Integrated System Plan Study Plan

April 29, 2022

Welcome

Bobby Olsen
Senior Director, Corporate Planning, Environmental Services, and Innovation (SRP)

Welcome SRP Board and Council Observers

John Hoopes
SRP Vice President

Victor Flores
SRP Board Member

Anda McAfee
SRP Board Member

Jack White
SRP Board Member

Larry Rovey
SRP Board Member

Suzanne Naylor
SRP Council Member

Rocky Shelton
SRP Council Member

Safety & Sustainability Minute

Safety

Maintain a clean and well-kept vehicle

Limit distractions

Sustainability

Got a clunker?

Consider replacing with a newer vehicle (2005+) or electric vehicle

PLANNING TOGETHER, PLANNING BETTER

120+ community organizations invited to participate

Meeting Introduction

Joan Isaacson
Kearns & West Consulting, Senior Facilitator

Integrated System Plan (ISP)
Large Stakeholder Group Meeting Overview

Meeting #1	Meeting #2	Meeting #3	Meeting #4
ISP Launch and Vision	**ISP Study Plan** **Inform** about the scope of the first ISP. **Review and gather feedback** on the study plan for SRP's first Integrated System Plan	**ISP Study Results** **Update** on analytical process overview and preliminary results. **Inform** stakeholders on the process to interpret the results.	**ISP Path Forward** **Review** the results and future Integrated System Plans. **Inform** stakeholders of SRP's Preferred Strategic Direction and Action Plans.
Fall 2021	**Today**	**Fall/Winter 2022**	**Spring 2023**

Meeting Objectives:

- **Update** on current events at SRP
- **Inform** about the scope of the first Integrated System Plan.
- **Review and gather feedback** on the study plan for SRP's first Integrated System Plan

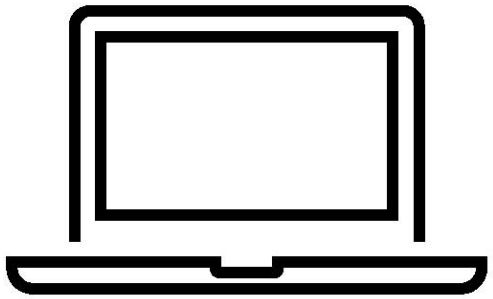
Agenda

Time		Topics	Presenter
8:00 – 8:10	10 mins	Welcome and Opening Remarks	Bobby Olsen (SRP) Joan Isaacson (Kearns & West)
8:10 – 8:30	20 mins	SRP Resource Planning Updates – Q&A	Grant Smedley (SRP)
8:30 – 8:50	20 mins	SRP's Industry-Leading Vision of Integrated Planning	Angie Bond-Simpson (SRP)
8:50 – 9:55	65 mins	The Study Plan for SRP's First Integrated System Plan – Q&A	Lakshmi Alagappan (E3) Angie Bond-Simpson (SRP) Jed Cohen (SRP) Kyle Heckel (SRP)
9:55 - 10:00	5 mins	Next Steps and Closing Remarks	
10:15 – 12:00		Technical Working Session: Study Plan Details	

Guides for Productive Virtual Meetings

- Actively participate
- In plenary, use Hand and/or Chat to engage
- Be respectful of other perspectives
- Stay concise to allow time for everyone to participate
- Enjoy the meeting!

Poll Instructions
Three ways to participate



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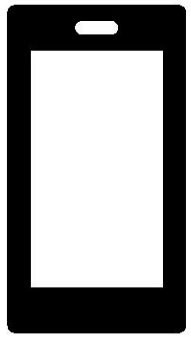

BY SMART PHONE
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on your internet browser.

BY TEXT MESSAGE
Text **kwpoll2** to 22-333 on your
mobile device.

We will be using this tool throughout the entire workshop. You will not need to perform this step again. No need to "leave" the session, it will end automatically at the appropriate time.

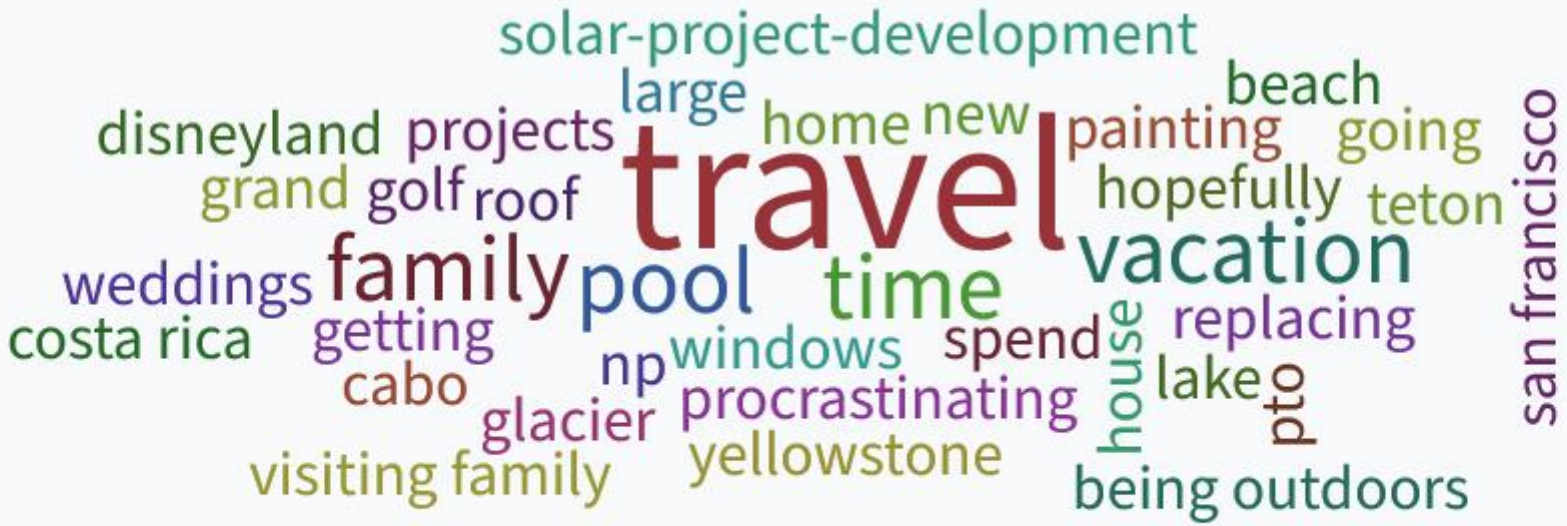
Poll Question

Enter 1 to 3 words to answer:

What are some summer plans that you are looking forward to?

Use an underscore (“_”) between words to submit them as a single word cloud response, submit multiple responses if desired.

What are some summer plans that you are looking forward to?



Resource Planning Updates

Grant Smedley
Director, Resource Planning, Acquisition and Forecasting (SRP)

Resource Needs have Increased Significantly

- Initial procurement targets
  - Summer peak capacity needs
    - At least 400 MW by June 2024
    - An additional 600 MW by June 2026
  - 277 MW of solar by 2025
- Significant risks and challenges have emerged to planned and existing resources
  - Resource needs have increased
  - Continued need for flexible natural gas

Status of Coolidge Expansion Project (CEP)

- ACC denied CEC application on April 12th
- Loss of CEP will significantly increase reliability risk and cost to SRP customers
- Quick-start, fast-ramping flexible natural gas is still needed
- Additional options will be pursued to add flexible natural gas quickly

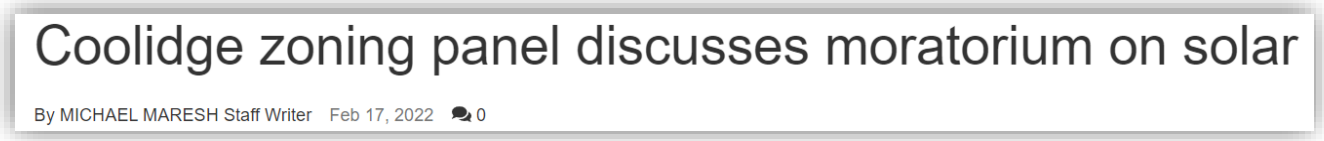
ACC = Arizona Corporation Commission
CEC = Certificate of Environmental Compatibility

U.S. Department of Commerce Investigation

- Department of Commerce (DOC) investigating whether imports of solar panels from Vietnam, Thailand, Malaysia, and Cambodia circumvent "anti-dumping" rules intended to block imports of solar cells and panels from China
- Investigation opposed by a number of solar trade organizations and multi-national manufacturers
- Outcome could result in imposition of tariffs as high as 250%, possibly retroactively
- DOC investigation:
  - Preliminary determination by late August 2022
  - Final determination expected in January 2023, but could be as late as April 2023
- Project delays likely

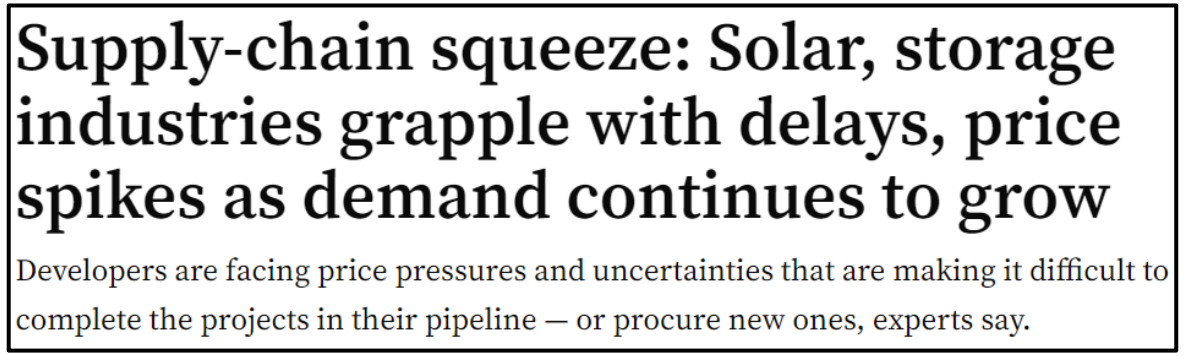
Other Risks and Challenges

- Supply Chain
- Permitting Challenges
- Regulatory Hurdles
- Interconnection Issues
- Drought Conditions
- Operational Readiness
- Battery Technology Maturity



Coolidge zoning panel discusses moratorium on solar

By MICHAEL MARESH Staff Writer Feb 17, 2022 0



Supply-chain squeeze: Solar, storage industries grapple with delays, price spikes as demand continues to grow

Developers are facing price pressures and uncertainties that are making it difficult to complete the projects in their pipeline — or procure new ones, experts say.

Lake Powell's levels projected to drop below critical threshold

12 News - March 10, 2022 - US

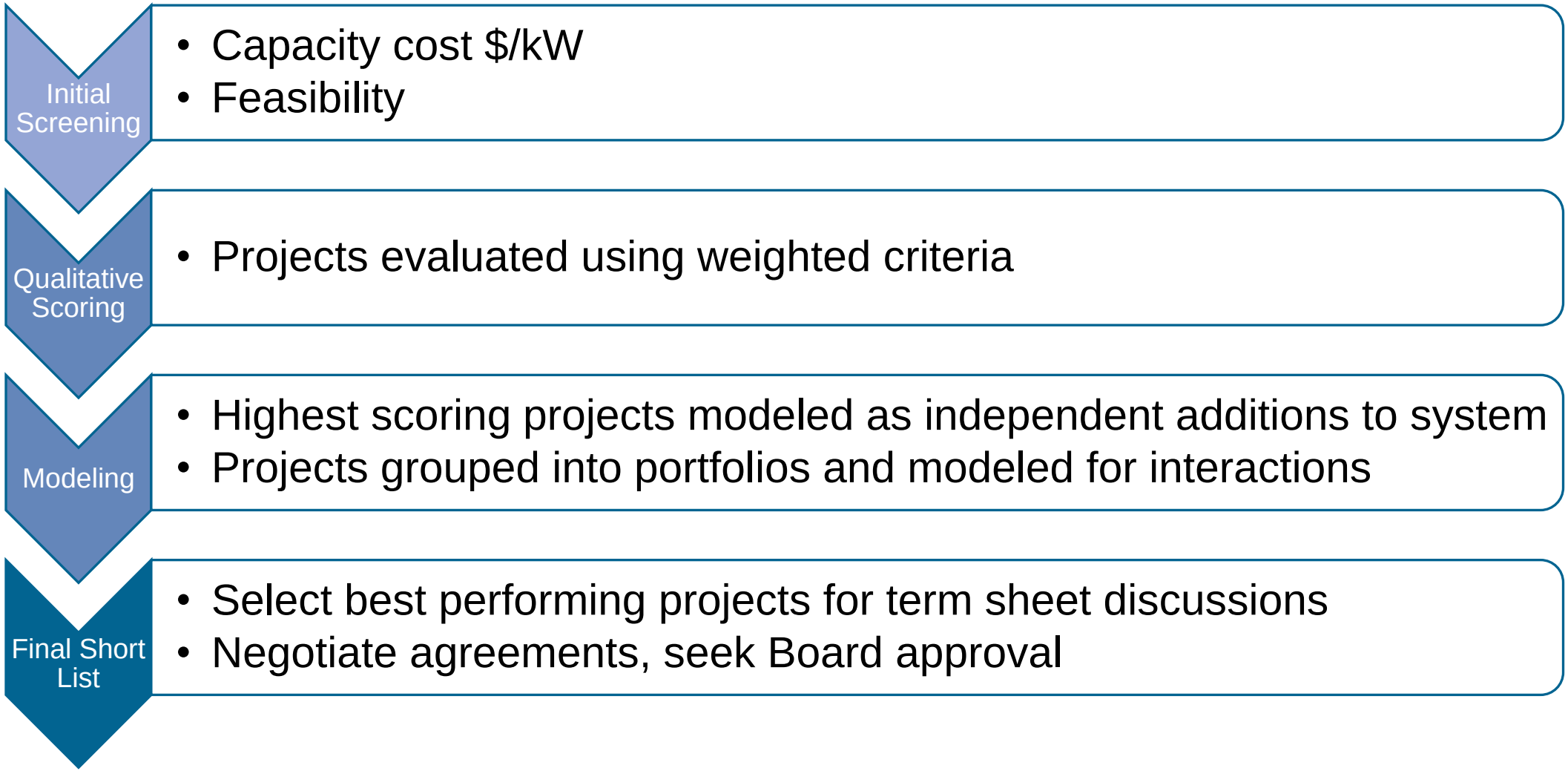
Lake Powell's levels projected to drop below critical threshold

Responses to All-Source RFP

- 34 out of 53 interested parties proposed projects
- Projects include varying on-line dates, capacities and pricing (configurations)
- 56 unique projects with 129 configurations under review

Resource Type
Solar + Storage
Stand-alone Storage (Grid-charged)
Wind + Storage
Existing Natural Gas
Geothermal

Evaluation Approach



Scoring Criteria

Sustainability (25%)	Affordability (25%)	Operating Characteristics (25%)	Executability (25%)
Carbon emissions, water use	Capacity cost, energy cost	Peak capacity contribution, technology maturity, resource diversity	Development risk, counterparty risk, location

Next Steps

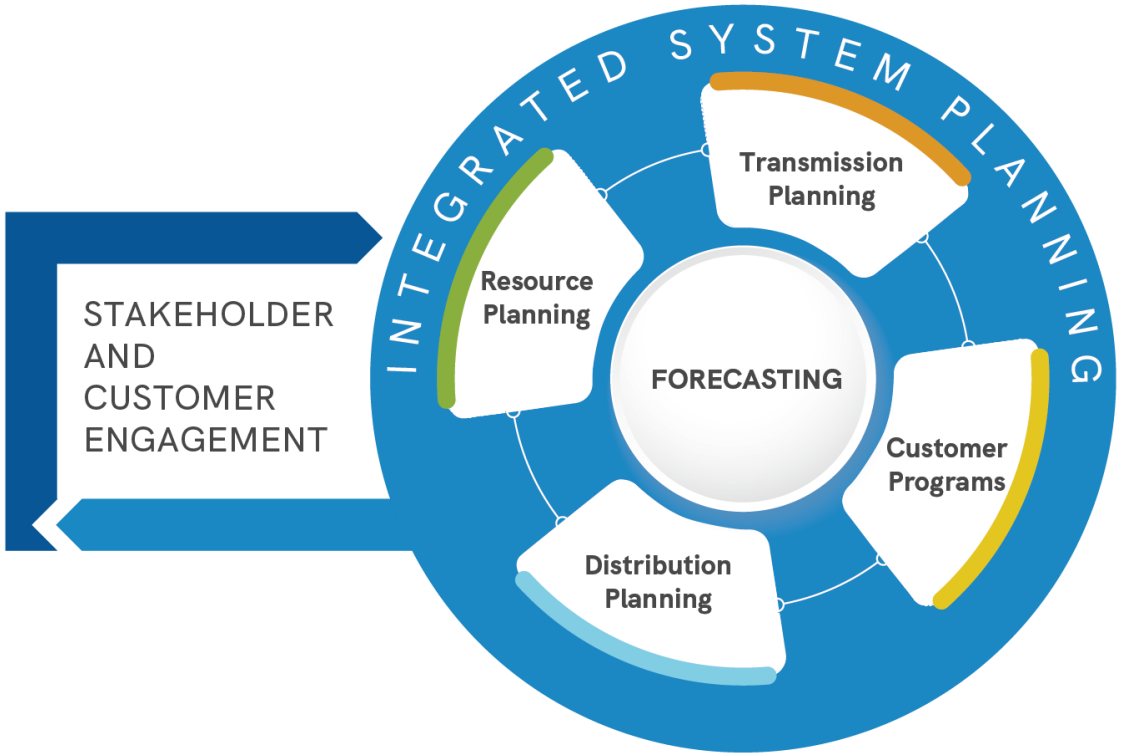
- Finalize All-Source RFP selections
- Negotiate power purchase agreements
- Pursue options for additional flexible natural gas

SRP's Leading Vision: Integrated System Planning

Angie Bond-Simpson
Director, Integrated System Planning & Support (SRP)

SRP's Integrated System Plan

Planning a future system (2025-2035) that will enable us to achieve or exceed our 2035 goals, at the best customer value.



Current and Future Integrated System Plans

2035 Goals &

2018 Integrated Resource Plan

Integrated System Plan 1: Pilot

Foundational plan

Creates collaborative process

Identifies gaps and customer priorities

Integrated System Plan 2: Enhance

Improves methodology

Addresses gaps

Enhances scope

Integrated System Plan 3: Optimize

Establish **Planning Together**

Build Methods for **Planning Better**

SRP ISP ROADMAP

Stakeholder Engagement and Public Outreach

Collaboratively develop Study Plan:
Scenarios & Sensitivities
Strategic Approaches
Metrics

Gather input data

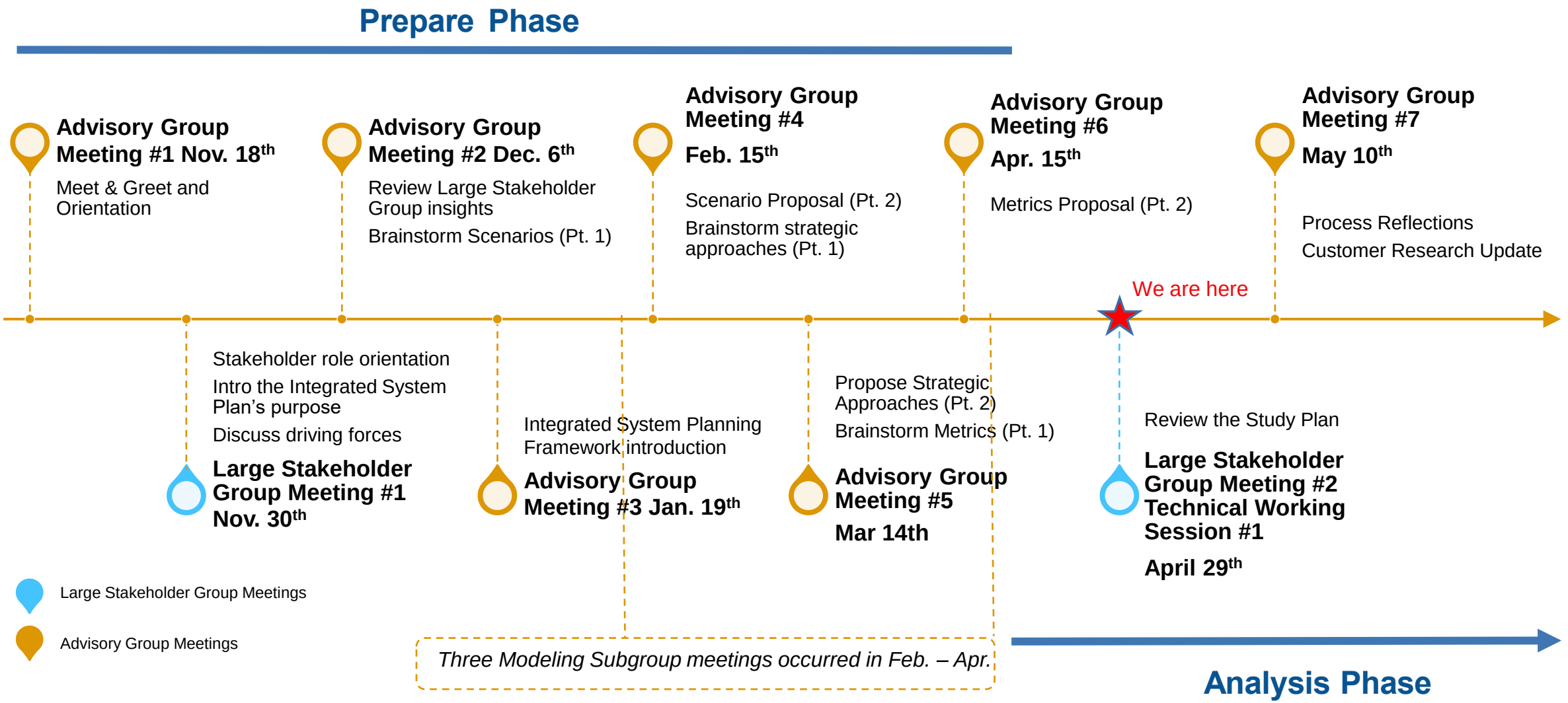
Perform system analysis

Validate and share results

Recommend new SRP strategic directions

Recommend near term actions

Developing the Study Plan



Poll Question

Enter a phrase or short sentence to answer:

It’s the year 2035 and there is a feature article in USA Today about Arizona’s energy transition.

What's the headline?

Submit multiple responses if desired.

It's the year 2035 and there is a feature article in USA Today about Arizona's energy transition. What's the headline?

Open Text Responses:

- Wholistic system planning helps achieve robust system
- AZ meets 75% renewable goal
- Utilities Service Area To Be Redrawn
- Every home has a battery
- Widespread community solar projects dramatically reduce the energy burden for low-income communities in Phoenix.
- Homeowners move to energy Independence
- "100% of vehicle sales are electric"
- Distributed resources play important role in Arizona's transition to clean energy.
- Arizona leads nation in renewable energy generation
- Arizona has reached 2 million electric vehicles.
- Arizona leads the way to a carbon-free future
- The Southwest still struggles to meet demand
- Utilities use technology to lead the way
- AZ All Solar
- Arizona utilities' participation in regional wholesale markets has saved billions.
- Sun Storage Success

The Study Plan

Lakshmi Alagappan – Partner (E3)
Angie Bond-Simpson – Director, Integrated System Planning (SRP)
Jed Cohen - Integrated System Planning Lead (SRP)
Kyle Heckel - Integrated System Planning Sr. Analyst (SRP)

The Study Plan: Introduction

Lakshmi Alagappan
Partner, Energy and Environmental Economics (E3)

Study Plan

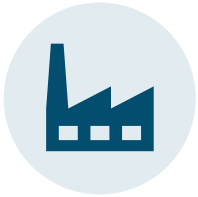
With input and feedback from stakeholders, SRP has developed a study plan for the Integrated System Plan that aims to:

- **Identify uncertainties** that can impact future system plans
- **Test SRP decisions** for how to meet customers' energy needs
- **Produce results** to inform strategic directions and actions over the next several years

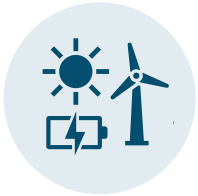
Southwest Resource Adequacy Study

E3 conducted the SWRA study on behalf of APS, the AZ G&T Cooperatives, EPE, PNM, SRP, TEP, and WALC to examine power system reliability in the Southwest over the next decade – recognizing multiple planning challenges and uncertainties:

Load growth



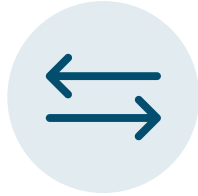
Planned coal & gas retirements



Rapidly increasing reliance on renewables, storage, and distributed energy resources

Climate change impacts on extreme weather

Increasing risk of sustained drought

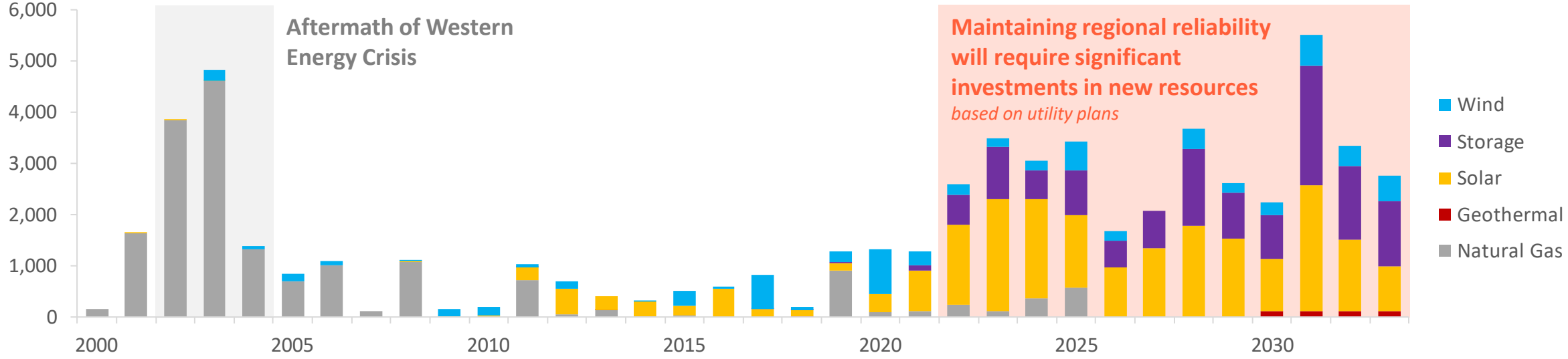


Tightening Western markets

Southwest Resource Adequacy Study: Plans for New Resources Over the Next Decade

Over the next 10 years, utilities in the Southwest anticipate adding far more new resources than in any previous decade. Maintaining reliability and meeting sustainability goals will require SRP and other utilities to engage in thoughtful, sustained planning activities to bring these resources online.

New Installed Capacity Additions by Year (Southwest Region)
(Nameplate MW)



Poll Question

Enter a phrase or short sentence to answer:

Since we last met in November, what changes have you experienced in your organization or community?

Submit multiple responses if desired.

Since we last met in November, what changes have you experienced in your organization or community?

Open Text Responses:

- Regulatory uncertainty
- Escalation of demands from industries for clean electrons.
- End of the Pandemic
- Desire for optional power creating options. Keep our plants... convert them.
- Supply chain concerns
- volatile energy pricing / general inflation.
- Permitting challenges in local communities. It's not just thermal that's facing challenges.
- Ukraine Crisis
- Doubling down of long-terms about serious climate risks: drought at its highest levels, major fires expanding outside of traditional fire season, etc.
- Public desire for increased action in env
- Increased concern about solar supply chain
- Political polarization
- facility expansion
- Announced our Climate Action Plan that will provide a pathway toward our 2040 NetZero Goal
- Energy Costs (Elec & NG)
- AD/CVD tariff investigation is crippling progress and certainty for solar development.
- tight labor markets and supply chain disruptions
- Higher gas prices
- Uncertainty
- Much greater interest in EVs

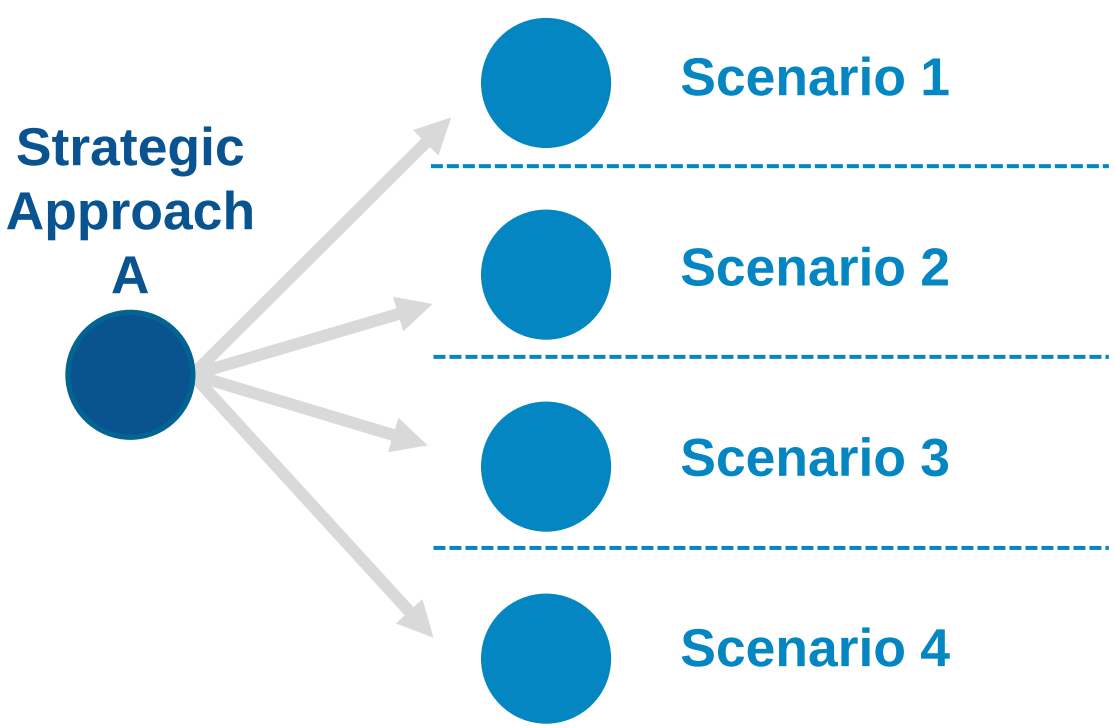
Scenario Design Framework

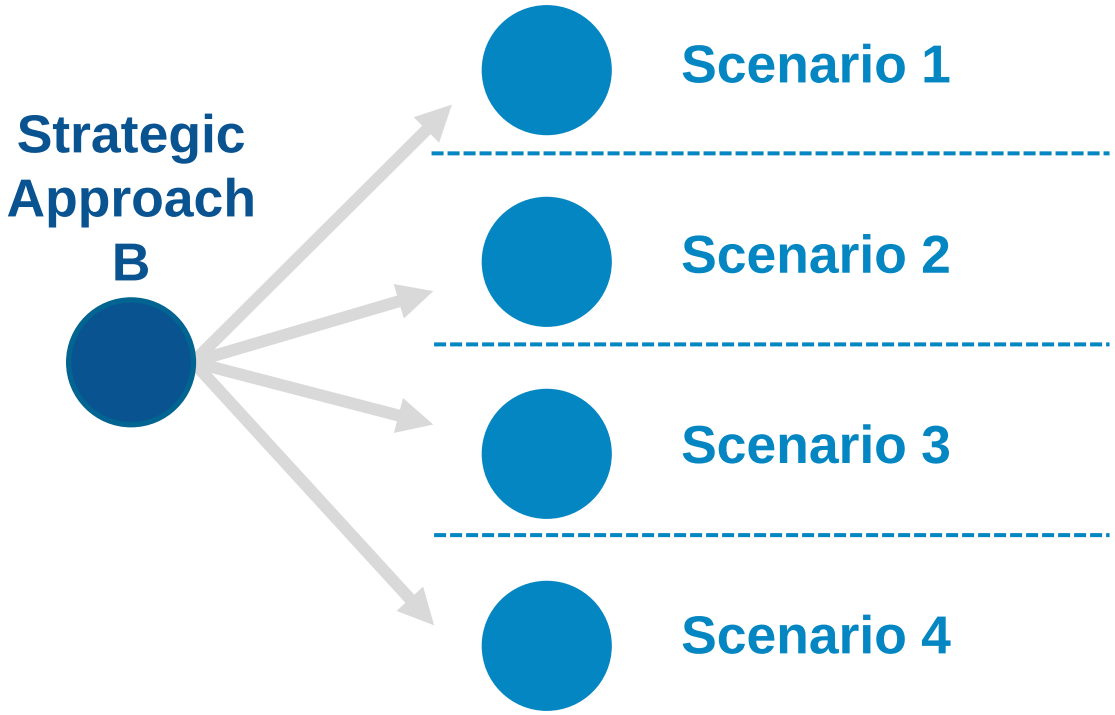
A **scenario** defines a plausible future state of the world around us, reflecting societal, technological, economic, environmental, and political trends & conditions

A **strategic approach** represents a possible set of choices that could allow SRP to meet its objectives

Relationship Between Scenarios & Strategic Approaches

Each strategic approach will be tested under a range of different future scenarios to identify the plan components that best achieve SRP's objectives and inform the development of Action Plans





Metrics

Metrics are outputs from the Integrated System Plan modeling ecosystem that allow SRP, customers, and other stakeholders to measure the performance of different system plans.

Integrated System Plan Study Plan: Study Plan Collaborative Process Overview

Study Plan Components	Stage of Completion	Advisory Group Brainstorm	Draft Proposal	Advisory Group Review & Feedback	Final Proposal	Share Final Proposal with Stakeholders
Scenarios & Sensitivities	**Finalized**	✓	✓	✓	✓	✓
Strategic Approaches	**Finalized**	✓	✓	✓	✓	✓
Metrics	Proposal	✓	✓	✓	Pending Review	May 10th

Other Stakeholder Group Engagements

Large Stakeholder Group Nov 30th discussions helped to focus and prioritize the components of the study plan

Reviewed the modeling ecosystem and specific assumptions with the Advisory Group: Modeling Subgroup

The Study Plan: Scenarios and Sensitivities

Jed Cohen
Integrated System Planning Lead (SRP)

What we heard on Nov 30th from this group

How do you think your expectations and needs for electricity service will change in the future?

Large Stakeholder Group Top Themes

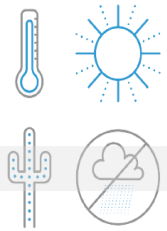
- ❑ Increased load from economic and land development, electrification, and climate change impacts
- ❑ Substantial growth in distributed/onsite solar, storage, demand response, and energy efficiency
- ❑ Reliability in the face of renewable energy fluctuations, extreme weather, and disruptions such as wildfires
- ❑ Growing corporate and organizational goals for decarbonization and grid integration
- ❑ More affordability and equity concerns for low-income community members and small businesses

The Scenarios in the Integrated System Plan

Lower electricity demand

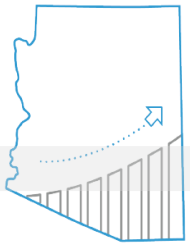
Higher electricity demand

DESERT CONTRACTION



The Desert Contraction scenario is a future in which growth slows, in part due to climate change impacts in the Southwest

CURRENT TRENDS



The Current Trends scenario reflects a central case for how Arizona's future might unfold

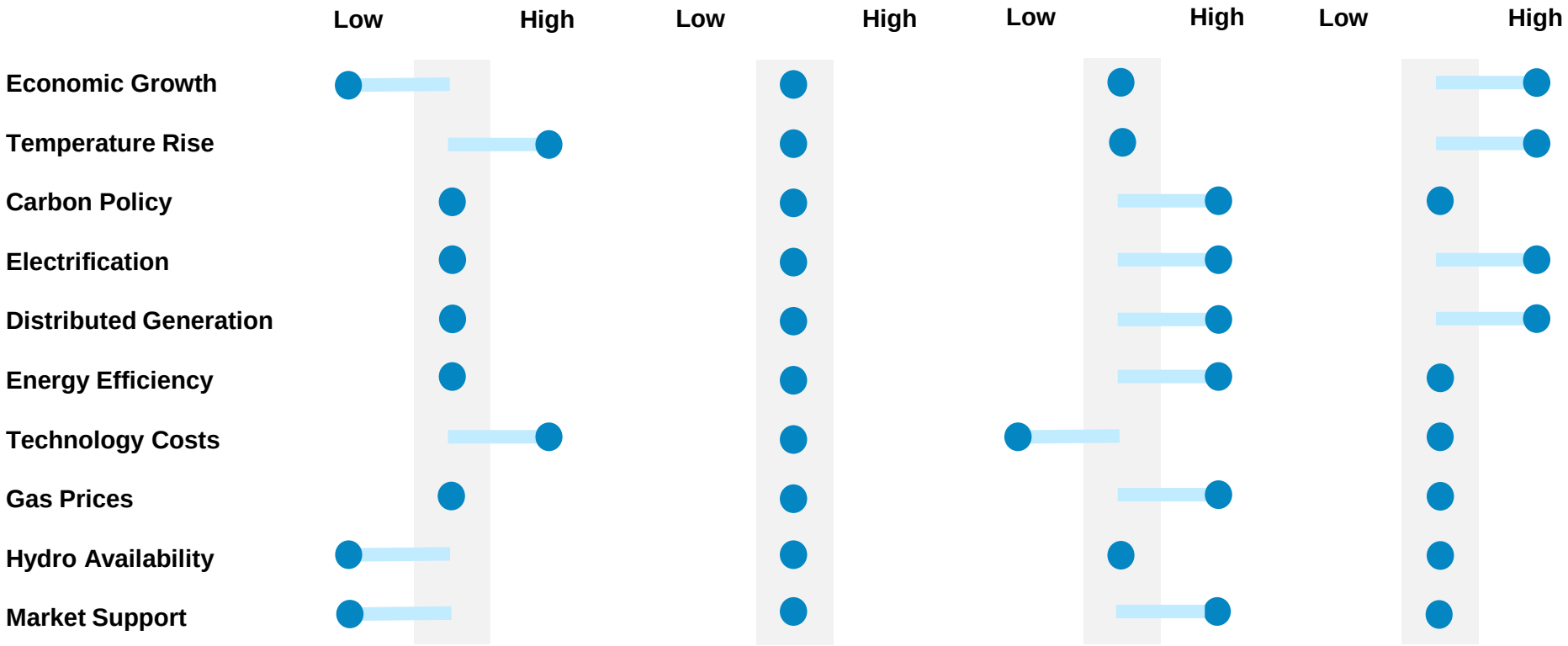
STRONG CLIMATE POLICY

The Strong Climate Policy scenario is a future in which the U.S. implements strong climate policies

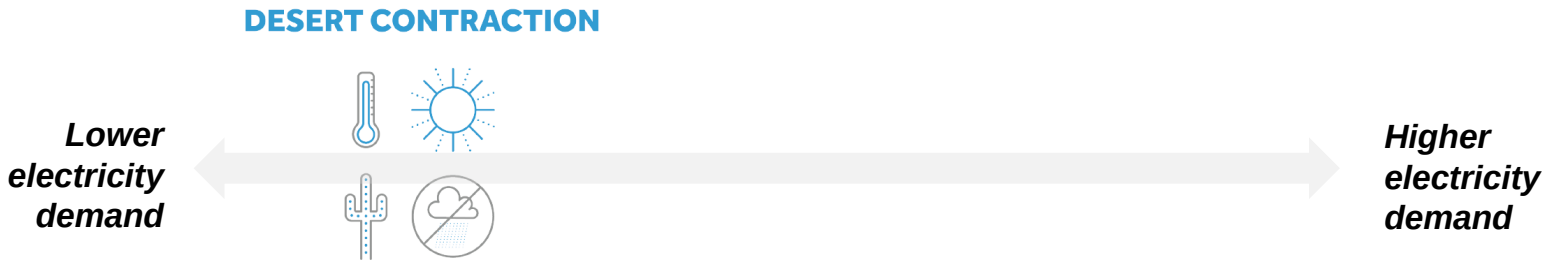
DESERT BOOM

The Desert Boom scenario is a future in which economic growth in the Valley further accelerates

Fundamental Factors:



Scenario:
Desert Contraction

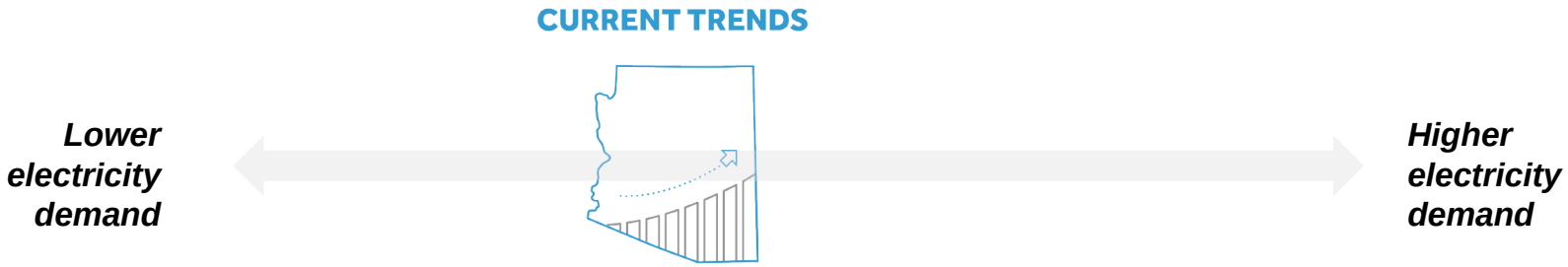


The Desert Contraction scenario is a future in which growth slows, in part due to climate change impacts in the Southwest

Driving Trends:

- Global competition and economic decline
- Rapidly developing impacts of climate change, extreme heat
- Electricity import markets shrink as the Southwest struggles with extreme drought

Scenario: Current Trends

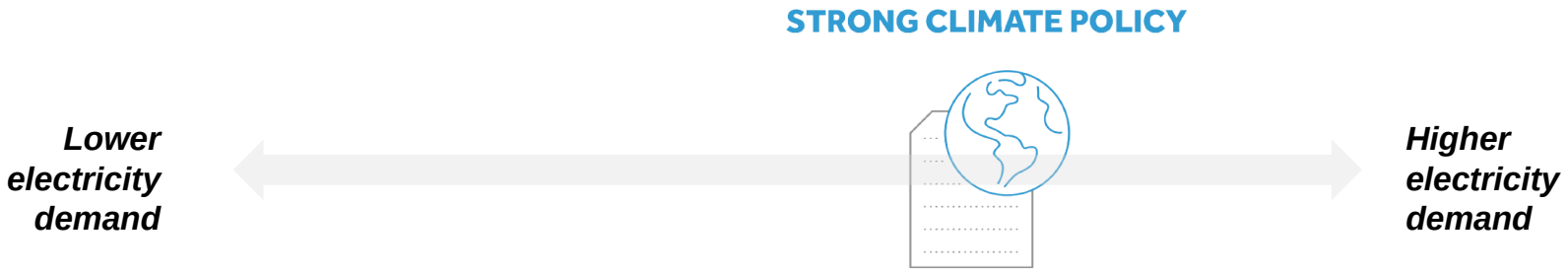


The Current Trends scenario reflects a central case for how Arizona's future might unfold

Driving Trends:

- Favorable economy in Arizona drives commercial growth
- Increased temperatures and continued drought
- New technologies take hold with increased electrification, distributed energy, energy efficiency and decreased solar and battery technology costs.

Scenario: Strong Climate Policy



The Strong Climate Policy scenario is a future in which the U.S. implements strong climate policies

Driving Trends:

- New public policies and measures implemented to mitigate climate change
- Mass-based carbon reduction target of 85% by 2035
  Compared to 2005 levels
- R&D spending spurs rapid advancements in the next generation of energy technologies

Scenario: Desert Boom

Lower electricity demand

Higher electricity demand

The Desert Boom scenario is a future in which economic growth in the Valley further accelerates

Driving Trends:

- A booming tech industry sites a second Silicon Valley in our Valley of the Sun
- The strong economy drives electrification and distributed energy adoption
- Rapid temperature increase and continued drought

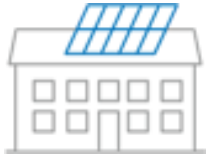
Sensitivities

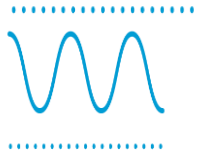
Sensitivies

High Demand Response

High Energy Efficiency

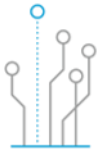
High Distributed Generation Adoption





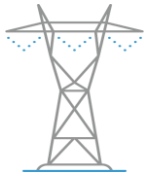
Increased Load Management

High, Low & Volatile Gas Prices



High & Low Technology Costs

Regional Diversity



Poll Question

Which of the 10 sensitivities is most interesting to you?

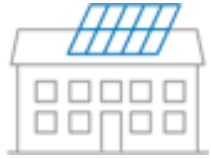
Choose a letter to answer:

Sensitivies

A. **High Demand Response**

B. **High Energy Efficiency**

C. **High Distributed Generation Adoption**

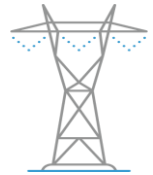


D. **Increased Load Management**

E. **High, Low & Volatile Gas Prices**

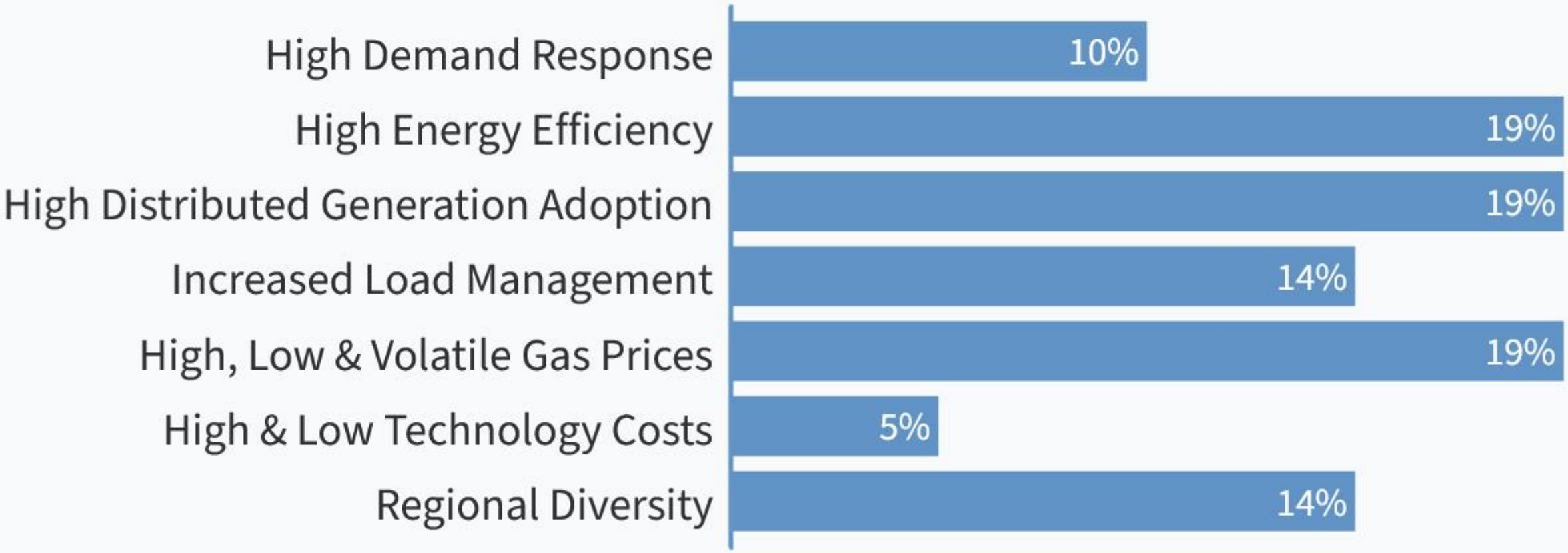
F. **High & Low Technology Costs**

G. **Regional Diversity**



Please, one response only.

Which of the 10 sensitivities is most interesting to you?



The Study Plan: Strategic Approaches

Angie Bond-Simpson
Director, Integrated System Planning & Support (SRP)

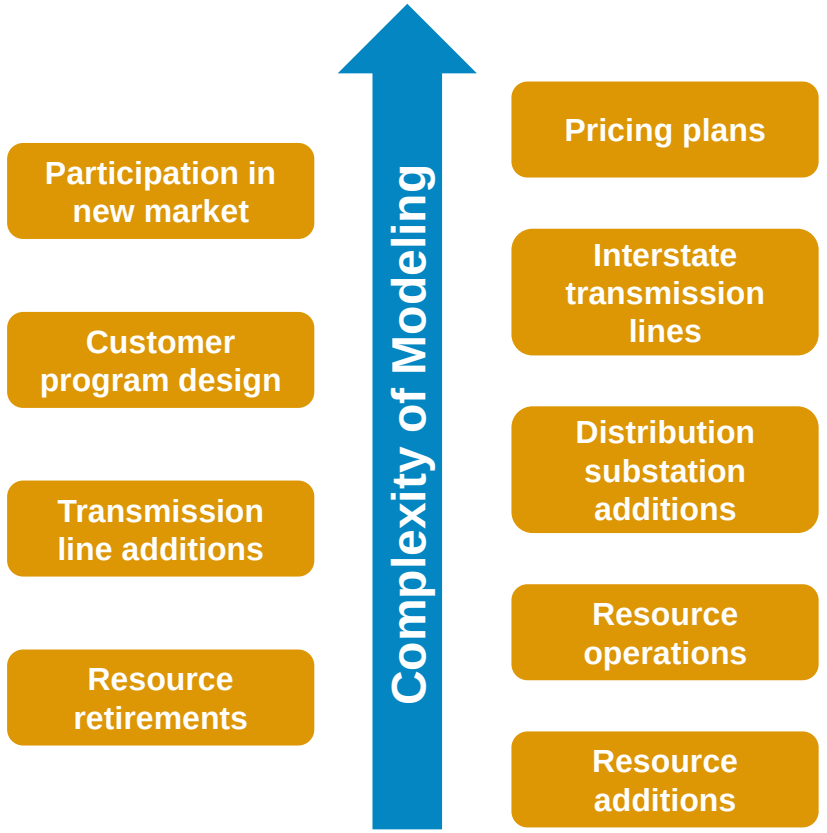
Guidelines for Strategic Approaches

All strategic approaches must:

- Meet or exceed SRP's 2035 **Sustainability** Goals. This includes SRP industry leading Customer Programs inclusive of Energy Efficiency.
- Meet industry & SRP standards for **reliability**.
- Consider **affordability**

The first Integrated System Plan will not be able to evaluate all potential strategic approaches.

Illustrative SRP Decisions:



Proposed Strategic Approaches & Studies

Strategic Approaches for System Analyses

Modeled through scenarios and sensitivities

- **Technology Neutral**
- **No New Fossil**
- **Minimum Coal**

Exploratory Studies

Studies to enhance system planning

- **Next Generation Time of Use**
- **High Regional Interaction**
- **Flexible Coal Operations**
- **SRP Storage on Distribution System**

Technology Neutral

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

This strategic approach considers Advisory Group ideas relating to least cost systems, affordability, and approaches open to all technology options

Key Research Questions Addressed:

- What is a least-cost approach to serving customer demand under the various scenarios?
- What is the impact of a least-cost approach on carbon emissions?
- How diverse/resilient is the system in 2035?

No New Fossil

SRP avoids investment in new natural gas capacity, ***meeting future needs with carbon-free resources***

This strategic approach considers Advisory Group ideas relating to not relying on fossil fuels or carbon capture and storage.

Key Research Questions Addressed:

- What investments, research and operational readiness activities are needed to maintain reliability without flexible natural gas?
- What are the opportunities and challenges from a power delivery perspective?
- Do we have transmission access to diversify renewables?

Minimum Coal

*SRP **reduces power generation from coal** and analyzes the system-wide impacts*

This strategic approach considers Advisory Group ideas relating to exiting coal and plant community impacts.

Key Research Questions Addressed:

- What is the role of existing coal assets in the energy transition?
- What other options are available to serve that role?
- What emerging technologies will need to be in place to serve customer demand?

Exploratory Studies

Related to advisory group ideas about innovative choices to meet customer demand

Exploratory Studies

Next Generation Time of Use

SRP explores the next generation of residential TOU plans

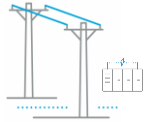
High Regional Interaction

SRP explores integration with regional electricity markets

Flexible Coal Operations

SRP explores the system impacts and value of flexible operation of the coal generation fleet

SRP Storage on Distribution System



SRP explores storage sited on the distribution versus transmission systems

Strategic Approaches & Exploratory Studies

Strategic Approaches for System Analyses

Technology 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*

Exploratory Studies

Next Generation Time of Use

SRP explores the next generation of residential TOU plans

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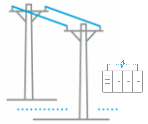
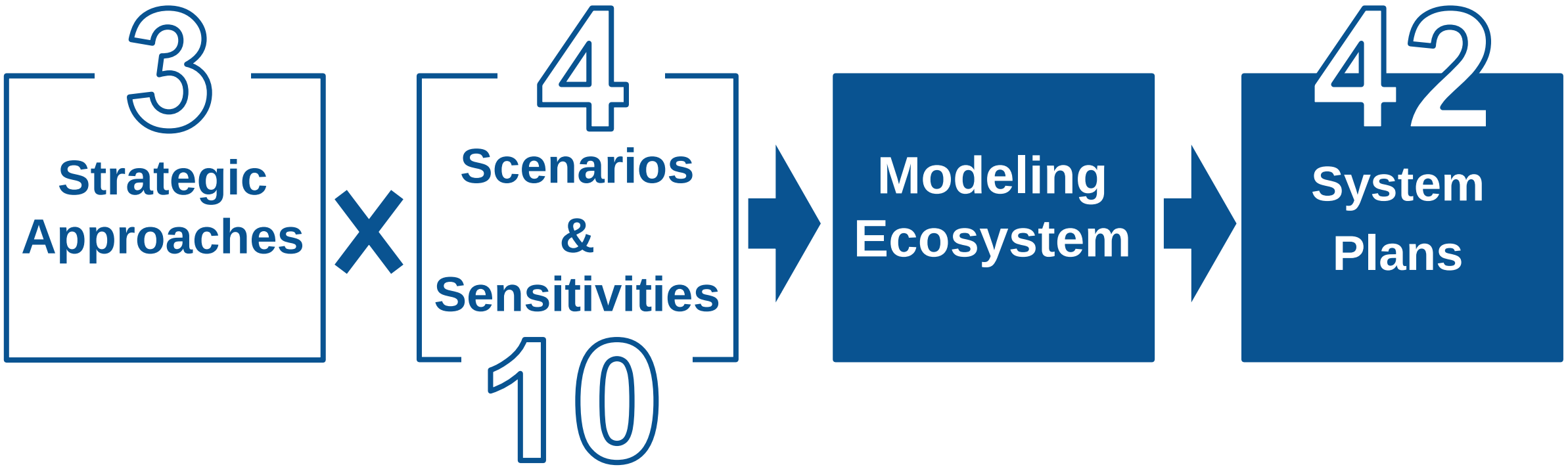
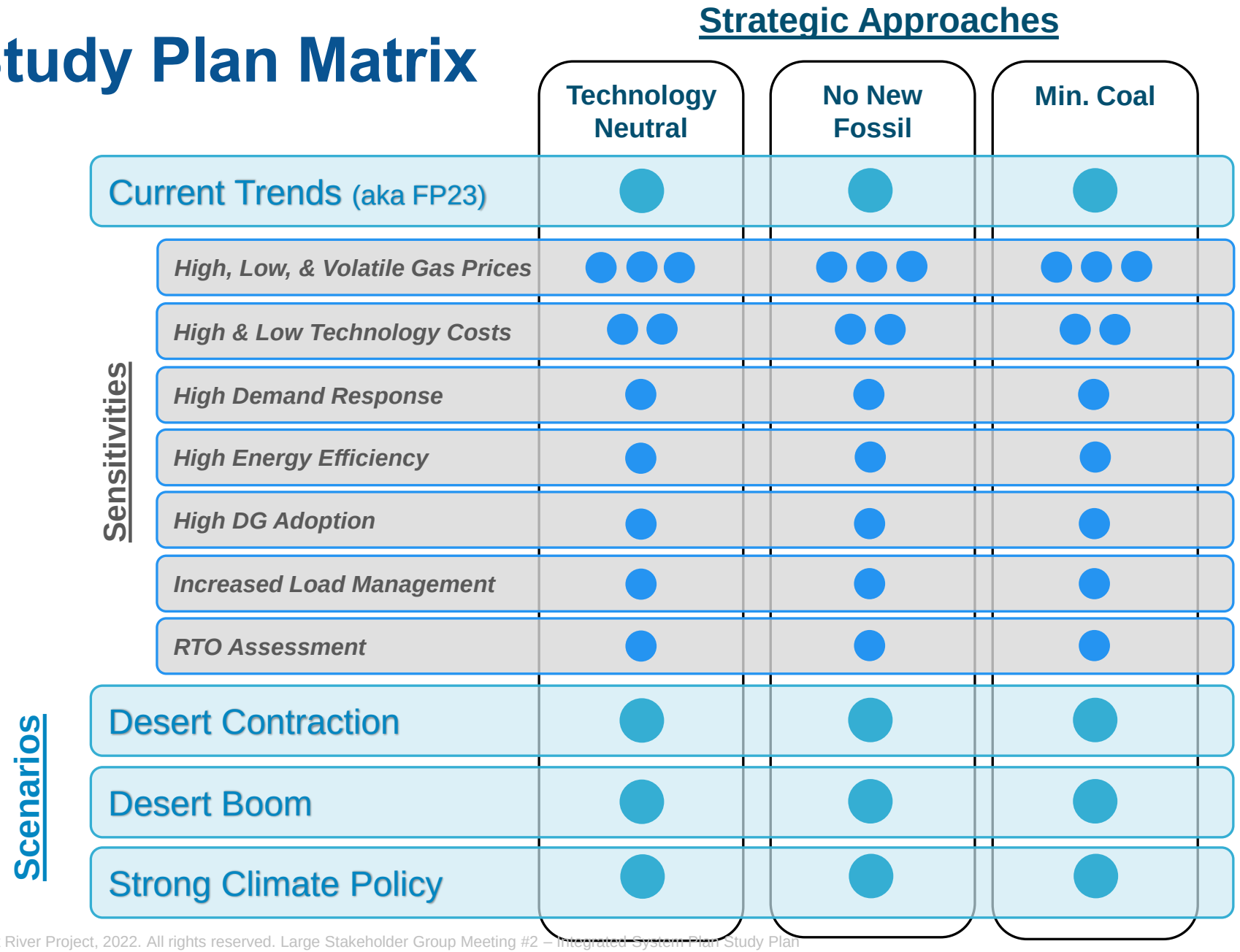


SRP explores storage sited on the distribution versus transmission systems

Developing a System Plan



Study Plan Matrix



Exploratory Studies

- Next Generation Time of Use (TOU)
- High Regional Interaction
- Flexible Coal Operations
- SRP Storage on Distribution System

Poll Question

Chose A, B, or C to answer:

Which strategic approach most interests you?

A.

Technology Neutral

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

B.

No New Fossil

*SRP avoids investment in new natural gas capacity, **meeting future needs with carbon-free resources***

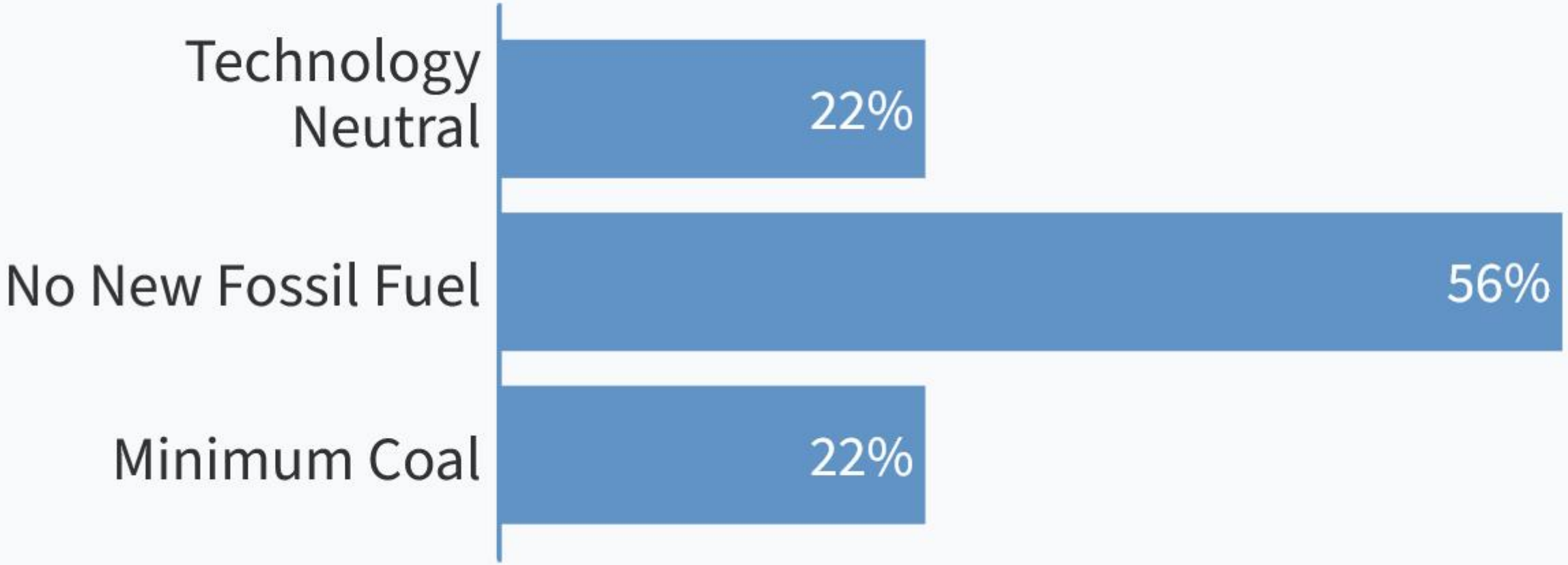
C.

Minimum Coal

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

Please, one response only.

Which strategic approach most interests you?



Poll Question

Chose A, B, C, or D to answer:

Which exploratory study most interests you?

A.

Next Generation Time of Use

SRP explores the next generation of residential TOU plans

B.

High Regional Interaction

SRP explores integration with regional electricity markets

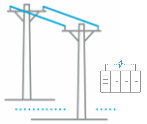
C.

Flexible Coal Operations

SRP explores the system impacts and value of flexible operation of the coal generation fleet

D.

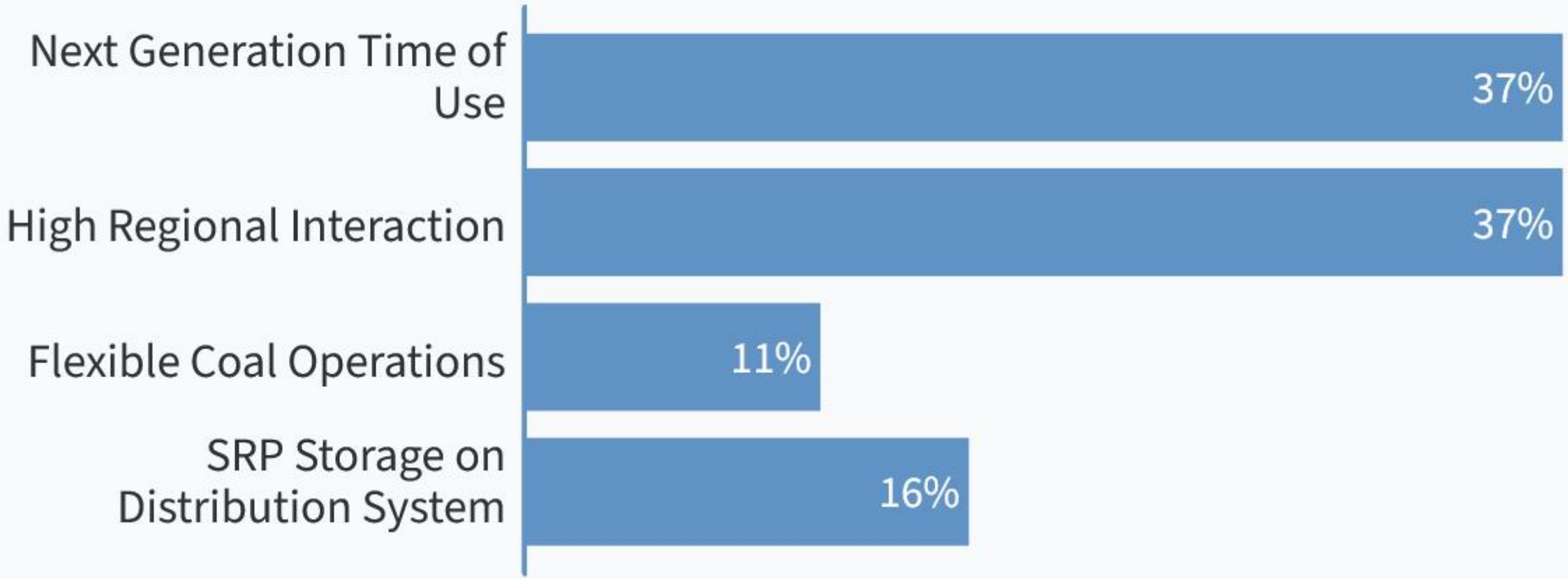
SRP Storage on Distribution System



SRP explores storage sited on the distribution versus transmission systems

Please, one response only.

Which exploratory study most interests you?



The Study Plan: Metrics

Kyle Heckel
Sr. Analyst, Integrated System Planning & Support, SRP

Guidelines for Integrated System Plan Metrics

Metrics will be used to…

- Provide information to SRP, customers and other stakeholders
- Evaluate the performance of each strategic approach across scenarios and sensitivities

Metrics should…

- Be quantifiable
- Vary across strategic approaches
- Give insight into interesting elements of power system performance

Proposed Metrics Categories

Affordability

What are the system costs to SRP and price impacts to customers?

Sustainability

How does the system impact different environmental considerations?

Reliability

How do different system plans increase or mitigate reliability risks?

Customer Preference

Which system plans do customers prefer?

Poll Question

Enter 1 to 3 words to answer:

What ideas do you have for measuring success of the Integrated System Plan?

Use an underscore (“_”) between words to submit them as a single word cloud response, submit multiple responses if desired.

What ideas do you have for measuring success of the Integrated System Plan?

Next Steps & Wrap-up

Angie Bond-Simpson
Director, Integrated System Planning & Support (SRP)

Next Steps

Large Stakeholder Group

Technical Working Session #1

TODAY at 10:15AM

Tentative Schedule:

- Meeting #3: **ISP Study Results** – Fall / Winter 2022
- Meeting #4: **ISP Path Forward** – Spring 2023

Stakeholder Communication Email:

IntSysPlan@srpnet.com

Integrated System Plan: Informational Portal

https://srpnet.com/about/integrated-system-plan.aspx

thank you!