

DOCKETED

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An Overview of Front-of-the-Meter DER in California

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FTM Review: Three Parts



1. Qualitative Review

- What is FTM DER?

2. Quantitative Review

- How much is deployed?

3. Questions for OIIP

Agenda





Part 1: Qualitative Review

DER: How It Fits Together



DER

Broad agreement on
how DER is defined



**FTM vs
BTM**

Lack of formal
definition for FTM DER



FTM DER

Level setting



FTM vs BTM: A General Approach



Qualifier	FTM if...	BTM if...
Point of Interconnection	On grid side of (i.e., in front) utility customer meter	On customer side of (i.e., behind) utility customer meter
Customer Load	Customer load is not directly offset	Customer on-site load is offset
Output	Energy is sent directly to the distribution grid	Excess energy may be sent to the distribution grid
Customer Needs	Not bound by a customer's load shape	Serves customer energy needs first
Metering	Dedicated production meter and any required telemetry	Bi-directional meter netting out consumption and production; plus, any required telemetry
Interconnection (IOUs)	Wholesale Distribution Access Tariff (WDAT) and Rule 21	Rule 21

FTM DER: Three Example Pathways (1 of 3)



- 1) CAISO Market
- 2) Feed-in-Tariff



- 3) Virtual Net Energy Metering

FTM DER: Three Example Pathways (2 of 3)



Common feature: All energy generated is sent directly to distribution grid through a dedicated meter.

1. CAISO Market

- Scheduling Coordinator (SC) for the DER manages resource operations, submits market bids, and manages settlement with CAISO.

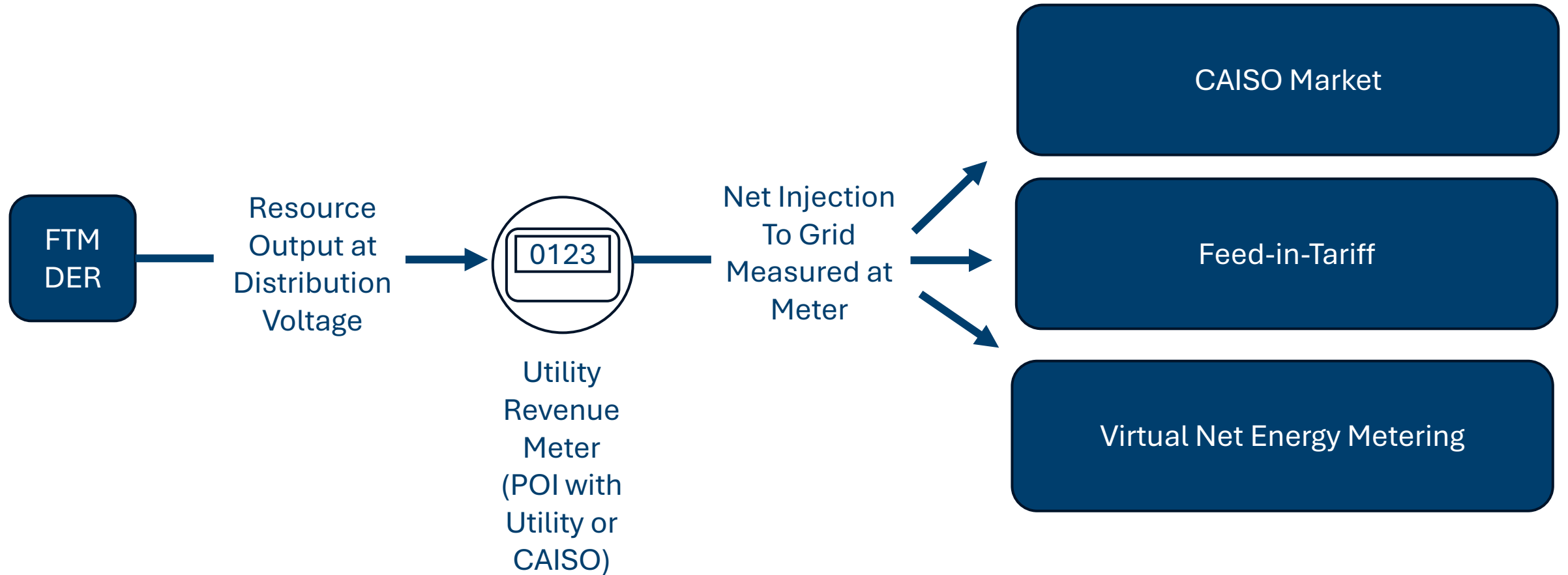
2. Feed-in-Tariff

- Standardized, fixed-price, long-term contract that allows the DER to sell entire output at wholesale directly to LSE.

3. Virtual Net Energy Metering

- Billing arrangement for multi-tenant, multi-meter properties.
- Electricity generated from the DER is sent through a dedicated meter to the distribution grid and credited to the tenants' bills.

FTM DER: Three Example Pathways (3 of 3)





Part 2: Quantitative Review

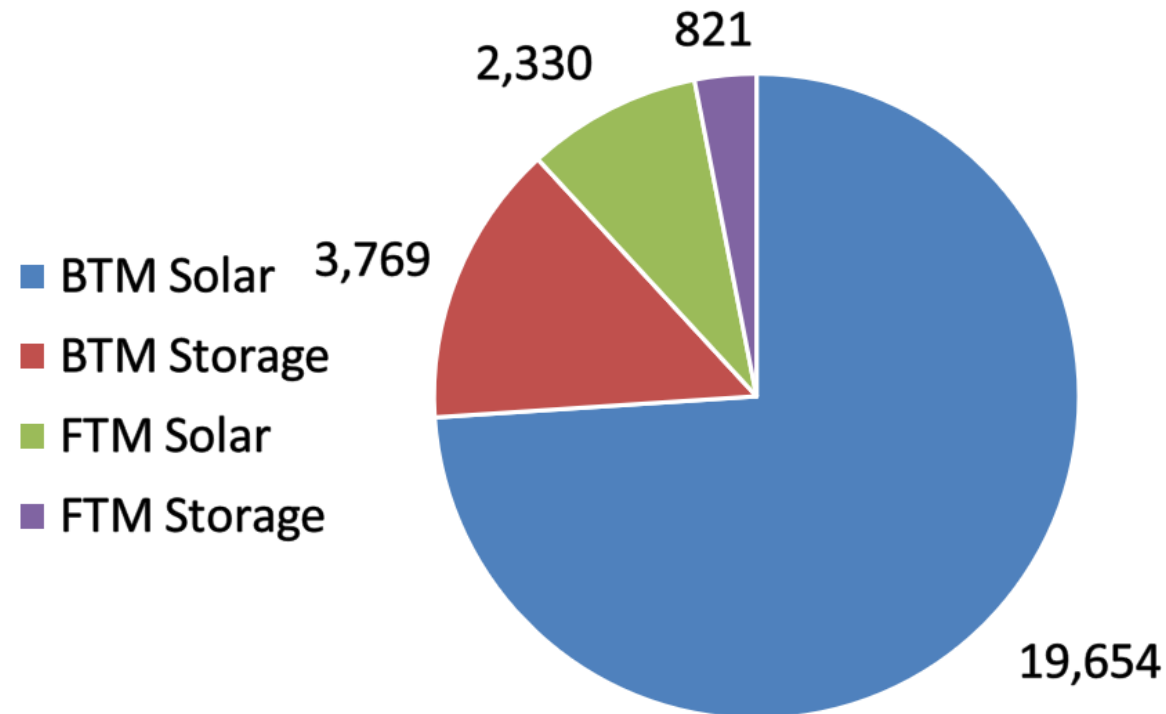
Data Sources



- CEC Quarterly Fuels and Energy Reports (QFER) Data
 - California Code of Regulations, Title 20, Division 2, Chapter 3, Section 1304(a)(1)-(3)
 - Form 1304(b) includes supply data
- IOU Wholesale Distribution Access Tariff (WDAT) Interconnection Queue Reports Data
- CPUC Resources Tracking Data Reports
 - Monthly reports containing information on new resources added for compliance with IRP procurement orders.
- CPUC California Distributed Generation Statistics (DGStats)
 - Distributed generation projects that are on a customer's site or property in California's investor-owned utility service territories

FTM vs BTM DER: Solar & Storage (Statewide)

Nameplate Capacity (MW) Estimates - 2025



SEGMENT PERCENTAGES			
	BTM	FTM	FTM
BTM Solar	Storage	Solar	Storage
74%	14%	9%	3%

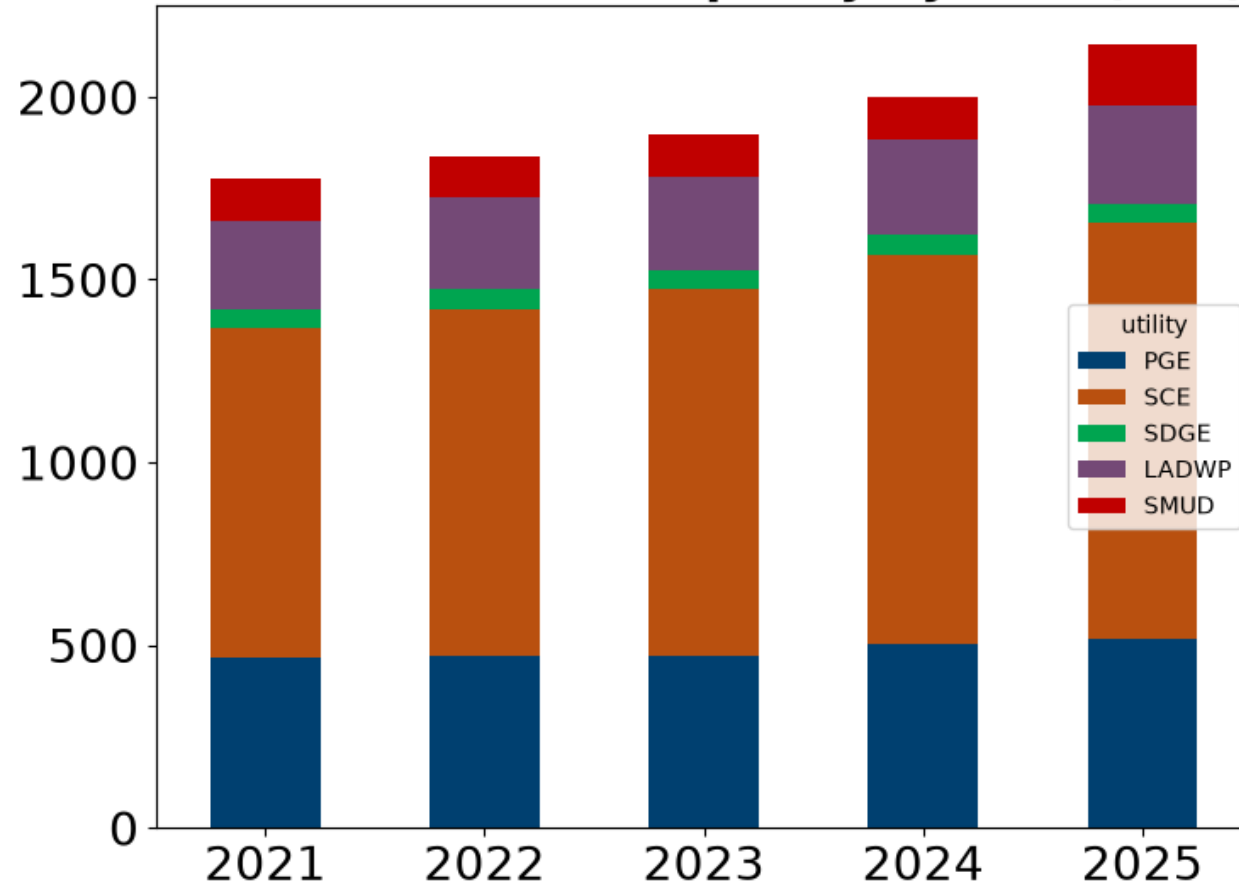
Source: CEC

FTM DER: Solar & Storage Capacity

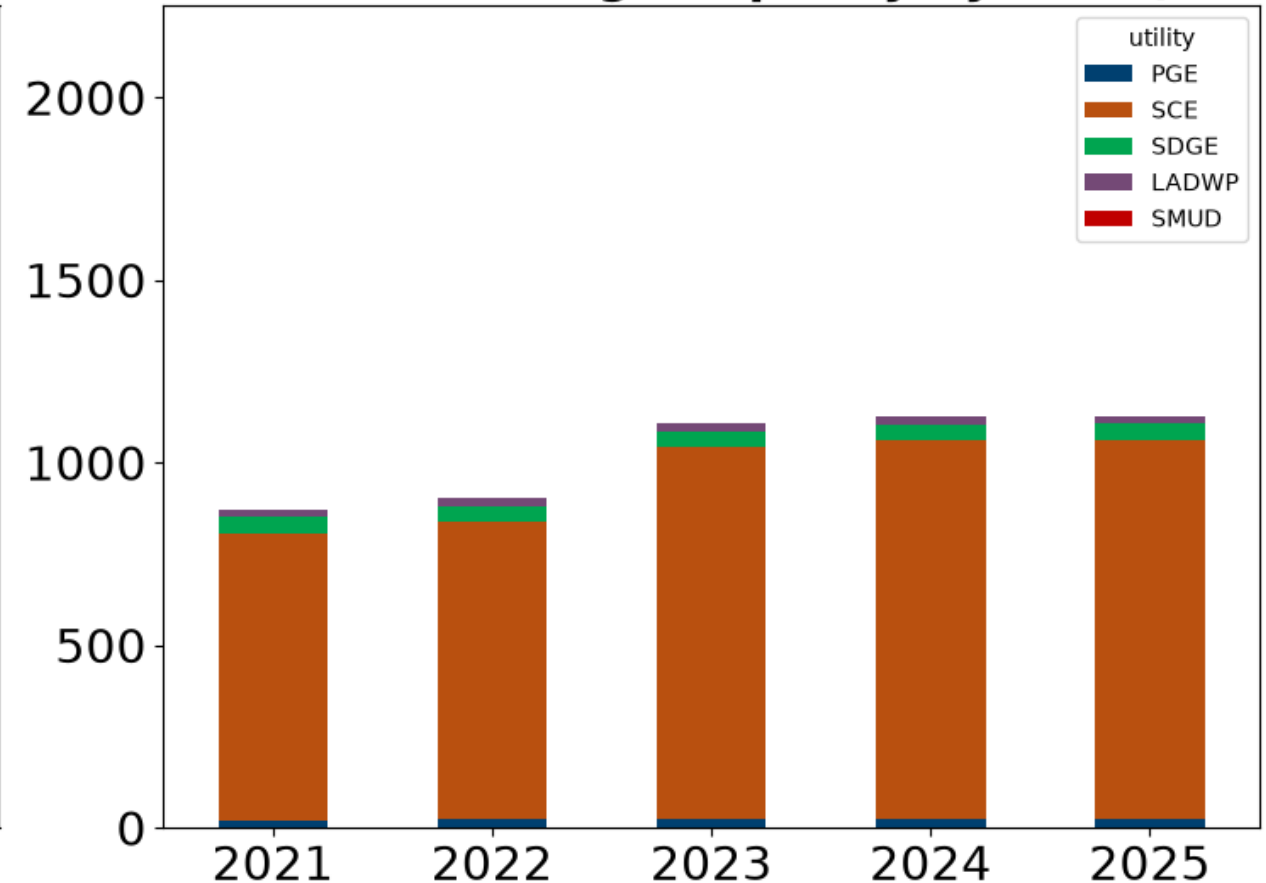
Historic growth, by utility



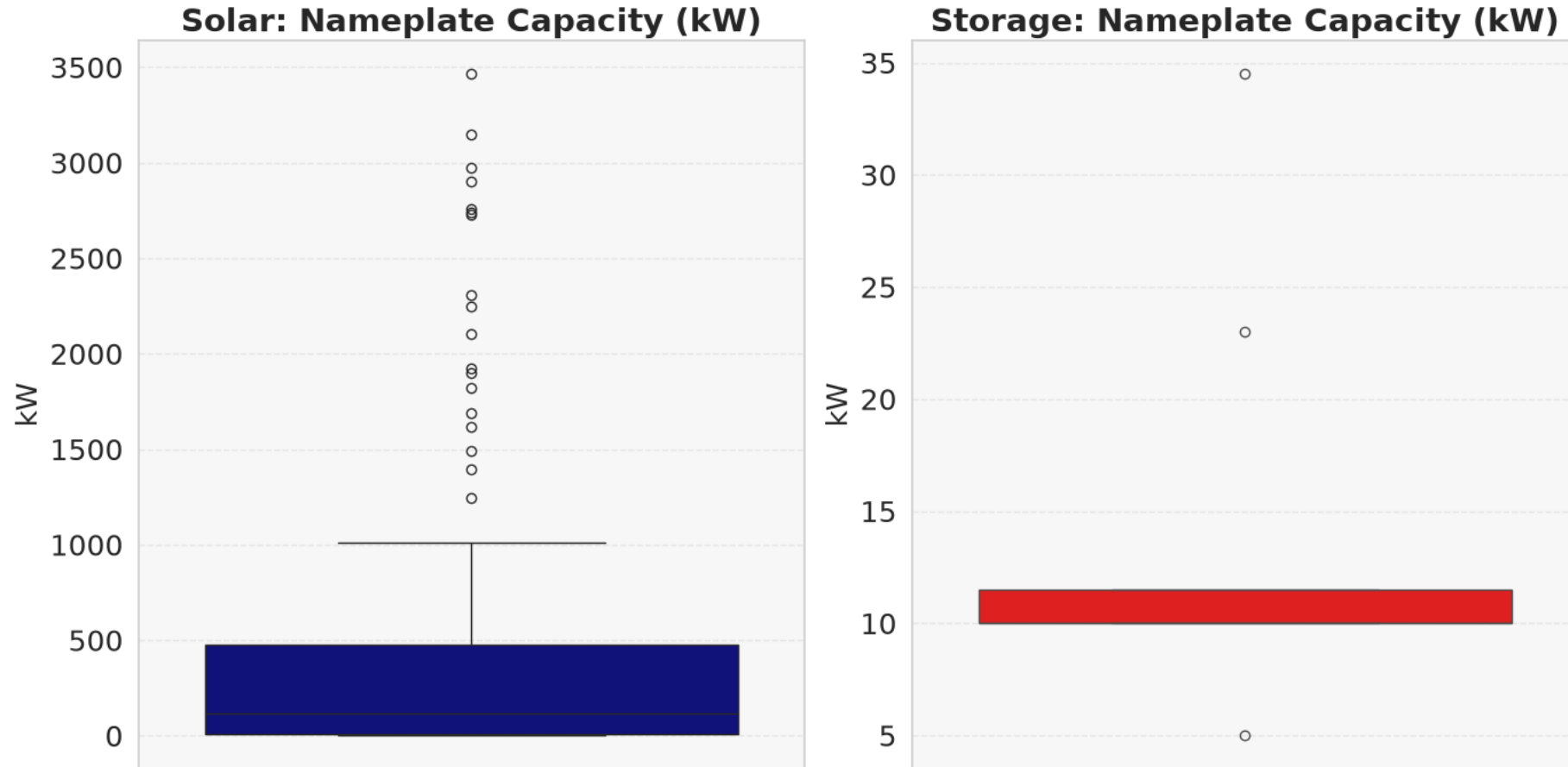
Cumulative Solar Capacity by Year (MW)



Cumulative Storage Capacity by Year (MW)



FTM DER: Solar & Storage Capacity Variance

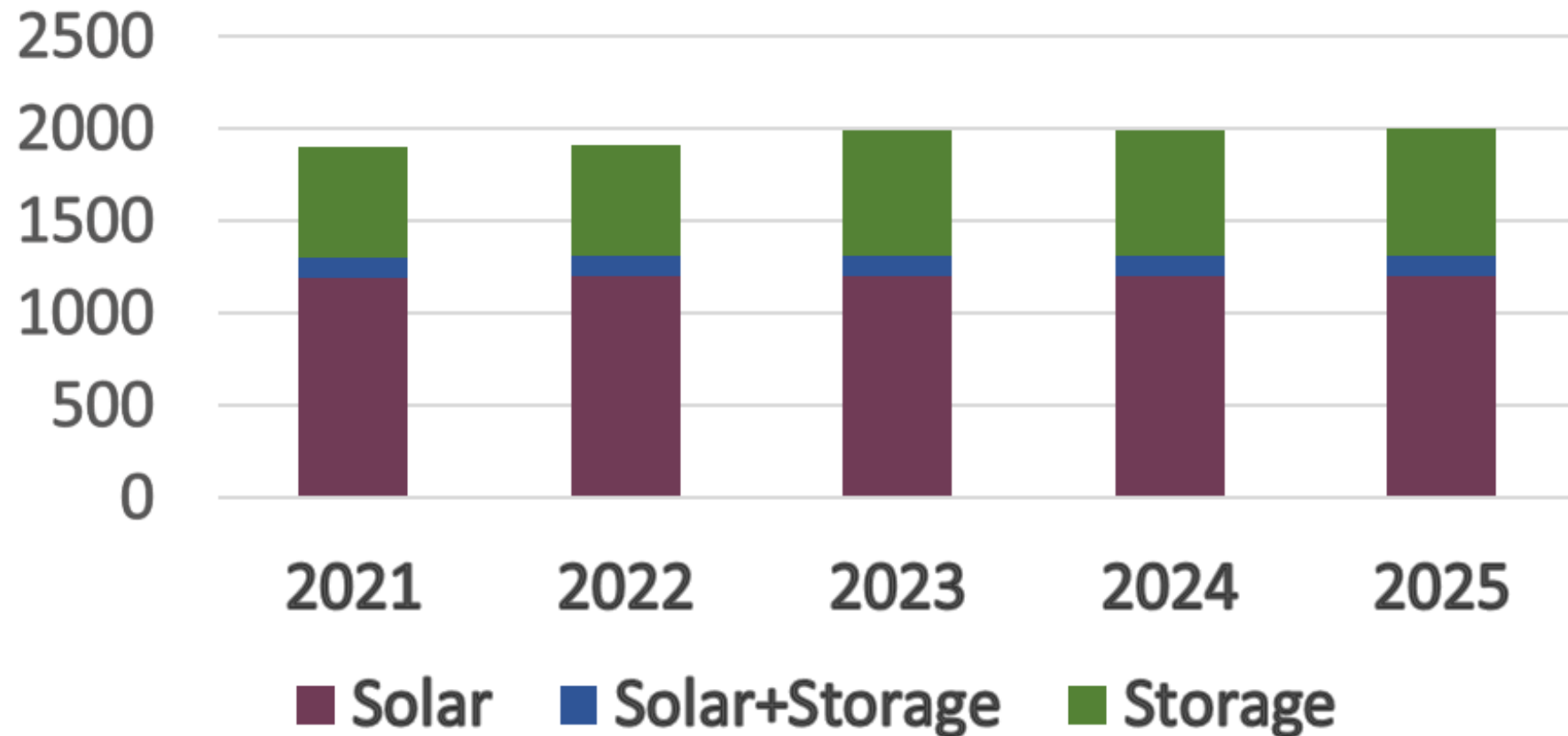


Note: many outliers have been removed for the sake of legibility. FTM solar projects are as large as 60 MW and storage projects as large as 160 MW.

FTM DER: CAISO-Registered Projects



Cumulative Capacity of WDAT Projects (MW)

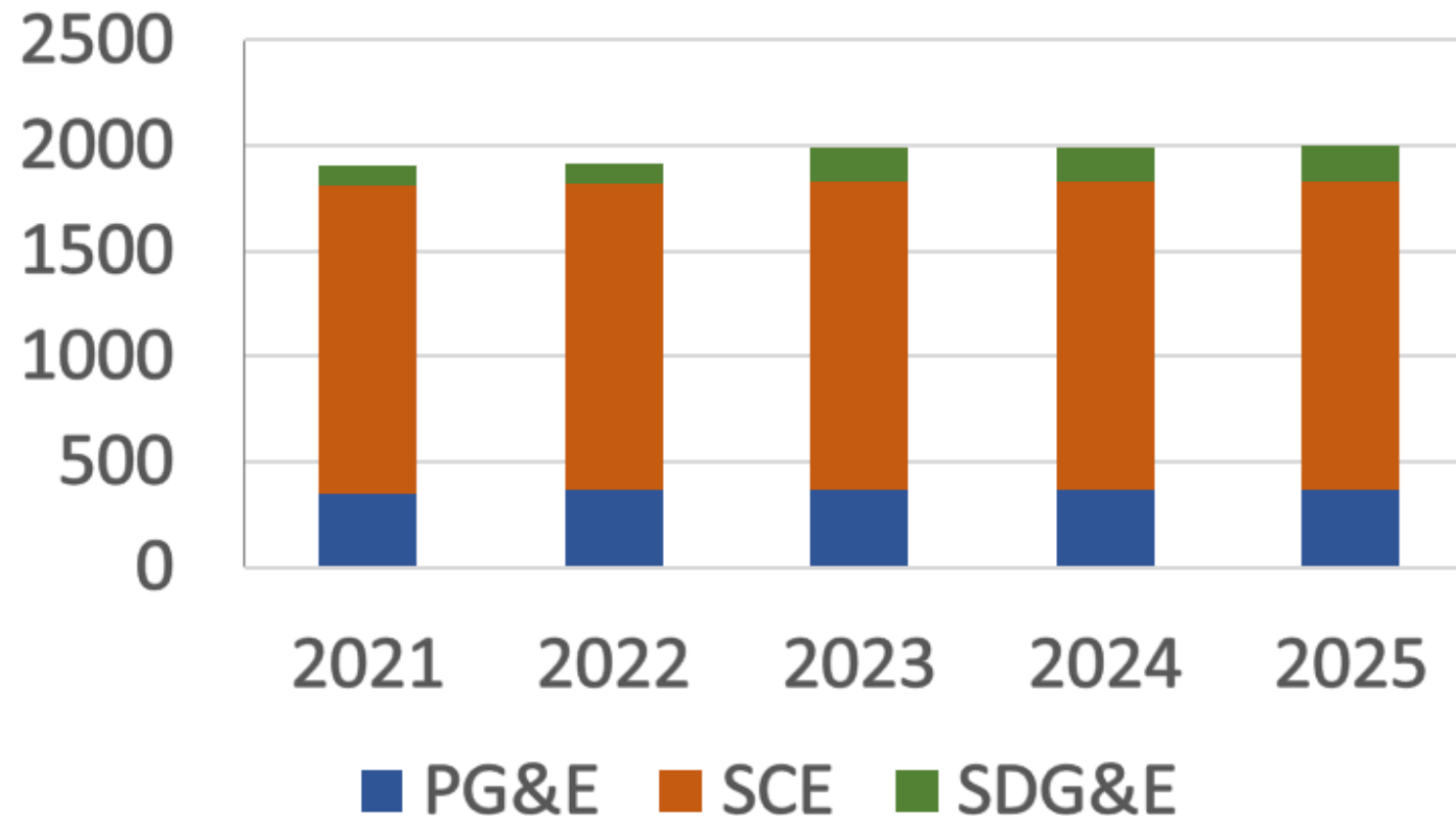


FTM DER: CAISO-Registered Projects

Solar and Storage



Cumulative Capacity for WDAT Projects (MW)

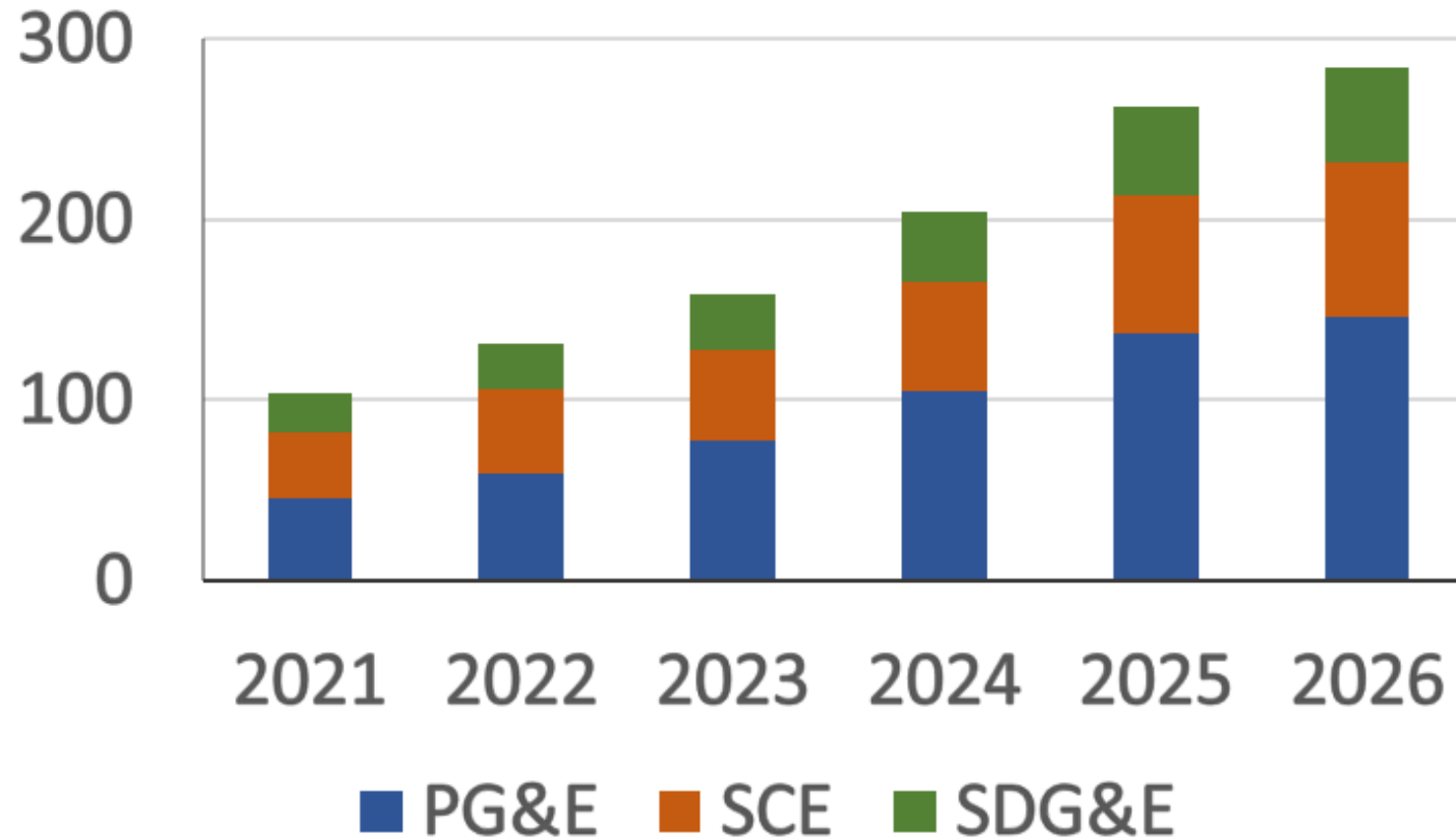


VNEM Cumulative Capacity

Capacity under IOU Virtual Net Metering/Billing Tariff



Cumulative VNEM Capacity by IOU (MW)



Source: CEC



Part 3: Questions for OIIP



Questions To Address (1 of 2)

- What are FTM DERs?
- What are the attributes of FTM DER in terms of configurations, capabilities, locations, sizes, etc?
- How do they operate?
- What opportunities and challenges exist for these resources?
- What are the use cases for FTM DER?



Questions To Address (2 of 2)

- What types and quantities of FTM DER do LSEs and developers currently have in their portfolios?
- What are the current pathways to development?
- Why do LSEs and developers choose certain pathways?
- What benefits and costs do LSEs and developers evaluate when considering FTM DER as part of their portfolios?
- What additional opportunities could exist for FTM DER?



Thank You!

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