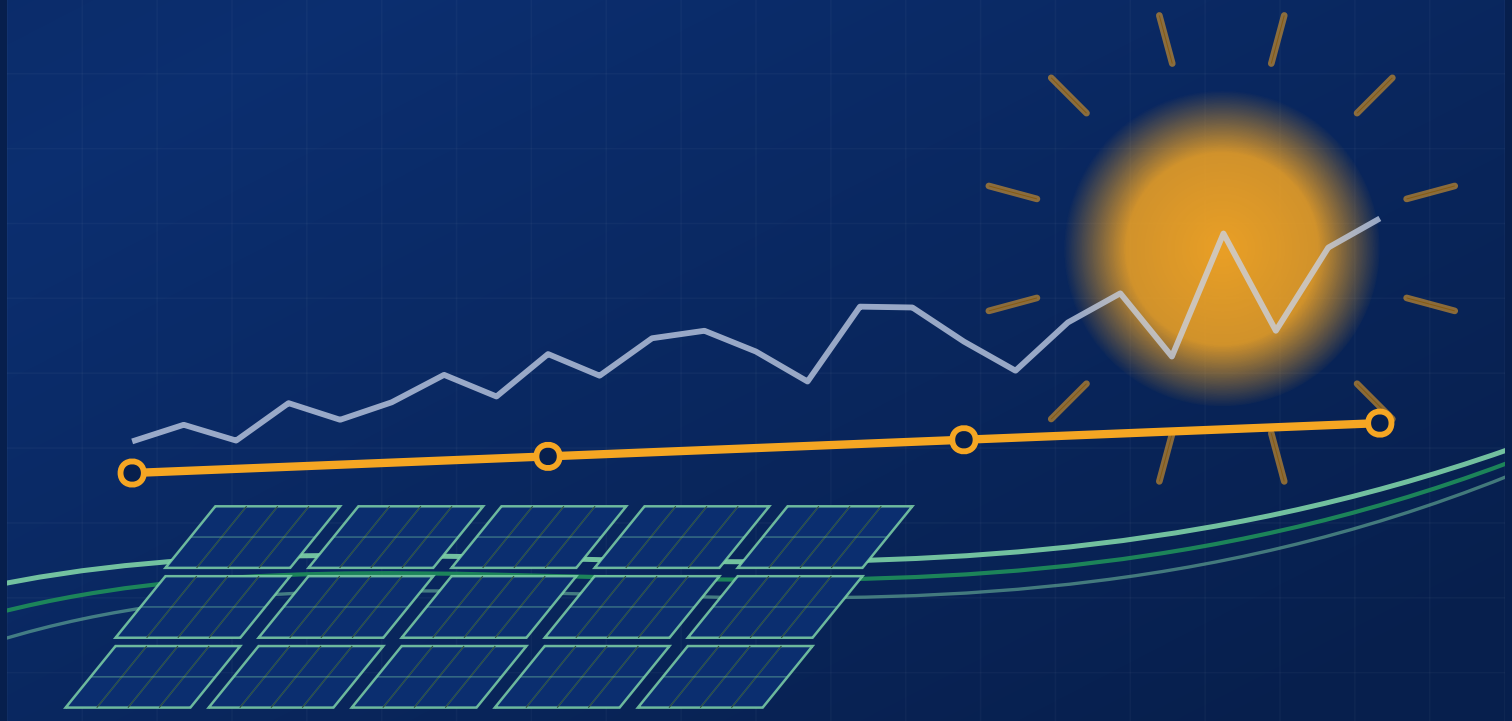
FOR PHILIPPINE BUSINESSES USING 100,000+ kWh A MONTH

Power Purchase Agreements for Philippine Business

A CFO's Guide to Onsite, Offsite and Virtual PPAs



Doc Andrie

Dr. Andrie Udal, PhD in Mineral and Energy Economics

Power Purchase Agreements for Philippine Business



Power Purchase Agreements for Philippine Business

A CFO's Guide to Onsite, Offsite and Virtual PPAs

Doc Andrie

Dr. Andrie Udal, PhD in Mineral and Energy Economics

SolarMD Power Consulting and Engineering Services

solarmd.net

Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Doc Andrie is the pen name of Dr. Andrie Udal, PhD in Mineral and Energy Economics.

Copyright © 2026 Andrie Udal. All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the author, except for brief quotations in reviews and other uses permitted by law. Readers may use and adapt the companion templates for their own organisation's internal evaluation of power procurement options.

Philippines, October 2026
ISBN: [to be assigned]
First edition: October 2026

Not professional advice. This book is for general information and education only. It is not legal, tax or investment advice, and it is not accounting, engineering or insurance advice. Reading it does not create an adviser–client relationship with the author or with SolarMD Power Consulting and Engineering Services. Before entering into any power purchase agreement, retail supply contract or virtual PPA, engage qualified Philippine counsel and consult your tax adviser, auditor and other professional advisers. The author and publisher accept no liability for any loss arising from reliance on this book.

Illustrative and composite cases. All case studies, worked examples, sites, bids and figures labelled illustrative are hypothetical or composite. They were built by the author to explain the methods. They are not real clients of the author or of SolarMD, and they do not describe any real company, building or project. Where real, publicly reported transactions are mentioned, they are identified as such and cited.

Currency of information. Regulatory, tariff and market information in this book is current as of October 2026. Laws, Energy Regulatory Commission (ERC) and Department of Energy (DOE) issuances, eligibility thresholds, tariffs and market prices change. Sources and the dates on which they were checked are given in each chapter's notes; check the current text before relying on it.

Disclosure of interest. The author's firm, SolarMD Power Consulting and Engineering Services, reviews solar and PPA offers, invests in solar projects and makes its own PPA offers. The methods in this book are provider-neutral and apply equally to any offer, including SolarMD's.

Names and images. Company, agency and product names are used for identification only and do not imply endorsement. Charts and diagrams were prepared by the author. AI-generated images are illustrative images of generic scenes; they do not depict real people, buildings or sites.

Contact: relations@solarmd.net · solarmd.net

For Rose, my wife,

who believed in this work long before anyone else did,

and for Francheska, our one-year-old daughter,

whose future is the reason I care about building a cleaner, brighter one.

FRONT MATTER

Abstract

Philippine companies using 100,000 kWh or more of electricity a month now have three distinct routes to long-term clean power: onsite solar power purchase agreements (PPAs), offsite PPAs supplied through a Retail Electricity Supplier (RES), and virtual PPAs. Each carries very different economic, contractual, accounting and risk profiles. This book is a practical guide for chief financial officers and business owners who must evaluate and choose among them.

Drawing on over ten years of experience in energy economics and solar and work with hundreds of clients, Doc Andrie (Dr. Andrie Udal, PhD in Mineral and Energy Economics) explains the current regulatory framework, including Retail Competition and Open Access at the 100 kW threshold, the Green Energy Option Program, the Department of Energy's 2025 virtual PPA circular and zero-export rules. The book shows how to price a PPA and model savings using levelized cost of energy, net present value, internal rate of return and Monte Carlo analysis, how PPAs are treated under PFRS 16 and IFRS 9, and how to identify and price key risks such as tariff and WESM exposure, developer credit, curtailment and change-in-law.

Later chapters walk through term-sheet red flags, a structured developer tender, composite case studies and a 90-day roadmap from first bill review to signed contract. Companion tools, including a savings model, risk register, term-sheet scorecard, bid evaluation workbook and RFP template, give decision-makers what they need to secure lower, more predictable energy costs while meeting sustainability goals.

Keywords: power purchase agreement, PPA, virtual PPA, retail electricity supplier, RCOA, GEOP, solar energy, energy economics, corporate renewable procurement, Philippines

FRONT MATTER

A Message from the Author

Over more than 10 years in energy economics and solar, I have sat across the table from hundreds of clients: hospital administrators, factory owners, mall operators, CFOs and boards. Most of them asked me the same questions. Is this price fair? What happens if the grid rate falls? Who carries the risk if something goes wrong? And why does this contract run for twenty years?

Those conversations taught me that the biggest risk in a PPA is rarely the technology. It is signing a contract you do not fully understand. I have seen good companies lock in escalators that erased their savings, accept termination clauses they could not afford, and walk away from good offers because no one explained the numbers in plain language.

I wrote this book to close that gap. It is what I would tell every client in our first meeting if we had a full day together, set out step by step, with the formulas, the checklists and the red flags. Whether you choose an onsite PPA, offsite supply through a Retail Electricity Supplier, or a virtual PPA, you should walk into that decision as the most informed person in the room.

Thank you for trusting me with your time. I hope this book saves you money, protects you from costly mistakes, and gives you the confidence to make energy a strategic advantage for your business.

Doc Andrie
Dr. Andrie Udal, PhD in Mineral and Energy Economics

Contents

Abstract v

A Message from the Author vi

List of Companion Templates xii

Preface xiii

How to Read This Book xv

About the Author xvii

Chapter 1 Why Electricity Is Now a CFO Issue 1

1.1 How a Philippine electricity bill is built 3
1.2 Rate trends: higher, and harder to predict 4
1.3 The peso, fuel and the imported-energy link 6
1.4 Electricity as a major, controllable cost line 7
1.5 ESG and sustainability reporting: electricity becomes a disclosure item 8
1.6 From 'utility bill' to 'energy procurement strategy' 9
1.7 A preview of the three paths 10
1.8 A CFO decision framework 14
Key takeaways 14
Questions a CFO should ask 15

Chapter 2 PPA Basics in Plain Language 18

2.1 What a PPA is, in plain language 19
2.2 The parties: who is around the table 20
2.3 The three models 21
2.4 Key commercial terms 26
2.5 Risk allocation 29
2.6 Cash flows: how the money moves 30
2.7 Common misconceptions 32
Key takeaways 33
Questions a CFO should ask 34

Chapter 3 Buy, Lease-to-Own or PPA 37

3.1 Four ways to get solar power, and one way to get green power without a roof 38
3.2 Outright purchase 39
3.3 Lease-to-own 41
3.4 Onsite and offsite PPAs: paying for output, not equipment 42
3.5 Cash flow, NPV and IRR: a worked illustration 43
3.6 Balance sheet and lease accounting under PFRS 16 45
3.7 Risk, O&M responsibility and flexibility 47
3.8 A decision guide by company profile 49
Key takeaways 50
Questions a CFO should ask 51

Chapter 4 Onsite PPA: Solar on Your Roof or Land....55
4.1 How an onsite, behind-the-meter PPA works....56
4.2 Site suitability: roof, land, shading and load....58
4.3 Sizing against daytime load....59
4.4 Self-consumption, export and net-metering limits....61
4.5 ERC and DOE rules on customer-site generation....62
4.6 Sale of electricity or lease? The licensing question....63
4.7 Tariff structures: discount, fixed or escalating....63
4.8 Tenor, buyout, performance guarantees, O&M and insurance....64
4.9 Interconnection with the distribution utility, and permits....65
4.10 Risks and how to contain them....65
4.11 Adding batteries....67
4.12 An illustrative savings case: about 100,000 kWh a month....68
4.13 Sector fit: hospitals, factories, malls and cold storage....70
4.14 Negotiation checklist....71
Key takeaways....72
Questions a CFO should ask....73

Chapter 5 Offsite PPA through a Retail Electricity Supplier (RES)....77
5.1 How an offsite PPA works in the Philippines....78
5.2 Who is eligible: RCOA at 100 kW and GEOP at 50 kW....80
5.3 The switching process and timeline....81
5.4 What stays with the DU and NGCP....83
5.5 RES contract structures: fixed, indexed, blended and time-of-use....85
5.6 Renewable energy certificates, the RPS and the WESM RE market....87
5.7 The Supplier of Last Resort, the cooling-off period and credit support....88
5.8 Risks and how to contain them....89
5.9 How to run a RES tender....90
5.10 Negotiation checklist....91
5.11 Sector fit....92
Key takeaways....93
Questions a CFO should ask....93

Chapter 6 Virtual PPA: The Financial Contract and Where It Stands in the Philippines....97
6.1 What a virtual PPA is....99
6.2 How settlement works....100
6.3 The Philippine framework under DC2025-10-0024....101
6.4 Physical offsite PPA versus virtual PPA....104
6.5 Accounting: derivative treatment and hedge accounting....105
6.6 Tax considerations....106
6.7 RE100, ESG and Scope 2 market-based claims....107
6.8 International context....108
6.9 An illustrative settlement and hedge-value analysis....109
6.10 Risks and how to contain them....111
6.11 When a VPPA makes sense....112
6.12 Negotiation checklist....114
Key takeaways....114
Questions a CFO should ask....115

Chapter 7 Pricing a PPA: Fixed Rates, Escalators, Discounts to Grid and Indexed Prices...119
7.1 How a developer builds a PPA price....121
7.2 Verified cost benchmarks: the Philippines and the region....123
7.3 The main price structures....125

7.4 Who carries which risk....128
7.5 Comparing offers: levelised cost to the buyer and NPV....129
7.6 Escalator traps....130
7.7 Sensitivity analysis....131
7.8 What a 'good' price looks like....132
7.9 An illustrative offer comparison....133
7.10 Negotiation levers....134
7.11 Pricing checklist....135
Key takeaways....136
Questions a CFO should ask....136

Chapter 8 Modelling Your Savings: NPV, IRR, Payback and Sensitivity, Step by Step....140

8.1 Why model, and what decision the model supports....142
8.2 The data you need....142
8.3 Building the model, step by step....143
8.4 The metrics, and when each one misleads....147
8.5 Choosing a discount rate....149
8.6 A worked example: one site, five choices....150
8.7 Sensitivity, scenario and Monte Carlo analysis....152
8.8 Break-even analysis....154
8.9 Common modelling mistakes....155
8.10 Presenting to the board....156
8.11 The companion template....157
8.12 Model checklist....157
Key takeaways....158
Questions a CFO should ask....158

Chapter 9 Risk: Volume, Price, Counterparty, Regulatory and Curtailment....162

9.1 A risk taxonomy for three structures....164
9.2 Volume risk....165
9.3 Price risk....167
9.4 Shape and basis risk....168
9.5 Counterparty and credit risk....168
9.6 Regulatory and policy risk....170
9.7 Curtailment and grid risk....171
9.8 Physical risks: typhoons, floods and earthquakes....172
9.9 Operational, O&M, foreign exchange and inflation risk....174
9.10 ESG and greenwashing risk....174
9.11 Termination and exit risk....175
9.12 The risk matrix and mitigation by contract clause....175
9.13 An illustrative quantified risk analysis....177
9.14 A risk register template....178
9.15 A risk mitigation roadmap....179
9.16 Risk checklist....179
Key takeaways....180
Questions a CFO should ask....181

Chapter 10 Term Sheet Red Flags, Clause by Clause....186

10.1 The legal backdrop in five rules....187
10.2 Anatomy of a term sheet, and where the red flags cluster....188
10.3 Formation and timing....188
10.4 Price and money....189
10.5 Performance....190

10.6 Risk allocation....191
10.7 Ownership, site and exit....194
10.8 Attributes, data and disputes....197
10.9 Terms specific to RES supply contracts....199
10.10 Terms specific to virtual PPAs....199
10.11 A red-flag scoring tool....200
10.12 A negotiation playbook....202
Key takeaways....203
Questions a CFO should ask....203

Chapter 11 Choosing a Developer and Running a Competitive Tender....207
11.1 Why tender: price discovery and the value of competition....208
11.2 The tender process end to end....209
11.3 What to put in the data room....210
11.4 Developer due diligence....211
11.5 Evaluation criteria and weighted scoring....214
11.6 Making bids comparable....216
11.7 An illustrative evaluation of four bids....216
11.8 RES tenders....218
11.9 Governance, probity and conflicts of interest....219
11.10 Common tender mistakes....220
11.11 Timeline and budget for advisers....221
11.12 The role of an independent adviser....221
11.13 An RFP template outline....222
11.14 Tender checklist....222
Key takeaways....223
Questions a CFO should ask....223

Chapter 12 Case Studies: A Hospital, a Factory and a Mall....227
12.1 How the cases were built....228
12.2 Case 1: a private tertiary hospital in Metro Manila....229
12.3 Case 2: a manufacturing plant in a CALABARZON ecozone....233
12.4 Case 3: a mall group with sites in Luzon and the Visayas....236
12.5 Sidebar: publicly reported Philippine deals (real, not composites)....240
12.6 Cross-case comparison....241
12.7 Lessons learned....242
Key takeaways....243
Questions a CFO should ask....243

Chapter 13 A 90-Day Roadmap: From First Idea to Signed PPA....248
13.1 Before Day 1: the conditions for a 90-day timetable....249
13.2 Days 1–30: Diagnose....250
13.3 Days 31–60: Design and tender....251
13.4 Days 61–90: Evaluate, negotiate, approve....253
13.5 Weekly deliverables, roles and gates....254
13.6 Quick wins: start before the PPA....256
13.7 The board approval paper....258
13.8 After signing: realistic timelines to supply or COD....258
13.9 Common delays and how to avoid them....261
13.10 Ready to sign: the final checklist....262
13.11 The companion 90-day project plan....262
13.12 The book in one page....262
Key takeaways....264

A closing message from the author....264

Appendices A to G....268

Appendix A. Glossary....269
Appendix B. PPA Evaluation Checklist....276
Appendix C. Templates Guide....280
Appendix D. Regulatory Reference....286
Appendix E. Assumptions and Data Sources....294
Appendix F. Bibliography....297
Appendix G. Index of Figures and Tables....307

Companion templates: the six workbooks and templates are listed in the List of Companion Templates and explained in Appendix C (Templates Guide); all are available at solarmd.net. Chapter endnotes appear at the end of each chapter.

FRONT MATTER

List of Companion Templates

Workbooks and templates that put the book's methods to work

Six companion files accompany this book. Each one reproduces the method and the illustrative example of its chapter, with live formulas or editable text, so that you can replace the example inputs with your own. Inputs are marked; everything else is calculated. Appendix C, the Templates Guide, explains how the files fit together and in what order to use them. All six can be downloaded from https://solarmd.net/book1/support, which also carries updates, errata and help for the book.

Table FM.1. Companion templates

File	Chapter	What it contains	Format
Chapter08_Savings_Model.xlsx	8	**Savings model.** Rebuilds your bill, takes monthly solar output, estimates a discount rate and produces year-by-year cash flows, NPV, IRR, payback, scenarios, sensitivity, break-even and Monte Carlo results with live formulas.	Excel
Chapter09_Risk_Register.xlsx	9	**Risk register.** Pre-filled with eighteen example risks, with scoring scales, a live heat map and a quantification sheet.	Excel
Chapter10_TermSheet_Scorecard.xlsx	10	**Term-sheet scorecard.** Drop-down ratings, editable weights and thresholds, a gate rule, a three-offer comparison and a clause guide.	Excel
Chapter11_RFP_Template.docx	11	**Request for proposals.** A full RFP for an onsite solar PPA, RES supply or virtual PPA, with instructions, data room index, evaluation method, timetable and bidder forms.	Word
Chapter11_Bid_Evaluation.xlsx	11	**Bid evaluation matrix.** Pass/fail gates, a normalisation model, weighted scoring with editable weights, a weight-sensitivity table and four example bids.	Excel
Chapter13_90Day_Plan.xlsx	13	**90-day plan.** Every task with owner, deliverable and a Gantt chart that redraws, plus RACI, decision-gate, weekly-deliverable and ready-to-sign sheets.	Excel

The workbooks use illustrative example data from their chapters. They are tools for analysis, not offers or forecasts; results depend entirely on the inputs you enter. Have counsel review any RFP or contract document before use.

FRONT MATTER

Preface

Why I wrote this book

For most Philippine companies, electricity was long a bill to be paid rather than a decision to be made. That has changed. A business can now put solar on its own roof under an onsite power purchase agreement (PPA) without spending capital. If it is large enough, it can stop buying generation from its distribution utility and contract with a Retail Electricity Supplier (RES) of its choice, and the threshold for doing so fell to 100 kW of average monthly peak demand in June 2026. Since late 2025 it has also had a Department of Energy framework for virtual PPAs, financial contracts that let a buyer back a specific renewable project without changing its physical supply. Philippine buyers have never had so many ways to buy electricity.

Good information has not kept up. Much of what decision-makers read about PPAs comes from the people who sell them: developers, suppliers, brokers and equipment vendors. Their material is often useful, but it is written to win a contract. The rules are spread across statutes, ERC resolutions, DOE circulars and market-operator bulletins. Few sources set out, in one place and in plain language, how a finance team should compare the options on their merits. I wrote this book to fill that gap. It is written for the buyer's side of the table.

The energy economist's lens

I trained as an energy economist, and that training shapes every chapter. Three habits of mind run through the book. The first is that every decision is a comparison with a counterfactual. A PPA saves money only relative to what you would otherwise have paid, so the book starts with your own bill and builds a baseline you can defend. The second is that a contract is a device for allocating risk. Volume, price, counterparty, regulatory and curtailment risk do not disappear when you sign. Someone carries each of them, and the price should reflect who does. The third is that competition sets prices better than salesmanship. A well-run tender reveals what the market will offer, and an offer that cannot survive a fair comparison should not be signed.

My training in data science adds a fourth habit: keep what the data show apart from what is assumed, and say which is which. That is why every illustrative number in this book is labelled, and why every rule, tariff and market figure is cited with the date it was checked.

Who this book is for

The book is written for chief financial officers, owners, treasurers and finance managers of Philippine businesses that use about 100,000 kWh of electricity a month or more, the scale at which a PPA or a RES contract can move the income statement. Hospitals, factories, malls, hotels, cold-storage operators, schools, office buildings and multi-site groups all fall within that range. Board members, general counsel, procurement heads and facilities and engineering managers will find the chapters that touch their own responsibilities. Smaller businesses can use the same methods, although some options, such as switching to a RES, depend on eligibility rules that Chapter 5 explains.

How to use this book

The thirteen chapters move from why to how. Chapters 1 to 3 explain why electricity is now a CFO issue, how PPAs work and whether to buy, lease or contract. Chapters 4 to 6 examine the three paths in turn: onsite, offsite through a RES, and virtual. Chapters 7 to 11 are the toolkit: pricing, savings models, risk, term sheets and tenders. Chapter 12 applies the whole method to three composite buyers, and Chapter 13 turns it into a 90-day plan.

You do not need to read the book from cover to cover. The next section, How to Read This Book, suggests four reading paths. The six companion templates listed above put the methods to work with your own numbers. The regulatory information is current as of October 2026. Rules change, so check the current text before you rely on it, and take advice from qualified Philippine counsel, your tax adviser and your auditor before you sign.

Where I stand

I lead SolarMD Power Consulting and Engineering Services. SolarMD reviews solar and PPA offers for clients, and it also invests in solar projects and makes its own PPA offers. I have written this book so that its methods apply equally to any provider's offer, including ours. When SolarMD makes its own offer, we say so, and the buyer remains free to choose another provider. The tests in these pages are the tests I would want any offer to pass.

An invitation

To download the companion templates, check updates and errata or get help with the book, visit https://solarmd.net/book1/support. To report an error or discuss your own site, write to relations@solarmd.net. I hope this book helps you make a sound decision, on your own terms.

Doc Andrie
Dr. Andrie Udal, PhD in Mineral and Energy Economics
Philippines, October 2026

FRONT MATTER

How to Read This Book

Four reading paths, and the conventions used throughout

The chapters build on one another, but few readers need all of them at once. Figure FM.1 shows four paths through the book, by reader type. Filled circles are the chapters to read in order; hollow circles are chapters to skim or consult as needed. Every path starts with Chapters 1 and 2, which set out the case for acting and the vocabulary, and every path finishes with the 90-day roadmap in Chapter 13.

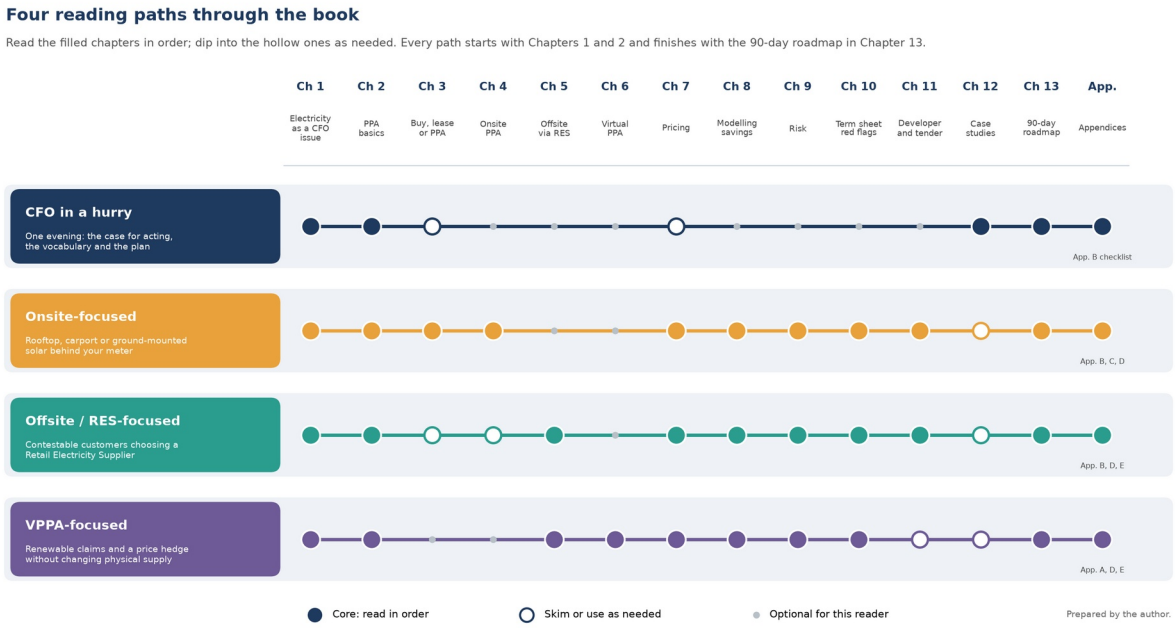


Figure FM.1. Reading paths by reader type. Chapter selections are the author's recommendations. Prepared by the author (build/charts_fm.py).

CFO in a hurry

Chapters 1, 2, 12 and 13, then Appendix B

If you have one evening before a board meeting, read Chapter 1 for the case for acting, Chapter 2 for the vocabulary, the case in Chapter 12 closest to your business, and Chapter 13, which closes with the whole book on one page. Skim Chapter 3 if ownership is on the table and Chapter 7 before you look at a price. Keep Appendix B, the PPA Evaluation Checklist, beside you when an offer arrives.

Onsite-focused reader

Chapters 1–4 and 7–11, then 13

For rooftop, carport or ground-mounted solar behind your meter, read Chapters 3 and 4 closely: whether to buy, lease or contract, and how an onsite PPA is sized, regulated and written. Then work through pricing, the savings model, risk, term sheets and the tender (Chapters 7 to 11), and use Chapter 12 to see onsite solar combined with other options. The savings model, risk register, scorecard, RFP template and bid evaluation matrix are your working tools.

Offsite / RES-focused reader

Chapters 1, 2, 5 and 7–11, then 13

If your site is contestable and you are choosing a Retail Electricity Supplier, Chapter 5 is your core chapter: eligibility, switching, bill components, contract structures and how to run a RES tender. Chapters 7 to 11 show you how to price, model, risk-test and negotiate the offers. Skim Chapters 3 and 4, because most RES buyers also have a roof, and Chapter 12. Appendix D gathers the switching rules and lead times in one place.

VPPA-focused reader

Chapters 1, 2, 5, 6 and 7–10, then 13

A virtual PPA sits alongside your physical supply, whether from your distribution utility or a RES, so read Chapter 5 before Chapter 6, which covers settlement, the DOE framework, accounting, tax and renewable claims. Chapters 7 to 10 then show how to price the strike, model the settlement, register the basis and counterparty risks and read the clauses. Skim Chapters 11 and 12. Appendices A, D and E help with the terms, rules and assumptions.

Conventions used in this book

- RES always means Retail Electricity Supplier, licensed by the Energy Regulatory Commission (ERC).
- Figures and tables built on hypothetical numbers say 'Illustrative example data' in their captions. They explain a method; they are not forecasts or offers.
- The hospital, factory and mall group in Chapter 12, and the example buyers elsewhere, are composites. They are not real clients or projects.
- Each chapter closes with key takeaways and with numbered notes that give its sources and the dates on which they were checked.
- Shaded boxes with a teal rule hold definitions ('Terms used in this chapter'), warnings and checklists.
- Amounts are in Philippine pesos (₱) unless stated otherwise, and energy is in kilowatt-hours (kWh).

FRONT MATTER

About the Author



Dr. Andrie Udal, who writes as Doc Andrie, is an energy economist and the founder and Managing Partner of SolarMD Power Consulting and Engineering Services (solarmd.net). He holds a PhD in Mineral and Energy Economics, Colorado School of Mines, and an MSHDS (Master of Science in Health Data Science).

Through SolarMD, he helps hospitals and other complex organisations evaluate and advance solar projects: reading bills and load data, comparing offers, structuring power purchase agreements and checking that systems keep performing over the life of the contract. SolarMD works with commercial and industrial sites in the Philippines, with hospitals as a key sector, and coordinates with licensed Retail Electricity Suppliers for clients that pair onsite solar with competitive retail supply.

He leads SolarMD's public research on solar at Philippine hospitals, an evidence directory built from published sources that separates documented installations from announcements, tenders and signed agreements. The same discipline runs through this book: keep the record apart from the claim, show the assumptions, and leave the decision with the buyer.

His approach brings together the tools of energy economics (baselines, risk allocation and competitive price discovery) and a data scientist's insistence on traceable sources and stated assumptions. He writes for the buyer's side of the table: the CFOs, owners and boards who sign fifteen- or twenty-year power contracts and must live with them.

Disclosure and contact

Disclosure: SolarMD invests in solar projects with co-investment partners and makes its own PPA offers. It discloses when an offer is its own, and clients remain free to choose another provider.

Contact: relations@solarmd.net · solarmd.net

CHAPTER 1

Why Electricity Is Now a CFO Issue

Rates, volatility, reporting pressure, and the shift from paying a utility bill to running an energy procurement strategy

---

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: How a Philippine bill is built · Rate trends and WESM volatility · The peso, fuel and imported-energy link · Electricity as a controllable cost line · ESG and sustainability reporting · From utility bill to procurement strategy · The three PPA paths · A CFO decision framework · Key takeaways and questions to ask



Figure 1.1. Electricity has moved from the facilities budget to the boardroom agenda. (AI-generated illustrative image; generic scene, not real persons.)

For most of the last two decades, the electricity bill in a Philippine company sat comfortably in the operations budget. Someone in facilities or accounting received it, checked that the meter reading looked reasonable, and passed it on for payment. The number moved from month to month, but few finance teams asked why. It was treated like weather: an external condition to be endured, not a cost to be managed.

That attitude is no longer affordable. For a company consuming 100,000 kilowatt-hours (kWh) or more every month, electricity is now one of the largest cash costs that is still largely unhedged, poorly understood, and, for most firms, never competitively procured. At the same time, the rules have changed. Since 26 June 2026, any end-user with an average monthly peak demand of at least 100 kilowatts (kW) can choose its own Retail Electricity Supplier,[1] and since 21 February 2026 any end-user with at least 50 kW can contract directly for renewable supply under the Green Energy Option Program.[2] A Department of Energy (DOE) circular now also recognises virtual power purchase agreements.[3] The choices that used to belong only to the largest industrial plants are now open to mid-sized hotels, hospitals, schools, malls, office buildings and factories.

This chapter explains why electricity has become a chief financial officer's issue rather than a facilities issue. It looks at how Philippine grid prices are built, why they have risen and become more volatile, how the peso and imported fuels feed straight into your tariff, and why sustainability reporting is turning electricity into a disclosure item as well as a cost item. It closes with a preview of the three procurement paths this book covers (onsite, offsite and virtual power purchase agreements) and a practical framework for deciding among them.

A note on terms used throughout this book

PPA (power purchase agreement): a long-term contract to buy electricity, or the attributes of electricity, at an agreed price structure.

RES: in this book, RES always means Retail Electricity Supplier, the ERC-licensed supplier that a contestable customer can contract with under Retail Competition and Open Access (RCOA).

RE Supplier: a supplier of electricity from renewable energy resources to end-users who opt into the Green Energy Option Program (GEOP).

Captive customer: an end-user still supplied by its distribution utility (for example, Meralco) at the regulated tariff. Contestable customer: an end-user that is eligible for, or has moved to, supply from a RES.

kW vs kWh: kW measures demand (how much power you draw at a moment); kWh measures energy (how much you use over time). Eligibility thresholds are set in kW; your bill is mostly driven by kWh.

1.1 How a Philippine electricity bill is built

Before a CFO can manage electricity, it helps to know what is actually being paid for. A Philippine grid bill is a stack of separately regulated charges. Each one goes to a different party and moves for different reasons.

- Generation charge: the cost of the electricity itself, passed through by the distribution utility from its power suppliers and from the Wholesale Electricity Spot Market (WESM). It changes every month.
- Transmission and ancillary service charges: paid to the National Grid Corporation of the Philippines (NGCP) for moving power on the high-voltage grid and keeping the system stable.
- System loss charge: the cost of electricity lost in the network, which also moves with generation and transmission costs.
- Distribution, supply and metering charges: the utility's own regulated revenue for running the local network and serving customers.
- Taxes, universal charges and other pass-through items: VAT, local franchise tax, the universal charge for missionary electrification and environmental programmes, the feed-in-tariff allowance (FIT-All), and similar policy charges.
- Refunds and adjustments: lines that can be positive or negative, such as refunds ordered by the Energy Regulatory Commission (ERC).

The generation charge dominates. In Meralco's October 2026 billing, the generation charge was ₱10.2005 per kWh out of a typical household's all-in rate of ₱15.0615 per kWh, or about 68% of the bill (Figure 1.2).[4,5] Meralco's published schedule applies the same per-kWh generation charge to every captive customer class, from residential through the General Service and General Power classes used by commercial and industrial customers.[6] Larger commercial and industrial customers also pay demand charges per kW, so their exact mix differs. But the conclusion carries over: the generation charge is the largest and most volatile part of the bill, and it is the part a business can actually change through procurement.

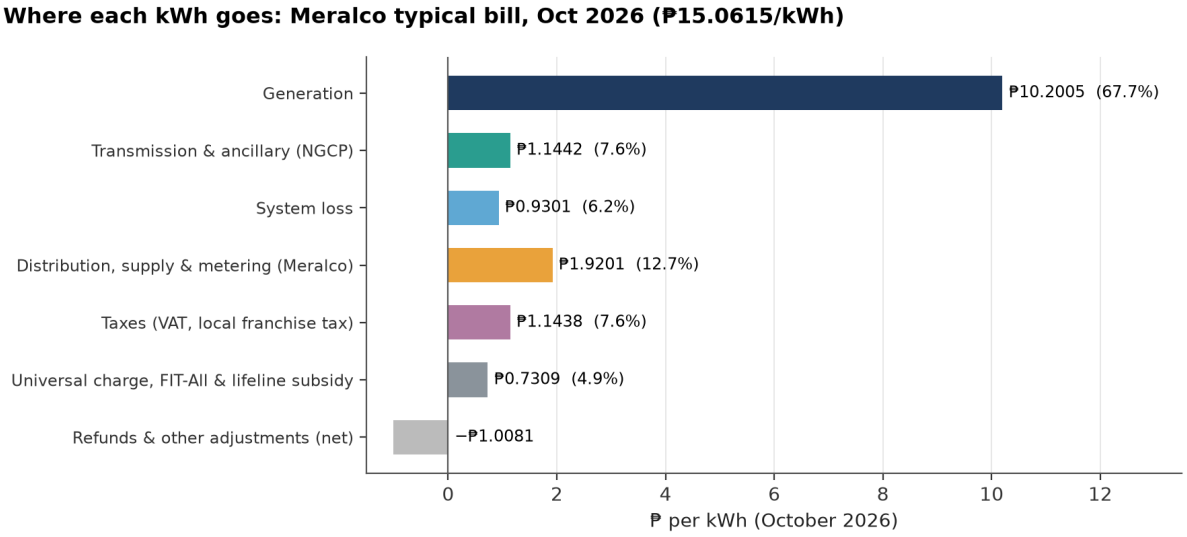


Figure 1.2. Components of a typical Meralco bill per kWh, October 2026. Source: Meralco, Residential Bills at Typical Consumption Levels, October 2026; author's grouping.[5]

This matters because the generation charge is precisely the component that the procurement options in this book replace or reduce. An onsite PPA displaces some of the kWh you buy from the grid. An offsite PPA through a RES, or through an RE Supplier under GEOP, replaces the utility's generation charge with a negotiated contract price, while you continue to pay regulated network charges. Rate schedules note that certain charges, including generation, do not apply to contestable customers in the same way, because those customers are billed for generation by their RES.[6] A virtual PPA leaves your physical supply unchanged but adds a financial contract alongside it. In every case the economics turn on one question: how does a contracted price compare with the generation charge you would otherwise pay?

1.2 Rate trends: higher, and harder to predict

The simplest way to see why finance leaders are paying attention is to look at the generation charge over time. Meralco publishes a monthly breakdown of its generation charge by supply source. The series is public, primary data from the country's largest distribution utility. Its billing-month figures show the generation charge at ₱5.1957 per kWh in February 2022 and ₱10.2005 per kWh in October 2026, an increase of about 96%, or close to double, in under five years (Figure 1.3).[4] The climb has not been steady. The charge drifted between roughly ₱6.4 and ₱7.7 per kWh through 2023 and 2024, then rose almost every month in 2026, from ₱7.7471 in January to ₱10.2005 in October.[4]

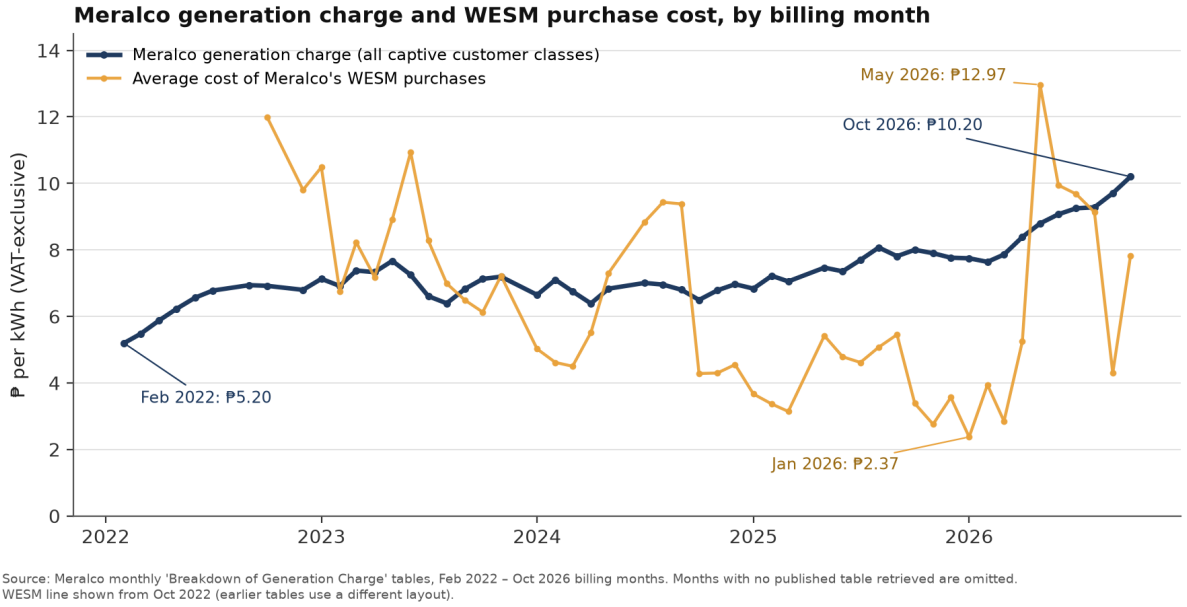


Figure 1.3. Meralco generation charge and average cost of Meralco's WESM purchases by billing month, February 2022 to October 2026. Source: Meralco monthly Breakdown of Generation Charge tables.[4]

The second line in Figure 1.3 shows something CFOs should study closely: the average cost of the electricity Meralco bought from the spot market. In January 2026 that cost was ₱2.37 per kWh. Four months later, in May 2026, it was ₱12.97 per kWh, more than five times higher.[4] A swing of that size in an input cost would trigger a treasury review in almost any other part of a business. In electricity it often goes unnoticed, because the spot market is only one ingredient in the utility's blended generation charge, and blending smooths and delays the signal.

WESM: the spot market behind the bill

WESM is the Philippine wholesale spot market, operated by the Independent Electricity Market Operator of the Philippines (IEMOP). Prices are set at short intervals by supply and demand on the grid. They spike when plants trip, when reserves are thin during hot months, or when transmission is constrained, and they collapse when supply is plentiful. Annual averages hide the volatility but still show the direction. IEMOP reported an average WESM price of ₱5.58 per kWh for 2024 and ₱4.14 per kWh for the first half of 2025, the lowest since 2020.[7] Press reports of IEMOP data put the January to November 2025 average at ₱4.32 per kWh, against ₱6.44 per kWh in 2023.[8]

Here is the economist's lesson. Lower average spot prices in 2025 did not translate into a lower generation charge in 2026. The charge kept rising while spot prices were soft, because most of a utility's supply comes from bilateral power supply agreements (PSAs) and independent power producers whose contracts pass through fuel costs, foreign exchange movements and other adjustments. In October 2026, for example, PSAs made up about 74% of Meralco's supply, First Gas and Prime CoreGen about 24%, and WESM only about 2%.[9] Your exposure is therefore not simply to the spot market. It is to the whole

portfolio of contracts your utility holds, with their fuel indexation, currency clauses and timing. You did not negotiate that portfolio and you cannot see most of its terms.

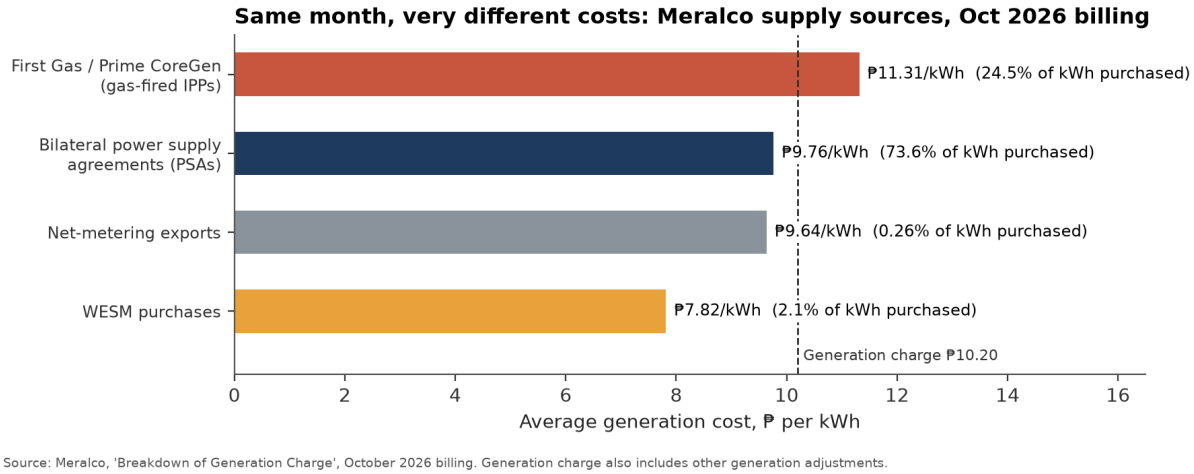


Figure 1.4. Average generation cost by Meralco supply source in a single month (October 2026 billing). The blended generation charge hides wide differences between sources. Source: Meralco, Breakdown of Generation Charge, October 2026.[4]

Figure 1.4 makes the same point from another angle. In the same billing month, electricity from the First Gas and Prime CoreGen gas plants cost Meralco an average of ₱11.31 per kWh, PSA supply ₱9.76, and WESM purchases ₱7.82.[4] Inside the PSA group, individual contracts ranged from under ₱1 to over ₱15 per kWh. The blended generation charge is an average of very different contracts, fuels and risk positions. A company that buys its own supply chooses which of those risks it holds.

1.3 The peso, fuel and the imported-energy link

Why do Philippine electricity prices move with events thousands of kilometres away? Because the generation fleet runs largely on fuels bought at world prices, and many generation costs are denominated in US dollars.

DOE statistics show that coal supplied 79,359 gigawatt-hours (GWh) of the country's 126,941 GWh of gross generation in 2024, or about 62.5%. Natural gas supplied about 14.2% and renewable energy about 22.2%.[10] Coal and liquefied natural gas (LNG) are priced in international markets, so their cost to a Philippine generator depends on both the world commodity price and the peso-dollar exchange rate.

Meralco's own explanation of its October 2026 rate increase shows the transmission mechanism clearly. It said charges from First Gas and Prime CoreGen rose by ₱3.2206 per kWh because those plants used LNG, 'the price of which remains elevated with the ongoing Middle East conflict', and because the weaker peso affected 'around 89%' of their costs, which are dollar-denominated. It also noted that peso depreciation affected 'around 54% of PSA costs that were dollar denominated'.[9] In other words, a geopolitical event and

a currency move flowed through to Philippine business tariffs within a billing cycle or two.

For a CFO this is a familiar risk in an unfamiliar place. Many companies hedge foreign-currency payables, borrowings or imported raw materials. Fewer recognise that their electricity bill carries embedded exposure to fuel prices and the peso, and that the exposure is passed through with a lag and without any choice on their part. A long-term contract at a fixed or predictably escalating peso price does not remove these risks from the economy. It moves them to a supplier who is better placed to manage them, in exchange for a price you can budget for.

1.4 Electricity as a major, controllable cost line

For the companies this book is written for, the numbers are large. The arithmetic in Table 1.1 uses the October 2026 Meralco generation charge and simple multiplication. It is not a forecast, but it shows the scale.

Table 1.1. Scale of electricity exposure for a business using 100,000 kWh per month (simple arithmetic)

Item	Calculation	Result
Annual consumption	100,000 kWh × 12 months	1,200,000 kWh
Annual generation cost at the October 2026 Meralco generation charge	1,200,000 kWh × ₱10.2005	≈ ₱12.24 million
Effect of every ₱1.00/kWh change in price	1,200,000 kWh × ₱1.00	₱1.2 million per year
Effect of the Feb 2022 to Oct 2026 increase in the generation charge (₱5.0048/kWh)	1,200,000 kWh × ₱5.0048	≈ ₱6.0 million per year
Implied minimum average monthly peak demand	100,000 kWh ÷ ~730 hours	≈ 137 kW (peak demand is always at least the average)

Generation charge figures from Meralco, October 2026 and February 2022 billing.[4] Excludes network charges, demand charges, taxes and other bill items. Multiply by your own consumption to scale.

Two things stand out. The first is size. For a firm at 100,000 kWh a month, each peso per kWh is worth about ₱1.2 million a year, and the movement in the generation charge since early 2022 alone is worth about ₱6 million a year. Many firms use several times that volume across multiple sites. The second is eligibility. A site that uses 100,000 kWh in a month must, by arithmetic, draw an average of roughly 137 kW across that month's hours, so its peak demand is higher still. Most businesses at this scale therefore already clear both the 100 kW RCOA threshold and the 50 kW GEOP threshold, subject to how demand is measured for each metered account.[1,2] Many such firms have options they have never examined.

Electricity is also more controllable than most people assume. A CFO has at least five levers:

1. Supplier choice: an eligible business can move from the utility's regulated generation charge to a negotiated contract with a RES, or with an RE Supplier under GEOP.
2. Contract structure: fixed, escalating, indexed, or blended prices; contract tenor; take-or-pay versus as-consumed volumes.
3. Self-generation: onsite solar, usually without upfront capital under a PPA, displaces grid purchases during daylight hours.
4. Load management: shifting loads in time, cutting peak demand, and efficiency investments lower both kWh and demand charges.
5. Attribute strategy: buying renewable energy certificates, directly or through a virtual PPA, separates the 'green' claim from the physical supply decision.

None of these levers is new in global corporate energy markets. What is new in the Philippines is that the regulatory doors to most of them are now open to mid-sized companies, not only to the largest industrial users. The network side of the bill will keep moving too. By October 2026 the ERC had announced approval of an average distribution rate of ₱1.48 per kWh for Meralco for the regulatory period July 2026 to June 2030, up from the ₱1.35 that had applied since 2016.[9] Network charges are not contestable, which is one more reason to manage the part of the bill that is.

1.5 ESG and sustainability reporting: electricity becomes a disclosure item

The second force putting electricity on the CFO's desk is sustainability reporting. For most service, commercial and light-manufacturing companies, purchased electricity is the largest single source of operational greenhouse-gas emissions, the category reported as Scope 2. As long as sustainability reports were voluntary or loosely framed, that number could sit in an appendix. That is changing.

In December 2025 the Securities and Exchange Commission (SEC) issued Memorandum Circular No. 16, Series of 2025. It adopts PFRS S1 and PFRS S2, the Philippine versions of the International Sustainability Standards Board's IFRS S1 and IFRS S2, and replaces the 2019 sustainability reporting guidelines.[11] The circular took effect on 8 January 2026 and uses a tiered timetable:[11]

- Tier 1: listed companies with market capitalisation above ₱50 billion apply the standards for fiscal years beginning on or after 1 January 2026, reporting in 2027.
- Tier 2: listed companies above ₱3 billion and up to ₱50 billion begin with fiscal year 2027, reporting in 2028.
- Tier 3: smaller listed companies, issuers listed only on the Philippine Dealing & Exchange Corp., and large non-listed entities with annual revenue above ₱15 billion begin with fiscal year 2028, reporting in 2029.

Sustainability reports under the circular must be approved by the board and attached to the annual report.[11] IFRS S2 is a climate standard written for investors. It asks companies to explain climate-related risks and opportunities in financial terms, including transition risks such as rising energy costs and carbon-related policy. That is CFO territory. The electricity contract becomes both a cost decision and evidence in a disclosure that auditors and investors will read.

Pressure also comes through supply chains. Multinational customers with renewable-electricity or net-zero targets increasingly ask their Philippine suppliers about the source of their power. The DOE's virtual PPA circular itself refers to corporate demand for renewable energy certificates to meet targets 'such as RE100 and Net Zero Targets'.[3] National policy points the same way: the Philippine Energy Plan 2023–2050 targets a 35% renewable share of the power generation mix by 2030 and 50% by 2040.[12]

A caution belongs here, because this book aims to be useful rather than promotional. Sustainability benefits must be documented, not assumed. Who owns the renewable energy certificates, how they are tracked through the Renewable Energy Market registry operated by IEMOP,[13] and how they are reflected in Scope 2 accounting are contract and accounting questions. They should be settled before signing, not after. Later chapters treat them in detail.

1.6 From 'utility bill' to 'energy procurement strategy'

Put these forces together (a large cost line, rising and volatile prices, embedded currency and fuel exposure, and new disclosure obligations) and electricity starts to look like any other strategic input. The question is no longer 'Is the bill correct?' but 'What is our electricity procurement strategy, who owns it, and how does it perform against the alternatives?'

The regulatory changes of 2026 make that question practical rather than theoretical:

> **Regulatory snapshot (verified as of October 2026)**
>
> **RCOA / Retail Aggregation Program:** ERC Resolution No. 22, Series of 2025 lowered the eligibility threshold from 500 kW to an average monthly peak demand of at least 100 kW, effective 26 June 2026. End-users below the threshold may form aggregated groups, subject to contiguous-area or same-franchise/common-ownership rules.[1]
>
> **Early uptake:** on implementation, the ERC said 77 contestable customers were scheduled for their initial switch under the 100 kW threshold (58 in Luzon, 19 in the Visayas), bringing total initial RCOA switches across all threshold levels to 96.[1]
>
> **GEOP:** DOE Department Circular No. DC2026-01-0002 (Revised GEOP Rules), effective 21 February 2026, lowered the GEOP threshold from 100 kW to 50 kW average monthly peak demand, with aggregation allowed within contiguous areas.[2]
>
> **Virtual PPAs:** DOE Department Circular No. DC2025-10-0024, published 7 November 2025, sets guidelines for VPPAs as private contracts for Voluntary RECs without physical delivery, with a

minimum term of ten years from commercial operations.[3]

Always confirm current rules, procedures and your account-level eligibility with your distribution utility, the ERC, the DOE and IEMOP before acting; thresholds are reviewed periodically.

Moving from a bill to a strategy changes who is involved and how decisions are made. In companies that manage energy well, three things tend to be true. Finance owns the economics and the risk position, not only the payment. Operations and engineering own the load data and the onsite assets. The board receives energy cost and emissions information with the same regularity as other material cost and risk items. None of this requires a large team. It does require treating electricity contracts like other long-term financial commitments: competitive tendering, a clear view of risk allocation, and periodic re-testing against the market.

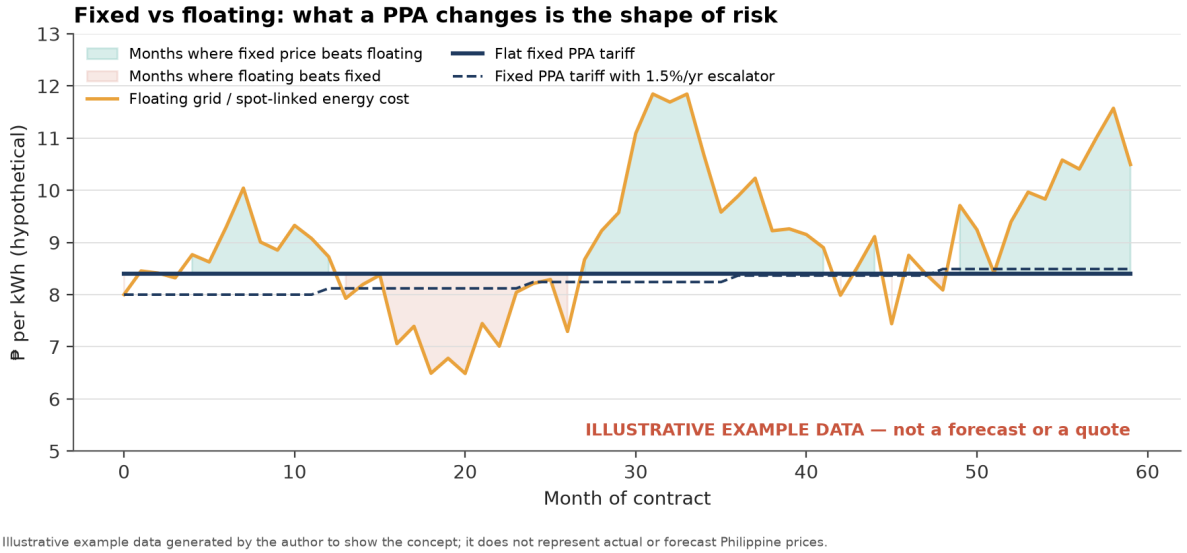


Figure 1.5. Illustrative example data: a fixed PPA tariff versus a floating, market-linked cost over a five-year contract. The numbers are hypothetical and are shown only to illustrate how a PPA changes the shape of price risk.

Figure 1.5 shows the core trade-off in stylised form, using illustrative example data rather than real prices. A fixed or predictably escalating PPA price will sometimes be above the floating alternative and sometimes below it. The value of the contract is not that it always wins month by month. It turns an unpredictable cost into a predictable one, so that budgets, pricing decisions and loan covenants rest on firmer ground. Whether a given contract is worth signing depends on its price, its terms, and your company's tolerance for volatility. Those are the questions the rest of this book equips you to answer.

1.7 A preview of the three paths

This book is organised around three ways a Philippine business can buy electricity, or its renewable attributes, under a long-term agreement. They are not mutually exclusive.

Many firms will combine them. Figure 1.6 summarises the structure, and Table 1.2 compares the main features.

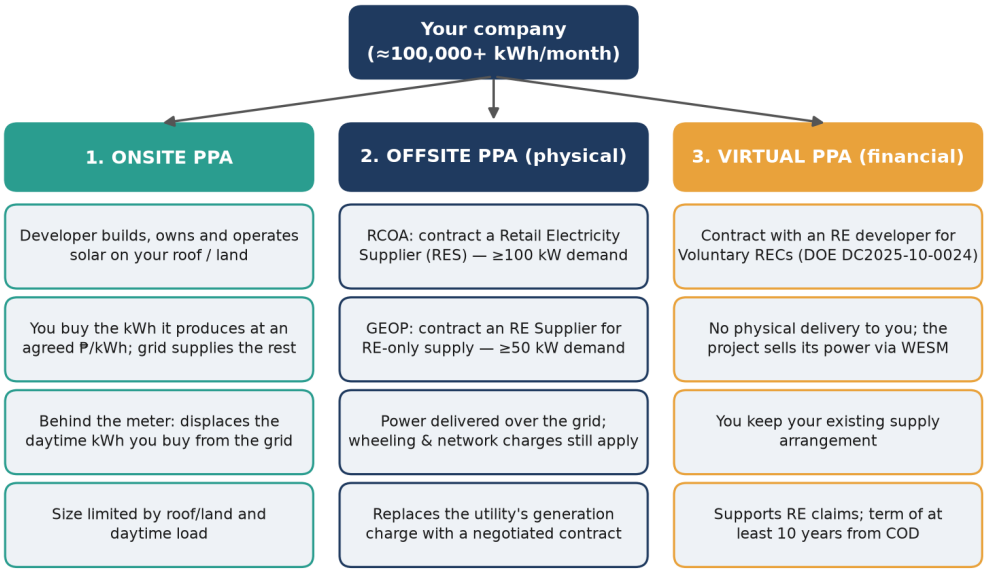


Figure 1.6. The three PPA paths covered in this book. Thresholds are as verified in October 2026.[1,2,3]

Path 1: Onsite PPA

Under an onsite PPA, a developer designs, finances, builds, owns and maintains a generating system, almost always solar photovoltaic, on your roof, carport or land. You buy the electricity it produces at an agreed price per kWh, usually for a long term, and you keep buying the balance from the grid. Because the power is used behind your meter, it displaces daytime grid purchases, and with them the per-kWh generation, network and tax charges attached to each grid kWh (demand charges per kW may not fall by the same proportion). The main constraints are physical: available roof or land area, structural capacity, shading, and how much of your load falls in daylight hours. Contract terms such as tenor, price escalation, performance guarantees and buy-out options matter at least as much as the headline tariff.



Figure 1.7. An onsite solar installation on a commercial rooftop: the typical asset behind an onsite PPA. (AI-generated illustrative image; generic building, not a real site.)

Path 2: Offsite PPA through a RES under RCOA, or an RE Supplier under GEOP

An offsite PPA buys electricity generated elsewhere and delivered to you over the grid. In the Philippines this works through two regulated routes. Under RCOA, an eligible contestable customer (now 100 kW and above) signs a retail supply contract with a Retail Electricity Supplier, a RES, which may source from any technology, including renewables. Under GEOP, an eligible end-user (now 50 kW and above) contracts with an RE Supplier for supply from renewable energy resources, and applies for distribution wheeling services with its host distribution utility.[2] In both cases you keep paying regulated transmission, distribution and other network charges. What changes is the generation component, which becomes a negotiated contract instead of the utility's pass-through generation charge. The key questions concern price structure, contract volume and shape, what happens when the supplier's own costs move, and the supplier's financial strength.



Figure 1.8. A grid-connected solar farm and substation: the kind of offsite resource that can supply an end-user through a RES or an RE Supplier. (AI-generated illustrative image; generic location, not a real project.)

Path 3: Virtual PPA

A virtual PPA is a financial rather than physical arrangement. Under the DOE's 2025 circular, it is a private contract between an end-user and an RE developer for the development of an RE project and the transfer of Voluntary Renewable Energy Certificates, 'without regard to the physical delivery of electricity'. The seller sells the project's power through WESM or other regulated channels. The circular states that VPPA prices are not subject to ERC or DOE review, that VPPAs are governed by Philippine law, and that the term is at least ten years from the project's commercial operation.[3] For a buyer, a VPPA can support renewable-energy claims and help finance new projects without changing its existing supply arrangement. Depending on how the price is structured, it can also create financial exposure that needs careful accounting and risk review. Later chapters cover these issues in depth.

Table 1.2. The three paths at a glance

Feature	Onsite PPA	Offsite PPA (RES / RE Supplier)	Virtual PPA
What you buy	kWh from a system at your site	Delivered kWh over the grid	Voluntary RECs under a financial contract
Physical delivery	Yes, behind the meter	Yes, via the grid	No
Eligibility (Oct 2026)	Suitable roof/land and load	RCOA: ≥100 kW; GEOP: ≥50 kW	Juridical person; per DOE DC2025-10-0024
Replaces	Part of grid purchases	Utility generation charge	Nothing physically; adds a contract
Main value	Lower cost per kWh displaced; visible RE	Negotiated price and structure; RE option	RE claims; supports new projects
Main watch-outs	Roof life, tenor, buy-out, performance	Price terms, volume, supplier risk	Price/settlement terms, REC tracking, accounting

Simplified for orientation; each path is analysed in its own chapter. Sources: ERC/IEMOP, DOE circulars.[1,2,3]

1.8 A CFO decision framework

Good energy procurement is a process, not a one-off purchase. Figure 1.9 sets out the seven-step framework used throughout this book. It starts with data you probably already have and ends with governance you can build into existing reporting cycles.



Figure 1.9. The CFO's energy procurement framework used in this book.

The order matters. Too many companies start at step 4, comparing supplier quotes, before they understand their own load profile or have agreed what they are trying to achieve. A firm that mainly wants budget certainty should judge offers differently from one that mainly wants the lowest expected cost or a credible renewable-energy claim. Being clear about objectives at step 3 is the single most useful thing a CFO can do before talking to any supplier or developer.

Key takeaways

- The generation charge is the largest part of a Philippine grid bill (about 68% of Meralco's typical October 2026 bill) and the part that procurement choices can change.
- Meralco's generation charge rose from ₱5.1957/kWh (Feb 2022) to ₱10.2005/kWh (Oct 2026), close to double, and the cost of Meralco's spot-market purchases swung from ₱2.37 to ₱12.97/kWh within the first five months of 2026.

- Lower average WESM prices do not guarantee lower bills: most utility supply comes from contracts that pass through fuel and currency costs.
- Fuel and the peso feed directly into tariffs. Coal and gas supplied about three-quarters of 2024 generation, and Meralco attributes recent increases to LNG prices and peso depreciation on dollar-denominated costs.
- For a business using 100,000 kWh a month, every ₱1/kWh is about ₱1.2 million a year, and such a business will typically already meet the 100 kW RCOA and 50 kW GEOP thresholds.
- SEC MC No. 16, s. 2025 brings IFRS-based sustainability and climate disclosures, phased in from FY2026, making electricity sourcing a disclosure matter as well as a cost matter.
- There are three main paths, which can be combined: onsite PPA, offsite PPA (through a RES under RCOA or an RE Supplier under GEOP), and virtual PPA.
- The value of a PPA lies as much in managing risk and governance as in a headline discount. Start with your load data and objectives, not with supplier quotes.

Questions a CFO should ask

6. What did we spend on electricity in each of the last 24 months, by site, and what share of that was the generation charge?
7. What are our average monthly peak demand (kW) and consumption (kWh) per metered account, and which accounts meet the 100 kW RCOA and 50 kW GEOP thresholds today?
8. How much of our consumption occurs in daylight hours, and how much suitable roof, carport or land area do we control, and for how long?
9. If the generation charge moved by ₱1, ₱2 or ₱3 per kWh, what would happen to our margins, pricing and covenants?
10. Is our objective lowest expected cost, budget certainty, renewable-energy credentials, or a ranked combination, and has the board agreed that ranking?
11. Which of our customers, lenders or investors are asking about our Scope 2 emissions or renewable-energy sourcing, and by when do we fall under SEC MC No. 16, s. 2025?
12. Who in the company owns electricity procurement, and does that person have the data, mandate and advisers to run a competitive process?
13. For any offer we receive: who carries fuel, currency and change-in-law risk; what are the termination and exit terms; and who owns the environmental attributes?
14. How will we monitor performance after signing: invoice audits, KPIs, and a calendar for re-tendering or renegotiation?
15. What is the cost of doing nothing for another two or three years?

The chapters that follow take each of these questions in turn, beginning with the mechanics of the Philippine power market and how to read your own bill and load data.

Notes

All sources were accessed on 17 October 2026 (Asia/Manila). Meralco rates are VAT-exclusive unless stated. Where press reports are cited, they report figures released by the named agency.

1. ERC Resolution No. 22, Series of 2025, as implemented in IEMOP, 'RCOA Threshold Bulletin No. 2026-01', https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf; Meralco, 'Competitive Retail Electricity Market (CREM) and Retail Aggregation Program (RAP) FAQs', https://company.meralco.com.ph/news-and-advisories/competitive-retail-electricity-market-crem-and-retail-aggregation-program-rap; and ERC announcement reported in Power Philippines, 'ERC expands RCOA access under new 100-kW threshold', 26 June 2026, https://powerphilippines.com/erc-expands-rcoa-access-under-new-100-kw-threshold/.
2. DOE Department Circular No. DC2026-01-0002, 'Revised Rules and Guidelines Governing the Implementation of the Green Energy Option Program', effective 21 February 2026, as summarised in IEMOP Advisory, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf; see also Philstar.com, 'DOE opens direct green energy contracting to more consumers', 25 February 2026.
3. DOE Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', published 7 November 2025 (BusinessWorld and Philippine Star), https://doe.gov.ph/circular-no-dc-2025-10-0024, Sections 2.9, 3, 6 and 7.8.
4. Manila Electric Company (Meralco), 'Breakdown of Generation Charge', monthly tables for billing months February 2022 to October 2026 (generation charge ₱5.1957/kWh in February 2022; ₱10.2005/kWh in October 2026; average cost of WESM purchases ₱2.3740/kWh in January 2026 and ₱12.9664/kWh in May 2026; October 2026 source costs: First Gas/Prime CoreGen ₱11.3145, PSAs ₱9.7645, WESM ₱7.8156, net-metering exports ₱9.6372 per kWh). Retrieved 17 October 2026 from https://meralcomain.s3.ap-southeast-1.amazonaws.com/ (e.g. /2026-10/10-2026_gc_table_0.pdf; /2022-02/02-2022_gc_table.pdf). Months for which no table could be retrieved are omitted from Figure 1.3.
5. Meralco, 'Residential Bills at Typical Consumption Levels, October 2026', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_residential_bills.pdf (200 kWh: total ₱15.0615/kWh). Component grouping and percentage shares calculated by the author.
6. Meralco, 'Summary Schedule of Rates, Effective October 2026 Billing', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_rate_schedule.pdf (generation charge ₱10.2005/kWh for all captive classes; note that certain rates such as generation do not apply to contestable customers billed by their RES; rates VAT-exclusive).
7. Independent Electricity Market Operator of the Philippines (IEMOP), 'The Electricity Spot Market at Work: Lower Market Prices for the First Half of 2025', https://www.iemop.ph/news/the-electricity-spot-market-at-work-lower-market-prices-for-the-first-half-of-2025/ (2024 average ₱5.58/kWh; H1 2025 ₱4.14/kWh).
8. Philstar.com, 'WESM prices hit fresh lows in 2025', 5 January 2026, https://www.philstar.com/business/2026/01/05/2498730/wesm-prices-hit-fresh-lows-2025 (citing IEMOP: January–November 2025 average effective WESM price ₱4.32/kWh; 2023 ₱6.44/kWh).
9. Meralco, 'Higher Residential Rates this October 2026', press release, 13 October 2026, https://company.meralco.com.ph/news-and-advisories/higher-residential-rates-october-2026 (source shares of supply; LNG and peso effects on First Gas/Prime CoreGen and PSA costs; ERC approval of ₱1.48/kWh average distribution rate for 1 July 2026 – 30 June 2030 versus ₱1.35 since 2016).
10. Department of Energy (DOE), '2024 Power Statistics – Summary', https://prod-cms.doe.gov.ph/documents/d/guest/02_summary-pdf (2024 gross generation 126,941 GWh; coal 79,359 GWh; natural gas 18,047 GWh; renewable energy 28,193 GWh). Percentages calculated by the author.
11. Securities and Exchange Commission, Memorandum Circular No. 16, Series of 2025, as reported in Manila Bulletin, 'SEC broadens sustainability reporting rules to large non-listed firms', 29 December 2025, https://mb.com.ph/2025/12/29/sec-broadens-sustainability-reporting-rules-to-large-non-listed-firms; and SyCipLaw, 'SEC Adopts Revised Sustainability Reporting Requirements; Large Non-Listed Entities Now Covered', 7 May 2026 (effective 8 January 2026; replaces SEC MC No. 4, s. 2019).

12. DOE, Philippine Energy Plan 2023–2050 (Clean Energy Scenario), as reported in Philstar.com, 'DOE relies on better transmission planning to sustain RE growth', 17 October 2023, https://www.philstar.com/business/2023/10/17/2304250/doe-relies-better-transmission-planning-sustain-re-growth; and Philippine News Agency, https://www.pna.gov.ph/index.php/articles/1263768.

13. IEMOP, 'IEMOP Annual Report 2025', https://www.iemop.ph/publications/iemop-annual-report-2025/ (Renewable Energy Market full commercial operations from 26 December 2024; IEMOP as Renewable Energy Registrar).

Figure and image credits

Figures 1.2, 1.3, 1.4, 1.6 and 1.9 and Tables 1.1–1.2 were prepared by the author from the sources noted. Figure 1.5 uses illustrative example data only. Figures 1.1, 1.7 and 1.8 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting or investment advice. Regulations and tariffs change; verify current rules with the ERC, DOE, IEMOP and your distribution utility before making decisions.

CHAPTER 2

PPA Basics in Plain Language

Who owns what, who pays what, who carries the risk

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: What a PPA is · The parties around the table · Onsite, offsite and virtual models · Key commercial terms · Risk allocation · How the money moves · Common misconceptions · Key takeaways and questions to ask



Figure 2.1. A PPA is a long-term contract first and an energy project second. Most of its value, and most of its risk, sits in the commercial terms. (AI-generated illustrative image; generic scene, not real persons.)

Chapter 1 argued that electricity has become a CFO issue: a large, volatile and largely unhedged cost line that eligible businesses can now actively procure. This chapter turns to the instrument most of this book is about, the power purchase agreement, or PPA. The aim is not to make you a power lawyer. It is to give you a working map, so that when a

developer, a Retail Electricity Supplier or a bank puts a term sheet in front of you, you can see quickly who owns what, who pays what, and who carries which risk.

Those three questions are the spine of the chapter. Every PPA, however it is labelled, is an answer to them. Two contracts with the same headline price can be very different deals once you look at who owns the equipment at the end, what happens if the plant produces less than expected, how the price moves over fifteen years, and what you must pay if you want to leave early. A CFO who understands these mechanics will negotiate better terms, and will also know when to walk away.

Terms used in this chapter

Offtaker: the buyer of the electricity or of its attributes. In this book, that is your company.

RES: Retail Electricity Supplier, an entity authorised by the ERC to sell electricity to end-users in the retail market under Retail Competition and Open Access (RCOA). In this book RES always means Retail Electricity Supplier.

RE Supplier: a supplier of electricity from renewable sources to end-users that opt into the Green Energy Option Program (GEOP).

COD: commercial operation date, the day the plant officially starts delivering under the contract.

REC: renewable energy certificate. Each REC represents the renewable and environmental attributes of one megawatt-hour (MWh) of generation, issued by the RE Registrar.[1]

2.1 What a PPA is, in plain language

A power purchase agreement is a long-term contract under which a buyer agrees to purchase electricity, or the attributes of electricity, from a specific generator or supplier at an agreed price structure over an agreed period. The United States Environmental Protection Agency's description is a useful benchmark: a physical PPA 'define[s] all the commercial terms for the sale of renewable electricity between the two parties, including when the project will begin commercial operation, schedule for delivery of electricity, penalties for under delivery, payment terms, and termination'.[2] Philippine law now recognises a virtual version as well. The Department of Energy (DOE) circular on virtual PPAs states that, for financing purposes, a VPPA 'shall be recognized as a valid type of PPA'.[1]

It helps to be clear about what a PPA is not. It is not the same as buying a solar system. When you buy a system, you spend the capital, you own the asset, and you carry its performance and maintenance risk. Under a PPA, someone else typically owns the asset and you pay for its output. Nor is a PPA the same as your regulated utility tariff. The tariff is set through a regulatory process and passes through the utility's costs month by month. A PPA price is negotiated between the parties and fixed in writing for years at a time.

Economically, a PPA does three things at once:

1. It allocates ownership: of the generating plant, of the electricity it produces, and of the environmental attributes (the RECs) attached to that electricity.
2. It allocates payment: who pays whom, for what unit (a kWh delivered, a kWh produced, a REC, or a capacity commitment), at what price, and how that price changes over time.
3. It allocates risk: construction delay, weak output, price movements, regulatory changes, and the possibility that either party fails to perform.

Hold on to those three allocations. The rest of this chapter, and most of the rest of this book, simply works through them for different structures.

2.2 The parties: who is around the table

A first-time buyer is often surprised by how many organisations are involved in what looks like a two-party contract. Figure 2.2 maps them. Not every party signs with you, but each one can affect your price, your risk or your timetable.

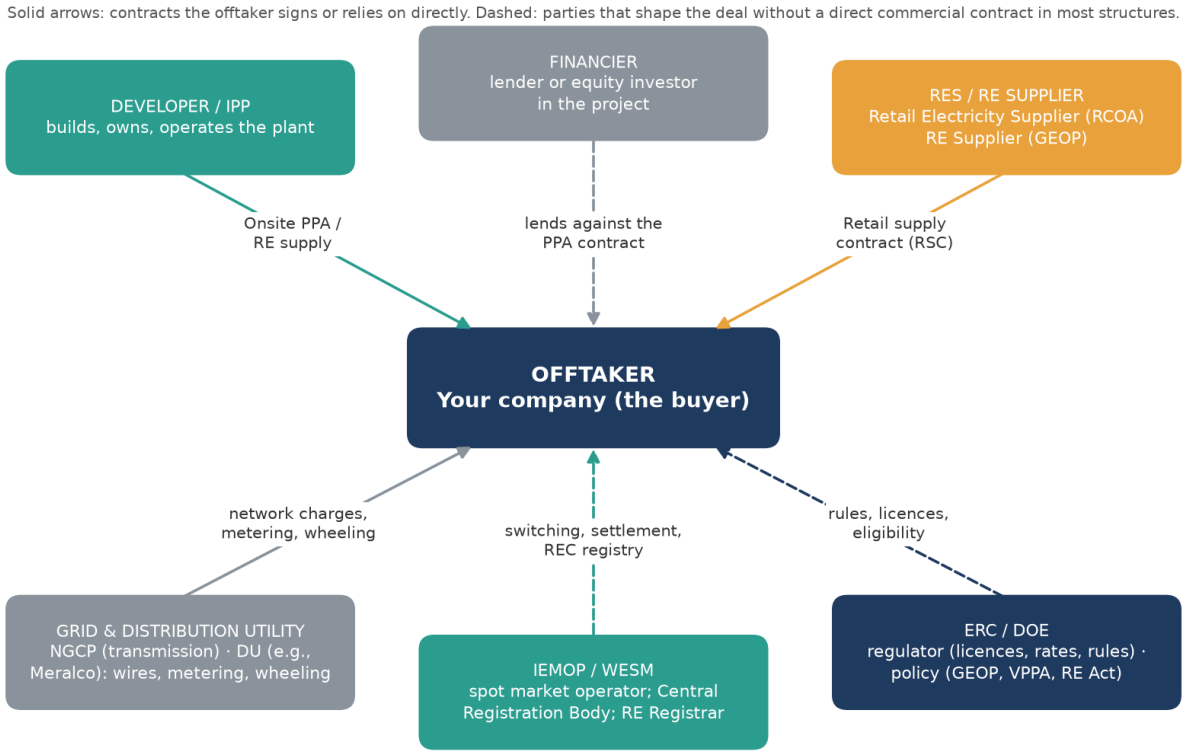


Figure 2.2. The parties around a Philippine PPA. Roles summarised from the EPIRA framework, the ERC Omnibus Rules for Customer Choice Programs and DOE circulars.[3,4,1]

Table 2.1. Who does what in a Philippine PPA

Party	Role in plain language	Why the CFO should care
Offtaker (your company)	Buys the electricity or its attributes and pays under the contract.	Your load profile, credit standing and site determine what you can contract and on what terms.
Developer / IPP	Develops, builds, owns and operates the generating plant. An	Its technical skill and financial strength determine whether the

	independent power producer (IPP) is a generator not owned by a utility.	plant is built on time and performs.
Financier	Lends to, or invests equity in, the project, often secured on the PPA's cash flows.	Lenders shape the contract: they want long tenors, firm payment terms and credit support from you.
RES (Retail Electricity Supplier)	Licensed by the ERC to sell electricity to contestable customers under RCOA.[4]	Your counterparty in an offsite deal under RCOA; its financial health is your supply risk.
RE Supplier (GEOP)	Supplies electricity from renewable sources to end-users that opt into GEOP.[4,5]	Your counterparty in a GEOP deal; it also coordinates wheeling with your utility.
Grid and distribution utility	NGCP operates the transmission grid; your distribution utility (DU), such as Meralco, owns the local wires and meters.[3]	Network charges remain regulated and are not negotiable in any PPA model.
IEMOP / WESM	Operates the Wholesale Electricity Spot Market, acts as Central Registration Body for retail switching, and serves as RE Registrar.[4,6]	Processes your switch, settles market transactions, and records REC transfers.
ERC and DOE	The ERC licenses suppliers, regulates rates and sets retail market rules; the DOE sets energy policy, including GEOP and the VPPA framework.[3]	Thresholds, eligibility and procedures come from these two agencies and can change.

Sources: Chambers and Partners, Renewable Energy 2026 – Philippines; ERC Resolution No. 13, s. 2024; DOE circulars as cited.[3,4,1,5]

Two points deserve emphasis. First, the financier is usually invisible to the buyer but very present in the contract. A developer that plans to borrow against your PPA will need terms its lenders accept, such as a minimum tenor, firm payment obligations, step-in rights and, sometimes, a guarantee from your parent company. Many clauses that look one-sided are really lender requirements. Knowing that helps you negotiate the substance rather than the wording.

Second, the regulated parties do not disappear when you sign a PPA. Under an offsite arrangement, your power still travels over NGCP's transmission grid and your utility's distribution network, and you still pay for that. The ERC's Omnibus Rules for Customer Choice Programs, issued as Resolution No. 13, Series of 2024, consolidated the rules for RCOA, GEOP and retail aggregation in one document.[4] They govern how you switch, how you are billed, and what your supply contract must contain.

2.3 The three models

Chapter 1 introduced the three paths this book covers. Figure 2.3 shows them as contract maps: who signs with whom, and where the electricity and the money actually go.

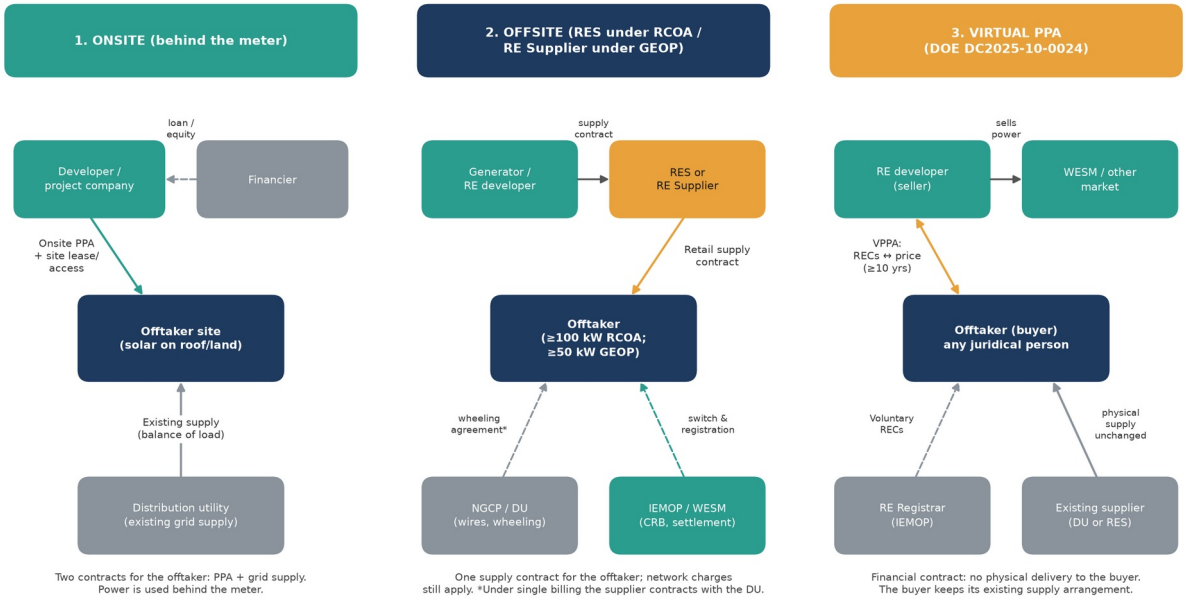


Figure 2.3. Contract maps for the three PPA models. Thresholds as verified in October 2026: RCOA 100 kW (ERC Res. No. 22, s. 2025); GEOP 50 kW (DOE DC2026-01-0002); VPPA minimum term ten years (DOE DC2025-10-0024).[7,5,1]

Model 1: Onsite, behind-the-meter PPA

In an onsite PPA, a developer installs a generating system, almost always solar photovoltaic and sometimes with batteries, on your roof, carport or adjacent land. The developer finances, owns, operates and insures the system. You buy its output at an agreed price per kWh. Because the system is connected on your side of the utility meter, its output is used directly by your loads and never passes through the utility's revenue meter as a purchase. You keep your existing utility supply for everything the solar system does not cover: nights, cloudy periods, and any load above the system's output.

The regulatory basis for third-party onsite systems has developed in stages. The ERC's Rules Governing Distributed Energy Resources (Resolution No. 11, Series of 2022, effective 14 December 2022) expressly cover generation and storage 'meant for end-user consumption only, so long as the DER owner and end-user are not the same entity', which describes the classic onsite PPA.[8] The DOE's Revised Omnibus RE Guidelines (DC2024-06-0018) define an 'RE Project for Own Use' as a project within or contiguous to the end-user's premises that supplies that end-user, whether installed by the end-user or by a third-party provider.[3] In August 2026 the DOE also issued DC2026-08-0017 to simplify requirements for zero-export self-generation solar systems.[9]

One caution. Whether a particular onsite arrangement is treated as a sale of electricity, an equipment lease, or a service contract affects which licences, permits and taxes apply. Law firm commentary notes that an independent power producer selling directly to retail customers would generally need a RES licence, and that some onsite projects are instead structured as operating leases under which the host uses the system for its own generation.[10] The DOE's Expanded Roof-Mounted Solar Program likewise recognises a

'lease-to-generate' model.[3] The commercial logic in this chapter applies to all of these structures, but the legal form should be confirmed by counsel for each project.

Onsite PPAs should also not be confused with net metering. Net metering under the Renewable Energy Act lets an end-user with an eligible system of up to 100 kW export surplus energy to the utility for credit, and the RECs from net-metered systems accrue to the distribution utility.[3] Most onsite PPAs for businesses at the scale this book addresses are larger than that and are designed to consume, not export, their output.



Figure 2.4. Behind the meter: an onsite system connects on the customer's side of the utility revenue meter, so its output is consumed directly by the site's loads. (AI-generated illustrative image; generic facility, not a real site.)

Model 2: Offsite PPA through a RES under RCOA, or an RE Supplier under GEOP

An offsite PPA buys electricity from generation located elsewhere, delivered to you over the grid. In the Philippines you cannot simply sign with any generator and have the power delivered. You contract through one of two regulated retail programmes.

Under RCOA, an end-user whose average monthly peak demand is at least 100 kW may become a contestable customer and sign a retail supply contract (RSC) with a RES. That threshold has applied since 26 June 2026 under ERC Resolution No. 22, Series of 2025.[7] Meralco determines eligibility per Service Identification Number, so each metered account is assessed separately.[7] The RES may source power from any technology, including its own or affiliated plants, bilateral contracts, and the spot market. Under GEOP, an end-user with a recorded monthly average peak demand of at least 50 kW over the past twelve months may choose an RE Supplier for renewable-only supply and apply for distribution wheeling services from its host utility.[5] End-users below either threshold may, subject to conditions, aggregate within contiguous areas.[7,5]

The Omnibus Rules give contestable customers useful protections that every CFO should know:[4]

- An RSC must spell out, among other things, all prices and charges, any price adjustment mechanism, security deposit terms, termination rights, and how early termination charges are calculated.
- The customer has a cooling-off period of five business days, or longer if agreed, during which it may cancel the RSC.
- A supplier may not automatically renew an RSC unless the contract contains an automatic renewal clause, and it must give at least 60 calendar days' notice before expiry.
- If a supplier defaults, it remains responsible for continuous supply until the customer contracts with a new supplier or a Supplier of Last Resort (SOLR), an ERC-designated backstop.
- Under single billing, the supplier sends one consolidated bill that includes network charges, and acts as collecting agent for the network service provider. The customer is not liable for amounts the supplier fails to pass on.

There is also an important one-way door. A customer that has moved to the competitive retail market is generally not allowed to return to its utility's regulated supply. The exception requires its average monthly peak demand to fall below 25% of the prevailing threshold for six consecutive months, for reasons other than seasonality, and ERC approval.[4] Treat switching as a long-term strategic decision, not a trial.

In both RCOA and GEOP, what changes is the generation part of your bill. Transmission, distribution, system loss and policy charges remain regulated and continue to be paid, whether billed through the supplier or directly by the utility. The DOE has directed that GEOP use the single billing arrangement for now, pending a supplemental policy.[5]



Figure 2.5. In an offsite PPA, power from a remote plant reaches the buyer over regulated transmission and distribution networks, so network charges still apply. (AI-generated illustrative image; generic location, not a real project.)

Model 3: Virtual PPA

A virtual PPA separates the financial and environmental side of a renewable project from the physical delivery of power. DOE Department Circular No. DC2025-10-0024 defines it as 'a private contract between an end-user and an RE Developer for the development of an RE Project and corresponding transfer of Voluntary RECs, without regard to the physical delivery of electricity'.[1] The seller generates and sells its electricity through WESM or another market. The buyer receives Voluntary RECs and keeps its existing physical supply, from its utility or its RES.

The circular's key features, in plain language:[1]

- Who may sign: any juridical person registered or licensed to do business, Filipino or not, may be a buyer. The seller must be an RE developer.
- Price: the REC price may be fixed or variable, and VPPA terms, including price, are not subject to ERC or DOE review unless the circular says otherwise.
- Term: at least ten years from the project's commercial operation, renewable by agreement.
- RECs: unless otherwise agreed, the Voluntary RECs are automatically registered or transferred to the buyer on the strength of the VPPA; the seller may not sell the same REC twice.
- Projects: only projects generating Voluntary RECs qualify; projects generating Compliance RECs for the Renewable Portfolio Standard do not.

- Law and disputes: Philippine law governs, disputes go to Philippine courts, and any arbitration must be seated in the Philippines. Payments may be settled in any manner and currency allowed by the Bangko Sentral ng Pilipinas.

In many international markets, virtual PPAs are structured as contracts for differences: the project sells its power at the market price, and the buyer and seller then settle the difference between that market price and an agreed 'strike' price.[11] The Philippine circular does not prescribe this structure, but it permits a variable price and refers to 'assured compensation' for the RECs, so similar settlement designs are possible.[1] Section 2.6 explains why that matters for your cash flow.

Table 2.2. Who owns what, who pays what: the three models side by side

Question	Onsite PPA	Offsite PPA (RES / RE Supplier)	Virtual PPA
Who owns the plant?	Developer (project company), on your site	Generator or supplier, elsewhere	RE developer, elsewhere
What do you receive?	kWh from the system on your site	kWh delivered via the grid	Voluntary RECs; no physical power
Whom do you pay?	Developer, per kWh produced or delivered; utility for the balance	RES or RE Supplier (single bill incl. network charges)	RE developer for RECs; existing supplier for power as before
What stays regulated?	Utility bill for remaining kWh and demand	Transmission, distribution, losses, policy charges	Your entire physical supply bill
Who owns the RECs?	Per contract; must be stated	Per contract and RPS rules; must be stated	Buyer, unless otherwise agreed[1]
Eligibility (Oct 2026)	Suitable roof/land and daytime load	RCOA ≥100 kW; GEOP ≥50 kW	Juridical person; ≥10-year term
Main buyer risk	Volume commitments; site obligations	Supplier credit; price formula; lock-in	Price settlement exposure; REC quality

Simplified for orientation. Sources: DOE DC2025-10-0024; ERC Res. No. 13, s. 2024; ERC Res. No. 22, s. 2025; IEMOP Advisory on DC2026-01-0002.[1,4,7,5]

2.4 Key commercial terms

A term sheet compresses a contract of perhaps a hundred pages into a few. Figure 2.6 shows a practical way to read one: group every clause by what it decides. Is it about what you pay, what you get, who carries risk, or how the contract ends?

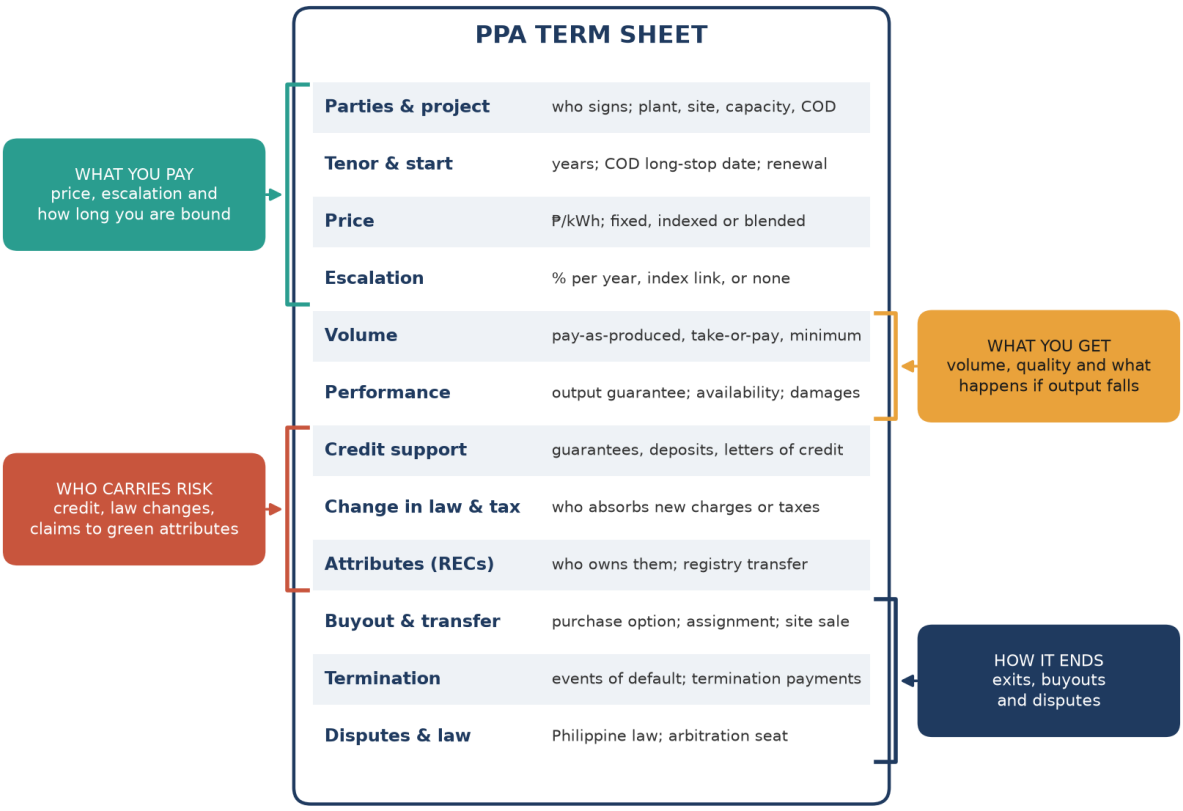


Figure 2.6. Anatomy of a PPA term sheet: twelve clauses, four questions. A strategic reading aid prepared by the author.

Tenor

Tenor is the length of the contract. It is usually the single most important term after price, because it determines how long you are locked in and how long the developer has to recover its investment. Longer tenors generally allow lower prices, since capital costs are spread over more years, but they increase the risk that your needs, your site or the market change. One Philippine developer, for example, has publicly described onsite solar PPAs of 10 to 25 years.[12] A Philippine law firm's 2026 practice guide notes that long-term corporate PPAs with contestable customers 'typically last for a term of ten years'.[3] Virtual PPAs must run at least ten years from commercial operation.[1] Match the tenor to things you can actually commit to: your lease on the site, your expected occupancy, and the remaining life of the roof.

Tariff structure and escalation

The tariff is the price formula, not just a number. Common structures include:

- Fixed price: the same ₱/kWh for the whole term. This gives maximum budget certainty, but in real terms the price falls over time as inflation erodes it.
- Fixed with escalation: a starting price that rises by an agreed percentage each year, or by an index. Check carefully what the compounded price will be in the final years.

- Discount to grid: a price set at a percentage below the utility's prevailing rate. It keeps you below the grid price, but it also means your PPA price rises and falls with the grid. You keep the volatility you may have wanted to remove.
- Indexed or pass-through: common in retail supply contracts. Parts of the price move with fuel costs, foreign exchange, WESM prices, or other agreed indices.
- Blended or hybrid: part fixed, part indexed; or a fixed price with a cap and floor.

None of these is inherently right or wrong. Each sits at a different point on the trade-off between expected cost and certainty, and Chapter 1 showed why certainty has value. The point is to know which risk you are buying.

Volume: take-or-pay, pay-as-produced and minimum offtake

Volume terms decide who carries the risk that the plant produces more or less than expected, or that you need more or less than expected. Under pay-as-produced, you pay only for the kWh actually generated or delivered. If the sun is weak, you pay less, but you also save less. Under take-or-pay, you commit to pay for an agreed quantity, or for all available output, whether or not you use it. This gives the developer and its lenders a firm revenue stream, usually in return for a lower price. Minimum offtake clauses sit in between: you must take, or pay for, at least a floor quantity each month or year. Retail supply contracts often include contracted-quantity bands with charges for consuming outside them. For any volume clause, ask what happens if you close a production line, move a warehouse, or install efficiency measures that cut your load.

Guarantees and credit support

Guarantees run both ways. The seller typically offers performance guarantees: a minimum annual output or availability, with liquidated damages if the plant falls short. The same developer has described paying liquidated damages based on output shortfall.[12] The buyer is typically asked for credit support, such as a security deposit, a bank guarantee, a standby letter of credit, or a parent company guarantee. RSCs must disclose any cash security deposit, when it may be retained, and when it must be returned with interest.[4] Negotiate the size and form of credit support as hard as the price, because it ties up liquidity or bank lines for the life of the contract.

Buyout, transfer and end of term

For onsite PPAs, ask what happens to the equipment. The usual options are a buyout right during the term at a pre-agreed schedule of prices, ownership transfer to you at the end of the term, extension at a renegotiated price, or removal at the developer's cost. Also ask what happens if you sell or vacate the property. Can the PPA be assigned to the buyer of the building? Must you pay a termination amount? For offsite and virtual PPAs, transfer usually means assignment rights, for example after a merger or a sale of the business.

Termination

Termination clauses define the events of default for each side, such as non-payment, insolvency, prolonged non-performance or loss of licence, and the payment due on early exit. Early termination payments are often set to compensate the developer for lost revenue or outstanding debt. In the early years they can be large. RSCs must state the method for calculating early termination charges.[4] Model the worst-case termination payment in year one, year five and year ten before you sign, and make sure the seller faces symmetrical consequences if it defaults.

> **The economist's rule of thumb**
>
> *A risk does not disappear when a contract moves it. It is priced. Every risk the seller accepts, such as fixed prices, output guarantees or change-in-law protection, is built into the tariff. Every risk you accept, such as take-or-pay, long tenor or strong credit support, should earn you a lower price. The right question is not 'Who carries the risk?' but 'Who can manage it most cheaply, and am I being paid fairly for what I carry?'*

2.5 Risk allocation

Figure 2.7 summarises how the main risks usually fall in each model. It is a starting point for negotiation, not a description of any particular contract.

	Onsite PPA	Offsite PPA (RES / RE Supplier)	Virtual PPA
Construction & completion	Seller	Seller	Seller
Generation / performance	Seller	Seller	Seller
Resource (sun, wind) variability	Shared / negotiated	Shared / negotiated	Buyer
Equipment O&M & insurance	Seller	Seller	Seller
Volume / shape mismatch with load	Buyer	Shared / negotiated	Shared / negotiated
Market (WESM) price exposure	Limited / n.a.	Shared / negotiated	Buyer
Fuel & FX pass-through	Limited / n.a.	Shared / negotiated	Limited / n.a.
Change in law / regulation	Shared / negotiated	Shared / negotiated	Shared / negotiated
Supplier / developer default	Buyer	Shared / negotiated	Buyer
Offtaker credit (your default)	Buyer	Buyer	Buyer
Site & roof (access, repairs, sale)	Buyer	Limited / n.a.	Limited / n.a.
REC ownership & claims	Shared / negotiated	Shared / negotiated	Shared / negotiated

Who usually bears the risk in a typical structure. Actual allocation depends entirely on the contract you sign. 'Buyer' under onsite volume risk reflects take-or-pay or minimum-offtake clauses; under offsite and virtual PPAs, many risks are 'shared' because price formulas, pass-through clauses and guarantees move them back and forth.

Figure 2.7. Typical risk allocation by PPA model. A qualitative summary prepared by the author; actual allocation depends on the contract signed.

A few patterns stand out. Construction, performance and equipment risks normally sit with the seller in all three models, because the seller controls the asset. Resource risk, meaning less sun or wind than forecast, is shared under pay-as-produced onsite and offsite contracts: the seller earns less, and you save less. Under a VPPA the buyer can carry more of it, because settlement volumes follow the project's actual output.

Market price risk differs sharply by model. An onsite PPA largely insulates the kWh it covers from market movements. An offsite retail supply contract may pass some of them through, depending on the price formula. A settlement-style VPPA can leave the buyer exposed to spot prices, because payments go up when market prices fall. Supplier default risk falls mainly on the buyer in onsite and virtual deals. In RCOA and GEOP it is partly cushioned by the rule that a defaulting supplier must keep supplying until you move to a new supplier or the SOLR, though you may still face a higher price and have to pursue indemnification under your contract.[4]

Change-in-law risk is almost always negotiated. Who pays if a new tax, levy or network charge is introduced? Who benefits if an incentive is withdrawn? REC ownership is a contract matter in every model and must be written down explicitly. If your company intends to make renewable-energy claims in sustainability reports, the RECs must be transferred to you and retired on your behalf.

Finally, do not overlook your own credit. In every model, you are the party whose payment obligation the project relies on. A stronger credit profile, or credit support you are willing to provide, is a bargaining asset. Use it deliberately.

2.6 Cash flows: how the money moves

Figure 2.8 traces electricity and money through each model. The differences matter for budgeting, treasury and accounting.

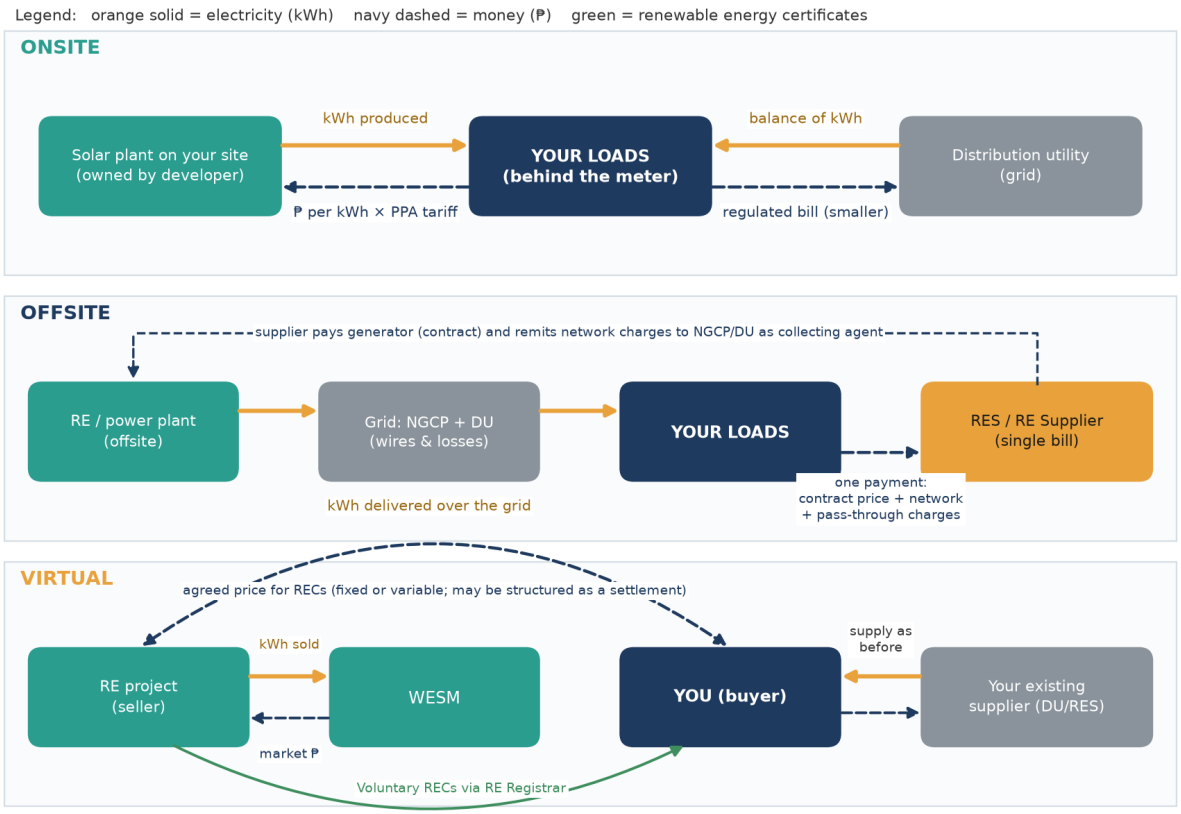


Figure 2.8. Money and power flows in the three models. Prepared by the author from the structures described in ERC Res. No. 13, s. 2024 and DOE DC2025-10-0024.[4,1]

Onsite. You receive two bills: one from the developer for solar kWh at the PPA tariff, and a smaller one from your utility for the rest. Your saving is the difference between what those solar kWh would have cost from the grid and what you pay the developer. Because demand charges are based on peak kW, a solar system may not reduce them in proportion to the kWh it displaces, particularly if your peak occurs in the evening. Table 2.3 shows the arithmetic using illustrative numbers.

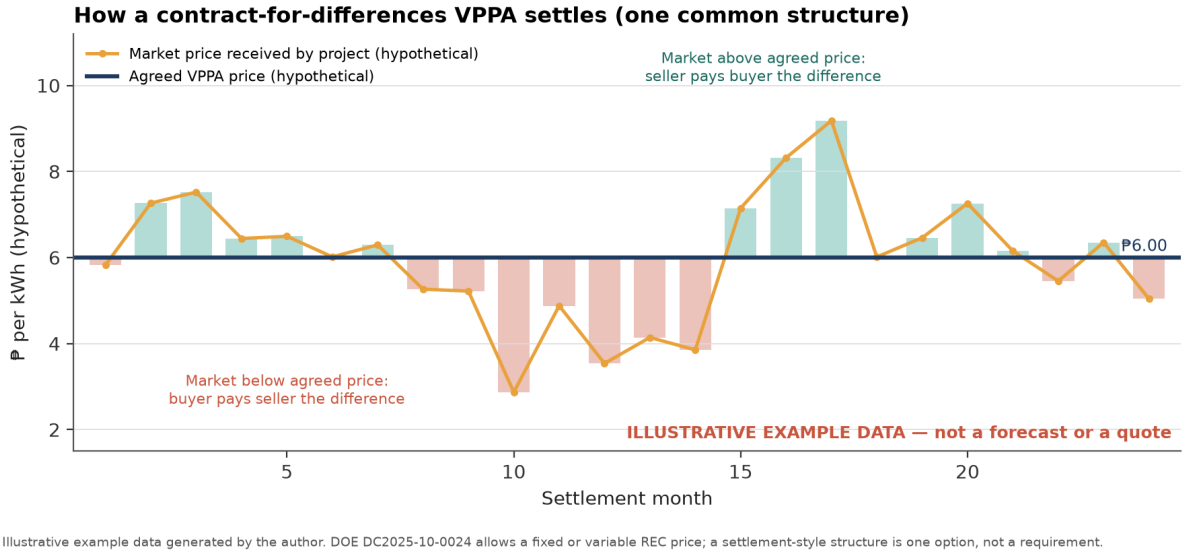
Table 2.3. Illustrative example data: monthly effect of an onsite PPA (pay-as-produced)

Item	Calculation	Result
Site consumption	Given	120,000 kWh
Solar output consumed on site	Given (≈15% of load)	18,000 kWh
Grid energy cost avoided (hypothetical ₱12.00/kWh of energy-based charges)	18,000 × ₱12.00	₱216,000
PPA payment (hypothetical tariff ₱8.40/kWh)	18,000 × ₱8.40	₱151,200
Gross monthly saving before any demand-charge effect	₱216,000 − ₱151,200	₱64,800
If solar output is 10% lower (weak month)	16,200 × (₱12.00 − ₱8.40)	₱58,320

Illustrative example data. All prices and quantities are hypothetical and chosen only to show the arithmetic; they are not quotes, forecasts or market averages. Actual avoided cost depends on your tariff class, demand charges, taxes and time-of-day profile.

Offsite. You receive one consolidated bill from your RES or RE Supplier under single billing. It covers the contract price for energy plus regulated network and pass-through charges. The supplier pays its generators under its own contracts and remits network charges to NGCP and the utility as collecting agent.[4] Your budget exposure is whatever the price formula in your RSC leaves floating.

Virtual. Your physical bill does not change at all. Alongside it, you pay the seller for Voluntary RECs under the VPPA. If the contract uses a settlement structure, the payment can be positive or negative each period. Figure 2.9 illustrates the mechanics with hypothetical numbers: when the market price the project receives is below the agreed price, the buyer pays the difference; when it is above, the seller pays the buyer.[11]



Illustrative example data generated by the author. DOE DC2025-10-0024 allows a fixed or variable REC price; a settlement-style structure is one option, not a requirement.

Figure 2.9. Illustrative example data: monthly settlement under a contract-for-differences style VPPA. Hypothetical prices for explanation only.

This is why a VPPA needs a treasury and accounting review before signing. Settlement-style contracts can behave like financial derivatives, and their accounting can be complex. In December 2024 the International Accounting Standards Board amended IFRS 9 and IFRS 7 for 'nature-dependent electricity contracts', often structured as PPAs. The amendments clarify the 'own-use' exemption, permit hedge accounting in some cases, and add disclosures, for annual periods beginning on or after 1 January 2026.[13] Onsite arrangements raise their own question of whether the contract contains a lease of the equipment. Confirm the treatment under Philippine Financial Reporting Standards with your auditors early, because it can affect your balance sheet and loan covenants.

2.7 Common misconceptions

Seven things CFOs often get wrong about PPAs

'A PPA always saves money': It changes the shape of your cost and risk. Whether it saves money depends on the price, the terms, and what grid prices actually do. Some months it will cost more

than the alternative.

'Zero capex means zero commitment': The developer funds the equipment, but you commit to a long-term payment stream, possibly with minimum volumes, credit support and termination payments.

'The headline tariff is the deal': Escalation, volume terms, pass-through clauses and termination payments can matter more over fifteen years than the first-year price.

'An offsite PPA replaces my whole bill': Transmission, distribution, system loss and policy charges remain regulated and payable in every model.

'Green power means green claims': Unless the RECs are transferred to you and properly recorded, you may not be able to claim the renewable attributes.

'A virtual PPA is just buying certificates': A settlement-style VPPA can create real financial exposure to spot prices, with derivative-like accounting.

'I can always switch back': Under RCOA, returning to regulated utility supply is generally not allowed, except in narrow circumstances with ERC approval.

Key takeaways

- A PPA is a long-term contract that allocates three things: ownership (of plant, power and RECs), payment (who pays whom, for what, at what price) and risk.
- Many parties shape the deal: offtaker, developer or IPP, financier, RES or RE Supplier, NGCP and your distribution utility, IEMOP as market operator and registrar, and the ERC and DOE.
- Onsite PPAs sit behind your meter and displace grid kWh. Offsite PPAs run through a RES under RCOA (from 100 kW) or an RE Supplier under GEOP (from 50 kW). Virtual PPAs under DOE DC2025-10-0024 transfer Voluntary RECs without physical delivery, for at least ten years.
- Network charges remain regulated in every model; PPAs act on the generation component.
- The commercial terms that matter most are tenor, price formula and escalation, volume commitments, guarantees and credit support, buyout and transfer rights, and termination payments.
- Risk is priced, not eliminated. Accept risks you can manage cheaply and make sure you are paid for them.
- Retail supply contracts carry regulatory protections (cooling-off, disclosure, SOLR backstop), but switching to the retail market is close to irreversible.
- VPPAs and some onsite structures raise accounting questions; involve your auditors before signing.

Questions a CFO should ask

1. Which model, or combination, fits our load profile, sites, eligibility (100 kW RCOA, 50 kW GEOP) and objectives?
2. Who will own the plant, the electricity and the RECs at each point in the contract, including after it ends?
3. Exactly what unit are we paying for (kWh produced, kWh delivered, contracted quantity, or RECs), and what is the full price formula, including escalation and pass-throughs?
4. What is the compounded price in the final year of the tenor, and how does it compare with a range of grid price scenarios?
5. Is the contract pay-as-produced, take-or-pay or subject to minimum offtake, and what happens if our load falls?
6. What performance guarantees does the seller give, and what credit support are we being asked to provide in return?
7. What are the termination payments in years one, five and ten, and are default consequences symmetrical?
8. What happens if we sell, vacate or renovate the site, or undergo a merger?
9. Who bears new taxes, charges or regulatory changes during the term?
10. How will our auditors treat this contract under PFRS, and does it affect our covenants?
11. How financially strong is the counterparty, and what happens to our supply if it fails?

Before choosing among PPA models, a CFO should settle a prior question: should the company buy its own system, lease it with a view to owning it, or simply buy the power? The next chapter compares outright purchase, lease-to-own and PPAs on cash flow, balance sheet and tax.

Notes

All sources were accessed on 17 October 2026 (Asia/Manila). Quotations from DOE and ERC issuances are taken from the official documents cited. Market reports describe individual companies' practices and are not market-wide statistics.

1. Department of Energy (DOE), Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', published 7 November 2025 (BusinessWorld and Philippine Star), https://doe.gov.ph/circular-no-dc-2025-10-0024 (PDF: https://d24qbtp4vooyzi.cloudfront.net/api/media/file/DC2025-10-0024.pdf). Sections 2.4 and 2.9 (REC and VPPA definitions), 3.1–3.5 (general principles, including recognition as a valid type of PPA, pricing not subject to ERC/DOE review, automatic REC transfer), 4 (qualified parties), 5.2 (Voluntary vs Compliance RECs), 6.3 and 6.5 (regulation, financing and 'assured compensation'), 7.2–7.8 (no delivery, non-exclusivity, no double counting, BSP-compliant currency, minimum ten-year term), 8.3–8.5 (governing law, disputes, arbitration seat).

2. US Environmental Protection Agency, Green Power Markets, 'Physical Power Purchase Agreements (Physical PPAs)', https://www.epa.gov/green-power-markets/physical-power-purchase-agreements-physical-ppas (definition of a physical PPA and its commercial terms).

3. Chambers and Partners, 'Renewable Energy 2026 – Philippines: Law and Practice' and 'Trends and Developments', Cruz Marcelo & Tenefrancia, last updated 11 September 2026, https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines/trends-and-developments (roles of DOE, ERC, NGCP, TransCo, DUs, IEMOP and PEMC; retail supply and GEOP contracts; 'Long-term PPAs typically last for a term of ten years'; net metering up to 100 kW with RECs accruing to the DU; DOE DC2024-06-0018 definition of 'RE Project for Own Use'; DOE DC2023-12-0035 Expanded Roof-Mounted Solar Program business models including 'lease-to-generate').

4. Energy Regulatory Commission (ERC), Resolution No. 13, Series of 2024, 'A Resolution Adopting the Omnibus Rules for Customer Choice Programs in the Retail Market', with Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (definitions; Module A6 on Last Resort Supply; general obligation (p) on supplier default; Module F2 on single billing and collecting-agent role; Module K1 on reversion to the captive market; Modules L12–L13 on Offer Sheet, Retail Supply Contract minimum provisions, renewal and five-business-day cooling-off period). See also IEMOP Bulletin No. 2024-01 on registration categories (RES, Local RES, RE Supplier, SOLR), https://www.iemop.ph/wp-content/uploads/2024/11/Bulletin-1-Registration-of-Retail-Supplier-and-Service-Provider.pdf.

5. IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002 – Promulgating the Revised Rules and Guidelines Governing the Implementation of the Green Energy Option Program', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (Revised GEOP Rules effective 21 February 2026; 50 kW threshold over the past twelve months; distribution wheeling services with host DU; GEOP aggregation in contiguous areas; DOE direction to apply single billing in the interim).

6. IEMOP, 'IEMOP Annual Report 2025', https://www.iemop.ph/publications/iemop-annual-report-2025/ (IEMOP as Renewable Energy Registrar; Renewable Energy Market operations), and IEMOP Bulletin No. 2024-02 (IEMOP as Central Registration Body), https://www.iemop.ph/wp-content/uploads/2024/11/Bulletin-2-Retail-Customer-Switching-RCOA-GEOP-and-RAP.pdf.

7. ERC Resolution No. 22, Series of 2025, as implemented in IEMOP, 'RCOA Threshold Bulletin No. 2026-01', 5 May 2026, https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (100 kW average monthly peak demand threshold effective 26 June 2026); Meralco, 'Competitive Retail Electricity Market (CREM) and Retail Aggregation Program (RAP) FAQs', https://company.meralco.com.ph/news-and-advisories/competitive-retail-electricity-market-crem-and-retail-aggregation-program-rap (eligibility per Service Identification Number; aggregation conditions).

8. ERC Resolution No. 11, Series of 2022, 'A Resolution Adopting the Rules Governing Distributed Energy Resources (DER)', published 29 November 2022, effective 14 December 2022, as summarised by Clark Electric Distribution Corporation, 'Distributed Energy Resources (DER)', https://www.clarkelectric.ph/node/151, and Meralco, 'Renewable DER Exporting', https://company.meralco.com.ph/products-services-and-programs/distributed-energy-resources.

9. DOE, Department Circular No. DC2026-08-0017 on self-generation zero-export solar systems and micro-solar systems for own use, https://prod-cms.doe.gov.ph/documents/d/guest/dc2026-08-0017-pdf; see also Chambers and Partners (note 3).

10. Bird & Bird, 'Onsite PPAs: Perspectives from key ASEAN economies', July 2021, https://www.twobirds.com/-/media/pdfs/news/articles/2021/onsite-ppas---asean6---july-2021.pdf (Philippine section: RES licence for suppliers to the contestable market; operating-lease alternative for own-use generation). Commentary predates the 2024 Omnibus Rules and later DOE circulars; confirm current treatment with counsel.

11. US Environmental Protection Agency, Green Power Markets, 'Financial PPA', https://www.epa.gov/green-power-markets/financial-ppa (contract-for-differences settlement against a strike price; typical monthly settlement; REC conveyance).

12. Power Philippines, 'Zero-capex model gains ground as firms shift to solar without spending a peso', 3 January 2026, https://powerphilippines.com/zero-capex-model-gains-ground-as-firms-shift-to-solar-without-spending-a-peso/ (developer-reported PPA terms of 10 to 25 years; liquidated damages for output shortfall). Cited as a market report of one developer's practice, not as a market-wide statistic.

13. IFRS Foundation, 'IASB updates IFRS Accounting Standards for nature-dependent electricity contracts', 18 December 2024, https://www.ifrs.org/news-and-events/news/2024/12/iasb-updates-accounting-standards-nature-dependent-electricity-contracts/ (amendments to IFRS 9 and IFRS 7, effective for annual periods beginning on or after 1 January 2026). Confirm the Philippine (PFRS) adoption and application with your auditors.

Figure and image credits

Figures 2.2, 2.3, 2.6, 2.7 and 2.8 and Tables 2.1–2.2 were prepared by the author from the sources noted. Figure 2.9 and Table 2.3 use illustrative example data only. Figures 2.1, 2.4 and 2.5 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting or investment advice. Regulations and tariffs change; verify current rules with the ERC, DOE, IEMOP and your distribution utility before making decisions.

CHAPTER 3

Buy, Lease-to-Own or PPA

Cash flow, balance sheet and tax compared

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: Four routes to solar · Outright purchase, depreciation and incentives · Lease-to-own · Onsite and offsite PPAs · Cash flow, NPV and IRR · PFRS 16 and the balance sheet · Risk, O&M and flexibility · A decision guide by company profile · Key takeaways and questions to ask



Figure 3.1. The same solar system can be paid for in three very different ways. The choice shows up in the cash-flow statement, the balance sheet and the tax return. (AI-generated illustrative image; generic scene, not real persons.)

Chapter 2 explained what a PPA is and how it allocates ownership, payment and risk. Before a CFO signs one, a more basic question has to be answered. Should the company own the generating asset, lease it with a view to owning it, or simply buy the electricity it produces? Developers, banks and equipment suppliers each tend to recommend the answer that suits their own business model. This chapter sets out the economics of each

route neutrally, so that you can choose the one that fits your company's cash position, balance sheet, tax profile and appetite for risk.

The comparison is not about which technology to use. In most cases the panels, inverters and mounting structures are the same whichever route you take. What differs is who pays for them and when, who owns them, who maintains them, how they appear in your financial statements, and what you can deduct for tax. Those differences can matter as much as the price of the equipment itself.

> **Terms used in this chapter**
>
> **Capex:** capital expenditure, the up-front cost of buying and installing the system.
>
> **O&M:** operation and maintenance, including cleaning, inspection, repairs, monitoring and insurance.
>
> **NPV:** net present value, the value today of all future cash inflows and outflows, discounted at a rate that reflects your cost of capital and risk.
>
> **IRR:** internal rate of return, the discount rate at which an investment's NPV equals zero.
>
> **ROU asset:** right-of-use asset, the asset a lessee recognises under PFRS 16 for its right to use a leased item.
>
> **RES:** Retail Electricity Supplier, an entity licensed by the ERC to sell electricity to contestable customers under Retail Competition and Open Access (RCOA). In this book RES always means Retail Electricity Supplier.

3.1 Four ways to get solar power, and one way to get green power without a roof

For a business that uses 100,000 kWh or more per month, there are four practical routes to renewable electricity. Three of them involve a system on your own roof, carport or land. The fourth brings power from elsewhere over the grid. Figure 3.2 shows how ownership and payment differ across the three onsite routes over a typical project life.

1. Outright purchase. You buy the system, usually through an engineering, procurement and construction (EPC) contractor, and pay for it with cash or a loan in your own name. You own it from the first day.
2. Lease-to-own. A lessor or financier buys the system and installs it on your site. You pay a fixed monthly amount over an agreed term, often with no down payment, and ownership transfers to you at the end.
3. Onsite PPA. A developer finances, builds, owns and operates the system on your site. You pay only for the electricity it produces, at an agreed price per kWh.
4. Offsite PPA. You contract for electricity from a plant elsewhere, through a RES under RCOA or an RE Supplier under the Green Energy Option Program (GEOP). There is no equipment on your site.

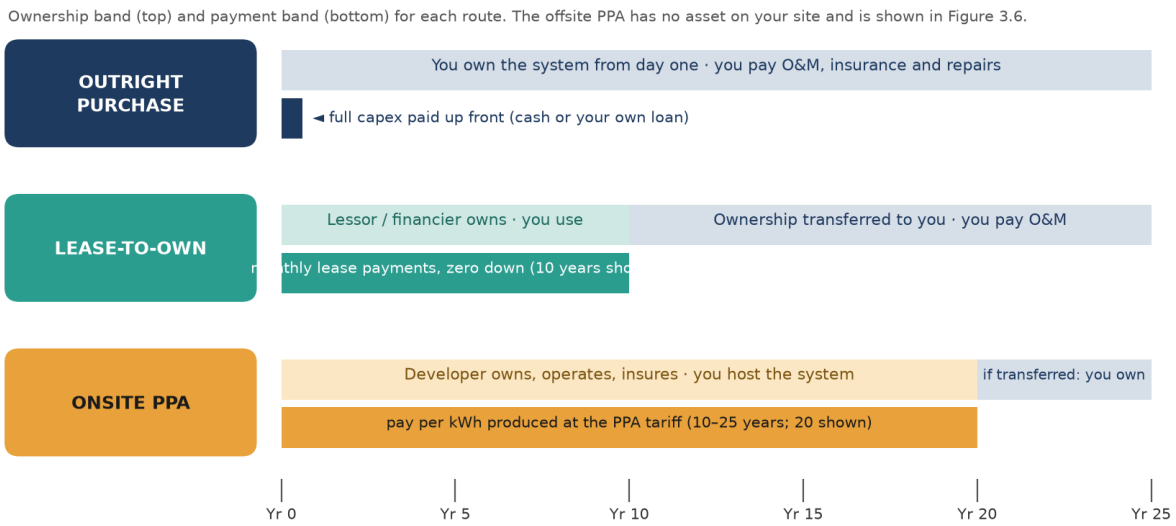


Figure 3.2. Who owns the system and how you pay, over a 25-year horizon. Term lengths shown are examples; actual terms vary by contract. Prepared by the author.

3.2 Outright purchase

How it works

In an outright purchase, your company signs an EPC contract, pays for the system, and becomes its owner as soon as it is commissioned. Payment is usually staged: a deposit on signing, progress payments during delivery and installation, and a final payment on acceptance. You may fund the purchase from cash reserves or with a bank loan, but either way the asset and its risks are yours.

Ownership brings the largest share of the long-run value. Once the capex is paid, the electricity the system produces costs you only its O&M, insurance and occasional component replacement. Inverters, for example, usually need replacing at least once during a 25-year panel life. For a well-designed system on a site you will occupy for decades, no other route keeps as much of the saving inside the company.

Depreciation

For financial reporting, the system is recorded as property, plant and equipment and depreciated over its useful life. For income tax, Section 34(F) of the National Internal Revenue Code allows a reasonable allowance for depreciation of property used in business. It permits the straight-line, declining-balance and sum-of-the-years-digits methods, among others.[1] Depreciation does not save cash directly. It reduces taxable income, so its cash value is the depreciation charge multiplied by your tax rate. Since July 2020 the regular corporate income tax rate has been 25%, with a 20% rate for domestic corporations whose net taxable income does not exceed ₱5 million and whose total assets, excluding land, do not exceed ₱100 million.[2] The value of a depreciation deduction therefore depends on your company having taxable profits to shelter.

Tax incentives: what the RE Act and CREATE/CREATE MORE actually offer a buyer

A common sales claim is that solar 'comes with government incentives'. The truth is more specific, and the details matter.

The Renewable Energy Act of 2008 (Republic Act No. 9513) grants generous fiscal incentives, but to registered RE developers. Section 15 lists a seven-year income tax holiday, duty-free importation of RE machinery and equipment for ten years, realty taxes on RE equipment capped at 1.5% of net book value, a special loss carry-over, a 10% corporate tax rate after the income tax holiday, accelerated depreciation for projects that do not receive the holiday, and zero-rated VAT on the sale of power generated from renewable sources.[3] The BIR's implementing rules (Revenue Regulations No. 7-2022) make clear that these incentives are not self-executing. The developer must hold a DOE registration and register with the Board of Investments (BOI), and registration under the RE Act generally rules out claiming other incentives under the Tax Code for the same activity.[4] In practice, these benefits sit mainly with the third-party developers that own onsite and offsite PPA projects, not with a company that buys panels for its own roof.

There are two narrower routes worth knowing for a company that owns its system. First, RR 7-2022 recognises a rebate equal to the VAT passed on to purchasers of RE equipment for residential, industrial or community use, granted as a tax credit in the year of purchase, but only for purchasers that are not VAT-registered.[4] Most companies at the scale this book addresses are VAT-registered and recover input VAT in the normal way instead. Second, the BOI has allowed self-financed projects that generate renewable power for a company's own use to register as energy efficiency and conservation projects under the 2022 Strategic Investment Priority Plan. Under BOI Memorandum Circular No. 2023-006, such projects are entitled only to an income tax holiday and duty exemption on imported capital equipment, and the holiday ends at the earlier of the CREATE entitlement period or recovery of 50% of the capital investment.[5] Registration is project-specific and should be confirmed against the current investment priority plan.

For companies already registered with an investment promotion agency, the CREATE Act (Republic Act No. 11534), as amended by the CREATE MORE Act (Republic Act No. 12066, effective 28 November 2024), adds another layer.[6] Registered business enterprises that opt for the enhanced deductions regime pay a 20% corporate income tax rate on income from their registered activity. They may claim an additional depreciation allowance of 10% for buildings and 20% for machinery and equipment that are directly related to production, and an additional deduction equal to 100% of power expense used in the registered project or activity.[7] The power-expense deduction cuts both ways. It makes every peso of electricity bought for the registered activity, possibly including PPA payments, more valuable as a deduction, while a self-owned system reduces the power expense available to deduct. Whether a particular PPA payment qualifies as 'power expense', and how additional depreciation applies to solar equipment, should be confirmed with your tax

adviser and the relevant investment promotion agency before you build either into a business case.

> **The economist's caution on incentives**
>
> *Incentives change the timing and size of tax payments; they rarely turn a weak project into a good one. Model the project without incentives first. Then add only those your company is actually registered for, or can realistically obtain, and test what happens if a claim is disallowed.*

3.3 Lease-to-own

How it works

Under a lease-to-own arrangement, a lessor, which may be the installer, a leasing company or a bank, pays for the system and installs it on your site. You pay a fixed monthly amount for an agreed term, and ownership transfers to you once the term ends and all payments are made. Some programmes require no up-front payment. For example, one Philippine financier advertises zero-upfront commercial rooftop solar with a choice of terms from five to fifteen years, after which the system belongs to the business.[8] That is one company's published offer, not a market-wide statistic, and terms offered to your company will depend on its credit profile and the size of the system.

Most lease-to-own programmes rely on third-party financing. The installer designs and builds the system, while a bank or financing company funds it and carries your credit risk during the term. That is why approval depends on your financial statements, credit history and sometimes collateral or a guarantee, much as it would for an equipment loan. During the term, the lessor often provides or arranges O&M and insurance so that its collateral keeps performing. After transfer, those responsibilities pass to you, unless you buy a separate service contract.

The cash-flow logic

Lease-to-own is, in economic substance, a way to buy the system with financing bundled in. The test is simple. Is the monthly lease payment lower than the monthly value of the electricity the system displaces? If it is, you are cash-positive from the first month and keep the system afterwards. A short term means larger payments, which may exceed the savings in the early years. A long term means smaller payments and more interest in total. Ask for the implied interest rate in writing and compare it with your own borrowing cost. A lease that looks affordable can still be an expensive loan.

Why the tax label matters

The BIR does not tax a transaction by its name. Under Revenue Regulations No. 19-86, as restated by Revenue Memorandum Circular No. 11-2024, a contract described as a lease is

treated as a conditional sale if, among other factors, the lessee acquires automatic ownership on paying the contracted rentals, or if part of each rental is credited to the purchase price.[9] A lease-to-own contract will often meet that test. If it is treated as a sale, the lessee is in tax terms a buyer. It claims depreciation and the interest element rather than deducting the full rental, and VAT on the price is due outright rather than spread over the rentals.[10] If it is a true lease, the rentals are deductible as they are paid or accrued. Neither treatment is automatically better. But the classification affects the timing of deductions and VAT, so settle it with your tax adviser before signing, and make sure invoices match the treatment.

3.4 Onsite and offsite PPAs: paying for output, not equipment

Chapter 2 described the PPA models in detail. For this comparison, the key point is that under an onsite PPA the developer pays the capex and carries the performance and O&M risk, and you pay only for the kWh delivered. One Philippine developer has described onsite PPA terms of 10 to 25 years, with liquidated damages if output falls short.[11] Some contracts transfer the system to the host at the end of the term or offer a buyout schedule during it. Others require the developer to remove it. Because the developer is often a registered RE developer, the RE Act incentives described in Section 3.2 may lower its costs, and a competitive tender is the best way to ensure part of that saving reaches your tariff.

PPA payments are generally deductible as an ordinary operating expense in the year incurred. VAT treatment depends on the seller: the RE Act zero-rates the sale of power generated from renewable sources by qualified, registered developers, so check whether your invoices should carry 0% or 12% VAT.[3,4] For a VAT-registered buyer, input VAT is normally recoverable, so the difference is mainly one of cash timing.

An offsite PPA requires no site at all, but it is available only to eligible customers. Under RCOA, an end-user with an average monthly peak demand of at least 100 kW may contract with a RES. Under GEOP, the threshold is 50 kW, measured over the past twelve months.[12] Offsite contracts replace the generation part of your bill. Regulated network charges remain, and a customer that moves to the competitive retail market generally cannot return to regulated supply.[13] There is no asset, no capex and usually no lease on your balance sheet. Your exposure is to the price formula and the supplier's credit.



Figure 3.3. Whoever owns the system is responsible for keeping it producing: cleaning, inspection, repairs and insurance. Under a PPA that is the developer. After purchase or lease transfer, it is you. (AI-generated illustrative image; generic facility, not a real site.)

3.5 Cash flow, NPV and IRR: a worked illustration

To make the comparison concrete, consider a hypothetical company using about 120,000 kWh per month, with a roof suitable for a 300 kWp system. Table 3.1 lists the assumptions. They are chosen for illustration only. They are not quotes, forecasts or market averages, and your own figures will differ.

Table 3.1. Illustrative example data: assumptions for the worked comparison

Item	Assumption (hypothetical)	Applies to
System size and output	300 kWp × 1,300 kWh/kWp in year 1 (390,000 kWh, about 27% of annual load); 0.5% annual degradation	All three routes
Avoided grid cost	₱10.00/kWh in year 1, rising 2% a year	All three routes
Capex	₱40,000/kWp = ₱12.0 million, paid in year 0	Purchase
O&M and insurance	₱400/kWp a year (₱120,000), rising 3% a year; inverter replacement of ₱1.2 million in year 12	Owner: purchase from year 1; lease after transfer; PPA after year 20
Lease-to-own	Zero down; 10 years; level payments at an implied 12% rate (about ₱2.12 million a year, or ₱177,000 a month); lessor covers O&M during the term; ownership transfers at end; taxed as a conditional sale	Lease-to-own
Onsite PPA	₱7.50/kWh in year 1, rising 1% a year; 20 years; pay-as-produced;	Onsite PPA

	system transferred to host at end	
Tax	25% corporate income tax; company has taxable profits; 10-year straight-line tax depreciation; no special incentives	All three routes
Horizon and discount rate	25 years; NPV shown at 6%, 10% and 14%	All three routes

Illustrative example data. All values are hypothetical and chosen only to show the method. The analysis is after corporate income tax, ignores VAT timing, and compares each route against continuing to buy all electricity from the grid.

Figure 3.4 plots the cumulative after-tax cash position of each route relative to staying entirely on grid power. The shapes tell the story more clearly than any single metric.

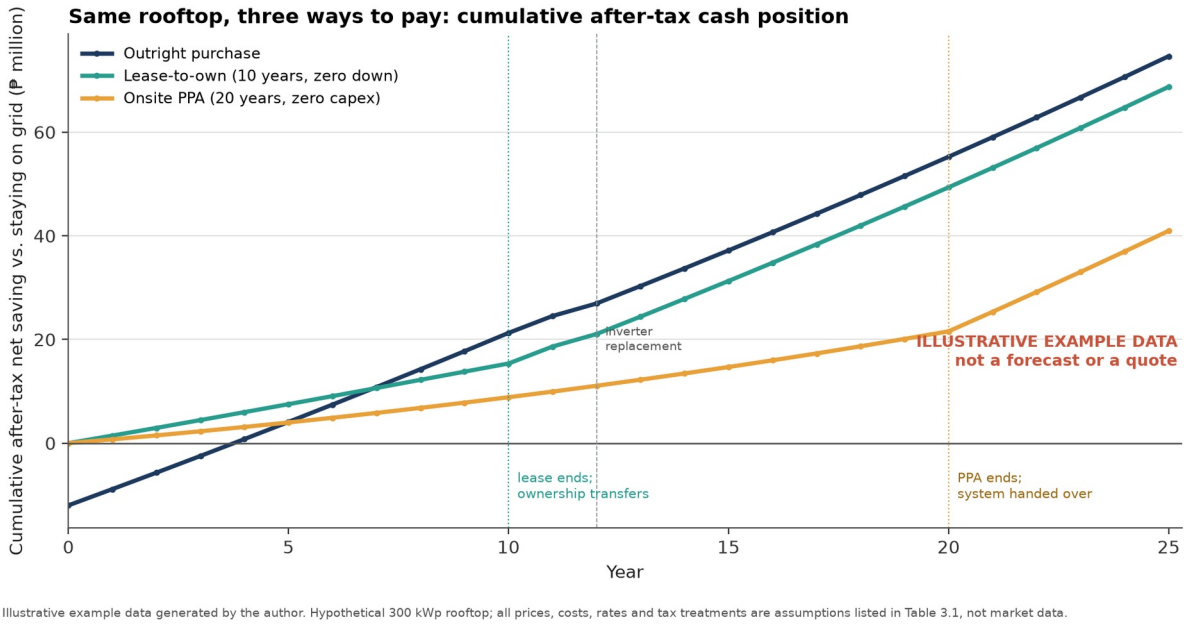


Figure 3.4. Illustrative example data: cumulative after-tax net saving of the three onsite routes against staying on grid supply. Hypothetical inputs from Table 3.1; not a forecast or a quote.

Table 3.2. Illustrative example data: results of the worked comparison (₱ million)

Metric	Outright purchase	Lease-to-own	Onsite PPA
Up-front cash	−12.0	0	0
Year-1 after-tax net saving	3.13	1.46	0.73
Year in which cumulative position turns positive	Year 4	Year 1	Year 1
Cumulative after 10 years	21.3	15.4	8.9
Cumulative after 25 years	74.6	68.8	41.0
NPV at 6%	31.2	30.1	16.6
NPV at 10%	18.3	19.4	10.4
NPV at 14%	10.7	13.6	7.1
IRR	27%	not meaningful (no outlay)	not meaningful (no outlay)

Illustrative example data computed by the author from the hypothetical assumptions in Table 3.1. Rounded. Not a forecast, quote or market average.

Four lessons emerge, and they hold well beyond these particular numbers.

1. Ownership captures the most value over the full life. The purchase route ends the 25 years with the largest cumulative saving because no one else takes a margin on the asset. It also starts with the deepest hole: ₱12 million out of the treasury in year 0, recovered in about four years in this example.
2. Zero-capex routes are positive from day one, but the saving is shared. Under the PPA, the developer recovers its capex, O&M, risk and profit through the tariff, so your annual saving is smaller until the system is handed over. Under lease-to-own, the lessor's financing margin comes out of the early years' savings. You then keep everything after transfer, which is why the teal line steepens after year 10.
3. The discount rate decides the ranking. At a 6% discount rate, outright purchase has the highest NPV. At 10% and 14%, lease-to-own edges ahead, because the company is in effect borrowing at an after-tax cost (12% × (1 − 25%) = 9%) below its own cost of capital. A CFO whose cash has better uses, such as expanding capacity, inventory or debt reduction, should use a higher discount rate, and the financed routes then look relatively better.
4. IRR is not a fair basis for comparison here. A route with no up-front outlay has no meaningful IRR, so a high IRR on the purchase route does not prove it is better. Compare NPVs at your own discount rate, the size and timing of the cash commitment, and the risks each route leaves with you.

> **The economist's rule: compare like with like**
>
> *Every option should be measured against the same baseline, which is continuing to buy grid power, over the same horizon and at the same discount rate. Include what happens at the end of each contract: transfer, buyout, renewal or removal. A 10-year lease, a 20-year PPA and a 25-year asset life cannot be compared on year-one savings alone.*

3.6 Balance sheet and lease accounting under PFRS 16

The accounting treatment of each route can matter as much as the cash flow, especially for companies with bank covenants, rating considerations or plans to raise capital. Figure 3.5 summarises the typical balance-sheet footprint.

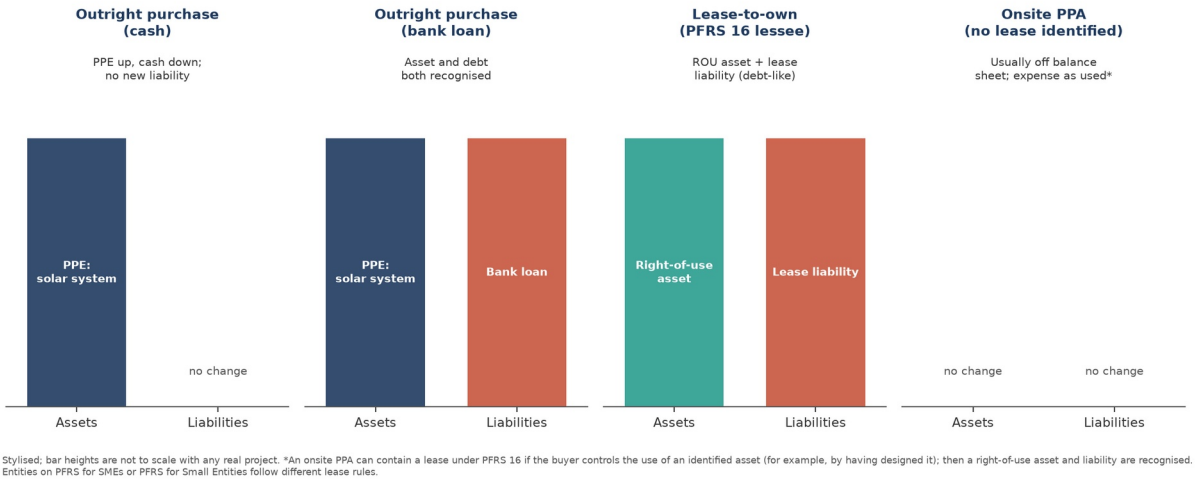


Figure 3.5. Typical balance-sheet footprint of each route for a lessee reporting under full PFRS. Stylised; prepared by the author from PFRS 16 and IFRS 16 guidance.[14,15]

PFRS 16, Leases, the Philippine adoption of IFRS 16, took effect on 1 January 2019, replacing PAS 17. A lessee recognises a right-of-use asset and a lease liability, measured at the present value of the lease payments, for virtually all leases. Exemptions apply only to short-term leases of 12 months or less and leases of low-value assets.[14,16] The old distinction that kept operating leases off the lessee's balance sheet no longer exists for companies reporting under full PFRS.

For a lease-to-own contract, three consequences follow. First, a liability appears on day one that analysts and lenders will usually treat as debt, raising leverage ratios. Second, the income statement shows depreciation of the right-of-use asset and interest on the liability instead of a rental expense. This raises EBITDA but front-loads total expense, because interest is highest early in the term. Third, because ownership transfers at the end of the term, IFRS 16 requires the right-of-use asset to be depreciated over the useful life of the system rather than over the shorter lease term.[15] Check your loan covenants before signing. A covenant written on 'total debt' may or may not include lease liabilities.

Tax and accounting are separate tracks. PFRS 16 did not change the BIR's rules. For a lease that is a true lease for tax purposes, the lessee continues to deduct the rentals, not the book depreciation and interest, and the timing difference is handled through deferred tax.[10]

An onsite PPA is usually treated as an executory contract to buy electricity, expensed as the power is received. But it can contain a lease. IFRS 16's own illustrative examples include a 20-year contract for all the output of a solar farm that the customer had designed before construction. Because those design decisions predetermined how the plant would be used, the customer was found to control its use, and the contract contained a lease, even though the supplier operated it.[15] If you take all the output of a dedicated system on your roof and had a strong hand in its design, ask your auditor to assess whether the PPA contains a lease before you sign. Offsite retail supply contracts do not

normally raise the question, but settlement-style virtual PPAs can raise derivative accounting issues, as Chapter 2 explained.[17]

Finally, not every company reports under full PFRS. Under SEC rules, corporations with total assets above ₱350 million or total liabilities above ₱250 million generally use full PFRS. Medium-sized entities below those levels but above ₱100 million use PFRS for SMEs, and smaller entities use PFRS for Small Entities.[18] The SME framework still uses the older finance-lease and operating-lease model. The IASB's third edition of the IFRS for SMEs Accounting Standard, adopted in the Philippines for periods beginning on or after 1 January 2027, did not align its lease section with IFRS 16.[19] For many mid-sized companies, an operating-type lease may therefore stay off the balance sheet, while a lease-to-own contract that transfers ownership is likely to be a finance lease and appear on it anyway.

3.7 Risk, O&M responsibility and flexibility

Cash flow and accounting describe the expected case. A CFO must also ask what happens when things go wrong. Figure 3.6 brings the main dimensions together.

	Outright purchase	Lease-to-own	Onsite PPA	Offsite PPA (RES / RE Supplier)
Up-front cash	Full capex	None	None	None
Who owns the asset	You, from day 1	Financier, then you	Developer (maybe you at end)	Generator / supplier
Monthly cash flow	Savings from day 1; capex already spent	Lease payment vs savings; may be thin	Pay per kWh; saving from day 1	Contract price vs utility; formula-driven
Long-run value captured	Highest if system performs	High after transfer	Shared with developer	Depends on price formula
Balance-sheet footprint	PPE (+ loan if borrowed)	ROU asset + lease liability	Usually none, unless lease found	None (supply contract)
Tax deductions	Depreciation (+ any registered incentive)	Lease payments or depreciation + interest	PPA payments as expense	Power cost as expense
Performance risk	You	You (warranties help)	Developer	Supplier / generator
O&M responsibility	You	Often lessor in term, then you	Developer	Supplier / generator
Flexibility to exit / relocate	Asset is yours to sell or move	Buyout / transfer per lease	Termination and buyout payments	Termination charges; RCOA one-way door
Site needed?	Yes	Yes	Yes	No (≥100 kW RCOA; ≥50 kW GEOP)

generally favourable to the buyer · mixed / depends on terms · generally unfavourable or a burden on the buyer

Qualitative summary by the author. Accounting and tax entries depend on the contract and your reporting framework; confirm with your auditor and tax adviser.

Figure 3.6. Comparison matrix: outright purchase, lease-to-own, onsite PPA and offsite PPA. Qualitative summary by the author; actual terms depend on the contract.

Performance and technology risk

If you own the system, you carry the risk that it produces less than forecast, through soiling, shading, equipment faults, poor workmanship or faster degradation. Manufacturer warranties cover defects, not lost savings, and claims take time. Under lease-to-own, you carry the same production risk, while the lessor's interest in its collateral may help during the term. Under an onsite PPA with pay-as-produced pricing, weak output reduces your payments, and a performance guarantee with liquidated damages can add further protection. Under an offsite PPA, the supplier manages generation and you are exposed mainly to the price formula and to the supplier's ability to perform.

O&M responsibility

O&M is easy to underestimate. Panels need periodic cleaning, especially near roads and industrial sources of dust. Inverters need monitoring and eventually replacement. Roof penetrations and cabling must be inspected, and insurance must be maintained. Owners can contract this out, but someone in the company must manage the contractor and read the monitoring data. If you have no facilities or electrical team, the hidden cost of ownership is management attention. A PPA, or a lease with O&M bundled during the term, transfers that burden to a specialist.

Counterparty and contract risk

When you buy, your main counterparty risk is the EPC contractor during construction and the warranty period. Once the system is accepted, you depend on no one. When you lease or sign a PPA, you depend on the lessor or developer for the whole term. You also carry contract risk of your own: termination payments, minimum-offtake clauses, assignment restrictions and change-in-law provisions, as discussed in Chapter 2.

Flexibility

Flexibility is the dimension most often traded away without noticing. An owned system can be expanded, moved, sold with the building or left in place, at your discretion. A lease-to-own contract usually restricts relocation and early payoff, and an onsite PPA can impose large termination or buyout payments, particularly in the early years. Offsite contracts carry early termination charges, and switching to the competitive retail market is close to a one-way door.[13] If you lease your premises, or expect to relocate, consolidate or sell within the contract term, give flexibility a heavy weight. An owned system on a building you leave behind is worth far less than its book value.



Figure 3.7. Carports and other structures can host solar where roofs are weak or shaded, but they add structural cost and site permanence to the decision. (AI-generated illustrative image; generic building, not a real site.)

3.8 A decision guide by company profile

No single route is best for every company. Figure 3.8 offers a first-pass screen, and Table 3.3 translates it into typical profiles. Treat both as a starting point for your own analysis, not as a recommendation.

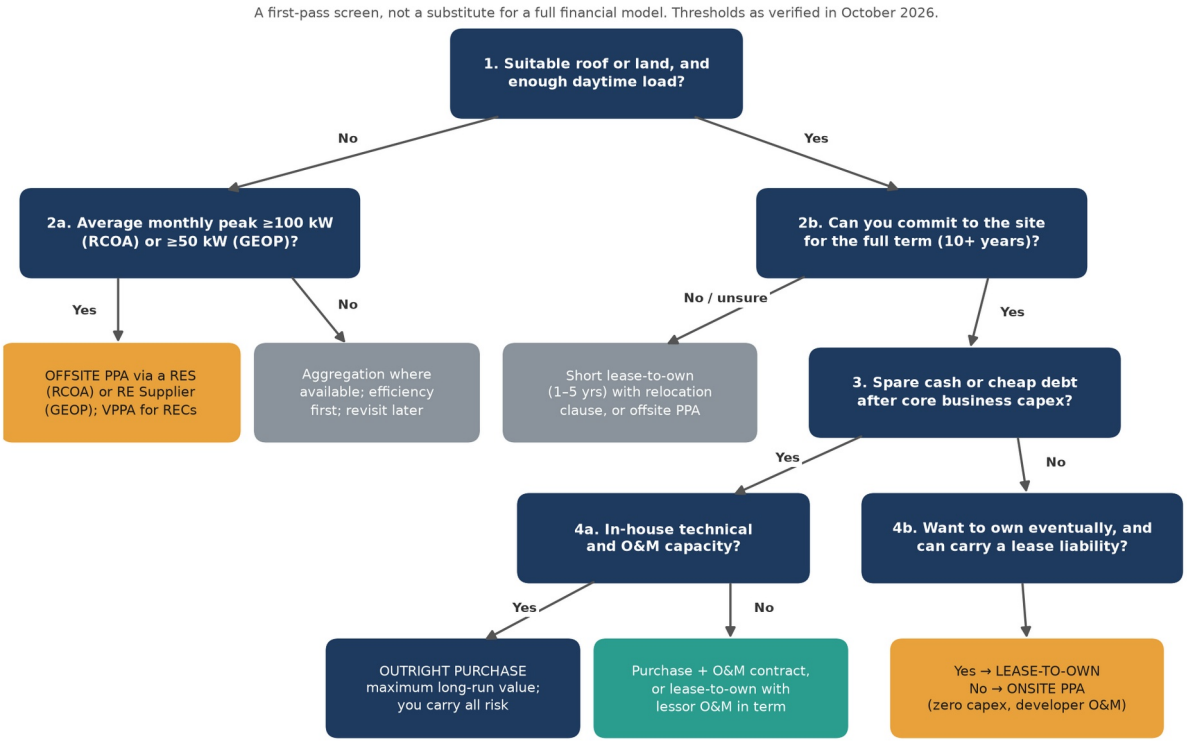


Figure 3.8. Decision tree for choosing among purchase, lease-to-own and PPAs. RCOA and GEOP thresholds as verified in October 2026.[12] Prepared by the author.

Table 3.3. Which route tends to fit which company

Company profile	Usually fits best	Why	Watch out for
Cash-rich manufacturer on owned land, long-term site, in-house engineering team	Outright purchase	Captures the most value; low cost of capital; can manage O&M	Concentrated performance risk; tie-up of cash that may have better uses
Growing mid-sized firm, tight cash, profitable, owns its building	Lease-to-own	No down payment; ownership after term; savings can cover payments	Implied interest rate; lease liability under PFRS 16 (or finance lease under PFRS for SMEs); conditional-sale tax treatment
Company that wants zero capex and no technical burden, long-term site	Onsite PPA	Developer funds, owns and maintains; pay only for output	Tariff escalation, minimum offtake, termination and buyout schedule; possible embedded lease
Company leasing its premises, or likely to relocate within 10 years	Short lease-to-own with relocation clause, or offsite PPA if eligible	Avoids stranding an asset on someone else's roof	Landlord consent; removal and reinstatement costs
Contestable customer with little usable roof (≥100 kW RCOA; ≥50 kW GEOP)	Offsite PPA via a RES or RE Supplier	Scales beyond the roof; no asset on site	Price formula, supplier credit, near-irreversible switch; network charges remain
BOI- or other IPA-registered enterprise under the enhanced deductions regime	Model all routes with tax adviser	Additional power-expense and depreciation deductions change the after-tax ranking	Confirm what counts as power expense and qualified capex; no double availment
Company close to its bank covenant limits	Onsite or offsite PPA (after auditor review)	Usually no lease liability	Auditor may still identify a lease in a dedicated onsite PPA

Prepared by the author. Thresholds from ERC Resolution No. 22, Series of 2025 and DOE DC2026-01-0002 as verified in October 2026.[12] Profiles are generalisations; your own figures should decide.

Many companies will not choose just one route. A common pattern is to own or lease a rooftop system that covers daytime base load, and to contract the remaining demand through a RES or RE Supplier. Another is to start with a PPA at one site and buy outright at the next, once the team has experience. The decision tree is meant to frame the conversation with your board, not to end it.

Key takeaways

- The equipment is usually the same in every route. What differs is who pays, who owns, who maintains, how it is accounted for and how it is taxed.
- Outright purchase captures the most long-run value but requires full capex and leaves all performance and O&M risk with you. Depreciation is deductible, and its value depends on having taxable profits.
- The RE Act's main incentives belong to registered RE developers. A buyer for its own use benefits indirectly through PPA prices, or directly only through narrower routes

such as BOI registration of self-financed own-use projects or, for registered enterprises, CREATE MORE's enhanced deductions.

- Lease-to-own can require no down payment, with ownership at the end of the term; one published Philippine offer runs from five to fifteen years. It is financing in substance: compare the implied rate with your borrowing cost, and expect the BIR to treat automatic-ownership leases as conditional sales.
- Onsite PPAs need no capex and transfer O&M and performance risk to the developer, but they share the saving and can lock you in. Offsite PPAs need no site, but they depend on eligibility, the price formula and the supplier's credit.
- Under PFRS 16, a lease-to-own contract puts a right-of-use asset and a lease liability on the balance sheet. A dedicated onsite PPA can also contain a lease. SMEs follow different rules.
- Rank options by NPV at your own discount rate over the same horizon, not by IRR or first-year savings. The ranking can flip with the cost of capital.
- Weigh flexibility heavily if you lease your premises or may relocate, consolidate or sell within the contract term.

Questions a CFO should ask

1. What is our true cost of capital, and what return could the same cash earn elsewhere in the business?
2. Over the same horizon and against the same grid baseline, what are the NPVs of purchase, lease-to-own and PPA at our discount rate, and how sensitive are they to grid prices and output?
3. Which tax incentives are we actually registered for, or can realistically obtain, and what happens to the business case if a claim is disallowed?
4. For a lease-to-own offer, what is the implied interest rate, and will the BIR treat it as a lease or a conditional sale?
5. How will each option appear under our reporting framework (full PFRS, PFRS for SMEs or PFRS for Small Entities), and does it affect our loan covenants?
6. Has our auditor confirmed whether a proposed onsite PPA contains a lease?
7. Who will clean, monitor, repair and insure the system in each year of its life, and what will that cost?
8. What happens to the system and our obligations if we sell, vacate or expand the site?
9. What are the termination and buyout amounts in years one, five and ten, and at the end of each contract?
10. Are we eligible for an offsite PPA (≥100 kW under RCOA or ≥50 kW under GEOP), and would a combination of onsite and offsite supply serve us better?

If your analysis points towards a system on your own site without owning it, the next chapter is for you. Chapter 4 examines the onsite PPA in depth: how to assess your roof

and load profile, how developers build their tariffs, and how to evaluate an onsite offer line by line.

Notes

All sources were accessed on 17 October 2026 (Asia/Manila). Laws and regulations are cited from official texts or reputable professional summaries as indicated. Company offers and market reports describe individual companies' practices and are not market-wide statistics. Tax and accounting outcomes depend on facts and should be confirmed with your own advisers.

1. National Internal Revenue Code of 1997, as amended, Section 34(F), 'Depreciation', https://taxacctgcenter.ph/nirc-ra-8424-amended-title-ii-chapter-vii-allowable-deductions-philippines/ (reasonable allowance for exhaustion, wear and tear of property used in trade or business; straight-line, declining-balance and sum-of-the-years-digit methods, and other methods prescribed by the Secretary of Finance).
2. Republic Act No. 11534 (CREATE Act), amending Section 27(A) of the NIRC, as further amended by Republic Act No. 12066, https://lawphil.net/statutes/repacts/ra2024/ra_12066_2024.html (25% corporate income tax effective 1 July 2020; 20% for corporations with net taxable income not exceeding ₱5 million and total assets not exceeding ₱100 million, excluding land).
3. Republic Act No. 9513, Renewable Energy Act of 2008, Section 15, https://www.lawphil.net/statutes/repacts/ra2008/ra_9513_2008.html (incentives for registered RE developers: seven-year income tax holiday; duty-free importation; realty tax cap of 1.5% of net book value; NOLCO; 10% corporate tax after ITH; accelerated depreciation only if no ITH; zero-rated VAT on sale of power from renewable sources). See also DOE, 'Incentives in the Energy Sector', https://prod-cms.doe.gov.ph/documents/d/guest/doe-incentives-in-the-energy-sector-2.
4. Bureau of Internal Revenue, Revenue Regulations No. 7-2022, as summarised by Ablola, Saribong & Gueco Law, 'RR No. 7-2022: Tax Incentives and Compliance Rules for Renewable Energy Developers, Suppliers, and Biomass Producers in the Philippines', 30 June 2022, https://www.makatilawfirm.com/2022/06/30/rr-no-7-2022-tax-incentives-and-compliance-rules-for-renewable-energy-developers-suppliers-and-biomass-producers-in-the-philippines/ (incentives not self-executing; DOE and BOI registration; 0% VAT on sale of RE power; VAT rebate as tax credit for non-VAT-registered purchasers of RE equipment; prohibition on double availment).
5. Board of Investments, Memorandum Circular No. 2023-006 (amending MC No. 2022-008, energy efficiency and conservation projects under the 2022 SIPP), as reported by BusinessMirror, 'BOI tweaks guidelines on energy efficiency, conservation projects', 20 October 2023, https://businessmirror.com.ph/2023/10/20/boi-tweaks-guidelines-on-energy-efficiency-conservation-projects/; circular at https://boi.gov.ph/sdm_downloads/boi-memorandum-circular-no-2023-006/ (self-financed projects entitled only to ITH and duty exemption; ITH limited to CREATE period or recovery of 50% of capital investment, whichever comes first; first availment by an own-use solar project).
6. Republic Act No. 12066 (CREATE MORE Act), signed 8 November 2024 and effective 28 November 2024; PwC Philippines, Tax Alert No. 44, https://www.pwc.com/ph/en/tax/tax-publications/tax-alerts/2024/tax-alert-44.html; BOI, 'DTI-BOI and DOF release interim rules of CREATE MORE', https://boi.gov.ph/dti-boi-and-dof-release-interim-rules-of-create-more/.
7. Republic Act No. 12066, amending NIRC Sections 27(A) and 294(C), https://lawphil.net/statutes/repacts/ra2024/ra_12066_2024.html (20% rate for registered business enterprises under the enhanced deductions regime; 100% additional deduction on power expense, applicable only to power used for the registered project or activity); CREATE MORE Implementing Rules and Regulations, https://assets.kpmg.com/content/dam/kpmgsites/ph/pdf/InTAX/2025/CREATE-MORE-Act-Implementing-Rules-and-Regulations.pdf (additional depreciation of 10% for buildings and 20% for machinery and equipment directly related to production).
8. First Circle, 'Solar Financing', https://www.firstcircle.ph/solar-financing, accessed 17 October 2026 (zero upfront cost; choice of term from 5 to 15 years, stated elsewhere on the page as 6 to 15 years; system 100%

owned by the business at the end of the term). Cited as an example of a published offer, not as a market-wide statistic.

9. Bureau of Internal Revenue, Revenue Memorandum Circular No. 11-2024, restating Sections 4.03/2 and 4.03/3 of Revenue Regulations No. 19-86, as summarised by Grant Thornton Philippines, 'Clarifications on the accounting and tax treatment of leases', 2024, https://www.grantthornton.com.ph/alerts-and-publications/technical-alerts/tax-alert/2024/clarifications-on-the-accounting-and-tax-treatment-of-leases/ (compelling persuasive factors for conditional-sale treatment, including automatic ownership upon payment of rentals and rentals credited to the purchase price).

10. PwC Philippines, 'Tax implications of PFRS 16 – Leases', Taxwise or Otherwise, 2019, https://www.pwc.com/ph/en/tax/tax-publications/taxwise-or-otherwise/2019-taxwise-or-otherwise/tax-implications-of-pfrs-16-leases.html (tax rules unchanged by PFRS 16; for true leases, rentals deductible and ROU depreciation and interest not deductible; for conditional sales, payments treated as purchase price and VAT due outright).

11. Power Philippines, 'Zero-capex model gains ground as firms shift to solar without spending a peso', 3 January 2026, https://powerphilippines.com/zero-capex-model-gains-ground-as-firms-shift-to-solar-without-spending-a-peso/ (developer-reported onsite PPA terms of 10 to 25 years; liquidated damages for output shortfall). One developer's practice, not a market-wide statistic.

12. IEMOP, 'RCOA Threshold Bulletin No. 2026-01', 5 May 2026, implementing ERC Resolution No. 22, Series of 2025, https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (100 kW threshold effective 26 June 2026); IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (GEOP threshold of 50 kW over the past twelve months). As cited in Chapter 2.

13. Energy Regulatory Commission, Resolution No. 13, Series of 2024, 'Omnibus Rules for Customer Choice Programs in the Retail Market', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (Module K1 on reversion to the captive market; Module L on early termination charges in retail supply contracts). As cited in Chapter 2.

14. Grant Thornton Philippines, 'Accounting for and taxation of leases in accordance with the new PFRS 16', https://www.grantthornton.com.ph/insights/articles-and-updates1/tax-notes/accounting-for-and-taxation-of-leases-in-accordance-with-the-new-pfrs-16/ (PFRS 16 effective 1 January 2019, replacing PAS 17; right-of-use asset; short-term lease of 12 months or less; low-value asset benchmark of about US$5,000 when new).

15. IFRS Foundation, IFRS 16 Leases, https://www.ifrs.org/issued-standards/list-of-standards/ifrs-16-leases/ (single lessee model; paragraph 32 on depreciating the right-of-use asset to the end of the underlying asset's useful life where ownership transfers); IFRS 16 Illustrative Examples, Example 9A (contract for the output of a solar farm designed by the customer contains a lease), https://www.ifrs.org/content/dam/ifrs/publications/html-standards/english/2022/issued/ifrs16-ie.html.

16. PwC Philippines, as in note 10 (lessees recognise all leases on the balance sheet except low-value assets and leases of 12 months or less; ROU asset and lease liability measured at the discounted value of future lease payments).

17. IFRS Foundation, 'IASB updates IFRS Accounting Standards for nature-dependent electricity contracts', 18 December 2024, https://www.ifrs.org/news-and-events/news/2024/12/iasb-updates-accounting-standards-nature-dependent-electricity-contracts/ (amendments to IFRS 9 and IFRS 7, effective for annual periods beginning on or after 1 January 2026). As cited in Chapter 2.

18. Securities and Exchange Commission, Revised SRC Rule 68, https://appointment.sec.gov.ph/wp-content/uploads/2019/11/SRC-Rule-68-as-amended.pdf, as summarised by JP CPAs, 'Financial Reporting Framework for Corporations', https://jp-cpas.com/financial-reporting-framework-for-corporations/ (full PFRS above ₱350 million total assets or ₱250 million total liabilities; PFRS for SMEs for medium-sized entities above ₱100 million; PFRS for Small Entities above ₱3 million up to ₱100 million).

19. KPMG, 'IFRS for SMEs® updated', 2025, https://kpmg.com/xx/en/our-insights/ifrg/2024/ifrs-sme.html, and IFRS Foundation, IFRS for SMEs Accounting Standard (third edition, 2025),

https://www.ifrs.org/content/dam/ifrs/publications/html-standards/english/2025/issued/html-ifrs-for-smes.html (Section 20 Leases not aligned with IFRS 16); Philippine adoption as PFRS for SMEs Accounting Standard (third edition), approved by the Financial and Sustainability Reporting Standards Council on 16 May 2025 and effective for annual periods beginning on or after 1 January 2027 (earlier application permitted), per the PRC-published preface (Resolution No. 51 attachment), https://prc.gov.ph/sites/default/files/Reso%2051%20attachement%20PFRS%20for%20SMEs%20Accounting%20Standard%20-%20Third%20Edition_Preface.pdf, and FSRSC, 'Our Standards', http://www.pfsrsc.org/government-organization-our-standards.

Figure and image credits

Figures 3.2, 3.5, 3.6 and 3.8 and Table 3.3 were prepared by the author from the sources noted. Figure 3.4 and Tables 3.1–3.2 use illustrative example data only, generated by the author's model (build/charts_ch3.py). Figures 3.1, 3.3 and 3.7 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting or investment advice. Regulations and tariffs change; verify current rules with the ERC, DOE, IEMOP and your distribution utility before making decisions.

CHAPTER 4

Onsite PPA: Solar on Your Roof or Land

Site, sizing, rules, tariffs and contract terms for a behind-the-meter PPA

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: How an onsite PPA works · Site suitability and a readiness scorecard · Sizing against daytime load · Export and net-metering limits · ERC and DOE rules · Sale of electricity or lease · Tariff structures · Tenor, buyout, guarantees, O&M and insurance · Interconnection and permits · Risks · Batteries · An illustrative savings case · Sector fit · Negotiation checklist, key takeaways and CFO questions



Figure 4.1. An onsite PPA starts on the roof, not in the contract. Before any price is discussed, an engineer should confirm that the structure can carry the array for the full contract term. (AI-generated illustrative image; generic scene, not real persons or a real site.)

Chapter 3 compared the main ways of paying for solar: buying the system, leasing it with a view to owning it, or buying only its output. This chapter takes the third route, the onsite power purchase agreement, and examines it in detail. Under an onsite PPA a developer finances, builds, owns and operates a solar system on your roof, carport or land. You buy the electricity it produces at an agreed price for an agreed term. For a business using 100,000 kWh or more a month, it is often the quickest way to cut part of the power bill without spending capital.

It is also a long, site-specific commitment. The contract will outlast several roof inspections, at least one change of management, and possibly a change in how your site is used. The economics depend on physical facts: how strong the roof is, how much sun reaches it, and how closely your load follows the sun. They also depend on rules that have changed several times since 2022. The sections that follow take each of these in turn, then work through an illustrative case and a negotiation checklist.

> **Terms used in this chapter**
>
> **Behind the meter:** generation connected on the customer's side of the distribution utility's revenue meter, so its output is used on site before any grid supply.
>
> **kWp:** kilowatt-peak, the rated DC output of solar modules under standard test conditions. System size is usually quoted in kWp.
>
> **Self-consumption:** the share of the solar system's output that is used on site rather than exported or curtailed.
>
> **Solar share:** the share of the site's total electricity use that the solar system supplies.
>
> **DU:** distribution utility, such as Meralco or an electric cooperative, which owns the local network and your revenue meter.
>
> **COC:** Certificate of Compliance, the ERC's authorisation to operate a generation facility, including many customer-site systems.
>
> **RES:** Retail Electricity Supplier, an entity licensed by the ERC to sell electricity to contestable customers under Retail Competition and Open Access (RCOA). In this book RES always means Retail Electricity Supplier.

4.1 How an onsite, behind-the-meter PPA works

The physical arrangement is simple. Solar modules on your roof or land feed inverters, which convert their DC output to AC at your site's voltage. The inverters connect to your main switchboard, on your side of the DU's revenue meter. Whenever the sun is up, your loads draw first on the solar output and take the balance from the grid. At night, and whenever solar falls short, the grid supplies everything, as it does today. A separate meter owned by the developer records the solar kWh delivered, and that reading is the basis of your monthly PPA invoice (Figure 4.2).

The commercial arrangement has three relationships. The PPA is between you and the developer: you grant access to the site and pay for each kWh delivered, while the developer designs, finances, builds, owns, operates and insures the system. Your supply relationship with the DU continues unchanged for the electricity you still buy from the grid, together with any connection or export agreement the rules require. Behind the developer, out of your sight but present in the contract, sit its lenders, its engineering, procurement and construction (EPC) contractor and its O&M contractor. Many clauses that look one-sided are really lender requirements, as Chapter 2 explained.

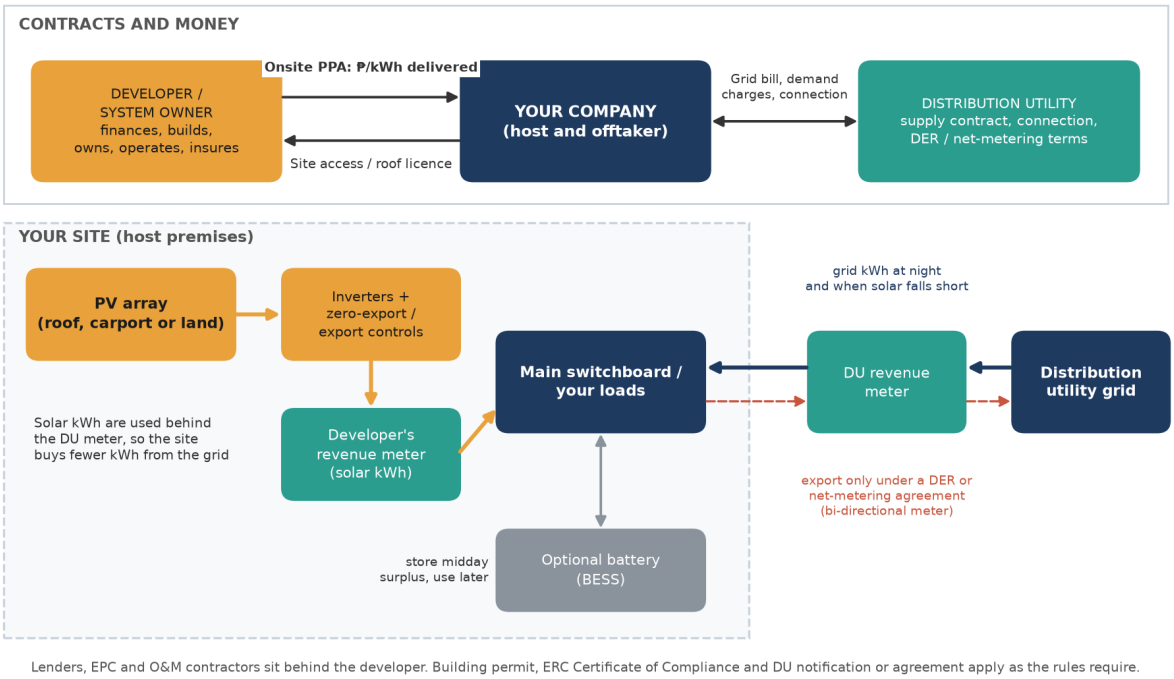


Figure 4.2. System and contract layout of a typical onsite PPA. Solar output is used behind the DU meter; exports, where allowed, need a separate agreement with the DU. Prepared by the author.

The saving comes from the gap between the PPA price and the cost of the grid kWh each solar kWh displaces. That avoided cost is higher than the generation charge alone. In October 2026, Meralco's generation charge was ₱10.2005 per kWh.[1] For a General Power secondary customer, the author's sum of all per-kWh items in Meralco's published schedule for that month, including system loss, distribution energy, universal charges, FIT-All and temporary refunds, was about ₱11.70 per kWh before VAT. Demand charges per kW and fixed monthly charges come on top.[2] Solar reduces the per-kWh items reliably. It reduces demand charges only if the monthly peak happens to coincide with strong sunshine every day of the month, which no CFO should assume. A single cloudy afternoon at the wrong hour can leave the peak, and the demand charge, unchanged.

4.2 Site suitability: roof, land, shading and load

Developers will screen your site themselves, but a CFO who understands the screening criteria negotiates from strength. Four physical questions decide whether an onsite PPA makes sense at all.

Roof structure and remaining life

A rooftop array adds permanent dead load and, more importantly in the Philippines, wind uplift. The National Structural Code of the Philippines (NSCP 2015) provides wind maps for the whole archipelago, with stricter design wind speeds for essential facilities such as hospitals than for ordinary buildings.[3] PAGASA reports that an average of about 20 tropical cyclones enter the Philippine Area of Responsibility each year, eight or nine of which cross the country.[4] Ask for a structural assessment signed by a licensed engineer that covers the roof sheets, purlins, trusses and connections, not only the main frame. Then compare the remaining life of the roof with the PPA term. If the roof will need replacing in year eight of a twenty-year contract, it is usually cheaper to re-roof before installation than to pay for removal and reinstallation later.

Land, carports and usable area

Usable area is always smaller than total roof area. Skylights, air-conditioning units, exhaust fans, walkways, fire-code setbacks and access routes all take space. As a rough check, a module with 21% efficiency produces about 210 W per square metre under standard test conditions, so each kWp needs roughly 4.8 square metres of module area before walkways and spacing (1,000 W ÷ 210 W per m^2). Ground-mounted systems on spare land and carports over parking areas can add capacity where roofs are weak or crowded. They bring their own costs, including foundations, fencing, land-use clearances and a longer cable run, and they make the arrangement harder to unwind if you later want to use the land for something else.

Shading and orientation

Shade costs more output than its area suggests, because one shaded module can drag down the output of others connected to it. Check for neighbouring buildings, water tanks, parapets, trees that will grow over the contract term, and any planned construction next door. Ask the developer to show the yield effect of the tilt and orientation it proposes, together with a shading study and a yield estimate from recognised software, and for the weather data used.

Load profile

The most underrated criterion is your own load profile. Solar output peaks around midday and falls to zero by early evening. A plant that runs two shifts on weekdays, a mall whose demand peaks after sunset, and a cold store that runs flat around the clock will each

absorb the same solar output very differently. Before inviting offers, pull at least twelve months of interval data from your DU meter, or install your own logger. That data is the foundation for sizing, and it is the best defence against an oversized proposal.

Figure 4.3 turns these criteria into a site-readiness scorecard. It is a screening tool, not an engineering study. Its purpose is to show the board, before any tender, whether the site is ready, which amber items need fixing first, and whether an offsite route would serve the company better.

Site-readiness scorecard for an onsite PPA

Criterion (weight)	Ready (5)	Conditional (3)	Not ready (1)	Example site score
Roof or land structure and remaining life (weight 15)	Engineer confirms capacity for added dead load and NSCP wind uplift; roof life ≥ PPA term or re-roofed first	Needs strengthening or re-roofing within term	Cannot carry load / roof near end of life	4 / 5
Unshaded usable area (weight 10)	Enough clear area for target size; little shading 08:00–16:00	Partial shading or fragmented roofs	Heavy shading; area well below target	4 / 5
Daytime load fit (weight 15)	Weekday daytime load ≥ solar peak; operations 6–7 days a week	Weekend dips or seasonal shutdowns	Load mostly at night	5 / 5
Site tenure and control (weight 15)	Owned, or lease runs beyond PPA term with landlord consent	Lease shorter than term; consent pending	Short lease, sale or relocation likely	3 / 5
Electrical and DU interface (weight 10)	Switchboard capacity, protection and metering space; DU process clear	Upgrades needed; DIS for export	Weak feeder or major rework	3 / 5
Permits and regulatory path (weight 10)	Clear path: building permit, ERC COC, DU notice/agreement	Some items unclear (e.g., export, landlord, LGU)	Unresolved legal or zoning issue	4 / 5
Credit and contract readiness (weight 10)	Audited financials; board authority; counsel engaged	Parent guarantee or security likely needed	Weak credit or no decision-maker	4 / 5
Access, safety and operations (weight 10)	Safe roof access, fire-code clearances, O&M windows agreed	Access restrictions (clean rooms, sterile areas)	No safe access	3 / 5
Future plans (expansion, sale, change of use) (weight 5)	No major change expected within term	Possible expansion; can be designed around	Planned demolition, sale or move	2 / 5

Weighted score = Σ (weight × score ÷ 5). 75–100: ready to tender. 55–74: fix the amber items first. Below 55: consider an offsite PPA via a RES, or revisit later.

Example site: 74 / 100 (conditional)

Illustrative example scores for a hypothetical site. Weights are the author's suggested starting point; adjust them to your company's priorities. A low score on structure, tenure or load fit is usually decisive on its own.

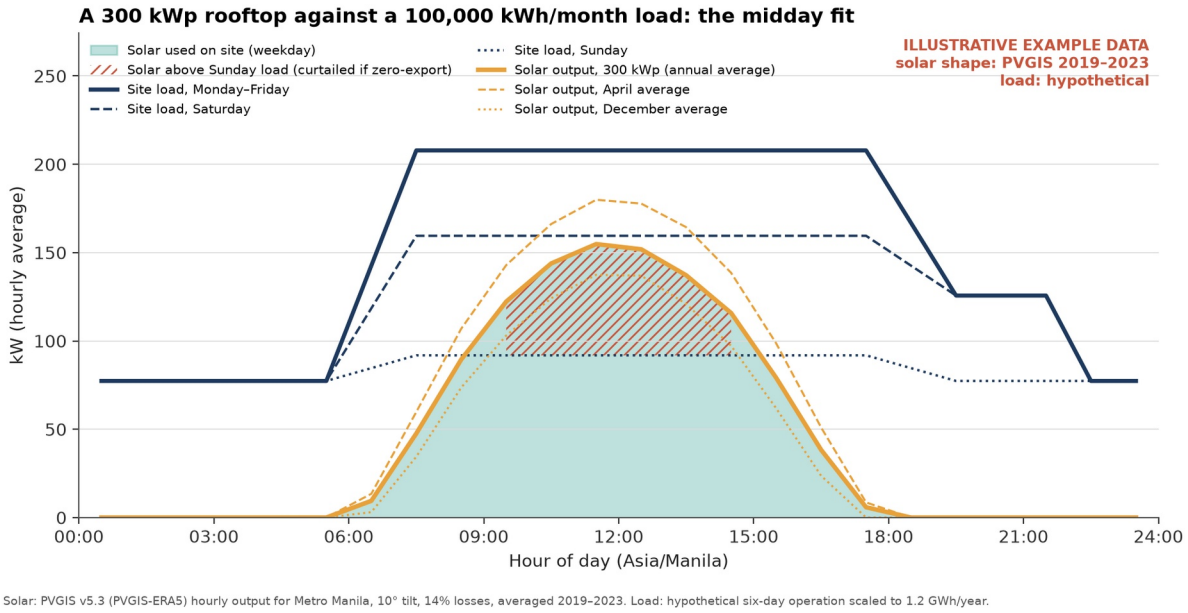
Figure 4.3. Site-readiness scorecard for an onsite PPA. Weights and the example scores are the author's suggestions for a hypothetical site (illustrative example data); adjust them to your own priorities.

4.3 Sizing against daytime load

The right size for a behind-the-meter system is set by your daytime load, not by your roof area or the developer's preference. A system that produces more than the site can use at midday will either export the surplus, if the rules and your agreements allow it, or curtail it, meaning the inverters throttle back and the energy is lost. Either way, the surplus is worth less to you than self-consumed solar.

Figure 4.4 shows the fit for a hypothetical site using 100,000 kWh a month, with a six-day operation. The solar curve is not invented. It is the hourly output of 1 kWp in Metro Manila from the European Commission's PVGIS model, averaged over 2019–2023 and scaled to 300 kWp. PVGIS puts the long-term annual yield at that location at about 1,330 kWh per kWp for a lightly tilted, south-facing array with 14% system losses.[5] On a typical weekday the site's load sits well above solar output all day. On Sundays, when the plant

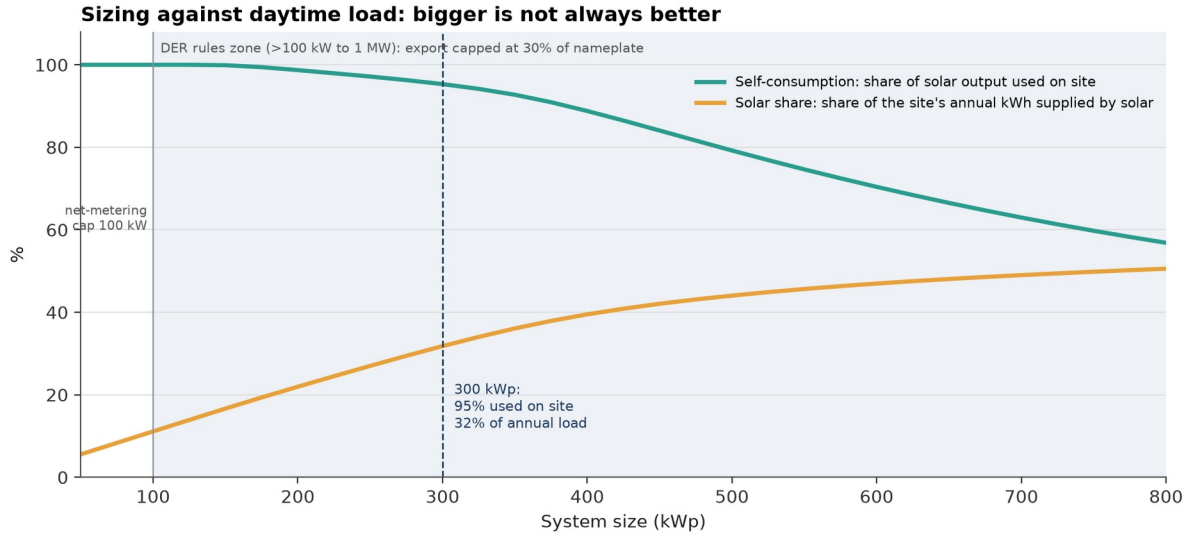
runs only its base load, midday output exceeds demand, and the hatched area is what a zero-export system would curtail.



Solar: PVGIS v5.3 (PVGIS-ERA5) hourly output for Metro Manila, 10° tilt, 14% losses, averaged 2019–2023. Load: hypothetical six-day operation scaled to 1.2 GWh/year.

Figure 4.4. Illustrative example data: average daily solar output of a 300 kWp system against a hypothetical 100,000 kWh/month load. Solar shape from PVGIS v5.3 (2019–2023);[5] load is hypothetical.

Figure 4.5 repeats the hourly calculation for every system size from 50 kWp to 800 kWp across five years of PVGIS hours. Up to about 200 kWp, almost every solar kWh is used on site. At 300 kWp, 95% is still self-consumed, and solar supplies about 32% of the site's annual electricity. Beyond that, each additional kWp adds less and less. At 600 kWp, solar would supply 47% of annual use, but 30% of its output would be surplus. The rule for a zero-export design is to size so that midday output rarely exceeds the lowest regular daytime load, typically Sunday or holiday load, and to accept a small amount of curtailment rather than none at all.



Illustrative example data. Same hypothetical load and PVGIS solar series as Figure 4.4; zero-export assumed (surplus is curtailed). Regulatory thresholds per ERC rules cited in the text.

Figure 4.5. Illustrative example data: self-consumption and solar share by system size for the same hypothetical site, assuming zero export. Net-metering and DER thresholds from ERC rules.[6,7]

> **The economist's note on sizing**
>
> *A developer earns on every kWh it delivers, so its incentive is to propose the largest system the roof can hold. Your incentive is the largest system your load can absorb at a price below the avoided grid cost. Under a pay-as-produced PPA, curtailed energy is the developer's loss, so expect it to price that risk in or to ask for 'deemed generation' payments. Decide the size from your own interval data before you read the proposals.*

4.4 Self-consumption, export and net-metering limits

If the system will sometimes produce more than the site uses, the next question is whether you may export the surplus and what it earns. The Philippine rules offer four routes, and the right one depends mainly on system size (Table 4.1).

Net metering is the best known, but it is designed for small systems. The Renewable Energy Act and the ERC's net-metering rules limit it to renewable systems of up to 100 kW. Exports are credited at the DU's blended generation cost, not the retail rate.[6] The ERC's 2025 amendments (Resolution No. 15, Series of 2025, issued 27 August 2025) now require credits to be banked and rolled over to later bills, make the REC meter optional, and give DUs 20 working days to complete interconnection once permits are in place.[6] In Meralco's October 2026 generation-charge breakdown, energy exported by net-metering customers was valued at ₱9.6372 per kWh, compared with a generation charge of ₱10.2005.[1] At the scale this book addresses, a system of 100 kW or less would supply only about a tenth of a 100,000 kWh/month site's needs, so net metering is rarely the main route.

For larger systems, the ERC's Distributed Energy Resources (DER) Rules, in force since 14 December 2022, allow on-grid renewable systems above 100 kW and up to 1 MW to consume and export. Exports are capped at 30% of nameplate capacity and are compensated at 75% of the DU's blended generation rate for systems above 100 kW up to 500 kW, and at 60% above 500 kW up to 1 MW.[7] A distribution impact study is required before an exporting DER is installed.[7] The same rules also cover DERs 'meant for end-user consumption only, so long as the DER owner and end-user are not the same entity', which describes the third-party onsite PPA exactly.[7]

The newest route is zero export. In DOE Department Circular No. DC2026-08-0017, signed on 28 July 2026, the DOE created a streamlined path for 'Self-Generating Facility Zero-Export Solar Systems' of any capacity that are equipped with controls preventing export. The end-user must notify its DU, obtain a building permit (unless the LGU confirms the existing one is sufficient), and secure an ERC COC, although households, clinics, hospitals and other medical facilities are exempt from the COC.[8] DUs may not impose pre-installation clearances, technical permits or inspection fees, and may not reduce the transformer and service-drop capacity assigned to the customer's registered load because

of the solar system.[8] Any electricity that leaks into the grid in breach of the zero-export requirement earns no credit.

Table 4.1. Regulatory routes for a customer-site solar system (as verified in October 2026)

Route	Size	Export	Key requirements	Fits an onsite PPA when
Net metering (ERC Res. 15, s. 2025)	Up to 100 kW	Yes; credited at the DU's blended generation cost; credits banked	Net-metering agreement with DU; bi-directional meter; ERC COC	The system is small; rarely the main route at 100,000 kWh/month
DER, consumption and export (ERC Res. 11, s. 2022)	Above 100 kW to 1 MW (on-grid)	Up to 30% of nameplate; paid 75% (≤500 kW) or 60% (>500 kW) of blended generation rate	Distribution impact study; DER agreement with DU; REC meter; ERC COC	Weekend or holiday surplus is material and worth exporting
DER, end-user consumption only (ERC Res. 11, s. 2022)	Any	No	Owner and end-user are different entities; connection agreement; ERC COC (five-year validity)	The classic third-party onsite PPA with no export
Zero-export SGF ZESS (DOE DC2026-08-0017)	Any	No; leaked exports uncompensated	Notice to DU; building permit; ERC COC unless household, clinic or hospital; export-prevention controls	Simplest path for a self-consuming system; confirm how it applies to third-party ownership

Prepared by the author from ERC Resolutions No. 11, s. 2022 and No. 15, s. 2025, and DOE DC2026-08-0017.[6,7,8] Rules change; confirm current requirements with your DU and counsel.

4.5 ERC and DOE rules on customer-site generation

Three further points from the rules matter to a CFO. First, the COC. The DER Rules require the end-user, owner or operator of a DER to secure a COC from the ERC before operation, to file the application at least 30 days before testing and commissioning, and to undergo an ERC technical inspection. A COC for a consumption-only DER is valid for five years.[7] Your contract should say who applies, who pays, and who bears the delay if the COC is late.

Second, the DOE's registration framework. The DOE's revised omnibus renewable energy guidelines (DC2024-06-0018) define an 'RE Project for Own Use' as one within or contiguous to the end-user's premises that supplies that end-user, whether installed by the end-user or by a third-party provider. Certain own-use projects need no DOE operating contract but must still meet DOE registration requirements.[9] The DOE's Expanded Roof-Mounted Solar Program (DC2023-12-0035), which applies to roof-mounted facilities above 100 kWp, adds further business models. In its 'lease-to-generate' option, for example, a rooftop solar provider leases a roof, sells the power to the DU or the grid, and needs its own Solar Energy Operating Contract.[10]

Third, the zero-export circular is new, and it is written around 'end-users' installing systems for their own use. It states that end-users bear the operational and financial risks of underperformance or failure, and it directs the ERC to issue implementing rules, including a simplified single-transaction COC process, within 90 days.[8] How it applies when a third party owns the system and sells you its output should be confirmed with counsel. So should the question of whether the ERC's implementing rules have been issued by the time you sign.

4.6 Sale of electricity or lease? The licensing question

This is the legal question every onsite PPA must answer, and the answer is not purely commercial. The Electric Power Industry Reform Act (EPIRA) declares the supply sector a business affected with public interest. Section 29 provides that, except for distribution utilities and electric cooperatives within their franchise areas, 'all suppliers of electricity to the contestable market shall require a license from the ERC'.[11] A developer selling kWh to you could therefore be characterised as a supplier, raising the question of a RES licence or other authorisation.

Two features of the current rules point towards a workable path, but neither removes the need for advice. The DER Rules expressly list permitted commercial arrangements between a DER owner or operator and an end-user. These include the sale of all energy produced, with or without transfer of ownership at the end of the term, a lease of the DER under which the end-user takes all the energy, and analogous arrangements 'subject to the limitations as provided under existing laws'.[7] Law-firm commentary written before these rules also noted that some onsite projects are structured as operating leases precisely to avoid characterisation as a supply of electricity.[12]

The label matters well beyond licensing. A sale of electricity is invoiced per kWh, and the seller may qualify for zero-rated VAT on renewable power if it is a registered RE developer.[13] A lease is invoiced as rent, may carry 12% VAT, and may put a right-of-use asset and lease liability on your balance sheet under PFRS 16. As Chapter 3 explained, even a per-kWh PPA can contain a lease if you control the use of a dedicated asset.[14] The structure also decides whose name goes on the COC and who is responsible for regulatory compliance. Treat the structure as a decision for your counsel, tax adviser and auditor together, and confirm it with counsel before signing. Do not accept a developer's assurance that its standard form 'has always been fine'.

4.7 Tariff structures: discount, fixed or escalating

Onsite PPA prices come in three basic forms, and each allocates grid-price risk differently (Table 4.2). The headline number on a proposal tells you little until you know which form it takes.

Table 4.2. Onsite PPA tariff structures compared

Structure	How the price moves	Who carries grid-price risk	What to negotiate
Discount to the grid rate	A fixed percentage below a defined grid reference each month	Shared: you always save the percentage, but your peso saving falls if grid prices fall	The exact reference (generation charge only, or all per-kWh charges?); a floor price, if any, and its level; data source and timing
Fixed (flat)	Same ₱/kWh for the whole term	You: large savings if grid prices rise, losses if they fall below the fixed price	Price level; any change-in-law pass-through; buyout values linked to the fixed price
Escalating	Starts lower and rises by a set percentage each year (or by an index)	You, increasingly over time: the escalator compounds whatever the grid does	Escalation rate versus a realistic grid outlook; cap; switch to a discount if the price ever exceeds the grid rate

Prepared by the author. Hybrid forms exist, for example a fixed price with a ceiling linked to the grid rate.

A discount-to-grid tariff is easy to explain to a board: the company always pays less than the grid for every solar kWh. But it also passes grid-price falls straight through to the developer's revenue. Developers therefore often add a floor price, which turns the structure back into a fixed price whenever grid prices are low. A fixed tariff gives budget certainty and captures the full upside if grid costs rise. An escalating tariff looks cheapest in year one. However, a 3% annual escalator raises the price by about 75% over twenty years ($1.03^{19} \approx 1.75$), and the comparison should be made over the whole term, not the first invoice. Section 4.12 tests all three against different grid-price paths.

4.8 Tenor, buyout, performance guarantees, O&M and insurance

Tenor and buyout

One Philippine developer has reported onsite PPA terms of 10 to 25 years.[15] Longer terms lower the tariff, because the developer recovers its capital over more years, but they lengthen your exposure to every risk in Section 4.10. Insist on a buyout schedule that sets out, year by year, the price at which you may buy the system. It should fall as the developer recovers its investment and should be set at, or close to, a nominal amount at the end of the term. Specify what happens at expiry: transfer to you, renewal, or removal at the developer's cost with the roof restored.

Performance guarantees

Under a pay-as-produced tariff, weak output already lowers your bill, but it also lowers your saving. A performance guarantee closes that gap. The developer guarantees a minimum annual output, adjusted for actual weather and for any curtailment caused by you, and pays liquidated damages for any shortfall, often calculated as the saving you lost

on each missing kWh. The developer cited above reports paying liquidated damages for output shortfalls.[15] Ask for the expected (P50) yield, the guaranteed level, the weather-adjustment method, and an allowance for module degradation consistent with field evidence. A widely cited NREL review of almost 2,000 field measurements found a median degradation rate of 0.5% a year.[16]

O&M and insurance

The developer should carry O&M: cleaning, inspections, inverter repairs and replacement, monitoring and spare parts. The PPA should set response times for faults and give you read-only access to the monitoring portal. Insurance should cover the system against fire, typhoon, flood and earthquake damage, and third-party liability. Clarify whether your own property policy needs an endorsement, because insurers will want to know about a third-party asset on your roof. Make the developer responsible for damage its system or its contractors cause to your building.

4.9 Interconnection with the distribution utility, and permits

Even a zero-export system touches your DU. Under DC2026-08-0017, a connected zero-export system needs written notice to the DU, and the DU may run a distribution impact study for its own planning, at its own cost, without delaying your installation.[8] An exporting system under the DER Rules needs a distribution impact study before installation and must meet the Philippine Electrical Code, the Philippine Distribution Code, IEEE 1547 and the DER interconnection standards. The DU may disconnect a non-compliant system and, with at least three days' notice, inspect protective devices and meters.[7] Meralco states that, as an initial reference subject to the study, the aggregate capacity of embedded generators on its feeders should not exceed 8 MW at 34.5 kV and 3 MW at 13.8 kV, so hosting capacity can constrain exporting systems on busy feeders.[17]

Beyond the DU, expect a building permit from the local government unit under the National Building Code, electrical plans signed and sealed by a professional electrical engineer under the Philippine Electrical Code, and the ERC COC where required.[8] Your PPA should give the developer responsibility for obtaining all permits in its name or yours, with a long-stop date after which you may terminate without penalty if permits or the COC have not been obtained. Fire-safety clearances and landlord consent, where you lease the premises, belong on the same list.

4.10 Risks and how to contain them

The risks of an onsite PPA are concentrated in the physical site and the long term. Table 4.3 summarises the main risks and the usual contractual answers.

Roof leaks

Every penetration is a potential leak, and typhoon rain will find it. Require installation methods approved by your roofer or roof manufacturer, a workmanship warranty for roof penetrations, and clear liability for water damage to stock and equipment, not just for the repair itself.

Relocation

If you may move, expand or sell the building within the term, negotiate relocation and assignment rights now. Options include moving the system to another site you own at an agreed cost, assigning the PPA to a buyer of the building, or buying out the system at the scheduled price.

Early termination

Termination payments are where onsite PPAs bite. If you terminate for convenience, or the developer terminates for your default, expect to pay the buyout amount or the developer's lost revenue, which can be large in the early years. Make sure termination works both ways: if the developer defaults or the system fails persistently, you should be able to terminate and require removal at its cost.

Under-performance

Weak output can come from soiling, shading, inverter faults, poor workmanship or faster degradation. The performance guarantee, monitoring access and O&M response times in Section 4.8 are the remedies. Watch for exclusions that quietly shift risk back to you, such as broad force majeure or 'host-caused' curtailment definitions that include your normal operations.

Table 4.3. Main risks of an onsite PPA and how to contain them

Risk	What can happen	Contractual answer
Roof leaks and building damage	Water damage to stock and equipment; disputes over cause	Approved mounting method; penetration warranty; developer liability for consequential damage; insurance
Roof replacement during term	Removal and reinstallation cost; lost output	Re-roof before installation; agreed removal and reinstallation procedure, cost and timing
Relocation, sale or change of use	Stranded system; termination payment	Relocation option; assignment to a building buyer; declining buyout schedule
Early termination	Large payment in early years	Termination amounts capped by year; mutual termination rights; developer-default remedies
Under-performance	Smaller savings than promised	Weather-adjusted output guarantee with liquidated damages; monitoring access; O&M response times
Typhoon and natural hazards	Damage to array and building;	Design to NSCP wind speeds; all-

	downtime	risk insurance; restoration deadlines
Regulatory or change in law	New charges, COC issues or recharacterisation	Change-in-law clause with clear sharing; licensing structure confirmed by counsel
Developer default or sale	Unpaid O&M; new owner with different priorities	Step-in and assignment terms; obligations binding on successors; your consent rights

Prepared by the author. Allocation is negotiable; the answers shown are common starting positions, not market standards.

4.11 Adding batteries

A battery energy storage system (BESS) changes what an onsite system can do. It can store midday surplus for use in the evening, raising self-consumption and allowing a larger array. It can shave the site's demand peak if the peak is predictable. With the right inverters and switchgear, it can also keep critical loads running during a grid outage, which a standard grid-tied solar system cannot do, because grid-tied inverters disconnect when the grid fails. The DER Rules expressly cover storage 'meant for end-user consumption only' where the owner and end-user are different entities, so a third party can own a battery at your site on the same basis as the solar array.[7]

Costs have fallen fast. BloombergNEF's 2025 survey found average lithium-ion pack prices of US$108 per kWh across all uses, and US$70 per kWh for stationary storage packs, 45% lower than in 2024.[18] Pack prices are only part of an installed system's cost, which also includes inverters, enclosures, cooling, fire protection and installation. Even so, the trend explains why developers have begun offering solar-plus-storage, particularly for sites with heavy round-the-clock operations such as food processing, logistics and cold storage.[15] Treat battery economics separately from solar economics. Ask exactly which savings the battery creates (shifted kWh, lower demand charges, avoided outage costs), how those savings are measured, and whether you pay for them through a per-kWh price, a monthly capacity fee or both.



Figure 4.6. Solar plus storage at a cold-storage facility: the battery shifts midday solar to evening refrigeration load and can support critical loads during outages. (AI-generated illustrative image; generic facility, not a real site.)

4.12 An illustrative savings case: about 100,000 kWh a month

Consider a hypothetical manufacturer in Metro Manila using 1.2 million kWh a year, or 100,000 kWh a month, with the six-day load profile of Figure 4.4. About two-thirds of its consumption falls between 06:00 and 18:00. Following Section 4.3, it hosts a 300 kWp zero-export system under a 20-year pay-as-produced PPA. Table 4.4 lists the assumptions. The solar yield comes from PVGIS. Everything else is hypothetical and chosen to illustrate the method, not to predict prices.

Table 4.4. Illustrative example data: assumptions for the savings case

Item	Assumption
Site load	1,200,000 kWh/year (100,000 kWh/month); hypothetical six-day profile; hourly peak about 208 kW; about 66% of kWh between 06:00 and 18:00
System	300 kWp rooftop, zero export; hourly output from PVGIS v5.3, Metro Manila, 2019–2023 (about 1,334 kWh/kWp a year); surplus curtailed
Solar used on site, year 1	about 381,500 kWh (95% of output; about 32% of annual load); 0.5% annual degradation
Avoided grid cost	₱11.00/kWh in year 1 (below the October 2026 Meralco GP secondary per-kWh sum of about ₱11.70, as a margin for charges that may not be avoided); base case rises 2% a year; tested at −2%, 0% and +4%
Tariff A: discount	20% below the avoided grid cost each month, no floor
Tariff B: fixed	₱8.50/kWh flat for 20 years
Tariff C: escalating	₱7.80/kWh in year 1, rising 3% a year
Basis	Buyer pays only for solar kWh used on site; savings pre-tax and VAT-exclusive; NPV at 10%; no demand-

	charge savings assumed

Illustrative example data. All prices, rates and the load profile are hypothetical; only the solar yield shape comes from PVGIS.[5] Not a quote or a forecast.

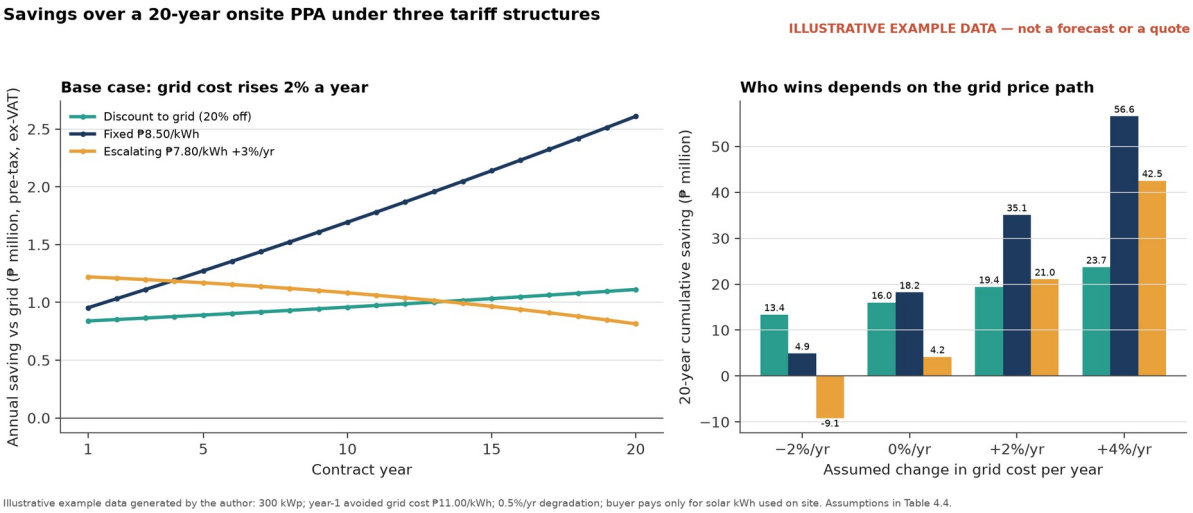


Figure 4.7. Illustrative example data: annual and cumulative savings over a 20-year onsite PPA under three tariff structures and four grid-price paths. Hypothetical inputs from Table 4.4; not a forecast or a quote.

Table 4.5. Illustrative example data: results of the savings case (₱ million)

Metric	A: 20% discount	B: fixed ₱8.50	C: ₱7.80 +3%/yr
Year-1 PPA payments	3.36	3.24	2.98
Year-1 saving	0.84	0.95	1.22
Year-1 saving as share of a ₱13.2 million grid bill	6.4%	7.2%	9.3%
20-year saving, grid +2%/yr (base)	19.4	35.1	21.0
NPV at 10%, base case	7.9	12.7	9.5
20-year saving, grid flat	16.0	18.2	4.2 (loss-making from year 13)
20-year saving, grid −2%/yr	13.4	4.9 (loss-making from year 14)	−9.1 (loss-making from year 8)
20-year saving, grid +4%/yr	23.7	56.6	42.5

Illustrative example data computed by the author's model (build/charts_ch4.py) from the hypothetical assumptions in Table 4.4. Rounded. Not a forecast, quote or market average.

Four lessons stand out, and they hold well beyond these particular numbers.

1. A headline discount is not a bill saving. A 20% discount on the 32% of kWh that solar supplies is a saving of about 6% on the total power bill. Present the board with the saving on the whole bill, not the discount on solar kWh.
2. The cheapest first-year price can be the most expensive contract. The escalating tariff saves the most in year one but the least, or nothing, if grid prices stop rising. Its 3% escalator compounds regardless of what the grid does.

3. The fixed tariff is a bet on grid prices. It wins handsomely if grid costs keep rising and loses if they fall for long enough. That is a hedge, which is valuable for budgeting, but the CFO should take it knowingly.
4. The discount structure is the most robust and has the least upside. It never loses money relative to the grid, because the developer shares the downside, but it also shares the upside. If the developer insists on a floor, the protection weakens exactly when you need it.

> **The economist's rule: test the price path, not the price**
>
> *Ask every bidder to show your saving under at least three grid-price paths, including one where grid costs fall. Compare the offers by NPV over the full term at your own discount rate, and look closely at the worst case. A contract you cannot live with in the bad scenario is not a hedge; it is a liability.*

4.13 Sector fit: hospitals, factories, malls and cold storage

The same contract works differently in different businesses. Table 4.6 summarises the fit, and the notes below add the points that most often decide the case.

Hospitals run around the clock, so almost all solar output is self-consumed. Under DC2026-08-0017, hospitals and other medical facilities installing zero-export systems are exempt from the ERC COC.[8] Their roofs, however, are crowded with plant, helipads and isolation exhausts, and the NSCP treats hospitals as essential facilities with stricter wind design.[3] Solar alone does not provide backup power. If resilience is the goal, specify islanding-capable inverters and storage, and coordinate with existing generator sets.

Factories are often the best fit. Weekday daytime loads are high and predictable, and roofs are large. The main issues are lightweight long-span roofs that need structural checks, weekend and holiday shutdowns that cause curtailment, and plans for expansion or relocation within the term.

Malls have large roofs and carparks, and air-conditioning loads rise with the sun. But demand stays high well after sunset, so solar covers a smaller share of the total. Tenant sub-metering, landlord-tenant arrangements and carport structures need early attention.

Cold storage runs a steady 24-hour refrigeration load that rises in the hottest hours, which suits solar well. Insulated sandwich-panel roofs may have limited load capacity, and any penetration that breaches the cold envelope is costly. Evening refrigeration load makes these sites natural candidates for batteries.



Figure 4.8. Hospitals combine continuous load with crowded roofs and strict structural requirements; carports can add capacity. (AI-generated illustrative image; generic building, not a real site.)

Table 4.6. Sector fit for onsite PPAs

Sector	Load fit with solar	Typical site constraints	Points to negotiate
Hospitals	Excellent: 24/7 load, almost no curtailment	Crowded roofs; essential-facility wind design; infection-control access rules	Islanding and storage for resilience; O&M access protocols; COC position under DC2026-08-0017
Factories	Very good on weekdays; weekend dips	Long-span light roofs; expansion plans; dust and soiling	Size to Sunday load or export under DER rules; relocation and expansion rights; cleaning frequency
Malls	Good at midday; evening peak not covered	Rooftop plant; carport structures; tenant metering	Carport cost sharing; tenant allocation of solar kWh; landlord consent where leased
Cold storage	Very good: steady load rising with heat	Sandwich-panel roofs; cold-envelope penetrations	Non-penetrating or approved mounting; battery option for evening load; liability for product loss

Prepared by the author. Generalisations; each site must be assessed on its own data.

4.14 Negotiation checklist

Use this checklist when you compare offers and mark up the developer's draft. Each item corresponds to a section of this chapter.

1. Size: system size justified by your own interval data, with expected self-consumption, solar share and curtailment shown.
2. Price: tariff form, reference rate, escalator, floor or ceiling, and your saving under at least three grid-price paths.
3. Volume: pay-as-produced, with no minimum take or deemed-generation payment except for curtailment you clearly cause.
4. Structure: sale of electricity or lease confirmed by counsel; VAT, COC holder and PFRS 16 treatment agreed with your tax adviser and auditor.
5. Term and buyout: term, year-by-year buyout schedule, and the end-of-term outcome (transfer, renewal or removal).
6. Performance: P50 estimate, weather-adjusted output guarantee, liquidated-damages rate and degradation allowance.
7. O&M: scope, response times, cleaning frequency, spare parts and monitoring access.
8. Insurance and liability: all-risk and third-party cover; developer liability for building damage, leaks and product loss.
9. Roof: structural certificate, roof-life plan, approved mounting method and penetration warranty.
10. Permits and interconnection: who obtains each permit and the COC, DU notice or agreement, and a long-stop date with a penalty-free exit.
11. Flexibility: relocation, assignment, expansion and early-termination amounts capped by year.
12. Change in law: how new charges, taxes or rule changes are shared.
13. Credit support: what the developer asks of you (guarantee, deposit) and what it offers in return (step-in rights, successor obligations).
14. Environmental attributes: who owns any renewable energy certificates and other environmental claims from the system's output.

Key takeaways

- An onsite PPA puts a developer-owned solar system behind your meter. You pay only for the kWh it delivers, and the saving is the gap between the PPA price and the grid charges each solar kWh avoids.
- Site facts decide the case: roof structure and remaining life, unshaded area, site tenure, and above all a daytime load that can absorb the output.
- Size against your lowest regular daytime load, using your own interval data. In the illustrative case, a 300 kWp system used 95% of its output on site and supplied about 32% of annual load. Doubling the size would add far less.
- Net metering is capped at 100 kW. Larger systems can export up to 30% of nameplate under the DER Rules at a discount to the blended generation rate, or run zero-export under DOE DC2026-08-0017.

- Whether the PPA is a sale of electricity or a lease affects licensing, VAT, the COC and the balance sheet. Confirm the structure with counsel before signing.
- Discount, fixed and escalating tariffs allocate grid-price risk differently. Compare offers over the full term and under several grid-price paths, never on the first-year price.
- Tenor, buyout, performance guarantees, O&M, insurance, relocation and termination terms can matter as much as the tariff.
- Batteries are becoming viable as pack prices fall. Evaluate them on their own savings, especially for 24-hour sites and those that need backup power.

Questions a CFO should ask

1. Do we have at least twelve months of interval data, and what share of our kWh falls in daylight hours on our lowest-load days?
2. Has a licensed engineer certified the roof for the added load and NSCP wind uplift, and will the roof last the full term?
3. Do we own the site, or does our lease run beyond the PPA term with the landlord's consent?
4. Which regulatory route applies (net metering, DER or zero-export), and who will obtain the COC and DU agreements?
5. Has counsel confirmed whether the contract is a sale of electricity or a lease, and what that means for licensing, VAT and PFRS 16?
6. What is our saving on the whole power bill, not just on solar kWh, under rising, flat and falling grid prices?
7. What would it cost to terminate, relocate or buy out the system in years one, five and ten?
8. What output does the developer guarantee, how is it weather-adjusted, and what does it pay for a shortfall?
9. Who pays for roof leaks, building damage and lost product, and is it insured?
10. Would a battery, or an offsite contract for the rest of our load, add more value than a larger array?

An onsite system can rarely cover more than a third or so of a busy site's electricity. For the rest, a growing number of Philippine businesses can now contract directly in the retail market. Chapter 5, "Offsite PPA through a Retail Electricity Supplier (RES)", explains how that market works, who qualifies, and how to evaluate a RES contract.

Notes

All sources were accessed on 17 October 2026 (Asia/Manila). Laws and regulations are cited from official texts or reputable professional summaries as indicated. Company offers and market reports describe individual companies' practices and are not market-wide statistics. Tax and accounting outcomes depend on facts and should be confirmed with your own advisers.

1. Manila Electric Company (Meralco), 'Breakdown of Generation Charge', October 2026 billing month, https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_gc_table_0.pdf (October 2026 generation charge ₱10.2005/kWh; export energy from net-metering customers ₱9.6372/kWh, 0.26% of total). As cited in Chapter 1.

2. Meralco, 'Summary Schedule of Rates, Effective October 2026 Billing', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_rate_schedule.pdf (General Power secondary per-kWh items: generation ₱10.2005, system loss ₱0.9301, distribution ₱0.1339, AWAT refunds ₱(0.1239) and ₱(0.1740), regulatory reset ₱(0.0023), universal charges, FIT-All ₱0.3359 and other items; per-kW transmission, ancillary and distribution charges; rates VAT-exclusive; demand classes Medium 40–200 kW, Large 200–750 kW). The ₱11.70/kWh figure is the author's sum of the per-kWh items for General Power secondary customers and excludes per-kW, fixed monthly and VAT amounts.

3. Association of Structural Engineers of the Philippines, National Structural Code of the Philippines 2015, Volume 1, Section 207 (Wind Loads) and Table 103-1 (occupancy categories, including essential facilities such as hospitals), text at https://archive.org/stream/NSCP2015/NSCP-2015_djvu.txt (wind contour maps for the entire archipelago by occupancy category; basic wind speed defined as a three-second gust at 10 m in Exposure C).

4. Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), 'Tropical Cyclone Information', https://www.pagasa.dost.gov.ph/climate/tropical-cyclone-information (average of 20 tropical cyclones per year in the Philippine Area of Responsibility, about 8 or 9 crossing the Philippines; peak season July to October).

5. European Commission Joint Research Centre, Photovoltaic Geographical Information System (PVGIS) v5.3, https://re.jrc.ec.europa.eu/pvg_tools/en/. Author's queries of 17 October 2026 for 14.55°N, 121.03°E (Metro Manila), 1 kWp crystalline silicon, 10° tilt, south-facing, 14% system losses: long-term average (PVGIS-ERA5, 2005–2023) 1,328 kWh/kWp per year (API: https://re.jrc.ec.europa.eu/api/v5_3/PVcalc?lat=14.55&lon=121.03&peakpower=1&loss=14&angle=10&aspect=0); hourly series for 2019–2023 used in Figures 4.4, 4.5 and 4.7 (API: https://re.jrc.ec.europa.eu/api/v5_3/seriescalc?lat=14.55&lon=121.03&peakpower=1&loss=14&angle=10&aspect=0&pvcalculation=1&startyear=2019&endyear=2023), averaging about 1,334 kWh/kWp per year. Data file saved as build/pvgis_manila_2019_2023_ch4.json.

6. Energy Regulatory Commission (ERC), Resolution No. 15, Series of 2025, '2025 Amended Rules Enabling the Net-Metering Program for Renewable Energy', issued 27 August 2025, as reported by GMA News, 'ERC amends net-metering program rules', 2 September 2025, https://www.gmanetwork.com/news/money/economy/957709/erc-amends-net-metering-program-rules/story/ (facilities not exceeding 100 kW; banking and rollover of credits; optional REC meter), and summarised by Ocampo & Suralvo Law Offices, 'The Energy Regulatory Commission Amends the Net-Metering Rules for Renewable Energy', October 2025, https://www.ocamposuralvo.com/2025/10/24/the-energy-regulatory-commission-amends-the-net-metering-rules-for-renewable-energy/ (export rate based on the DU's blended generation cost excluding other adjustments; 20 working days for interconnection). The GMA report describes the credit as equivalent to the retail rate; the law-firm summary and the ERC's earlier statements on the 2019 rules describe it as the blended generation cost, which this chapter follows. Resolutions listed at Meralco, 'Net-Metering Resource Library', https://company.meralco.com.ph/advocacies/net-metering/resource-library.

7. ERC, Resolution No. 11, Series of 2022, 'Rules Governing Distributed Energy Resources (DER)', effective 14 December 2022, as described by Meralco, 'Renewable DER Exporting', https://company.meralco.com.ph/products-services-and-programs/distributed-energy-resources (three covered DER types; 30% export cap; compensation at 75% and 60% of the blended generation rate), and summarised by Ocampo & Suralvo Law Offices, 'ERC Issued Distributed Energy Resources Rules', December 2022, https://www.ocamposuralvo.com/updates/erc-issued-distributed-energy-resources-rules.html (COC before operation; application 30 days before testing; five-year validity for own-consumption DERs; permitted commercial arrangements including sale of all energy, sale with transfer of ownership, and lease; interconnection standards including PEC, PDC and IEEE 1547; distribution impact study for exporting DERs; DU inspection on three days' notice).

8. Department of Energy (DOE), Department Circular No. DC2026-08-0017, 'Policy Guidelines for Self-Generating Facility Zero-Export Solar Systems and Micro-Solar Systems for Own-Use', https://prod-cms.doe.gov.ph/documents/d/guest/dc2026-08-0017-pdf (Sections 3.1, 4.2–4.4, 5.3–5.4, 6.1–6.2 and 7; preamble references to the National Building Code, the Philippine Electrical Code and the EVOSS Act); DOE, 'DOE Simplifies Rules for Own-Use Solar, Expands Access for Filipino Consumers', https://doe.gov.ph/doe-simplifies-rules-for-own-use-solar-expands-access-for-filipino-consumers; Manila Bulletin, 'DOE scraps permits, fees for home, business solar panels', 6 August 2026, https://mb.com.ph/2026/08/06/doe-scraps-permits-fees-for-home-business-solar-panels (signed 28 July 2026).

9. Chambers and Partners, 'Renewable Energy 2026 – Philippines: Law and Practice', https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines (DOE DC2024-06-0018 definition of 'RE Project for Own Use'; certain own-use projects require no operating contract but must comply with DOE registration requirements). See also Chapter 2.

10. DOE Department Circular No. DC2023-12-0035, 'Prescribing the Policy and General Framework on the Expanded Roof-Mounted Solar Program', as summarised by Enviliance ASIA, 'Philippines promulgates rules on rooftop photovoltaics', https://enviliance.com/regions/southeast-asia/ph/report_11391 (roof-mounted facilities above 100 kWp; supply contingency, lease-to-generate and peer-to-peer models), and Philippine Solar and Storage Energy Alliance, 'Rooftop Solar Market Report', https://pssea.ph/wp-content/uploads/2025/08/Rooftop-Solar-Market-Report.pdf (lease-to-generate providers obtain a Solar Energy Operating Contract and sell to the DU or grid).

11. Republic Act No. 9136, Electric Power Industry Reform Act of 2001 (EPIRA), Section 29 (Supply Sector), https://lawphil.net/statutes/repacts/ra2001/ra_9136_2001.html.

12. Bird & Bird, 'Onsite PPAs: Perspectives from key ASEAN economies', July 2021, https://www.twobirds.com/-/media/pdfs/news/articles/2021/onsite-ppas---asean6---july-2021.pdf (Philippine section: RES licence for suppliers to the contestable market; operating-lease alternative). Predates the DER Rules and later DOE circulars. As cited in Chapter 2.

13. Republic Act No. 9513, Renewable Energy Act of 2008, Section 15(g), https://www.lawphil.net/statutes/repacts/ra2008/ra_9513_2008.html (zero-rated VAT on sale of power from renewable sources by registered RE developers); Bureau of Internal Revenue, Revenue Regulations No. 7-2022, as summarised by Ablola, Saribong & Gueco Law, 30 June 2022, https://www.makatilawfirm.com/2022/06/30/rr-no-7-2022-tax-incentives-and-compliance-rules-for-renewable-energy-developers-suppliers-and-biomass-producers-in-the-philippines/. As cited in Chapter 3.

14. IFRS Foundation, IFRS 16 Leases, Illustrative Examples, Example 9A (contract for the output of a solar farm designed by the customer contains a lease), https://www.ifrs.org/content/dam/ifrs/publications/html-standards/english/2022/issued/ifrs16-ie.html. As cited in Chapter 3.

15. Power Philippines, 'Zero-capex model gains ground as firms shift to solar without spending a peso', 3 January 2026, https://powerphilippines.com/zero-capex-model-gains-ground-as-firms-shift-to-solar-without-spending-a-peso/ (one developer's reported practice: 10- to 25-year PPAs; developer bears capital, performance, maintenance, insurance and typhoon-related repair costs; liquidated damages for output shortfall; integration of storage for 24-hour operations such as food processing, logistics and cold storage). One developer's practice, not a market-wide statistic.

16. D. C. Jordan and S. R. Kurtz, 'Photovoltaic Degradation Rates — An Analytical Review', Progress in Photovoltaics, 2013 (NREL preprint NREL/JA-5200-51664), https://docs.nlr.gov/docs/fy12osti/51664.pdf (nearly 2,000 degradation rates; median 0.5% per year, mean 0.8% per year).

17. Meralco, 'Renewable DER Exporting', section 8, 'Hosting Capacity for DER', https://company.meralco.com.ph/products-services-and-programs/distributed-energy-resources (distribution impact study required for connection to 13.8 kV or 34.5 kV feeders; initial reference of 8 MW and 3 MW aggregate embedded generation for 34.5 kV and 13.8 kV feeders respectively).

18. BloombergNEF, 'Lithium-Ion Battery Pack Prices Fall to $108 Per Kilowatt-Hour, Despite Rising Metal Prices', 9 December 2025, https://about.bnef.com/insights/clean-transport/lithium-ion-battery-pack-prices-fall-to-108-per-kilowatt-hour-despite-rising-metal-prices-bloombergnef/ (2025 average pack price US$108/kWh; stationary storage packs US$70/kWh, 45% lower than 2024).

Figure and image credits

Figure 4.2 and Tables 4.1–4.3 and 4.6 were prepared by the author from the sources noted. Figure 4.3 (site-readiness scorecard) uses the author's suggested weights and illustrative example scores. Figures 4.4, 4.5 and 4.7 and Tables 4.4–4.5 use illustrative example data generated by the author's model (build/charts_ch4.py); only the solar output shape is real data, from PVGIS v5.3 (European Commission JRC). Figures 4.1, 4.6 and 4.8 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting or investment advice. Regulations and tariffs change; verify current rules with the ERC, DOE, IEMOP and your distribution utility before making decisions.

CHAPTER 5

Offsite PPA through a Retail Electricity Supplier (RES)

Eligibility, switching, bill components, contract structures, risks and how to run a RES tender

---

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: How an offsite PPA works · Eligibility: RCOA at 100 kW and GEOP at 50 kW · Aggregation and contestability · The switching process and timeline · What stays with the DU and NGCP · An illustrative DU vs RES bill · Fixed, indexed, blended and time-of-use contracts · RECs, the RPS and the WESM RE market · Supplier of Last Resort, cooling-off and credit support · Risks · How to run a RES tender · Negotiation checklist · Sector fit · Key takeaways and CFO questions



Figure 5.1. In an offsite PPA the plant can be hundreds of kilometres away. Its output enters the transmission grid, and your supplier matches it to your consumption in the market's settlement accounts, not with a dedicated wire. (AI-generated illustrative image; generic landscape, not a real site.)

Chapter 4 showed that a rooftop or carport system can rarely cover more than about a third of a busy site's electricity, and only during daylight. The rest still comes from the grid, and for most Philippine businesses it is still bought from the distribution utility (DU) at a regulated price that the company cannot negotiate. This chapter is about changing that. Under Retail Competition and Open Access (RCOA), an eligible business can buy its electricity from a Retail Electricity Supplier (RES) of its choice, on contract terms it negotiates. Under the Green Energy Option Program (GEOP), it can buy from an RE Supplier that sources renewable energy. Either way, the plant is elsewhere, the wires stay the same, and the contract becomes your main tool for managing the largest part of your power bill.

In June 2026 this door opened much wider. The eligibility threshold for RCOA fell from 500 kW to 100 kW of average monthly peak demand. The ERC estimated that, as of August 2026, about 15,183 customers were eligible for the competitive retail market and about 12,491 of them had not yet switched. More than 11,500, or about 76%, were in the newly opened 100–499 kW segment.[1,2] Many companies using 100,000 kWh a month or more are in that group. Few of them have run an electricity tender before.

Terms used in this chapter

RES: Retail Electricity Supplier, an entity licensed by the ERC to sell electricity to contestable customers under RCOA. In this book RES always means Retail Electricity Supplier.

RE Supplier: an entity authorised by the DOE to supply renewable energy to end-users under GEOP.

Contestable customer: an end-user eligible to choose its supplier. A captive customer is still supplied by its DU at regulated rates.

WESM: the Wholesale Electricity Spot Market, operated by the Independent Electricity Market Operator of the Philippines (IEMOP).

CRB: Central Registration Body, the IEMOP function that processes switches between suppliers.

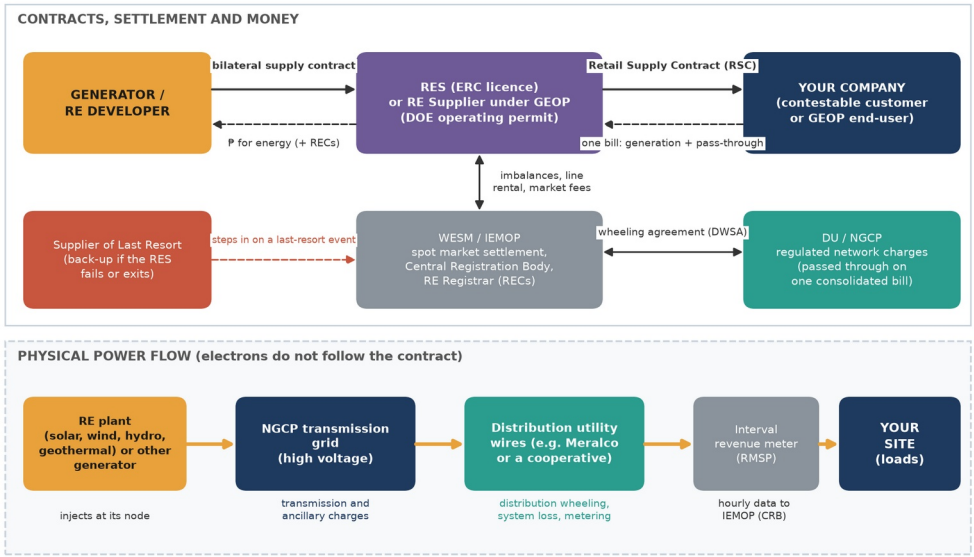
RSC: Retail Supply Contract, the contract between you and your RES or RE Supplier.

SOLR: Supplier of Last Resort, the ERC-designated back-up supplier if your RES fails or exits.

REC: Renewable Energy Certificate, a market instrument representing the renewable attributes of one MWh of generation.

5.1 How an offsite PPA works in the Philippines

An offsite PPA in the Philippine context is, in practice, a retail supply contract. Your company does not normally sign directly with a power plant. It signs with a RES (under RCOA) or an RE Supplier (under GEOP). That supplier, in turn, buys power from one or more generators under bilateral contracts, from its own affiliated plants, or from the spot market. Figure 5.2 shows the two layers that every CFO should keep separate: the physical flow of power and the flow of contracts and money.



RES collects network charges as a collecting agent for the DU/NGCP. Your company also signs a metering service agreement with the RMSP (usually the DU). Prepared by the author from the ERC Omnibus Rules (Res. No. 13, s. 2024).

Figure 5.2. Power and contract flow of an offsite PPA through a RES or RE Supplier. Power follows the physics of the grid; the contract determines who pays whom. Prepared by the author from the ERC Omnibus Rules.[3]

Physically, nothing changes at your site. The generator injects power into the NGCP transmission grid at its own connection point. Your DU's wires continue to deliver power to your meter, as before. The electrons you consume come from whatever plants happen to be running nearby. What changes is the accounting. Your interval meter records your consumption every hour, the DU acting as Retail Metering Service Provider (RMSP) sends that data to IEMOP, and IEMOP settles the difference between what your supplier contracted and what you used through WESM.[3,4]

Contractually, four agreements matter. The RSC between you and your supplier sets the price and terms. Your supplier signs a distribution wheeling service agreement (DWSA) with your DU, so that it can use the DU's network to serve you. You or your supplier sign a metering service agreement with the RMSP. And your supplier must be a registered WESM member, so that its imbalances can be settled in the spot market.[3] Under the single-billing arrangement now standard in the Philippines, you receive one consolidated bill from your supplier. It shows the supplier's generation and supplier charges together with the DU's and NGCP's regulated charges, which the supplier collects as an agent and passes on.[3,5]

Two kinds of supplier serve this market. A RES holds a licence from the ERC under the Electric Power Industry Reform Act (EPIRA).[6] It may sell power from any source: coal, gas, renewables or a mix. An RE Supplier under GEOP holds a DOE operating permit and must source renewable energy for its GEOP customers. IEMOP describes the GEOP objective as ensuring compliance with the 100% RE sourcing requirement for all GEOP end-users.[3,7] Some companies hold both authorisations. A RES can also offer a renewable product under RCOA, but there the renewable content is whatever the contract and its certificates say it is, so read both carefully.

5.2 Who is eligible: RCOA at 100 kW and GEOP at 50 kW

Eligibility is based on demand, not consumption. The ERC lowered the RCOA and Retail Aggregation Program (RAP) threshold to an average monthly peak demand of at least 100 kW in Resolution No. 22, Series of 2025. IEMOP's RCOA Threshold Bulletin No. 2026-01 confirms that the 100 kW threshold took effect on 26 June 2026 and that the eligibility rules in Module D of the Omnibus Rules continue to apply.[1] The ERC has said that 100 kW is not the final target and that its long-term goal is to extend choice to households.[2]

The GEOP threshold is lower. The DOE's revised GEOP rules, Department Circular No. DC2026-01-0002, became effective on 21 February 2026 and lowered the GEOP threshold to 50 kW. Existing end-users qualify with a recorded monthly average peak demand of 50 kW or more over the past twelve months. New end-users qualify with a projected peak of at least 50 kW if they choose an RE Supplier and apply for distribution wheeling services with their host DU.[7,8] The circular also requires an annual review of the threshold, starting twelve months after it took effect, with possible phased reductions to 20 kW, 10 kW and eventually zero.[8]

For orientation, a site using 100,000 kWh a month at a load factor of about 55% would have a peak demand of roughly 250 kW (100,000 ÷ 730 hours ÷ 0.55). It would qualify for both RCOA and GEOP. A site with a flatter load, such as a cold store running around the clock, has a lower peak for the same kWh, but not below its average load. At 100,000 kWh a month, that average is about 137 kW (100,000 ÷ 730 hours), and peak demand is typically higher, so even a flat site of this size clears the 100 kW RCOA threshold. Smaller sites, or loads split across several meters, can fall below it and may qualify only for GEOP, or for RCOA through aggregation. Check your demand at each meter, not your kWh.

Table 5.1. Routes to an offsite supply contract (as verified in October 2026)

Route	Who can join	Supplier	Supply source	Key rule
RCOA / Competitive Retail Electricity Market (CREM)	Average monthly peak demand of at least 100 kW, per meter, over the preceding 12 months, or forecast via load profiling	RES licensed by the ERC (or a Local RES)	Any source, as agreed in the RSC	Switching is close to one-way: reversion to the DU only if demand falls below 25% of the threshold for six months, with ERC approval
Retail Aggregation Program (RAP)	Smaller end-users in a contiguous area whose combined average peak over the preceding three months meets the 100 kW threshold	RES acting as aggregator	Any source	Members cannot opt out during the contract term
GEOP	Average monthly peak demand of at least 50 kW over	RE Supplier with a DOE operating permit	Renewable energy	RECs are Voluntary RECs allocated to the end-user

	the past 12 months; aggregation allowed for smaller users in a contiguous area			

Sources: ERC Resolution No. 22, Series of 2025, via IEMOP RCOA Threshold Bulletin No. 2026-01; ERC Omnibus Rules, Modules D2, D4, K1 and K3; DOE DC2026-01-0002, via IEMOP Advisory of 7 September 2026.[1,3,7]

Aggregation

If your company has several smaller sites, or sits in a business park, aggregation may get you in. Under the Omnibus Rules, end-users in a contiguous area, such as a subdivision, business district, economic zone, condominium, commercial complex or mixed-use development, may combine their demand to reach the threshold. So may metering points in the same DU franchise area that belong to the same owner.[3] As of August 2026, the ERC reported 311 retail aggregated groups with 4,997 members, averaging about 60 members with about 50 kW each. It has allowed, for example, the aggregation of private schools that belong to one association and are located within one local government unit.[2] The trade-off is commitment: no member may leave the group during the contract term.[3]

Contestability certification

There is no longer a separate certificate to apply for. Under Module D5 of the Omnibus Rules, the monthly bill from your DU serves as proof of eligibility in place of a certificate of contestability. Once your average peak reaches the threshold, the DU must print a notice on your bill stating that you are an eligible end-user for GEOP and, where applicable, for the competitive retail market.[3] If your bill does not show it but your interval data suggest you qualify, raise it with your DU in writing.

5.3 The switching process and timeline

Switching is a regulated sequence with fixed minimum lead times. Figure 5.3 lays out the main steps of an initial switch, counted back from the intended switch date. The single longest step is the first. Your notice of intention to switch must be received by your DU at least 90 calendar days before the intended switch date.[3] Everything else must fit inside that window.

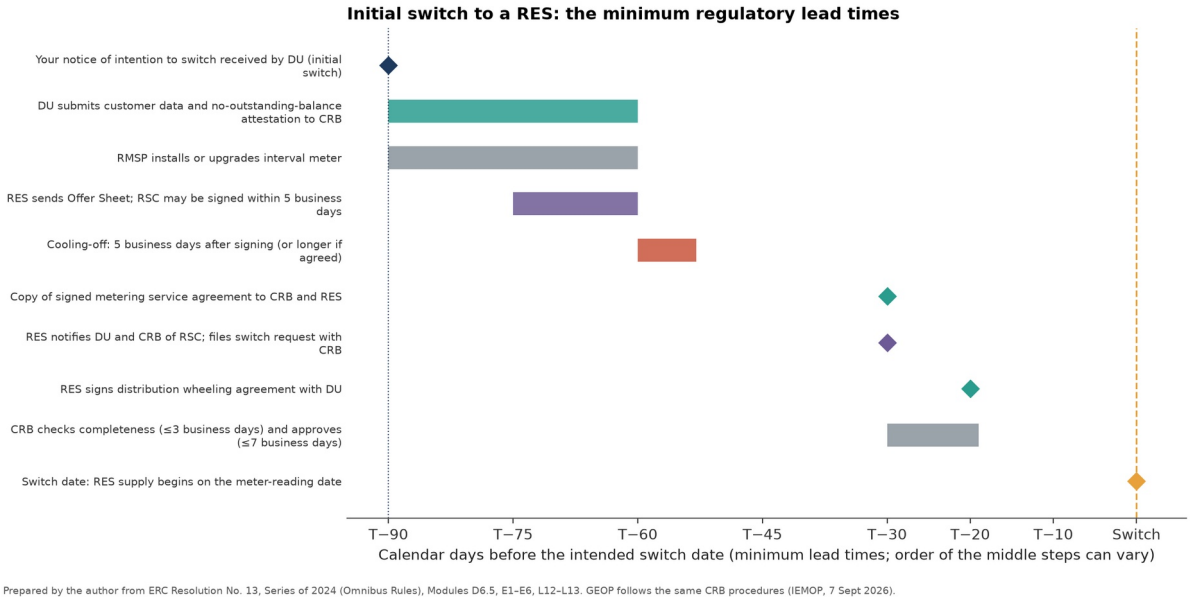


Figure 5.3. Minimum regulatory lead times for an initial switch to a RES. GEOP switches follow the same CRB procedures. Prepared by the author from ERC Resolution No. 13, Series of 2024.[3,7]

Within that window, the DU must submit your customer information and an attestation that you have no outstanding balance to the CRB within 30 days of receiving your notice. You cannot make an initial switch while you owe the DU money, although you are entitled to a refund of your bill deposit when you migrate. The RMSP must install or upgrade an interval meter within 30 days of your notice, or up to 60 days for an aggregated group. The meter's cost is borne by you.[3] Your supplier must notify the DU and the CRB of the signed RSC at least 30 days before the switch, and sign the wheeling agreement with the DU at least 20 days before. It files the switch request with the CRB at least 30 days before the switch. The CRB has up to three business days to check completeness and up to seven business days from a complete submission to approve the switch.[3] Supply begins on the agreed date, but not before the cooling-off period has ended.

Two practical lessons follow. First, start early. The 90-day clock and the tender itself add up to roughly five to six months from a board decision to the first RES bill. Second, assign one owner. A switch involves your finance team, your facilities team, the DU, the RMSP, the supplier and IEMOP, and missing documents stop the clock.



Figure 5.4. Switching requires an ERC-type-approved interval meter with telemetry, installed by the Retail Metering Service Provider at the customer's cost. Hourly data from this meter drive both your bill and the market settlement. (AI-generated illustrative image; generic facility, not a real site.)

5.4 What stays with the DU and NGCP

The most common misunderstanding about retail competition is the size of the saving. Only the generation part of the bill is contestable. Everything that pays for the wires, the grid, system losses, subsidies and government charges stays regulated. Module F1.2 of the Omnibus Rules lists the regulated items that still appear on a retail customer's bill: transmission, distribution, metering, system loss, local franchise tax, real property tax, senior citizen and lifeline subsidies, VAT, universal charges, the FIT-All charge, and other ERC-approved charges.[3]

- Wheeling (distribution) charges. Your DU charges for using its network, through distribution charges per kWh and per kW and a metering charge. For a Meralco General Power secondary customer in October 2026, these were ₱0.1339 per kWh, ₱232.20 per kW, and a monthly metering charge that depends on the demand class.[5]
- Transmission and ancillary charges. NGCP's transmission charges, and the cost of the reserves that keep the grid stable, are passed through per kW of demand for this class: ₱177.19 and ₱196.69 per kW respectively in October 2026.[5]
- System loss. The cost of energy lost on the DU's network is recovered as a regulated charge: ₱0.9301 per kWh for Meralco in October 2026.[5]
- Universal charges and FIT-All. Charges for missionary electrification, environmental programmes and stranded debts (together ₱0.3850 per kWh), and the feed-in tariff allowance (₱0.3359 per kWh), applied to all customers in October 2026. Meralco notes

that for contestable customers, FIT-All and generation are billed by their RES rather than the DU.[5]

- Line rental. This is a WESM charge, not a DU charge. IEMOP defines it as the cost associated with delivering bilateral contract quantities through the grid. The ERC describes it, now as the Bilateral Line Loss and Congestion Cost, as a settlement adjustment reflecting price differences between the point of generation and the point of delivery caused by losses and congestion. For a captive customer it is hidden in the generation charge. For a RES customer it is either included in the RES price or passed through separately, depending on the contract.[9]

Figure 5.5 shows what this means for a hypothetical company using 100,000 kWh a month with a billing demand of 250 kW, using Meralco's published General Power secondary rates for October 2026 and two hypothetical supply prices. Table 5.2 gives the numbers.

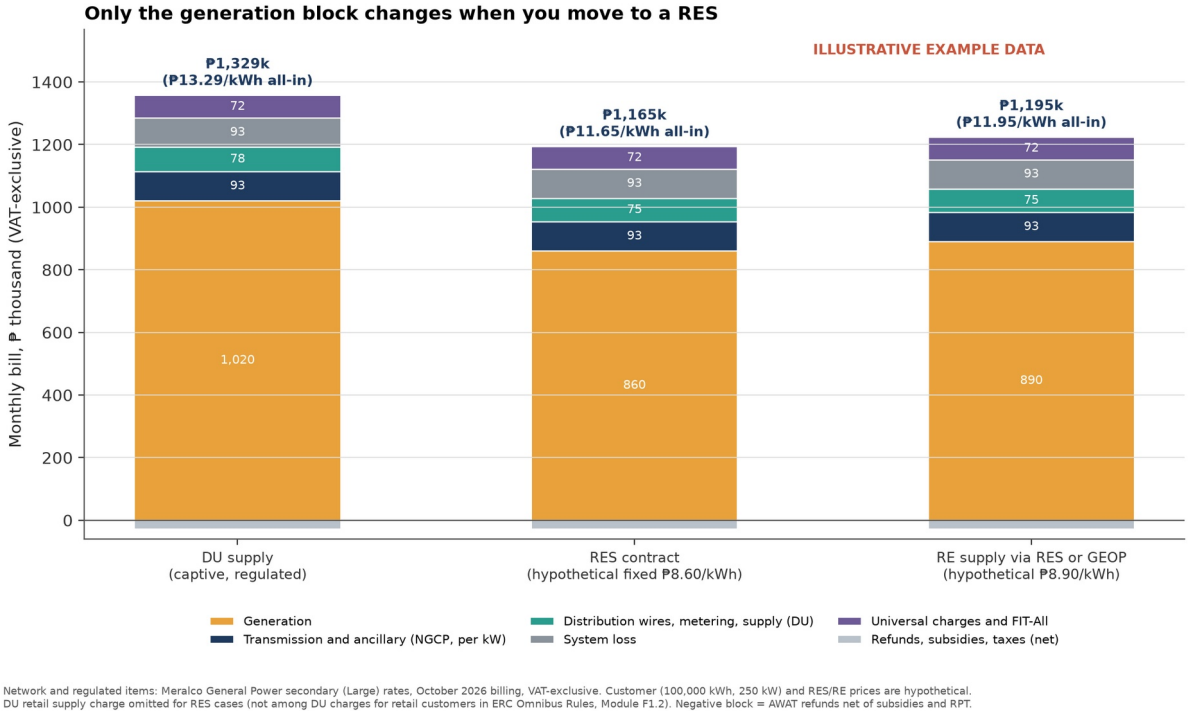


Figure 5.5. Illustrative example data: monthly bill components under DU supply, a hypothetical RES contract and a hypothetical renewable supply contract. Network items use Meralco's October 2026 rates;[5] customer data and supply prices are hypothetical.

Table 5.2. Illustrative example data: DU supply versus RES and RE offsite contracts for about 100,000 kWh a month (₱, VAT-exclusive)

Bill component	DU supply (captive)	RES contract (hypothetical ₱8.60/kWh)	RE supply (hypothetical ₱8.90/kWh)
Generation	1,020,050 (₱10.2005/kWh)	860,000	890,000
Transmission and ancillary (NGCP, 250 kW)	93,470	93,470	93,470
Distribution, metering and DU supply charge	78,324	74,892 (no DU supply charge)	74,892

System loss	93,010	93,010	93,010
Universal charges and FIT-All	72,090	72,090	72,090
Refunds, subsidies and real property tax (net)	−28,190	−28,190	−28,190
Total per month	1,328,754	1,165,272	1,195,272
All-in cost per kWh	₱13.29	₱11.65	₱11.95
Saving versus DU per month (per year)	–	163,482 (≈1.96 million)	133,482 (≈1.60 million)

Illustrative example data computed by the author (build/charts_ch5.py). Network and regulated rates: Meralco General Power secondary, Large demand class, October 2026 billing.[5] Customer load (100,000 kWh; 250 kW) and supply prices are hypothetical, not market quotes. RES cases assume the price is all-in (including line rental and market fees), that the DU's retail supply charge no longer applies, and that system loss is unchanged; confirm each with your DU and supplier. Excludes VAT and local franchise tax.

Three points stand out. First, even a large cut in the generation price moves the total bill by less. In this example a 16% lower generation price reduces the total bill by about 12%, because nearly a quarter of the bill is regulated and does not change. Second, the break-even is precise and worth computing. Here, any all-in RES generation price below about ₱10.23 per kWh beats the October 2026 DU bill, and every ₱0.50 per kWh is worth ₱50,000 a month, or ₱600,000 a year. Third, the comparison is only as good as the month you pick. October 2026 was the highest Meralco generation charge in the series this book has tracked since 2022.[10] A RES offer must be judged against where the DU price is likely to go over the contract term, not against a single month.

The economist's note on market averages

PEMC reports that the weighted average generation rate of RES and Local RES customers was ₱5.33 to ₱5.41 per kWh in the first half of 2026, while the average generation rate of the five largest DUs rose from ₱6.12 to ₱7.04 per kWh, and it estimated CREM savings of ₱9.03 billion in the second quarter of 2026.[11] These are averages of contracts signed at different times, many when wholesale prices were lower. A new contract will be priced off today's forward market and your own load shape. PEMC itself cautions that savings are not guaranteed each quarter. Use market averages to set expectations, never to set your budget.

5.5 RES contract structures: fixed, indexed, blended and time-of-use

The RSC must state the pricing structure, all prices and charges, and, if the price is variable, its adjustment mechanism. The supplier must declare that the price is inclusive of all costs connected with the sale of electricity.[3] Within those rules, four structures dominate (Table 5.3).

Table 5.3. RES contract structures compared

Structure	How the price is set	Who carries price risk	Best suited to
Fixed	One price per kWh for the term, or fixed steps by year	Supplier, which hedges and charges a premium for it	Companies that value budget certainty; thin margins; boards that

			dislike surprises
Indexed (WESM-linked or fuel-linked)	A reference such as WESM prices, a fuel index or the DU's generation charge, plus or minus an agreed adder or discount	You	Companies with flexible load, strong balance sheets and the capacity to monitor markets
Blended	Part of the volume at a fixed price, the rest indexed; sometimes with a cap and floor	Shared, in proportion to the blend	Most mid-sized buyers: limits the downside while keeping some of the benefit of low spot prices
Time-of-use	Different prices for peak and off-peak periods, or by hour band	Depends on whether each band is fixed or indexed	Sites that can shift load to cheaper hours, or whose load is mainly at night or on weekends

Prepared by the author. A discount to the DU's generation charge is a form of indexation: you inherit the DU's fuel, foreign-exchange and WESM exposure, minus the discount.

Figure 5.6 tests these structures against what actually happened. It applies hypothetical contract terms to Meralco's actual monthly generation charge and to the actual average cost of Meralco's WESM purchases, used as a proxy for a spot index, for the 32 billing months between January 2024 and October 2026 for which this book has data.[10]

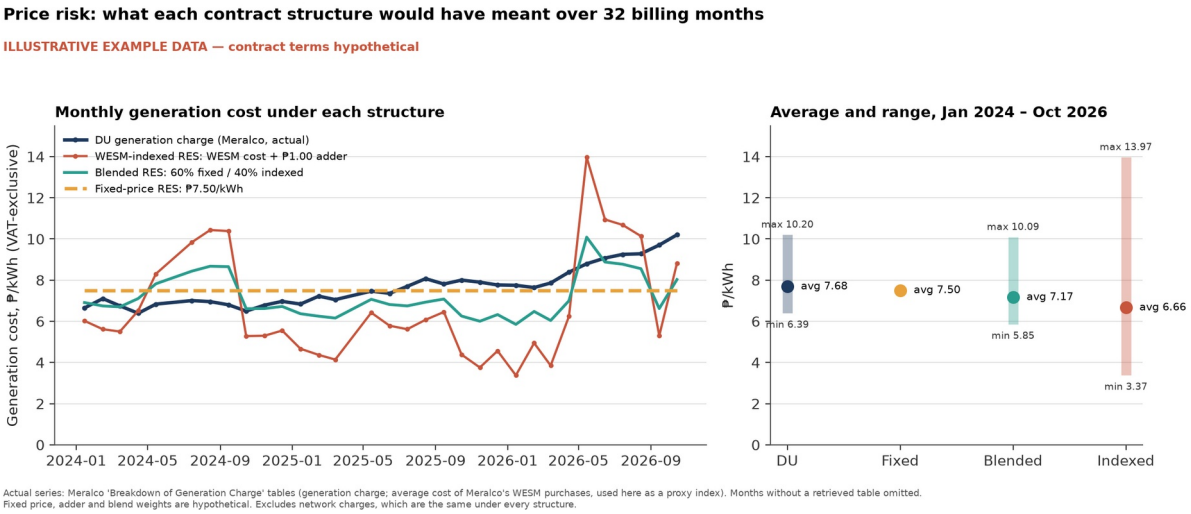


Figure 5.6. Illustrative example data: monthly generation cost under DU supply and three hypothetical RES structures, applied to Meralco's actual monthly series from January 2024 to October 2026.[10] Contract terms are hypothetical.

Table 5.4. Illustrative example data: back-test of price structures, 100,000 kWh a month, January 2024 to October 2026 (32 billing months)

Measure (generation only)	DU (actual)	Fixed ₱7.50	Blended 60/40	Indexed: WESM cost + ₱1.00
Average ₱/kWh	7.68	7.50	7.17	6.66
Lowest month ₱/kWh	6.39	7.50	5.85	3.37
Highest month ₱/kWh	10.20	7.50	10.09	13.97
Standard deviation ₱/kWh	0.97	0.00	1.03	2.58
Total generation	24.6	24.0	22.9	21.3

cost over 32 months (₱ million)				

Illustrative example data computed by the author from Meralco's Breakdown of Generation Charge tables;[10] contract terms are hypothetical. Meralco's average WESM purchase cost is used only as a proxy; a real RES index would reference prices at your own node and may include line rental and market fees.

The lesson is not that indexed contracts are better. Over this particular period, the indexed contract was cheapest on average because WESM prices were low through most of 2025. But in May 2026, the month the spot index peaked, it would have cost about ₱1.40 million for generation alone, against about ₱0.88 million under the DU. That is a swing of roughly half a million pesos in one month for a company of this size. The fixed contract never surprised anyone, but it cost more than the DU throughout 2024. The blended contract sat between the two. Which one is right depends on how much monthly variation your cash flow and covenants can absorb, not on which would have won in hindsight.

Spot prices also differ sharply by region. In the September 2026 billing period, IEMOP reported average WESM prices of ₱5.18 per kWh in Luzon, ₱12.42 in the Visayas and ₱12.61 in Mindanao, with the Luzon–Visayas interconnection operating under price separation for 77.6% of the period.[12] An indexed contract in Cebu is a very different risk from the same contract in Laguna.

5.6 Renewable energy certificates, the RPS and the WESM RE market

If renewable supply matters to your company, for an ESG report, a customer requirement or a parent-company target, the certificate matters as much as the kWh. The Renewable Portfolio Standards (RPS) under the RE Act require mandated participants, which include DUs, electric cooperatives and RES, to source a rising share of their supply from eligible renewable sources. The DOE raised the annual increment from 1% to 2.52% from 2023, to support its aspiration of a 35% renewable share by 2030 and 50% by 2040.[13] The obligation falls on the supplier, not on you.

Compliance is tracked through RECs traded in the Renewable Energy Market (REM). The REM began full commercial operations on 26 December 2024 under DOE Department Circular No. DC2024-12-0031, with IEMOP as RE Registrar. Each REC represents the renewable attributes of one MWh from a registered eligible facility.[14] Under the DOE's 2025 VPPA circular, RECs are classified as Compliance RECs, used by mandated participants to meet the RPS, or Voluntary RECs, used by end-users for their own claims.[15]

Under GEOP, the revised rules classify the RECs generated from energy supplied to GEOP end-users as Voluntary RECs and allocate them to the end-user. In September 2026, however, IEMOP reported that issuance of these RECs was held in abeyance pending enhancements to the Philippine Renewable Energy Market System and an amendment of the REM Rules. Accrued RECs will be issued once those are completed. They expire three years from issuance, and end-users can trade them only after registering with the REM.[7]

Under a renewable RES product, there is no automatic allocation. The RSC must say which RECs are retired on your behalf, from which plants, and for which period.

Two cautions apply. First, if the supplier counts the same RECs towards its own RPS obligation, your renewable claim may be challenged as double counting. Ask for written confirmation that RECs retired for you are not used for anyone else's compliance. Second, a renewable product that relies on a solar plant cannot physically match a night-time load. That is acceptable for certificate-based claims, but your sustainability team should describe it accurately.

5.7 The Supplier of Last Resort, the cooling-off period and credit support

Supplier of Last Resort

If your RES fails, you do not lose power. The Omnibus Rules define last resort supply events that move a customer to an ERC-designated SOLR. They include termination of the RSC for a breach the customer did not cause, termination of the supplier's wheeling agreement, cessation of the supplier's operations, revocation of its licence or GEOP permit, its suspension from WESM trading, and its unilateral termination without just cause.[3] Until the switch to the SOLR or a new supplier takes effect, the defaulting supplier must keep supplying, and the RSC must cover such events with liquidated damages or other indemnities.[3]

Last resort supply is a safety net, not a destination. The SOLR charges the applicable WESM nodal energy price, or the price of its power supply agreement, plus a 5% premium. It requires a cash security deposit equal to one month's estimated bill, based on your average demand and energy use over the previous six months. The SOLR contract runs month by month. You may leave for a new supplier with ten days' written notice, and the SOLR may not charge an exit fee.[3] Your contingency plan should assume a period at spot prices, plus the deposit, until a new RES is in place.

Cooling-off and contract formalities

The Omnibus Rules give retail customers a right to cancel a signed RSC within five business days, or a longer agreed period. The customer may waive this right, and it does not apply to renewals.[3] Before signing, the supplier must provide an Offer Sheet consistent with the RSC, and the RSC may be signed within five business days of your receipt of the Offer Sheet. A supplier may not renew a contract automatically unless the contract allows it and the supplier notifies you at least 60 calendar days before expiry. Any ambiguity in a templated contract is construed in the customer's favour.[3] Use the cooling-off period: it is the last free exit.

Credit support

Expect your supplier to ask for security. If it collects a cash security deposit, the rules require it to hold the deposit in an escrow account, a restricted account or a hold-out facility, unavailable for its working capital, to pay you the interest earned, and to return the balance within 30 days after the contract ends.[3] Suppliers may also ask for a bank guarantee or standby letter of credit instead. Negotiate the amount, the form and the conditions for drawing on it. Ask for something in return as well: evidence of the supplier's financial capacity, a parent-company guarantee where the RES is a thinly capitalised affiliate, and early termination charges that apply symmetrically. The Omnibus Rules already provide that a supplier that terminates prematurely through its own fault faces fees equivalent to those it would impose on the customer.[3]

5.8 Risks and how to contain them

Moving to a RES replaces one set of risks, the regulated pass-through of the DU's costs, with another. Table 5.5 summarises the main ones.

Table 5.5. Main risks of an offsite supply contract and how to contain them

Risk	What can go wrong	How to contain it
Price	Indexed price spikes with WESM; a fixed price ends up above the DU's charge if markets fall	Choose the structure to fit your risk appetite; blend fixed and indexed; caps and floors; stagger contract terms; re-tender before expiry
Volume	Consumption falls (plant closure, efficiency, onsite solar) or rises (expansion), triggering take-or-pay or excess charges	Agree a volume band and how deviations are priced; disclose planned onsite solar before signing; include a site-closure clause
Supplier counterparty	The RES defaults, loses its licence or cannot settle WESM obligations	Check financials and sourcing; seek a parent guarantee; liquidated damages; plan for SOLR prices and deposit
Imbalance	Hourly differences between contracted and actual supply are settled at spot prices, and the contract decides who pays	Prefer full-requirements supply or clear imbalance rules; ask who bears line rental and market fees
Regulatory	Rules on line rental, reserves, thresholds, RECs or billing change during the term	Change-in-law clause with cost sharing and a right to renegotiate; monitor ERC and DOE issuances
Reversion and lock-in	You cannot easily return to the DU	Treat the first switch as permanent; keep at least two credible suppliers in each tender

Prepared by the author from the ERC Omnibus Rules[3] and the market developments cited in the text.

Regulatory risk is not theoretical. In August 2026 the ERC approved corrective measures for unusually high line rental charges in the Visayas, including suspending collection in the affected circumstances, adopting a longer-term calculation method, and ordering an

independent audit of related market settlements back to June 2021.[9] In October 2026 IEMOP noted the ERC's suspension of commercial dispatch and settlement of the reserve market from 14 October, a move intended to reduce reserve-related costs.[12] Each change shifts costs between generators, suppliers and customers. Your contract should say who absorbs them.

Supplier concentration is a risk too. PEMC reports that concentration remains evident in both the retail market and GEOP, although its indicators have been declining. It identified two corporate groups as accounting for the majority of GEOP customers and renewable consumption.[11] Fewer credible bidders means weaker price discovery, so invite widely.

5.9 How to run a RES tender

A RES tender is a procurement exercise like any other, with two differences: the product is priced off volatile markets, and offers expire within days. Figure 5.7 sets out a roadmap that fits inside the regulatory timeline.

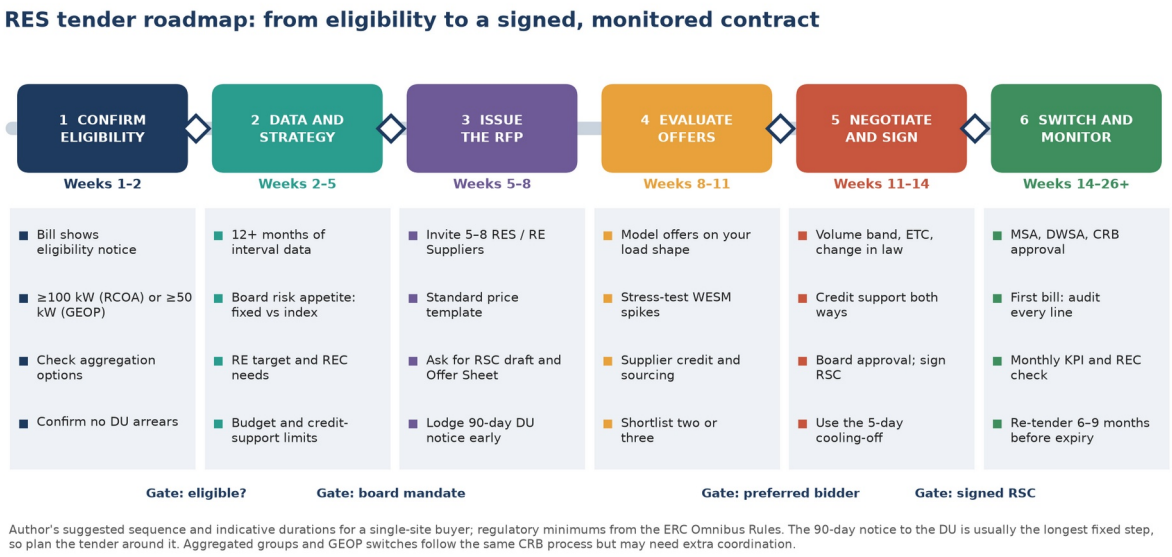


Figure 5.7. RES tender roadmap: phases, indicative durations and decision gates. Author's suggested sequence; regulatory minimums from the ERC Omnibus Rules.[3]

1. Confirm eligibility and readiness. Check that your bill shows the eligibility notice, that your demand is comfortably above the threshold rather than just at it, and that you have no arrears with the DU.
2. Gather data and set the strategy. Obtain at least twelve months of interval data from your DU. Agree with the board how much price variation the company can accept, whether renewable supply is required, and what credit support it is willing to post.
3. Issue a request for proposals. Invite five to eight suppliers, including at least one RE Supplier if renewable supply matters. Provide your load data and require prices in a

common template, with a draft RSC and Offer Sheet. Give bidders the same deadline and a short validity period, since prices move with the market.

4. Evaluate on your own load. Apply each offer to your hourly load shape, add the regulated charges, and compare the total bill, not the headline price. Stress-test indexed offers against a spike like May 2026 and against a prolonged low-price period. Score supplier credit, sourcing and service alongside price.
5. Negotiate and sign. Negotiate the volume band, early termination charges, change in law and credit support with your preferred bidder and one alternate. Obtain board approval, sign, and use the cooling-off period to confirm nothing has been missed.
6. Switch and monitor. Complete the metering, wheeling and CRB steps. Audit the first bill line by line, track the contract monthly against the DU's generation charge, and start the next tender six to nine months before expiry.



Figure 5.8. Evaluate offers on the total bill, using your own hourly load, not on the headline price per kWh. (AI-generated illustrative image; generic scene, no identifiable persons.)

5.10 Negotiation checklist

1. Price definition. Is the price all-in, including line rental, WESM market fees and any supplier charge? Which items are pass-through, and on what basis?
2. Price adjustment. For indexed or blended offers, what is the exact index, the node, the averaging period and any cap, floor or collar? Can you fix additional volume later, and at what price?
3. Volume. Is the contract full-requirements or block? What band applies, and how are deviations above and below it priced? What happens if you add onsite solar, as discussed in Chapter 4?

4. Term and renewal. How long is the term, when may either party renew, and what notice is required? Is there an automatic renewal clause?
5. Early termination. How are early termination charges calculated, and do they apply equally to the supplier? Is there a right to terminate on site closure or sale?
6. Credit support. What form and amount of security is required from you, where is it held, when may it be drawn, and what does the supplier provide in return?
7. Supplier default. What liquidated damages apply on a last resort supply event? Who pays the difference between the SOLR price and the contract price?
8. Change in law. How are new or changed regulated charges, market rules or taxes shared? Is there a right to renegotiate or exit?
9. Renewable content. For renewable products, which plants supply, which RECs are retired for you, when, and with what evidence? Are they excluded from the supplier's RPS compliance?
10. Billing and disputes. When are bills issued, how are disputes handled, and is the ERC-approved complaint procedure set out as required?
11. Outage hours. What allowable outage hours of the supplier's source plant are agreed, and what happens beyond them?
12. Assignment. Can the supplier assign the contract, and can you assign it to a buyer of your business?

5.11 Sector fit

Offsite supply suits almost any eligible business, but the reasons and the best structure differ by sector (Table 5.6).

Table 5.6. Sector fit for offsite supply through a RES or RE Supplier

Sector	Why it fits	Structure that often suits	Watch out for
Factories (two or three shifts)	High, steady consumption; much of the load outside solar hours	Blended or fixed; renewable product if customers require it	Volume bands if production is cyclical; plant expansions
Hospitals	Continuous load; budget certainty valued	Fixed or mostly fixed	Critical-load reliability stays with the DU network and your backup systems, not the RES
Malls and hotels	Large daytime and evening load; multiple tenants	Time-of-use or blended	Tenant sub-metering; who passes savings or risks on to tenants
Cold storage	Round-the-clock load with a flat profile	Fixed or indexed with a cap	Lower peak for the same kWh, though never below the average load; smaller sites should check each meter, as GEOP's 50 kW threshold may be met first

Offices and BPO sites	Weekday load; ESG reporting needs	Renewable product with clear REC retirement	Lease terms that outlast or undercut the contract
Multi-site chains and schools	Many smaller meters	Aggregation through a RES (RAP) or GEOP aggregation	Contiguous-area or same-owner rules; no exit during the term

Prepared by the author. Generalisations; your load data and risk appetite should decide.

Key takeaways

- An offsite PPA in the Philippines is usually a retail supply contract with a RES under RCOA or an RE Supplier under GEOP. The plant is elsewhere; the DU's wires and meter stay the same.
- Eligibility is based on average monthly peak demand: at least 100 kW for RCOA since 26 June 2026, and at least 50 kW for GEOP since 21 February 2026. Smaller sites may qualify through aggregation.
- Allow five to six months. The DU must receive your notice at least 90 days before the switch, and the cooling-off period and CRB approval must fit inside that window.
- Only generation is contestable. Wheeling, transmission, system loss, universal charges and taxes stay regulated, so a lower generation price produces a smaller percentage cut in the total bill.
- Fixed, indexed, blended and time-of-use structures allocate price risk differently. Choose the one your cash flow can live with, not the one that would have won in hindsight.
- Renewable claims rest on certificates. Under GEOP, Voluntary RECs belong to you, although issuance was on hold as of September 2026. Under a RES product, the RSC must specify retirement.
- Plan for supplier failure: SOLR prices are spot-based plus 5%, with a one-month deposit. Negotiate credit support both ways and symmetric termination charges.
- Run a competitive tender on your own load data, and evaluate offers on the total bill.

Questions a CFO should ask

1. What is our average monthly peak demand at each meter, and do we qualify for RCOA, GEOP or both, alone or through aggregation?
2. What would our total bill have been over the past 24 months under each offer, using our actual hourly load?
3. How much monthly variation in the power bill can our cash flow and covenants absorb, and which contract structure matches that?
4. Is each offered price all-in? Who bears line rental, market fees, imbalances and changes in regulated charges?
5. What happens to our contract if we add onsite solar, expand, close or sell a site?

6. How strong is the supplier's balance sheet, where does it source its power, and what security does it offer us?
7. What would a last resort supply event cost us for one or two months, including the SOLR deposit?
8. If renewable supply matters to us, which RECs will be retired in our name, and can we evidence that to auditors and customers?
9. Who in our company owns the switching process, the monthly bill audit and the re-tender date?
10. Since switching is close to a one-way door, are we confident that competitive supply serves us better than the DU over the long run?

A retail contract lets you choose your supplier and your price risk, but it still ties you to a physical delivery arrangement and to the retail rules. Some companies want something different: to support a specific new renewable project and obtain its certificates while keeping their existing supply. Chapter 6, "Virtual PPA", explains how the DOE's 2025 framework for virtual power purchase agreements works and how a CFO should evaluate one.

Notes

All sources were accessed on 17 October 2026 (Asia/Manila). Laws and regulations are cited from official texts or reputable professional summaries as indicated. Company offers and market reports describe individual companies' practices and are not market-wide statistics. Tax and accounting outcomes depend on facts and should be confirmed with your own advisers.

1. IEMOP, 'RCOA Threshold Bulletin No. 2026-01: Switching Timeline and Procedures', 5 May 2026, implementing ERC Resolution No. 22, Series of 2025, 'A Resolution Lowering the Eligibility Threshold for RCOA and RAP', https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (average monthly peak demand of at least 100 kW; effective 26 June 2026; Module D eligibility requirements apply); BusinessWorld, 'Threshold to participate in retail market access program lowered to 100 kilowatts', 4 November 2025, https://bworldonline.com/economy/2025/11/04/710086/threshold-to-participate-in-retail-market-access-program-lowered-to-100-kilowatts/ (previous threshold 500 kW).

2. BusinessWorld, 'ERC says 11,500 businesses can tap new 100-kW power market', 8 October 2026, https://bworldonline.com/corporate/2026/10/08/785541/erc-says-11500-businesses-can-tap-new-100-kw-power-market/ (ERC figures as of August 2026: about 15,183 eligible customers; about 12,491 eligible customers not yet switched; more than 11,500, about 76%, in the 100–499 kW range; 311 retail aggregated groups with 4,997 members, averaging about 60 members and about 50 kW per member; aggregation of private schools of one association within one LGU; 100 kW not the final target).

3. Energy Regulatory Commission (ERC), Resolution No. 13, Series of 2024, 'A Resolution Adopting the Omnibus Rules for Customer Choice Programs in the Retail Market', Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (Module A6 Last Resort Supply; A7 aggregation; C financial capability and cash security deposits held in escrow, restricted account or hold-out facility with interest; D2 and D4 eligibility and aggregation in contiguous areas; D5.1 monthly bill as proof of eligibility in lieu of Certificates of Contestability; D6.3 and D6.5 metering cost borne by end-user, meter installation within 30 days or 60 days for aggregated groups; E1–E6 switching conditions and timelines, including 90-day notice to the NSP, 30-day notices, 20-day DWSA, CRB checks within 3 business days and approval within 7 business days, return of security deposit within 30 days; F1.2 unbundled bill content; F2 single billing and collecting-agent role; G3 last resort supply events; G7 SOLR cash security deposit of one month's estimated billing; G13–G15 SOLR contract term, 10-day notice, no exit fee, WESM

nodal price or PSA price plus 5% premium; K1 reversion below 25% of threshold for six months subject to ERC approval; K3.1 no opt-out from an aggregated group; L12 Offer Sheet, RSC minimum provisions, 5-business-day signing window, 60-day notice for automatic renewal, construction in favour of the customer; L13 five-business-day cooling-off period; M8 termination fees for supplier-fault termination). As cited in Chapter 2.

4. IEMOP Bulletin No. 2024-02, 'Retail Customer Switching (RCOA, GEOP and RAP)', https://www.iemop.ph/wp-content/uploads/2024/11/Bulletin-2-Retail-Customer-Switching-RCOA-GEOP-and-RAP.pdf (IEMOP as Central Registration Body). As cited in Chapter 2.

5. Meralco, 'Summary Schedule of Rates, Effective October 2026 Billing', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_rate_schedule.pdf (General Power secondary: generation ₱10.2005/kWh; transmission ₱177.19/kW; ancillary service ₱196.69/kW; system loss ₱0.9301/kWh; distribution ₱0.1339/kWh and ₱232.20/kW; Large secondary supply charge ₱3,432.33 and metering charge ₱3,451.57 per customer per month; AWAT refunds ₱(0.1239) and ₱(0.1740)/kWh; regulatory reset ₱(0.0023)/kWh; senior citizen subsidy ₱0.0001; RPT charge ₱0.0067 and adjustment ₱0.0015; UC-ME (NPC-SPUG) ₱0.3296, UC-ME (RED-CI) ₱0.0101, UC-EC ₱0.0025, UC-SD ₱0.0428; FIT-All ₱0.3359; lifeline subsidy ₱0.0100 per kWh; rates VAT-exclusive; note that certain rates such as generation, FIT-All and GEA-All do not apply to contestable customers, as these are billed by their RES). Demand classes as cited in Chapter 4. Grouping and totals in Table 5.2 calculated by the author.

6. Republic Act No. 9136, Electric Power Industry Reform Act of 2001 (EPIRA), Section 29 (Supply Sector), https://lawphil.net/statutes/repacts/ra2001/ra_9136_2001.html. As cited in Chapter 4.

7. IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002 – Promulgating the Revised Rules and Guidelines Governing the Implementation of the Green Energy Option Program', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (Revised GEOP Rules effective 21 February 2026; 50 kW threshold for existing end-users over the past twelve months and for new end-users on projected demand; GEOP aggregation in contiguous areas following RCOA timelines and procedures; interim single billing; RECs classified as Voluntary RECs allocated to the end-user, with issuance held in abeyance pending PREMS enhancements and REM Rules amendment; three-year REC validity); IEMOP Bulletin No. 2024-01, 'Registration of Retail Supplier and Service Provider', https://www.iemop.ph/wp-content/uploads/2024/11/Bulletin-1-Registration-of-Retail-Supplier-and-Service-Provider.pdf (registration categories; '100% RE sourcing requirement for all GEOP end-users'; RE Suppliers may be liable for line rental and other charges on bilateral contracts declared in the market).

8. Department of Energy (DOE), Department Circular No. DC2026-01-0002, 'Promulgating the Revised Rules and Guidelines Governing the Implementation of the Green Energy Option Program', published 6 February 2026, https://doe.gov.ph/circular-no-dc-2026-01-0002; text of Sections 6 and 8 as published in DOE information pack, https://prod-cms.doe.gov.ph/documents/d/guest/info-pack_052-business-world-daily-tribune-pdf (Sections 6.1–6.3 eligibility and aggregation; Section 8 annual review of the 50 kW threshold, initial review twelve months from effectivity, phased reduction e.g. to 20 kW, 10 kW and eventually 0 kW).

9. IEMOP, 'Glossary of Common WESM Terminologies', https://www.iemop.ph/home-media/publications/?md_file=d3AtY29udGVudC91cGxvYWRzLzIwMjAvMDgvSUVNT1AtR2xvc3Nhcnktb2YtQ29tbW9uLVdFU00tVGVybWlub2xvZ2llcy5wZGY%3D (line rental: 'the cost associated with the delivery of bilateral contract quantities through the Grid'); Power Philippines, 'ERC defends line rental rules amidst NASECORE Ombudsman complaint', 2 September 2026, https://powerphilippines.com/erc-defends-line-rental-rules-amidst-nasecore-ombudsman-complaint/ (line rental now called Bilateral Line Loss and Congestion Cost; part of the DU's Energy Trading Amount and generation charge; ERC corrective measures of 13 August 2026 for Visayas line rental, including suspension of collection under affected circumstances, longer-term calculation method, and independent audit of settlements back to 26 June 2021).

10. Meralco, 'Breakdown of Generation Charge', monthly tables for billing months January 2024 to October 2026 (generation charge and average cost of Meralco's WESM purchases; e.g. May 2026: generation charge ₱8.7942/kWh, WESM purchases ₱12.9664/kWh; October 2026: generation charge ₱10.2005/kWh), October 2026 table at https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_gc_table_0.pdf. Same series as Chapter 1; months without a retrieved table omitted.

11. Philippine Electricity Market Corporation (PEMC), Market Assessment Department, 'Retail Market Assessment Report for 2nd Quarter of 2026' (QRMAR-2026-02, 26 March to 25 June 2026), September 2026, https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/NDI1OA== (weighted average CREM rate of RES and Local RES ₱5.33–₱5.41/kWh, January–June 2026; top five DU average generation rate rising from ₱6.12/kWh in January to ₱7.04/kWh in June 2026; estimated CREM savings ₱4.91 billion in Q1 and ₱9.03 billion in Q2 2026; 'savings are not guaranteed each quarter'; continued but declining market concentration; Ayala and First Gen Groups account for the majority of GEOP customers and RE consumption; 963 GEOP end-users at end-Q2 2026). See also BusinessWorld, 7 July 2026, https://bworldonline.com/economy/2026/07/07/761834/contestable-retail-power-consumers-realized-savings-estimated-at-p4-91-billion/.

12. Power Philippines, 'WESM price climbs to PHP 7.43/kWh despite wider supply margin', 13 October 2026, https://powerphilippines.com/wesm-price-climbs-to-php-7-43-kwh-despite-wider-supply-margin/, reporting IEMOP data for the September 2026 billing period (26 August–25 September): system-wide average ₱7.43/kWh; Luzon ₱5.18, Visayas ₱12.42, Mindanao ₱12.61/kWh; Luzon–Visayas HVDC under price separation for 77.6% of the period; effective spot settlement price ₱9.32/kWh; ERC suspension of reserve market commercial dispatch and settlement from 14 October 2026). See also Inquirer.net, 13 October 2026, https://business.inquirer.net/615674/wesm-prices-rise-to-p7-43-kwh-in-september.

13. DOE, Department Circular No. DC2017-12-0015 (RPS Rules for On-Grid Areas) and DC2023-05-0015 (amendments), via IEMOP, 'Renewable Portfolio Standards', https://www.iemop.ph/re-market/renewable-portfolio-standards/; Philippine Daily Inquirer, 'PH raises RE sourcing requirement', https://business.inquirer.net/364989/ph-raises-re-sourcing-requirement (DC2022-09-0030: DUs, electric cooperatives and retail electricity suppliers; increment raised from 1% to 2.52% from 2023), and 'Higher renewable energy growth mandate takes effect', https://business.inquirer.net/404185/higher-renewable-energy-growth-mandate-takes-effect (35% RE share by 2030 and 50% by 2040).

14. DOE, 'REC trading starts 26 December 2024 with the full operationalization of REM', press release, https://legacy.doe.gov.ph/press-releases/rec-trading-starts-26-december-2024-full-operationalization-rem; IEMOP, 'Full Commercial Operations of the Renewable Energy Market', https://www.iemop.ph/events/full-commercial-operations-of-the-renewable-energy-market/ (DOE DC2024-12-0031; IEMOP as RE Registrar from 26 December 2024; one REC represents the renewable attributes of one MWh).

15. DOE, Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', https://doe.gov.ph/circular-no-dc-2025-10-0024 (Section 5.2: Voluntary and Compliance RECs). As cited in Chapter 2.

Figure and image credits

Figures 5.2, 5.3 and 5.7 and Tables 5.1, 5.3, 5.5 and 5.6 were prepared by the author from the sources noted. Figures 5.5 and 5.6 and Tables 5.2 and 5.4 use illustrative example data generated by the author's model (build/charts_ch5.py): network and regulated rates are Meralco's published October 2026 rates, and the price back-test uses Meralco's actual monthly generation-charge and WESM-cost series, but the customer load and all RES and RE contract prices are hypothetical. Figures 5.1, 5.4 and 5.8 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting or investment advice. Regulations and tariffs change; verify current rules with the ERC, DOE, IEMOP and your distribution utility before making decisions.

CHAPTER 6

Virtual PPA: The Financial Contract and Where It Stands in the Philippines

How settlement works, the DOE framework, accounting, tax, renewable claims, risks and when a VPPA makes sense

---

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: What a VPPA is · How settlement works, with worked examples · DOE DC2025-10-0024: eligibility, REC transfer, settlement reference and agency roles · Physical versus virtual · PFRS 9 derivative and hedge accounting, and the nature-dependent electricity amendments · Tax questions · RE100 and Scope 2 claims · International context · An illustrative settlement and hedge-value analysis on actual WESM prices · Risks · When a VPPA makes sense · Negotiation checklist · Key takeaways and CFO questions



Figure 6.1. In a virtual PPA the renewable plant keeps selling its power into the grid and the market. What the buyer contracts for is the plant's certificates and, usually, a financial settlement against the market price, not the electrons. (AI-generated illustrative image; generic landscape, not a real site.)

Chapters 4 and 5 dealt with contracts that change where your electricity physically comes from: a rooftop system behind your meter, or a supply contract with a Retail Electricity Supplier (RES) or RE Supplier that replaces your distribution utility's (DU's) generation charge. A virtual power purchase agreement (VPPA) is a different instrument. Nothing about your physical supply changes. You keep buying power from your DU or your RES exactly as before. Alongside that supply, you sign a long-term contract with the owner of a specific renewable project. You receive its renewable energy certificates (RECs) and, in the structure most common abroad, you settle in cash the difference between an agreed price and the market price the project earns.

Since November 2025 the Philippines has had a legal framework for this. Department of Energy (DOE) Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', was issued on 29 October 2025, published on 7 November 2025 and took effect fifteen days after publication.[1] It is short, seven pages, and deliberately light-touch. This chapter explains what a VPPA is, how its cash flows work, what the circular actually says and does not say, how auditors and tax advisers are likely to look at it, and when it makes sense for a Philippine company. The honest summary is that a VPPA is a powerful tool for a narrow group of buyers, and a costly mistake for the wrong one.

Terms used in this chapter

VPPA: virtual power purchase agreement. Under DC2025-10-0024, a private contract between an end-user and an RE Developer for the development of an RE Project and the transfer of Voluntary RECs, without regard to physical delivery of electricity.

Contract for differences (CfD): a settlement in which one party pays the other the difference

between an agreed strike price and a market reference price, multiplied by a volume.

Strike price: the fixed price per kWh or MWh agreed in the contract.

Reference price: the market price against which settlement is calculated, such as the project's WESM nodal price or a regional average.

Voluntary REC: a certificate for one MWh of renewable generation used for voluntary claims (for example RE100), as opposed to a Compliance REC used by mandated participants for the Renewable Portfolio Standards (RPS).

RE Registrar: the body that issues and transfers RECs. IEMOP has acted as RE Registrar since the Renewable Energy Market (REM) began full commercial operations on 26 December 2024.

RES: Retail Electricity Supplier, licensed by the ERC. In this book RES always means Retail Electricity Supplier.

6.1 What a virtual PPA is

The global industry definition is a useful starting point. RE100, the corporate renewable electricity initiative, describes a financial or virtual PPA as 'a purely financial transaction in which a corporate buyer assumes market risk related to the sale of a generator's electricity and receives energy attributes'. Typically this is done through a contract for difference: the generator exchanges the risk of selling its output to the wholesale market at a variable price for a fixed-price cash flow agreed with the buyer. Because it is only a financial instrument, RE100 notes, 'the corporate buyer must still separately procure electricity for its operations'.[2]

In plain terms, a VPPA gives the developer predictable revenue to borrow against, and gives the buyer certificates for renewable claims and, if its own power cost moves with the same market, a long-term hedge. The developer sells its power in the spot market as usual. If the market price is below the strike price, the buyer tops up the developer's revenue. If the market price is above it, the developer pays the excess to the buyer. Either way, the developer's combined revenue per MWh stays close to the strike price.

The Philippine circular frames the transaction a little differently. It describes a VPPA as 'a private agreement for the sale of Voluntary RECs' between a seller and a buyer 'who is willing to acquire the said Voluntary RECs for a fixed or variable price', and as 'a financial transaction, wherein the Seller sells or transfers the Voluntary RECs from its VPPA Project in exchange for an agreed price or pricing mechanisms'.[1] The legal object of the contract is therefore the certificate. A CfD-style settlement is one possible 'variable price' or 'pricing mechanism', but the circular does not require it. Figure 6.2 shows both layers.

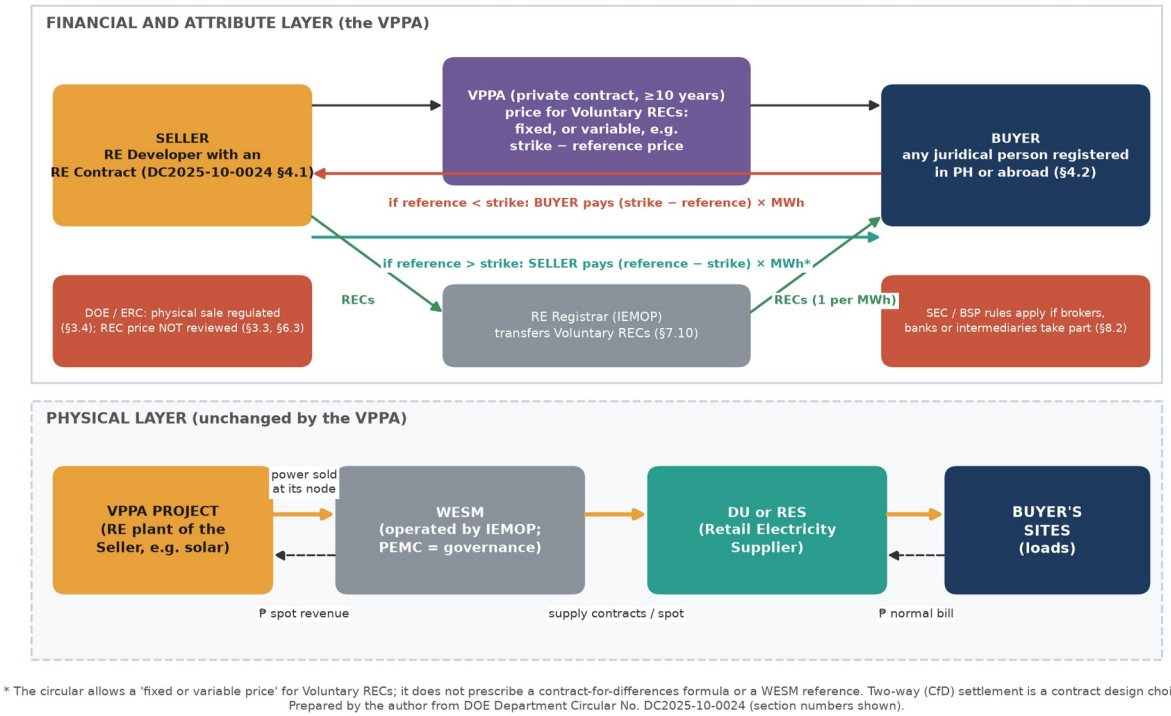


Figure 6.2. VPPA contract and cash flows. The physical layer is unchanged; the VPPA adds a financial and certificate layer. Two-way settlement is shown as one possible pricing mechanism. Prepared by the author from DOE DC2025-10-0024.[1]

6.2 How settlement works

A CfD-style VPPA needs five numbers: the strike price, the reference price, the settlement volume, the settlement interval and the payment period. The calculation is simple. For each interval, settlement equals the strike price minus the reference price, multiplied by the volume. A positive result is paid by the buyer to the seller; a negative result is paid by the seller to the buyer. Payments are netted and invoiced monthly. Under the Philippine circular, the parties may settle 'in a manner and currency allowed by the Bangko Sentral ng Pilipinas (BSP) and Philippine laws'.[1]

Table 6.1 works through three months for a hypothetical buyer with a 200 MWh monthly share of a solar project and a strike price of ₱4.50 per kWh. The reference prices in months A and C are actual Luzon monthly average WESM prices for February 2026 and June 2026.[3] The last two columns assume that the buyer's physical supply is a WESM-indexed RES contract at the Luzon price plus a ₱1.00 per kWh adder, a structure described in Chapter 5.

Table 6.1. Illustrative example data: three monthly settlements (200 MWh, strike ₱4.50/kWh)

Month	Reference price (₱/kWh)	Settlement (₱)	Who pays	Physical supply cost at reference + ₱1.00 (₱)	Net cost after VPPA (₱/kWh)
A (low price;	2.69	(4.50 − 2.69) ×	Buyer pays	738,000	(738,000 +

Luzon, Feb 2026)		200,000 = 362,000	seller		362,000) ÷ 200,000 = 5.50
B (price at strike)	4.50	0	No payment	1,100,000	5.50
C (high price; Luzon, Jun 2026)	7.95	(4.50 − 7.95) × 200,000 = (690,000)	Seller pays buyer	1,790,000	(1,790,000 − 690,000) ÷ 200,000 = 5.50
C with shape risk: project earns 90% of the average	7.16 (project) vs 7.95 (buyer)	(531,000)	Seller pays buyer	1,790,000	6.30

Illustrative example data computed by the author. Reference prices for A and C: IEMOP monthly average Luzon WESM price, February and June 2026 billing months.[3] Volume, strike and adder are hypothetical. Figures exclude VAT and network charges, which a VPPA does not affect.

The first three rows show the hedge working perfectly: whatever the market does, the buyer's net cost for those 200 MWh is ₱5.50 per kWh, the strike price plus its supply adder. The last row shows why perfection is rare. A solar plant produces when the sun shines, and if midday prices are lower than the monthly average, the project's own reference price falls below the price the buyer pays for its round-the-clock load. The settlement no longer fully offsets the buyer's cost, and the hedged price drifts to ₱6.30. Section 6.10 returns to this shape risk and to its cousin, basis risk.

Design choices that decide who carries the risk

- Reference price. Settling against the project's own nodal price fully hedges the developer and leaves all location and shape differences with the buyer. Settling against a regional or load-weighted price shifts some of that risk back to the developer, who will price it into a higher strike.
- Volume. 'As-generated' settlement follows the plant's metered output, so the buyer carries weather and availability risk. A fixed hourly or monthly shape moves that risk to the developer, again at a price.
- Interval and limits. Hourly or five-minute settlement captures the true value of the output; monthly averages are simpler but hide intra-day differences. A floor on the reference price limits the buyer's payments, a cap limits the developer's, and each changes the strike.
- RECs. The circular provides that, unless otherwise agreed, Voluntary RECs from a duly executed VPPA are automatically registered or transferred to the buyer, and that the seller may not sell the same REC to more than one buyer.[1]

6.3 The Philippine framework under DC2025-10-0024

The circular rests on the Renewable Energy Act of 2008 and the RPS rules, and its stated purpose is to allow RE Developers to enter into 'financial arrangements for the transfer of RECs to commercial and industrial end-users in consideration of guaranteed payments for

the electricity to be produced by the RE projects'.[1] Table 6.2 summarises the provisions a CFO needs to know.

Table 6.2. Key provisions of DOE Department Circular No. DC2025-10-0024 (verified against the signed circular)

Topic	What the circular says	Section
Status	A VPPA is recognised as a valid type of PPA for financing; the buyer's guaranteed payment per Voluntary REC may serve as a financial guarantee	3.2, 6.5
Seller	Any juridical person, Filipino or non-Filipino, registered or licensed to do business in the Philippines and engaged as an RE Developer	4.1
Buyer	Any juridical person, Filipino or non-Filipino, registered or licensed to do business in its country of origin or in the Philippines	4.2
Eligible project	RE projects in the Philippines, existing, under development or planned; only projects or merchant plants generating Voluntary RECs; projects generating Compliance RECs do not qualify	5.1–5.3
Price	Fixed or variable; not subject to review or regulation by the ERC, the DOE or any other government agency	3.1, 3.3, 6.3, 7.7
Physical power	No obligation to deliver to the buyer; the seller must sell its electricity through WESM or any other market, platform or agreement under DOE and ERC rules	3.4, 7.2
RECs	Automatically registered or transferred to the buyer unless otherwise agreed; on submission of the VPPA, the RE Registrar transfers the RECs; no double selling	3.5, 7.5, 7.10
Exclusivity	A buyer may contract with several sellers; each VPPA project is exclusive under a given VPPA	7.4
Term	Minimum ten years, reckoned from the date of commercial operations; renewable	7.8
Securities	Direct buyer–seller VPPAs are not 'securities'; if brokers, banks or other intermediaries take part, SEC and BSP rules apply	8.1, 8.2
Law and disputes	Philippine law (RE Act, EPIRA, WESM Rules, RPS rules); Philippine courts; arbitration allowed if	6.2, 8.3–8.5

	seated in the Philippines; situs in the Philippines for legal and tax purposes	
Follow-up rules	DOE to issue or amend guidelines needed for implementation within one year of effectivity	9

Prepared by the author from the signed circular as published by the DOE.[1]

Eligibility and registration

Two features stand out. First, there is no demand threshold for the buyer. Unlike the Retail Competition and Open Access (RCOA) programme (100 kW) or the Green Energy Option Program (GEOP, 50 kW), any juridical person may be a buyer, including a foreign parent that is not registered in the Philippines.[1,4] Second, the supply pool is limited to projects that produce Voluntary RECs. Plants whose certificates are used by DUs and RES for RPS compliance are excluded, so in practice the seller will usually be a merchant plant selling into WESM, or a plant whose output is sold under arrangements that do not generate Compliance RECs.

The circular says little about procedure. On submission of the VPPA to the RE Registrar, the Registrar 'shall transfer the Voluntary RECs to the Buyer in accordance with the terms of the VPPA', and both parties warrant compliance with REC registration and trading requirements.[1] IEMOP has been the RE Registrar since the REM began full commercial operations on 26 December 2024.[5] The plumbing for Voluntary RECs is still being built, however. In September 2026 IEMOP reported that issuance of Voluntary RECs to GEOP end-users was on hold pending enhancements to the Philippine Renewable Energy Market System and an amendment of the REM Rules, and that end-users can trade RECs only after registering with the REM.[6] I could not find published REM procedures specific to VPPA buyers as of mid-October 2026. Ask any seller to show how and when your RECs will be issued and transferred.

Settlement reference and the role of each agency

The circular does not name a settlement reference. It requires the seller to sell its power 'through the Wholesale Electricity Spot Market (WESM) or any other market, platform, or agreement', and it says the valuation of Voluntary RECs 'may consider existing domestic and international standards'.[1] Any link to WESM prices is therefore a choice the parties make in their contract. WESM does publish the obvious candidates. IEMOP, as market operator, publishes nodal and regional prices and the effective spot settlement price.[3] The Philippine Electricity Market Corporation (PEMC) is the governance arm of WESM.[7] Neither is given a specific VPPA role in the circular beyond IEMOP's role as RE Registrar.

The ERC's role is also narrow. VPPA terms, including price, are not subject to ERC or DOE review unless the circular says otherwise. The physical delivery, grid connection and sale of the project's electricity remain subject to DOE and ERC rules.[1] Because the price is

unregulated, so is your protection: there is no Offer Sheet, cooling-off period or Supplier of Last Resort of the kind the ERC's retail rules provide for RES contracts (Chapter 5). Your contract is your only safeguard.

What the circular does not settle

Two-way payments: It allows a 'variable price' for RECs, but does not say whether a seller-to-buyer payment, in effect a negative REC price, is part of a REC sale. Have counsel confirm that your CfD design fits the circular.

Derivatives regulation: It exempts direct VPPAs from the Securities Regulation Code, but it is silent on any other financial regulation of a cash-settled price swap.

Implementing rules: Section 9 requires supplementary DOE rules within one year of effectivity, that is by about late November 2026. I found none published as of 18 October 2026.

Market track record: I found no publicly announced Philippine VPPA transaction as of the same date. Early buyers will be negotiating without precedents.

6.4 Physical offsite PPA versus virtual PPA

Figure 6.3 sets the two side by side. The physical offsite contract of Chapter 5 replaces the DU's generation charge with a negotiated price and, if the product is renewable, brings certificates with it. The VPPA leaves the generation charge in place and adds a second, financial layer. That makes the VPPA more flexible in where and how much you buy, and more demanding in how you manage it.

Physical offsite PPA versus virtual PPA: what changes for the buyer

	PHYSICAL OFFSITE PPA (Chapter 5)	VIRTUAL PPA (this chapter)
Power delivered to your meter?	Yes – through the RES / RE Supplier and DU	No – you keep your DU or RES supply
Who can buy (Philippines)	Contestable customers ≥100 kW (RCOA) or ≥50 kW (GEOP)	Any juridical person; no demand threshold in the circular
Sites covered	Each eligible metering point, switched one by one	Any number of sites, any grid, even captive ones
Price exposure	Contract price replaces the DU generation charge	Two-way settlement vs a market price, on top of your bill
Renewable attributes	RECs per supply contract (GEOP: Voluntary RECs to end-user)	Voluntary RECs transferred by the RE Registrar
Regulator's review	ERC rules on retail supply contracts	REC price not reviewed by ERC or DOE
Minimum term	Negotiated (often multi-year)	10 years from commercial operations
Accounting (PFRS 9)	Often 'own-use' executory contract	Likely derivative at fair value unless hedge accounting
Main extra risks	Supplier default, volume bands, switching lock-in	Basis, shape, cannibalisation, mark-to-market, tenor

Prepared by the author from ERC Res. No. 13, s. 2024 and No. 22, s. 2025; DOE DC2026-01-0002 and DC2025-10-0024; IASB amendments to IFRS 9/IFRS 7 (adopted in the Philippines as amendments to PFRS 9/PFRS 7). Simplified; accounting outcomes depend on contract terms.

Figure 6.3. Physical offsite PPA versus virtual PPA. Prepared by the author from the ERC and DOE rules cited in Chapters 5 and 6.[1,4]

Three differences matter most. Coverage: a physical contract helps only sites that are contestable and have switched; a VPPA can cover any site in any grid, including captive sites. Cash flow: a physical contract replaces one bill with another; a VPPA adds a payment that can go either way every month. Reporting: a physical retail contract is usually an ordinary purchase of electricity; a CfD-style VPPA will usually be a derivative at fair value (Section 6.5). A company can do both: a RES contract for the sites that qualify and a VPPA for the attributes and the hedge.

6.5 Accounting: derivative treatment and hedge accounting

Under PFRS 9, the Philippine equivalent of IFRS 9, a contract to buy a non-financial item that can be settled net in cash is accounted for as a financial instrument unless it is held for the entity's own purchase, sale or usage requirements, the 'own-use' exception. A VPPA with no physical delivery cannot qualify for own use. KPMG's summary of the 2024 amendments is direct: 'Virtual PPAs and PPAs that do not meet the own-use exemption are accounted for as derivatives and measured at FVTPL', fair value through profit or loss.[8] The contract's estimated value over its remaining ten-plus years is remeasured at every reporting date through profit or loss. Without a liquid, published long-dated forward price curve, that valuation rests heavily on management's own assumptions.

Not every Philippine VPPA will be a derivative. A fixed-price contract for RECs only, with no reference to power prices, may be an executory purchase of certificates. Settle that judgement with your auditor before signing, not at year-end.

The amendments for nature-dependent electricity contracts

In December 2024 the International Accounting Standards Board (IASB) issued 'Contracts Referencing Nature-dependent Electricity', amending IFRS 9 and IFRS 7. The amendments clarify the own-use requirements, permit hedge accounting when these contracts are used as hedging instruments, and add disclosures, for annual periods beginning on or after 1 January 2026, with earlier application permitted.[9] In the Philippines, the Financial and Sustainability Reporting Standards Council adopted them as amendments to PFRS 9 and PFRS 7 on 14 February 2025, with the same effective date, and the Board of Accountancy approved them in BOA Resolution No. 04-2025.[10] For a calendar-year company, 2026 is the first year.

The hedge accounting change is the one that matters for VPPA buyers. Previously, a buyer that wanted to designate a VPPA as a cash flow hedge of its forecast electricity purchases had to designate a fixed hedged volume, typically a conservative P90 estimate, while the VPPA settled on actual, variable output. The mismatch could cause ineffectiveness or make hedge accounting unavailable.[8] The amended standard now permits an entity to designate as the hedged item 'a variable nominal amount of forecast electricity transactions that is aligned with the variable amount of nature-dependent electricity expected to be delivered

by the generation facility as referenced in the hedging instrument'. Where the contract's cash flows are conditional on the forecast transaction occurring, that transaction is presumed to be highly probable.[9] The other hedge accounting requirements still apply, and the hedging changes apply prospectively to new hedging relationships.[11] Basis risk still matters. A Visayas buyer hedging with a Luzon-referenced VPPA, for example, may struggle to show the economic relationship hedge accounting requires.

The PFRS 7 amendments add disclosures that help investors understand how these contracts affect an entity's financial performance and cash flows.[9,12] Finally, check your framework. The amendments are to full PFRS. Companies that report under PFRS for SMEs or PFRS for Small Entities, as many mid-sized Philippine firms do, follow different and simpler financial-instrument requirements, so ask your auditor how a VPPA would be presented under them.[13]



Figure 6.4. A VPPA creates a monthly settlement to verify and a fair-value estimate to defend at every reporting date. Treasury, accounting and sustainability teams need to own it together. (AI-generated illustrative image; generic scene, no identifiable persons.)

6.6 Tax considerations

The tax treatment of Philippine VPPAs is largely untested, and this section is a list of questions to take to your tax adviser, not a set of answers. The circular fixes the situs of a VPPA in the Philippines 'for legal and tax purposes'.[1] Beyond that, it is silent.

- VAT. The RE Act zero-rates 'the sale of fuel or power generated from renewable sources of energy'.[14] Whether a payment for Voluntary RECs, or a cash settlement under a CfD, is a sale of power, a sale of an intangible, or a financial payment is not addressed in the circular, and I found no BIR issuance on VPPAs. The answer changes whether VAT is charged and whether it is creditable.

- Income tax. Ask whether settlement payments and receipts are ordinary business expenses and income, or hedging gains and losses, and how fair-value changes booked under PFRS 9 are treated for tax, since unrealised gains and losses usually create timing differences.
- Incentives. If your company is a registered business enterprise under the CREATE MORE regime, ask whether VPPA payments count as power expenses for the enhanced deduction, which Philippine counsel describe as a 100% additional deduction on power expenses.[7] A VPPA payment is not obviously a power expense.
- Withholding and documentary stamp tax. Ask whether payments to the seller attract withholding tax and whether the contract itself is subject to documentary stamp tax.
- Cross-border buyers. The circular lets a foreign parent be the buyer. That raises withholding tax, tax treaty and BSP foreign exchange questions, and the question of where the RECs and the hedge benefit belong within the group.

Readers should confirm the tax treatment of any VPPA with a qualified Philippine tax adviser before signing, and consider asking for a BIR ruling for a large transaction.

6.7 RE100, ESG and Scope 2 market-based claims

For most buyers, the certificates are the point. The Greenhouse Gas (GHG) Protocol's Scope 2 Guidance requires companies to report scope 2 emissions using two methods: a location-based figure using grid-average emission factors, and a market-based figure reflecting the contractual instruments the company holds, such as certificates and PPAs. Those instruments must meet the Guidance's Scope 2 Quality Criteria, which include conveying the generation attributes, being the only instrument that carries the claim, being retired or cancelled on the company's behalf, and coming from the same market as the consumption.[15] A VPPA leaves the location-based figure unchanged; it reduces the market-based figure only by the certificates retired for you.

Those rules are changing. The GHG Protocol's 2025–2026 public consultation proposed that certificates count in the market-based method only if they are matched to consumption hour by hour and come from a grid region deliverable to the company's operations. As of 16 October 2026, the Protocol's Independent Standards Board was developing two market-based methods: Method 1 with hourly matching, deliverability and incrementality, and Method 2 keeping the 2015 rules, with a transition date still to be decided. A consolidated public consultation is planned for the second quarter of 2027 and the joint GHG Protocol–ISO standard for the fourth quarter of 2028.[16] For a ten-year contract signed today, a solar-only VPPA that supports a 100% annual claim now could support a much lower share under hourly matching.

RE100's technical criteria add three points. First, certificates must come from the same market as the consumption; for RE100, a Philippine claim needs Philippine certificates. Second, financial PPAs are exempt from RE100's fifteen-year commissioning-date limit

when they are long-term, project-specific contracts signed as the original offtaker. Third, RE100 says that long-term certificate contracts in Korea and Japan that are advertised as virtual PPAs but have no contract-for-differences mechanism 'must be reported as unbundled procurement of EACs'.[2] A Philippine VPPA structured as a fixed-price REC purchase with no CfD could be classified the same way. RE100's April 2025 list of certificate systems used in the Philippines shows I-REC and TIGR, not REM certificates.[2] I-REC issuance in the Philippines reached 4.7 million certificates in 2024, according to Arthur D. Little.[17] Confirm with your sustainability reporting team, and with your customers or parent if they set the requirement, which certificates they will accept.

6.8 International context

Virtual PPAs are a mainstream tool in the United States and Europe, and a newer one in Asia. A few verified data points show the scale and the current direction:

- Global. BloombergNEF counted 55.9 GW of corporate clean power purchase agreements announced in 2025, 10% below the 2024 record and the first fall in nearly a decade. Meta, Amazon, Google and Microsoft accounted for 49% of the total. BloombergNEF's figures cover offsite deals of all types and do not separate virtual from physical contracts.[18]
- United States. The US hosted a record 29.5 GW of deals, but the number of unique corporate buyers fell 51% to 33, as large technology firms dominated.[18]
- Europe. Pexapark recorded 13.1 GW of disclosed PPA capacity in 2025 across 247 deals, down from 15.3 GW in 2024. It attributes the cooling to lower capture-price expectations and solar cannibalisation. BloombergNEF reports that rising hours of negative prices are eroding the value of standalone solar and wind deals.[18,19]
- Asia Pacific. BloombergNEF recorded 6.9 GW in 2025, down from 10.7 GW.[18] Japan is the closest parallel to the Philippine design. Since April 2022, qualifying non-FIT renewable plants can sell non-fossil certificates directly to corporate buyers who keep their retailer. In November 2022, Japan's Ministry of Economy, Trade and Industry stated that CfD settlement in such a virtual PPA generally falls outside its commodity derivatives law, provided the contract as a whole is a genuine sale of real certificates that are actually transferred.[20]

The lesson for Philippine buyers: VPPAs suit large, creditworthy buyers with strong treasuries; solar-only contracts lose value as solar penetration rises; and where the legal design rests on certificates, as in Japan and the Philippines, the link between certificate and cash settlement must be genuine and documented.

6.9 An illustrative settlement and hedge-value analysis

To show how a VPPA would have behaved in practice, this section applies hypothetical contract terms to actual WESM price history. The buyer is a hypothetical group of five Luzon sites using 600 MWh a month in total. It contracts a 2 MWp share of a Luzon solar project at a strike price of ₱4.50 per kWh, settled monthly on as-generated output against the Luzon monthly average WESM price. Output follows the PVGIS solar profile for Metro Manila (2019–2023 average) used in Chapter 4, about 2,668 MWh a year, or 37% of the group's consumption.[21] Prices are IEMOP's monthly regional averages for the 23 billing months from November 2024 to September 2026.[3,22,23] All contract terms are illustrative, not market quotes.

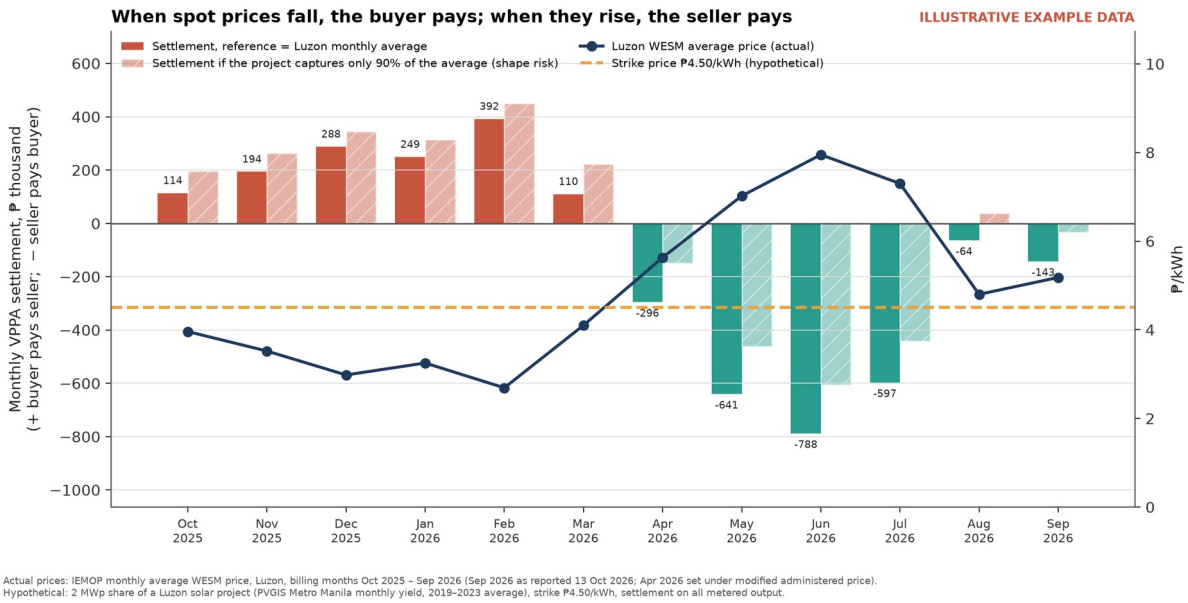


Figure 6.5. Illustrative example data: monthly VPPA settlement for the last twelve billing months, using actual Luzon WESM average prices.[3,22,23] Contract terms and volumes are hypothetical.

Table 6.3. Illustrative example data: twelve monthly settlements, October 2025 to September 2026 (strike ₱4.50/kWh; ₱, positive = buyer pays)

Billing month	Luzon WESM average (₱/kWh, actual)	Project output share (MWh)	Settlement (₱)	Direction
Oct 2025	3.96	211	113,716	Buyer pays
Nov 2025	3.52	197	193,542	Buyer pays
Dec 2025	2.98	189	287,549	Buyer pays
Jan 2026	3.25	199	249,077	Buyer pays
Feb 2026	2.69	216	391,737	Buyer pays
Mar 2026	4.10	274	109,549	Buyer pays
Apr 2026	5.63	262	(295,807)	Seller pays
May 2026	7.02	254	(640,616)	Seller pays
Jun 2026	7.95	228	(788,215)	Seller pays
Jul 2026	7.30	213	(597,411)	Seller pays
Aug 2026	4.80	213	(64,032)	Seller pays
Sep 2026	5.18	210	(142,663)	Seller pays
12 months	avg 4.86	2,668	(1,183,574)	Net: seller paid

				buyer

Illustrative example data computed by the author (build/charts_ch6.py). Prices: IEMOP Market Operations Highlights and releases (April 2026 set under a modified administered price; September 2026 as reported on 13 October 2026).[3,22,23] Output: PVGIS monthly yield for Metro Manila applied to 2 MWp.[21] Strike and volume hypothetical.

Over these twelve months the buyer paid the seller ₱1.35 million in the six low-price months and received ₱2.53 million in the six high-price months, from April to September 2026, a net receipt of ₱1.18 million. The payments are lumpy: a buyer who signed in late 2025 would have paid for six straight months before the first receipt. And the result depends heavily on shape. If the project's own captured price had been only 90% of the monthly average, the same twelve months would have ended with the buyer paying a net ₱0.14 million instead.

Figure 6.6 asks the more important question: did the VPPA reduce risk? That depends on the buyer's physical supply.

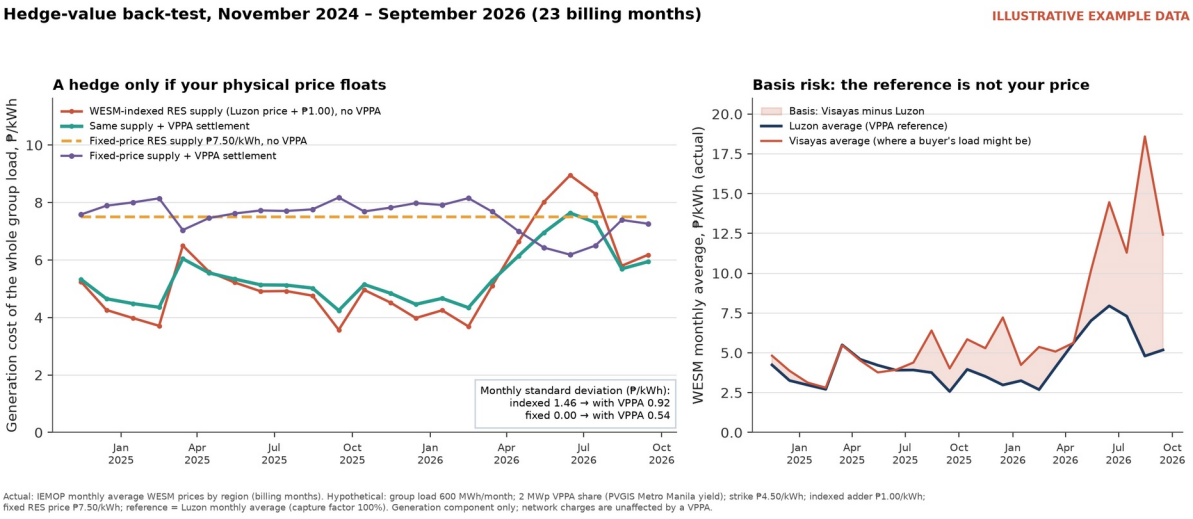


Figure 6.6. Illustrative example data: hedge value of the VPPA for different physical supply arrangements (left) and basis risk between Luzon and the Visayas (right), November 2024 to September 2026. Actual IEMOP regional prices;[3,22,23] contract terms hypothetical.

Table 6.4. Illustrative example data: back-test of generation cost for the whole group load, 23 billing months (₱/kWh)

Physical supply	Without VPPA: average	Without VPPA: std. deviation	With VPPA: average	With VPPA: std. deviation	With VPPA: highest month
Luzon sites, WESM-indexed RES (Luzon price + ₱1.00)	5.35	1.46	5.38	0.92	7.64
Luzon sites, fixed-price RES at ₱7.50	7.50	0.00	7.53	0.54	8.17
Visayas sites, WESM-indexed RES (Visayas price + ₱1.00)	7.64	3.94	7.67	3.62	19.48

Illustrative example data computed by the author. VPPA referenced to the Luzon average in all cases; capture factor 100%. Load 600 MWh a month; VPPA covers about 37% of annual load. Std. deviation = standard deviation of monthly ₱/kWh. Generation component only.

For the Luzon group on an indexed RES contract, the VPPA cut the monthly standard deviation of its generation cost from ₱1.46 to ₱0.92 per kWh, and the worst month from ₱8.95 to ₱7.64. That is a real hedge, limited only by the fact that it covers about 37% of consumption. For the same group on a fixed-price RES contract, the VPPA did the opposite. It turned a perfectly flat cost into one that varied by ₱0.54 per kWh a month. A buyer whose price is already fixed is not hedging with a VPPA; it is taking on a new market position. For Visayas sites, the Luzon-referenced VPPA barely helped (₱3.94 to ₱3.62), because Visayas prices moved on their own. The Visayas price exceeded the Luzon price by an average of ₱2.29 per kWh over the period, and by ₱13.79 in the August 2026 billing month, when IEMOP reported an average of ₱18.59 per kWh in the Visayas against ₱4.80 in Luzon.[22]

6.10 Risks and how to contain them

Table 6.5. Main risks of a VPPA and how to contain them

Risk	What can go wrong	How to contain it
Basis / node	The reference price, at the project's node or region, diverges from the price you actually pay at your sites	Prefer projects in the same grid as your load; negotiate a regional or load-zone reference; size the VPPA to the load it can genuinely hedge
Shape	Solar output is concentrated in hours when prices may be lower than your round-the-clock average	Model hourly capture, not monthly averages; consider hybrid or storage-backed projects; negotiate fixed shapes or collars
Price cannibalisation	As more solar is built, midday prices fall and the buyer's settlement payments rise	Stress-test low-price scenarios over the full term; add a floor; diversify technology
Counterparty	Seller fails to build or operate, or defaults on payments when prices are high; seller fears your default	Construction milestones and long-stop dates; parent guarantees or letters of credit both ways; netting and set-off
Regulatory	Implementing rules, REM procedures, WESM pricing rules, tax rulings or Scope 2 standards change	Change-in-law clause with renegotiation and exit rights; conditions precedent on REC issuance and transfer
Long tenor	Ten-year minimum from commercial operations, plus construction; business may change, sites may close	Assignment rights on sale or merger; agreed termination payment formula; stagger volumes across contracts
Accounting and liquidity	Fair-value swings hit profit; collateral calls strain cash	Agree hedge documentation with auditors upfront; cap collateral; board-approved loss limits

Prepared by the author from the sources cited in this chapter.

Basis and node risk is the risk the Philippine data make most vivid. WESM prices differ not only between Luzon, the Visayas and Mindanao but between nodes within them. In September 2026, IEMOP reported regional averages of ₱5.18 in Luzon, ₱12.42 in the Visayas and ₱12.61 in Mindanao, with the Luzon–Visayas link under price separation for 77.6% of the period.[23] A VPPA hedges you only to the extent that your power cost moves with its reference price.

Shape risk and price cannibalisation are two sides of the same coin. Solar accounted for 5.3% of system-wide generation in September 2026,[23] and Luzon's registered solar capacity was 2,693 MW in December 2025.[3] As that share grows, midday prices may soften, and a solar VPPA buyer's settlement payments grow with them. Europe shows how far this can go.[18,19] In the Philippines, the DOE now requires new variable renewable plants of 10 MW or more to integrate energy storage equal to at least 20% of their capacity, which may help projects shift some output into higher-priced hours.[7]

Counterparty risk runs both ways. Because the circular lets the buyer's guaranteed payment serve as a financial guarantee for the project's lenders,[1] they will scrutinise your credit and the seller will ask for security. Ask for the same: when spot prices are high, the seller owes you money. Regulatory risk is high because the framework is new. Long tenor compounds everything: the ten-year minimum runs from commercial operations, so for a project not yet built you may be committed for twelve years or more from signing.

6.11 When a VPPA makes sense

A VPPA complements, rather than replaces, the options in Chapters 4 and 5. The strongest cases share a few features.

- Multi-site groups. A retail chain, bank, telecom tower operator or manufacturer with many sites can cover them all with one contract, instead of switching dozens of meters one by one.
- Sites outside the RCOA scope. Sites below the 100 kW RCOA and 50 kW GEOP thresholds, or in areas where switching is impractical, cannot buy renewable supply physically. A VPPA brings them certificates regardless of where they are.[4]
- Visible renewable targets. Exporters, BPOs and subsidiaries of multinationals with RE100, customer or parent-company targets need project-specific, long-term certificates that a VPPA can provide, provided the certificates are accepted (Section 6.7).
- Floating physical cost in the same grid. The hedge works only if a meaningful share of your power cost moves with WESM in the grid where the project sits.
- Balance sheet and treasury capacity. You need the credit to support a ten-year commitment and the systems to value, document and monitor a derivative.

Figure 6.7 turns these features into five gates. A 'no' at any gate does not rule out a VPPA. It tells you what must change first.

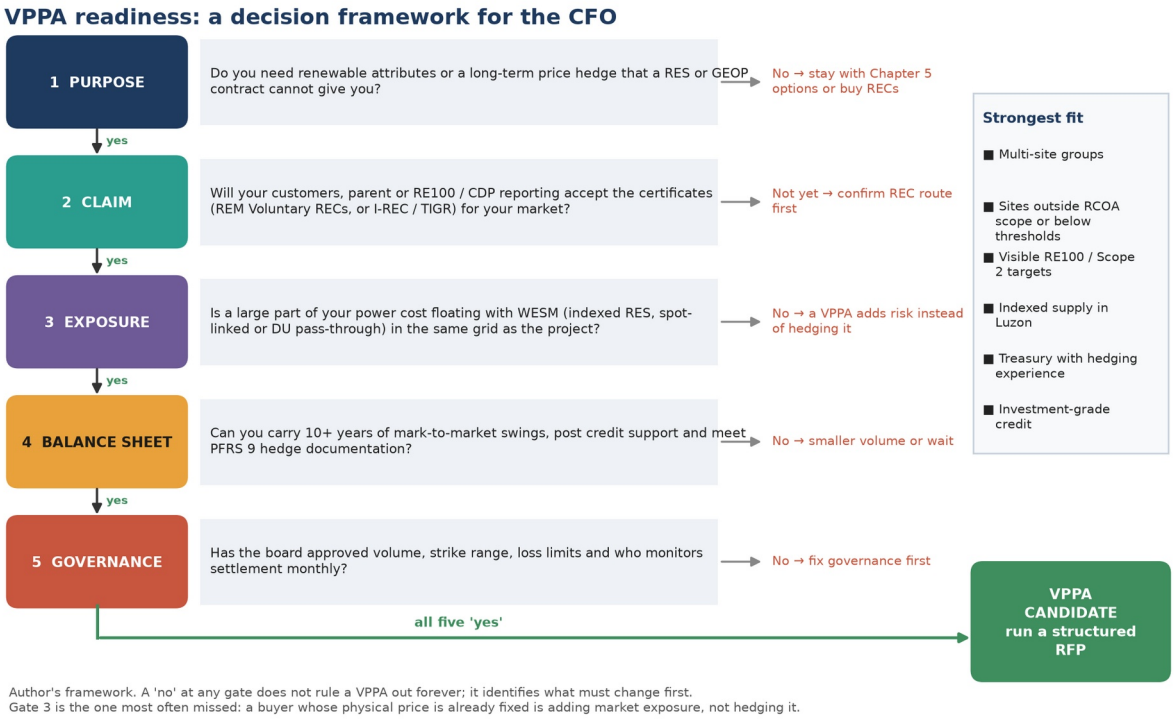


Figure 6.7. VPPA readiness decision framework. Author's framework.



Figure 6.8. A VPPA can cover many sites at once, including those too small, or in the wrong place, to switch supplier, because nothing about their physical supply changes. (AI-generated illustrative image; generic scene, not a real site.)

6.12 Negotiation checklist

1. Structure. Is it a fixed-price REC purchase, a CfD, or both? Has counsel confirmed that the design fits DC2025-10-0024 and that two-way payments are enforceable?
2. Project. Is the project eligible to generate Voluntary RECs, and does it have a valid RE Contract and permits? What are the construction milestones, the long-stop date and your remedies if it is late?
3. Strike price and indexation. Is the strike fixed for the term or escalated? In what currency, and what happens if peso and dollar diverge?
4. Reference price. Which price, at which node or region, over what interval? What happens when IEMOP applies administered prices, price substitution or caps, or revises published prices?
5. Volume. As-generated or a fixed shape? What availability guarantee does the seller give, and what is the compensation for curtailment or outages?
6. Floors, caps and negative prices. Is there a floor or cap on the reference price, and how are very low or negative prices handled?
7. RECs. When and how will Voluntary RECs be issued and transferred to you? What happens if the RE Registrar's procedures are not ready? Are you protected against double counting?
8. Credit support. What security does each side post, in what form, and how is it adjusted as market value moves?
9. Term, termination and assignment. What is the term from signing and from commercial operations? How is the termination payment calculated? Can you assign the contract on a sale or merger?
10. Change in law. How are changes to the circular, REM rules, WESM pricing rules, taxes or reporting standards handled?
11. Accounting and tax. Has your auditor reviewed the draft for PFRS 9 classification and hedge accounting? Has your tax adviser confirmed VAT, income tax and documentary stamp tax treatment?
12. Disputes. Is arbitration seated in the Philippines, as the circular requires if arbitration is used?

Key takeaways

- A VPPA leaves your physical supply untouched. It adds a long-term contract for a project's certificates and, usually, a cash settlement between a strike price and a market price.
- DOE DC2025-10-0024, published on 7 November 2025, recognises VPPAs as a valid type of PPA, sets a minimum ten-year term from commercial operations, frees the REC price from ERC and DOE review, and has the RE Registrar transfer Voluntary RECs to the buyer.

- The circular does not prescribe a WESM settlement reference or a CfD design. Those are contract choices. Implementing rules and REC procedures for VPPA buyers were still pending as of October 2026.
- Any juridical person can be a buyer, with no demand threshold, which makes VPPAs relevant for multi-site groups and sites outside RCOA and GEOP.
- A CfD-style VPPA is likely a derivative under PFRS 9. The amendments effective from 1 January 2026, adopted locally in February 2025, make hedge accounting more workable but do not remove fair-value volatility.
- A VPPA hedges only a floating power cost in the same grid. For a buyer already on a fixed price, it adds risk.
- Basis, shape, cannibalisation, counterparty, regulatory and tenor risks are all real, and the Philippine regional price data show how large basis risk can be.
- Confirm tax treatment and renewable-claim acceptance before signing. Neither is settled yet.

Questions a CFO should ask

1. What problem are we solving: renewable claims, a price hedge, or both? Could a RES or GEOP contract, or unbundled RECs, solve it more simply?
2. How much of our power cost actually floats with WESM, in which grid, and how closely would the proposed reference price track it?
3. What would this VPPA have cost or paid us over the last two years, using hourly project output and our actual load?
4. What is the worst twelve-month cash outflow we could face, and can our liquidity and covenants absorb it?
5. Will our auditors classify it as a derivative, and can we meet the hedge accounting documentation from day one?
6. Which certificates will we receive, when, and will our customers, parent and RE100 or CDP reporting accept them?
7. How creditworthy is the seller, what security will each side post, and what happens if the project is late?
8. What has our tax adviser said about VAT, income tax, withholding and documentary stamp tax?
9. Who will verify each monthly settlement and report the contract's value to the board?
10. Are we comfortable being committed for ten years or more from commercial operation, given what we know about our sites and our business?

Every VPPA, like every PPA, turns on one number: the price. Whether you are negotiating a strike price, a RES tariff or an onsite solar rate, you need to know what the electricity is worth, what drives the seller's cost, and how to compare offers with different structures on a like-for-like basis. Chapter 7, "Pricing a PPA", shows how.

Notes

All sources were accessed on 18 October 2026 (Asia/Manila). Laws and regulations are cited from official texts or reputable professional summaries as indicated. Company offers and market reports describe individual companies' practices and are not market-wide statistics. Tax and accounting outcomes depend on facts and should be confirmed with your own advisers.

1. Department of Energy (DOE), Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', issued 29 October 2025, published 7 November 2025 in BusinessWorld and Philippine Star, effective fifteen days after publication, https://doe.gov.ph/circular-no-dc-2025-10-0024 (signed PDF: https://d24qbtp4vooyzi.cloudfront.net/api/media/file/DC2025-10-0024.pdf). Provisions cited: preamble ('financial arrangements for the transfer of RECs to commercial and industrial end-users in consideration of guaranteed payments'); Sections 2.9 (VPPA definition), 3.1–3.5, 4.1–4.2, 5.1–5.4, 6.1–6.6, 7.1–7.10, 8.1–8.5, 9 and 12. Text checked by the author against the seven-page signed circular.
2. RE100 (Climate Group and CDP), 'RE100 Technical Criteria' and appendices, 15 April 2025, https://www.theclimategroup.org/hubfs/RE100/PDFs/RE100%20technical%20criteria%20%2B%20appendices%20%2815%20April%202025%29.pdf (procurement type 2.2, financial (virtual) PPA definition; procurement type 4 and same-market requirement; Section 4.2 fifteen-year commissioning or re-powering date limit and exemption for financial PPAs as long-term project-specific procurement by the original off-taker; table of EAC systems listing I-REC and TIGR for the Philippines; Appendix on long-term EAC contracts in Korea and Japan, 'must be reported as unbundled procurement of EACs').
3. Independent Electricity Market Operator of the Philippines (IEMOP), 'Market Operations Highlights', monthly reports for billing months January 2025 to July 2026, each tabulating the average WESM price by region for the current and two preceding billing months (giving November 2024 to July 2026), https://www.iemop.ph/market-reports/2025-market-operations-highlights/ and https://www.iemop.ph/market-reports/2026-market-operations-highlights/; e.g. December 2025 report, 14 January 2026 (Luzon averages: October 2025 ₱3.96, November ₱3.52, December ₱2.98/kWh; Luzon registered solar capacity 2,693 MW as of 26 December 2025). April 2026 billing-month prices were set 'based on modified AP' (administered price) and are identical in all regions. Billing months run from the 26th of the previous month to the 25th. Series extracted by the author to src/ch6/wesm_monthly.json.
4. Energy Regulatory Commission (ERC) Resolution No. 22, Series of 2025, via IEMOP RCOA Threshold Bulletin No. 2026-01, 5 May 2026, https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (100 kW from 26 June 2026); IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (GEOP 50 kW). As cited in Chapter 5.
5. DOE, 'REC trading starts 26 December 2024 with the full operationalization of REM', press release, https://legacy.doe.gov.ph/press-releases/rec-trading-starts-26-december-2024-full-operationalization-rem; IEMOP, 'Full Commercial Operations of the Renewable Energy Market', https://www.iemop.ph/events/full-commercial-operations-of-the-renewable-energy-market/ (DOE DC2024-12-0031; IEMOP as RE Registrar). As cited in Chapter 5.
6. IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002 – Promulgating the Revised Rules and Guidelines Governing the Implementation of the Green Energy Option Program', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (Voluntary REC issuance to GEOP end-users held in abeyance pending PREMS enhancements and REM Rules amendment; trading only after REM registration). As cited in Chapter 5.
7. Chambers and Partners, 'Renewable Energy 2026 – Philippines: Law and Practice' and 'Trends and Developments', Cruz Marcelo & Tenefrancia, last updated 11 September 2026, https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines/trends-and-developments (PEMC as 'the operator and governance arm of the WESM'; CREATE MORE Act enhanced deductions regime 'now allows a 100% additional deduction on power expenses, up from 50%'; DOE DC2026-02-0008 requiring prospective variable RE plants of 10 MW or more to integrate energy storage of at least 20% of installed capacity).

8. KPMG, 'Nature-dependent electricity contracts', IFRS Today / Insights, https://kpmg.com/xx/en/our-insights/ifrg/2024/renewable-energy-contracts-ifrs7-ifrs9.html ('Virtual PPAs and PPAs that do not meet the own-use exemption are accounted for as derivatives and measured at FVTPL'; P50/P90 mismatch; variable nominal volume as hedged item).

9. IFRS Foundation, 'IASB updates IFRS Accounting Standards for nature-dependent electricity contracts', 18 December 2024, https://www.ifrs.org/news-and-events/news/2024/12/iasb-updates-accounting-standards-nature-dependent-electricity-contracts/; IASB, 'Contracts Referencing Nature-dependent Electricity: Amendments to IFRS 9 and IFRS 7', December 2024, https://www.ifrs.org/content/dam/ifrs/publications/amendments/english/2024/iasb-2024-3-crne-ifrs7-ifrs9.pdf (paragraph 6.10.1 on designating a variable nominal amount of forecast electricity transactions and the presumption that the forecast transaction is highly probable; effective for annual reporting periods beginning on or after 1 January 2026, earlier application permitted).

10. Financial and Sustainability Reporting Standards Council (FSRSC), 'FSRSC approves further deferral of PFRS 17 and other pronouncements', http://www.pfsrsc.org/fsrsc-approves-further-deferral-of-pfrs-17-and-other-pronouncements (adoption on 14 February 2025 of the amendments to PFRS 9 and PFRS 7, Contracts Referencing Nature-dependent Electricity; approval in BOA Resolution No. 04-2025), and 'Our Standards', http://www.pfsrsc.org/government-organization-our-standards (effective for annual periods beginning on or after 1 January 2026).

11. EY, 'Applying IFRS: Contracts referencing nature-dependent electricity – Amendments to IFRS 9 and IFRS 7', IFRS Developments Issue 234, March 2025, https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/technical/ifrs-technical-resources/documents/ey-gl-ifrs-devel-234-nature-dependent-electricity-03-25.pdf (variable nominal volume; other hedge accounting requirements continue to apply; effective date).

12. Grant Thornton Philippines, 'Navigating the changes to Philippine Financial Reporting Standards – 2025 Edition', https://www.grantthornton.com.ph/globalassets/_markets_/phl/media/revamp/technical-alerts/pdf-files/navigating-the-changes-to-philippine-financial-reporting-standards-2025.pdf (PFRS 7 disclosure requirements for contracts referencing nature-dependent electricity; retrospective application of in-scope identification; prospective application of hedge accounting changes to new hedging relationships).

13. Securities and Exchange Commission, Revised SRC Rule 68, as summarised by JP CPAs, 'Financial Reporting Framework for Corporations', https://jp-cpas.com/financial-reporting-framework-for-corporations/ (full PFRS, PFRS for SMEs and PFRS for Small Entities thresholds). As cited in Chapter 3.

14. Republic Act No. 9513, Renewable Energy Act of 2008, Section 15(g), 'Zero Percent Value-Added Tax Rate', https://lawphil.net/statutes/repacts/ra2008/ra_9513_2008.html ('The sale of fuel or power generated from renewable sources of energy … shall be subject to zero percent (0%) value-added tax').

15. World Resources Institute and WBCSD, 'GHG Protocol Scope 2 Guidance', 2015, https://ghgprotocol.org/scope-2-guidance (dual reporting of location-based and market-based scope 2 emissions; Scope 2 Quality Criteria for contractual instruments).

16. GHG Protocol, 'Scope 2 Market-based Method Update: From 2025–2026 Public Consultation to Current Status', 16 October 2026, https://ghgprotocol.org/blog/scope-2-market-based-method-update-2025-2026-public-consultation-current-status (public consultation 20 October 2025 to 31 January 2026 on hourly matching and deliverability; ISB direction toward Method 1 with hourly matching, deliverability and incrementality and Method 2 retaining the 2015 requirements; consolidated public consultation slated for Q2 2027; joint GHG Protocol–ISO Corporate Standard slated for Q4 2028).

17. Daily Tribune, 'Why the Philippines should start taking voluntary RECs seriously', 25 May 2026, https://tribune.net.ph/2026/05/25/why-the-philippines-should-start-taking-voluntary-recs-seriously (Arthur D. Little Southeast Asia: Philippine I-REC issuance of 4.7 million certificates and 3.5 million redemptions in 2024).

18. BloombergNEF, 'Corporate Clean Energy Buying Fell in 2025 After Nearly a Decade of Growth', 19 February 2026, https://about.bnef.com/insights/clean-energy/corporate-clean-energy-buying-fell-in-2025-after-nearly-a-decade-of-growth/ (55.9 GW in 2025, down 10%; Meta, Amazon, Google and Microsoft 49%; US record 29.5 GW; unique US corporate buyers down 51% to 33; EMEA 17 GW, down 13%; rising negative-price hours eroding standalone solar and wind deals; Asia Pacific 6.9 GW from 10.7 GW).

19. Pexapark, 'Price volatility accelerates race to value across clean energy markets – Pexapark Market Outlook 2026', 27 January 2026, https://pexapark.com/blog/price-volatility-accelerates-race-to-value-across-clean-energy-markets-pexapark-market-outlook-2026/ (European disclosed PPA capacity 13.1 GW across 247 deals in 2025, down from 15.3 GW in 2024; lower capture expectations; solar cannibalisation).

20. Orrick, Herrington & Sutcliffe, 'Japan Renewables Alert 60: Corporate PPAs (No. 3) – Application of Commodity Derivatives Transaction Act to Virtual PPAs', 17 November 2022, https://www.orrick.com/en/Insights/2022/11/Japan-Renewables-Alert-60 (direct transactions of non-FIT non-fossil certificates since April 2022; METI Commodity Market Development Office position published 11 November 2022 that the CDTA generally does not apply to CfD settlements where the contract as a whole is a purchase and sale of actual certificates whose transfer can be confirmed).

21. European Commission Joint Research Centre, PVGIS v5.3 (PVGIS-ERA5), hourly series 2019–2023 for 1 kWp at 14.55°N 121.03°E (Metro Manila), 10° tilt, 14% system losses, https://re.jrc.ec.europa.eu/api/v5_3/seriescalc?lat=14.55&lon=121.03&peakpower=1&loss=14&angle=10&aspect=0&pvcalculation=1&startyear=2019&endyear=2023&outputformat=json. As used in Chapter 4; monthly averages applied to billing months by calendar month.

22. IEMOP, 'Tight regional supply conditions pushed August WESM prices higher in Visayas and Mindanao', 10 September 2026, https://www.iemop.ph/news/tight-regional-supply-conditions-pushed-august-wesm-prices-higher-in-visayas-and-mindanao/ (August 2026 billing period, 26 July–25 August: Luzon ₱4.80, Visayas ₱18.59, Mindanao ₱19.56/kWh). IEMOP's September briefing, as reported in note 23, cited August comparatives of ₱4.90 (Luzon) and ₱11.81 (Visayas), suggesting later revisions; this chapter uses the figures first published.

23. Power Philippines, 'WESM price climbs to PHP 7.43/kWh despite wider supply margin', 13 October 2026, https://powerphilippines.com/wesm-price-climbs-to-php-7-43-kwh-despite-wider-supply-margin/, reporting IEMOP data for the September 2026 billing period (Luzon ₱5.18, Visayas ₱12.42, Mindanao ₱12.61/kWh; Luzon–Visayas HVDC under price separation 77.6% of the period; solar 5.3% of system-wide generation). As cited in Chapter 5.

Figure and image credits

Figures 6.2, 6.3 and 6.7 and Tables 6.2 and 6.5 were prepared by the author from the sources noted. Figures 6.5 and 6.6 and Tables 6.1, 6.3 and 6.4 use illustrative example data generated by the author's model (build/charts_ch6.py): WESM prices are IEMOP's actual published monthly regional averages (November 2024 to September 2026) and the solar profile is PVGIS data for Metro Manila, but the buyer, its load, the project share, the strike price, the supply adder and the fixed RES price are hypothetical and are not market quotes. Figures 6.1, 6.4 and 6.8 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting or investment advice. A VPPA is a long-term financial commitment; confirm its legal, tax and accounting treatment with qualified Philippine advisers, and verify current rules with the DOE, ERC, IEMOP, SEC and BSP before making decisions.

CHAPTER 7

Pricing a PPA: Fixed Rates, Escalators, Discounts to Grid and Indexed Prices

How developers build a price, what the benchmarks say, how each structure allocates risk, and how to compare and negotiate offers

---

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: The LCOE and a worked calculation · Verified cost benchmarks and Green Energy Auction results (GEA-1 to GEA-5) · Flat, escalating, CPI-linked, discount-to-grid, indexed, collared and blended prices · Take-or-pay versus pay-as-produced · Risk allocation and a selection matrix · Levelised cost to the buyer and NPV · Escalator traps · Sensitivity analysis · What a good price looks like · An illustrative three-offer comparison · Negotiation levers · Pricing checklist · Key takeaways and CFO questions



Figure 7.1. Behind every PPA price is a project budget: the panels, the inverters, the roof work, the money borrowed to pay for them and the return the owner expects. A buyer who understands that budget negotiates from strength. (AI-generated illustrative image; generic scene, not a real site.)

Chapters 4 to 6 explained the three families of PPA: onsite solar behind your meter, physical offsite supply through a Retail Electricity Supplier (RES), and the virtual PPA. Each eventually comes down to a price per kilowatt-hour (kWh) and a rule for how that price moves over ten, fifteen or twenty-five years. Two offers with the same year-one price can differ by millions of pesos over their life. Two offers with different structures, one fixed and one linked to the grid, cannot be compared at all until you put them on the same basis.

This chapter does four things. It shows how a developer builds a price from the bottom up, using the levelised cost of electricity (LCOE). It sets that against verified Philippine and regional benchmarks, including the results of the Green Energy Auctions. It explains the main price structures and who carries which risk under each. And it gives you the tools, levelised cost to the buyer, net present value (NPV) and sensitivity analysis, to compare real offers and negotiate them. A worked comparison of three illustrative offers for a site using about 100,000 kWh a month brings the pieces together.

Terms used in this chapter

LCOE: levelised cost of electricity, the constant price per kWh at which a project's discounted revenues just equal its discounted costs, including the required return on capital.

WACC: weighted average cost of capital, the blended return required by the project's lenders and equity investors.

Capacity factor and specific yield: annual output divided by the output at full rated power all year; for solar, often quoted as kWh per kWp per year.

Escalator: a contractual rule that raises the price each year, by a fixed percentage or an index

such as the consumer price index (CPI).

Discount to grid: a price set as a percentage below a defined distribution utility (DU) rate, often with a floor.

Take-or-pay and pay-as-produced: whether the buyer pays for a minimum contracted quantity regardless of use, or only for energy actually delivered.

RES: Retail Electricity Supplier, licensed by the ERC. In this book RES always means Retail Electricity Supplier.

7.1 How a developer builds a PPA price

A developer's price is not a number pulled from the grid tariff. It starts as a cost: the price that will repay the investment, cover operating costs and deliver the return investors require over the contract term. The International Renewable Energy Agency (IRENA) defines the LCOE in exactly these terms: the price of electricity at which revenues would equal costs, 'including making a return on the capital invested equal to the discount rate'.[1] The Energy Regulatory Commission (ERC) uses the same discounted cash flow logic, with a published list of parameters, when it sets the ceiling prices for the Green Energy Auctions.[2] Seven inputs drive the answer.

- Capital expenditure (capex): modules, inverters, mounting, cabling, roof works, engineering, permits and grid connection, usually expressed in pesos per kWp.
- Operating expenditure (opex): cleaning, preventive and corrective maintenance, monitoring, insurance and asset management, plus mid-life replacement of inverters.
- Capacity factor or yield: how many kWh each kWp produces in a year at your site, after shading, soiling, temperature and system losses.
- Degradation: the gradual loss of module output, which shrinks the kWh over which costs are spread.
- WACC: the cost of the debt and equity that pay for the system up front; for capital-intensive solar, usually the largest single driver of the price.
- Tenor: the contract term over which the investment must be recovered; a shorter contract means a higher price.
- Tax and incentives: corporate income tax raises the required price; incentives under the Renewable Energy Act of 2008, where the developer qualifies, lower it.

The LCOE formula combines them. With capex I_0 spent at the start, opex O_t and energy E_t in each year t of an N-year term, and a discount rate r equal to the WACC:

$$LCOE = \frac{I_0 + \sum_{t=1}^{N} \frac{O_t}{(1+r)^t}}{\sum_{t=1}^{N} \frac{E_t}{(1+r)^t}} \tag{7.1}$$

Energy each year depends on installed capacity P in kWp, specific yield Y in kWh per kWp, the share s of output the buyer actually pays for, and annual degradation d:

$$E_t = P \times Y \times s \times (1 - d)^{t-1} \tag{7.2}$$

Discounting energy as well as costs is what makes the LCOE a price rather than an average cost. A kWh delivered in year 18 is worth less to an investor than one delivered in year 2, so it carries less of the capital cost.

A worked illustration

Table 7.1 applies the formula to a 300 kWp rooftop system, the same size as the onsite case in Chapter 4. The yield comes from PVGIS data for Metro Manila.[3] The other inputs are illustrative but sit within the benchmark ranges in Section 7.2.

Table 7.1. Illustrative example data: LCOE of a 300 kWp rooftop system, 20-year term

Input or step	Value	Note
Capex, I_0	₱45,000/kWp × 300 kWp = ₱13.5 million	Within published installer ranges (Table 7.2)
Specific yield, Y	1,334 kWh/kWp/yr (capacity factor 15.2%)	PVGIS, Metro Manila, 2019–2023 average
Share paid for, s	95.3%	Output used on site, as in Chapter 4
Degradation, d	0.5% a year	Median of published field studies
Opex, O_t	₱800/kWp in year 1, rising 4% a year; inverters ₱3,000/kWp in year 12	Illustrative
WACC, r**; tenor,** N	10% nominal; 20 years	Illustrative
Energy in year 1, E_1	381,511 kWh	300 × 1,334 × 0.953
Present value of energy	3,144,867 kWh	Denominator of (7.1)
Present value of opex	₱2.98 million	Second term of the numerator
Pre-tax LCOE	(₱13.5m + ₱2.98m) ÷ 3.145m kWh = ₱5.24/kWh	Result of (7.1)
Flat tariff after 25% income tax	₱6.06/kWh	Solved for a 10% after-tax return
Same, with RE Act income tax holiday	₱5.33/kWh	7 years at 0%, then 10%

Illustrative example data computed by the author (build/charts_ch7.py). Pre-tax and VAT-exclusive. Not a quote: real offers add development costs, margin and risk premiums.

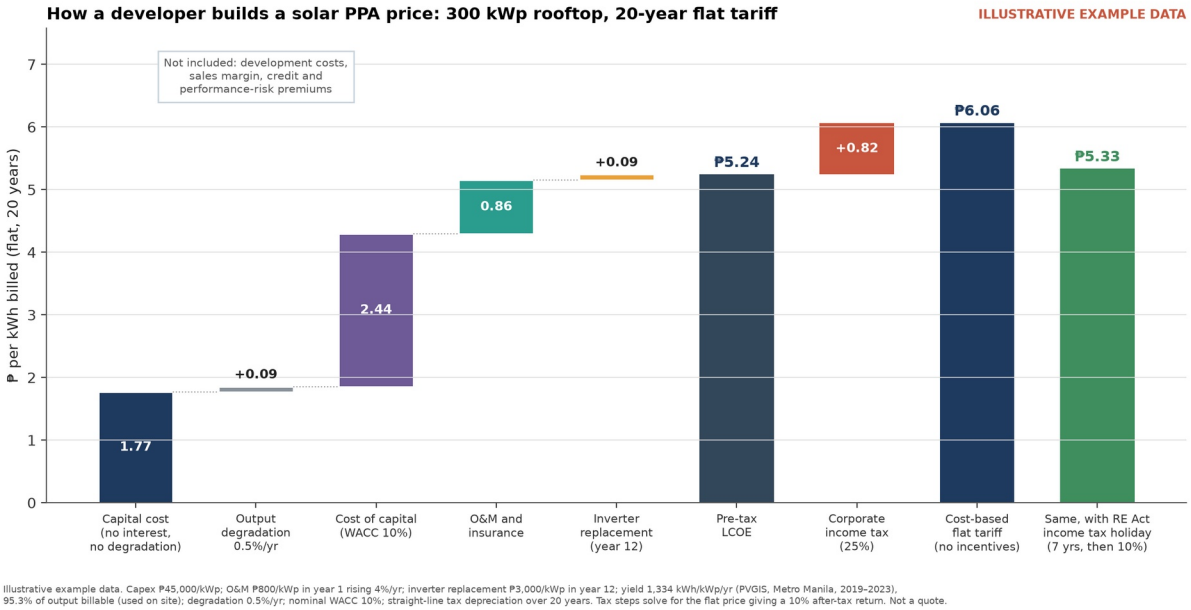


Figure 7.2. Illustrative example data: how the components of Table 7.1 add up to a price. The cost of capital is the largest single block. Not a quote.

Figure 7.2 breaks the price into blocks. The capital cost alone, spread over twenty years of output with no interest, is about ₱1.77 per kWh. The cost of capital adds ₱2.44, more than the equipment itself in this example. Operation, maintenance and insurance add ₱0.86, and degradation and the inverter replacement add less than ₱0.10 each. The pre-tax LCOE is ₱5.24. Corporate income tax at 25%[4] lifts the flat price needed for a 10% after-tax return to ₱6.06. If the developer is registered under the Renewable Energy Act and can use its seven-year income tax holiday and 10% rate thereafter,[5] the same return needs only ₱5.33. These incentives are not automatic; they require registration with the Department of Energy (DOE) and the Board of Investments.[6]

Two lessons follow. First, money is the biggest cost. A buyer who lowers the developer's financing cost, through a strong credit profile, a parent guarantee or a longer contract, lowers the price more than one who haggles over panel brands. Second, real offers sit above this cost-based number. The gap pays for development, sales, guarantees and the developer's view of your credit and your site. Knowing the cost-based number tells you how big that gap is.

7.2 Verified cost benchmarks: the Philippines and the region

Table 7.2 collects benchmarks for each input, from sources checked for this chapter. Treat installer price guides as indications, not statistics, and remember that utility-scale costs are lower than rooftop costs.

Table 7.2. Cost and finance benchmarks for solar PPA pricing (verified, as of mid-October 2026)

Input	Benchmark	Source and caveat
Capex, commercial and industrial rooftop	₱40,000–₱55,000 per kWp installed (EPC)	Two Philippine installers' published 2026 guides;[7] marketing material,

		not independent statistics
Capex, utility-scale solar (global)	US$691/kW in 2024, global weighted average (about ₱43,500/kW at ₱62.985/US$)	IRENA;[1] exchange rate of 16 October 2026[8]
Yield, Metro Manila	1,328 kWh/kWp/yr long-term average (about 15.2% capacity factor)	PVGIS, 10° tilt, 14% losses[3]
Capacity factor, utility-scale solar	17% global weighted average in 2024; 16–17% at the sites Ember modelled in the Philippines, Viet Nam and Indonesia	IRENA;[1] Ember[9]
O&M, utility-scale solar	US$13.1/kW per year all-in global weighted average, 2024	IRENA;[1] utility-scale data; rooftop O&M costs can differ
Degradation	Median 0.5% a year across nearly 2,000 measured rates	NREL review[10]
Policy interest rate	5.00% BSP target reverse repurchase rate after a 25 bp hike on 27 August 2026; 75 bp of tightening since April	Philstar[11]
Bank lending rate	7.695% a year, universal and commercial banks, May 2026	BSP data via CEIC[12]
Inflation	7.2% headline CPI in September 2026; 5.4% January–September average	PSA via GMA News[13]
Utility-scale solar LCOE, region	US$0.033/kWh (China) to US$0.070/kWh (United States); US$0.043 global, 2024	IRENA[1]
Solar ceiling prices, ASEAN	US$0.076/kWh Philippines; US$0.053 northern Viet Nam; US$0.09 Sumatra (US$0.049 in years 11–20)	Ember[9]
Tax	25% regular corporate income tax; RE Act: 7-year income tax holiday, then 10%, zero-rated VAT on RE power sales	RA 12066;[4] RA 9513[5]

Compiled by the author from the sources cited. Peso conversions use the 16 October 2026 closing rate and are indicative only.

Interest rates and inflation deserve a word of caution. A developer pricing a twenty-year contract today does so with the policy rate at 5.00% after three consecutive increases, bank lending rates near 7.7%, inflation at its fastest pace since March 2023, and a peso that touched a record low in early trading on 16 October 2026 before closing at ₱62.985 per US dollar.[11,12,13,8] Imported equipment is priced in dollars and debt costs have risen, so prices offered today may be higher than prices offered eighteen months ago, even though global equipment costs have fallen.

What the Green Energy Auctions tell you

The DOE's Green Energy Auction (GEA) programme provides the most transparent Philippine price discovery for new renewable capacity. Winning bidders receive a 20-year

Green Energy Tariff (GET) from commercial operation, at or below a ceiling, the GEA Reserve (GEAR) price, set by the ERC.[14] Table 7.3 summarises the rounds.

Table 7.3. Green Energy Auction rounds: ceiling prices and results (verified)

Round	Technologies and ceiling (GEAR) prices, ₱/kWh	Results
GEA-1 (2022)	Solar 3.6779; wind 6.0584; biomass 5.0797; run-of-river hydro 5.4913	Winning solar bids ₱3.40–₱3.6779/kWh[15]
GEA-2 (2023)	Ground-mounted solar 4.4043; rooftop solar 4.8738; floating solar 5.3948; onshore wind 5.8481	3,440.756 MW awarded, including 1,878.982 MW of ground-mounted solar; individual prices not retrieved for this chapter[16]
GEA-3 (2025)	Geothermal, hydropower, biomass and other non-solar technologies	About 6,720 MW awarded; geothermal awards at ₱5.1092–₱7.6441/kWh[17]
GEA-4 (2025)	Ground-mounted solar 4.4832; rooftop 5.68; floating 6.5258; onshore wind 6.0859; solar + storage (IRESS) 5.4028	10,195 MW across 123 projects. Ground-mounted solar: 58 awards, 4,179 MW, ₱3.58–₱4.48, median ₱4.10, capacity-weighted ₱4.03. Rooftop: all 4 awards at ₱5.68. IRESS: median ₱5.13. Onshore wind: ₱4.88–₱6.09[18,19]
GEA-5 (offshore wind)	Fixed-bottom offshore wind 11.00 (approved 19 February 2026)	Suspended on 4 July 2026; auction indicatively targeted for 1 December 2026; no awards as of 18 October 2026[20,21]

Compiled by the author. GEA-4 statistics calculated by the author from the DOE's list of winning bidders (Advisory No. 5). GEA-3 total as reported by ThinkGeoEnergy.

The GEA-4 results are the best current anchor for utility-scale solar: a median winning price of about ₱4.10 per kWh, with about seven in ten of the 58 ground-mounted awards between ₱3.90 and ₱4.30. They are not, however, the price a business should expect to pay. Auction prices are wholesale prices at the plant for very large projects. They exclude transmission, distribution, system loss and the supplier's margin. They also benefit from a one-time indexation between award and commercial operation that the ERC built into the GEAR-4 framework.[19] Rooftop projects, at the ₱5.68 ceiling, show how much more small, distributed systems cost. Use the auctions to test the generation-cost element of an offsite offer, and to check whether an onsite developer's cost story is plausible.

7.3 The main price structures

A PPA price has two parts: a starting level and a rule for how it moves. The rule allocates risk. Seven structures cover almost every offer a Philippine buyer will see, and Figure 7.3 shows how they behave.

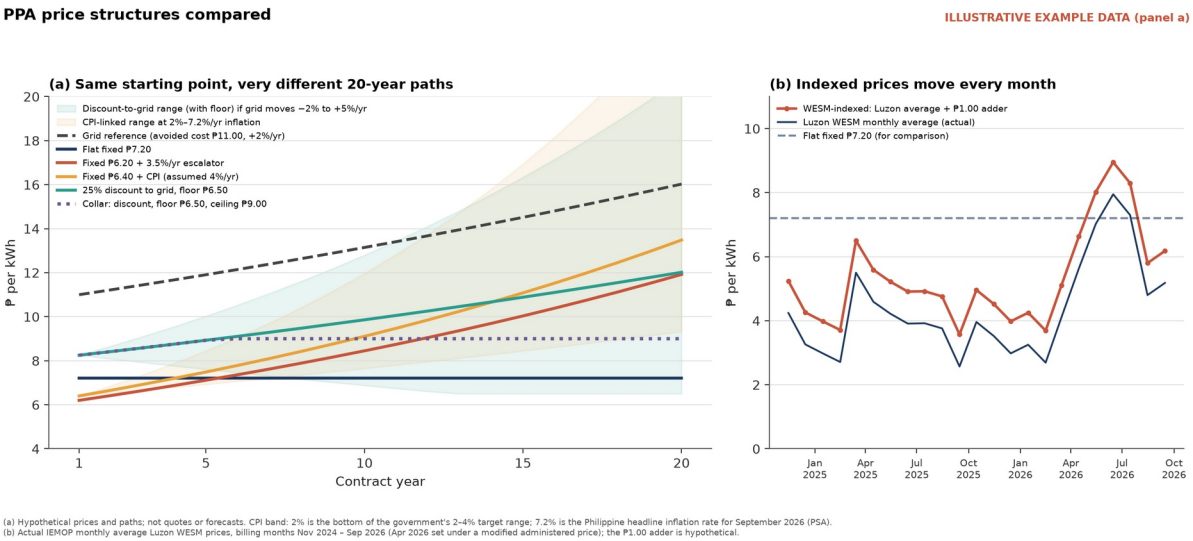


Figure 7.3. Panel (a), illustrative example data: price paths of the main structures over a 20-year term. Panel (b): an indexed price using actual Luzon WESM averages, November 2024 to September 2026, with a hypothetical adder.[22]

Flat fixed price

One price per kWh for the whole term. It gives perfect budget certainty and captures all the upside if grid prices rise, but it can leave you paying more than the grid if grid prices fall a long way. Because inflation erodes its real value every year, a flat price usually starts higher than an escalating one of equal value.

Fixed price with an escalator

The price starts lower and rises each year by a fixed percentage g, or by an inflation index:

$$P_t = P_1 \times (1+g)^{t-1} \vee P_t = P_1 \times \frac{CPI_t}{CPI_0} \tag{7.3}$$

A fixed escalator is predictable. A CPI escalator transfers inflation risk to you; Section 7.6 shows how expensive that can be. In the illustrative model, a developer needing a flat ₱6.06 would accept ₱5.14 in year one with a 2.5% escalator, ending at ₱8.21 in year twenty. The two have the same value to the developer; the escalating one simply moves your payments later.

Discount to grid

The price is a percentage δ below a defined grid reference G_t, such as the DU's generation charge or all of its per-kWh charges. Developers usually add a floor F:

$$P_t = max\left(F, (1-\delta)G_t\right) \tag{7.4}$$

You save the same percentage every month while the floor does not bind, so the structure is easy to explain to a board. But the developer's revenue follows the grid, so the developer prices in grid-price risk, and the floor hands the downside back to you when grid prices fall. The definition of G_t matters enormously: Meralco's October 2026 generation charge was ₱10.2005 per kWh, while the sum of all per-kWh charges for a General Power secondary customer was about ₱11.70.[23,24]

Indexed to WESM or to the generation charge

Common in offsite RES contracts, the price follows a market reference W_t, typically the regional WESM price, plus a fixed adder a, so that $P_t = W_t + a$. You get market prices, good and bad. Figure 7.3(b) shows what that meant in practice: the Luzon monthly average moved from ₱2.57 per kWh in the September 2025 billing month to ₱7.95 in June 2026.[22] Indexing to the DU's generation charge instead is smoother, because that charge blends long-term contracts, but it still moves monthly.

Collar: floor and ceiling

A collar puts a floor F and a ceiling C on an indexed or discount-to-grid price:

$$P_t = min\left(C, max\left(F, (1-\delta)G_t\right)\right) \tag{7.5}$$

The buyer gives up savings below the floor in exchange for protection above the ceiling. A well-designed collar is roughly symmetrical in value. A collar with a high floor and a ceiling far above any plausible grid price is a fixed price in disguise, with the risk on your side.

Blended and time-of-use prices

A blended price averages several sources, for example solar during the day and conventional supply at night, into one RES tariff. A time-of-use price charges different rates by hour or season. Both can match your load better, but they hide the price of each component. Ask for the components and the weights, and check how the blend changes if your load shape changes.

Take-or-pay versus pay-as-produced

This is a volume rule that sits alongside every price rule. Under pay-as-produced, you pay only for the energy delivered or used, and the developer carries weather, availability and, for onsite systems, the risk that your load falls. Under take-or-pay, you pay for a minimum quantity, often a percentage of forecast output, whether or not you use it. Take-or-pay lowers the developer's risk and should lower the price. Accept it only if you are paid for it, and only for a quantity you are sure to use, because a change in your operations turns unused energy into a pure cost.

7.4 Who carries which risk

Table 7.4. Risk allocation by price structure

Structure	Grid-price risk	Inflation risk	Budget predictability	Main watch-out
Flat fixed	Buyer, if grid prices fall below the price	Developer	High	Starting level; no escape if grid prices fall
Fixed + % escalator	Buyer, rising over time	Shared: fixed by contract	High	Compounding; compare over the full term
Fixed + CPI	Buyer	Buyer	Medium	Uncapped CPI in high-inflation years
Discount to grid	Shared; developer while the floor does not bind	Follows the grid	Low in pesos, high in % savings	Definition of the grid reference; floor level
Indexed (WESM or generation charge)	Buyer, fully	Follows the market	Low	Monthly volatility; regional price separation
Collar	Shared within the band	Follows the reference within the band	Medium	Asymmetric floor and ceiling
Blended or time-of-use	Depends on the components	Depends on the components	Medium	Opaque weights; load-shape changes
Take-or-pay (any structure)	Unchanged	Unchanged	Lower: adds volume risk	Paying for energy you cannot use

Prepared by the author. 'Buyer' means the risk falls on the buyer's cost relative to the grid.

No structure removes risk; each moves it. The right choice depends on which risk your business is better placed to carry. Figure 7.4 turns that judgement into a selection matrix: read across a row for your priority, and down a column to see a structure's profile.

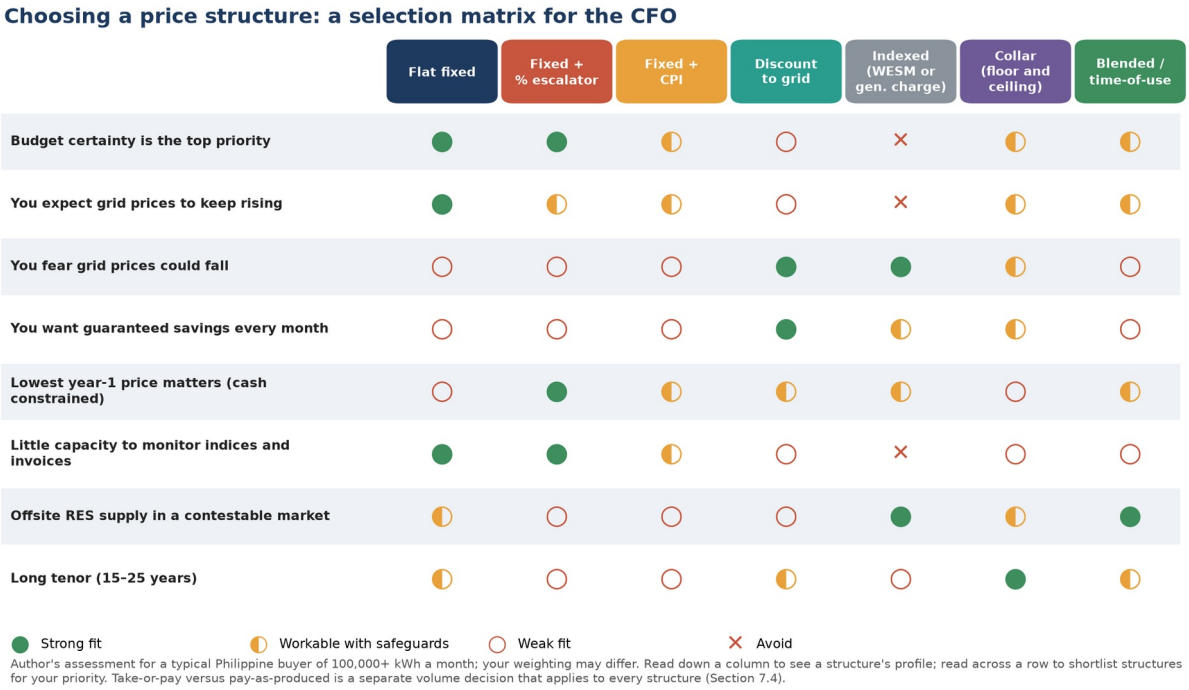


Figure 7.4. Price-structure selection matrix. Author's assessment for a typical Philippine buyer of 100,000 kWh or more a month.

7.5 Comparing offers: levelised cost to the buyer and NPV

Offers with different structures need a common yardstick. Two measures do the job. The levelised cost to the buyer (LCB) is the mirror image of the developer's LCOE: the constant price that has the same present value as the payments you will actually make, per kWh you will actually receive. With price P_t, energy E_t and your own discount rate ρ:

$$LCB = \frac{\sum_{t=1}^{N} \frac{P_t E_t}{(1+\rho)^t}}{\sum_{t=1}^{N} \frac{E_t}{(1+\rho)^t}} \tag{7.6}$$

The NPV of savings measures how much better off you are than with grid supply, where G_t is the grid cost you avoid:

$$NPV = \sum_{t=1}^{N} \frac{(G_t - P_t) E_t}{(1+\rho)^t} \tag{7.7}$$

Use a discount rate that reflects your own cost of funds, not the developer's. Compute the NPV under several grid paths, not one: a grid-linked offer has a different LCB in each scenario, a fixed offer the same. Put every offer on the same basis first: the same volume and degradation assumptions, the same treatment of VAT and pass-through charges, and

every cost you bear, such as security deposits, roof access and any minimum-take shortfall payments.



Figure 7.5. A spreadsheet that puts every offer on the same basis, with the same volumes, the same grid scenarios and the buyer's own discount rate, is the most valuable tool in a PPA negotiation. (AI-generated illustrative image; generic scene, no identifiable persons.)

7.6 Escalator traps

Escalators are where most pricing mistakes hide. Watch for these:

1. Compounding. A 3.5% annual escalator raises the price by 92% by year twenty ($1.035^{19} \approx 1.92$). Always compare the levelised cost over the full term, not the first invoice.
2. Uncapped CPI. Philippine headline inflation was 7.2% in September 2026.[13] At 7.2% a year for nineteen years, a CPI-linked price would rise to about 3.7 times its starting level. Insist on a cap, a collar or a fixed rate.
3. Escalation from signing, not from operation. If the clock starts at contract signature and construction takes a year, your first invoice is already escalated. Escalation should start at commercial operation.
4. Ratchets. Some clauses pass on index increases but not decreases. An index should work both ways.
5. Escalating the whole price. Pass-through items such as taxes or charges that are already indexed elsewhere should not be escalated twice.
6. Currency links. A price partly linked to the US dollar imports peso risk; the peso set record lows in October 2026.[8] Make sure the contract is in pesos, or that any foreign-exchange link is capped.
7. Teaser pricing. A low year-one price with a steep escalator can be worth less to you than a higher flat price. Break even before you sign.

8. Escalated buyout and termination values. If the buyout schedule is linked to the escalated price, early exit grows costlier every year.

7.7 Sensitivity analysis

A single NPV is a point estimate built on uncertain inputs. Sensitivity analysis changes one input at a time and shows how far the result moves. Figure 7.6 presents the results as tornado charts, with the most influential inputs at the top.

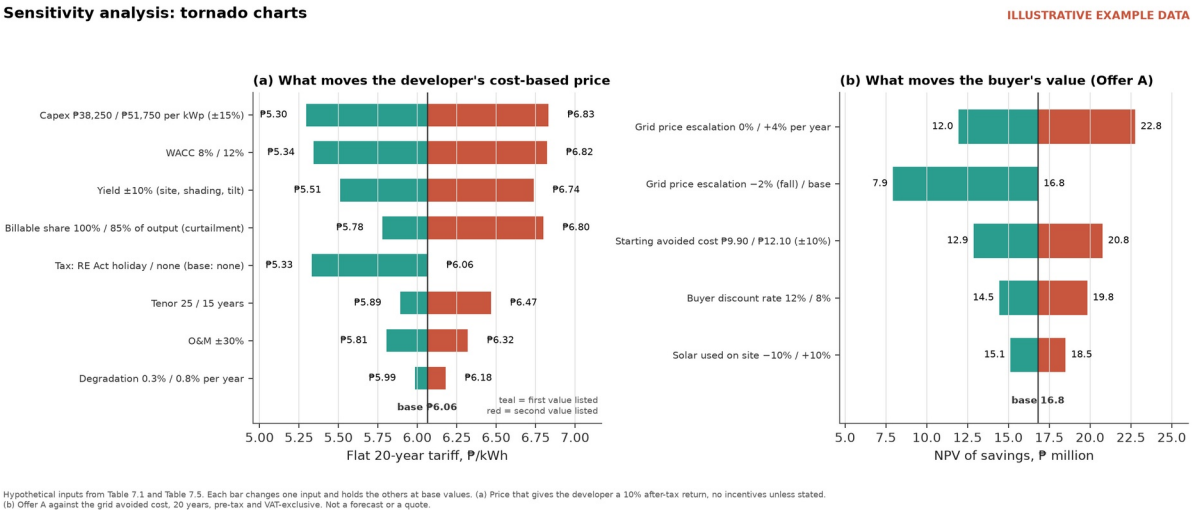


Figure 7.6. Illustrative example data: tornado charts for the developer's cost-based price (a) and the buyer's NPV of savings for Offer A in Section 7.9 (b). Hypothetical inputs; not a forecast or a quote.

On the developer's side (panel a), capex and WACC dominate. A 15% swing in capex moves the cost-based price from ₱5.30 to ₱6.83, and two percentage points of WACC move it from ₱5.34 to ₱6.82. Yield and the billable share matter almost as much: if only 85% of output can be used and billed, the price needed rises to ₱6.80. That is why developers resist pay-as-produced terms at sites with weekend shutdowns. Degradation and O&M matter less than their prominence in sales presentations suggests.

On the buyer's side (panel b), the future of grid prices dominates everything else. With grid costs flat, Offer A's NPV of savings falls from ₱16.8 million to ₱12.0 million; if grid prices fell 2% a year, it would be ₱7.9 million. History gives no reliable guide to the direction: Meralco's generation charge almost doubled between February 2022 and October 2026, from ₱5.1957 to ₱10.2005 per kWh, while average WESM prices fell from ₱5.58 per kWh in 2024 to ₱4.32 in the first eleven months of 2025.[24,25] The right question is therefore not which path is most likely, but whether the offer still makes sense on the paths you fear.

7.8 What a 'good' price looks like

Figure 7.7 places the illustrative cost-based price on a ladder of verified Philippine benchmarks. They are not like-for-like, and the comparison you need depends on the PPA type.

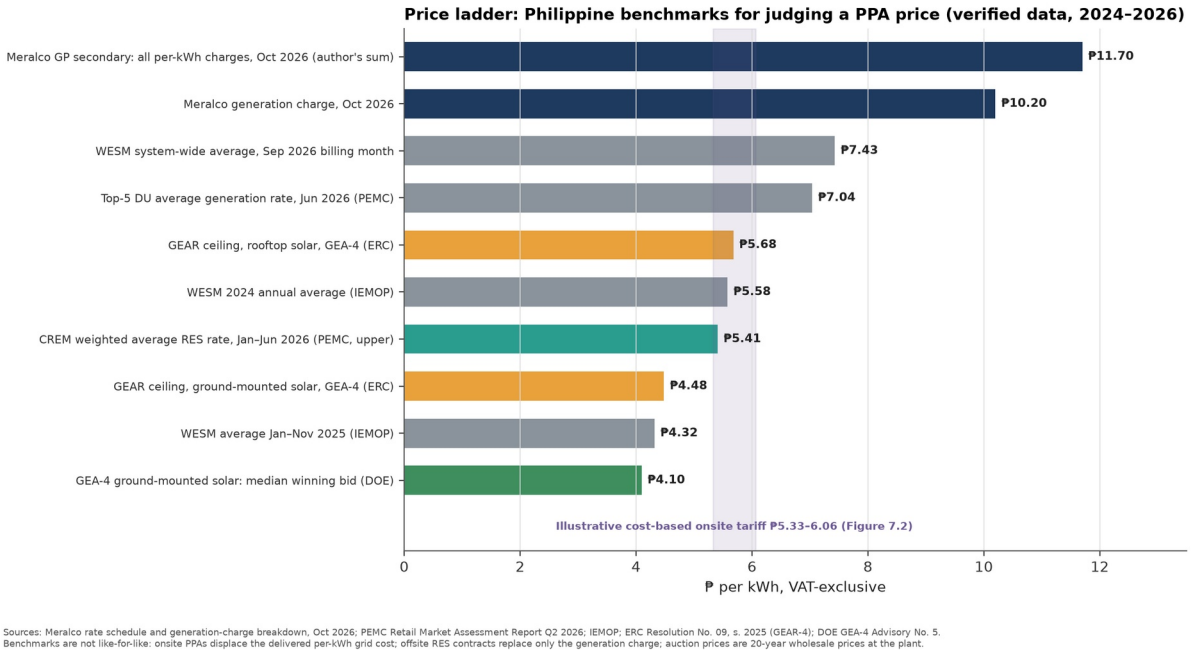


Figure 7.7. Price ladder of verified Philippine benchmarks, 2024–2026, with the illustrative cost-based onsite tariff from Figure 7.2.[18,19,22,23,24,25,26]

- Onsite solar displaces the full delivered per-kWh cost of grid power, about ₱11.70 per kWh for a Meralco General Power secondary customer in October 2026, though some charges are billed per kW and are not avoided.[23] An onsite price comfortably below that, and close to a defensible cost-based number such as the ₱5.33–₱6.06 range in Figure 7.2 plus a reasonable margin, is a good price.
- Offsite RES contracts replace only the generation charge. PEMC reports a weighted average contract rate for RES and Local RES of ₱5.33–₱5.41 per kWh in January–June 2026, against an average generation rate for the five largest DUs that rose from ₱6.12 to ₱7.04 per kWh.[26] A renewable offsite offer well above the market average needs a reason, such as a longer fixed term, RECs or a clean-energy claim.
- Wholesale benchmarks set a floor on expectations. GEA-4 ground-mounted solar cleared at a median of about ₱4.10 per kWh at the plant,[18] and Luzon WESM averaged ₱5.18 in the September 2026 billing month.[22] No supplier can sell you delivered renewable power at those prices and stay in business, but an offer far above them deserves scrutiny.

Three tests summarise the judgement. Is the price below your avoided cost, not only today but on a grid path that falls 2% a year? Is its levelised cost to you within a defensible margin of a cost-based estimate? And is it competitive with at least two other offers on the same basis? A price that passes all three is good, whatever its headline discount.

7.9 An illustrative offer comparison

Return to the hypothetical manufacturer of Chapter 4: a Metro Manila site using about 100,000 kWh a month, hosting a 300 kWp zero-export rooftop system whose output is about 381,500 kWh in year one, all used on site. Three developers make the offers in Table 7.5.

Table 7.5. Illustrative example data: three developer offers for the same 300 kWp onsite system

Term	Offer A	Offer B	Offer C
Price structure	Flat ₱7.20/kWh	₱6.20/kWh in year 1, +3.5% a year	25% below avoided grid cost, floor ₱6.50
Volume rule	Pay-as-produced	Pay-as-produced	Take-or-pay: at least 90% of forecast output
Term	20 years	20 years	20 years
Year-1 price	₱7.20	₱6.20	₱8.25
Common assumptions	Avoided grid cost ₱11.00/kWh in year 1, base case +2% a year; tested at −2%, 0% and +4%; buyer's discount rate 10%; degradation 0.5% a year; pre-tax, VAT-exclusive		

Illustrative example data. All offers, prices and grid paths are hypothetical; not quotes or forecasts. The ₱11.00 avoided cost follows Chapter 4, below the October 2026 Meralco GP secondary per-kWh sum of about ₱11.70.

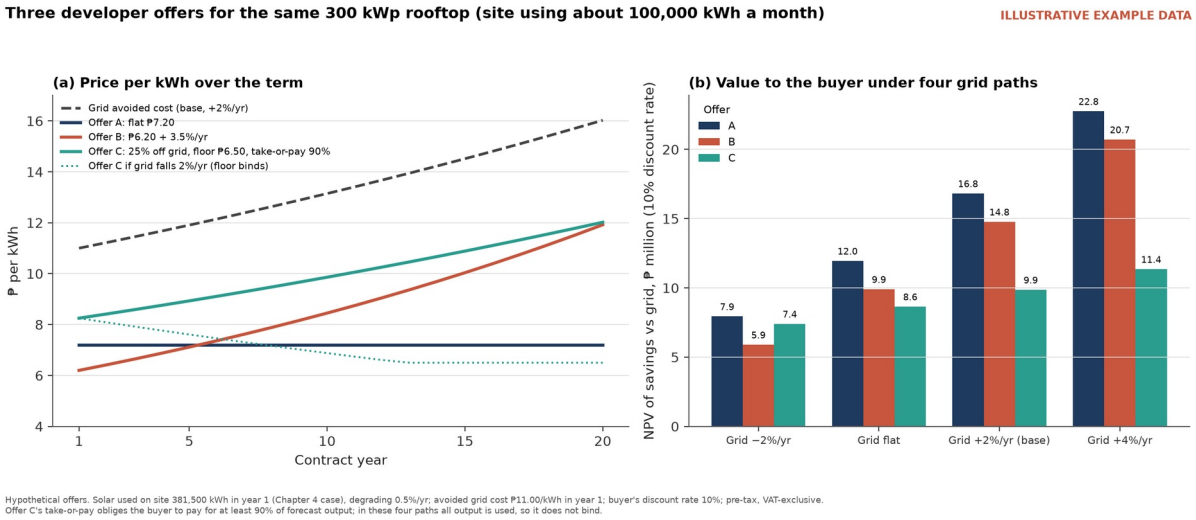


Figure 7.8. Illustrative example data: price paths of the three offers (a) and the buyer's NPV of savings under four grid paths (b). Hypothetical offers; not quotes or forecasts.

Table 7.6. Illustrative example data: results of the offer comparison

Metric	Offer A	Offer B	Offer C
Year-20 price (base grid path)	₱7.20	₱11.92	₱12.02
Levelised cost to buyer, base	₱7.20	₱7.85	₱9.41
NPV of savings, grid −2%/yr (₱ million)	7.9	5.9	7.4

NPV of savings, grid flat	12.0	9.9	8.6
NPV of savings, grid +2%/yr (base)	16.8	14.8	9.9
NPV of savings, grid +4%/yr	22.8	20.7	11.4
NPV if solar used falls 20% from year 6 (base grid)	14.7	13.2	7.0
Worst single year's saving, grid −2%/yr (₱)	101,819	(1,535,110)	344,609

Illustrative example data computed by the author (build/charts_ch7.py). NPV at the buyer's 10% discount rate over 20 years; brackets denote a loss against the grid.

Offer B has the lowest year-one price, but its 3.5% escalator carries it to ₱11.92 by year twenty, and its levelised cost of ₱7.85 is higher than Offer A's flat ₱7.20. If grid prices fell 2% a year, Offer B would cost more than the grid in its final years. To match Offer A, B would need an escalator of about 2.3%, or a year-one price of about ₱5.69 with its 3.5% escalator.

Offer C promises a 25% saving every month and sounds the safest. Yet because it tracks the grid, its levelised cost rises with grid prices, from ₱7.37 to ₱10.83 across the four paths, and its NPV is the lowest whenever grid prices are flat or rising. Its take-or-pay clause adds a hidden cost: if the plant dropped a shift and used 20% less solar from year six, the buyer would keep paying for 90% of forecast output, and the NPV would fall to ₱7.0 million. Matching Offer A in the base case would need a discount of about 43% with the same floor.

Offer A gives the highest NPV in all four grid paths and positive savings in every year of every path tested. It is the best of the three here, but that is a feature of these hypothetical numbers, not a rule. Change the starting prices and the ranking can change. What matters is the method: same volumes, several grid paths, the buyer's discount rate, and a downside test for the volume rule.

7.10 Negotiation levers

Section 7.1 showed what drives the developer's cost; each driver is also a lever.

- Ask for an open-book cost build-up. A developer that shows its capex, yield, opex and target return lets you test the price against Table 7.2 and Figure 7.2.
- Lower the developer's financing cost. A parent guarantee, a standby letter of credit, a strong payment record or a longer term can reduce the risk premium more than any discount request.
- Trade volume risk for price, explicitly. If you accept a modest take-or-pay on energy you will certainly use, ask for the price reduction that buys.
- Cap or remove escalators, and start them at commercial operation. Ask for the flat-price equivalent of any escalating offer.

- Make floors and ceilings symmetrical. If the developer wants a floor, ask for a ceiling of comparable value.
- Define the grid reference precisely: which charges, which customer class, which DU publication, and what happens when the tariff structure changes.
- Share the incentives. If the developer is registered under the RE Act or other regimes, ask how the tax savings are reflected in your price.
- Negotiate the buyout schedule, curtailment and deemed-energy definitions, performance guarantees and change-in-law clauses alongside the price, not after it.
- Compete. Three comparable offers on the same specification are worth more than any single negotiating tactic.



Figure 7.9. The price is negotiated together with the clauses that move it: escalators, floors, volume rules and buyouts. (AI-generated illustrative image; generic scene, no identifiable persons.)

7.11 Pricing checklist

1. Starting price, unit and basis: ₱ per kWh, VAT treatment, and which charges are included or passed through.
2. Price rule: flat, escalator (rate, start date, cap), CPI (index, base date, cap, two-way), discount (reference, floor), index (source, region, adder), collar (floor and ceiling).
3. Volume rule: pay-as-produced or take-or-pay; minimum quantity; treatment of curtailment, outages and your own downtime.
4. Levelised cost to the buyer and NPV of savings at your discount rate, under at least three grid paths including a falling one.
5. Comparison with a cost-based estimate and with the benchmarks in Figure 7.7.
6. Tornado test: which input moves the outcome most, and can you live with the downside?

7. Buyout and termination values, and whether they are linked to the escalated price.
8. Currency: peso-denominated, or any foreign-exchange link capped.
9. Change-in-law, tax and regulatory pass-through clauses and their limits.
10. Credit support required from you, and its cost.
11. At least three comparable offers, on the same specification and the same basis.

Key takeaways

- A developer's price starts as a cost: capex, opex, yield, degradation, WACC, tenor and tax, combined in the LCOE. The cost of capital is usually the biggest block.
- In the illustrative 300 kWp case, the pre-tax LCOE is about ₱5.24 per kWh and the cost-based flat tariff ₱5.33–₱6.06, depending on tax incentives. Offers above that include margin and risk premiums, which you can negotiate.
- GEA-4 ground-mounted solar cleared at a median of about ₱4.10 per kWh and rooftop solar at ₱5.68. These are wholesale benchmarks, not delivered prices.
- Every price structure allocates risk differently. Fixed prices protect against rising grid costs; grid-linked prices protect against falling ones; escalators and CPI links move cost into later years.
- Compare offers by levelised cost to the buyer and NPV of savings, at your own discount rate, under several grid paths, on the same basis.
- Escalators compound: 3.5% a year means 92% higher by year twenty. Uncapped CPI links are dangerous when inflation is 7.2%.
- Sensitivity analysis shows that grid-price direction dominates the buyer's outcome. Choose an offer that still works on the path you fear.
- A good price is below your avoided cost on a falling grid path, close to a defensible cost-based estimate, and competitive with other offers.

Questions a CFO should ask

1. What is the developer's cost-based price, and how large is the margin in its offer?
2. What is the levelised cost to us of each offer, at our own discount rate, over the full term?
3. What is the NPV of savings if grid prices fall 2% a year, stay flat, or rise 4% a year?
4. Which single input most changes our outcome, and what happens if it goes against us?
5. Exactly which grid charges does a discount-to-grid offer reference, and what is the floor?
6. Is any escalator capped, two-way, and starting at commercial operation?
7. Are we paying for energy we might not use, and what would a 20% fall in our load cost us?
8. Is the contract in pesos, and are any foreign-exchange or CPI links capped?
9. How do the buyout and termination values change over time?

10. Have we obtained at least three comparable offers on the same specification?

Pricing tells you what each kWh will cost. The next step is to turn those prices into a full savings model for your own site, with your load profile, your tariff, your tax position and your financing. Chapter 8, "Modelling Your Savings", shows how to build one.

Notes

All sources were accessed on 17–18 October 2026 (Asia/Manila). Laws, regulations and auction results are cited from official texts or reputable summaries as indicated. Installer price guides and company reports describe individual companies' practices and are not market-wide statistics. Tax outcomes depend on facts and should be confirmed with your own advisers.

1. International Renewable Energy Agency (IRENA), 'Renewable Power Generation Costs in 2024', Abu Dhabi, July 2025, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2025/Jul/IRENA_TEC_RPGC_in_2024_2025.pdf (Table S1: solar PV global weighted average total installed cost US$691/kW, capacity factor 17% and LCOE US$0.043/kWh in 2024; utility-scale solar LCOE from US$0.033/kWh in China to US$0.070/kWh in the United States; weighted average all-in O&M US$13.1/kW per year in 2024; Annex I definition of the LCOE as the price at which revenues equal costs, including a return on capital equal to the discount rate). Values in 2024 US dollars.
2. Energy Regulatory Commission (ERC), Resolution adopting the Green Energy Auction Reserve (GEAR) price for Round 5 (offshore wind), approved 19 February 2026, with Annex A listing parameters and justifications (e.g. 30-year economic life, 36.8% net capacity factor, construction period, equipment packages), https://prod-cms.doe.gov.ph/documents/d/guest/ogcs-prom-0606-2026-reso-no-05-series-of-2026-with-annex-a-pdf; ERC statements on GEAR-4 describing a discounted cash flow model with 41 parameters, Manila Standard, 'ERC sets prices for 4th green energy auction in September', https://manilastandard.net/business/314603507/erc-sets-prices-for-4th-green-energy-auction-in-september.html.
3. European Commission Joint Research Centre, PVGIS v5.3, Metro Manila (14.55°N, 121.03°E), 1 kWp crystalline silicon, 10° tilt, 14% system losses: long-term average (PVGIS-ERA5, 2005–2023) 1,328 kWh/kWp per year; hourly series 2019–2023 averaging about 1,334 kWh/kWp per year, https://re.jrc.ec.europa.eu/pvg_tools/en/. As cited in Chapter 4 (data file build/pvgis_manila_2019_2023_ch4.json). Capacity factors calculated by the author (kWh/kWp ÷ 8,760 h).
4. Republic Act No. 11534 (CREATE Act), amending Section 27(A) of the NIRC, as further amended by Republic Act No. 12066 (CREATE MORE), https://lawphil.net/statutes/repacts/ra2024/ra_12066_2024.html (25% regular corporate income tax). As cited in Chapter 3.
5. Republic Act No. 9513, Renewable Energy Act of 2008, Section 15, https://www.lawphil.net/statutes/repacts/ra2008/ra_9513_2008.html (seven-year income tax holiday for registered RE developers; 10% corporate tax after the holiday; zero-rated VAT on the sale of power from renewable sources). As cited in Chapter 3.
6. Bureau of Internal Revenue, Revenue Regulations No. 7-2022, as summarised by Ablola, Saribong & Gueco Law, 30 June 2022, https://www.makatilawfirm.com/2022/06/30/rr-no-7-2022-tax-incentives-and-compliance-rules-for-renewable-energy-developers-suppliers-and-biomass-producers-in-the-philippines/ (incentives not self-executing; DOE and BOI registration required). As cited in Chapter 3.
7. Ecoplus Solar, 'Solar Energy for Philippine Manufacturing Plants and Warehouses: A Complete Guide (2026)', 28 July 2026, https://ecoplus.ph/solar-energy-for-philippine-manufacturing-plants-and-warehouses-a-complete-guide-2026/ (commercial or industrial system 'typically costs between ₱40,000 and ₱55,000 per kWp installed under an EPC contract'); QC Solar Panel Installer, 'Commercial Solar Cost per kWp in Quezon City (2026)', last updated July 2026, https://qcsolarpanelinstaller.com/guides/commercial-solar-cost-per-kwp-quezon-city/ (₱40,000–₱55,000 per kWp for straightforward commercial rooftop systems). Installer marketing publications, cited as indications only.

8. The Manila Times, 'Peso rebounds from record low, closes at P62.985:$1', 16 October 2026, https://www.manilatimes.net/2026/10/16/business/peso-rebounds-from-record-low-closes-at-p629851/2447280 (close of ₱62.985 on 16 October 2026 from ₱63.06 on 15 October; intraday record low). Conversions by the author.

9. Ember, 'From emission-intensive to investment hotspots: Championing renewables in 3 ASEAN economies', Chapter 3, 'Solar project economics in three countries', published 2 December 2025, updated 13 April 2026, https://ember-energy.org/latest-insights/from-emission-intensive-to-investment-hotspots-championing-renewables-in-3-asean-economies/solar-project-economics-in-three-countries/ (sites with 16–17% capacity factors; PPA ceiling prices US$0.09/kWh in Sumatra with US$0.049/kWh in years 11–20, US$0.076/kWh in the Philippines and US$0.053/kWh in northern Viet Nam).

10. D. C. Jordan and S. R. Kurtz, 'Photovoltaic Degradation Rates — An Analytical Review', Progress in Photovoltaics, 2013 (NREL preprint NREL/JA-5200-51664), https://docs.nlr.gov/docs/fy12osti/51664.pdf (median degradation 0.5% per year across nearly 2,000 reported rates; mean 0.8%).

11. Philstar.com, 'Analysts see scope for one more BSP rate hike', 3 September 2026, https://www.philstar.com/business/2026/09/03/2553578/analysts-see-scope-one-more-bsp-rate-hike (Monetary Board raised the target reverse repurchase rate by 25 basis points to 5% on 27 August 2026; cumulative 75 bp since April; peso down 4.9% against the dollar since the start of 2026). The BSP's next scheduled meeting was 22 October 2026, after this chapter was written.

12. CEIC Data, 'Philippines Bank Lending Rate', sourced from the Bangko Sentral ng Pilipinas, https://www.ceicdata.com/en/indicator/philippines/bank-lending-rate (7.695% per annum in May 2026, universal and commercial banks).

13. GMA News Online, 'Inflation snaps four-month easing, accelerates to 7.2% in September 2026', 6 October 2026, https://www.gmanetwork.com/news/money/economy/1004884/inflation-snaps-four-month-easing-accelerates-to-7-2-in-september-2026/story/ (PSA: 7.2% in September 2026, from 6.1% in August; fastest since March 2023; year-to-date average 5.4%; government target range 2–4%). See also Philippine Statistics Authority, https://psa.gov.ph/price-indices/cpi-ir.

14. DOE, 'Philippines opens Green Energy Auction 4, integrating energy storage for a sustainable future', press release, https://legacy.doe.gov.ph/press-releases/philippines-opens-green-energy-auction-4-integrating-energy-storage-sustainable (supply contracts for 20 years from commercial operation; Green Energy Tariff subject to indexation as determined by the ERC; IRESS technical requirements).

15. Power Philippines, 'ERC sets GEAR prices under GEAP', https://powerphilippines.com/erc-sets-gear-prices-under-geap/ (GEA-1 GEAR: solar ₱3.6779, wind ₱6.0584, biomass ₱5.0797, run-of-river hydro ₱5.4913/kWh); Matuwid na Singil sa Kuryente, 'DOE bares details of winning green energy auction bidders', July 2022, https://matuwid.org/doe-bares-details-of-winning-green-energy-auction-bidders/, reporting DOE Advisory No. 5 (21 July 2022), https://legacy.doe.gov.ph/geap/advisory-no-5-list-winning-bidders-gea-1-corresponding-bid-details (solar offers from ₱3.40 to ₱3.6779/kWh).

16. Power Philippines, 'DOE generates 3,580 MW under GEA-2', 4 July 2023, https://powerphilippines.com/doe-generates-3580-mw-under-gea-2/ (final GEAR-2 prices: rooftop solar ₱4.8738, ground-mounted solar ₱4.4043, floating solar ₱5.3948, onshore wind ₱5.8481/kWh); Philstar.com, 'DOE lists winning bids in green energy auction', 14 July 2023, https://www.philstar.com/business/2023/07/14/2280849/doe-lists-winning-bids-green-energy-auction (105 winning bids; 3,440.756 MW, including 1,878.982 MW ground-mounted solar; 20-year supply agreements).

17. ThinkGeoEnergy, 'Philippines awards 30.9 MW in geothermal GEA-3 round', 10 June 2025, https://www.thinkgeoenergy.com/philippines-awards-30-9-mw-in-geothermal-gea-3-round/ (geothermal rates ₱5.1092–₱7.6441/kWh; 6,720.2 MW awarded across all GEA-3 technologies).

18. DOE, GEA-4 Advisory No. 5, 'List of Winning Bidders under GEA-4' (offered price, capacity and delivery date for each award), https://doe.gov.ph/renewable-energy-programs/green-energy-auction/gea-4/advisory-5; pv magazine, 'Philippines increases allocation under fourth energy auction', 10 November 2025, https://www.pv-magazine.com/2025/11/10/philippines-increases-allocation-under-fourth-energy-auction/ (10,195 MW across 123 projects). Statistics by technology calculated by the author from the DOE list (src/ch7/gea4_parsed.json).

19. ERC Resolution No. 09, Series of 2025, 9 June 2025, as summarised by Ocampo & Suralvo Law Offices, 2 October 2025, https://www.ocamposuralvo.com/2025/10/02/erc-adopts-green-energy-auction-reserve-gear-prices-for-round-4-of-the-green-energy-auction-program-geap/ (final GEAR-4: rooftop solar ₱5.6800, ground-mounted ₱4.4832, floating ₱6.5258, onshore wind ₱6.0859, solar + ESS ₱5.4028/kWh); Manila Standard, as in note 2 (indexation occurring once between the certificate of award and commercial operation, per DOE DC2025-06-0009).

20. ERC Resolution adopting the GEAR price for GEA-5, as in note 2 (₱11.00/kWh; 3,300 MW for delivery 2028–2030); Philippine Information Agency, 'DOE Issues Notice of Auction and Terms of Reference for GEA-5', 25 November 2025, https://pia.gov.ph/press-release/doe-issues-notice-of-auction-and-t-erms-of-reference-for-gea-5-launches-philippines-first-offshore-wind-only-green-energy-auction/ (fixed-bottom offshore wind; 20-year supply delivery period).

21. DOE, 'DOE Sets Indicative Timeline for Recalibrated GEA-5 Offshore Wind Auction', media release, 29 July 2026, https://doe.gov.ph/news/press-releases/3585498--doe-sets-indicative-timeline-for-recalibrated-gea-5-offshore-wind-auction (suspension under GEA-5 Advisory No. 2 of 4 July 2026; Auction Proper indicatively targeted for 1 December 2026; all dates indicative).

22. Independent Electricity Market Operator of the Philippines (IEMOP), 'Market Operations Highlights', monthly reports, billing months November 2024 to July 2026 (Luzon averages, e.g. ₱2.57/kWh September 2025, ₱7.95/kWh June 2026; April 2026 set on a modified administered price); IEMOP news release, 10 September 2026 (August 2026: Luzon ₱4.80/kWh); Power Philippines, 'WESM price climbs to PHP 7.43/kWh despite wider supply margin', 13 October 2026, https://powerphilippines.com/wesm-price-climbs-to-php-7-43-kwh-despite-wider-supply-margin/ (September 2026: system-wide ₱7.43, Luzon ₱5.18/kWh). As cited in Chapters 5 and 6 (series in src/ch6/wesm_monthly.json).

23. Meralco, 'Summary Schedule of Rates, Effective October 2026 Billing', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_rate_schedule.pdf (General Power secondary per-kWh items; per-kW transmission, ancillary and distribution charges; rates VAT-exclusive). The ₱11.70/kWh figure is the author's sum of per-kWh items, as in Chapter 4.

24. Meralco, 'Breakdown of Generation Charge', monthly tables, February 2022 to October 2026 (generation charge ₱5.1957/kWh in February 2022 and ₱10.2005/kWh in October 2026), e.g. https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_gc_table_0.pdf. As cited in Chapter 1.

25. IEMOP, 'The Electricity Spot Market at Work: Lower Market Prices for the First Half of 2025', https://www.iemop.ph/news/the-electricity-spot-market-at-work-lower-market-prices-for-the-first-half-of-2025/ (2024 average ₱5.58/kWh); Philstar.com, 'WESM prices hit fresh lows in 2025', 5 January 2026, https://www.philstar.com/business/2026/01/05/2498730/wesm-prices-hit-fresh-lows-2025 (January–November 2025 average ₱4.32/kWh). As cited in Chapter 1.

26. Philippine Electricity Market Corporation (PEMC), 'Retail Market Assessment Report for 2nd Quarter of 2026' (QRMAR-2026-02), September 2026, https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/NDI1OA== (weighted average CREM rate of RES and Local RES ₱5.33–₱5.41/kWh, January–June 2026; top five DU average generation rate from ₱6.12/kWh in January to ₱7.04/kWh in June 2026). As cited in Chapter 5.

Figure and image credits

Figures 7.4 and 7.7 and Tables 7.2, 7.3 and 7.4 were prepared by the author from the sources noted; GEA-4 statistics were calculated by the author from the DOE's list of winning bidders. Figures 7.2, 7.3(a), 7.6 and 7.8 and Tables 7.1, 7.5 and 7.6 use illustrative example data generated by the author's model (build/charts_ch7.py): the solar yield is PVGIS data for Metro Manila and Figure 7.3(b) uses IEMOP's actual monthly Luzon WESM averages, but capex, opex, financing, tax case, offers, grid-price paths and CPI paths are hypothetical and are not market quotes or forecasts. Figures 7.1, 7.5 and 7.9 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting or investment advice. PPA prices depend on site, credit, contract terms and market conditions at the time of offer; obtain competing offers and confirm tax and regulatory treatment with qualified Philippine advisers before signing.

CHAPTER 8

Modelling Your Savings: NPV, IRR, Payback and Sensitivity, Step by Step

The data you need, an eight-step model build, the metrics that matter, and how to test and present the answer

---

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: Why model · The data you need · Baseline grid-cost forecast, volumes, option costs, residual grid cost and savings · Payback, NPV, IRR, levelised cost to the buyer and SIR · When IRR misleads · Choosing a discount rate · A worked example: grid only, onsite PPA, lease-to-own, purchase and RES supply · Sensitivity, scenario and Monte Carlo analysis · Break-even analysis · Common mistakes · Presenting to the board · The companion Excel template · Model checklist · Key takeaways and CFO questions



Figure 8.1. A savings model turns a stack of electricity bills and a set of contract offers into one comparable number for each option, and an honest range around it. (AI-generated illustrative image; generic scene, no identifiable persons.)

Chapters 3 to 7 explained the main ways a Philippine business can buy cleaner or cheaper power: buying or leasing a solar system, signing an onsite power purchase agreement (PPA), contracting with a Retail Electricity Supplier (RES), or entering a virtual PPA. They also showed how each is priced. This chapter puts the pieces into a single financial model. It explains what data you need, how to build the model one step at a time, which metrics to calculate and how to read them, how to choose a discount rate, and how to test the answer against uncertainty.

A full worked example follows a site using 100,000 kWh a month, the same hypothetical manufacturer used in earlier chapters, and compares five choices: staying on grid supply, an onsite PPA, a lease-to-own system, an outright purchase and a RES contract. Every number in the example can be reproduced in the companion Excel template, Chapter08_Savings_Model.xlsx, which you can download from solarmd.net. It is built with live formulas, so you can replace the illustrative inputs with your own.

Terms used in this chapter

Baseline: what you would pay for electricity over the model period if you did nothing, also called the grid-only or counterfactual case.

NPV: net present value, the sum of all future cash flows from a decision, each discounted back to today at your discount rate.

IRR: internal rate of return, the discount rate at which the NPV of a cash-flow stream equals zero.

Payback: the time until cumulative savings repay the initial outlay; discounted payback uses discounted savings.

LCB: levelised cost to the buyer, the constant price per kWh with the same present value as

everything you will pay for an option (Chapter 7).

SIR: savings-to-investment ratio, the present value of savings divided by the investment.

WACC: weighted average cost of capital, the blended after-tax return your lenders and shareholders require.

RES: Retail Electricity Supplier, licensed by the ERC. In this book RES always means Retail Electricity Supplier.

8.1 Why model, and what decision the model supports

A savings model is not a forecast of the future. Nobody knows what Meralco's generation charge will be in 2040. A model is a disciplined way to compare options under the same assumptions, to find out which assumptions matter, and to show a board how the answer changes when those assumptions turn out to be wrong.

Be clear about the decision before you open a spreadsheet. In most companies it is one of four questions:

1. Should we act at all, or stay on grid supply?
2. If we act, which structure: PPA, lease, purchase, RES contract, or a combination?
3. Is this particular offer good enough to sign, and what would make it better?
4. How much risk are we taking, and can we live with the bad cases?

Each question needs the same core model but a different output. The first needs the NPV of savings against the baseline. The second needs NPVs of mutually exclusive options computed on the same basis. The third needs break-even values: the price, cost or grid-price path at which the offer stops paying. The fourth needs sensitivity, scenario and Monte Carlo analysis. A model built for the first question alone will mislead you on the other three.

8.2 The data you need

The quality of a model is set by its inputs. Table 8.1 lists what to collect before you start. Most of it you already have; the rest your distribution utility (DU), your engineers or the bidders can provide.

Table 8.1. Data checklist for a PPA savings model

Data	Why it matters	Where to get it
12–24 months of electricity bills	Sets the baseline: kWh, billing kW, every charge line, refunds and adjustments; reveals seasonality	Accounts payable; DU online portal
Interval or load data (15-minute or hourly)	Shows how much solar you can use on site and when; needed for zero-export sizing and time-of-use offers	DU interval meter, building management system, or a temporary load logger
Tariff components for your	Separates charges solar can avoid	DU's published rate schedule

customer class	(per kWh) from those it cannot (per kW, per customer)	(Meralco's monthly Summary Schedule of Rates)[1]
Site data	Roof area, structure, shading, orientation and connection point determine system size and yield	Site survey; PVGIS or a bankable yield study[2]
Contract terms	Price rule, escalator, term, volume rule, handover or buyout, termination, security deposits	Each bidder's term sheet (Chapters 2 and 7)
Company finance data	Tax position, depreciation policy, cost of debt and equity, loan covenants	Finance and tax teams; lenders

Prepared by the author.

Bills alone are not enough for an onsite project. A monthly bill tells you how much you used, not when. A plant that runs two shifts on weekdays will use almost all of its rooftop solar output; a warehouse that closes at weekends will not. If your DU cannot provide interval data, a temporary logger on the main incoming feeder for a few representative weeks is cheap insurance against oversizing a system whose surplus, under a zero-export design, is simply thrown away.



Figure 8.2. Interval data shows when a site uses power. Where the DU meter cannot supply it, a temporary load logger on the main feeder fills the gap. (AI-generated illustrative image; generic scene, no identifiable persons.)

8.3 Building the model, step by step

Figure 8.3 shows the build as eight steps. The first five produce a year-by-year cash flow for each option. The sixth turns those cash flows into metrics, the seventh tests them, and the eighth packages them for a decision. The companion template follows the same sequence, one sheet per step.

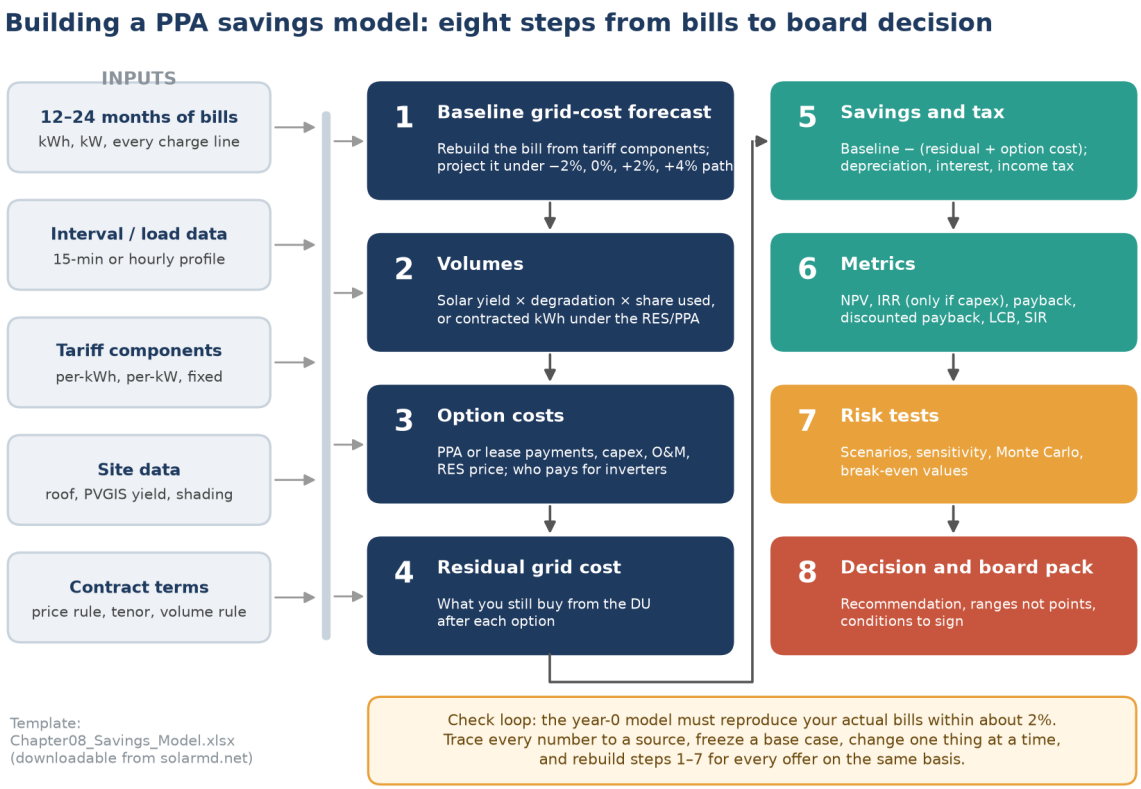


Figure 8.3. Building a PPA savings model: eight steps from bills to a board decision. Prepared by the author.

Step 1: the baseline grid-cost forecast

Start by rebuilding your current bill from the tariff components. With annual consumption Q in kWh, per-kWh charges p_E, billing demand D in kW, per-kW charges p_D and fixed monthly charges F, the grid-only cost in year t under an escalation rate g is:

$$B_t = \left(Q \times p_E + 12 \times D \times p_D + 12 \times F\right) \times \left(1+g\right)^{t-1} \tag{8.1}$$

Table 8.2 does this for the example site on Meralco's October 2026 General Power secondary rates. If the rebuilt bill does not match your actual bills within about 2%, find out why before going further: a missing charge, a demand ratchet or a rate class error will flow through every later number.

Table 8.2. Rebuilding the year-1 bill for the example site (100,000 kWh and 250 kW a month)

Component	Rate (October 2026, VAT-exclusive)	Monthly amount
Per-kWh charges: generation, system loss, distribution energy, universal charges, FIT-All, refunds and other items	₱11.7035/kWh, of which generation ₱10.2005	₱1,170,350
Per-kW charges: transmission, ancillary services and distribution demand	₱606.08/kW	₱151,520
Fixed charges: supply and metering	₱6,883.90/month	₱6,884

Total	All-in average ₱13.29/kWh	₱1,328,754 (₱15.95 million a year)

Rates from Meralco's Summary Schedule of Rates, October 2026 billing;[1] consumption and demand are illustrative example data. Same calculation as in Chapter 5.

Next, project the bill forward. Here the history in earlier chapters is a warning rather than a guide. Meralco's generation charge rose from ₱5.1957 per kWh in February 2022 to ₱10.2005 in October 2026, a compound rate of about 15.6% a year.[3] Yet it fell about 9% between October 2023 and October 2024 before rising 23% and then 27% in each of the next two years. Average WESM prices fell from ₱5.58 per kWh in 2024 to ₱4.32 in the first eleven months of 2025,[4] and the Luzon monthly average then ranged from ₱2.57 in September 2025 to ₱7.95 in June 2026 (Figure 8.4a).[5] Extending the 2022–2026 rate for 25 years would multiply the bill about 37 times, which no one should believe. Extending the 2024–2025 fall would be just as unwise.

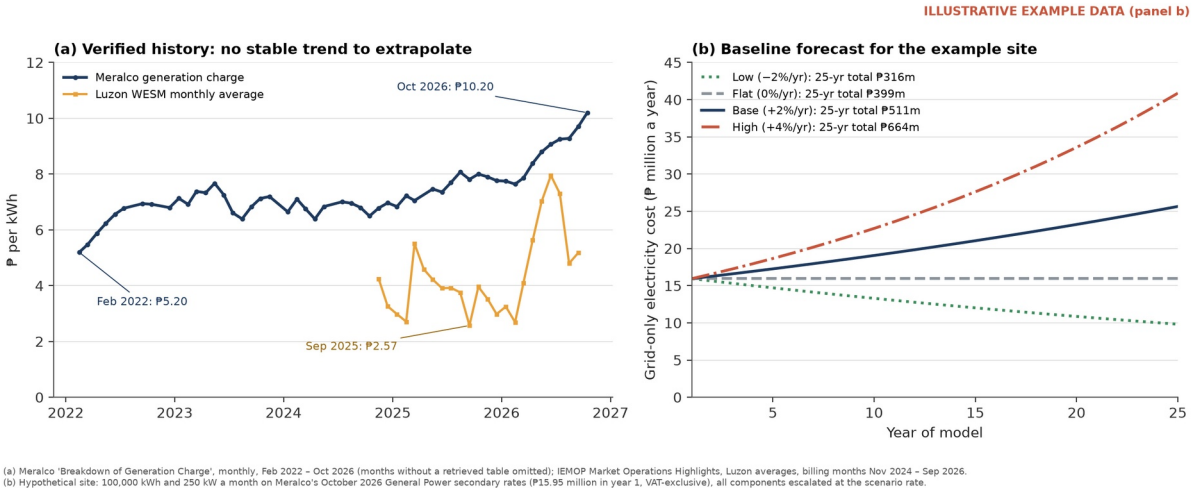


Figure 8.4. Panel (a): verified history of Meralco's generation charge and Luzon WESM prices.[3,5] Panel (b), illustrative example data: the example site's grid-only cost under four escalation scenarios.

The practical answer is a small set of long-run average escalation scenarios that bracket the plausible range, used consistently across every option. This book uses −2%, 0%, +2% (base) and +4% a year, as in Chapters 4 and 7. They are not predictions; they are the range within which the decision should hold. Over 25 years, the example site's grid-only bill totals ₱316 million in the low scenario and ₱664 million in the high one (Figure 8.4b). Year-to-year volatility, which the history shows is large, belongs in the risk analysis of Section 8.7, not in the base case.

Step 2: volumes

For onsite solar, the energy you use in year t depends on system size P in kWp, specific yield Y in kWh per kWp, the share s of output used on site, and annual degradation d:

$$E_t = P \times Y \times s \times (1 - d)^{t-1} \tag{8.2}$$

For the example, PVGIS hourly data for Metro Manila give a yield of 1,334 kWh per kWp a year.[2] Matching that output against the site's load profile, as in Chapter 4, shows that 95.3% of a 300 kWp zero-export system's output can be used, about 381,511 kWh in year 1, or 32% of consumption. Degradation is set at 0.5% a year, the median of measured field rates.[6] For a RES contract, the volume is your whole consumption, or the contracted quantity; check any minimum-take clause against a realistic low-load year.

Step 3: the cost of each option

Write down, year by year, everything you pay under each option and who pays for what. For a PPA, that is the price times the energy delivered or used, plus anything you take on at the end of the term. For a lease, it is the lease payments, plus operation and maintenance (O&M) once the lessor stops providing it. For a purchase, it is the capital cost in year 0, O&M and insurance every year, and the inverter replacement. For a RES contract, it is the RES price for the generation component; the regulated network charges stay with the DU. Leave nothing out: security deposits, metering upgrades, roof repairs and termination payments are all costs.

Step 4: residual grid cost

No option in this chapter removes the grid bill. With A_t the grid cost avoided per solar kWh, the residual bill after an onsite option is:

$$R_t = B_t - E_t \times A_t \tag{8.3}$$

The avoided cost A_t is lower than the all-in average of ₱13.29. Solar does not reliably reduce per-kW demand charges, because the monthly peak can fall on a cloudy hour or after sunset, and it does not touch fixed charges. The per-kWh charges sum to about ₱11.70; as in Chapters 4 and 7, the example uses ₱11.00, leaving a margin for items such as temporary refunds that may not be avoided.[1] For a RES contract, the saving is the difference between the DU generation charge and the RES price, plus the DU supply charge, which a contestable customer no longer pays the DU.[7]

Step 5: savings and tax

The pre-tax saving of each option in year t is the baseline minus everything you still pay, where C_t is the cost of the option itself:

$$S_t = B_t - \left(R_t + C_t\right) \tag{8.4}$$

Then convert to after-tax cash flow. Electricity is a deductible expense, so lower bills raise taxable income, and at the regular 25% corporate income tax rate each peso saved is worth 75 centavos after tax.[8] An owner claims depreciation instead of deducting the capital cost,[9] and under a lease-to-own contract that the BIR treats as a conditional sale,

the lessee deducts depreciation and the interest element rather than the full rental.[10] The template applies these rules year by year. Confirm them, and any incentives you qualify for, with your tax adviser.

8.4 The metrics, and when each one misleads

Simple and discounted payback

Payback is the year k in which cumulative cash flow C first turns positive, interpolated within that year:

$$SPB = k - 1 + \frac{\left|C_{k-1}\right|}{CF_k} \tag{8.5}$$

Discounted payback uses the same formula with each cash flow first divided by $(1+r)^t$. Payback is easy to explain and a useful liquidity check, but it ignores everything after the payback year and says nothing about value. The life-cycle costing manual of the US National Institute of Standards and Technology (NIST), the reference method for US federal energy projects, warns that payback is not a measure of long-term economic performance or profitability.[11] An option with no upfront cost, such as a PPA or a zero-down lease, has an immediate payback, which tells you nothing about which option is better.

Net present value

NPV adds up the after-tax cash flows CF_t of an option relative to the baseline, each discounted at rate r:

$$NPV = \sum_{t=0}^{N} \frac{CF_t}{(1+r)^t} \tag{8.6}$$

A positive NPV means the option creates value compared with doing nothing. When options are mutually exclusive, as rooftop PPA, lease and purchase are for the same roof, choose the one with the highest NPV, calculated over the same horizon and on the same assumptions. NPV is the primary metric in this book.

Internal rate of return

The IRR is the discount rate that makes the NPV zero:

$$\sum_{t=0}^{N} \frac{CF_t}{(1+IRR)^t} = 0 \tag{8.7}$$

IRR is popular because it reads like an interest rate. It misleads in three common situations.

1. No investment, no IRR. An onsite PPA or a RES contract with no upfront cost and positive savings from the first month has no outflow to earn a return on. The IRR does not exist; spreadsheet functions return an error or a meaningless number. Use the NPV of savings.
2. Ranking mutually exclusive options. A small project can have a higher IRR and a lower NPV than a large one. IRR also assumes interim cash flows are reinvested at the IRR itself; McKinsey has shown how this can overstate returns badly when the IRR is far above the cost of capital.[12] To compare buying with a PPA, compute the IRR of the difference between the two cash-flow streams, the incremental IRR, or simply compare NPVs.
3. Cash flows that change sign more than once, for example a large inverter replacement or a buyout payment in a later year, can produce more than one IRR.

Levelised cost to the buyer

Chapter 7 introduced the levelised cost to the buyer (LCB). With an upfront cost I_0, payments P_t and energy E_t:

$$LCB = \frac{I_0 + \sum_{t=1}^{N} \frac{P_t}{(1+r)^t}}{\sum_{t=1}^{N} \frac{E_t}{(1+r)^t}} \tag{8.8}$$

Compare an option's LCB with the levelised value of what it replaces: the avoided grid cost for solar, or the DU generation charge for a RES contract. The gap, multiplied by the discounted energy, is roughly the pre-tax NPV.

Savings-to-investment ratio

The SIR divides the present value of savings after the investment by the investment itself:

$$SIR = \frac{1}{I_0} \sum_{t=1}^{N} \frac{CF_t}{(1+r)^t} \tag{8.9}$$

An SIR above 1 is the same as a positive NPV. NIST recommends the SIR for ranking independent projects when capital is limited, not for choosing between mutually exclusive alternatives.[11] A company deciding whether to spend scarce capital on solar or on a new production line can use it; a company choosing between a PPA and a purchase for the same roof should use NPV.

8.5 Choosing a discount rate

The discount rate converts future savings into today's pesos. For a company, the usual starting point is its after-tax WACC, where E and D are the market values of equity and debt, $V = E + D$, r_E is the cost of equity, r_D the pre-tax cost of debt and T the tax rate:

$$WACC = \frac{E}{V} r_E + \frac{D}{V} r_D (1 - T) \tag{8.10}$$

The cost of equity can be estimated from a peso risk-free rate r_f, less the sovereign default spread s already embedded in Philippine government bond yields, plus your company's beta β times an equity risk premium (ERP) for the Philippines:

$$r_E = r_f - s + \beta \times ERP \tag{8.11}$$

Table 8.3 gives the market inputs as verified for this chapter. They have moved sharply in 2026, and they will move again, so update them when you run your own model.

Table 8.3. Discount-rate inputs (verified, mid-October 2026)

Input	Value	Source and caveat
BSP policy rate (target reverse repurchase rate)	5.00% since 27 August 2026, after three 25 bp increases since April	AsianBondsOnline; BusinessWorld. The Monetary Board meets on 22 October 2026, after this chapter was written, and several banks expected a further increase[13]
10-year government bond yield (BVAL)	8.013% on 14 October 2026 (5-year 7.679%; 20-year 8.355%; 25-year 8.344%)	Bureau of the Treasury; AsianBondsOnline shows 8.016% at the close on 15 October 2026, up about 194 bp in 2026[14]
Philippine sovereign default spread and equity risk premium	Default spread 1.62%; total ERP 6.69% (Baa2 rating)	Damodaran, January 2026 update; an academic estimate, widely used but not official[15]
Bank lending rate	7.695% a year, universal and commercial banks, May 2026	BSP data via CEIC; before the June and August rate increases[16]
Headline inflation	7.2% in September 2026; 5.4% January–September average	PSA[17]

Compiled by the author from the sources cited.

Applying equation (8.11) with a beta of 1.0 gives a cost of equity of about 8.0% − 1.6% + 6.7% ≈ 13.1%. With a pre-tax cost of debt of 8.5%, 25% tax and equal weights of debt and equity, equation (8.10) gives a WACC of about 9.7%. The worked example rounds this to 10%, the rate used in Chapters 3 and 7. These company inputs are illustrative; the template's WACC sheet lets you enter your own.

Three refinements matter in practice. First, be consistent: the escalation scenarios and the discount rate are both nominal, so both include inflation, which at 7.2% in September 2026 is well above the 2–4% government target.[17] Second, fixed contractual payments,

such as a lease or a flat PPA price, are debt-like and some analysts discount them at the after-tax cost of debt; uncertain savings are riskier and arguably deserve a higher rate. Third, whatever rate you choose, test the answer at two percentage points either side. If the ranking of options changes within that band, tell the board.

8.6 A worked example: one site, five choices

The example site is the hypothetical Metro Manila manufacturer used throughout this book: 100,000 kWh and 250 kW a month on Meralco's General Power secondary rate. Table 8.4 lists the assumptions. They follow Chapters 3 to 7 where sensible: the 300 kWp zero-export rooftop and ₱11.00 avoided cost of Chapter 4, the capital and O&M costs and the flat ₱7.20 PPA offer of Chapter 7, the 12% ten-year lease of Chapter 3, and the ₱8.60 fixed RES price of Chapter 5. With an average peak demand of 250 kW, the site is above the 100 kW threshold for retail competition that took effect on 26 June 2026.[18]

Table 8.4. Illustrative example data: assumptions for the worked example

Item	Assumption
Grid only (baseline)	Meralco GP secondary, October 2026 rates (Table 8.2): ₱15.95 million in year 1; all charges escalate at −2%, 0%, +2% (base) or +4% a year
Solar system (PPA, lease, purchase)	300 kWp rooftop; yield 1,334 kWh/kWp (PVGIS); 95.3% used on site; 0.5%/yr degradation; 381,511 kWh used in year 1; avoided cost ₱11.00/kWh in year 1
Onsite PPA	Flat ₱7.20/kWh, pay-as-produced, 20 years; developer pays O&M and the inverter; system handed over free at year 20; buyer pays O&M in years 21–25
Lease-to-own	Zero down; ₱13.5 million financed at 12% over 10 years (₱2.39 million a year); lessor pays O&M during the lease; ownership then transfers; taxed as a conditional sale
Purchase	₱45,000/kWp (₱13.5 million) paid in year 0; O&M and insurance ₱800/kWp in year 1, rising 4% a year; inverter replacement ₱3,000/kWp in year 12
RES supply	All consumption; fixed ₱8.60/kWh for the first 3 years against the ₱10.2005 DU generation charge; renewals at 10% below the DU generation charge; DU supply charge no longer billed
Finance and tax	25% income tax, company profitable; 10-year straight-line tax depreciation; after-tax discount rate 10%; 25-year horizon; annual, end-of-year cash flows; VAT ignored

Illustrative example data. All prices, costs and paths are hypothetical; not quotes or forecasts. Meralco rates and the PVGIS yield are actual data.

Table 8.5 and Figure 8.5 show the base-case results.

Table 8.5. Illustrative example data: results for the base case (+2% a year grid escalation)

Metric	Onsite PPA	Lease-to-own	Purchase	RES supply
Upfront investment	None	None	₱13.5 million	None

Year-1 after-tax saving (₱ million)	1.09	1.50	3.30	1.47
25-year after-tax saving, nominal (₱ million)	53.1	70.6	76.2 (net of capex)	32.5
NPV of after-tax savings at 10% (₱ million)	14.8	20.0	18.1	11.8
IRR	None (no investment)	None (no investment)	25.2%	None (no investment)
Simple / discounted payback	Immediate	Immediate	4.0 / 5.4 years	Immediate
Savings-to-investment ratio	n/a	n/a	2.34	n/a
Levelised cost to buyer, pre-tax (₱/kWh)	6.88	4.87	5.03	10.52
Levelised value of what it replaces (₱/kWh)	12.80	12.80	12.80	11.92 (generation charge)
NPV, grid −2% / 0% / +4% a year (₱ million)	6.7 / 10.3 / 20.6	11.9 / 15.5 / 25.8	10.1 / 13.6 / 23.9	8.4 / 9.9 / 14.0

Illustrative example data computed by the author (build/charts_ch8.py), reproduced by the Results and Scenarios sheets of Chapter08_Savings_Model.xlsx. After tax, VAT-exclusive, 25 years.

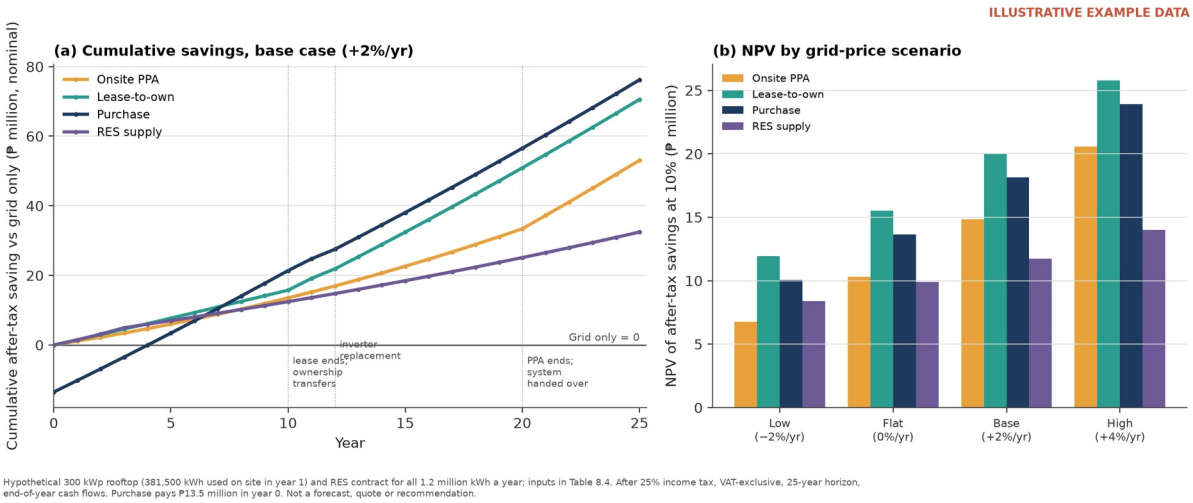


Figure 8.5. Illustrative example data: cumulative after-tax savings of each option against grid only (a), and NPV under four grid-price scenarios (b). Hypothetical inputs from Table 8.4; not a forecast or a quote.

Five points stand out. First, every option beats the grid in every scenario. The question for this site is not whether to act but how. Second, the purchase has the most impressive headline: an IRR of 25.2%, payback in 4.0 years and the largest 25-year saving, ₱76.2 million. But it ties up ₱13.5 million of capital and places all performance risk on the company.

Third, the IRR is the wrong guide to the buy-or-PPA choice. The PPA has no IRR at all. The right question is what return the company earns on the extra ₱13.5 million it spends by

buying rather than signing the PPA. The incremental IRR of the purchase over the PPA is 13.8%, only about four points above the 10% discount rate, and the NPV advantage is ₱3.3 million. That is a real but modest reward for committing capital and taking on the system's risks.

Fourth, the lease-to-own has the highest NPV in the base case, ₱20.0 million, as it did in Chapter 3. That is not magic. Its 12% interest rate costs about 9% after tax, below the 10% discount rate, and the lessor carries O&M for ten years. The ranking is sensitive to the discount rate: below about 6.7%, the purchase overtakes it. A cash-rich company with a low cost of capital should buy; a company that values its capital at 10% or more may prefer the lease, provided its loan covenants can absorb the lease liability that, as Chapter 3 explained, comes onto the balance sheet.

Fifth, the RES contract delivers the lowest NPV, ₱11.8 million, but on a different base. It saves on all 1.2 million kWh, not only the solar share, and needs no roof. Its savings are also the least sensitive to grid prices, because they track the generation charge. RES supply and onsite solar are not alternatives: the model can stack them, with the solar kWh then displacing the RES price rather than the DU generation charge, so the combined saving is less than the sum of the two. As a check on consistency, Chapter 7's Offer A showed an NPV of ₱16.8 million pre-tax over 20 years; on this chapter's after-tax, 25-year basis the same offer is worth ₱14.8 million.

8.7 Sensitivity, scenario and Monte Carlo analysis

Three tools test how far the answer can move. They answer different questions, and a good model uses all three.

Sensitivity analysis

Sensitivity analysis changes one input at a time, holding the others at base values. Table 8.6 shows the results for the example. Chapter 7 presented the same idea as a tornado chart.

Table 8.6. Illustrative example data: NPV with one input changed (₱ million)

Input changed (low / high case)	Onsite PPA	Lease-to-own	Purchase	RES supply
Starting avoided cost ₱9.90 / ₱12.10 (±10%)	11.6 to 18.0	16.8 to 23.2	14.9 to 21.3	11.8 to 11.8
Grid escalation 0% / +4% a year	10.3 to 20.6	15.5 to 25.8	13.6 to 23.9	9.9 to 14.0
Solar yield −10% / +10%	13.3 to 16.3	16.8 to 23.2	14.9 to 21.3	11.8 to 11.8
Discount rate 12% / 8%	12.3 to 18.2	16.6 to 24.7	13.7 to 23.9	10.2 to 13.8
Capex +15% / −15%	14.8 to 14.8	18.4 to 21.6	16.4 to 19.9	11.8 to 11.8

PPA price ₱7.92 / ₱6.48 (±10%)	13.1 to 16.5	20.0 to 20.0	18.1 to 18.1	11.8 to 11.8
O&M +30% / −30%	14.8 to 14.9	19.7 to 20.3	17.5 to 18.8	11.8 to 11.8
Degradation 0.8% / 0.3% a year	14.4 to 15.1	19.3 to 20.5	17.4 to 18.7	11.8 to 11.8
RES renewal discount 5% / 15%	14.8 to 14.8	20.0 to 20.0	18.1 to 18.1	8.0 to 15.5

Illustrative example data. Base-case NPVs: PPA 14.8, lease 20.0, purchase 18.1, RES 11.8. An unchanged range means the input does not affect that option.

Grid-price escalation and the starting avoided cost dominate the solar options; the discount rate comes next, and it matters most for the purchase, whose savings must repay an upfront cost. Capex, O&M and degradation, the subjects of most sales conversations, move the answer far less. For the RES contract, the assumption that matters most is one that is rarely written down: the discount you will obtain when the first contract expires.

Scenario analysis

Scenarios change several inputs together in a way that tells a coherent story. The four grid paths in Table 8.5 are the simplest scenarios. Others worth building are a 'fuel shock' with high escalation and high inflation, a 'market glut' with falling WESM prices, and an 'operations change' in which the plant drops a shift and uses 20% less solar from year six. Chapter 7 showed how a take-or-pay clause turns that last scenario into a direct cost.

Monte Carlo analysis

Monte Carlo analysis assigns a probability distribution to each uncertain input, draws thousands of random combinations, and computes the NPV for each. NIST's manual calls it the most common form of simulation used for uncertainty analysis, and notes that it can be done in most spreadsheet programs; it also warns that careless use of probabilistic models can produce meaningless or misleading results.[11] The result is a distribution rather than a point. Two rules make it useful. Apply the same random draw to every option, so that comparisons are like-for-like. And do not randomise the discount rate: it expresses your required return, not an uncertain outcome.

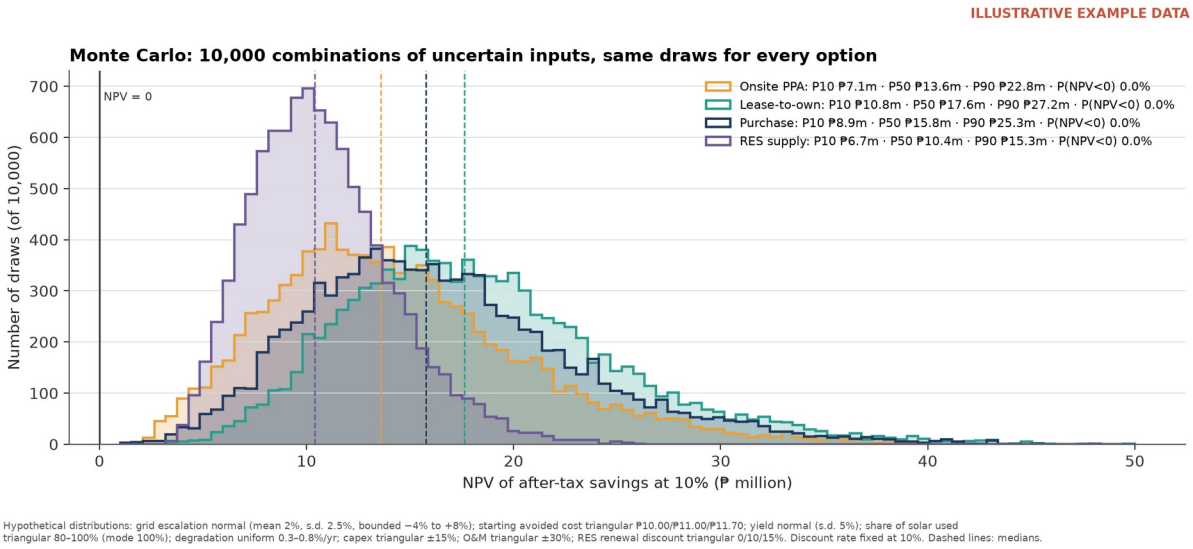


Figure 8.6. Illustrative example data: distribution of NPV for each option across 10,000 Monte Carlo draws. Hypothetical distributions listed below the chart; not a forecast.

Table 8.7. Illustrative example data: Monte Carlo results (10,000 draws, ₱ million)

Statistic	Onsite PPA	Lease-to-own	Purchase	RES supply
P10 (one draw in ten is worse)	7.1	10.8	8.9	6.7
P50 (median)	13.6	17.6	15.8	10.4
P90	22.8	27.2	25.3	15.3
Probability NPV below zero	0.0%	0.0%	0.0%	0.0%
Probability of being the best option	0.1%	96.2%	0.0%	3.7%

Illustrative example data (build/charts_ch8.py). The template's MonteCarlo sheet runs 1,000 live draws, so its figures differ slightly with every recalculation.

In this example no draw produced a negative NPV for any option, and the lease came out on top in 96% of draws. The spread is still wide: the purchase ranges from ₱8.9 million at P10 to ₱25.3 million at P90. Treat this with humility. A Monte Carlo result is only as good as the distributions you feed it, and it captures only the risks you model. It says nothing about a factory closure, a typhoon that destroys the roof or a developer's insolvency. Those belong in the risk analysis of Chapter 9.

8.8 Break-even analysis

Break-even analysis turns the question around. Instead of asking what the NPV is, it asks how wrong an assumption must be before the NPV reaches zero. Boards find this the most intuitive form of risk analysis, because it replaces probabilities with a simple test: is this plausible?

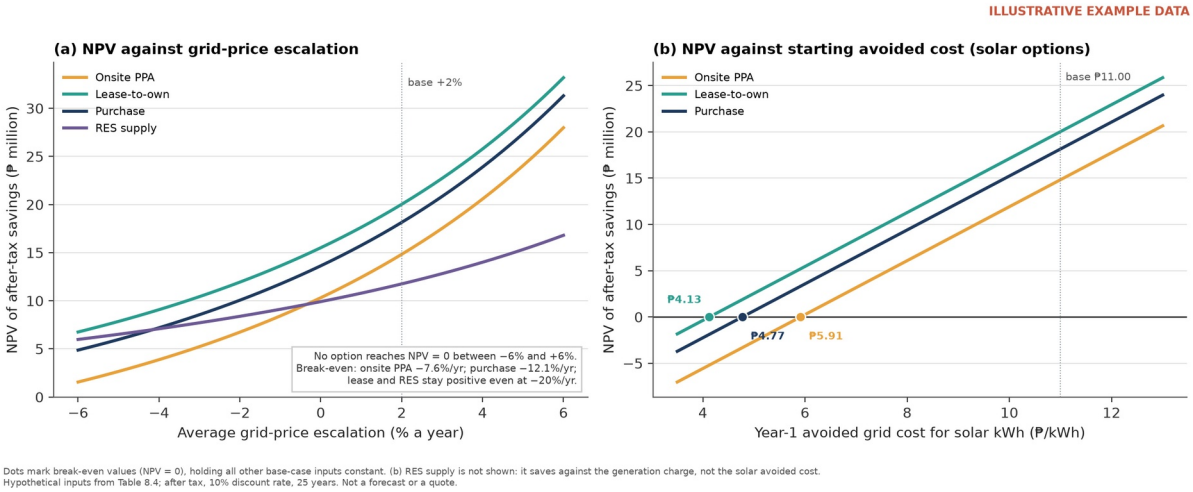


Figure 8.7. Illustrative example data: NPV against average grid-price escalation (a) and against the starting avoided cost for solar (b). Dots mark break-even values. Hypothetical inputs; not a forecast.

Table 8.8. Illustrative example data: break-even values (NPV = 0), other inputs at base values

Input	Base value	Onsite PPA	Lease-to-own	Purchase	RES supply
Average grid-price escalation	+2.0% a year	−7.6% a year	−15.7% a year	−12.1% a year	Positive even at −20% a year
Year-1 avoided cost per solar kWh	₱11.00	₱5.91	₱4.13	₱4.77	n/a
PPA price (flat)	₱7.20	₱13.48	n/a	n/a	n/a
Installed cost per kWp	₱45,000	n/a	₱128,142	₱116,447	n/a
RES first-contract price	₱8.60	n/a	n/a	n/a	₱13.85

Illustrative example data, reproduced by the BreakEven sheet of the template. Each value holds every other input at its base level.

The margins here are wide. Grid prices would have to fall by 7.6% a year for 25 years before the PPA stopped paying, and the avoided cost would have to start at ₱5.91 instead of ₱11.00. The PPA break-even price of ₱13.48 is above the starting avoided cost because grid prices rise in the base case and the buyer receives five years of almost free power after the handover. Wide margins like these are typical when a sound onsite PPA is compared with a high Meralco tariff. Narrow ones, a break-even only a point or two below the base case, are a signal to renegotiate or walk away.

8.9 Common modelling mistakes

1. Using the all-in average tariff as the avoided cost. Demand and fixed charges are not avoided by solar; the example's all-in ₱13.29 per kWh overstates the saving per solar kWh by about a fifth compared with the ₱11.00 used.
2. Extrapolating a recent trend. Neither the 2022–2026 rise in the generation charge nor the 2024–2025 fall in WESM prices is a 25-year forecast.

3. Ignoring degradation, the inverter replacement or O&M after a PPA handover or lease transfer.
4. Assuming all solar output is used. Without interval data, zero-export curtailment and weekend shutdowns are invisible.
5. Comparing options over different horizons, for example a 20-year PPA with a 25-year purchase, without valuing what happens after the shorter term.
6. Mixing pre-tax and after-tax figures, or nominal escalation with a real discount rate.
7. Ranking by IRR or payback, or reporting an IRR for an option with no investment.
8. Using the developer's discount rate, or a hurdle rate inflated to 'allow for risk', instead of your own cost of capital and an explicit risk analysis.
9. Leaving out security deposits, meter upgrades, roof works, termination payments or the cost of RES credit support.[7]
10. Treating a RES contract's first-term discount as permanent; renewals are priced in a future market.
11. Hard-coding numbers inside formulas, so that nobody can trace or change an assumption.
12. Presenting a single number without a range.

8.10 Presenting to the board

A board does not want the spreadsheet; it wants to know what is being proposed, why, what it costs, what could go wrong and what the company is committing to. A one-page summary should contain:

- The decision requested, in one sentence: for example, 'approve a 20-year onsite PPA at ₱7.20 per kWh, subject to the conditions below'.
- The options considered and their NPVs on the same basis, with the base case and the low and high grid scenarios side by side.
- The key drivers and break-even values: how far grid prices or the avoided cost must fall before the decision stops paying.
- The Monte Carlo range or, at minimum, the worst scenario tested, and the risks not captured in the numbers.
- Cash and balance-sheet effects: capital required, lease liabilities, covenants and security deposits.
- Non-financial factors: emissions, supply security, management time and the effect on any sustainability commitments.
- The conditions for signing: contract terms that must be secured, approvals and the timetable.

Show ranges, not false precision. 'Between ₱7 million and ₱23 million, with a median of about ₱14 million' is more honest and more persuasive than '₱14,823,456'. Name the

assumptions that matter most and who owns them. A board that has seen the bad cases before signing is a board that will not be surprised later.



Figure 8.8. The board needs a decision, a comparison on a common basis, the key drivers and the downside, not the spreadsheet. (AI-generated illustrative image; generic scene, no identifiable persons.)

8.11 The companion template

The downloadable template on solarmd.net, Chapter08_Savings_Model.xlsx, contains every calculation in this chapter as live formulas. Inputs are in blue on yellow cells; everything else is calculated. The Tariff sheet rebuilds your bill and checks it against your actual bills. The Solar sheet takes monthly PVGIS output. The WACC sheet estimates a discount rate. The Model sheet produces the year-by-year cash flows for the scenario selected on the Inputs sheet, and the Results sheet calculates NPV, IRR where it exists, simple and discounted payback, LCB, SIR and the incremental IRR of buying over a PPA. The Scenarios, Sensitivity, BreakEven and MonteCarlo sheets calculate every case at once, with charts. A 'model check' cell compares the year-by-year model with an independent closed-form calculation and should always read zero.

8.12 Model checklist

1. The rebuilt year-1 bill matches your actual bills within about 2%.
2. 12–24 months of bills, and interval data where available, are on file and anomalies are explained.
3. Solar yield comes from PVGIS or a bankable study for your site; the share used is checked against the load profile.

4. Degradation, inverter replacement, O&M and insurance are included, with a clear statement of who pays under each option.
5. Contract terms are modelled exactly as offered, including the handover, buyout or renewal assumptions.
6. Grid-price scenarios include a falling path.
7. Tax treatment is confirmed with your tax adviser.
8. The discount rate is documented and tested at two percentage points either side.
9. Options are ranked by NPV on the same horizon and basis; IRR is shown only where there is an investment.
10. Sensitivity, Monte Carlo and break-even results have been reviewed, and the downside is acceptable.
11. Someone who did not build the model has checked its formulas.
12. The board summary shows ranges, drivers and conditions.

Key takeaways

- A savings model compares options on the same assumptions and shows which assumptions matter. It is not a forecast.
- Start from 12–24 months of bills, interval data and the tariff components; rebuild the bill before projecting it.
- Use a small set of long-run escalation scenarios, including a falling one. Recent Philippine price history is too volatile to extrapolate.
- Only per-kWh charges are reliably avoided by solar; a RES contract replaces only the generation charge and the DU supply charge.
- NPV is the primary metric. A zero-capex PPA or RES contract has no IRR and an immediate payback; judge it by the NPV of savings.
- To decide between buying and a PPA, look at the incremental return: in the example, 13.8% on the extra capital, not the purchase's headline 25.2%.
- Base the discount rate on your WACC, using current market data, and test it at ±2 percentage points.
- Sensitivity, scenario, Monte Carlo and break-even analyses answer different questions; a board needs at least the break-even values and a downside case.

Questions a CFO should ask

1. Does the model reproduce our actual bills, and which charges does each option really avoid?
2. What grid-price paths have we assumed, and does the decision still hold if prices fall?
3. Is every option compared over the same horizon, after tax, at our own discount rate?
4. What is the NPV of each option, and what is the incremental return on any capital we commit?

5. Which two or three inputs move the answer most, and who is responsible for each?
6. How far must grid prices, the avoided cost or the offer price move before the decision stops paying?
7. What does the Monte Carlo range look like, and which risks does it leave out?
8. What happens to our savings if our operations change and we use 20% less power?
9. What cash, security deposits and balance-sheet commitments does each option require?
10. Has someone independent checked the model?

A model shows what you expect to save and how far that expectation can move. It does not show everything that can go wrong with a 20-year contract: counterparty failure, change in law, curtailment, force majeure, termination and the many ways a contract allocates those risks. Chapter 9, "Risk", turns to those questions.

Notes

All sources were accessed on 17–18 October 2026 (Asia/Manila). Market data such as policy rates, bond yields and inflation change frequently; update them before using the model. Academic estimates and consultancy articles are cited as such and are not official statistics. Tax outcomes depend on facts and should be confirmed with your own advisers.

1. Meralco, 'Summary Schedule of Rates, Effective October 2026 Billing', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_rate_schedule.pdf (General Power secondary: generation ₱10.2005/kWh; system loss ₱0.9301/kWh; distribution ₱0.1339/kWh and ₱232.20/kW; transmission ₱177.19/kW; ancillary service ₱196.69/kW; supply charge ₱3,432.33 and metering charge ₱3,451.57 per customer per month; universal charges, FIT-All and refund items; VAT-exclusive). The ₱11.70/kWh per-kWh total and the example bill are the author's calculations, as in Chapters 4 and 5.

2. European Commission Joint Research Centre, PVGIS v5.3, Metro Manila (14.55°N, 121.03°E), 1 kWp crystalline silicon, 10° tilt, 14% system losses; hourly series 2019–2023 averaging about 1,334 kWh/kWp per year, https://re.jrc.ec.europa.eu/pvg_tools/en/. As cited in Chapters 4 and 7 (data file build/pvgis_manila_2019_2023_ch4.json). Monthly profile in the template calculated by the author from the same series.

3. Meralco, 'Breakdown of Generation Charge', monthly tables, February 2022 to October 2026 (generation charge ₱5.1957/kWh in February 2022, ₱6.9192 in October 2022, ₱7.1267 in October 2023, ₱6.4948 in October 2024, ₱8.0008 in October 2025 and ₱10.2005 in October 2026), e.g. https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_gc_table_0.pdf. As cited in Chapters 1 and 7. Compound growth rates calculated by the author.

4. IEMOP, 'The Electricity Spot Market at Work: Lower Market Prices for the First Half of 2025', https://www.iemop.ph/news/the-electricity-spot-market-at-work-lower-market-prices-for-the-first-half-of-2025/ (2024 average ₱5.58/kWh); Philstar.com, 'WESM prices hit fresh lows in 2025', 5 January 2026, https://www.philstar.com/business/2026/01/05/2498730/wesm-prices-hit-fresh-lows-2025 (January–November 2025 average ₱4.32/kWh). As cited in Chapters 1 and 7.

5. Independent Electricity Market Operator of the Philippines (IEMOP), 'Market Operations Highlights', monthly reports, billing months November 2024 to July 2026 (Luzon averages, e.g. ₱2.57/kWh September 2025, ₱7.95/kWh June 2026); IEMOP news release, 10 September 2026 (August 2026: Luzon ₱4.80/kWh); Power Philippines, 'WESM price climbs to PHP 7.43/kWh despite wider supply margin', 13 October 2026, https://powerphilippines.com/wesm-price-climbs-to-php-7-43-kwh-despite-wider-supply-margin/ (September 2026: Luzon ₱5.18/kWh). As cited in Chapters 6 and 7.

6. D. C. Jordan and S. R. Kurtz, 'Photovoltaic Degradation Rates — An Analytical Review', Progress in Photovoltaics, 2013 (NREL preprint NREL/JA-5200-51664), https://docs.nlr.gov/docs/fy12osti/51664.pdf (median degradation 0.5% per year across nearly 2,000 reported rates). As cited in Chapters 4 and 7.

7. Energy Regulatory Commission (ERC), Resolution No. 13, Series of 2024, 'Omnibus Rules for Customer Choice Programs in the Retail Market', Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (Module C on cash security deposits; Module D6 on metering costs borne by the end-user; Module F1.2 on the regulated charges that remain on a retail customer's bill). As cited in Chapter 5, which also discusses the treatment of the DU supply charge.

8. Republic Act No. 11534 (CREATE Act), amending Section 27(A) of the NIRC, as further amended by Republic Act No. 12066 (CREATE MORE), https://lawphil.net/statutes/repacts/ra2024/ra_12066_2024.html (25% regular corporate income tax; 20% for qualifying smaller corporations). As cited in Chapter 3.

9. National Internal Revenue Code of 1997, as amended, Section 34(F), 'Depreciation', https://taxacctgcenter.ph/nirc-ra-8424-amended-title-ii-chapter-vii-allowable-deductions-philippines/ (reasonable allowance for depreciation of property used in trade or business; straight-line, declining-balance and sum-of-the-years-digit methods). As cited in Chapter 3.

10. Bureau of Internal Revenue, Revenue Memorandum Circular No. 11-2024, restating Revenue Regulations No. 19-86, as summarised by Grant Thornton Philippines, 'Clarifications on the accounting and tax treatment of leases', 2024, https://www.grantthornton.com.ph/alerts-and-publications/technical-alerts/tax-alert/2024/clarifications-on-the-accounting-and-tax-treatment-of-leases/; PwC Philippines, 'Tax implications of PFRS 16 – Leases', 2019, https://www.pwc.com/ph/en/tax/tax-publications/taxwise-or-otherwise/2019-taxwise-or-otherwise/tax-implications-of-pfrs-16-leases.html. As cited in Chapter 3.

11. J. Kneifel, 'Life Cycle Costing Manual for the Federal Energy Management Program', NIST Handbook 135, 2025 edition (NIST HB 135e2025), National Institute of Standards and Technology, August 2025, https://nvlpubs.nist.gov/nistpubs/hb/2025/NIST.HB.135e2025.pdf (Chapter 6: net savings, savings-to-investment ratio, adjusted internal rate of return, simple and discounted payback; the payback method 'is not a measure of long-term economic performance or profitability'; SIR and AIRR used primarily for ranking independent projects under a budget constraint; Chapter 8: treatment of uncertainty, including sensitivity analysis and probabilistic assessment; Monte Carlo simulation described as 'the most common form of simulation used for uncertainty analysis' that 'can be done in most spreadsheet programs'; 'careless or erroneous use of probabilistic models can lead to meaningless or misleading results').

12. McKinsey & Company, 'Internal rate of return: A cautionary tale', McKinsey Quarterly, 2004, https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/internal-rate-of-return-a-cautionary-tale (IRR assumes interim cash flows are reinvested at the IRR; NPV assumes reinvestment at the cost of capital; at one industrial company, projects approved on IRRs averaging 77% returned 16% when reinvestment was adjusted to the cost of capital).

13. AsianBondsOnline (Asian Development Bank), 'Philippines', policy rates table, https://asianbondsonline.adb.org/philippines/ (BSP overnight reverse repurchase rate 5.000% from 27 August 2026, previous change 18 June 2026); BusinessWorld, 'Deutsche Bank expects further BSP tightening', 12 October 2026, https://bworldonline.com/banking-finance/2026/10/12/786230/deutsche-bank-expects-further-bsp-tightening/ (August hike to 5% was the third straight 25 bp increase; Monetary Board meeting on 22 October 2026; forecast of a further 25 bp increase); BSP, schedule of Monetary Board meetings on monetary policy, https://www.bsp.gov.ph/Pages/PriceStability/ScheduleOfMeetingsOfTheAdvisoryCommitteeAndMonetaryBoardOnMonetaryPolicy.aspx. The outcome of the 22 October 2026 meeting was not known when this chapter was written.

14. Bureau of the Treasury, 'PHP BVAL Reference Rates', 14 October 2026, https://www.treasury.gov.ph/ (5-year 7.679%, 10-year 8.013%, 20-year 8.355%, 25-year 8.344%); AsianBondsOnline, as in note 9 (10-year yield 8.016% at the close of 15 October 2026, up 194.4 bp year to date).

15. A. Damodaran, 'Country Default Spreads and Risk Premiums', NYU Stern School of Business, last updated 5 January 2026, https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html (Philippines:

Moody's rating Baa2; adjusted default spread 1.62%; country risk premium 2.46%; equity risk premium 6.69%). Academic estimates, updated periodically.

16. CEIC Data, 'Philippines Bank Lending Rate', sourced from the Bangko Sentral ng Pilipinas, https://www.ceicdata.com/en/indicator/philippines/bank-lending-rate (7.695% per annum in May 2026, universal and commercial banks). As cited in Chapter 7.

17. GMA News Online, 'Inflation snaps four-month easing, accelerates to 7.2% in September 2026', 6 October 2026, https://www.gmanetwork.com/news/money/economy/1004884/inflation-snaps-four-month-easing-accelerates-to-7-2-in-september-2026/story/ (PSA: 7.2% in September 2026; year-to-date average 5.4%; government target range 2–4%). See also Philippine Statistics Authority, https://psa.gov.ph/price-indices/cpi-ir. As cited in Chapter 7.

18. IEMOP, 'RCOA Threshold Bulletin No. 2026-01: Switching Timeline and Procedures', 5 May 2026, implementing ERC Resolution No. 22, Series of 2025, https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (average monthly peak demand of at least 100 kW; effective 26 June 2026). As cited in Chapter 5.

Figure and image credits

Figure 8.3 and Tables 8.1, 8.2 and 8.3 were prepared by the author from the sources noted. Figure 8.4(a) uses actual Meralco generation charges and IEMOP Luzon WESM averages. Figures 8.4(b), 8.5, 8.6 and 8.7 and Tables 8.4 to 8.8 use illustrative example data generated by the author's model (build/charts_ch8.py) and reproduced in the companion template Chapter08_Savings_Model.xlsx: the Meralco October 2026 rates and the PVGIS solar yield for Metro Manila are actual data, but consumption, demand, every option's price and cost, lease terms, RES prices, tax case, discount rate, grid-price scenarios and Monte Carlo distributions are hypothetical and are not market quotes or forecasts. Figures 8.1, 8.2 and 8.8 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting or investment advice. Model results depend entirely on their inputs; replace the illustrative data with your own, obtain competing offers and confirm tax, accounting and regulatory treatment with qualified Philippine advisers before signing.

CHAPTER 9

Risk: Volume, Price, Counterparty, Regulatory and Curtailment

What can go wrong in a 20-year power contract, who pays when it does, and the clauses that decide

---

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: A risk taxonomy for onsite, offsite/RES and virtual PPAs · Volume risk: resource variability, P50/P90, degradation, load and take-or-pay · Price risk: WESM volatility, escalators and indexation · Shape and basis risk · Counterparty risk: developer and RES default, Supplier of Last Resort, credit support, step-in rights · Regulatory risk and change in law · Curtailment, congestion and grid alerts · Typhoons, floods, earthquakes and insurance · Operational, FX and inflation risk · ESG and greenwashing risk · Termination and exit · Risk matrix and mitigation by clause · An illustrative quantified risk analysis · Risk register template · Mitigation roadmap · Checklist, key takeaways and CFO questions



Figure 9.1. A 20-year power contract in the Philippines will see typhoons, price spikes, rule changes and, quite possibly, a counterparty in trouble. Good contracts decide in advance who pays for each. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

Chapter 8 built a model of what a power purchase agreement (PPA) or a Retail Electricity Supplier (RES) contract should save. A model of expected savings is only half of a decision. The other half is what can go wrong over ten to twenty-five years, how badly, and who pays when it does. This chapter answers those questions for the three structures covered in this book: onsite PPAs, offsite supply through a RES, and virtual PPAs (VPPAs).

Risk is not a reason to avoid a PPA. Staying on grid supply is also a risky position: Meralco's generation charge almost doubled between February 2022 and October 2026, from ₱5.1957 to ₱10.2005 per kWh.[1] The aim is to know which risks you are taking, to price them, and to move each one to the party best able to manage it. The contract is the main tool for doing that, so each section ends with the clauses that matter, and the chapter closes with a risk matrix, a risk register and a short quantified example.

Terms used in this chapter

P50 and P90: the annual energy output expected to be exceeded with 50% and 90% probability. P50 is the central estimate; P90 is a conservative one used by lenders.

Take-or-pay: a clause under which the buyer pays for energy that is available, or for a minimum quantity, whether or not it uses it. Deemed energy is output the plant could have produced but did not, for a reason the contract puts on the buyer.

Shape and basis risk: the risk that energy is produced at different hours (shape) or priced at a different location (basis) from the energy you consume.

SOLR: Supplier of Last Resort, the entity that serves a contestable customer whose RES can no longer supply it.

Step-in rights: the right of a buyer or lender to take over operation of a plant, or to appoint

someone to do so, when the operator defaults.

Change in law: a clause that allocates the cost of new laws, regulations or regulatory decisions made after signing.

Expected loss: probability of default × loss given default × exposure at default.

RES: Retail Electricity Supplier, licensed by the ERC. In this book RES always means Retail Electricity Supplier.

9.1 A risk taxonomy for three structures

Every PPA risk falls into one of a dozen families: volume, price, shape and basis, counterparty, regulatory, curtailment and grid, physical, operational, macroeconomic (foreign exchange and inflation), ESG claims, and termination. What differs between structures is not the list but who carries each risk. Figure 9.2 shows the usual allocation.



Figure 9.2. Risk allocation by contract type: who usually bears each risk in an onsite PPA, an offsite supply contract with a RES, and a virtual PPA. Prepared by the author.

Three patterns stand out. An onsite PPA concentrates operational and physical risk on the developer but leaves the buyer with load risk, counterparty risk and the risk that the arrangement outlives the buyer's use of the building. A full-requirements RES contract transfers volume, shape and most operational risk to the supplier, which prices it in; the buyer keeps price risk at renewal and counterparty risk, softened by the SOLR backstop. A VPPA is a financial contract: the buyer takes market price, shape and basis risk directly,

and both sides are exposed to each other's credit for the full term. Table 9.1 summarises how each risk shows up.

Table 9.1. Risk taxonomy for onsite, offsite/RES and virtual PPAs

Risk family	Onsite PPA	Offsite / RES supply	Virtual PPA
Volume	Output below forecast reduces savings; falling load leaves output unused or paid for	Contract quantity or minimum take versus actual load	Settled volume floats with plant output
Price	Fixed price may exceed a falling grid price	Fixed, indexed or WESM-linked price; renewal price unknown	Monthly settlement of strike minus market price
Shape and basis	None behind the meter	Usually with the supplier under full requirements	Solar-hour prices and location differences stay with the buyer
Counterparty	Developer insolvency or neglect	RES default triggers last resort supply	Two-way credit exposure
Regulatory	Own-use, DER and net-metering rules	Retail competition, GEOP and switching rules	VPPA circular, REC and accounting rules
Curtailment and grid	Export limits; inverters trip in grid outages	Supplier's dispatch and congestion costs	Plant curtailment changes settled volume
Physical and operational	On your roof: typhoon, flood, earthquake, O&M	At the generator, priced into supply	At the generator; hedge pauses if plant is down
Exit	Buyout or removal if you move or sell	Early termination fee	Mark-to-market termination payment

Prepared by the author from the structures described in Chapters 2 to 6.

9.2 Volume risk

Solar resource variability

Sunshine varies from year to year. PVGIS, the European Commission's free solar database used throughout this book, gives hourly output for Metro Manila for every year from 2005 to 2023.[2] Summed by year, a 1 kWp system at the book's standard settings produced between 1,259 kWh in 2011 and 1,415 kWh in 2015, around a mean of 1,328 kWh. The standard deviation is 37 kWh, or 2.8% of the mean (Figure 9.3a). That is the pure weather effect. A yield study adds two more uncertainties: the accuracy of the solar data and of the simulation model.

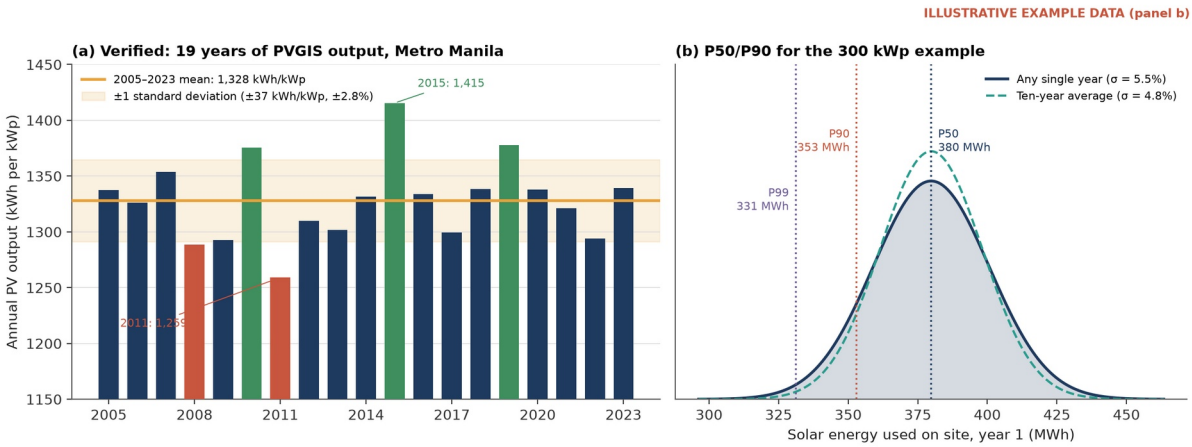
Annual output is usually treated as normally distributed, and the uncertainties as independent, so they combine by root-sum-square.[3] With σ_{IA} the interannual variability, σ_D the data uncertainty and σ_S the simulation uncertainty, each as a share of the P50:

$$\sigma = \sqrt{\sigma_{IA}^2 + \sigma_D^2 + \sigma_S^2} \tag{9.1}$$

The P90 output E_{90}, exceeded in nine years out of ten, is then:

$$E_{90} = E_{50} \times \left(1 - 1.282\,\sigma\right) \tag{9.2}$$

For the 300 kWp example of Chapter 8, using the PVGIS interannual variability and, for illustration, the data and simulation uncertainties of ±3.5% and ±5% at P90 used in a published worked example,[3] the total single-year uncertainty is 5.5%. The P50 is about 380 MWh of solar energy used on site in year 1 and the P90 about 353 MWh (Figure 9.3b). Over a ten-year average, weather effects partly cancel and the uncertainty falls to 4.8%, but data and model errors do not cancel, because they repeat every year.



(a) PVGIS v5.3 (PVGIS-ERA5) hourly series 2005–2023, 1 kWp crystalline silicon, 14.55°N 121.03°E, 10° tilt, 14% losses; annual totals by the author. Red/green bars lie more than one standard deviation below/above the mean.
(b) 300 kWp × 1,328 kWh/kWp × 95.3% used on site. Total uncertainty combines the PVGIS interannual variability (2.75%) with assumed data (±3.5%) and simulation (±5%) uncertainties at P90, by root-sum-square.

Figure 9.3. Panel (a): verified annual PV output in Metro Manila from PVGIS, 2005–2023.[2] Panel (b), illustrative example data: P50, P90 and P99 output for the example 300 kWp system.

What does a P90 year cost? Under a pay-as-produced onsite PPA, the buyer pays only for what is delivered, so a shortfall of about 27 MWh costs the buyer the saving it would have made, ₱11.00 − ₱7.20 = ₱3.80 per kWh, or about ₱0.10 million. The developer loses about ₱0.19 million of revenue. Resource risk under this structure therefore sits mainly with the developer, which is why developers and their lenders care so much about P90. It sits with the buyer when the contract has a guaranteed-output clause running the other way, or in a VPPA, where lower output means a smaller hedge.

Degradation

Solar modules lose output slowly. A review of nearly 2,000 measured rates found a median of 0.5% a year and a mean of 0.8%,[4] so some systems degrade much faster than the median. Module warranties cover this, but a warranty claim is slow and only as good as the manufacturer. Under a PPA, degradation is the developer's problem unless the price rises to compensate. Ask for a performance guarantee measured against a weather-corrected expected output, with liquidated damages for shortfall.

Load changes and take-or-pay

The volume risk most CFOs underestimate is their own. Plants close lines, shift work to other sites, install more efficient equipment or sell the building. Under a zero-export

onsite system, solar output that the site cannot use is curtailed and lost; under a take-or-pay clause, the buyer pays for it anyway.

For the example site, if a drop in operations cut the share of solar output used from 95.3% to 75%, about 81 MWh a year would go unused. With take-or-pay at ₱7.20, the buyer would pay about ₱0.58 million a year for energy it cannot use: almost six times the cost of a P90 weather year. RES contracts carry a similar risk through minimum-take, contract quantity and imbalance clauses. Mitigation is a matter of sizing and drafting: size the system to the minimum realistic load, not the average; prefer pay-as-produced on energy used; and negotiate a right to relocate, resize or buy out if operations change.

9.3 Price risk

Grid and WESM volatility

Price risk is the reason most companies look at PPAs in the first place, and it cuts both ways. Figure 9.4 shows monthly average spot prices in the Wholesale Electricity Spot Market (WESM). Between November 2024 and September 2026, the Luzon average ranged from ₱2.57 to ₱7.95 per kWh. In the Visayas and Mindanao the range was wider, from below ₱3 to ₱18.59 and ₱19.56 respectively in August 2026.[5] In May 2026, Meralco's own WESM purchases cost an average of ₱12.9664 per kWh, against a generation charge of ₱8.7942.[1]

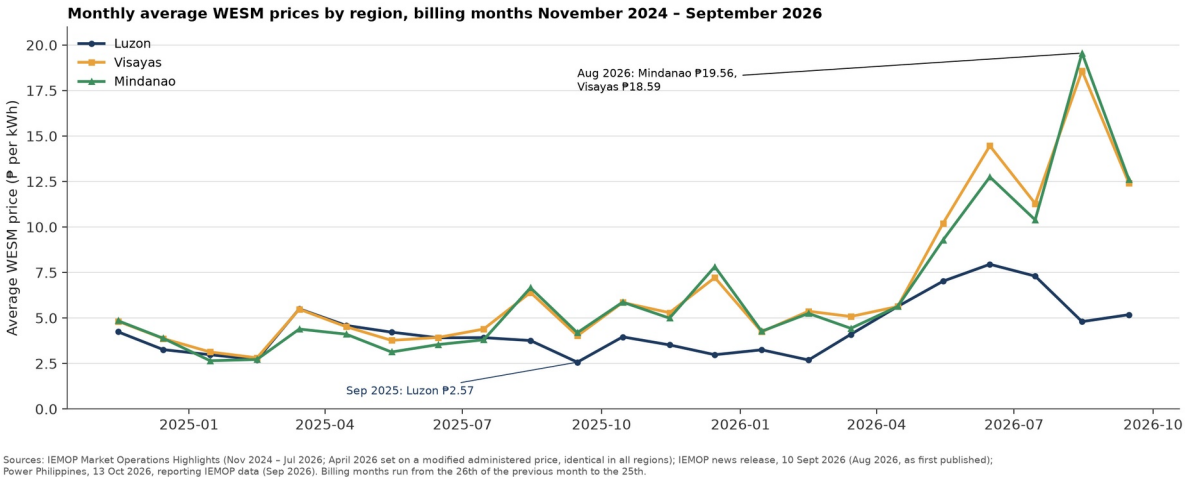


Figure 9.4. Verified monthly average WESM prices by region, November 2024 to September 2026.[5] Regional prices separate when transmission links are constrained.

A fixed-price PPA protects you when grid prices rise and costs you, relative to the grid, when they fall. Neither outcome is a loss in the sense that matters: you bought certainty. The real risks are a price fixed well above the market at signing, or a contract that looks fixed but passes market costs through. Pass-throughs to look for in RES contracts include line rental (now called Bilateral Line Loss and Congestion Cost), on which the ERC ordered corrective measures for the Visayas in August 2026,[6] and ancillary or reserve costs. These

rules change: the ERC suspended commercial dispatch and settlement in the reserve market from 14 October 2026.[7]

Escalators and indexation

Most PPA prices escalate. A fixed escalator, for example 2% a year, is simple and predictable but can drift away from both inflation and grid prices over twenty years. An index, such as consumer prices or the distribution utility's (DU's) generation charge, keeps the price in touch with something but imports that index's volatility. A discount to the grid tariff, with a floor and a cap, shares the risk; Chapter 7 showed how floors and caps change the value. Test any escalator against the falling-price scenario of Chapter 8. If a 2% escalator against a grid price falling 2% a year turns the deal negative by year twelve, you need a cap, a reopener or a shorter term.

9.4 Shape and basis risk

Shape risk arises because solar produces in the middle of the day while many sites use power around the clock. Behind the meter it is limited to the zero-export loss already discussed. Under a full-requirements RES contract the supplier takes it. In a VPPA it stays with the buyer. Each month the buyer receives, or pays, the difference between the strike price K and the market price M_t on the settled volume Q_t:

$$S_t = \left(K - M_t\right) \times Q_t \tag{9.3}$$

If M_t is the price at the plant's node during solar hours, and your own load is priced at another node across the whole day, the hedge is imperfect. That gap is basis risk. Philippine prices separate sharply by region. In the September 2026 billing month the Luzon–Visayas HVDC link was under price separation for 77.6% of the period,[7] and in December 2025 it was at its 250 MW Luzon-to-Visayas transfer limit or offline for 69% of the period, with congestion on the 230 kV Leyte–Cebu corridor also separating prices within the Visayas.[8] As more solar is built, prices during sunny hours may fall relative to evening prices, which would reduce what a solar VPPA settles at. Mitigation: settle at a node or zone close to your load; consider hybrid or storage-backed supply; cap settlement in negative-price hours; and stress-test the settlement against a year of actual hourly prices.

9.5 Counterparty and credit risk

Developer default

A PPA is a long promise from a company that may be young, thinly capitalised and dependent on project finance. Philippine experience is a reminder that awards are not projects: the DOE reported that 163 renewable energy service contracts covering 17,904

MW were terminated or relinquished in 2024 and 2025 because developers failed to meet their obligations, and that most of the affected capacity was solar.[9] Those were grid-scale contracts, not onsite PPAs, but the lesson carries over. Before signing, check the developer's balance sheet, track record, financing and parent support, not only its price.

For a buyer, developer default has two stages. Before commissioning, the risk is delay; protect against it with a long-stop date, delay liquidated damages and a right to walk away. After commissioning, the risk is a plant that is not maintained, or an owner that disappears. Here the protections are step-in rights, so that you or a replacement operator can run the plant; a purchase option at a pre-agreed price on default; and clear title, so that the developer's creditors cannot remove equipment from your roof. Lenders to the developer will want their own step-in rights, usually documented in a direct agreement; make sure theirs and yours fit together.

RES default and the Supplier of Last Resort

If a RES fails, a contestable customer is not left in the dark. Under the ERC's Omnibus Rules for customer choice, a last resort supply event transfers the customer to the SOLR. The SOLR charges the WESM nodal price, or its power supply agreement price, plus a 5% premium, may require a cash security deposit of one month's estimated billing, and charges no exit fee when the customer moves to a new RES.[10] The power stays on. The price does not.

Expected loss gives a simple way to size counterparty risk. With PD the annual probability of default, LGD the share of the exposure lost, and EAD the exposure at default, the banking standard is:[11]

$$EL = PD \times LGD \times EAD \tag{9.4}$$

Suppose, for illustration, that the example site's RES defaults in a month like May 2026. If the SOLR charged Meralco's average WESM purchase cost for that month plus 5%, about ₱13.61 per kWh, against a ₱8.60 contract price, three months on last resort supply before a new RES takes over would cost about ₱1.50 million. At an assumed 1% annual probability of default, the expected loss is about ₱15 thousand a year. That is small on average but large if it happens, and it tends to happen in exactly the market conditions that bankrupt suppliers: a RES with a weak hedge book is most likely to fail when spot prices spike.

Annual default probabilities compound over a long contract. With an annual probability PD, the chance of at least one default in N years is:

$$PD_N = 1 - \left(1 - PD\right)^N \tag{9.5}$$

An apparently remote 1% a year becomes about 18% over twenty years. That is why credit support matters more in a twenty-year PPA than in a three-year RES contract.

Your own credit, and credit support both ways

Developers face your credit risk too, and will ask for security: a deposit, a standby letter of credit, a parent guarantee or a balance-sheet covenant. For the example PPA, three months of payments would be about ₱0.68 million. Credit support should run both ways. In a twenty-year onsite PPA, a fair package might be a letter of credit from the buyer sized to a few months of payments; and from the developer, a performance bond during construction, a parent guarantee or minimum-capital covenant during operation, and the step-in and purchase rights described above. In a VPPA, where the exposure is the mark-to-market value of the contract, collateral thresholds that reset as prices move are normal.

9.6 Regulatory and policy risk

Philippine power rules have changed fast. Table 9.2 lists changes verified for this chapter that bear directly on PPA risk. Most widen the buyer's options. All of them show that a twenty-year contract will outlive the rules under which it was signed.

Table 9.2. Recent regulatory changes relevant to PPA risk (verified, October 2026)

Rule	What changed	Risk or opportunity for buyers
Retail competition (RCOA), ERC Resolution No. 22, s. 2025	Eligibility threshold lowered from 500 kW to 100 kW average monthly peak demand from 26 June 2026[12]	More sites can switch to a RES; more suppliers and contract forms to vet
Green Energy Option Program (GEOP), DOE DC2026-01-0002	Revised rules effective 21 February 2026; 50 kW threshold; issuance of Voluntary RECs to GEOP end-users held in abeyance pending system enhancements[13]	Easier access to renewable supply; REC delivery timing uncertain
Net metering, ERC Resolution No. 15, s. 2025, and 2026 proposals	Amended rules for systems up to 100 kW, with banking and rollover of credits; further amendments proposed in 2026 (faster interconnection, multi-site crediting, removal of the 1 MW DER cap), still under consultation when this chapter was written[14]	Export value and procedures may improve; do not price a deal on proposals
Zero-export and micro-solar systems, DOE DC2026-08-0017	Signed 28 July 2026; simplified rules for own-use zero-export systems, reported as removing permits and fees[15]	Lower friction for onsite systems; check which DU and local requirements still apply
Virtual PPAs, DOE DC2025-10-0024	Published 7 November 2025; VPPAs recognised; pricing not subject to ERC or DOE review; automatic REC transfer; minimum ten-year term; BSP-compliant currency[16]	A legal basis for VPPAs; first-of-a-kind documentation and REC processes
Storage for new variable RE, DOE DC2026-02-0008	Prospective variable RE plants of 10 MW or more to integrate storage of at least 20% of capacity[17]	May raise offsite supply costs but firm up output

Market rules	ERC corrective measures on Visayas line rental (August 2026); reserve market commercial dispatch and settlement suspended from 14 October 2026[6,7]	Pass-through costs can change mid-contract
Disclosure and accounting	SEC sustainability reporting extended to large non-listed companies (effective 8 January 2026); IFRS 9/7 amendments for nature-dependent electricity contracts effective 1 January 2026[18,19]	Claims and VPPA accounting face more scrutiny

Compiled by the author from the sources cited. Rules continue to change; check the current text before signing.

A change-in-law clause decides who pays when the rules move. A good clause defines 'change in law' to include new laws, regulations, ERC and DOE issuances and changes in their official interpretation after signing; separates changes that affect costs from changes that make performance illegal; passes through only the net, documented cost; sets a materiality threshold below which each party absorbs its own costs; and gives either party a right to renegotiate, and finally to terminate at a pre-agreed price, if the change destroys the deal's economics. Avoid clauses that let the seller pass through 'any' new charge without a cap, and clauses that quietly make a change in the seller's tax incentives the buyer's risk.

9.7 Curtailment and grid risk

Grid risk reaches PPA buyers in two ways. The first is curtailment: a plant that cannot deliver because the grid cannot take its output. The ERC has attached curtailment conditions to grid-connection approvals for new solar plants in Luzon, warning in one 2026 decision that an 80 MW Pangasinan project would face generation curtailment and dispatch prioritisation until transmission reinforcements are completed, likely not before June 2034.[20] For an offsite or virtual PPA, ask who bears curtailment: if settlement is on metered output, you do; if it is on deemed output, the seller does, and will price it in.

The second is grid adequacy. The National Grid Corporation of the Philippines (NGCP) issues a yellow alert when the operating margin is insufficient to meet the grid's contingency requirement, and a red alert when supply is insufficient to meet demand and the grid's regulating requirement, which can lead to rotating outages.[21] During the hot months of 2024 NGCP raised 11 red and 31 yellow alerts in Luzon and 8 red and 26 yellow alerts in the Visayas,[22] and the ERC moved to suspend WESM trading when grids were on red alert. In May 2026 forced plant outages put Luzon and the Visayas on red alert again; on 15 May the Luzon deficiency reached 852 MW, Meralco called about 250 MW of de-loading from customers in its Interruptible Load Program, and rotating interruptions had affected about 900,000 Meralco customers the day before.[23] On 24 September 2026 the

Visayas grid was on red alert for five hours, with 2,292 MW available against a peak of 2,495 MW, and in October the Energy Secretary told Congress that the Visayas supply gap could persist until 2028.[24] Whole islands can also fail: Panay lost power for about three days in January 2024.[25]



Figure 9.5. Grid alerts are declared by the system operator when reserves run short. A rooftop PPA does not keep the lights on during a red-alert outage unless the system has storage and islanding capability. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

Many buyers assume that rooftop solar protects them from brownouts. It usually does not. Grid-tied inverters built to the interconnection standards referenced in the ERC's DER Rules, including IEEE 1547, are designed to stop energising the line when the grid goes down, to protect line workers.[26] Unless the system includes storage and an islanding switch, a grid outage stops the solar plant too. If supply security matters, specify it, price it, and decide who bears the cost of lost output during outages: under a pay-as-produced PPA, nobody pays for energy not produced; under deemed-energy clauses, grid outages are sometimes put on the buyer.

9.8 Physical risks: typhoons, floods and earthquakes

The Philippines is exposed to physical hazards that a twenty-year contract will almost certainly meet. PAGASA records an average of 20 tropical cyclones a year in the Philippine Area of Responsibility, about 8 or 9 of which cross the country, with the peak from July to October.[27] Typhoon Odette in December 2021 brought down at least 95 transmission facilities, including 12 towers and 820 poles, and the DOE warned that restoring power in parts of Cebu could take up to two months.[28] Earthquakes are a national hazard: the National Structural Code of the Philippines (NSCP) 2015 places the entire country in Seismic Zone 4, the higher of its two zones, except Palawan and Tawi-Tawi.[29] On 30

September 2025 a magnitude 6.9 earthquake off northern Cebu tripped the Luzon–Visayas link, damaged NGCP's Daanbantayan substation and cut power across Eastern Visayas; ten days later a magnitude 7.4 earthquake struck offshore Davao Oriental.[30,31]

For an onsite system, the design standard is the first line of defence. The NSCP 2015 wind provisions use three wind-speed maps for different occupancy categories, with basic wind speeds defined as three-second gusts at 10 metres and mean recurrence intervals of 300, 700 and 1,700 years.[29] Ask for structural calculations for the roof and the mounting system under the applicable map, signed by a licensed engineer; the roof's condition and age matter as much as the racking. Flooding is often a bigger threat to equipment than wind: put inverters, switchgear and batteries above the site's recorded flood level, as in Figure 9.6, and route cables accordingly.



Figure 9.6. Inverters and switchgear on a raised plinth above floodwater. Equipment elevation is a cheap design choice that avoids long outages. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

Insurance transfers what design cannot remove. The usual covers are construction all-risks during installation, property damage during operation, business interruption, and third-party liability. Check four points: whether typhoon, flood and earthquake are covered or excluded, and with what deductibles; who is the insured and the loss payee; whether business interruption covers the buyer's lost savings or only the owner's lost revenue; and how long repairs will take, because spare parts may have to be imported. Under an onsite PPA, the developer normally insures and repairs the system; one developer has publicly described bearing typhoon-related repair costs under its PPAs.[32] The buyer insures the building. Force majeure clauses decide whether payments stop while the plant is down; avoid clauses that make you pay for deemed energy for months after a typhoon.

9.9 Operational, O&M, foreign exchange and inflation risk

Operational risk is the gap between what a system should produce and what it does. Soiling, failed inverters, tripped breakers and slow repairs all reduce output. Under a PPA these mostly cost the developer, but they also cost you the saving. Ask for monthly performance reports against expected output corrected for actual weather, an availability guarantee with liquidated damages, response and repair times, spare parts held in the Philippines, and rules for the developer's staff working on your site. Companies that own their systems should budget for O&M and the inverter replacement, as Chapter 8 did.

Foreign exchange and inflation risk enter through costs priced in dollars and through escalation clauses. Solar modules, inverters and batteries are imported, and the peso hit a record low against the dollar in October 2026; headline inflation was 7.2% in September 2026, well above the government's 2–4% target.[33] A developer that quotes a peso price before buying equipment carries that risk until it places orders, so expect price validity periods and adjustment clauses before financial close. Over the contract term, the main exposure is an escalator linked to inflation or a dollar index. Fixed peso escalators move that risk to the seller. RES contracts may pass through fuel costs, which are often priced in dollars.

9.10 ESG and greenwashing risk

Many companies sign PPAs partly to make renewable energy claims. Those claims carry risk. Under the GHG Protocol's Scope 2 Guidance, a market-based emissions figure needs contractual instruments, such as renewable energy certificates (RECs), that meet quality criteria; electricity alone is not enough.[34] In the Philippines, RECs are tracked through the Renewable Energy Market, with IEMOP as registrar since December 2024,[35] and the VPPA circular makes REC transfer automatic, but the revised GEOP rules hold Voluntary REC issuance to GEOP end-users in abeyance pending system enhancements.[13,16] International standards are also moving: the GHG Protocol is revising its market-based method, with hourly matching and deliverability under consideration,[34] and RE100 sets its own criteria for qualifying procurement.[36]

Disclosure rules raise the stakes. The SEC extended sustainability reporting to large non-listed companies from January 2026.[18] A company that claims to be '100% solar-powered' without owning the RECs, or that counts RECs that belong to someone else, risks a misleading disclosure. The mitigation is contractual: state who owns the RECs and environmental attributes, require their transfer and retirement in your name, and keep the evidence.

9.11 Termination and exit risk

Twenty years is a long time for a business. Sites close, companies are sold and leases end. Every PPA should answer five questions before signing. What happens if you sell or vacate the building: can the contract be assigned to the new occupant or the system relocated? What is the buyout price in each year, and is it a schedule or a formula? Who removes the system at the end and restores the roof? What happens on default by either side? And for a RES contract, what is the early termination fee? The Omnibus Rules set minimum provisions for retail supply contracts, a five-business-day cooling-off period after signing, and rules on termination fees where the supplier is at fault.[10] For a VPPA, termination is settled at mark-to-market, which can mean a large payment in either direction.

A pre-agreed termination schedule, declining over time, is the single most useful exit protection. It turns an open-ended legal dispute into a known number that can go into the risk register and the model.

9.12 The risk matrix and mitigation by contract clause

A risk matrix ranks risks by likelihood and impact so that management attention follows the numbers. Score each on a scale of 1 to 5 and multiply:

$$Score = L \times I \tag{9.6}$$

Figure 9.7 applies this to the example site, a 300 kWp onsite PPA combined with RES supply for the rest of its load. The scores are the author's judgement for that hypothetical site, not statistics; your site, contracts and counterparties will differ. Price volatility scores highest because it is almost certain and material, which is the case for contracting in the first place. Load change, typhoon damage, shape risk and grid alerts follow. Earthquake is unlikely but severe.

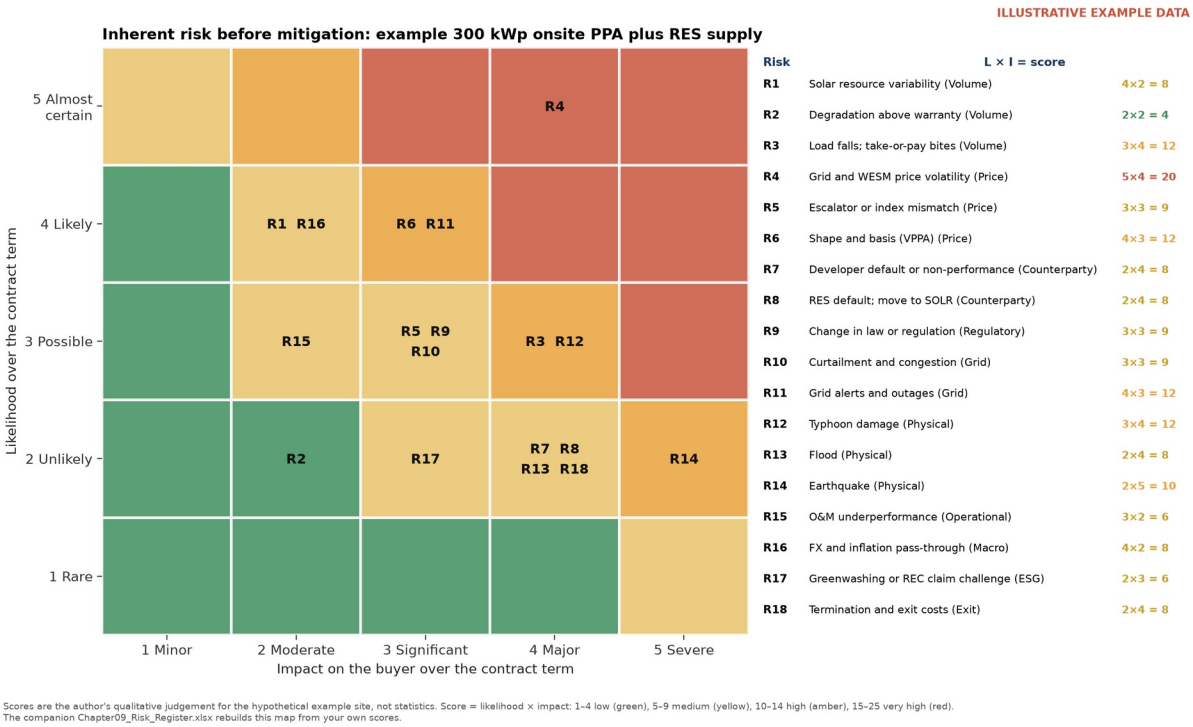


Figure 9.7. Illustrative example data: risk heat map for the example site before mitigation. Scores are the author's qualitative judgement.

Table 9.3 matches the main risks to the contract clauses that mitigate them. Chapter 10 turns this into a list of warning signs to look for in a term sheet.

Table 9.3. Mitigation by contract clause

Risk	Clause	What good looks like for the buyer
Resource and degradation	Performance guarantee; pricing basis	Pay-as-produced; weather-corrected guarantee with liquidated damages
Load change	Volume, take-or-pay, relocation	No take-or-pay on unused energy; right to resize, relocate or buy out
Price	Price, escalator, index, floor and cap	Escalator tested against a falling-grid case; cap or reopener
Shape and basis	Settlement point, hours, negative prices	Settlement near your load; cap on negative-price exposure
Developer default	Step-in, purchase option, direct agreement, title	Right to step in or buy at a formula price; equipment free of liens on your site
RES default	Supplier obligations, security, SOLR	Supplier credit checks; known SOLR terms; right to re-tender quickly
Change in law	Change in law, renegotiation, termination	Defined, net-cost pass-through with threshold and exit
Curtailment and grid	Deemed energy, curtailment, outages	Buyer not charged for grid outages or curtailment it does not cause
Physical	Design standards, insurance, force majeure	NSCP-compliant design; insurance certificates; payments stop when output stops

Operational	O&M, availability, reporting	Availability guarantee; repair times; monthly reports
FX and inflation	Price adjustment, escalator	Peso price fixed at signing, or capped adjustment to financial close
ESG claims	Environmental attributes, REC transfer	RECs transferred and retired in your name; no double counting
Termination and exit	Termination schedule, assignment, removal	Declining buyout schedule; assignment on sale; removal and roof restoration

Prepared by the author. Clause names vary between contracts; the substance matters.

9.13 An illustrative quantified risk analysis

Numbers make risks comparable. Table 9.4 and Figure 9.8 quantify five risks for the example site, using the Chapter 8 prices: avoided grid cost ₱11.00, onsite PPA ₱7.20 and RES ₱8.60 per kWh. All inputs other than the PVGIS data and the Meralco reference price are assumptions.

Table 9.4. Illustrative example data: quantified risk scenarios for the example site

Scenario	Key assumptions	Result (pre-tax)
P90 solar year (onsite PPA)	P50 380 MWh; total uncertainty 5.5%; pay-as-produced	Output 353 MWh; buyer's lost saving ₱0.10 million; developer's lost revenue ₱0.19 million
Load drop under take-or-pay	Share of output used falls from 95.3% to 75%	81 MWh paid for but unused: ₱0.58 million a year
Developer default after commissioning	PD 1% a year; exposure 12 months of savings plus ₱0.5 million transition costs; LGD 100%	Exposure ₱1.94 million; expected loss ₱19 thousand a year; 18% chance of at least one default in 20 years
RES default in a price spike	Three months on SOLR at ₱13.61/kWh (May 2026 Meralco WESM purchase cost + 5%); PD 1% a year	Cost if it occurs ₱1.50 million; expected loss ₱15 thousand a year
Typhoon puts the system out September–December	115 MWh lost (PVGIS monthly profile); owned system: repair 30% of ₱13.5 million, deductible 5%	PPA, payments stop: ₱0.44 million; PPA with deemed energy: ₱1.27 million; owned and uninsured: ₱5.32 million; owned with property and business-interruption cover: ₱0.68 million

Illustrative example data computed by the author (build/charts_ch9.py), reproduced in the Quantify sheet of Chapter09_Risk_Register.xlsx. Probabilities of default, outage length, repair cost and insurance terms are hypothetical and are not statistics or quotes.

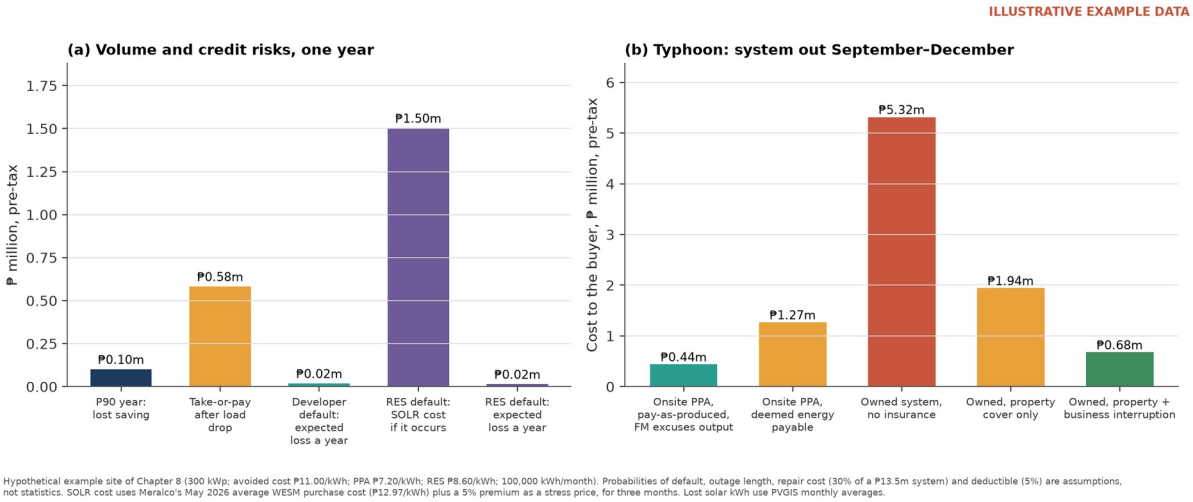


Figure 9.8. Illustrative example data: (a) one-year cost of volume and credit risks; (b) cost of a four-month typhoon outage under different contract and insurance arrangements. Hypothetical inputs; not a forecast or a quote.

Three lessons emerge. First, in this example the weather is the least of the buyer's volume worries; its own load matters far more, so the take-or-pay clause deserves more negotiating time than the P90. Second, expected credit losses are small, but the loss if a default happens is large and arrives at the worst time; credit support is cheap insurance against a rare, expensive event. Third, contract terms change the cost of the same typhoon by a factor of about three under a PPA, and insurance changes it by a factor of about eight for an owner. The physical event is the same; the allocation differs.

9.14 A risk register template

A risk register turns the analysis into a management tool. It lists each risk with an owner and a review date, and records how mitigation changes the score. Table 9.5 shows the columns. The companion workbook, Chapter09_Risk_Register.xlsx, available from solarmd.net, contains the register pre-filled with the eighteen example risks, the scoring scales, a live heat map and a quantification sheet.

Table 9.5. Risk register columns

Column	Content
ID, category, risk	Short name and family from the taxonomy (volume, price, counterparty and so on)
Applies to	Onsite PPA, offsite/RES supply, virtual PPA, or all
Cause and consequence	What triggers the risk and what it would cost or disrupt
Inherent likelihood, impact and score	1–5 scales; score = likelihood × impact; rating low, medium, high or very high
Contract clause and mitigation	The clause that allocates the risk and any further actions (insurance, design, credit support)
Owner	A named person: CFO, plant engineer, legal counsel, sustainability lead
Residual likelihood, impact and score	The score after mitigation, which should be within the board's risk appetite
Review date, trend and status	When it was last reviewed, whether it is rising or

	falling, and whether action is open or closed

Prepared by the author. The Excel template calculates scores, ratings and the heat map automatically.

Keep the register alive. Review it quarterly, and before each typhoon season, each RES renewal and each board report. Add new risks when the rules change.

9.15 A risk mitigation roadmap

Risk management in a PPA is front-loaded: most of the protection is won or lost before signing. Figure 9.9 sets out the sequence. Gather load and resource data and agree the board's risk appetite before the tender; build credit, insurance and REC checks into the tender; negotiate the clauses in Table 9.3; verify design and insurance at commissioning; and then monitor output, review the register and plan the exit well before expiry.

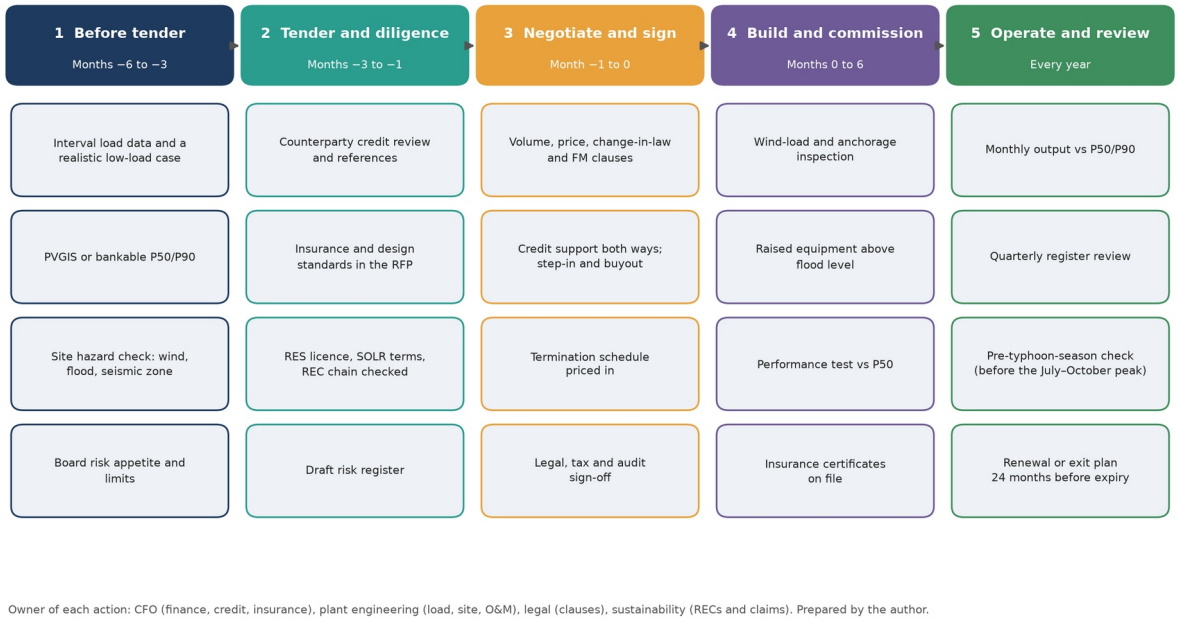


Figure 9.9. A risk mitigation roadmap for a PPA or RES contract, from tender preparation to annual review. Prepared by the author.

9.16 Risk checklist

1. We have 12–24 months of bills and interval data, and a realistic low-load case for the contract term.
2. The yield estimate gives P50 and P90, using long-term data such as PVGIS or a bankable study.
3. The contract is pay-as-produced on energy used, or any take-or-pay exposure is sized and accepted by the board.
4. Escalators and indices have been tested against a falling-grid-price scenario.
5. For a VPPA, the settlement point, hours and negative-price treatment are understood, and basis risk has been tested on actual prices.

6. The developer's or RES's finances, track record and parent support have been checked.
7. Credit support runs both ways, with step-in rights, a purchase option on default and clear title.
8. We know the SOLR terms that would apply if our RES failed.
9. The change-in-law clause is defined, capped and includes an exit.
10. Curtailment, grid outages and deemed energy are allocated in writing.
11. Structural design meets NSCP 2015 for wind and seismic loads, and equipment sits above flood level.
12. Insurance covers typhoon, flood and earthquake, with known deductibles and business-interruption cover for the right party.
13. O&M, availability guarantees and reporting are specified.
14. REC ownership, transfer and retirement are documented.
15. A declining termination schedule, assignment rights and end-of-term removal are agreed.
16. The risk register has owners and review dates, and the board has seen the residual risks.

Key takeaways

- Every structure carries the same families of risk; what differs is who bears them. Read the allocation in the clauses, not the label on the contract.
- Weather variability is real but modest: PVGIS shows a 2.8% standard deviation in Metro Manila's annual solar output over 2005–2023. Your own load is usually a bigger volume risk.
- Fixed prices buy certainty, not guaranteed savings. Test escalators against falling grid prices and watch for pass-through costs.
- VPPAs leave shape and basis risk with the buyer, and Philippine regional prices separate often.
- Counterparty risk is low-probability and high-impact. Credit support, step-in rights and a purchase option are worth more over twenty years than a slightly lower price.
- The rules have changed repeatedly since 2025 and will change again. A good change-in-law clause is essential.
- Grid-tied rooftop solar does not prevent brownouts without storage and islanding. Grid alerts and congestion affect offsite deals too.
- Typhoons, floods and earthquakes are design and insurance questions; force majeure decides who pays while the plant is down.
- Keep a live risk register with named owners, and agree exit terms before you sign.

Questions a CFO should ask

1. Which risks does this contract leave with us, and which with the seller, clause by clause?
2. What are the P50 and P90 outputs, and what do they mean for our savings?
3. What happens to our payments if our consumption falls by a quarter?
4. How does the price behave if grid prices fall for five years in a row?
5. Who is our counterparty, who stands behind it, and what security do we get?
6. If our RES fails, what would last resort supply cost us in a price spike?
7. Who pays if a new law, ERC decision or tax change alters the economics?
8. Who pays for curtailment and grid outages, and does the system keep running in a brownout?
9. Is the system designed for NSCP 2015 wind and seismic loads, above flood level, and properly insured?
10. Who owns the RECs, and can we defend our renewable energy claim?
11. What does it cost to exit in each year of the contract?
12. Who owns each risk in our register, and when was it last reviewed?

Knowing the risks, and the clauses that allocate them, is the foundation for reading any offer critically. Chapter 10, "Term Sheet Red Flags", applies this analysis to the documents you will actually receive and shows the terms that should make a CFO stop, ask and renegotiate.

Notes

All sources were accessed on 17–18 October 2026 (Asia/Manila). Grid conditions, market prices and regulations change frequently; check the current position before relying on them. News reports are cited as reports of the events and statements they describe. Probabilities, outage durations, repair costs and risk scores in the worked example are illustrative assumptions, not statistics.

1. Meralco, 'Breakdown of Generation Charge', monthly tables, February 2022 to October 2026 (generation charge ₱5.1957/kWh in February 2022 and ₱10.2005/kWh in October 2026; May 2026: generation charge ₱8.7942/kWh, average cost of WESM purchases ₱12.9664/kWh), e.g. https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_gc_table_0.pdf. As cited in Chapters 1 and 5.

2. European Commission Joint Research Centre, PVGIS v5.3 (PVGIS-ERA5), hourly PV output 2005–2023 for 1 kWp crystalline silicon at 14.55°N, 121.03°E (Metro Manila), 10° tilt, south-facing, 14% system losses, https://re.jrc.ec.europa.eu/api/v5_3/seriescalc?lat=14.55&lon=121.03&peakpower=1&loss=14&angle=10&aspect=0&pvcalculation=1&startyear=2005&endyear=2023&outputformat=json, downloaded 18 October 2026 (data file build/pvgis_manila_2005_2023_ch9.json). Annual totals, mean (1,328 kWh/kWp, matching the long-term PVGIS figure cited in Chapter 4), standard deviation and monthly averages calculated by the author.

3. P. Caballero, 'How to calculate P90 (and other Pxx) PV energy yield estimates', Solargis, 24 September 2025, https://solargis.com/resources/blog/best-practices/how-to-calculate-p90-or-other-pxx-pv-energy-yield-estimates (normal-distribution assumption; P90 = mean − 1.282 × standard deviation; root-sum-square aggregation of independent uncertainties; interannual variability as the standard deviation of annual values, divided by √n for an n-year average; worked example using irradiance-model uncertainty of ±3.5%

and simulation uncertainty of ±5% at P90). Those two values are used in this chapter for illustration only; a site-specific yield study should set them.

4. D. C. Jordan and S. R. Kurtz, 'Photovoltaic Degradation Rates — An Analytical Review', Progress in Photovoltaics, 2013 (NREL preprint NREL/JA-5200-51664), https://docs.nlr.gov/docs/fy12osti/51664.pdf (nearly 2,000 reported rates; median 0.5% per year, mean 0.8% per year). As cited in Chapters 4, 7 and 8.

5. IEMOP, 'Market Operations Highlights', monthly reports, billing months November 2024 to July 2026, https://www.iemop.ph/market-reports/2026-market-operations-highlights/ (regional averages; April 2026 set on a modified administered price, identical in all regions); IEMOP, 'Tight regional supply conditions pushed August WESM prices higher in Visayas and Mindanao', 10 September 2026, https://www.iemop.ph/news/tight-regional-supply-conditions-pushed-august-wesm-prices-higher-in-visayas-and-mindanao/ (August 2026: Luzon ₱4.80, Visayas ₱18.59, Mindanao ₱19.56/kWh, as first published); Power Philippines, as in note 6 (September 2026). As cited in Chapters 6 and 7; series in src/ch6/wesm_monthly.json. Ranges calculated by the author.

6. Power Philippines, 'ERC defends line rental rules amidst NASECORE Ombudsman complaint', 2 September 2026, https://powerphilippines.com/erc-defends-line-rental-rules-amidst-nasecore-ombudsman-complaint/ (line rental now called Bilateral Line Loss and Congestion Cost; ERC corrective measures of 13 August 2026 for Visayas line rental). As cited in Chapter 5.

7. Power Philippines, 'WESM price climbs to PHP 7.43/kWh despite wider supply margin', 13 October 2026, https://powerphilippines.com/wesm-price-climbs-to-php-7-43-kwh-despite-wider-supply-margin/, reporting IEMOP data for the September 2026 billing period (Luzon ₱5.18, Visayas ₱12.42, Mindanao ₱12.61/kWh; Luzon–Visayas HVDC under price separation for 77.6% of the period; ERC suspension of reserve market commercial dispatch and settlement from 14 October 2026). As cited in Chapter 5.

8. IEMOP, 'December 2025 Power Market: Luzon Prices Ease as Supply Improves; Visayas and Mindanao Experience Tighter Conditions', https://www.iemop.ph/news/december-2025-power-market-luzon-prices-ease-as-supply-improves-visayas-and-mindanao-experience-tighter-conditions/ (Leyte–Luzon HVDC at its maximum Luzon-to-Visayas transfer limit of 250 MW or offline for 69% of the billing period, from 34% in November; congestion on the 230 kV Leyte–Cebu corridor causing localised price separation).

9. Philippine News Agency, '163 RE service contracts terminated, relinquished in 2024-25', January 2026, https://www.pna.gov.ph/index.php/articles/1266765 (combined potential capacity 17,904.02 MW; 59 solar projects with 12,271.29 MW); BusinessMirror, 14 January 2026, https://businessmirror.com.ph/2026/01/14/doe-solar-phl-owes-govt-%E2%82%B124-b-contractual-obligations/ (terminated contracts: 32 in 2024 and 51 in 2025; relinquished: 38 and 42); Philippine News Agency, 'DOE terminates 84 RE contracts for failure to meet obligations', https://www.pna.gov.ph/index.php/articles/1265771 (non-compliance with work programs, Green Energy Auction terms of reference and DOE standards). A developer named in press reports disputes liability; this chapter cites only the aggregate DOE figures.

10. Energy Regulatory Commission (ERC), Resolution No. 13, Series of 2024, 'Omnibus Rules for Customer Choice Programs in the Retail Market', Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (Module A6 Last Resort Supply; G3 last resort supply events; G7 SOLR cash security deposit of one month's estimated billing; G13–G15 SOLR contract term, notice, no exit fee, WESM nodal price or PSA price plus 5% premium; L12 retail supply contract minimum provisions; L13 five-business-day cooling-off period; M8 termination fees for supplier-fault termination). As cited in Chapters 2 and 5.

11. Basel Committee on Banking Supervision, Basel Framework, CRE35, 'IRB approach: treatment of expected losses and provisions', https://www.bis.org/committees/bcbs/basel-framework/standard/cre/35/inforce/2023-01-01/published/2020-03-27 (expected loss = PD × LGD; expected loss amount = EL × EAD).

12. IEMOP, 'RCOA Threshold Bulletin No. 2026-01: Switching Timeline and Procedures', 5 May 2026, implementing ERC Resolution No. 22, Series of 2025, https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (100 kW average monthly peak demand; effective 26 June 2026); BusinessWorld, 4 November 2025, https://bworldonline.com/economy/2025/11/04/710086/threshold-to-participate-in-retail-market-access-program-lowered-to-100-kilowatts/ (previous threshold 500 kW). As cited in Chapter 5.

13. IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002 – Promulgating the Revised Rules and Guidelines Governing the Implementation of the Green Energy Option Program', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (effective 21 February 2026; 50 kW threshold; Voluntary REC issuance to GEOP end-users held in abeyance pending PREMS enhancements and REM Rules amendment). As cited in Chapters 5 and 6.

14. ERC Resolution No. 15, Series of 2025, '2025 Amended Rules Enabling the Net-Metering Program for Renewable Energy', as summarised by Ocampo & Suralvo Law Offices, October 2025, https://www.ocamposuralvo.com/2025/10/24/the-energy-regulatory-commission-amends-the-net-metering-rules-for-renewable-energy/ (facilities up to 100 kW; banking and rollover of credits), as cited in Chapter 4; pv magazine, 'Philippines proposes transmission grid reforms, updates to net-metering', 13 July 2026, https://www.pv-magazine.com/2026/07/13/philippines-proposes-transmission-grid-reforms-updates-to-net-metering/ (proposed cut in interconnection time from 20 to 10 working days, removal of the 1 MW DER cap, multi-site crediting; 23,684 net-metering prosumers with 232 MW as of 30 June 2026); ISELCO II, notice of ERC public consultation on the Resolution Amending ERC Resolution No. 15, Series of 2025 (ERC Case No. 2026-014 RM), 7 August 2026, https://iselco2.com.ph/august-07-2026-erc-in-line-with-the-energy-regulatory-commissions-erc-commitment-to-transparency-and-participatory-governance-we-invite-all-stakeholders-to-join-our-upcoming-public-con/. No final amended resolution had been located when this chapter was written.

15. DOE, Department Circular No. DC2026-08-0017, 'Policy Guidelines for Self-Generating Facility Zero-Export Solar Systems and Micro-Solar Systems for Own-Use', https://prod-cms.doe.gov.ph/documents/d/guest/dc2026-08-0017-pdf; Manila Bulletin, 'DOE scraps permits, fees for home, business solar panels', 6 August 2026, https://mb.com.ph/2026/08/06/doe-scraps-permits-fees-for-home-business-solar-panels (signed 28 July 2026). As cited in Chapter 4.

16. DOE, Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', published 7 November 2025, effective fifteen days after publication, https://doe.gov.ph/circular-no-dc-2025-10-0024 (Sections 3.1–3.5: recognition as a valid type of PPA, pricing not subject to ERC/DOE review, automatic REC transfer; 5.2: Voluntary and Compliance RECs; 7.2–7.8: BSP-compliant currency and minimum ten-year term). As cited in Chapters 2 and 6.

17. Chambers and Partners, 'Renewable Energy 2026 – Philippines: Trends and Developments', Cruz Marcelo & Tenefrancia, last updated 11 September 2026, https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines/trends-and-developments (DOE DC2026-02-0008 requiring prospective variable RE plants of 10 MW or more to integrate energy storage of at least 20% of installed capacity). As cited in Chapter 6.

18. Securities and Exchange Commission, Memorandum Circular No. 16, Series of 2025, as reported in Manila Bulletin, 'SEC broadens sustainability reporting rules to large non-listed firms', 29 December 2025, https://mb.com.ph/2025/12/29/sec-broadens-sustainability-reporting-rules-to-large-non-listed-firms (effective 8 January 2026). As cited in Chapter 1.

19. IFRS Foundation, 'IASB updates IFRS Accounting Standards for nature-dependent electricity contracts', 18 December 2024, https://www.ifrs.org/news-and-events/news/2024/12/iasb-updates-accounting-standards-nature-dependent-electricity-contracts/ (effective for annual periods beginning on or after 1 January 2026); FSRSC, adoption of the corresponding PFRS 9 and PFRS 7 amendments, http://www.pfsrsc.org/fsrsc-approves-further-deferral-of-pfrs-17-and-other-pronouncements. As cited in Chapter 6.

20. Power Philippines, 'ERC clears Citicore's Binalonan Solar grid connection, flags potential curtailment', 2026, https://powerphilippines.com/erc-clears-citicores-binalonan-solar-grid-connection-flags-potential-curtailment/ (ERC decision of 13 March on an 80.1 MW project; curtailment and dispatch prioritisation until reinforcements are completed, likely not before June 2034); Power Philippines, 'ERC clears Citicore's Luntal 50-MW Batangas solar grid link', https://powerphilippines.com/erc-clears-citicores-luntal-50-mw-batangas-solar-grid-link/ (output to face 'generation curtailment and appropriate dispatch prioritization' until Tuy-area upgrades are completed).

21. NGCP, 'NGCP: Heightened monitoring needed amid spike in demand, unplanned plant outages', news release, 12 March 2025, https://www.ngcp.ph/Attachment-Uploads/2025-03-12%20News%20Release%20Heightened%20Monitoring-2025-03-13-10-40-34.pdf (definitions of yellow and

red alerts); GMA News Online, 'NGCP: 5-hour red alert status over Visayas grid on September 24, 2026', https://www.gmanetwork.com/news/topstories/nation/1003518/ngcp-5-hour-red-alert-status-over-visayas-grid-on-september-24-2026/story/ (red alert 'issued when power supply is insufficient to meet consumer demand and the transmission grid's regulating requirement'; yellow alert 'when the operating margin is insufficient to meet the transmission grid's contingency requirement').

22. GMA News Online, 'NGCP: No more red, yellow alerts seen for rest of 2024', https://www.gmanetwork.com/news/topstories/nation/911317/ngcp-no-more-red-yellow-alerts-seen-for-rest-of-2024/story/ (April to early June 2024: 11 red and 31 yellow alerts in Luzon; 8 red and 26 yellow in the Visayas; none red and 2 yellow in Mindanao); BusinessWorld, 'ERC to suspend WESM trading when Luzon and Visayas are under red alert', 2 May 2024, https://bworldonline.com/top-stories/2024/05/02/592269/erc-to-suspend-wesm-trading-when-luzon-and-visayas-are-under-red-alert/.

23. GMA News Online, 'NGCP issues red, yellow alerts for Luzon, Visayas grids for Friday, May 15, 2026', https://www.gmanetwork.com/news/money/economy/987730/luzon-visayas-red-yellow-alerts-ngcp-may-15-2026/story/ (available capacity 12,075 MW against peak demand of 12,927 MW, a deficiency of 852 MW; 4,828 MW unavailable); PTV News, 'Luzon, Visayas grids remain under red, yellow alerts this May 15', https://ptvnews.ph/luzon-visayas-grids-remain-under-red-yellow-alerts-this-may-15/ (Meralco secured about 250 MW of de-loading from Interruptible Load Program customers; around 900,000 customers affected by outages on 14 May 2026).

24. GMA News Online, as in note 20 (24 September 2026: Visayas red alert 4–9 p.m.; available capacity 2,292 MW against peak demand of 2,495 MW; DOE order for NGCP to install over 250 MW of battery storage); Philstar.com, 'DOE: Planning failure caused Visayas power shortfall', 5 October 2026, https://www.philstar.com/headlines/2026/10/05/2561051/doe-planning-failure-caused-visayas-power-shortfall (supply gap that 'could persist until 2028').

25. GMA News Online, 'ERC: NGCP failed in obligation in Panay Island blackout', January 2024, https://www.gmanetwork.com/news/money/companies/893832/erc-ngcp-failed-in-obligation-in-panay-island-blackout/story/ (island-wide outage from 2 January 2024, restored by 5 January).

26. ERC Resolution No. 11, Series of 2022, 'Rules Governing Distributed Energy Resources (DER)', effective 14 December 2022, as summarised by Ocampo & Suralvo Law Offices, December 2022, https://www.ocamposuralvo.com/updates/erc-issued-distributed-energy-resources-rules.html (interconnection standards including the Philippine Electrical Code, the Philippine Distribution Code and IEEE 1547). As cited in Chapter 4. IEEE 1547 requires distributed resources to cease to energise the area electric power system when it is de-energised (anti-islanding); confirm the behaviour of any specific inverter with its supplier.

27. PAGASA, 'Tropical Cyclone Information', https://www.pagasa.dost.gov.ph/climate/tropical-cyclone-information (average of 20 tropical cyclones a year in the Philippine Area of Responsibility, about 8 or 9 crossing the Philippines; peak of the typhoon season July to October). As cited in Chapter 4.

28. Rappler, '87% of power lines restored post-Odette, but distribution a problem', 29 December 2021, https://www.rappler.com/business/ngcp-report-power-lines-post-typhoon-odette-december-29-2021/ (NGCP: at least 95 facilities or power lines down, including 12 towers and 820 transmission poles; DOE statement that restoring power in some areas of Cebu may take up to two months).

29. Association of Structural Engineers of the Philippines, National Structural Code of the Philippines 2015, Volume 1, 7th edition, text at https://archive.org/stream/NSCP2015/NSCP-2015_djvu.txt (Section 207: three wind contour maps for the archipelago by occupancy category; basic wind speed a three-second gust at 10 m in Exposure C; 3%, 7% and 15% probability of exceedance in 50 years, mean recurrence intervals of 1,700, 700 and 300 years; Table 208-3 seismic zone factors Z = 0.20 for Zone 2 and 0.40 for Zone 4; Appendix I-B: Seismic Zone 4 is the 'entire Philippines except Palawan and Tawi-Tawi').

30. PHIVOLCS, 'Poster of the 30 September 2025 Magnitude 6.9 Offshore Northern Cebu Earthquake', https://www.phivolcs.dost.gov.ph/poster-of-the-30-september-2025-magnitude-6-9-offshore-northern-cebu-earthquake/; Rappler, 'Quake cuts power across provinces in Eastern Visayas', 1 October 2025, https://www.rappler.com/philippines/visayas/earthquake-eastern-visayas-power-outage-october-1-2025/ (NGCP: tripping of the Luzon–Visayas link; damage to the Daanbantayan substation; four 230 kV lines tripped; 641 MW of isolated load).

31. PHIVOLCS, 'Primer on the 10 October 2025 Magnitude (Mw) 7.4 Offshore Davao Oriental Earthquake', https://www.phivolcs.dost.gov.ph/primer-on-the-10-october-2025-magnitude-mw-7-4-offshore-davao-oriental-earthquake/.

32. Power Philippines, 'Zero-capex model gains ground as firms shift to solar without spending a peso', 3 January 2026, https://powerphilippines.com/zero-capex-model-gains-ground-as-firms-shift-to-solar-without-spending-a-peso/ (one developer's reported practice: developer bears capital, performance, maintenance, insurance and typhoon-related repair costs; liquidated damages for output shortfall). One developer's practice, not a market-wide statistic. As cited in Chapter 4.

33. The Manila Times, 'Peso rebounds from record low, closes at P62.985:$1', 16 October 2026, https://www.manilatimes.net/2026/10/16/business/peso-rebounds-from-record-low-closes-at-p629851/2447280; GMA News Online, 'Inflation snaps four-month easing, accelerates to 7.2% in September 2026', 6 October 2026, https://www.gmanetwork.com/news/money/economy/1004884/inflation-snaps-four-month-easing-accelerates-to-7-2-in-september-2026/story/ (PSA; government target range 2–4%). As cited in Chapters 7 and 8.

34. World Resources Institute and WBCSD, 'GHG Protocol Scope 2 Guidance', 2015, https://ghgprotocol.org/scope-2-guidance (location-based and market-based methods; Scope 2 Quality Criteria for contractual instruments); GHG Protocol, 'Scope 2 Market-based Method Update: From 2025–2026 Public Consultation to Current Status', 16 October 2026, https://ghgprotocol.org/blog/scope-2-market-based-method-update-2025-2026-public-consultation-current-status (hourly matching and deliverability under consideration). As cited in Chapter 6.

35. DOE, 'REC trading starts 26 December 2024 with the full operationalization of REM', press release, https://legacy.doe.gov.ph/press-releases/rec-trading-starts-26-december-2024-full-operationalization-rem (IEMOP as Renewable Energy Registrar). As cited in Chapters 5 and 6.

36. RE100 (Climate Group and CDP), 'RE100 Technical Criteria', 15 April 2025, https://www.theclimategroup.org/hubfs/RE100/PDFs/RE100%20technical%20criteria%20%2B%20appendices%20%2815%20April%202025%29.pdf. As cited in Chapter 6.

Figure and image credits

Figures 9.2 and 9.9 and Tables 9.1, 9.2, 9.3 and 9.5 were prepared by the author from the sources noted. Figure 9.3(a) uses actual PVGIS annual output for Metro Manila, 2005–2023, and Figure 9.4 uses actual IEMOP regional WESM averages. Figures 9.3(b), 9.7 and 9.8 and Table 9.4 use illustrative example data generated by the author's model (build/charts_ch9.py) and reproduced in the companion template Chapter09_Risk_Register.xlsx: the PVGIS data and the Meralco May 2026 WESM purchase cost are actual data, but the example site, prices, data and simulation uncertainties, probabilities of default, outage durations, repair costs, insurance terms and every likelihood and impact score are hypothetical and are not market quotes, statistics or forecasts. Figures 9.1, 9.5 and 9.6 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

This chapter is for general information and does not constitute legal, tax, accounting, insurance, engineering or investment advice. Risk allocation depends on the exact wording of each contract; have contracts reviewed by qualified Philippine counsel, and structural and electrical designs checked by licensed engineers, before signing.

CHAPTER 10

Term Sheet Red Flags, Clause by Clause

What each clause of an onsite PPA, a RES supply contract and a virtual PPA does to your cash flow, and what a fair version looks like

---

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: The legal backdrop · Term sheet anatomy and red-flag hotspots · 23 clause families, each with what it does, a red flag, a market-reasonable alternative and a negotiation tip · Typhoon force majeure · Buyout and fair market value traps · Early termination payment curves · RES terms: switching, SOLR, cooling-off and pass-through charges · VPPA terms: settlement reference, negative prices and REC delivery · Illustrative sample clause wording · A red-flag scoring tool · A negotiation playbook · Key takeaways and CFO questions



Figure 10.1. A term sheet is short, but almost every line moves money or risk. Reading it clause by clause, before lawyers draft the long-form contract, is the cheapest negotiation you will ever do. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

Chapter 9 matched each risk in onsite PPAs, offsite supply from a Retail Electricity Supplier (RES) and virtual PPAs (VPPAs) to the clause that allocates it (Table 9.3). This chapter reads those clauses one at a time, asking what the words do to cash flow and what a fair version looks like.

For each clause you get four things: what it does, a red-flag example, a market-reasonable alternative and a negotiation tip. The chapter then turns them into a red-flag scoring tool, with a companion Excel scorecard, and a negotiation playbook. Sample clause wording appears in shaded boxes. It is illustrative only, not a precedent.

Before you use this chapter

Not legal advice: This chapter explains commercial and economic effects. It does not replace advice from qualified Philippine counsel, who should draft and review every clause, together with your tax adviser, auditor and insurance broker.

Sample wording: Every sample clause is labelled illustrative. None comes from a real contract.

Market-reasonable: This means a position that a creditworthy buyer can usually ask for without ending the conversation. It is the author's judgement, not a survey of market terms.

RES: Retail Electricity Supplier, licensed by the ERC. In this book RES always means Retail Electricity Supplier.

10.1 The legal backdrop in five rules

Five Civil Code provisions shape how PPA clauses are read.[1]

1. Freedom of contract. Parties may agree any terms that are 'not contrary to law, morals, good customs, public order, or public policy' (Article 1306), and obligations from contracts 'have the force of law between the contracting parties' (Article 1159).
2. Fortuitous events. Under Article 1174, no one is liable for events that 'could not be foreseen, or which, though foreseen, were inevitable', except where the law says otherwise, the contract says otherwise, or 'the nature of the obligation requires the assumption of risk'. The Supreme Court requires an event independent of human will, unforeseeable or unavoidable, making normal performance impossible.[2] The contract can widen or narrow this default.
3. Liquidated damages and penalties. Agreed damages are enforceable (Article 2226), but courts 'shall' reduce them if they are 'iniquitous or unconscionable' (Article 2227), and may reduce a penalty on partial performance (Article 1229).
4. Ambiguity. Obscure stipulations 'shall not favor the party who caused the obscurity' (Article 1377). For RES contracts, the ERC goes further: ambiguity in a templated retail supply contract is construed in favour of the customer.[3]
5. Hardship. Article 1267 allows release where performance 'has become so difficult as to be manifestly beyond the contemplation of the parties'. A negotiated reopener is far more predictable.

10.2 Anatomy of a term sheet, and where the red flags cluster

Figure 10.2 groups them into 23 clause families and marks the hotspots: the clauses where, in the author's experience, most value is won or lost. Price, take-or-pay, force majeure, early termination and the structure-specific terms carry the top weight; in a VPPA, so do change in law, credit support and RECs.

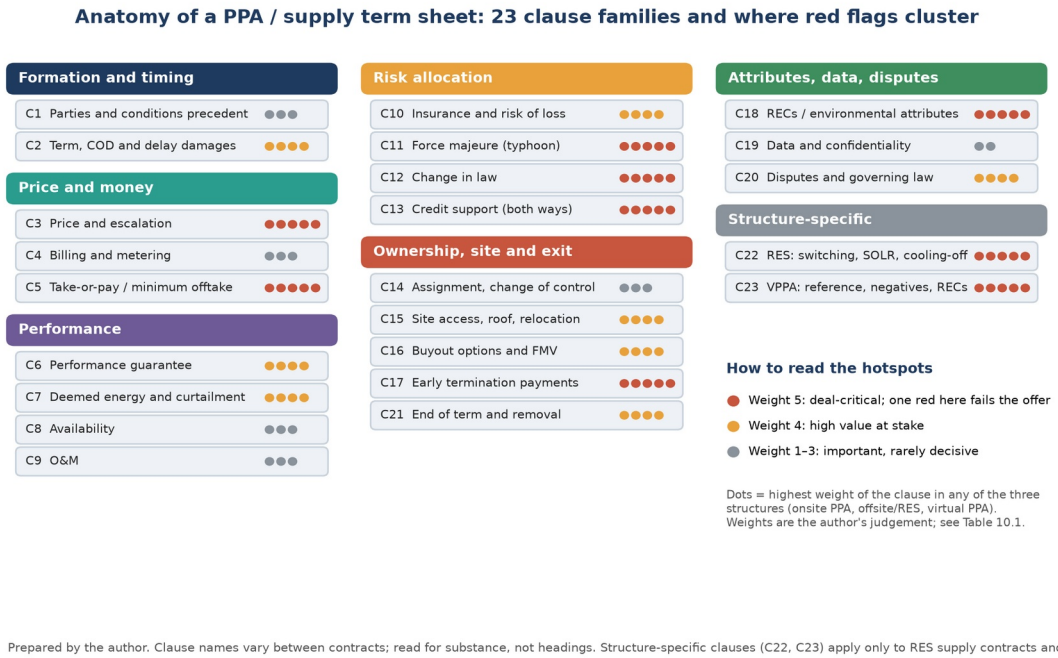


Figure 10.2. Term sheet anatomy with red-flag hotspots. Dots show the highest weight each clause family carries in any of the three structures. Prepared by the author.

10.3 Formation and timing

C1 Parties and conditions precedent

Applies to: All structures

What it does. Names the parties and lists what must happen before obligations bite: permits, DU interconnection approval, financing, roof surveys.

Red flag. The seller is a newly formed special-purpose company with no parent guarantee, and the conditions precedent are open-ended and run only in its favour.

Market-reasonable alternative. A named, creditworthy seller or guarantor; a short, objective list of conditions for each side; a long-stop date after which either party may walk away without cost.

Negotiation tip. Ask for the developer's audited accounts and its parent's, as Chapter 9 recommended.

C2 Term, commercial operation date (COD) and delay liquidated damages

Applies to: All; for RES, the supply start date

What it does. Fixes when the term starts, when the plant must run, and what lateness costs the developer.

Red flag. The term runs from signing, not from COD, so delays eat your savings years; there are no delay damages.

Market-reasonable alternative. Term from actual COD, verified by a joint performance test; daily delay liquidated damages that approximate your lost saving; a long-stop date with a right to terminate. For a VPPA, remember the ten-year minimum runs from commercial operations.[4]

Negotiation tip. Size the damages from your own model: the lost saving per day is the avoided grid cost minus the PPA price, times expected daily output (Chapter 8). Keep them proportionate (Article 2227).

> **Illustrative sample wording, not legal advice: delay liquidated damages**
>
> **Red-flag version:** 'The Seller shall use reasonable efforts to achieve the Commercial Operation Date by the Target Date. The Seller shall have no liability for any delay.'
>
> **Market-reasonable version:** 'If the Commercial Operation Date has not occurred by the Target Date, other than because of Buyer Delay or Force Majeure, the Seller shall pay the Buyer liquidated damages of ₱[amount] per day, up to [cap]. If it has not occurred by the Long-Stop Date, the Buyer may terminate without liability.'

10.4 Price and money

C3 Price and escalation

Applies to: All

What it does. Sets the price per kWh, or the strike price in a VPPA, and how it changes over time.

Red flag. A fixed annual escalator with no cap or reopener; a 'discount to grid' with no floor protection for you; or an index you cannot observe or audit.

Market-reasonable alternative. A price structure tested against the falling-grid scenario of Chapter 8; floors and caps, as priced in Chapter 7; and a published, verifiable index if indexation is used.

Negotiation tip. Ask for two or three price structures and compare them in your model.

C4 Billing and metering

Applies to: All

What it does. Defines the revenue meter, testing, invoicing, payment and invoice disputes.

Red flag. The seller owns and reads the only meter; there is no right to test it; invoices are final if not disputed in a few days and disputed amounts must be paid in full.

Market-reasonable alternative. A revenue-grade meter with test rights and tolerance; access to the interval data; at least 30 days to dispute; pay the undisputed amount and settle the rest under the dispute clause. For RES supply, the ERC requires billing type, frequency and payment methods to be stated in the contract, and gives a dispute route through the supplier's complaint procedure and then the ERC.[3]

Negotiation tip. Ask for the meter data feed in the term sheet.

C5 Take-or-pay or minimum offtake

Applies to: Onsite and RES; VPPA as a fixed-volume hedge

What it does. Decides whether you pay only for energy delivered and used, or for a minimum quantity whatever you use.

Red flag. Payment for all energy 'available' or for a fixed annual quantity, with no relief if your operations shrink. Chapter 9's example showed this costing almost six times a P90 weather year.

Market-reasonable alternative. Pay-as-produced on energy delivered; system sized to your minimum realistic load; if a minimum is unavoidable, a band, such as 80% of forecast, with carry-forward of shortfalls and relief for force majeure and seller faults.

Negotiation tip. Offer a slightly higher price for pay-as-produced terms; flexibility usually costs less than the exposure.

10.5 Performance

C6 Performance guarantee

Applies to: Onsite; VPPA (output); RES (service levels)

What it does. Promises output and pays you for shortfalls.

Red flag. No guarantee; or one set against a low, unadjusted figure with token damages as the exclusive remedy.

Market-reasonable alternative. A guaranteed annual output, corrected for actual weather and degradation (Chapter 9 explains P50 and P90), with liquidated damages at your lost saving per kWh. RES contracts should state the agreed allowable outage hours of the source plant.[3]

Negotiation tip. Ask what yield study the guarantee is based on and get it. A guarantee set far below P90 protects only the seller.

C7 Deemed energy and curtailment

Applies to: Onsite and VPPA; RES (supplier's own dispatch)

What it does. Decides who pays for energy the plant could have produced but did not, because of curtailment, grid outages or the buyer's actions.

Red flag. Deemed energy charged for any interruption 'not caused by the seller', which puts grid outages, DU curtailment and even typhoon damage on you.

Market-reasonable alternative. Deemed energy only for interruptions caused by the buyer, such as a roof shutdown or a breach, capped in hours per year and measured against a weather-corrected estimate. Grid outages are shared or excused: grid-tied inverters stop during an outage by design.[5]

Negotiation tip. List every cause of lost output and allocate each one in a table.

C8 Availability

Applies to: Onsite and VPPA

What it does. Guarantees the share of time the plant is ready to run.

Red flag. Availability measured over the life of the contract, or excluding so many events that it cannot be breached.

Market-reasonable alternative. Annual availability of a stated percentage, measured monthly, with clear exclusions and damages for shortfall.

Negotiation tip. Ask for the developer's measured availability on comparable plants, and set the guarantee near it.

C9 Operations and maintenance (O&M)

Applies to: Onsite; VPPA (seller's plant)

What it does. Sets who maintains the plant, repair speed and reporting.

Red flag. 'Commercially reasonable' maintenance with no response times, no spare parts in the country and no reporting.

Market-reasonable alternative. Response and repair times by severity; spares held locally; monthly reports against weather-corrected expected output;.

Negotiation tip. Tie O&M failures to the availability and performance damages, so there is a cost to slow repairs.

10.6 Risk allocation

C10 Insurance and risk of loss

Applies to: Onsite chiefly

What it does. Sets who insures what, and who bears loss or damage.

Red flag. The developer owns the system, but the buyer bears risk of loss 'while on the premises', or must insure equipment it does not own.

Market-reasonable alternative. Risk follows ownership, which is also the Civil Code default for goods (Article 1504).[1] The owner insures the system; you insure the building; certificates are delivered yearly; and typhoon, flood and earthquake cover and deductibles are disclosed.

Negotiation tip. Have your broker read the insurance clause and the developer's certificates together, as Chapter 9 recommended.

C11 Force majeure, with a typhoon focus

Applies to: All

What it does. Excuses performance during events beyond a party's control and sets what happens to payments and the term.

Red flag. Typhoons are treated as force majeure for the seller but not for the buyer; payments or deemed energy continue during the outage; the term is extended by every force majeure day; and there is no exit after a long outage.

Market-reasonable alternative. Mutual relief; no payments while output stops; restoration within a fixed period or termination at a pre-agreed value; an objective typhoon trigger.

Negotiation tip. Typhoons are foreseeable here. PAGASA records about 20 tropical cyclones a year in the Philippine Area of Responsibility,[6] so a seller may argue that ordinary storms are a design risk, not force majeure. Agree that up to the NSCP design wind speed,[7] damage is the owner's design and insurance risk, and that relief applies above it or when PAGASA raises a Tropical Cyclone Wind Signal at a stated level for the site.[8]

> **Illustrative sample wording, not legal advice: typhoon force majeure**
>
> **Red-flag version:** 'Force Majeure shall excuse the Seller's obligations. The Buyer's payment obligations shall not be excused by Force Majeure.'
>
> **Market-reasonable version:** 'A Typhoon Event occurs when PAGASA raises Tropical Cyclone Wind Signal No. [4] or higher for the municipality of the Site. During a Force Majeure outage no payment is due for energy not delivered. Damage from wind speeds within the design basis under NSCP 2015 is not Force Majeure. If the System is not restored within [180] days, either Party may terminate, with the Termination Value in Schedule [x].'

PAGASA's modified signal system has five levels, from Signal No. 1 for winds of 39–61 km/h to Signal No. 4 for 118–184 km/h and Signal No. 5 for 185 km/h or more.[8] A signal level is objective and public, which reduces arguments over what counts as a 'typhoon'. Your engineer should compare it with the site's design wind speed.

C12 Change in law

Applies to: All; highest stakes in VPPAs

What it does. Allocates the cost of new laws, rules and taxes after signing.

Red flag. The seller may pass through 'any' new tax, charge or cost without a cap, while savings from favourable changes stay with the seller; or a change to the seller's tax incentives becomes your cost.

Market-reasonable alternative. A defined term covering laws, regulations and ERC and DOE issuances after signing; net, documented cost only; a materiality threshold; symmetry, so savings are shared too; and renegotiation followed by termination at a pre-agreed value if the deal no longer works. Chapter 9 showed how often the rules changed.

Negotiation tip. For a VPPA, name the instruments that matter: the VPPA circular, whose implementing rules were due within one year,[4] the REM and WESM rules and accounting standards.

> **Illustrative sample wording, not legal advice: change in law**
>
> **Red-flag version:** 'The Buyer shall reimburse the Seller for any increase in cost arising from any Change in Law.'
>
> **Market-reasonable version:** 'If a Change in Law increases or decreases a Party's net cost of performance by more than [x]% of the annual Contract Price, the Parties shall negotiate in good faith for [60] days to restore the economic balance. Failing agreement, either Party may terminate, and the Termination Value in Schedule [x] applies.'

C13 Credit support, both ways

Applies to: All; essential in VPPAs

What it does. Secures each side's payment and performance obligations: deposits, letters of credit, parent guarantees, performance bonds.

Red flag. Only the buyer posts security; it is large, never steps down, and can be drawn on a simple demand.

Market-reasonable alternative. Two-way security sized to realistic exposure, such as a few months of payments from the buyer, and a construction bond plus a parent guarantee or capital covenant from the seller. In a VPPA, collateral thresholds reset with mark-to-market value, because when spot prices are high the seller owes you. For SOLR supply, the ERC fixes the deposit at one month's estimated billing.[3]

Negotiation tip. Offer a step-down after two years of on-time payment in exchange for seller security.

10.7 Ownership, site and exit

C14 Assignment and change of control

Applies to: All

What it does. Sets whether either side can transfer the contract or change owners.

Red flag. The seller may assign freely, including to an unknown fund, while the buyer needs consent for any assignment, even on the sale of the building, and a change of control of the buyer is a default.

Market-reasonable alternative. Seller assignment to lenders and to creditworthy successors with notice; buyer assignment to a buyer of the site, or to an affiliate of equal credit, without unreasonable refusal of consent; change of control is not a default if credit quality holds.

Negotiation tip. If you might sell the site, say so now and negotiate the transfer mechanism.

C15 Site access, roof and relocation

Applies to: Onsite; RES on relocation

What it does. Grants roof or land access and deals with roof repairs and moves.

Red flag. Unrestricted 24-hour access; a ban on roof works for the full term; no right to relocate; and the buyer pays all costs of temporary removal for roof repair.

Market-reasonable alternative. Access on notice under site safety rules; a roof-condition survey before installation and a defined roof-repair protocol with cost sharing; one or two relocation or temporary-removal rights at cost. Article 415 of the Civil Code treats things attached to an immovable in a fixed manner as immovable property,[1] so ask counsel to confirm how title to the system, and your lenders' and landlord's rights, are documented.

Negotiation tip. Before signing, have your engineer plan any roof replacement due within the term, as Chapter 4 advised.



Figure 10.3. Roof attachment checks after a storm. Site-access, roof-repair and insurance clauses decide who pays for this work and for any damage found. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

C16 Buyout options and the fair market value trap

Applies to: Onsite

What it does. Gives you the right to buy the system during or at the end of the term.

Red flag. A buyout at 'the greater of fair market value and [a schedule]', with fair market value set by the seller's appraiser on the value of the energy to you, meaning your avoided grid cost, rather than the value of used equipment.

Market-reasonable alternative. A published buyout schedule by year, declining to a nominal or used-equipment value at the end of the term, or fair market value set by an independent appraiser jointly appointed, with a cap at the schedule.

Negotiation tip. Ask for the buyout schedule at signing and model it, as in Chapter 3.

Figure 10.4 shows why the fair market value (FMV) wording matters, using the Chapter 8 example system: 300 kWp, ₱13.5 million installed, a flat ₱7.20 per kWh for twenty years. If FMV is appraised as the present value of your avoided grid cost on the remaining output, in year 10 it comes to about ₱31.6 million, three times the ₱10.2 million of the developer's unrecovered investment plus 5%.

C17 Early termination payments

Applies to: All

What it does. Sets what each side pays if the contract ends early.

Red flag. The buyer pays all remaining payments for the rest of the term, undiscounted and without deducting costs the seller saves or the resale value of the equipment, while a seller default gives the buyer nothing beyond removal.

Market-reasonable alternative. A schedule in an annex, declining each year, based on the developer's unrecovered investment plus a modest premium, and lower for no-fault terminations. A seller default should let you terminate and either buy at a discount or require removal at its cost. For RES contracts, the termination charge and its calculation must be stated, and a supplier that terminates early through its own fault faces the same fees as customers.[3] In a VPPA, agree the mark-to-market method and price source now.

Negotiation tip. Ask for the number in each year, then compare it with the curves in Figure 10.4.

$$B_t = C \times \frac{(1+r)^N - (1+r)^t}{(1+r)^N - 1} \tag{10.1}$$

Equation 10.1 gives the unrecovered investment B_t at the end of year t for an installed cost C recovered as a level annuity over N years at return r. For the example, with r = 10%, a red-flag clause would charge about ₱49.7 million to exit after year 1 and ₱25.5 million after year 10. The schedule charges about ₱13.9 million and ₱10.2 million.

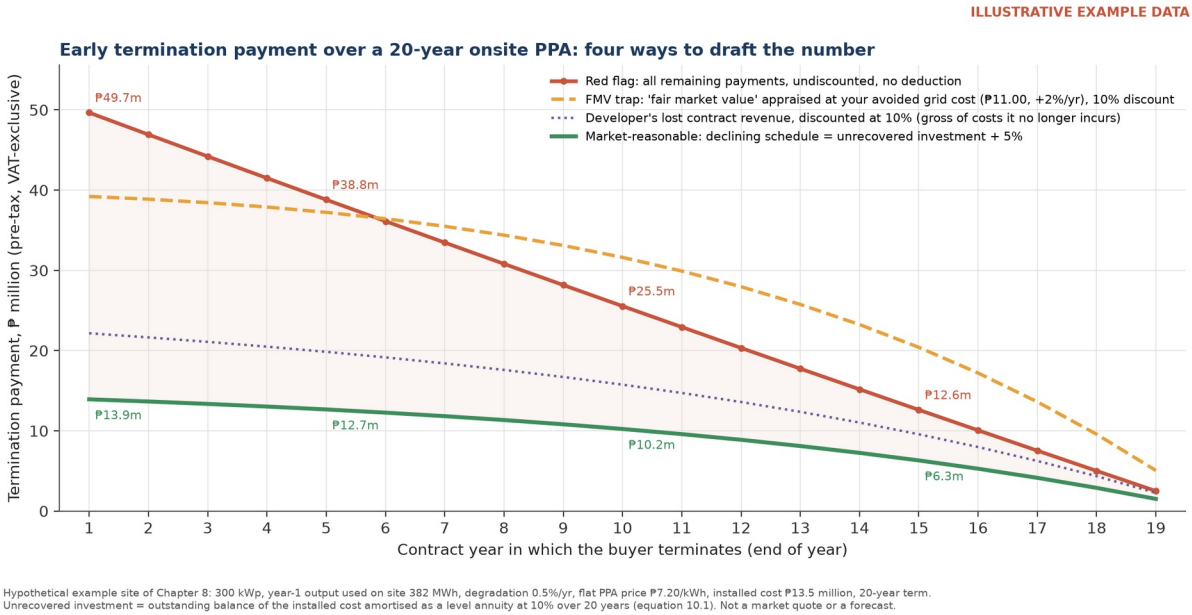


Figure 10.4. Illustrative example data: early termination payment over a 20-year onsite PPA under four drafting choices. Hypothetical example site of Chapter 8; not a market quote.

Illustrative sample wording, not legal advice: termination value

Red-flag version: 'On termination for any reason other than Seller Default, the Buyer shall pay all Contract Payments that would have fallen due for the remainder of the Term.'

Market-reasonable version: 'The Termination Value is the amount for the relevant Contract Year in Schedule [x]. On termination for Seller Default, the Buyer may require removal at the Seller's

> cost or purchase the System at [x]% of the Termination Value.'

C21 End of term and removal

Applies to: Onsite; RES (renewal); VPPA (renewal)

What it does. Sets what happens at expiry: removal, purchase or renewal.

Red flag. Automatic renewal on the same price; the buyer pays for removal; or the system can be abandoned on the roof.

Market-reasonable alternative. Your choice of purchase at the scheduled value, renewal on agreed terms, or removal at the seller's cost within a fixed period with roof restoration, backed by a removal bond in the final years. For RES contracts, automatic renewal is valid only if the contract provides for it and the supplier gives at least 60 days' notice before expiry.[3]

Negotiation tip. Diarise the decision 24 months before expiry, as in the Chapter 9 roadmap.

10.8 Attributes, data and disputes

C18 REC and environmental attribute ownership

Applies to: All; central in VPPAs

What it does. Says who owns the renewable energy certificates (RECs) and other environmental attributes.

Red flag. Silence; or the seller keeps the RECs while the marketing says you are 'solar powered'. Without RECs, a market-based Scope 2 claim fails.[9]

Market-reasonable alternative. All RECs and attributes from your contracted output transfer to you, or are retired in your name, with registry evidence each year; a warranty of no double counting; and remedies if RECs are not delivered.

Negotiation tip. Ask who will register the plant with the Renewable Energy Market and when your first RECs will reach you. Issuance processes are still developing.[10]

> **Illustrative sample wording, not legal advice: environmental attributes**
>
> **Market-reasonable version:** 'All Environmental Attributes associated with the Delivered Energy are transferred to the Buyer. The Seller shall cause the RECs to be issued and transferred to, or retired on behalf of, the Buyer in the Renewable Energy Registrar within [x] days after each Contract Year, and warrants that it has not sold or claimed them elsewhere.'

C19 Data and confidentiality

Applies to: All

What it does. Controls use of your data and of the contract terms.

Red flag. The seller may use and publish your consumption data and your name for marketing, while the buyer may not show the contract to its own auditors, lenders or a successor supplier.

Market-reasonable alternative. Mutual confidentiality with carve-outs for auditors, lenders, regulators, advisers and buyers of either business; your data used only to perform the contract. Where data identify individuals, such as staff at metering points or residents, the Data Privacy Act applies.[11]

Negotiation tip. Make sure you can share the contract with a tender adviser at renewal.

C20 Dispute resolution and governing law

Applies to: All

What it does. Chooses the law, the forum and the escalation route.

Red flag. Courts or arbitration in the seller's home country under foreign law; a single arbitrator appointed by the seller; or, in a VPPA, an arbitration seat outside the Philippines, which the VPPA circular does not allow.[4]

Market-reasonable alternative. Philippine law; escalation to senior managers, then mediation, then arbitration. A domestic dispute can go to the Philippine Dispute Resolution Center, Inc. (PDRCI), whose rules offer an expedited procedure and emergency arbitrators.[12] For a foreign seller, SIAC arbitration lets the parties choose the seat, which can be Manila.[13]

Negotiation tip. The ADR Act of 2004 (RA 9285) supports this. Courts must refer disputes covered by an arbitration agreement to arbitration on a timely request and interpret the law 'in favor of arbitration'. International commercial arbitration follows the UNCITRAL Model Law, domestic arbitration remains under RA 876 as amended, and foreign awards are enforced under the New York Convention.[14] Ask counsel whether installation disputes could fall under construction arbitration, which the Act leaves to the Construction Industry Arbitration Law.

> **Illustrative sample wording, not legal advice: disputes**
>
> **Market-reasonable version:** 'This Agreement is governed by the laws of the Philippines. Any dispute not resolved by senior management within [30] days shall be finally resolved by arbitration administered by [PDRCI under its Arbitration Rules] [SIAC under the SIAC Rules]. The seat of arbitration shall be [Makati City], Philippines, the language English, and the tribunal [one or three] arbitrators. Metering disputes may be referred to an Independent Expert.'

10.9 Terms specific to RES supply contracts

C22 Switching, Supplier of Last Resort, cooling-off and pass-through charges

Applies to: Offsite / RES

What it does. The ERC's Omnibus Rules for customer choice set minimum contents for retail supply contracts and the process for switching (Chapter 5).[3]

Red flag. A price described as 'all-in' that then passes through line rental, reserve and 'other market charges'; no cooling-off right, or a waiver buried in the signature page; termination fees with no formula; and silence on what happens if the supplier fails.

Market-reasonable alternative. Under the rules, the supplier must state that its price 'is inclusive of all costs in connection with the sale of electricity' and list any other charges; the customer may cancel within five business days of signing unless it waives the right; and the contract must say when the customer can be moved to the Supplier of Last Resort (SOLR). The SOLR charges the WESM nodal price or its PSA price plus 5%, may require a one-month deposit, and charges no exit fee.[3]

Negotiation tip. List every pass-through by name with a cap, because rules on line rental and reserves change mid-contract.[15] Keep the cooling-off right. Map the switching timeline: an initial switch requires at least 90 days' notice to the distribution utility, and the cooling-off period must expire before the switch request.

10.10 Terms specific to virtual PPAs

C23 Settlement reference, negative prices and REC delivery

Applies to: Virtual PPA

What it does. Defines the settlement price, negative-price treatment and Voluntary REC delivery.

Red flag. A reference price the seller can influence, such as its own realised price, or a node far from your load; settlement of negative-price hours at the full negative price, so you pay the strike plus the negative amount; and a 'best efforts' REC promise.

Market-reasonable alternative. A published WESM price at a named node or region and interval, with a fallback if publication is suspended; a floor on the reference price, usually zero, or no settlement in negative-price hours; and REC transfer under the circular, which makes it automatic unless otherwise agreed and bans double selling.[4]

Negotiation tip. Negative prices are real here. The ERC reported negative average WESM prices across all three grids on 25 December 2024 (−₱1.0338/kWh), 1 January 2025 and 18 April 2025,[16] and during the 2026 market suspension negative administered prices were set to zero.[17] Stress-test settlement on actual prices (Chapter 6) and cover market suspensions.



Figure 10.5. The issues list, not the draft contract, is the negotiating document. Each marked clause should carry an ask, a fallback and a give. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

10.11 A red-flag scoring tool

A scoring tool makes reviews consistent and auditable. Give each clause a weight w_i from 1 to 5 for the structure you are buying, rate it green (market-reasonable, $p_i = 0$), amber (a gap you can negotiate, $p_i = 1$) or red (a red flag, $p_i = 3$), and compute a red-flag index over the n clauses that apply, from 0, all green, to 100, all red:

$$I = \frac{\sum_{i=1}^{n} w_i p_i}{3 \sum_{i=1}^{n} w_i} \times 100 \tag{10.2}$$

Red scores three points because a red flag usually costs far more than an amber gap. The bands, which are the author's judgement, are green up to 15, amber up to 30, and red above that. A gate rule overrides the arithmetic: any red on a weight-5 clause makes the offer red. Table 10.1 lists the weights, and Figure 10.6 applies them to three hypothetical first drafts.

Table 10.1. Illustrative clause weights by structure (5 = deal-critical; 0 = not applicable)

Clause	Onsite PPA	Offsite / RES	Virtual PPA
C1 Parties and conditions precedent	3	3	3
C2 Term, COD and delay damages	4	2	4
C3 Price and escalation	5	5	5
C4 Billing and metering	3	3	3
C5 Take-or-pay / minimum offtake	5	4	3
C6 Performance guarantee	4	2	3

C7 Deemed energy and curtailment	4	2	4
C8 Availability	3	2	3
C9 O&M	3	–	1
C10 Insurance and risk of loss	4	1	2
C11 Force majeure (typhoon)	5	4	4
C12 Change in law	4	4	5
C13 Credit support (both ways)	4	3	5
C14 Assignment and change of control	3	3	3
C15 Site access, roof, relocation	4	2	–
C16 Buyout options and FMV	4	–	–
C17 Early termination payments	5	4	5
C18 RECs / environmental attributes	3	3	5
C19 Data and confidentiality	2	2	2
C20 Disputes and governing law	3	3	4
C21 End of term and removal	4	1	2
C22 RES terms: switching, SOLR, cooling-off, pass-through	–	5	–
C23 VPPA terms: reference price, negative prices, REC delivery	–	–	5

The author's judgement for a typical Philippine C&I buyer. Adjust them in the companion workbook to reflect your own priorities, and agree them before the offers arrive.

ILLUSTRATIVE EXAMPLE DATA

Red / amber / green clause scorecard for three example offers

w = clause weight for that structure (1–5)

	Onsite PPA	Offsite / RES	Virtual PPA
C1 Parties and conditions precedent	Green (w3)	Green (w3)	Amber (w3)
C2 Term, COD and delay damages	Amber (w4)	Green (w2)	Red (w4)
C3 Price and escalation	Amber (w5)	Amber (w5)	Green (w5)
C4 Billing and metering	Green (w3)	Amber (w3)	Amber (w3)
C5 Take-or-pay / minimum offtake	Red (w5)	Amber (w4)	Green (w3)
C6 Performance guarantee	Amber (w4)	Green (w2)	Amber (w3)
C7 Deemed energy and curtailment	Red (w4)	Green (w2)	Amber (w4)
C8 Availability	Green (w3)	Green (w2)	Amber (w3)
C9 O&M	Green (w3)	n/a	Green (w1)
C10 Insurance and risk of loss	Amber (w4)	Green (w1)	Green (w2)
C11 Force majeure (typhoon)	Red (w5)	Amber (w4)	Amber (w4)
C12 Change in law	Amber (w4)	Red (w4)	Amber (w5)
C13 Credit support (both ways)	Amber (w4)	Green (w3)	Red (w5)
C14 Assignment and change of control	Amber (w3)	Green (w3)	Amber (w3)
C15 Site access, roof, relocation	Amber (w4)	Green (w2)	n/a
C16 Buyout options and FMV	Red (w4)	n/a	n/a
C17 Early termination payments	Red (w5)	Amber (w4)	Amber (w5)
C18 RECs / environmental attributes	Amber (w3)	Amber (w3)	Amber (w5)
C19 Data and confidentiality	Green (w2)	Green (w2)	Green (w2)
C20 Disputes and governing law	Green (w3)	Green (w3)	Red (w4)
C21 End of term and removal	Amber (w4)	Green (w1)	Green (w2)
C22 RES terms: switching, SOLR, cooling-off, pass-through	n/a	Red (w5)	n/a
C23 VPPA terms: reference price, negative prices, REC delivery	n/a	n/a	Amber (w5)
Red-flag index (0–100) and band	46 / 100 → Red	29 / 100 → Red	38 / 100 → Red

Illustrative example ratings by the author for three hypothetical offers; not an assessment of any real contract. Points: green 0, amber 1, red 3; index = weighted points ÷ maximum possible × 100 (equation 10.2). Bands: green ≤ 15, amber ≤ 30, red above 30 or any red on a weight-5 clause. Rebuild with your own ratings in Chapter10_TermSheet_Scorecard.xlsx.

Figure 10.6. Illustrative example data: red/amber/green scorecard for three hypothetical first-draft offers. Ratings are the author's examples, not an assessment of any real contract.

The example onsite offer scores 46, with red flags on take-or-pay, force majeure, early termination, deemed energy and buyout. The RES offer scores 29, inside the amber band,

but the gate rule makes it red because of pass-through charges in the price. The VPPA scores 38, with one-way credit support as its gating red. All three are typical first drafts.

The companion workbook, Chapter10_TermSheet_Scorecard.xlsx, available from solarmd.net, contains the scorecard with drop-down ratings, editable weights and thresholds, the gate rule, a three-offer comparison and a clause guide.

10.12 A negotiation playbook

Figure 10.7 sets out the sequence. Buyers often lose value by negotiating in the wrong order: price first, termination schedule last, when leverage has gone.

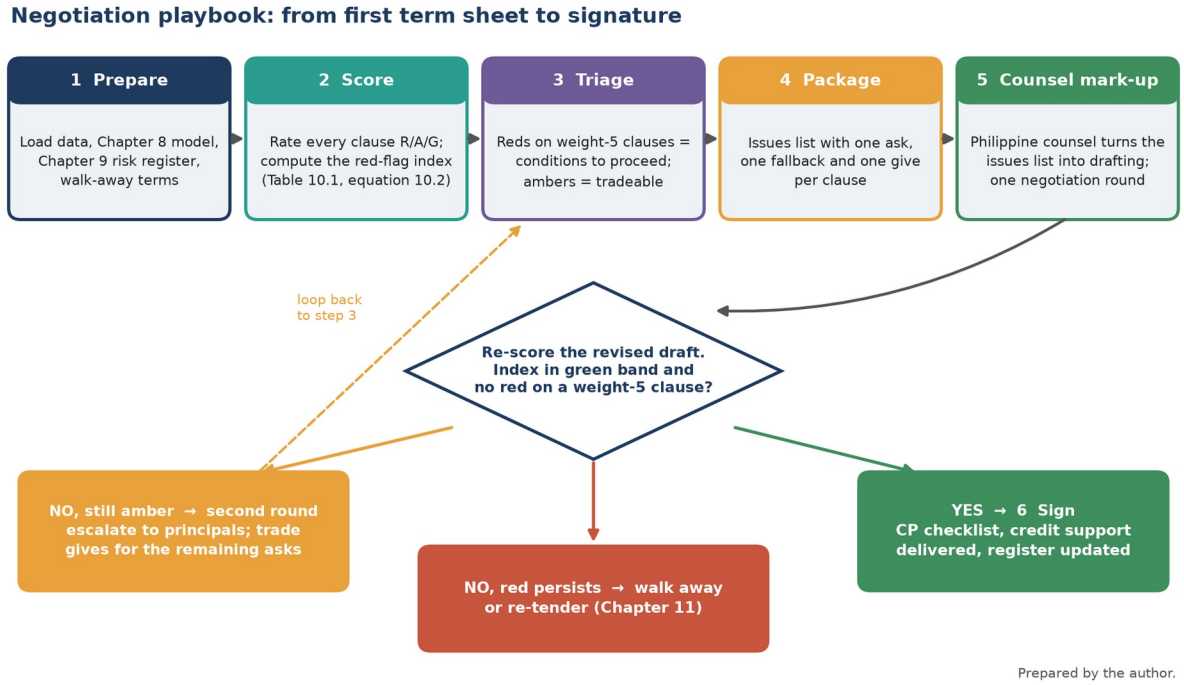


Figure 10.7. A negotiation playbook from first term sheet to signature. Prepared by the author.

1. Prepare before the first meeting. Bring your load data, the Chapter 8 model and the Chapter 9 risk register, and agree your walk-away terms with the board.
2. Score the term sheet, not the long-form contract.
3. Triage. Any red on a weight-5 clause becomes a condition of continuing. Ambers are your trading stock.
4. Package the issues. For each clause, write one ask, one fallback and one give. Gives that cost a creditworthy buyer little include a longer term, exclusivity during diligence, a credit-support step-down schedule, roof access windows and a quick decision.
5. Bring in counsel to turn the agreed issues list into drafting, then re-score the revised draft.
6. Sign only when the index is green and no weight-5 clause is red. If a red persists, walk away or re-tender. Chapter 11 shows how to run a tender.

Key takeaways

- Philippine contract law enforces what you sign; have counsel draft every clause.
- Five clause families decide most outcomes: price, take-or-pay, force majeure, early termination and the RES or VPPA-specific terms.
- Typhoons are foreseeable here. Use an objective trigger, such as a PAGASA wind signal level, tied to the design wind speed, and make sure payments stop when output stops.
- Termination payments vary enormously with the drafting. In the example, exiting after year 10 costs about ₱10.2 million under a fair schedule and ₱25.5 million under a red-flag clause.
- Fair market value buyouts are a trap if the appraiser values your avoided grid cost rather than the equipment.
- For RES contracts, the ERC Omnibus Rules give you rights: an all-inclusive price statement, a five-business-day cooling-off period, notice before automatic renewal, and SOLR supply at the WESM or PSA price plus 5%.
- For VPPAs, define the reference price and negative-price treatment, insist on automatic REC transfer, and seat any arbitration in the Philippines.
- Score every offer with the same weights and negotiate the package, not single clauses.

Questions a CFO should ask

1. Do we pay only for energy delivered and used? If not, what is our maximum exposure in a bad year?
2. Which causes of lost output are charged to us as deemed energy, and how many hours a year can that be?
3. What happens to our payments, and to the term, if a typhoon puts the system out for six months?
4. Who pays if a law, ERC decision or tax changes, and can we exit if the economics break?
5. What would it cost to terminate in years 1, 5, 10 and 15, and how was that number built?
6. Is the buyout price a schedule, or a fair market value that someone else will appraise?
7. Who owns the RECs, and when will they be retired in our name?
8. For a RES contract, is the price truly all-inclusive, and what does SOLR supply cost us if the supplier fails?
9. For a VPPA, which price do we settle against, and what happens in negative-price hours and market suspensions?
10. What is the red-flag index of this offer, and which red flags have we agreed to accept, and why?

A well-scored term sheet is only as good as the developer behind it and the competition that produced it. Chapter 11, "Choosing a Developer and Running a Competitive Tender",

shows how to build a shortlist, run a fair tender and use competition to fix the red flags before they reach the contract.

Notes

All sources were accessed on 17–18 October 2026 (Asia/Manila). Laws, ERC and DOE rules and arbitration rules change; check the current text before relying on it. Quotations from statutes and rules were checked against the sources cited. News reports are cited as reports of the events and statements they describe. Clause weights, example ratings, thresholds and termination-payment figures are illustrative assumptions, not market data or statistics.

1. Republic Act No. 386, Civil Code of the Philippines, text at The Lawphil Project, https://lawphil.net/statutes/repacts/ra1949/ra_386_1949.html (Articles 415(3), 1159, 1174, 1229, 1267, 1306, 1377, 1504, 2226 and 2227; quotations checked against this text on 18 October 2026).
2. Asset Privatization Trust v. T.J. Enterprises, G.R. No. 167195, Supreme Court, Second Division, 8 May 2009, https://lawphil.net/judjuris/juri2009/may2009/gr_167195_2009.html (elements of a fortuitous event under Article 1174).
3. Energy Regulatory Commission (ERC), Resolution No. 13, Series of 2024, 'Omnibus Rules for Customer Choice Programs in the Retail Market', Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (Module E1.2 conditions for switching, including expiry of the cooling-off period; E2.1 ninety calendar days' notice to the NSP for initial switches; G3 last resort supply events; G7 SOLR cash security deposit of one month's estimated billing; G14 no SOLR exit fee; G15 WESM nodal or PSA price plus 5% premium; L12.2 minimum contents of a retail supply contract, including (b) billing, (c) a declaration that the price 'is inclusive of all costs in connection with the sale of electricity', (i) early termination charges and their calculation, (l) SOLR transfer circumstances and (m) allowable outage hours; L12.9 automatic renewal only if provided in the contract and notified at least 60 calendar days before expiry; L12.11 templated contracts construed in favour of the customer; L13 five-business-day cooling-off period, which may be waived; M3 bill disputes through the supplier's complaint procedure and then the ERC; M8 termination fees for supplier-fault termination). As cited in Chapters 2, 5 and 9. A proposal to harmonise the WESM and retail rules (ORCP-WR-WM-RR-RM-25-03) was listed as deferred on the PEMC rules-change page when checked.
4. Department of Energy (DOE), Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', published 7 November 2025, https://doe.gov.ph/circular-no-dc-2025-10-0024 (Sections 3.5 and 7.10 automatic REC registration or transfer and transfer by the RE Registrar; 7.2 no obligation to deliver power; 7.5 no double selling; 7.6 BSP-compliant currency; 7.7 price as agreed; 7.8 minimum ten-year term from commercial operations; 8.3 Philippine governing law; 8.4 Philippine courts; 8.5 arbitration permitted 'Provided, That the seat of arbitration is in the Philippines'; Section 9 supplementary DOE issuances within one year). Text checked by the author against the signed circular. As cited in Chapters 2, 6 and 9.
5. ERC Resolution No. 11, Series of 2022, 'Rules Governing Distributed Energy Resources', as summarised by Ocampo & Suralvo Law Offices, https://www.ocamposuralvo.com/updates/erc-issued-distributed-energy-resources-rules.html (interconnection standards including IEEE 1547). As cited in Chapters 4 and 9. Confirm the anti-islanding behaviour of any specific inverter with its supplier.
6. PAGASA, 'Tropical Cyclone Information', https://www.pagasa.dost.gov.ph/climate/tropical-cyclone-information (average of 20 tropical cyclones a year in the Philippine Area of Responsibility). As cited in Chapters 4 and 9.
7. Association of Structural Engineers of the Philippines, National Structural Code of the Philippines 2015, Volume 1, Section 207 (wind loads; basic wind speeds by occupancy category), text at https://archive.org/stream/NSCP2015/NSCP-2015_djvu.txt. As cited in Chapter 9.
8. PAGASA, press statement on the Modified Tropical Cyclone Wind Signal System, 23 March 2022, https://www.pagasa.dost.gov.ph/press-release/108, and 'Tropical Cyclone Wind Signal', https://www.pagasa.dost.gov.ph/learning-tools/tropical-cyclone-wind-signal (five levels: No. 1, 39–61 km/h;

No. 2, 62–88 km/h; No. 3, 89–117 km/h; No. 4, 118–184 km/h; No. 5, 185 km/h or higher). The wind-signal level is suggested here as an objective contract trigger; whether it suits a particular site and design is an engineering and legal question.

9. World Resources Institute and WBCSD, 'GHG Protocol Scope 2 Guidance', 2015, https://ghgprotocol.org/scope-2-guidance (market-based method and Scope 2 Quality Criteria for contractual instruments). As cited in Chapters 6 and 9.

10. IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (Voluntary REC issuance to GEOP end-users held in abeyance pending PREMS enhancements and REM Rules amendment). As cited in Chapters 5, 6 and 9.

11. Republic Act No. 10173, Data Privacy Act of 2012, https://www.lawphil.net/statutes/repacts/ra2012/ra_10173_2012.html (Section 3(g): personal information is information from which the identity of an individual is apparent or can reasonably and directly be ascertained).

12. Philippine Dispute Resolution Center, Inc. (PDRCI), 'Arbitration Rules', https://pdrci.org/arbitration-rules/ (applicable to arbitrations commenced on or after 1 January 2015; model arbitration clause; Article 41 confidentiality; Article 52 expedited procedure; Article 53 emergency arbitrator), and PDRCI, 'New Arbitration Rules to take effect on January 1, 2015', https://pdrci.org/new-arbitration-rules-to-take-effect-on-january-1-2015-2014-sept/.

13. Singapore International Arbitration Centre, 'Arbitration Rules of the Singapore International Arbitration Centre', 7th edition, in force 1 January 2025, https://siac.org.sg/siac-rules-2025 (Rule 1.2 domestic and international arbitrations; Rule 1.5 commencement; Rule 13 Streamlined Procedure; Rule 36.1 'The parties may agree on the seat of the arbitration').

14. Republic Act No. 9285, Alternative Dispute Resolution Act of 2004, https://www.lawphil.net/statutes/repacts/ra2004/ra_9285_2004.html (Section 19 adoption of the UNCITRAL Model Law for international commercial arbitration; Section 24 referral to arbitration; Section 25 interpretation 'in favor of arbitration'; Section 32 domestic arbitration governed by RA 876 as amended; Section 33 Model Law articles applied to domestic arbitration; Sections 34–35 construction disputes governed by Executive Order No. 1008; Section 42 New York Convention; Section 45 grounds for refusing a foreign award limited to Article V of the Convention); Republic Act No. 876, The Arbitration Law, https://www.newyorkconvention.org/media/uploads/pdf/6/2/628_republic-act-no-876.pdf; New York Convention, contracting state page for the Philippines, https://www.newyorkconvention.org/contracting-states/contracting-states/philippines.

15. Power Philippines, 'ERC defends line rental rules amidst NASECORE Ombudsman complaint', 2 September 2026, https://powerphilippines.com/erc-defends-line-rental-rules-amidst-nasecore-ombudsman-complaint/ (line rental renamed Bilateral Line Loss and Congestion Cost; ERC corrective measures of 13 August 2026); Power Philippines, 'WESM price climbs to PHP 7.43/kWh despite wider supply margin', 13 October 2026, https://powerphilippines.com/wesm-price-climbs-to-php-7-43-kwh-despite-wider-supply-margin/ (ERC suspension of reserve market commercial dispatch and settlement from 14 October 2026). As cited in Chapter 9.

16. L. Lectura, 'WESM average prices for all 3 grids negative in April', BusinessMirror, 2 May 2025, https://businessmirror.com.ph/2025/05/02/wesm-average-prices-for-all-3-grids-negative-in-april/ (reporting the ERC: negative average prices across the Luzon, Visayas and Mindanao grids on 25 December 2024 at −₱1.0338/kWh, 1 January 2025 at −₱0.5592/kWh and 18 April 2025 at −₱0.4014/kWh).

17. IEMOP, 'April 2026 supply margins dwindle amid rising energy demand; modified administered prices stabilize spot rates', 13 May 2026, https://www.iemop.ph/news/april-2026-supply-margins-dwindle-amid-rising-energy-demand-modified-administered-prices-stabilize-spot-rates/ (ERC market suspension from 26 March 2026; Modified Administered Prices with 'all negative AP set at 0 PHP/kWh'; normal operations resumed 1 May 2026).

Figure and image credits

Figures 10.2 and 10.7 and Table 10.1 were prepared by the author. Figures 10.4 and 10.6 use illustrative example data generated by the author's model (build/charts_ch10.py) and reproduced in the companion template Chapter10_TermSheet_Scorecard.xlsx: the example site, prices, installed cost, return, clause weights, ratings and thresholds are hypothetical and are not market quotes, statistics or an assessment of any real contract. All sample clause wording was written by the author for illustration. Figures 10.1, 10.3 and 10.5 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

Disclaimer. This chapter is for general information and does not constitute legal, tax, accounting, insurance, engineering or investment advice. The sample clauses are illustrative only, have not been tested in any court or arbitration, and must not be used as precedents. Contract terms depend on the exact wording, the parties and the facts. Engage qualified Philippine counsel to draft and review every PPA, RES supply contract or VPPA, and consult your tax adviser, auditor and insurance broker, before signing.

CHAPTER 11

Choosing a Developer and Running a Competitive Tender

How to discover the market price, test the developers behind the offers, and compare bids on a fair and common basis

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: Why tender: price discovery and competition · The tender process end to end · What goes in the data room · Developer due diligence: track record, finances, licences and registrations, EPC and O&M, equipment bankability lists, insurance and references · Evaluation criteria and weighted scoring · Normalising bids · An illustrative evaluation of four bids · RES tenders · Governance, probity and RA 12009 · Common mistakes · Timeline and adviser budget · The role of an independent adviser · An RFP template outline · Checklist, key takeaways and CFO questions



Figure 11.1. Competition only works if every bid is opened, read and scored under rules fixed in advance. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

Chapters 7 to 10 gave you the tools to judge one offer: its price structure, its savings, its risks and its clauses. This chapter is about getting good offers in the first place, from developers who will still be there in year fifteen. That is the job of a competitive tender.

For a company using 100,000 kWh a month, a twenty-year PPA is a commitment worth tens of millions of pesos. The process below scales down well: a mid-sized buyer can run it in about six months with a small team and modest outside help.

> **Before you use this chapter**
>
> **Scope:** The process applies to onsite PPAs, offsite supply from a Retail Electricity Supplier (RES) and virtual PPAs. Where they differ, the text says so.
>
> **RES:** Retail Electricity Supplier, licensed by the ERC. In this book RES always means Retail Electricity Supplier.
>
> **Illustrative numbers:** Durations, weights, ratings and the four bids in Section 11.7 are the author's examples, not market data.
>
> **Not legal advice:** Government-owned buyers must follow procurement law, and every buyer should have counsel review the tender documents and the contract.

11.1 Why tender: price discovery and the value of competition

There is no published price list for a rooftop PPA or a renewable supply contract. A price depends on your site, your load, your credit and the developer's own cost of capital. You cannot know what the market will offer until several developers price the same thing. That is price discovery. IRENA describes auctions as 'a crucial mechanism for price discovery' in renewable energy.[1] A private tender does the same job on a smaller scale.

Competition does three further things. It moves terms as well as price: a developer that knows rivals are bidding is more likely to accept a fair termination schedule. It reveals information: the spread between offers shows how much of any price is margin. And it gives you a fallback, a credible second bidder.

The stakes are easy to size. In the Chapter 8 example, a 300 kWp rooftop system, every ₱0.10 per kWh off the price is worth about ₱0.31 million in present value over a twenty-year term at a 10% discount rate. A tender that moves the price by ₱0.30 to ₱0.50 pays for itself many times over.

Concentration makes competition harder to get. PEMC reports that market concentration remains evident in retail supply and in the Green Energy Option Program, though declining, and that two corporate groups account for most GEOP customers and renewable consumption.[2] The lesson for buyers is to invite widely, not to rely on the two or three names they already know.

11.2 The tender process end to end

Figure 11.2 shows the steps and indicative durations for a single-site rooftop PPA. A RES tender is shorter at the front and is followed by the regulatory switching timeline (Section 11.8).

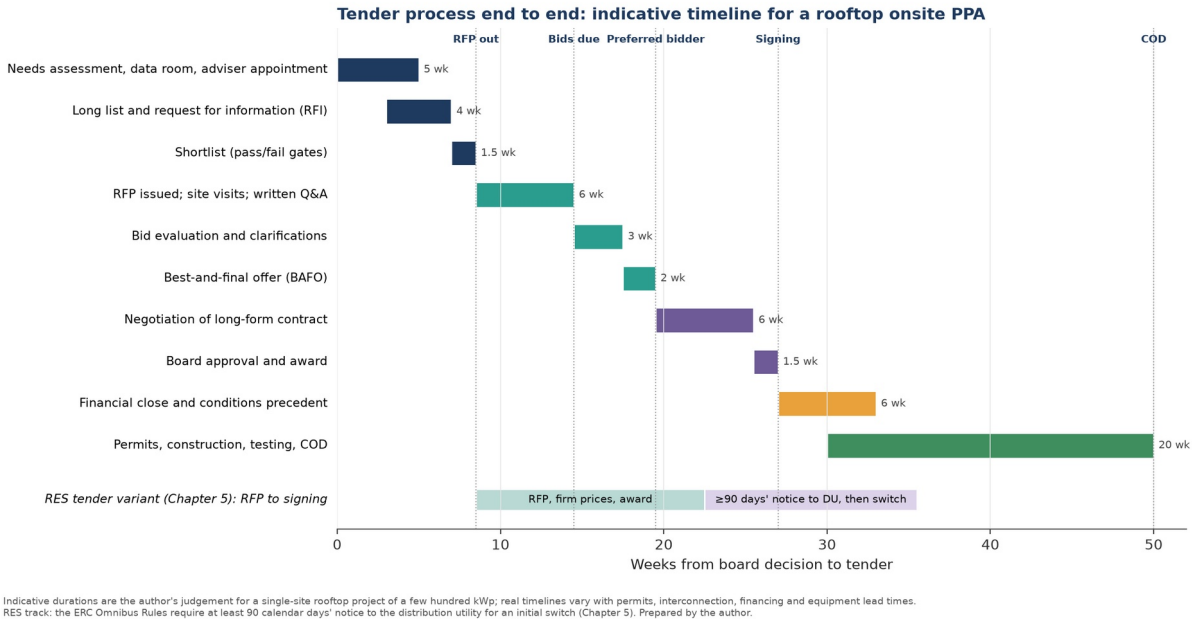


Figure 11.2. Tender process end to end: indicative timeline from board decision to commercial operation for a rooftop onsite PPA, with the RES variant. Durations are the author's judgement; the 90-day notice is from the ERC Omnibus Rules.[3] Prepared by the author.

1. Needs assessment and data room. Define what you are buying: onsite, offsite or virtual; the target volume; the term; and any renewable-claim requirement. Agree a budget ceiling and walk-away terms with the board, appoint advisers and build the data room (Section 11.3).
2. Long list. Identify ten to fifteen firms that have built and financed projects of your size and type.
3. Request for information (RFI). A short questionnaire on capability, track record, licences and finances, with a confidentiality agreement. No prices yet.
4. Shortlist. Apply the pass/fail gates of Section 11.4 and keep four to six firms. Tell the others promptly.
5. Request for proposals (RFP). Issue the full package: data room access, technical requirements, your term sheet (Chapter 10), a mandatory pricing form, the evaluation criteria and the timetable.
6. Site visits and written Q&A. Give every bidder the same access. Answer questions in writing and send every answer to all bidders, without naming who asked.
7. Bid evaluation. Check compliance, normalise prices, score the contract mark-ups and the technical, credit and ESG criteria, and clarify in writing.
8. Best-and-final offer (BAFO). Invite the top two or three to improve on a common basis. One round is usually enough.

9. Negotiation. Agree the long-form contract with the preferred bidder, keeping a reserve bidder warm.
10. Award. Obtain board approval on a written evaluation report and notify the unsuccessful bidders.
11. Financial close. The developer satisfies its conditions precedent: financing, permits, insurance and credit support.
12. Construction and commercial operation date (COD). Monitor the schedule, witness the acceptance tests and start the contract only on a verified COD (Chapter 10).

11.3 What to put in the data room

Bidders price uncertainty. The more they know about your site and load, the less contingency they build into the price and the more alike their offers become. A virtual data room, a shared folder with access logs, is enough for most buyers. Table 11.1 lists the contents.

Table 11.1. Data room contents for an onsite or offsite PPA tender

Item	Why bidders need it	Source
Twelve to twenty-four months of electricity bills	Tariff, demand charges, power factor and seasonality; the avoided cost the PPA must beat	Finance; distribution utility (DU)
Interval (15-minute) load data, ideally twelve months or more	Matches solar output to load; essential for sizing and for RES pricing	DU, metering service provider or your own logger
Single-line diagram and transformer, switchgear and metering details	Interconnection point, protection and metering design	Facilities; electrical engineer
Roof drawings: plans, sections, purlin layout, roofing material and age	Layout, load paths and attachment design	Facilities; original designer
Structural assessment of the roof	Spare load capacity and wind design under the National Structural Code (NSCP 2015)	Licensed structural engineer
Site photos and drone images, with obstructions and shading marked	Desk layout before site visits; fewer surprises	Facilities
Site rules: safety, access hours, hot-work and permit-to-work	Construction method and cost	Health and safety
Lease or title documents and any landlord or lender consents	Who can grant roof rights for twenty years	Legal
Your draft term sheet and red-flag positions	Bids priced against your contract, not theirs	Chapter 10
Audited financial statements, or a summary credit pack	Developers price your credit	Finance

For a RES tender, the bills and interval data matter most; for a VPPA, add your load profile by trading interval and your renewable-claim requirements. Load data that identify individuals are covered by the Data Privacy Act.[4]

Two cautions. First, a structural report written for the bidders is worth its cost. Without it, each bidder either prices a worst case or excludes the work, as Bid C does in Section 11.7, and you cannot compare them. Chapter 9 explained why wind design matters here.[5] Second, put everything under a confidentiality agreement before access, and log who opened what.



Figure 11.3. Bills, interval data, roof drawings, the structural report and site photos: a complete data room narrows the spread between bids. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

11.4 Developer due diligence

A PPA is a twenty-year promise. The DOE reported that 163 renewable energy service contracts covering 17,904 MW were terminated or relinquished in 2024 and 2025, many for failure to meet work programmes and obligations.[6] Awards are not projects. Due diligence asks whether this developer can build, finance and run your system, and still be there to honour the contract. Figure 11.4 shows how the tests deepen as the field narrows.

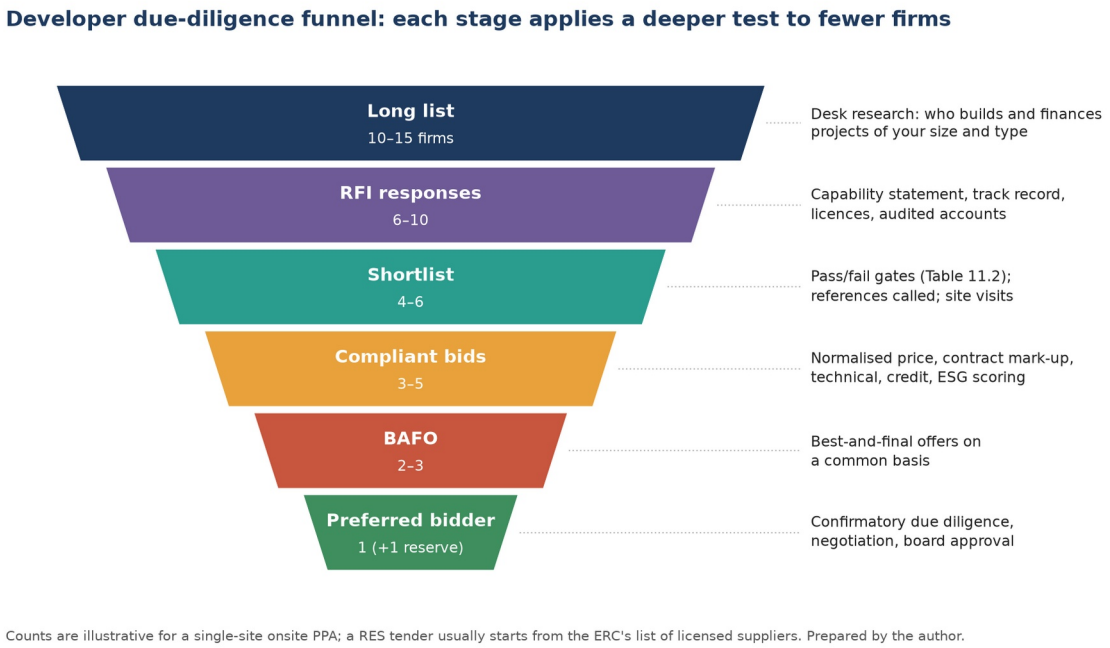


Figure 11.4. Developer due-diligence funnel. Counts are illustrative. Prepared by the author.

Track record and financial strength

Ask for a list of operating projects of similar size and type, with locations, COD dates, measured performance against guarantee and client contacts. Ask for three years of audited financial statements for the contracting entity and its parent. Many PPAs are signed by a special-purpose company with no assets of its own, so the parent's accounts, a parent guarantee and evidence of committed equity and debt matter more than the brochure. Chapter 9 sets out the questions on developer credit.

Licences and registrations

The licences needed depend on the structure, and they are easy to misstate. Table 11.2 sets out what to verify. Ask for copies and check them with the issuing agency.

Table 11.2. Licences and registrations to verify, by structure

Requirement	Applies to	What the rules say
DOE registration (Certificate of Registration) or RE service/operating contract	Onsite and offsite RE projects	DOE DC2024-06-0018 governs RE contracts and DOE Certificates of Registration. An 'RE Project for Own-Use' is located within or contiguous to the end-user's premises and supplies that end-user, whether installed by the end-user or by a third party. Certain own-use projects need no operating contract but must meet DOE registration requirements.[7]
DOE certification for RE Act incentives	Developers claiming incentives	RE Act incentives go to RE developers 'as duly certified by the DOE, in consultation with the BOI'; developers register with the DOE's Renewable Energy Management Bureau.[8] Incentives are not self-executing.[9]
BOI registration	Developers and buyers seeking tax incentives	Renewable energy is a priority in the Strategic Investment Priority Plan, allowing developers to register with the BOI for incentives.[10] Self-financed own-use projects have a separate BOI route (Chapter 3).[11]
ERC RES licence	Offsite supply to	EPIRA Section 29: suppliers to the contestable market 'shall

	contestable customers; GEOP	require a license from the ERC'. Under the Omnibus Rules, no one may supply retail customers without a RES licence (or letter-authority for a Local RES), and GEOP suppliers also need a DOE operating permit.[12,3]
ERC Certificate of Compliance (COC)	Onsite generation (DER)	Required before operation under the DER Rules, except where DOE DC2026-08-0017 exempts qualifying zero-export systems (Chapter 4).[13,14]
PCAB contractor licence	EPC contractor and subcontractors	Undertaking construction without a contractor's licence is an offence under RA 4566.[15]
Permits and seals	Onsite designs	Building permit from the LGU and electrical plans signed and sealed by a professional electrical engineer (Chapter 4).

A virtual PPA does not involve physical supply to you, so the counterparty's licences relate to its own plant and market registration; see Chapter 6. Confirm the current requirements for your structure with counsel.

EPC and O&M capability

Most developers subcontract construction (engineering, procurement and construction, or EPC) and sometimes operations and maintenance (O&M). Evaluate the firms that will actually do the work: their licences, safety record, named project manager, design standards and local service presence. Ask for a sample monthly O&M report and the response times the contract will guarantee.

Equipment bankability lists

Bidders often describe their modules as 'Tier 1'. Treat that as a claim to verify. The best-known list is BloombergNEF's, and its methodology is explicit. A module maker is Tier 1 if it has supplied own-brand, own-manufactured products to at least six projects financed non-recourse by six different commercial banks in the past two years, and only financings over 10 MW count. BNEF says the list is 'purely a measure of industry acceptance', is not a recommendation, does not account for product quality or financial strength, and that only the latest quarter's list is valid.[16] BNEF publishes a similar Tier 1 list for inverters.[17] The lists are available only to BNEF subscribers, so ask the bidder for evidence of the current quarter's listing.

Two other independent sources complement the lists. PV Tech's PV ModuleTech bankability ratings grade module suppliers quarterly from AAA to C on financial health, manufacturing and shipments.[18] Kiwa PVEL's annual PV Module Reliability Scorecard reports accelerated-test results for specific bills of materials. Its 2026 edition named 43 manufacturers as Top Performers, while 87% of manufacturers and 61% of bills of materials had at least one test failure.[19] A brand name is not a bill of materials. Specify the module and inverter models, require the datasheets, the warranty terms and evidence of the warrantor's financial standing, and ban substitution without your consent.

Insurance and references

Ask for the insurance programme the developer will carry: construction all-risks during installation, property damage including typhoon, flood and earthquake during operation,

business interruption, and third-party liability. Ask for the deductibles and for your company to be named as an additional insured where appropriate. Have your broker review it, as Chapter 9 advised.

Call at least three references yourself, including one the bidder did not volunteer. Ask how the developer handled the first serious fault, whether the guaranteed output was met and whether the client would sign again.



Figure 11.5. A supervised site walk gives every bidder the same view of the roof, access routes and obstructions. (AI-generated illustrative image; generic scene, no identifiable persons or sites.)

11.5 Evaluation criteria and weighted scoring

Fix the criteria, weights and scoring rules before the bids arrive, and put them in the RFP. Figure 11.6 shows the framework: pass/fail gates first, then a weighted value score, then a check that the result is robust.

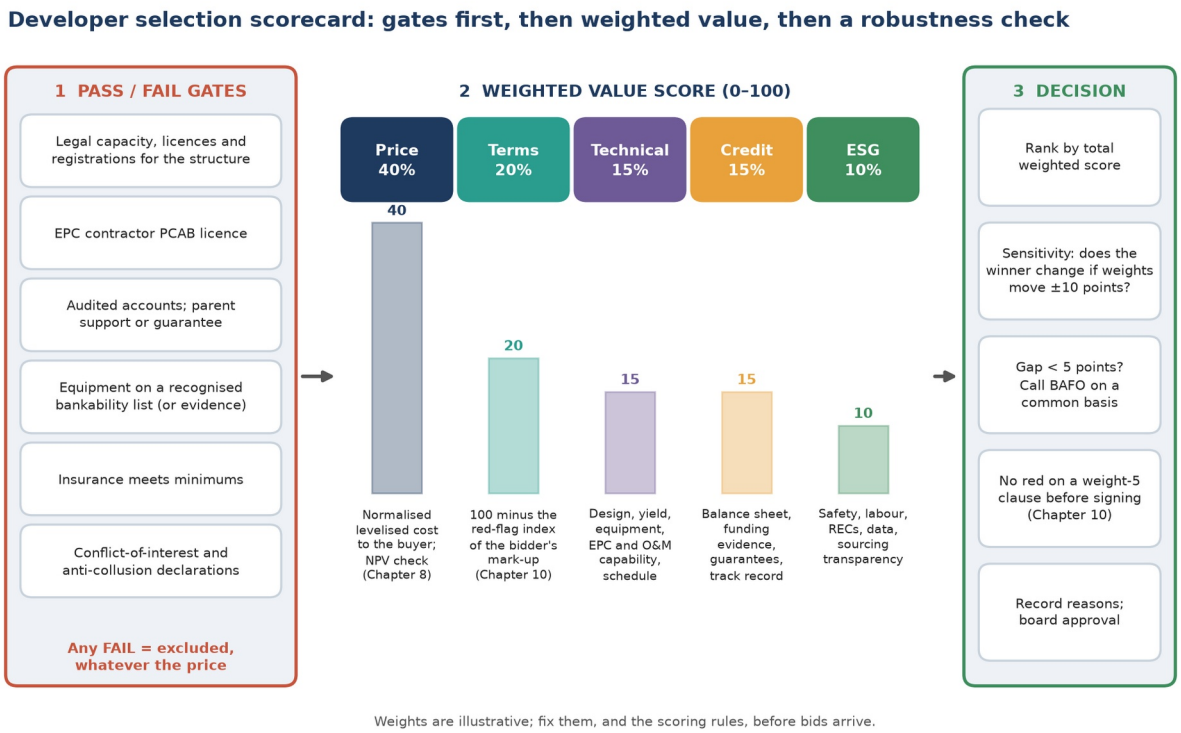


Figure 11.6. Developer selection scorecard framework. Weights are illustrative. Prepared by the author.

Table 11.3. Illustrative evaluation criteria and weights

Criterion	Weight	How it is scored
Price	40%	Normalised levelised cost to the buyer (LCB, Chapter 8). The NPV of savings is reported alongside, as a check.
Contract terms	20%	100 minus the red-flag index of the bidder's mark-up of your term sheet (Chapter 10 scorecard).
Technical	15%	Design and yield study, equipment, EPC and O&M capability, schedule; rated 1–5.
Credit	15%	Audited accounts, parent support, funding evidence, track record; rated 1–5.
ESG	10%	Safety record, labour practices, REC delivery, data handling, supply-chain transparency; rated 1–5.

Weights are the author's illustrative judgement. A buyer whose main goal is a renewable claim might raise ESG; one with a weak balance sheet of its own might raise credit.

Price is scored on normalised LCB, not on the headline price. The choice of formula matters. The common 'lowest price divided by bid price' formula compresses differences: a bid 4% dearer still scores 96. This chapter uses a linear rule that deducts five points for every 1% a bid's LCB is above the lowest:

$$S_i = max\left(0, 100 - 500 \times \left(\frac{LCB_i}{LCB_{low}} - 1\right)\right) \tag{11.1}$$

Each criterion score $s_{i,c}$, from 0 to 100, is multiplied by its weight w_c and summed to give bid i a total out of 100:

$$T_i = \sum_{c=1}^{5} w_c \, s_{i,c} \tag{11.2}$$

Ratings of 1 to 5 are scaled to 100 by multiplying by 20. Define each rating in writing. For example, credit 5 might mean investment-grade parent support, and 1 a new company with no guarantee. Have two evaluators score independently and reconcile.

11.6 Making bids comparable

Bids never arrive on the same basis. One quotes VAT-inclusive, another escalates, a third leaves costs with you, a fourth proposes a larger system. Normalising them is the most valuable hour in the tender. Make the RFP's pricing form mandatory, then apply six steps to every bid:

1. Put every price on the same tax basis: VAT-exclusive, with any pass-through charges listed separately.
2. Replace each bidder's yield claim with one independent P50 estimate for your site (Chapter 9), or require every bidder to guarantee against it.
3. Convert every price structure, whether flat, escalating, indexed or discount-to-grid, into an annual price path under the same grid scenarios (Chapter 7).
4. Add every cost the bid leaves with you: structural strengthening, interconnection works, insurance, security deposits and metering.
5. Charge take-or-pay or deemed-energy terms for energy you would pay for but not use.
6. Compute the LCB per kWh you actually use, and the NPV of savings against the grid, at your own discount rate over the same horizon (Chapter 8).

If bidders propose different system sizes, compare LCB first. A bigger system can show a larger NPV simply because it is bigger. If the larger size is attractive, ask every shortlisted bidder to price it at BAFO.

11.7 An illustrative evaluation of four bids

> **Illustrative example data**
>
> **Site:** The hypothetical Metro Manila manufacturer of Chapters 4 and 8, using about 100,000 kWh a month, with a 300 kWp zero-export rooftop system producing about 382 MWh used on site in year one.
>
> **Basis:** Buyer's independent P50 yield of 1,334 kWh/kWp, 0.5% a year degradation, avoided grid cost ₱11.00/kWh rising 2% a year, 10% discount rate, twenty-year term, pre-tax.
>
> **Bids:** Bids A and B reuse the flat and escalating structures of Chapter 7. All bids, ratings and indices are hypothetical and describe no real company.

Table 11.4. Four illustrative bids as received

	Bid A	Bid B	Bid C	Bid D
System size	300 kWp	300 kWp	300 kWp	400 kWp
Quoted price, year 1 (₱/kWh)	7.20, VAT-exclusive	6.94, VAT-inclusive	7.00, VAT-exclusive	6.40, VAT-exclusive
Price structure	Flat	+3.5% a year	Flat	Flat
Payment basis	Energy used	Energy used	Energy used	Take-or-pay on all output
Costs left with buyer	None	None	₱0.9 million strengthening and interconnection; ₱60,000 a year insurance, +3% a year	None
Yield in bidder's projection (kWh/kWp)	1,334	1,450	1,334	1,380
Red-flag index of mark-up (Ch10)	22	28	12	52
Technical / credit / ESG (1–5)	4 / 4 / 3	4 / 3 / 4	5 / 5 / 4	3 / 2 / 2

Illustrative example data. All four bids passed the gates in Table 11.2.

On headline price, Bid D at ₱6.40 looks cheapest and Bid B at ₱6.94 second. Figure 11.7 shows what normalisation does. Removing VAT takes Bid B to ₱6.20, but its 3.5% escalator adds ₱1.65 in levelised terms, for an LCB of ₱7.85. Bid C's extras add ₱0.49, giving ₱7.49. Bid D's 400 kWp system uses only 88.8% of its output on site under zero export, and take-or-pay makes you pay for the rest, adding ₱0.81, for ₱7.21. Bid A stays at ₱7.20. Bid B's projection also used a yield 8.7% above the independent P50, which flattered its savings estimate but does not change its LCB.

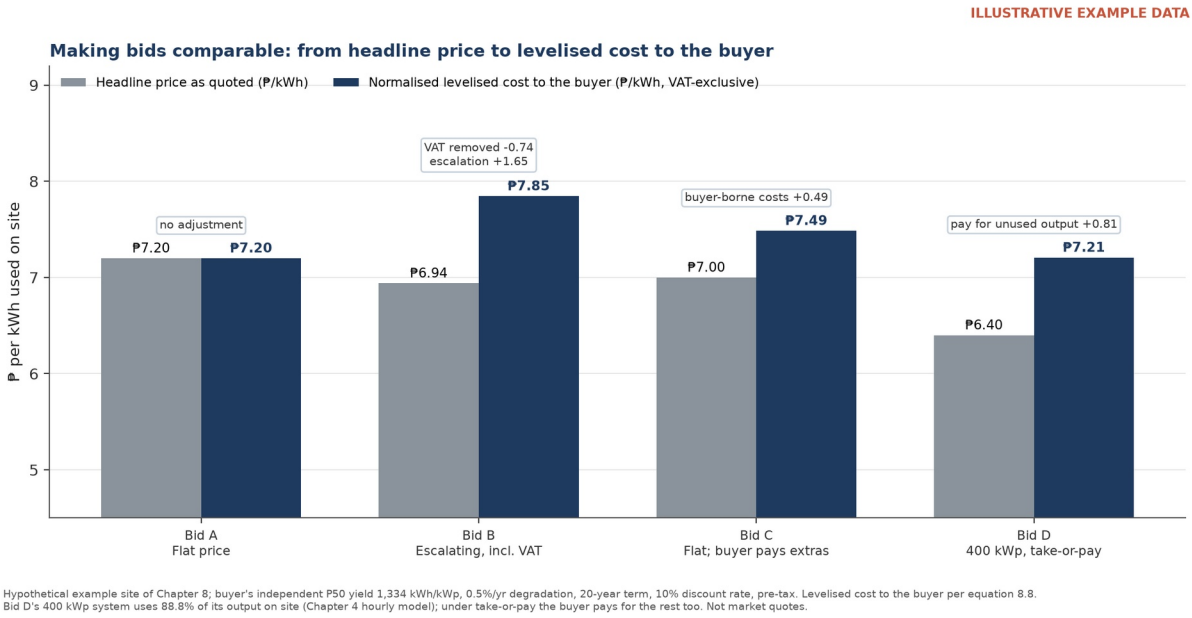


Figure 11.7. Illustrative example data: headline price and normalised levelised cost to the buyer for four hypothetical bids. Not market quotes.

Table 11.5. Normalised results and weighted scores

	Bid A	Bid B	Bid C	Bid D
Normalised LCB (₱/kWh)	7.20	7.85	7.49	7.21
NPV of savings, 20 years (₱ million)	16.8	14.8	15.9	20.9
Price score (equation 11.1)	100	55	80	99
Contract score	78	72	88	48
Technical / credit / ESG scores	80 / 80 / 60	80 / 60 / 80	100 / 100 / 80	60 / 40 / 40
Weighted total (equation 11.2)	85.6	65.5	87.7	68.4
Rank	2	4	1	3

Illustrative example data, computed by build/charts_ch11.py and reproduced in Chapter11_Bid_Evaluation.xlsx.

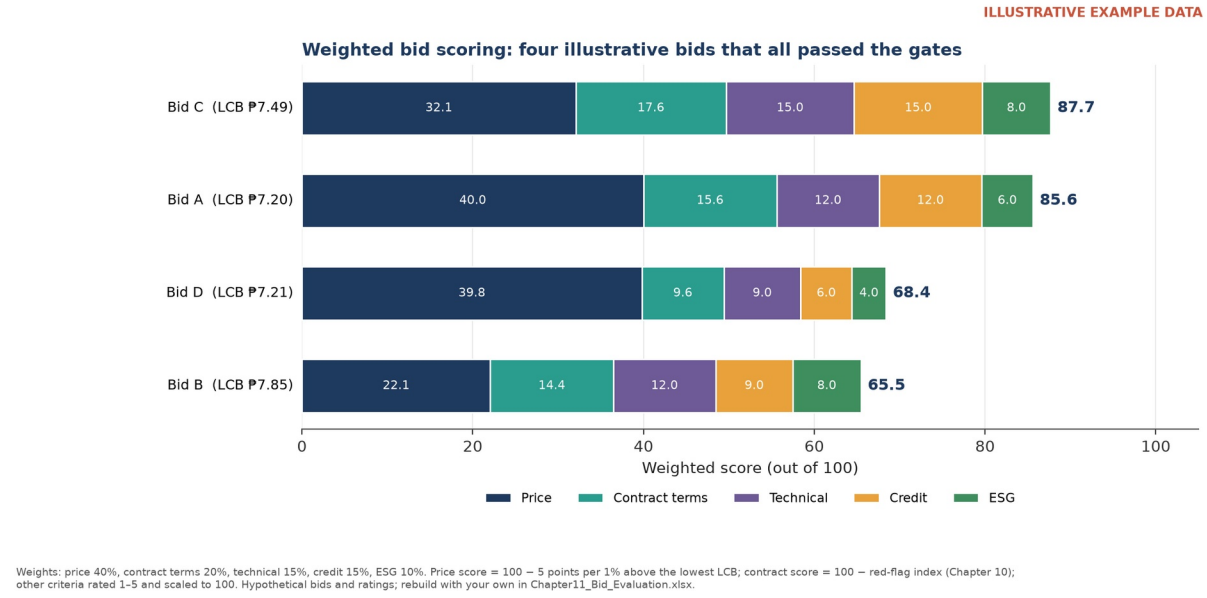


Figure 11.8. Illustrative example data: weighted scores of four hypothetical bids by criterion.

Bid C ranks first with 87.7, ahead of Bid A on 85.6, although its LCB is ₱0.29 higher. Its stronger contract terms, technical offer and credit outweigh the price gap. Bid D has the largest NPV, ₱20.9 million, only because its system is a third larger, and its weak terms and credit leave it third. Bid B, second on headline price, comes last.

The robustness check matters here. The gap between the top two is 2.1 points, and if the price weight rose from 40% to 46% or more, Bid A would win. The result is too close to award on first-round scores. The committee should therefore call a BAFO from Bids C and A on a common basis: Bid C pricing the strengthening and insurance into its tariff, both bidders offering a 400 kWp option on pay-as-produced terms, and both marking up the same final term sheet.

11.8 RES tenders

Chapter 5 set out how to run a RES tender. The principles here apply, with four differences.

- The field is defined by licence. Only ERC-licensed suppliers, or Local RES with letter-authority, may supply you.[3] For renewable supply under GEOP, the supplier also needs a DOE operating permit.
- Prices are firm only briefly. The Omnibus Rules allow a supplier to sign within five business days of your receiving its Offer Sheet.[3] Set a single bid deadline, evaluate within days and have board authority in place before bids arrive.
- Normalise on your interval load. Apply each offer to your own load profile, add the charges that stay with the DU, and compare the total bill (Chapter 5). Check that each offer declares the price 'inclusive of all costs', as the rules require, and list every pass-through by name (Chapter 10).
- Plan the switch. An initial switch requires at least 90 days' notice to the distribution utility, so start the tender well before the date you want the new supply.[3]

11.9 Governance, probity and conflicts of interest

A tender is only as good as its integrity. Bidders price in the risk of an unfair process, and the best ones may decline to bid. Five rules protect both the company and the result:

1. A written tender plan, approved by the board, that fixes the criteria, weights, evaluation committee and approval route before the RFP is issued.
2. Signed conflict-of-interest declarations from every evaluator and adviser, and a requirement that bidders disclose relationships with your directors, officers and advisers.
3. One point of contact. Every question and answer goes in writing to all bidders. No private meetings during the bid period.
4. Two envelopes. Score technical and contract terms before opening prices, so price does not colour the other scores.
5. An audit trail: the evaluation report, scoring sheets, clarifications and the reasons for the award, kept for the life of the contract.

Collusion between bidders is illegal. The Philippine Competition Act treats agreements among competitors 'fixing price at an auction or in any form of bidding including cover bidding, bid suppression, bid rotation and market allocation' as per se prohibited.[20] Require bidders to sign an independent-bid declaration, and watch for identical prices or a pattern of losing bids.

Hospitals and government-owned buyers: RA 12009

Government buyers, including government hospitals, state universities and government-owned or controlled corporations (GOCCs), cannot simply run a private tender. Republic Act No. 12009, the New Government Procurement Act, was enacted on 20 July 2024, took effect on 13 August 2024 and repealed RA 9184. The GPPB issued its implementing rules in February 2025.[21] Points relevant to a PPA or supply contract:

- Coverage. The Act applies to procurement of goods, infrastructure projects and consulting services by national agencies, SUCs, GOCCs, GFIs and LGUs, whatever the source of funds (Section 4). Private hospitals are not covered.
- Modes. Besides competitive bidding, the Act provides for competitive dialogue (Section 29), a two-stage process for complex purchases where the requirements need to be refined with bidders before prices are submitted.
- Value, not just lowest price. Award can go to the Most Economically Advantageous Bid using a disclosed quality-price ratio, with price weighted between 15% and 40% (Section 61). Lifecycle cost and sustainable procurement are recognised (Sections 5 and 72).
- Multi-year authority. GOCCs need prior board authority before procuring multi-year contracts, and national agencies a multi-year contractual authority from the DBM (Section 9).
- Probity. Observers sit in the bids and awards committee proceedings (Section 43). Bidders swear they are not related to the head of the procuring entity, committee members or project consultants within the third civil degree, which otherwise means automatic disqualification (Section 81), and must disclose beneficial ownership (Section 82).

Two cautions. A 2013 GPPB resolution, issued under the old law, advised that buying electricity from a RES is procurement of goods, by competitive bidding or limited source bidding.[22] Whether that guidance carries over is a question for counsel. Also, the Act gives agencies a three-year transitory period from approval of the standard forms (Section 113). Confirm the applicable mode, forms and approvals with your bids and awards committee and legal office before designing the tender.

11.10 Common tender mistakes

- Tendering on headline price. The headline excludes VAT treatment, escalation, buyer-borne costs and take-or-pay (Section 11.7).
- Letting each bidder use its own yield. Optimism wins unless one independent P50 is imposed.
- Issuing the RFP without your term sheet, then negotiating a developer's contract after award.
- An incomplete data room, which buys contingencies and exclusions.
- Weights invented after the bids are opened. This invites challenge and destroys bidder trust.
- Too few bidders, or a weak special-purpose company with no parent support chosen on price alone.
- Accepting 'Tier 1' as a brand claim without checking the current list, the model and the warranty.
- Endless BAFO rounds, or no reserve bidder if negotiations fail.

- For RES: no board authority to sign within the offer's validity period.

11.11 Timeline and budget for advisers

Figure 11.2 suggests about six months from board decision to signing for a rooftop PPA. RES tenders are faster to sign but must allow at least 90 days' notice before supply starts. VPPAs take longest, because accounting and treasury review run alongside the tender (Chapter 6).

Adviser fees vary too widely to quote, so Table 11.6 budgets effort, not pesos. Obtain fixed-fee quotations on that scope and compare the total with the value at stake. In the example, a tender that improves the price by ₱0.10 per kWh is worth about ₱0.3 million in present value, before any gain on terms.

Table 11.6. Illustrative adviser effort for a single-site onsite PPA tender

Role	Main tasks	Indicative effort
Technical adviser	Data room specification, independent yield (P50/P90), technical scoring, equipment and design review, acceptance testing	10–20 person-days
Commercial or tender adviser	Tender plan, RFI/RFP, normalisation model, evaluation report, BAFO	10–20 person-days
Philippine counsel	Term sheet, confidentiality agreement, contract negotiation, licence verification	8–15 person-days
Structural engineer	Roof assessment for the data room	Fixed fee per site
Internal team	Project owner (finance), facilities, legal, procurement	About 0.2–0.5 of one full-time person for six months

Effort ranges are the author's judgement for a single site of a few hundred kWp; multi-site, offsite and virtual PPA tenders need more. They are not market statistics.

11.12 The role of an independent adviser

An independent adviser brings market knowledge, a tested process and the models in this book, and lets your team concentrate on decisions. Typical tasks are building the data room, drafting the RFP, setting up the normalisation model, verifying licences and equipment claims, running the Q&A and BAFO, and writing the evaluation report.

Independence is the point. An adviser should have no financial interest in any bidder, should be paid by you, not by a success fee from a developer, and should sign the same conflict declaration as your evaluators. The adviser recommends; your committee and board decide.

Disclosure

Author's firm: The author, Dr. Andrie Udal, PhD in Mineral and Energy Economics, is with SolarMD Power Consulting and Engineering Services (solarmd.net), an independent consulting and engineering firm.

Principle: One firm should not both advise and bid in the same tender. Whichever firm you retain as tender adviser, exclude it from bidding, and ask any adviser to disclose in writing all of its commercial interests, including any relationship with a bidder, before you appoint it.

11.13 An RFP template outline

The companion Word file, Chapter11_RFP_Template.docx, contains a full template built on this outline:

1. Invitation and instructions to bidders: timetable, single point of contact, submission format, bid validity and confidentiality.
2. Background and objectives: site, load, structure sought, term, renewable-claim requirements.
3. Scope of supply: design, permits, construction, O&M, metering, insurance, decommissioning; for RES, the supply and switching scope.
4. Data room index.
5. Technical requirements: equipment standards and evidence of bankability, design codes, yield study, performance guarantee, monitoring and reporting.
6. Commercial terms: your term sheet, with bidders required to mark up every clause.
7. Mandatory pricing form: VAT-exclusive price, structure, all buyer-borne costs, payment basis, options.
8. Qualification documents: licences and registrations, audited accounts, parent support, references, insurance.
9. Evaluation method: gates, criteria, weights, scoring rules and BAFO procedure.
10. Probity: conflict-of-interest, independent-bid and beneficial-ownership declarations; the buyer's rights to reject bids and cancel the tender.
11. Forms and annexes.

The companion workbook, Chapter11_Bid_Evaluation.xlsx, available from solarmd.net, contains the gates, the normalisation model, the weighted scoring with editable weights, a weight-sensitivity table and the four example bids.

11.14 Tender checklist

- Board-approved tender plan, budget ceiling and walk-away terms.
- Data room complete: bills, interval data, single-line diagram, roof drawings, structural report, photos, site rules, title and consents.
- Term sheet with your red-flag positions (Chapter 10) issued with the RFP.

- Long list of at least ten firms; shortlist of four to six through written gates; licences verified with the agencies.
- Mandatory pricing form; one independent P50; common grid scenarios; equipment evidence model by model.
- Criteria, weights and scoring rules fixed before bids arrive.
- Conflict declarations signed by evaluators, advisers and bidders.
- Two-envelope evaluation, written clarifications, one BAFO round.
- Weight-sensitivity check and a reserve bidder.
- Evaluation report approved by the board; for government buyers, mode and approvals confirmed under RA 12009.

Key takeaways

- There is no price list for a PPA. Competition is how you discover the price and improve the terms.
- A complete data room, especially interval data and a structural report, narrows the spread between bids and removes exclusions.
- Verify licences and registrations for the structure you are buying: DOE registration, ERC RES licence for offsite supply, the COC, PCAB licences and any BOI registration.
- A Tier 1 listing measures bankability, not quality. Check the current list and the specific bill of materials.
- Normalise before you score: same tax basis, one independent yield, common grid scenarios, all buyer-borne costs and take-or-pay, then LCB and NPV.
- Fix the weights in advance, score terms and credit as well as price, and test whether the winner changes when the weights move.
- Government buyers, including government hospitals and GOCCs, must follow RA 12009.
- Advisers must be independent of every bidder, and no firm should both advise on and bid in the same tender.

Questions a CFO should ask

1. How many credible firms did we invite, and why were others excluded?
2. Did every bidder price the same data, the same term sheet and the same independent yield?
3. What is each bid's normalised levelised cost to us, and what did normalisation add to its headline price?
4. Which licences and registrations has each bidder shown, and did we verify them with the agency?
5. Who stands behind the contracting company, and what happens to our contract if it fails?

6. Are the modules and inverters on a current bankability list, and who backs the warranties?
7. Were the weights fixed before bids were opened, and would the winner change if they moved?
8. Has every evaluator and adviser signed a conflict declaration, and does any adviser have an interest in a bidder?
9. Who is our reserve bidder if negotiations fail?
10. If we are a government entity, which procurement mode under RA 12009 applies?

Tools and process take you only so far; seeing them work on real sites is the final test. Chapter 12, "Case Studies", follows Philippine buyers through onsite, offsite and virtual PPAs, from first bill review to the contract and its results.

Notes

All sources were accessed on 17–18 October 2026 (Asia/Manila). Laws, procurement rules, ERC and DOE rules and third-party equipment lists change; check the current text or list before relying on it. Quotations from statutes, rules and methodologies were checked against the sources cited. Tender durations, funnel counts, criterion weights, ratings, adviser effort and the four bids are illustrative assumptions, not market data or statistics.

1. International Renewable Energy Agency (IRENA), 'Renewable Energy Auctions: Analysing 2016', June 2017, https://www.irena.org/Publications/2017/Jun/Renewable-Energy-Auctions-Analysing-2016 (auctions as 'this crucial mechanism for price discovery and market development').
2. Philippine Electricity Market Corporation (PEMC), Market Assessment Department, 'Retail Market Assessment Report for 2nd Quarter of 2026' (QRMAR-2026-02), September 2026, https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/NDI1OA== (continued but declining market concentration; two corporate groups account for the majority of GEOP customers and RE consumption). As cited in Chapter 5.
3. Energy Regulatory Commission (ERC), Resolution No. 13, Series of 2024, 'Omnibus Rules for Customer Choice Programs in the Retail Market', Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (A5.1 no supply to retail customers without a RES licence or, for Local RES, letter-authority; C9.1 GEOP suppliers need a RES licence or letter-authority and a DOE operating permit; E2.1 at least ninety calendar days' notice to the NSP for initial switches; L12.2(c) declaration that the price 'is inclusive of all costs in connection with the sale of electricity'; L12.4 RSC may be entered within five business days from receipt of the Offer Sheet). As cited in Chapters 2, 5, 9 and 10.
4. Republic Act No. 10173, Data Privacy Act of 2012, https://www.lawphil.net/statutes/repacts/ra2012/ra_10173_2012.html (Section 3(g) definition of personal information). As cited in Chapter 10.
5. Association of Structural Engineers of the Philippines, National Structural Code of the Philippines 2015, Volume 1, Section 207 (wind loads), text at https://archive.org/stream/NSCP2015/NSCP-2015_djvu.txt. As cited in Chapters 9 and 10.
6. Philippine News Agency, '163 RE service contracts terminated, relinquished in 2024-25', January 2026, https://www.pna.gov.ph/index.php/articles/1266765 (combined potential capacity 17,904.02 MW); Philippine News Agency, 'DOE terminates 84 RE contracts for failure to meet obligations', https://www.pna.gov.ph/index.php/articles/1265771. As cited in Chapter 9; this chapter cites only the aggregate DOE figures.
7. Department of Energy (DOE), Department Circular No. DC2024-06-0018, 'Revised Omnibus Guidelines Governing the Award and Administration of Renewable Energy Contracts and the Registration of

Renewable Energy Developers', published 10 June 2024, https://doe.gov.ph/circular-no-dc-2024-06-0018-1 (Section 2 coverage of RE contracts and Certificates of Registration for projects with or without RE contracts; Section 3.5 Certificate of Registration; Section 3.30 'RE Project for Own-Use'; Section 3.34 Solar Energy Operating Contract; definitions checked against the signed circular); Chambers and Partners, 'Renewable Energy 2026 – Philippines: Law and Practice', https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines ('Certain own-use projects do not require an operating contract but must comply with DOE registration requirements'). As cited in Chapters 2 and 4.

8. Republic Act No. 9513, Renewable Energy Act of 2008, https://lawphil.net/statutes/repacts/ra2008/ra_9513_2008.html (Section 15 incentives for RE developers 'as duly certified by the DOE, in consultation with the BOI'; Section 25 registration of RE developers with the DOE through the Renewable Energy Management Bureau; Section 26 DOE certification).

9. Bureau of Internal Revenue, Revenue Regulations No. 7-2022, as summarised by Ablola, Saribong & Gueco Law, 30 June 2022, https://www.makatilawfirm.com/2022/06/30/rr-no-7-2022-tax-incentives-and-compliance-rules-for-renewable-energy-developers-suppliers-and-biomass-producers-in-the-philippines/ (incentives not self-executing; DOE and BOI registration required). As cited in Chapters 3 and 7.

10. Chambers and Partners, 'Renewable Energy 2026 – Philippines: Law and Practice', https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines (the Strategic Investment Priority Plan lists RE as a priority investment area, allowing RE project developers to register with the BOI and avail themselves of enhanced tax incentives).

11. Board of Investments, Memorandum Circular No. 2023-006, https://boi.gov.ph/sdm_downloads/boi-memorandum-circular-no-2023-006/ (self-financed energy efficiency and own-use projects); Republic Act No. 12066 (CREATE MORE Act); BOI, 'DTI-BOI and DOF release interim rules of CREATE MORE', https://boi.gov.ph/dti-boi-and-dof-release-interim-rules-of-create-more/. As cited in Chapter 3.

12. Republic Act No. 9136, Electric Power Industry Reform Act of 2001 (EPIRA), Section 29, https://lawphil.net/statutes/repacts/ra2001/ra_9136_2001.html ('all suppliers of electricity to the contestable market shall require a license from the ERC'; qualifications include 'technical capability, financial capability, and creditworthiness').

13. ERC, Resolution No. 11, Series of 2022, 'Rules Governing Distributed Energy Resources (DER)', as summarised by Ocampo & Suralvo Law Offices, https://www.ocamposuralvo.com/updates/erc-issued-distributed-energy-resources-rules.html (COC before operation). As cited in Chapter 4.

14. DOE, Department Circular No. DC2026-08-0017, 'Policy Guidelines for Self-Generating Facility Zero-Export Solar Systems and Micro-Solar Systems for Own-Use', https://prod-cms.doe.gov.ph/documents/d/guest/dc2026-08-0017-pdf. As cited in Chapters 4 and 9.

15. Republic Act No. 4566, Contractors' License Law, https://lawphil.net/statutes/repacts/ra1965/ra_4566_1965.html (Section 9 definition of contractor; Section 35 penalty for undertaking construction 'without first securing a license to engage in the business of contracting'); Construction Industry Authority of the Philippines, 'Licensing and Registration of Local Contractors', https://construction.gov.ph/licensing-and-registration-of-local-contractors/.

16. BloombergNEF, 'Tier 1 Solar Module Methodology', 4 September 2026, https://assets.bnef.com/public/tiering/solarmodules.pdf (Section 4.1 six projects financed non-recourse by six different commercial banks in the past two years; Section 4.2 only financings over 10 MW counted since 2Q 2025; Sections 2.2 and 5: not a recommendation, list 'purely a measure of industry acceptance' that 'does not directly account for product quality or financial strength'; only the latest quarter's list is valid; list available to BNEF clients only).

17. BloombergNEF, 'Tier 1 Power Inverter Methodology', https://assets.bnef.com/public/tiering/invertermethodology (own-brand, own-manufactured inverters supplied to projects with non-recourse finance from commercial banks; not a measure of quality); BloombergNEF, 'Tier 1 reports', https://about.bnef.com/tier-1-reports/ (Tier 1 lists for PV modules, power inverters and energy storage, published quarterly).

18. Solar Media / PV Tech Market Research, 'PV ModuleTech Bankability Ratings Quarterly report', https://marketresearch.solarmedia.co.uk/reports/pv-moduletech-bankability-ratings-quarterly-report/

(module suppliers ranked from AAA to C; financial health, manufacturing operations and shipment trends; quarterly updates).

19. Kiwa PVEL, '2026 PV Module Reliability Scorecard' presentation, PV ModuleTech USA, June 2026, https://www.kiwa.com/globalassets/us/pvel/resources/kiwa-pvel---2026-moduletech-usa.pdf (43 Top Performer manufacturers; 87% of manufacturers and 61% of bills of materials experienced at least one failure; eligibility tied to factory-witnessed samples).

20. Republic Act No. 10667, Philippine Competition Act, https://lawphil.net/statutes/repacts/ra2015/ra_10667_2015.html (Section 14(a)(2): agreements between or among competitors 'fixing price at an auction or in any form of bidding including cover bidding, bid suppression, bid rotation and market allocation and other analogous practices of bid manipulation' are per se prohibited).

21. Republic Act No. 12009, New Government Procurement Act, https://lawphil.net/statutes/repacts/ra2024/ra_12009_2024.html (Sections 3 and 4 coverage of SUCs, GOCCs, GFIs and LGUs; Section 5(r) lifecycle cost; Section 9 multi-year contracting; Section 29 competitive dialogue; Section 43 observers; Section 61 quality-price ratio with price weighted 'a minimum weight of fifteen percent (15%) up to a maximum of forty percent (40%)'; Section 72 sustainable public procurement; Section 81 disclosure of relations up to the third civil degree; Section 82 beneficial ownership; Section 113 three-year transitory period; Section 115 repeal of RA 9184); Government Procurement Policy Board (GPPB), 'Important Update: Effectivity and Transitory Periods under RA 12009', https://www.gppb.gov.ph/important-update-effectivity-and-transistory-periods-under-ra-12009/ (enacted 20 July 2024; effective 13 August 2024); GPPB, 'Issuance and Publication of the IRR for the New Government Procurement Act', https://www.gppb.gov.ph/exciting-announcement-issuance-and-publication-of-the-irr-for-the-new-government-procurement-act/; IRR of RA 12009, dated 10 February 2025, https://lawphil.net/statutes/repacts/ra2025/irr_12009_2025.html.

22. GPPB Resolution No. 10-13, 'Approving the Issuance of an Advisory Letter Clarifying Procurement Issues Raised in the Implementation of Retail Competition and Open Access (RCOA)', 15 March 2013, text at https://legaldex.com/laws/approving-the-issuance-of-an-advisory-letter-clarifying-procurement-issues (procurement of electricity is acquisition of goods; competitive bidding or limited source bidding under RA 9184 in RCOA areas). Issued under RA 9184, since repealed by RA 12009.

Figure and image credits

Figures 11.2, 11.4 and 11.6 and Tables 11.1 to 11.6 were prepared by the author. Figures 11.7 and 11.8 and Tables 11.4 and 11.5 use illustrative example data generated by the author's model (build/charts_ch11.py) and reproduced in the companion workbook Chapter11_Bid_Evaluation.xlsx: the example site, the four bids, their prices, costs, ratings and red-flag indices, and the weights are hypothetical and are not market quotes, statistics or an assessment of any real company. No developer or supplier is named or recommended. Figures 11.1, 11.3 and 11.5 are AI-generated illustrative images of generic scenes; they do not depict real people, companies or sites.

Disclaimer. This chapter is for general information and does not constitute legal, procurement, tax, accounting, insurance, engineering or investment advice. Government entities must follow RA 12009, its implementing rules and GPPB issuances, and should confirm the applicable procurement mode with their bids and awards committee and legal office. Engage qualified Philippine counsel to review tender documents and every PPA, RES supply contract or VPPA, and consult your tax adviser, auditor and insurance broker, before signing.

CHAPTER 12

Case Studies: A Hospital, a Factory and a Mall

Three composite, anonymised illustrations of how Philippine buyers combine onsite, offsite and virtual PPAs

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: How the composite cases were built · Case 1: a private tertiary hospital in Metro Manila (onsite PPA, RES supply and a battery for resilience) · Case 2: a manufacturing plant in a CALABARZON ecozone (purchase, lease-to-own or onsite PPA, and a three-bid tender) · Case 3: a mall group in Luzon and the Visayas (rooftop and carport PPAs, RES and a VPPA with Visayas basis risk) · Sidebar: publicly reported Philippine deals · Cross-case comparison · Lessons learned, key takeaways and CFO questions

Read this first: composite illustrations, not real clients

Composite cases: The hospital, the factory and the mall group in this chapter are composite, anonymised illustrations built by the author from the methods of Chapters 3 to 11. They are not real clients, real buildings or real projects, and they are not projects of the author or of SolarMD Power Consulting and Engineering Services.

Illustrative example data: Every load, bill, roof, system size, price, bid, cost, rating, risk score, NPV and Monte Carlo result in the three cases is illustrative example data, produced by build/charts_ch12.py. None is a market quote, a statistic or a forecast.

Real inputs: Only published market inputs are real: Meralco's October 2026 rate schedule, PVGIS solar data, WESM prices reported by IEMOP, the retail thresholds and the DOE, ERC and tax rules cited in the notes. Section 12.5 reports a few real, publicly reported Philippine deals, kept separate from the composites.

RES: Retail Electricity Supplier, licensed by the ERC. In this book RES always means Retail Electricity Supplier.

Chapters 1 to 11 gave you a method: read the bill, size the load, compare structures, model the money, register the risks, fix the terms and run a tender. This chapter puts the method

to work on three composite buyers, a private hospital, an export factory and a mall group. They were chosen because each has a different binding constraint. The hospital cannot lose power. The factory needs its capital for growth. The mall group straddles two grids whose prices have drifted apart.

Each case follows the same eight steps: the profile, the load and bill, the options, the modelling results, the risk register, the term-sheet wins, the tender and the decision. Figure 12.1 summarises the three paths. Section 12.6 compares them, and Section 12.7 draws the lessons.

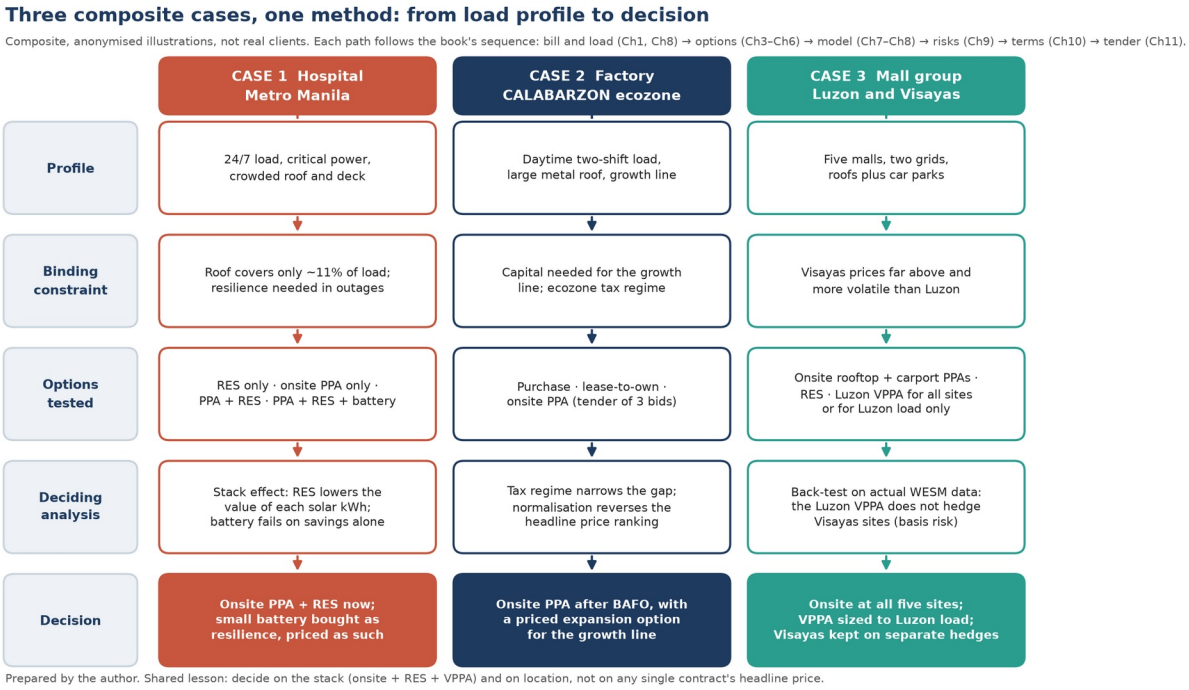


Figure 12.1. Case decision paths: how each composite buyer moved from its load profile to a decision. Composite, anonymised illustrations, not real clients. Prepared by the author.

12.1 How the cases were built

All three cases use the Chapter 8 model and its conventions: after-tax NPV of savings against staying as you are, a 10% discount rate, a 25-year horizon with a 20-year PPA and handover of the system at the end of the term, 0.5% a year degradation and grid prices rising 2% a year in the base case. The levelised cost to the buyer (LCB) is equation 8.8. Each Monte Carlo run uses the same 10,000 random draws for every option, with the Chapter 8 distributions. Table 12.1 separates the real inputs from the illustrative ones.

Table 12.1. Inputs used in the three cases: real market data and illustrative assumptions

Input	Value used	Status
Meralco tariff, General Power 13.8 kV and below, October 2026	Generation ₱10.2005/kWh; all per-kWh items ₱11.07/kWh; transmission, ancillary and distribution ₱588.86/kW-month; Very Large customer charges ₱24,284.03/month; VAT-exclusive[1]	Real (author's sums of published items)

Avoided cost per solar kWh	₱10.40/kWh on Meralco; on a RES contract, the RES price plus ₱0.20	Illustrative; same margin logic as Chapters 4 and 8
Solar yield, PVGIS v5.3 hourly 2019–2023	Metro Manila 1,334; Laguna 1,455; Metro Cebu 1,438 kWh/kWp a year[2]	Real (author's queries)
WESM monthly averages, Luzon and Visayas	Billing months November 2024 to September 2026[3]	Real (IEMOP)
Retail eligibility	RCOA 100 kW from 26 June 2026; GEOP 50 kW[4]	Real (rules)
PPA, RES and VPPA prices, capex, O&M, battery cost, lease rate	Per case	Illustrative example data
Loads, roofs, tax status, ratings, risk scores	Per case	Illustrative example data

The avoided cost of ₱10.40 sits about ₱0.67 below the 13.8 kV per-kWh sum, as Chapters 4 and 8 used ₱11.00 against ₱11.70 for secondary customers. Solar does not reliably cut per-kW demand charges, so they are not counted.

12.2 Case 1: a private tertiary hospital in Metro Manila

Case 1 at a glance (composite illustration; illustrative example data)

Not a real client: A composite of the hospital issues discussed in Chapters 4 and 9; no real hospital is described.

Structure chosen: A 600 kWp onsite PPA plus offsite supply from a RES for the rest of the load, and a 250 kW / 500 kWh battery bought for resilience.



Figure 12.2. A crowded hospital roof: the array must work around the helipad, chillers, cooling towers and exhausts, so a parking-deck canopy adds the capacity the roof cannot. (AI-generated illustrative image; generic scene, not a real building; no identifiable persons.)

Profile

The composite hospital is a private tertiary hospital of about 300 beds, organised as a proprietary non-profit hospital. Its ICU, operating theatres, emergency room, laboratories, pharmacy cold chain and data centre run around the clock. Generators back the critical loads. The main roof carries a helipad, chillers, cooling towers and isolation exhausts, and the National Structural Code treats hospitals as essential facilities with stricter wind design.[5] The owners want lower costs, a credible renewable story and better resilience, in that order.

Load and bill analysis

The hospital uses 600,000 kWh a month with a peak demand of 1,100 kW, a load factor of about 75%. On Meralco's General Power 13.8 kV Very Large rate for October 2026, the bill is about ₱7.3 million a month before VAT: ₱6.6 million for energy, ₱0.6 million for demand and ₱24,284 in customer charges, or ₱12.19 per kWh all-in. Meralco also gives private hospitals registered and certified by the Department of Health a 3% special discount on distribution, metering and supply charges.[1] That discount is small, and it stays with the distribution utility whichever supplier the hospital chooses. With a peak far above 100 kW, the hospital has been eligible for retail competition since 26 June 2026,[4] but had not switched. It was one of about 12,491 eligible customers the ERC counted as not yet switched in August 2026.[6]

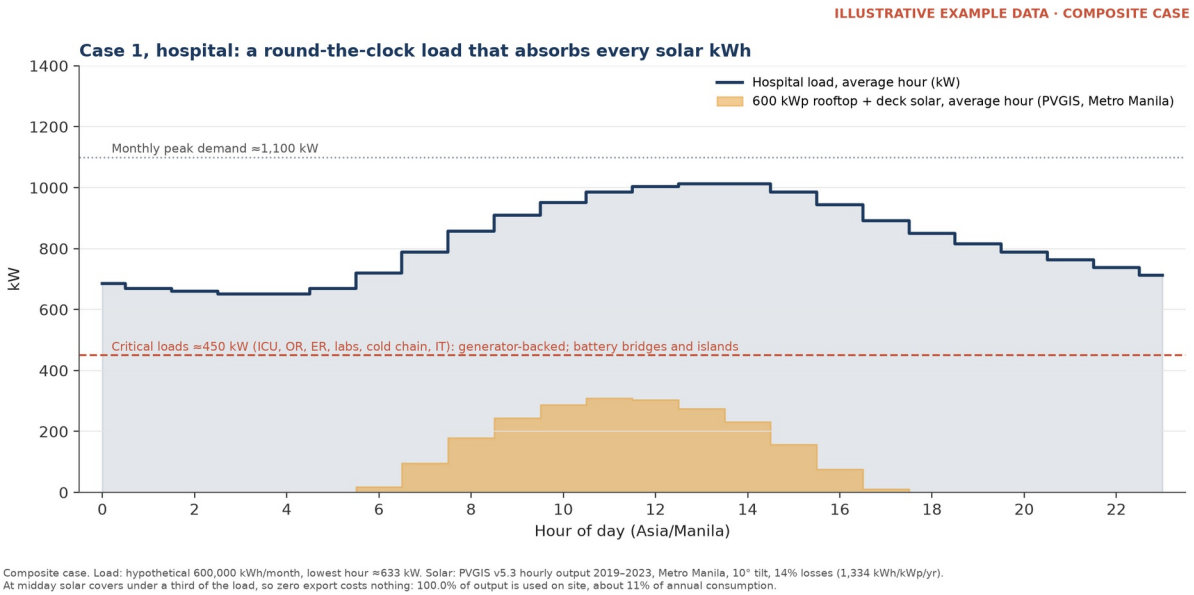


Figure 12.3. Illustrative example data (composite case): the hospital's average hourly load against the output of a 600 kWp array. Solar from PVGIS; load hypothetical.

Figure 12.3 shows the case's central fact. The hospital never uses less than about 633 kW, more than the array's peak output, so every solar kWh is used on site and zero export costs nothing. The roof is the limit, not the load. After clearances, about 420 kWp fits on the roof and 180 kWp on a canopy over the top deck of the car park. The 600 kWp would

produce about 800 MWh a year, only 11% of consumption. Solar alone cannot be the strategy.

Options considered

1. RES only: buy all energy from a RES on a three-year fixed price (Chapter 5).
2. Onsite PPA only: the 600 kWp system, with Meralco supplying the rest.
3. Onsite PPA plus RES: the 600 kWp system, with a RES supplying the rest.
4. The same, plus a battery for resilience: 500 kW / 1,000 kWh, or a smaller 250 kW / 500 kWh unit for critical loads only.

Owning the solar system was screened out early. The hospital's capital budget was committed to medical equipment, and with income taxed at 10% under Section 27(B) of the Tax Code, depreciation is worth little to it.[7]

Modelling results

Table 12.2. Case 1 results (illustrative example data; composite case)

Option	NPV after tax (₱ million)	Monte Carlo P50 (P10 to P90)	Key price
RES only	83.7	72.0 (44.5 to 107.5)	Levelised RES price ₱10.52/kWh
Onsite PPA only	35.0	32.1 (16.7 to 54.0)	LCB ₱6.55; avoided ₱10.40
Onsite PPA + RES	109.9	96.9 (61.5 to 147.2)	Avoided per solar kWh ₱8.80
Onsite PPA + RES + 250 kW / 500 kWh battery	99.9	87.0 (51.6 to 137.2)	Battery capex ₱15.0 million

Illustrative example data. 25 years at 10%, after tax at 10%; PPA ₱6.85/kWh flat after the tender; RES ₱8.60/kWh fixed for three years, then 10% below the DU generation charge (Chapter 8 method). No draw produced a negative NPV for any option. Payback is immediate for all except the battery.

Switching to a RES is worth more than the solar: ₱83.7 million against ₱35.0 million. The two together are worth ₱109.9 million, but less than the sum of the parts, and this is the case's first lesson. Once the hospital buys energy at ₱8.60, each solar kWh displaces a cheaper kWh. Its avoided cost falls from ₱10.40 to ₱8.80, and the PPA's NPV falls by 25%, to ₱26.2 million. Call it the stack effect. A rooftop offer priced against the Meralco tariff overstates its value to a buyer who is about to sign a RES contract.

The battery is the second lesson. Its only measurable saving is demand shaving, credited at 70% reliability against ₱588.86 per kW-month. On that basis the 1,000 kWh unit has an NPV of ₱-19.9 million and the 500 kWh unit ₱-10.0 million. That is about ₱1.3 million a year, roughly 1.5% of the annual bill. Grid-tied solar must shut down when the grid fails,[8] so without a grid-forming battery the array is useless in an outage. The battery's real value is resilience: it bridges the seconds before the generators start, lets the array keep running during long outages and saves diesel. Recent red alerts in Luzon and the Visayas make that risk concrete.[9] Battery packs have become much cheaper,[10] but the installed cost used here, ₱30,000 per kWh, is an illustrative assumption to be replaced by quotes.

Risk register highlights

- R11 grid alerts and outages (likelihood 4, impact 5 for a hospital): mitigated by the battery, islanding-capable inverters and tested generator coordination.
- R8 RES default and move to the supplier of last resort: the Omnibus Rules set last-resort supply at a market-linked price plus a premium,[11] so the hospital asked for a security deposit from the RES and a credit check.
- R4 price after the three-year fixed term: modelled as a renewal 10% below the DU generation charge, with a re-tender planned 12 months before expiry.
- R12 typhoon and R15 O&M access: wind design for an essential facility on the canopy, and maintenance windows that respect infection-control zones.

Term-sheet negotiation wins (Chapter 10)

- C5 and C7: the unsolicited offer's take-or-pay and uncapped deemed energy were replaced by pay-as-produced, with deemed energy only for curtailment the hospital causes.
- C15 site access: infection-control protocols, helipad clearances and one relocation at the developer's cost if the hospital expands its roof plant.
- C11 force majeure: a typhoon does not trigger deemed-energy payments, and the developer must restore the system within a set period.
- C17 early termination: a declining schedule capped at the developer's unrecovered cost, not lost profits.
- C22 RES terms: every pass-through charge named, the price confirmed as 'inclusive of all costs', and the cooling-off period kept.

Tender outcome

The hospital ran the Chapter 11 process twice, in parallel. The onsite RFP went to five shortlisted developers. Three sent compliant bids, and the best normalised bid improved at BAFO to ₱6.85 per kWh, flat and pay-as-produced. The unsolicited ₱7.20 take-or-pay offer that started the project would have been worth ₱24.1 million alongside RES supply. The tendered price is worth ₱26.2 million, about ₱2.1 million more, before counting the better terms. The RES tender went to licensed suppliers with a single deadline. Because RES offers can be accepted within only five business days,[11] the board approved the price ceiling in advance.

Decision and lessons

The board approved the onsite PPA plus RES supply, and the 250 kW / 500 kWh battery as a resilience investment with an explicit annual cost. The larger battery was deferred until outage costs could be measured. Because hospitals installing zero-export systems are exempt from the ERC Certificate of Compliance under DOE DC2026-08-0017, the permitting path was short.[12] The lessons: tender the RES and onsite supply together and value solar

against the RES price, not the Meralco tariff; buy batteries for resilience and price them as insurance; and if the roof is the limit, a parking deck may be the cheapest extra capacity.

12.3 Case 2: a manufacturing plant in a CALABARZON ecozone

Case 2 at a glance (composite illustration; illustrative example data)

Not a real client: A composite export manufacturer in a CALABARZON economic zone; no real company or zone is described. The plant is assumed to be inside Meralco's franchise; if your ecozone has its own distribution utility, use its tariff.

Structure chosen: A 1.2 MWp onsite PPA won in a three-bid tender, with a priced option to expand to 1.6 MWp.



Figure 12.4. A large metal factory roof with space reserved for expansion: the roof can carry more panels than the load can use on a Sunday. (AI-generated illustrative image; generic scene, not a real facility; no identifiable persons.)

Profile

The composite plant makes components for export. It runs two shifts from 06:00 to 22:00, Monday to Saturday, and only maintenance on Sunday. Its 16,000 m² metal deck roof, re-roofed six years ago, can take about 1.6 MWp. A second production line is planned for year 3. The company is a registered business enterprise that has chosen the enhanced deductions regime (EDR) under the CREATE MORE Act: a 20% income tax rate and a 100% additional deduction for power expense used in the registered activity.[13]

Load and bill analysis

The plant uses 650,000 kWh a month with a peak of about 1,382 kW. On the same Meralco rate the bill is about ₱8.0 million a month, or ₱12.36 per kWh all-in. Figure 12.5 shows why system size is the key technical question. A 1.2 MWp array fits the weekday load, but under zero export its Sunday surplus is wasted. The hourly model puts the share of output used on site at 93.8% for 1.2 MWp and 92.1% for 1.6 MWp. Once the new line also runs a Sunday shift, these rise to 98.2% and 96.2%. The 1.2 MWp system would supply about 21% of consumption.

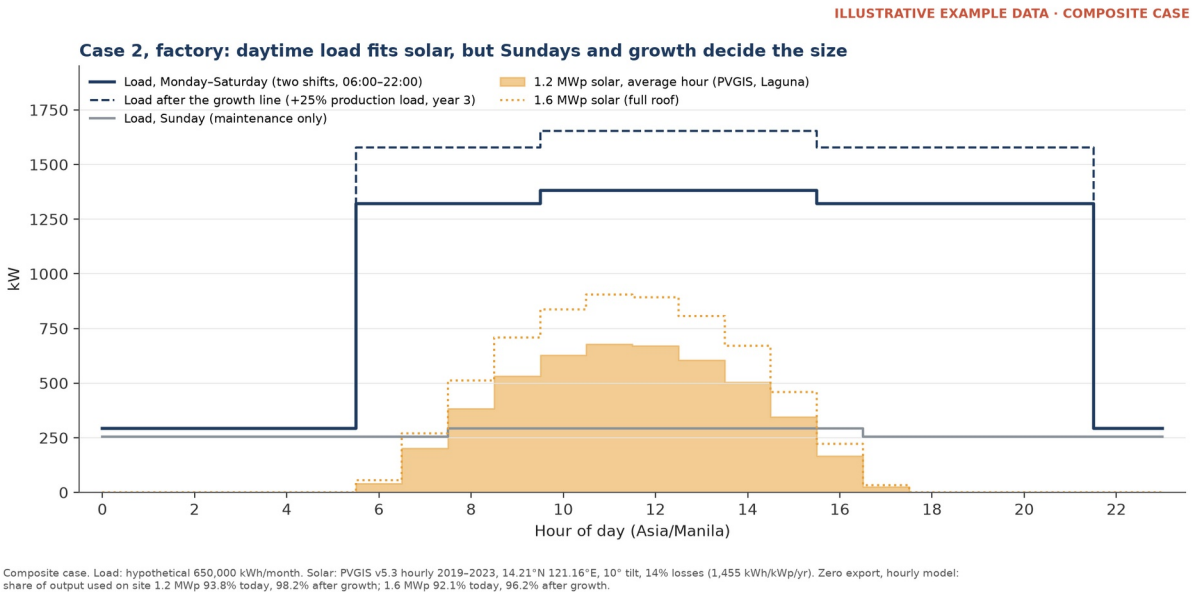


Figure 12.5. Illustrative example data (composite case): the factory's weekday, Sunday and post-growth load against 1.2 MWp and 1.6 MWp of solar. Solar from PVGIS (Laguna); load hypothetical.

Options considered

The board compared the three ownership routes of Chapter 3 for a 1.2 MWp system: an outright purchase at the lowest compliant EPC quote of ₱42,000 per kWp (₱50.4 million); a ten-year lease-to-own at 12%, about ₱8.9 million a year, treated for tax as a conditional sale;[14] and an onsite PPA. The option to expand to 1.6 MWp was priced separately.

Tender outcome

The onsite PPA tender followed Chapter 11: a data room with twelve months of interval data and a structural report, the buyer's term sheet, one independent P50 and the Chapter 11 weights (price 40, contract terms 20, technical 15, credit 15, ESG 10). Table 12.3 shows the three compliant bids.

Table 12.3. Case 2 tender: three bids normalised with the Chapter 11 method (illustrative example data)

	Bid X	Bid Y	Bid Z
Offer	1.6 MWp, flat, take-or-pay on all output	1.2 MWp, +3% a year	1.2 MWp, flat, expansion option
Headline price, year 1 (₱/kWh)	6.20	5.70	6.35

Normalised LCB (₱/kWh used)	6.73	6.97	6.35
Red-flag index of mark-up (Ch10)	40	30	15
Technical / credit / ESG (1–5)	4 / 3 / 3	3 / 4 / 3	5 / 4 / 4
Weighted score (out of 100)	66.9	61.6	92.0

Illustrative example data. Twenty years at 10%, independent P50 for Laguna, zero export. Hypothetical bids describing no real company.

Normalisation reversed the headline ranking. Bid Y's ₱5.70 escalates to an LCB of ₱6.97. Bid X's larger system wastes Sunday output that take-or-pay still makes the buyer pay for, lifting its ₱6.20 to ₱6.73. Bid Z, the dearest headline, is cheapest normalised and also best on terms, and scored 92.0. At BAFO it cut its price to ₱6.15 and confirmed the expansion option: 400 kWp more at the same tariff once the new line runs. About 90% of that extra output would then be used on site.

Modelling results

Table 12.4. Case 2 results for a 1.2 MWp system (illustrative example data)

	Onsite PPA (₱6.15)	Lease-to-own	Purchase
NPV, EDR base case (₱ million)	53.2	55.6	49.3
Monte Carlo P50 (P10 to P90)	48.8 (27.9 to 78.8)	47.9 (25.5 to 78.9)	41.6 (19.1 to 72.5)
Share of draws in which the option is best	59%	41%	0%
Levelised cost to the buyer (₱/kWh)	5.88	4.27	4.44
Payback after tax (years)	Immediate	Immediate	4.7
NPV if PPA payments are deductible only once	36.6	55.6	49.3
NPV at the regular 25% income tax	66.8	84.8	77.5
NPV if the plant later moves to RES supply	41.2	43.6	37.2

Illustrative example data. 25 years at 10%. EDR base case: 20% tax with grid power and PPA payments deductible twice; treating PPA payments as power expense is an assumption for the tax adviser to confirm. The share of draws in which purchase was best rounds to zero.

The tax regime decides this case. At the regular 25% rate, ownership wins clearly: the lease is worth ₱84.8 million against ₱66.8 million for the PPA. Under the EDR, every peso of grid power saved also gives up a double deduction, so savings are taxed at an effective 40%. Capital spent on the system does not get the double deduction. The gap closes: lease ₱55.6 million, PPA ₱53.2 million, purchase ₱49.3 million. In the Monte Carlo the PPA is best in 59% of draws and the lease in the rest. If the BIR or the company's tax adviser concluded that PPA payments do not qualify as power expense, the PPA would fall to ₱36.6 million and the lease would win. One more sensitivity matters. If the plant later moves its residual load to a RES, the stack effect of Case 1 cuts every option by about a fifth, but leaves the ranking unchanged.

Risk register highlights

- R3 load falls and take-or-pay bites (3 × 4): export orders are cyclical, which is why Bid X's take-or-pay was marked red.
- R9 change in law (3 × 4): the incentive regime is time-limited and could change; the model was rerun at the regular rate, and the term sheet shares the risk of tax changes.
- R12 typhoon (3 × 4): a structural report and wind-uplift design for the metal roof, with clamp-on mounts that avoid roof penetrations.
- R18 termination and exit (2 × 4): a plant relocation or sale would trigger the termination schedule, so a buyout table was negotiated in advance.

Term-sheet negotiation wins (Chapter 10)

- C3 price: flat for twenty years, with the expansion tranche at the same tariff for 36 months after COD.
- C5: pay-as-produced, with no take-or-pay.
- C6 performance guarantee: 95% of the independent P50, with liquidated damages at the avoided-cost rate.
- C16 buyout: a fixed schedule of buyout prices by year instead of 'fair market value', so a later switch to ownership is priced today.
- C15 and C14: one free removal and reinstallation for roof replacement, and assignment to a buyer of the plant without the developer's veto.

Decision and lessons

The board chose the onsite PPA, subject to a written opinion from its tax adviser on the treatment of PPA payments, with the lease-to-own as the fallback. The NPVs were close, so the deciding factors were strategic. The PPA keeps ₱50.4 million of borrowing capacity for the growth line, which earns more than a solar system. It leaves performance and O&M risk with the developer. And it prices the expansion option now. The lessons: model the tax regime you actually have, because it can reverse the ranking; normalise bids before reading headline prices; and size for the load you will have, with an option, not a guess.

12.4 Case 3: a mall group with sites in Luzon and the Visayas

> **Case 3 at a glance (composite illustration; illustrative example data)**
>
> **Not a real client:** A composite group of five regional malls, three in Meralco's franchise in Luzon and two in the Visayas; no real mall, operator or REIT is described.
>
> **Structure chosen:** Onsite rooftop and carport PPAs at all five sites, a 7 MWp Luzon VPPA sized to the Luzon load only, and separate hedges for the Visayas sites.



Figure 12.6. Solar carports turn a mall's open parking into generating capacity and shade, at a higher structural cost than rooftops. (AI-generated illustrative image; generic scene, not a real mall; no identifiable persons or vehicles.)

Profile

The composite group owns five malls of similar size. The three Luzon malls already buy from a RES at a fixed ₱8.60 per kWh. The two Visayas malls are still on their distribution utilities. Tenants and lenders are asking for a renewable-energy target, and the group may later transfer malls to a real estate investment trust (REIT), so any contract must be assignable.

Load and bill analysis

Each mall uses about 900,000 kWh a month with a peak of about 1,855 kW, so the group uses 54 GWh a year. Opening hours match the solar day closely (Figure 12.7a), so even with carports every solar kWh is used on site. Rooftops can take 5.0 MWp and three car parks a further 1.4 MWp. Together they cover about 16% of group consumption. Visayas prices have been higher and more volatile. Visayan Electric reported a residential rate of ₱14.89 per kWh for September 2026, and said it would have reached ₱21.24 without the ERC's revised price cap for the Visayas and Mindanao and the charges it had deferred.[15] For comparability, the case values Visayas solar at the same ₱10.40 avoided cost as Luzon. That is conservative.

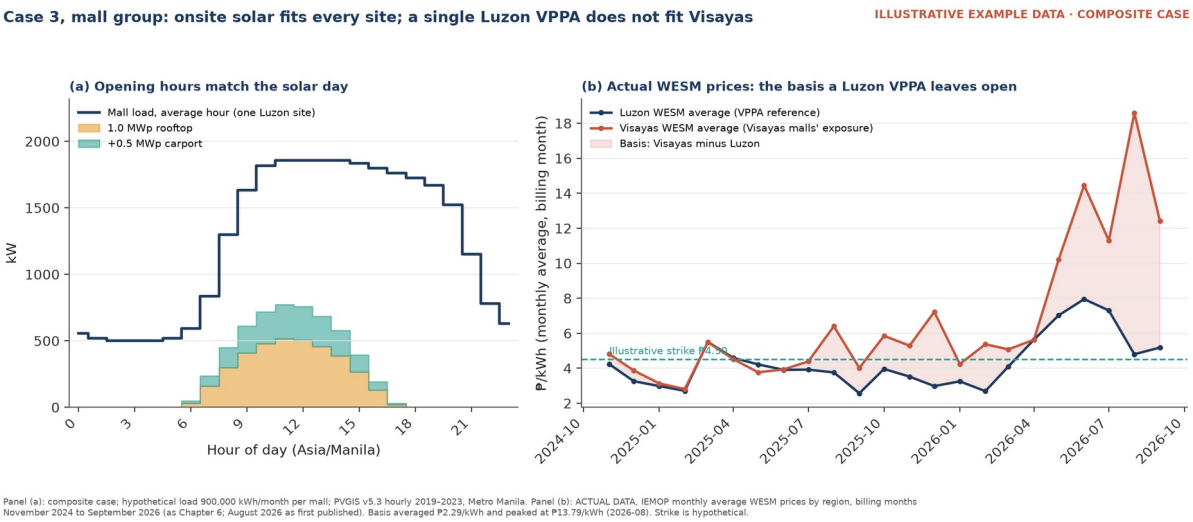


Figure 12.7. (a) Illustrative example data (composite case): one Luzon mall's hourly load against its rooftop and carport solar. (b) Actual data: IEMOP monthly average WESM prices for Luzon and the Visayas, November 2024 to September 2026, and the basis between them.[3]

Options considered

1. Onsite rooftop and carport PPAs at all five sites (rooftop ₱6.35, carport ₱7.60 per kWh), keeping the Luzon RES contracts.
2. The same, plus a 12 MWp VPPA with a Luzon solar farm at a ₱4.50 strike for fifteen years, covering the whole group's renewable target. The Visayas malls would move to RES contracts indexed to Visayas WESM prices.
3. The same, but with a 7 MWp VPPA sized to the Luzon malls' residual load only.

Under DOE DC2025-10-0024, a VPPA is a valid type of PPA with a minimum ten-year term. Its pricing is not subject to ERC or DOE review, and RECs transfer automatically to the buyer.[16] Settlement is two-way. When the reference WESM price is below the strike, the buyer pays the difference; when it is above, the developer pays. For the buyer the contract works like a fixed-price hedge, but only if its own power cost moves with the same reference price (Chapter 6).

Modelling results

The onsite PPAs are worth ₱284.0 million across the five sites. Value per kWp differs by site, and the difference is the stack effect again. A Luzon rooftop on RES supply is worth ₱40,515 per kWp, a Visayas rooftop ₱56,946. Luzon carports, at the higher carport tariff, are worth ₱30,205 per kWp, still positive but the thinnest margin in the portfolio.

The VPPA needed a different test: a back-test on actual WESM prices (Table 12.5). Over the 23 months, Visayas prices averaged ₱6.64 per kWh against ₱4.35 in Luzon. They were higher in 19 of the 23 months, and the gap reached ₱13.79 in the August 2026 billing month. Congestion on the Luzon–Visayas link and tight Visayas supply drive that basis.[17] A Luzon VPPA pays out on Luzon prices. It cut the volatility of a Luzon mall's WESM-indexed

supply by a third. For the Visayas malls it did almost nothing, because their cost moved with Visayas prices, which the contract does not reference.

Table 12.5. Case 3 VPPA back-test on actual WESM prices, November 2024 to September 2026

Generation cost, ₱/kWh (monthly)	Mean	Standard deviation	Worst month
Luzon malls, WESM-indexed RES (Luzon price + ₱1.00)	5.35	1.46	8.95
Luzon malls, with 7 MWp Luzon VPPA	5.38	0.96	7.73
Visayas malls, WESM-indexed RES (Visayas price + ₱1.00)	7.64	3.94	19.59
Visayas malls, with their share of a Luzon VPPA	7.67	3.63	19.49

WESM prices are actual IEMOP monthly averages; loads, VPPA volumes, the ₱4.50 strike and the ₱1.00 adder are illustrative example data (Chapter 6 method, reference price at 100% capture).

Looking forward, the VPPA's value depends on future Luzon prices and on how much of the average price a solar farm actually captures. At the observed average price and a 90% capture factor, the 12 MWp VPPA has an NPV of ₱-5.3 million, a modest net cost of the hedge and the RECs. In the Monte Carlo its P50 is ₱19.0 million, but the P10 to P90 range runs from ₱-87.6 million to ₱158.1 million, and 42% of draws are negative. The VPPA is a hedge and a source of RECs, not a saving. Under IFRS 9 it is likely to be a derivative measured at fair value through profit or loss, so the finance team also has to manage earnings volatility (Chapter 6).[18] Table 12.6 combines the packages.

Table 12.6. Case 3 results for the group (illustrative example data)

Package	NPV P50 (P10 to P90), ₱ million	P(NPV < 0)	Renewable share of load
Onsite PPAs, five sites	272.5 (140.6 to 454.8)	0.0%	16%
Onsite + 12 MWp VPPA for the whole group	294.6 (77.4 to 583.2)	3.5%	46%
Onsite + 7 MWp VPPA for Luzon load only	284.6 (106.3 to 531.3)	0.9%	34%

Illustrative example data. Onsite: 25 years at 10%, after 25% tax, Chapter 8 distributions (1,000 common draws). VPPA: 15 years; reference price ×0.7 to ×1.5 of the observed Luzon average, rising with the grid escalation draw; capture factor 0.8 to 1.0.

Risk register highlights

- R6 shape and basis (5 × 4 for the Visayas malls): the decisive risk; the back-test shows a Luzon contract cannot hedge Visayas prices.
- R10 curtailment and congestion (3 × 3): a Luzon solar farm can be curtailed, and the link to the Visayas has run at its transfer limit.
- R17 REC claim challenge (2 × 3): REC delivery and registration confirmed with the RE Registrar before claims are made.
- R15 and R12: carports add vehicle-damage and third-party liability, and typhoon design for open structures.

Term-sheet negotiation wins (Chapter 10)

- C23 VPPA settlement: settlement on the project's own price node, settlement suspended in any hour when the WESM price is below zero, and replacement RECs or a cash payment if delivery fails.
- C13 credit support both ways: a capped letter of credit from the group, matched by the developer's.
- C14 assignment: free assignment of the onsite PPAs to a purchaser or a REIT on transfer of a mall.
- C15 relocation: one relocation per site for renovations or tenant fit-outs, at the developer's cost.
- C10 insurance: carport policies that cover vehicle damage and third-party liability, with the group as additional insured.

Tender outcome

The group ran one multi-site RFP in three lots, Luzon rooftops, Visayas rooftops and carports, so that smaller developers could bid for single lots. It ran a separate VPPA RFP for developers with Luzon solar projects. Splitting the lots let the group award the Visayas rooftops to the bidder with local O&M crews. The carport lot was priced above the rooftop lots, as the structures required.

Decision and lessons

The group signed onsite PPAs at all five sites and a 7 MWp Luzon VPPA sized to its Luzon load, for a combined NPV of about ₱280.9 million at a 90% capture factor and about 34% renewable supply. It rejected the whole-group VPPA. For the Visayas malls it chose a tender for fixed-price RES supply and will consider a VPPA only with a project in the Visayas. The lessons: in the Visayas, the hedge that works best is the one on your own roof; a VPPA hedges only the price it references; and test any hedge on actual prices before signing.

12.5 Sidebar: publicly reported Philippine deals (real, not composites)

Real deals, as publicly reported

Separate from the composites: The examples below are real transactions reported by the companies or the press. They are included to show that each structure in this chapter is in use. Figures are as reported and have not been independently verified. Naming a company is not an endorsement, and none of these deals is connected with the composite cases or with the author.

Table 12.7. Selected publicly reported Philippine corporate solar and renewable supply deals

Buyer	As reported	Structure
SM Prime Holdings / SM Supermalls	100 MWp of rooftop solar across 59 properties by December 2025, rising to 122 MWp by September 2026[19]	Onsite rooftop, multi-site

Mount Grace Hospitals (13 hospitals) with First Gen	Agreements signed December 2025, effective February 2026: ten hospitals under the Retail Aggregation Program (about 4.5 MW), two under GEOP (600 kW) and one under RCOA (700 kW), supplied from hydro and geothermal plants[20]	Offsite renewable retail supply
FCC Philippines with Peak Energy	15-year PPA for a 1 MWp rooftop system at a plant in Laguna, about 1,500 MWh in year one, priced about 30% below prevailing grid tariffs according to the companies[21]	Onsite rooftop PPA, factory
Proterial Philippines with Advent Upgrade Solar	20-year PPA for a 1,587.20 kWp ground-mounted system at LIMA Estate, Batangas, targeting operation in the first quarter of 2027[22]	Onsite ground-mounted PPA, ecozone

As reported in the sources cited. We found no public report of a signed VPPA under DC2025-10-0024 as of 18 October 2026.

12.6 Cross-case comparison

Figure 12.8 puts every option from the three cases on one scale, and Figure 12.9 and Table 12.8 summarise the chosen packages. Three patterns stand out. First, the chosen package was never the option with the highest single NPV. The hospital paid for resilience, the factory chose between two options within the Monte Carlo noise, and the mall group gave up a slightly higher median for a much better downside. Second, the price headroom per solar kWh depends on what the solar displaces: ₱8.80 for a buyer on RES supply, ₱10.40 for one on Meralco. Third, the risks that decided each case were not in the NPV: outages, the tax regime and basis.

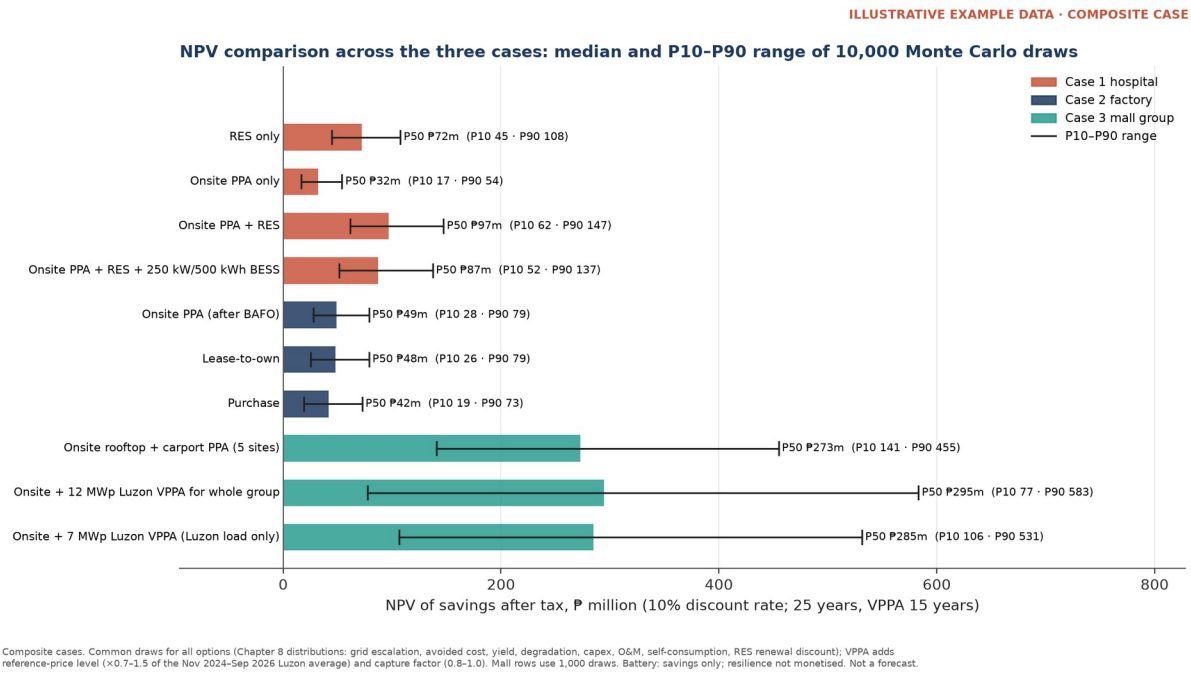


Figure 12.8. Illustrative example data (composite cases): median NPV and P10 to P90 range for every option in the three cases. Not a forecast.

Table 12.8. Cross-case summary (illustrative example data; composite cases)

	Hospital	Factory	Mall group
Annual load	7.2 GWh	7.8 GWh	54 GWh

Onsite solar	600 kWp; 11% of load	1.2 MWp; 21% of load	6.4 MWp; 16% of load
Offsite or virtual	RES for the rest	None yet (RES later)	Luzon RES; 7 MWp Luzon VPPA
NPV of chosen package	₱99.9 million	₱53.2 million	₱280.9 million
Upfront capital	₱15.0 million (battery)	None	None
Binding constraint	Roof area; resilience	Capital; tax regime	Basis between grids
Decisive analysis	Stack effect; battery as insurance	Tax-regime sensitivity; bid normalisation	Back-test on actual WESM prices

Illustrative example data. NPVs after tax at 10%; the mall figure uses a 90% capture factor for the VPPA.

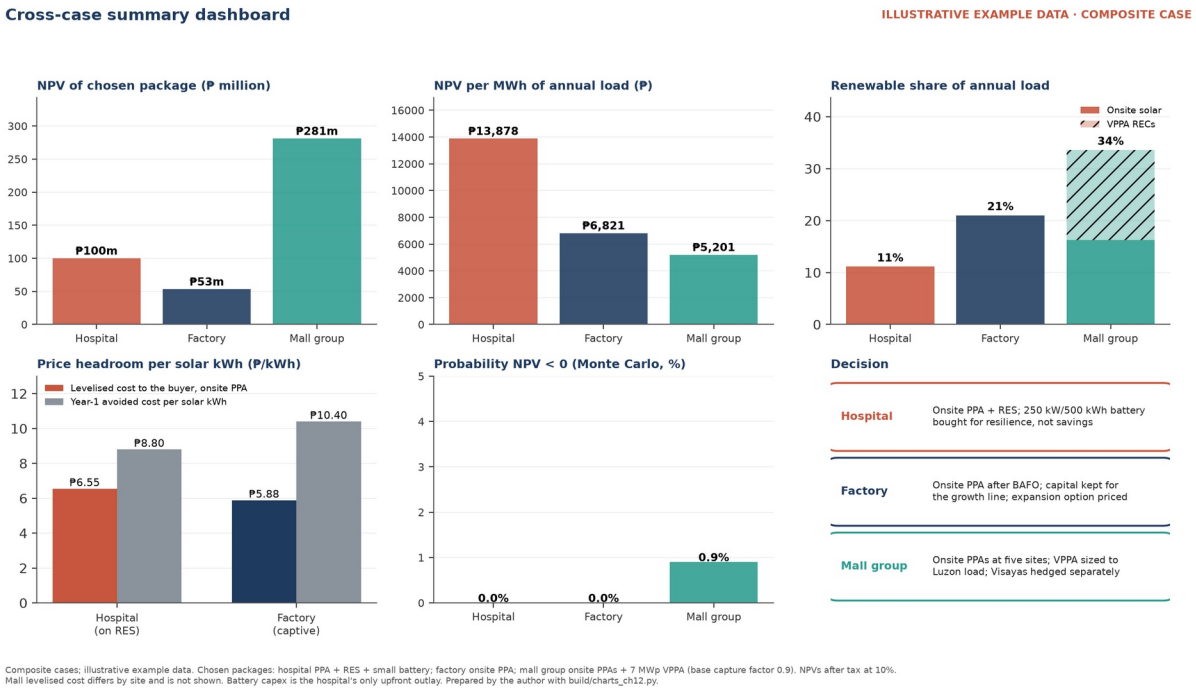


Figure 12.9. Illustrative example data (composite cases): cross-case summary dashboard. Prepared by the author.

12.7 Lessons learned

1. Model the stack, not the contract. Onsite solar, RES supply and a VPPA interact. Value each solar kWh against what it actually displaces.
2. Let the binding constraint pick the structure: roof area and resilience for the hospital, capital and tax for the factory, geography for the mall group.
3. Tax status can reverse a ranking. Non-profit hospitals, ecozone enterprises under the EDR and regular corporations should not expect the same answer. Get the tax opinion before the board vote.
4. Normalise every bid. In Case 2, the dearest headline price was the cheapest offer.
5. Price resilience openly. A battery that fails on savings can still be right, if the board knows what it pays each year for the protection.
6. A hedge must reference the price you pay. Back-test any VPPA on actual regional WESM prices before you sign.

7. Buy options, not guesses: an expansion tranche at a fixed tariff, a buyout schedule and assignment rights cost little at signing and are expensive to add later.

Key takeaways

- The three composite cases show one method producing three different answers, because each buyer's binding constraint differed.
- A RES contract lowers the value of each onsite solar kWh; tender and model both together.
- Batteries at hospitals are mainly resilience investments; their savings alone rarely justify them.
- Under CREATE MORE's enhanced deductions regime, savings on power are effectively taxed more heavily, narrowing the advantage of ownership.
- Headline prices mislead; normalised levelised cost and contract terms decide tenders.
- A Luzon VPPA does not hedge Visayas sites; actual WESM data show a basis that averaged above ₱2 per kWh and spiked far higher.
- Real Philippine buyers already use every structure in this chapter, from multi-site rooftops to aggregated renewable retail supply.

Questions a CFO should ask

1. What does each solar kWh actually displace for us: the Meralco tariff, a RES price or a WESM-indexed price?
2. Have we modelled onsite, RES and VPPA options together, on the same draws?
3. What is our binding constraint: roof, capital, resilience, tax or geography?
4. Which tax regime applies to us, and has our tax adviser confirmed how PPA payments are treated?
5. What does resilience cost us each year, and what does an outage cost?
6. Did normalisation change the ranking of the bids, and why?
7. Does any hedge reference the price we actually pay, in the grid where we use the power?
8. Which options, such as expansion, buyout and assignment, have we priced into the contract now?

Case studies show what good decisions look like; the next step is making one in your own company. Chapter 13, "A 90-Day Roadmap", turns the method of this book into a week-by-week plan, from collecting your bills to a board-approved decision.

Notes

All sources were accessed on 17–18 October 2026 (Asia/Manila). Tariffs, WESM prices, tax rules and DOE and ERC rules change; check the current text before relying on it. Quotations from statutes and rules were checked against the sources cited. The three cases are composite, anonymised illustrations, not real clients or projects: every load,

bill, roof, system size, price, bid, cost, rating, risk score and model result in them is illustrative example data. Only the published market inputs and the deals in Section 12.5 are real.

1. Manila Electric Company (Meralco), 'Summary Schedule of Rates, Effective October 2026 Billing', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_rate_schedule.pdf (GP 13.8 kV and below: generation ₱10.2005/kWh; transmission ₱194.29/kW; ancillary service ₱215.72/kW; system loss ₱0.3850/kWh; distribution ₱0.0502/kWh and ₱178.85/kW; Very Large supply charge ₱12,460.82 and metering charge ₱11,823.21 per customer per month; universal charges, FIT-All, refund and other per-kWh items as for GP secondary; Very Large class 750 kW ≤ demand < 10,000 kW; footnote 23, special discount of 3% of distribution, metering and supply charges for GS-B and GP private hospitals duly registered and certified by the Department of Health; rates VAT-exclusive). Per-kWh and per-kW totals are the author's sums, as in Chapters 4, 5 and 8.

2. European Commission Joint Research Centre, PVGIS v5.3 (PVGIS-ERA5), 1 kWp crystalline silicon, 10° tilt, south-facing, 14% system losses. Hourly series 2019–2023: Metro Manila, 14.55°N 121.03°E, as in Chapter 4 (build/pvgis_manila_2019_2023_ch4.json); Laguna, 14.21°N 121.16°E, and Metro Cebu, 10.32°N 123.90°E, downloaded 18 October 2026, https://re.jrc.ec.europa.eu/api/v5_3/seriescalc?lat=14.21&lon=121.16&peakpower=1&loss=14&angle=10&aspect=0&pvcalculation=1&startyear=2019&endyear=2023&outputformat=json and the same query with lat=10.32&lon=123.90 (build/pvgis_laguna_2019_2023_ch12.json, build/pvgis_cebu_2019_2023_ch12.json). Long-term PVcalc averages (2005–2023) for the same points: Metro Manila 1,328; Laguna 1,451; Metro Cebu 1,445 kWh/kWp a year. Hourly averages are the author's calculations. Both Visayas malls use the Metro Cebu series.

3. Independent Electricity Market Operator of the Philippines (IEMOP), 'Market Operations Highlights', monthly reports for billing months January 2025 to July 2026 (regional averages for November 2024 to July 2026), https://www.iemop.ph/market-reports/2026-market-operations-highlights/; IEMOP, 'Tight regional supply conditions pushed August WESM prices higher in Visayas and Mindanao', 10 September 2026, https://www.iemop.ph/news/tight-regional-supply-conditions-pushed-august-wesm-prices-higher-in-visayas-and-mindanao/ (August 2026: Luzon ₱4.80, Visayas ₱18.59/kWh, as first published); Power Philippines, 'WESM price climbs to PHP 7.43/kWh despite wider supply margin', 13 October 2026, https://powerphilippines.com/wesm-price-climbs-to-php-7-43-kwh-despite-wider-supply-margin/ (September 2026: Luzon ₱5.18, Visayas ₱12.42/kWh). Same series as Chapter 6 (build/model_ch6.json); basis statistics calculated by the author.

4. IEMOP, 'RCOA Threshold Bulletin No. 2026-01', 5 May 2026, implementing ERC Resolution No. 22, Series of 2025, https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (100 kW threshold effective 26 June 2026); IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (GEOP threshold of 50 kW). As cited in Chapters 2, 3 and 5.

5. Association of Structural Engineers of the Philippines, National Structural Code of the Philippines 2015, Volume 1, Section 207 (Wind Loads) and Table 103-1 (occupancy categories, including essential facilities such as hospitals), text at https://archive.org/stream/NSCP2015/NSCP-2015_djvu.txt. As cited in Chapters 4 and 9.

6. BusinessWorld, 'ERC says 11,500 businesses can tap new 100-kW power market', 8 October 2026, https://bworldonline.com/corporate/2026/10/08/785541/erc-says-11500-businesses-can-tap-new-100-kw-power-market/ (ERC figures as of August 2026: about 15,183 eligible customers; about 12,491 eligible customers not yet switched). As cited in Chapter 5.

7. Republic Act No. 11534 (CREATE Act), amending Section 27(B) of the National Internal Revenue Code, https://lawphil.net/statutes/repacts/ra2021/ra_11534_2021.html ('Proprietary educational institutions and hospitals which are nonprofit shall pay a tax of ten percent (10%) on their taxable income', with a temporary 1% rate from 1 July 2020 to 30 June 2023; the regular corporate rate applies to the entire taxable income if gross income from unrelated trade, business or other activity exceeds 50% of total gross income). Whether a given hospital qualifies is a question for its tax adviser.

8. ERC, Resolution No. 11, Series of 2022, 'Rules Governing Distributed Energy Resources (DER)', as summarised by Ocampo & Suralvo Law Offices, https://www.ocamposuralvo.com/updates/erc-issued-distributed-energy-

resources-rules.html (interconnection standards including IEEE 1547). IEEE 1547 requires distributed resources to cease to energise the area electric power system when it is de-energised (anti-islanding). As cited in Chapter 9.

9. GMA News Online, 'NGCP issues red, yellow alerts for Luzon, Visayas grids for Friday, May 15, 2026', https://www.gmanetwork.com/news/money/economy/987730/luzon-visayas-red-yellow-alerts-ngcp-may-15-2026/story/ (Luzon deficiency of 852 MW); GMA News Online, 'NGCP: 5-hour red alert status over Visayas grid on September 24, 2026', https://www.gmanetwork.com/news/topstories/nation/1003518/ngcp-5-hour-red-alert-status-over-visayas-grid-on-september-24-2026/story/; Philstar.com, 'DOE: Planning failure caused Visayas power shortfall', 5 October 2026, https://www.philstar.com/headlines/2026/10/05/2561051/doe-planning-failure-caused-visayas-power-shortfall (supply gap that 'could persist until 2028'). As cited in Chapter 9.

10. BloombergNEF, 'Lithium-Ion Battery Pack Prices Fall to $108 Per Kilowatt-Hour, Despite Rising Metal Prices', 9 December 2025, https://about.bnef.com/insights/clean-transport/lithium-ion-battery-pack-prices-fall-to-108-per-kilowatt-hour-despite-rising-metal-prices-bloombergnef/ (2025 average pack price US$108/kWh; stationary storage packs US$70/kWh). Pack prices exclude inverters, enclosures, fire protection and installation. As cited in Chapter 4.

11. Energy Regulatory Commission (ERC), Resolution No. 13, Series of 2024, 'Omnibus Rules for Customer Choice Programs in the Retail Market', Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (G13–G15 last resort supply at the WESM nodal price or PSA price plus a 5% premium; L12.2(c) price 'inclusive of all costs'; L12.4 retail supply contract within five business days from receipt of the Offer Sheet; L13 cooling-off period). As cited in Chapters 5, 9, 10 and 11.

12. Department of Energy (DOE), Department Circular No. DC2026-08-0017, 'Policy Guidelines for Self-Generating Facility Zero-Export Solar Systems and Micro-Solar Systems for Own-Use', https://prod-cms.doe.gov.ph/documents/d/guest/dc2026-08-0017-pdf (exemption from the ERC Certificate of Compliance for qualifying zero-export systems, including those of hospitals and other medical facilities). As cited in Chapter 4.

13. Republic Act No. 12066 (CREATE MORE Act), amending NIRC Sections 27(A) and 294(C), https://lawphil.net/statutes/repacts/ra2024/ra_12066_2024.html (20% rate for registered business enterprises under the enhanced deductions regime; 100% additional deduction on power expense, applicable only to power used for the registered project or activity); Chambers and Partners, 'Renewable Energy 2026 – Philippines: Trends and Developments', https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines/trends-and-developments (enhanced deductions regime 'now allows a 100% additional deduction on power expenses, up from 50%'). As cited in Chapters 3 and 6. Whether payments under an onsite PPA qualify as power expense is an assumption in Case 2, to be confirmed by a tax adviser.

14. Bureau of Internal Revenue, Revenue Memorandum Circular No. 11-2024, restating Revenue Regulations No. 19-86, as summarised by Grant Thornton Philippines, 'Clarifications on the accounting and tax treatment of leases', 2024, https://www.grantthornton.com.ph/alerts-and-publications/technical-alerts/tax-alert/2024/clarifications-on-the-accounting-and-tax-treatment-of-leases/ (conditional-sale treatment where ownership passes on payment of the rentals). As cited in Chapters 3 and 8.

15. Visayan Electric, 'Visayan Electric announces rate reduction for September, welcomes rate intervention measures from the ERC', 28 September 2026, https://www.visayanelectric.com/post/visayan-electric-announces-rate-reduction-for-september-welcomes-rate-intervention-measures-from-th (residential rate for 200 kWh down from ₱14.96 to ₱14.89/kWh; ERC revised secondary price cap across the Visayas and Mindanao and deferral of charges with IEMOP; rates 'would have otherwise reached ₱21.24 per kWh for residential customers'). Residential rates; commercial tariffs differ.

16. DOE, Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', published 7 November 2025, effective fifteen days after publication, https://doe.gov.ph/circular-no-dc-2025-10-0024 (Sections 3.1–3.5: recognition as a valid type of PPA, pricing not subject to ERC or DOE review, automatic REC transfer; Sections 7.2–7.8: BSP-compliant currency and minimum ten-year term). As cited in Chapters 2, 6 and 9.

17. IEMOP, 'December 2025 Power Market: Luzon Prices Ease as Supply Improves; Visayas and Mindanao Experience Tighter Conditions', https://www.iemop.ph/news/december-2025-power-market-luzon-prices-ease-as-supply-improves-visayas-and-mindanao-experience-tighter-conditions/ (Leyte–Luzon HVDC at its maximum Luzon-to-Visayas transfer limit of 250 MW or offline for 69% of the billing period; congestion on the Leyte–Cebu corridor); Power Philippines, as in note 3 (Luzon–Visayas HVDC under price separation for 77.6% of the September 2026 billing period). As cited in Chapters 5 and 9.

18. KPMG, 'Nature-dependent electricity contracts', https://kpmg.com/xx/en/our-insights/ifrg/2024/renewable-energy-contracts-ifrs7-ifrs9.html ('Virtual PPAs and PPAs that do not meet the own-use exemption are accounted for as derivatives and measured at FVTPL'); IFRS Foundation, 'IASB updates IFRS Accounting Standards for nature-dependent electricity contracts', 18 December 2024, https://www.ifrs.org/news-and-events/news/2024/12/iasb-updates-accounting-standards-nature-dependent-electricity-contracts/ (amendments effective for annual periods beginning on or after 1 January 2026). As cited in Chapter 6.

19. Philippine Daily Inquirer, 'SM Prime hits 100-MW rooftop solar rollout', 11 December 2025, https://business.inquirer.net/563690/sm-prime-hits-100-mw-rooftop-solar-rollout (100 MWp across 59 properties; more than 200,000 modules on 65 hectares of rooftop); The Manila Times, 'SM Supermalls evolves for the next generation of customers', 4 September 2026, https://www.manilatimes.net/2026/09/04/business/sm-supermalls-evolves-for-the-next-generation-of-customers/2418586 (capacity increased from 100 MWp to 122 MWp, with further expansion planned).

20. Power Philippines, 'First Gen powers 13 Mount Grace hospitals with renewable energy', 19 March 2026, https://powerphilippines.com/first-gen-powers-13-mount-grace-hospitals-with-renewable-energy/ (agreements signed in December 2025, effective February 2026; RAP: 10 hospitals, about 4.5 MW; GEOP: 2 hospitals, 600 kW; RCOA: 1 hospital, 700 kW; supply from hydro facilities in Nueva Ecija and geothermal plants in Leyte and Cotabato). The article's description of programme thresholds predates the current 100 kW RCOA and 50 kW GEOP thresholds (note 4).

21. Power Philippines, 'FCC Philippines taps Peak Energy for 15-year solar deal', 30 July 2026, https://powerphilippines.com/fcc-philippines-taps-peak-energy-for-15-year-solar-deal/; RenewableEnergy.ph, 'Japanese auto parts maker FCC taps Peak Energy for Laguna rooftop solar project', 29 July 2026, https://renewableenergy.ph/japanese-auto-parts-maker-fcc-taps-peak-energy-for-laguna-rooftop-solar-project-570/ (1 MWp rooftop; about 1,500 MWh in the first year; price approximately 30% below prevailing grid tariffs, as stated by the companies; developer to design, finance, build, own, operate and maintain).

22. Power Philippines, 'Advent Upgrade Solar, Proterial ink 20-year deal for LIMA solar project', 4 September 2026, https://powerphilippines.com/advent-upgrade-solar-proterial-ink-20-year-deal-for-lima-solar-project/; AboitizPower, 'Advent Upgrade Solar Inc. and Proterial Philippines sign 20-year PPA for first solar PV system in LIMA Estate', 9 September 2026, https://aboitizeyes.aboitiz.com/power/advent-upgrade-solar-inc-and-proterial-philippines-sign-20-year-ppa-for-first-solar-pv-system-in-lima-estate/ (1,587.20 kWp ground-mounted; commercial operation targeted for the first quarter of 2027).

Figure and image credits

Figures 12.1, 12.3, 12.5, 12.7, 12.8 and 12.9 and Tables 12.1 to 12.8 were prepared by the author. Figures 12.3, 12.5, 12.7(a), 12.8 and 12.9 and Tables 12.2 to 12.6 and 12.8 use illustrative example data for composite, anonymised cases generated by the author's model (build/charts_ch12.py); they describe no real client, building, developer or supplier and are not market quotes, statistics or forecasts. Figure 12.7(b) and the WESM columns of Table 12.5 use actual IEMOP data; solar profiles use actual PVGIS data. Table 12.7 reports real deals as published in the sources cited, without endorsement. Figures 12.2, 12.4 and 12.6 are AI-generated illustrative images of generic scenes; they do not depict real people, buildings or sites.

Disclaimer. This chapter is for general information and does not constitute legal, tax, accounting, insurance, engineering or investment advice. The composite cases are not projects of the author or of SolarMD Power Consulting and Engineering Services. Tax treatments in Cases 1 and 2, including the treatment of PPA payments under the enhanced deductions regime, are assumptions for illustration; obtain your own tax advice. Engage

qualified Philippine counsel to review every PPA, RES supply contract or VPPA, and consult your auditor and insurance broker, before signing.

CHAPTER 13

A 90-Day Roadmap: From First Idea to Signed PPA

A week-by-week plan in three 30-day phases, with roles, deliverables, decision gates and a board paper

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In this chapter: Before Day 1 · Days 1–30: Diagnose · Days 31–60: Design and tender · Days 61–90: Evaluate, negotiate, approve · Weekly deliverables, RACI and decision gates · Quick wins · The board approval paper · After signing: realistic timelines to supply or COD · Common delays · Ready-to-sign checklist · The companion 90-day plan · The book in one page · Key takeaways · A closing message from the author

Read this first: what this roadmap is, and is not

A plan, not a promise: Ninety days from first idea to a signed contract is achievable for a prepared buyer with one or two sites, clean data, a sponsor who can decide and a standard structure. Many buyers will need longer. Chapter 11 suggests about six months from board decision to signing for a rooftop PPA, and this chapter explains where the extra time usually goes.

Signing is not supply: Offsite supply from a RES cannot begin until the regulated switching steps are complete, including a notice that the distribution utility (DU) must receive at least 90 calendar days before the switch date. Onsite systems are designed, permitted and built after signing. Section 13.8 sets out realistic timelines.

Durations: Task durations, gate criteria and post-signing ranges are the author's planning judgement for a single-site buyer using about 100,000 kWh a month. They are not market statistics. Regulatory lead times are taken from the rules cited in the notes.

RES: Retail Electricity Supplier, licensed by the ERC. In this book RES always means Retail Electricity Supplier.

Twelve chapters have given you the parts: how to read the bill, what each type of PPA does, how to price, model, register risks, negotiate terms and run a tender, and how three composite buyers put it all together. This final main chapter turns those parts into a

working plan. It answers the question most CFOs ask after the first briefing: what do we do on Monday morning?

The plan runs for thirteen weeks in three phases of about thirty days. Days 1 to 30 diagnose: form the team, gather the data, check eligibility, build the baseline and screen the options. Days 31 to 60 design and tender: choose the structure, build the data room, go to market and register the risks. Days 61 to 90 evaluate, negotiate and approve: normalise the bids, review the terms, run a best and final offer, take the decision to the board and sign. Four decision gates sit between the phases, so that the company commits money and reputation only when the facts justify it. Figure 13.1 shows the whole roadmap.

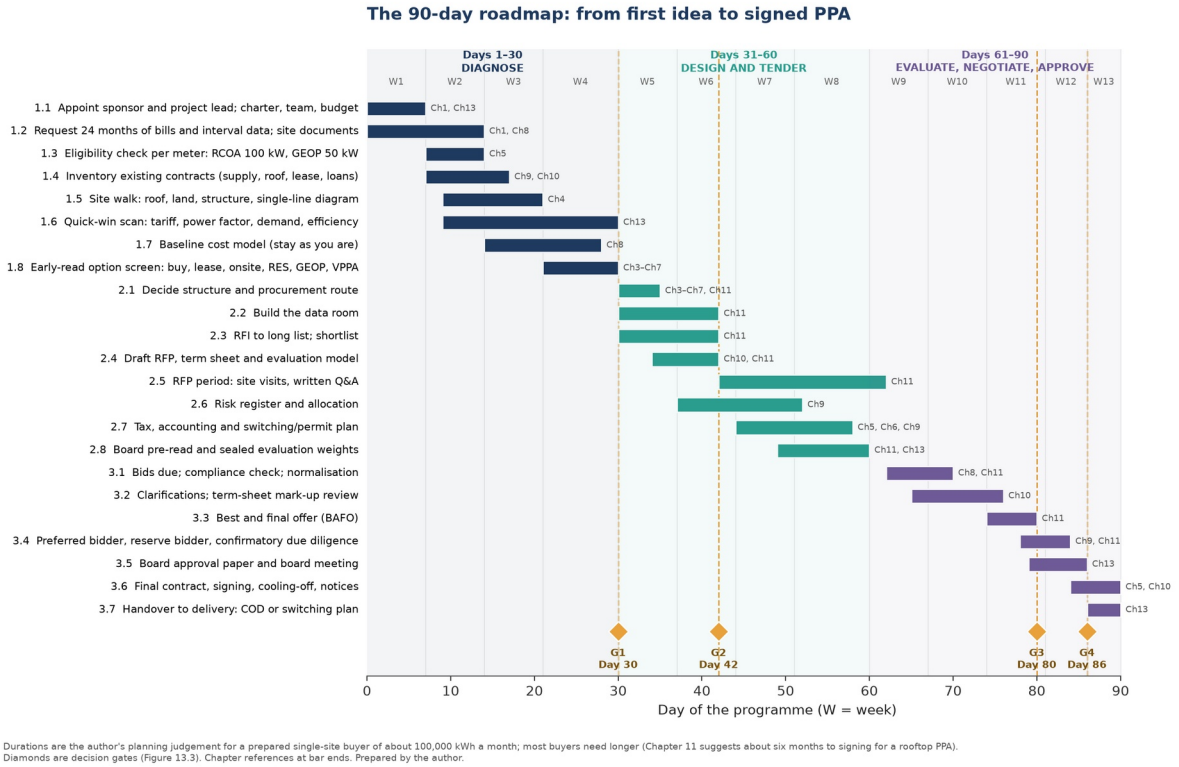


Figure 13.1. The 90-day roadmap: tasks, phases and decision gates, with the chapter that supports each task. Durations are the author's planning judgement for a prepared single-site buyer. Prepared by the author.

13.1 Before Day 1: the conditions for a 90-day timetable

Ninety days is a target, not a law of nature. It works when five conditions hold. First, someone senior wants the outcome and can make decisions within days, not quarters. Second, at least twelve months of bills exist and interval data can be obtained quickly. Third, the company has one or two sites, not twenty. Fourth, the structure is familiar to the market: an onsite rooftop PPA, a supply contract with a RES, or both. A first VPPA usually takes longer, because accounting and treasury review run alongside the tender (Chapter 6). Fifth, the board meets, or can be convened, near Day 85.

If one of these conditions fails, keep the sequence and stretch the calendar. The order of the work matters more than its speed. A company that skips the baseline to save two weeks will spend longer arguing about bids it cannot compare.

13.2 Days 1–30: Diagnose

The purpose of the first phase is to learn enough to decide whether a tender is worth running, and for what. It ends at Gate 1 on Day 30.

Week 1: form the team and name the sponsor

Appoint an executive sponsor, usually the CFO, and a project lead from finance who owns the timetable. Add a facilities or engineering lead, in-house legal and procurement, and a contact in tax and accounting. Agree a one-page charter: the objective (lower and more predictable power cost, a renewable share, resilience or a combination), the sites in scope, the budget for outside advisers and the dates of the four gates. Table 13.2 sets out who is responsible, accountable, consulted and informed for each activity. On the same day, send the data requests.



Figure 13.2. A one-page charter and a visible thirteen-week plan keep a small team on schedule. (AI-generated illustrative image; generic office, not real people or a real company.)

Weeks 1–2: gather the data

Collect twenty-four months of bills for every meter in scope, or at least twelve. Request fifteen-minute interval data from the DU or from your own meters. If none exists, install a temporary load logger at once: a month of logged data is better than none, and Chapter 8 explains how to combine it with bills. Gather the site documents that bidders will later

need: roof drawings and age, structural records, the single-line diagram, land titles or leases, and photographs. Chapter 11 lists the full data room.

Week 2: check eligibility

Eligibility decides which doors are open. Under the current rules, the Retail Competition and Open Access (RCOA) threshold is an average monthly peak demand of 100 kW, effective 26 June 2026, and the Green Energy Option Program (GEOP) threshold is 50 kW.[1] Check each meter separately, because eligibility is per metering point unless you qualify through aggregation (Chapter 5). Your DU bill should state whether you are an eligible end-user.[2] A site using 100,000 kWh a month at a load factor of 55% peaks at roughly 250 kW, so it qualifies for both programmes. A flat, round-the-clock load of the same size peaks lower, at roughly 140 to 160 kW, so its margin above 100 kW is smaller; a smaller site, or one split across several meters, may fall below the threshold.

In the same week, list every existing contract that could constrain the project: any current RES contract and its expiry and renewal notice dates, roof warranties, building leases that restrict alterations, and loan covenants on new long-term obligations.

Weeks 2–4: build the baseline and screen the options

The baseline is your cost of staying as you are, projected forward with the method of Chapter 8: tariff by component, load growth, and grid prices under base, high and low cases. Every option will be measured against it. Then run an early-read option screen across the structures of Chapters 3 to 7: buying or leasing a system, an onsite PPA, supply from a RES or a GEOP supplier, and a VPPA. The screen is not a decision. Its job is to discard options that clearly do not fit, and to identify one or two worth tendering.

Use indicative prices, clearly labelled as such, and test them over a wide range. If an option only works at the most optimistic price, it is not yet an option. Run the quick wins of Section 13.6 in parallel; they do not wait for any gate.

Gate 1 (Day 30): proceed to design?

The sponsor decides, on a short note from the project lead, against the criteria in Table 13.3. The essential test is whether at least one option shows a positive base-case NPV with a margin for error, on data good enough to trust. A no-go is a valid outcome: implement the quick wins, fix the data gaps and screen again when tariffs, load or eligibility change.

13.3 Days 31–60: Design and tender

The second phase turns a promising option into a competitive process with fixed rules. Its milestone is the release of the request for proposals (RFP) at Gate 2 on Day 42.

Week 5: decide the structure

Record the structure chosen and the reasons, in a page. Typical outcomes for a buyer of this size are an onsite rooftop PPA; RES supply for the whole load; or both, tendered together so that bidders and your model see the stack (Chapter 12). Decide the procurement route at the same time: an open RFP, a shortlist from a request for information (RFI), or, for RES supply, a request for firm offers from licensed suppliers. Appoint any outside advisers now, on a fixed scope (Table 11.6).

Weeks 5–6: data room, RFI and RFP

Build the data room from the material collected in Phase 1, organised so that every bidder prices the same facts. Send a short RFI to a long list and use the answers to confirm that at least three qualified firms will bid. Draft the RFP with the term sheet of Chapter 10 attached, so bidders mark up your terms rather than you marking up theirs. Build and test the evaluation model of Chapter 11, including the pass/fail gates, the normalisation to a levelised cost to the buyer and the weights.

Gate 2 (Day 42): release the RFP?

The two criteria that matter most are a complete data room and evaluation weights sealed before any bid arrives (Table 13.3). If either is missing, hold the RFP. A clean tender that starts a week late beats a contested one that starts on time.

Weeks 7–8: bidders work, you prepare

The RFP period in this plan is three weeks, from Day 43 to Day 62. That is short for an onsite project, and it works only if the data room is complete and site visits are scheduled in the first week. Answer all questions in writing and share the answers with every bidder. Allow more time if bidders ask for it for good reason, and move the later dates rather than squeezing the evaluation.

Use the bidders' time to finish your own work. Complete the risk register of Chapter 9: volume, price, counterparty, regulatory and curtailment risks, each with an owner, a score and the contract clause that allocates it. Obtain the first written views from tax and accounting, especially for any VPPA, which may have to be accounted for as a derivative.[3] Ask counsel to map the switching steps for a RES contract and the permits and DU notifications for an onsite system, so that the post-signing timeline is known before the board meets. Ask counsel, too, whether to send the notice of intention to switch before signing, so that the 90-day clock runs in parallel with the evaluation.[2]

Finally, send the board a pre-read in Week 8. It should explain the objective, the options screened, the structure chosen, the evaluation method and the timetable to a decision. In the author's view, boards that see the method before the answer ask better questions and decide faster.

13.4 Days 61–90: Evaluate, negotiate, approve

Weeks 9–10: evaluate the bids

Bids arrive on Day 63. Check compliance against the pass/fail gates first. Then normalise every compliant bid to the same basis: VAT treatment, escalation, payment basis, costs left with the buyer and an independent P50 yield (Chapters 8 and 11). Score price only after normalisation. Ask written clarification questions, and score each bid's mark-up of your term sheet with the red-amber-green scorecard of Chapter 10. The output of these two weeks is a ranked table and a negotiation brief for each of the top two bidders.

Week 11: best and final offer and the preferred bidder

Invite the top two to a best and final offer (BAFO) on the open points, with a firm deadline. Then select a preferred bidder and keep a reserve in writing. Run confirmatory due diligence on the preferred bidder: its licences (a RES must hold a current ERC licence), the parent's financial statements, references from completed projects, the named engineering contractor and the insurance programme.

Gate 3 (Day 80): select the preferred bidder?

The preferred bid must beat the baseline at P50, remain acceptable in the downside cases of Chapters 8 and 9 and carry no unresolved red flag on a critical clause (Table 13.3). If it fails, run one more BAFO round, re-scope or stop. Never lower a gate to fit a bid.

Weeks 12–13: board approval and signing

The board paper goes out with the agenda, ideally five working days before the meeting. Section 13.7 gives an outline. After approval, finalise the contract text, check the ready-to-sign list of Section 13.10, and sign within the validity of the offer. For a RES contract, the rules give you five business days after signing to cancel, unless you waive the right, and the switch request cannot be filed until that cooling-off period has ended.[2] Send the notices on the day of signing, appoint the delivery owner and hand over the post-signing plan.

Gate 4 (Day 86): approve and sign?

The board's resolution, written tax and accounting views, counsel's sign-off and an offer still within its validity are all required. If any item is open, extend the validity in writing, fix the item or return to the reserve bidder. Figure 13.3 summarises the four gates; Table 13.3 lists the full criteria.

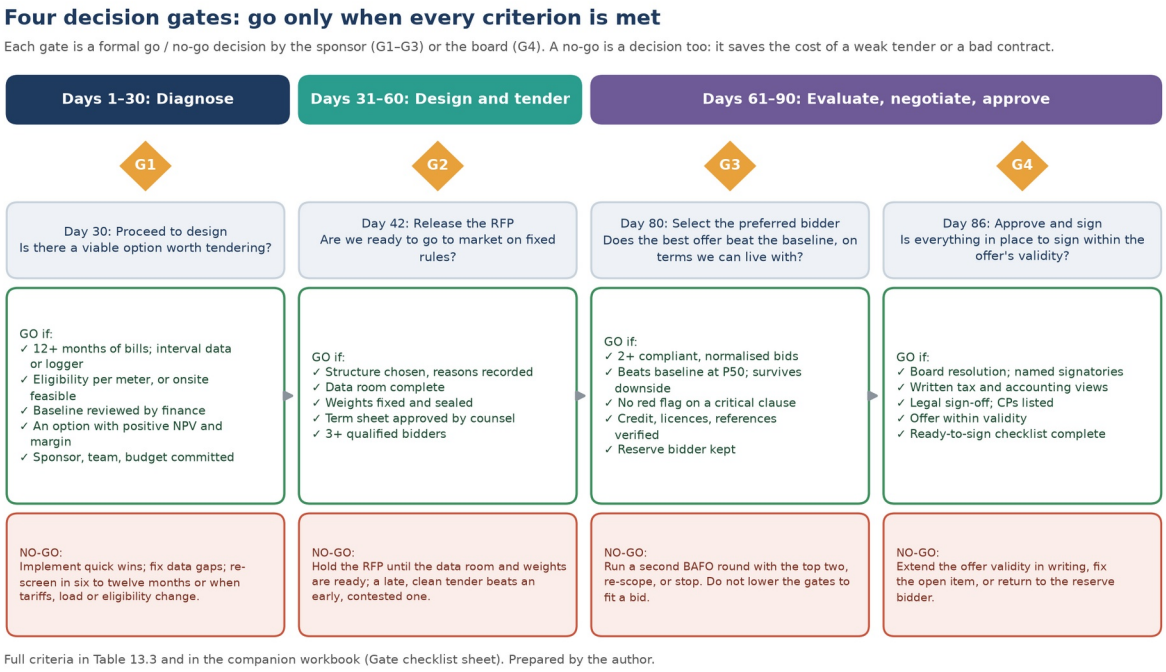


Figure 13.3. The four decision gates and their go / no-go criteria. Prepared by the author.

13.5 Weekly deliverables, roles and gates

Table 13.1 lists the deliverable due at the end of each week. A deliverable is a document someone can read and challenge, not an activity. If a week ends without its deliverable, the project lead should report the slip to the sponsor at once.

Table 13.1. Week-by-week plan and deliverables

Wk	Days	Main tasks	Deliverables by end of week	Owner (A)
1	1–7	Name sponsor and lead; charter; send data requests	Project charter; RACI; data request letters	Sponsor
2	8–14	Collect bills and interval data; eligibility check; contracts inventory	Bill file; eligibility memo per meter; contracts list	Project lead
3	15–21	Site walk; roof, land and single-line review; start baseline; quick-win scan	Site fact sheet; quick-win list with owners	Facilities
4	22–30	Baseline model; option screen; Gate 1	Baseline forecast; option screen memo; Gate 1 decision	Project lead
5	31–37	Decide structure and route; appoint advisers; build data room; send RFI	Structure memo; tender plan; adviser letters	Sponsor
6	38–44	Data room complete; RFI shortlist; RFP and term sheet; Gate 2; RFP issued	Data room index; shortlist; RFP pack; Gate 2 decision	Procurement
7	45–51	Site visits; written Q&A; risk register	Q&A log; draft risk register	Procurement
8	52–60	Tax and accounting views; switching and permit plan; board pre-read	Tax and accounting note; post-signing plan draft; pre-read	Sponsor
9	61–67	Bids due (Day 63); compliance; normalisation	Bid opening record; compliance matrix; normalised table	Procurement
10	68–74	Clarifications; term-sheet mark-up scoring	RAG scorecards; negotiation briefs	Legal
11	75–81	BAFO; preferred and reserve bidder; due diligence; Gate 3	BAFO evaluation; recommendation report; Gate 3 decision	Project lead

12	82–86	Board paper; board meeting; final text; Gate 4	Board paper; board resolution	Sponsor
13	87–90	Signing; notices; handover	Signed PPA or RSC; notices sent; post-signing plan	Legal

Weeks 12 and 13 are shorter, so that the plan ends on Day 90. RSC: retail supply contract with a RES. The companion workbook (Section 13.11) holds the same plan as an editable Gantt chart.

Table 13.2 assigns the roles. Use the standard convention: R does the work, A owns the outcome and signs it off, C is consulted before the decision and I is informed after it. Each activity has exactly one A.

Table 13.2. RACI matrix for the 90-day programme

Activity	Spon.	Lead	Facil.	Legal	Proc.	Tax/ Acct.	Adv.	Board
Charter, team and budget	A	R	C	C	C	I	I	I
Bills, interval and site data	I	A	R	I	I	I	C	–
Eligibility check (RCOA, GEOP)	I	A	R	C	I	–	C	–
Quick wins	A	C	R	I	C	C	C	–
Baseline model and option screen	C	A	C	I	I	R	C	I
Gate 1 decision	A	R	C	C	C	C	C	I
Structure and tender plan	A	R	C	C	R	C	C	I
Data room	I	A	R	C	C	C	R	–
RFI, RFP and term sheet	C	C	C	R	A	C	R	–
Risk register	C	A	R	R	C	R	C	I
Board pre-read	A	R	I	C	I	C	C	I
Bid evaluation and BAFO	C	R	R	R	A	R	R	–
Term-sheet negotiation	C	R	C	A	R	C	C	–
Board approval	R	R	I	C	I	C	I	A
Signing, notices, handover	A	R	R	R	C	I	I	I

R = responsible, A = accountable, C = consulted, I = informed, – = not involved. Spon. = executive sponsor (usually the CFO); Lead = project lead (finance); Facil. = facilities and engineering; Legal = in-house legal and external Philippine counsel; Proc. = procurement; Tax/Acct. = tax, accounting and the external auditor; Adv. = technical and commercial advisers. Adapt the roles to your organisation, but keep one A per row.

Table 13.3. Decision gates: go / no-go criteria

Gate	When	Go only if all of these are met	If no-go
G1 Proceed to design	Day 30	Twelve or more months of bills in hand and interval data received or a logger running; Eligibility confirmed per meter (RCOA, GEOP) or an onsite site judged feasible; Baseline model reviewed by finance; At least one option with a positive base-case NPV and a margin for error; Sponsor, team and adviser budget committed.	Implement quick wins; fix data gaps; re-screen in six to twelve months or when tariffs, load or eligibility change.
G2 Release the RFP	Day 42	Structure chosen and recorded, with reasons; Data room complete enough that bidders need not price contingencies; Evaluation criteria and weights fixed	Hold the RFP until the data room and weights are ready; a late, clean

		and sealed before bids; Draft term sheet approved by counsel; At least three qualified bidders confirmed through the RFI.	tender beats an early, contested one.
G3 Select the preferred bidder	Day 80	At least two compliant, normalised bids; Preferred bid beats the baseline at P50 and remains acceptable in the Chapter 8 and 9 downside cases; No unresolved red flag on a critical clause (Chapter 10 scorecard); Counterparty credit, licences and references verified; Reserve bidder retained in writing.	Run a second BAFO round with the top two, re-scope, or stop. Do not lower the gates to fit a bid.
G4 Approve and sign	Day 86	Board resolution and named signatories; Written tax and accounting views (for a VPPA, derivative accounting addressed); Legal sign-off on the final text; conditions precedent listed; Offer still within validity; price and dates unchanged; Ready-to-sign checklist complete.	Extend the offer validity in writing, fix the open item, or return to the reserve bidder.

Criteria are the author's recommended minimum. Add your own, such as a renewable-share target or a maximum term, before Day 1, not after the bids arrive.

13.6 Quick wins: start before the PPA

Some savings need no tender at all, and they make every later option easier to judge. Run them in parallel with Phase 1. Each is a reason to read your own bill closely, which Chapter 1 recommended.

Tariff and contract optimisation

Check that each meter is on the right rate class and voltage level, and that the contracted demand still fits the load. On the Meralco system, General Power customers pay per-kW transmission, ancillary service and distribution charges. In October 2026 these totalled ₱606.08 per kW a month for secondary customers and ₱588.86 per kW for customers at 13.8 kV and below, before VAT.[4] If your actual demand is below your guaranteed minimum billing demand (GMBD), you are billed on the GMBD. Meralco computes it as 70% of contracted capacity and allows General Power customers to modify the contract and the GMBD once a year.[5] A site that has shed load since it was connected may be paying for capacity it no longer uses. Check, too, whether you qualify for a special discount: Meralco's schedule grants one to private hospitals certified by the Department of Health and to schools certified by the Department of Education.[4]

Power factor

Your business bill reports a power factor, a measure of how much of the current you draw does useful work.[6] Meralco's October 2026 schedule lists a power factor adjustment for qualified General Power customers, expressed as a percentage of the distribution charge: a penalty of 1.4% and a discount of 0.7%, under an ERC order of 2011.[4] The schedule does not show on its face how the percentage scales with your measured power factor, so ask Meralco for the clause and the reference value that applies to your account. Then have an engineer check whether capacitor banks are working and correctly sized. Power factor

correction is well-established technology, and a failed or undersized capacitor bank is one avoidable cause of a poor reading.



Figure 13.4. Checking a capacitor bank with a power quality analyser: a low-cost first step before any PPA. (AI-generated illustrative image; generic facility, not a real person or site.)

Demand management

Because demand charges are billed per kW of peak, a short spike costs as much as a long one. Staggering the start-up of large motors, chillers or compressors, and moving flexible loads such as pumping, charging or batch processes out of the peak, can lower the billed demand. As illustrative arithmetic, a sustained 50 kW reduction in a 13.8 kV customer's monthly peak would save about ₱29,400 a month at the October 2026 per-kW charges, before VAT, provided the billed demand stays above the GMBD. Interval data from Phase 1 show where the spikes are.

Energy efficiency as the first step

Every kWh you do not use is one you need not contract for, and a smaller, flatter load makes a PPA easier to size. Efficiency is also a legal obligation for many readers. Under the Energy Efficiency and Conservation Act (Republic Act No. 11285), Type 1 designated establishments use 500,000 to 4,000,000 kWh a year, and Type 2 more than 4,000,000 kWh; the thresholds count all forms of energy, not only electricity. Designated establishments must, among other things, keep monthly energy records, submit annual reports to the DOE, conduct an energy audit once every three years through a certified energy auditor or an accredited energy service company, and employ a certified energy conservation officer (Type 1) or a certified energy manager (Type 2).[7] A company using 100,000 kWh of electricity a month uses 1.2 million kWh a year and is therefore at least a Type 1 designated establishment. Its most recent audit is a ready-made input to the baseline.

Table 13.4. Quick wins to run during Days 1–30

Quick win	What to check	Basis	Owner
Rate class and voltage	Each meter on the right class; whether a higher supply voltage is worth it	Per-kW and per-kWh charges differ by voltage level[4]	Finance
Contracted demand and GMBD	Actual demand versus GMBD over twelve months	GMBD = 70% of contracted capacity; General Power may modify once a year[5]	Facilities
Power factor	Bill reading; capacitor bank condition and sizing	Meralco adjustment: 1.4% penalty, 0.7% discount, % of distribution charge[4]	Facilities
Demand peaks	Spikes in interval data; start-up sequencing; flexible loads	Demand charges billed per kW of peak[4]	Facilities
Energy efficiency	Last energy audit; lighting, cooling, compressed air, motors	RA 11285 duties for designated establishments[7]	Facilities
Special discounts	Eligibility of private hospitals and schools	Meralco schedule, special discount footnote[4]	Finance

Other DUs have their own schedules; check yours. The ₱29,400 example in the text is illustrative arithmetic, not a forecast.

13.7 The board approval paper

A board paper for a twenty-year contract should be short, honest about risk and easy to check. Twelve pages and a one-page summary are enough for most decisions. Table 13.5 gives an outline; each section draws on a chapter of this book.

Table 13.5. Board approval paper: template outline

Section	Contents	Chapter
1. Decision requested	The resolution in one paragraph: counterparty, structure, term, price basis, maximum commitment and authorised signatories	13
2. Executive summary	One page: objective, recommendation, NPV and range, main risks, why now	8, 12
3. Current position	Bill analysis, baseline cost forecast, eligibility, quick wins done	1, 5, 8
4. Options considered	Structures screened and why most were set aside	3–7
5. Tender process	Bidders, gates, sealed weights, normalisation, BAFO, ranking	11
6. Recommended offer	Price, escalation, term, output guarantee, termination schedule, security	7, 10
7. Financial case	NPV, IRR, payback and levelised cost against the baseline; sensitivity and Monte Carlo ranges	8
8. Risk register	Top risks, owners, allocation in the contract, residual exposure	9
9. Tax, accounting and legal	Written views: tax treatment, lease or derivative accounting, counsel's sign-off	3, 6, 10
10. Implementation	Post-signing timeline, switching notices or construction plan, delivery owner, reporting	13
Appendices	Evaluation model, scorecards, term sheet, risk register, adviser reports	8–11

Keep the decision requested on the first page. State the downside cases as plainly as the base case.

13.8 After signing: realistic timelines to supply or COD

The 90 days end at signing. The savings begin later, and the board should know when.

Offsite supply through a RES

For an initial switch, the rules require your DU to receive your notice of intention to switch at least ninety calendar days before the intended switch date.[2] Inside that window, the metering service provider must install or upgrade the interval meter, you must provide your metering services agreement to the Central Registration Body (CRB) and to the RES at least thirty days before the switch, and the RES must complete its filings and the wheeling agreement with the DU. The switch cannot be requested before the five-business-day cooling-off period has ended.[2] If the notice goes in on the day of signing, first supply comes at the earliest about three months later, and in practice often three to four months later once billing cycles are aligned. If counsel advised sending the notice earlier, during the evaluation, the switch can follow sooner after signing. Retail aggregation groups follow a similar ninety-day notice through their supplier.[2]

Real deals show both speeds. First Gen reported that its renewable supply agreements with a hospital group, signed in December 2025, took effect in February 2026.[8] Treat that as one reported case, not a norm.

Onsite rooftop PPA

After signing, the developer satisfies its conditions precedent and financing, completes the detailed design and structural check, obtains local permits and notifies or applies to the DU under the distributed energy resource rules, procures and installs the equipment, and tests and commissions the system.[9] A zero-export system that qualifies under the DOE's 2026 circular is exempt from the ERC Certificate of Compliance, which removes one step.[10] The author's planning range is about four to nine months from signing to commercial operation (COD) for a rooftop system of a few hundred kWp to about 1.5 MWp. As a reported example, a 1,587 kWp ground-mounted system in an industrial estate was announced in September 2026 with commercial operation targeted for the first quarter of 2027.[11] Typhoon season, roof repairs and equipment lead times are the usual reasons for slippage.

Virtual PPA

A VPPA settles against the market price of a real plant's output, so settlement starts when the plant operates. Under the DOE's guidelines a VPPA has a minimum term of ten years.[12] If the plant is already operating, settlement can start soon after the conditions precedent. If it is still to be built, plan on a year or more; this chapter's planning window is about ten to twenty-two months. Figure 13.5 summarises the three tracks.

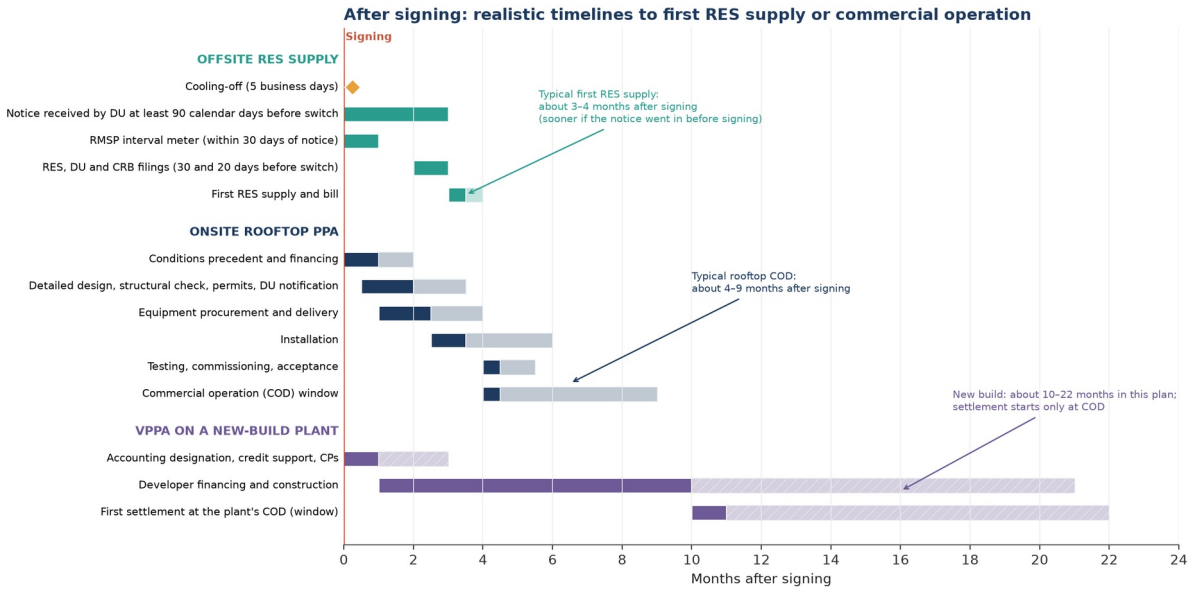


Figure 13.5. Post-signing timelines to first RES supply, onsite COD or first VPPA settlement. RES steps follow the minimum lead times in the ERC Omnibus Rules; onsite and VPPA ranges are the author's planning judgement. Prepared by the author.

Table 13.6. Realistic post-signing timelines

Route	Main steps after signing	Planning range
Offsite RES supply	Cooling-off (5 business days); DU receives notice at least 90 calendar days before switch; RMSP meter; MSA to CRB and RES at least 30 days before; RES filings and wheeling agreement; CRB approval; switch	About 3–4 months to first supply if notice is sent at signing; sooner if sent earlier
Onsite rooftop PPA	Conditions precedent and financing; design, structural check and permits; DU notification or interconnection; procurement; installation; testing and acceptance; COD	About 4–9 months to COD
VPPA, operating plant	Accounting designation, credit support, conditions precedent	Settlement within a few months
VPPA, new-build plant	As above, plus developer financing and construction	About 10–22 months to first settlement

Regulatory lead times from ERC Resolution No. 13, Series of 2024.[2] Other ranges are the author's planning judgement and are not statistics.



Figure 13.6. Rooftop installation begins only after design, structural checks and permits are complete. (AI-generated illustrative image; generic industrial site, not a real project.)

13.9 Common delays and how to avoid them

Most delays are predictable. Table 13.7 lists the usual ones and the simplest remedy for each.

Table 13.7. Common delays and how to avoid them

Delay	Why it happens	How to avoid it
Data arrive late	Interval data requested late or from the wrong source	Send DU and meter requests on Day 1; install a logger if needed
No decision-maker	Sponsor too junior or too busy	Name a sponsor who can decide within a week; fix gate dates in the charter
Scope keeps changing	New sites or structures added mid-tender	Freeze scope at Gate 2; add later sites as an option in the contract
Bidders price contingencies	Incomplete data room; no structural report	Complete the data room before Gate 2; commission the roof assessment early
Weights argued after bids	Criteria not fixed in advance	Seal the evaluation model and weights before Day 63
Tax or audit objections late	Accounting reviewed after the choice	Obtain written views in Weeks 7–8; for a VPPA, start in Week 5
Board cycle missed	Board meets quarterly	Book the meeting on Day 1 or agree a special meeting or a written resolution
Offer validity lapses	Long negotiation	Ask for 60–90 days' validity in the RFP; track the expiry date
Switch date slips	Notice sent late or outstanding DU balance	Map the switching steps in Week 8; clear DU balances; ask counsel about notice timing
Construction slips	Permits, roof repairs, weather, equipment lead times	Put permit and COD milestones, and delay damages, in the contract

Remedies are the author's recommendations. Before an initial switch, outstanding balances with the DU must be settled.[2]

13.10 Ready to sign: the final checklist

Before anyone signs, the project lead should confirm each item below in writing. Any 'no' is a reason to pause, not to sign and fix it later.

1. The board resolution approves this counterparty, structure, term, price basis and maximum commitment, and names the signatories.
2. The final contract text matches the term sheet as negotiated, and counsel has signed off on it.
3. Every clause scored red in Chapter 10 is resolved or expressly accepted by the board.
4. The financial case has been re-run on the final price and terms and still beats the baseline in the base case and remains acceptable in the downside cases.
5. Written tax and accounting views are on file, including the lease or derivative treatment where relevant.
6. The counterparty's licences, corporate approvals and authority to sign are verified; a RES holds a current ERC licence.
7. Credit support, parent guarantees and insurance certificates are in the agreed form.
8. The conditions precedent, long-stop dates and termination payments are listed and understood.
9. For RES supply: the switching plan, notice date, metering arrangements and cooling-off period are mapped; DU balances are clear.
10. For onsite supply: the roof or land rights, structural report, permit plan and COD milestones are agreed.
11. The offer is still within its validity, at the approved price and dates.
12. A delivery owner, a reporting format and the first review date are named.

13.11 The companion 90-day project plan

The companion workbook Chapter13_90Day_Plan.xlsx holds the plan of this chapter in editable form. The Plan sheet lists every task with its phase, start and end day, owner, deliverable and status, and draws a Gantt chart that redraws when you change the start date or a duration. The RACI sheet reproduces Table 13.2 and checks that every activity has exactly one A. The Gates sheet turns Table 13.3 into a checklist that returns GO only when every criterion is ticked. The Weekly sheet lists the deliverables of Table 13.1 with due dates, and the Ready to sign sheet holds the checklist of Section 13.10. Replace the example start date with your own Day 1.

13.12 The book in one page

The thirteen chapters form one decision path. Understand the bill and the contracts (Chapters 1 and 2); choose the structure (3 to 6); price and model it (7 and 8); protect yourself (9 and 10); buy competitively and learn from cases (11 and 12); then act (13).

Figure 13.7 puts the path on one page, and Table 13.8 links each chapter to the 90-day plan.

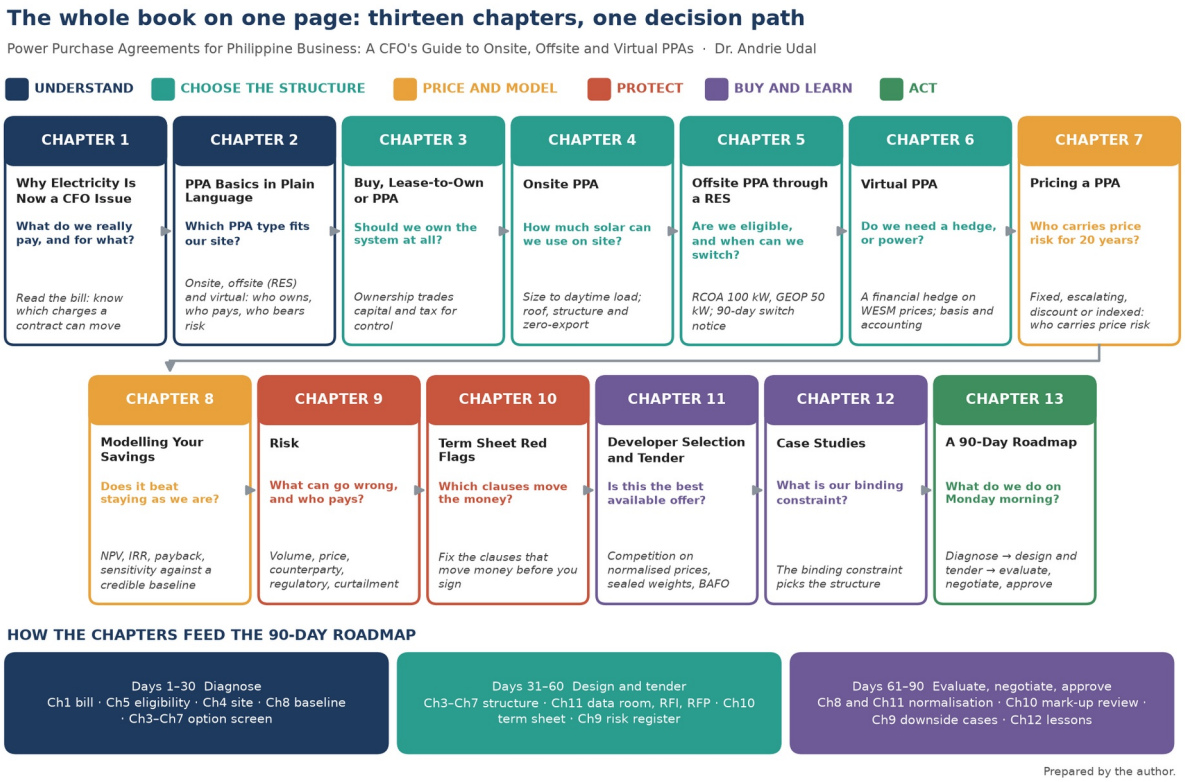


Figure 13.7. The whole book on one page: the question each chapter answers, its core idea, and how the chapters feed the three phases of the 90-day roadmap. Prepared by the author.

Table 13.8. How every chapter feeds the 90-day roadmap

Chapter	Core idea	Used in
1 Why Electricity Is Now a CFO Issue	Know which charges on the bill a contract can move	Days 1–30: bill analysis, quick wins
2 PPA Basics in Plain Language	Onsite, offsite and virtual PPAs allocate ownership and risk differently	Days 1–30: option screen
3 Buy, Lease-to-Own or PPA	Ownership trades capital and tax for control	Days 1–30 and 31–60: screen and structure
4 Onsite PPA	Size to daytime load; roof, structure and export rules decide the fit	Days 1–30: site walk; post-signing COD
5 Offsite PPA through a RES	Eligibility thresholds and the regulated switching process	Days 1–30: eligibility; post-signing switch
6 Virtual PPA	A financial hedge on market prices, with basis and accounting risk	Days 31–60: structure, accounting
7 Pricing a PPA	The price formula decides who carries price risk	Days 31–90: term sheet, evaluation
8 Modelling Your Savings	NPV, IRR, payback and sensitivity against the baseline	Days 15–30 baseline; Days 61–90 evaluation
9 Risk	Register, score and allocate every major risk	Days 38–52 register; Gate 3 downside test
10 Term Sheet Red Flags	Fix the clauses that move money before signing	Days 35–42 term sheet; Days 66–90 negotiation
11 Developer Selection and Tender	Competition on normalised prices with sealed weights	Days 31–80: RFI, RFP, evaluation, BAFO

12 Case Studies	The binding constraint picks the structure	Gate 1 and Gate 3 judgement
13 A 90-Day Roadmap	A timetable with gates, roles and deliverables	The whole programme

Chapter 11's full title is 'Choosing a Developer and Running a Competitive Tender'; Chapter 12's is 'Case Studies: A Hospital, a Factory and a Mall'.

Three ideas run through every chapter. Measure against the baseline: a PPA is worth only what it saves against staying as you are. Read the contract, not the headline: terms, risk allocation and normalisation change rankings. Keep the decision in your own hands: competition, sealed criteria and decision gates protect the buyer far better than trust in any single seller.

Key takeaways

- Ninety days from first idea to signing is achievable for a prepared buyer with clean data, one or two sites, a decisive sponsor and a familiar structure; many buyers will need about six months.
- Run the work in three phases, Diagnose, Design and tender, Evaluate, negotiate and approve, with a formal go / no-go gate between them.
- Check eligibility per meter early: RCOA at 100 kW and GEOP at 50 kW of average monthly peak demand.
- Fix the evaluation weights and complete the data room before the RFP goes out.
- Quick wins, from tariff and demand checks to power factor and efficiency, start on Day 1 and need no tender.
- Signing is not supply: an initial RES switch needs a notice received by the DU at least 90 calendar days ahead, and onsite systems typically reach COD several months after signing.
- One accountable owner per activity, one deliverable per week and a short, candid board paper keep the programme on time.

A closing message from the author

I wrote this book because electricity has become a significant and increasingly controllable cost for many Philippine businesses, and because the choices now open to buyers are wider than they have ever been. The ERC estimated in October 2026 that about 15,183 customers were eligible for the competitive retail market as of August 2026, and that about 12,491 eligible customers had not yet switched.[13] Onsite solar, supply from a RES and VPPAs are no longer novelties. They are ordinary commercial contracts that deserve ordinary financial discipline.

That discipline is the thread of this book. Start from your own bill and your own load. Build a baseline you trust. Compare structures on the same basis. Price the risks you keep.

Read every clause that moves money. Let competition, not salesmanship, set the price. And decide at gates, with the facts in front of you.

No book can replace advice on your own site, contracts and taxes. Rules, tariffs and market prices change, and every figure in this book is dated in its notes for that reason. Before you sign, check the current rules, and engage qualified Philippine counsel, your tax adviser and your auditor.

Readers who want to use the method can download the companion workbooks and templates referred to in this book, the savings model, risk register, term-sheet scorecard, bid evaluation matrix, RFP template and the 90-day plan, at https://solarmd.net/book1/support, where updates, errata and help are also posted. I hope they help you make a good decision, on your own terms.

Dr. Andrie Udal, PhD in Mineral and Energy Economics

The appendices follow.

Notes

All sources were accessed on 17–18 October 2026 (Asia/Manila). Tariffs, thresholds and DOE and ERC rules change; check the current text before relying on it. Quotations from statutes, rules and tariff schedules were checked against the sources cited. Task durations, gate criteria and post-signing planning ranges in this chapter are the author's judgement for a prepared single-site buyer, not market statistics.

1. IEMOP, 'RCOA Threshold Bulletin No. 2026-01', 5 May 2026, implementing ERC Resolution No. 22, Series of 2025, https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (100 kW threshold effective 26 June 2026); IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (GEOP threshold of 50 kW). As cited in Chapters 2, 3, 5 and 12.
2. Energy Regulatory Commission (ERC), Resolution No. 13, Series of 2024, 'Omnibus Rules for Customer Choice Programs in the Retail Market', Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ== (Module D5 bill notice of eligibility; E1.2 conditions for switching, including expiry of the cooling-off period; E2.1(a) notice of intention to switch received by the NSP at least ninety calendar days before the intended switch date for initial switches; E2.1(b) retail supply contract and metering services agreement, with a copy of the signed MSA to the CRB and the Retail Supplier at least thirty calendar days before the switch date; E2.2 settlement of outstanding balances with the NSP for initial switches; I1.3 ninety-day notice for aggregated groups; L13 five-business-day cooling-off period, which may be waived). Other minimum lead times as summarised in Chapter 5. As cited in Chapters 2, 5, 9, 10 and 11.
3. KPMG, 'Nature-dependent electricity contracts', https://kpmg.com/xx/en/our-insights/ifrg/2024/renewable-energy-contracts-ifrs7-ifrs9.html ('Virtual PPAs and PPAs that do not meet the own-use exemption are accounted for as derivatives and measured at FVTPL'); IFRS Foundation, 'IASB updates IFRS Accounting Standards for nature-dependent electricity contracts', 18 December 2024, https://www.ifrs.org/news-and-events/news/2024/12/iasb-updates-accounting-standards-nature-dependent-electricity-contracts/ (amendments effective for annual periods beginning on or after 1 January 2026). As cited in Chapters 6 and 12.
4. Manila Electric Company (Meralco), 'Summary Schedule of Rates, Effective October 2026 Billing', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_rate_schedule.pdf (General Power

secondary: transmission ₱177.19/kW, ancillary service ₱196.69/kW, distribution ₱232.20/kW; GP 13.8 kV and below: transmission ₱194.29/kW, ancillary service ₱215.72/kW, distribution ₱178.85/kW; footnote 17 and columns 'Power Factor Adj': penalty 1.4% and discount 0.7% for General Power classes, 'for qualified General Power customers, % of Distribution Charge (in accordance with ERC Order on Case No. 2011-088RC dated October 6, 2011)'; footnote 23 special discount for private hospitals certified by the Department of Health and educational institutions certified by the Department of Education; rates VAT-exclusive). Per-kW totals (₱606.08 and ₱588.86) and the ₱29,400 example (50 kW × ₱588.86) are the author's arithmetic.

5. Meralco, 'Start or Modify Service' (FAQ), https://company.meralco.com.ph/faq-about/start-or-modify-service ('GMBD is computed by taking 70% of your Contracted Capacity … For General Power customers, you can modify your contract and GMBD once a year'; GMBD used to compute demand and distribution charges when actual demand is lower than the guaranteed minimum). Accessed 18 October 2026.

6. Meralco, 'How to Read Your Business Bill', https://corporatepartners.meralco.com.ph/billings-and-payments/uyb-2021/how-to-read-your-business-bill (power factor shown on the bill as 'a measure of how efficiently power was used'; actual demand compared with minimum billing demand). Accessed 18 October 2026.

7. Republic Act No. 11285, 'Energy Efficiency and Conservation Act', Sections 19 and 20, https://lawphil.net/statutes/repacts/ra2019/ra_11285_2019.html and https://ldr.senate.gov.ph/legislative-issuance/republic-act-no-11285 (Type 1: 500,000 to 4,000,000 kWh a year; Type 2: more than 4,000,000 kWh; obligations including monthly records, an annual report to the DOE by 15 April, an energy audit once every three years by a certified energy auditor or accredited ESCO, and a CECO for Type 1 or a CEM for Type 2); DOE, Department Circular No. DC2019-11-0014 (implementing rules), Section 63, https://legacy.doe.gov.ph/laws-and-issuances/department-circular-no-dc2019-11-0014 (thresholds based on aggregate consumption of all forms of energy); DOE, 'Memorandum Circular No. MC2020-05-0001 FAQs', https://legacy.doe.gov.ph/energy-efficiency/memorandum-circular-no-mc2020-05-0001-faqs (thresholds expressed in kWh equivalent). Accessed 18 October 2026.

8. Power Philippines, 'First Gen powers 13 Mount Grace hospitals with renewable energy', 19 March 2026, https://powerphilippines.com/first-gen-powers-13-mount-grace-hospitals-with-renewable-energy/ (agreements signed in December 2025, effective February 2026, across RAP, GEOP and RCOA). As cited in Chapter 12. The article does not say when switching notices were given.

9. ERC, Resolution No. 11, Series of 2022, 'Rules Governing Distributed Energy Resources (DER)', as summarised by Ocampo & Suralvo Law Offices, https://www.ocamposuralvo.com/updates/erc-issued-distributed-energy-resources-rules.html (interconnection standards). As cited in Chapters 9 and 12.

10. Department of Energy (DOE), Department Circular No. DC2026-08-0017, 'Policy Guidelines for Self-Generating Facility Zero-Export Solar Systems and Micro-Solar Systems for Own-Use', https://prod-cms.doe.gov.ph/documents/d/guest/dc2026-08-0017-pdf (exemption from the ERC Certificate of Compliance for qualifying zero-export systems). As cited in Chapters 4 and 12.

11. Power Philippines, 'Advent Upgrade Solar, Proterial ink 20-year deal for LIMA solar project', 4 September 2026, https://powerphilippines.com/advent-upgrade-solar-proterial-ink-20-year-deal-for-lima-solar-project/; AboitizPower, 'Advent Upgrade Solar Inc. and Proterial Philippines sign 20-year PPA for first solar PV system in LIMA Estate', 9 September 2026, https://aboitizeyes.aboitiz.com/power/advent-upgrade-solar-inc-and-proterial-philippines-sign-20-year-ppa-for-first-solar-pv-system-in-lima-estate/ (1,587.20 kWp ground-mounted; commercial operation targeted for the first quarter of 2027). As cited in Chapter 12.

12. DOE, Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', https://doe.gov.ph/circular-no-dc-2025-10-0024 (Sections 7.2–7.8, including a minimum ten-year term). As cited in Chapters 2, 6, 9 and 12.

13. BusinessWorld, 'ERC says 11,500 businesses can tap new 100-kW power market', 8 October 2026, https://bworldonline.com/corporate/2026/10/08/785541/erc-says-11500-businesses-can-tap-new-100-kw-power-market/ (ERC figures as of August 2026: about 15,183 eligible customers; about 12,491 eligible customers not yet switched). As cited in Chapters 5 and 12.

Figure and image credits

Figures 13.1, 13.3, 13.5 and 13.7 and Tables 13.1 to 13.8 were prepared by the author (build/charts_ch13.py and build/plan_ch13.py). They use no market data except the regulatory lead times, thresholds and tariff items cited in the notes; durations and planning ranges are the author's judgement. Figures 13.2, 13.4 and 13.6 are AI-generated illustrative images of generic scenes; they do not depict real people, buildings or sites.

Disclaimer. This chapter is for general information and does not constitute legal, tax, accounting, insurance, engineering or investment advice. The 90-day plan is a template; real timelines depend on your data, sites, counterparties, board calendar, permits and the rules in force. Engage qualified Philippine counsel to review every PPA, RES supply contract or VPPA, and consult your auditor, tax adviser and insurance broker, before signing.

APPENDICES

Appendices A to G

Glossary, checklist, templates guide, regulatory reference, assumptions, bibliography and index of figures and tables

---

From: Power Purchase Agreements for Philippine Business: A CFO's Guide to Onsite, Offsite and Virtual PPAs

Dr. Andrie Udal, PhD in Mineral and Energy Economics · SolarMD Power Consulting and Engineering Services · solarmd.net

In these appendices: A. Glossary · B. PPA Evaluation Checklist · C. Templates Guide · D. Regulatory Reference · E. Assumptions and Data Sources · F. Bibliography · G. Index of Figures and Tables

Additional support for this book

Online: https://solarmd.net/book1/support

Downloads: the six companion files described in Appendix C.

Updates and errata: corrections and changes to rules, tariffs and data after publication.

Help: questions about the book and its templates.

How to use these appendices

A: Glossary. Plain-language definitions of the terms and acronyms used in the book, with the chapters where each appears.

B: PPA Evaluation Checklist. The chapter checklists in one place, ordered from preparation to signing, with separate sections for onsite, offsite (RES) and virtual PPAs.

C: Templates Guide. What each companion file does, what to enter, what it produces, and a walk-through of the book's example site. All files are available at https://solarmd.net/book1/support.

D: Regulatory Reference. Every law, regulation and standard the book relies on, with a status check made on 18 October 2026.

E: Assumptions and Data Sources. The illustrative assumptions behind the worked examples and the real market data used, with dates.

F: Bibliography. Every source cited in the chapter endnotes, deduplicated and grouped.

G: Index of Figures and Tables. All figures and tables by chapter.

Chapter references: The chapter numbers in Appendices A, B, D and F were generated from the chapter texts and endnotes. A reference means the item is used or cited in that chapter, not necessarily that it is discussed at length.

Appendix A. Glossary

This glossary explains the terms and acronyms used in Chapters 1 to 13. Definitions are deliberately short and practical. Where a term has a legal definition, for example in ERC Resolution No. 13, Series of 2024 or DOE Department Circular No. DC2025-10-0024, the legal text governs. The last column lists the chapters in which the term appears; 'All' means every chapter. Thresholds, rates and dates are as checked on 18 October 2026.

Table A.1. Glossary of terms and acronyms

Term	Meaning	Ch.
Administered price	A price set by a formula instead of by bidding, used by the market operator when the ERC suspends the spot market. In April 2026 WESM prices were set on a modified administered price, with negative values set to zero.	6, 10
Aggregation; Retail Aggregation Program (RAP)	Pooling the demand of separately metered end-users so that the group meets an eligibility threshold. Under RAP the group needs an average monthly peak demand of at least 100 kW; GEOP allows aggregation within contiguous areas.	1, 2, 4, 5, 12, 13
Ancillary service charge	A per-kW charge for the reserves NGCP buys to keep the grid stable. It stays on the bill whichever supplier you use.	1, 5, 8, 9, 12, 13
Avoided cost (avoided grid cost)	The amount you stop paying the utility for each kWh that solar or another source replaces. This book uses ₱11.00 per kWh for the Meralco General Power secondary example, slightly below the ₱11.70 sum of per-kWh charges.	2–4, 7–12
BAFO (best and final offer)	A last, written round of pricing and terms requested from the top bidders after evaluation, on a common basis.	11–13
Baseline (counterfactual)	What you would pay for electricity over the model period if you did nothing; every option is measured against it.	3, 8, 13
Basis risk	The risk that the price at the plant's location differs from the price where you consume, so a hedge settled at one point does not fully offset costs at another.	6, 9, 12
Behind the meter	Generation connected on the customer's side of the utility's revenue meter, so its output is used on site before any grid supply.	1, 2, 4, 9
BESS (battery energy storage system)	Batteries with their inverters and controls, used to shift solar output to other hours, shave demand peaks or provide back-up power.	2, 4, 9, 12
Bilateral Line Loss and Congestion Cost (line rental)	A settlement adjustment for price differences between where power is generated and where it is delivered, caused by losses and congestion. Check whether a RES price includes it.	5, 9, 10
BIR	Bureau of Internal Revenue, which issues revenue regulations and memorandum circulars on tax treatment.	3, 6, 8, 12
Blended price	A RES price that fixes part of the volume and indexes the rest to a market price, for example 60% fixed and 40% indexed.	1, 5, 7
BOI	Board of Investments, which registers projects for incentives under the Strategic Investment Priority Plan and CREATE MORE.	3, 7, 11
BSP	Bangko Sentral ng Pilipinas, the central bank. Its policy rate (target reverse repurchase rate) is a starting point for discount rates.	2, 6–9
Buyout	The right to buy an onsite system from the developer during or at the end of the term, at a scheduled price or at fair market value.	2–4, 7–10, 12
Capacity factor; specific yield	Annual output divided by the output at full rated power all year. For solar it is often quoted as kWh per kWp per year: about 1,328 kWh/kWp	7, 8

Term	Meaning	Ch.
	(about 15% capacity factor) for Metro Manila in PVGIS.	
Capex	Capital expenditure: the up-front cost of buying and installing a system.	2, 3, 7, 8, 12
Captive customer	An end-user still supplied by its distribution utility at the regulated tariff.	1, 5, 6
Central Registration Body (CRB)	The IEMOP function that registers customers and processes switches between suppliers.	2, 5, 13
Certificate of Compliance (COC)	The ERC's authorisation to operate a generation facility, including many customer-site systems. Qualifying zero-export systems of households, clinics and hospitals are exempt under DOE DC2026-08-0017.	4, 11–13
Change in law	A clause that allocates the cost of new laws, regulations, taxes or regulatory decisions made after signing.	1–10, 12
COD (commercial operation date)	The day a plant officially starts delivering under the contract.	1, 2, 5–7, 10–13
Collar	A floor and a ceiling on an indexed or discount-to-grid price. The buyer gives up savings below the floor in exchange for protection above the ceiling.	5–7
Conditional sale	A lease that the tax rules treat as a purchase, for example where ownership passes automatically once the rentals are paid. Payments are then treated as purchase price.	3, 8, 12
Conditions precedent (CPs)	Events that must happen before contract obligations take effect, such as permits, financing or board approval.	6, 10, 11, 13
Contestable customer	An end-user that is eligible to choose its supplier under RCOA, or has already switched to a RES.	1–6, 8, 9, 11
Contract for differences (CfD)	A settlement in which one party pays the other the difference between an agreed strike price and a market reference price, multiplied by a volume. It is the financial core of a virtual PPA.	2, 6
Cooling-off period	Five business days after signing a retail supply contract during which the customer may withdraw. It can be waived, and switching cannot complete until it has expired.	2, 5, 6, 9, 10, 12, 13
CREATE and CREATE MORE	Republic Act No. 11534 (2021) and Republic Act No. 12066 (2024), which set the 25% regular corporate income tax rate (20% for qualifying smaller firms) and the incentive regimes for registered enterprises.	3, 6, 12
Credit support	Security for payment or performance, such as a deposit, letter of credit or parent guarantee. It should run both ways.	2, 4–13
CREM	Competitive Retail Electricity Market: the contestable segment of the retail market, open to end-users of at least 100 kW from 26 June 2026.	5
Curtailment	Output that a plant could have produced but did not, because export was blocked, the grid was constrained or the load was too low.	4, 6–10, 12, 13
Data room	A controlled set of documents given to every bidder: bills, interval data, drawings, structural reports, photographs, site rules and title.	11–13
Decision gate	A formal go / no-go point in the 90-day roadmap (G1 to G4) at which the sponsor or board commits further time and money only if set criteria are met.	5, 13
Deemed energy (deemed generation)	Output that the plant could have produced but did not, for a reason the contract puts on the buyer, and for which the buyer pays.	4, 7, 9–12
Degradation	The gradual fall in a solar module's output over time. The book uses the median field value of 0.5% a year.	3, 4, 7–12
DER (distributed energy resources)	Small generation or storage connected to the distribution network. ERC Resolution No. 11, Series of 2022, sets the rules.	2, 4, 9, 11
Discount rate	The rate used to convert future cash flows into today's money. It should reflect your cost of capital and the risk of the cash flows; the examples use 10% after tax.	3, 4, 7, 8, 11, 12
Discount to grid	A PPA price set as a percentage below a defined utility rate, often with a	2, 4, 7, 10,

Term	Meaning	Ch.
	floor.	11
Distribution charge	The utility's charge for using its local network, billed per kWh and per kW. It stays with the DU after a switch to a RES.	5, 13
DOE	Department of Energy, which sets energy policy and issues department circulars such as the GEOP, VPPA and zero-export solar rules.	1–7, 9–13
DU (distribution utility)	The company or electric cooperative that owns the local network and your revenue meter, such as Meralco.	2, 4–13
DWSA (distribution wheeling service agreement)	The agreement that lets a RES use the DU's network to serve you.	1, 2, 5, 13
Early termination payment	The amount one party pays the other if the contract ends before its term. It should follow a declining, formula-based schedule.	2–6, 8–10, 12, 13
Enhanced deductions regime (EDR)	A CREATE MORE incentive regime for registered enterprises: a 20% income tax rate and additional deductions, including 100% extra on power expense used in the registered activity.	3, 12
EPC	Engineering, procurement and construction: the contract or contractor that designs and builds the plant.	3, 4, 7, 11, 12
EPIRA	Electric Power Industry Reform Act of 2001 (Republic Act No. 9136), the law that restructured the industry and created retail competition.	2, 4–6, 11
ERC	Energy Regulatory Commission, which licenses RES, sets the retail market rules and approves regulated rates.	All
Escalator	A contract rule that raises the price each year, by a fixed percentage or by an index such as the consumer price index (CPI).	1–4, 6–13
ESG	Environmental, social and governance: the sustainability topics companies report on, including electricity use and emissions.	1, 5, 6, 9, 11, 12
Expected loss (PD × LGD × EAD)	Probability of default × loss given default × exposure at default: a way to put a peso value on counterparty risk.	9
Fair market value (FMV)	An appraised value used in some buyout clauses. Its definition can change the buyout price several-fold.	10, 12
FIT-All	Feed-in tariff allowance: a uniform per-kWh charge on the bill that funds feed-in tariffs for eligible renewable plants.	1, 4, 5, 8
Force majeure	Events beyond a party's control, such as typhoons, that excuse performance for a time. The clause sets payments, term extension and exit rights during long outages.	4, 8–10, 12
FVTPL	Fair value through profit or loss: derivative accounting in which changes in a contract's value go through the income statement each period.	6
GEA / GEAR	Green Energy Auction, the DOE's auction of long-term supply contracts for new renewable capacity; GEAR is the ERC-set Green Energy Auction Reserve price, the ceiling for bids.	7
Generation charge	The part of the bill that pays for the energy itself. It was ₱10.2005 per kWh on Meralco in October 2026, and it is the part a RES contract replaces.	1, 4–9, 12
GEOP (Green Energy Option Program)	The DOE programme that lets end-users of at least 50 kW average monthly peak demand buy renewable energy from an RE Supplier (Revised GEOP Rules, effective 21 February 2026).	1–3, 5, 6, 9, 11–13
GHG Protocol Scope 2	The accounting standard for emissions from purchased electricity. It requires location-based and market-based figures; contractual instruments such as RECs count only in the market-based figure.	1, 6, 9, 10
GMBD (guaranteed minimum billing demand)	The demand Meralco bills when actual demand is lower; computed as 70% of contracted capacity and adjustable once a year for General Power customers.	13
Hedge accounting	Accounting that matches the timing of gains and losses on a hedging contract, such as a VPPA, with the item it hedges, reducing profit	2, 6

Term	Meaning	Ch.
	volatility. It requires designation and documentation.	
HVDC link and price separation	The high-voltage direct-current link between Luzon and the Visayas. When it is congested, prices on the two grids separate, creating basis risk.	5–7, 9
IEMOP	Independent Electricity Market Operator of the Philippines: operator of WESM, Central Registration Body and RE Registrar.	1, 2, 5, 6, 9, 12
IFRS / PFRS	International Financial Reporting Standards and their Philippine adoption (PFRS). PFRS 16 covers leases; PFRS 9 covers derivatives such as VPPAs.	1–4, 6, 9, 12
Interval data	Meter readings at short intervals, usually 15 minutes, showing when you use power. Essential for sizing solar and pricing time-of-use offers.	4, 5, 8–13
IPP (independent power producer)	A generator not owned by a utility.	1, 2
IRR (internal rate of return)	The discount rate at which a project's NPV equals zero. It exists only where there is an upfront investment; the incremental IRR compares buying with a PPA.	3, 8, 13
kW, kWh, kWp, MW, MWh	kW measures demand (power at a moment); kWh measures energy over time; kWp is the rated output of solar modules under standard test conditions. One MW is 1,000 kW and one MWh is 1,000 kWh.	All
LCB (levelised cost to the buyer)	The constant price per kWh with the same present value as everything you will pay for an option, including costs the bid leaves with you.	7, 8, 11–13
LCOE (levelised cost of electricity)	The constant price per kWh at which a project's discounted revenues just equal its discounted costs, including the required return.	7
Local RES	A supplier authorised by letter-authority (rather than a RES licence) to supply retail customers, typically a distribution utility's affiliate within its franchise.	5, 7, 11
Long-stop date	The last date by which a milestone, such as COD or first supply, must be reached before the other party may terminate without penalty.	4, 6, 9, 10, 13
Monte Carlo analysis	A simulation that draws uncertain inputs many times at random to show the range of outcomes, such as P10, P50 and P90 NPVs.	8, 12, 13
MSA (metering service agreement)	The agreement for metering services with the Retail Metering Service Provider, copied to the CRB and the supplier before a switch.	5, 13
Net metering	The ERC programme for customer-site renewable systems of up to 100 kW that export surplus energy and receive credits on their bills (ERC Resolution No. 15, Series of 2025).	2, 4, 9
NGCP	National Grid Corporation of the Philippines, the transmission operator. It issues yellow and red alerts when supply margins are thin.	1, 2, 5, 9
NPV (net present value)	The value today of all future cash inflows and outflows from a decision, discounted at your discount rate. The main ranking metric in this book.	3, 4, 7, 8, 11–13
NSCP 2015	National Structural Code of the Philippines, which sets wind and seismic loads for structures, including rooftop arrays.	4, 9–11
NSP (network service provider)	The DU or other network owner that must receive the customer's notice of intention to switch.	2, 5, 10, 11, 13
O&M	Operation and maintenance: cleaning, inspection, repairs, monitoring and, often, insurance.	3, 4, 7–12
Offsite PPA	A supply contract under which power from a remote plant is delivered over the grid, in the Philippines through a RES under RCOA or an RE Supplier under GEOP.	1–7, 9–13
Offtaker	The buyer of the electricity or of its attributes; in this book, your company.	2, 6
Onsite PPA	A contract to buy, per kWh, the output of a system that a developer builds, owns and operates on your roof or land.	All
P50, P90 (and P10)	Annual output or NPV values expected to be exceeded with 50%, 90%	4, 6, 8–13

Term	Meaning	Ch.
	(and 10%) probability. P50 is the central estimate; P90 is a conservative case used by lenders.	
Pass-through	A cost that the supplier adds to your bill on top of the stated price, such as line rental or market fees. Every pass-through should be named and capped.	1, 2, 4, 5, 7, 9–12
Pay-as-produced; take-or-pay	Pay-as-produced means you pay only for energy delivered and used. Take-or-pay means you pay for a minimum quantity, or for all available output, whether or not you use it.	1–5, 7–12
Payback (simple and discounted)	The time until cumulative savings repay the initial outlay; discounted payback uses discounted savings. A liquidity check, not a measure of value.	8, 12, 13
PEMC	Philippine Electricity Market Corporation, the governance arm of WESM, which publishes retail market assessment reports.	5–7, 11
PFRS 16; right-of-use (ROU) asset	The lease standard under which a lessee records a right-of-use asset and a lease liability for most leases; some PPAs contain a lease.	3, 4
Power factor	A measure of how much of the current you draw does useful work. Meralco applies a power factor penalty or discount to qualified General Power customers.	11, 13
PPA (power purchase agreement)	A long-term contract to buy electricity, or the attributes of electricity, at an agreed price structure.	All
PSA	Two meanings in this book: a power supply agreement, the bilateral contract through which a DU buys most of its power; and the Philippine Statistics Authority, which publishes inflation data.	1, 7, 8, 10
PVGIS	Photovoltaic Geographical Information System of the European Commission Joint Research Centre, a free tool for solar yield estimates used throughout this book.	4, 6–9, 12
RACI	A matrix showing who is Responsible, Accountable, Consulted and Informed for each activity.	13
RCOA (Retail Competition and Open Access)	The EPIRA programme that lets eligible end-users choose a RES. The threshold has been an average monthly peak demand of at least 100 kW since 26 June 2026.	1–6, 9, 12, 13
RE Registrar; REM	The RE Registrar issues and transfers RECs; IEMOP has acted as RE Registrar since the Renewable Energy Market (REM) began full commercial operations on 26 December 2024.	1, 2, 5, 6, 9, 10, 12
RE Supplier	A supplier of electricity from renewable sources to end-users that opt into GEOP.	1–3, 5, 6
RE100	A global initiative of companies committed to 100% renewable electricity, with technical criteria for what counts.	1, 6, 9
REC (renewable energy certificate); Voluntary and Compliance RECs	A certificate for the renewable attributes of one MWh. Voluntary RECs support voluntary claims such as RE100; Compliance RECs are used by mandated participants for the RPS.	1, 2, 4–7, 9–12
Red-flag index	The Chapter 10 score from 0 (all green) to 100 (all red), weighting each clause by importance. Green up to 15, amber up to 30, red above; any red on a weight-5 clause makes the offer red.	9–13
Reference price	The market price against which a VPPA or indexed price is settled, such as a WESM nodal or regional average.	5, 6, 9, 10, 12
RES (Retail Electricity Supplier)	In this book RES always means Retail Electricity Supplier: an entity licensed by the ERC to sell electricity to contestable customers under RCOA.	All
Reversion	A return from a RES to DU supply. Under the Omnibus Rules it is possible only if demand falls below 25% of the threshold for six months, with ERC approval.	5

Term	Meaning	Ch.
RFI / RFP	Request for information and request for proposals: the documents used to screen the market and then to invite binding bids.	11–13
RMSP (Retail Metering Service Provider)	The entity, usually the DU, that installs the interval meter and sends consumption data to IEMOP for settlement.	5, 13
RPS (Renewable Portfolio Standards)	The obligation on DUs, electric cooperatives and RES to source a rising share of their supply from renewables, met with Compliance RECs.	2, 5, 6
RSC (Retail Supply Contract)	The contract between you and your RES or RE Supplier, with minimum contents set by the ERC Omnibus Rules.	1–3, 5, 9, 10, 13
SEC	Securities and Exchange Commission, which sets financial and sustainability reporting rules for corporations.	1, 3, 6, 9
Self-consumption; solar share	Self-consumption is the share of solar output used on site; solar share is the share of the site's total use that solar supplies.	4, 8
SGF ZESS; MSS	Self-Generating Facility Zero-Export Solar System and Micro-Solar System, the two categories of own-use solar under DOE DC2026-08-0017. An MSS is a plug-and-play system of up to 1 kW.	2, 4, 7–9, 11–13
Shape risk	The risk that a plant produces at different hours from those in which you consume, so its output is worth less than your average price.	6, 9, 12
SIR (savings-to-investment ratio)	The present value of savings divided by the investment; useful for ranking projects under a budget limit.	8
SOLR (Supplier of Last Resort)	The ERC-designated supplier that serves a contestable customer whose RES fails or exits, at the WESM nodal price or its PSA price plus 5%, with no exit fee.	2, 5, 6, 9, 10
Step-in rights	The right of a buyer or lender to take over operation of a plant, or appoint someone to, when the operator defaults.	2, 4, 9
Strike price	The fixed price per kWh or MWh agreed in a VPPA or CfD.	2, 6, 9, 10, 12
System loss charge	A per-kWh charge for energy lost in the distribution network. It stays with the DU after a switch.	1, 2, 4, 5, 7, 8
Tenor (term)	The length of a contract, usually counted from COD or first supply.	1, 2, 4, 6, 7
Time-of-use (TOU) price	A price that differs by hour of the day, typically higher at peak times.	5, 7, 8
Transmission charge	A per-kW charge for using NGCP's high-voltage grid, passed through by the DU.	5
Two-envelope evaluation	A tender method in which technical and contract proposals are scored before the price envelopes are opened.	11
Universal charges	Per-kWh charges on every on-grid bill for missionary electrification, environmental programmes and stranded debts.	1, 4, 5, 8
VAT; zero-rated VAT	Value-added tax at 12%. Sales of power from renewable sources by registered RE developers are zero-rated under the RE Act; compare bids on a VAT-exclusive basis.	1, 3–8, 11–13
VPPA (virtual PPA)	Under DOE DC2025-10-0024, a private contract between an end-user and an RE Developer for an RE project and the transfer of Voluntary RECs, without physical delivery; usually settled as a CfD.	1–3, 5–13
WACC (weighted average cost of capital)	The blended return required by lenders and shareholders; the usual basis for the discount rate.	7, 8
WESM	Wholesale Electricity Spot Market, operated by IEMOP, where prices are set by the hour for each node.	1, 2, 5–10, 12
Yellow and red alerts	NGCP grid alerts: yellow when the operating margin cannot meet the contingency requirement; red when supply cannot meet demand and the regulating requirement.	9, 12

Chapter references were generated by searching the chapter texts and figure captions. Where an acronym has two meanings in the book (for example PSA), both are given.

Appendix B. PPA Evaluation Checklist

Use this checklist when an offer arrives, before each decision gate and again before signing. It brings together the checklists that close Chapters 4 to 11 and 13. Section B.1 applies to every structure. Then complete the section for your structure, B.2 for onsite, B.3 for offsite supply from a RES or GEOP supplier, B.4 for a virtual PPA, and finish with B.5. If you are combining structures, for example onsite solar with RES supply for the rest of the load, complete each section that applies. The Ch. column shows where each point is explained.

Mark each line Yes, No or N/A. A No is not automatically fatal, but it should be a conscious, recorded decision. Any No on price definition, volume obligations, termination, credit support or change in law deserves a written answer from the seller and a view from counsel before you go further.

B.1 All structures: prepare and go to market

Table B.1. Preparation and market approach (Gates 1 and 2)

No.	Check	Ch.	Done
B1.1	A sponsor who can decide, a project lead, a one-page charter, an adviser budget and the four gate dates are agreed.	13	
B1.2	Twelve to twenty-four months of bills for every meter are on file, with interval (15-minute) data or a temporary load logger; anomalies are explained.	8, 9, 13	
B1.3	A realistic low-load case for the contract term (lost shift, line closure, efficiency, sale of site) is defined.	9	
B1.4	Eligibility is confirmed meter by meter: RCOA at 100 kW and GEOP at 50 kW average monthly peak demand, or aggregation; onsite feasibility is screened.	5, 13	
B1.5	The year-1 bill has been rebuilt from the tariff and matches actual bills within about 2%.	8	
B1.6	Quick wins are running: tariff and contracted-capacity review, power factor, demand management and energy efficiency.	13	
B1.7	Solar yield comes from PVGIS or a bankable study for the site, with P50 and P90; the share used on site is checked against the load profile.	8, 9	
B1.8	Grid-price scenarios include a falling path; the discount rate is documented and tested two points either side.	7, 8	
B1.9	An option has a positive NPV with margin at P50 and survives the downside case (Gate 1).	8, 13	
B1.10	The structure is chosen and the reasons recorded; the data room is complete; criteria and weights are fixed and sealed before bids arrive (Gate 2).	11, 13	
B1.11	A term sheet with your red-flag positions (Chapter 10) is approved by counsel and issued with the RFP.	10, 11	
B1.12	A long list of at least ten firms is cut to four to six through written gates, with licences and registrations verified with the agencies.	11	

Gate numbers follow the 90-day roadmap in Chapter 13.

B.2 Onsite PPA

Table B.2. Onsite PPA offer

No.	Check	Ch.	Done
B2.1	Size: system size justified by your own interval data, with expected self-	4	

No.	Check	Ch.	Done
	consumption, solar share and curtailment shown.		
B2.2	Price: tariff form, reference rate, escalator, floor or ceiling, and your saving under at least three grid-price paths, including a falling one.	4, 7	
B2.3	Volume: pay-as-produced on energy used, with no minimum take or deemed-generation payment except for curtailment you clearly cause.	4, 7, 9	
B2.4	Structure: sale of electricity or lease confirmed by counsel; VAT, COC holder and PFRS 16 treatment agreed with your tax adviser and auditor.	3, 4	
B2.5	Term and buyout: term, year-by-year buyout schedule (not an open fair-market-value formula), and the end-of-term outcome: transfer, renewal or removal.	4, 10	
B2.6	Performance: P50 estimate, weather-adjusted output guarantee, liquidated-damages rate and degradation allowance.	4	
B2.7	O&M: scope, response times, cleaning frequency, spare parts, availability guarantee and monitoring access.	4, 9	
B2.8	Roof and structure: structural certificate, roof-life plan, approved mounting method and penetration warranty; design meets NSCP 2015 wind and seismic loads; equipment above flood level.	4, 9	
B2.9	Insurance and liability: all-risk and third-party cover; typhoon, flood and earthquake cover with known deductibles; developer liability for building damage, leaks and product loss.	4, 9	
B2.10	Permits and interconnection: who obtains each permit and the COC (or confirms a DC2026-08-0017 exemption), DU notice or agreement, and a long-stop date with a penalty-free exit.	4, 13	
B2.11	Force majeure: mutual relief for typhoons, no payments while output stops, restoration within a fixed period and an exit after a long outage.	10	
B2.12	Flexibility: relocation, assignment, expansion and early-termination amounts capped by year.	4, 9	
B2.13	Change in law: new charges, taxes or rule changes shared, capped and with an exit.	4, 9	
B2.14	Credit support both ways: what the developer asks of you, and what it offers in return (step-in rights, purchase option on default, successor obligations).	4, 9	
B2.15	Environmental attributes: who owns any RECs and other environmental claims from the system's output.	4, 9	
B2.16	Price check: levelised cost to the buyer compared with a cost-based estimate and the benchmarks in Chapter 7; at least three comparable offers on the same specification.	7, 11	

Applies also to the onsite part of a combined structure. For a lease or purchase, the ownership, tax and O&M items apply to you instead of the developer.

B.3 Offsite supply from a RES (including GEOP supply)

Table B.3. Retail supply contract offer

No.	Check	Ch.	Done
B3.1	Price definition: is the price all-in, including line rental, WESM market fees and any supplier charge? Which items are pass-through, on what basis, and with what cap?	5, 9, 10	
B3.2	Price adjustment: for indexed or blended offers, the exact index, node, averaging period and any cap, floor or collar; whether more volume can be fixed later, and at what price.	5, 7	
B3.3	Volume: full-requirements or block; the band, and how deviations above and below it are priced; the effect of adding onsite solar.	5	
B3.4	Term and renewal: length, renewal rights and notice; any automatic renewal only if written into the contract and notified at least 60 days before expiry.	5, 10	

No.	Check	Ch.	Done
B3.5	Early termination: how charges are calculated, whether they apply equally to the supplier, and a right to terminate on site closure or sale.	5	
B3.6	Credit support: form and amount of your security, where it is held, when it may be drawn, and what the supplier provides in return.	5, 9	
B3.7	Supplier default: the SOLR terms that would apply (WESM nodal or PSA price plus 5%, one-month deposit, no exit fee) and who pays the difference from the contract price.	5, 9, 10	
B3.8	Change in law: how new or changed regulated charges, market rules or taxes are shared; a right to renegotiate or exit.	5	
B3.9	Renewable content: which plants supply, which RECs are retired for you, when and with what evidence, and their exclusion from the supplier's RPS compliance.	5	
B3.10	Billing, disputes and outage hours: bill timing, the ERC-approved complaint procedure, and the allowable outage hours of the source plant.	5, 10	
B3.11	Licences: the RES holds a current ERC licence (or a Local RES its letter-authority); a GEOP RE Supplier also holds its DOE permit.	11, 13	
B3.12	Switching plan: cooling-off period mapped; DU receives the notice at least 90 calendar days before the switch date; RMSP meter; MSA to the CRB and RES at least 30 days before; DU balances settled.	5, 13	
B3.13	Assignment: whether the supplier can assign the contract, and whether you can assign it to a buyer of your business.	5	

Eligibility when checked on 18 October 2026: RCOA and RAP 100 kW, GEOP 50 kW average monthly peak demand. Check the current rules.

B.4 Virtual PPA

Table B.4. Virtual PPA offer

No.	Check	Ch.	Done
B4.1	Structure: fixed-price REC purchase, CfD, or both; counsel confirms the design fits DOE DC2025-10-0024 and that two-way payments are enforceable.	6, 10	
B4.2	Project: eligible to generate Voluntary RECs, with a valid RE Contract and permits; construction milestones, long-stop date and remedies if it is late.	6	
B4.3	Strike price and indexation: fixed or escalated, in what currency (BSP-compliant), and what happens if peso and dollar diverge.	6	
B4.4	Reference price: which price, at which node or region, over what interval; treatment of administered prices, price substitution, caps and later revisions.	6, 10	
B4.5	Volume: as-generated or fixed shape; the seller's availability guarantee and compensation for curtailment or outages.	6	
B4.6	Floors, caps and negative prices: any floor or cap on the reference price and how very low or negative prices are settled.	6, 9, 10	
B4.7	Shape and basis risk tested on actual WESM prices for your regions, including the Luzon–Visayas price separation.	6, 9, 12	
B4.8	RECs: when and how Voluntary RECs are issued and transferred; fallback if RE Registrar procedures are not ready; protection against double counting.	6	
B4.9	Credit support both ways, in agreed form, adjusted as market value moves.	6, 10	
B4.10	Term, termination and assignment: term from signing and from COD (minimum ten years from commercial operations), termination payment formula, assignment on sale or merger.	6	
B4.11	Change in law: changes to the circular, REM rules, WESM pricing rules, taxes or reporting standards.	6, 10	
B4.12	Accounting and tax: auditor review of PFRS 9 classification and hedge accounting (including the 2026 amendments for nature-dependent electricity); tax adviser view on VAT, income tax and documentary stamp tax.	6	

No.	Check	Ch.	Done
B4.13	Disputes: any arbitration seated in the Philippines, as the circular requires.	6, 10	

A VPPA sits alongside your physical supply; complete B.3 for that supply as well.

B.5 All structures: evaluate, approve and sign

Table B.5. Evaluation, approval and signing (Gates 3 and 4)

No.	Check	Ch.	Done
B5.1	Bids normalised to a common basis: VAT-exclusive, buyer-borne costs added, take-or-pay and deemed energy charged, one independent P50, same grid scenarios.	11	
B5.2	Two-envelope evaluation, written clarifications and one BAFO round; a weight-sensitivity check and a reserve bidder.	11	
B5.3	Every revised draft re-scored on the Chapter 10 scorecard; any red on a weight-5 clause resolved or expressly accepted by the board.	10, 13	
B5.4	Model reviewed by someone who did not build it; sensitivity, Monte Carlo and break-even results show an acceptable downside.	8	
B5.5	The risk register has owners and review dates, and the board has seen the residual risks.	9	
B5.6	Conflict declarations signed by evaluators, advisers and bidders; for government-owned buyers, the procurement mode and approvals confirmed under RA 12009.	11	
B5.7	The board resolution approves this counterparty, structure, term, price basis and maximum commitment, and names the signatories (Gate 4).	13	
B5.8	The final contract text matches the negotiated term sheet, and counsel has signed off.	13	
B5.9	The financial case is re-run on the final price and terms and still beats the baseline in the base case and remains acceptable in the downside cases.	13	
B5.10	Written tax and accounting views are on file, including any lease or derivative treatment.	13	
B5.11	Counterparty licences, corporate approvals and authority to sign verified; credit support, parent guarantees and insurance certificates in the agreed form.	13	
B5.12	Conditions precedent, long-stop dates and termination payments listed and understood; the offer is still within its validity.	13	
B5.13	A delivery owner, a reporting format and the first review date are named.	13	

Items B5.7 to B5.13 are the twelve-point ready-to-sign checklist of Chapter 13, condensed. The 90-Day Plan workbook contains the same list with a GO / NO-GO result.

Appendix C. Templates Guide

Six companion files support the book. Each reproduces the illustrative example of its chapter with live formulas or editable text, so that you can replace the example inputs with your own and see the results change. All six can be downloaded from https://solarmd.net/book1/support, which also carries updates, errata and help for the book. This appendix explains what each file does, what you need to enter, what it produces, and in what order to use them. Figure C.1 shows how they fit together.

Table C.1. The companion files at a glance

File	Ch.	Purpose	Key inputs	Key outputs
Chapter08_Savings_Model.xlsx	8	Compares grid only, an onsite PPA, lease-to-own, outright purchase and RES supply over 25 years, after tax.	Tariff components; monthly kWh and billing kW; PVGIS kWh/kWp; offer terms; tax rate; discount rate; grid-price scenario	NPV, IRR, paybacks, SIR, levelised costs, incremental IRR, scenarios, tornado, break-evens, Monte Carlo
Chapter09_Risk_Register.xlsx	9	Live register of onsite, RES and VPPA risks, scored before and after mitigation.	Scales and thresholds; likelihood and impact (1–5) per risk; owner, clause, review date; site load, prices, PVGIS series	Ratings and colours; inherent and residual heat maps; peso values for five example risks
Chapter10_TermSheet_Scorecard.xlsx	10	Rates up to three term sheets clause by clause and flags walk-away issues.	Points per rating; band thresholds; gate weight; weights per structure; a rating for each of 23 clause families	Red-flag index, band and gate result per offer; issues list; termination-payment curves
Chapter11_RFP_Template.docx	11	Editable request for proposals for an onsite PPA.	Your site data, timetable, evaluation criteria and weights, gates, and the term sheet	A document to issue to the shortlist, so that every bid arrives in the same format
Chapter11_Bid_Evaluation.xlsx	11	Puts up to four bids on a common basis and scores them.	Independent P50 yield; avoided cost; discount rate; VAT; criterion weights; bids as received; gate results; 1–5 ratings	LCB and NPV per bid; walk from headline price to LCB; weighted totals and rank; BAFO flag; weight sensitivity
Chapter13_90Day_Plan.xlsx	13	Turns the 90-day roadmap into a dated plan with gates.	Day 1 date (Plan!C4); task start days and durations; RACI letters; gate ticks; signing date	Dated Gantt chart; RACI check; GO / NO-GO per gate; weekly and ready-to-sign trackers; post-signing dates

All workbooks use the same colour code: blue text on a yellow background is an input you should change; black is a formula, which you should not overwrite. Example values are illustrative, not quotes, forecasts or advice.

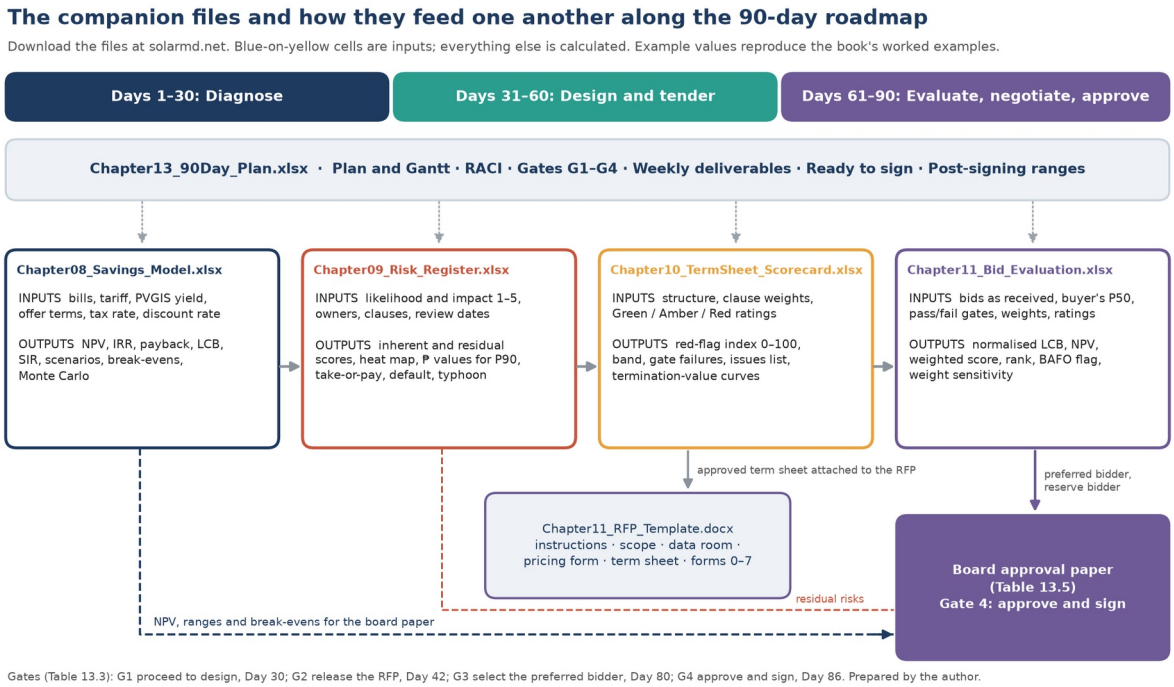


Figure C.1. How the companion files fit together across the 90-day roadmap. The 90-Day Plan runs across all three phases; the four workbooks feed the board approval paper. Prepared by the author.

C.1 Chapter 8 Savings Model

Purpose. The Savings Model compares five ways of buying electricity for one site over 25 years: grid only (the baseline), an onsite solar PPA, lease-to-own, outright purchase and supply from a RES. Every result is a live formula driven by four input sheets: Tariff, Inputs, Solar and WACC.

1. Tariff: enter your distribution utility's rate components for your customer class, per kWh, per kW and per customer. The example uses Meralco's October 2026 General Power secondary rates, VAT-exclusive.
2. Inputs: enter monthly kWh and billing kW, then check that the year-1 grid-only cost matches your last twelve bills to within about 2%. If it does not, find out why before going further.
3. Solar: paste the monthly kWh per kWp from PVGIS for your site, tilt and losses, or from a bankable yield study.
4. Inputs: enter each offer's terms (PPA price and term; capex, O&M and lease terms; RES price and renewal assumption), your tax position and your discount rate. The WACC sheet helps you build the rate from the BSP rate, government bond yields and a risk premium.
5. Choose a grid-price scenario from the drop-down. The Model and Results sheets follow it. The Scenarios, Sensitivity, BreakEven and MonteCarlo sheets calculate all cases at once.
6. Check the 'Model check' cell on Results. It compares the year-by-year model with an independent closed-form calculation and should read 0.

Key outputs. NPV, IRR, simple and discounted payback, savings-to-investment ratio and levelised cost for each option; the incremental IRR of buying rather than signing a PPA; a scenario table, tornado chart, break-even prices and a Monte Carlo distribution. The MonteCarlo sheet draws 1,000 cases each time it recalculates; the book's figures use 10,000 draws, so results will differ slightly. The Checklist sheet holds the model review checklist from Chapter 8.

C.2 Chapter 9 Risk Register

Purpose. A live register of the risks in an onsite PPA, a RES contract or a VPPA, scored before and after mitigation, with heat maps and peso values for the main risks.

- Scales: agree the likelihood and impact definitions and the rating thresholds with management first. The example uses scores of up to 4 for Low, 9 for Medium, 14 for High and 25 for Very high, where score = likelihood × impact.
- Register: eighteen example risks (R1 to R18) and twelve blank rows. For each risk, enter likelihood and impact before and after mitigation, the contract clause and further mitigation, the owner and a review date. Escalate any residual Very high rating.
- HeatMap: inherent and residual heat maps, calculated from the Register.
- Clauses: the contract clauses that mitigate each risk family (Table 9.3 of Chapter 9).
- Quantify and PVGIS: calculators for P50 and P90 output, take-or-pay after a load drop, expected credit loss, SOLR cost after a RES default and a typhoon outage. Paste your own site's PVGIS series to update them.

C.3 Chapter 10 Term Sheet Scorecard

Purpose. Rates up to three term sheets clause by clause across 23 clause families, so that you can compare offers and see where to negotiate. Each clause is rated Green (0 points), Amber (1) or Red (3), or N/A, and weighted 1 to 5 for the structure.

$$Index = 100 \times \frac{\sum_{i=1}^{n} w_i p_i}{p_{Red} \times \sum_{i=1}^{n} w_i} \tag{C.1}$$

Here w_i is the weight of clause i, p_i its points and n the number of rated clauses. In the example an offer is Green at an index of 15 or less, Amber up to 30 and Red above 30, and any Red on a clause of weight 5 makes the whole offer Red. The IssuesList sheet turns Offer A's ratings into a negotiation list with an ask, a fallback and a give for each clause. The Termination sheet draws the early-termination curves of Chapter 10. Re-score every revised draft, and sign only when the band is Green and counsel has reviewed the contract.

C.4 Chapter 11 RFP Template and Bid Evaluation

The RFP Template is an editable Word document for inviting onsite PPA proposals. Fill in your site data, timetable, gates, evaluation criteria and weights, and attach the term sheet you approved using the Chapter 10 scorecard. Because every bidder answers in the same format and against the same term sheet, the bids can be compared on equal terms.

The Bid Evaluation workbook puts up to four bids on a common basis. It removes VAT where a price is quoted VAT-inclusive, applies escalation, adds costs left with the buyer, charges take-or-pay on all output, and uses one independent P50 yield for every bid. It then calculates each bid's levelised cost to the buyer (LCB) and NPV of savings, and scores five criteria.

$$S_i = max\left(0, 100 - 5 \times 100 \times \left(\frac{LCB_i}{LCB_{min}} - 1\right)\right) \tag{C.2}$$

The price score falls by five points for every 1% that a bid's LCB is above the lowest eligible LCB (equation C.2, which is equation 11.1 of Chapter 11). The contract score is 100 minus the red-flag index from the Chapter 10 scorecard, and technical, credit and ESG ratings of 1 to 5 are multiplied by 20. The example weights are price 40%, contract terms 20%, technical 15%, credit 15% and ESG 10%. A bid that fails any gate is excluded whatever its price. The workbook calls for a BAFO if the top two bids are within five points, and the Sensitivity sheet shows whether the winner changes as the price weight moves from 20% to 80%.

C.5 Chapter 13 90-Day Plan

Purpose. Turns the 90-day roadmap into a dated plan. Enter your Day 1 date in cell C4 of the Plan sheet; every date in the workbook follows from it. Adjust task start days and durations, and the Gantt grid and chart update. On the RACI sheet, the check column flags any activity without exactly one accountable person. The Gates sheet shows GO only when every criterion for that gate is ticked Yes. The Weekly and Ready to sign sheets are for the weekly project meeting. Enter the signing date on the Post-signing sheet to see indicative dates for first RES supply, onsite COD or first VPPA settlement.

C.6 Order of use

1. Weeks 1–4 (Diagnose): open the 90-Day Plan and set Day 1. Rebuild the bill in the Savings Model, load PVGIS data and run the first comparison of structures. Start the Risk Register for the structure that leads. Gate 1 asks whether any option has a positive NPV with margin at P50 and survives the downside case.
2. Weeks 5–8 (Design and tender): agree the Term Sheet Scorecard weights and your red-flag positions; attach the term sheet to the RFP Template; fix the Bid Evaluation criteria, weights and gates before bids arrive (Gate 2).

3. Weeks 9–13 (Evaluate, negotiate, approve): enter bids exactly as received in the Bid Evaluation workbook; score each contract mark-up in the Scorecard and carry its red-flag index into the contract-terms criterion; re-run the Savings Model on the preferred bid; update the Risk Register with residual risks; take all three to the board (Gates 3 and 4).
4. After signing: use the Post-signing sheet of the 90-Day Plan for indicative dates to first RES supply, onsite COD or first VPPA settlement, and keep the Risk Register under quarterly review.

C.7 Worked walk-through: the book's example site

Table C.2 follows the example site of Chapters 4 to 11 through the files in order. With the example inputs unchanged, the workbooks reproduce the figures shown. Replace the inputs with your own, step by step, and the outputs will change accordingly. Monte Carlo results vary slightly with each recalculation.

Table C.2. Walk-through of the example site using the companion files

Step	File and sheets	Key inputs (example)	Key outputs (example)	Ch.
1. Rebuild the bill	Savings Model: Tariff, Inputs	100,000 kWh a month; 250 kW billing demand; Meralco General Power secondary, October 2026, VAT-exclusive	Year-1 grid cost of ₱1,328,754 a month (₱15.95 million a year), within about 2% of actual bills	8
2. Load solar data	Savings Model: Solar	PVGIS v5.3, Metro Manila, 2019–2023; 300 kWp; 95.3% of output used on site; 0.5% a year degradation	About 1,334 kWh/kWp a year; about 381,500 kWh used on site in year 1	4, 8
3. Compare structures	Savings Model: Inputs, Results	PPA ₱7.20/kWh flat, 20 years; capex ₱45,000/kWp; O&M ₱800/kWp; lease 12%, 10 years; RES ₱8.60/kWh for 3 years; avoided cost ₱11.00; tax 25%; discount rate 10%; grid +2% a year	NPV ₱14.8m (PPA), ₱20.0m (lease-to-own), ₱18.1m (purchase: IRR 25.2%, payback 4.0 years), ₱11.8m (RES). Incremental IRR of purchase over PPA 13.8%	8
4. Stress the case	Savings Model: Scenarios, Sensitivity, BreakEven, MonteCarlo	Low (−2%), flat, base (+2%) and high (+4%) grid paths; yield, load, capex and O&M multipliers	Which option still wins in the downside case, and the break-even prices to watch	8
5. Price the risks	Risk Register: Register, Quantify	18 example risks; scales Low ≤4, Medium ≤9, High ≤14, Very high ≤25; P50 380 MWh with 5.5% uncertainty	P90 output about 353 MWh; take-or-pay after a load drop would cost about ₱0.58m a year	9
6. Score the term sheets	Term Sheet Scorecard	Green 0, Amber 1, Red 3 points; Green ≤15, Amber ≤30; any Red on a weight-5 clause makes the offer Red	Example first drafts: onsite 46 (Red), RES 29 (Red by the gate rule), VPPA 38 (Red)	10
7. Run the tender	RFP Template; Bid Evaluation	Weights 40/20/15/15/10; 5 points off per 1% above the lowest LCB; BAFO if the top two are within 5 points; VAT 12%	LCBs: A ₱7.20, B ₱7.85, C ₱7.49, D ₱7.21. Totals: C 87.7, A 85.6, D 68.4, B 65.5. BAFO between C and A	11
8. Plan and	90-Day Plan:	Day 1 date; owners; gate	Dated plan with four GO / NO-	13

Step	File and sheets	Key inputs (example)	Key outputs (example)	Ch.
approve	Plan, Gates, Ready to sign, Post-signing	criteria; signing date	GO gates; twelve-point ready-to-sign check; indicative dates after signing	

Illustrative example data. The site, offers, bids and ratings are hypothetical; tariff and PVGIS data are real, as of October 2026. NPVs are after tax over 25 years at a 10% discount rate, with grid prices rising 2% a year.

Common mistakes when using the templates

Skipping the bill check: If the rebuilt year-1 cost is more than about 2% from your actual bills, every saving that follows is wrong by at least as much.

Using the bidder's yield: Use one independent P50 for all bids; a higher claimed yield is not a lower price.

Changing weights after bids arrive: Fix criteria, weights and gates before opening any bid, and put them in the RFP.

Overwriting formulas: Change only blue-on-yellow cells. If a result looks odd, check the Model check cell and the inputs before editing any formula.

Reading one number: Take the NPV, the downside case and the residual risks to the board together.

Appendix D. Regulatory Reference

This appendix lists the laws, regulations, accounting standards and other rules cited in the book, grouped by issuing body, with what each means for a buyer and the chapters that cite it. Figure D.1 places the main instruments on a timeline. The descriptions are summaries for orientation, not legal advice; read the instrument itself, and ask counsel to confirm the current text before relying on it. Table D.7 records the status check of the fastest-moving rules made on 18 October 2026.

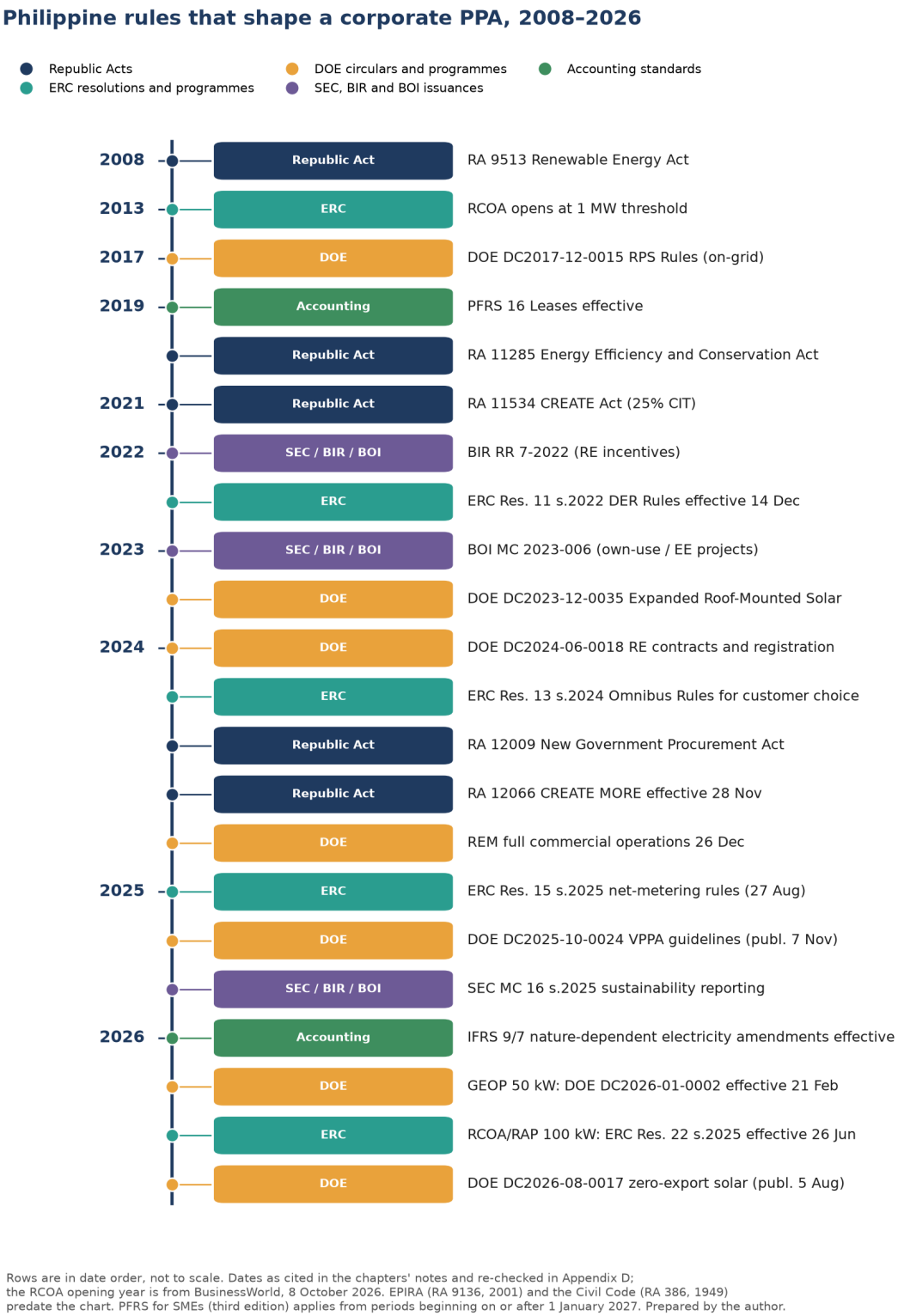


Figure D.1. Timeline of the main laws, regulations and standards that shape PPAs in the Philippines, 2008–2026. Dates are effectivity or publication dates as cited in the book and Tables D.1 to D.7. Prepared by the author.

D.1 Republic Acts

Table D.1. Republic Acts cited in the book

Law	Number and date	What it means for a buyer	Ch.
Civil Code of the Philippines	Republic Act No. 386 (1949)	Contract law behind every PPA: obligations, fortuitous events (Art. 1174), liquidated	10

Law	Number and date	What it means for a buyer	Ch.
		damages and penalties, interpretation of contracts.	
The Arbitration Law	Republic Act No. 876 (approved 19 June 1953)[1]	Governs domestic arbitration, as applied through the ADR Act.	10
Contractors' License Law	Republic Act No. 4566 (1965)	Requires a licence (PCAB) to engage in contracting; check the EPC contractor of an onsite bidder.	11
Electric Power Industry Reform Act (EPIRA)	Republic Act No. 9136 (2001)	Restructured the industry; Section 29 requires suppliers to the contestable market to hold an ERC licence.	2, 4–6, 11
Alternative Dispute Resolution Act	Republic Act No. 9285 (2004)	Adopts the UNCITRAL Model Law for international arbitration and the New York Convention for foreign awards.	10
Renewable Energy Act	Republic Act No. 9513 (2008)	Incentives for registered RE developers (income tax holiday, then 10%; zero-rated VAT on RE power sales); basis for the RPS, REM and GEOP.	2–7, 11, 12
Data Privacy Act	Republic Act No. 10173 (2012)	Governs personal information in data rooms, metering data and contracts.	10, 11
Philippine Competition Act	Republic Act No. 10667 (2015)	Bid rigging, cover bidding and bid rotation are per se prohibited (Section 14(a)(2)).	11
Energy Efficiency and Conservation Act	Republic Act No. 11285 (2019)	Obligations for designated establishments using 500,000 kWh a year or more (Type 1) or above 4,000,000 kWh (Type 2): records, annual report, audits, energy managers.	13
CREATE Act	Republic Act No. 11534 (2021)	25% regular corporate income tax (20% for qualifying smaller corporations); 10% rate for qualifying non-profit proprietary schools and hospitals.	3, 7, 8, 12
New Government Procurement Act	Republic Act No. 12009 (enacted 20 July 2024; effective 13 August 2024); IRR dated 10 February 2025	Procurement rules for government-owned buyers, including SUCs, GOCCs and LGUs; repealed RA 9184.	11
CREATE MORE Act	Republic Act No. 12066 (signed 8 November 2024; effective 28 November 2024)	Enhanced deductions regime: 20% rate and 100% additional deduction on power expense for the registered activity; amends CREATE.	3, 6–8, 11, 12

Years from the official text at the Lawphil Project and agency sites.

D.2 Energy Regulatory Commission

Table D.2. ERC resolutions, orders and actions

Instrument	Number and date	What it means for a buyer	Ch.
Power factor adjustment order	ERC Case No. 2011-088RC (Order of 6 October 2011)	Basis of Meralco's power factor penalty (1.4%) and discount (0.7%) of the distribution charge for qualified General Power customers.	13
DER Rules	ERC Resolution No. 11, Series of 2022 (published 29 November 2022; effective 14 December 2022)	Rules for distributed energy resources: COC before operation, interconnection standards (PEC, PDC, IEEE 1547), commercial arrangements including sale and lease.	2, 4, 9–13

Instrument	Number and date	What it means for a buyer	Ch.
Omnibus Rules for Customer Choice Programs in the Retail Market	ERC Resolution No. 13, Series of 2024	The retail market rulebook: eligibility, switching (90-day notice), cooling-off, retail supply contract minimum contents, SOLR, reversion, credit security.	2, 3, 5, 8–13
GEAR price for GEA-4	ERC Resolution No. 09, Series of 2025 (9 June 2025)	Ceiling prices for the fourth Green Energy Auction (e.g. ground-mounted solar ₱4.4832/kWh); a public benchmark for solar PPA prices.	7
Amended net-metering rules	ERC Resolution No. 15, Series of 2025 (issued 27 August 2025)	Net metering for systems of up to 100 kW, with banking and rollover of credits. Amendments proposed in ERC Case No. 2026-014 RM were still at consultation stage when checked.[2]	4, 9
Lowered RCOA and RAP threshold	ERC Resolution No. 22, Series of 2025 (effective 26 June 2026)	Eligibility for RCOA and RAP lowered from 500 kW to an average monthly peak demand of at least 100 kW.[3]	1–3, 5, 6, 8, 9, 12, 13
GEAR price for GEA-5 (offshore wind)	ERC Resolution No. 05, Series of 2026 (approved 19 February 2026)	₱11.00/kWh reserve price for fixed-bottom offshore wind; Annex A lists the model parameters.	7
Market interventions	ERC actions of 26 March–1 May 2026 (market suspension, modified administered prices), 13 August 2026 (Visayas line rental) and from 14 October 2026 (reserve market settlement suspended)	Examples of rule changes that alter pass-through costs mid-contract.	5–7, 9, 10

's.' = Series. ERC resolutions take effect after publication; check the effectivity clause of each.

D.3 Department of Energy

Table D.3. DOE department circulars, advisories and plans

Instrument	Number and date	What it means for a buyer	Ch.
RPS Rules for on-grid areas	DC2017-12-0015; amended by DC2022-09-0030 and DC2023-05-0015	Renewable Portfolio Standards for DUs, electric cooperatives and RES; annual increment raised from 1% to 2.52% from 2023.	5
Energy efficiency IRR	DC2019-11-0014; MC2020-05-0001 (FAQs)	Implementing rules of RA 11285; thresholds based on aggregate energy use expressed in kWh equivalent.	13
Expanded Roof-Mounted Solar Program	DC2023-12-0035	Framework for roof-mounted facilities above 100 kWp, including supply-contingency, lease-to-generate and peer-to-peer models.	2, 4
Revised omnibus guidelines on RE contracts	DC2024-06-0018 (published 10 June 2024)	RE contracts, Certificates of Registration and the definition of 'RE Project for Own-Use'; some own-use projects need registration but no operating contract.	2, 4, 11
Full commercial operations of the REM	DC2024-12-0031 (REM from 26 December 2024)	Started REC trading, with IEMOP as RE Registrar.	1, 5, 6, 9
GEA price indexation	DC2025-06-0009	Indexation of the Green Energy Tariff once between the certificate of award and	7

Instrument	Number and date	What it means for a buyer	Ch.
		commercial operation.	
Guidelines on Virtual PPAs	DC2025-10-0024 (issued 29 October 2025; published 7 November 2025; effective fifteen days after publication)	Recognises VPPAs; pricing not subject to ERC or DOE review; automatic REC transfer; minimum ten-year term from COD; BSP-compliant currency; Philippine-seated arbitration. Supplementary rules are due within one year of effectivity; none had been issued as of 18 October 2026.[4]	1, 2, 5, 6, 9, 10, 12, 13
Revised GEOP Rules	DC2026-01-0002 (published 6 February 2026; effective 21 February 2026)	GEOP threshold lowered from 100 kW to 50 kW; aggregation in contiguous areas; annual review of the threshold. Confirmed current on 18 October 2026.[5]	1–3, 5, 6, 9, 10, 12, 13
Energy storage for new variable RE	DC2026-02-0008	Prospective variable RE plants of 10 MW or more to integrate storage of at least 20% of installed capacity.	6, 9
Zero-export and micro-solar systems for own use	DC2026-08-0017 (signed 28 July 2026; published 5 August 2026; effective on publication)	Streamlines own-use zero-export systems of any size (SGF ZESS) and plug-and-play systems up to 1 kW (MSS); waives the COC for qualifying systems of households, clinics and hospitals; DU notification. The ERC was given 90 days to issue supporting rules.[6]	2, 4, 9, 11–13
Green Energy Auction advisories	GEA-1 Advisory No. 5 (21 July 2022); GEA-4 Advisory No. 5; GEA-5 Advisory No. 2 (4 July 2026)	Winning bids and auction timelines used as price benchmarks in Chapter 7.	7
Philippine Energy Plan 2023–2050	DOE plan (Clean Energy Scenario)	Targets of 35% RE in the generation mix by 2030 and 50% by 2040.	1

DOE circular numbers follow the pattern DCyyyy-mm-nnnn (year, month, sequence).

D.4 SEC, BIR, BOI, GPPB and tax rules

Table D.4. Corporate, tax, incentive and procurement issuances

Instrument	Issuer and number	What it means for a buyer	Ch.
Revised SRC Rule 68	Securities and Exchange Commission	Financial reporting frameworks by size: full PFRS, PFRS for SMEs and PFRS for Small Entities.	3, 6
Sustainability reporting	SEC Memorandum Circular No. 16, Series of 2025 (effective 8 January 2026; replaces MC No. 4, s. 2019)	Extends sustainability reporting to large non-listed companies; electricity and emissions become disclosure items.	1, 9
Lease and conditional-sale tax treatment	BIR Revenue Memorandum Circular No. 11-2024, restating RR No. 19-86	Factors that make a lease a conditional sale for tax, such as automatic transfer of ownership.	3, 8, 12
RE tax incentives	BIR Revenue Regulations No. 7-2022	Incentives are not self-executing; DOE and BOI registration required; 0% VAT on RE power sales; no double availment.	3, 4, 7, 11
Depreciation	National Internal Revenue Code, Section 34(F)	Allowable depreciation methods for owned systems.	3, 8
Energy efficiency and own-use	BOI Memorandum Circular No. 2023-006	Self-financed EE and own-use solar projects may obtain an income tax holiday and duty	3, 11

Instrument	Issuer and number	What it means for a buyer	Ch.
projects	(amending MC No. 2022-008)	exemption under the 2022 SIPP.	
CREATE MORE interim rules	DTI-BOI and DOF interim rules; CREATE MORE IRR	Implementation of the enhanced deductions regime and additional depreciation.	3, 11
Procurement of electricity by government buyers	GPPB Resolution No. 10-13 (15 March 2013)	Electricity procurement in RCOA areas treated as acquisition of goods; issued under RA 9184, since repealed by RA 12009.	11

Tax treatment depends on the facts of each contract; obtain a written view from your tax adviser.

D.5 Accounting and reporting standards

Table D.5. Accounting, sustainability-reporting and claims standards

Standard	Issuer and date	What it means for a buyer	Ch.
PFRS 16 Leases (IFRS 16)	Effective 1 January 2019, replacing PAS 17	Lessees recognise a right-of-use asset and lease liability; some PPAs contain a lease (IFRS 16 Illustrative Example 9A).	3, 4, 8
Contracts referencing nature-dependent electricity	Amendments to IFRS 9 and IFRS 7 (IASB, December 2024); adopted as PFRS 9/PFRS 7 amendments by the FSRSC on 14 February 2025	Own-use and hedge-accounting relief for renewable PPAs and VPPAs, with new disclosures; effective for periods beginning on or after 1 January 2026.	2, 3, 6, 9, 12, 13
PFRS 9 Financial Instruments	PFRS 9 (IFRS 9)	VPPAs, and PPAs that fail the own-use exemption, are derivatives measured at fair value through profit or loss unless hedge accounting applies.	2, 3, 6, 9, 12
PFRS for SMEs Accounting Standard (third edition)	Approved by the FSRSC on 16 May 2025; effective for periods beginning on or after 1 January 2027	Section 20 Leases is not aligned with IFRS 16; relevant to medium-sized buyers.	3, 6
GHG Protocol Scope 2 Guidance	WRI and WBCSD, 2015; market-based method update under consultation (status note of 16 October 2026)	Dual location-based and market-based reporting; quality criteria for RECs and contracts.	1, 6, 9, 10
RE100 Technical Criteria	Climate Group and CDP, 15 April 2025	What counts towards a 100% renewable claim, including financial PPAs and EAC systems for the Philippines.	1, 6, 9

Philippine Financial Reporting Standards (PFRS) adopt IFRS Accounting Standards through the FSRSC.

D.6 Market operator bulletins, codes and other rules

Table D.6. Market rules, technical codes, arbitration rules and case law

Instrument	Issuer and date	What it means for a buyer	Ch.
RCOA Threshold Bulletin No. 2026-01	IEMOP, 5 May 2026	Switching timeline and procedures for the 100 kW threshold.	1–3, 5, 6, 8–10, 12, 13
Bulletins No. 2024-01 and 2024-02	IEMOP, 2024	Registration categories (RES, Local RES, RE Supplier, SOLR) and retail customer switching	2, 5

Instrument	Issuer and date	What it means for a buyer	Ch.
		by the CRB.	
Advisory on the Revised GEOP Rules	IEMOP, 7 September 2026	How IEMOP implements the 50 kW threshold, GEOP aggregation and interim single billing; Voluntary REC issuance to GEOP end-users held in abeyance.	1–3, 5, 6, 9, 10, 12, 13
National Structural Code of the Philippines 2015	ASEP, Volume 1	Wind (Section 207) and seismic loads; occupancy categories, including essential facilities such as hospitals.	4, 9–12
Interconnection standards	Philippine Electrical Code, Philippine Distribution Code, IEEE 1547	Technical standards for connecting customer-site generation, including anti-islanding.	4, 9, 10, 12
Modified Tropical Cyclone Wind Signal System	PAGASA, 23 March 2022	Five wind-signal levels, suggested as objective force majeure triggers.	10
Arbitration rules	PDRCI Arbitration Rules (from 1 January 2015); SIAC Rules, 7th edition (from 1 January 2025); New York Convention	Institutional rules and enforcement of awards for PPA disputes.	10
Fortuitous events	Asset Privatization Trust v. T.J. Enterprises, G.R. No. 167195 (8 May 2009)	Supreme Court statement of the elements of a fortuitous event under Article 1174.	10

Market operator bulletins implement ERC and DOE rules; the underlying resolution or circular governs.

D.7 Status check, 18 October 2026

The rules below change most often or had pending follow-up action when the book was completed. Each was checked again on 18 October 2026 (Asia/Manila).

Table D.7. Status of fast-moving rules on 18 October 2026

Item	Position when checked	Status
RCOA / RAP threshold	100 kW average monthly peak demand, effective 26 June 2026 (ERC Resolution No. 22, s. 2025). ERC officials said on 8 October 2026 that 100 kW is not the final target.[3]	Unchanged; current
GEOP threshold	50 kW, Revised GEOP Rules (DC2026-01-0002), effective 21 February 2026; annual review of the threshold, with possible later steps to 20 kW, 10 kW and 0 kW.[5]	Unchanged; current
DOE DC2025-10-0024 (VPPA)	In force since about 22 November 2025. The DOE's list of 2026 department circulars (DC2026-01-0001 to DC2026-10-0021) contained no supplementary VPPA rules on 18 October 2026; Section 9 expects them within one year of effectivity.[4]	Current; supplementary rules pending
DOE DC2026-08-0017 (zero-export solar)	Published in BusinessWorld and Daily Tribune on 5 August 2026 and effective on publication. ERC supporting rules (due within 90 days, by about 3 November 2026) not located as of 18 October 2026.[6]	In force; ERC rules pending
Net metering	ERC Resolution No. 15, s. 2025 remains the current text; the proposed amendment (ERC Case No. 2026-014 RM) was at public-consultation stage.[2]	No final amendment located
BSP policy rate	5.00% since 27 August 2026. The Monetary Board meets on 22 October 2026, four days after this check; Deutsche Bank, as reported by BusinessWorld on 12 October 2026, expected a	Re-check after 22 October 2026

Item	Position when checked	Status
	further 25 bp increase. The outcome was not available.[7]	

Sources are given in the notes to this appendix. Re-check every item before relying on it; thresholds in particular are under annual review.

Appendix E. Assumptions and Data Sources

Every worked example in the book combines real, dated market data with hypothetical assumptions chosen to illustrate a method. This appendix separates the two. Table E.1 lists the example site used from Chapter 4 to Chapter 11. Table E.2 shows where individual chapters use different illustrative values, so that numbers in different chapters are not compared directly. Table E.3 gives the real market and finance inputs with their dates, and Table E.4 the main data sources and when they were accessed. None of the illustrative values is a quote, a forecast or a recommendation.

Table E.1. The example site: illustrative assumptions

Item	Assumption	Ch.
Site	Hypothetical manufacturer in Metro Manila, Meralco franchise, General Power secondary	4, 5, 8, 9, 10, 11
Consumption	100,000 kWh a month (1.2 million kWh a year); six-day load profile; about 66% of kWh between 06:00 and 18:00	4, 5, 8
Demand	250 kW billing demand (Chapters 5 and 8); hourly peak of the modelled profile about 208 kW (Chapter 4)	4, 5, 8
Grid tariff	Meralco October 2026 published rates, VAT-exclusive; generation charge ₱10.2005/kWh; per-kWh items about ₱11.70/kWh	4, 5, 8
Avoided cost per solar kWh	₱11.00 in year 1 (below the per-kWh sum, as a margin for charges solar may not avoid)	4, 7, 8, 9, 11
Solar system	300 kWp rooftop, zero export; PVGIS v5.3 Metro Manila 2019–2023, about 1,334 kWh/kWp a year; about 95% of output used on site; 0.5% a year degradation	4, 7, 8, 9, 11
Onsite PPA	₱7.20/kWh flat, 20 years, pay-as-produced, system handed over at the end of the term	7, 8, 9, 10, 11
Ownership options	Capex ₱45,000/kWp (₱13.5 million); O&M and insurance ₱800/kWp a year, +4% a year; inverter replacement ₱3,000/kWp in year 12; lease-to-own at 12% over 10 years	7, 8
RES supply	₱8.60/kWh fixed for a 3-year first contract; renewals at a 10% discount to the DU generation charge	5, 8, 9
Tax and finance	25% corporate income tax, company profitable; 10-year straight-line tax depreciation; 10% after-tax discount rate; 25-year horizon	8
Grid-price paths	−2%, 0%, +2% (base) and +4% a year	4, 7, 8

Illustrative example data, except the Meralco tariff and PVGIS data, which are real. Demand appears in three forms: billing demand (250 kW) in the bill and savings models, the hourly peak of the modelled load profile (about 208 kW) for sizing, and the arithmetic average demand (about 137 kW) used in Chapter 1 for the eligibility discussion.

Table E.2. Illustrative assumptions that differ by chapter

Ch.	Assumptions
2	Onsite PPA effect for a site using 120,000 kWh a month: ₱12.00/kWh energy charges avoided, ₱8.40/kWh PPA tariff, about 15% of load from solar
3	300 kWp × 1,300 kWh/kWp; avoided cost ₱10.00/kWh, +2% a year; capex ₱40,000/kWp; O&M ₱400/kWp, +3% a year; PPA ₱7.50/kWh, +1% a year; NPV at 6%, 10% and 14%
4	Chapter 8 site; three PPA offers: 20% discount to grid, fixed ₱8.50, and ₱7.80 rising 3% a year; 20-year saving and NPV at 10%
5	RES at ₱8.60/kWh and RE supply at ₱8.90/kWh against DU supply; back-test of fixed ₱7.50, blended 60/40 and WESM cost + ₱1.00 over 32 billing months (January 2024–October 2026)
6	VPPA strike ₱4.50/kWh; 200 MWh a month in the worked settlements; five Luzon sites using 600 MWh a

Ch.	Assumptions
	month with a 2 MWp share (about 2,668 MWh a year); physical supply at the Luzon price + ₱1.00
7	LCOE of the 300 kWp system at ₱45,000/kWp and 1,334 kWh/kWp; three developer offers for the same system
8	The example site of Table E.1
9	Chapter 8 prices; P50 380 MWh with 5.5% total uncertainty; RES default probability 1% a year; SOLR at the May 2026 WESM cost plus 5% (about ₱13.61/kWh)
10	Three hypothetical first-draft term sheets (onsite, RES, VPPA) rated against the example weights
11	Four bids for the 300 kWp site (Bid D 400 kWp, take-or-pay); independent P50 1,334 kWh/kWp; avoided cost ₱11.00, +2% a year; discount rate 10%; 20-year horizon
12	Three composite cases (hospital, factory, mall group) on Meralco General Power 13.8 kV rates; avoided cost ₱10.40/kWh; PVGIS series for Metro Manila, Laguna and Metro Cebu
13	Planning durations for a prepared single-site buyer; switching and cooling-off periods from ERC Resolution No. 13, s. 2024

Chapter 3 uses simpler round numbers (₱40,000/kWp, 1,300 kWh/kWp, ₱10.00 avoided cost, PPA ₱7.50 rising 1%) to explain ownership routes; Chapters 7 and 8 use the refined values of Table E.1. Results from the two sets should not be compared.

Table E.3. Real market and finance inputs used in the book

Input	Value and date	Source	Ch.
BSP policy rate (overnight reverse repurchase)	5.00% from 27 August 2026; next decision 22 October 2026	AsianBondsOnline; BSP schedule	7, 8
10-year PHP BVAL reference rate	8.013% on 14 October 2026	Bureau of the Treasury	8
Average bank lending rate	7.695% (May 2026)	CEIC, from BSP data	7, 8
Headline inflation	7.2% in September 2026	PSA, as reported by GMA News	7, 8, 9
Peso–dollar rate	₱62.985 per US$ (close, 16 October 2026)	The Manila Times	7, 9
Country default spread and equity risk premium	1.62% and 6.69% (Philippines, January 2026)	A. Damodaran, NYU Stern	8
Meralco generation charge	₱10.2005/kWh (October 2026 billing)	Meralco	1, 4, 5, 8
WESM monthly averages	IEMOP regional averages, November 2024 to September 2026; September 2026 system-wide ₱7.43/kWh	IEMOP; Power Philippines	5, 6, 7, 9, 12
Solar yield	PVGIS v5.3, 1 kWp, 10° tilt, 14% losses: Metro Manila about 1,330 kWh/kWp long-term; Laguna 1,451 and Metro Cebu 1,445 kWh/kWp	European Commission JRC	4, 7, 8, 9, 12
Green Energy Auction ceilings	GEAR-4 ground-mounted solar ₱4.4832/kWh; GEA-5 offshore wind ₱11.00/kWh	ERC	7

Values as published on the dates shown; see the chapter endnotes for full references. The BSP rate was due for review on 22 October 2026.

Table E.4. Main data sources and access dates

Source	What was used	Accessed	Ch.
Meralco	Summary Schedule of Rates and	17–18 October	1, 4, 5, 7, 8,

Source	What was used	Accessed	Ch.
	Breakdown of Generation Charge (monthly, February 2022 to October 2026); business bill guides	2026	12, 13
IEMOP (WESM and RE Market operator)	Market Operations Highlights; monthly price releases; RCOA, switching and GEOP bulletins and advisories; RE Registrar	17–18 October 2026	1, 2, 5, 6, 7, 9, 12, 13
PEMC	Quarterly Retail Market Assessment Reports (CREM rates, switching counts)	17–18 October 2026	5, 7, 11
ERC	Resolutions on retail competition, DER, net metering, GEAR prices and thresholds	17–18 October 2026	2–13
DOE	Department circulars, GEA advisories, power statistics, press releases	17–18 October 2026	1–13
European Commission JRC, PVGIS v5.3	Solar yield, hourly series 2005–2023 (Metro Manila) and 2019–2023 (Laguna, Metro Cebu)	Queries of 17 and 18 October 2026	4, 6, 7, 8, 9, 12
BSP, Bureau of the Treasury, AsianBondsOnline, CEIC	Policy rate, BVAL curve, lending rates	17–18 October 2026	7, 8
A. Damodaran (NYU Stern)	Country default spreads and equity risk premiums	17–18 October 2026	8
IFRS Foundation, FSRSC, SEC	PFRS 16, PFRS 9 and 7 amendments, PFRS for SMEs, SRC Rule 68, sustainability reporting	17–18 October 2026	3, 6, 9, 12, 13
Lawphil, Official Gazette and agency sites	Text of Republic Acts and court decisions	17–18 October 2026	3, 4, 5, 10, 11, 12, 13
News media (BusinessWorld, Philstar, Inquirer, GMA, Power Philippines, Manila Bulletin and others)	Market events, policy announcements, project and contract announcements	17–18 October 2026	1–13

All times Asia/Manila. Monthly WESM figures are those first published; IEMOP later revised some August 2026 regional averages (see Chapter 6).

Appendix F. Bibliography

This bibliography lists the 186 distinct sources cited in the endnotes of Chapters 1 to 13, after removing duplicates. Sources are grouped by type and listed alphabetically within each group. The chapters citing each source are given in square brackets. Where a chapter cited a source through a summary by a law firm, news outlet or market operator, the entry shows that summary as cited. Detailed pinpoint references (sections, tables, page numbers) are in the chapter endnotes. All web sources were accessed on 17 or 18 October 2026 (Asia/Manila).

Laws, regulations and official issuances

Asset Privatization Trust v. T.J. Enterprises, G.R. No. 167195, Supreme Court, Second Division, 8 May 2009, https://lawphil.net/judjuris/juri2009/may2009/gr_167195_2009.html. [Ch. 10]

Board of Investments, Memorandum Circular No. 2023-006, as reported by BusinessMirror, 'BOI tweaks guidelines on energy efficiency, conservation projects', 20 October 2023, https://businessmirror.com.ph/2023/10/20/boi-tweaks-guidelines-on-energy-efficiency-conservation-projects/. [Ch. 3]

Board of Investments, Memorandum Circular No. 2023-006, https://boi.gov.ph/sdm_downloads/boi-memorandum-circular-no-2023-006/. [Ch. 3, 11]

BOI, 'DTI-BOI and DOF release interim rules of CREATE MORE', https://boi.gov.ph/dti-boi-and-dof-release-interim-rules-of-create-more/. [Ch. 3, 11]

Bureau of Internal Revenue, Revenue Memorandum Circular No. 11-2024, restating Sections 4.03/2 and 4.03/3 of Revenue Regulations No. 19-86, as summarised by Grant Thornton Philippines, 'Clarifications on the accounting and tax treatment of leases', 2024, https://www.grantthornton.com.ph/alerts-and-publications/technical-alerts/tax-alert/2024/clarifications-on-the-accounting-and-tax-treatment-of-leases/. [Ch. 3, 8, 12]

Bureau of Internal Revenue, Revenue Regulations No. 7-2022, as summarised by Ablola, Saribong & Gueco Law, 'RR No. 7-2022: Tax Incentives and Compliance Rules for Renewable Energy Developers, Suppliers, and Biomass Producers in the Philippines', 30 June 2022, https://www.makatilawfirm.com/2022/06/30/rr-no-7-2022-tax-incentives-and-compliance-rules-for-renewable-energy-developers-suppliers-and-biomass-producers-in-the-philippines/. [Ch. 3, 4, 7, 11]

CREATE MORE Implementing Rules and Regulations, https://assets.kpmg.com/content/dam/kpmgsites/ph/pdf/InTAX/2025/CREATE-MORE-Act-Implementing-Rules-and-Regulations.pdf. [Ch. 3]

Department of Energy, Department Circular No. DC2024-06-0018, 'Revised Omnibus Guidelines Governing the Award and Administration of Renewable Energy Contracts and the Registration of Renewable Energy Developers', published 10 June 2024, https://doe.gov.ph/circular-no-dc-2024-06-0018-1. [Ch. 11]

Department of Energy, Department Circular No. DC2026-01-0002, 'Promulgating the Revised Rules and Guidelines Governing the Implementation of the Green Energy Option Program', published 6 February 2026, https://doe.gov.ph/circular-no-dc-2026-01-0002. [Ch. 5]

DOE, Department Circular No. DC2017-12-0015 and DC2023-05-0015, via IEMOP, 'Renewable Portfolio Standards', https://www.iemop.ph/re-market/renewable-portfolio-standards/. [Ch. 5]

DOE, Department Circular No. DC2019-11-0014, Section 63, https://legacy.doe.gov.ph/laws-and-issuances/department-circular-no-dc2019-11-0014. [Ch. 13]

DOE Department Circular No. DC2023-12-0035, 'Prescribing the Policy and General Framework on the Expanded Roof-Mounted Solar Program', as summarised by Enviliance ASIA, 'Philippines promulgates rules on rooftop photovoltaics', https://enviliance.com/regions/southeast-asia/ph/report_11391. [Ch. 4]

DOE Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', published 7 November 2025, https://doe.gov.ph/circular-no-dc-2025-10-0024. [Ch. 1, 2, 5, 6, 9, 10, 12, 13]

DOE Department Circular No. DC2026-01-0002, 'Revised Rules and Guidelines Governing the Implementation of the Green Energy Option Program', effective 21 February 2026, as summarised in IEMOP Advisory, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf. [Ch. 1–3, 5, 6, 9, 10, 12, 13]

DOE, Department Circular No. DC2026-08-0017 on self-generation zero-export solar systems and micro-solar systems for own use, https://prod-cms.doe.gov.ph/documents/d/guest/dc2026-08-0017-pdf. [Ch. 2, 4, 9, 11–13]

DOE, GEA-4 Advisory No. 5, 'List of Winning Bidders under GEA-4', https://doe.gov.ph/renewable-energy-programs/green-energy-auction/gea-4/advisory-5. [Ch. 7]

DOE, 'Memorandum Circular No. MC2020-05-0001 FAQs', https://legacy.doe.gov.ph/energy-efficiency/memorandum-circular-no-mc2020-05-0001-faqs. [Ch. 13]

Energy Regulatory Commission, Resolution adopting the Green Energy Auction Reserve price for Round 5, approved 19 February 2026, with Annex A listing parameters and justifications, https://prod-cms.doe.gov.ph/documents/d/guest/ogcs-prom-0606-2026-reso-no-05-series-of-2026-with-annex-a-pdf. [Ch. 7]

Energy Regulatory Commission, Resolution No. 13, Series of 2024, 'A Resolution Adopting the Omnibus Rules for Customer Choice Programs in the Retail Market', with Annex 'A', https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzQ0OQ==. [Ch. 2, 3, 5, 8–13]

Energy Regulatory Commission, Resolution No. 15, Series of 2025, '2025 Amended Rules Enabling the Net-Metering Program for Renewable Energy', issued 27 August 2025, as reported by GMA News, 'ERC amends net-metering program rules', 2 September 2025, https://www.gmanetwork.com/news/money/economy/957709/erc-amends-net-metering-program-rules/story/. [Ch. 4]

ERC Resolution No. 09, Series of 2025, 9 June 2025, as summarised by Ocampo & Suralvo Law Offices, 2 October 2025, https://www.ocamposuralvo.com/2025/10/02/erc-adopts-green-energy-auction-reserve-gear-prices-for-round-4-of-the-green-energy-auction-program-geap/. [Ch. 7]

ERC Resolution No. 11, Series of 2022, 'A Resolution Adopting the Rules Governing Distributed Energy Resources', published 29 November 2022, effective 14 December 2022, as summarised by Clark Electric Distribution Corporation, 'Distributed Energy Resources', https://www.clarkelectric.ph/node/151. [Ch. 2]

ERC, Resolution No. 11, Series of 2022, 'Rules Governing Distributed Energy Resources', effective 14 December 2022, as described by Meralco, 'Renewable DER Exporting', https://company.meralco.com.ph/products-services-and-programs/distributed-energy-resources. [Ch. 4]

ERC Resolution No. 11, Series of 2022, 'Rules Governing Distributed Energy Resources', effective 14 December 2022, as summarised by Ocampo & Suralvo Law Offices, December 2022, https://www.ocamposuralvo.com/updates/erc-issued-distributed-energy-resources-rules.html. [Ch. 9–13]

ERC Resolution No. 15, Series of 2025, '2025 Amended Rules Enabling the Net-Metering Program for Renewable Energy', as summarised by Ocampo & Suralvo Law Offices, October 2025, https://www.ocamposuralvo.com/2025/10/24/the-energy-regulatory-commission-amends-the-net-metering-rules-for-renewable-energy/. [Ch. 9]

ERC Resolution No. 22, Series of 2025, as implemented in IEMOP, 'RCOA Threshold Bulletin No. 2026-01', https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf. [Ch. 1–3, 5, 6, 8, 9, 12, 13]

Government Procurement Policy Board, 'Important Update: Effectivity and Transitory Periods under RA 12009', https://www.gppb.gov.ph/important-update-effectivity-and-transistory-periods-under-ra-12009/. [Ch. 11]

GPPB, 'Issuance and Publication of the IRR for the New Government Procurement Act', https://www.gppb.gov.ph/exciting-announcement-issuance-and-publication-of-the-irr-for-the-new-government-procurement-act/. [Ch. 11]

GPPB Resolution No. 10-13, 'Approving the Issuance of an Advisory Letter Clarifying Procurement Issues Raised in the Implementation of Retail Competition and Open Access', 15 March 2013, text at https://legaldex.com/laws/approving-the-issuance-of-an-advisory-letter-clarifying-procurement-issues. [Ch. 11]

IRR of RA 12009, dated 10 February 2025, https://lawphil.net/statutes/repacts/ra2025/irr_12009_2025.html. [Ch. 11]

National Internal Revenue Code of 1997, as amended, Section 34, 'Depreciation', https://taxacctgcenter.ph/nirc-ra-8424-amended-title-ii-chapter-vii-allowable-deductions-philippines/. [Ch. 3, 8]

Republic Act No. 386, Civil Code of the Philippines, text at The Lawphil Project, https://lawphil.net/statutes/repacts/ra1949/ra_386_1949.html. [Ch. 10]

Republic Act No. 876, The Arbitration Law, https://www.newyorkconvention.org/media/uploads/pdf/6/2/628_republic-act-no-876.pdf. [Ch. 10]

Republic Act No. 4566, Contractors' License Law, https://lawphil.net/statutes/repacts/ra1965/ra_4566_1965.html. [Ch. 11]

Republic Act No. 9136, Electric Power Industry Reform Act of 2001, Section 29, https://lawphil.net/statutes/repacts/ra2001/ra_9136_2001.html. [Ch. 4, 5, 11]

Republic Act No. 9285, Alternative Dispute Resolution Act of 2004, https://www.lawphil.net/statutes/repacts/ra2004/ra_9285_2004.html. [Ch. 10]

Republic Act No. 9513, Renewable Energy Act of 2008, Section 15, https://www.lawphil.net/statutes/repacts/ra2008/ra_9513_2008.html. [Ch. 3, 4, 6, 7, 11]

Republic Act No. 10173, Data Privacy Act of 2012, https://www.lawphil.net/statutes/repacts/ra2012/ra_10173_2012.html. [Ch. 10, 11]

Republic Act No. 10667, Philippine Competition Act, https://lawphil.net/statutes/repacts/ra2015/ra_10667_2015.html. [Ch. 11]

Republic Act No. 11285, 'Energy Efficiency and Conservation Act', Sections 19 and 20, https://lawphil.net/statutes/repacts/ra2019/ra_11285_2019.html. [Ch. 13]

Republic Act No. 11534, amending Section 27 of the National Internal Revenue Code, https://lawphil.net/statutes/repacts/ra2021/ra_11534_2021.html. [Ch. 12]

Republic Act No. 11534, amending Section 27 of the NIRC, as further amended by Republic Act No. 12066, https://lawphil.net/statutes/repacts/ra2024/ra_12066_2024.html. [Ch. 3, 7, 8, 12]

Republic Act No. 12009, New Government Procurement Act, https://lawphil.net/statutes/repacts/ra2024/ra_12009_2024.html. [Ch. 11]

Securities and Exchange Commission, Memorandum Circular No. 16, Series of 2025, as reported in Manila Bulletin, 'SEC broadens sustainability reporting rules to large non-listed firms', 29 December 2025, https://mb.com.ph/2025/12/29/sec-broadens-sustainability-reporting-rules-to-large-non-listed-firms. [Ch. 1, 9]

Securities and Exchange Commission, Revised SRC Rule 68, as summarised by JP CPAs, 'Financial Reporting Framework for Corporations', https://jp-cpas.com/financial-reporting-framework-for-corporations/. [Ch. 6]

Securities and Exchange Commission, Revised SRC Rule 68, https://appointment.sec.gov.ph/wp-content/uploads/2019/11/SRC-Rule-68-as-amended.pdf. [Ch. 3]

Standards, professional guidance and research

A. Damodaran, 'Country Default Spreads and Risk Premiums', NYU Stern School of Business, last updated 5 January 2026, https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html. [Ch. 8]

Association of Structural Engineers of the Philippines, National Structural Code of the Philippines 2015, Volume 1, Section 207 and Table 103-1, text at https://archive.org/stream/NSCP2015/NSCP-2015_djvu.txt. [Ch. 4, 9–12]

Basel Committee on Banking Supervision, Basel Framework, CRE35, 'IRB approach: treatment of expected losses and provisions', https://www.bis.org/committees/bcbs/basel-framework/standard/cre/35/inforce/2023-01-01/published/2020-03-27. [Ch. 9]

Bird & Bird, 'Onsite PPAs: Perspectives from key ASEAN economies', July 2021, https://www.twobirds.com/-/media/pdfs/news/articles/2021/onsite-ppas---asean6---july-2021.pdf. [Ch. 2, 4]

BloombergNEF, 'Tier 1 Power Inverter Methodology', https://assets.bnef.com/public/tiering/invertermethodology. [Ch. 11]

BloombergNEF, 'Tier 1 reports', https://about.bnef.com/tier-1-reports/. [Ch. 11]

BloombergNEF, 'Tier 1 Solar Module Methodology', 4 September 2026, https://assets.bnef.com/public/tiering/solarmodules.pdf. [Ch. 11]

Chambers and Partners, 'Renewable Energy 2026 – Philippines: Law and Practice' and 'Trends and Developments', Cruz Marcelo & Tenefrancia, last updated 11 September 2026, https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines/trends-and-developments. [Ch. 2, 6, 9, 12]

Chambers and Partners, 'Renewable Energy 2026 – Philippines: Law and Practice', https://practiceguides.chambers.com/practice-guides/renewable-energy-2026/philippines. [Ch. 4, 11]

D. C. Jordan and S. R. Kurtz, 'Photovoltaic Degradation Rates — An Analytical Review', Progress in Photovoltaics, 2013 (NREL preprint NREL/JA-5200-51664, 2012), https://docs.nlr.gov/docs/fy12osti/51664.pdf. [Ch. 4, 7–9]

Ember, 'From emission-intensive to investment hotspots: Championing renewables in 3 ASEAN economies', Chapter 3, 'Solar project economics in three countries', published 2 December 2025, updated 13 April 2026, https://ember-energy.org/latest-insights/from-emission-intensive-to-investment-hotspots-championing-renewables-in-3-asean-economies/solar-project-economics-in-three-countries/. [Ch. 7]

EY, 'Applying IFRS: Contracts referencing nature-dependent electricity – Amendments to IFRS 9 and IFRS 7', IFRS Developments Issue 234, March 2025, https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/technical/ifrs-technical-resources/documents/ey-gl-ifrs-devel-234-nature-dependent-electricity-03-25.pdf. [Ch. 6]

Financial and Sustainability Reporting Standards Council, 'FSRSC approves further deferral of PFRS 17 and other pronouncements', http://www.pfsrsc.org/fsrsc-approves-further-deferral-of-pfrs-17-and-other-pronouncements. [Ch. 6, 9]

GHG Protocol, 'Scope 2 Market-based Method Update: From 2025–2026 Public Consultation to Current Status', 16 October 2026, https://ghgprotocol.org/blog/scope-2-market-based-method-update-2025-2026-public-consultation-current-status. [Ch. 6, 9]

Grant Thornton Philippines, 'Accounting for and taxation of leases in accordance with the new PFRS 16', https://www.grantthornton.com.ph/insights/articles-and-updates1/tax-notes/accounting-for-and-taxation-of-leases-in-accordance-with-the-new-pfrs-16/. [Ch. 3]

Grant Thornton Philippines, 'Navigating the changes to Philippine Financial Reporting Standards – 2025 Edition', https://www.grantthornton.com.ph/globalassets/_markets_/phl/media/revamp/technical-alerts/pdf-files/navigating-the-changes-to-philippine-financial-reporting-standards-2025.pdf. [Ch. 6]

IASB, 'Contracts Referencing Nature-dependent Electricity: Amendments to IFRS 9 and IFRS 7', December 2024, https://www.ifrs.org/content/dam/ifrs/publications/amendments/english/2024/iasb-2024-3-crne-ifrs7-ifrs9.pdf. [Ch. 6]

IFRS 16 Illustrative Examples, Example 9A, https://www.ifrs.org/content/dam/ifrs/publications/html-standards/english/2022/issued/ifrs16-ie.html. [Ch. 3, 4]

IFRS Foundation, 'IASB updates IFRS Accounting Standards for nature-dependent electricity contracts', 18 December 2024, https://www.ifrs.org/news-and-events/news/2024/12/iasb-updates-accounting-standards-nature-dependent-electricity-contracts/. [Ch. 2, 3, 6, 9, 12, 13]

IFRS Foundation, IFRS 16 Leases, https://www.ifrs.org/issued-standards/list-of-standards/ifrs-16-leases/. [Ch. 3]

International Renewable Energy Agency, 'Renewable Energy Auctions: Analysing 2016', June 2017, https://www.irena.org/Publications/2017/Jun/Renewable-Energy-Auctions-Analysing-2016. [Ch. 11]

International Renewable Energy Agency, 'Renewable Power Generation Costs in 2024', Abu Dhabi, July 2025, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2025/Jul/IRENA_TEC_RPGC_in_2024_2025.pdf. [Ch. 7]

J. Kneifel, 'Life Cycle Costing Manual for the Federal Energy Management Program', NIST Handbook 135, 2025 edition, National Institute of Standards and Technology, August 2025, https://nvlpubs.nist.gov/nistpubs/hb/2025/NIST.HB.135e2025.pdf. [Ch. 8]

Kiwa PVEL, '2026 PV Module Reliability Scorecard' presentation, PV ModuleTech USA, June 2026, https://www.kiwa.com/globalassets/us/pvel/resources/kiwa-pvel---2026-moduletech-usa.pdf. [Ch. 11]

KPMG, 'IFRS for SMEs® updated', 2025, https://kpmg.com/xx/en/our-insights/ifrg/2024/ifrs-sme.html. [Ch. 3]

KPMG, 'Nature-dependent electricity contracts', IFRS Today / Insights, https://kpmg.com/xx/en/our-insights/ifrg/2024/renewable-energy-contracts-ifrs7-ifrs9.html. [Ch. 6, 12, 13]

McKinsey & Company, 'Internal rate of return: A cautionary tale', McKinsey Quarterly, 2004, https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/internal-rate-of-return-a-cautionary-tale. [Ch. 8]

New York Convention, contracting state page for the Philippines, https://www.newyorkconvention.org/contracting-states/contracting-states/philippines. [Ch. 10]

Orrick, Herrington & Sutcliffe, 'Japan Renewables Alert 60: Corporate PPAs – Application of Commodity Derivatives Transaction Act to Virtual PPAs', 17 November 2022, https://www.orrick.com/en/Insights/2022/11/Japan-Renewables-Alert-60. [Ch. 6]

P. Caballero, 'How to calculate P90 PV energy yield estimates', Solargis, 24 September 2025, https://solargis.com/resources/blog/best-practices/how-to-calculate-p90-or-other-pxx-pv-energy-yield-estimates. [Ch. 9]

Pexapark, 'Price volatility accelerates race to value across clean energy markets – Pexapark Market Outlook 2026', 27 January 2026, https://pexapark.com/blog/price-volatility-accelerates-race-to-value-across-clean-energy-markets-pexapark-market-outlook-2026/. [Ch. 6]

Philippine Dispute Resolution Center, Inc., 'Arbitration Rules', https://pdrci.org/arbitration-rules/. [Ch. 10]

Professional Regulation Commission, preface to the PFRS for SMEs Accounting Standard (third edition), approved by the Financial and Sustainability Reporting Standards Council on 16 May 2025, https://prc.gov.ph/sites/default/files/Reso%2051%20attachement%20PFRS%20for%20SMEs%20Accounting%20Standard%20-%20Third%20Edition_Preface.pdf. [Ch. 3]

PwC Philippines, Tax Alert No. 44, https://www.pwc.com/ph/en/tax/tax-publications/tax-alerts/2024/tax-alert-44.html. [Ch. 3]

PwC Philippines, 'Tax implications of PFRS 16 – Leases', Taxwise or Otherwise, 2019, https://www.pwc.com/ph/en/tax/tax-publications/taxwise-or-otherwise/2019-taxwise-or-otherwise/tax-implications-of-pfrs-16-leases.html. [Ch. 3, 8]

RE100, 'RE100 Technical Criteria' and appendices, 15 April 2025, https://www.theclimategroup.org/hubfs/RE100/PDFs/RE100%20technical%20criteria%20%2B%20appendices%20%2815%20April%202025%29.pdf. [Ch. 6, 9]

Singapore International Arbitration Centre, 'Arbitration Rules of the Singapore International Arbitration Centre', 7th edition, in force 1 January 2025, https://siac.org.sg/siac-rules-2025. [Ch. 10]

Solar Media / PV Tech Market Research, 'PV ModuleTech Bankability Ratings Quarterly report', https://marketresearch.solarmedia.co.uk/reports/pv-moduletech-bankability-ratings-quarterly-report/. [Ch. 11]

US Environmental Protection Agency, Green Power Markets, 'Financial PPA', https://www.epa.gov/green-power-markets/financial-ppa. [Ch. 2]

US Environmental Protection Agency, Green Power Markets, 'Physical Power Purchase Agreements', https://www.epa.gov/green-power-markets/physical-power-purchase-agreements-physical-ppas. [Ch. 2]

World Resources Institute and WBCSD, 'GHG Protocol Scope 2 Guidance', 2015, https://ghgprotocol.org/scope-2-guidance. [Ch. 6, 9, 10]

Regulators, market operators, utilities and data providers

AboitizPower, 'Advent Upgrade Solar Inc. and Proterial Philippines sign 20-year PPA for first solar PV system in LIMA Estate', 9 September 2026, https://aboitizeyes.aboitiz.com/power/advent-upgrade-solar-inc-and-proterial-philippines-sign-20-year-ppa-for-first-solar-pv-system-in-lima-estate/. [Ch. 12, 13]

AsianBondsOnline, 'Philippines', policy rates table, https://asianbondsonline.adb.org/philippines/. [Ch. 8]

BSP, schedule of Monetary Board meetings on monetary policy, https://www.bsp.gov.ph/Pages/PriceStability/ScheduleOfMeetingsOfTheAdvisoryCommitteeAndMonetaryBoardOnMonetaryPolicy.aspx. [Ch. 8]

Bureau of the Treasury, 'PHP BVAL Reference Rates', 14 October 2026, https://www.treasury.gov.ph/. [Ch. 8]

CEIC Data, 'Philippines Bank Lending Rate', sourced from the Bangko Sentral ng Pilipinas, https://www.ceicdata.com/en/indicator/philippines/bank-lending-rate. [Ch. 7, 8]

Construction Industry Authority of the Philippines, 'Licensing and Registration of Local Contractors', https://construction.gov.ph/licensing-and-registration-of-local-contractors/. [Ch. 11]

Department of Energy, '2024 Power Statistics – Summary', https://prod-cms.doe.gov.ph/documents/d/guest/02_summary-pdf. [Ch. 1]

DOE, 'DOE Sets Indicative Timeline for Recalibrated GEA-5 Offshore Wind Auction', media release, 29 July 2026, https://doe.gov.ph/news/press-releases/3585498--doe-sets-indicative-timeline-for-recalibrated-gea-5-offshore-wind-auction. [Ch. 7]

DOE, 'DOE Simplifies Rules for Own-Use Solar, Expands Access for Filipino Consumers', https://doe.gov.ph/doe-simplifies-rules-for-own-use-solar-expands-access-for-filipino-consumers. [Ch. 4]

DOE, information pack with the text of DC2026-01-0002 as published in BusinessWorld and Daily Tribune, https://prod-cms.doe.gov.ph/documents/d/guest/info-pack_052-business-world-daily-tribune-pdf. [Ch. 5]

DOE, Philippine Energy Plan 2023–2050, as reported in Philstar.com, 'DOE relies on better transmission planning to sustain RE growth', 17 October 2023, https://www.philstar.com/business/2023/10/17/2304250/doe-relies-better-transmission-planning-sustain-re-growth. [Ch. 1]

DOE, 'Philippines opens Green Energy Auction 4, integrating energy storage for a sustainable future', press release, https://legacy.doe.gov.ph/press-releases/philippines-opens-green-energy-auction-4-integrating-energy-storage-sustainable. [Ch. 7]

DOE, 'REC trading starts 26 December 2024 with the full operationalization of REM', press release, https://legacy.doe.gov.ph/press-releases/rec-trading-starts-26-december-2024-full-operationalization-rem. [Ch. 5, 6, 9]

European Commission Joint Research Centre, Photovoltaic Geographical Information System v5.3, https://re.jrc.ec.europa.eu/pvg_tools/en/. [Ch. 4]

European Commission Joint Research Centre, PVGIS v5.3 data service (JSON output), https://re.jrc.ec.europa.eu/pvg_tools/en/json. [Ch. 7, 8]

European Commission Joint Research Centre, PVGIS v5.3, hourly PV output 2005–2023 for 1 kWp crystalline silicon at 14.55°N, 121.03°E, 10° tilt, south-facing, 14% system losses, https://re.jrc.ec.europa.eu/api/v5_3/seriescalc?lat=14.55&lon=121.03&peakpower=1&loss=14&angle=10&aspect=0&pvcalculation=1&startyear=2005&endyear=2023&outputformat=json. [Ch. 9]

European Commission Joint Research Centre, PVGIS v5.3, hourly series 2019–2023 for 1 kWp at 14.55°N 121.03°E, 10° tilt, 14% system losses, https://re.jrc.ec.europa.eu/api/v5_3/seriescalc?lat=14.55&lon=121.03&peakpower=1&loss=14&angle=10&aspect=0&pvcalculation=1&startyear=2019&endyear=2023&outputformat=json. [Ch. 6]

European Commission Joint Research Centre, PVGIS v5.3 hourly series 2019–2023 for Laguna (14.21°N 121.16°E) and Metro Cebu (10.32°N 123.90°E), downloaded 18 October 2026, https://re.jrc.ec.europa.eu/api/v5_3/seriescalc. [Ch. 12]

First Circle, 'Solar Financing', https://www.firstcircle.ph/solar-financing. [Ch. 3]

IEMOP, 'April 2026 supply margins dwindle amid rising energy demand; modified administered prices stabilize spot rates', 13 May 2026, https://www.iemop.ph/news/april-2026-supply-margins-dwindle-amid-rising-energy-demand-modified-administered-prices-stabilize-spot-rates/. [Ch. 10]

IEMOP Bulletin No. 2024-01, 'Registration of Retail Supplier and Service Provider', https://www.iemop.ph/wp-content/uploads/2024/11/Bulletin-1-Registration-of-Retail-Supplier-and-Service-Provider.pdf. [Ch. 5]

IEMOP Bulletin No. 2024-02, 'Retail Customer Switching', https://www.iemop.ph/wp-content/uploads/2024/11/Bulletin-2-Retail-Customer-Switching-RCOA-GEOP-and-RAP.pdf. [Ch. 5]

IEMOP, 'December 2025 Power Market: Luzon Prices Ease as Supply Improves; Visayas and Mindanao Experience Tighter Conditions', https://www.iemop.ph/news/december-2025-power-market-luzon-prices-ease-as-supply-improves-visayas-and-mindanao-experience-tighter-conditions/. [Ch. 9, 12]

IEMOP, 'Full Commercial Operations of the Renewable Energy Market', https://www.iemop.ph/events/full-commercial-operations-of-the-renewable-energy-market/. [Ch. 5, 6]

IEMOP, 'Glossary of Common WESM Terminologies', https://www.iemop.ph/home-media/publications/?md_file=d3AtY29udGVudC91cGxvYWRzLzIwMjAvMDgvSUVNT1AtR2xvc3Nhcnktb2YtQ29tbW9uLVdFU00tVGVybWlub2xvZ2llcy5wZGY%3D. [Ch. 5]

IEMOP, 'IEMOP Annual Report 2025', https://www.iemop.ph/publications/iemop-annual-report-2025/. [Ch. 1, 2]

IEMOP, 'Market Operations Highlights', monthly reports, billing months November 2024 to July 2026, https://www.iemop.ph/market-reports/2026-market-operations-highlights/. [Ch. 9, 12]

IEMOP, 'Tight regional supply conditions pushed August WESM prices higher in Visayas and Mindanao', 10 September 2026, https://www.iemop.ph/news/tight-regional-supply-conditions-pushed-august-wesm-prices-higher-in-visayas-and-mindanao/. [Ch. 6, 9, 12]

Independent Electricity Market Operator of the Philippines, 'Market Operations Highlights', monthly reports, billing months November 2024 to July 2026. [Ch. 7, 8]

Independent Electricity Market Operator of the Philippines, 'Market Operations Highlights', monthly reports for billing months January 2025 to July 2026, each tabulating the average WESM price by region for the current and two preceding billing months, https://www.iemop.ph/market-reports/2025-market-operations-highlights/. [Ch. 6]

Independent Electricity Market Operator of the Philippines, 'The Electricity Spot Market at Work: Lower Market Prices for the First Half of 2025', https://www.iemop.ph/news/the-electricity-spot-market-at-work-lower-market-prices-for-the-first-half-of-2025/. [Ch. 1, 7, 8]

Manila Electric Company, 'Breakdown of Generation Charge', monthly tables for billing months February 2022 to October 2026. Retrieved 17 October 2026 from https://meralcomain.s3.ap-southeast-1.amazonaws.com/. [Ch. 1]

Manila Electric Company, 'Breakdown of Generation Charge', October 2026 billing month, https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_gc_table_0.pdf. [Ch. 4, 5, 7–9]

Meralco, 'Competitive Retail Electricity Market and Retail Aggregation Program FAQs', https://company.meralco.com.ph/news-and-advisories/competitive-retail-electricity-market-crem-and-retail-aggregation-program-rap. [Ch. 1, 2]

Meralco, 'Higher Residential Rates this October 2026', press release, 13 October 2026, https://company.meralco.com.ph/news-and-advisories/higher-residential-rates-october-2026. [Ch. 1]

Meralco, 'How to Read Your Business Bill', https://corporatepartners.meralco.com.ph/billings-and-payments/uyb-2021/how-to-read-your-business-bill. [Ch. 13]

Meralco, 'Net-Metering Resource Library', https://company.meralco.com.ph/advocacies/net-metering/resource-library. [Ch. 4]

Meralco, 'Residential Bills at Typical Consumption Levels, October 2026', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_residential_bills.pdf. [Ch. 1]

Meralco, 'Start or Modify Service', https://company.meralco.com.ph/faq-about/start-or-modify-service. [Ch. 13]

Meralco, 'Summary Schedule of Rates, Effective October 2026 Billing', https://meralcomain.s3.ap-southeast-1.amazonaws.com/2026-10/10-2026_rate_schedule.pdf. [Ch. 1, 4, 5, 7, 8, 12, 13]

NGCP, 'NGCP: Heightened monitoring needed amid spike in demand, unplanned plant outages', news release, 12 March 2025, https://www.ngcp.ph/Attachment-Uploads/2025-03-12%20News%20Release%20Heightened%20Monitoring-2025-03-13-10-40-34.pdf. [Ch. 9]

PAGASA, press statement on the Modified Tropical Cyclone Wind Signal System, 23 March 2022, https://www.pagasa.dost.gov.ph/press-release/108. [Ch. 10]

Philippine Atmospheric, Geophysical and Astronomical Services Administration, 'Tropical Cyclone Information', https://www.pagasa.dost.gov.ph/climate/tropical-cyclone-information. [Ch. 4, 9, 10]

Philippine Electricity Market Corporation, Market Assessment Department, 'Retail Market Assessment Report for 2nd Quarter of 2026', September 2026, https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/NDI1OA==. [Ch. 5, 7, 11]

PHIVOLCS, 'Poster of the 30 September 2025 Magnitude 6.9 Offshore Northern Cebu Earthquake', https://www.phivolcs.dost.gov.ph/poster-of-the-30-september-2025-magnitude-6-9-offshore-northern-cebu-earthquake/. [Ch. 9]

PHIVOLCS, 'Primer on the 10 October 2025 Magnitude 7.4 Offshore Davao Oriental Earthquake', https://www.phivolcs.dost.gov.ph/primer-on-the-10-october-2025-magnitude-mw-7-4-offshore-davao-oriental-earthquake/. [Ch. 9]

Visayan Electric, 'Visayan Electric announces rate reduction for September, welcomes rate intervention measures from the ERC', 28 September 2026, https://www.visayanelectric.com/post/visayan-electric-announces-rate-reduction-for-september-welcomes-rate-intervention-measures-from-th. [Ch. 12]

News and market reports

BloombergNEF, 'Corporate Clean Energy Buying Fell in 2025 After Nearly a Decade of Growth', 19 February 2026, https://about.bnef.com/insights/clean-energy/corporate-clean-energy-buying-fell-in-2025-after-nearly-a-decade-of-growth/. [Ch. 6]

BloombergNEF, 'Lithium-Ion Battery Pack Prices Fall to $108 Per Kilowatt-Hour, Despite Rising Metal Prices', 9 December 2025, https://about.bnef.com/insights/clean-transport/lithium-ion-battery-pack-prices-fall-to-108-per-kilowatt-hour-despite-rising-metal-prices-bloombergnef/. [Ch. 4, 12]

BusinessMirror, report on DOE claims over terminated RE contracts, 14 January 2026, https://businessmirror.com.ph/2026/01/14/doe-solar-phl-owes-govt-%E2%82%B124-b-contractual-obligations/. [Ch. 9]

BusinessWorld, 'Deutsche Bank expects further BSP tightening', 12 October 2026, https://bworldonline.com/banking-finance/2026/10/12/786230/deutsche-bank-expects-further-bsp-tightening/. [Ch. 8]

BusinessWorld, 'ERC says 11,500 businesses can tap new 100-kW power market', 8 October 2026, https://bworldonline.com/corporate/2026/10/08/785541/erc-says-11500-businesses-can-tap-new-100-kw-power-market/. [Ch. 5, 12, 13]

BusinessWorld, 'ERC to suspend WESM trading when Luzon and Visayas are under red alert', 2 May 2024, https://bworldonline.com/top-stories/2024/05/02/592269/erc-to-suspend-wesm-trading-when-luzon-and-visayas-are-under-red-alert/. [Ch. 9]

BusinessWorld, 'Threshold to participate in retail market access program lowered to 100 kilowatts', 4 November 2025, https://bworldonline.com/economy/2025/11/04/710086/threshold-to-participate-in-retail-market-access-program-lowered-to-100-kilowatts/. [Ch. 5, 9]

Daily Tribune, 'Why the Philippines should start taking voluntary RECs seriously', 25 May 2026, https://tribune.net.ph/2026/05/25/why-the-philippines-should-start-taking-voluntary-recs-seriously. [Ch. 6]

Ecoplus Solar, 'Solar Energy for Philippine Manufacturing Plants and Warehouses: A Complete Guide', 28 July 2026, https://ecoplus.ph/solar-energy-for-philippine-manufacturing-plants-and-warehouses-a-complete-guide-2026/. [Ch. 7]

ERC announcement reported in Power Philippines, 'ERC expands RCOA access under new 100-kW threshold', 26 June 2026, https://powerphilippines.com/erc-expands-rcoa-access-under-new-100-kw-threshold/. [Ch. 1]

GMA News Online, 'ERC: NGCP failed in obligation in Panay Island blackout', January 2024, https://www.gmanetwork.com/news/money/companies/893832/erc-ngcp-failed-in-obligation-in-panay-island-blackout/story/. [Ch. 9]

GMA News Online, 'Inflation snaps four-month easing, accelerates to 7.2% in September 2026', 6 October 2026, https://www.gmanetwork.com/news/money/economy/1004884/inflation-snaps-four-month-easing-accelerates-to-7-2-in-september-2026/story/. [Ch. 7–9]

GMA News Online, 'NGCP: 5-hour red alert status over Visayas grid on September 24, 2026', https://www.gmanetwork.com/news/topstories/nation/1003518/ngcp-5-hour-red-alert-status-over-visayas-grid-on-september-24-2026/story/. [Ch. 9, 12]

GMA News Online, 'NGCP issues red, yellow alerts for Luzon, Visayas grids for Friday, May 15, 2026', https://www.gmanetwork.com/news/money/economy/987730/luzon-visayas-red-yellow-alerts-ngcp-may-15-2026/story/. [Ch. 9, 12]

GMA News Online, 'NGCP: No more red, yellow alerts seen for rest of 2024', https://www.gmanetwork.com/news/topstories/nation/911317/ngcp-no-more-red-yellow-alerts-seen-for-rest-of-2024/story/. [Ch. 9]

Inquirer.net, 'WESM prices rise to P7.43/kWh in September', 13 October 2026, https://business.inquirer.net/615674/wesm-prices-rise-to-p7-43-kwh-in-september. [Ch. 5]

ISELCO II, notice of ERC public consultation on the Resolution Amending ERC Resolution No. 15, Series of 2025, 7 August 2026, https://iselco2.com.ph/august-07-2026-erc-in-line-with-the-energy-regulatory-commissions-erc-commitment-to-transparency-and-participatory-governance-we-invite-all-stakeholders-to-join-our-upcoming-public-con/. [Ch. 9]

L. Lectura, 'WESM average prices for all 3 grids negative in April', BusinessMirror, 2 May 2025, https://businessmirror.com.ph/2025/05/02/wesm-average-prices-for-all-3-grids-negative-in-april/. [Ch. 10]

Manila Bulletin, 'DOE scraps permits, fees for home, business solar panels', 6 August 2026, https://mb.com.ph/2026/08/06/doe-scraps-permits-fees-for-home-business-solar-panels. [Ch. 4, 9]

Manila Standard, 'ERC sets prices for 4th green energy auction in September', https://manilastandard.net/business/314603507/erc-sets-prices-for-4th-green-energy-auction-in-september.html. [Ch. 7]

Matuwid na Singil sa Kuryente, 'DOE bares details of winning green energy auction bidders', July 2022, https://matuwid.org/doe-bares-details-of-winning-green-energy-auction-bidders/. [Ch. 7]

Philippine Daily Inquirer, 'PH raises RE sourcing requirement', https://business.inquirer.net/364989/ph-raises-re-sourcing-requirement. [Ch. 5]

Philippine Daily Inquirer, 'SM Prime hits 100-MW rooftop solar rollout', 11 December 2025, https://business.inquirer.net/563690/sm-prime-hits-100-mw-rooftop-solar-rollout. [Ch. 12]

Philippine Information Agency, 'DOE Issues Notice of Auction and Terms of Reference for GEA-5', 25 November 2025, https://pia.gov.ph/press-release/doe-issues-notice-of-auction-and-t-erms-of-reference-for-gea-5-launches-philippines-first-offshore-wind-only-green-energy-auction/. [Ch. 7]

Philippine News Agency, '163 RE service contracts terminated, relinquished in 2024-25', January 2026, https://www.pna.gov.ph/index.php/articles/1266765. [Ch. 9, 11]

Philippine News Agency, article on the Philippine Energy Plan 2023–2050 targets, https://www.pna.gov.ph/index.php/articles/1263768. [Ch. 1]

Philippine News Agency, 'DOE terminates 84 RE contracts for failure to meet obligations', https://www.pna.gov.ph/index.php/articles/1265771. [Ch. 9, 11]

Philstar.com, 'Analysts see scope for one more BSP rate hike', 3 September 2026, https://www.philstar.com/business/2026/09/03/2553578/analysts-see-scope-one-more-bsp-rate-hike. [Ch. 7]

Philstar.com, 'DOE lists winning bids in green energy auction', 14 July 2023, https://www.philstar.com/business/2023/07/14/2280849/doe-lists-winning-bids-green-energy-auction. [Ch. 7]

Philstar.com, 'DOE opens direct green energy contracting to more consumers', 25 February 2026. [Ch. 1]

Philstar.com, 'DOE: Planning failure caused Visayas power shortfall', 5 October 2026, https://www.philstar.com/headlines/2026/10/05/2561051/doe-planning-failure-caused-visayas-power-shortfall. [Ch. 9, 12]

Philstar.com, 'WESM prices hit fresh lows in 2025', 5 January 2026, https://www.philstar.com/business/2026/01/05/2498730/wesm-prices-hit-fresh-lows-2025. [Ch. 1, 7, 8]

Power Philippines, 'Advent Upgrade Solar, Proterial ink 20-year deal for LIMA solar project', 4 September 2026, https://powerphilippines.com/advent-upgrade-solar-proterial-ink-20-year-deal-for-lima-solar-project/. [Ch. 12, 13]

Power Philippines, 'DOE generates 3,580 MW under GEA-2', 4 July 2023, https://powerphilippines.com/doe-generates-3580-mw-under-gea-2/. [Ch. 7]

Power Philippines, 'ERC clears Citicore's Binalonan Solar grid connection, flags potential curtailment', 2026, https://powerphilippines.com/erc-clears-citicores-binalonan-solar-grid-connection-flags-potential-curtailment/. [Ch. 9]

Power Philippines, 'ERC clears Citicore's Luntal 50-MW Batangas solar grid link', https://powerphilippines.com/erc-clears-citicores-luntal-50-mw-batangas-solar-grid-link/. [Ch. 9]

Power Philippines, 'ERC defends line rental rules amidst NASECORE Ombudsman complaint', 2 September 2026, https://powerphilippines.com/erc-defends-line-rental-rules-amidst-nasecore-ombudsman-complaint/. [Ch. 5, 9, 10]

Power Philippines, 'ERC sets GEAR prices under GEAP', https://powerphilippines.com/erc-sets-gear-prices-under-geap/. [Ch. 7]

Power Philippines, 'FCC Philippines taps Peak Energy for 15-year solar deal', 30 July 2026, https://powerphilippines.com/fcc-philippines-taps-peak-energy-for-15-year-solar-deal/. [Ch. 12]

Power Philippines, 'First Gen powers 13 Mount Grace hospitals with renewable energy', 19 March 2026, https://powerphilippines.com/first-gen-powers-13-mount-grace-hospitals-with-renewable-energy/. [Ch. 12, 13]

Power Philippines, 'WESM price climbs to PHP 7.43/kWh despite wider supply margin', 13 October 2026, https://powerphilippines.com/wesm-price-climbs-to-php-7-43-kwh-despite-wider-supply-margin/. [Ch. 5–10, 12]

Power Philippines, 'Zero-capex model gains ground as firms shift to solar without spending a peso', 3 January 2026, https://powerphilippines.com/zero-capex-model-gains-ground-as-firms-shift-to-solar-without-spending-a-peso/. [Ch. 2–4, 9]

PTV News, 'Luzon, Visayas grids remain under red, yellow alerts this May 15', https://ptvnews.ph/luzon-visayas-grids-remain-under-red-yellow-alerts-this-may-15/. [Ch. 9]

pv magazine, 'Philippines increases allocation under fourth energy auction', 10 November 2025, https://www.pv-magazine.com/2025/11/10/philippines-increases-allocation-under-fourth-energy-auction/. [Ch. 7]

pv magazine, 'Philippines proposes transmission grid reforms, updates to net-metering', 13 July 2026, https://www.pv-magazine.com/2026/07/13/philippines-proposes-transmission-grid-reforms-updates-to-net-metering/. [Ch. 9]

QC Solar Panel Installer, 'Commercial Solar Cost per kWp in Quezon City', last updated July 2026, https://qcsolarpanelinstaller.com/guides/commercial-solar-cost-per-kwp-quezon-city/. [Ch. 7]

Rappler, '87% of power lines restored post-Odette, but distribution a problem', 29 December 2021, https://www.rappler.com/business/ngcp-report-power-lines-post-typhoon-odette-december-29-2021/. [Ch. 9]

Rappler, 'Quake cuts power across provinces in Eastern Visayas', 1 October 2025, https://www.rappler.com/philippines/visayas/earthquake-eastern-visayas-power-outage-october-1-2025/. [Ch. 9]

RenewableEnergy.ph, 'Japanese auto parts maker FCC taps Peak Energy for Laguna rooftop solar project', 29 July 2026, https://renewableenergy.ph/japanese-auto-parts-maker-fcc-taps-peak-energy-for-laguna-rooftop-solar-project-570/. [Ch. 12]

The Manila Times, 'Peso rebounds from record low, closes at P62.985:$1', 16 October 2026, https://www.manilatimes.net/2026/10/16/business/peso-rebounds-from-record-low-closes-at-p629851/2447280. [Ch. 7, 9]

The Manila Times, 'SM Supermalls evolves for the next generation of customers', 4 September 2026, https://www.manilatimes.net/2026/09/04/business/sm-supermalls-evolves-for-the-next-generation-of-customers/2418586. [Ch. 12]

ThinkGeoEnergy, 'Philippines awards 30.9 MW in geothermal GEA-3 round', 10 June 2025, https://www.thinkgeoenergy.com/philippines-awards-30-9-mw-in-geothermal-gea-3-round/. [Ch. 7]

Appendix G. Index of Figures and Tables

The thirteen chapters contain 107 figures and 67 tables. The tables below list them by chapter, figures first, with each caption shortened to its first sentence. Figures and tables in these appendices are not included.

Table G.1. Chapter 1: Why Electricity Is Now a CFO Issue

No.	Caption (first sentence)
Figure 1.1	Electricity has moved from the facilities budget to the boardroom agenda (AI-generated image)
Figure 1.2	Components of a typical Meralco bill per kWh, October 2026
Figure 1.3	Meralco generation charge and average cost of Meralco's WESM purchases by billing month, February 2022 to October 2026
Figure 1.4	Average generation cost by Meralco supply source in a single month (October 2026 billing)
Figure 1.5	Illustrative example data: a fixed PPA tariff versus a floating, market-linked cost over a five-year contract
Figure 1.6	The three PPA paths covered in this book
Figure 1.7	An onsite solar installation on a commercial rooftop: the typical asset behind an onsite PPA (AI-generated image)
Figure 1.8	A grid-connected solar farm and substation: the kind of offsite resource that can supply an end-user through a RES or an RE Supplier (AI-generated image)
Figure 1.9	The CFO's energy procurement framework used in this book
Table 1.1	Scale of electricity exposure for a business using 100,000 kWh per month (simple arithmetic)
Table 1.2	The three paths at a glance

9 figures and 2 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.2. Chapter 2: PPA Basics in Plain Language: Who Owns What, Who Pays What, Who Carries the Risk

No.	Caption (first sentence)
Figure 2.1	A PPA is a long-term contract first and an energy project second (AI-generated image)
Figure 2.2	The parties around a Philippine PPA
Figure 2.3	Contract maps for the three PPA models
Figure 2.4	Behind the meter: an onsite system connects on the customer's side of the utility revenue meter, so its output is consumed directly by the site's... (AI-generated image)
Figure 2.5	In an offsite PPA, power from a remote plant reaches the buyer over regulated transmission and distribution networks, so network charges still apply (AI-generated image)
Figure 2.6	Anatomy of a PPA term sheet: twelve clauses, four questions
Figure 2.7	Typical risk allocation by PPA model
Figure 2.8	Money and power flows in the three models
Figure 2.9	Illustrative example data: monthly settlement under a contract-for-differences style VPPA
Table 2.1	Who does what in a Philippine PPA
Table 2.2	Who owns what, who pays what: the three models side by side
Table 2.3	Illustrative example data: monthly effect of an onsite PPA (pay-as-produced)

9 figures and 3 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.3. Chapter 3: Buy, Lease-to-Own or PPA: Cash Flow, Balance Sheet and Tax Compared

No.	Caption (first sentence)
Figure 3.1	The same solar system can be paid for in three very different ways (AI-generated image)
Figure 3.2	Who owns the system and how you pay, over a 25-year horizon
Figure 3.3	Whoever owns the system is responsible for keeping it producing: cleaning, inspection, repairs and insurance (AI-generated image)
Figure 3.4	Illustrative example data: cumulative after-tax net saving of the three onsite routes against

No.	Caption (first sentence)
	staying on grid supply
Figure 3.5	Typical balance-sheet footprint of each route for a lessee reporting under full PFRS
Figure 3.6	Comparison matrix: outright purchase, lease-to-own, onsite PPA and offsite PPA
Figure 3.7	Carports and other structures can host solar where roofs are weak or shaded, but they add structural cost and site permanence to the decision (AI-generated image)
Figure 3.8	Decision tree for choosing among purchase, lease-to-own and PPAs
Table 3.1	Illustrative example data: assumptions for the worked comparison
Table 3.2	Illustrative example data: results of the worked comparison (₱ million)
Table 3.3	Which route tends to fit which company

8 figures and 3 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.4. Chapter 4: Onsite PPA: Solar on Your Roof or Land

No.	Caption (first sentence)
Figure 4.1	An onsite PPA starts on the roof, not in the contract (AI-generated image)
Figure 4.2	System and contract layout of a typical onsite PPA
Figure 4.3	Site-readiness scorecard for an onsite PPA
Figure 4.4	Illustrative example data: average daily solar output of a 300 kWp system against a hypothetical 100,000 kWh/month load
Figure 4.5	Illustrative example data: self-consumption and solar share by system size for the same hypothetical site, assuming zero export
Figure 4.6	Solar plus storage at a cold-storage facility: the battery shifts midday solar to evening refrigeration load and can support critical loads during... (AI-generated image)
Figure 4.7	Illustrative example data: annual and cumulative savings over a 20-year onsite PPA under three tariff structures and four grid-price paths
Figure 4.8	Hospitals combine continuous load with crowded roofs and strict structural requirements; carports can add capacity (AI-generated image)
Table 4.1	Regulatory routes for a customer-site solar system (as verified in October 2026)
Table 4.2	Onsite PPA tariff structures compared
Table 4.3	Main risks of an onsite PPA and how to contain them
Table 4.4	Illustrative example data: assumptions for the savings case
Table 4.5	Illustrative example data: results of the savings case (₱ million)
Table 4.6	Sector fit for onsite PPAs

8 figures and 6 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.5. Chapter 5: Offsite PPA through a Retail Electricity Supplier (RES)

No.	Caption (first sentence)
Figure 5.1	In an offsite PPA the plant can be hundreds of kilometres away (AI-generated image)
Figure 5.2	Power and contract flow of an offsite PPA through a RES or RE Supplier
Figure 5.3	Minimum regulatory lead times for an initial switch to a RES
Figure 5.4	Switching requires an ERC-type-approved interval meter with telemetry, installed by the Retail Metering Service Provider at the customer's cost (AI-generated image)
Figure 5.5	Illustrative example data: monthly bill components under DU supply, a hypothetical RES contract and a hypothetical renewable supply contract
Figure 5.6	Illustrative example data: monthly generation cost under DU supply and three hypothetical RES structures, applied to Meralco's actual monthly...
Figure 5.7	RES tender roadmap: phases, indicative durations and decision gates
Figure 5.8	Evaluate offers on the total bill, using your own hourly load, not on the headline price per kWh (AI-generated image)
Table 5.1	Routes to an offsite supply contract (as verified in October 2026)
Table 5.2	Illustrative example data: DU supply versus RES and RE offsite contracts for about 100,000 kWh a month (₱, VAT-exclusive)

No.	Caption (first sentence)
Table 5.3	RES contract structures compared
Table 5.4	Illustrative example data: back-test of price structures, 100,000 kWh a month, January 2024 to October 2026 (32 billing months)
Table 5.5	Main risks of an offsite supply contract and how to contain them
Table 5.6	Sector fit for offsite supply through a RES or RE Supplier

8 figures and 6 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.6. Chapter 6: Virtual PPA: The Financial Contract and Where It Stands in the Philippines

No.	Caption (first sentence)
Figure 6.1	In a virtual PPA the renewable plant keeps selling its power into the grid and the market (AI-generated image)
Figure 6.2	VPPA contract and cash flows
Figure 6.3	Physical offsite PPA versus virtual PPA
Figure 6.4	A VPPA creates a monthly settlement to verify and a fair-value estimate to defend at every reporting date (AI-generated image)
Figure 6.5	Illustrative example data: monthly VPPA settlement for the last twelve billing months, using actual Luzon WESM average prices
Figure 6.6	Illustrative example data: hedge value of the VPPA for different physical supply arrangements (left) and basis risk between Luzon and the Visayas...
Figure 6.7	VPPA readiness decision framework
Figure 6.8	A VPPA can cover many sites at once, including those too small, or in the wrong place, to switch supplier, because nothing about their physical... (AI-generated image)
Table 6.1	Illustrative example data: three monthly settlements (200 MWh, strike ₱4.50/kWh)
Table 6.2	Key provisions of DOE Department Circular No
Table 6.3	Illustrative example data: twelve monthly settlements, October 2025 to September 2026 (strike ₱4.50/kWh; ₱, positive = buyer pays)
Table 6.4	Illustrative example data: back-test of generation cost for the whole group load, 23 billing months (₱/kWh)
Table 6.5	Main risks of a VPPA and how to contain them

8 figures and 5 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.7. Chapter 7: Pricing a PPA: Fixed Rates, Escalators, Discounts to Grid and Indexed Prices

No.	Caption (first sentence)
Figure 7.1	Behind every PPA price is a project budget: the panels, the inverters, the roof work, the money borrowed to pay for them and the return the owner... (AI-generated image)
Figure 7.2	Illustrative example data: how the components of Table 7.1 add up to a price
Figure 7.3	Panel (a), illustrative example data: price paths of the main structures over a 20-year term
Figure 7.4	Price-structure selection matrix
Figure 7.5	A spreadsheet that puts every offer on the same basis, with the same volumes, the same grid scenarios and the buyer's own discount rate, is the... (AI-generated image)
Figure 7.6	Illustrative example data: tornado charts for the developer's cost-based price (a) and the buyer's NPV of savings for Offer A in Section 7.9 (b)
Figure 7.7	Price ladder of verified Philippine benchmarks, 2024–2026, with the illustrative cost-based onsite tariff from Figure 7.2
Figure 7.8	Illustrative example data: price paths of the three offers (a) and the buyer's NPV of savings under four grid paths (b)
Figure 7.9	The price is negotiated together with the clauses that move it: escalators, floors, volume rules and buyouts (AI-generated image)
Table 7.1	Illustrative example data: LCOE of a 300 kWp rooftop system, 20-year term
Table 7.2	Cost and finance benchmarks for solar PPA pricing (verified, as of mid-October 2026)
Table 7.3	Green Energy Auction rounds: ceiling prices and results (verified)
Table 7.4	Risk allocation by price structure

No.	Caption (first sentence)
Table 7.5	Illustrative example data: three developer offers for the same 300 kWp onsite system
Table 7.6	Illustrative example data: results of the offer comparison

9 figures and 6 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.8. Chapter 8: Modelling Your Savings: NPV, IRR, Payback and Sensitivity, Step by Step

No.	Caption (first sentence)
Figure 8.1	A savings model turns a stack of electricity bills and a set of contract offers into one comparable number for each option, and an honest range... (AI-generated image)
Figure 8.2	Interval data shows when a site uses power (AI-generated image)
Figure 8.3	Building a PPA savings model: eight steps from bills to a board decision
Figure 8.4	Panel (a): verified history of Meralco's generation charge and Luzon WESM prices
Figure 8.5	Illustrative example data: cumulative after-tax savings of each option against grid only (a), and NPV under four grid-price scenarios (b)
Figure 8.6	Illustrative example data: distribution of NPV for each option across 10,000 Monte Carlo draws
Figure 8.7	Illustrative example data: NPV against average grid-price escalation (a) and against the starting avoided cost for solar (b)
Figure 8.8	The board needs a decision, a comparison on a common basis, the key drivers and the downside, not the spreadsheet (AI-generated image)
Table 8.1	Data checklist for a PPA savings model
Table 8.2	Rebuilding the year-1 bill for the example site (100,000 kWh and 250 kW a month)
Table 8.3	Discount-rate inputs (verified, mid-October 2026)
Table 8.4	Illustrative example data: assumptions for the worked example
Table 8.5	Illustrative example data: results for the base case (+2% a year grid escalation)
Table 8.6	Illustrative example data: NPV with one input changed (₱ million)
Table 8.7	Illustrative example data: Monte Carlo results (10,000 draws, ₱ million)
Table 8.8	Illustrative example data: break-even values (NPV = 0), other inputs at base values

8 figures and 8 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.9. Chapter 9: Risk: Volume, Price, Counterparty, Regulatory and Curtailment

No.	Caption (first sentence)
Figure 9.1	A 20-year power contract in the Philippines will see typhoons, price spikes, rule changes and, quite possibly, a counterparty in trouble (AI-generated image)
Figure 9.2	Risk allocation by contract type: who usually bears each risk in an onsite PPA, an offsite supply contract with a RES, and a virtual PPA
Figure 9.3	Panel (a): verified annual PV output in Metro Manila from PVGIS, 2005–2023
Figure 9.4	Verified monthly average WESM prices by region, November 2024 to September 2026
Figure 9.5	Grid alerts are declared by the system operator when reserves run short (AI-generated image)
Figure 9.6	Inverters and switchgear on a raised plinth above floodwater (AI-generated image)
Figure 9.7	Illustrative example data: risk heat map for the example site before mitigation
Figure 9.8	Illustrative example data: (a) one-year cost of volume and credit risks; (b) cost of a four-month typhoon outage under different contract and...
Figure 9.9	A risk mitigation roadmap for a PPA or RES contract, from tender preparation to annual review
Table 9.1	Risk taxonomy for onsite, offsite/RES and virtual PPAs
Table 9.2	Recent regulatory changes relevant to PPA risk (verified, October 2026)
Table 9.3	Mitigation by contract clause
Table 9.4	Illustrative example data: quantified risk scenarios for the example site
Table 9.5	Risk register columns

9 figures and 5 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.10. Chapter 10: Term Sheet Red Flags, Clause by Clause

No.	Caption (first sentence)
Figure 10.1	A term sheet is short, but almost every line moves money or risk (AI-generated image)
Figure 10.2	Term sheet anatomy with red-flag hotspots
Figure 10.3	Roof attachment checks after a storm (AI-generated image)
Figure 10.4	Illustrative example data: early termination payment over a 20-year onsite PPA under four drafting choices
Figure 10.5	The issues list, not the draft contract, is the negotiating document (AI-generated image)
Figure 10.6	Illustrative example data: red/amber/green scorecard for three hypothetical first-draft offers
Figure 10.7	A negotiation playbook from first term sheet to signature
Table 10.1	Illustrative clause weights by structure (5 = deal-critical; 0 = not applicable)

7 figures and 1 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.11. Chapter 11: Choosing a Developer and Running a Competitive Tender

No.	Caption (first sentence)
Figure 11.1	Competition only works if every bid is opened, read and scored under rules fixed in advance (AI-generated image)
Figure 11.2	Tender process end to end: indicative timeline from board decision to commercial operation for a rooftop onsite PPA, with the RES variant
Figure 11.3	Bills, interval data, roof drawings, the structural report and site photos: a complete data room narrows the spread between bids (AI-generated image)
Figure 11.4	Developer due-diligence funnel
Figure 11.5	A supervised site walk gives every bidder the same view of the roof, access routes and obstructions (AI-generated image)
Figure 11.6	Developer selection scorecard framework
Figure 11.7	Illustrative example data: headline price and normalised levelised cost to the buyer for four hypothetical bids
Figure 11.8	Illustrative example data: weighted scores of four hypothetical bids by criterion
Table 11.1	Data room contents for an onsite or offsite PPA tender
Table 11.2	Licences and registrations to verify, by structure
Table 11.3	Illustrative evaluation criteria and weights
Table 11.4	Four illustrative bids as received
Table 11.5	Normalised results and weighted scores
Table 11.6	Illustrative adviser effort for a single-site onsite PPA tender

8 figures and 6 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.12. Chapter 12: Case Studies: A Hospital, a Factory and a Mall

No.	Caption (first sentence)
Figure 12.1	Case decision paths: how each composite buyer moved from its load profile to a decision
Figure 12.2	A crowded hospital roof: the array must work around the helipad, chillers, cooling towers and exhausts, so a parking-deck canopy adds the capacity... (AI-generated image)
Figure 12.3	Illustrative example data (composite case): the hospital's average hourly load against the output of a 600 kWp array
Figure 12.4	A large metal factory roof with space reserved for expansion: the roof can carry more panels than the load can use on a Sunday (AI-generated image)
Figure 12.5	Illustrative example data (composite case): the factory's weekday, Sunday and post-growth load against 1.2 MWp and 1.6 MWp of solar
Figure 12.6	Solar carports turn a mall's open parking into generating capacity and shade, at a higher structural cost than rooftops (AI-generated image)
Figure 12.7	(a) Illustrative example data (composite case): one Luzon mall's hourly load against its rooftop and carport solar. (b) Actual data: IEMOP monthly...
Figure 12.8	Illustrative example data (composite cases): median NPV and P10 to P90 range for every option

No.	Caption (first sentence)
	in the three cases
Figure 12.9	Illustrative example data (composite cases): cross-case summary dashboard
Table 12.1	Inputs used in the three cases: real market data and illustrative assumptions
Table 12.2	Case 1 results (illustrative example data; composite case)
Table 12.3	Case 2 tender: three bids normalised with the Chapter 11 method (illustrative example data)
Table 12.4	Case 2 results for a 1.2 MWp system (illustrative example data)
Table 12.5	Case 3 VPPA back-test on actual WESM prices, November 2024 to September 2026
Table 12.6	Case 3 results for the group (illustrative example data)
Table 12.7	Selected publicly reported Philippine corporate solar and renewable supply deals
Table 12.8	Cross-case summary (illustrative example data; composite cases)

9 figures and 8 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

Table G.13. Chapter 13: A 90-Day Roadmap: From First Idea to Signed PPA

No.	Caption (first sentence)
Figure 13.1	The 90-day roadmap: tasks, phases and decision gates, with the chapter that supports each task
Figure 13.2	A one-page charter and a visible thirteen-week plan keep a small team on schedule (AI-generated image)
Figure 13.3	The four decision gates and their go / no-go criteria
Figure 13.4	Checking a capacitor bank with a power quality analyser: a low-cost first step before any PPA (AI-generated image)
Figure 13.5	Post-signing timelines to first RES supply, onsite COD or first VPPA settlement
Figure 13.6	Rooftop installation begins only after design, structural checks and permits are complete (AI-generated image)
Figure 13.7	The whole book on one page: the question each chapter answers, its core idea, and how the chapters feed the three phases of the 90-day roadmap
Table 13.1	Week-by-week plan and deliverables
Table 13.2	RACI matrix for the 90-day programme
Table 13.3	Decision gates: go / no-go criteria
Table 13.4	Quick wins to run during Days 1–30
Table 13.5	Board approval paper: template outline
Table 13.6	Realistic post-signing timelines
Table 13.7	Common delays and how to avoid them
Table 13.8	How every chapter feeds the 90-day roadmap

7 figures and 8 tables. Captions shortened to their first sentence; sources and notes are in the chapter.

End of appendices.

Notes

These notes cover sources checked for the appendices themselves. All other sources are those of the chapter endnotes, listed in Appendix F. All sources were accessed on 17–18 October 2026 (Asia/Manila). Tariffs, thresholds and DOE and ERC rules change; check the current text before relying on it.

1. Republic Act No. 876, The Arbitration Law, The Lawphil Project, https://lawphil.net/statutes/repacts/ra1953/ra_876_1953.html ('Approved: June 19, 1953'). Checked 18 October 2026.

2. ISELCO II, notice of ERC public consultation on the Resolution Amending ERC Resolution No. 15, Series of 2025 (ERC Case No. 2026-014 RM), 7 August 2026, https://iselco2.com.ph/august-07-2026-erc-in-line-with-the-energy-regulatory-commissions-erc-commitment-to-transparency-and-participatory-governance-we-invite-

all-stakeholders-to-join-our-upcoming-public-con/. No final amended resolution had been located on 18 October 2026.

3. IEMOP, 'RCOA Threshold Bulletin No. 2026-01', 5 May 2026, https://www.iemop.ph/wp-content/uploads/2026/05/RCOA-Threshold-Bulletin-2026-01.pdf (100 kW threshold under ERC Resolution No. 22, Series of 2025, effective 26 June 2026); BusinessWorld, 'ERC says 11,500 businesses can tap new 100-kW power market', 8 October 2026, https://bworldonline.com/corporate/2026/10/08/785541/erc-says-11500-businesses-can-tap-new-100-kw-power-market/ (RCOA began in 2013 at 1 MW; 8,674 end-users had switched as of August 2026; ERC officials said 100 kW is not the final target). Checked 18 October 2026.

4. DOE, Department Circular No. DC2025-10-0024, 'Guidelines on Virtual Power Purchase Agreements', https://doe.gov.ph/circular-no-dc-2025-10-0024 (published 7 November 2025; Section 9 on supplementary rules); DOE, 'DOE Issuances 2026', https://doe.gov.ph/laws-and-issuances/issuances/2026 (department circulars DC2026-01-0001 to DC2026-10-0021 listed on 18 October 2026, none on VPPAs).

5. DOE, Department Circular No. DC2026-01-0002, https://doe.gov.ph/circular-no-dc-2026-01-0002 (published 6 February 2026; Section 8 annual review of the 50 kW threshold, with possible phased reductions, e.g. to 20 kW, 10 kW and eventually 0 kW); IEMOP, 'Advisory: IEMOP Implementation of DOE Department Circular No. DC2026-01-0002', 7 September 2026, https://www.iemop.ph/wp-content/uploads/2026/09/IEMOP-Advisory_Implementation-of-DC2026-01-002_Revised-Rules-GEOP.pdf (effective 21 February 2026). Checked 18 October 2026.

6. DOE, Department Circular No. DC2026-08-0017, 'Policy Guidelines for Self-Generating Facility Zero-Export Solar Systems and Micro-Solar Systems for Own-Use', https://prod-cms.doe.gov.ph/documents/d/guest/dc2026-08-0017-pdf (Section 7: ERC to issue regulatory support within ninety days of effectivity; Section 13: effective immediately after publication in the Official Gazette or two newspapers of general circulation); Enviliance ASIA, 'Philippines Deregulates Small-Scale Solar Power Systems for Self-Consumption', 27 August 2026, https://enviliance.com/regions/southeast-asia/ph/report_17224 (published in BusinessWorld and Daily Tribune on 5 August 2026); DOE, 'DOE Simplifies Rules for Own-Use Solar, Expands Access for Filipino Consumers', https://doe.gov.ph/doe-simplifies-rules-for-own-use-solar-expands-access-for-filipino-consumers. No ERC issuance under Section 7 had been located on 18 October 2026.

7. AsianBondsOnline (Asian Development Bank), 'Philippines', policy rates table, https://asianbondsonline.adb.org/philippines/ (5.000% from 27 August 2026); BSP, schedule of Monetary Board meetings on monetary policy, https://www.bsp.gov.ph/Pages/PriceStability/ScheduleOfMeetingsOfTheAdvisoryCommitteeAndMonetaryBoardOnMonetaryPolicy.aspx (22 October and 17 December 2026); BusinessWorld, 'Deutsche Bank expects further BSP tightening', 12 October 2026, https://bworldonline.com/banking-finance/2026/10/12/786230/deutsche-bank-expects-further-bsp-tightening/ (forecast of a further 25 bp increase). The outcome of the 22 October 2026 meeting was not known when this appendix was completed.

Figure and image credits

Figures C.1 and D.1 and all tables in these appendices were prepared by the author (build/charts_appx.py and build/content_appx.py). Chapter references in Appendices A, D, F and G were generated from the chapter source files (build/appx_refs.py). Figure D.1 uses only the instruments and dates listed in Tables D.1 to D.7.

Disclaimer. These appendices are for general information and do not constitute legal, tax, accounting, insurance, engineering or investment advice. Summaries of laws, regulations and standards are simplified and may be overtaken by later rules; illustrative values are not quotes, forecasts or recommendations. Engage qualified Philippine counsel to review every PPA, RES supply contract or VPPA, and consult your auditor, tax adviser and insurance broker, before signing.