TLG Support to Actis' investment in a 3.5 GW Solar+BESS Hybrid Project

April 2025

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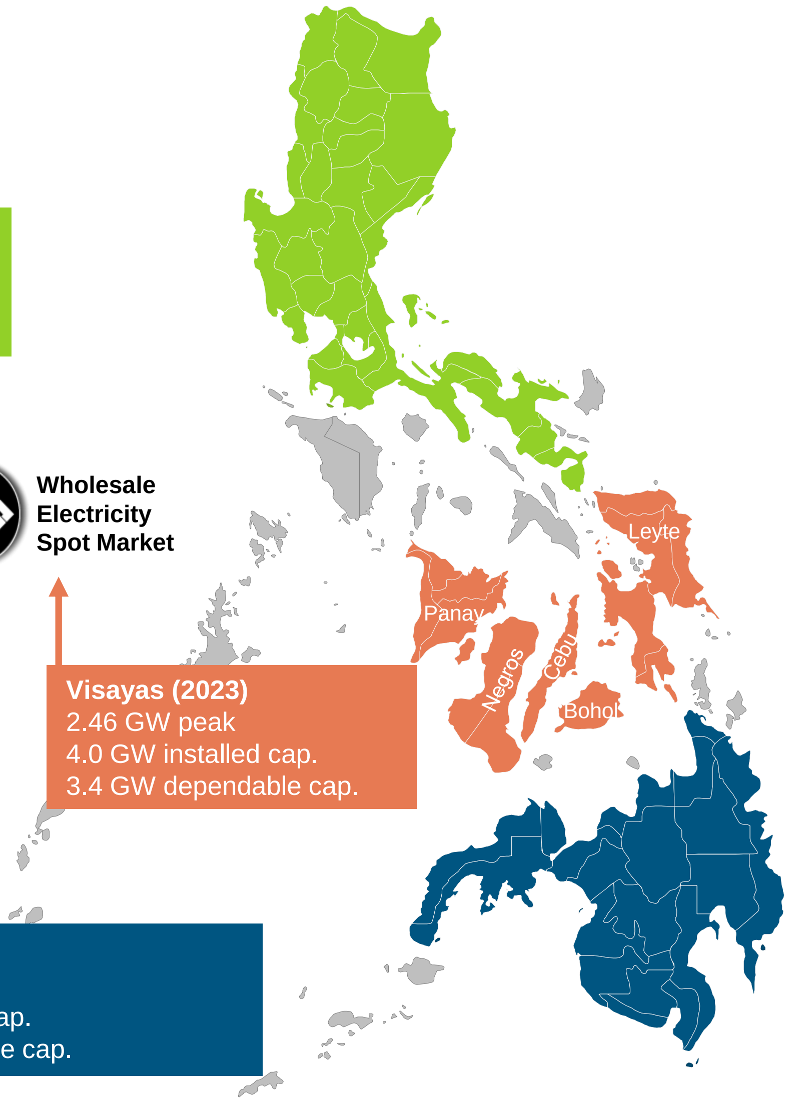
Attractive growth fundamentals and versatile market for power development

PHILIPPINES

Luzon (2023)
12.55 GW peak
19.8 GW installed cap.
17.4 GW dependable cap.

WESM launched in 2006

Wholesale Electricity Spot Market



Visayas (2023)
2.46 GW peak
4.0 GW installed cap.
3.4 GW dependable cap.

Added later

Mindanao (2023)
2.32 GW peak
4.6 GW installed cap.
4.0 GW dependable cap.

- Small but complex
- Energy only market design
- Spot market operational since 2006
- More than 90% private sector (post privatization)
- 5-6% per annum growth
- Nodal pricing (transmission)
- Three main interconnected regions

Note: Consumption includes own-use and system losses. Visayas peak demand stated is coincident
Plant capacities rounded to the nearest MW and are not ownership weighted
Source: DOE; NGCP operations data; TLG analysis

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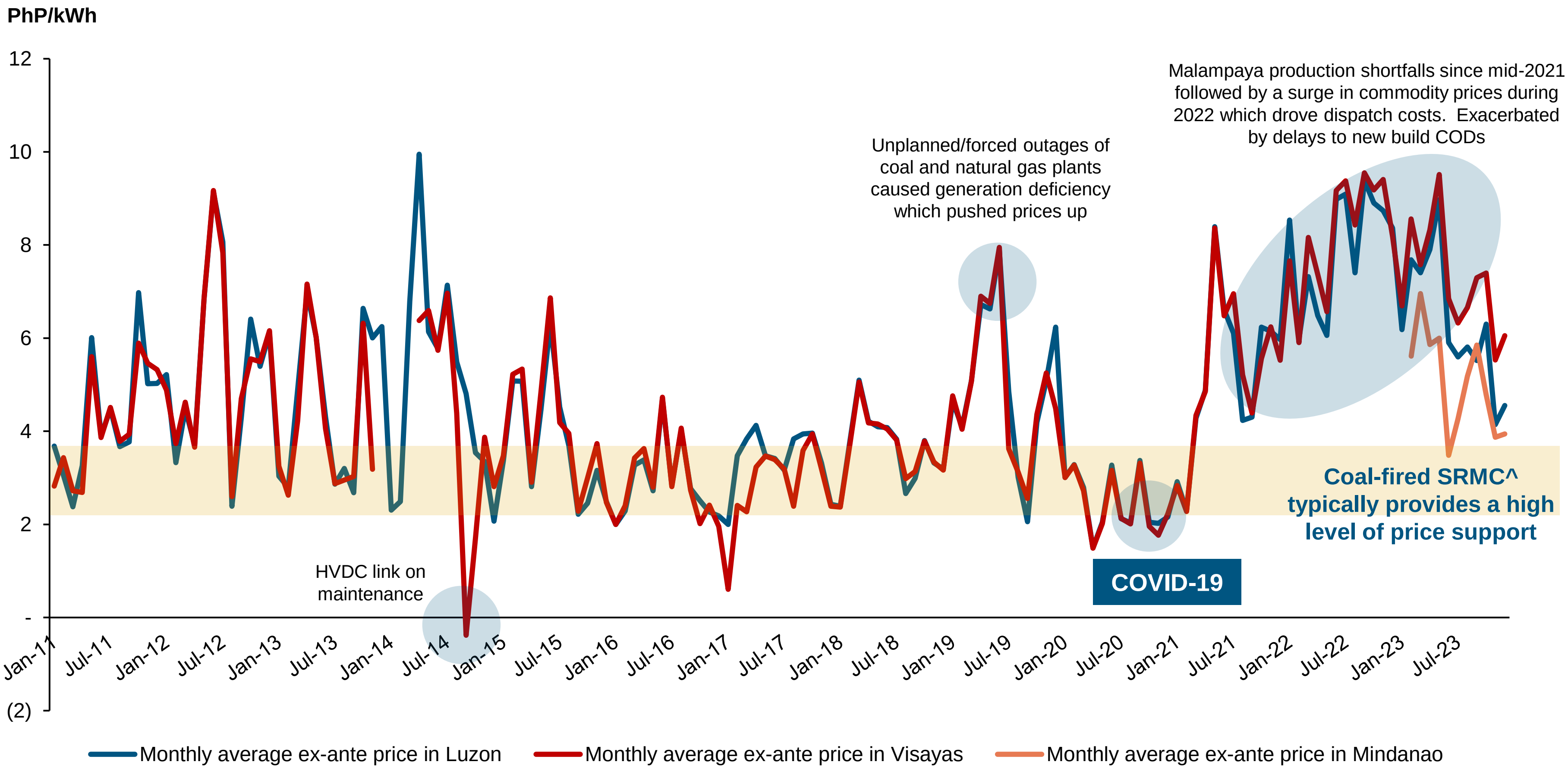
Energy only spot market with highly volatile prices – attractive for storage

Monthly average Luzon, Visayas & Mindanao LWAP# *(Jan 2011 – Dec 2023)*



#LWAP denotes the load-weighted average price

^SRMC denotes 'Short-Run Marginal Cost', which reflects variable generation costs (i.e. fuel and variable O&M costs)

*Note: Data from Dec 2022 onwards is updated directly from TLG's WESM database

Source: PEMC (Monthly Summary Report); TLG analysis

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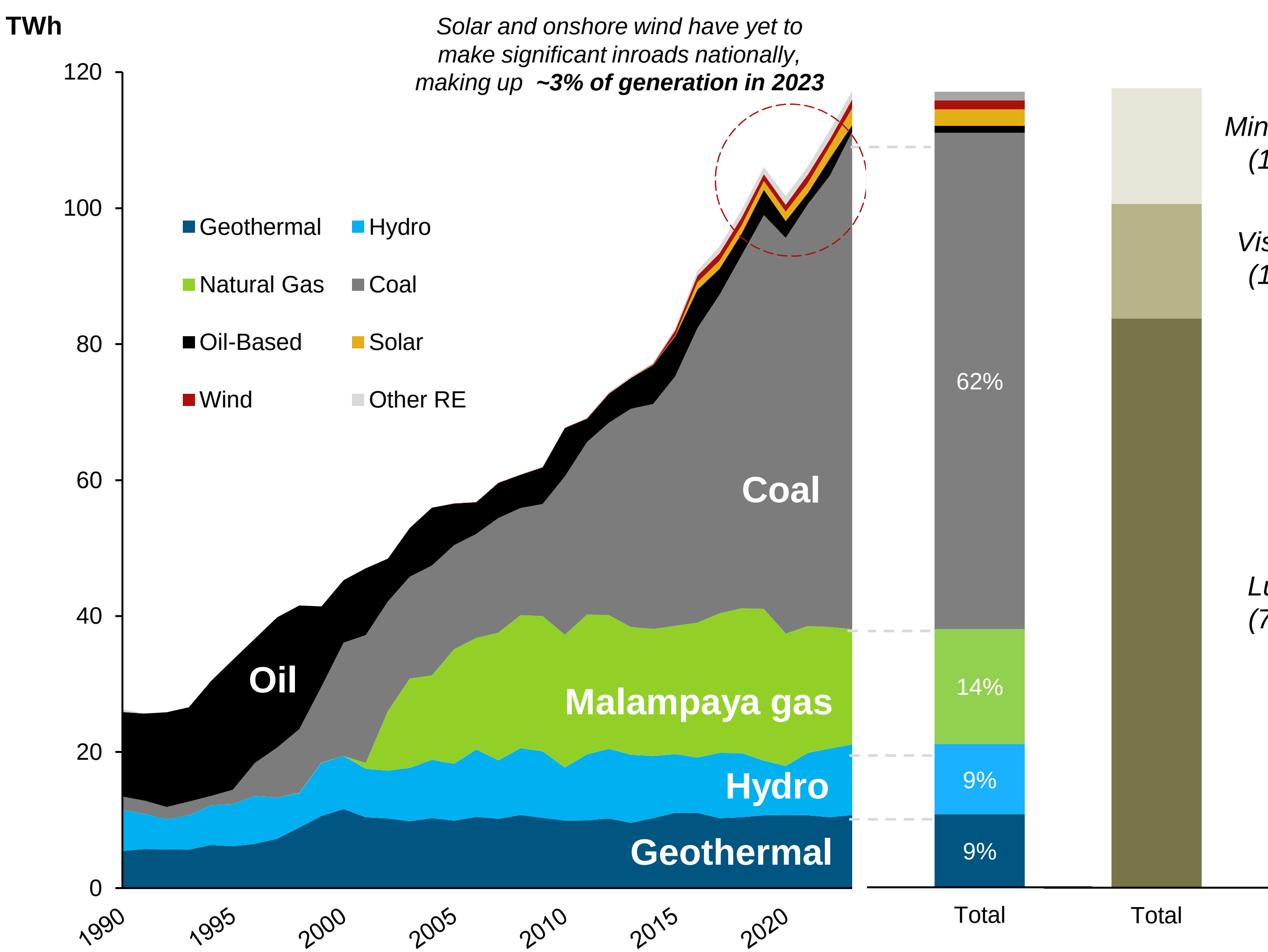
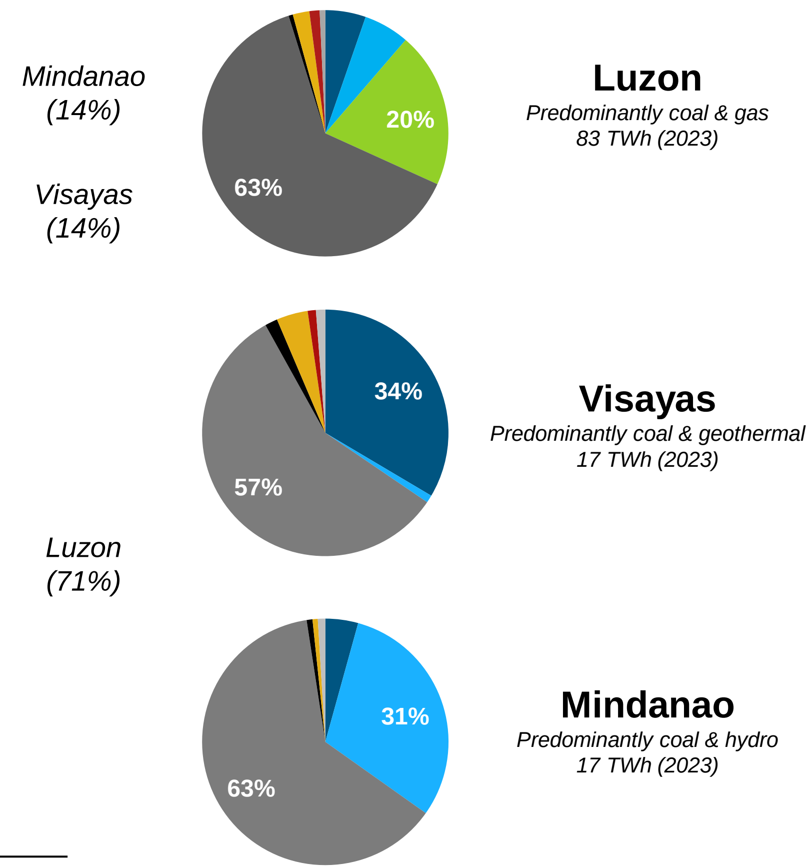
Multiple fuels. Domestic gas is depleting with shift to imported LNG. Commercially active RE sector but still small in generation (TWh) terms

Generation by fuel type in the Philippines (1990-2023)



Generation mix in the Philippines (2023)



Source: DOE, IEMOP, TLG analysis

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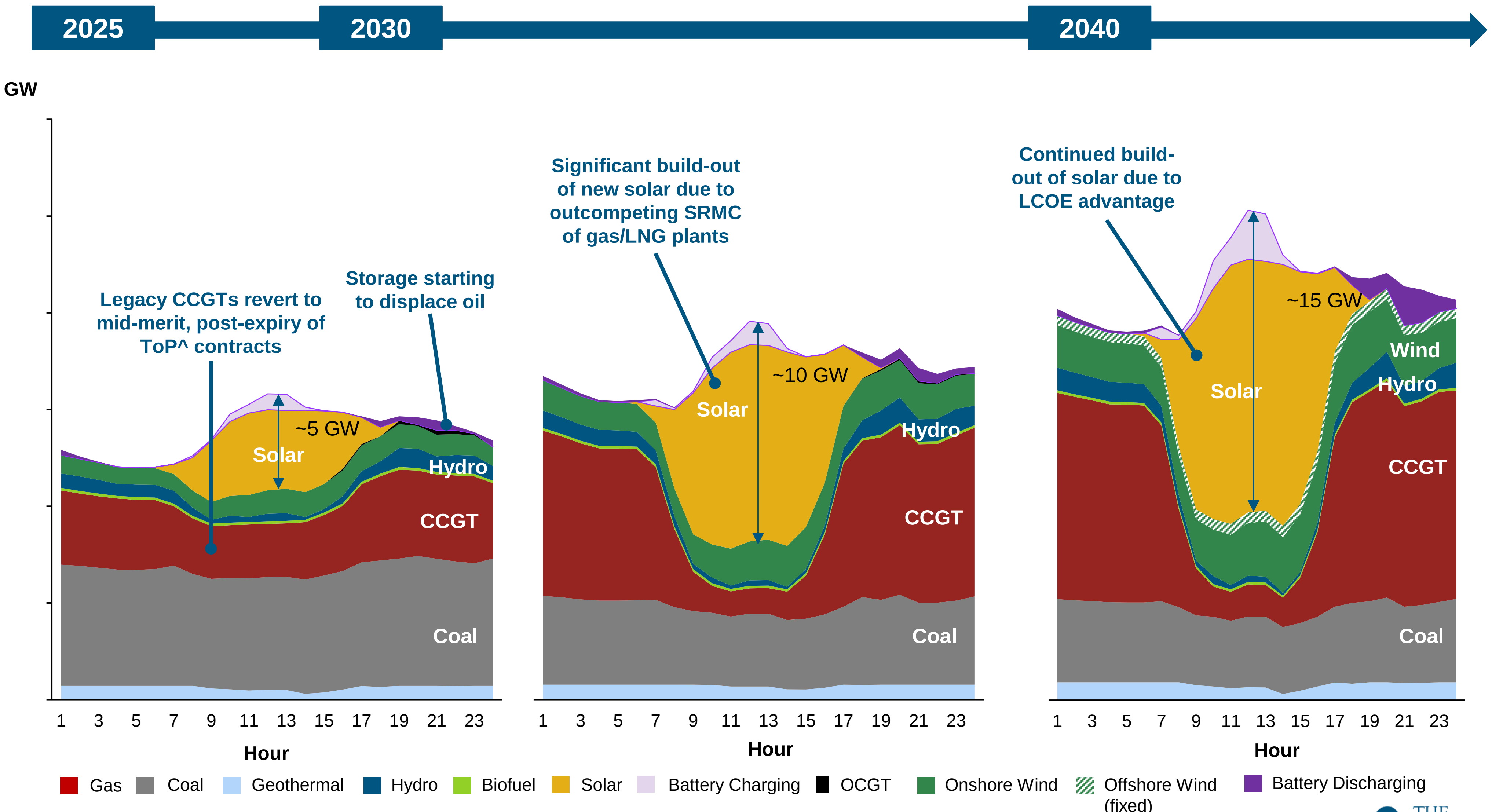
Illustrative

Luzon – solar expected to grow exceptionally over next 15 years based on fundamentals



^ ToP denotes 'Take-or-Pay', relating to the contractual nature of the Malampaya domestic gas contracts

Source: TLG analysis

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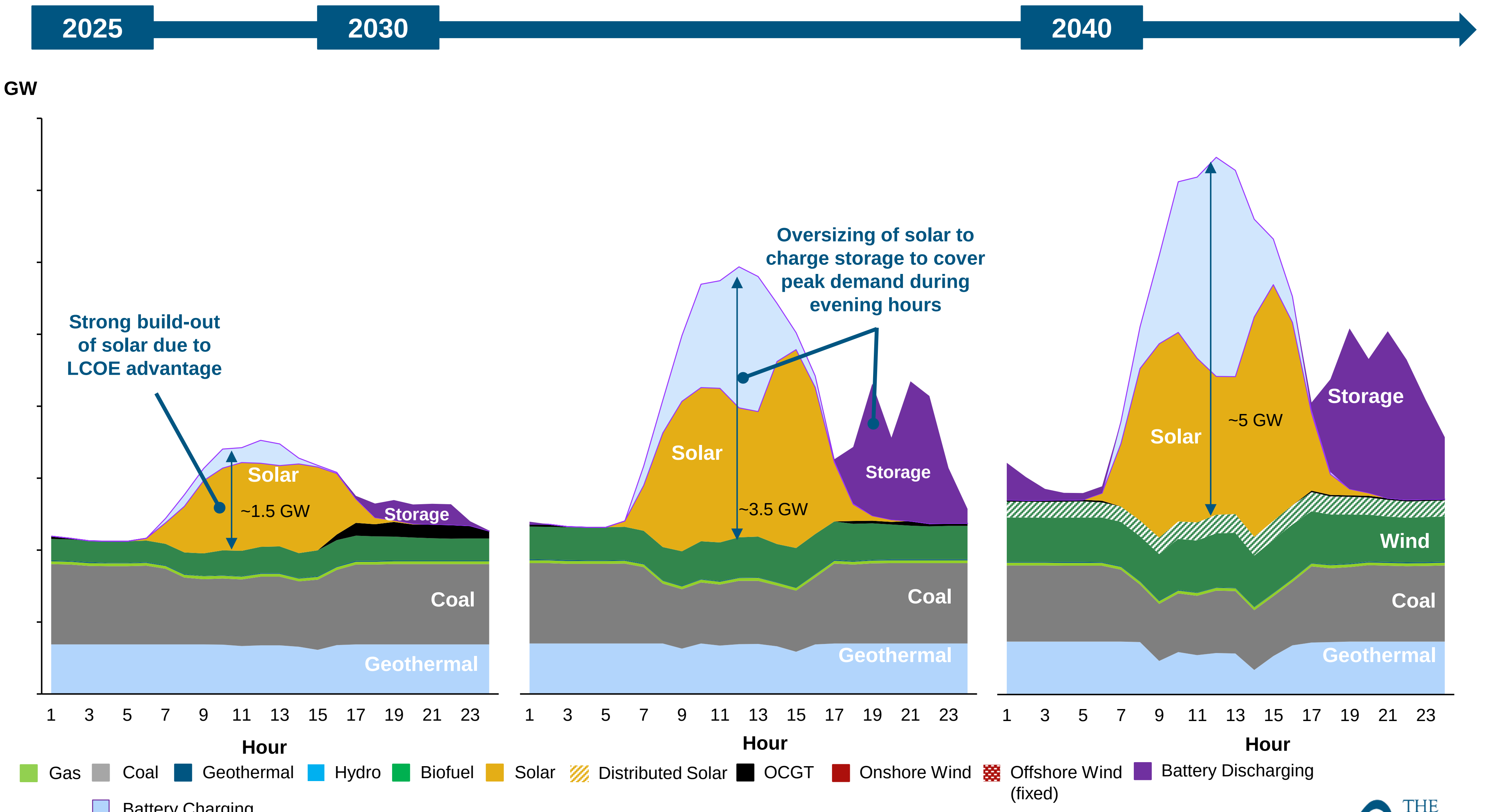
Illustrative

Visayas – shifts to solar and storage more aggressively as the alternative is typically diesel or coal



Source: TLG analysis

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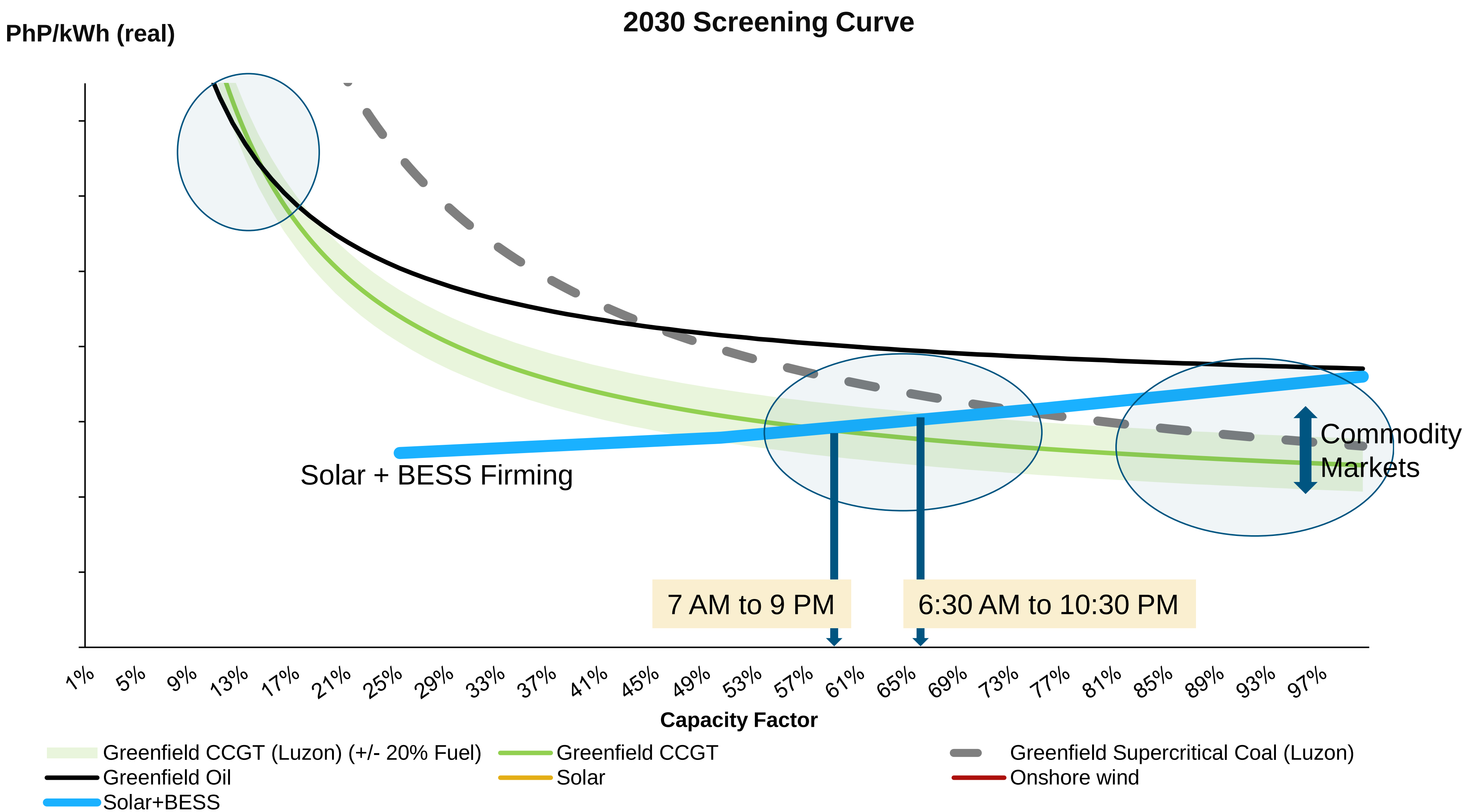
Illustrative

Solar+BESS is emerging as an attractive mid-merit solution given commodity fuel market volatility and uncertainty



Sources: TLG research

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Philippines has an advanced electricity market with multiple “routes” to commercialise projects and some slightly more favourable options for RE

Offtake routes in the regulated market

CSP

Competitive Selection Process (CSPs) are the most common offtake route in the regulated market, where DUs undertake a transparent and competitive bidding to secure electricity supply

USP

Unsolicited proposals (USP) are unsolicited bids for “novel” technologies which can be submitted to a DU and are then subject to a price challenge process, with solar-BESS the most prominent technology type thus far.

- If two rounds of price challenges fail, the contract is executed by the original proponent and the DU.
- Original proponent of the USP can match any alternative winning challenge price (within 5 days).

EPSA

Emergency power supply agreements (EPSA) are a negotiated procurement of emergency power supply due to the occurrence of a force majeure event, that is exempt from CSP.

- EPSA tariff cannot be higher than the latest ERC-approved generation tariff for the plant, if available.
- EPSA contract term cannot be longer than one year.
- The relevant government authority must be informed of the force majeure event within five days, and the EPSA must be filed within 30 days of the force majeure event.

Embedded RE plant exemption

Supply to a DU from a generating plant **embedded in the DU’s franchise area utilizing renewable energy resources is exempt from CSP**, for up to 10 MW of capacity.

- Any capacity intended to be sold outside of the DU’s franchise area must undergo a CSP.

CSP guidelines October 2023 set the **maximum term of power supply agreements set out as 10 years for financial PSAs, 15 years for physical PSAs and <u>20 years for PSAs involving RE plants</u>**

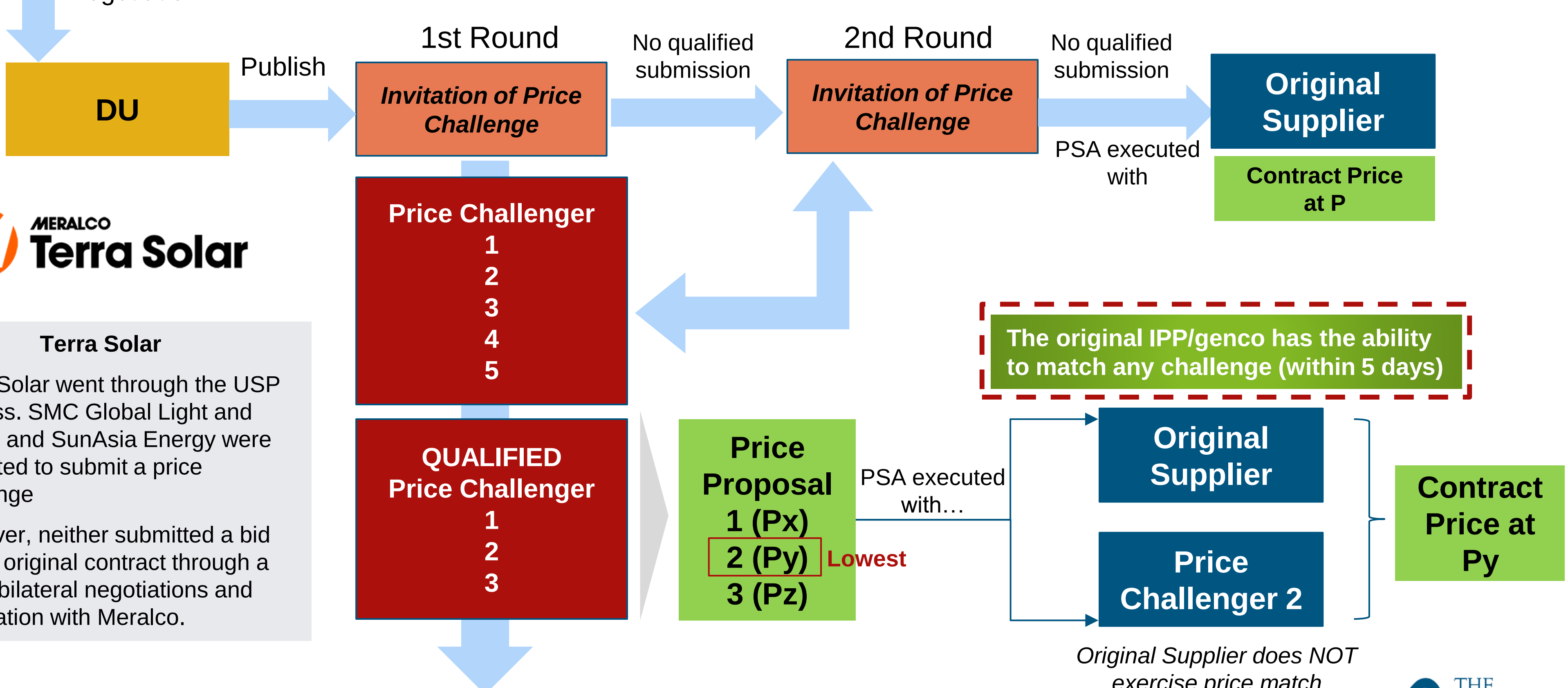
Source: DOE, TLG

Open auctions (CSPs) or price challenges under unsolicited proposals (USPs) are allowed under Philippines contracting regulations for public distribution businesses

Overview of the Price Challenge Process

Background: In late 2021, the DOE amended its competitive selection process (CSP) policy to allow for the procurement of power through unsolicited proposals, **but only for new technology**.

New technology: In this context new technology refers to novel or a novel use or arrangement of existing technology that **has not yet been commercially operating or applied in the Philippines**.



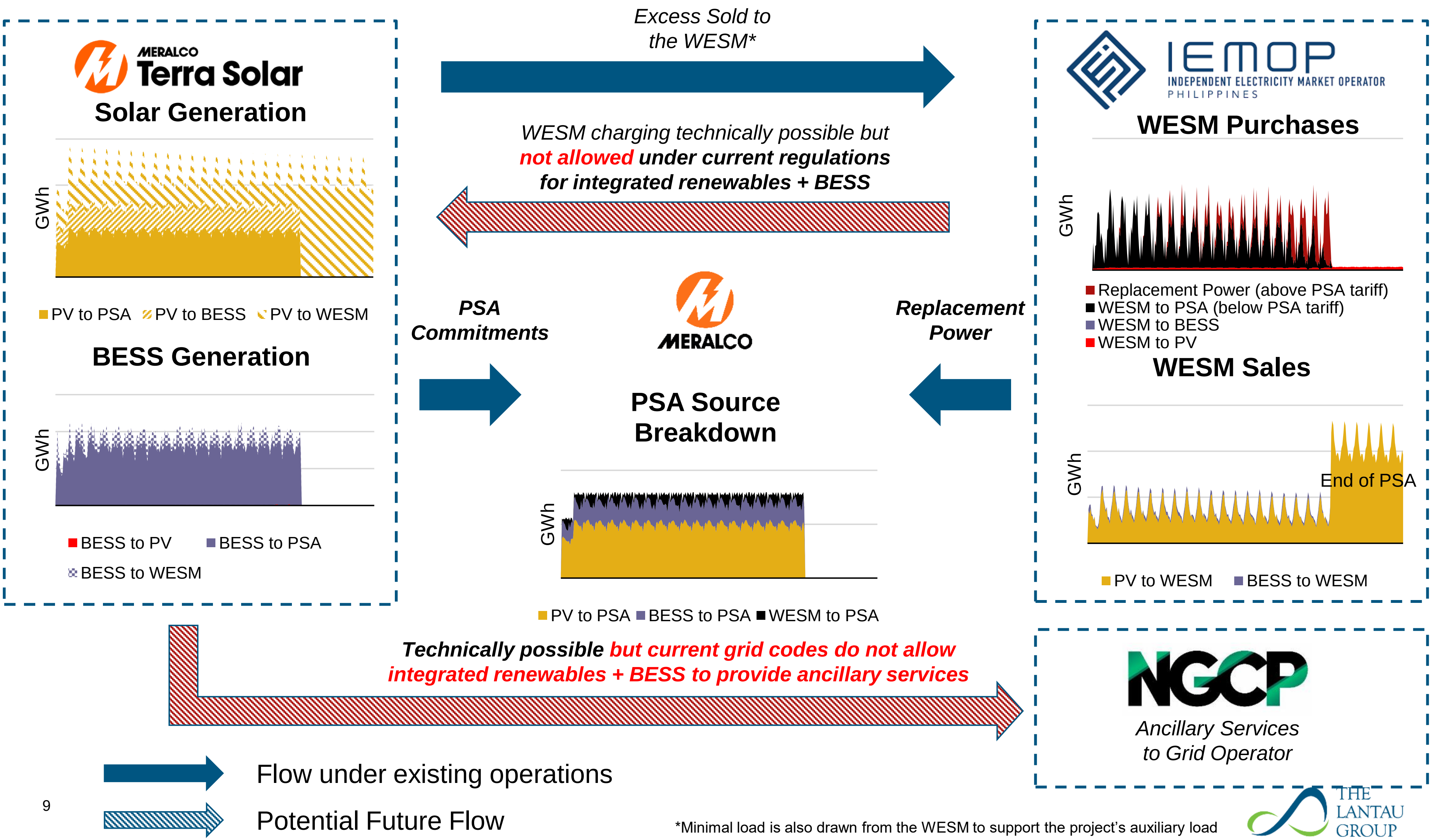
Terra Solar

- Terra Solar went through the USP process. SMC Global Light and Power and SunAsia Energy were expected to submit a price challenge
- However, neither submitted a bid so the original contract through a direct bilateral negotiations and finalisation with Meralco.

Source: TLG research and analysis

Illustrative

BESS integration subject to numerous project-specific constraints that can hopefully be removed to enhance system-wide value



*Minimal load is also drawn from the WESM to support the project's auxiliary load

Insights

- **Solar + BESS economics are increasingly favourable** in the Philippines
  - LNG imports and (locationally oriented oil use) are the “avoided cost” setting fuel
  - Grid is reasonably robust (with nodal pricing) but grid connection and general development timing and uncertainty are becoming more constraining
  - Evening peaking (with relatively higher WESM spot prices) has been a long-term feature of Philippine macro-economy making BESS integration attractive

- Compared to other ASEAN markets, the Philippines sees (by far) the most commercial activity around RE and BESS development – because the **WESM is a robust core market design**.
  - And because a variety of contracting and bilateral negotiation options exist
  - **Ancillary services markets also** provide supportive value for BESS participation and contracting

- Nevertheless, there is a **lot of room for improvement**:
  - BESS must be integrated with RE site or BESS would not be treated as RE for favoured tax status
  - BESS cannot be charged from WESM (grid) or must pay grid charges as if a “load”
  - Not able to participate in AS markets

- Consequently, **projects are optimized, not systems** – this is not efficient

End

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Insight

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