

# Update and Review of Proposed Restructuring of Solar Net Metering in California

Gerry Braun, IRESN

MSEF Monthly Call

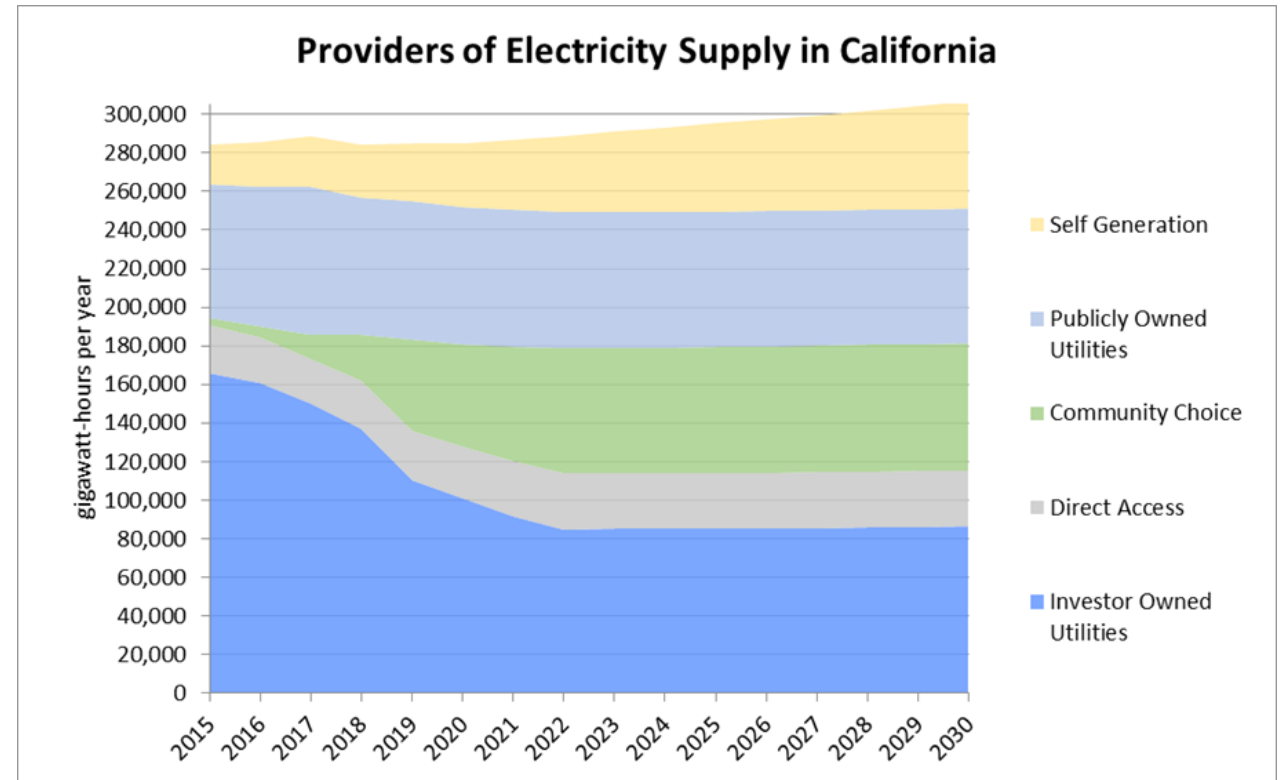
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# Outline

- California Electricity Supply
- California Net Metered Solar
  - On-site Solar Progress and Potential
  - Distribution Costs and Distribution System Usage
- Elements of Proposed CPUC Decision
- Local Clean Energy Activist Revolt
- On-going Reconsideration
- Strategic Issues
  - State and Local Goals
  - Industry Capacity
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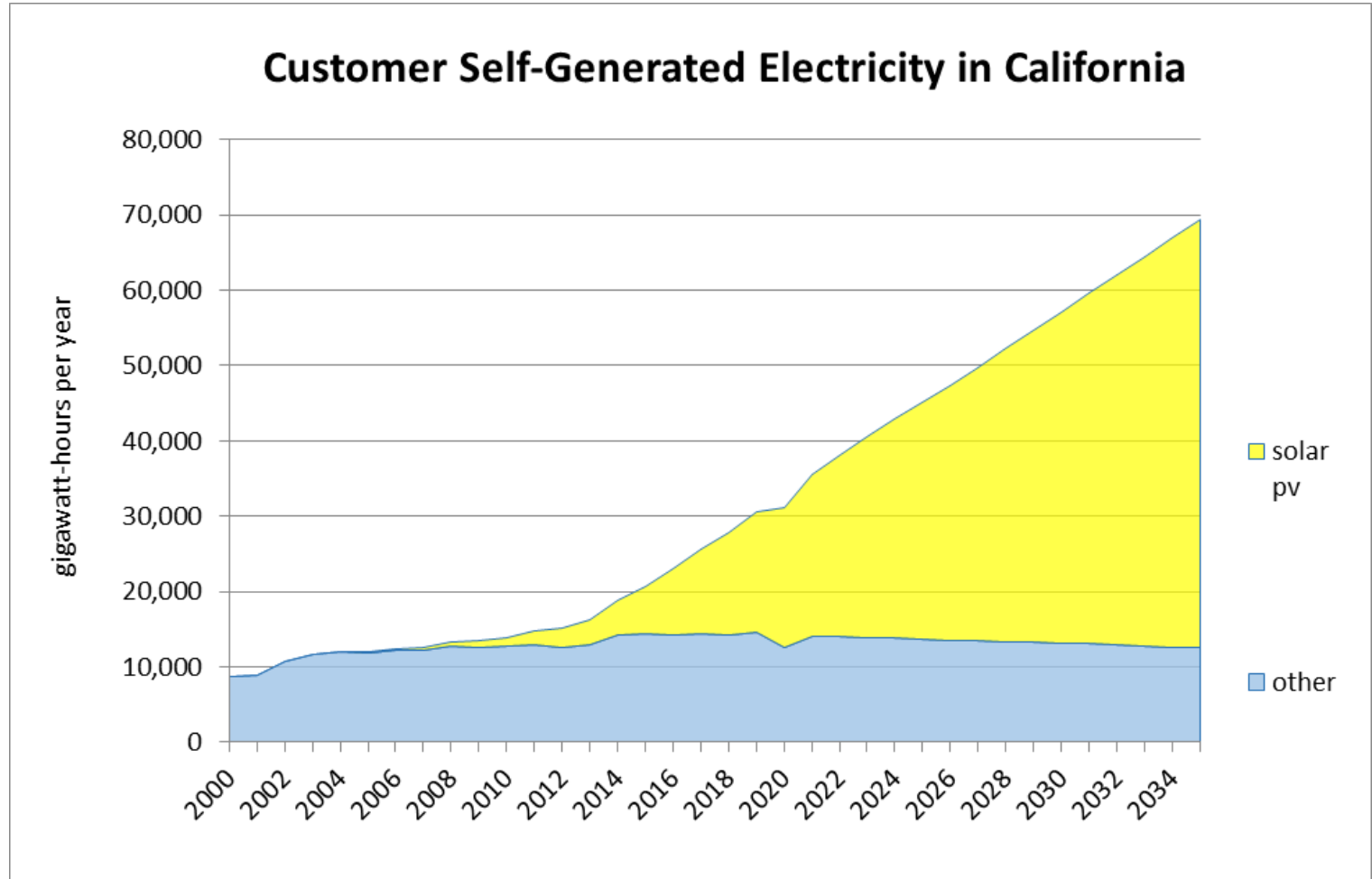
# Electricity Decentralization and Demonopolization in California

- Decentralization is about scaling down both electricity sources and generation service providers.
- Demonopolization is about reducing the role of utility monopolies in local energy supply.
- The share of electricity supply provided by Community Choice agencies and the share provided by on-site solar self-generators has increased dramatically.



Source: California Energy Commission Data – Analysis by Robert Freehling

Self-generation Progress in California



Source: California Energy Commission Data – Analysis by Robert Freehling

# On-site Solar Potential

Based on aerial photography analysis of 8,352 Davis, California home-rooftops, BIRA Energy determined that residential rooftop solar generation technical potential in Davis, California in 2015 was more than 250 MW, capable of supplying more than 350,000 MWh of annual electricity production – enough to supply the annual needs for nearly 60,000 homes—or about four times as many homes as existed in Davis at the time.

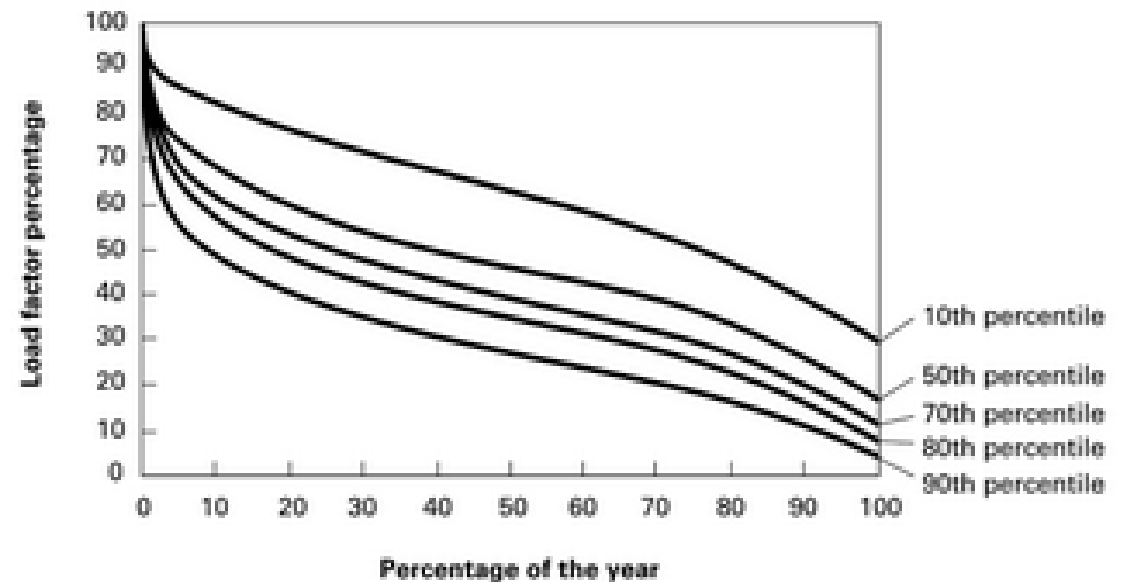


Photo Source: BIRA Energy  
(Yellow roofs are Single-Family, Green are Multi-Family, Pink are Non-Residential.)

# Distribution Costs and Asset Utilization

- When residential or commercial on-site PV systems “over-generate”, their output is distributed to other electricity users, including other residential and commercial customers
- Northern CA residential customers the same price (more than \$0.32 per kWh) for electricity imported from the transmission grid and for solar electricity feeding into the local distribution grid.
- Grid electricity charges include more than \$0.12/kWh for “distribution”.
- During much of the year and during most days the distribution system is lightly loaded.

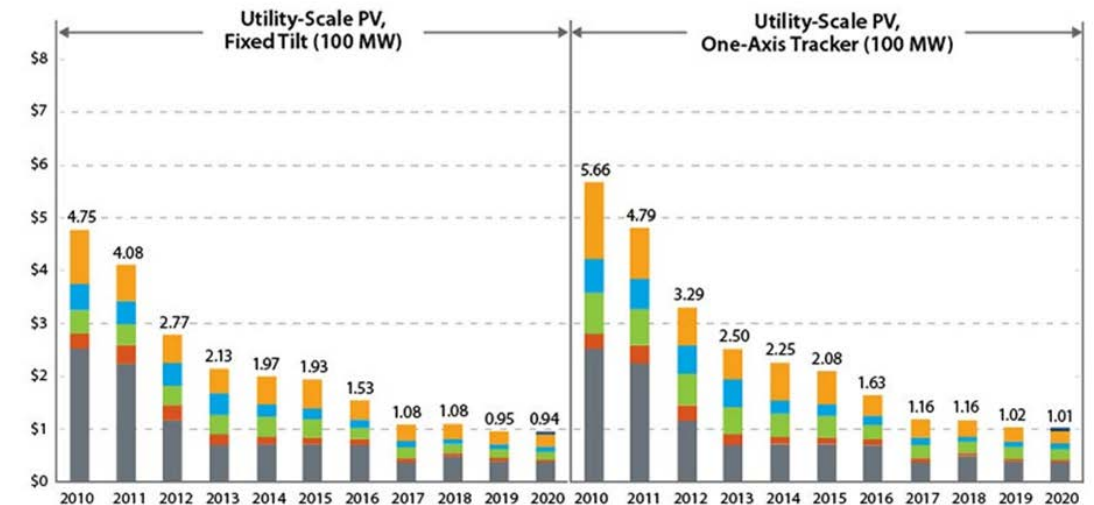
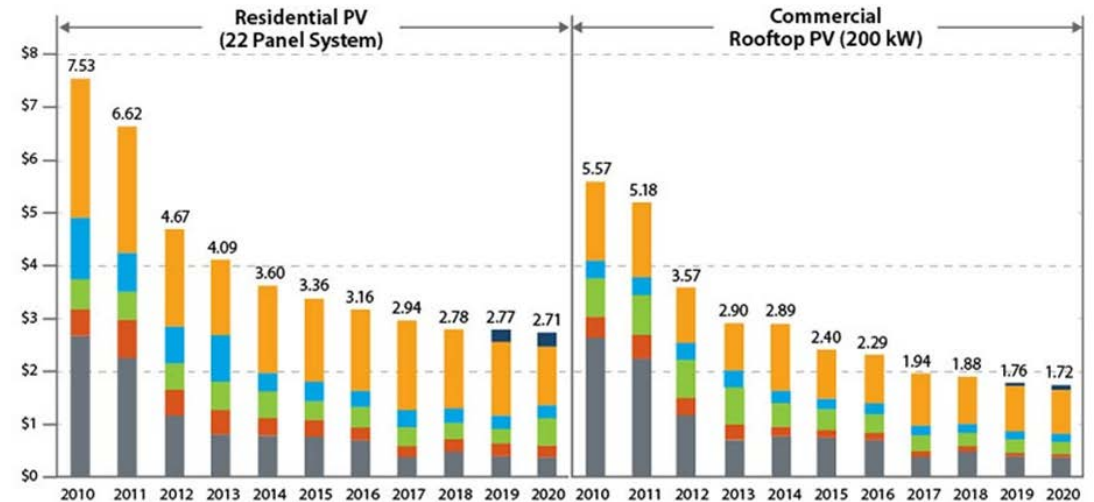
**Figure 1-35: Asset utilization varies widely among feeders**  
Some feeders stand idle far more of the time than others.



Source: J. Iannucci, "The Distributed Utility: One view of the Future" (Distributed Utility—Is This the Future? EPRI, PG&E, and NREL conference, December 1992)

# Solar PV Generation Costs Depend on Project Scale

- On-site solar PV systems cost between one and two times more per kW of installed capacity than “utility scale” solar PV power plants.
- PG&E customer charges:
  - Generation – 12 cents per kWh
  - Residential T&D - 17 cents per kWh





# Elements of Proposed Decision

1. Tariff changes. Bill credits for net hourly generation 80% lower for new NEM residential customers than for current NEM residential customers.
2. Grid access fees. \$8 per kilowatt (kW) of installed solar capacity for new NEM customers.
3. System sizing. New NEM residential customers are allowed to “oversize” their systems to meet up to 150% of historical usage. Limit currently is 100%.
4. Time of Use Prices. Higher per kWh prices available to new NEM residential customers selling stored solar electricity to the grid between 6 and 9 pm.
5. Transition credit. Ten-year fixed monthly credit that starts at \$5.25 per kW (higher for low-income customers) and steps down to zero over 4 years.
6. Special incentives. Solar plus storage for low-income and tribal households, including an exemption from the grid access fees.
7. Storage Rebates. Establishes a fund to pay storage rebates to existing NEM 2.0 customers who transition to the (NEM 3.0) “Net Billing” Tariff within the next four years.
8. Retroactive Eligibility Changes. Eligibility for NEM-1 and NEM-2 compensation for net generation is reduced from 20 to 15 years.
9. Equity Fund. Up to \$600 million to help scale up low-income access to on-site solar.
10. Monthly Billing. Eliminates annual “true-up” for “over/under” on-site solar generation.



# Activist Revolt

- Former governor and sponsor of the California Solar Initiative publishes NYT op-ed criticizing proposed decision.
- Public demonstrations and public comment.
- Initiatives to consider potential litigation.
- Debates between independent energy economists and anti-solar economists funded by the CPUC.



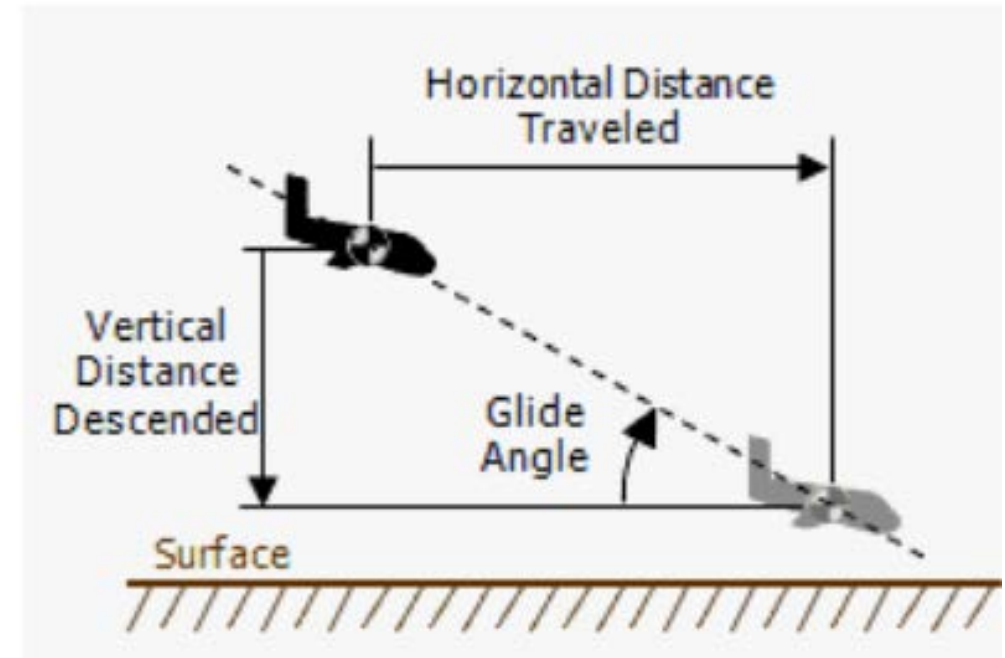
# On-going CPUC Reconsideration

Political pressure on the CPUC to flatten California's "duck curve" by "time of supply" as well as "time of use" pricing.

Mapping a "glide path". To what landing point?

- To local grid operation that makes local supply responsive to local demand, while transmission operation makes bulk supply responsive to net demand on the transmission system? (Unclear how demand peaks will shift and how fast as a result of building and vehicle electrification.)
- To the landing point a California retail solar industry that has been repurposed to market and install battery storage rather than rooftop solar? (Is repurposing a competitive retail solar industry a legitimate public policy goal?)

At what glide angle? According to the results of what pilot project?



# Integrative Policy for Storage Paired Solar – Deployment Options Evaluation

	On-site Solar	Community Solar	Solar Power Plant	All Together
Affordability	Owner Dependent	Bad in CA	Good	Improving
Reliability	Good	Good	Good	Best
Land Use	Best	Site Dependent	Site Dependent	Blend Dependent
Decarbonization	Good	Good	Good	Best
Energy Resilience	Good	Local Grid Dependent	Neutral	Best
Local Economy	Good	Good	Neutral	Blend Dependent
Equity	Model Dependent	Model Dependent	Neutral	Best

# For Future Discussion:

Does California need its own Department of Energy?  
...and a state renewable energy laboratory?