

# Salt River Project (SRP) Integrated System Plan Advisory Group Modeling Subgroup #5- Summary

*Prepared by Kearns & West*

## Advisory Group – Modeling Subgroup Meeting #5 Overview

### Meeting Objectives

- Discuss technical Q&A for the key findings from Integrated System Plan (ISP) analysis for Forecasting, Customer Programs, Distribution Planning, Transmission Planning, and ISP long-term capacity expansion

**Topic:** ISP Analysis Key Findings

**Date:** April 21, 2023

**Time:** 12:30 – 2:30 p.m.

**Location:** Project Administration Building (PAB) – Mohave East and West

Please see the appendix for the Advisory Group member roster and attendance information. The [meeting agenda](#) and [presentation](#) are included with the meeting materials for Advisory Group Meeting #11, conducted earlier on April 21<sup>st</sup>, and are available at the [Integrated System Plan portal](#).

### Meeting Orientation

Joan Isaacson, facilitator from Kearns & West, welcomed Advisory Group members to this optional Modeling Subgroup meeting and noted that most of the Advisory Group members who attended the morning meeting stayed for the afternoon session. She explained that subject matter experts from SRP and E3 would respond to technical questions about the ISP in an informal Q&A session. During the Q&A, slides from the earlier Advisory Group meeting were shown for reference.

### Forecasting and Customer Programs

Jed Cohen, Manager of Forecasting and Load Research at SRP, and Nathan Morey, Manager of Product Development at SRP, responded to Advisory Group member questions about energy efficiency and demand response, customer incentives, and how unique aspects of Phoenix are considered in forecasting load and designing customer programs. Nathan Lee, Managing Consultant from E3, also responded to questions from the Advisory Group.

On the topic of energy efficiency, Advisory Group members focused on how energy efficiency was modeled in the analysis. Morey and Lee explained that energy efficiency was modeled using aggregate savings impacts to modify the load forecast. By 2035, the modeling shows about 1,000 megawatts (MW) of load reduction from energy efficiency in the base case, which represents aggressive energy efficiency efforts to meet or exceed SRP's 2035 Sustainability Goals. Ramping energy efficiency efforts further to displace several thousand additional MW of

customer load is not possible. Meeting annual goals has been a challenge and will continue to be a challenge, especially as building energy codes and equipment efficiency standards evolve and erode savings potential.

In replying to a question about demand response, Cohen explained that it is handled on the supply side in the integrated system modeling ecosystem and that grid operators use demand response to manage load. Morey added that shorter windows for demand response can have a greater impact on flattening the peak, although the snapback effect can create a subsequent peak. Another factor is that demand response and energy efficiency can compete in decreasing system peak impacts of air conditioning units since the energy efficiency is already so productive.

Advisory Group members discussed how to incentivize grid-positive customer behavior and gave examples from their own experiences. Cohen noted the opportunities for customer education on topics such as pre-cooling homes before the on-peak price period and SRP's work on developing effective messages. Morey spoke about the importance of educating homeowners about making their house as energy efficient as possible prior to installing residential solar so they can optimize the system for their needs and not overbuild it.

In explaining how SRP factors in variation in conditions in its service area, Cohen described regionalized climate models for Phoenix that draw on Arizona State University research on urban heat island effects. Forecasts include climate drift and in the ISP modeling SRP uses two different representative concentration pathways (RCP) from the Intergovernmental Panel on Climate Change: RCP 4.5 in the Current Trends and Strong Climate Policy scenarios and the more pessimistic RCP 8.5 in Desert Boom and Desert Contraction. Morey added that Phoenix is unique in that water heating has a minimal impact on peak load. The biggest potential for shifting load is air conditioning, followed by electric vehicle charging, commercial/industrial uses and the electrification of commercial/industrial uses.

## Transmission and Distribution Planning

Justin Lee, Manager of Transmission System Planning at SRP, and Melissa Martinez, Manager of Distribution Planning at SRP, began by following up on technical questions posed during the earlier Advisory Group meeting. They then responded to questions about non-wires alternatives, projected load growth and analysis for future ISPs.

In response to a question posed during the Advisory Group meeting, Lee said that modeling indicates losses of about 41 MW on the pro-rata transmission system as compared to the hub system, noting this is due to how the system has been built. Following up on a different question, Lee explained that transmission planning has not considered non-wires alternatives

for this ISP. The team did evaluate batteries and found that at this time it is not cost-effective, although as costs decline, that may change.

Martinez followed up on an earlier question about non-wires alternatives for distribution by describing how the team looked at asset deferral using a 1 MW battery, which would serve 125 customers. In comparison, a new substation transformer would serve 2,000-3,000 customers. Analysis found that the transformer was the better choice because the battery would only delay addition of the transformer by two years. Martinez added that SRP plans to track battery technology and the value of customer- and system-sited assets for future ISPs.

In wrapping up, Martinez clarified that the maps indicating placement of future distribution resources (slides 56-59 in the Advisory Group #11 presentation) reflect growth and where resources are needed to serve load. She added that in the modeling for the Strong Climate Policy scenario, the addition of substation bays (slide 61) stays consistent year over year since the model selects energy efficiency and distributed generation to avoid adding infrastructure in heavily constrained areas.

## Long-Term Capacity Expansion Results

Arne Olson, Senior Partner at E3, and Nathan Lee responded to Advisory Group member questions about the long-term capacity expansion results. SRP subject matter experts also assisted in responding to questions. Topics included the time horizon of the study, the Strong Climate Policy scenario, and the modeling of energy efficiency in the capacity expansion modeling.

Nathan Lee began by explaining how the model runs through 2050 to estimate a net present value and find least-cost solutions to meet all modeling constraints, and time beyond the horizon is addressed with an in-perpetuity end-effects method so that modeled costs don't just end in 2050. Olson added that after 2050 the model addresses potential end-effects impacts by repeating the final year an infinite number of times beyond the study's time horizon. He noted that although stranded assets are important to consider, there is a narrow set of circumstances where a firm resource like natural gas is not contributing the last 5-10% of capacity.

In response to a question about the lower planning reserve margin for the Strong Climate Policy scenario as compared to other scenarios, Kyle Heckel, Senior Engineer for Integrated Planning and ISP Project Manager at SRP, explained that the modeling scenario definition assumes a high level of federal support that drives greater build outs of renewable energy and transmission in the region. He added that the lower planning reserve margin functions as a proxy for being able to rely on regional diversity in the Strong Climate Policy scenario. On whether SRP would endorse a mandate for an 85% reduction in CO2 reductions by 2035, Bobby Olsen, Senior Director of Corporate Planning, Environmental Services, and Innovation at SRP, stated that SRP

is planning and preparing for this as a plausible future, but does not intend to use these results to advocate for a mandatory reduction in CO2.

Advisory Group members also posed questions about the load shapes used in the modeling and how energy efficiency is factored into long-term capacity expansion. Nathan Lee explained that the model does not select energy efficiency on the demand side as part of the optimization. Instead, peak demand and the hourly profile are given as inputs and the dispatch of demand response is optimized to a degree. Olson added that it is a challenge in the industry to optimize supply simultaneously with customer programs and demand at the same time in this type of modeling.

## Wrap Up

Angie Bond-Simpson, Director of Integrated System Planning & Support at SRP, concluded the Modeling Subgroup meeting by thanking the Advisory Group members for their perseverance through this process. She noted that system-wide scenario planning is unique to SRP and our leading vision and thanked the project team members for their time and preparation. Bond-Simpson ended by encouraging Advisory Group members to reach out with questions and any requests to get caught up on the modeling work completed and presented to-date.

## Appendix

### Meeting Attendance

Advisory Group Member Organizations (members in attendance on 4/21 are indicated in **bold**)

Arizona Hispanic Chamber of Commerce

#### **A New Leaf**

American Association of Retired Persons (AARP)

Arizona State University (ASU)

#### **Arizona Public Interest Research Group (PIRG)**

Building Owners and Managers Association (BOMA)

Chicanos Por La Causa

#### **City of Phoenix**

#### **Common Spirit Health**

CMC Steel Arizona

CyrusOne

Environmental Defense Fund (EDF)

Intel

Kroger

#### **Local First**

Mesa Public Schools

Pinal County

Profile Precision Extrusions

SRP Customer Utility Panel (CUP)

#### **Salt River Pima-Maricopa Indian Community (SRPMIC)**

#### **Southwest Energy Efficiency Project (SWEEP)**

United Dairymen of Arizona

#### **Western Resource Advocates (WRA)**

#### **Wildfire**

#### Key SRP Staff

Angie Bond-Simpson, Director of Integrated System Planning & Support

Bobby Olsen, Senior Director of Corporate Planning, Environmental Services, and Innovation

Domonique Cohen, Senior Strategic Planner for Integrated Planning and ISP Communications

Lead

Jed Cohen, Manager of Forecasting and Load Research

Justin Lee, Manager of Transmission Planning

Kyle Heckel, Senior Engineer for Integrated Planning and ISP Project Manager

Maria Naff, Manager of Integrated Planning

Melissa Martinez, Manager of Distribution Planning

Nathan Morey, Manager of Product Development

### Key Facilitation Team

Arne Olson, E3

Nathan Lee, E3

Brisa Aviles, Kearns & West

Karen Lafferty, Kearns & West

Joan Isaacson, Kearns & West

### SRP Board and Council Observers

Larry Rovey, SRP Board Member

Suzanne Naylor, SRP Council Member