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# ***Planning and "Markets" for Distributed Energy Resources***

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# California's Distributed Energy Resource Policy and Regulatory Landscape

## Clean energy pathway to 2030

Legislation pending to go beyond the 33% Renewable Portfolio Standard

## Integrated demand side management

Ongoing CPUC proceeding – more holistic customer programs

## Net metering successor tariff

Ongoing CPUC proceeding – based on the costs and benefits of distributed generation

## Energy storage

New policy proceeding opened in March 2015 – valuation, multiple-function storage, cost allocation, safety

## Distribution Resources Plan

Ongoing CPUC proceeding – optimal locations for Distributed Energy Resources (DERs)

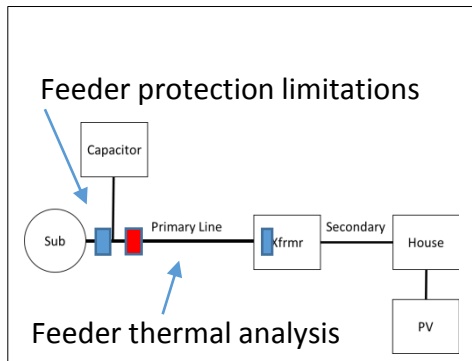
# Distribution Resources Plan

**Integration Capacity Analysis (ICA)**

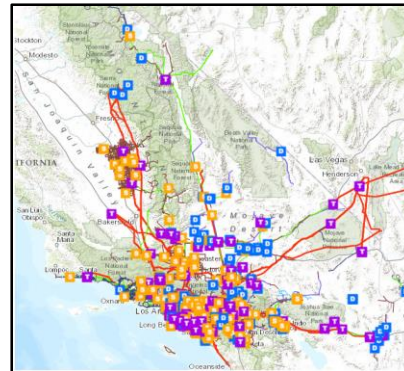
**Available capacity across electric grid**

**Locational Net Benefit Analysis**

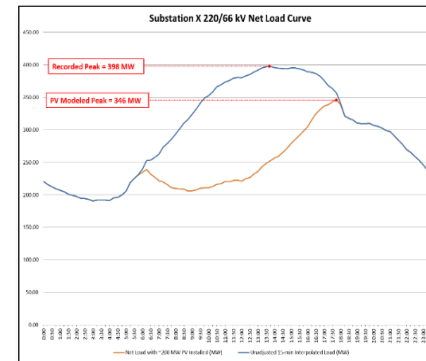
**Demonstration and Deployment**



Identify system limitations and capabilities



Release public information about system limitations and capabilities to facilitate interconnection



Identify locations where DERs may provide grid benefits



Test proposed planning methodologies and required operational capabilities of the future grid

Note: Other DRP topics include data sharing policy, recommendations to incorporate locational value into tariffs and contracts, safety, and barriers to DER deployment

# Grid as DER Integration Platform

## Grid Design

### Robust, high capacity grid:

Enables customer choice, interconnection without little study, and significant provision of energy needs locally

and/or

### Grid that enables DER locational benefits:

More opportunities for DERs to provide alternatives to traditional grid investment



## Grid Functions

Provides the backbone distribution system

Ensures grid reliability and power quality

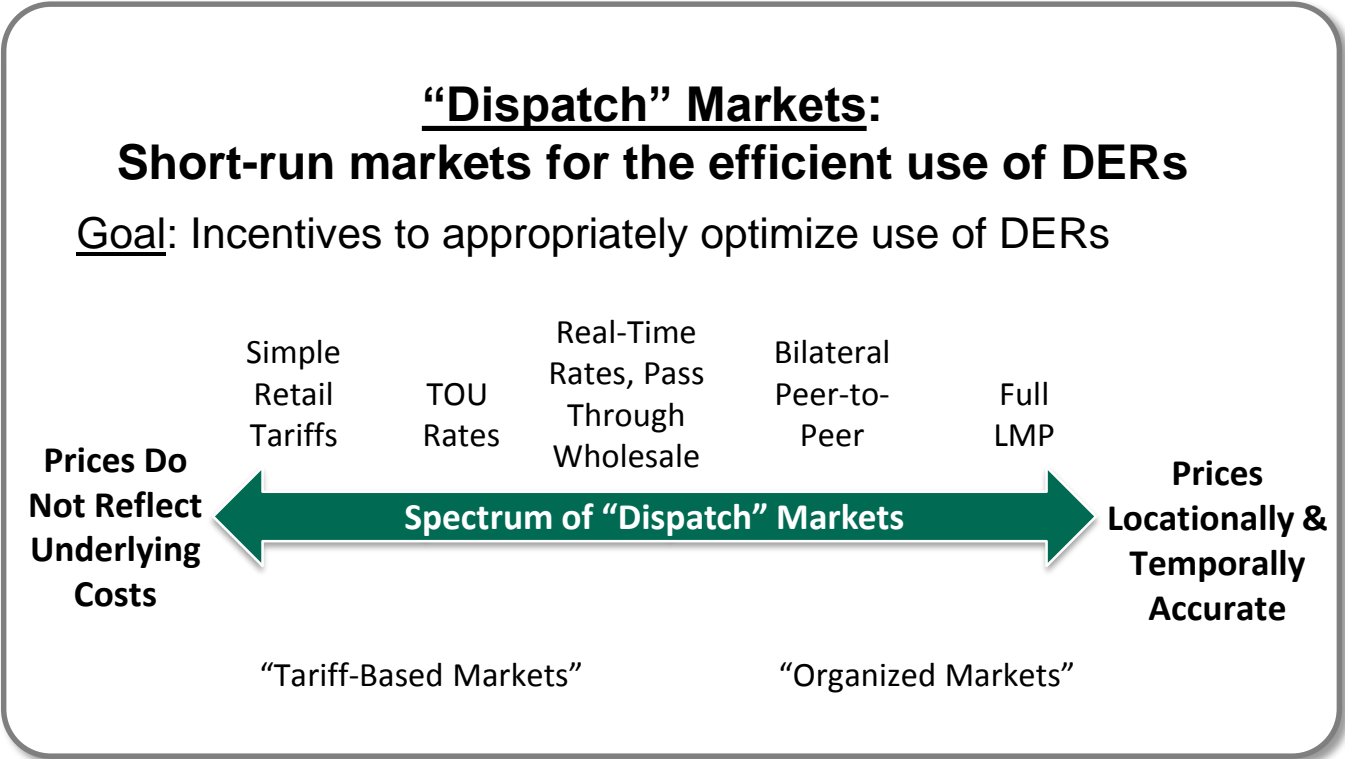
Modernized, “plug and play” system capable of two-way electricity flows

Permit streamlined DER interconnection

# Distribution DER "Markets"



**Infrastructure Markets:**  
**Long-run markets for DER capital investment**  
Goal: Incentives for investment in optimally-sited DERs



# Distribution Market Design Considerations

- Incremental value of price signals beyond wholesale prices / market complexity & implementation cost
- Direct bids to wholesale markets / “aggregator of aggregators”
- Customer efficiency / grid operator needs
- Prices reflect underlying costs / customer equity
- Extent of market / market power concerns
- Robust, high-capacity grid / many opportunities for grid services by DERs



**Distribution markets for DERs  
will require balancing potentially competing objectives**