

Osprey Data Center Load Interconnection Request

**Presented to the CAISO on
September 24, 2024**



**Valley Electric
Association, Inc.**

A Touchstone Energy Cooperative 

Overview



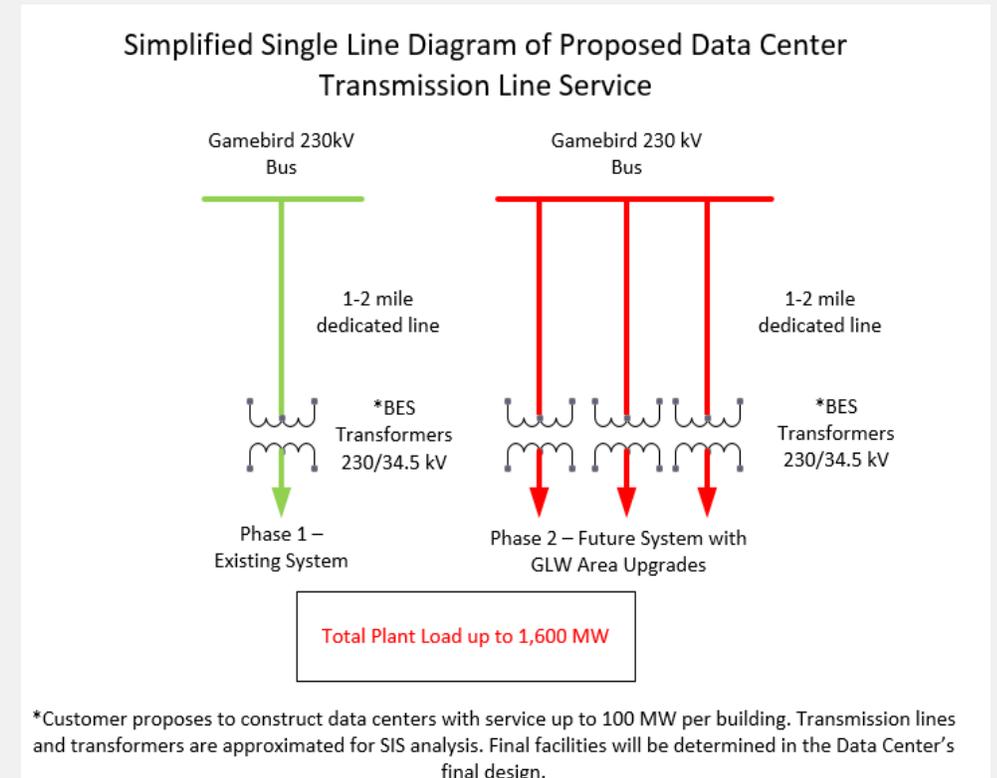
Osprey Real Estate Capital Data Center Development (Osprey) proposes to construct a series of data center buildings to meet current and future demand for data center services. Each building will comprise up to 100 MW of total load. The project was evaluated to include 16 such buildings for a total project load of 1,600 MW.

Project Scope: Construct a new 230/34.5 kV substation interconnected to GridLiance West's (GLW) Gamebird 230kV substation to serve data center load. Data Center will include an automatic load transfer scheme to transfer load from the transmission grid to 100% backup generation as needed for transmission and data center reliability.

- Today's presentation is to discuss the transmission System Impact Study (SIS) of interconnecting data center load with their automatic load transfer scheme.
- Proposed In-Service dates: start construction in 2025 and build future data centers to meet customer demand.

Modifications to CAISO's Base Cases

- The SIS utilized the CAISO's 2023-2024 Transmission Planning Process (TPP) base case models, criteria and standards to evaluate transmission reliability of adding data center load.
 - The SIS included two additional base cases to represent when PV generation is off, but with high load due to air conditioning cooling.
 - Changes to the CAISO base cases include adding queued load, new transmission ratings and data center load at a 98% power factor.
- The SLD illustrates how data center load was modeled in CAISO base cases.



System Impact Study

- The SIS evaluated adding data center load in two stages:
 - Stage 1 - to the existing transmission grid and
 - Stage 2 – to the future transmission grid when GLW’s Area upgrades are in-service in 2027.
 - CAISO approved GLW Area Upgrades are defined in the CAISO 2022-2023 TPP report (See pages 79-81) located at the following link. <https://www.caiso.com/documents/iso-board-approved-2022-2023-transmission-plan.pdf>
- The SIS included steady state, transient stability and short circuit duty analysis for each stage.
- Planning criteria violations were mitigated using operational re-dispatch, Under Voltage Load Shedding, automatic data center load transfers and VAR/voltage support.

Up to 1,600 MW of Data Center Load can be served with automatic load transfers, mitigation and VAR/voltage support.

Data Center MW	Pre-GLW Upgrades (<2027)	Post-GLW Upgrades (>2027)
100		
200	+VAR/voltage support	
300		
400		
500		
600		
700		
800		
900		
1000		+VAR/voltage support
1100		+VAR/voltage support
1200		+VAR/voltage support
1300		+VAR/voltage support
1400		+VAR/voltage support
1500		+VAR/voltage support
1500		+VAR/voltage support
1600		+VAR/voltage support

	No criteria violations
	Use DC load transfer to mitigate criteria violations
	No transmission capability available for DC load

Mitigation of Criteria Violations

<u>Type of Analysis</u>	<u>Mitigation Required</u>
Power-flow	<ol style="list-style-type: none"> Data Center load up to 200 MW on the existing transmission system can be mitigated by adding 25 MVAR of VAR support or other equivalent mitigation. Data Center automatic load transfer for is required for 100-200 MW loads interconnected to the existing transmission system and required for loads greater than 500 MW in the future transmission system with GLW Area upgrades. Temporarily re-rate Amargosa 230/138 kV transformer until GLW Area Upgrades are constructed. Operational re-dispatch ahead of the next contingency for P6 criteria violations and UVLS (existing). In order to mitigate P0 voltage violations for load 1,000 MW or greater, the Data Center will add voltage support.
Transient Stability	<ol style="list-style-type: none"> No mitigation required.
Short Circuit	<ol style="list-style-type: none"> No mitigation required.

VAR/voltage support Per 100 MW of Data Center Load

Using 2028 B2_Summer Peak Case			Using 2028 S2_Summer Peak Case		
Data Center Load		Data Center 230kV bus	Data Center Load		Data Center 230kV bus
MW	MVAR	New MVAR Injected	MW	MVAR	New MVAR Injected
900	183	None	900	183	None
1000	203	23	1000	203	48
1100	223	77	1100	223	120
1200	244	140	1200	244	175
1300	264	189	1300	264	256
1400	284	272	1400	284	338
1500	305	342	1500	305	401
1600	325	414	1600	325	437

Request for CAISO Concurrence

- Transmission reliability is maintained with the addition of data center load.
- Up to 200 MW of data center load can be added to the existing transmission system with proposed mitigation.
- Up to 1,600 MW of data center load can be added to the future transmission system with proposed mitigation.

Questions?

Contact information

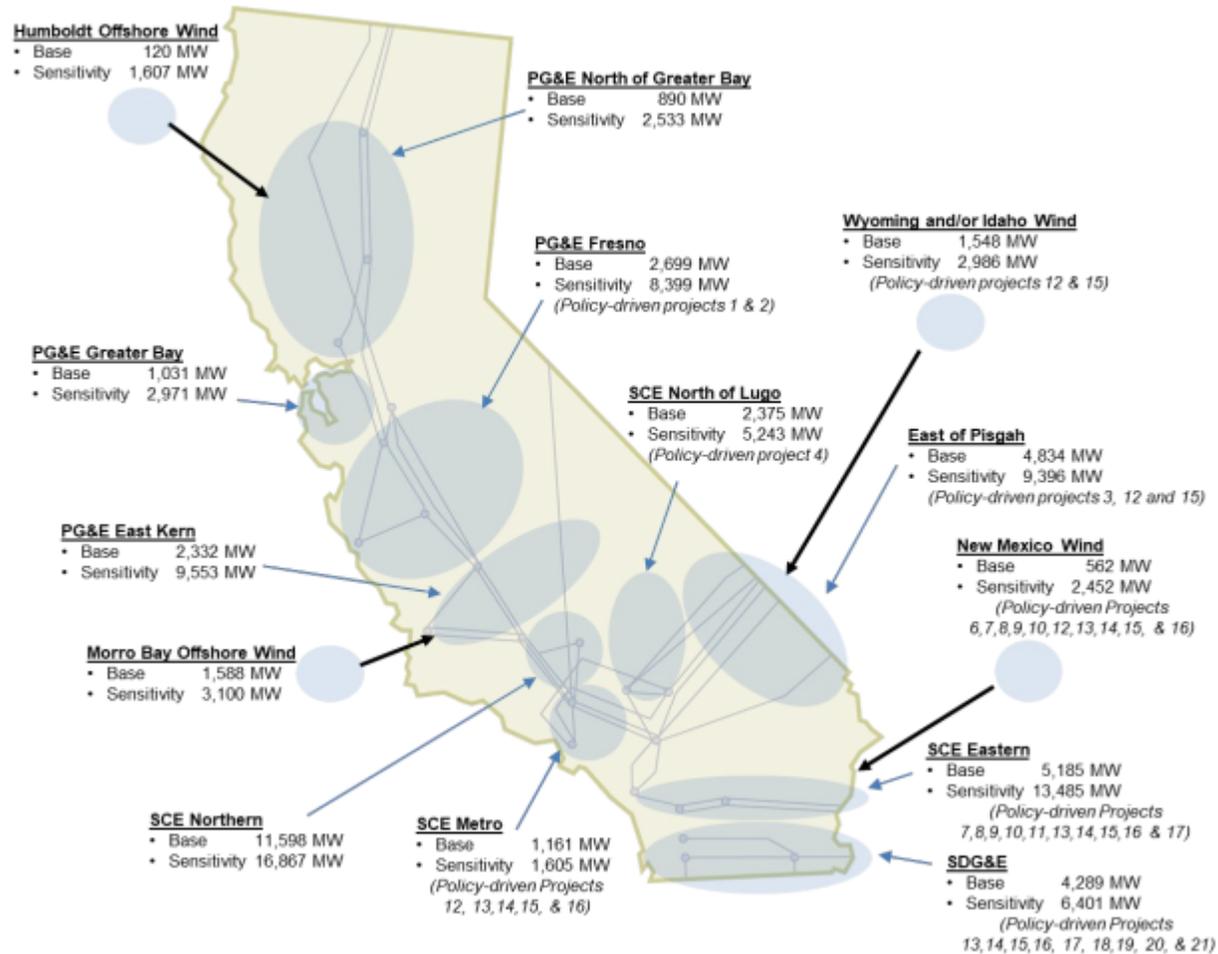
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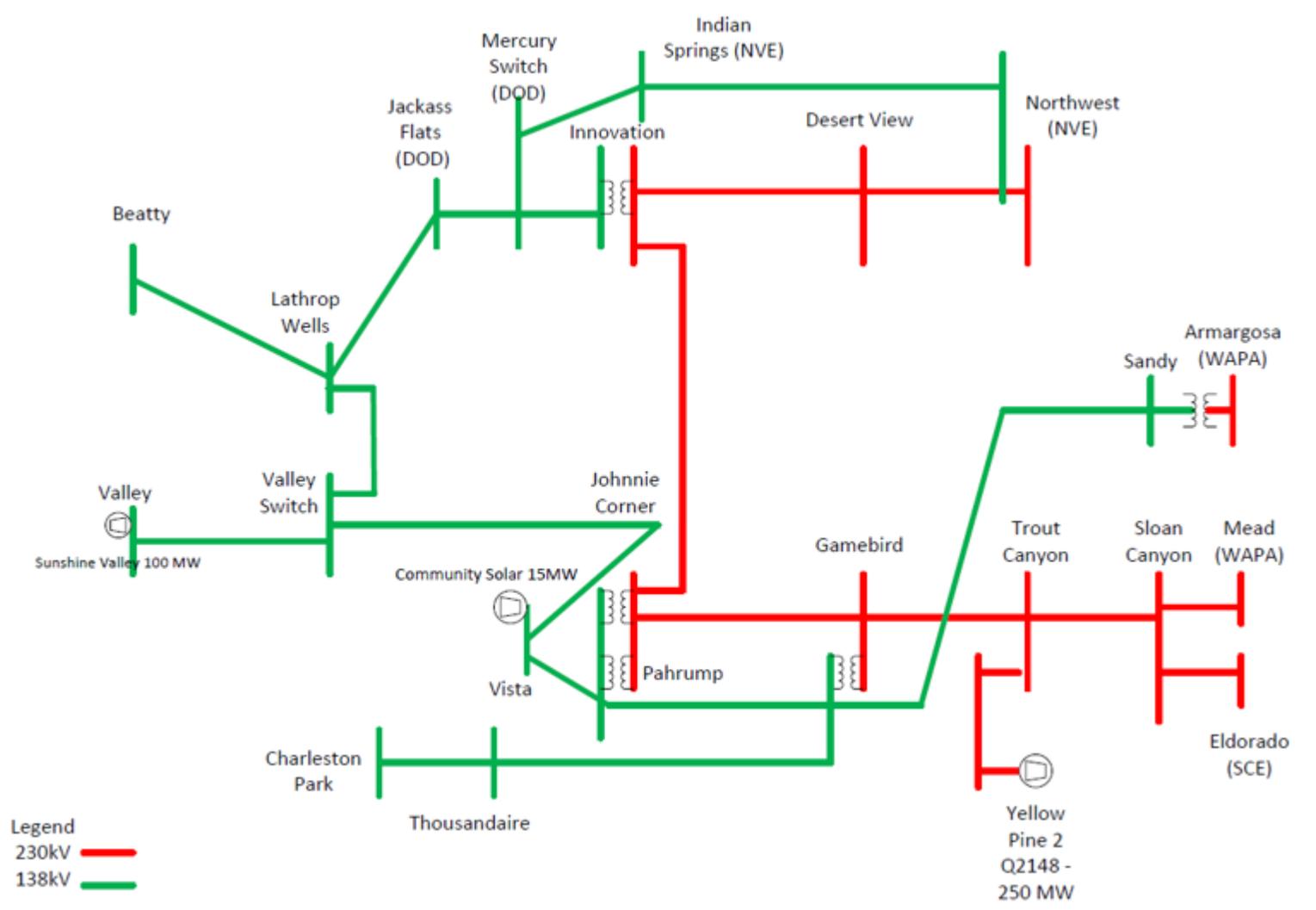
Support Slides

VEA/GLW System within CAISO Operational Area (East of Pisgah bubble outside of CA in NV)

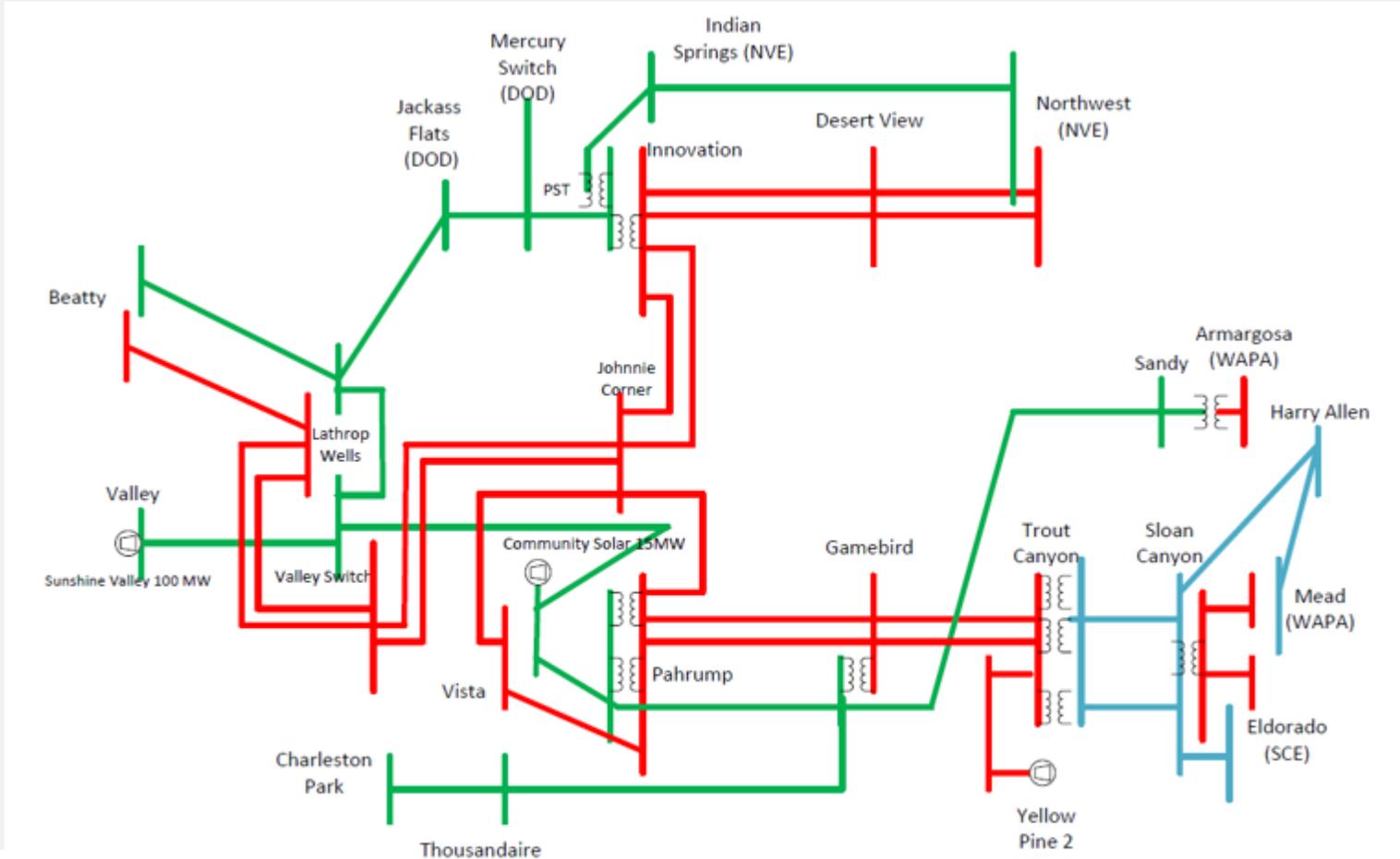
Figure ES-1: Transmission Planning Zones and Capacity



Existing VEA/GLW Transmission System



Future VEA/GLW Transmission System



Legend
 500kV —
 230kV —
 138kV —