

Salt River Project (SRP) Integrated System Plan Technical Working Session: Regional Market Developments

Prepared by Kearns & West

Technical Working Session – Meeting Overview

As part of the Integrated System Plan (ISP), Salt River Project (SRP) is hosting Technical Working Sessions where experts from around the country and SRP explore special topics. This session focused on trends and developments in regional energy markets. The purpose was to gather expert opinions, hear and address stakeholder questions and discuss regional energy markets to better understand implications for the ISP and future planning processes.

Meeting Objectives

- Understand key values and limitations of greater regional market interaction
- Discuss key considerations for SRP’s participation in new regional market initiatives
- Discuss how greater market interaction should be captured in long-term planning processes and identify potential enhancements needed for future ISPs

Topic: Regional Market Developments

Date: March 31, 2023

Time: 9:00-11:30 a.m. MST

Location: Virtual

Of the more than 120 organizations invited from the Large Stakeholder Group and Advisory Group members, 81 stakeholders from 57 organizations attended the Technical Working Session. Please see the appendix for attendance information. The [meeting agenda](#) and [presentation](#) are available at the [Integrated System Plan portal](#).

Welcome and Agenda Overview

Bobby Olsen, Senior Director of Corporate Planning, Environmental Services and Innovation at SRP, welcomed attendees to the webinar and then recognized and thanked the SRP Board and Council observers for their attendance and participation in the ISP. He reviewed the meeting objectives ([slide 5](#)) and agenda ([slide 6](#)), emphasizing the focus on understanding the impacts of regional market interactions and how to capture those in an integrated system planning process.

Olsen noted that for this session SRP brought in multiple experts representing diverse perspectives from research/academia, regional market initiatives, environmental organizations, government and utilities. He said that SRP wants to ensure it is receiving necessary feedback for the ISP. He also introduced Arne Olson, Senior Partner at E3, as moderator for the panel and Q&A.

SRP's Participation in Markets: Today and in the Future

Olsen then introduced Josh Robertson, Director of Energy Market Strategy at SRP, who presented SRP's current and potential future regional market participation. He began by explaining the potential value and benefits of markets ([slide 10](#)), first outlining how markets in the western United States currently function and describing the energy imbalance market (EIM). He then noted the utilities' significant transition toward clean energy and how it represents a fundamental shift in market operations.

Robertson continued by explaining how SRP must consider benefits and risks of participation in expanded Western markets ([slide 11](#)), highlighting the importance of getting the proper structures and rules for governance in place. Although markets will not solve all the challenges faced by utilities, but depending on the eventual market rules they have the potential to help reduce overall system costs. He then described SRP's current participation in markets ([slide 12](#)). In summarizing SRP's priorities for participation in new markets or a regional transmission organization (RTO), Robertson cited four areas – customer benefits, governance, transmission cost allocation, and generation resource sufficiency – with an emphasis on maintaining reliability and low costs for customers ([slide 13](#)). He concluded by describing new developments for regional real-time and day-ahead markets and SRP's participation in the Western Power Pool's (WPP) Western Resource Adequacy Program (WRAP), which is a regional reliability planning program ([slide 14](#)).

Panelist Presentations

Olson first introduced the panelists, highlighting the wide range of perspectives, and then provided background on the history of regional markets. Olson described a 2011 study he led that projected that annual benefits of a Western imbalance market would be between \$140-230M per year, mostly due to reduced fuel combustion and fuel costs. This study helped raise awareness in the West and ultimately led to the formation of the Western Energy Imbalance Market (EIM) in November 2014 through a partnership between the California Independent System Operator (CAISO) and PacifiCorp. CAISO estimates the EIM has provided over \$3.4 billion in savings to its 19 member utilities. He noted that the diverse perspectives of the panelists are important in considering potential creation of a day-ahead market and posed the question: "Should we take the next step and move toward a day-ahead market?"

In their presentations, panelists noted some common themes around regional markets as related to their different perspectives. The geographic diversity of the West and the diversity of resources in different sub-regions emerged as a major theme as did the significant transitions in the power sector. Multiple panelists commented on the importance of governance and common standards as well as the need for different degrees of coordination within markets and market types. Other themes included the potential for integrating renewable resources, the need for transparent and correct price signals and regional transmission planning.

Regional Electricity Markets: Why Do It, What to Expect

David Hurlbut, Senior Analyst at the National Renewable Energy Laboratory (NREL), began by explaining factors driving increased interest in energy markets, including potentially lower costs, more resource options for reliability and more cost-effective integration of wind and solar resources. He described the seven regional wholesale markets in the United States, contrasting them with the Western Electricity Coordinating Council (WECC), most of which is not in an organized wholesale market. Hurlbut then explained how markets can broadly encompass all aspects of grid operations or they can narrowly target specific functions, pointing out that regional cooperation is possible without an RTO. He also addressed how expanded markets are providing more value – most importantly in optimizing dispatch through hourly and sub-hourly markets – and allowing for more price transparency. Hurlbut explained how geographic diversity increases the value of wind and solar and highlights the importance of regional transmission planning. He concluded his remarks by saying that the power sector is changing in ways that make regional coordination and markets more beneficial to customers than ever before, but the fundamentals are different and require new ways of thinking about how utilities interact with their neighbors.

Western Resource Adequacy Program and Other Regional Grid Initiatives

Sarah Edmonds, President and CEO of Northwest Power Pool Corporation, d/b/a The Western Power Pool, described the Western Resource Adequacy Program (WRAP) as a resource adequacy planning and operations compliance program that leverages significant regional diversity to help ensure that participants (including SRP) have adequate resources to meet electric load, especially during challenging supply-demand periods. Edmonds explained that while markets such as the Western EIM, the Enhanced Day-Ahead Market (EDAM) proposed by CAISO, or the Markets+ construct proposed by the Southwest Power Pool include operational tools that help improve reliability in the operations time period (day-ahead to real-time), they are not a replacement for advance resource adequacy planning and coordination, such as WRAP. She described how WRAP provides electric utilities across the West with the ability to take advantage of regional diversity by planning to a collective reliability metric, whereas utilities that plan on their own cannot access regional diversity and the potential savings that come from a collective approach. Edmonds further explained that WRAP addresses the problem of each utility evaluating resource adequacy in the absence of standardized methods for measuring reliability risks and resource contributions. WRAP's common reliability metrics and standardized resource counting rules help to inform resource selection and drive investment savings across the region. Edmonds summarized by explaining that the unique value of WRAP is that it presents a regional program for resource adequacy, leverages diversity over a wide footprint and sends the message that load-serving entities in the West can work together to achieve resource adequacy that delivers enhanced transparency and diversity benefits for customers. WRAP's seasonal forward showing planning framework will be binding as will the

operations program sometime between 2025 and 2028. Edmonds ended by showing a timeline indicating the stages of the transition to a binding WRAP, noting that this pacing gives time for utilities to adjust for new planning environments. Edmonds also acknowledged that the West is actively pursuing market expansion including EDAM and Markets+ and clarified that the intention for WRAP is that it will be able to operate in tandem with markets, but that WRAP’s “interoperability” with markets is highly dependent on market design working in a complementary fashion with WRAP design.

Regional Markets: Environmental Benefits

Kelsie Gomanie, advocate from the Climate & Clean Energy Program at the National Resources Defense Council (NRDC), first shared background on NRDC and the Sustainable FERC (Federal Energy Regulatory Commission) Project, outlining how regional markets have potential benefits in meeting goals related to decarbonization, reliability and affordability. She described how addressing the climate crisis and ensuring the reliability of the power system are the largest benefits, noting that regional markets allow participants to harness resources that produce energy at different times. There are also crucial benefits for centralized transmission planning in an RTO, which allows for more cost-effective transmission projects while accommodating growth. She added that day-ahead markets have more accurate and stable costs and noted that RTOs, as markets with the highest level of regional coordination, create trust in the long-term and allow stakeholders to have a say in the decision-making process. Gomanie concluded by stating that benefits are only maximized when all or most entities in a region participate.

Regionalization in Wholesale Electricity Markets

Tony Clark, Senior Advisor at Wilkinson Barker Knauer, LLP and former Commissioner at FERC, presented on regionalization in wholesale markets, beginning with a description of how utilities look for scale and diversity on the system. As renewable sources come online, the geographical scope increases, and Clark commented on different regional approaches and the complex geography of the West. He stated that a common misconception is that RTOs were designed to build transmission and green energy resources, whereas their actual genesis was in creating prices for energy. In describing challenges, he spoke to the energy transition, construction of non-dispatchable generation resources and conflicts between RTO-formed prices and state energy policies. He pointed to how states in existing RTOs have increasingly enacted policies that undermine or fight market results because, in their opinion, the RTOs are not procuring the generation they want or need. Clark finished his presentation by offering recommendations for decision-makers, calling attention to the importance of discussions around governance, understanding the perspectives of different stakeholders and examining “third ways” to achieve shared goals.

Portfolio Planning Within an Integrated Market

Colton Kennedy, Director of Energy Portfolio Planning for the Omaha Public Power District (OPPD), shared the perspective of an entity currently involved in markets as a Southwest Power Pool Member considering how to make changes in the future. He first provided an overview of the context for OPPD, noting that Nebraska is a 100% public powered state, and expected load growth is 50% in the next 10 years. OPPD has a diverse resource mix with heavy reliance on coal and oil but also a strategic directive to achieve net zero carbon by 2050, which represents a challenge. Kennedy next spoke to regional economic efficiencies and how as the marginal costs of renewable sources decrease, the traditional savings from market participation diminish. He cited benefits of market participation such as reductions in net production costs, access to renewable sources, more efficient market signals and the ability to buy power on the market to reduce the financial impact of outages. On challenges, he cited areas of uncertainty and how market incentives may not capture all needs for reliability or externalities (e.g., cost of carbon). Kennedy concluded by noting that while there are advantages to market participation, utilities have to consider challenges and limitations in an evolving system.

Q&A

Participants in the facilitated discussion included external panelists David Hurlbut, Sarah Edmonds, Kelsie Gomanie, Tony Clark and Colton Kennedy. Arne Olson from E3 served as the moderator. Discussion topics included the benefits and challenges of operating regional markets, resource adequacy, environmental perspectives on RTOs, interactions between systems, and governance.

The panelists first addressed the gap between the theoretical benefits of markets and the practical challenges of real-life implementation. They began by describing how an assumption for emerging RTOs was that most of the time gas would set prices as a marginal resource, a mechanism that has shifted. This has created issues around reconciling locational marginal pricing with contract prices and having a complete price signal to drive future investment. Bilateral agreements can help with cost recovery, but some price transparency is lost. Also addressed was the ability to lean on the pool – such as in the example of WRAP – for tapping resources and how security-constrained economic dispatch ensures efficient dispatch of generating resources. The key for developers is access to the grid to be able to offset costs.

Panelists described the need to balance local resource sufficiency with the market. For example, geospatial diversity of resources does not always align with price signals. Local operational issues can result from lower-than-expected generation from renewables and transmission outages, challenges that are less apparent at a bulk system level but have local system impacts. The diverse resource pool in WRAP has common counting rules across the system and efforts around quality control are in place, such as deliverability requirements for firm transmission. Another approach has been creating two sub-regions in the West to address limited transmission capacity.

On the question of resource adequacy and benefits related to real-time dispatch, a description was provided as to how WRAP matches up entities who are in deficit with those who are in surplus relative to their forward showing requirement and then issues directions for executing a transaction. This use of traditional trading approaches was chosen in lieu of waiting for creation of one integrated RTO marketplace. There are now two potential market footprints, which are still aligned with the diverse WRAP footprint, even if some economic efficiencies are lost. One panelist noted that transmission today comes from economic and reliability-driven processes. This creates a challenge because scenarios can't capture all operational conditions.

Regarding environmental perspectives, broad support exists for regional markets and RTOs along with some skepticism about the full impacts of regionalization. A misconception exists that some are advocating for an RTO that would supersede state or federal control, but an RTO would not have authority over resource planning, siting, renewable energy and emissions reduction policies, or retail rates. It was noted that RTOs are an important tool but not the only one, given their limitations. Distributed energy resources also have a role in ensuring reliability, affordability and decarbonization, and an RTO can manage the variation in solar and wind output to ensure reliability.

Another question focused on the different methods of resource accreditation between WRAP and the California market (overseen by the California Public Utilities Commission and the California Independent System Operator [CAISO]) and how those systems would interact. It was described that early conversations have begun and are ongoing around resource adequacy. Although systems may share common goals and challenges, there will be region-specific differences in examining resource adequacy (e.g., California's slice-of-day vs. WRAP's capacity critical hours approach). Some import/export assumptions may prove problematic if a mismatch occurs. WRAP is sending new signals in a seven-months-ahead timeframe for procurement and securing resources and is optimistic about calibrating assumptions.

Conversation then shifted to consider regional transmission planning. Panelists described regional planning authority in an RTO as something that could help, but that creates difficult cost allocation questions. One possibility would be interregional transmission from resource-rich areas (e.g., high wind areas in Wyoming) to other locations, but challenges exist with interstate issues of right of way, siting and market supply. An RTO or similar authority could help through more centralized transmission planning but does not solve all problems due to institutional limitations, including a focus and priority on local reliability.

On the issue of governance, panelists discussed achieving effective management and operation of power systems, saying that governance drives everything else. It was noted that vertically integrated utilities in unified regions have had success. Multiple speakers commented on the diversity of the West, the need for independence and how transparency and meaningful

stakeholder participation are important aspects of getting RTO governance right and ensuring reliability. Risks in not establishing good governance include a lack of transmission being built, gridlock, and sub-regions being pitted against each other.

A final question was whether the panelists see any movement toward dismantling regional markets or transitioning to a different structure. It was explained that since 2006, regional markets have remained largely the same with some minor adjustments by a few entities. The situation in Montana was cited as a cautionary example of the difficulties of unbundling and a reason why tweaking the current institutions and models may be preferred. An entity could choose to leave an RTO, but given exit fees, the commitment to build out transmission and the jurisdictional relationship with the federal government, it is very difficult to do so.

Closing Remarks

Angie Bond-Simpson, Director of Integrated System Planning & Support at SRP, thanked the panelists for sharing their unique perspectives and thanked the moderator. She commented on thinking of markets as a connected system rather than as silos and how the integrated system planning team hopes to draw on the perspectives shared today in evolving SRP's ISP. Bond-Simpson stated the presentation slides and summary would be posted at the ISP web portal. She concluded the session by noting that the next and final Technical Working Session will focus on the evolution of time-of-day pricing programs.

Appendix

Meeting Attendance

Large Stakeholder Group and Advisory Group Organizations (groups represented on 3/31/2023 are shown in bold)

AARP

Advanced Energy Economy

AEPCO

AES Clean Energy

Air Products

American Lung Association

AMPUA

AMWUA

Apache County

Apache County Economic Development

Apex Clean Energy

Apple Inc.

AriSEIA

Arizona Cattle Growers Association

Arizona Center for Law in the Public Interest

Arizona Chamber of Commerce

Arizona Commerce Authority

Arizona Competitive Power Alliance

Arizona Cotton Growers Association

Arizona Energy Policy Group

Arizona Farm Bureau

Arizona Hispanic Chamber of Commerce

Arizona Lodging and Tourism Association

Arizona Power Authority

Arizona Public Service

Arizona Residential Utility Customer Office

Arizona Solar Deployment Alliance

Arizona Solar Energy Industries Association/Veregy

Arizona State Land Department

Arizona State University

Avangrid Renewables

Atlas Renewable Power

AzCPA

AZ Thrives

AZ PIRG

AZ Strategies

AZ Sustainability Alliance

Balanced Rock Power

Basha's

Beatitudes Campus

Boeing

Building Owners and Managers Association (BOMA)

Bureau of Land Management

Calpine

Candela Renewables

Casa Grande

Chicanos Por La Causa

Christian Care Inc., Mesa District

City of Apache Junction

City of Chandler

City of Mesa

City of Phoenix

City of Tempe

CMC Steel, AZ

CommonSpirit Health

ConnectGen, LLC

Coolidge

Copper State Consulting Group

Cushman & Wakefield

Cyrus One

Digital Realty

DMB

East Valley Chamber of Commerce

East Valley Partnership

Enel Green Power North America, Inc.

Energy Exemplar, LLC

Environmental Defense Fund

EPRI

Facebook
Forest Service U.S. Department of
Agriculture
Fort McDowell Yavapai Nation
Freeport-McMoRan Copper and Gold
Gamage & Burnham Attorneys at Law
General Electric
Gila Bend
Gilbert
Glendale
Google
Greater Phoenix Economic Council
Greater Phoenix Leadership
Greenlots
Home Builders Association of Central
Arizona
Hospice of the Valley
Innergex
Intel
Interwest Energy Alliance
Invenergy
JKL Consulting Services, LLC
Kroger Co. (Ralphs and Food4Less)
Kyl Center for Water Policy
Local First Arizona
Mercy Gilbert Medical Center/Dignity
Health
Mesa Community Action Network
Mesa Gateway Airport
Mesa Public Schools
Microchip Technology
Mitsubishi Hitachi Power Systems
Americas, Inc.
Navajo County
New Leaf/Mesa-CAN
New Life Christian Center, Coolidge
NextEra Energy Resources
Northern Arizona University
NREL
Onward Energy
Origis Energy
Orsted Onshore North America

PAC Worldwide
Page
Pattern
Phoenix Chamber of Commerce
Pinal County
Profile Precision Extrusions
Queen Creek Chamber of Commerce
Queen Creek Unified School District
Roosevelt Water Conservation District
Salt River Pima-Maricopa Indian
Community
SRP Customer Utility Panel
Scottsdale
Seguro Energy
Sierra Club
Southwest Energy Efficiency Project
Southwestern Power Group
St. Johns
St. Paul Church, Randolph
Starwood Energy Group Global, Inc.
Sustainable Energy Power Alliance
The Nature Conservancy (Arizona
Thrives)
Tierra Strategy
Tormoen Hickey, LLC
Town of Florence
Town of Springerville
Tucson Electric Power
United Dairymen of Arizona
University of Arizona
Valle Del Sol Strategic Initiatives: The
Real Arizona Coalition
Valley Partnership
Vote Solar
Walmart
Wärtsilä North America, Inc.
West Marc
Western Grid Group
Western Resource Advocates
Wildfire

Other Organizations in Attendance

Arizona Municipal Power
B3 Strategies
BGA
BrightNight Power
Capital Power
CEBA
Ceres
Clean Energy Buyers Alliance
CP Energy Marketing
IEDA
Mi Familia Vota
Murphy for Phoenix
R Street Institute
Solar United Neighbors
Stellar Renewable Power
Strata Clean Energy
Triple Oak Power

Key SRP Staff

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