Navigating the Philippine Energy Transition: Key Insights for Asset Owners

18 August 2025

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List of Abbreviations

ADB	Asian Development Bank
APAC	Asia-Pacific
BAU	Business-as-usual
BESS	Battery Energy Storage Solution
CFB	Circulating Fluidized Bed
CFPP	Coal Fired Power Plant
COD	Commercial Operation Date
D/E	Debt-to-Equity Ratio
DOE	Department of Energy
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortization
EERI	Excellent Energy Resources Inc.
EPIRA	Electric Power Industry Reform Act of 2001
ER 1-94	Energy Regulations No. 1-94
ETM	Energy Transition Mechanism
FCFE	Free Cash Flow to Equity
GDP	Gross Domestic Product
GEAP	Green Energy Auction Program
GEAR	Green Energy Auction Reserve
GFANZ	Glasgow Financial Alliance for Net Zero
GNPD	Dinginin Power Station
HVDC	High Voltage Direct Current
IRR	Internal Rate of Return
KPI	Key Performance Indicator
LNG	Liquefied Natural Gas
LPPC	Limay Power Station
MPO	Managed Phaseout
MPPCL	Masinloc Power Station
NPV	Net Present Value
NZTP	Net-zero Transition Plan
PCPC	Concepcion Power Station
PHP	Philippine Peso
PPA	Power Purchase Agreement
PTCM	Philippine Transition Criteria Matrix
QPPL	Quezon Power Plant
RE	Renewable Energy
SBPL	San Buenaventura Power
SDG	Sustainable Development Goal
SLB	Sustainability-linked Bond
SLTEC	Puting Bato Power Station
SPPC	South Premiere Power Corporation
TPC	Toledo Power
UNDP	United Nations Development Programme
WACC	Weighted Average Cost of Capital
WESM	Wholesale Electricy Spot Market

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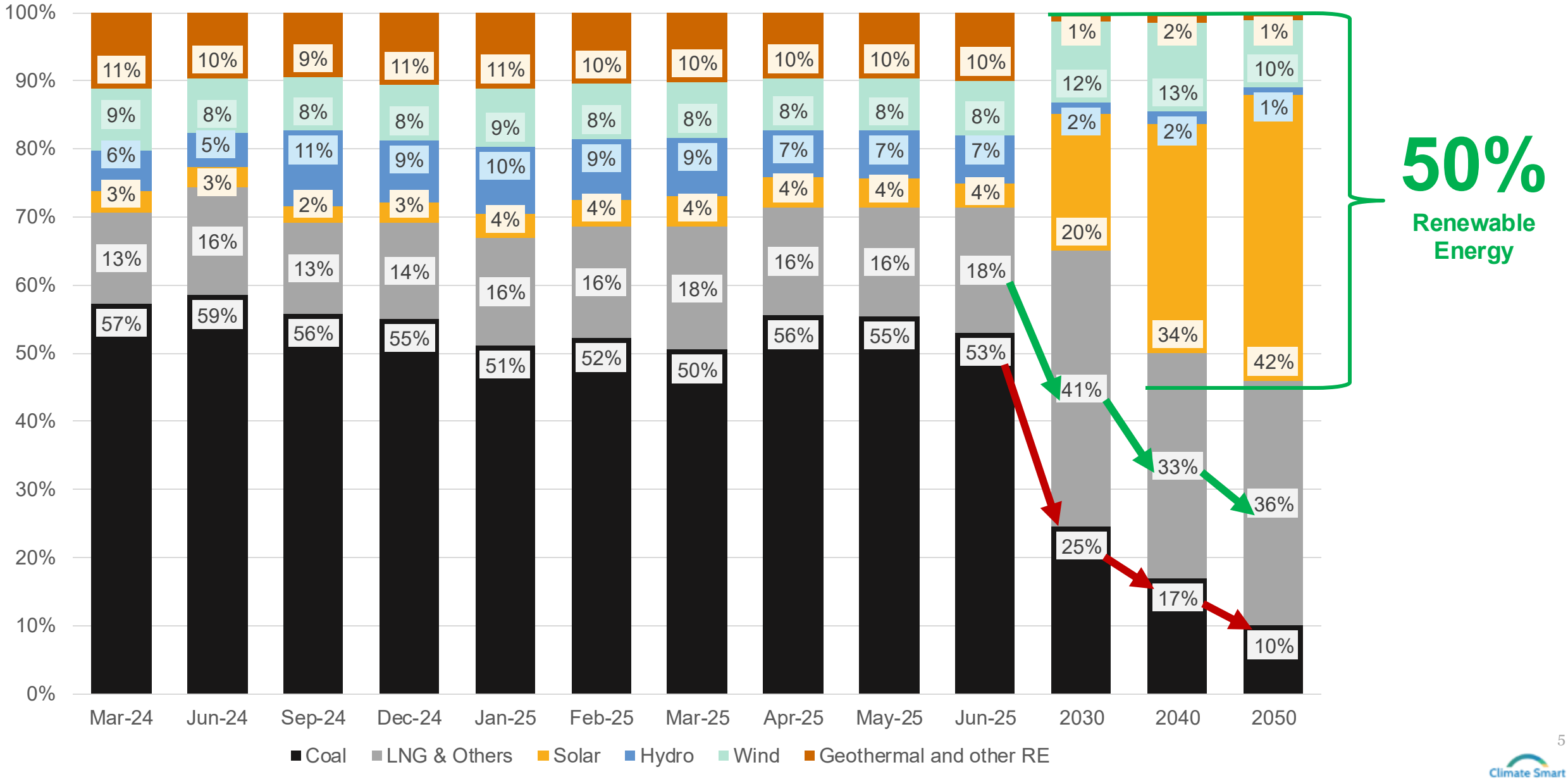
Session Agenda

1. Philippine Power Industry in 2025
2. Scoring Philippine CFPPS on readiness for transition
3. Developing Financially Viable Managed Phase Out Pathways for Archetype CFPPs in the Philippines

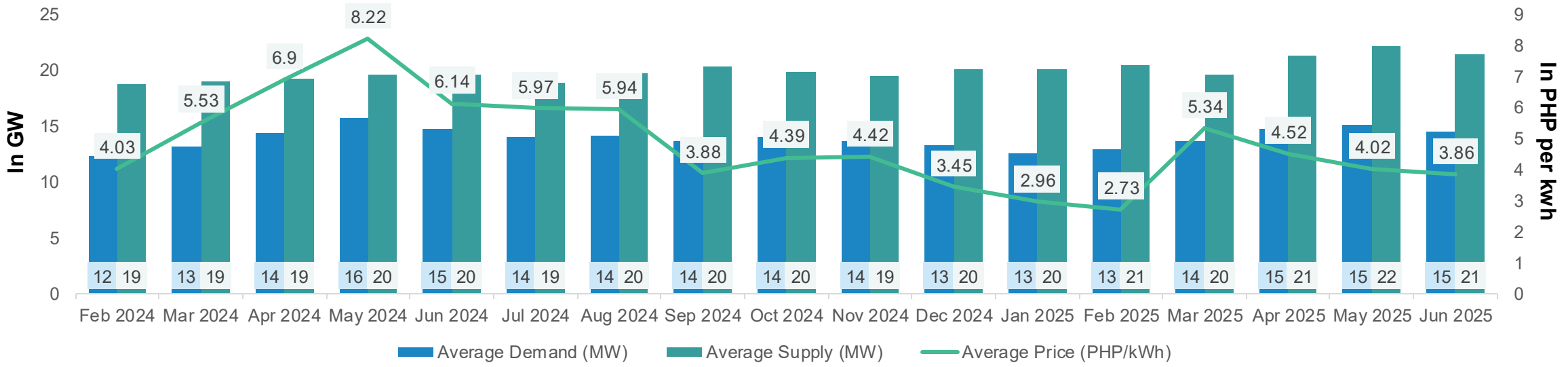
PART 1: Philippine Power Industry in 2025

Philippine power generation is still growing and still dominated by coal and thermals

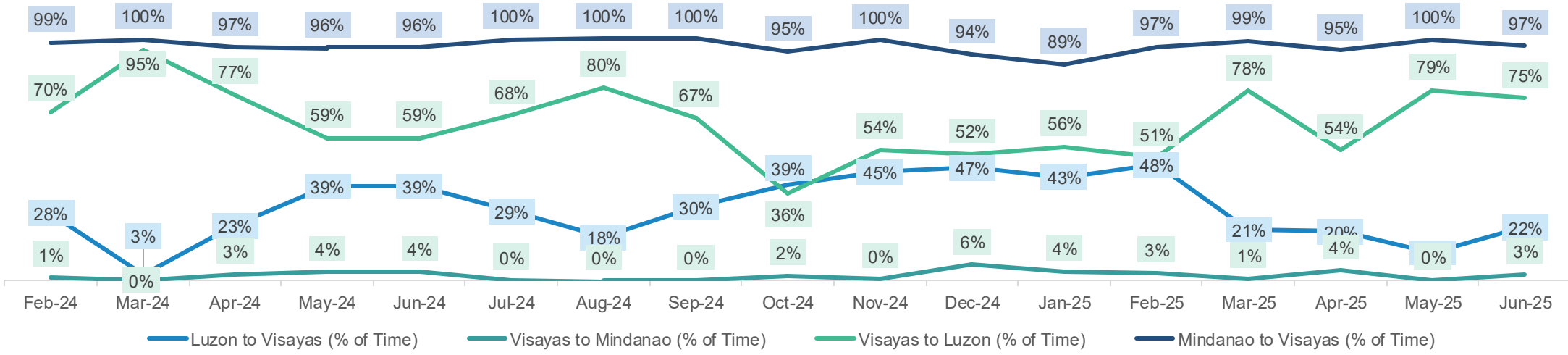


However increasing penetration of renewable energy has pushed prices down but issues remain

POWER SUPPLY – DEMAND + AVERAGE PRICE



AVERAGE HVDC POWER EXCHANGE



RE GEAP prices remaining tight vs exceptions, CFPPs remain cheap, and LNG expensive

- Green Energy Auction Reserve (GEAR) prices for solar already match delivered rates from CFPPs based on latest awarded PPAs, with LNG closely approximating onshore wind GEAR prices but previous GEAPs had mixed results

GEAR Prices and Capacities Summary

Technology	GEAP 1 (2022)	GEAP 2 (2023)	GEAP 4 (2025)
GEAR Price (PHP/kWh)			
Ground mounted Solar	3.67	4.40	5.68
Rooftop Solar	NA	2.87	4.48
Floating Solar	NA	NA	6.53
Solar + BESS	NA	NA	5.40
Onshore Wind	6.05	5.85	6.09
Biomass	5.08	Up to 6.3	NA
Run of river hydro	5.49	NA	NA
Capacity (MW)			
Ground mounted Solar	1,260	6,715	3,940
Rooftop Solar	NA	605	48
Floating Solar	NA	300	3,175
Solar + BESS	NA	NA	1,100+ESS
Onshore Wind	380	3,720	2,390
Biomass	230	235	NA
Run of river hydro	130	NA	NA

CFPPs Delivered Rates Summary with Awarded PPAs

IPPs		Delivered Rate (PHP/kWh)	Date of Awarding
GNPD	Mid-merit	6.7628	Feb 2025
MPPCL	Baseload	5.0107	Nov 2024
GNPD	Baseload	5.2217	Oct 2024
LPPC	Baseload	5.6150	May 2024
GNPD	Baseload	6.0403	Mar 2024
AVERAGE RATE		5.7301	

LNG Delivered Rates Summary with Awarded PPAs

IPPs		Delivered Rate (PHP/kWh)	Date of Awarding
SPPC	Baseload	6.0950	Apr 2024
EERI	Baseload	6.1917	Mar 2024
SPPC	Mid-merit	6.5398	Apr 2022
AVERAGE RATE		6.2755	

Notes:
(1) Based on latest GEAP Press Releases and ERC Disclosures

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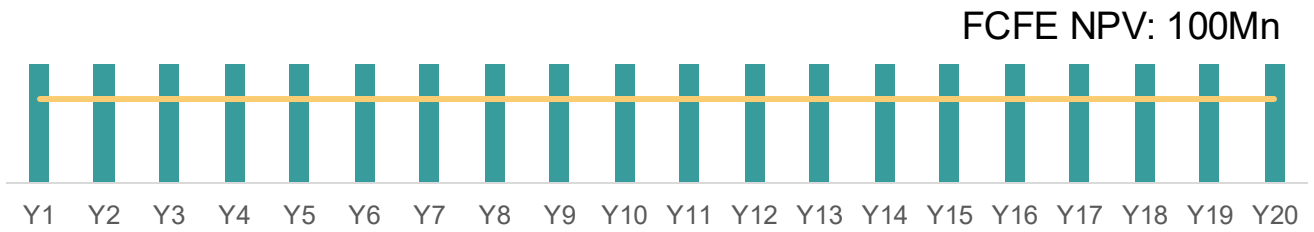
Why Early CFPP Transition is still relevant today – unlocking "new" capital for RE

- Regulations are tightening with capital remaining scarce – Local debt financing from large banks getting harder and more expensive to access for thermal assets without any transition story/ strategy from sponsors
- Sponsors' equity and debt capital are locked into large CFPP assets and will miss out on the investment opportunity of aggressively expanding its RE portfolio and power assets that can tap the ancillary market

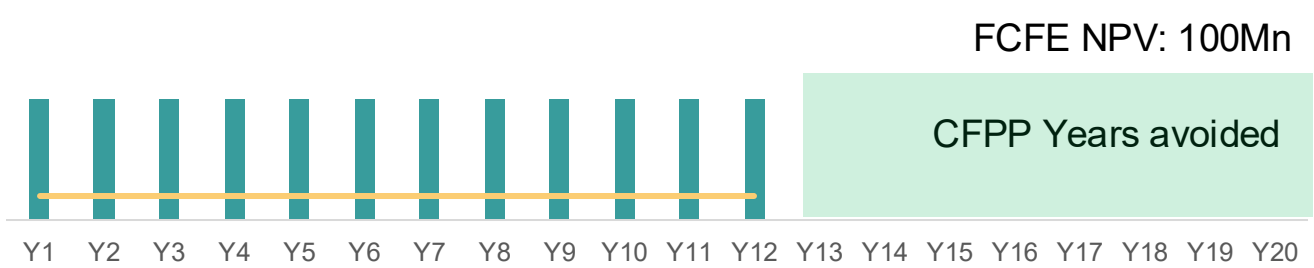
Cashflows from Current Operations



- CFPP earns its money for 20-25 years of operations
- Based on current cashflows and likely basis for acquisition price

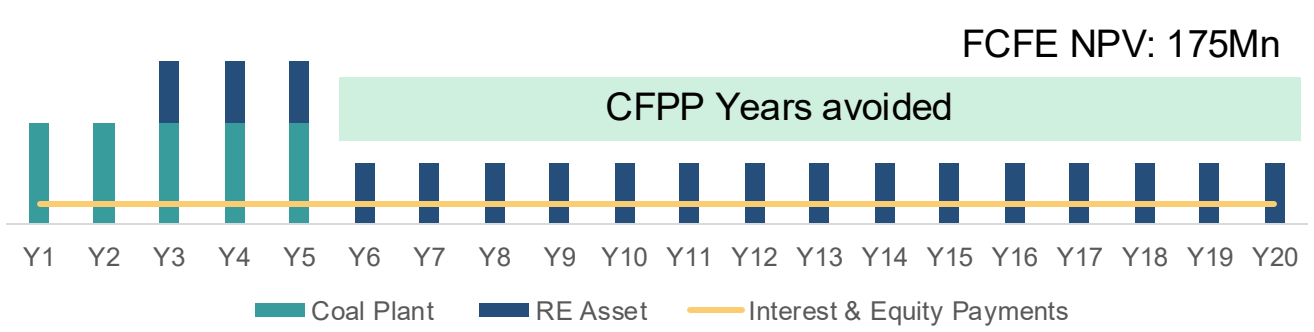
Post-Acquisition Cashflows

Credit Support/ Lower cost of Capital only



- Earlier transition possible due to upfront refinancing proceeds, accumulated savings from lower cost of overall capital from special lower cost debt and equity
- More value upside if financing is paired with alternative financing (ie transition credits) and renewable energy (RE) assets

RE Asset, Credit Support/ Lower Cost of Capital



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Part 2: Scoring Philippine CFPPS on readiness for transition

Philippine Transition Criteria Matrix (PTCM) Overview

- The PTCM was developed to determine which of the country's CFPPs are most viable for transition financing

PTCM Objectives

Develop a framework of metrics to score and rank CFPPs and to highlight the best candidates for MPO

Provide high-level insights on CFPPs that can be considered for early transition

Test plants that are considered good candidates for early transition by an MPO.

Preliminary Framework

PTCM assessed (i) the national and regional contexts of the Philippines in terms of its degree of readiness to transition to clean energy, (ii) fossil fuel plants' operating conditions, and (iii) existing contractual obligations. Following this, the PTCM will screen candidates based on the following indicative criteria:

Minimal to no adverse impact on energy security

High financial Viability and potential for an MPO

Minimal to no impact on livelihood and local economy

High contribution to environmental damage

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Methodology

Technical (35%)	Transition potential (20%)	Financial (30%)	Socio-environmental (15%)
Metrics on the role of the CFPP in grid security vs operational performance	*Metrics on the technical feasibility to transition to RE and low carbon technologies*	*Metrics on the ability to earn money to payback a potential transition finance mechanism*	*Metrics on potential social and environmental impact in a for early decommissioning*

CFPPs were rated Low (30% of weightage), Medium (60% of weightage), and High (90% of Weightage)

Technical (35%)	Transition potential (20%)	Financial (30%)	Socio-environmental (15%)
5% Plant Capacity (MW)	5% Plant Age	15% Profitability[1] (% EBITDA Margin)	2.5 % Estimated Number of Jobs Lost
10% Plant Capacity factor (%)	5% Transition Options Availability	5% % Contracted Capacity for PSA	2.5 % Contribution to the local government (ER 1-94/Local GDP)
5% Plant Efficiency (%)	10% Number of Partners	10% Fixed Operating Costs ($/MWh)	10 % Carbon Emissions Intensity (gCO_2e/kWh)
15% Criticality to Grid			

The higher the total score a CFPP tallies, the higher its potential for a managed phaseout

Technical (35%)	Transition potential (20%)	Financial (30%)	Socio-environmental (15%)
Higher Technical Score = Lower threat to energy security	Higher Transition Potential Score = Lower technical/legal hurdles to transition	Higher Financial Score = Higher capability to fulfill MPO obligations	Higher Socio-environmental Score = Lower impact to communities and greater environmental impact

1 Assuming CFPP is fully contracted

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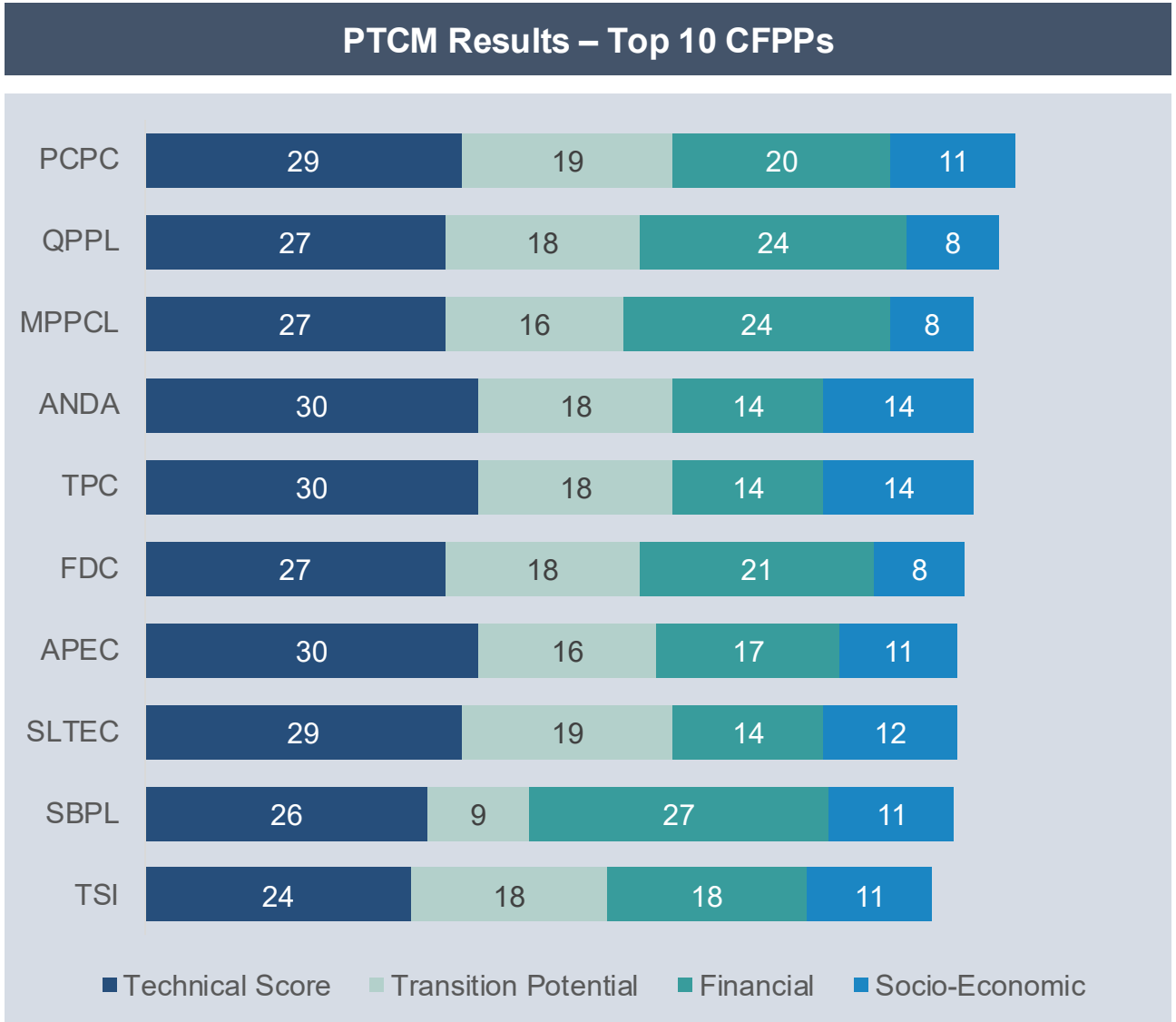
Results



- Larger plants like MPPCL, QPPL, and SBPL have good economies of scale and ability to acquire medium to long term PPAs
- As ancillary service capable assets plays catch up – baseload opportunities remain for CFPPs like PCPC and TPC in supply scarce region like Visayas in the medium to long term
- CFPPs have to explore transition options to adopt to a 2025 world – this includes upgrades for flexibility and co-firing with biomass, ammonia, or hydrogen
- Young (0-5 yrs) to middle-aged plants (6 to 15 yrs) have the opportunity to maximize MPO financing interest vs older plants

Part 3: Developing Financially Viable Managed Phase Out Pathways for Archetype CFPPs in the Philippines

Overview | Structuring and Analyzing a Managed Phase Out (MPO) of CFPPs (1/2)

- Although energy policy will remain the primary driver of a country's transition from coal to clean energy, financing mechanisms can play a catalytic role in enabling the benefits of, and overcoming barriers to, coal phaseout.

Financial Levers

Two types of financial levers and what could work in the Philippines

1. **Reducing Cost of Capital**
   Such mechanisms include blended finance and credit enhancements

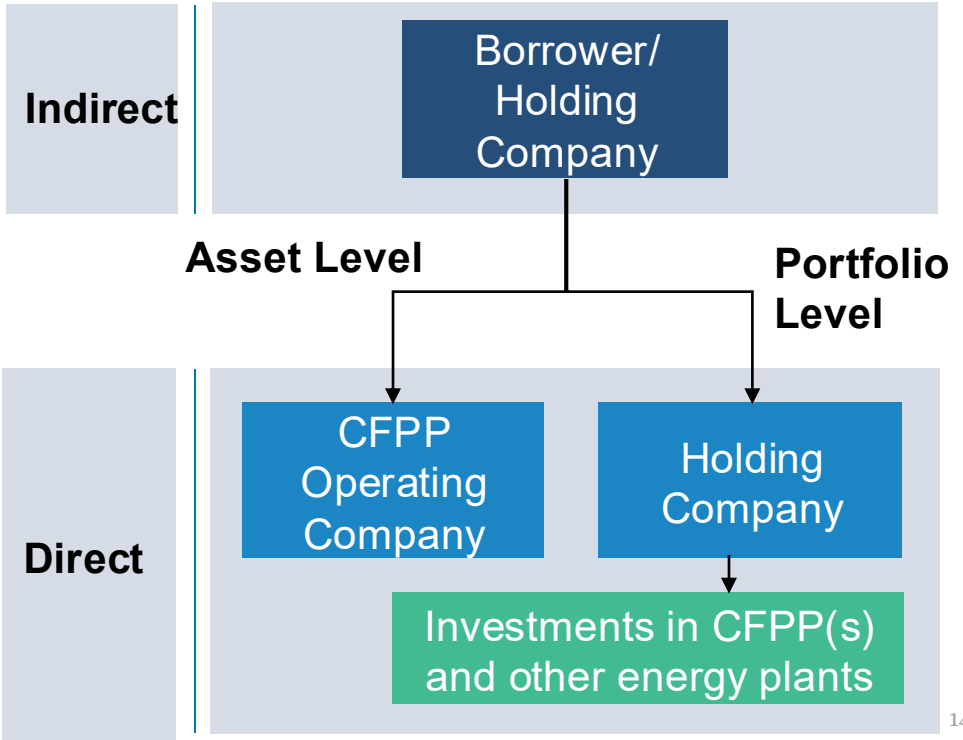
2. **Alternative Cash Flows**
   Includes bundling with renewable energy projects, debt-for-climate swaps, carbon credits etc

While no one-size-fits-all financing mechanism exists, the following may be most relevant to APAC:

- Blended capital
- Financial engineering
- Renewable energy bundling
- Carbon credits
- Outcome-based / KPI linked financing

Participation Models

FIs can participate by investing debt, equity, or mezzanine directly into an asset/portfolio or indirectly through a managed transition vehicle



Overview | Structuring and Analyzing a Managed Phase Out (MPO) of CFPPs (2/2)

- An MPO is considered financially feasible if there is minimal to no value loss, obligations are fully settled, and the transition will result in accelerated retirement or reduced emissions
- International benchmarks for financing already being explored in the Philippines – including ADB's Energy Transition Mechanism (ETM) and Glasgow Financial Alliance for Net Zero's (GFANZ's) MPO

Commercial Criteria Used to Assess Financial Feasibility of MPO

1. Early retirement is "value neutral" at retirement year
2. Equity Internal Rate of Return (IRR) of an MPO ≥ Baseline or other preferred alternative at retirement year
3. Full Payment of Plant Level Loans at retirement year
4. Avoided Operating Years or Emissions at retirement year

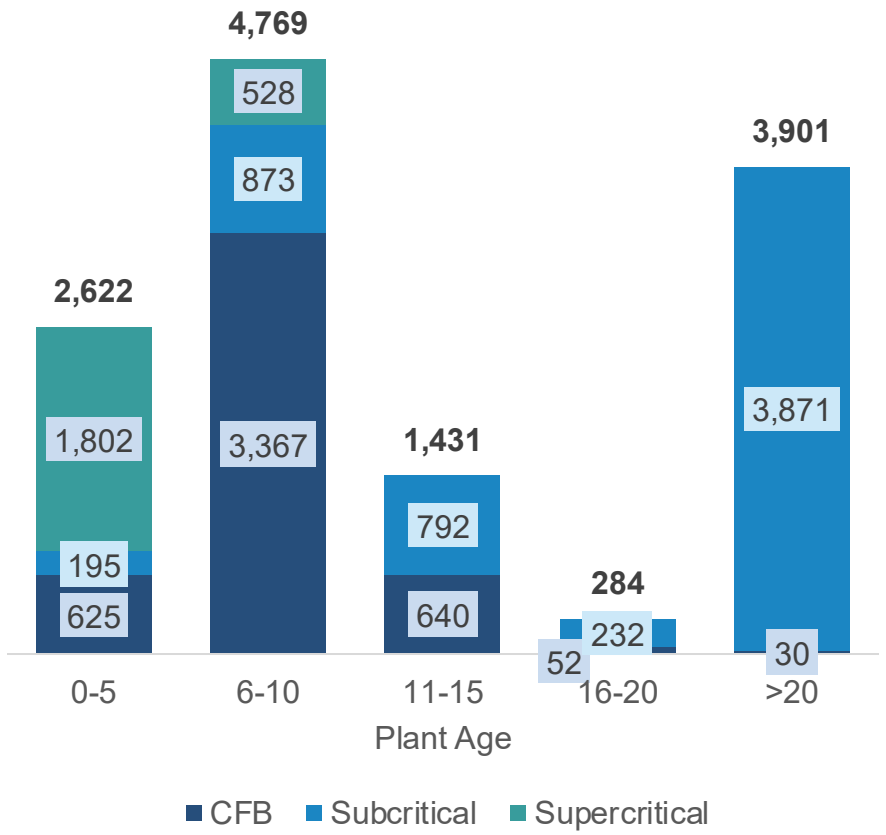
Commercial Criteria Used to Assess Financial Feasibility of MPO

- **A** Ensuring credibility of relevant energy transition and coal phaseout plans
- **B** Optimizing meaningful impact
- **C** Achieving transparency and accountability

Methodology | Developing Archetype CFPPs

- Baseline assumptions for three CFPP archetypes, representative of the Philippines' coal plant portfolio, were developed to evaluate the suitability of an MPO

Installed PH CFPP Capacity (MW)



	Middle-aged Plant	Young Plant	New Plant
Plant Technology	Subcritical	CFB	CFB
Age (Yrs)	25	10	(New)
Project Cost (PHPm)	45,000	26,000	34,,000
COD / Retirement year	2000 / 2039	2015 / 2054	2030 / 2069
Capacity (MW)	1000	300	600
Heat Rate (Btu/kWh)	9,407	9,798	9,798
Capacity Factor	80%	80%	80%
Tariff Assumptions			
Contracted Capacity, Start and End Date*	PPA 1 – 800MW, (2000 – 2014) PPA 2 – 800 MW (2015 – 2029)	PPA 1 – 240 MW, (2015 – 2029) PPA 2 – 240 MW (2030 – 2044)	PPA 1 – 480 MW, (2029 – 2043) PPA 2 – 480 MW (2044 – 2059)
Ave Tariff Price per kwh	PHP 4.38-6.37	PHP 6.25-6.69	PHP 5.50-6.62

Source: Transition Zero

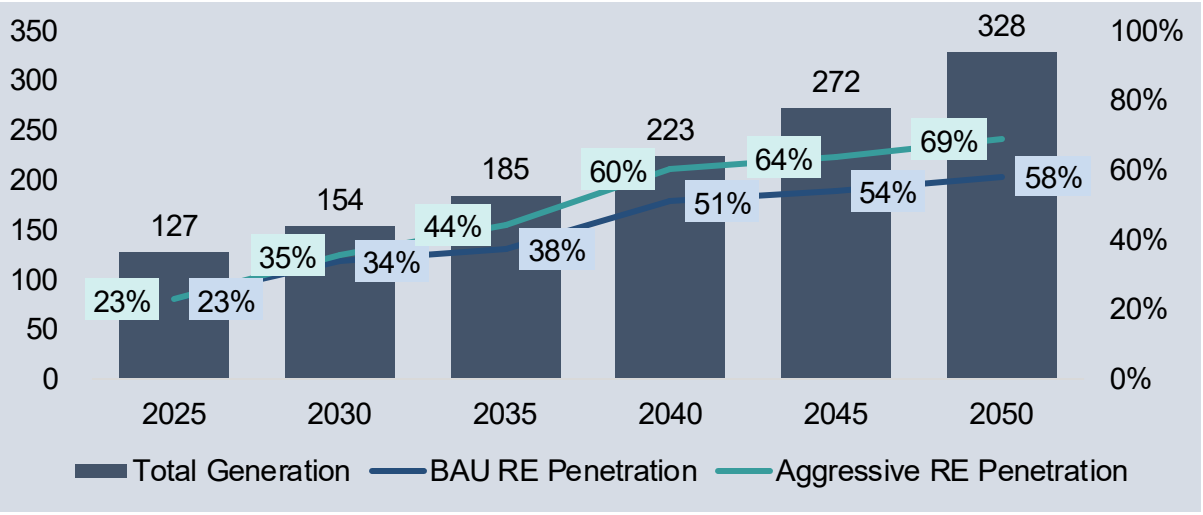
* Project cost, interest rates,, and other market data have not been adjusted for inflation

Methodology | Developing Transition Scenarios

• The financial viability of an MPO was assessed against the CFPPs' baseline operating life of 40 years across two market scenarios

WESM / Market Scenarios		
	BAU	Aggressive
RE Share Targets	*In line with latest Philippine Energy Plan*	*Higher than latest Philippine Energy Plan*
2030	35%	35%
2040	50%	57%
2050	>50%	>65%

Philippine Projected Generation (TWh)



MPO Assumptions (PHPm)			
MPO	**Middle-aged Plant**	**Young Plant**	**New Plant**
Target Retirement	December 31, 2029 (10 years avoided)	December 31, 2039 (15 years avoided)	December 31, 2050 (19 years avoided)
MPO Loan			
Drawdown	January 1, 2026	January 1, 2026	January 1, 2035
Loan Amount (PHPm)	BAU: 37,000-38,000 Aggressive: 37,000	BAU: 33,000-35,000 Aggressive: 32,000-34,000	BAU: 59,000-63,000 Aggressive: 55,000-59,000
Loan Tenor (Yrs)	4	14	14
Interest Rate Discount from the MPO	1%-2%	1%-2%	1%-2%
Assumed D/E prior to Drawdown	0%	13%	50%
Debt Sculpting	1.20 x Debt Service Coverage Ratio		

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Summary Results for Archetype Plants - BAU

• As an MPO targets value-neutrality for asset owners, its value-add is maximized from younger CFPPs with a) existing debt and b) longer runways for repayment

Middle-aged Plant (PHPm)

Baseline Equity Value (as of 2025)	Interest Rate Discount from the MPO	MPO Proceeds Available for Dividends	MPO Equity Value	Increase in Baseline Equity Value (%)
40,244	1.0%	37,000	40,403	0.40%
	1.5%	37,000	40,606	0.90%
	2.0%	38,000	40,940	1.73%

Young Plant (PHPm)

Baseline Equity Value (as of 2025)	Interest Rate Discount from the MPO	MPO Proceeds Available for Dividends	MPO Equity Value	Increase in Baseline Equity Value (%)
24,014	1.0%	29,013	26,884	11.95%
	1.5%	30,013	27,580	14.85%
	2.0%	31,013	28,282	17.77%

New Plant (PHPm)

Baseline Equity Value (as of 2025)	Interest Rate Discount from the MPO	MPO Proceeds Available for Dividends	MPO Equity Value	Increase in Baseline Equity Value (%)
3,601	1.0%	40,471	6,251	73.61%
	1.5%	42,471	6,769	88.00%
	2.0%	44,471	7,285	102.34%

By Year 25 of operations, the Middle-aged Plant is assumed to have recouped most of its value, so an MPO would provide relatively less value-add to the asset owner

As the Young Plant still has existing debt, an MPO would mitigate against potential merchant risk while providing upfront cash to the asset owner

Pursuing an MPO for the New Plant would greatly their asset owners as RE economics grow more favorably

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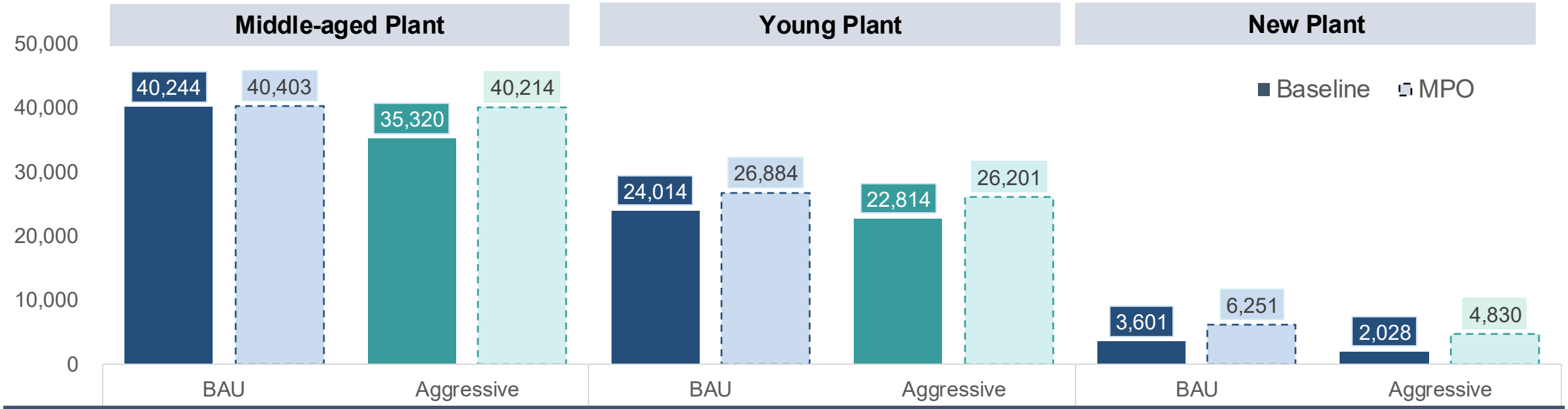
Summary of Results – BAU vs Aggressive RE Scenario

•Pursuing an MPO becomes more attractive as the value of CFPPs are depressed from the expected RE surge

Equity Value at 1% MPO Discount (PHPm)



% Change from Baseline Equity Value

Interest Rate Discount from the MPO	BAU	Aggressive RE
1.0%	0.40%	13.85%
1.5%	0.90%	14.43%
2.0%	1.73%	14.99%

Interest Rate Discount from the MPO	BAU	Aggressive RE
1.0%	11.95%	14.84%
1.5%	14.85%	17.85%
2.0%	17.77%	20.88%

Interest Rate Discount from the MPO	BAU	Aggressive RE
1.0%	73.61%	138.16%
1.5%	88.00%	163.18%
2.0%	102.34%	188.48%

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Value Drivers for an Early Retirement for Future Considerations

Baseline Profitability	• CFPP remains profitable and viable today but volatilities in fuel costs and shifting investor preference to greener technologies, may create a disincentive for prolonged operation.
Lower Cost of Debt	• Lowering the cost of debt helps refinance CFPPs, allowing them to retire earlier and reducing the time until decommissioning. • Blended finance options still available but limited.
Renewable Energy Replacement	• Achieving RE targets will require early retirement of CFPPs to create more “space” into the grid and its viability depends on the availability of RE sources and grid ability to balance variability. • Similarly, EPIRA has set ownership limits for IPPs, setting a cap of 30% installed capacity ownership at 30%, therefore incentivizing investments into more efficient technologies.
Transition Credits	• Transition credits can support ambitious early retirement CFPPs by bridging the financial gap between continuing operations under BAU and the costs associated with shutting down and transitioning to cleaner energy alternatives.

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Reference Slides

Annex 1. Case Studies

Private sector-led Energy Transition

• On a more transaction- and asset- level, private players have demonstrated that early retirement of CFPPs or credible commitments for emissions reductions can deliver concrete impact and raise competitive financing

Energy Transition Mechanism (ETM)

Background:

- In Oct 2021, ACEN committed to reach Net Zero by 2050 or earlier
- Milestones include: (1) Transition generation portfolio to 100% renewables by 2025, (2) Spin-off all thermal capacity by 2025, and (3) Work towards early retirement and just transition of the SLTEC coal plant by 2040 or earlier

Key Components of the ACEN ETM for SLTEC:

1. **Obtaining support** from key stakeholders on the ETM proposition
2. **Optimizing the capital** structure and cost of capital
3. **Developing risk allocation** / mitigation and structures suitable for new investors
4. **Implementing** a just energy transition
5. **Creating opportunities** to further accelerate the transition and cascade key learnings

Key Outcomes and Impact:

- PHP 17.4 bn total transaction value, providing steady returns to ETM investors
- PHP 7.2 bn proceeds to ACEN to finance RE projects
- SLTEC was retired 15 yrs earlier than its technical life, >50 mn tCO2e avoided
- Zero coal ownership for ACEN as early as 2021

Sustainability-Linked Bonds (SLBs)

Background:

- Italian energy infrastructure firm Enel's ground-breaking UN Sustainable Development Goal (SDG)-linked bond launched in 2019, a year before the market adopted the sustainability-linked bond (SLB) structure
- Sep 2019: Issued its US$ 1.5 bn SDG-linked bond, prior to this Enel had raised US$ 3.7 bn from green bonds since 2017
- Since its maiden SDG-linked bond, Enel has raised >US$24 bn from SLBs in three currencies

Key Learnings:

- Enel has issued several SLBs, representing 40% of its capital structure across 23 separate issues, becoming the liquid benchmark securities for the issuer.
- Its SLB frameworks have focused on Scope 1 + 2 emissions. It is the first company to have initiated a SLB instrument in the world and the one that is most prolific in tying its carbon transition to the cost of financing its business.
- As such, it shows the way for others to radically embrace a transition framework for its financing – aligning company-wide decarbonization strategies and targets with KPIs of emissions reductions

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Country Level Energy Transition

- On a national- and policy-level, governments have demonstrated that strategic frameworks can accelerate energy transition and foster sustainable development

FRANCE

Background:

- France has set ambitious climate targets, including carbon neutrality by 2050, largely underpinned by its historical reliance on nuclear power and a proactive shift towards renewables.
- The National Low-Carbon Strategy (SNBC) serves as the roadmap for achieving these goals, setting sectoral carbon budgets and guiding public and private investments
- Emphasis on energy efficiency and renewable energy deployment (solar, wind)

Key Components of the SNBC for Energy Transition:

1. **Energy Efficiency:** Aggressive targets for reducing final energy consumption across all sectors (buildings, transport, industry).
2. **Renewable Energy Deployment**: Support mechanisms (feed-in tariffs, tenders) to boost solar, wind (onshore and offshore), and hydro capacity
3. **Green Finance Initiatives**: Development of green bond markets and public funding for climate projects

Key Outcomes and Impact:

- Significant reduction in emissions from electricity generation due to increasing renewables
- France consistently among the lowest carbon intensity electricity grids in Europe
- Development of robust renewable energy industries and supply chains

CHILE

Background:

- Chile is highly vulnerable to climate change impacts and has committed to a rapid energy transition, leveraging its abundant renewable resources (solar, wind)
- The National Energy Policy 2050 sets long-term goals for a secure, sustainable, inclusive, and competitive energy sector
- Strong focus on phasing out coal-fired power plants and developing green hydrogen as a key future export and domestic energy source.

Key Components of Chile's Energy Transition Policy:

1. **Coal Phase-out Plan**: Voluntary agreements with power generators to decommission all coal-fired plants by 2040.
2. **Renewable Energy Promotion**: Competitive auctions and regulatory frameworks have driven massive solar and wind power expansion.
3. **Green Hydrogen Strategy**: Ambitious national strategy to become a world leader in green hydrogen production and export.

Key Outcomes and Impact:

- Rapid growth of renewable energy generation, with renewables now exceeding 40% of the grid.
- Significant progress on coal plant decommissioning ahead of schedule.
- Emergence as a global leader in green hydrogen development, attracting substantial international investment

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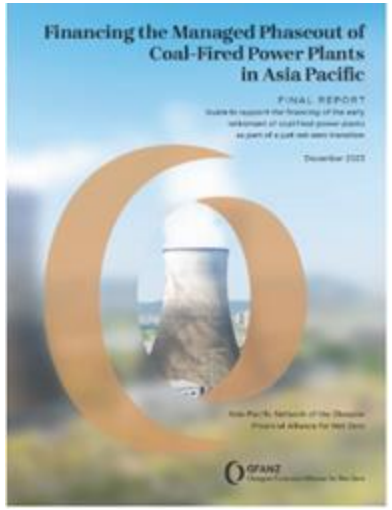
Private Sector Framework | GFANZ Managed Phase Out Initiative (1/2)

- In 2023, the Glasgow Financial Alliance for Net Zero (GFANZ) released its report on financing early coal fired power plant retirement through managed phase outs in the Asia Pacific (APAC) region which was completed in collaboration with a global network of partners.

Financing the Managed Phase Out of CFPPs in APAC



Background:

- This report, which addresses financing the managed phaseout of coal-fired power plants in the Asia-Pacific region, aims to provide practical, voluntary guidance for net zero-committed financial institutions considering the financing of coal phaseout transactions.
- This was co developed with various international and domestic stakeholders with focus on providing guidelines for banks, financial institutions, and investors including relevant stakeholders.

Working group members

DBS, HSBC, SMBC, DAI-ICHI LIFE, Allianz Global Investors, ROBECO, standard chartered, MIZUHO, Fidelity International, UBS, MUFG, BNP PARIBAS ASSET MANAGEMENT, CIMB, NISSAY

Supporting partners (20+ partners)

Consultative panel

PLN, mandiri, UNEP FINANCE INITIATIVE, Global Energy Alliance for People and Planet, ADB, Manulife Investment Management, SEQUOIA CLIMATE FOUNDATION, ASIA INVESTOR GROUP ON CLIMATE CHANGE, MAS

Knowledge partners

Gold Standard	CLIMATE POLICY INITIATIVE	International Labour Organization	Climate Bonds Initiative
Carbon markets	*Climate finance*	*Just Transition*	*Debt market standards*
Marsh	TransitionZero	IISD International Institute for Sustainable Development	
Insurance broker	*Technical & data*	*Public policy*	
ClientEarth	WWF	ARE	anthropocene Fixed Income Institute
Legal	*Civil society*	*Transition tech research*	*Debt markets*

Secretariat partners

BAIN & COMPANY, Climate Smart Ventures

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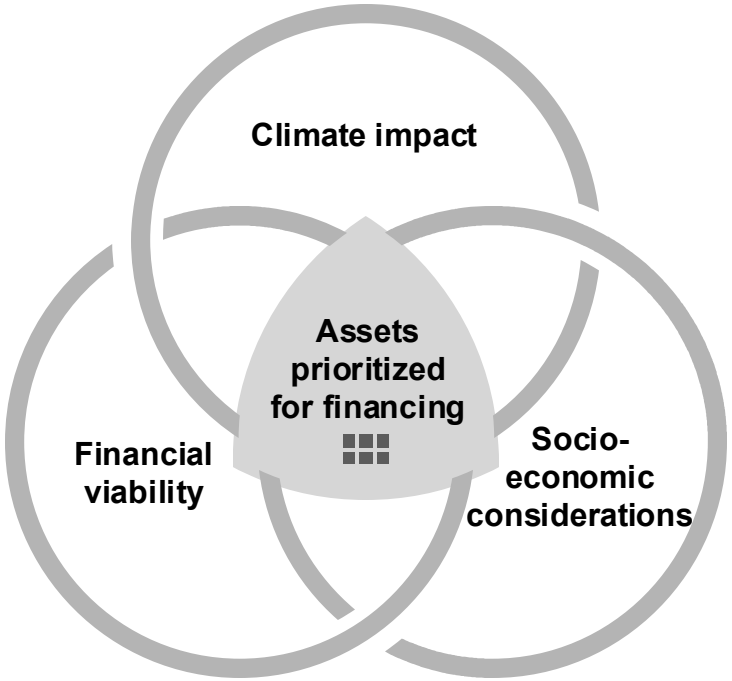
Private Sector Framework | GFANZ Managed Phase Out Initiative (2/2)

- GFANZ and its partners were examining a three-step process for a financial institution to approach financing CFPP MPOs, integrating Credibility, Inclusivity and Viability considerations

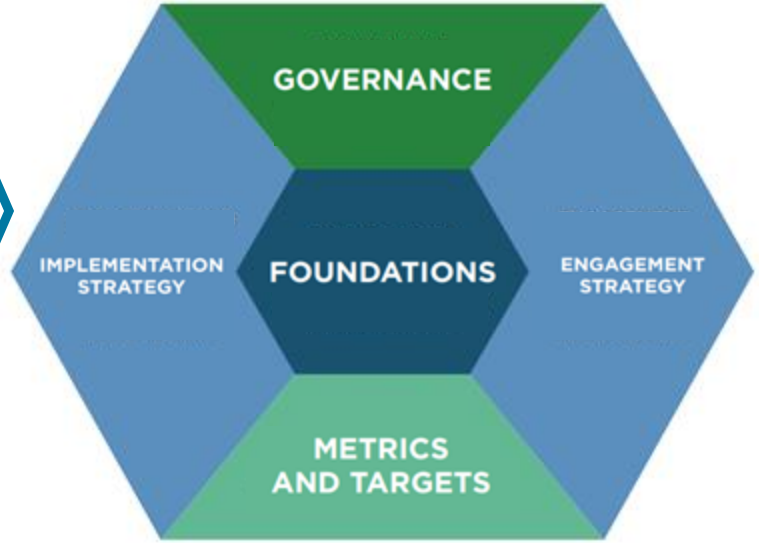
Step A: Ensuring credibility of relevant energy transition and coal phaseout plans → **Step B:** Optimizing meaningful impact → **Step C:** Achieving transparency and accountability

Levels of considerations

Meaningful impact



MPO as part of Entity's NZTP



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Annex 2. PTCM Reference Slides

PTCM Framework

Criteria cluster	% Score	Criteria	Performance Indicators
Technical (35%) *Metrics revolve around the role of the asset in ensuring grid security vis-à-vis its operational performance*	5%	Plant Capacity (MW)	H: < 150 MW | M: 150-300 MW | L: > 300 MW
	10%	Plant Capacity factor (%)	H: < 60% | M: 60 – 75 | L: > 75%
	5%	Plant Efficiency (%)	H: < 30% | M: 30 – 35 | L: > 35%
	15%	Criticality to Grid	H: 1 market participated | M: 2 markets participated | L: >2 markets participated
Transition potential (20%) *Metrics revolve around the technical feasibility of the asset to transition to low carbon technologies*	5%	Plant Age	H: > 29 years left on age of plant | M: 15 to 29 years | L: < 15 years
	5%	Transition Options Availability	H: >4 transition options | M: 3-4 transition options | L: 1-2 transition options
	10%	Number of Partners	H: 1 partner | L: >1 partner
Financial (30%) *Metrics revolve around the asset's ability to meet targets under a potential transition finance mechanism*	15%	Profitability (% EBITDA Margin)	H: Relatively high performing (>60%) | M: Relatively mid performing (50-60%) | L: Relatively low performing (<50%)
	5%	% Contracted capacity for PSA	H: > 74% | M: 50 - 74% | L: < 50%
	10%	Fixed Operating Costs ($/MWh)	H: Comparatively high performing (<9) | M: Mid performing (9-10) | L: Low performing (>10)
Socio-environmental (15%) *Metrics revolve around the asset's potential social and environmental impact in a potential decommissioning*	2.5%	Estimated number of Jobs Lost	L: > 150 workforce on site | M: 50 - 150 workforce on site | H: < 50 workforce on site
	2.5%	Contribution to the local government (ER 1-94/Local GDP)	H: <5% | M: 5-10% | L: >10%
	10%	Carbon Emissions Intensity (gCO_2e/kWh)	H: >1.2 | M: 1.1-1.2 | L: <1.1

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PTCM | Coverage (1/3)

Plant Name	Reference Name	Capacity[1]	COD	Sponsors
Bundagul Power Station	ANDA	84 MW	2016	Anda Power Corporation
Mabalacat Mill Power Station	APEC	52 MW	2006	Formosa Plastics Group
Sem Calaca Power Station	SCPC	Unit 1: 300 MW Unit 2: 300 MW	Unit 1: 1984 Unit 2: 1995	Semirara
Cebu Energy Power Station	CEDC	Unit 1: 82MW Unit 2: 82MW Unit 3: 82MW	Unit 1: 2010 Unit 2: 2010 Unit 3: 2011	MGEN, Vivant, other partners
Dinginin Power Station	GNPD	Unit 1: 725 MW Unit 2: 725 MW	Unit 1: 2021 Unit 2: 2022	Aboitiz, Power Partners Ltd
Misamis Oriental Power Station	FDC	Unit 1: 135 MW Unit 2: 135 MW Unit 3: 135 MW Unit 4: 135 MW Unit 5 135 MW	Unit 1: 2016 Unit 2: 2016 Unit 3: 2016 Unit 4: 2027 Unit 4: 2027	Filinvest
Lanao Kauswagan Power Station	GNPK	Unit 1: 151 MW Unit 2: 151 MW Unit 3: 151 MW Unit 4: 151 MW	Unit 1: 2019 Unit 2: 2020 Unit 3: 2019 Unit 4: 2019	Power Partners Ltd. Co
Naga Power Station	KSPC	Unit 1: 111 MW Unit 2: 111 MW	Unit 1: 2011 Unit 2: 2010	KEPCO, SPC Power Corp
Mariveles Power Station	GMEC	Unit 1: 345 MW Unit 2: 345MW	Unit 1: 2013 Unit 2: 2013	Aboitiz, GNPower

1 Installed Capacity; For pipeline CFPPs, only units listed in DOE's List of Committed Plants as of March 2025 were considered
Source: Transition Zero, DOE, Global Energy Monitor

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PTCM | Coverage (2/3)

Plant Name	Reference Name	Capacity[1]	COD	Sponsors
Masinloc Power Station	MPPCL	Unit 1: 315 MW Unit 2: 344 MW Unit 3: 355 MW Unit 4: 350 MW Unit 5: 350 MW	Unit 1: 1998 Unit 2: 1998 Unit 3: 2020 Unit 4: 2025 Unit 5: 2025	San Miguel Global Power
Mindanao Steag Power Station	MEC	Unit 1: 116 MW Unit 2: 116 MW	Unit 1: 2006 Unit 2: 2006	Aboitiz, La Filipina Uy Gongco
MPC Balingasag Power Station	MPC	Unit 1: 55 MW Unit 2: 55 MW Unit 3: 55 MW	Unit 1: 2017 Unit 2: 2017 Unit 3: 2017	CEPALCO, Vivant
Pagbilao Power Station	TLI	Unit 1: 382 MW Unit 2: 382 MW Unit 3: 420 MW	Unit 1: 1996 Unit 2: 1996 Unit 3: 2018	Aboitiz, TeaM Energy
Concepcion Power Station	PCPC	Unit 1: 135 MW Unit 2: 135 MW	Unit 1: 2016 Unit 2: 2028	A Brown Company Inc
Panay Power Station	PEDC	Unit 1: 382 MW Unit 2: 382 MW Unit 3: 420 MW	Unit 1: 2010 Unit 2: 2011 Unit 3: 2016	MGEN, Minority partner
Petron Refinery Power Station	PETRON	Units 1-4: 140 MW Units 5-6: 44MW	Units 1-4: 2013 Units 5-6: 2022	Petron Corporation
Quezon Power Plant	QPPL	511	2000	EGCO
San Buenaventura Power	SBPL	528	2019	MGEN, EGCO
Limay Power Station	LPPC	Unit 1: 150 MW Unit 2: 150 MW Unit 3: 150 MW Unit 4: 150 MW	Unit 1: 2017 Unit 2: 2018 Unit 3: 2019 Unit 4: 2019	San Miguel Global Power

1 Installed Capacity; For pipeline CFPPs, only units listed in DOE's List of Committed Plants as of March 2025 were considered
Source: Transition Zero, DOE, Global Energy Monitor

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PTCM | Coverage (3/3)

Plant Name	Reference Name	Capacity[1]	COD	Asset Owner(s)
Kamanga Power Station	SEC	Unit 1: 105 MW Unit 2: 105 MW	Unit 1: 2019 Unit 2: 2016	MGEN, Alsons
Southwest Luzon Power Generation Company	SLPGC	Unit 1: 150 MW Unit 2: 150 MW	Unit 1: 2016 Unit 2: 2016	Semirara
Puting Bato Power Station	SLTEC	Unit 1: 135 MW Unit 2: 135 MW	Unit 1: 2015 Unit 2: 2016	ACEN/ETM Philippines Holdings
Malita Power Station	SMCPC	Unit 1: 150 MW Unit 2: 150 MW	Unit 1: 2016 Unit 2: 2018	San Miguel Global Power
SMC Mariveles	MPGC	Unit 1: 150 MW Unit 2: 150 MW Unit 3: 150 MW Unit 4: 150 MW	Unit 1: 2024 Unit 2: 2024 Unit 3: 2024 Unit 4: 2025	San Miguel Global Power
Sual Power Station	SMEC	Unit 1: 647 MW Unit 2: 647 MW	Unit 1: 1999 Unit 2: 1999	San Miguel Global Power
Therma South Power Station	TSI	Unit 1: 150 MW Unit 2: 150 MW	Unit 1: 2015 Unit 2: 2016	Aboitiz
Toledo Power Company	TPC	82	2014	MGEN
Therma Visayas Inc	TVI	Unit 1: 170 MW Unit 2: 170 MW	Unit 1: 2019 Unit 2: 2019	Aboitiz, Vivant
UPP Power Station	UPPC	30	1998	SCG Packing, Minority Partners

1 Installed Capacity; For pipeline CFPPs, only units listed in DOE's List of Committed Plants as of March 2025 were considered
Source: Transition Zero, DOE, Global Energy Monitor

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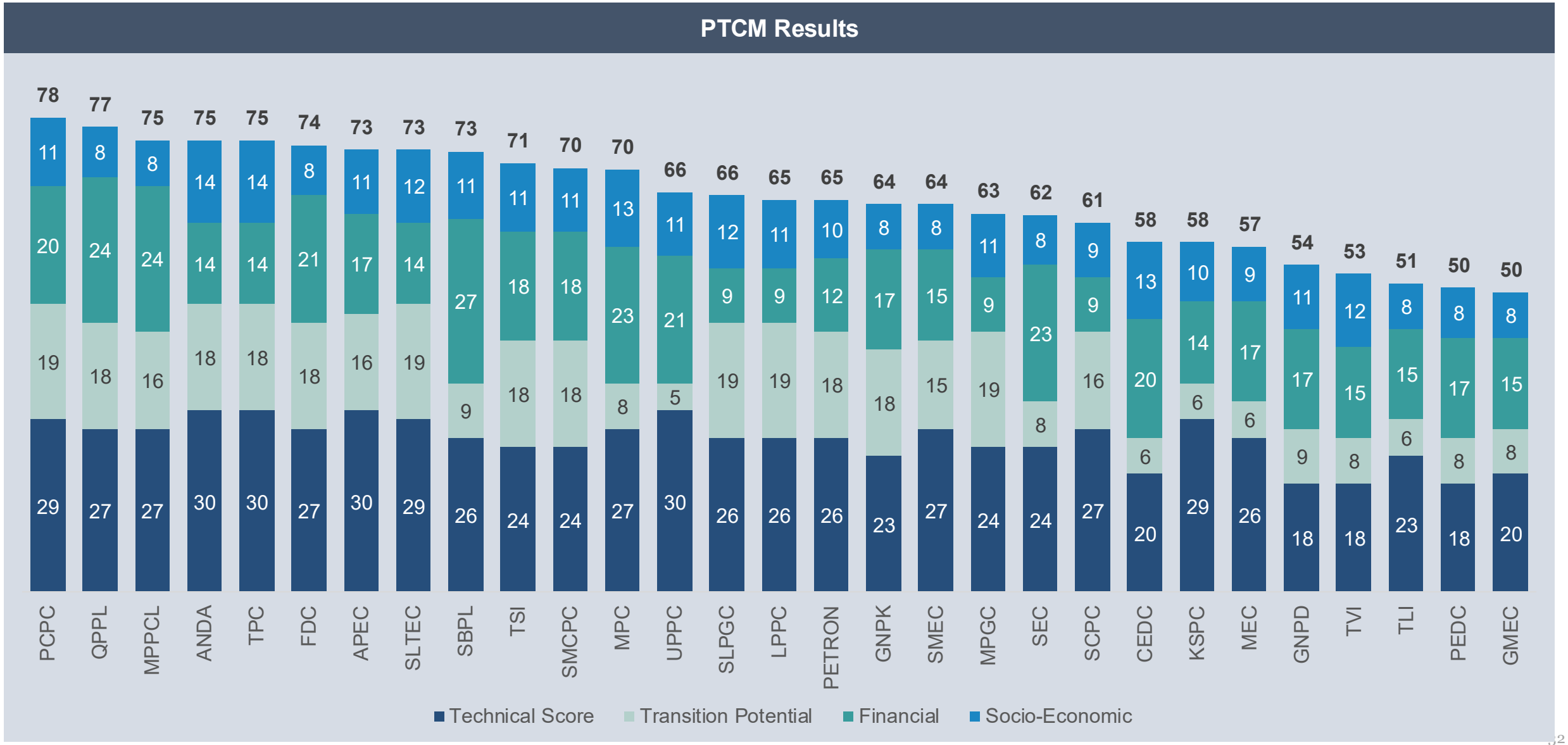
PTCM Results



Source: Transition Zero

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Annex 3. Financial Projections and Scenario Analysis

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Transition Finance and "Managed Phase Out" options already available in the Philippines

- UNDP defines **Energy Transition as "… a continuing process requiring long-term energy strategies and planning, with a country-tailored focus on applying appropriated energy technologies to reach net-zero emissions**".

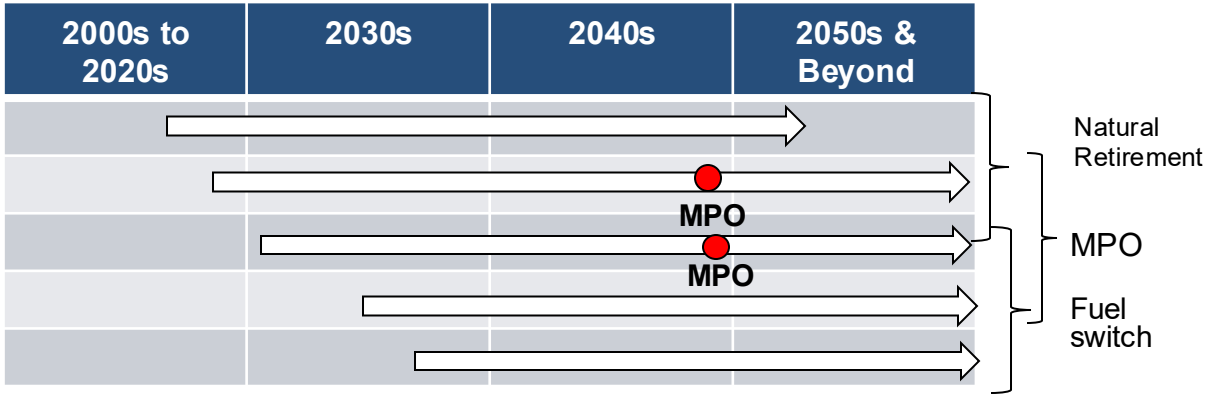
- CFPPs produce most emissions in fossil fuel power generation making a prime candidate for accelerated and managed phase out (MPO).

Default Emissions Factors for Stationary Combustion in the Energy Industry (tCO2/TJ)

Coal	95 to 101
Gas/ Oil	74 to 77
Nat Gas	56

Source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2: Energy, Table 2.2

- Transition Finance Facilities, including MPOs are designed to bridge the gap from high carbon sources to a decarbonized economy



- Options include KPI based Sustainability Linked Bonds/ Loans and carbon credits targeting high carbon industries such as power, oil & gas, automobile, steel, and other industries

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Methodology: Financial and Scenario Analysis

- The financial viability of an MPO was assessed against the CFPPs' baseline operating life of 40 years across two market scenarios

Key Operating Data

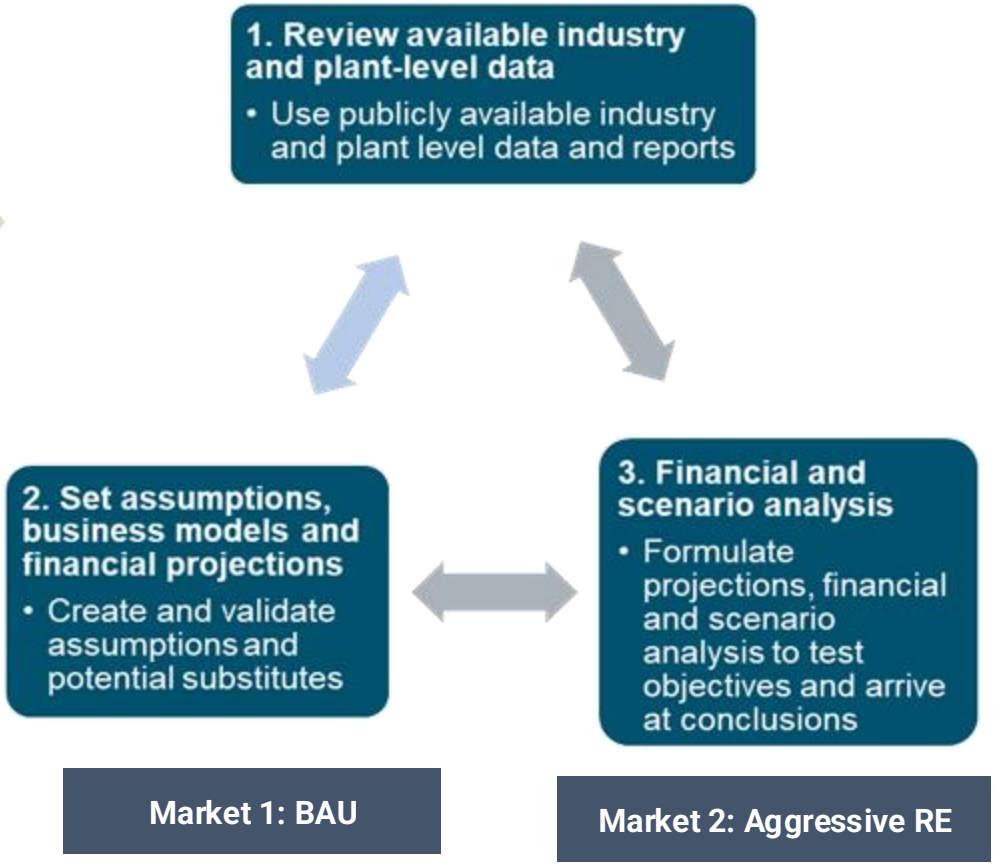
CFPP Capacity
- Dependable Capacity

Tariffs
- Electricity Tariff

Est. Supply and Utilization
- Transition options
- Electricity Generation, Capacity Made Available
- Electrical Utilization, Capacity Made Available (100%)
- Heat Rate

Scenario 1: Baseline

Scenario 2: MPO Only



Market 1: BAU

Market 2: Aggressive RE

Key Financial Information Analyzed

Forecasted Projections
- Income Statements, Balance Sheets, Cash Flow Statements
- Economic, Industry, and other new trends (e.g. carbon taxes, carbon credits,)

Key Financial Metrics
- Equity Value

*All operations, market, and financial information presented above are from publicly available financial and operational data while supplemental public information was secured by the team when available

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General Assumptions for Archetype Plants

- Baseline assumptions for three CFPP archetypes, representative of the Philippines' coal plant portfolio, were developed to evaluate the suitability of an MPO

BASELINE ASSUMPTIONS	Middle-aged Plant (25 years)	Young Plant (10 years)	New Plant (Under Construction)
Plant Technology	**Subcritical**	**Circulating Fluidized Bed (CFB)**	**Circulating Fluidized Bed (CFB)**
Project Cost (PHPm)	45,000	26,000	34,000
COD	January 1, 2000	January 1, 2015	January 1, 2030
Dependable Capacity (MW)	1000	300	600
Baseline Retirement Date	December 31, 2039	December 31, 2054	December 31, 2069
Heat Rate (Btu/kWh)	9,407	9,798	9,798
Calorific Value of Coal	4,200	4,200	4,200
Capacity Factor	80%	80%	80%
Tariff Assumptions			
Contracted Capacity, Start and End Date*	PPA 1 – 800 MW, (2000 – 2014) PPA 2 – 800 MW (2015 – 2029)	PPA 1 – 240 MW, (2015 – 2029) PPA 2 – 240 MW (2030 – 2044)	PPA 1 – 480 MW, (2029 – 2043) PPA 2 – 480 MW (2044 – 2059)
Ave Tariff Price (inclusive of fuel costs)*	PPA 1 – PHP 4.38 per kWh PPA 2 – PHP 6.37 per kWh	PPA 1 – PHP 6.25 per kWh PPA 2 – PHP 6.69 per kWh	PPA 1 – PHP 5.50 per kWh PPA 2 – PHP 6.62 per kWh
Ave Coal Consumption Rate* (kg/kWh)	0.59	0.59	0.59

Source: Transition Zero
* Project cost, interest rates,, and other market data have not been adjusted for inflation

Financing Assumptions for Archetype Plants

- Baseline projections were then benchmarked against an MPO scenario, in which the archetype plant would retire ahead of its 40-year useful life

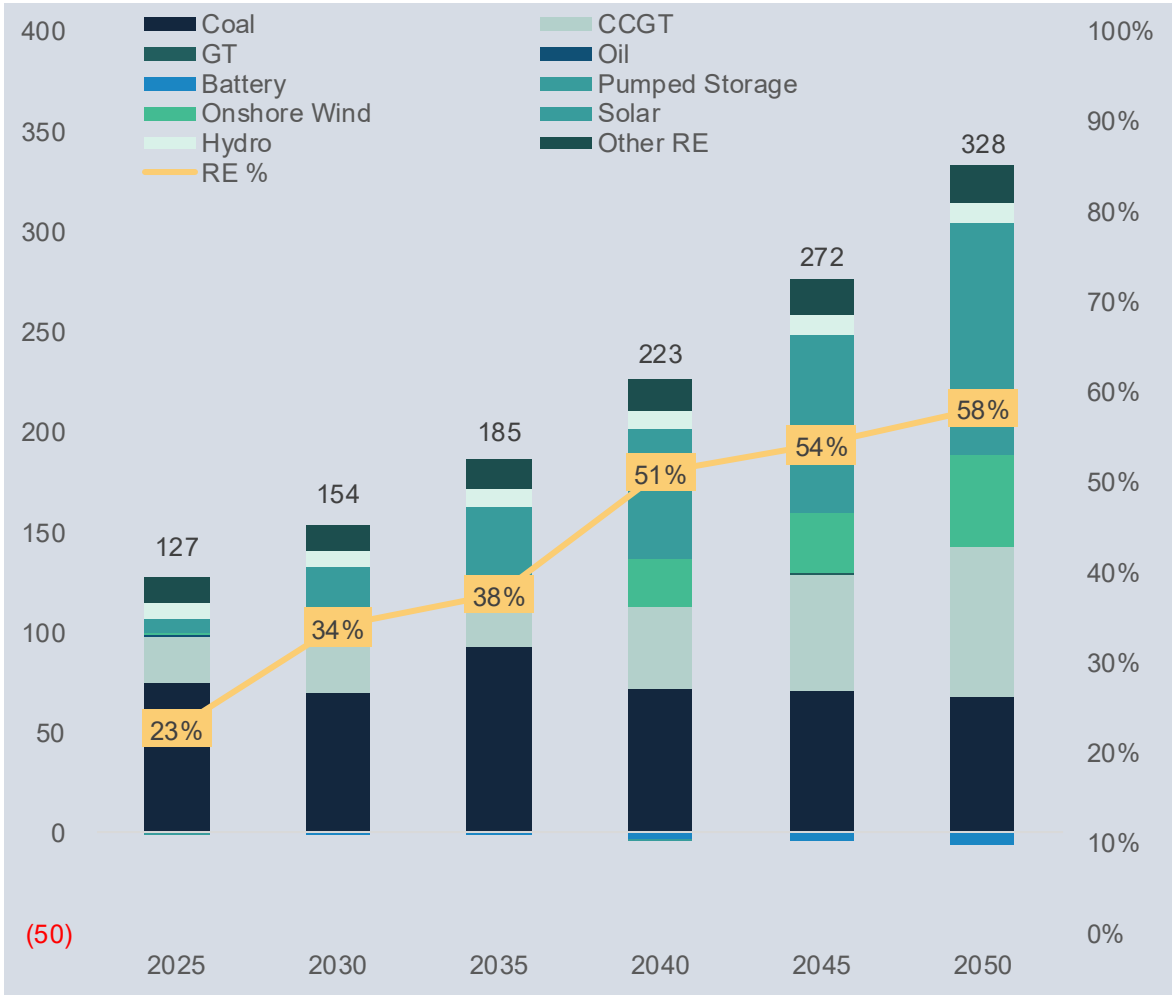
BAU	Middle-aged Plant	Young Plant	New Plant
Financing			
Construction Period (Years)	5	5	5
Project Finance	70% Project Cost, 30% balloon payment at maturity, 15-year tenor, Debt Sculpting of 1.2x DSCR		
Pre Tax Cost of Debt	17.19% - Construction 16.69% - Operations	7.12% - Construction 8.87% - Operations	7.93% - Construction 7.43% - Operations
WACC	12.62% (70% Debt – 30% Equity)	8.26% (70% Debt – 30% Equity)	7.76% (70% Debt – 30% Equity)
Refinancing Loan	5-year amortization on Project Finance Loan Maturity		
Interest Rate on Refinancing Loan	5.92%	7.39%	7.39%

MPO	Middle-aged Plant	Young Plant	New Plant
Target Retirement	December 31, 2029 (10 years avoided)	December 31, 2039 (15 years avoided)	December 31, 2050 (19 years avoided)
MPO Loan			
Drawdown	January 1, 2026	January 1, 2026	January 1, 2035
Loan Amount (PHPm)	BAU: 37,000-38,000 Aggressive: 37,000	BAU: 33,000-35,000 Aggressive: 32,000-34,000	BAU: 59,000-63,000 Aggressive: 55,000-59,000
Interest Rate*	6.36%	6.43%	6.43%
Assumed D/E prior to Drawdown	0%	13%	50%
Debt Sculpting	1.20 x Debt Service Coverage Ratio		

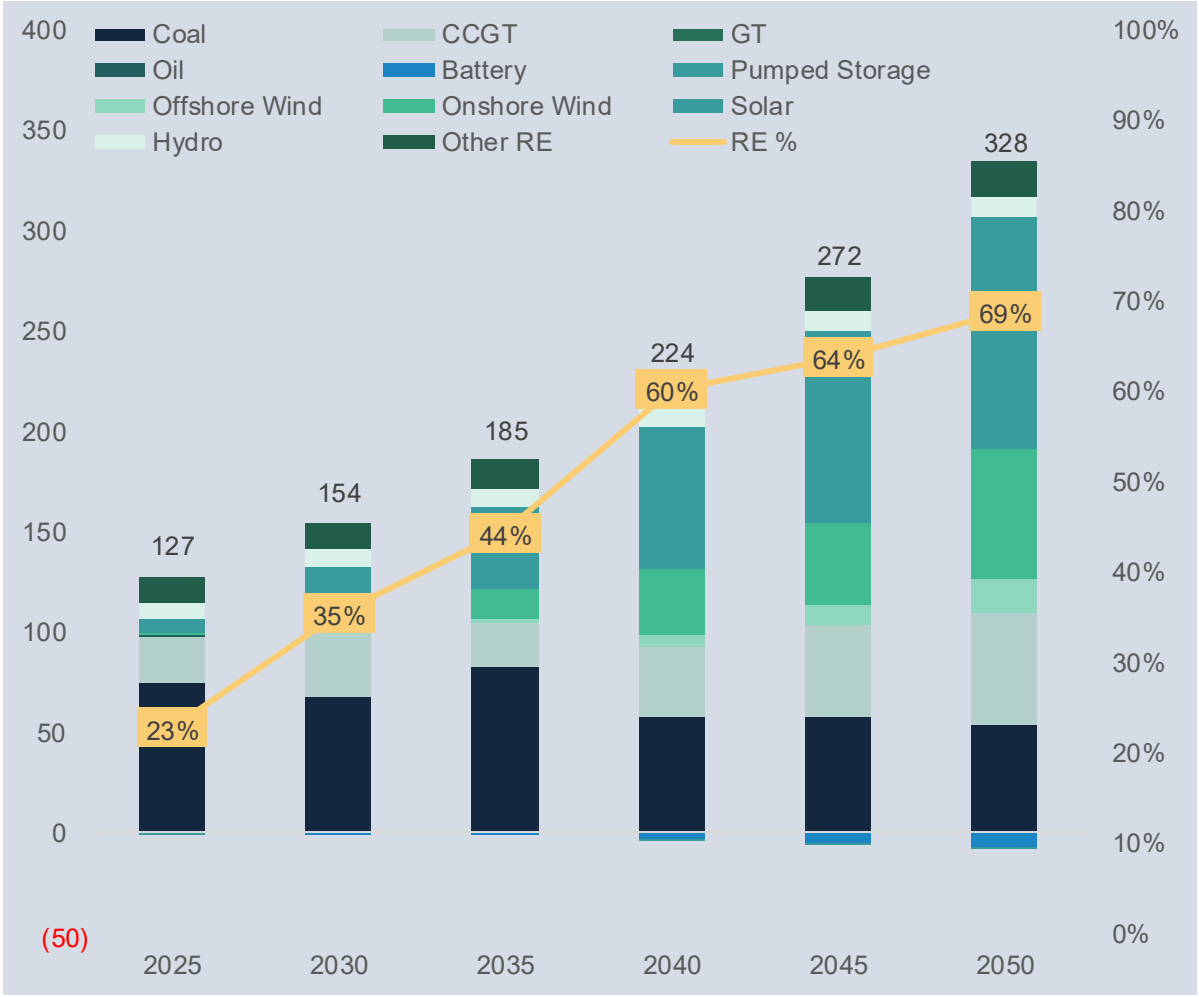
*Interest Rates taken from applicable BVAL (as of Jan 2 2025) + assumed spread less discount of 100 base points

Market Scenarios

BAU Projected Generation Mix (TWh)



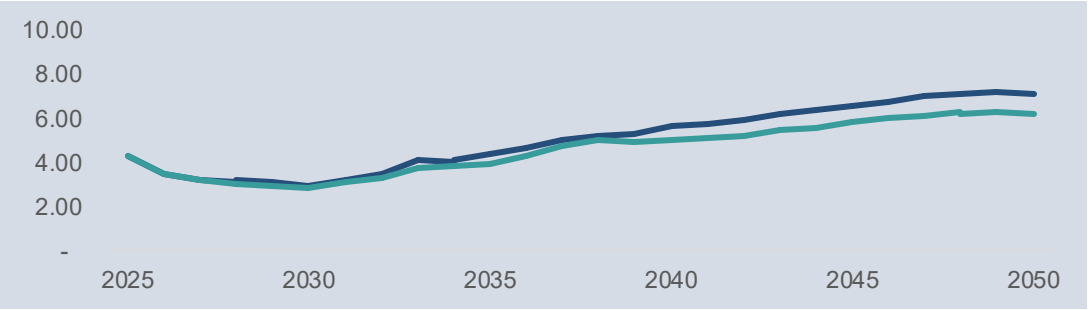
Aggressive RE Generation Mix (TWh)



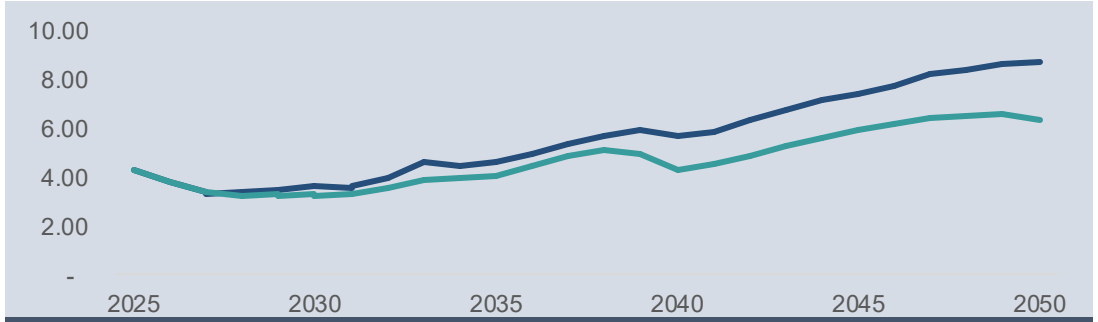
GT = Gas Turbine;

Market Projections

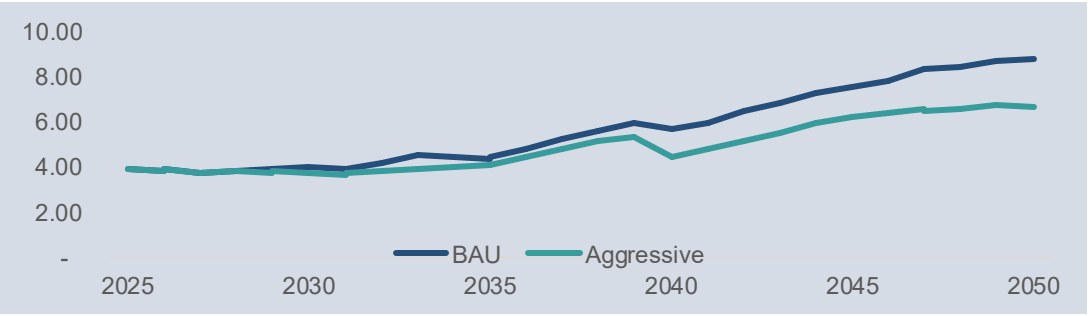
Projected WESM Prices, Luzon, 2025 – 2050 (PHP/kWh)



Projected WESM Prices, Visayas, 2025 – 2050 (PHP/kWh)

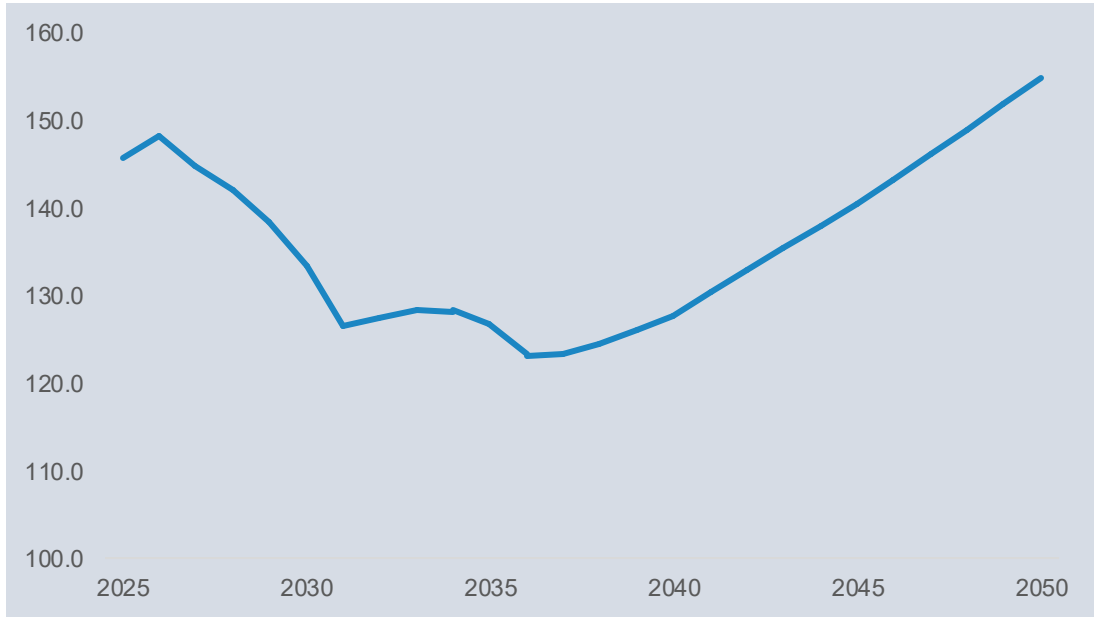


Projected WESM Prices, Visayas, 2025 – 2050 (PHP/kWh)



*Prices were projected as of end-2024, and are based on the 2023-2050 Philippine Energy Plan's Clean Energy Scenario. Rates projected past 2050 were made on a 5-year moving average

Forecasted Coal Prices, 2025 - 2050 (USD/MT)



- Higher RE penetration leads to conditions that lower average annual specially for Luzon
- Supply-tight Visayas to remain elevated in due to limited inter-island connectivity, lesser RE potential within region
- Coal Prices expected to decline from ~$140 to ~120 per MT from 2025 to 2035 due to stabilization of supply and demand on a global level

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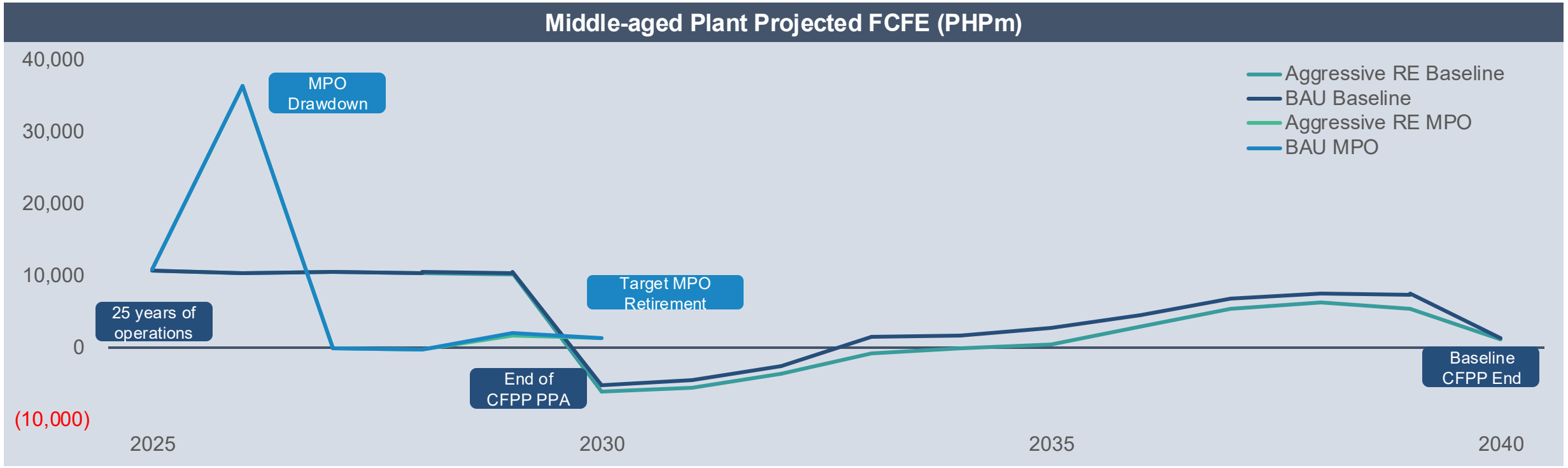
Results | Middle-aged Plant- Minimal Value-add as CFPP has recouped most of its value



Market Scenario	BAU			Aggressive		
Baseline Equity Value (as of 2025)	40,244			35,320		
Interest Rate Discount from MPO	1.0%	1.5%	2.0%	1.0%	1.5%	2.0%
MPO Proceeds Available for Dividends	37,000	37,000	38,000	37,000	37,000	37,000
MPO Equity Value	40,403	40,606	40,940	40,214	40,417	40,616
Percentage Change from Baseline Equity Value	0.40%	0.90%	1.73%	13.85%	14.43%	14.99%

- Pursuing an MPO for a middle-aged plant is deemed to be financially viable as a mitigant against the volatile spot market, assuming the CFPP will not be re-contracted after its PPA expires (2030)
- By 2025, the middle-aged plant is assumed to have fully repaid any existing loans. As such, the full MPO loan can be divided among shareholders. Total MPO loan proceeds are only limited by the CFPP's relatively short runway to early retirement (4 years)

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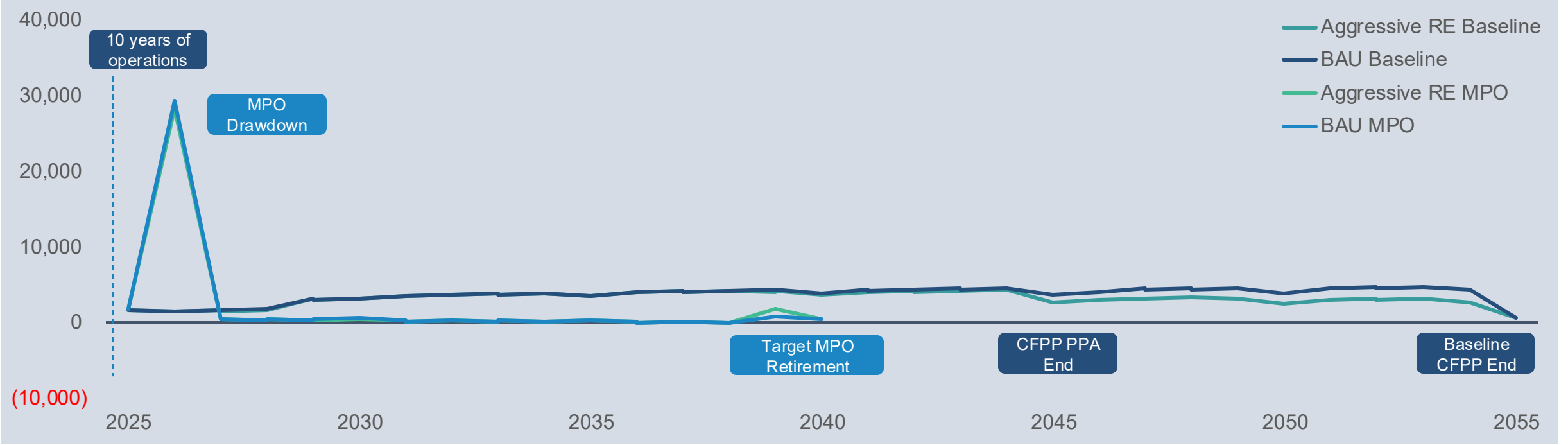
Results | Young Plant – Maximizing Runway for MPO

Young Plant Projected FCFE (PHPm)



Market Scenario	BAU			Aggressive		
Baseline Equity Value (as of 2025)	24,014			22,814		
Interest Rate Discount from MPO	1.0%	1.5%	2.0%	1.0%	1.5%	2.0%
MPO Proceeds Available for Dividends	29,013	30,013	31,013	28,013	29,013	30,013
MPO Equity Value	26,884	27,580	28,282	26,201	26,886	27,578
Percentage Change from Baseline Equity Value	11.95%	14.85%	17.77%	14.84%	17.85%	20.88%

- Despite the higher early retirement target of 15 years, equity value and returns are exceeded due to the upfront cash secured through the loan drawdown.
- By Year 11 of operations, the Young Plant is well-positioned to re-lever its existing debt. Targeting early retirement by 2040 also allows for a longer runway for sizing of the MPO loan amount

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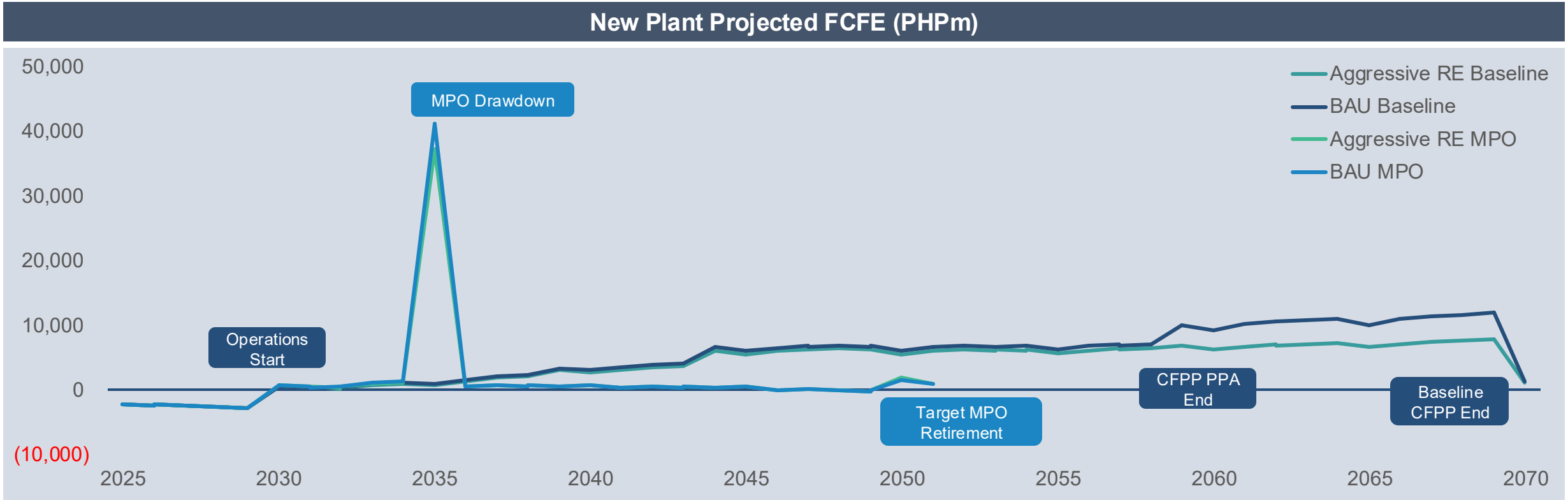
Results | New Plant – MPO as strong mitigant against CFPP volatility



Market Scenario	BAU			Aggressive		
Baseline Equity Value (as of 2025)		3,601			2,028	
Interest Rate Discount from MPO	1.0%	1.5%	2.0%	1.0%	1.5%	2.0%
MPO Proceeds Available for Dividends	40,471	42,471	44,471	36,410	38,410	40,410
MPO Equity Value	6,251	6,769	7,285	4,830	5,338	5,851
Percentage Change from Baseline Equity Value	73.61%	88.00%	102.34%	138.16%	163.18%	188.48%

- Compared to the previous two archetypes, the New Plant experiences the greatest increase in equity value from baseline to MPO scenario, as it is projected to start operations during the forecasted dip in WESM prices
- Conducting the MPO with only 5 years of operations also allows the asset owner to recoup their investment significantly earlier than expected

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Summary Results for Archetype Plants

Middle-aged Plant (PHPm)						
Market Scenario	**BAU**			**Aggressive**		
Baseline Equity Value (as of 2025)		40,244			35,320	
Interest Rate Discount from MPO	1.0%	1.5%	2.0%	1.0%	1.5%	2.0%
MPO Proceeds Available for Dividends	37,000	37,000	38,000	37,000	37,000	37,000
MPO Equity Value	40,403	40,606	40,940	40,214	40,417	40,616
Percentage Change from Baseline Equity Value	0.40%	0.90%	1.73%	13.85%	14.43%	14.99%

By Year 25 of operations, the Middle-aged Plant is assumed to have recouped most of its value, so an MPO would provide relatively less value-add to the asset owner

Young Plant (PHPm)						
Market Scenario	**BAU**			**Aggressive**		
Baseline Equity Value (as of 2025)		24,014			22,814	
Interest Rate Discount from MPO	1.0%	1.5%	2.0%	1.0%	1.5%	2.0%
MPO Proceeds Available for Dividends	29,013	30,013	31,013	28,013	29,013	30,013
MPO Equity Value	26,884	27,580	28,282	26,201	26,886	27,578
Percentage Change from Baseline Equity Value	11.95%	14.85%	17.77%	14.84%	17.85%	20.88%

As the Young Plant still has existing debt, an MPO would mitigate against potential merchant risk while providing upfront cash to the asset owner

New Plant (PHPm)						
Market Scenario	**BAU**			**Aggressive**		
Baseline Equity Value (as of 2025)		3,601			2,028	
Interest Rate Discount from MPO	1.0%	1.5%	2.0%	1.0%	1.5%	2.0%
MPO Proceeds Available for Dividends	40,471	42,471	44,471	36,410	38,410	40,410
MPO Equity Value	6,251	6,769	7,285	4,830	5,338	5,851
Percentage Change from Baseline Equity Value	73.61%	88.00%	102.34%	138.16%	163.18%	188.48%

Pursuing an MPO for the New Plant would greatly their asset owners as RE economics grow more favorably

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Key Findings | Baseline Profitability

- The financial viability of pursuing a Managed Phaseout is evaluated against that of baseline operations. As such, level of contracting, and other drivers of CFPP profitability are key considerations in this assessment.

Level of Contracting – Given the volatility of coal prices and the spot market, a higher contracting level would ensure the recovery of incurred fuel costs

Baseline Equity Value (PHPm)

Level of contracting[1]	50.00%	60.00%	70.00%	80.00%	90.00%	100.00%
Middle-aged Plant[2]	40,244	40,244	40,244	40,244	40,244	40,244
Young Plant	18,816	20,548	22,281	24,014	25,746	27,479
New Plant	418	1,038	2,284	3,601	5,017	6,449

Increase from Baseline to MPO Equity Value

Level of contracting[1]	50.00%	60.00%	70.00%	80.00%	90.00%	100.00%
Middle-aged Plant	-190%	-123%	-56%	0%	0%	0%
Young Plant	25%	24%	20%	12%	8%	4%
New Plant	459%	260%	120%	74%	51%	38%

Other Considerations:

1. Fuel Costs (Calorific Value of Coal, Thermal Efficiency / Burn Rate) – The higher the fuel costs incurred, the less profitable a CFPP is, thereby lowering the required return rate needed to be matched for an MPO
2. Plant Age / Level of Existing Debt – An MPO would be more viable to younger plants that have not yet fully repaid their project finance debt, as they could further stretch out principal repayments from a potential refinancing

1 Level of contracting for first contract
2 Middle-aged Plant is assumed to be on its second PPA contract by Year 25 of operations
*80% contracted capacity was assumed for all archetypes to achieve minimum equity return of 12% while also meeting debt requirements of 1.2x DSCR. Actual level of contracting varies per CFPP

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