

Rooftop solar trends and policy implications in Thailand

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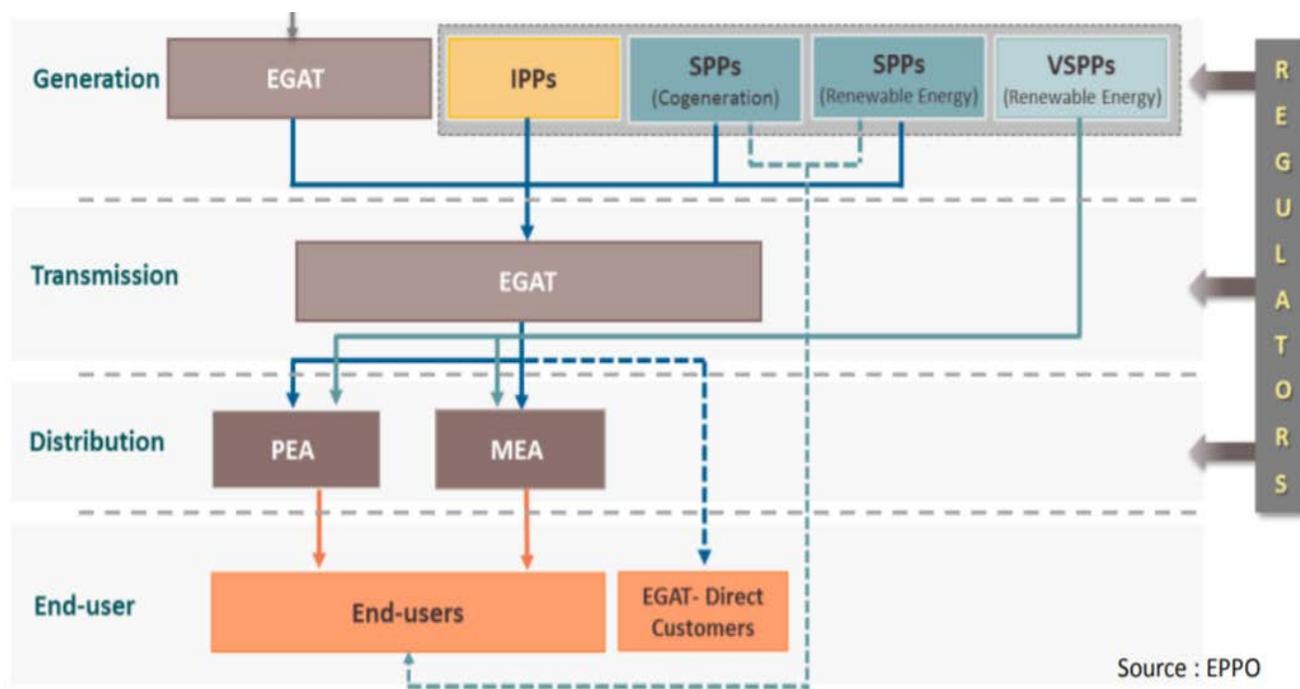
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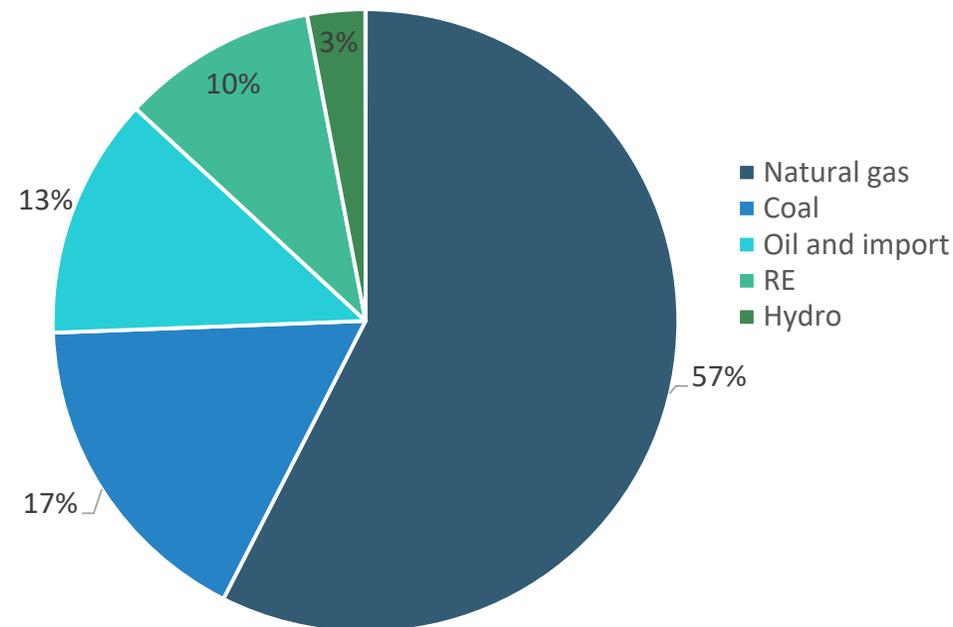
Outline

- Power system in Thailand
- Current renewable energy status
- Evolution of solar PV policy
- Net billing policy
- Key takeaways

Thai power structure is single-buyer model and has high shares of conventional but limited RE



2019's generation mix

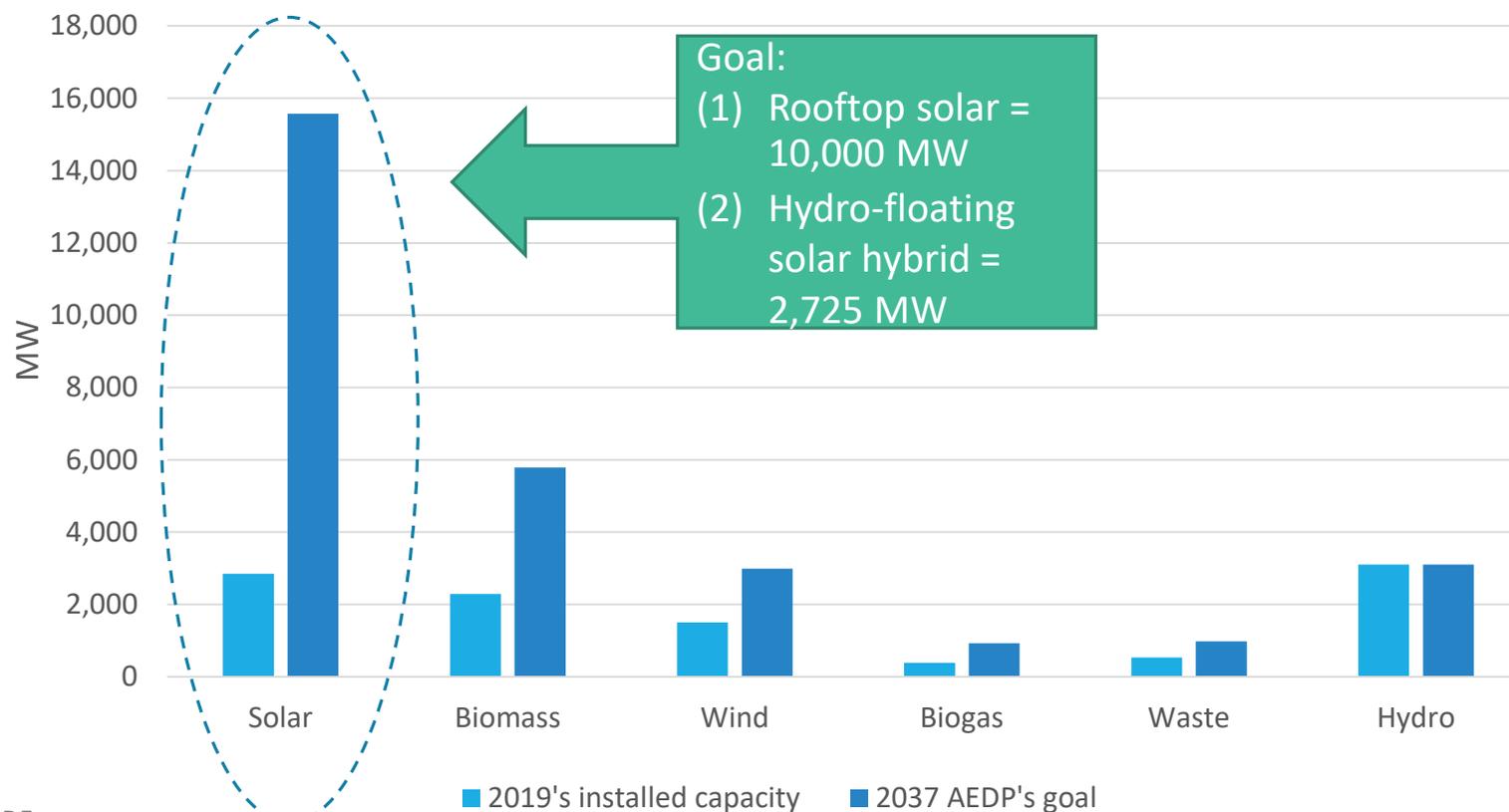


Source: EPP0

2019's installed capacity = 45,297 MW ; peak demand = 30,853 MW; generation = 197,850 GWh

Hydro has the highest current RE shares, but the long-term goal would be rooftop solar

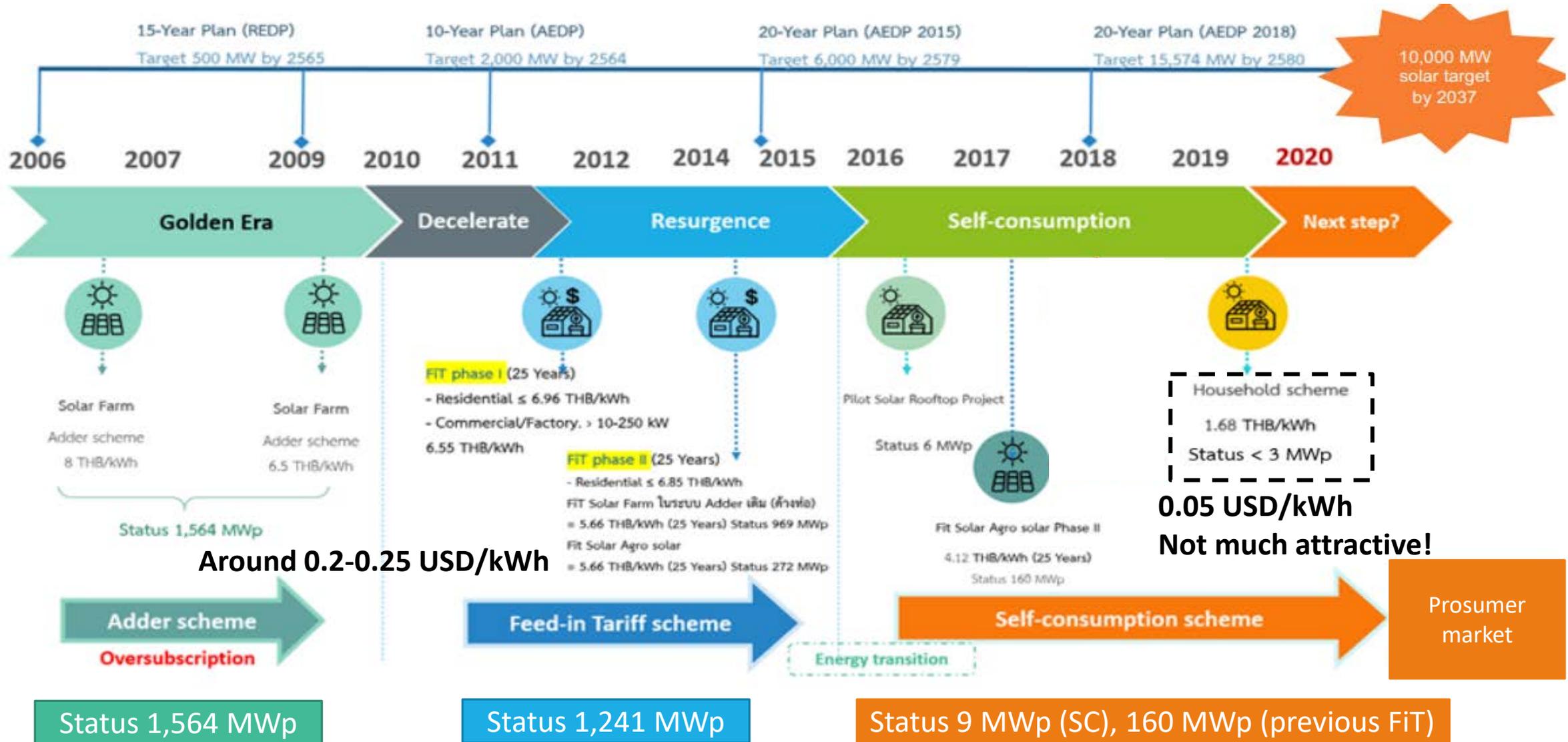
RE installed capacity in Thailand (for electricity generation)



- The Alternative Energy Development Plan (AEDP 2018-2037) aims to have at least **30% of RE in the final energy consumption (electricity and heat)**.
- Currently, RE shares around 15% of final energy consumption.

Source: DEDE

From Adder to FiT to self-consumption, and what's next?



Source: Adapted from Kokchang (2020), ACEF 2020 Deep dive workshop

Net billing can give reasonable level of economic viability and mitigate stakeholder's concerns

Bill savings of residential rooftop PV

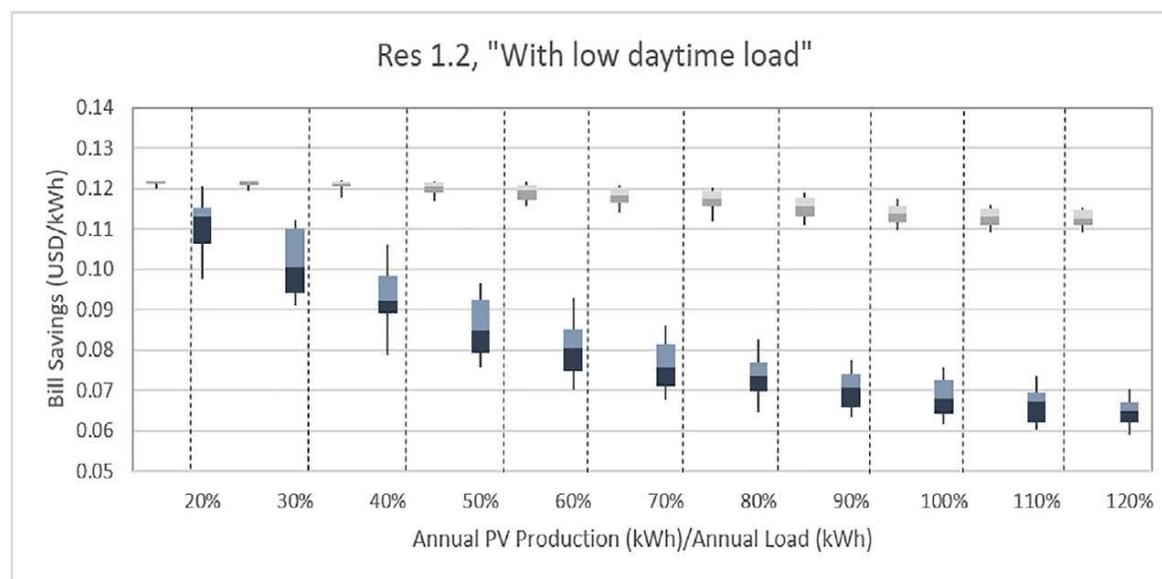


Fig. 3. Bill savings of residential scale with block rate ("with low daytime load"). Box plots represent the 10th, 25th, 50th, 75th and 90th percentile values. Grey plots represent net metering results and blue plots represent net billing results.

Grey plots = results from net metering

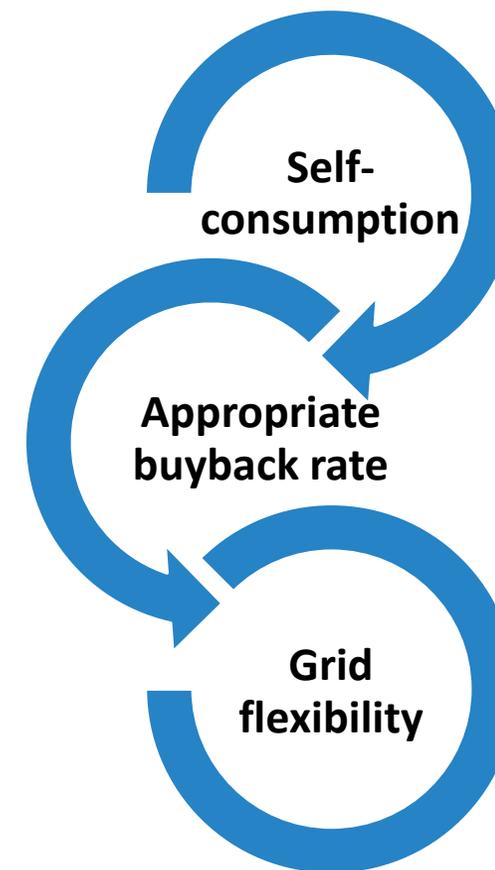
Blue plots = results from net billing

• Why's net billing?

- Reasonable level of economic viability
 - With net billing, residential bill savings are 2.20-3.96 THB/kWh (0.06-0.11 USD/kWh).
 - Depending on load profile, buyback rate, retail rate option and PV size, etc.
 - Lower than net metering but still reasonable at PV-to-load ratio < 30% (for residential scale).
- Stakeholder's concerns mitigation
 - Bill savings of net billing scheme decrease when oversizing PV systems; however, it is not the case for net metering.
 - From the perspective of the utilities, who are concerned about customers' oversizing the PV systems and the impact on the power grid, the utilities may prefer net billing over net metering due to the less incentive to oversize the system, and hence, less grid injection.

Key takeaways

- Thailand's government plans on installing more 10 GW solar PV by the end of 2037. To reach the goal, the appropriate level of incentives should be in place.
- Current buyback rate of 1.68 THB/kWh (0.05 USD/kWh) is not much attractive to customers.
- Thus, the government should provide the appropriate level of export rate that is agreeable with all relevant stakeholders (i.e. value of solar).
- Other flexibility approaches (i.e. battery, demand response) should be promoted together with solar PV as it can help address grid integration issues.



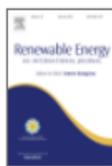
Thank you for your attention

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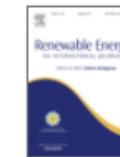
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Bill saving analysis of rooftop PV customers and policy implications for Thailand

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The economics of solar PV self-consumption in Thailand

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