

## Questions to WAPA on Imbalance Market

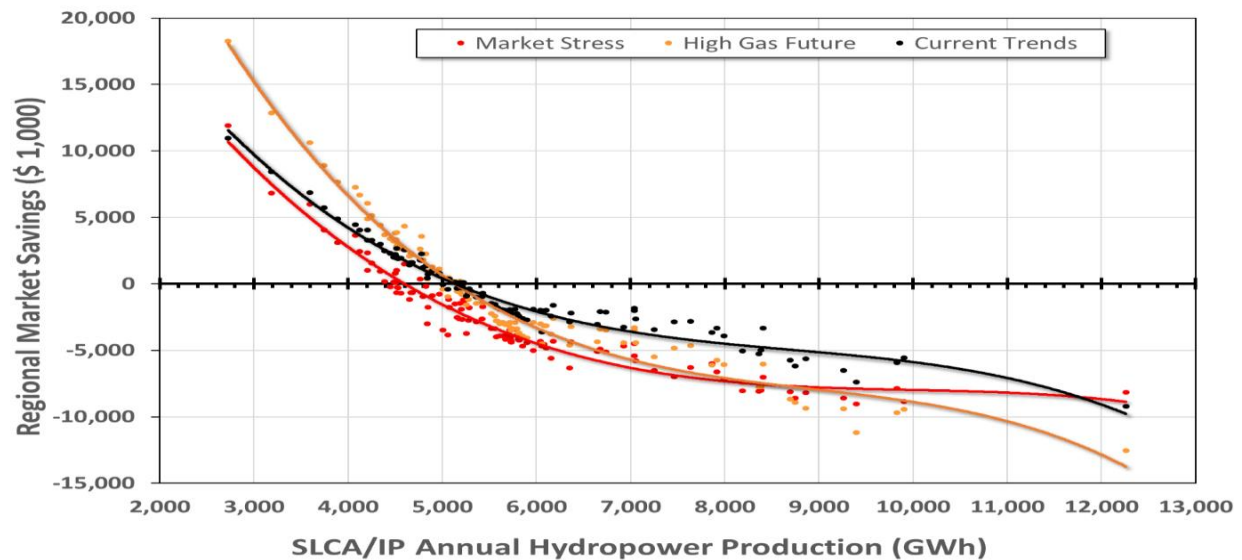
July 19, 2019

1) Why has WAPA-CRSP determined that it is not necessary to conduct an economic study of the costs/benefits of participating in the SPP EIS?

CRSP studied the costs and benefits during the previous Mountain West effort and has leveraged those results to assess a smaller energy imbalance market. In a full day-2 market, production cost benefits are limited or non-existent due to our limited generation flexibility (water releases and environmental constraints) and those benefits can be inferred to the EIM market. There are no expected benefits at this time.

2) From WAPA's previous Mountain West efforts, did WAPA analyze the costs/benefits of participating in the EIS absent full market participation? If so, can WAPA provide the study results to the CRSP customers?

In the previous study, the costs and benefits from Mountain West assumed the original seven entities were participating in the market. With fewer participants, the market benefits for WEIS are assumed to be less. CRSP assumes WEIS benefits would result from reduced or no additional regulation/flex reserve requirements within WACM in the future. CRSP may consider and analyze limited resource offer participation with WEIS in the future if the WEIS is established and WAPA chooses to become a market participant. The largest benefit would be the avoided cost of purchasing additional regulation/flex reserves to all BA members within WACM, including CRSP.



3) Will WAPA participate in EIS governance? If so, what form will that take?

WAPA will participate in EIS governance if the decision is made to become a market participant. This is an important consideration for WAPA as federal power needs are significantly different than those of investor-owned utilities. WAPA is in a unique position and governance needs to respect and acknowledge the responsibility of federal hydropower deliveries.



- Participants of the WEIS will have significant input and authority over its administration, and each participant can participate on the executive committee to approve or reject proposed amendments to the WEIS Tariff
- Establish detailed WEIS Market Protocols to support the filed tariff
- Provide consultation to SPP in determining the administrative rate charged to participants of the WEIS market
- Recommend proposed amendments to the Western Joint Dispatch Agreement (WJDA)

4) Can WAPA please provide copies of all SPP tariffs and agreements that WAPA will be subject to upon joining the EIS?

It is our understanding that you received these documents, if not, please let us know. WAPA will provide tariff and EIS (WJDA) documents, made available by SPP, to any CRSP customer upon request; please keep in mind that all documents are still under development.

5) What seams issues will need to be addressed if WAPA CRSP participates in the SPP EIS and WAPA-DSW participates in the CAISO EIM, or now called the Western EIM?

There will be no impacts for firm electric service schedules from CRSP generation to customers as energy imbalance operations within the WACM BA do not affect these fixed schedules. Today, CRSP has energy imbalance service within the WACM BA and firm electric service schedules are not affected. No seams impacts have been identified so far. Also, timing constraints do not affect FES or WRP schedules. CRSP currently schedules to FES customers within PacifiCorp's PACE BA (PacifiCorp is a member of the Western EIM). These fixed schedules are treated as a resource to CRSP customers within PACE.

6) What investment has WAPA already made in metering and telecommunication facilities for the EIS to assume responsibility for RC services? What incremental investment will need to be made for the SPP EIS to provide EI service?

The CRSP Management Center has worked closely with the Bureau of Reclamation over the last several years to provide improved metering capabilities at all SLCA/IP facilities. This was planned initially for lifecycle replacement and to increase meter-range accuracy. The process was accelerated during the Mountain West discussions. With the exception of Glen Canyon, all plants have been updated with metering capability that meets SPP market protocols. Glen Canyon has upgraded metering on several units and will continue the work as transformers are replaced. SPP WEIS allows existing metering capability to be qualified (grandfathered) until upgraded. It is likely that communications and SCADA programming will be required between WACM BA and SPP. However, no significant capital investment will be needed.

7) What incremental investment in systems will WAPA need to make to participate in the EIS?

No significant capital investment will be needed. Communication points and SCADA programming will be required for market visibility. Some software may be needed, but it would be capitalized.

8) How many additional FTEs will WAPA have to hire to facilitate participation in the EIS?



WAPA has been preparing for market activities over the past few years. WAPA's Organizational Approach to Markets (OAM) initiative is aligning internal resources and departments to allow the organization to enter markets efficiently. Through OAM, WAPA has identified areas where reassigned FTE can cover positions needed to participate in EIS without adding staff.

9) How will WAPA's generation assets be treated in the EIS? Will they be participating resources, subject to dispatch instructions by the EIS? Or, will they be self-scheduled and not subject to dispatch instructions?

CRSP generating resources are obligated for firm electric service contractual obligations. These resources will be scheduled to balance FES in the hour-ahead-bilateral-market, as they are today. Some plants, such as Morrow Point and Blue Mesa, may have some capability to engage in the energy imbalance market in limited-risk situations. The daily water-release requirement will necessitate careful water management and conservative generation offers. Glen Canyon would likely not be offered into an energy imbalance market as it would already be providing moment-to-moment regulation for the WACM BA and has limited flexibility due to substantial environmental restrictions and release criteria. Resource offers are voluntary and CRSP/BOR maintains control of the generators.

10) If WAPA's generation assets will be subject to dispatch instructions by the EIS, what are the potential economic benefits?

WAPA will continue to be responsible, as it is today, for buying firm energy when needed and selling excess energy when required in the bilateral markets. The WEIS is not intended as a substitute for day-ahead and hourly balancing; rather it is a mechanism for market participants to purchase and sell within the hour to balance forecast error on generation and load. It also allows the BA to leverage market assets to support the required energy imbalance service (ancillary service schedule 4 and 9 of the OATT tariff). As discussed in question 9, the possibility of economic benefit to the CRSP project is limited.

11) It appears that transmission providers allow the EIS to use non-firm transmission for EIS transactions. If that is the case, is there foregone revenue from non-firm transmission sales to other parties? Please quantify this impact?

The EIS uses unsold transmission for the scheduling hour. Because the EIS ensures that each market participant is balanced upon entering the hour, this transmission would not have otherwise been sold. Transmission must be acquired to balance each market participant before the start of the hour. Most transmission customers within the BA already have network service agreements and are charged appropriately based on their meter after the fact. They do not receive free use of the transmission system.

12) What changes, if any, will WAPA customers have to make to their business practices for WAPA to submit accurate resource plans (load and generation forecasts) to the EIS?

WACM already provides load and generation forecasts for the BA to the reliability coordinator, so WAPA does not anticipate any impacts to its customers' business practices.

13) Are there areas within the WAPA BA that WAPA already knows will be subject to high locational marginal process due to transmission or other constraints? Please identify them?



Any area with existing congestion would be a likely candidate for high LMP prices, however, this will vary subject to actual transmission line loading and generation dispatch configurations. Transmission congestion charges would only be incurred by entities that receive EI service because of unexpected deviations from generation or load schedules. There would be no congestion charge for tags submitted through the bilateral markets balanced prior to the start of the hour.

14) Who will WAPA charge or credit for generation imbalance costs/revenues? CRSP contractors?

The SPP WEIS will charge or credit any entity that resides within WACM that deviates from the aggregate of their balanced load and resource schedule due to forecast error. The CRSP project will receive a charge/credit for generation imbalance as it does today. SPP will charge or credit any entity that has offered a unit into the energy imbalance market if their generation is dispatched. No single CRSP customer will incur charge/credit for imbalance of CRSP schedules or generation.

15) Who will WAPA charge or credit for load imbalance costs/revenues? Load in the BA?

The SPP WEIS will charge or credit any entity within the BA that deviates from the aggregate of their balanced load and resource schedule due to forecast error. If a BA entity only has load- they would receive a charge or credit on the difference between a fixed schedule and the metered load. No single CRSP customer will incur charge/credit for imbalance of CRSP schedules, generation, or project use load.

16) Has CRSP WAPA evaluated or performed any evaluation or studies to determine whether the Western EIM may offer better benefits or options for its customers compared to SPP EIS?

CRSP anticipates minimal market benefits from either as the purpose of analyzing SPP WEIS is to support BA reliability. WAPA is currently studying the Western EIM for the Sierra Nevada region (SNR). CRSP is currently following this study to determine the costs and benefits for SNR, as both projects are similar in size.

17) A list of participants in the Western EIM and a list of planned participants in the next two to three years has been shared and can be provided upon request. The list appears to include a substantial number of utilities in the western United States. Does this list of participants and prospective participants in the Western EIM, give CRSP region pause as to whether further analysis should be performed to compare the benefits of the Western EIM compared to SPP EIS?

While the list of planned participants in Western EIM is substantial there are currently no other energy imbalance options in the West at this time. CRSP anticipates little benefit in either model. CRSP has a responsibility to support BA solutions and reliability for the benefit of all FES customers. WAPA supports unique situations and solutions for each of its projects. While CRSP is analyzing SPP WEIS the Sierra Nevada region is currently analyzing Western EIM.

18) Is CRSP's decision which imbalance market to join driven by the location of its largest contractor for the CRSP resource? If so, has any analysis been performed to determine the feasibility of participating in two different balancing markets such as SPP EIS and the Western EIM?

WAPA CRSP always strives to balance the interest of all its customers and is committed to preventing any inappropriate cost shifts for them. CRSP has a responsibility to support BA solutions and reliability on the CRSP system to deliver FES to all customers. Participation in two



different markets would require separating CRSP generators and transmission among different BAs which would lead to duplicated costs and create additional financial burdens for all customers. A study performed when CRSP was bifurcated between two BAs led to CRSP moving to a single BA, thus reducing overall costs.

19) Attached is an article that states the CA ISO has become a net exporter of power during certain times of the day. Further, the article goes on to state that Arizona Public Service and NV Energy, Western EIM participants only, are purchasing some of the exported power and wheeling the power to PacifiCorp East and Idaho Power. Do any of these developments potentially offer any benefits for CRSP if it were part of the Western EIM? Do these developments give reason for CRSP to further analyze the potential benefits to joining the Western EIM?

Existing generation and transmission constraints limit CRSP's ability to purchase excess energy from the Western EIM. Increased RPS standards across the Western Interconnection could potentially lead to more surplus/deficit across the West. The WACM BA currently has approximately 4,000 MW of interconnection capacity requests, the majority of which are composed of renewable generation. WAPA believes the potential for increased surplus generation is not limited to CAISO or the Western EIM.

20) In regard to Governance of SPP-EIS versus the Western EIM. It was stated at an earlier meeting that the SPP-EIS stakeholder process was favored over CAISO. However, as you probably are aware, the Western EIM does have a different board than the CAISO? Further, in the past, utilities were unwilling to join the CAISO because of governance issues. However, given the growing list of utilities in the Western EIM and planned participants, it appears the Governance issues, at least related to the Western EIM, are of less concern than full participation in the CAISO. Does the organizational structure of the Western EIM and the growing number of participants in the Western EIM reduce CRSP's concern about governance about the Western EIM?

WAPA acknowledges that the Western EIM has a separate board, however, in the long run day-2 markets are on the horizon. CAISO has yet to end state control of its governance. Competition from a day-2 market with a member-driven board could result from implementing the SPP WEIS.

