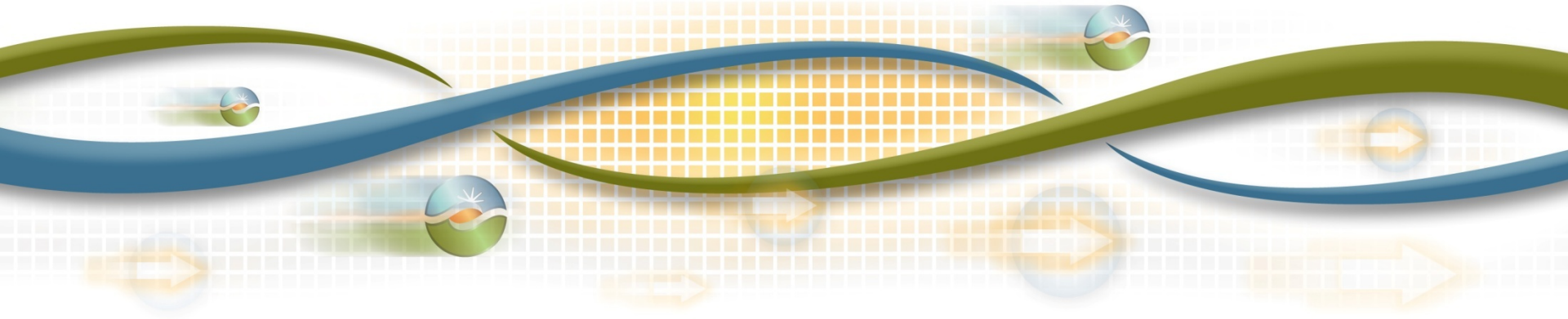




California ISO

Briefing on Energy Imbalance Market

EIM Transitional Committee Meeting
General Session
October 21, 2015



Briefing on Energy Imbalance Market (EIM)

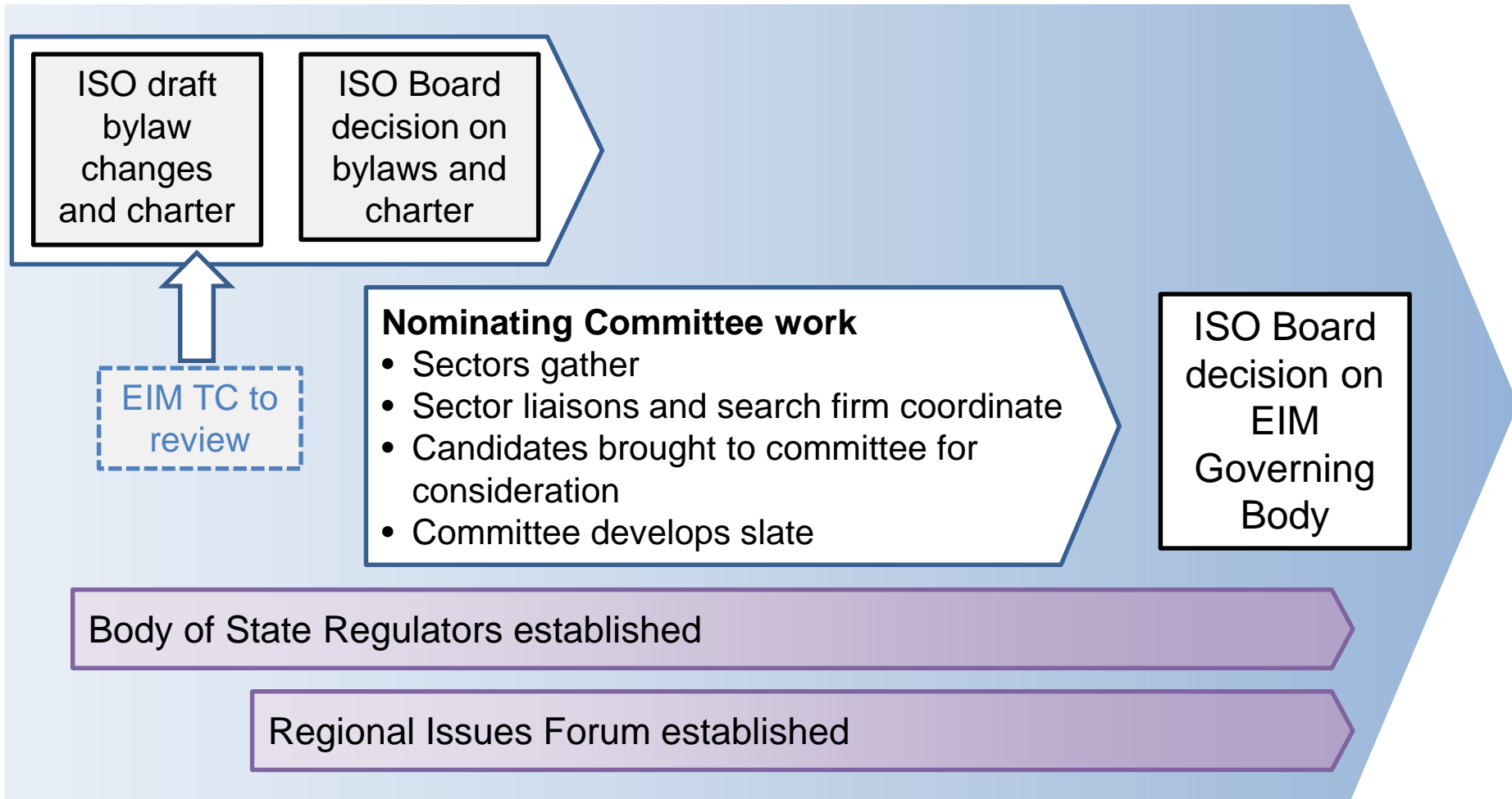
Agenda

- EIM governance implementation
- EIM operations and market performance
- EIM regulatory update
- Status of NV Energy launch
- Status of Puget Sound Energy and Arizona Public Service implementation
- Other news on EIM

Stacey Crowley, Director, Regional Affairs

EIM GOVERNANCE IMPLEMENTATION

Implementation of EIM governance has begun with the goal of seating the governing body in Q2 2016.



Mark Rothleder, VP Market Quality and Renewable Integration

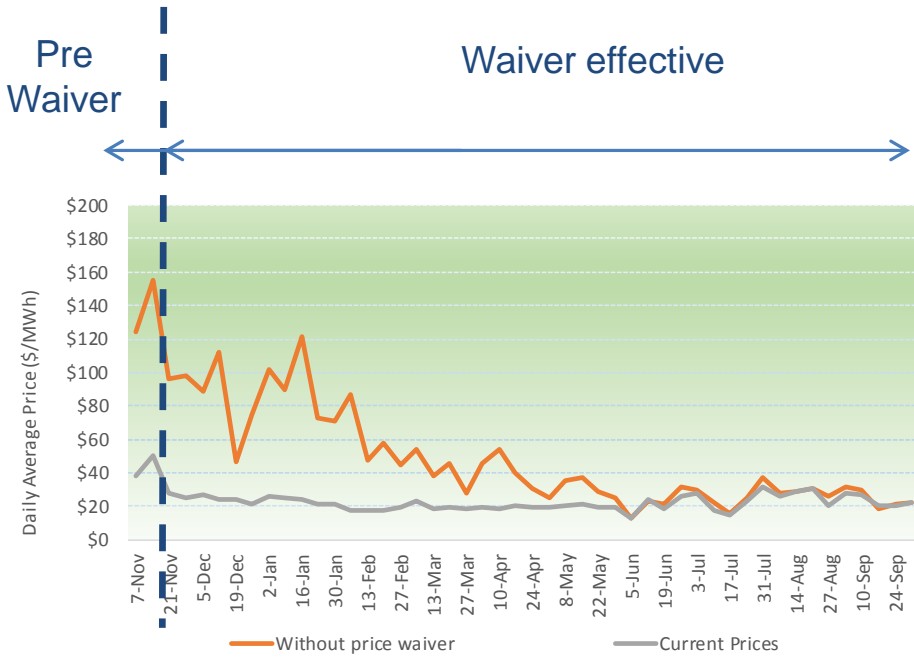
EIM OPERATIONS UPDATE

EIM Operations Update

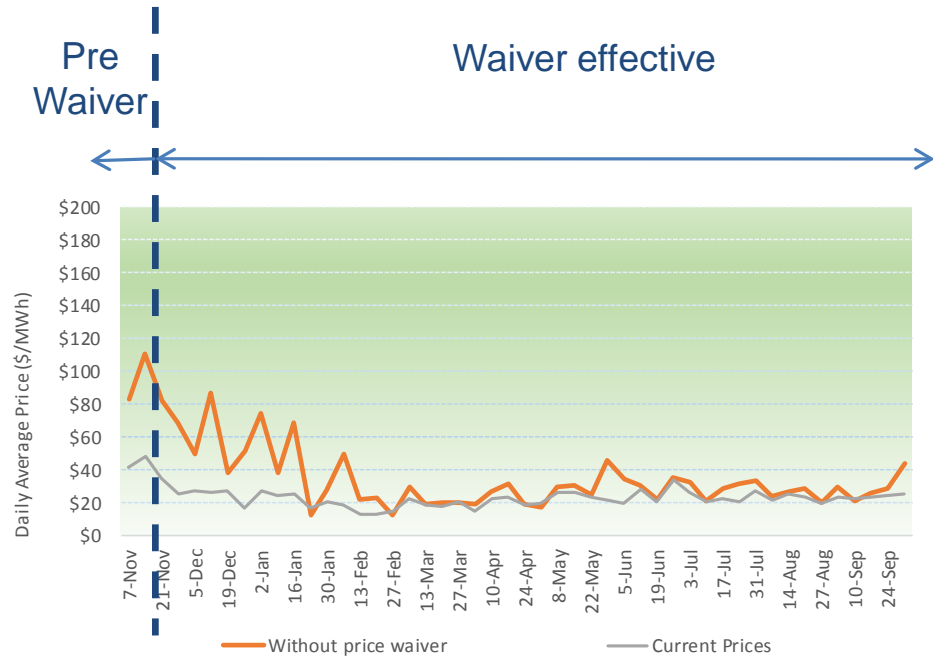
- Benefits assessment for 3rd quarter 2015 will be issued by October 30.
 - First year benefits expected to exceed \$30 million
- Transfers:
 - PACE to PACW transfer unavailable in September and October due to maintenance work
 - COI Dynamic Transfer Capability increased
- Frequency of infeasibilities overall below 1%
 - PACW infeasibilities increased in September due to transfer constraints
- EIM supporting transfer data added to monthly performance report

15-minute prices in PACW affected by waiver in September due unavailability of transfer from PACE to PACW

15-minute PACE Aggregate Price

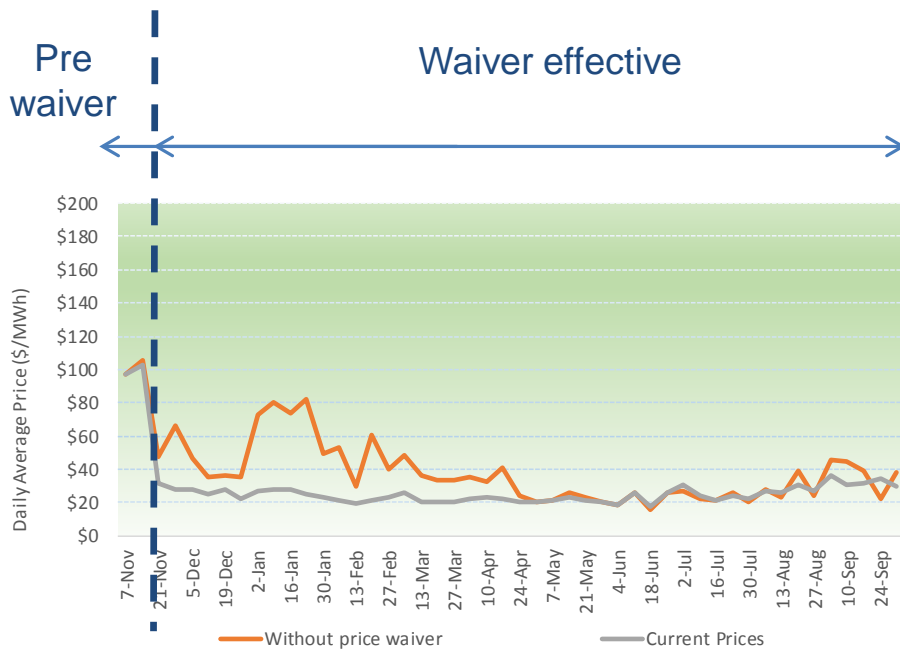


15-minute PACW Aggregate Price

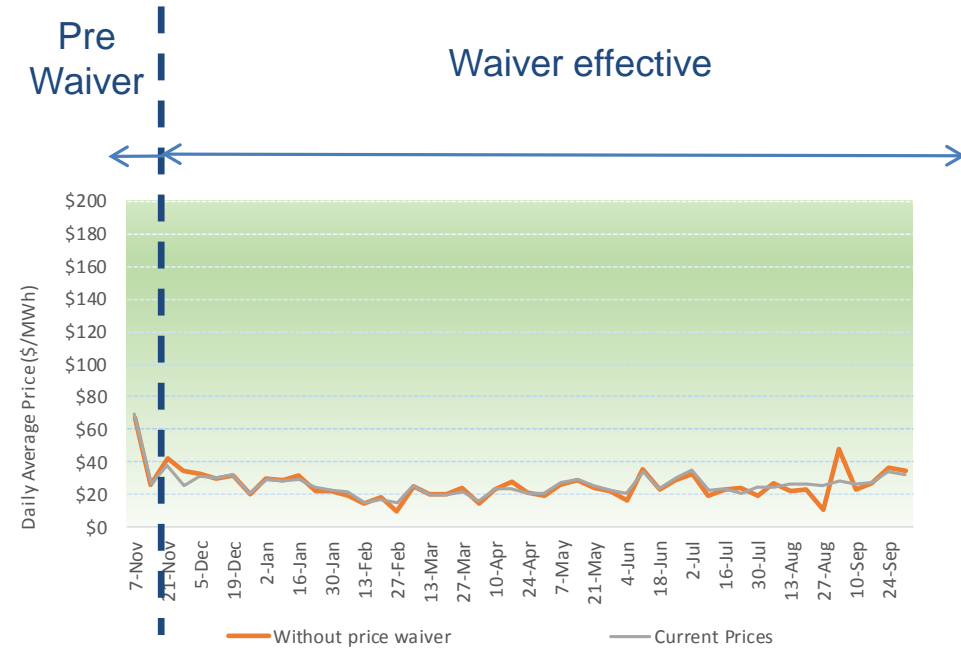


5-minute pricing continues to perform well

5-minute PACE Aggregate Price

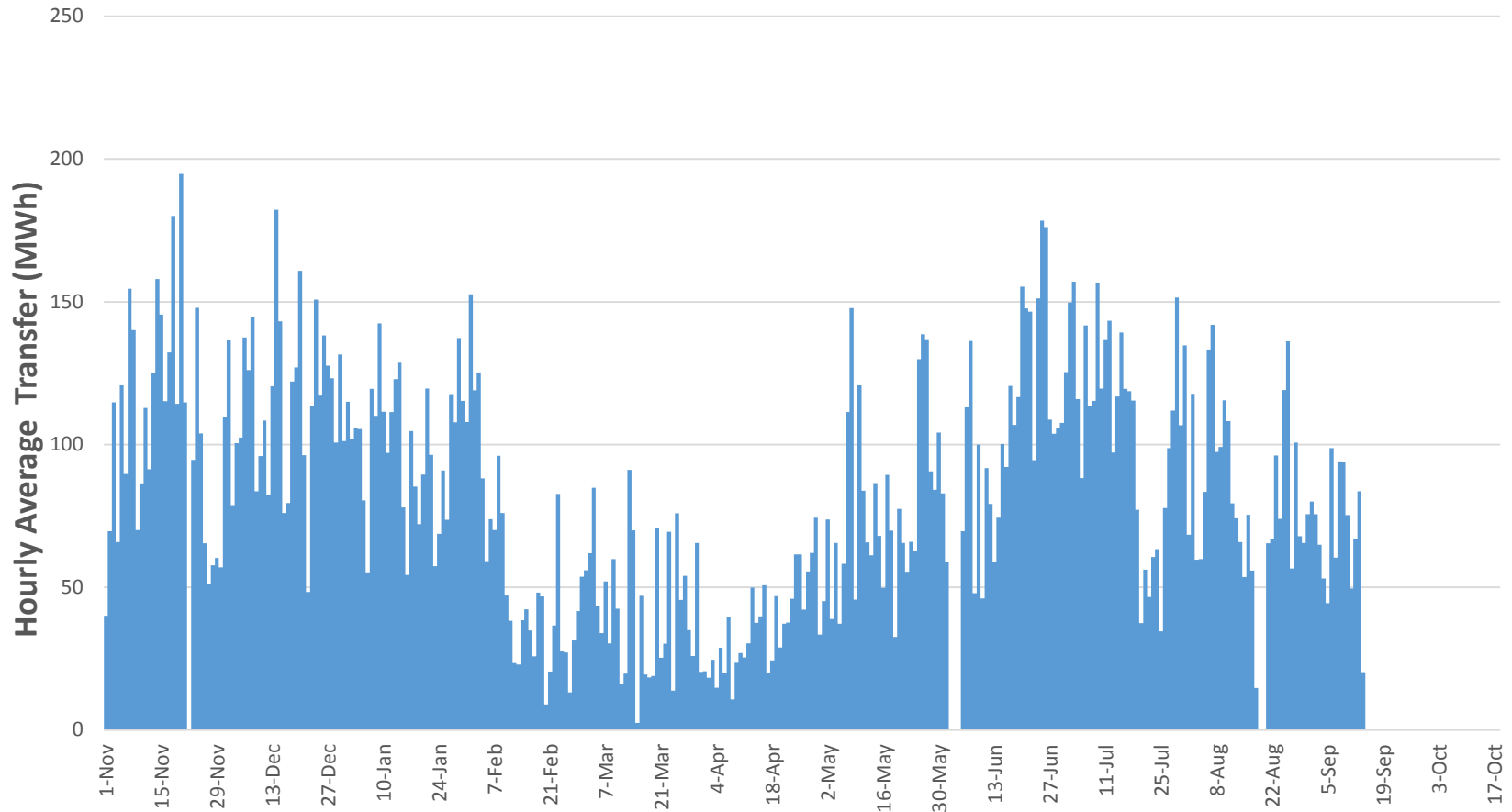


5-minute PACW Aggregate Price



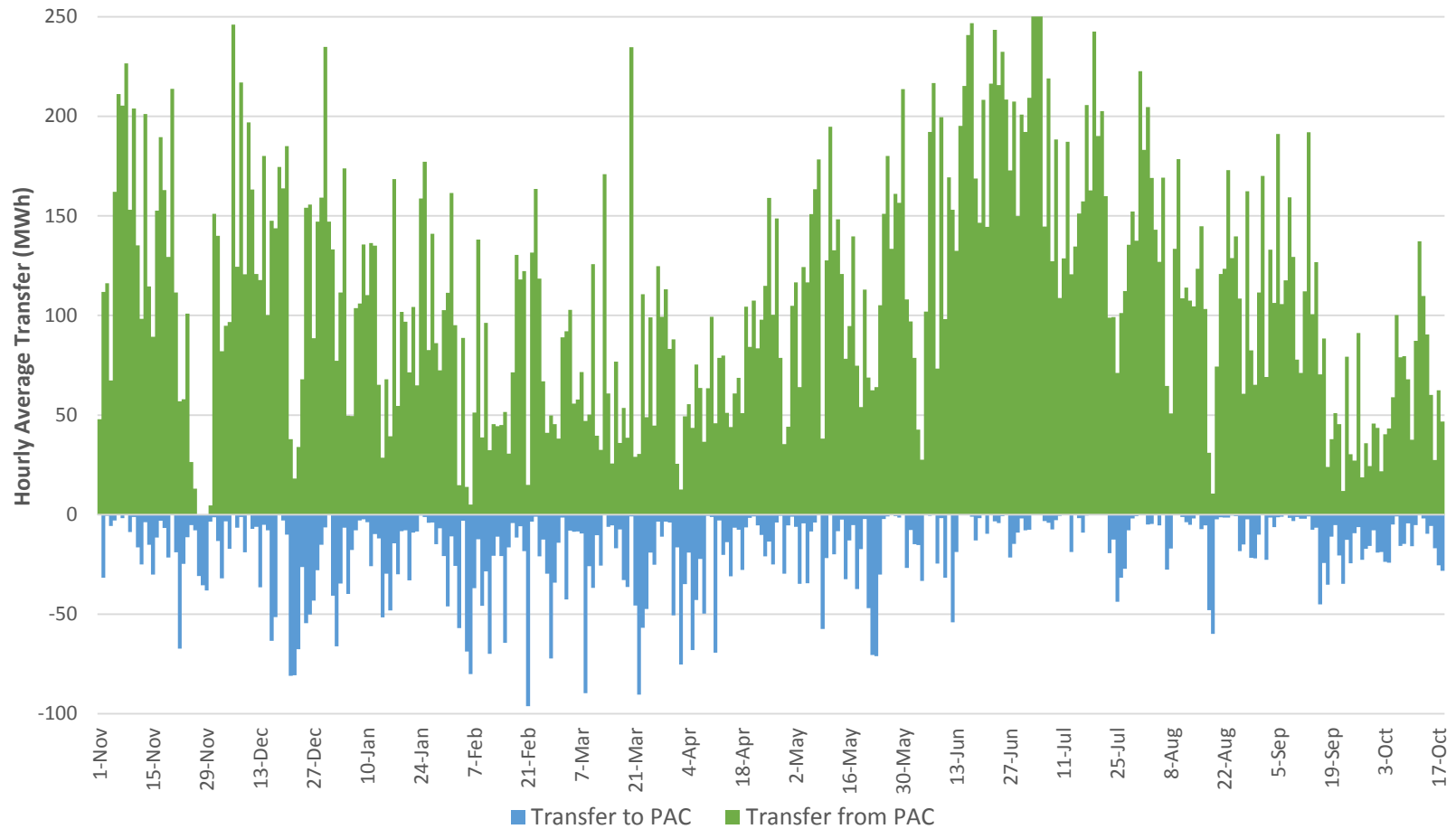
PACE to PACW transfer unavailable part of September and October due to maintenance work

EIM transfers PACE to PACW



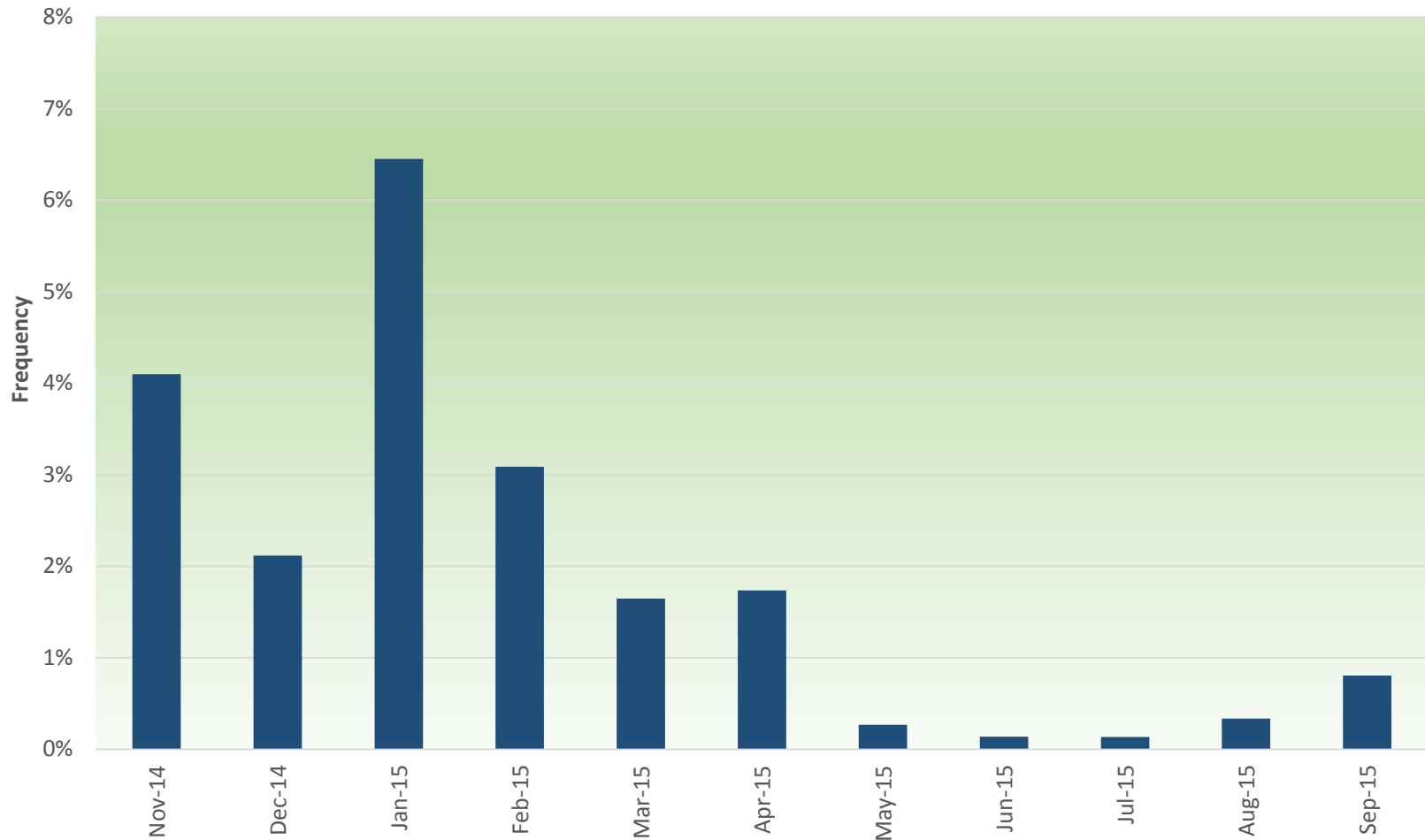
EIM operations update

EIM transfers to and from PAC



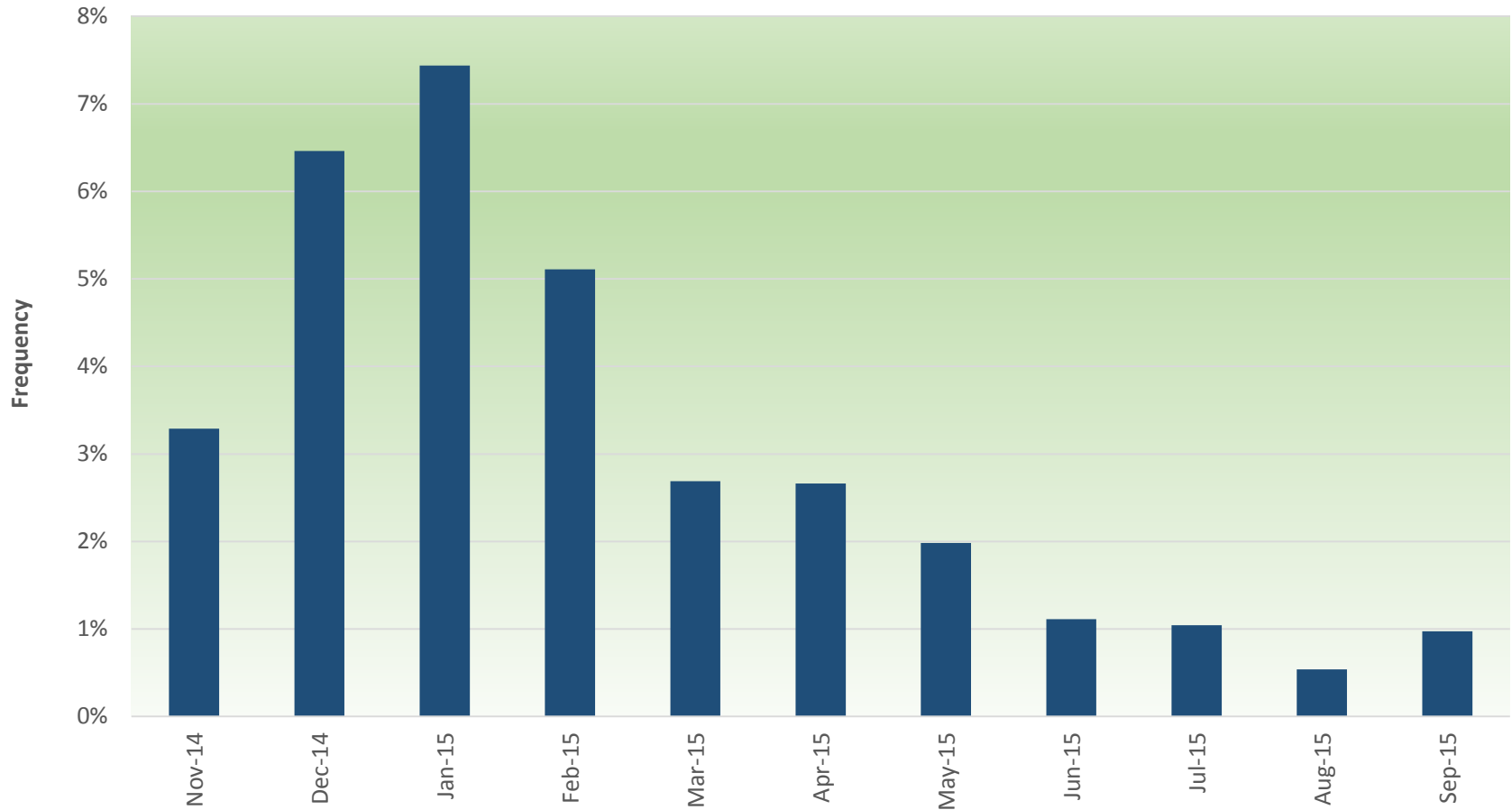
EIM operations update

15 Min FMM infeasibilities



EIM operations update

5-Min FMM infeasibilities



Transfer into ISO by supporting resource type

Month	Coal (%)	Gas (%)	Non-Emitting (%)	Total
14-Nov	3.66%	11.11%	85.23%	100%
14-Dec	24.18%	10.78%	65.04%	100%
15-Jan	0.06%	6.04%	93.90%	100%
15-Feb	0.32%	88.89%	10.79%	100%
15-Mar	0.46%	99.54%	0.00%	100%
15-Apr	0.13%	65.48%	34.39%	100%
15-May	0.00%	84.37%	15.63%	100%
15-Jun	0.00%	72.95%	27.05%	100%
15-Jul	0.00%	65.16%	34.84%	100%
15-Aug	0.02%	86.48%	13.50%	100%

http://www.caiso.com/Documents/MarketPerformanceReport_August_2015.pdf.

Note: In the first two months of EIM operations (November and December 2014), EIM startup issues related to processing GHG bid adder resulted in the dispatch of coal generation to support transfers into California. Once GHG bid adders were properly accounted for, beginning in January 2015, almost all of the EIM dispatches to support transfers into the ISO were from resources other than coal, as documented in the above table.

John Anders, Lead Counsel

EIM REGULATORY UPDATE

There are several pending ISO matters that require FERC action prior to moving forward.

Matter	Status	Required for NV Energy implementation?
ER15-1919-002	EIM year 1 enhancements to be implemented on October 27 pending FERC action by October 21	yes
ER15-861-004	EIM readiness criteria pending FERC action by October 28	yes
ER15-861-005	EIM readiness certification pending FERC action is not mandated	essential
ER15-2565-000	EIM transition period pricing proposal pending FERC action by October 28	desired
ER15-2272-000	Inclusion of EIM transfer constraints in market power mitigation pending FERC action is not mandated	yes

The EIM available balancing capacity proposal is pending FERC action— not required for NV Energy implementation

Date	Activity
October 20	ISO answered comments and protests from stakeholders and questions from FERC staff
???	<p data-bbox="432 586 1798 708">Timing of FERC action is unknown but almost certainly would not occur prior to November 1</p> <ul data-bbox="432 753 1823 1268" style="list-style-type: none"><li data-bbox="432 753 1566 875">• waiver remains in effect with respect to the PacifiCorp balancing authority areas<li data-bbox="432 921 1823 1042">• price discovery mechanism would apply to NV Energy if the transitional pricing proposal is accepted<li data-bbox="432 1088 1731 1268">• NV Energy explained that the available balancing capacity proposal and the transitional pricing proposal are not required for implementation

Management will present the year one enhancements, phase 2, to the ISO Board on November 4-5

- Modify the allocation of congestion rents resulting from EIM transfers between balancing authority areas
- Modify the market power mitigation process to always include EIM transfer limits
- Specify how EIM entities include imports and exports in their base schedules
- Allow the ISO to provide outage information on behalf of an EIM entity to the regional reliability coordinator

Petar Ristanovic, VP Technology

NV ENERGY LAUNCH UPDATE

NV Energy is set to go to financially binding EIM operations on November 1 pending FERC action on readiness.

- NV Energy began parallel operations on September 1 following market simulation
- ISO and NVE confirmed completion of EIM readiness criteria with no exceptions and certified with FERC on October 1
- EIM Year 1 Enhancements phase 1 will be implemented on October 27 pending FERC approval
- Activation on November 1 is pending FERC approval of the readiness criteria and certification
- ISO and NVE defined a rigorous support plan to monitor and quickly respond to conditions

NV Energy and the ISO are ready to monitor market results.

- The ISO published a market quality report on October 1
- Pricing performance improvement continues and ISO continues to provide documentation to FERC
- Parallel operations with NV Energy will continue until October 31 to ensure systems are stable in advance of the transactions becoming financially binding on November 1
- The available balancing capacity enhancement will be implemented upon FERC approval

Puget Sound Energy and Arizona Public Service implementations are on track for October 1, 2016.

- Both entities executed EIM Entity Agreements
- EIM Scheduling Coordinator and Participating Resource Agreements are on track to be executed by December 1
- ISO provided 100 level training and CBTs, which will continue through January. A course on Access Provisioning will occur in December
- ISO conducted an operator application overview and tour for APS and PSE operators to assist with operator planning

Puget Sound Energy and Arizona Public Service implementations are on track for October 1, 2016.

- ISO hosted a joint system integration workshop with PSE, APS and their integration vendor, PCI, on September 28-29 to support completing integration design in October
- Network model data validation in progress with both entities and is expected to be complete by November 1
- APS submitted full Master File resource data and PSE submitted sample files, with final versions expected on December 30

Don Fuller, Director, Strategic Initiatives

OTHER NEWS ON EIM

Portland General Electric announces intention to pursue Fall 2107 EIM participation

- Oct 2014 – Oregon Commission directed PGE to provide a cost-benefit analysis of joining a regional EIM
- Sept 2015 - Announced plans to participate in ISO's EIM and withdraw from market initiative led by the Northwest Power Pool Members' Market Assessment and Coordination Committee
- Serves over 849,000 customers in 52 cities and a population of about 1.8 million people
- All time peak, Feb 6, 2014
3,866 Megawatts



Portland General Electric

Idaho Power plans to explore participation in the EIM

- Sept 2015 - Announced plans to withdraw from market initiative led by the Northwest Power Pool Members' Market Assessment and Coordination Committee
- Initiating a cost/benefit study for EIM and expects to make a decision first quarter 2016
- Idaho Power Company serves 516,000 customers within 24,000 square miles in southern Idaho and Eastern Oregon
- All time peak, July 2, 2013
3,407 Megawatts

