



Regional Integration: EIM and ISO Expansion

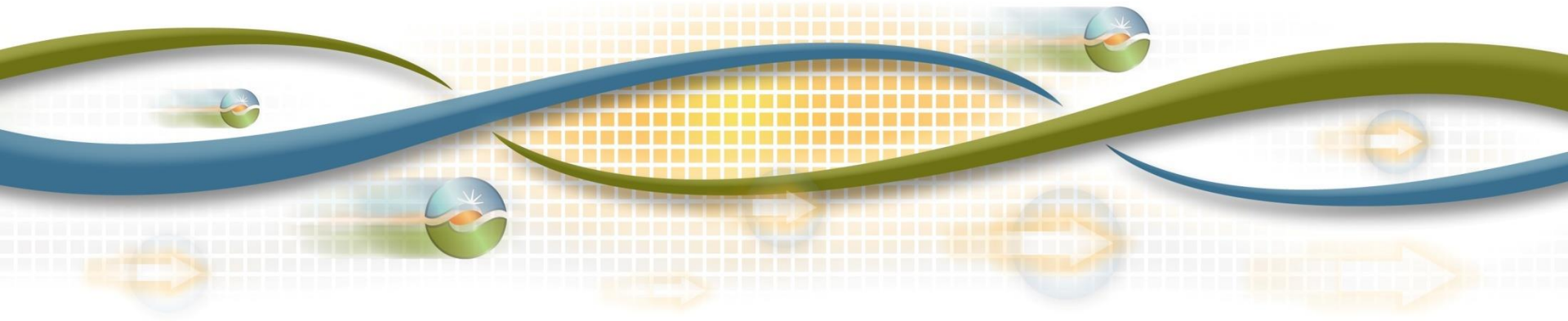
Stacey Crowley

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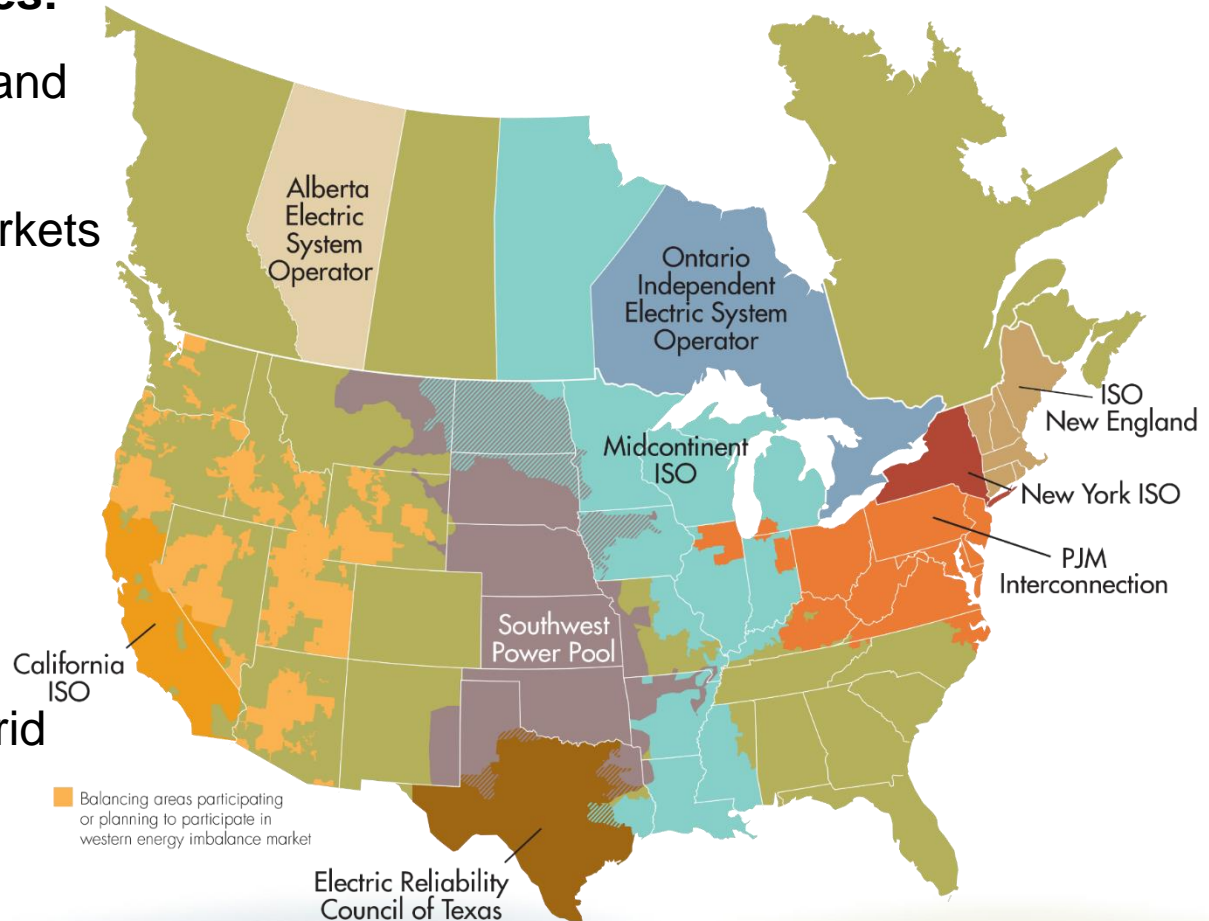
August 29, 2016



Two-thirds of the United States is served by independent system operators (ISO/RTOs)

ISOs provide these services:

- Operate the grid reliably and effectively
- Operate efficient spot markets for energy and reserves
- Provides fair and open transmission access and scheduling
- Manage new generation interconnections
- Plan and identify future grid infrastructure needs



California ISO

- Nonprofit public benefit corporation
- Part of Western Electricity Coordinating Council: 14 states, British Columbia, Alberta and parts of Mexico
- 71,000 MW of power plant capacity
- 50,270 MW record peak demand (July 24, 2006)
- 26,014 circuit-miles of transmission lines
- ISO is governed by the Federal Energy Regulatory Commission, which has jurisdiction over transmission lines that cross state borders.



The ISO Board approved nominations of the EIM Governing Body in June 2016

- The EIM Governing Body is seated and will hold its first public meeting on August 30.
- The EIM Charter establishes the mission of the Governing Body to “to promote, protect and expand the success of the EIM for the benefit of its participants as a whole, ... “

Valerie
Fong



Doug
Howe



Carl
Linville



John
Prescott



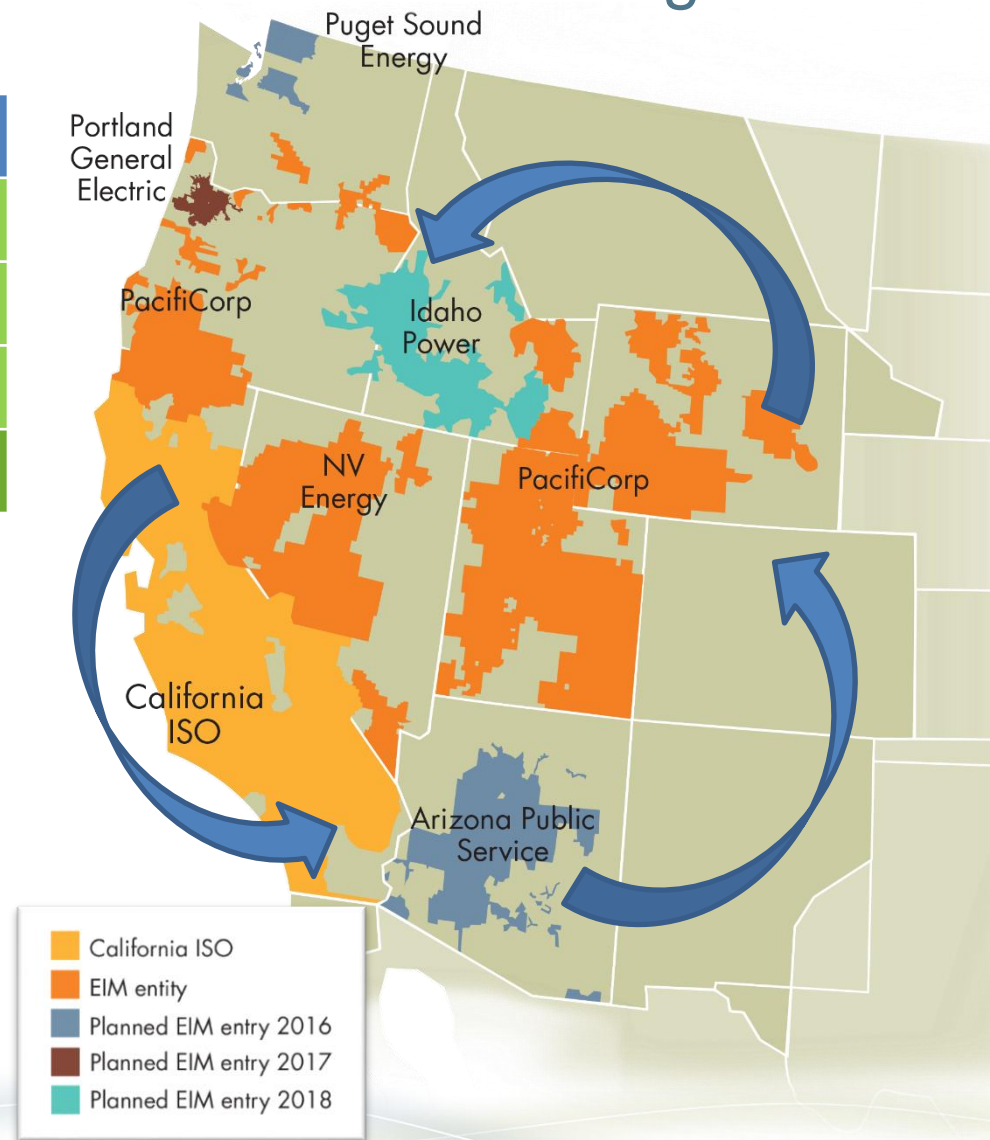
Kristine
Schmidt



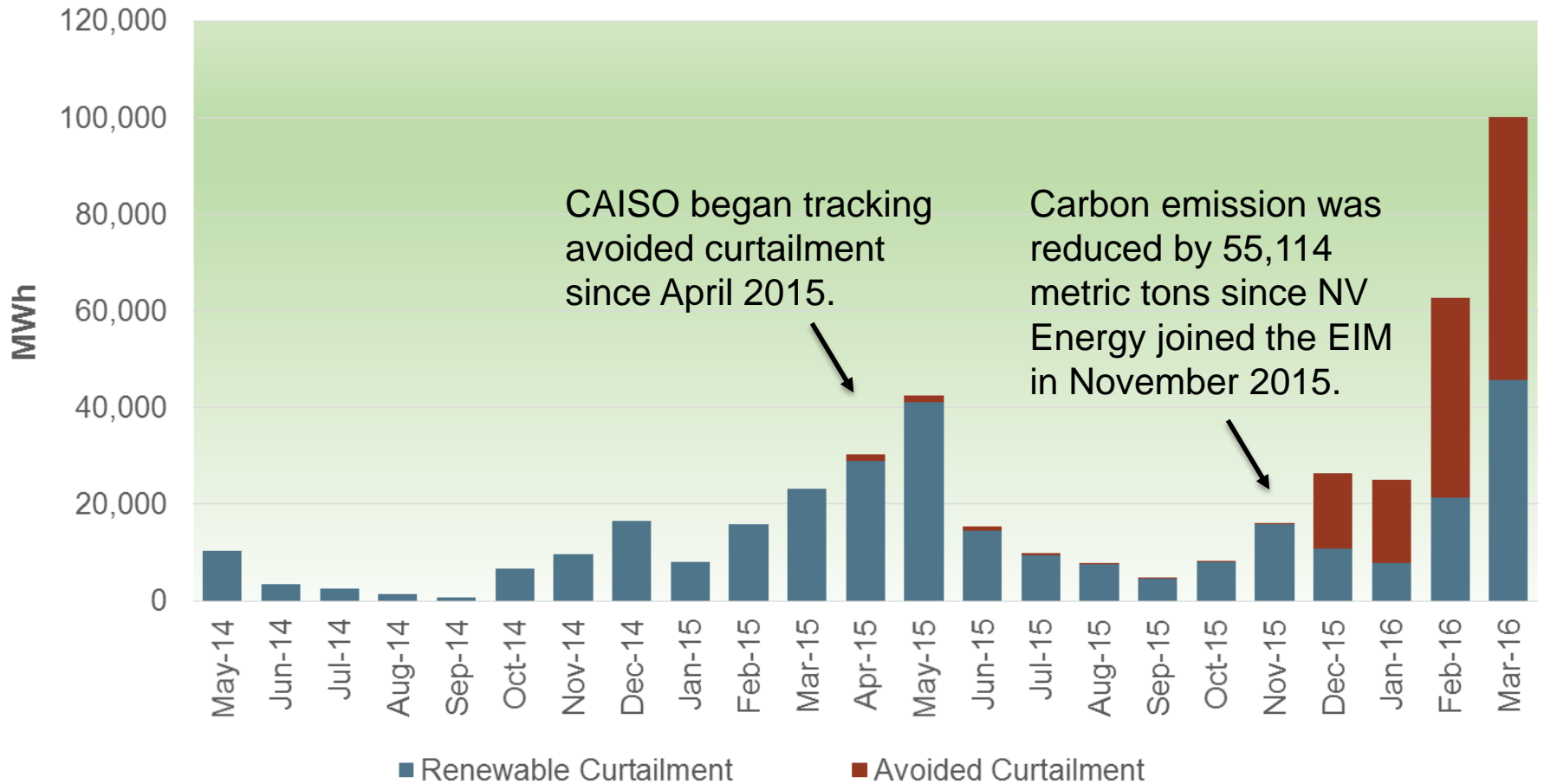
Energy imbalance market (EIM) is an easily-scalable extension of the real-time market to broader region

	Q2 2016 (\$M)	TOTAL (\$M)
ISO	7.89M	28.14M
PacifiCorp	10.51M	52.31M
NV Energy	5.20M	7.74M
Total	23.60M	88.19M

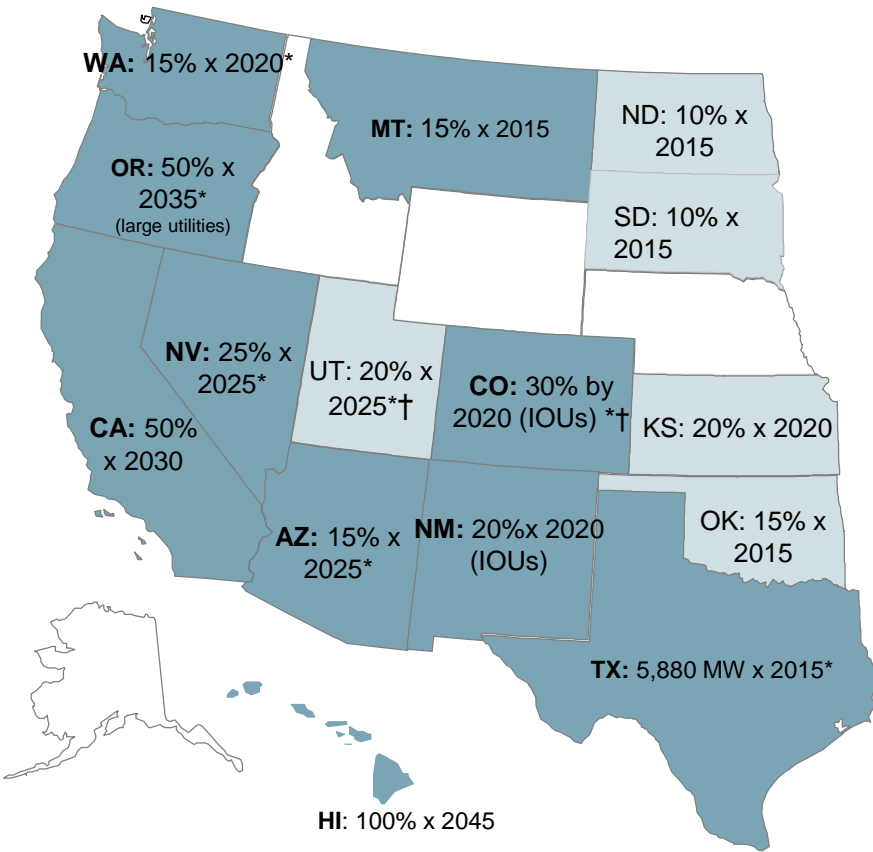
- Reduced renewable energy curtailment
- Displaced greenhouse gas emitting resources
- Reduced flexible ramping requirements across footprint



Wind/Solar curtailment and avoided curtailment due to EIM.



A regional ISO can transform the electricity sector to a low-carbon energy delivery system.



www.dsireusa.org / October 2015

- Renewable portfolio standard
- Renewable portfolio goal
- *** Extra credit for solar or customer-sited renewables
- †** Includes non-renewable alternative resources

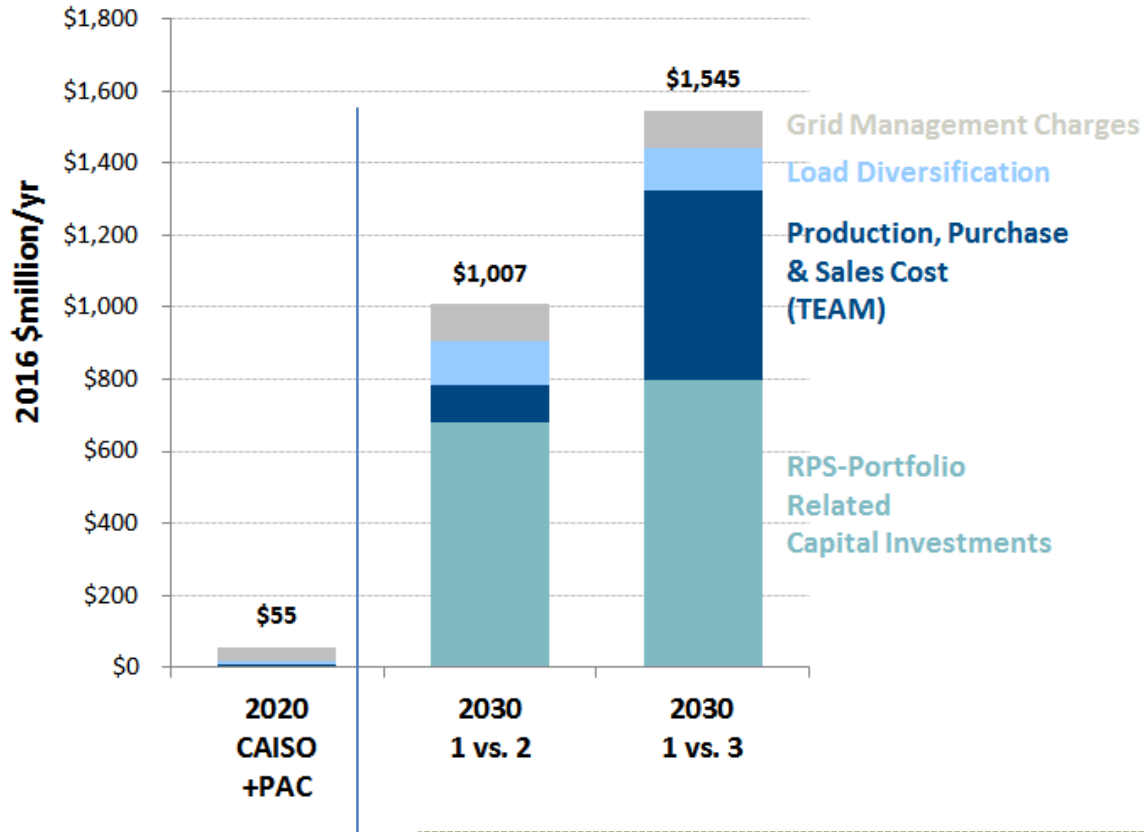
Regional market integration can:

- Reduce customer costs
- Enhance coordination and reliability
- Facilitate renewable resource integration
- Reduce emissions
- Enhance regional system planning

Successful market integration requires:

- Change in California state statute to amend governance
- Approval by PacifiCorp state regulatory bodies and the FERC
- Approval by FERC on changes to PacifiCorp and ISO tariffs

Annual benefits to California ratepayers from expanded regional market



- California ratepayer impact analysis of an expanded regional market shows estimated savings:
 - **\$55 million/year in 2020** (0.1% of retail rates) based on limited scope of CAISO-PAC region.
 - Would be \$258 million/year for expanded regional footprint (WECC without PMAs)
 - **\$1 billion to \$1.5 billion/year in 2030** (2–3% of retail rates) depending on renewable procurement to meet 50% RPS

Overall benefits likely larger, consistent with findings of other studies

- Estimates based on conservative assumptions
- Value of additional regional market benefits was not quantified

Preserving state authority is key principle driving proposed regional governance design.

- CEC has solicited comments on governance issues associated with a regional market:
http://www.energy.ca.gov/sb350/regional_grid/documents/index.html
- Current proposal would transition to new ISO Board nominated and selected by regional representatives
- Western States Committee - authority over certain aspects of transmission cost allocation and regional resource adequacy structure, approve slate of Board members
- State and sector representatives further develop details of governance

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ISO webpage on the regional energy market

<http://www.caiso.com/informed/Pages/RegionalEnergyMarket/BenefitsofaRegionalEnergyMarket.aspx>

Send questions to:

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THANK YOU