



Implications of the Changing Energy Supply

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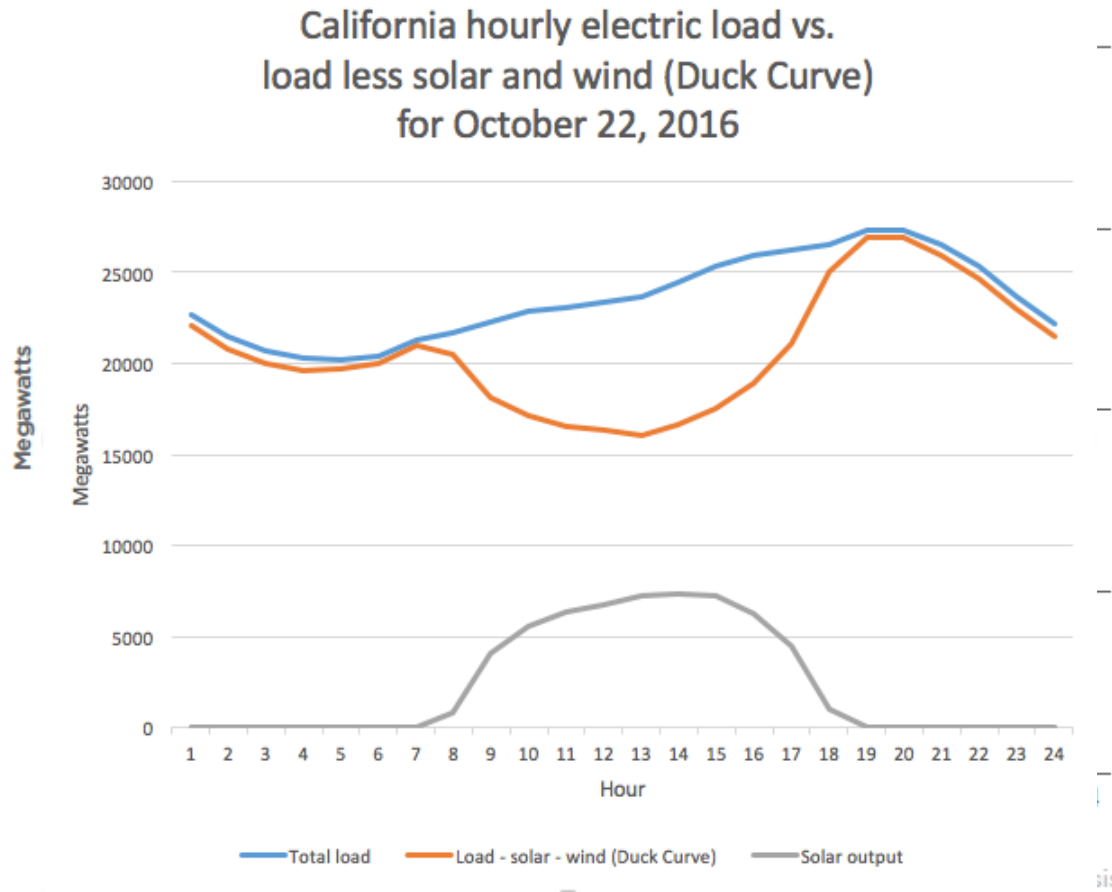
California Public Utilities Commission (CPUC) decision makers in attendance, please be advised we will be discussing substantive issues in open proceedings pending before the CPUC. If you wish to stay and listen, please let us know you are here so we can file an ex parte notice.

Objective

- Provide an overview of the duck curve and the implications to system operators and customers.
- Provide an overview of how energy storage and other distributed energy resources (**DERs**) may affect customers and contribute to California's low carbon future.

What is the Duck Curve and Why Does it Matter?

California's electrical system load will vary based on the contribution from intermittent generation such as solar and wind.

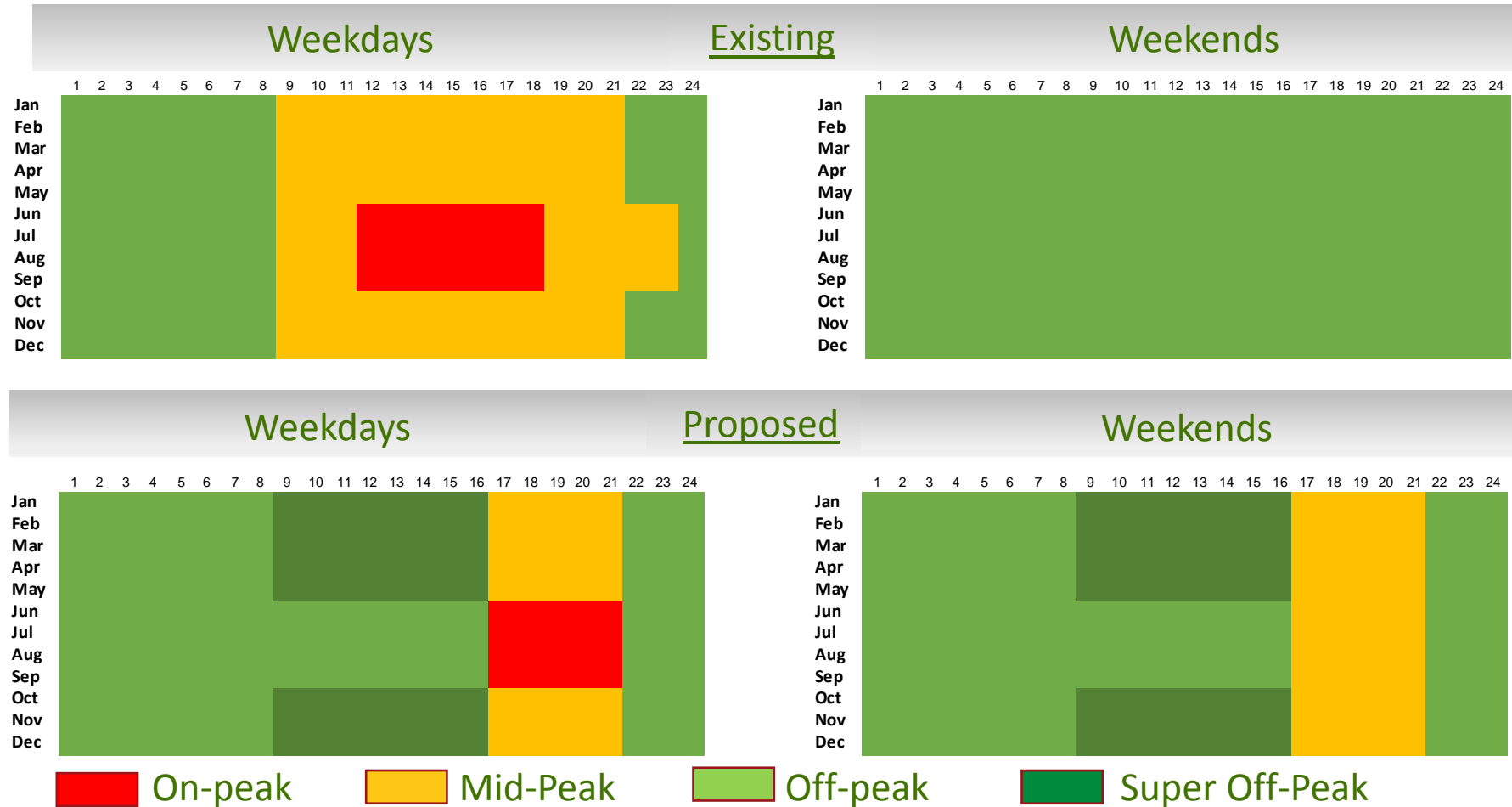


System operators must manage:

- Short, steep ramps
- Oversupply risk
- Decreased frequency response

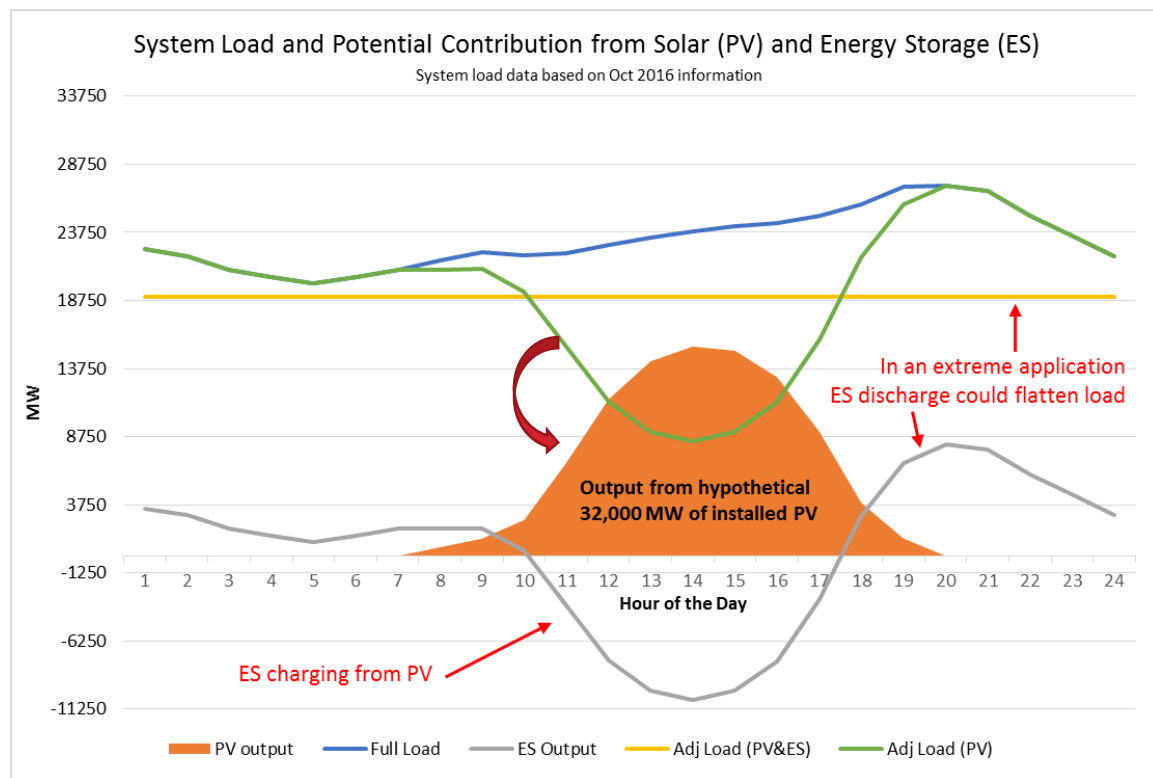
Does the Duck Curve have Future Implications to Time-of-Use (TOU) Rates?

California's electrical system load peak is shifting to later in the day and will result in a change to the demand charges and time-of-use periods.



How Might Energy Storage Influence the Duck Curve?

Energy storage may assist with ramping challenges and during periods of excess generation.



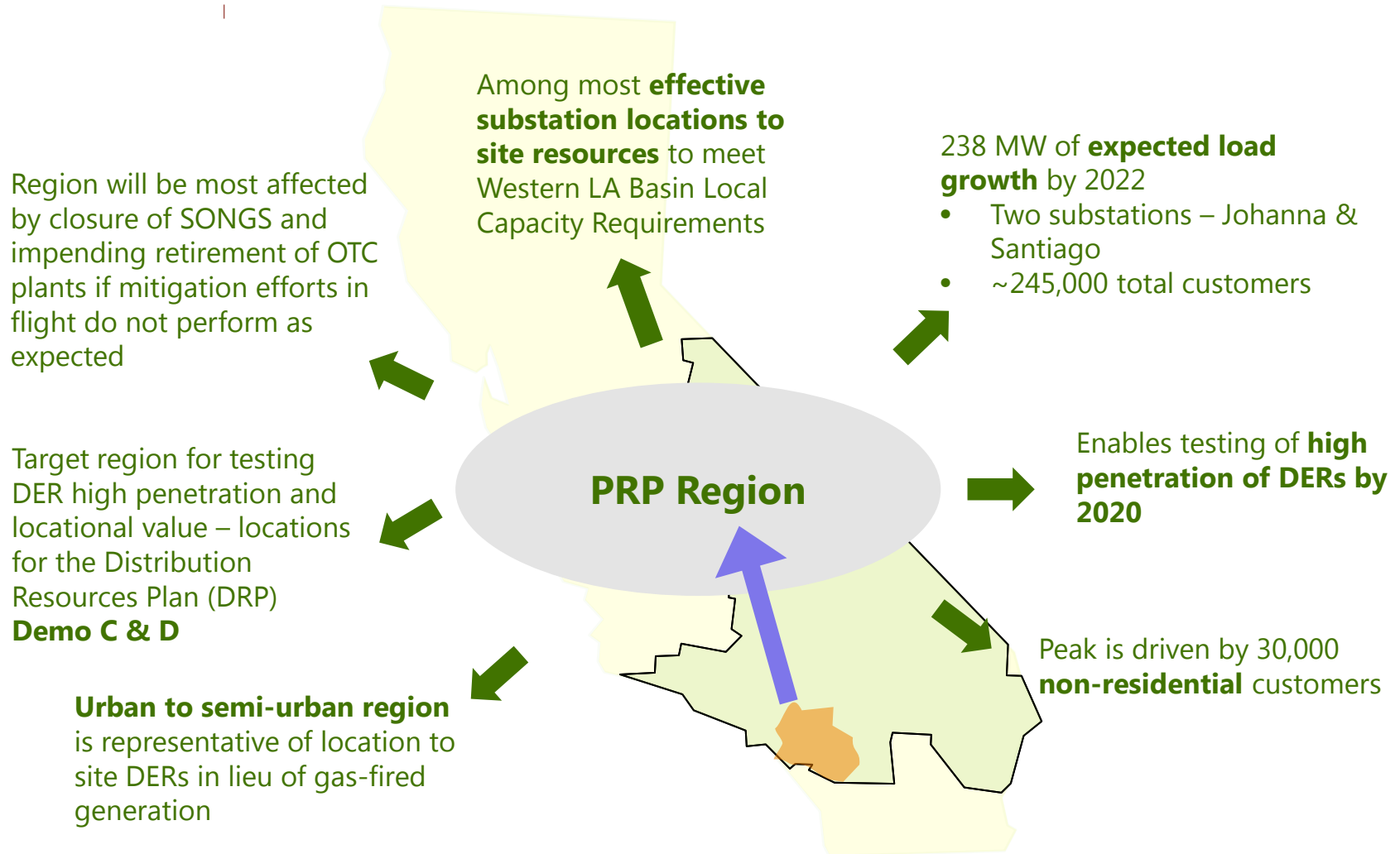
Generative Questions:

1. What does your load shape look like?
2. How might you use solar and energy storage to manage your demand and energy costs?
3. How could a portfolio of **distributed energy resources (DERs)** optimize your energy usage?

- The **role of DERs** in serving customer needs are rapidly changing.
- **Validating DER performance** is vital to grid planning and operations.
- SCE's Preferred Resources Pilot's (PRPs) seeks to **confirm DER performance capabilities** before SCE's customers must rely on large quantities to meet their reliability needs.

SCE's Preferred Resources Pilot (PRP)

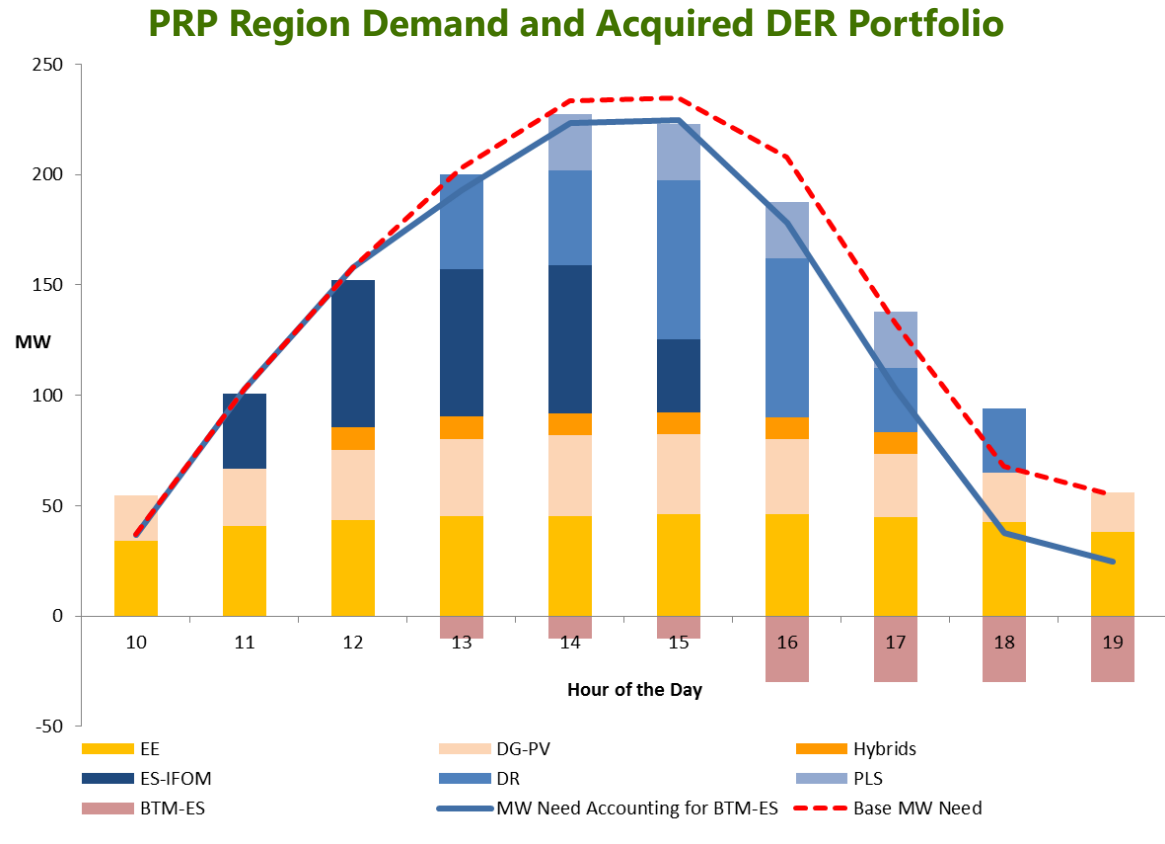
Ideal Real-World Test Location to Validate DER* Performance



* The PRP DERs are clean energy resources comprised of energy efficiency, demand response, solar, and energy storage. The PRP was self-initiated in 2013, in advance of many current state-wide initiatives, and is informing SCE's grid modernization efforts.

SCE's PRP DER Portfolio Depends on Customer Participation

- 260 MW of DERs will be deployed to **offset incremental load growth** in the PRP Region.
- Over two-thirds of the DERs are **sited at customer facilities**.
- Participating customers are **helping to inform** reliable operation of the future grid.





Preferred Resources Pilot

**Meeting
Local Demand
Through
Clean Energy
Resources**



The changing supply of energy to include more large scale renewable and distributed energy resources (DERs) will impact all customers.

- SCE embraces the change in the energy supply mix and is taking actions to assure our grid is ready and DERs will serve our customers' need (e.g., the PRP project).
- SCE supports customers in their energy optimization activities, including their adoption of DERs.
- Together we are advancing California's low-carbon future.