

# Day Ahead Market

## Recommendation

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The West is moving towards centralized organized energy markets. Today we will share our timeline and rationale for joining a day ahead market (DAM).

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**Objective of Today's Presentation**

## Presentation Topics

**1**

Background

**2**

Market Alternatives

**3**

Recommendation

**4**

Implementation

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Supporting Information

# Background

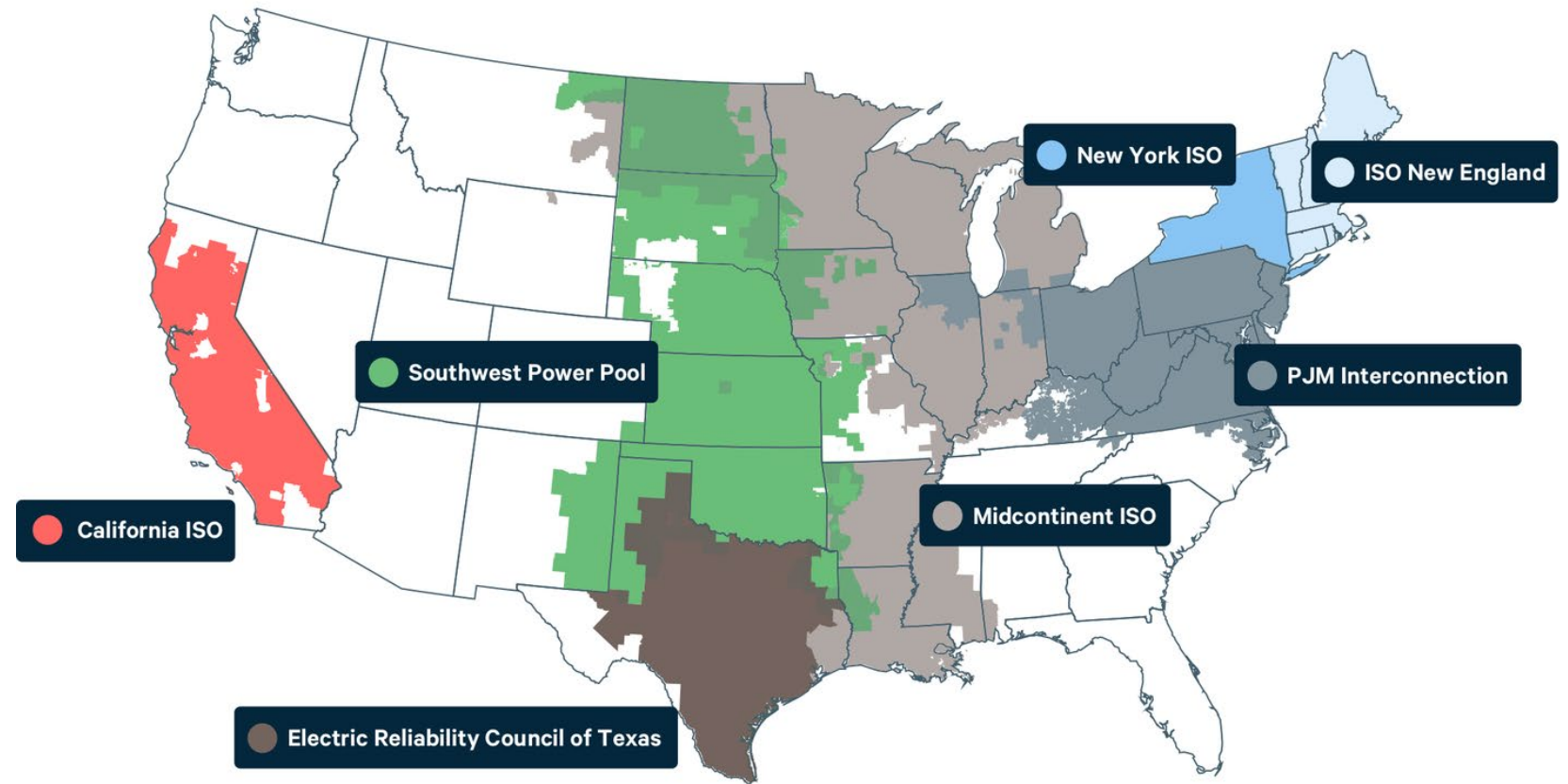
**Part 1**

## Background

# Organized energy markets in the US

## Market Evolution

- ✓ Organized energy markets are prevalent across the United States.
- ✓ In a DAM, a software tool chooses what generation will meet load optimally, at the lowest cost.
- ✓ Participants in the market decide and bid what their generation will cost to run.
- ✓ In a DAM, the software tool determines how to meet load optimally for a *whole day*.

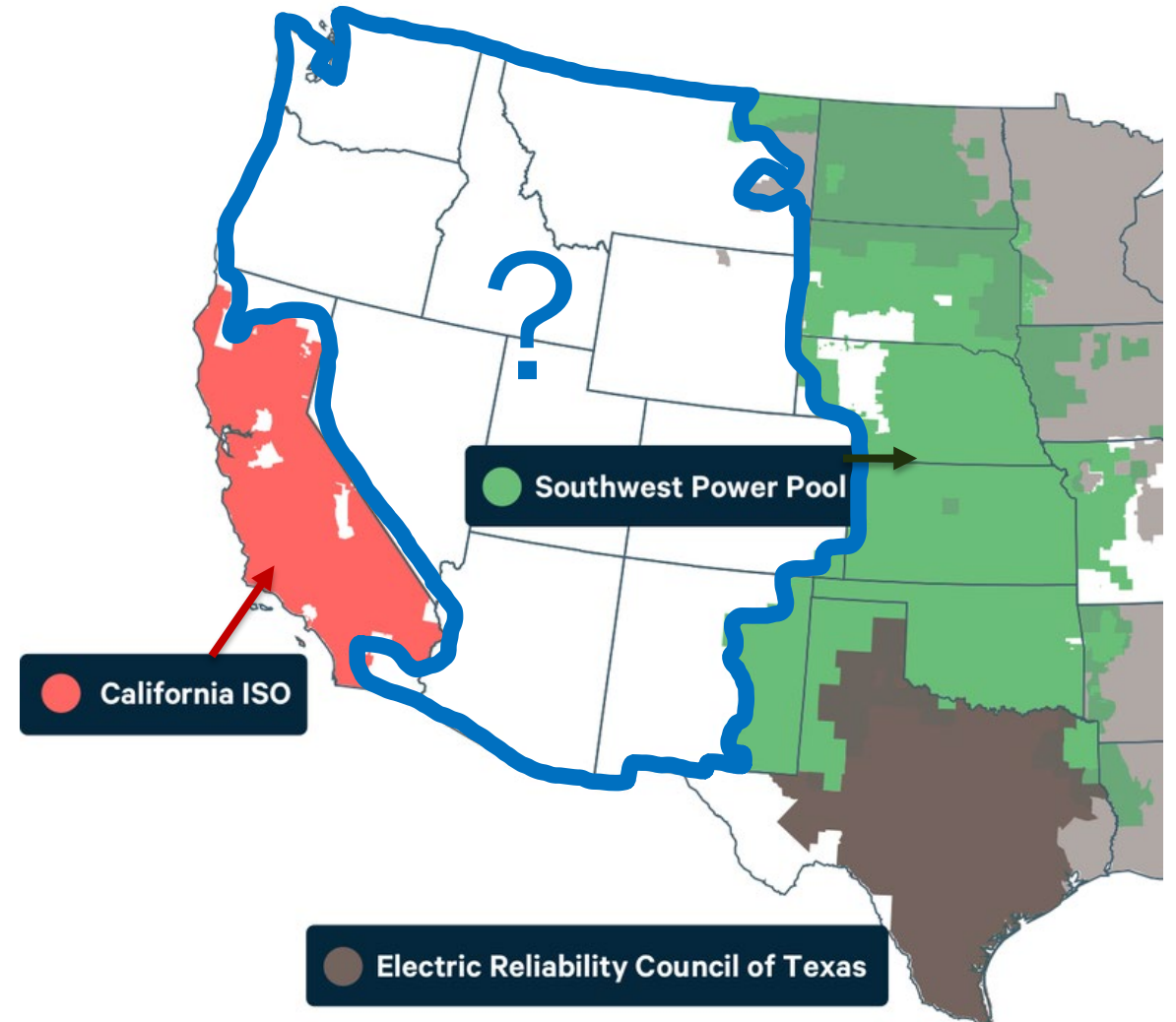


## Background

# The West is moving quickly to an organized energy market


### Change is coming to the West

- ✓ Utilities across the West are moving swiftly towards joining a DAM.
- ✓ The changing resource mix drives the need for greater sharing of resources across a broader footprint.
- ✓ Utilities are faced with two options: join the **California Independent System Operator (CAISO) Extended Day Ahead Market (EDAM)** or the **Southwest Power Pool (SPP) Markets+**.
- ✓ The presence of day-ahead markets in the West will impact all trade in the West. Maintaining the status quo is not an option.
- ✓ The market we join will have significant financial and reliability impacts on Tacoma Power for decades to come.

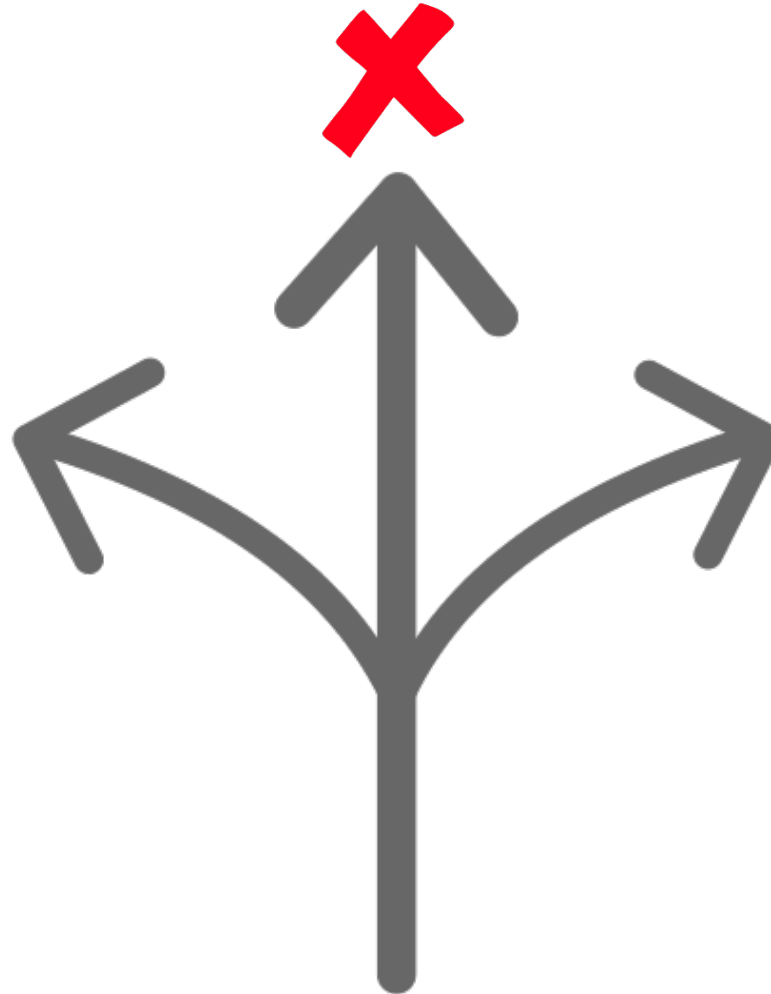


## Background

# A fork in the road

 California ISO  
Extended Day Ahead Market  
(EDAM)

Status Quo: Bilateral Markets Only



 SPP *Southwest Power Pool*  
Markets+

### Policy Decision

- We must make a decision to execute an agreement to fund the buildout of Markets+ by December 16<sup>th</sup>.
- Our share of the funding obligation is about \$3 million.
- Without support, we will lose this option and CAISO will be our only choice.

## Background

# Why are organized, day ahead markets valuable?

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A common resource adequacy program improves regional reliability

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Optimal dispatch of resources makes it less expensive to serve load – a DAM expands this benefit to the whole day rather than hourly

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More efficient use of the transmission system

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More effective integration of variable resources like wind and solar

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Tacoma Specific: A well-designed DAM should capture the value of hydro flexibility



# Market Alternatives

**Part 2**

## Market Alternatives

# What is the California Independent System Operator (CAISO)?

### The CAISO Balancing Authority

- ✓ CAISO is the largest of 38 balancing authorities in the western interconnection, covering around 35 percent of the electric load in the West – all in California.
- ✓ CAISO has a statutory fiduciary responsibility to the citizens of California.
- ✓ CAISO's Board is appointed by the Governor of California.
- ✓ A balancing authority is responsible for:
  - Operating a transmission control area
  - Matching generation with load, and
  - Maintaining consistent electric frequency of the grid, even during extreme weather conditions or natural disasters.
  - Note: Tacoma Power is also a Balancing Authority

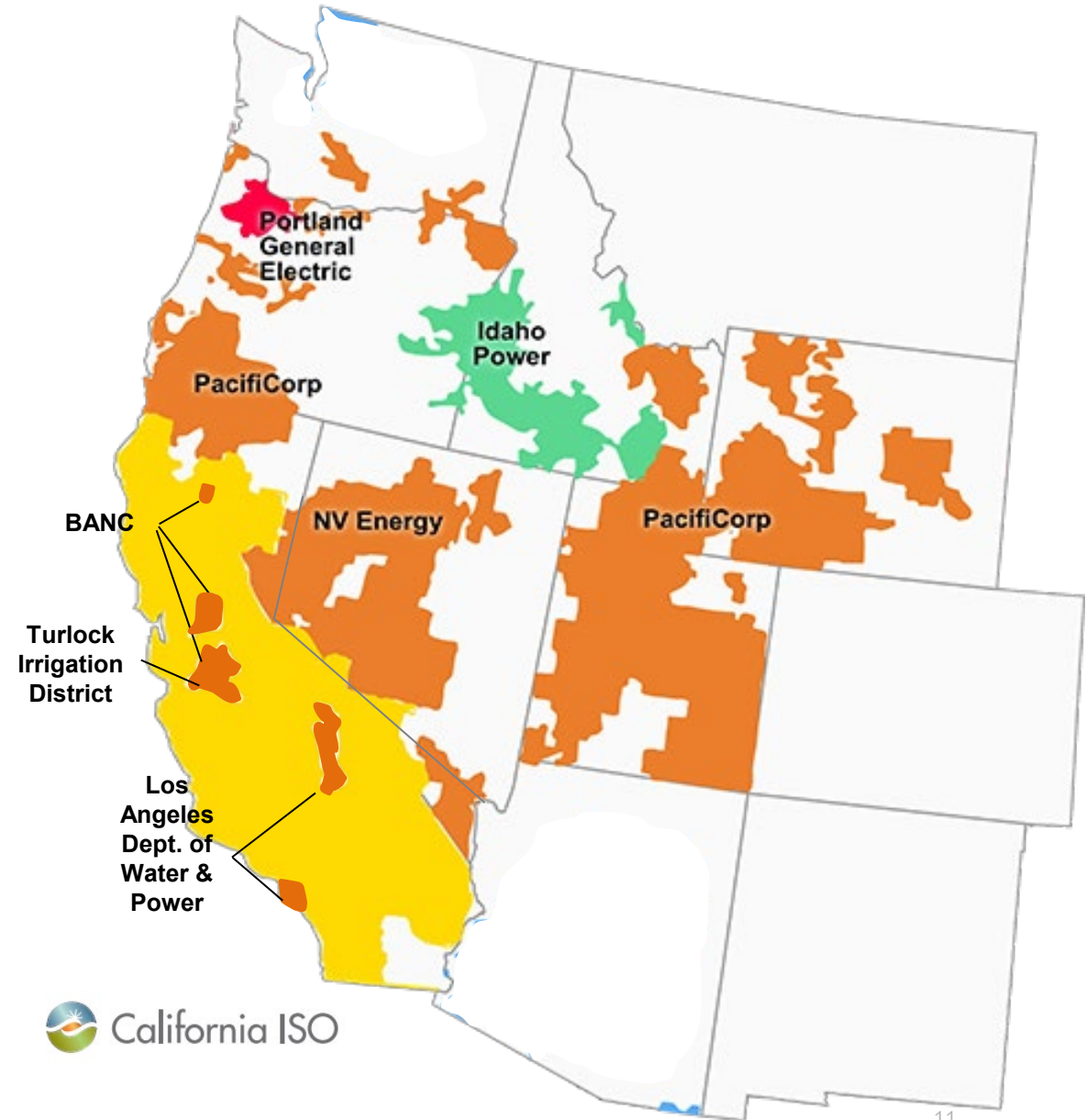


## Market Alternatives

# Option 1: CAISO's EDAM

### CAISO's Extended Day Ahead Market (EDAM)

- ✓ CAISO is extending its Day-Ahead Market (EDAM) to other balancing authorities in the West.
- ✓ Currently, four entities have informed the CAISO of their intent to join the EDAM: PacifiCorp, Balancing Authority of Northern California, Portland General Electric, Los Angeles Department of Water & Power.
- ✓ Two additional entities, Idaho Power and NV Energy, have indicated that they are leaning toward EDAM as their preferred day-ahead market.
- ✓ The Federal Energy Regulatory Commission (FERC) approved the EDAM tariff (market rules) in December 2023.

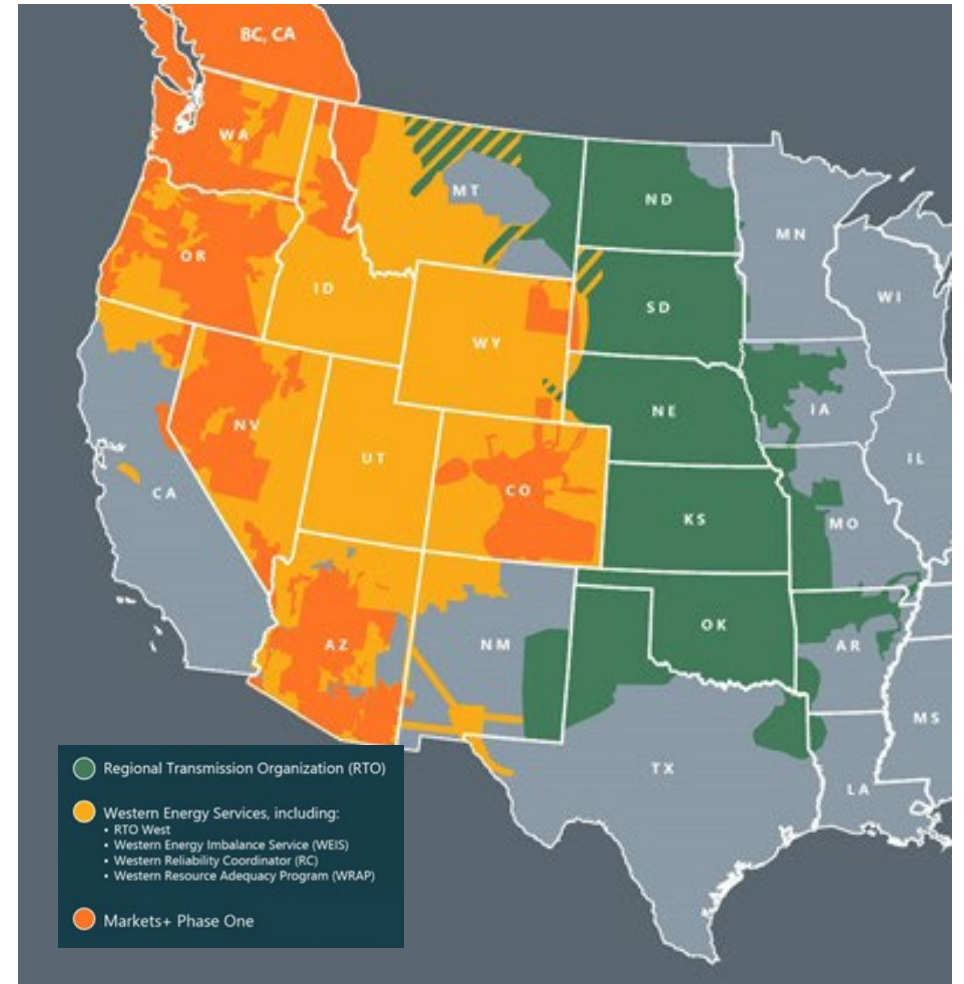


## Market Alternatives

# What is the Southwest Power Pool (SPP)?

### The SPP Regional Transmission Organization

- ✓ SPP manages the electric grid across 17 central and western U.S. states and provides energy services on a contract basis to customers in both the Eastern and Western Interconnections.
- ✓ Unlike CAISO, SPP exists to operate markets across multiple states and does not have a statutory fiduciary responsibility to any single state.
- ✓ The SPP Board is selected through a stakeholder nomination process focusing on diversity of representation and independence – and not beholden to one state or interest.
- ✓ SPP already works with the west as program operator for the Western Resource Adequacy Program (WRAP).
- ✓ Multiple utilities across the west have requested SPP develop a day ahead market as an alternative to the CAISO EDAM.



## Market Alternatives

# Option 2: SPP Markets+

### The SPP Markets+ Initiative

- ✓ Markets+ is SPP's offering of a day-ahead and real-time market for the west – as requested by multiple western utilities.
- ✓ In **phase one**, potential participants and stakeholders financially committed to draft the market protocols, tariff and governing documents.
- ✓ Tariff approval by FERC is anticipated by the end of 2024.
- ✓ **Phase two** begins upon FERC approval of the Markets+ tariff. In this phase, SPP will acquire necessary software, hardware, and staff while participating entities fully commit and are integrated into the system.
- ✓ Current participants include: Arizona Public Service Company, Salt River Project, Tristate Electric, Tucson Electric Power, Black Hills Colorado Electric, Snohomish PUD, Public Service Company of Colorado, Avista Corp, Chelan County Public Utility District, Grant County Public Utility District, Powerex Corp, Puget Sound Energy, Tacoma Power, Bonneville Power Administration (BPA)



## MARKETS+



# Recommendation

**Part 3**

## Recommendation

# Tacoma Power decision criteria

Governance	Reliability	Transmission & Congestion Rent	Products & Price Formation	GHG Accounting	Footprint
<ul style="list-style-type: none"><li>• Independent, non-affiliated, and representative decision making.</li><li>• Both policy and operational independence.</li><li>• Full separation between market participant and market operator.</li><li>• Meaningful role and vote for Tacoma Power.</li></ul>	<ul style="list-style-type: none"><li>• Each market participant brings sufficient resources to meet their load.</li><li>• Financial consequences for both short-term and long-term failures.</li><li>• Diversity benefits are achieved reliably and equitably.</li></ul>	<ul style="list-style-type: none"><li>• Fair recovery and allocation of transmission costs.</li><li>• Market designed to mitigate congestion costs with stable, equitable, and predictable allocation.</li></ul>	<ul style="list-style-type: none"><li>• Appropriate compensation for unique attributes like the flexibility hydro resources provide to the region.</li><li>• Price signals reflect grid needs and shortages.</li><li>• Fair and transparent market power mitigation.</li></ul>	<ul style="list-style-type: none"><li>• Proper accounting and pricing to incent carbon reductions.</li><li>• Compatibility with multiple state and local policies.</li></ul>	<ul style="list-style-type: none"><li>• Market size impacts economic benefits.</li><li>• BPA's decision impacts Tacoma Power's options.</li></ul>

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# Join SPP Markets+

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**Our Recommendation**

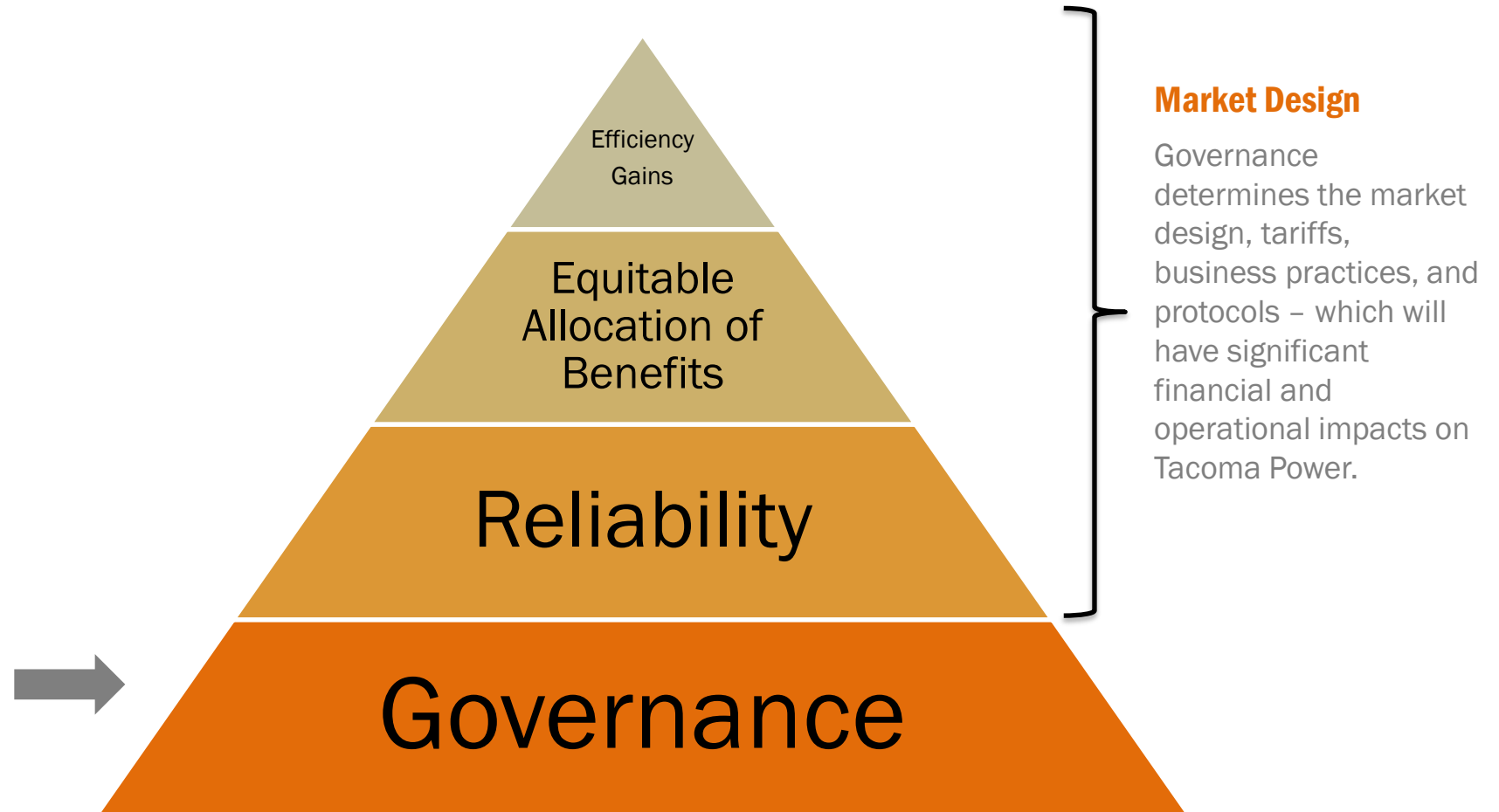


## Recommendation

Governance is the foundation of a durable day ahead market

### What is Governance?

Governance determines how key decisions are made in a market where participants and regions may have different interests. It has a major influence on outcomes – including market prices, cost allocation, distribution of benefits, reliability risks, and the success of environmental programs.



## Recommendation

# Governance

Governance is the most important consideration in the selection of a day ahead market

The governance framework of a western day-ahead market has the potential to affect \$25 billion or more in annual trade. It has a major influence on market outcomes, including the determination of market prices, how costs are allocated, the extent and allocation of reliability risks during stressed grid conditions.

Given the magnitude of the potential impacts of joining a day ahead market, we believe that full independence is a mandatory element.

In Markets+, SPP as a market operator is fully independent and impartial to market outcomes. The SPP governance model offers a geographically diverse and independent Board of Directors and a framework where all participants have a voice and a vote. SPP is not a market participant and therefore is able to facilitate the market without a conflict of interest.

The CAISO Board of Governors is appointed by the governor of California. CAISO is obligated by statute to consider and produce benefits for California ratepayers first. CAISO is the only organized market in the United States where the market operator is also a participant. This creates a conflict of interest, the effects of which are already evident.



## Recommendation

# Impacts of Governance

## Biased governance has real-world impacts

For entities outside California, joining EDAM would mean accepting that their interactions will be resolved by market rules developed by the CAISO under its governance framework, and implemented by a market operator that is also a participant.

There is substantial evidence of CAISO regularly making operational decisions that prioritize the reliability and economic outcomes for its own BA at the disadvantage of other market participants.

**Example:** During the MLK weather event, CAISO market rules resulted in California transmission customers receiving a disproportionately high distribution (over \$120M) of the congestion value associated with power flowing from the Southwest to the Northwest.

**Example:** CAISO has refused to implement pricing that provides the appropriate price signal to hydro and battery resources – despite being best practice promoted by FERC. A study estimated that Northwest and Southwest ratepayers are harmed by receiving \$188-420 million per year less for wholesale sales to California due to suppressed market prices.



## Recommendation

# Reliability

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### Markets+ is built on a rigorous resource adequacy framework

Western Resource Adequacy Program (WRAP) participation is a requirement for entities in Markets+.

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Entities in WRAP certify well ahead of time that they carry enough capacity to meet load in tight grid conditions.

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Participation in a resource adequacy program is not required to participate in EDAM. EDAM instead uses a short-term test that is less robust in ensuring there are sufficient resources in tight grid conditions.

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Participants in CAISO's EDAM who are also in WRAP could be forced to over-procure some capacity, which is a significant added cost to EDAM.

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## Market Alternatives

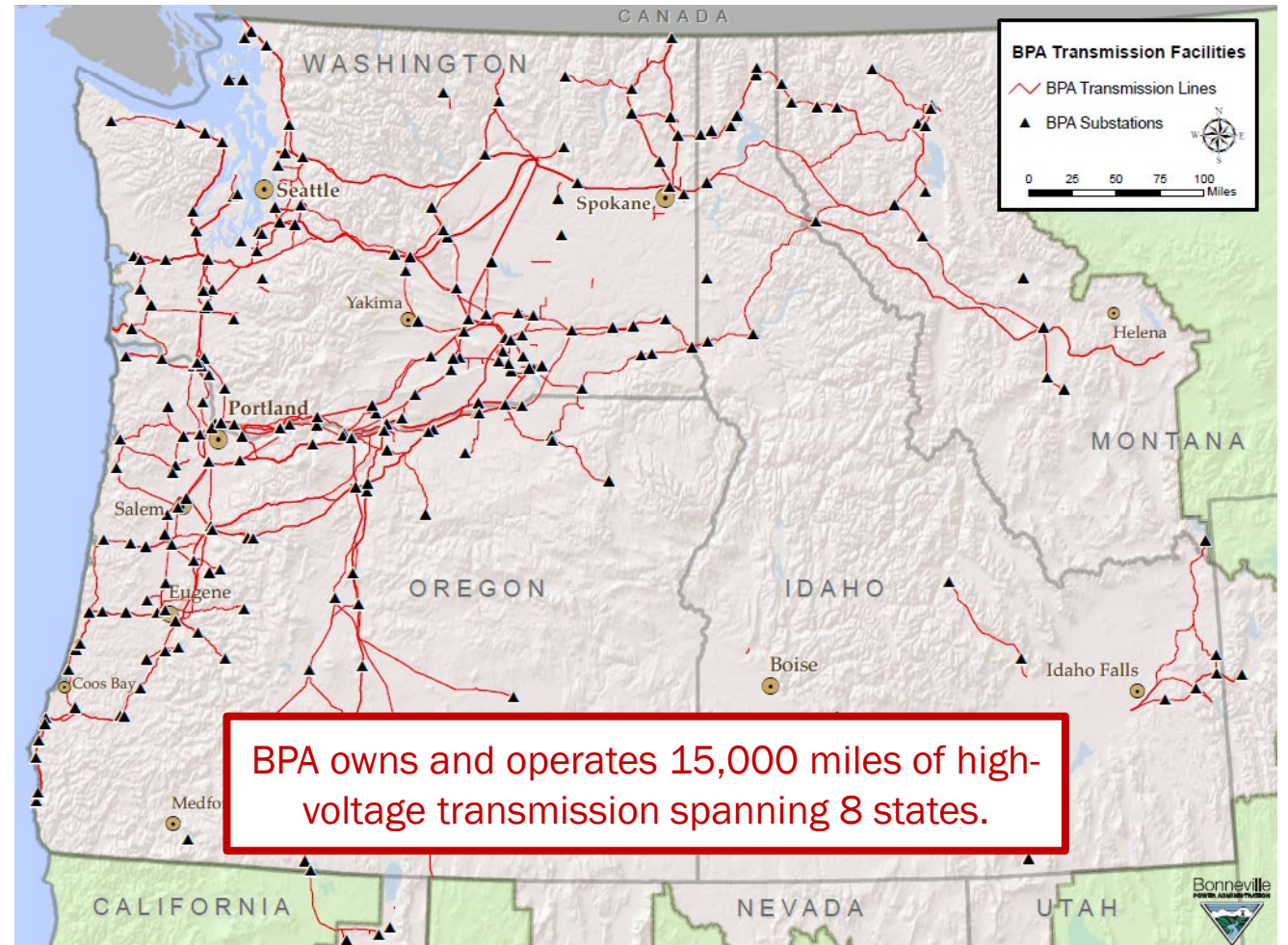
# BPA's Day-Ahead Market Decision

### BPA's Decision is Critical for Tacoma Power

- ✓ BPA's market decision will have a significant impact on Tacoma as Tacoma's system is surrounded by BPA.
- ✓ It would be difficult or impossible for Tacoma to join a different market than BPA.

### BPA's Decision Process

- ✓ BPA launched its public process for determining which Day-Ahead Market it will join and announced it is leaning to join Markets+.
- ✓ While BPA delayed its final decision on which Day-Ahead Market it will join until May 2025, they plan to fund their \$25M share of the Markets + Phase 2 costs.
- ✓ This decision was supported by a large majority of Pacific Northwest public power utilities.



## Recommendation

# Benefits of joining

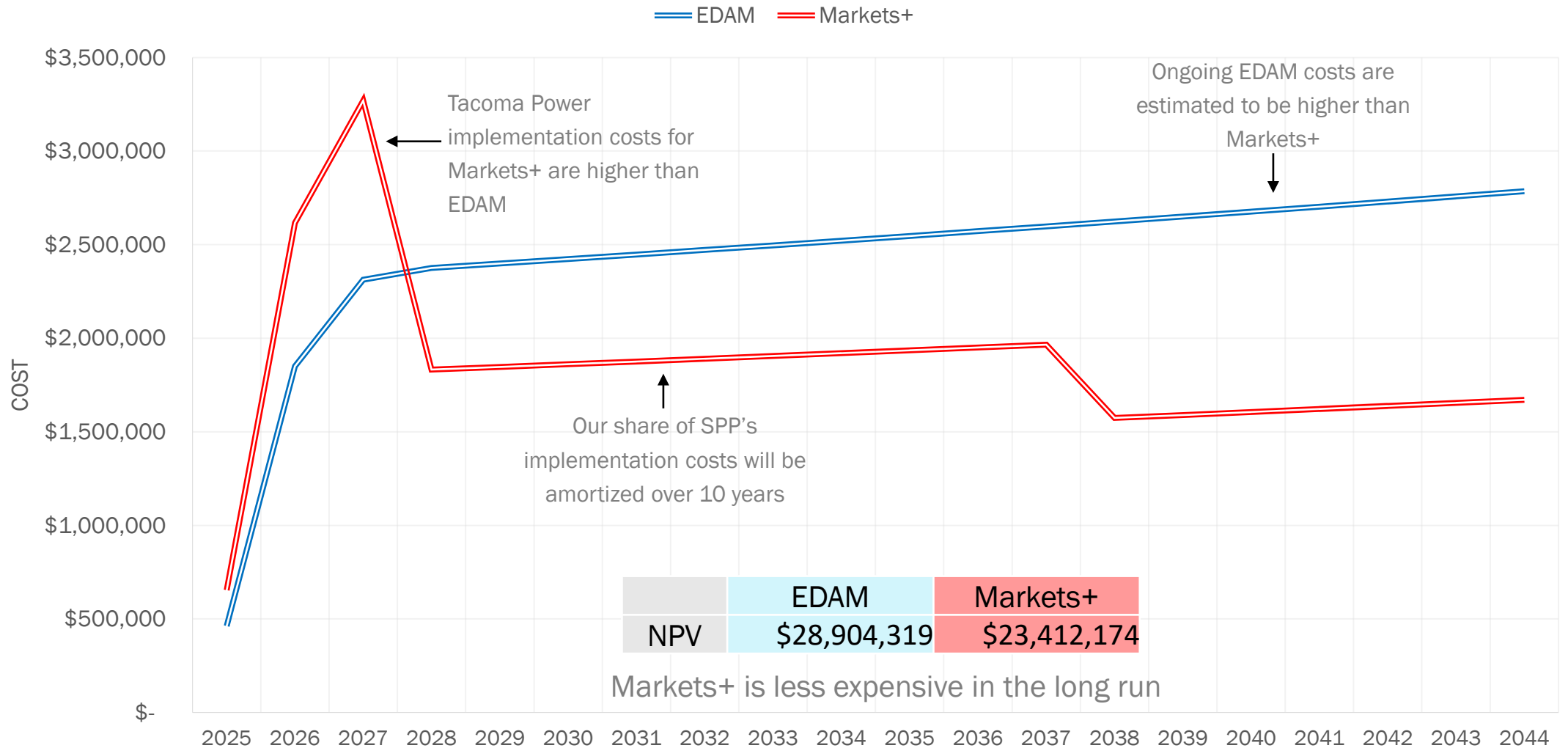
### Benefits Expected to Exceed Costs

- Tacoma participated in the Western Markets Exploratory Group (WMEG) with 24 other entities across the Western Interconnection.
- The study suggests that there is financial benefit to joining a DAM.
- In all cases studied, Tacoma's production cost savings ranged from **\$3 million to \$15 million per year** in the footprints modeled.
- The study suggested that EDAM provides higher economic benefits than Markets+ - but the differences between the two are within the margin of error.
- The models used are highly sensitive to assumptions and are limited in their ability to reflect and quantify the long-term implications of important governance and market design differences.
- The results of the WMEG study reflect a portion of the benefits. It does not consider "capacity savings" that result from a rigorous, common resource adequacy program. These savings are likely much larger in magnitude.



## Recommendation

# Cost Comparison





## Recommendation

# Tacoma Power key market design principles revisited

Governance	Reliability	Transmission & Congestion Rent	Price Formation	GHG Accounting	Footprint
<p><b>Markets+</b></p> <ul style="list-style-type: none"><li>• Independent governance, impartial market operator.</li></ul> <p><b>EDAM</b></p> <ul style="list-style-type: none"><li>• Board appointed by CA Governor, legal responsibility to CA.</li></ul>	<p><b>Markets+</b></p> <ul style="list-style-type: none"><li>• Reliability requirements apply to short-term and long-term needs.</li></ul> <p><b>EDAM</b></p> <ul style="list-style-type: none"><li>• Market rules only address short-term reliability.</li></ul>	<p><b>Markets+</b></p> <ul style="list-style-type: none"><li>• Market designed for more equitable allocation of all transmission costs and benefits.</li></ul> <p><b>EDAM</b></p> <ul style="list-style-type: none"><li>• Greater potential for inequitable allocation.</li></ul>	<p><b>Markets+</b></p> <ul style="list-style-type: none"><li>• More likely to value flexible hydro resources and less likely to over-mitigate.</li></ul> <p><b>EDAM</b></p> <ul style="list-style-type: none"><li>• Pricing does not fully recognize the flexibility of hydro resources, and market mitigation rules carry higher risks.</li></ul>	<p><b>Markets+</b></p> <ul style="list-style-type: none"><li>• Accommodates emission reductions and respects state and local policies.</li><li>• Allows additional flexibility to participants.</li></ul> <p><b>EDAM</b></p> <ul style="list-style-type: none"><li>• Accommodates emission reductions and respects state and local policies.</li><li>• Does not allow participants the flexibility to find unique solutions.</li></ul>	<p><b>Markets+</b></p> <ul style="list-style-type: none"><li>• Footprint not yet fully defined.</li><li>• BPA continues to support Markets+.</li></ul> <p><b>EDAM</b></p> <ul style="list-style-type: none"><li>• Large footprint could increase economic benefits.</li></ul>



## Recommendation

# Risks

### Tariff Approval

- IF FERC does not approve the Markets+ tariff by the end of the year, it could delay implementation.

### BPA Decision

- If BPA elects to not join Markets+, the market is likely not viable.

### Politics

- Multiple parties are lobbying against Markets+
- Markets+ could fail if current funding parties defer to join.

### Financial

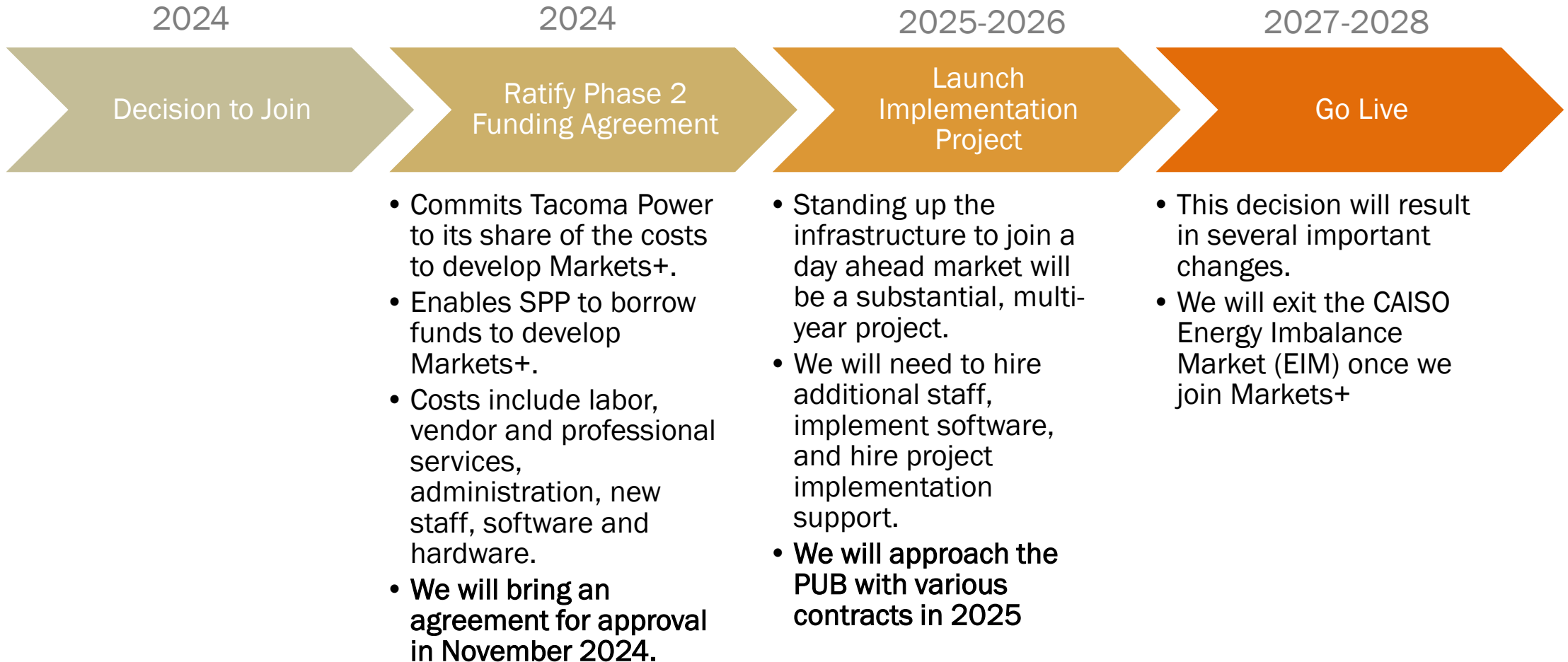
- We could lose all/part of our Markets+ phase 2 funding obligation if the market does not come to fruition.

# Implementation

**Part 4**

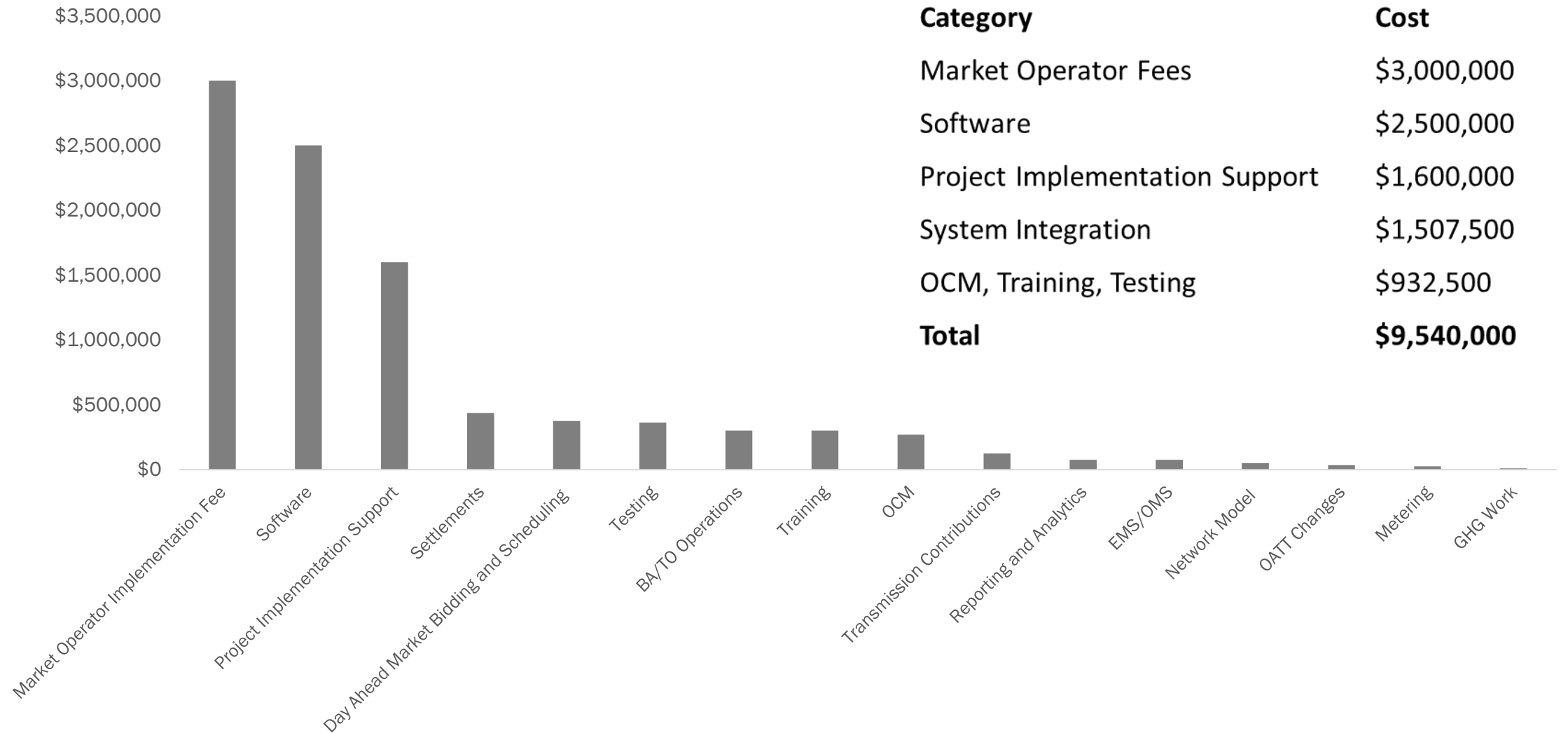
## Implementation

# What happens next?



## Implementation

# What are the implementation cost elements?



## Implementation

# What are the staffing requirements?

### Power Management

- 1.0 FTE – Power Management System Engineering
- 1.0 FTE – Real Time Energy Trading
- 1.0 FTE – Analytics

### Transmission & Distribution

- 1.0 FTE – T&D System Planning
- 1.0 FTE – T&D System Operations

### Absorb with Current Staff

- Meter Data Management and Settlements
- Reporting
- Policy
- Market Management

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Questions?

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# Supporting Information

**Appendix**

## Appendix

# Issue Alert White Paper Series

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Issue Alert 1: Governance	<a href="https://www.westernenergyboard.org/wp-content/uploads/Issue-Alert-1-Governance-July-31-2024.pdf">https://www.westernenergyboard.org/wp-content/uploads/Issue-Alert-1-Governance-July-31-2024.pdf</a>
Issue Alert 2: Reliability	<a href="https://www.westernenergyboard.org/wp-content/uploads/Issue-Alert-2-Reliability-Final.pdf">https://www.westernenergyboard.org/wp-content/uploads/Issue-Alert-2-Reliability-Final.pdf</a>
Issue Alert 3: Fair & Accurate Market Pricing	<a href="https://www.westernenergyboard.org/wp-content/uploads/Issue-Alert-3-Fair-and-Accurate-Pricing.pdf">https://www.westernenergyboard.org/wp-content/uploads/Issue-Alert-3-Fair-and-Accurate-Pricing.pdf</a>
Issue Alert 4: Seams	<a href="https://www.westernenergyboard.org/wp-content/uploads/Issue-Alert-4-Seams.pdf">https://www.westernenergyboard.org/wp-content/uploads/Issue-Alert-4-Seams.pdf</a>
Issue Alert 5: Support for Clean Resources	Forthcoming
Issue Alert 6: Market Operator Actions and Modeling	Forthcoming
Issue Alert 7: Durable Customer Benefits	Forthcoming

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