# Transmission Planning Coordination in Comprehensive Electricity Planning

NARUC NASEO Comprehensive Electricity Planning Task Force Webinar
July 7, 2020

# Agenda

**Moderators:**

- **Lorenzo Kristov, Task Force Core Team**
- **Brooke Tucker, Deputy Director, Utah Governor's Energy Development Office**

**Speakers:**

- **Dan Robicheaux, Planner, Policy Regulatory Planning, Midcontinent Independent System Operator (MISO)**
- **Neil Millar, Vice President of Transmission Planning & Infrastructure Development at the California ISO**
- **Nick Chaset, Chief Executive Officer, East Bay Community Energy (EBCE)**
- **Doug Scott, Vice President of Strategic Initiatives, Great Plains Institute**

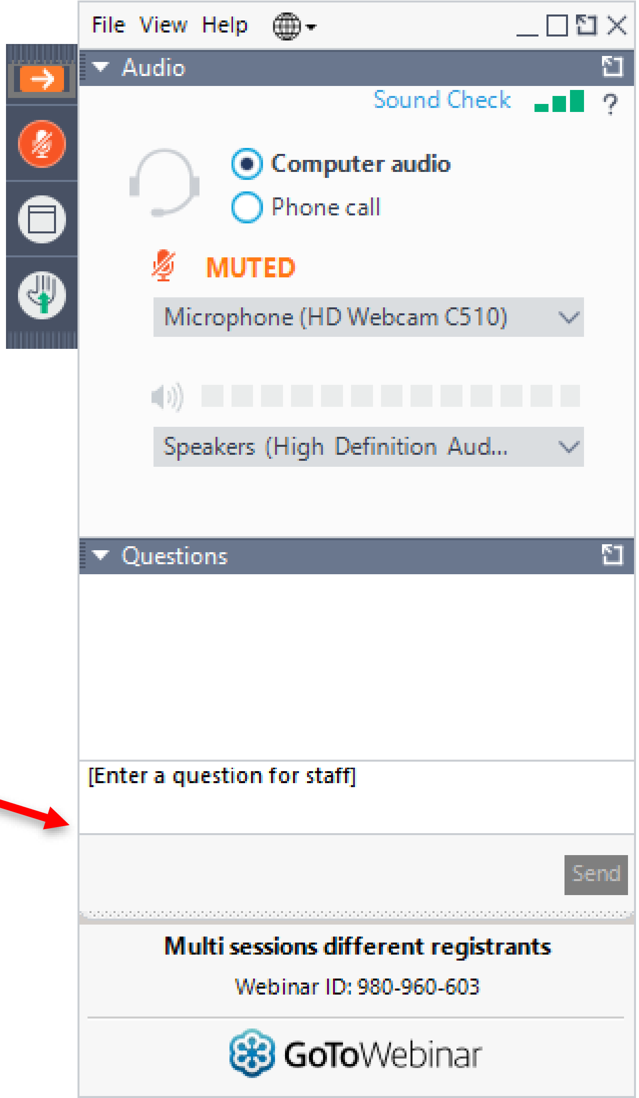
**Q&A**

# Questions and Presentations

Questions can be asked in two ways:

1. Raise your hand by clicking on the hand icon. An organizer will call on you an unmute during the Q&A session.

2. Type your question in the Question Box and an organizer will read the question during Q&A




Presentations are available in the handout section of the webinar control panel.

# Dan Robicheux, MISO

MISO

# DERs in MISO Transmission Planning

## Transmission Planning Coordination in Comprehensive Electricity Planning
## NARUC-NASEO

Dan Robicheaux
July 7, 2020

# Executive Summary

- For economic planning, DERs captured via Futures
- For reliability-based planning, DERs are part of modeling submission
- As industry evolves, may need to adjust DER assumptions

# The MISO transmission planning process entails a comprehensive approach – today, we'll focus on economic and reliability planning

## Economic Planning

Scenario-based planning to provide economic and market efficiency benefits

## Resource Planning

Evaluate long-term interconnection queue requests; identify upgrades to integrate into base expansion model


## Policy Assessment

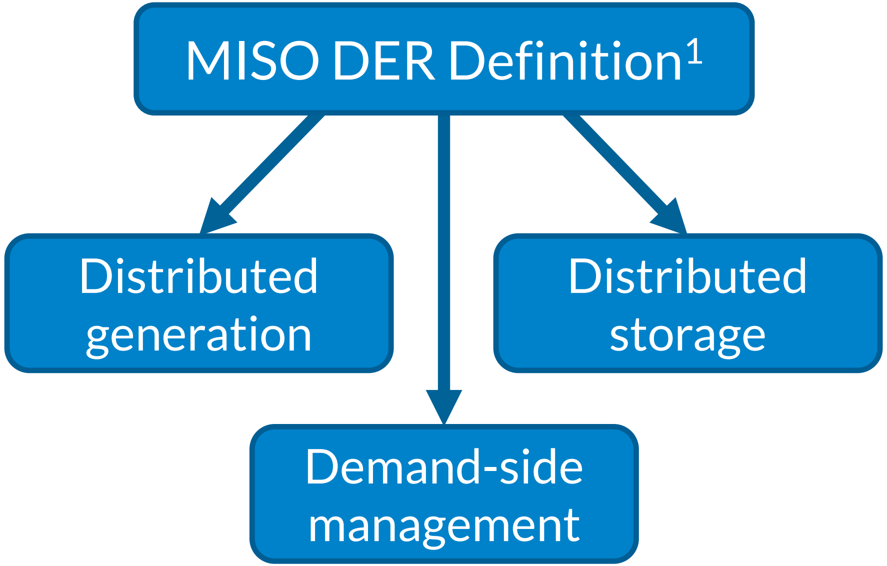
Long-term policy focused planning to analyze the impacts of changes in state or federal policy and industry trends; determine the transmission required to support those policies and industry trends

## Reliability Planning

Validate needs for plans identified by the member Transmission Owners; seek efficiencies by combining plans, if possible; evaluate system against reliability standards

**Planning Horizons**
Reliability: 5 to 10 years
Economic: 15 to 20 years

# MISO DER definition is followed for economic and policy studies




**MISO DER definition:**

DERs are power generation, storage, or demand-side management connected to the electrical system, either behind the meter on a customer's premises, or on a utility's distribution system.

1. *MISO DER Framing Report, November 2019,* https://cdn.misoenergy.org/DER%20Framing%20Report%202019397951.pdf

# MISO Futures are forward-looking scenarios of the energy landscape used for planning

Futures are used to:

- Model economic generation capacity expansion, which
- Forecasts optimal fleets to meet planning reserve margin and other requirements.

MISO uses the range of optimal future resource mixes to develop transmission plans to ensure continued reliability and market efficiency.

# MISO Transmission Expansion Plan (MTEP) 2021 Futures Overview

| I | II | III |
|---|---|---|
| The footprint develops in line with 100% of utility IRPs and 85% of utility announcements, state mandates, goals, or preferences.<br><br>Emissions decline as an outcome of utility plans.<br><br>Energy increases consistent with current trends. | Companies/states meet their goals, mandates and announcements.<br><br>Changing federal and state policies support footprint-wide carbon emissions reduction of 60% by 2040.<br><br>Energy increases 30% footprint-wide by 2040 driven by electrification | Changing federal and state policies support footprint-wide carbon emissions reduction of 80% by 2040.<br><br>Increased electrification drives a footprint-wide 50% increase in energy by 2040. |

# MTEP21 DR, EE, & DG Potential

| MTEP21 DERs | | Future I | | Future II | | Future III | |
|---|---|---|---|---|---|---|---|
| | | Capacity (GW) | Energy (GWh) | Capacity (GW) | Energy (GWh) | Capacity (GW) | Energy (GWh) |
| 20-Year Technical Potential* | Demand Response (DR) | 5.2 | 442 | 5.9 | 498 | 5.9 | 498 |
| | Energy Efficiency (EE) | 13.3 | 86,886 | 14.5 | 94,313 | 14.5 | 94,313 |
| | Distributed Generation (DG) | 14.7 | 26,119 | 14.7 | 26,119 | 21.8 | 36,934 |

**Technical Potential** represents feasible potential under each scenario. Only economically viable programs will be implemented in MTEP21 models (each program will be offered against supply-side alternatives)

Additional DR/EE/DG up to determined potential** allowed to be economically selected.

** Existing DR programs will be modeled as base assumptions*

*** Approximation only. Final results pending.*

# **NERC definition** of DER is followed for reliability planning studies

- NERC DER Definition[1]
  - Distributed generation
  - Distributed storage
  - Other **electricity-producing** resources

- MISO DER Definition[2]
  - Distributed generation
  - Distributed storage
  - Demand-side management

1. *NERC, DER Task Force Report, February 2017,* https://www.nerc.com/comm/Other/essntlrlbltysrvcstskfrcDL/Distributed_Energy_Resources_Report.pdf
2. *MISO DER Framing Report, November 2019,* https://cdn.misoenergy.org/DER%20Framing%20Report%202019397951.pdf

# DER in reliability planning models

- Transmission Owners and Load-Serving Entities are required to submit gross load values
- Existing DERs represented as:
  - Registered non-CP node as generators
  - Legacy, embedded non-CP node resources set by data submitters
  - Non-registered non-CP node as out-of-service negative loads



MISO

# During project justification, Non-Transmission Alternatives (NTAs) are considered to allow alternatives to a specific transmission project

- Submitted projects flagged for eligibility for NTA considerations
- If an NTA pursued by stakeholder and addresses the transmission issue, the transmission solution is no longer needed
  - Thus, the proposed project can be withdrawn, deferred or de-scoped

# Where to follow conversations on DERs in MISO transmission planning

- MISO DER Workshops (link)
- Modeling Users Group (MUG)
- Planning Advisory Committee (PAC)
- Subregional Planning Meetings (SPMs)
- Technical Study Task Force Meetings (TSTFs)
- MTEP Workshops (link) and MTEP Futures Evolution

# Questions?

# Contact information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DER Program Manager

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# Neil Millar, CAISO

# Transmission Planning Coordination in Comprehensive Electricity Planning

NARUC NASEO Webinar

Neil Millar, Vice President, Transmission Planning and Infrastructure Development

July 7, 2020

# Transmission responsibilities to support different facility-related processes are distributed:

**CAISO-led**

- Transmission "expansion" planning – identifying and approving through the plan all transmission expansion requirements
- Generator interconnection requests

**Transmission Owner-led**

- All maintenance including lifecycle replacement
- Interconnections of new load delivery points
- Interconnections of new 3rd party transmission requests

Both parties have roles in the processes led by the other party.

# The significance and responsibility of the transmission planning process:

- It provides a mechanism for participating transmission owners to be compliant with all relevant FERC orders
- It is the key mechanism for cost recovery of expansion-related transmission development to meet emerging reliability and policy needs – as well as interregional coordination
- Participating transmission owners rely on the credibility of the program in seeking cost recovery for CAISO-approved facilities at FERC
- The CAISO carries the bulk of the burden of defending the need for these facilities in CPUC permitting processes

# 2020-2021 Transmission Planning Process

December 2019 | April 2020 | March 2021

**Phase 1 – Develop detailed study plan**

State and federal policy

CEC - Demand forecasts

CPUC - Resource forecasts and common assumptions with procurement processes

Other issues or concerns

**Phase 2 - Sequential technical studies**

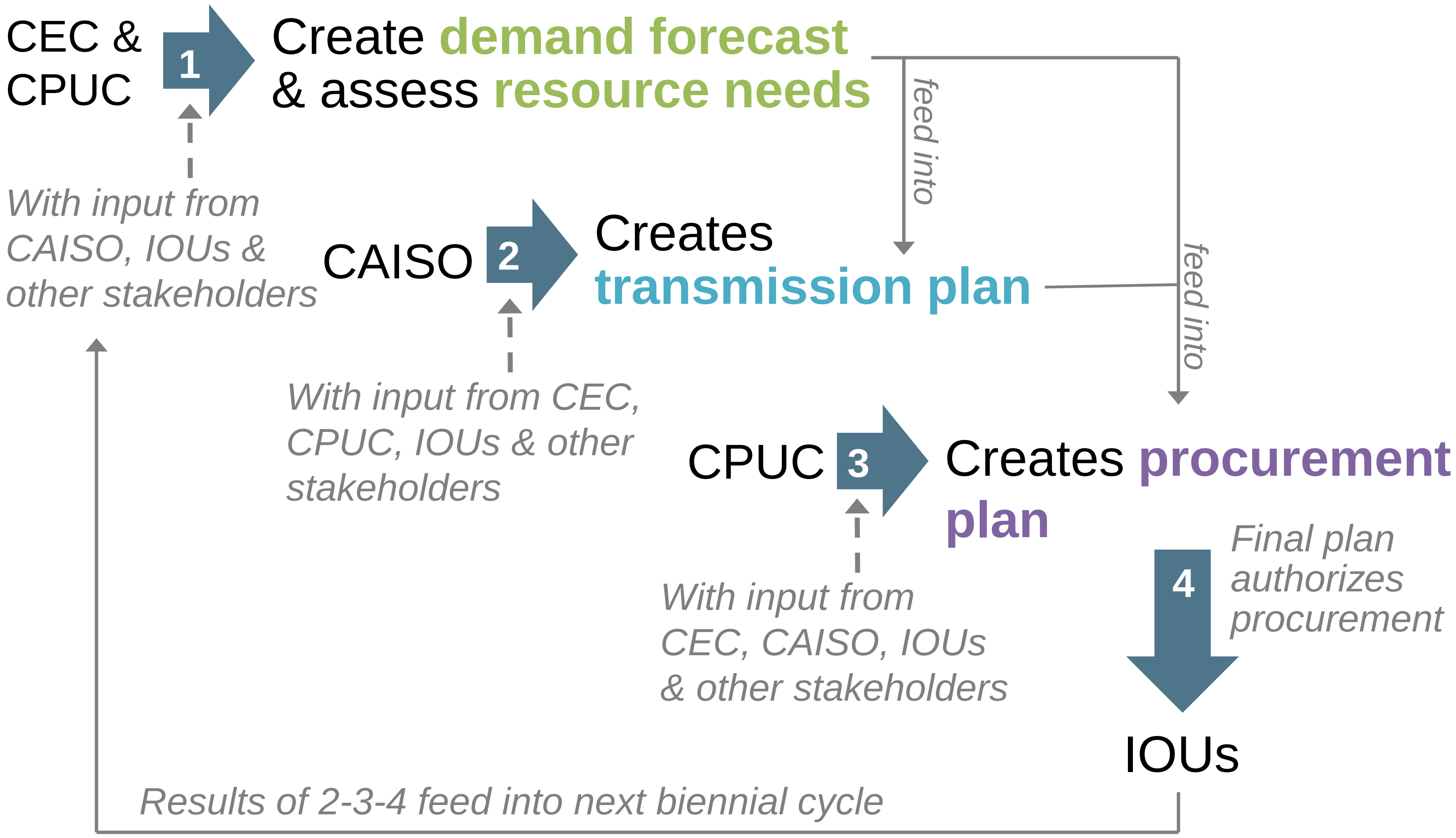
- Reliability analysis
- Renewable (policy-driven) analysis
- Economic analysis

Publish comprehensive transmission plan with recommended projects

**Phase 3 Procurement**

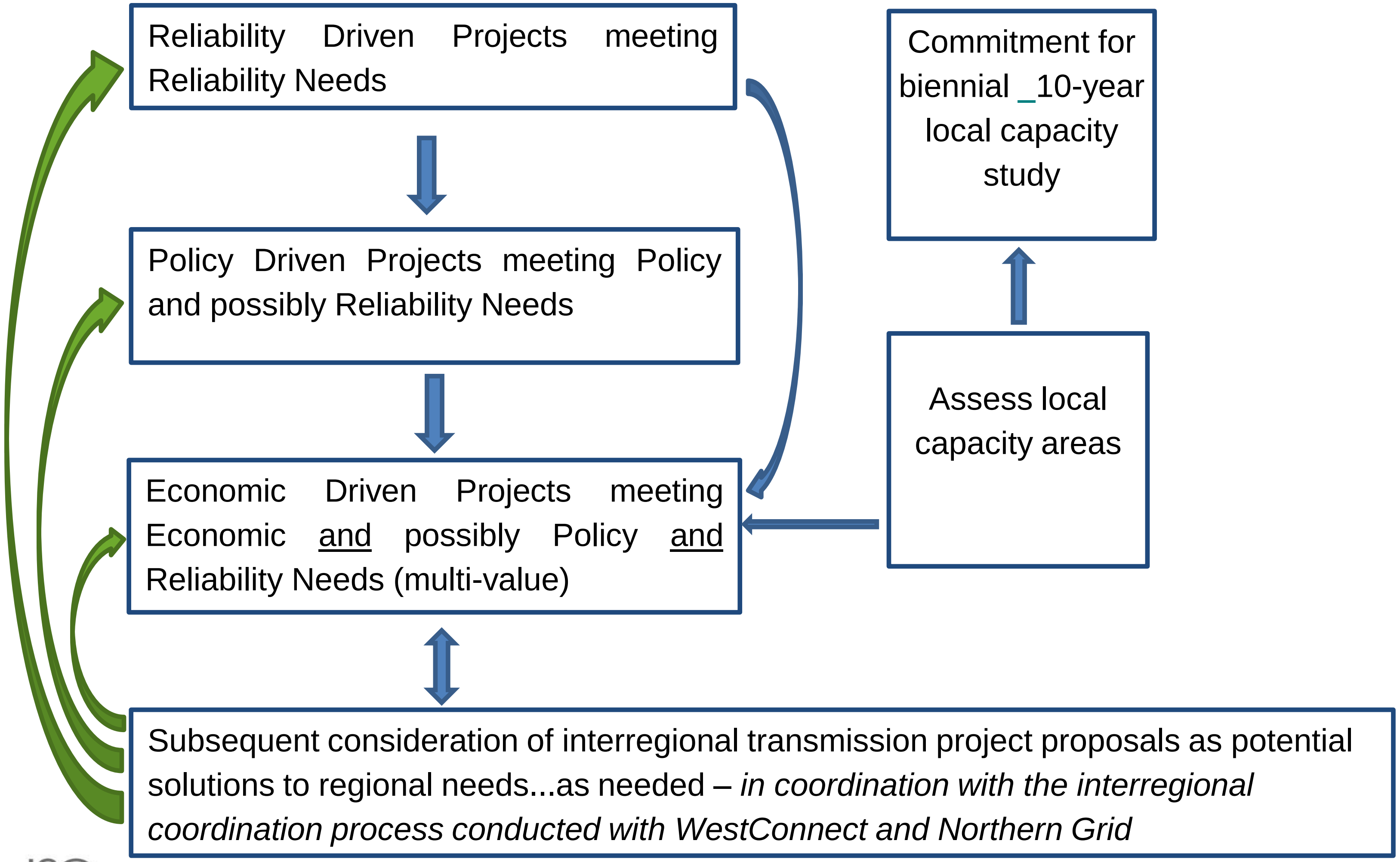
CAISO Board for approval of transmission plan

# CEC, CPUC and CAISO coordination




California ISO

# Studies are coordinated as a part of the transmission planning process



# The transmission planning process considers both transmission and non-transmission alternatives

- Mitigation plans may consider transmission and non-transmission solutions and their treatment is somewhat different:
  - Transmission projects are recommended for ISO Management or Board of Governor's approval
  - Non-transmission solutions are recommended as part of the mitigation plan; however the ISO works with load serving entities and the CPUC so that the resources will be procured
- Examples of transmission and non-transmission together include:
  - Oakland Clean Energy Initiative
  - Southern California local capacity needs post-SONGS
  - Moorpark/Santa Clara local capacity area and sub-area
  - Dinuba transmission storage device

# Regional transmission facilities eligible for competitive solicitation

- Regional transmission facilities deemed needed under the comprehensive transmission planning process are eligible for competitive solicitation unless they are not eligible for competitive solicitation:
  - Facilities that involve an upgrade or improvement to, addition on, or a replacement of a part of an existing participating TO facility
  - all projects under 200 kV, *e.g.* “local”
- The CAISO made selections through this process eleven times since 2011, 2 to incumbents, 2 to consortiums including incumbents, and 7 to non-incumbent PTOs.
  - Several projects were subsequently canceled for other reasons

# Key agency coordination issues and challenges

- Input assumptions from state agencies, including:
  - Pace of effective resource planning (especially for renewable integration resources)
  - Volatility in year over year load forecasting efforts, and pace of adoption of new issues (peak shift, electrification of other carbon-emitting segments)
- Permitting processes, based on dated state legislation, have not kept up with the new transmission planning paradigms and pace of grid evolution:
  - Timing, requirements, process
- Mitigations relying on preferred resources can only be supported to the <u>minimum</u> required by planning standards, increasing risk of insufficiency due to forecast volatility
  - unless an CAISO standard has been specifically put in place - so any significant change in forecast can result in increased requirements on short notice

California ISO

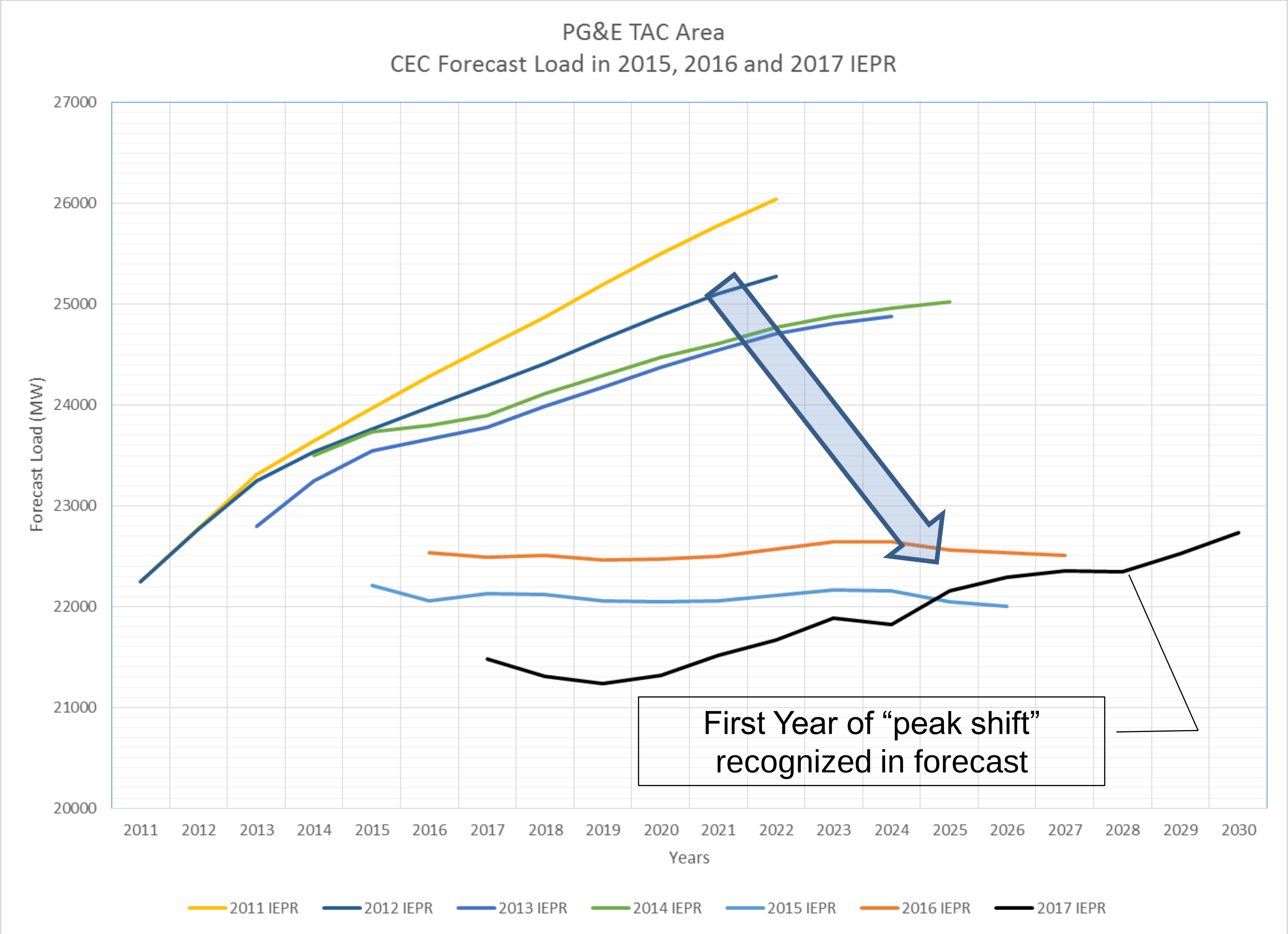
# In 2015, the ISO began a 3 year programmatic review of a backlog of transmission projects, predominantly in PG&E service territory:

- Most were low voltage (less than 200 kV)
  - Much of PG&E's lower voltage system is under ISO operational control due to its configuration
- The projects spanned a number of years, dating back as early as 2006, and had not been getting advanced through the permitting processes
- While the ISO normally assumes in each cycle that previously approved projects proceed, reviews are conducted if there are material changes in circumstances warranting review

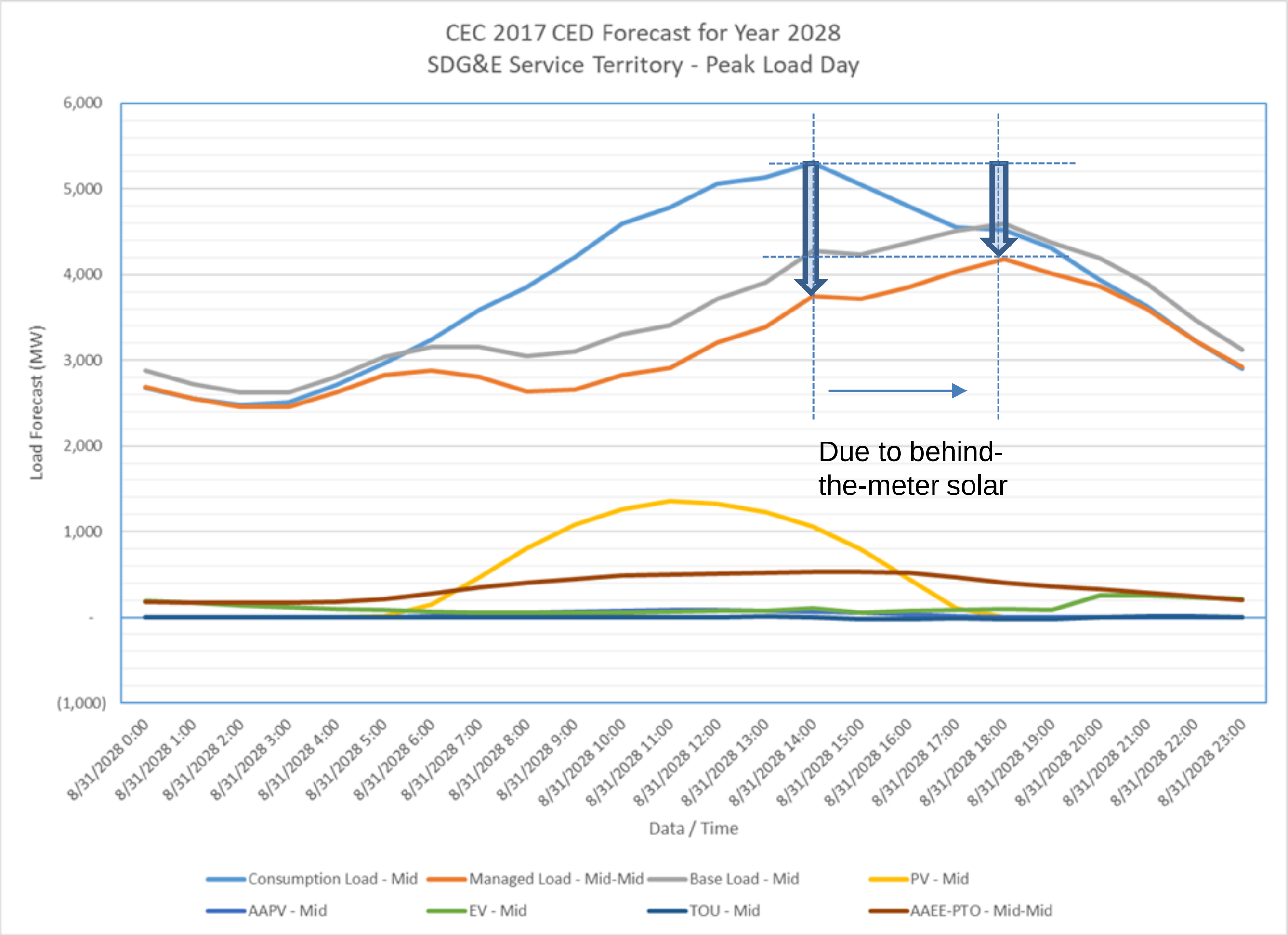
# Most of the projects were impacted by one or more of three particular changes in circumstances

- Declining load forecasts year from what were relatively high annual growth rates to relatively flat load growth
- Behind the meter solar resources lowered peak loads in the middle of the afternoon to levels below the 5 to 7 pm load levels that were not affected by the BTM solar – that became the new peak load periods
  - This shift took several years to fully incorporate into CEC forecasts
- Many of the projects had been approved immediately upon the need being identified in the 10 year planning horizon
  - the ISO now only approves reliability-driven projects when transmission owner permitting activities are reasonably likely to need to commence

# CEC forecasts trended downward year over year, and then the peak shift issue needed to be addressed:



# The behind-the-meter solar lowered the system peak (at its traditional periods) below load levels later in the day

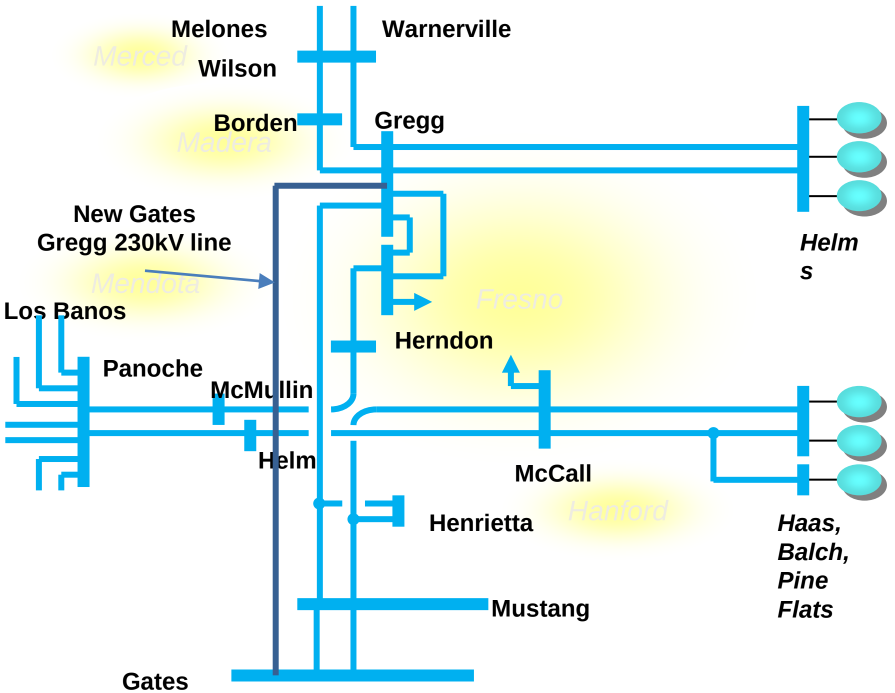


# The three year review of previously approved projects:

- 2015-2016
  - Canceled 13 sub-transmission - primarily local – previously approved projects in PG&E's service area
- 2016-2017
  - Canceled 13 previously approved projects in the PG&E service area
  - Identified 15 as needing further review and scoping (Gates-Gregg on hold)
- 2017-2018
  - Canceled 18 PG&E previously-approved projects and re-scoped 22. Only 7 were been identified as needing further review. (After identifying 33 projects as needed from initial screening, 62 projects received thorough review.)
  - In the SDG&E service territory, 2 previously-approved projects were also canceled
- 2018-2019 (addressing projects needing further review)
  - Canceled 6 projects of the 7 that were left on hold (including Gregg-Gates)
  - 1 project require further evaluation in future planning cycles
  - Revised the scope of a number of other smaller projects

# Gates-Gregg 230 kV Line was approved in 2013

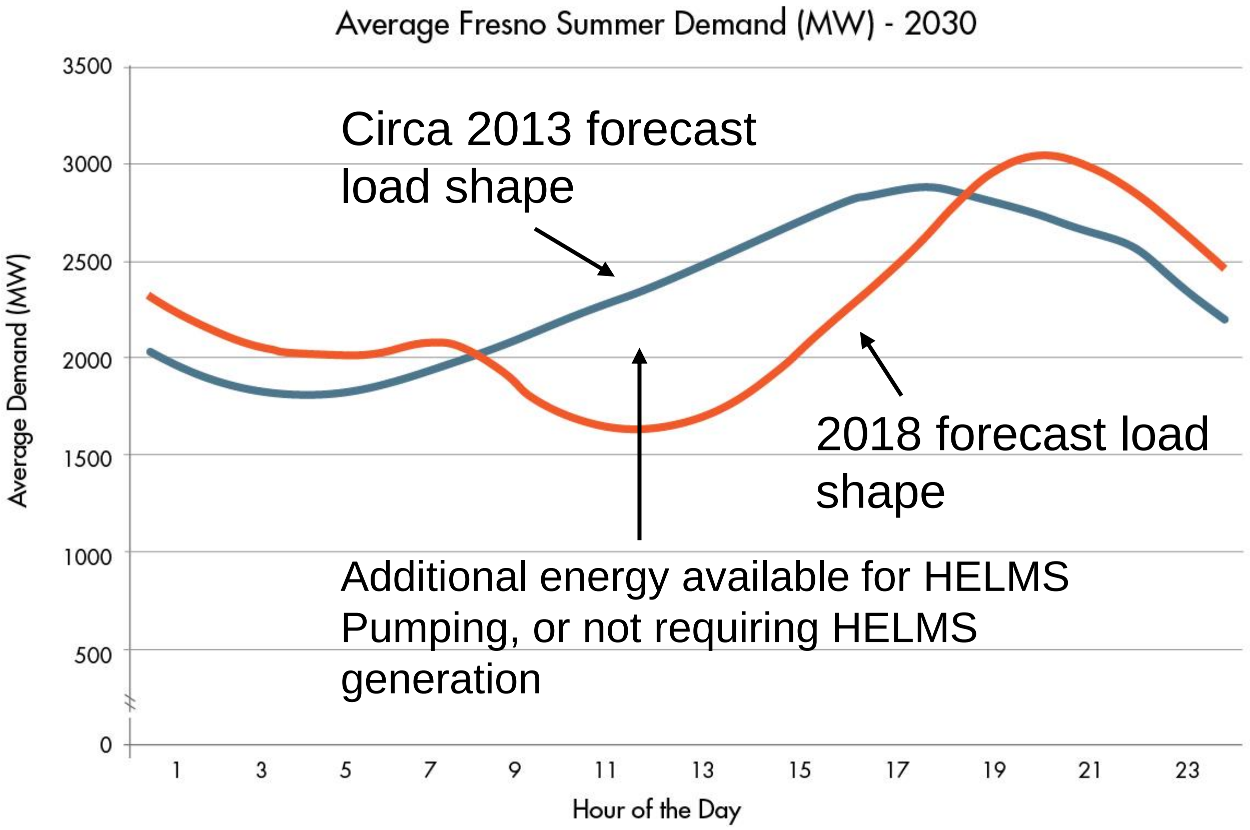
- 2012-2013 Transmission Planning Process
- Build a new Gates-Gregg 230 kV line to address limitations on pumping capability at Helms while also serving local area loads.
- Project was approved as a reliability-driven project with potential renewable integration benefits
- Reliability needs identified to start in the 2023 to 2029 timeframe




California ISO

# Behind the meter solar generation exceeding original forecasts impact the need for the project:

The impact was to create additional pumping opportunities for HELMS for reliability needs at later peak load hours and for economic opportunities




California ISO

# Thank you for your participation!

For more detailed information on anything presented, please visit our website at:
www.caiso.com

Or send an email to:
regionaltransmission@caiso.com

# The CAISO and our neighbors have an interregional coordination framework approved by FERC:

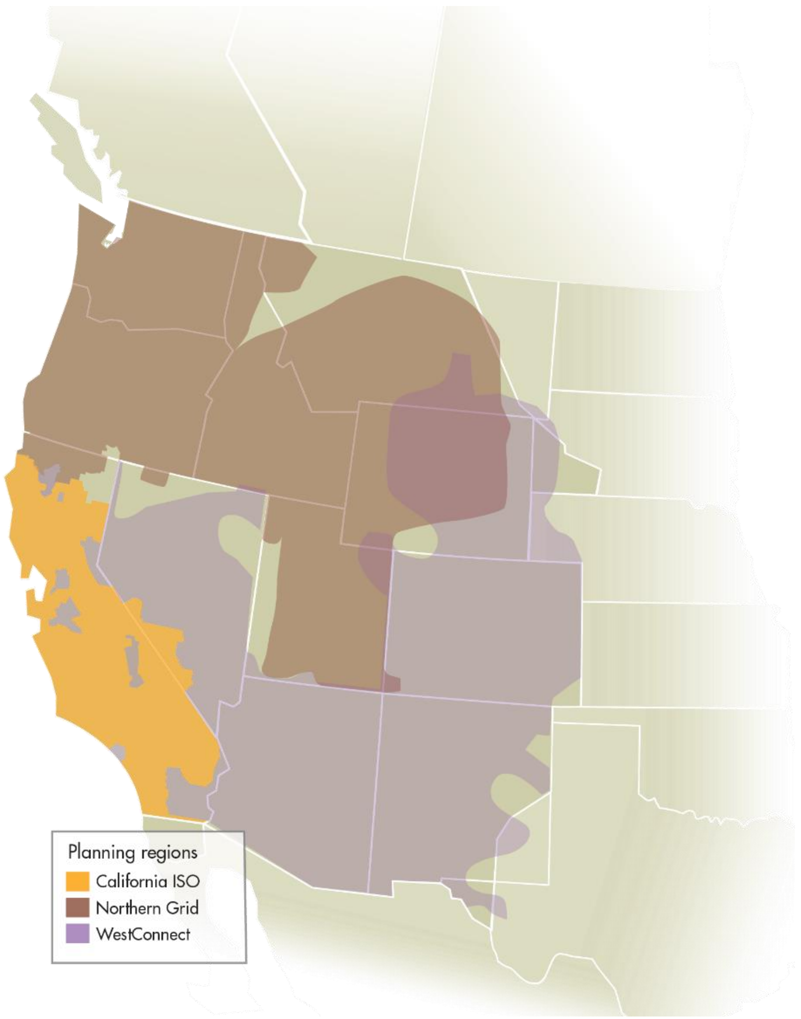
<u>Interregional coordination</u>

- Annual exchange of information
- Annual public interregional coordination meeting

<u>Interregional cost allocation</u>

- Each region determines (1) if project meets any regional needs and (2) if project is more cost effective or efficient than regional solution(s)
- Costs shared in proportion to each region's share of total benefits

Note Northern Tier Transmission Group and Columbia Grid merged into Northern Grid earlier this year.



# Interregional coordination biennial process timeline (aligns with other regions' biennial planning cycles)

**Year 1**

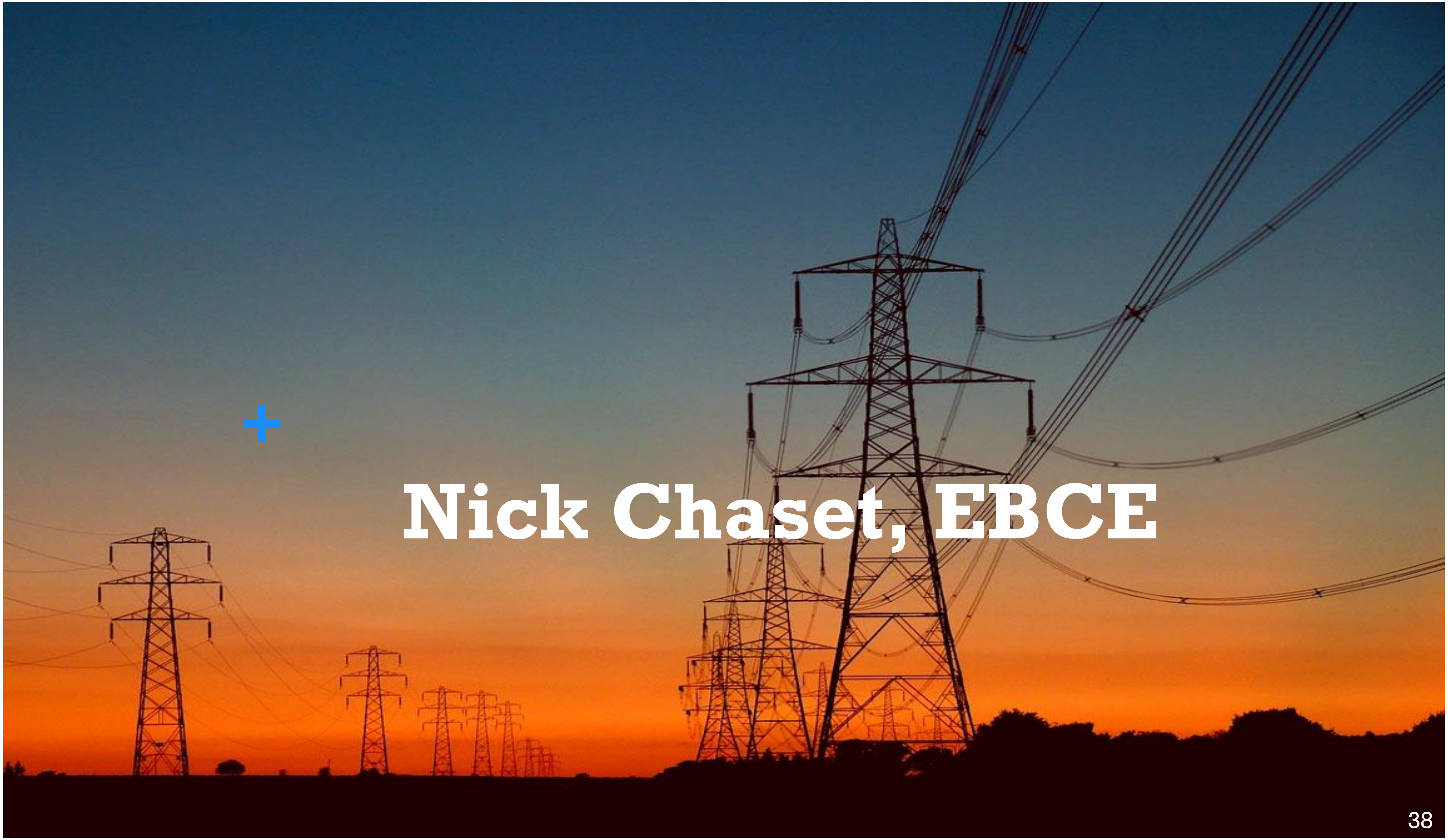
- Coordination with other planning regions
- Interregional Transmission Project submissions
- Viability assessments
- Document in CAISO annual Transmission Plan

**Year 2**

- Solutions from Year 1
- Data and cost coordination with other relevant planning regions
- Detailed Assessment
- Assess commitment of relevant planning regions
- Recommend approval in CAISO annual Transmission Plan

CAISO Board for approval of transmission plan

CAISO Board for approval of transmission plan



# Nick Chaset, EBCE

EAST BAY COMMUNITY ENERGY

Case Study:

# Oakland Clean Energy Initiative

# Disclaimer

The Oakland Clean Energy Initiative solicitation was issued jointly by EBCE and PG&E. The focus of this presentation is on EBCE's requirements, experiences, and plans and does not aim to present information on behalf of PG&E.

# Agenda

- **Background**
  - History of the Oakland Clean Energy Initiative
  - Oakland Power Plant
  - CAISO/TPP Planning
- **OCEI RFP**
  - Structure of the Solicitation
  - Benefits and Challenges
- **Contracts Signed**
- **Future Plans**
- **Q&A**

# Background

# History of the Oakland Clean Energy Initiative

**The Need**:

- ✓ Replacement of an ***aging fossil peaker plant*** with local, reliable, clean energy
- ✓ An ***innovative solution*** to meet Oakland's transmission reliability needs

**The Options**:

- ✓ Status Quo → rely on aging fossil plant with local air quality concerns
- ✓ New Transmission → Build underground and overhead lines, dig through DT Oakland
- ✓ OCEI → portfolio of clean, innovative solutions; ***CAISO preferred approach***

**The Approach**:

- ✓ Partner with PG&E to issue solicitation, ensuring coordinated effort to deliver sufficient, ***reliable, clean energy*** service to the downtown Oakland load pocket
- ✓ Solicitation issued in Spring 2018, to achieve mid-2022 CODs

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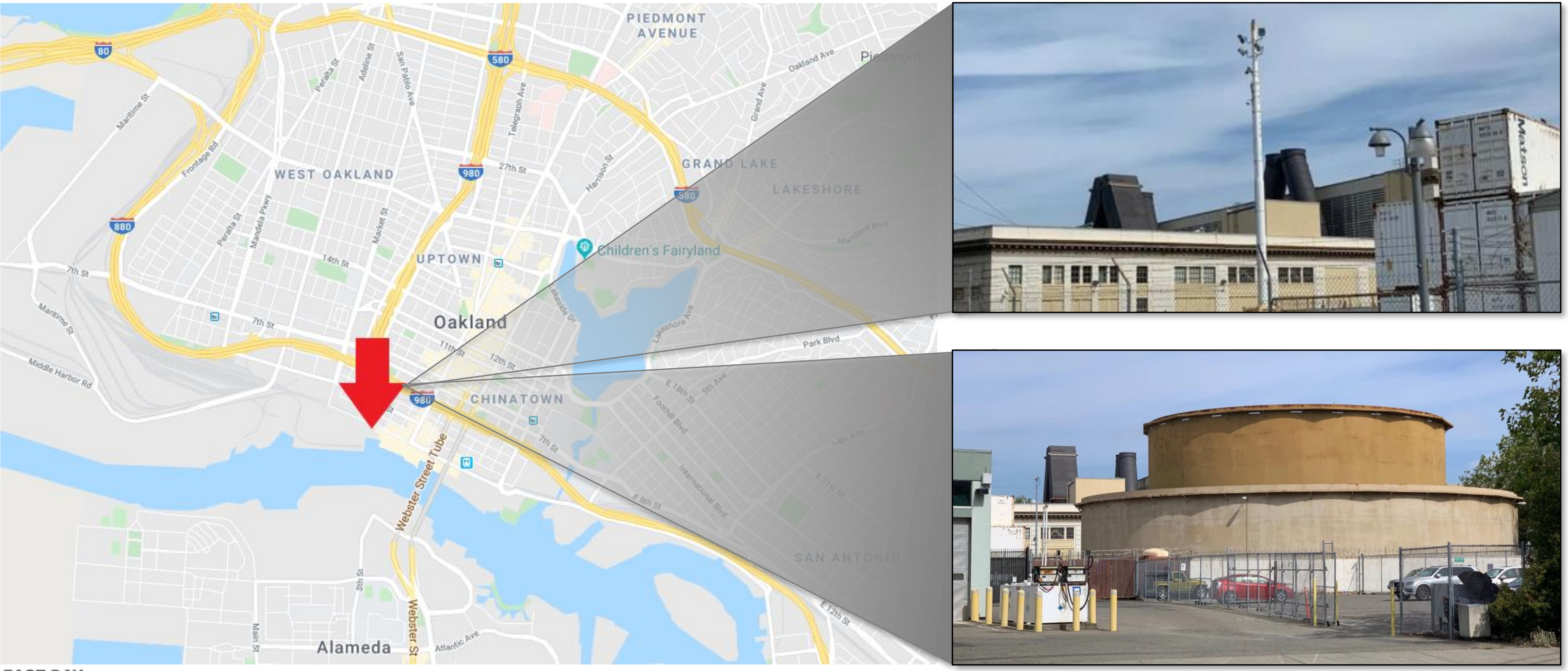
# Oakland Power Plant




Photos Source: GreenTech Media (link)

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# Oakland Power Plant

- Asset Owner: Dynegy
- Commissioned: 1978 (near retirement)
- Resource Type: Jet Fuel Peaker
- CAISO Contract: Reliability Must Run

- Recent Generation Profile:
  - 2018 saw no production in 6 of the 12 months, and Nov - Dec 2018 had <20 MWh production, combined.

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# CAISO Transmission Planning Process

- Currently ongoing CAISO TPP to determine the specific capacity need in the load pocket
  - Location: Oakland C, Oakland L, Maritime Port of Oakland, and Schnitzer Steel substation pocket, which is located within PG&E's Oakland distribution planning area. This substation pocket was selected due to the increasing potential for contingency overloads in the area.

# Oakland Clean Energy Initiative RFP

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# OCEI Solicitation Overview

EBCE and PG&E joint solicitation to meet needs of both entities, facilitated by an independent evaluator.

EBCE Market Products of Interest:

- ✓ Resource Adequacy
- ✓ RECs
- ✓ Energy

Eligible Resource Types:

- ✓ FTM renewable generation
- ✓ FTM energy storage
- ✓ BTM energy storage

| Event | Date |
|---|---|
| Issuance | April 13, 2018 |
| Participants’ Webinar | May 9, 2018 |
| Submission Deadline | June 15, 2018 |
| EBCE Shortlisting | Sept. 14, 2018 |
| Negotiations Begin | October 2018 |
| PG&E submits for CPUC approval<br>EBCE submits for Board approval | March 2019 |
| Contracts Signed* | June/July 2019 |

*Counterparties to execute separate contracts with PG&E and EBCE.

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# Lessons Learned

**Benefits**:

- Coordination with on CAISO need
- Collaboration in structuring a process that could best deliver respective parties' needs

**Challenges**:

- Coordinating across multiple parties with different needs, requirements, governing structures
- Managing Confidentiality – agreeing on counterparties without sharing confidential information (i.e. terms and conditions, etc.)

# Contracts Signed

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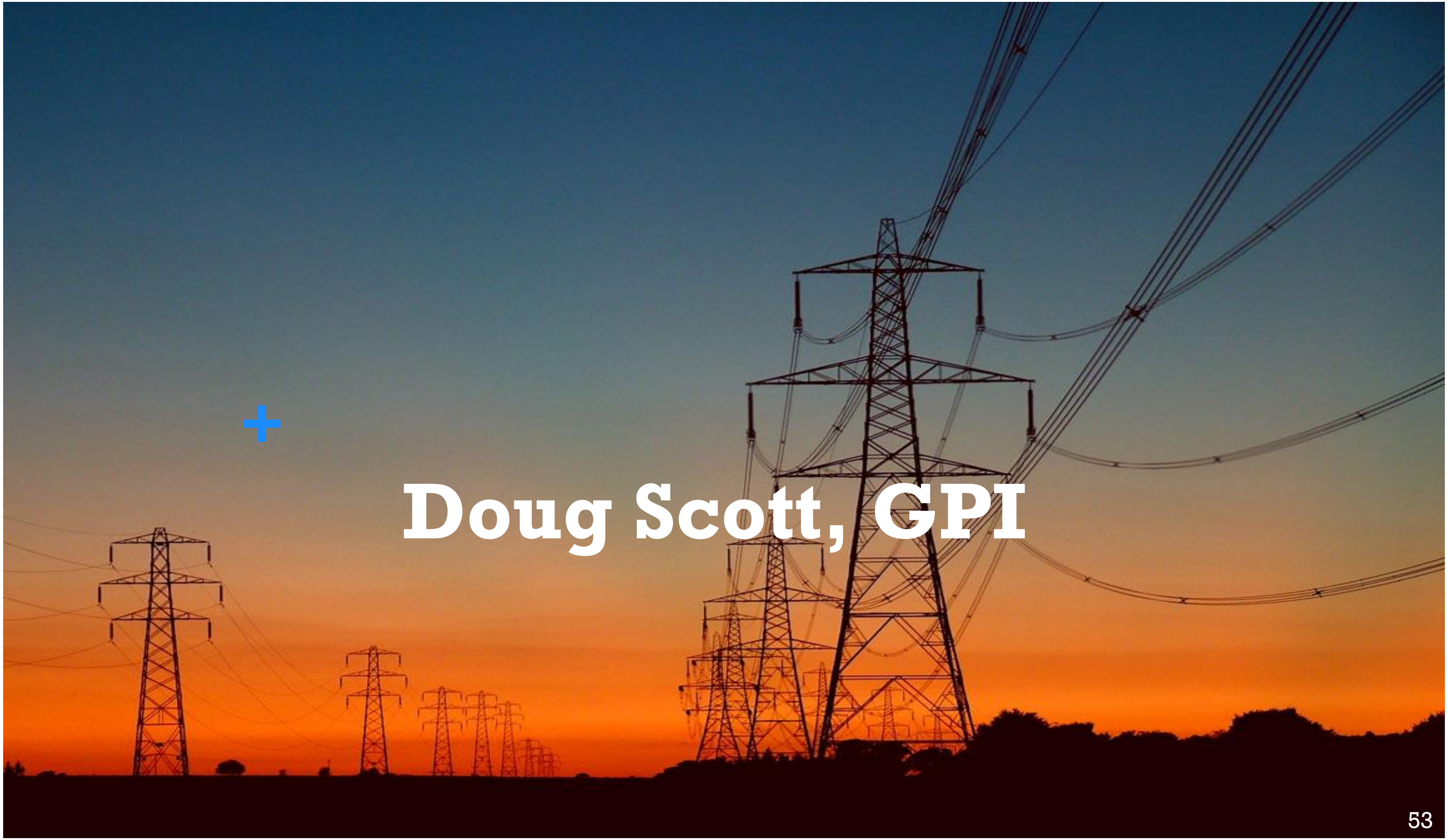
# 3 Storage Contracts Signed

| Counterparty | Capacity | Technology | Market Products | Delivery Term | Expected IDD |
|---|---|---|---|---|---|
| **Vistra (Dynegy)** | 36.25 MW | Li-ion BESS (FTM) | Storage Capacity; Resource Adequacy; Discharging Energy; Ancillary Services | 10 years | Jan. 2022 |
| **esVolta** | 7 MW | Li-ion BESS (FTM) | Storage Capacity; Resource Adequacy; Discharging Energy; Ancillary Services | 13 years | Dec. 2021 |
| **Sunrun** | 500 kW | Li-ion BESS (BTM - PDR) | Storage Capacity; Resource Adequacy; Discharging Energy | 10 years | Jan. 2022 |
| **Total:** | **43.75 MW** | 43.25 MW FTM<br>0.5 MW BTM | | | |

# Questions?

For more information on OCEI,
visit https://ebce.org/ocei/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