Roll Call
Safety Minute

1. Reconvene Meeting of August 29, 2023 .................. PRESIDENT DAVID ROUSSEAU

2. Integrated System Planning Overview ....................... ANGIE BOND-SIMPSON;
   NICK SCHLAG, ENERGY AND ENVIRONMENTAL ECONOMICS, INC.;
   APRIL SMITH, BELLOMY RESEARCH; and VARIOUS
   Informational presentation to provide an overview of the Integrated System
   Plan (ISP) and demonstrate how coordinated planning throughout
   generation, transmission, distribution, and customer programs will guide
   SRP through the energy transition.

3. Adjourn .......................................................... PRESIDENT DAVID ROUSSEAU

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.
Integrated System Plan (ISP) Update: Day 2

ISP Board and Council Study Session

Angie Bond-Simpson, Sr. Director | August 30, 2023
SAFETY MINUTE: MONSOON SEASON

- Arizona: June 15 – September 30
  - Downbursts
  - Dust Storms
  - Thunderstorms
- Prepare before a storm
- Stay indoors, decide not to drive

Outages or downed lines/poles? Call SRP 602-236-8888
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

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<td>DAY 2</td>
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<tr>
<td>9:30-9:35</td>
<td>Welcome</td>
<td>Bobby Olsen</td>
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<td>9:35- 9:45</td>
<td>ISP Scenario Planning Metrics</td>
<td>Angie Bond-Simpson</td>
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<td>9:45-10:25</td>
<td>ISP Recommendation: System Strategies Including Key Findings That Support the Recommendation</td>
<td>Angie Bond-Simpson Nick Schlag (E3)</td>
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<td>10:25-10:45</td>
<td>ISP Implementation Steps: Balanced System Plan</td>
<td>Angie Bond-Simpson</td>
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<td>10:40- 11:15</td>
<td>ISP Implementation Steps: ISP Actions</td>
<td>Adam Peterson Dan Dreiling Vanessa Kisicki Grant Smedley Bryce Nielsen</td>
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<td>11:15-12:00</td>
<td>Panel Q&amp;A</td>
<td>All</td>
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<td>12:00-12:05</td>
<td>Wrap Up &amp; Next Steps</td>
<td>Angie Bond-Simpson</td>
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<tr>
<td>12:05-12:30</td>
<td>Lunch</td>
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</table>
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.
ISP Scenario Rate Impacts

ISP Takeaway:

- The Technology Neutral strategic approach results in lowest impact to customer prices.

These are representative results based on ISP analysis modeling, NOT projections of SRP’s future prices, and are not inclusive of factors beyond the scope of ISP analysis.

29% forecasted inflation
ISP Scenario CO₂ Reductions (Mass)

ISP Takeaways

- Coal retirements, coupled with renewable and storage additions, drive significant carbon mass reductions in all cases.
- No New Fossil and Minimum Coal lead to greater carbon reductions.
- Carbon emissions are generally correlated with load growth (lower in Desert Contraction, higher in Desert Boom).

For Desert Boom, the No New Fossil and Minimum Coal cases do not meet reliability standards.

All cases achieve SRP’s 2035 Sustainability goal of a 65% carbon intensity reduction.
ISP Recommendation: System Strategies

Angie Bond-Simpson
Sr. Director, Resource Management

Nick Schlag
Partner (E3)
ISP System Strategies

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

Objectives:

- 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.
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.
### Key Contributing Departments

<table>
<thead>
<tr>
<th>Department</th>
<th>responsibility</th>
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</thead>
<tbody>
<tr>
<td>Integrated System Planning &amp; Support</td>
<td>coordination, leadership guidance, analysis &amp; support</td>
</tr>
<tr>
<td>Forecasting &amp; Load Research</td>
<td></td>
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<tr>
<td>Resource Planning &amp; Development</td>
<td></td>
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<tr>
<td>Transmission Planning, Strategy &amp; Develop</td>
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<tr>
<td>Distribution Planning &amp; Strategy</td>
<td></td>
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<tr>
<td>Customer Programs</td>
<td></td>
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<tr>
<td>Financial Planning &amp; Analysis</td>
<td></td>
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<tr>
<td>Pricing</td>
<td></td>
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<tr>
<td>Strategic Research &amp; Insights</td>
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</tbody>
</table>

**Leadership Guidance & Analysis Teams**

**Consultants:**

- Energy-Environmental Economics
- K E A R N S W E S T
Major Trends Impacting Planning

Energy demand continues to grow rapidly in Arizona.

The Inflation Reduction Act (IRA) provides significant funding for clean energy.

$350 billion new funding for a wide range of clean energy technologies and programs.

NERC: North America faces increased reliability risks.

The SRP system reached a new peak load of 8,163 MW on 7/18/23.

As part of the ISP, SRP held a Technical Working Session on the IRA and the analysis factors in IRA incentives.

System-Wide Analysis

Strategic Approaches

<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>

12 Scenario-Based System Plans

30 Sensitivity Cases
Integrated System Plan
SRP and third-party models
Integrated System Plan: System Strategies

Energy Investments
Invest in renewable resources and storage to manage fuel consumption, and drive carbon and water reductions.
Renewable and Storage Resources Reduce Fuel Costs and Contribute to Improved Sustainability

The ISP analysis identified a range of renewable and storage additions that vary depending on future planning conditions.

Different amounts of renewable and storage additions lead to different sustainability outcomes:

- **Reduced Carbon Intensity**
  - 74 to 96% vs. 2005 baseline (SRP goal of 65%)

- **Reduced Water Usage Intensity**
  - 31 to 71% vs. 2005 baseline (SRP goal of 20%)
Renewable and Storage Resources Reduce Fuel Costs and Contribute to Improved Sustainability

Lower renewable & storage additions are associated with smaller reductions in carbon and water usage intensity

*Tech Neutral, Current Trends case:*

![Graph showing MW Additions by 2035](image)

- **Solar**
- **Wind**
- **Geothermal**
- **Biomass**
- **Battery Storage**
- **Pumped Hydro**

Renewable & storage additions under a mid case planning scenario:

+3,150 MW

(second lowest among cases)

- **Reduced Carbon Intensity**
  - 75%
  - vs. 2005 baseline
  - (third smallest reduction)

- **Reduced Water Usage Intensity**
  - 37%
  - vs. 2005 baseline
  - (second smallest reduction)
Renewable and Storage Resources Reduce Fuel Costs and Contribute to Improved Sustainability

Higher renewable & storage additions are associated with larger reductions in carbon and water usage intensity

Tech Neutral, Strong Climate Policy case:

This outcome could be driven by factors outside of SRP’s control, including an aggressive federal clean energy requirement

Renewable & storage additions under an aggressive federal clean energy requirement scenario:

+17,200 MW
(highest among cases)

Reduced Carbon Intensity 91%
vs. 2005 baseline
(third largest reduction)

Reduced Water Usage Intensity 67%
vs. 2005 baseline
(third largest reduction)
Renewable and Storage Resources Reduce Fuel Costs and Contribute to Improved Sustainability

Significant quantities of new renewables & storage resources across cases point to their role in improving sustainability and managing fuel consumption.

A focus on adaptivity and flexibility will position SRP to adjust its portfolio to meet customer needs at lowest costs.
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.
New Firm Resources Are Needed

Firm resources are key to maintaining reliability

- Across all plans, firm resources meet at least 55% of reliability needs in 2035
- Without new firm resources, reliability is compromised by 2028 under a high load growth scenario
New Firm Resources Are Needed

New natural gas is part of a least-cost portfolio

- On average, a least-cost plan adds >2,000 MW by 2035
- Without new natural gas, costs are 17-24% higher in 2035 in the Current Trends scenario

In the Desert Contraction scenario, the cost increase is 7-11%. The Desert Boom cases do not meet the reliability requirements but would have even greater cost increases.
New Firm Resources Are Needed

Emerging technology may help to meet a portion of firm resource needs

- Hydrogen is selected in cases that accelerate hydrogen availability and include an aggressive federal carbon target

Green hydrogen capacity additions in Strong Climate Policy scenario cases:

<table>
<thead>
<tr>
<th>Approach</th>
<th>Hydrogen Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech Neutral</td>
<td>178 MW</td>
</tr>
<tr>
<td>No New Fossil</td>
<td>195 MW</td>
</tr>
<tr>
<td>Minimum Coal</td>
<td>790 MW</td>
</tr>
</tbody>
</table>

Any green hydrogen capacity additions would require the development of supply, storage, and transportation infrastructure, which would require further advancements in the industry.

The ISP also evaluated nuclear small modular reactors (SMR) and gas with carbon capture and sequestration (CCS), but these resources were not selected by 2035 in any cases.
Integrated System Plan: System Strategies

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Proactive Transmission
Proactively plan to expand transmission infrastructure to enable generator interconnections and load growth.
Proactive Transmission Planning Enables Load Growth and Addition of Generating Resources

A significant amount of transmission infrastructure is needed by 2035:

<table>
<thead>
<tr>
<th>Infrastructure Type</th>
<th>New 500 kV Lines</th>
<th>New and Upgraded 230 kV Lines</th>
<th>New 500/230 kV Transformers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line miles</td>
<td>300</td>
<td>300</td>
<td>15</td>
</tr>
<tr>
<td># of transformers</td>
<td></td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

Long lead times for infrastructure necessitate a proactive approach.

- 500 kV lines: 5-9+ years
- 230 kV lines: 3-7 years
- 500/230 kV transformers: 3-5 years
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Distribution Readiness for Growth and Evolving Customer Needs

Load growth will drive additional infrastructure needs for the distribution system…

…while changes in how our customers use energy will require innovation and flexibility.

**SRP Electric Service Area:**

- **Load Growth (MW):**
  - -10 to 0
  - 0 to 5
  - 5 to 30
  - 30+

- **500,000** electric vehicles
- **1,300 MW** distributed solar
- **300 MW** demand response
Distribution Readiness for Growth and Evolving Customer Needs

Load growth will drive additional infrastructure needs for the distribution system…

…while changes in how our customers use energy will require innovation and flexibility.

SRP Electric Service Area:

- Substation
- New or upgraded

Load Growth (MW)
- -10 to 0
- 0 to 5
- 5 to 30
- 30+

500,000 electric vehicles
1,300 MW distributed solar
300 MW demand response
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Partnership and Supplier Solutions Can Help SRP Meet the Pace of Transformation through 2035

- 2,200-18,000 MW new nameplate capacity
- 160-380 miles new 230+ kV transmission lines
- 6-12 new 500/230kV transformers
- 26-84 new distribution substation bays

- 3,800 GWh total energy efficiency savings
- 300 MW total demand response
- 500,000 total electric vehicles

- Up to 10% IRA bonus domestic content provisions*
  *Public power must satisfy domestic content, or entire credit at risk
Integrated System Plan: System Strategies

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Partnerships & Suppliers
Explore partnerships, supply chain and development solutions that manage cost and availability to meet the pace of transformation.
Existing customer programs and price plans are effective at managing peak energy demand today.

2035 Peak Day Projection

Managed load to be served by SRP generating resources

Current TOU plans span some or all of these hours and reduce generation requirements

Unmanaged Load

- Energy Efficiency
- Distributed Solar

CUSTOMER PROGRAMS
Customer Programs & Pricing Can Help SRP Meet New System Needs

As large amounts of solar and wind are added to the system, the “net load” must be served with dispatchable resources.
As the system transforms, net load is the new target for pricing and programs.

- Late evening and overnight load reduction becomes more important
- Opportunity to shift load to mid-day, low-cost periods and build load during these periods

Customer Programs & Pricing Can Help SRP Meet New System Needs
Integrated System Plan: System Strategies

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Existing Assets Are the Foundation for the Future System

Any future planning scenario requires maintaining the existing system.

In 2035, SRP’s existing and contracted generating assets make up an estimated 50% of nameplate capacity, 70% of reliability needs, and 45% of carbon-free energy.

In 2035, SRP’s existing transmission lines make up an estimated 90% of the total number of 230+ kV line miles.

In 2035, SRP’s existing distribution substation bays make up an estimated 85% of the total number of substation bays.
Integrated System Plan: System Strategies

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

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

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**Strategic Investment & Reinforcement of Existing Assets**
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**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.
Balanced System Plan Objectives

The Balanced System Plan serves as an *illustrative path* for SRP’s system that is consistent with the ISP System Strategies.

• Achieves SRP’s reliability requirements
• Achieves SRP’s 2035 Sustainability Goals
• Informed by the breadth of analysis in the Integrated System Plan
• Balances risks, including financial, development, and operational
• Considers customer preferences and stakeholder input
The System Strategies Inform the Draft Balanced System Plan

**Energy Investments**
The draft Balanced System Plan adds mostly renewable and storage resources to manage fuel consumption, drive carbon and water reductions.

**Capacity Investments**
The draft Balanced System Plan includes new natural gas capacity to support reliability and manage affordability.

**Proactive Transmission**
The draft Balanced System Plan includes transmission infrastructure needed to meet load and generation growth, balancing a hub and pro-rata location strategy.

**Distribution Innovation**
The draft Balanced System Plan adds distribution infrastructure needed to meet growing load, including that from electric vehicles, while preparing the grid for future customer innovation.

**Strategic Investment & Reinforcement of Existing Assets**
The draft Balanced System Plan maintains existing system infrastructure, barring resources with planned retirement dates.

**Evolution of Customer Programs & Pricing**
The draft Balanced System Plan grows customer programs through 2035. The draft Balanced System Plan doesn’t include the impacts of changes to pricing, but SRP anticipates that could mitigate some system needs.

**Partnerships & Suppliers**
The draft Balanced System Plan will seek partners for emerging technology research and domestic suppliers for renewable and storage self-build options.
Draft Balanced System Plan: 2025 and 2035 Total Capacity

- Maintain similar level of total thermal capacity
- 26,500 MW by 2035 (80% increase in 10 years)
- Triple the capacity of renewable and storage resources

2025: 26,500 MW
2035: 39,750 MW
Draft Balanced System Plan: Diversified Resource Additions

Balanced System Plan Nameplate Capacity Additions by 2035 (MW)

Solar: 6,000
- Low-cost scalable resource to displace fossil fuel consumption

Natural Gas: 2,000
- Proven flexible low-cost firm technology

Battery Storage: 1,500
- Flexible resource to support renewable integration and meet system need during evening net peak

Pumped Hydro: 1,000
- Longer duration storage to meet longer stretches of demand during overnight period

Wind: 800
- Low-cost renewable resource that complements solar and enables efficient use of transmission

Customer Solar: 750

Customer Programs: 700
- Customer actions reduce demand

Biomass: 50
- Renewable resources that help to diversify firm resource mix

Geothermal: 50

Hydrogen: 0
- Lack of maturity presents technology risk

Nuclear: 0

Notes:
1) The draft Balanced System Plan includes 1300 MW coal retirements and the expiration of a 1000 MW gas toll
2) Customer Programs reflect growth in demand response (DR) and estimated peak reductions from additional energy efficiency (EE). Customer Solar includes forecasted adoption of customer solar and storage
Draft Balanced System Plan: 2035 Energy Mix

The illustrative energy mix shown here for the draft Balanced System Plan is based on the Current Trends scenario.
The Balanced System Plan includes transmission infrastructure needed to meet load and generation growth, balancing a hub and pro-rata resource location strategy.
The Balanced System Plan adds distribution infrastructure needed to meet growing load, including that from electric vehicles, while preparing the grid for future customer innovation.
Proposed Balanced System Plan Affordability

Balanced Plan: $121/MWh in 2035

Reference: $117/MWh in 2025
Balanced Plan Carbon Emission Comparison

Carbon Emissions in 2035 (MMT)

- Balanced Plan: 7.4MMT, 61% reduction from 2005

Carbon Intensity in 2035 (lb/MWh)

- Balanced Plan: 284 lb/MWh, 82% reduction from 2005
Balanced System Plan (2035)

**Affordable**
- 3% annual growth rate in Total System Cost
- 0.3% annual growth rate in average system cost ($/MWh)

**Sustainable**
- 1,300 MW coal plants retired
- 7,000 MW new wind & solar capacity
- 82% CO2 intensity reduction (lb./MWh)
- 61% CO2 emission reduction (lbs.) relative to 2005 levels
- 56% water use reduction (gal/MWh) relative to 2005 levels

**Reliable**
- 16% planning reserve margin satisfied by an increasingly diverse portfolio of resources
- 2,000 MW new firm natural gas capacity
- 1,000 MW new long-duration energy storage capacity (pumped hydro)
- 190 miles of new or upgraded transmission lines
- 8 new transmission 500/230kV transformers
- 65 new distribution substation bays

**Customer-Focused**
- 3,800 GWh energy efficiency savings
- 300 MW total demand response
- 500k electric vehicles
- Responsive to ISP Residential Customer Research
  Manages cost, while maintaining reliability and transitioning to more sustainable energy system

8/30/2023 Integrated System Plan Overview, A. Bond-Simpson
Draft Balanced System Plan

**Affordability**
Utilizes an all-of-the above approach to diversify and pace investments

**Sustainability**
Triples renewable and storage development to drive emissions reductions and reduce water consumption from power generation

**Reliability**
Maintains firm generation capacity and expands grid needs, while preparing for emerging grid technologies

**Customer Focus**
Focuses on managing costs, advancing sustainability and customer programs without sacrificing reliability
Intended Use of the Balanced System Plan

- The Balanced System Plan maps out an illustrative path through 2035. It provides a tangible, unified vision that reflects the ISP System Strategies.
- 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, including but not limited to factors listed below, and may deviate from this illustrative path as necessary to adapt to change.
  - Population and economic growth
  - Climate change
  - Evolving customer needs
  - Technological advancements
  - Fuel costs
  - Supply chain risk
  - IRA implementation progress
  - Regulatory changes
ISP Actions

Adam Peterson
Director, Corporate Pricing

Dan Dreiling
Director, Customer Programs

Vanessa Kisicki
Director, Distribution Strategy

Grant Smedley
Director, Resource Planning, Acquisition & Development

Bryce Nielsen
Director, Transmission Planning & Development

8/30/2023 Integrated System Plan Overview, A. Bond-Simpson
ISP Actions

ISP Actions are a set of near-term actions that SRP will complete following the publication of the Integrated System Plan (ISP).

Objectives:

- 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.
ISP Action #1: Residential Time-of-Use Pilot

Perform customer research to evaluate customer’s response to new time-of-use peak periods and a super off-peak period in the middle of the day which will inform SRP’s load forecast for long-term system planning and SRP’s price process.
ISP Action #2: Time-of-Use Evolution

Engage commercial, large industrial, and residential customers, and stakeholders to inform them of how the evolving grid will impact time-of-use periods and develop a roadmap for implementing new time-of-use periods.

- Undertake a Pricing Process informed by the ISP as to how time-of-use plans need to evolve. Propose new time-of-use hours including a super off-peak period when the cost to serve customers’ needs is lowest and on-peak hours updated for the modern grid.
- Develop communication plan for all customer types and segments to educate on any new time-of-use price plans with a focus on promoting affordability as well as potential sustainability benefits.

**ISP System Strategies Alignment**

- **Partnerships & Suppliers**
- **Evolution of Customer Programs & Pricing**
- **Energy Investments**

**Potential to defer**

Capacity Investments

8/30/2023 Integrated System Plan Overview, A. Bond-Simpson
ISP Action #3: Customer Programs

Continuously refresh program plans and drive participation in customer programs at levels consistent with those planned for in the ISP, representing a meaningful increase from SRP’s initial 2035 Sustainability Goal for Energy Efficiency.

- Evaluate the cost-effectiveness and emissions impacts of different customer program measures using the avoided costs and emissions impacts results from the ISP. Determine whether any changes to the customer programs portfolio are warranted based on this information, considering that these results must be weighed against other important factors such as customer access, equity, cost and satisfaction.

ISP System Strategies Alignment

- Partnerships & Suppliers
- Evolution of Customer Programs & Pricing
- Energy Investments
- Distribution Innovation
- Potential to defer Capacity Investments

8/30/2023 Integrated System Plan Overview, A. Bond-Simpson
ISP Action #4: EV Management

Develop a roadmap by evaluating customer needs and system impacts and assessing viable pathways for managing electric vehicle (EV) charging through price plans, customer programs and educational efforts to align with time periods that are lower-cost and minimize additional infrastructure needs.

ISP System Strategies Alignment

- Energy Investments
- Strategic Investment & Reinforcement of Existing Assets
- Evolution of Customer Programs & Pricing
- Partnerships & Suppliers
- Distribution Innovation
ISP Action #5: Electrification

Analyze the benefits and costs of non-EV electrification within SRP’s service area, including effects on SRP operations and economy-wide emissions. Assess options for expanding E-Tech program offerings related to residential and commercial electrification.
ISP Action #6: Distribution Enablement Roadmap

Continue implementing SRP’s Distribution Enablement (DE) Roadmap, which includes:

- Deploying Advanced Distribution Management System (ADMS) and Distributed Energy Resources Management System (DERMS)
- Continue implementing advanced planning tools
- Advancing the distribution interconnection process
- Executing the DE Research & Development (R&D) plan
ISP Action #7: Resource Selection

Issue all-source requests for proposals (RFPs) or requests for information (RFIs) at least once every two years.

Compare with self-build options and ensure that SRP can select resource technologies that meet SRP’s reliability and sustainability goals while minimizing total system cost.

ISP System Strategies Alignment

- Capacity Investments
- Energy Investments
- Partnerships & Suppliers
ISP Action #8: Coal Transition Action Plan

- Coordinate with co-owners to develop a path forward for the Springerville Generating Station
- Prepare plans for repurposing the Coronado Generation Station site
- Develop solutions that preserve transmission following the retirement of coal plants
- Test strategies for minimizing coal plant emissions while leveraging their capacity to maintain reliability

ISP System Strategies Alignment

- Capacity Investments
- Strategic Investment & Reinforcement of Existing Assets
- Proactive Transmission
- Partnerships & Suppliers
ISP Action #9: Proactive Siting

Develop and initiate siting research that considers collaborative community engagement, land, resources, and transmission and distribution to proactively identify, prepare and preserve options for feasible sites for future system infrastructure.
ISP Action #10: Regional Transmission

Pursue transmission projects that would enable SRP to access diverse renewable resource options beyond solar, such as wind and geothermal, and engage with project developers, as appropriate.
Panel Q&A

Bobby Olsen
AGM & Chief Planning, Strategy & Sustainability Executive

Angie Bond-Simpson
Sr. Director, Resource Management

Adam Peterson
Director, Corporate Pricing

Dan Dreiling
Director, Customer Programs

Bryce Nielsen
Director, Transmission Planning & Development

Vanessa Kisicki
Director, Distribution Strategy

Grant Smedley
Director, Resource Planning, Acquisition & Development

Nick Schlag
Partner (E3)
Wrap Up and Next Steps

Angie Bond-Simpson
Sr. Director, Resource Management
thank you!
Lunch
SRP’s Integrated System Plan
Pre-Read
August 2023 Board & Council Study Session

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.

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.
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.

**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.
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.
SRP Team’s Implementation of ISP System Strategies: Balanced System Plan

The Balanced System Plan serves as 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.

<table>
<thead>
<tr>
<th>2035</th>
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<tbody>
<tr>
<td><strong>Affordable</strong></td>
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<tr>
<td>3% annual growth rate in Total System Cost</td>
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<tr>
<td>0.3% annual growth rate in average system cost ($/MWh)</td>
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<tr>
<td><strong>Sustainable</strong></td>
<td></td>
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<tr>
<td>1,300 MW coal plants retired</td>
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<tr>
<td>7,000 MW new wind &amp; solar capacity</td>
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<td>82% CO₂ reduction (lb./MWh) relative to 2005 levels</td>
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<tr>
<td>61% CO₂ reduction (lbs.) relative to 2005 levels</td>
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<tr>
<td>56% water use reduction (gal/MWh) relative to 2005 levels</td>
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<tr>
<td><strong>Reliable</strong></td>
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<tr>
<td>16% planning reserve margin</td>
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<tr>
<td>2,000 MW new natural gas capacity</td>
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<tr>
<td>1,000 MW new long-duration energy storage capacity (pumped hydro)</td>
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<tr>
<td>190 miles of new or upgraded transmission lines</td>
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<tr>
<td>8 new transmission 500/230kV transformers</td>
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<tr>
<td>65 new distribution substation bays</td>
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<tr>
<td><strong>Customer-Focused</strong></td>
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<tr>
<td>3,800 GWh energy efficiency savings</td>
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<tr>
<td>300 MW total demand response</td>
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<tr>
<td>500,000 electric vehicles</td>
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<td>Responsive to ISP Residential Customer Research</td>
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<tr>
<td>Manages cost, while maintaining reliability and transitioning to more sustainable energy system</td>
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</tbody>
</table>

NOTES:
- Responsive to ISP Residential Customer Research: Manages cost, while maintaining reliability and transitioning to more sustainable energy system.
- Affordable: 3% annual growth rate in Total System Cost. 0.3% annual growth rate in average system cost ($/MWh).
- Sustainable: 1,300 MW coal plants retired. 7,000 MW new wind & solar capacity. 82% CO₂ reduction (lb./MWh) relative to 2005 levels. 61% CO₂ reduction (lbs.) relative to 2005 levels. 56% water use reduction (gal/MWh) relative to 2005 levels.
- Reliable: 16% planning reserve margin. 2,000 MW new natural gas capacity. 1,000 MW new long-duration energy storage capacity (pumped hydro). 190 miles of new or upgraded transmission lines. 8 new transmission 500/230kV transformers. 65 new distribution substation bays.
- Customer-Focused: 3,800 GWh energy efficiency savings. 300 MW total demand response. 500,000 electric vehicles.

MEETING OBJECTIVES:
- 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.

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:
System Strategies and other ISP Output definitions are on the back.
Integrated System Plan: Other Definitions

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.

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.

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 and supply chain and development solutions that manage cost and availability to meet the pace of transformation.