

Northwest Power Pool Members' Market Assessment and Coordination Initiative

Northwest Energy Systems Symposium
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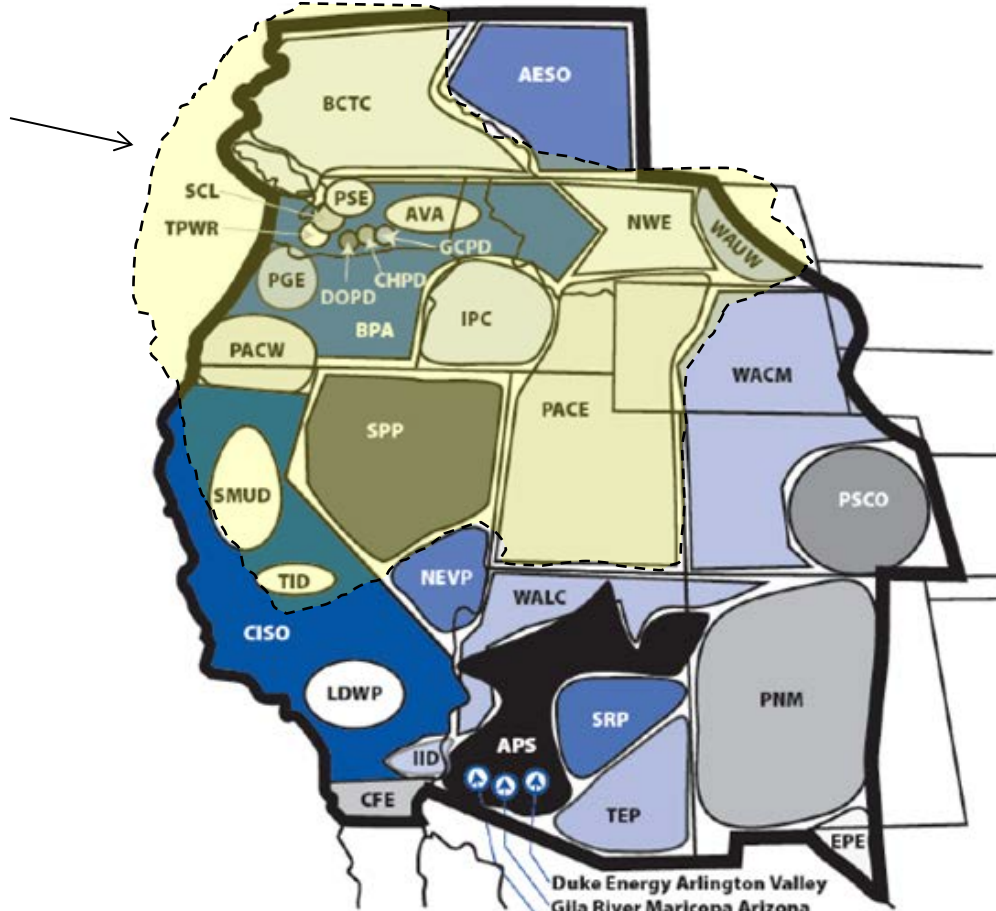
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Portland General Electric*

Agenda

- History of Northwest Power Pool Members' Market Assessment and Coordination Initiative (NWPP MC)
- Roadmap to enhanced utility operations
- Emerging generation and balancing trends in the Pacific Northwest, and comparisons to other regions

WECC Balancing Authority Areas

NWPP MC
Footprint

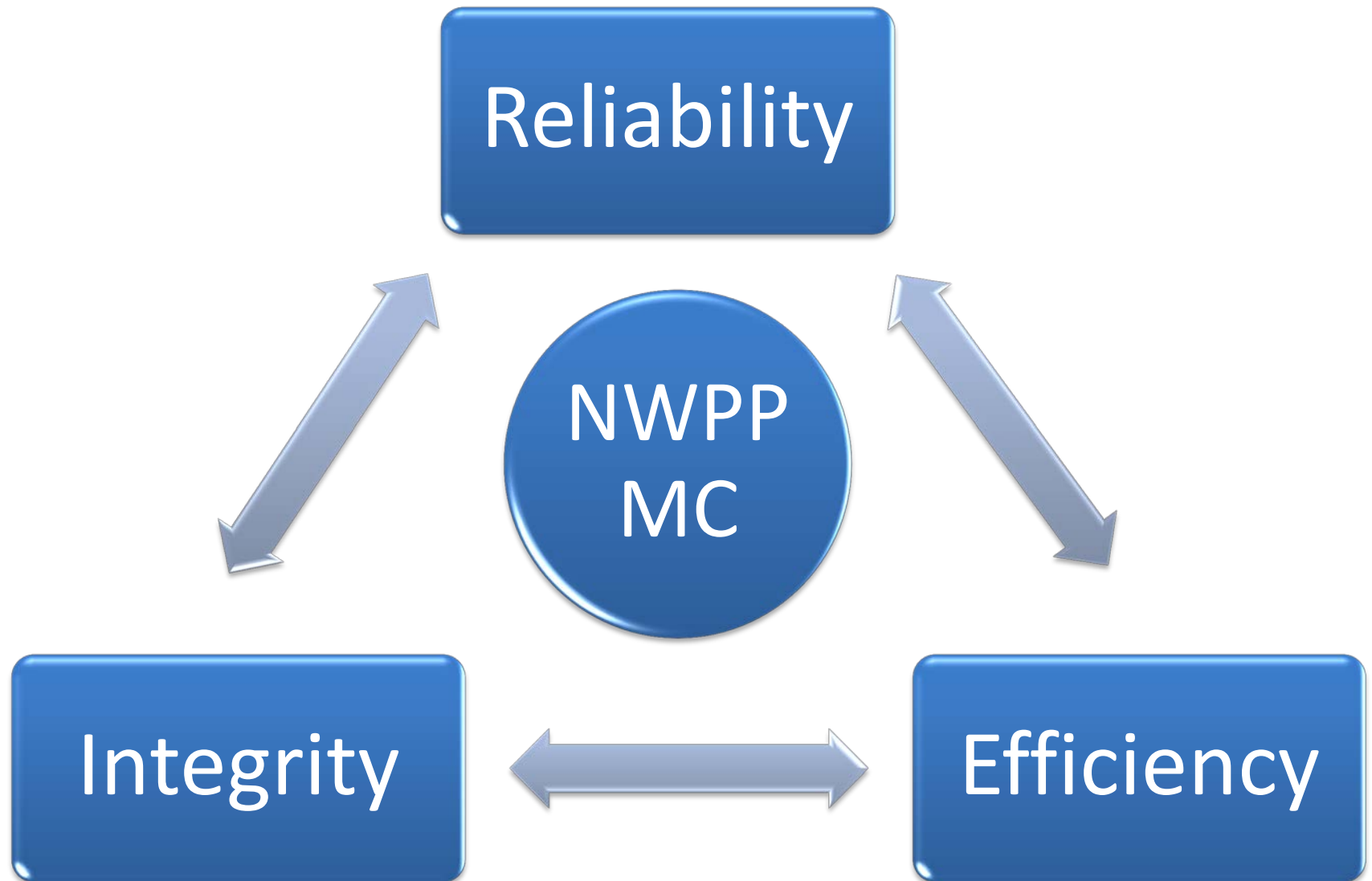


Balancing Authority footprints are general and for illustrative purposes only.

NWPP MC Objectives – March 2012

Deliver comprehensive Northwest solution to:

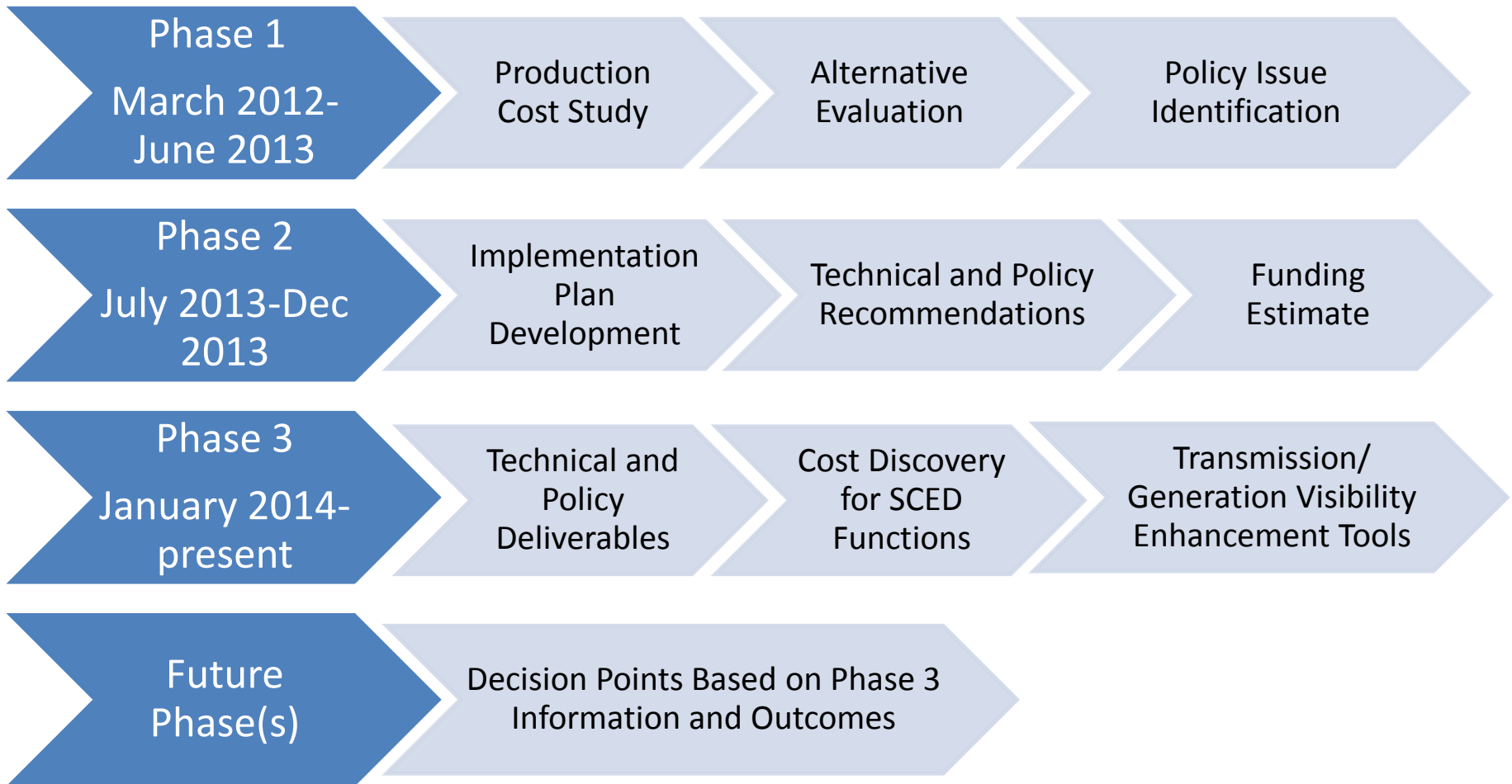
- Manage variable energy resource operational impacts
- Share regional balancing diversity and capabilities
- Enhance reliability of transmission constraint management
- Mitigate compliance exposure and costs
- Leverage existing tools where expedient
- Preserve existing Reserve Sharing Group benefits
- Respect self-determination priorities



Funding Organizations

- Avista Corporation
- Balancing Authority of Northern California (BANC)
- Bonneville Power Administration
- B.C. Hydro/Powerex
- Eugene Water & Electric Board
- Idaho Power Company
- NaturEner
- NorthWestern Energy
- Puget Sound Energy
- Chelan County PUD
- PacifiCorp
- Portland General Electric
- Clark County PUD
- Grant County PUD
- Snohomish County PUD
- Seattle City Light
- Tacoma Power
- Turlock Irrigation District
- WAPA, Upper Great Plains

NWPP MC Initiative



NWPP MC Phase 1 & 2 Key Outcomes

- No single solution addresses entire problem statement
 - Intra-hour energy-only transactions are not sufficient
 - Diversity benefits are real, but ability to access is constrained by existing transmission, coordination, and economic environment
- Region would benefit from comprehensive enhancements to its operations and commercial framework
 - Respecting existing OATT-based investments
 - Building on foundation of reliability and self-determination
 - Addressing capacity sufficiency at the BA and entity level
 - Capturing cost savings through accessing in-hour diversity
 - Solidifying bilateral market outcomes that will continue to account for <90% of all market activity for foreseeable future

NWPP MC Phase 1 & 2 : Addressing Governance Risks

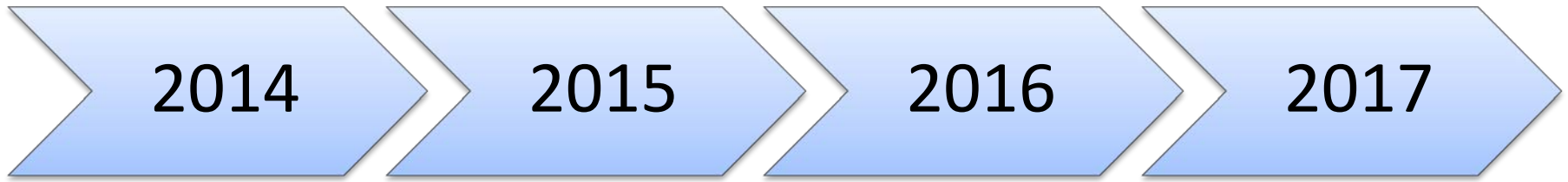
Phase 2

- Provide illustrative Bylaws for EIM Admin Corp that attempt to address governance concerns
 - FERC jurisdiction – Can an EIM governance model be structured to mitigate the risk of increased FERC jurisdiction over public power entities?
 - Prohibit Board from taking action that expands jurisdiction.
 - Allows Members to withdraw immediately if they feel threatened by jurisdiction.
 - Scope Creep – Can an EIM be implemented in a way that minimizes the risks of market structure expansion?
 - Require super-majority vote to change scope or geographic footprint.
 - Restrict membership to existing NWPP geographic footprint.
 - Vendor contract with Market Operator will limit MO ability to make changes to market function and geographic boundaries.

Phase 3

- Initiate conversations with FERC staff and Commissioners
- Evaluate and continue development of draft bylaws and accompanying agreements

NWPP MC Initiative Roadmap



Phase 3

Phase 4

Phase 5

Operational Integrity

Efficiency

Reliability and Coordination

Phase 3 – Summary Scope

Technical

- Regional Flow Forecast on Targeted Flowgates
- Resource Monitoring and Deliverability for Energy / Capacity
- Regional Data Sharing Tools for BAs and Merchants
- Operations Integration Between Functional Roles

Policy

- 15-Minute Flexible Capacity Product
- Resource Sufficiency Protocols and Testing
- Develop NWPP MC SCED Protocols for RFP Issuance
- Legal – Vendor Agreements and FERC Engagement

NWPP MC Use of SCED Platform Fundamentals for RFP Development

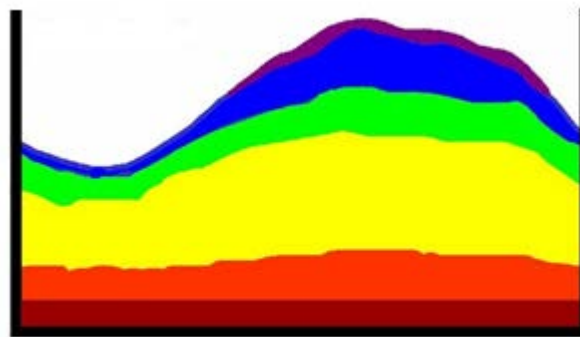
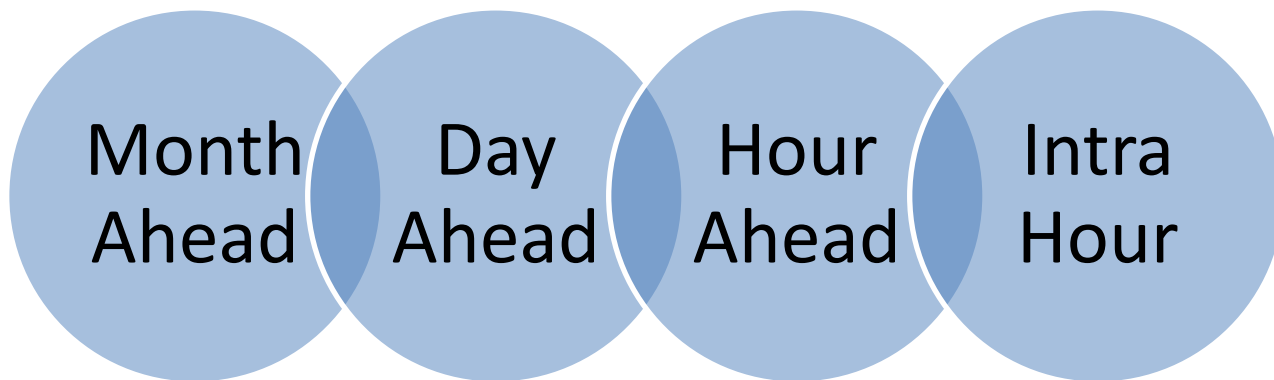
Operational attributes:

- Flow-based transmission monitoring and sub-hourly commercial dispatch by central operator
- Wide-area footprint to maximize diversity benefits with least-cost 5-min dispatch
- Improves reliability and efficiency of within-hour load/resource balancing

Implementation choices and protocols would:

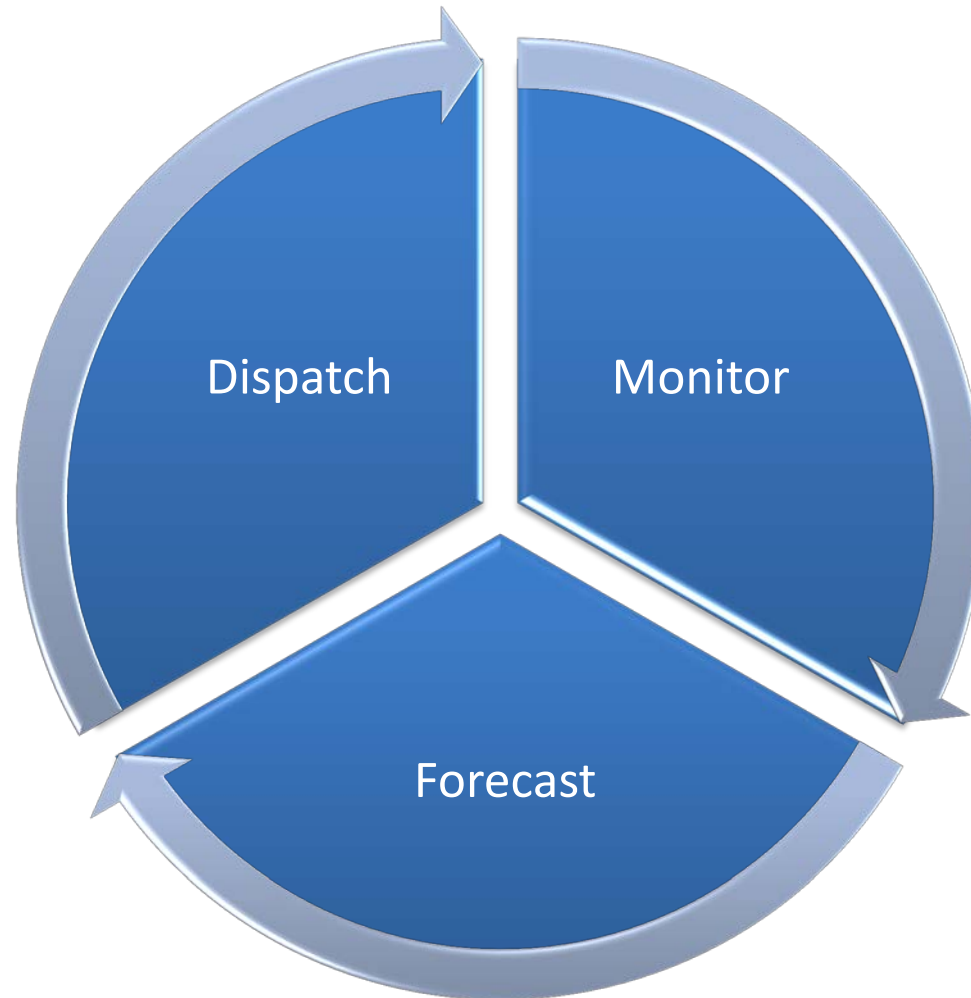
- Optimize market participants' transmission assets within the constraints of TSPs' transmission tariffs
- Physically dispatched according to entity-submitted cost-based curves
- Retain individual BA's responsibility for NERC requirements and prevent entities from leaning on each other's capacity

Making Efficient Use of Resources



■ Nuclear ■ QF ■ Thermal ■ Imports ■ Hydro ■ Peaking

NWPP Members' Core Capabilities



Evolution of Core Capabilities

	Phase 3	Phase 4	Phase 5
Monitor	Resource Deliverability Table-Top	Resource Sufficiency	Energy Deliverability
Forecast	3hr Regional Flow Forecast	24hr Regional Flow, Load and Wind Forecast	Near real-time Demand Forecast
Dispatch	Advisory Resource Sufficiency Guidance		Energy

Balancing Supply and Demand in the PNW

PNW Generation -

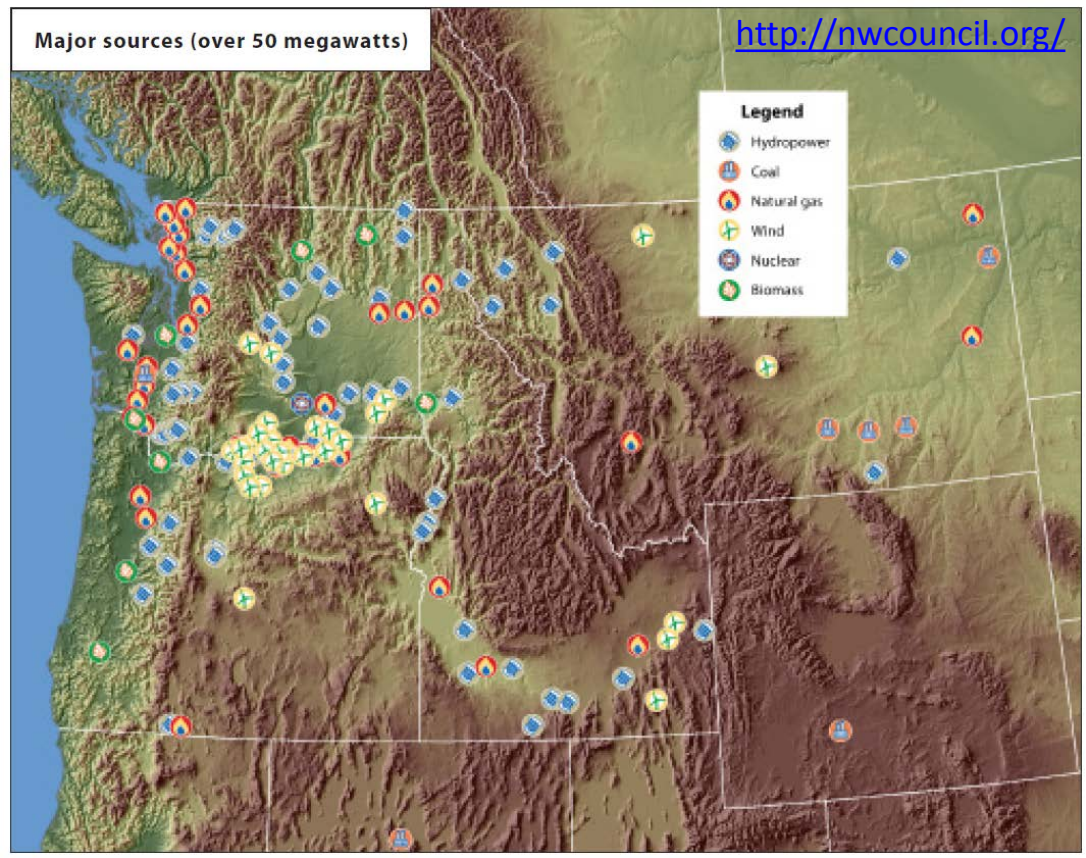
- 59,000 MW Total
 - 34,000 MW Hydro →
 - 9,000 MW Nat Gas ↑
 - 7,000 MW Coal ↓
 - 6,000 MW Wind ↑
 - Other ↑

PNW Demand -

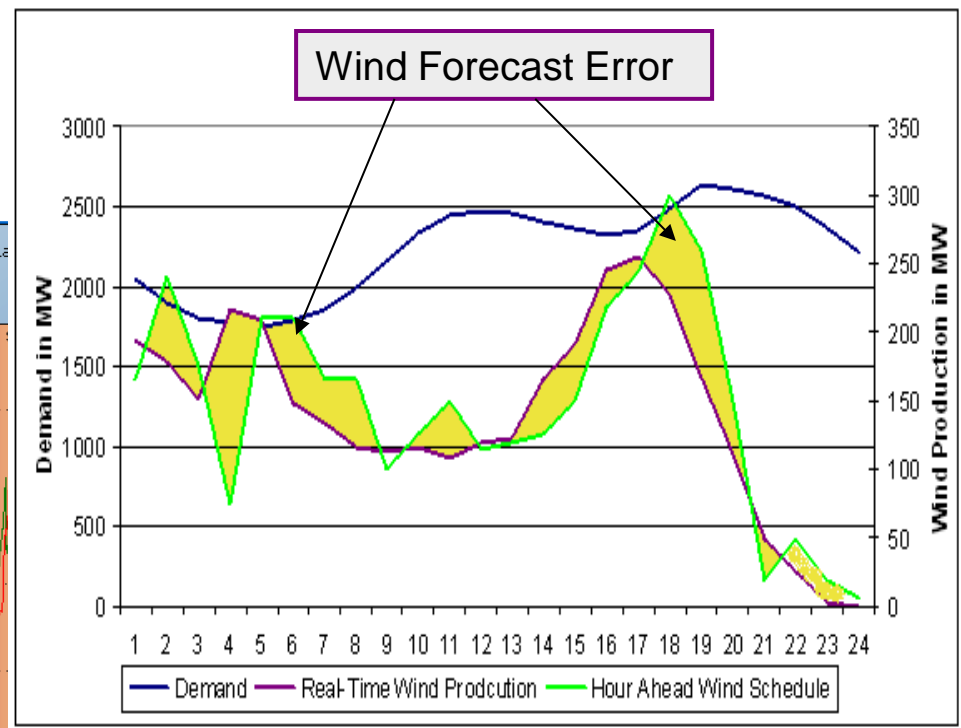
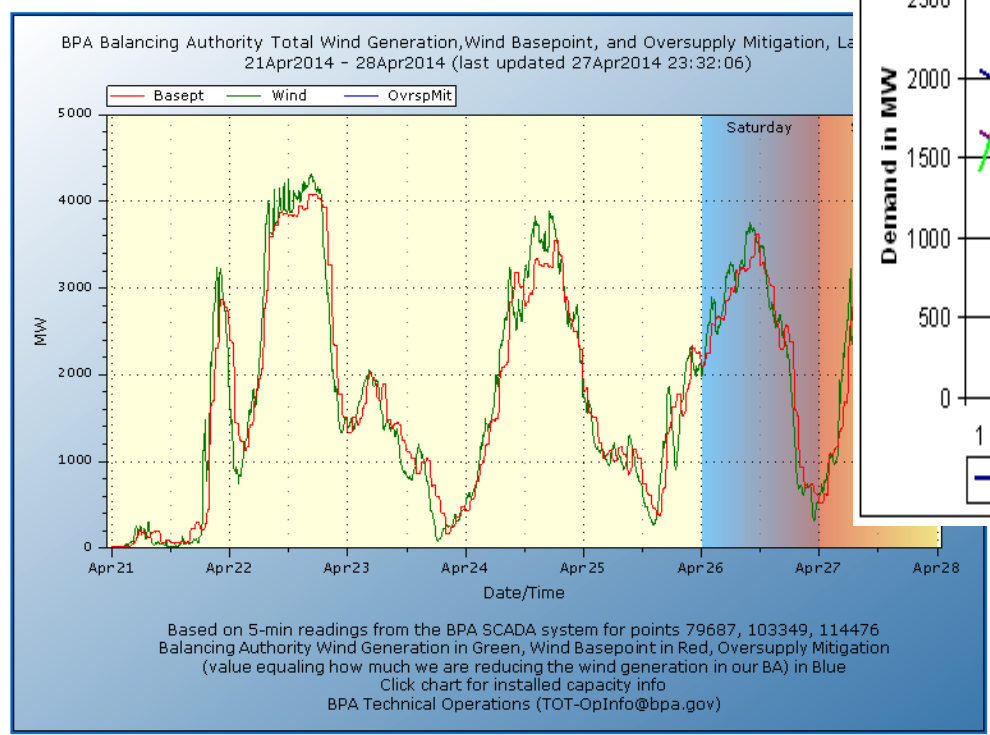
- 22,000 MW-avg →
- 36,000 MW Peak ↑

Exports Peak Demand -

- 4,300 MW to CAISO ↓ ↑



Increasing Demand for Flexible Capacity

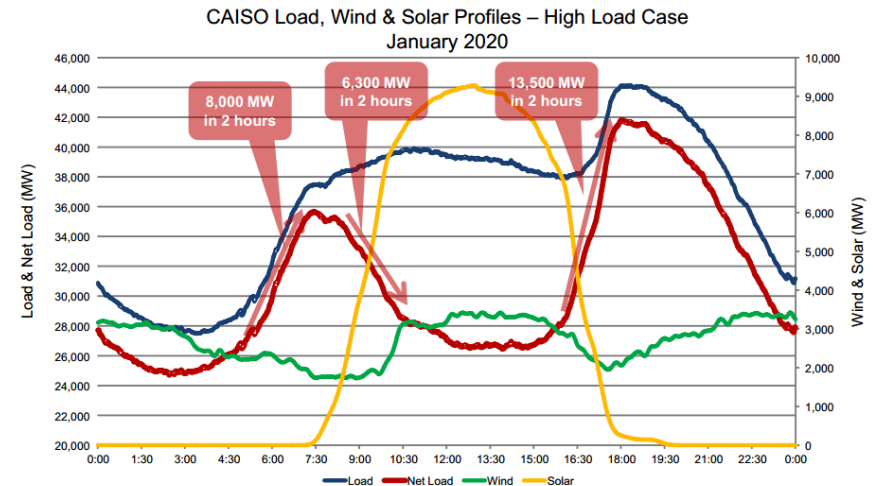


Additional Sources of Market Volatility

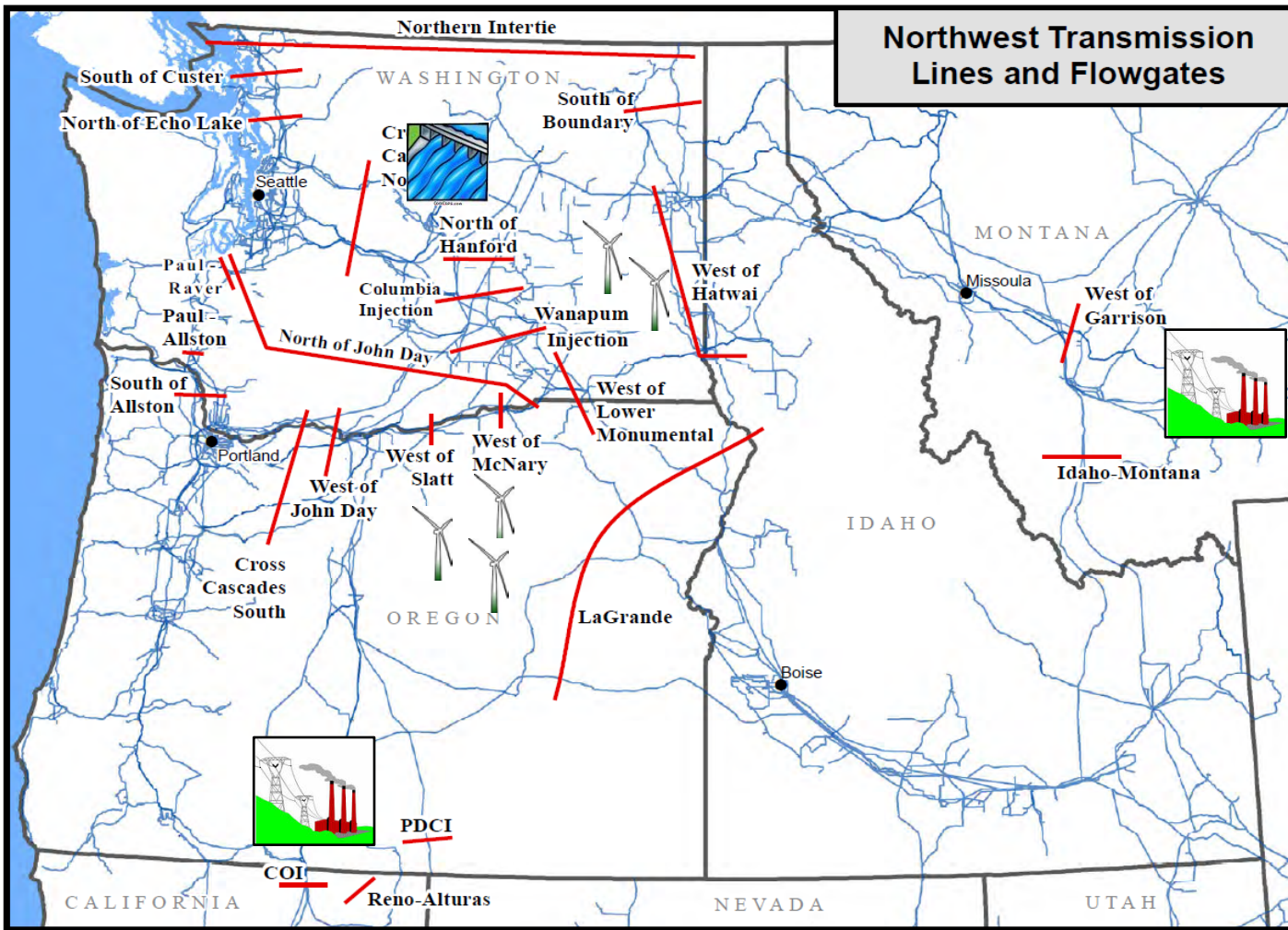
- Coal Plant Closures
 - 1,340 MW Centralia closing 2020-25
 - 640 MW Boardman closing 2020



- Growth in solar generation across the WECC

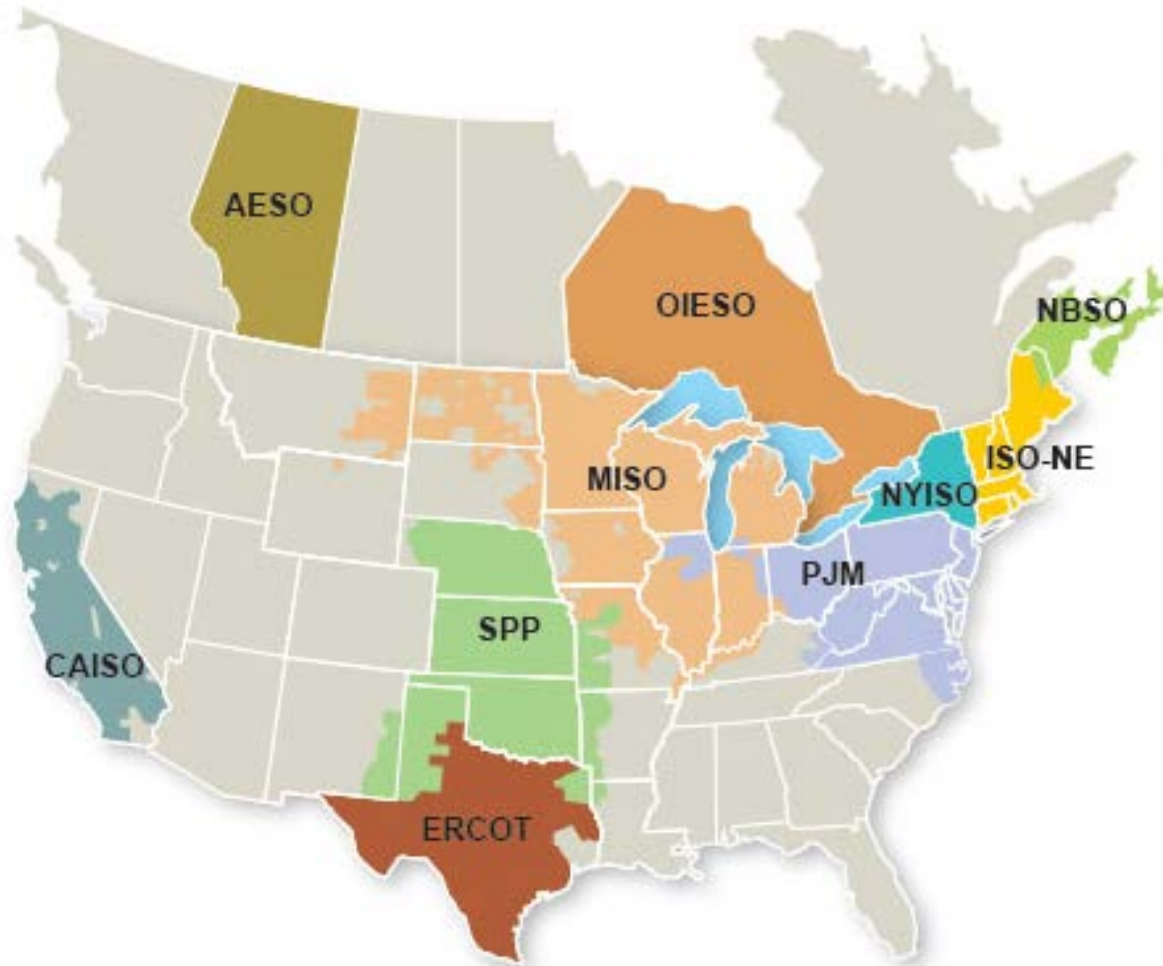


Management of Transmission Congestion



Map created by BPA GIS, 9/14/2012

RTO/ISO Markets



Northwest Objectives are to Access RTO/ISO Benefits without the Risks

- Coordinate operations while retaining local control and responsibility at the Balancing Authority level
- Share critical transmission system information while retaining individual transmission provider duties
- Capture diversity benefits through improved regional forecasting and intra-hour redispatch of units
- Enhance reliability through wide-area visibility
- Focus Market Operator on low-cost, high-value, straightforward functions while minimizing regulatory changes

Questions

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NWPP MC Public Meeting May 8th

SeaTac Conference Center

1-4p