The Board may vote during the meeting to go into Executive Session, pursuant to A.R.S. §38-431.03 (A)(3), for the purpose of discussion or consultation for legal advice with legal counsel to the Committee on any of the matters listed on the agenda.

The Board may go into Closed Session, pursuant to A.R.S. §30-805(B), for records and proceedings relating to competitive activity, including trade secrets or privileged or confidential commercial or financial information.

Visitors: The public has the option to attend in-person or observe via Zoom and may receive teleconference information by contacting the Corporate Secretary’s Office at (602) 236-4398. If attending in-person, all property in your possession, including purses, briefcases, packages, or containers, will be subject to inspection.
SAFETY MINUTE: SCHOOL ZONES

• Focus on driving and watching for people
• Drive carefully through neighborhoods
• Arizona school zones are 15mph
• Stop if anyone is within the crosswalk
• No passing other vehicles
• Stop for school bus (both directions)

Better to be late for an appointment than have a tragic accident.
Integrated System Plan (ISP) Overview: Day 1

ISP Board and Council Study Session

Angie Bond-Simpson, Sr. Director | August 29, 2023
Welcome

Bobby Olsen
AGM & Chief Planning, Strategy & Sustainability Executive
Meeting Objectives

Day 1
• Introduce Integrated System Planning (ISP)
• Review collaborative study plan and engagement processes

Day 2
• Present ISP recommended System Strategies based on key findings from the analysis
• Illustrate Management’s ISP Implementation Steps
• Address questions with SRP Subject Matter Experts
## Agenda

<table>
<thead>
<tr>
<th>Time (incl. Q&amp;A)</th>
<th>Topics</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAY 1</strong></td>
<td><strong>DAY 1</strong></td>
<td></td>
</tr>
<tr>
<td>9:30-9:40</td>
<td>10 min Welcome, Opening Remarks and Meeting Objectives</td>
<td>Bobby Olsen</td>
</tr>
<tr>
<td>9:40-10:10</td>
<td>30 min Introduction to the Integrated System Plan (ISP)</td>
<td>Angie Bond-Simpson</td>
</tr>
<tr>
<td>10:10-10:40</td>
<td>30 min ISP Study Plan &amp; Stakeholder Engagement</td>
<td>Kyle Heckel</td>
</tr>
<tr>
<td>10:40-11:35</td>
<td>55 min Voice of the Residential Customer Research</td>
<td>April Smith (Bellomy)</td>
</tr>
<tr>
<td>11:35-12:00</td>
<td>25 min Key Findings and ISP Strategy Development</td>
<td>Angie Bond-Simpson</td>
</tr>
<tr>
<td>12:00-12:30</td>
<td>30 min Lunch</td>
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<tr>
<td><strong>DAY 2</strong></td>
<td><strong>DAY 2</strong></td>
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</tr>
<tr>
<td>9:30-9:40</td>
<td>10 min Welcome and Day One Recap</td>
<td>Bobby Olsen</td>
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<tr>
<td></td>
<td>Angie Bond-Simpson</td>
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</tr>
<tr>
<td>9:40-10:20</td>
<td>40 min ISP Recommendation: System Strategies Including Key Findings that Support the Recommendation</td>
<td>Angie Bond-Simpson, Nick Schlag (E3)</td>
</tr>
<tr>
<td>10:20-10:45</td>
<td>25 min ISP Implementation Steps: Balanced System Plan</td>
<td>Angie Bond-Simpson</td>
</tr>
<tr>
<td>10:40-11:15</td>
<td>35 min ISP Implementation Steps: ISP Actions</td>
<td>Adam Peterson, Dan Dreiling, Vanessa Kisicki, Grant Smedley, Bryce Nielsen</td>
</tr>
<tr>
<td>11:15-12:00</td>
<td>45 min Q&amp;A</td>
<td>All</td>
</tr>
<tr>
<td>11:55-12:00</td>
<td>5 min Wrap Up &amp; Next Steps</td>
<td>Angie Bond-Simpson</td>
</tr>
<tr>
<td>12:00-12:30</td>
<td>30 min Lunch</td>
<td></td>
</tr>
</tbody>
</table>
Introduction to the ISP

Angie Bond-Simpson
Sr. Director, Resource Management
Outline

• What is an ISP?
• Why is an ISP needed?
• What is the process for the first ISP?
• Who is involved in the first ISP?
SRP’s Integrated System Plan

An Integrated System Plan is the holistic roadmap for the power system of the future which considers evolving customer needs for reliability, affordability, and sustainability and achieves our 2035 goals.
Traditional Utility Planning

Parallel Planning Processes

Customer Programs Design

Distribution Planning

Transmission Planning

Resource Planning

8/29/2023 Integrated System Plan Overview, A. Bond-Simpson
Integrated System Planning

Interactive Planning Process

STAKEHOLDER AND CUSTOMER ENGAGEMENT

FORECASTING

Resource Planning

Transmission Planning

Customer Programs

Distribution Planning
Why move to an Integrated System Planning Process?
Evolving customer preferences
Technology advancements and supply chain impacts
Climate risk and regulations
Planning a System That’s Affordable, Reliable, Sustainable

Maintaining Reliability
- Technology maturity
- Timely development
- Available when needed

Sustainability Commitments
- Carbon
- Water

Affordability
- Cost stability
- Investment longevity
- Lowest quartile prices regionally
The Integrated Planning Process

**Overarching Motivation**
- Corporate Goals
  - Maintain high customer satisfaction and affordability standards
  - Meet the growing needs of customers while maintaining reliability
  - Reach the 2035 sustainability goals

**Specific Objectives**
- Transmission Planning
- Resource Planning
- Distribution Planning
- Customer Programs

**Analytical Processes: Integrated System Plan**
- Forecasting
  - Stakeholder and customer engagement

**The Way Forward**
- Identify knowledge gaps
- Strategic approach through 2035
- Specific Action Plans
- Inform future goals, objectives, and Integrated System Plans

8/29/2023 Integrated System Plan Overview, A. Bond-Simpson
Major Building Blocks of the ISP

- Cross-company collaboration
- Rigorous data-driven modeling approach
- Stakeholder and customer engagement
- Engagement of industry experts
ISD Project Team

Key Contributing Departments

- Integrated System Planning & Support
- Forecasting & Load Research
- Resource Planning & Development
- Transmission Planning, Strategy & Development
- Distribution Planning & Strategy
- Customer Programs
- Financial Planning & Analysis
- Pricing
- Strategic Research & Insights

Leadership Guidance & Analysis Teams

Coordination, Leadership Guidance, Analysis & Support

Consultants:

Energy-Environmental Economics

KEARN'S WEST

8/29/2023 Integrated System Plan Overview, A. Bond-Simpson
ISP Stakeholder and Customer Engagement

- **Advisory Group**
  - Focused engagement from a smaller diverse group
- **Large Stakeholder Group**
  - Large-scale public platform

**Engagement Objectives**
- Inform & Provide Learning Opportunities
- Consider Feedback
- Build Support

**Technical Working Sessions**
- Open to all stakeholders and convened on specific topics with topical experts

**Customer Research**
- Multi-pronged approach to include the customer voice

**Meetings**
- 14
- 23
- 600+

**Community Organizations**
- 23
- 140+

**Points of Feedback & Questions Answered**
- 600+
- 500+

**Topical Sessions**
- 4

**External Expert Panelists**
- 20

**External Stakeholder Attendees**
- 169

**90-Minute Focus Groups**
- 4

**Customer Respondents to Phase 2 Survey**
- 400

**Customer Respondents to Phase 3 Survey**
- 1,011

8/29/2023 Integrated System Plan Overview, A. Bond-Simpson
ISP Board and Council Observers

John Hoopes  
SRP Association Vice President

Chris Dobson  
SRP District Vice President

Anda McAfee  
SRP Board Member

Jack White  
SRP Board Member

Larry Rovey  
SRP Board Member

Krista O'Brien  
SRP Board Member

Suzanne Naylor  
SRP Council Member

Rocky Shelton  
SRP Council Member

Mark Mulligan  
SRP Council Member
ISP Study Plan & Engagement Processes

Kyle Heckel
Sr. Engineer, Integrated Planning
The ISP Study Plan

• Considers wide-ranging perspectives of what may happen in the future
• Assesses SRP’s future system through a variety of strategic planning options
• Is designed to evaluate trends and tradeoffs in affordability, reliability, and sustainability
• Reflects customer and community stakeholder input
The ISP Study Plan

- Considers wide-ranging perspectives of what may happen in the future
- Assesses SRP’s future system through a variety of strategic planning options
- Is designed to evaluate trends and tradeoffs in affordability, reliability, and sustainability
- Reflects customer and community stakeholder input
Considering Wide-Ranging Perspectives for the Future

- What if climate change makes the desert a less favorable place to live?
- What happens if SRP experiences strong load growth, and renewable costs continue to decline?
- What if the U.S. passes increasingly aggressive climate policy? What if renewables are cheaper and emerging tech available sooner?
- What if Arizona becomes an employment and data hub resulting in explosive load growth?
Additional Sensitivities in the ISP Study Plan

- High Demand Response
- High Distributed Generation Adoption
- High, Low & Volatile Gas Prices
- Regional Diversity
- High Energy Efficiency
- Increased Load Management
- High & Low Technology Costs
The ISP Study Plan

• Considers wide-ranging perspectives of what may happen in the future

• **Assesses SRP’s future system through a variety of strategic planning options**

• Is designed to evaluate trends and tradeoffs in affordability, reliability, and sustainability

• Reflects customer and community stakeholder input
The Strategic Approaches in the ISP Study Plan

Technology Neutral: What does it look like to be open to any technology but solve for least cost?

No New Fossil: What does it look like to only build carbon free options?

Minimum Coal: What does it look like to exit coal by 2035?

Increasingly restrictive on fossil fuel generation
## System-Wide Analysis

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Technology Neutral</th>
<th>No New Fossil</th>
<th>Min. Coal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desert Contraction</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Current Trends</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Strong Climate Policy</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Desert Boom</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

**Strategic Approaches**

- 12 Scenario-Based System Plans
- 30 Sensitivity Cases

8/29/2023 Integrated System Plan Overview, A. Bond-Simpson
The ISP Study Plan

• Considers wide-ranging perspectives of what may happen in the future
• Assesses SRP’s future system through a variety of strategic planning options
• **Is designed to evaluate trends and tradeoffs in affordability, reliability, and sustainability**
• Reflects customer and community stakeholder input
Integrated System Plan
SRP and third-party models

- Customer Program Design
- System Level Load Forecast
  - SAE (Itron) SRP models
  - LoadSEER (Integral Analytics)
- Reliability Requirements
- New Resource Options & Costs
- Existing Resource Characteristics
- Regional Market Price Forecast
- Transmission Cost for New Resources

- Distribution Level Load Forecast
  - SRP model
- Transmission Level Load Forecast
  - SRP model
  - PLEXOS (Energy Exemplar)
  - Aurora (Energy Exemplar)
- Transmission Investments
- Resource Investments
- Resource Detailed Operations

- Affordability, Sustainability, and Reliability Metrics
- Customer Program Design
- Avoided Costs
- SRP model

- Transmission Planning
  - Resource Planning, Resource Acquisition, and Generation Engineering
  - Financial Services

8/29/2023 Integrated System Plan Overview, A. Bond-Simpson
Integrated System Plan Metrics

**Affordability**
- Total System Costs
- Average System Costs
- Average Residential Price Impact

**Sustainability**
- CO2 Reductions
- Water Use
- Carbon-Free Generation
- Capacity Factor for Gas Fleet
- Direct Air Emissions (NOx, SO2, PM, VOC)

**Reliability**
- Resource Contribution to Reliability
- Reliance on Emerging Technologies
- Qualitative Risk Ratings (Development Risk and Operational Risk)
- Planning Reserve Margin

**Customer Focus**
- Customer Preference Rating
- CO2 Reductions from energy efficiency, demand response, distributed generation, and electrification
The ISP Study Plan

- Considers wide-ranging perspectives of what may happen in the future
- Assesses SRP’s future system through a variety of strategic planning options
- Is designed to evaluate trends and tradeoffs in affordability, reliability, and sustainability
- **Reflects customer and community stakeholder input**
ISP Study Plan Stakeholder Engagement

SRP used a multi-step process with ISP stakeholders to collaboratively develop each study plan component (e.g., scenarios, strategic approaches, and metrics)

- **7** Advisory Group Meetings
- **3** Modeling Subgroup Meetings
- **2** Large Stakeholder Group Meetings
Residential Customer Research: Bringing the Voices of Our Customers into the System Plan

Three Phases of Residential Customer Research

1. Phase I - Customer Focus Groups
2. Phase II - Quantitative Confirmation Survey
3. Phase III - Customer Preference Survey
About Bellomy

Insights Technology
Designed + Developed by Insights Professionals
About Bellomy

Our Guarantee

We will be the best team you’ve ever worked with

Company Stats

• Full-service market research firm with a digital marketing agency in-house
• Founded in 1976
• Headquartered in Winston-Salem, NC
• 100+ person company, with in-house researchers, designers, strategists, and developers across 14 states
• Ranked among the Top 50 market research firms in the US for the last 10+ years

Fueling digital acceleration through research + design
Background + Objectives

Bring the **voice of SRP's residential customers** into the planning of the future energy system

Create a **residential customer preference metric** for consideration in the ISP’s decision-making process
Methodology: Multi-Phased Approach

A three-phased research approach was applied.

**Virtual Focus Groups**
- 4 90-minute focus groups
- December 13 & 14, 2021

**Confirmation Survey**
- 400 respondents
- March 7 – 14, 2022

**Choice Exercise Survey**
- 1,011 respondents
- May 9 – 29, 2023

All respondents were: SRP customers, aged 18 or older, energy decision makers, and did not work for a related industry. Quotas set to ensure results were representative of SRP’s residential customer base.
EXPERIENCE WITH SRP, CONCERNS, & PRIORITIES
Most rated their experience with SRP positively

**Overall Experience with SRP**

<table>
<thead>
<tr>
<th>Category</th>
<th>Phase 2 (March 2022)</th>
<th>Phase 3 (May 2023)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outstanding</td>
<td>42.5%</td>
<td>39.1%</td>
</tr>
<tr>
<td>Positive</td>
<td>41.0%</td>
<td>46.2%</td>
</tr>
<tr>
<td>Neutral</td>
<td>12.0%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Negative</td>
<td>4.5%</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

In qualitative findings, customers noted a highly positive perception of SRP, specifying the reliability of service along with helpful customer service were key factors.
Customers demonstrated affordability concerns

Future Issues Facing Arizona
(From March 2022 Surveying)

- Water scarcity / Drought: 59.5%
- Affordability of electricity service: 44.0%
- Inflation: 36.5%
- Housing affordability: 35.5%
- Pollution / Air quality: 32.5%
- Reliability and availability of energy: 31.0%
- Crime / Safety: 30.8%
- Climate change / Global warming: 28.3%
- Healthcare access and affordability: 22.5%
- Population growth: 21.0%
- Cyber security / Identity protection: 15.8%
- Quality education availability: 15.5%
- Achieving a 'living wage' income: 14.8%
- Utility infrastructure investment: 14.3%
- Environmental conservation: 14.3%
- Homelessness: 13.5%
- Poverty / Income inequality: 13.3%
- Other: 20.0%

Three of the top five issues were affordability related

22% were very concerned about community members’ ability to pay electric bill
(From March 2022 Surveying)
Affordability and Reliability were most often ranked 1st

While a majority of customers ranked reliability first in the focus groups, they discussed a tough tradeoff between reliability and affordability.

Groups more likely to rank affordability first included:
- Limited income customers (200% of HHS Poverty Guidelines)
- Those enrolled in M-Power for Pre-Pay

Represents about a third of SRP’s residential customer base.
INITIAL ENERGY PLAN REACTIONS
(PHASE I & II)
Customers evaluated an illustrative SRP energy mix, which could take place in the next 10-20 years.

Customers were given background on SRP’s priorities to ensure power quality continues to improve.
Two thirds rated the energy plan positively

Overall Opinion of the Illustrative Plan
(From March 2022 Surveying)

- Positive (rated 4,5) 66%
- Neutral (rated 3) 25%
- Negative (rated 1,2) 9%

26% Excellent (rated 5)

Focus group participants suggested some initial opportunities, such as:
- The amount of time needed to implement the plan
- Getting customer buy-in and being transparent
- Ensuring SRP’s accountability for changes
- Clarifying how this would affect rates
CHOICE EXERCISE DESIGN
(BASED ON ISP ANALYSIS RESULTS)
ISP’s Analytical Framework

**STRATEGIC APPROACHES**

**Tech. Neutral**
SRP takes a least-cost approach to building the future power system.

**No New Fossil**
SRP avoids investment in new natural gas capacity, meeting future needs with carbon-free resources.

**Minimum Coal**
SRP reduces power generation from coal and analyzes the system-wide impacts while maintaining reliability.

**FUTURE SCENARIOS**

**DESERT CONTRACTION**
a future in which growth slows, in part due to climate change impacts in the Southwest.

**CURRENT TRENDS**
a central case for how Arizona’s future might unfold.

**STRONG CLIMATE POLICY**
a future in which the U.S. implements strong climate policies.

**DESERT BOOM+**
a future in which economic growth in the Valley further accelerates.

---

**Within the Strong Climate Policy scenario, cases for Tech. Neutral and No New Fossil are identical. Only one illustrative mix was shown to customers to represent both cases, thus data shown are identical for these two cases.**

**Within the Desert Boom scenario, Tech. Neutral was the only strategy tested; No New Fossil and Minimum Coal cases do not reach reliability targets.**
Informed The Following System Inputs:

- Illustrative energy mix (9 mixes)
- When SRP will meet its sustainability goals (2030/ 2035)
- % reduction in carbon emissions* (4 levels)
- % reduction in water usage* (4 levels)
- If SRP will build new gas power plants (Yes/ No)
- Monthly bill impact (4 levels)
- Number of 2-hour power outages (4 levels)

Variation in levels resulted in evaluation of ~9,200 possible system configurations.

*Levels were conditional on the energy mixes shown
Conjoint methodology was used to understand customer preference

11 screens showing 2 energy plans and a “none of these” option were shown

Customer preference ratings were produced for each potential future energy system

An example survey screen is shown to the right

8/29/2023 Integrated System Plan Overview, Bellomy
SRP is planning for the future of the greater Phoenix community and working towards a **sustainable future** for the benefit of our customers and communities we serve. SRP’s 2035 Sustainability Goals are about making decisions through the eyes of our customers while balancing costs, reliability of service, and the sustainability of our energy production. Two key components of the 2035 Sustainability Goals are:

- **Reducing the amount of Carbon emitted** by 65% from 2005 levels by 2035.
- **Reducing the amount of Water used** in energy generation by 20% by 2035.

SRP’s planning efforts aim to build a future system that will be **implemented by 2035** and meet these Sustainability Goals. Meeting the 2035 Sustainability Goals sooner means fewer carbon emissions. However, customers might be impacted through **increased costs or more power outages**.

The "Next" button will appear once you’ve had time to read this page.
Educational Information Included In Survey

SRP's Current Energy Mix

- Natural Gas, 45%
- Nuclear, 18%
- Solar, 3%
- Other Renewables, 7%
- Coal, 23%

Carbon-free sources shown in green font: 28%

The “Next” button will appear once you’ve had time to read this page.
Before you start this activity, we’d like to show you an example of a future energy plan, like the ones you will review shortly.

Please reference the following on how to understand the energy mix and the impacts of the plan (For each of these potential impacts, the effects are hypothetical):

- **Timing:** SRP is planning to reach the Sustainability Goals and implement a new energy mix by 2035.
- **Carbon reduction:** The mass amount of carbon reduced by this possible future energy mix has been translated to the amount of carbon produced by cars. In the energy plan below, the carbon reduction is equal to the number of gas-powered cars removed from the road each year.
- **Reduction in water usage:** The decrease in water used in generating power for the possible future energy mix has been translated from gallons to the number of gallons sold to each household. In the example below, the amount of water reduced is equal to the number of households it would take to use that water in one year.
- **Building new infrastructure:** Some possible future energy mixes will require SRP to build new natural gas power plants, while others will not. This will vary across possible future energy mixes.
- **Bill impact:** Each possible future energy mix will have added costs from using new energy sources and transitioning to them by 2035. Customers might have higher monthly bills as the cost is passed along in part on SRP bills.
- **Number of power outages:** SRP is designing a future energy system with zero outages caused by a lack of energy supply each year. However, SRP wants to understand how you would evaluate an energy plan that has the possibility of one to three 2-hour outages. These outages would occur during times with high energy demand, like a hot summer’s day, and would not be caused by storms.
Conjoint Exercise Screens

Which of these hypothetical future energy systems would you prefer SRP implement?
Please read through each plan carefully and select the plan you most prefer.

Click here to view a glossary of terms. This will open in a new browser and you can come back to this page to complete the activity.

**Energy Mix**

<table>
<thead>
<tr>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>75% reduction</td>
<td>68% reduction</td>
</tr>
<tr>
<td>about 4.9 million sq. miles per year</td>
<td>about 4.6 million sq. miles per year</td>
</tr>
</tbody>
</table>

Will build

- Increase by $10
- Increase by $20

- Two 2-hour outages
- One 2-hour outage

Mass of those, I would stick with the current system of my current monthly bill shown.

Select
SYSTEM PLAN PREFERENCES
(PHASE III)
## Monthly bill impact of greatest importance

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Ranked 1&lt;sup&gt;st&lt;/sup&gt; Most Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly bill impact</td>
<td>36.8%</td>
</tr>
<tr>
<td>Reduction in carbon emissions</td>
<td>15.9%</td>
</tr>
<tr>
<td>Number of 2-hour power outages</td>
<td>14.5%</td>
</tr>
<tr>
<td>Energy mix</td>
<td>13.9%</td>
</tr>
<tr>
<td>Reduction in water usage</td>
<td>11.4%</td>
</tr>
<tr>
<td>If SRP will build new gas power plants</td>
<td>5.0%</td>
</tr>
<tr>
<td>When SRP will meet its sustainability goals</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

Among those ranking the **energy mix first**, top ranked **priorities were evenly split:**
- Affordability – 31% ranked 1<sup>st</sup>
- Reliability – 36% ranked 1<sup>st</sup>
- Sustainability – 34% ranked 1<sup>st</sup>

Suggesting energy mix was seen as a **component related to all three priorities**.
Choices indicate a desire to “have it all”

Summed Share of Preference by Attribute

- **Monthly Bill Impact**: 72.2%
- **Number of 2-Hour Outages**: 58.9%
- **Energy Mix**: 53.9%

- **Energy Mix**:
  - Mixes: Over 40% to 60% Carbon-free resources
  - Mixes: Over 60% to 80% Carbon-free resources
  - Mixes: Over 80% Carbon-free resources
Real-world cost constraints force tradeoffs

**Limitations** on how much customers feel they can invest in the “greater good”

Fixed incomes and limited budgets constrain the degree to which they can prioritize sustainability

Price sensitivity analysis revealed a sharp decline in energy plan acceptance as levels increase above a 10% monthly bill impact

---

*Among those ranking monthly bill impact first (n=364); multiple responses accepted*
Customers’ optimal future energy system

Findings revealed that from the residential customer’s perspective the **ideal future energy system should**...

- **Manage cost, first and foremost**
- Keep monthly bill impacts **below a 10% increase** (from current bill)
- Include a diverse mix to **ensure reliability**
- Provide the cleanest, **most sustainable energy without exceeding a 10% bill increase** (from current bill)
Executive Summary

66% Rated Positively

Most customers reacted positively to SRP’s proposed path forward, and a quarter felt it was excellent. A majority agreed the plan should be prioritized by SRP.

Top factors: affordability & bill impacts

- In each quantitative phase of research, affordability surpassed reliability slightly in importance.
- Those with limited incomes put greater emphasis on affordability.
- When choosing a future energy system customer selections revealed monthly bill impact as the top driver of preference.

Customer understanding and openness to change

- Customers recognized that challenges are interrelated and pose risks to sustainability, the economy, and overall quality of life.
- In general, lower-cost plans were more preferred.
- Customers recognized the need for and expressed interest in SRP’s investment in sustainable energy, but they do not want to bear the cost of that investment.
Key ISP Findings

Angie Bond-Simpson
Sr. Director, Resource Management
ISP Results: Investments Needed at a Rapid Pace

- SRP will likely need to double or triple resource capacity in the next decade to serve customers while achieving reliability and sustainability goals. This will be at an unprecedented pace.
  - New renewables and firm capacity are part of a least-cost portfolio, even under a wide range of gas price and technology cost sensitivities.
  - When paired with firm capacity, solar and wind contribute to a least-cost portfolio while being able to help reduce carbon emissions.
- Without new firm generation capacity, the system cannot satisfy reliability requirements under a high load growth scenario. Higher levels of renewables and storage, including pumped storage are required in lower load growth scenarios.
- Hundreds of miles of new or upgraded transmission lines and nearly double the number of 500/230 kV transformers could be needed relative to today.
- Location of generation matters and plays a significant role in the buildout of the 500 kV transmission system.
ISP Analysis: Total Nameplate Capacity of Resource and Customer Programs, 2035 (MW)

Key Takeaway: SRP will likely need to double or triple resource capacity in the next decade to serve customers while achieving reliability and sustainability goals. This will be at an unprecedented pace.
ISP Analysis: Total Nameplate Capacity of Resource and Customer Programs, 2035 (MW)

Key Takeaway: SRP will likely need to double or triple resource capacity in the next decade to serve customers while achieving reliability and sustainability goals. This will be at an unprecedented pace.
ISP Analysis: Future Transmission Needs

Average Transmission Line Upgrades and Additions

Key Takeaway: SRP needs to prepare for hundreds of miles of new or upgraded transmission by 2035.
Metrics Takeaways: The Need for Balance

Affordability
A Tech Neutral strategic approach results in lowest system cost and lower bill impacts.

Sustainability
A Minimum Coal strategic approach results in greater emissions reductions and lower water use.

Reliability
A Tech Neutral strategic approach results in paced infrastructure development and is the only approach able to meet reliability under high customer demand conditions.

Customer Focus
Residential customer are sensitive to bill impacts.

Customer programs potentially unlock greater economy wide carbon reductions.
Integrated System Plan: System Strategies

**Energy Investments**
Invest in renewable resources and storage to manage fuel consumption, and drive carbon and water reductions.

**Capacity Investments**
Invest in firm generation, including natural gas, to support reliability and manage affordability, while also supporting advancement of emerging firm technologies.

**Proactive Transmission**
Proactively plan to expand transmission infrastructure to enable generator interconnections and load growth.

**Distribution Innovation**
Ensure distribution grid readiness to maintain reliability and enable customer innovations to drive carbon reductions.

**Strategic Investment & Reinforcement of Existing Assets**
Reinforce and maximize value of existing infrastructure with strategic investments to manage affordability, and ensure future performance, grid security and resilience.

**Evolution of Customer Programs & Pricing**
Evolve pricing and customer programs to improve economy-wide carbon reductions and pace infrastructure development, while recognizing customers’ diverse needs.

**Partnerships & Suppliers**
Explore partnerships, supply chain and development solutions that manage cost and availability to meet the pace of transformation.
Day One Wrap Up

Angie Bond-Simpson
Sr. Director, Resource Management
Lunch
Integrated System Plan (ISP) Output: System Strategies

The System Strategies are long-term strategies for planning and operating the power system to achieve SRP’s 2035 goals.

How they will be used:
- Provide guidance and priority for how to plan and operate the system in the future.
- Provide transparency to customers and other stakeholders of what strategies SRP plans to employ to evolve its system.
- Serve as the starting point for building an illustrative Balanced System Plan and ISP Actions designed to implement the System Strategies.

Energy Investments
Invest in renewable resources and storage to manage fuel consumption, and drive carbon and water reductions.

Capacity Investments
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NOTES:

SRP Integrated System Plan Web Page
Web page includes, but is not limited to, public information and reports, meeting slide decks, educational pre-read materials and meeting summaries.

For Reference:
Guiding ISP Principles and other ISP Output definitions are on the back.
SRP Team’s Implementation of ISP System Strategies

Balanced System Plan: An illustrative path for SRP’s system that is consistent with the ISP System Strategies.

How it will be used:
• The Balanced System Plan will provide a common starting point for future planning efforts, and serve as a basis for various external reporting and communication activities
• SRP will continue to monitor factors impacting system planning and may deviate from this illustrative path as necessary to adapt to change.

ISP Actions: A set of near-term actions that the SRP Team will complete following the publication of the ISP.

How they will be used:
• The ISP actions will kick start implementation of the System Strategies and make progress toward the 2035 Goals.
• Serve as SRP’s commitment to pursue these actions and to provide annual progress updates to stakeholders.

Guiding ISP Principles

The Guiding ISP Principles balance reliability, affordability, and sustainability, and other important factors for purposes of developing the ISP.

Integrated Long-Term View
Develop a holistic view, including resources, transmission, distribution and customer program perspectives for meeting evolving customer needs and achieving SRP’s Corporate Goals for 2035 and beyond. The long-term view ensures that SRP is making the right decisions today to support its customers and stakeholders in the future.

Transparency
Engage customers and other stakeholders in a system planning process that is responsive to questions and input.

Measure Success Through the Eyes of Our Customers
Maintain industry-leading customer satisfaction by responding to evolving customer needs by providing sustainable, safe, reliable, and affordable power while equitably recognizing the different needs, challenges, and perspectives of our customers.

Manage Costs
Deliver exceptional system and energy value by minimizing impacts from additional grid needs and future uncertainties to average retail prices, while maximizing customer value through diligent, long-term oriented cost management.

Build an Adequate and Reliable Power System
Meet, and in some cases, exceed industry standards to provide a dependable supply of electricity to all SRP customers. Provide a reliable grid that is able to prepare for and recover from both anticipated and unanticipated disruptions to ensure energy availability.

Adapt Toward a More Sustainable Future
Meaningfully reduce carbon emissions and generation water usage to achieve SRP’s 2035 Sustainability Goals to help address climate change and create less waste.
The purpose of this document is to provide Board & Council members context and background about SRP’s first Integrated System Planning (ISP) process in preparation for the two half-day Board & Council ISP Work Study Sessions on August 29th and August 30th, 2023, where the SRP project team will:

- Share the motivation behind SRP’s transition to Integrated System Planning
- Demonstrate the extensive and collaborative nature of the ISP process
- Present ISP findings and proposals for SRP’s planning through 2035
ALIGN: BUILDING A SHARED VISION TOGETHER

The electric power industry is undergoing a rapid transformation, presenting Salt River Project (SRP) with unprecedented opportunities and future uncertainties. SRP strives to provide high quality electricity services to its customers and work closely with them to respond to their needs, advance their priorities and goals, and collaboratively adapt to changes.

An Integrated System Plan (ISP) is a data-driven, collaboratively developed plan for generation, transmission, distribution and customer programs to meet SRP’s 2035 Corporate Goals at a high customer value while preparing for rapidly evolving system needs.

The analytical objectives of the ISP are to identify:
- Viable pathways for achieving SRP’s 2035 Corporate Goals
- Costs, risks and tradeoffs of these different pathways
- System strategies that are valuable across different pathways
- New capabilities or tools required to effectively plan and operate as the system evolves
- Activities SRP should undertake in the next 6 years to plan for these system strategies

SRP considers customers and community stakeholders to be important partners in building a sustainable, reliable, and affordable future power system. During the ISP process, SRP built a study plan that considered customers’ needs and interests and allowed SRP to explore a shared vision for the future of the power system.

Guiding ISP Principles

In developing the ISP, SRP followed certain Guiding ISP Principles, which were defined through a collaborative and transparent process involving the ISP Advisory Group, which represents a diverse set of stakeholder perspectives. These principles were intended to balance reliability, affordability, sustainability, and other important considerations.

Integrated Long-Term View: Develop a holistic view, including resources, transmission, distribution and customer program perspectives for meeting evolving customer needs and achieving SRP’s Corporate Goals for 2035 and beyond. The long-term view ensures that SRP is making the right decisions today to support its customers and stakeholders in the future.

Transparency: Engage customers and other stakeholders in a system planning process that is responsive to questions and input.

Measure Success Through the Eyes of Our Customers: Maintain industry-leading customer satisfaction by responding to evolving customer needs by providing sustainable, safe, reliable, and affordable power while equitably recognizing the different needs, challenges, and perspectives of our customers.

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Adapt Toward a More Sustainable Future: Meaningfully reduce carbon emissions and generation water usage to achieve SRP’s 2035 Sustainability Goals to help address climate change and create less waste.
PREPARE: PLANNING AMIDST CHANGE

The ISP used scenario planning methods to help SRP better understand future uncertainties and take advantage of opportunities. Using scenario planning allows SRP to develop the future power system in a way that can flexibly adapt to the changing industry and maintain affordable, reliable and sustainable power delivery.

The scenario planning framework for the ISP included three distinct elements: scenarios, strategic approaches and metrics.

**Scenario** defines a plausible future state of the world around us, reflecting societal, technological, economic, environmental, and political trends and conditions. These factors are outside of SRP’s control and reflect the unpredictable nature of the future that needs to be accounted for in SRP’s planning activities.

**Strategic approach** represents a possible decision, or set of decisions, that SRP could make in planning the future power system. These decisions are fully within SRP’s direct control.

**Metrics** are outputs from the ISP modeling ecosystem that allow SRP, customers and other stakeholders to measure the performance of different system plans across a range of future scenarios and sensitivities.

These elements of the ISP made up the holistic study plan that was developed with input from SRP subject matter experts and customer and stakeholder feedback. The SRP project team, consisting of representatives from Forecasting, Resource Planning, Transmission Planning, Distribution Planning and Customer Programs, performed a first of its kind system-wide scenario analysis that allowed SRP to test strategies for building the future power system across a wide range of possible futures. Based on learnings from that analysis, the project team developed, and shared with stakeholders, the ISP key findings that identified costs, risks and tradeoffs to consider when planning the future power system.

### Scenarios

SRP, with Advisory Group input, developed four scenarios to analyze in the ISP. The four scenarios reflect a diverse set of possible futures and consider uncertainties across a broad set of parameters. The figure below shows the four scenarios with a short narrative that describes each scenario.

![Scenario Diagram]

- **Lower electricity demand**
  - **Desert Contraction** scenario is a future in which growth slows, in part due to climate change impacts in the Southwest.
  - **Current Trends** scenario reflects a central case for how Arizona’s future might unfold.
  - **Strong Climate Policy** scenario is a future in which the U.S. implements strong climate policies.
  - **Desert Boom** scenario is a future in which economic growth in the Valley further accelerates.

### Strategic Approaches

SRP developed three strategic approaches to analyze in the ISP. These strategic approaches were intended to explore clearly delineated key decisions that may impact the future power system and to understand how these strategies perform across the scenarios described above. SRP strategy decisions resulting from the ISP are not restricted to only those analyzed in the strategic approaches and will include paths that combine the strategies described below.

- **The Technology Neutral** strategic approach aimed to develop future system plans on a technology-neutral and least-cost basis.
- **In the No New Fossil** strategic approach, SRP explored a system with no new natural gas capacity, meeting future needs with carbon-free resources. Existing and in-development natural gas units were still able to be used to meet customer needs under this strategic approach.
- **The Minimum Coal** strategic approach utilized a no new fossil approach to new capacity and also aimed to reduce power generation from coal in SRP’s system by testing operational changes to SRP’s coal resources, including seasonal operations and SRP coal exit by the end of the study period in 2035.

### Strategic Approaches for System Analyses

- **Technology Neutral**
  - SRP takes a least-cost approach to building the future power system.

- **No New Fossil**
  - SRP explores a system with no new natural gas capacity, meeting future needs with carbon-free resources.
  - SRP reduces power generation from coal and analyzes the system-wide impacts while maintaining reliability.

- **Minimum Coal**
  - SRP exit coal by the end of the study period in 2035.
Metrics

Metrics were used to provide information to internal and external stakeholders, evaluate the performance of each strategic approach across scenarios, and design customer preference research. SRP, drawing on Advisory Group input, developed metrics for affordability, sustainability, reliability, and customer focus, as shown in the figure below.

ANALYZE: PERFORMING ANALYSIS & VALIDATING RESULTS

SRP’s planning groups evaluated the strategic approaches across scenarios using a rigorous analytical process. For each combination of a strategic approach and scenario, SRP developed a system plan for 2025-2035 that sought an affordable way to meet customer needs while ensuring reliability and meeting or outperforming SRP’s sustainability goals related to generation carbon emissions and water usage. Each modeled system plan includes a plan for customer programs, distribution investments, transmission investments and generation resource additions.

External Validation: SRP leveraged external technical expertise, from Energy and Environmental Economics (E3), to benchmark analytical methods used in the ISP. E3 has worked collaboratively with the SRP Project team in developing an industry-leading ISP by providing validation services on generation capacity modeling.

Transparency: A key aspect of the ISP was the development and implementation of a robust plan to actively engage customers and community stakeholders. Inclusive, transparent and proactive dialogue with SRP stakeholders aimed to build support for the ISP process. The ISP team has hosted more than 20 forums for engagement, including ISP Advisory Group meetings, Large Stakeholder Group meetings, Technical Working Sessions, Modeling Subgroups and one-on-one discussions with interested stakeholders. The ISP team posts meeting agendas, slides and summaries on the ISP web portal.

Voice of the Customer: To bring the voice of SRP’s residential customers into the planning of the future energy system, SRP conducted residential customer research in partnership with Bellomy. During three phases of research, information on preferences pertaining to reliability, affordability and sustainability was collected through customer focus groups and surveys.
Metric Takeaways: The Need for Balance

The section below provides a brief description on how the ISP strategic approaches performed across scenarios under the four metric categories described above: affordability, sustainability, reliability, and customer focus.

**Affordability:** On affordability, a Tech Neutral strategic approach results in lowest system cost, driven largely by differences in generation costs across cases. All strategic approaches have similar costs under a scenario where the U.S. government provides federal incentives for clean energy technologies (Strong Climate Policy).

**Sustainability:** With respect to sustainability, a Minimum Coal strategic approach results in greater emissions reductions and lower water use, followed by No New Fossil. Decreased dependence on fossil fuel technology for energy (e.g., coal retirements and projected declined utilization of natural gas), paired with renewable and storage additions drive significant carbon reductions. These efforts enable SRP to achieve the 2035 Sustainability Goals related to generation carbon emissions and water reduction in all cases.

**Reliability:** In terms of reliability, a Tech Neutral strategic approach results in paced infrastructure development and is the only approach able to meet reliability under high customer demand conditions. Existing resources play a key role in ensuring reliability across all cases. When allowed, firm capacity resources are selected to help meet reliability needs at the least cost. All cases have development and operational risks given the amount of infrastructure necessary to enable the future system, which also poses new operational challenges and proactive measures to mitigate.

**Customer Focus:** Residential customers are sensitive to bill impacts and have preferences for managing costs while maintaining reliability and transitioning to a more sustainable energy system. Customer Preference Ratings reflected that Tech Neutral is most favorable in futures with higher load growth driven by lower generation costs, while Minimum Coal and No New Fossil were preferred when there is low load growth and federal incentives are driving down the cost of technology. Customer programs also have the potential to unlock greater economy-wide carbon reductions.
Summary of ISP Key Findings

SRP shared these key findings from the ISP analysis with stakeholders in the spring of 2023.

Resources & Infrastructure

- Significant investment over the next decade is needed to strategically locate and build out new grid infrastructure to connect new resources and customers, while achieving reliability and sustainability goals.
- SRP will likely need to double or triple resource capacity in the next decade to serve customers while achieving reliability and sustainability goals. This will be at an unprecedented pace.
- New renewables and firm capacity are part of a least-cost portfolio, even under a wide range of gas price and technology cost sensitivities.
- When paired with firm capacity, solar and wind contribute to a least-cost portfolio while being able to help reduce carbon emission.
- Without new firm generation capacity, the system cannot satisfy reliability requirements under a high load growth scenario. Higher levels of renewables and storage, including pumped storage, are required in lower load growth scenarios.
- Hundreds of miles of new or upgraded transmission lines and nearly double the number of 500/230 kV transformers could be needed relative to today.
- Location of generation matters and plays a significant role in the buildout of the 500 kV transmission system.

Customer Programs

- Electrification of end uses, including transportation and heating demand, creates new opportunities to shift energy usage to mid-day hours to help integrate more renewable energy and maximize carbon reduction impacts.
- SRP will need to evolve programs and price plans to shift consumer behavior, and further educate customers on when to consume and when to conserve energy.

Future Considerations

- If the U.S. government enacted a mandate for 85% CO2 reductions by 2035 (Strong Climate Policy), SRP would need to significantly accelerate renewable & storage deployment.
- Future uncertainties around development, planning and permitting processes could impact SRP’s ability to grow at the pace needed to meet increasing future load growth.
- With the amount of future infrastructure and resources needed, internal and external partnerships are going to be essential to build the future system and maintain high customer value.