SRP Integrated System Plan

Advisory Group

Meeting #3: Our Power Future, Together

January 19, 2022

Welcome

Kelly Barr
Associate General Manager, Chief Strategy, Corporate Services & Sustainability Executive

Welcome SRP Board and Council Observers

John Hoopes
SRP Vice President

Randy Miller
SRP Board Member

Anda McAfee
SRP Board Member

Jack White
SRP Board Member

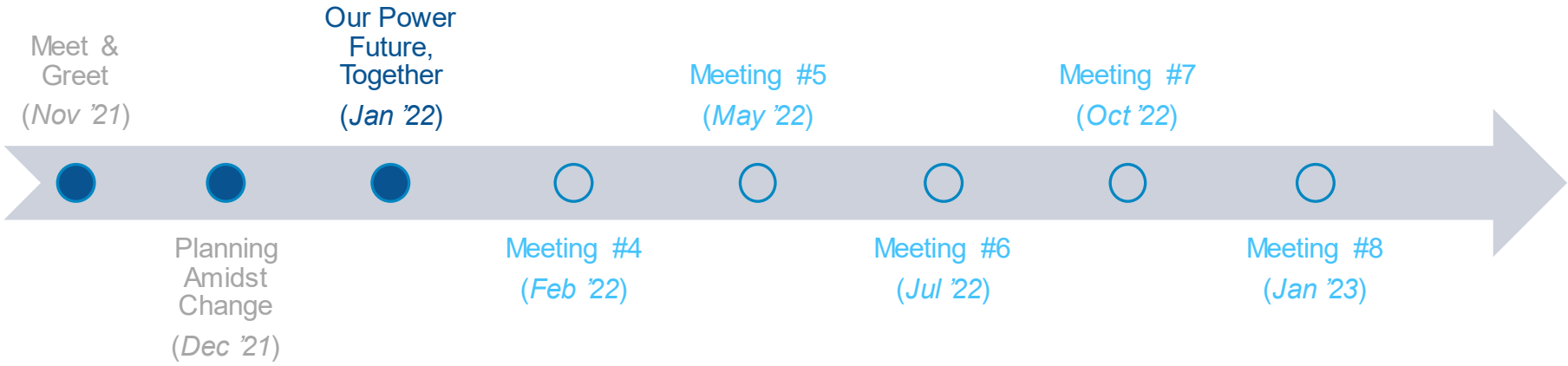
Larry Rovey
SRP Board Member

Suzanne Naylor
SRP Council Member

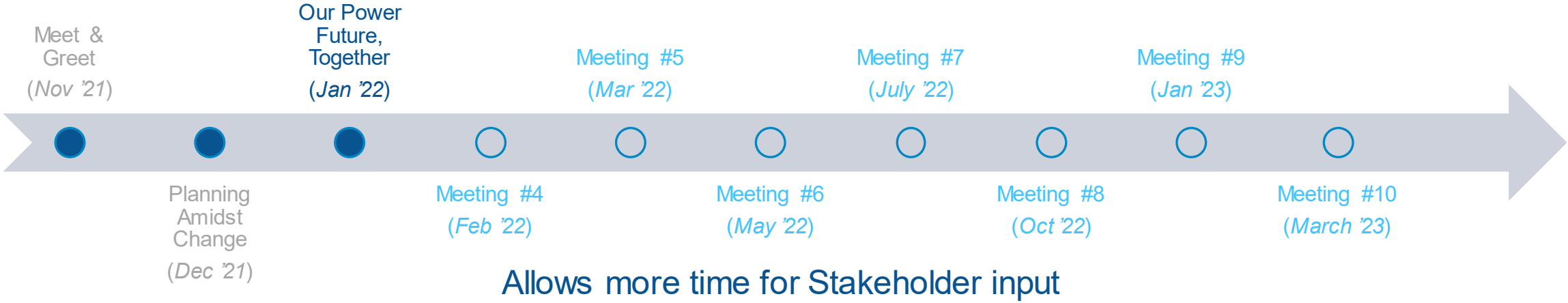
Rocky Shelton
SRP Council Member

Proposal to Extend the Project's Schedule

Current Advisory Group Meeting Timeline:



Proposed Extended Advisory Group Meeting Timeline:



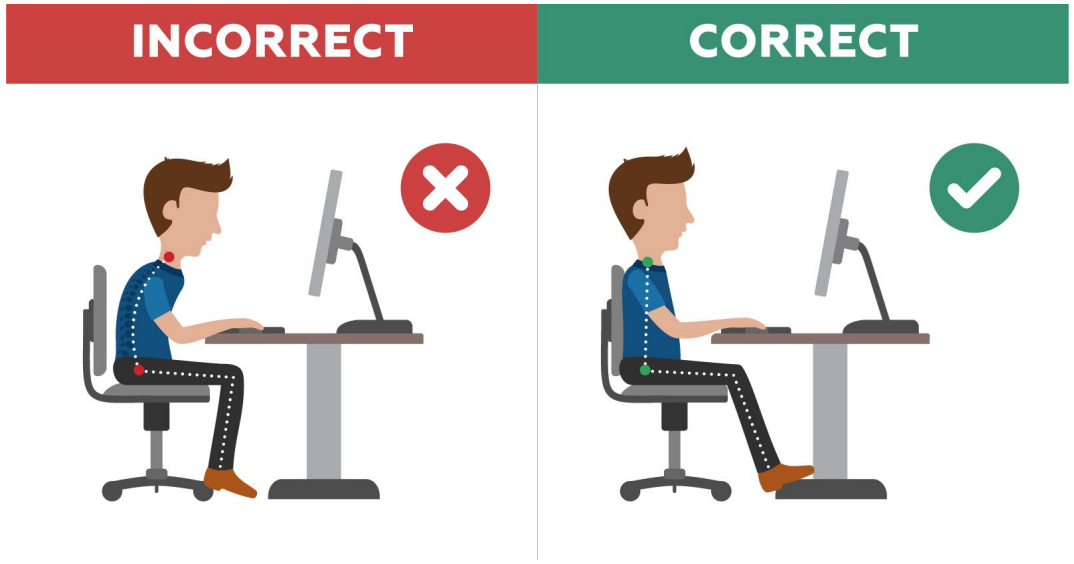
Allows more time for Stakeholder input

Safety & Sustainability Minute

Work from home safely and sustainably

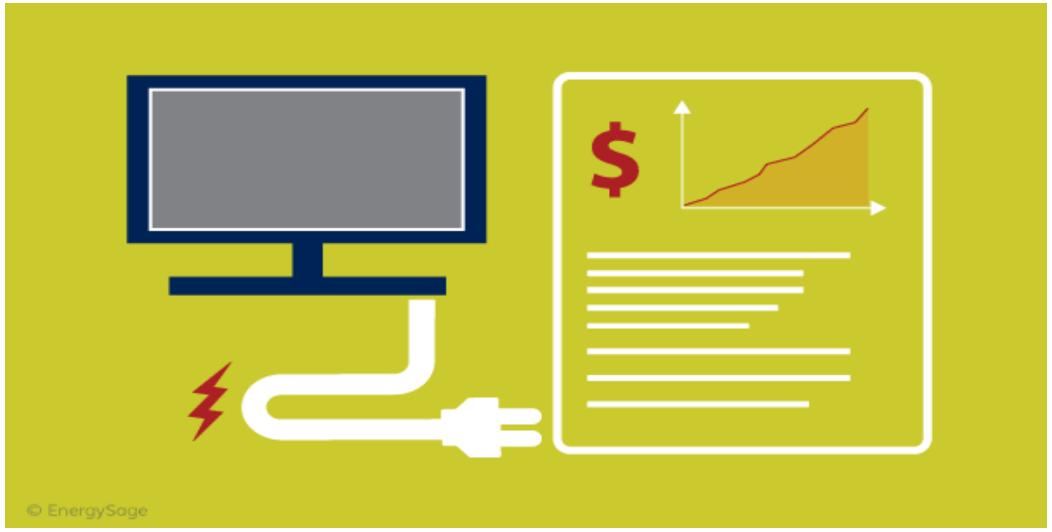
Daily Safety: Ergonomics

- Good posture is critical
- Avoid pressure points with your seat or desk
- Top part of the screen is at eye level
- Good ergonomics can help alleviate aches and pains and avoid long-term complications



Sustainability

- Unplug devices at night to reduce electricity use
- 'Phantom' load: devices use electricity even when they are turned off



Meeting Objectives:

- Discuss how integrated system planning will shape the way Distribution, Transmission, Generation and Customer Programs plans interface
- Introduce the integrated system planning framework and gather feedback on the future scenarios to consider in the Integrated System Plan

Meeting Agenda

Time		Topics	Presenter
9:00 – 9:10	10 mins	Welcome and Schedule Updates	Kelly Barr (SRP)
9:10 – 9:15	5 mins	Agenda Overview and Welcoming New Members	Joan Isaacson (Kearns & West)
9:15 – 10:25	70 mins	Planning Across the Entire System in the Integrated System Plan – Panel Discussion	Lakshmi Alagappan (E3) - Moderator Dan Dreiling (SRP) Vanessa Kisicki (SRP) Bryce Nielsen (SRP) Michael Reynolds (SRP)
10:25 – 10:35	10 mins	SRP Principles of Collaboration	Angie Bond-Simpson (SRP)
10:35 – 10:45	10 mins	Coffee Break	
10:45 – 11:25	40 mins	Scenario Planning Framework for the Integrated System Plan: Part 1	Nick Schlag (E3)
11:25 – 11:30	5 mins	Next Steps & Wrap-up	Joan Isaacson (Kearns & West)

SRP Integrated System Plan Advisory Group

	Organization Name	Primary Representative	Secondary Representative
1	AZ Hispanic Chamber of Commerce	Monica Villalobos	Susette Coumides
2	A New Leaf	Michael Hughes	
3	American Association of Retired Persons (AARP)	Brendon Blake	Tom Doescher
4	Arizona State University (ASU)	Gary Dirks	
5	AZ Arizona Public Interest Research Group (PIRG)	Diane Brown	
6	Building Owners and Managers Association (BOMA)	Amanda Forsmo	
7	Chicanos Por La Causa	Max Gonzales	
8	City of Phoenix	Karen Peters	
9	CMC Steel AZ	Garrett Kent	
10	Common Spirit Health	Robert Vandling	
11	CyrusOne	Todd Masters	
12	Environmental Defense Fund	Pam Kiely	Taylor Bacon
13	Intel	Marty Sedler	
14	Kroger	Denis George	
15	Local First	Kimber Lanning	Michael Peel
16	Mesa Public Schools	Scott Thompson	
17	PAC Worldwide	Mike Kunst	
18	Pinal County	James Smith	Himanshu Patel
19	SRP Customer Utility Panel (CUP)	Chris Clark	Audra Koester Thomas
20	Salt River Pima-Maricopa Indian Community (SRPMIC)	Martin Harvier	Gary Bohnee
21	Southwest Energy Efficiency Project (SWEEP)	Ellen Zuckerman	Caryn Potter
22	Western Resource Advocates (WRA)	Adam Stafford	Alex Routhier
23	Wildfire	Cynthia Zwick	

Guides for Productive Virtual Meetings

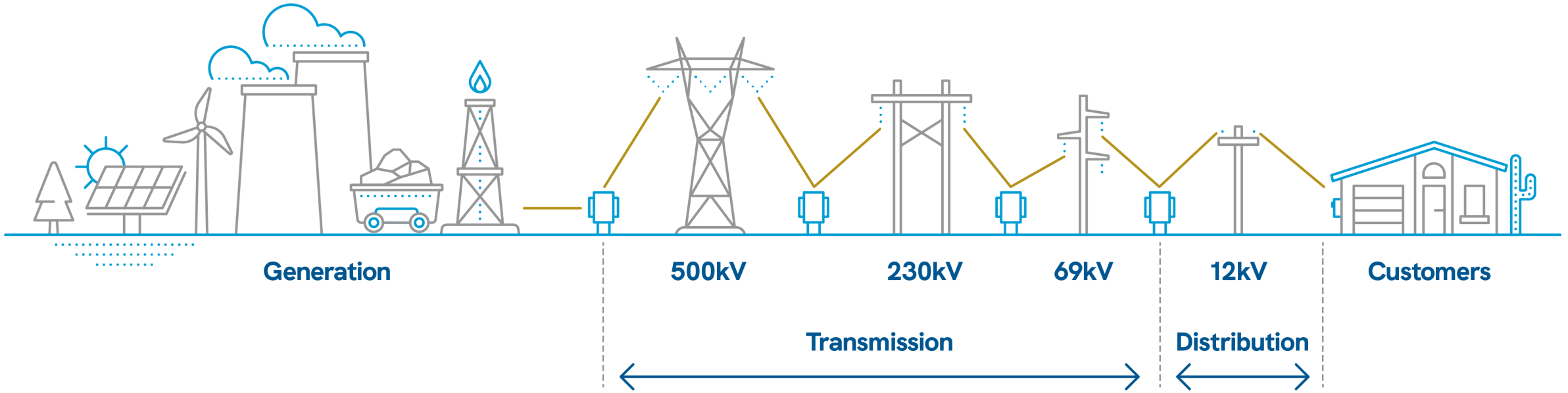
- Actively participate
- Be respectful of other perspectives
- Listen for understanding
- Stay concise to allow time for everyone to participate
- Enjoy the meeting!

Planning Across the Entire System in the Integrated System Plan – Panel Discussion

Planning Across the Entire System in the Integrated System Plan

Lakshmi Alagappan, Panel Moderator
E3 Partner

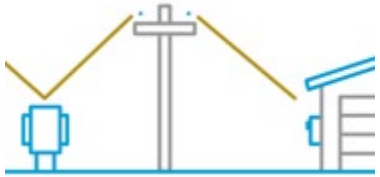
Traditional Utility Planning



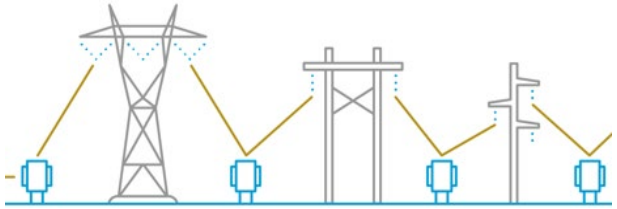
Traditional Utility Planning

Parallel Planning Processes

Customer Programs Design



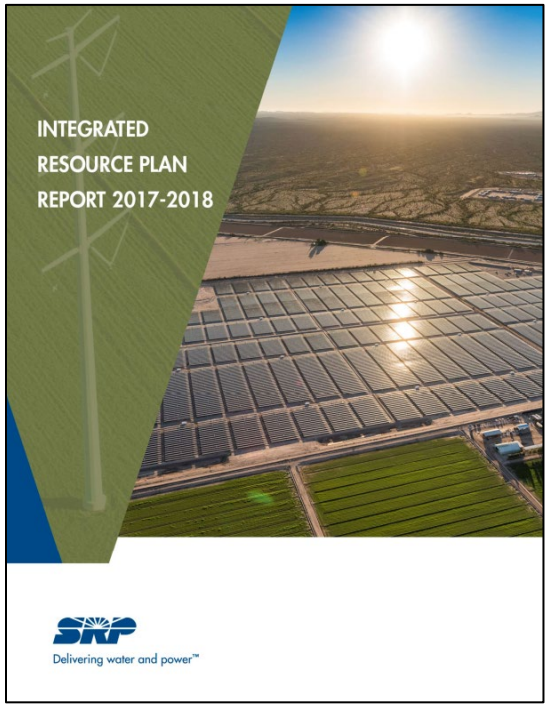
Distribution Planning



Transmission Planning

Resource Planning

Integrated Resource Plan (IRP)

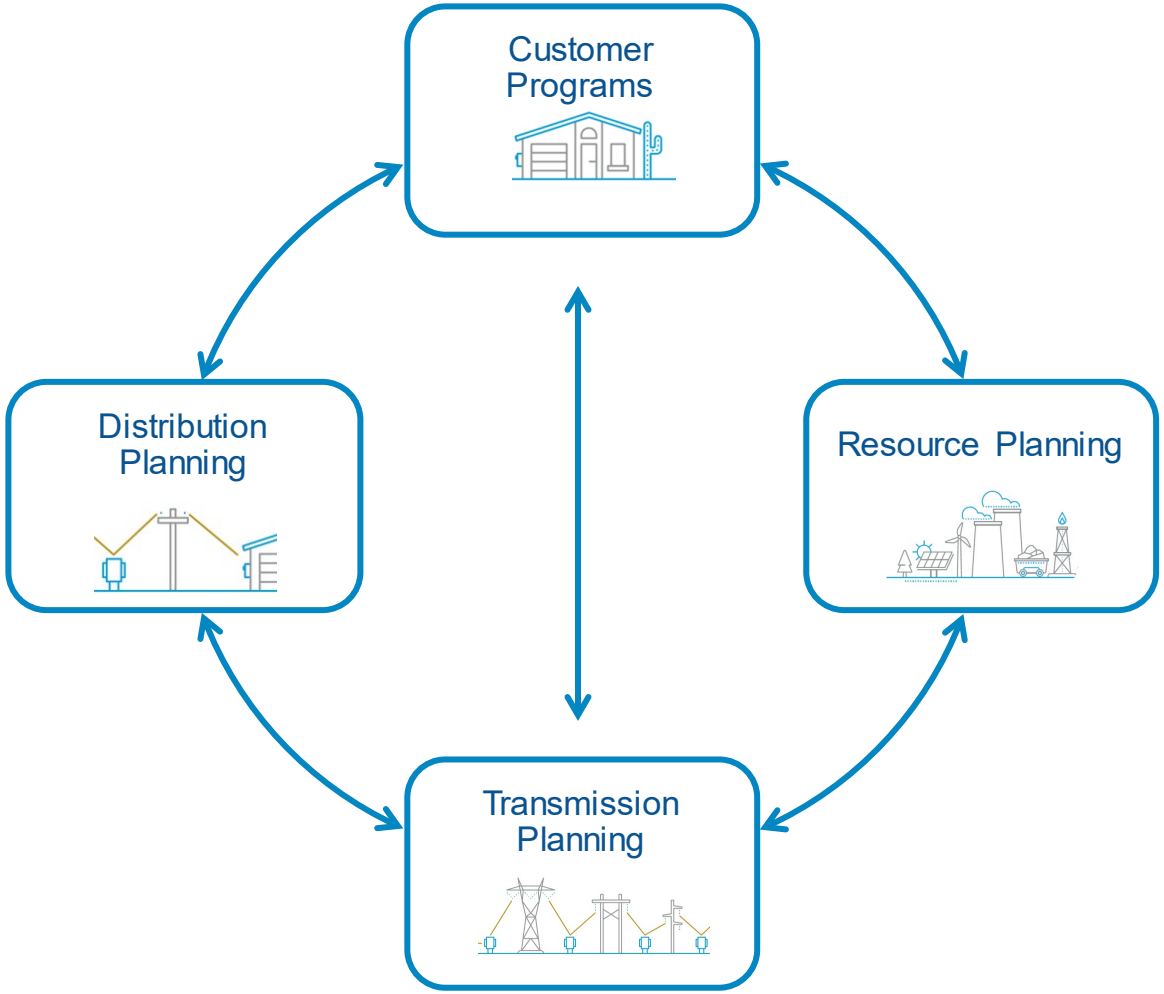


IRP Strategic Directions

- Grow renewables
- Reduce coal
- Preserve option for new nuclear
- Develop and promote customer programs
- Seek battery alternatives
- Develop flexible natural gas
- Expand participation in regional transmission markets
- Focus research on new technologies for generation, load management, storage and electrification

Integrated System Planning (ISP)

Interactive Planning Process



The Integrated System Plan puts forward an action plan that includes strategic directions for each of the planning areas

ISP Action Plan

- Planning for resource procurements
- Additional transmission planning for identified needs
- Additional distribution planning for identified needs
- Customer program design and planning
- Evaluation of pricing plans
- Planning tools, data, and process development

Current and Future Integrated System Plans

2035 Sustainability Goals &

Integrated Resource Plan 2017-18

Pilot Integrated System Plan

Foundational initial plan

Sets up a collaborative process

Identifies gaps, customer needs and goals

Integrated System Plan 2

Includes additional topics

Improves methodology

Addresses gaps

Integrated System Plan 3

Expands strategic options

Considers breakthrough technologies

Customer Programs

Dan Dreiling
Director, Customer Programs (SRP)

SRP Customer Programs

- Responsible for designing, developing and implementing SRP's energy efficiency, demand response, transportation electrification and other select customer programs.
- Our primary goals are to understand customer needs and offer programs that provide value, enhance customer satisfaction, and meet SRP's established sustainability objectives.

SRP's 2035 Sustainability Goals - Customer Programs

Energy Efficiency

Deliver over **3 million MWh** of annual aggregate energy savings.

Demand Response

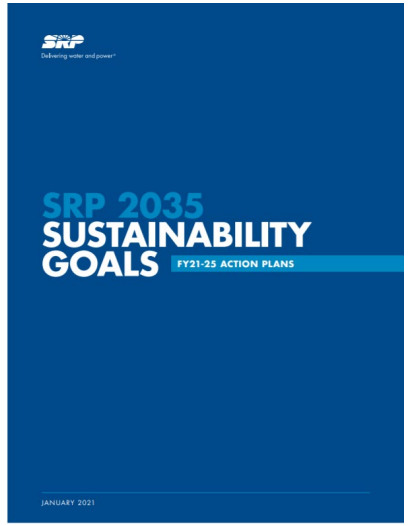
Deliver at least **300 MW** of dispatchable Demand Response and load management programs.

Electric Technologies

Expand portfolio of E-Tech programs to deliver **300,000 MWh** of annual aggregate energy impact.

Transportation Electrification

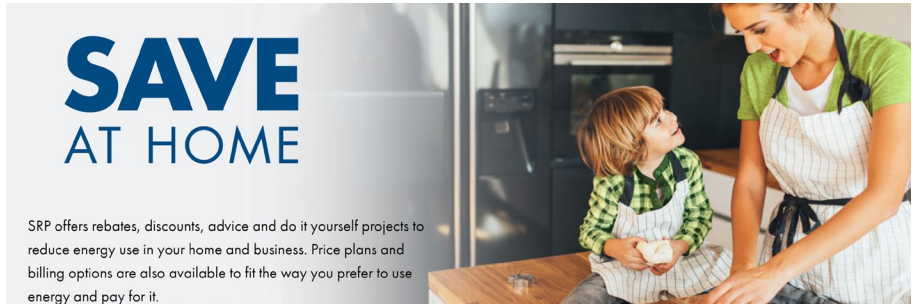
Support the enablement of **500,000 electric vehicles** (EV) in SRP's service territory and **manage 90% of EV charging**.



Considerations for Designing and Optimizing Programs

Diverse Portfolio of EE & DR Programs

Efficient Home
HVAC, Duct Repairs, Shade Screens, Insulation Upgrades, Energy Audits, Smart Thermostat



Commercial & Industrial
Standard, Custom, Small, New Construction, Retrocommissioning

Demand Response
Smart Thermostat, Commercial

Shade Trees

Education
Energy Scorecard, Building Codes, Events

Income Qualified
Multifamily, Home Energy Assessments

BRIGHTER DAYS, LOWER BILLS

PROGRAM HELPING LIMITED-INCOME FAMILIES WHO RENT BECOME MORE ENERGY EFFICIENT

BY KATHLEEN MASCAREÑAS

For 57-year-old Bruce Clinton, a disabled civil maintenance engineer who lives with and cares for his younger special-needs brother, it was a curious yet heartwarming sight.

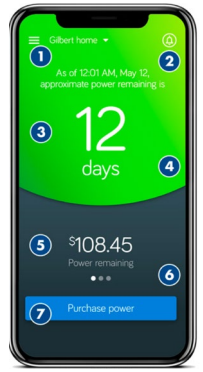
No one had ever come into their two-bedroom apartment before to help make the modest home more energy efficient. Yet on this day, courtesy of SRP, a staff member from the apartment complex zipped around swapping out old light bulbs and replacing them with brighter, more energy-efficient bulbs. First, in the bathrooms. Next, the kitchen. And finally, his ceiling fans and front porch too. Bruce noticed the difference. He felt it in his heart as well.

ENERGY STAR Homes

E-Commerce
Marketplace

SRP® | MARKETPLACE

M-Power



Growing EV, Electrification and Grid Enablement Programs

Home EV Charging

- Residential Smart Charger
- ENERGY STAR Homes – EV-Ready Communities
- Residential Turnkey EV Charging[a]

Managed Charging Research

- EV Supply Equipment (EVSE) Managed Charging Pilot
- Brattle research

Public EV Charging

- 3rd-Party public charging infrastructure

[a] *To be launched in FY23*
[b] *To be launched in FY24*

Work / Fleet EV Charging

- Business EV Charging
- Bus EV – Infrastructure Support
- Fleet Assessment Service
- Commercial Turnkey EV Charging[b]

Electric Technologies

- Forklifts
- Forklift Charging
- Truck Refrigeration Units
- Truck Stop Electrification
- Custom Electrification
- Fleet Assessment Service

Grid Enablement

- Customer Solar & Battery Storage Interconnections
- EV DC Fast-Charging (DCFC) Interconnections

Customer Programs Planning Process

- 2035 Sustainability Goals – Energy Efficiency, Demand Response, Transportation Electrification, E-Tech
- 5-Year Action Plan
- Stakeholder commitments on spending levels

- 6-year plan outlining incremental energy / demand impacts, budgets and performance metrics
- 30-year plan outlining longer-term aggregate energy / demand impacts

- Customers' needs and expectations
- Market insights and intelligence from research, trade allies, partners
- SRP's Strategic Directions
- Preliminary load forecast

- Measure level - evaluated savings assumptions, load shapes, rebate levels
- Program level - participation trends, energy impact, admin & marketing costs

Customer Programs Planning Deliverables and Stakeholders

Energy Efficiency Plan	Modifies SRP's load forecast
Demand Response Plan	Modeled as a capacity resource
Transportation Electrification Forecast	Modifies SRP's load forecast
Electric Technologies Plan	Modifies SRP's load forecast
Rooftop Solar Forecast	Modifies SRP's load forecast

Internal Planning Stakeholders	
Load Forecasting	Integrated System Planning & Support
Resource Analysis & Planning	Financial Planning & Analysis
Distribution Integration	Content Marketing & Creative Services

Benefits of an Integrated System Approach to Planning

Current Benefits

- Greater integration of Customer Programs' plan, drivers and planning process
- Alignment on assumptions and drivers
- More opportunities for cross-functional collaboration
- Opportunity to listen and consider stakeholder input on plans

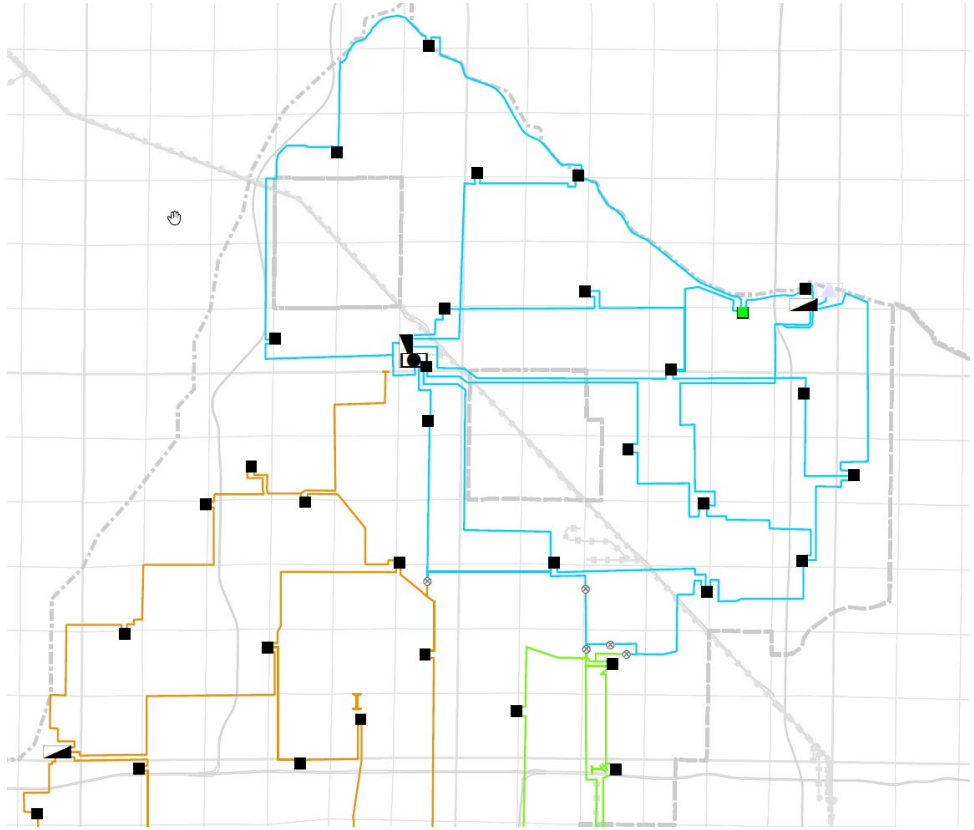
Future Improvements

- Customers continued ability to manage their energy use and saving money
- Greater understanding of the value of programs in meeting decarbonization goals
- Understanding of the potential / limitations of DSM serving as a capacity resource
- Recognition of the inherent tradeoffs in designing and optimizing programs to meet goals and targets
- Harnessing the value of localized capacity on the distribution system
- Enhanced load shaping value from programs to meet future system needs

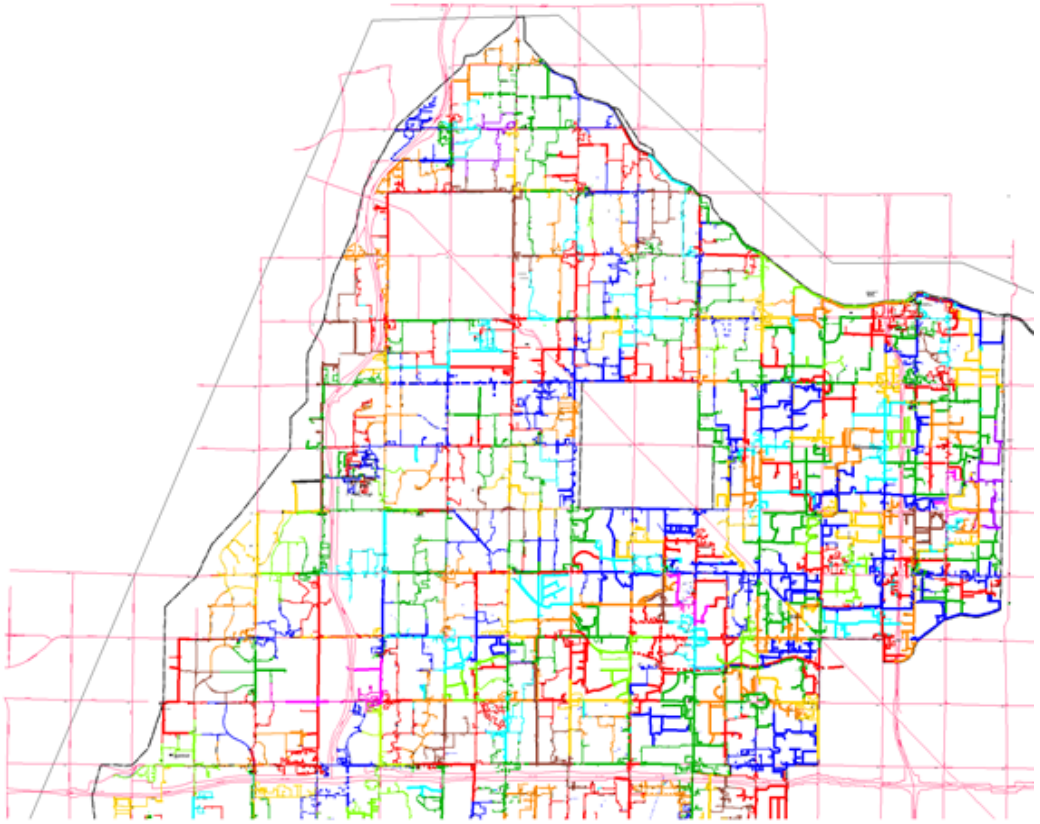
Distribution Planning

Vanessa Kisicki
Director, Distribution Strategy (SRP)

Planning for Distribution



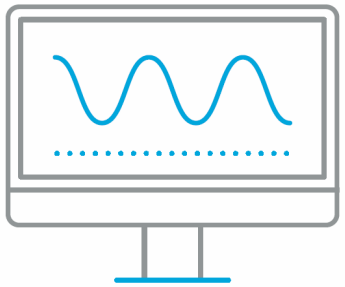
69 kV Transmission Lines



12 kV Distribution Circuits

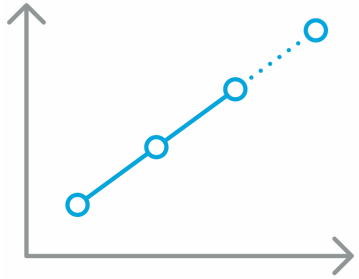
Traditional Distribution Planning Focus

1



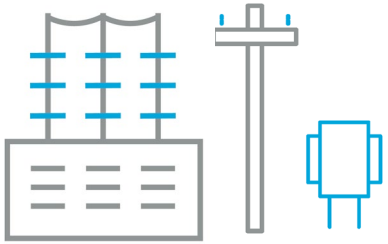
Provide **reliable service** to meet customer needs

2



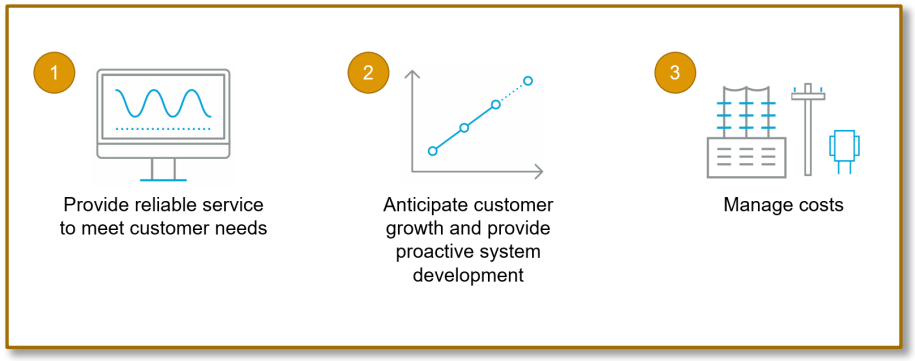
Anticipate **customer growth** and provide proactive system development

3



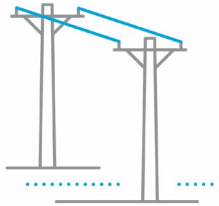
Manage costs

The Evolution of Distribution Planning

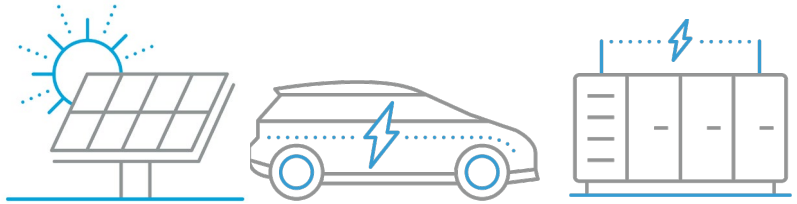


+

New Granular & Location-Specific **Models and Data**



Dynamic Distribution System with **Two-Way Power Flow**



New Technology Options to Mitigate Constraints

Distribution Planning Process

Inputs

- Load Forecast
- Distribution System Model
- New Customer Load Information
- Hourly Load Shapes
- DER Interconnections
- DER/EV Adoption

LOADSEER*

SYNERGI™ ELECTRIC*

- Load Allocation
- Load Flow Analysis

Outputs

- 6-Year Distribution System Plan
- 6-Year Infrastructure Upgrade Plan
- 10-Year Distribution System Plan
- Summer Switching Schemes

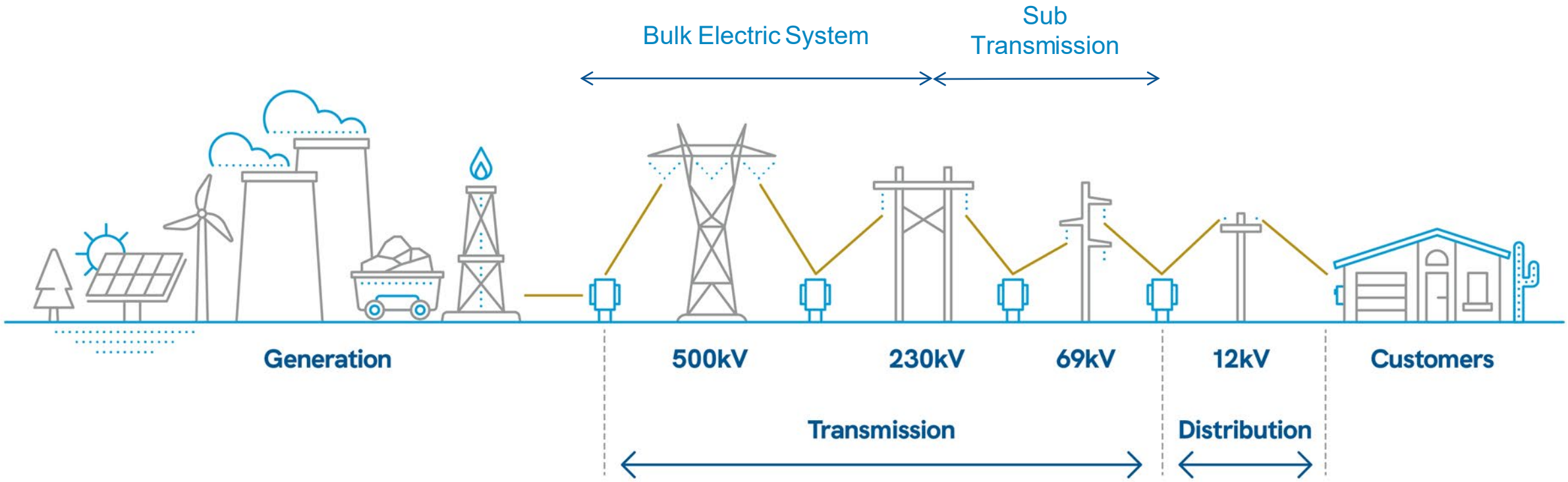
©Salt River Project, 2022. All rights reserved. ISP Advisory Group: Our Power Future, Together

*Key Distribution Planning Tools

Transmission Planning

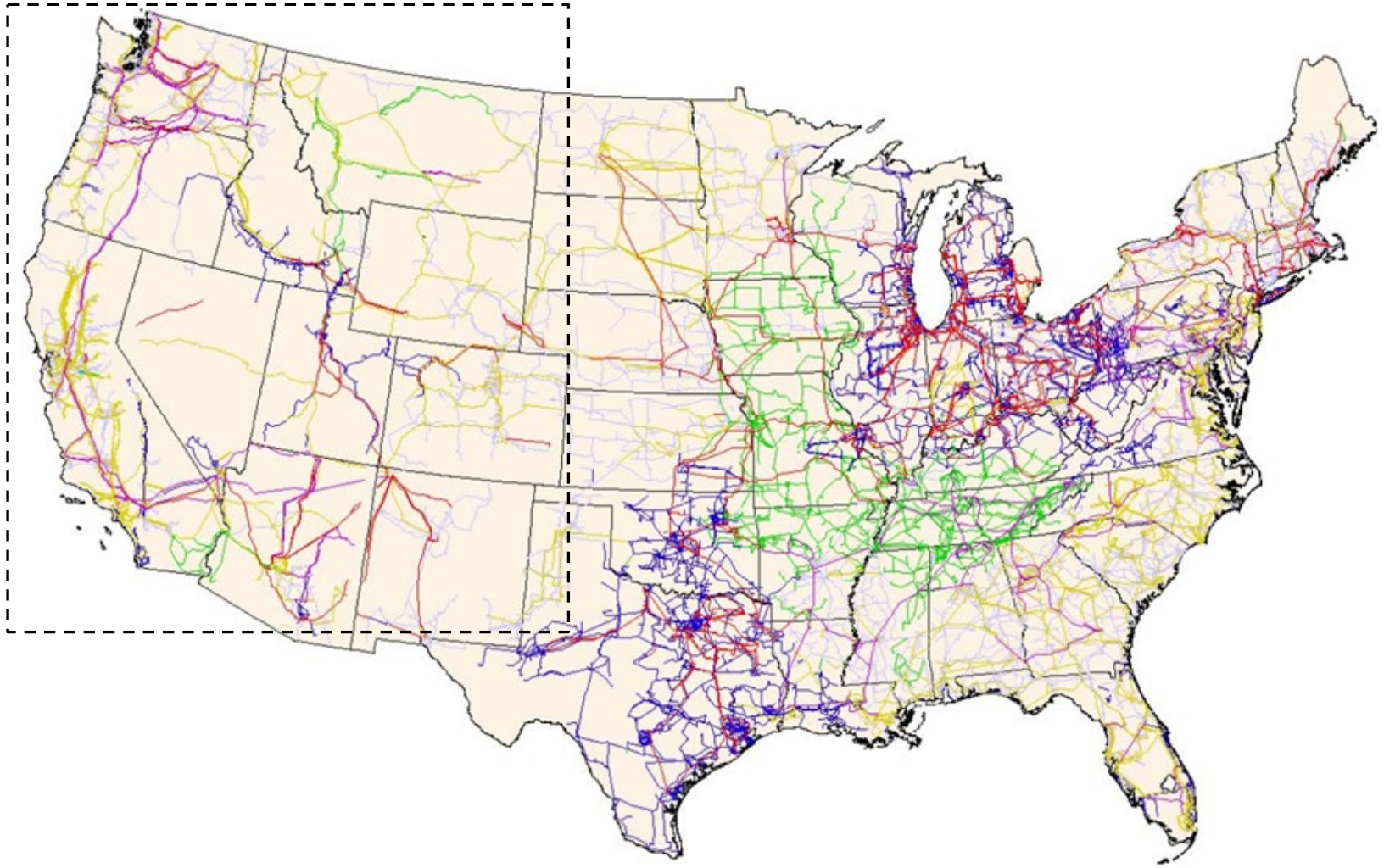
Bryce Nielsen
Director, Transmission Planning, Strategy & Development (SRP)

Generation to Load



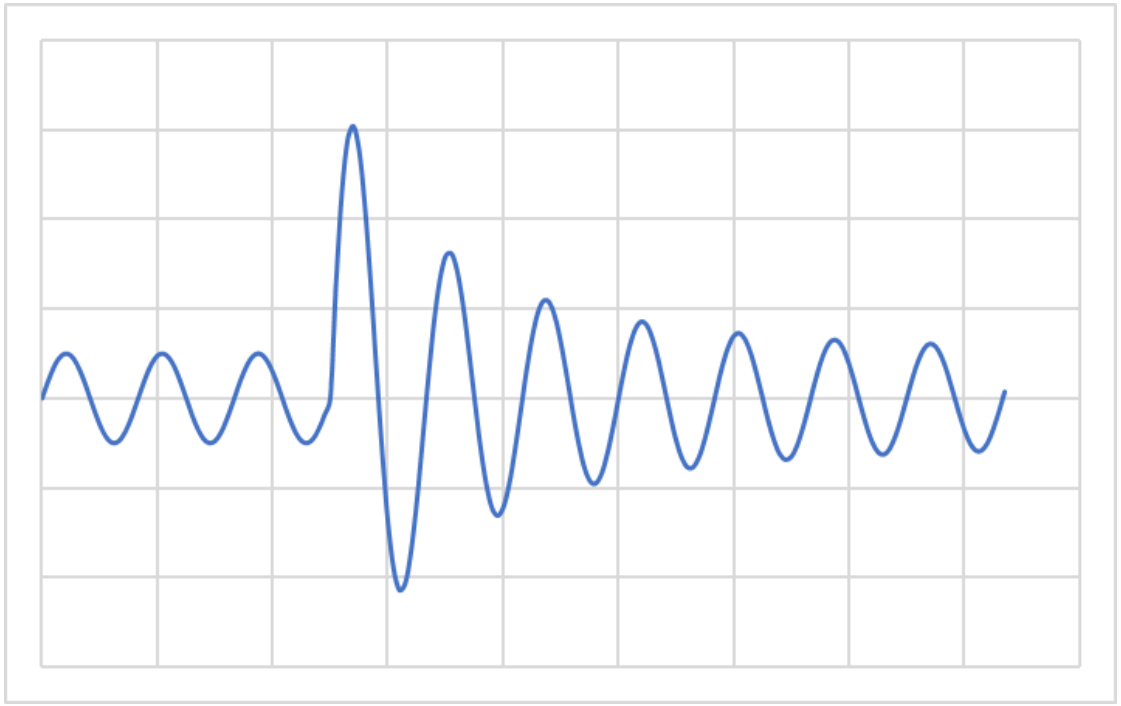
Transmission Planning: Case Building

- Western Interconnection
- AZ Coordinated Cases
- APS details



Transmission Planning: Methodology

- TPL-001-04 (NERC Standard)
- Guidelines for Electric System Planning
- Types of Analysis
  - Steady State
    - ✓ Power Flow
    - ✓ Voltage
  - Dynamic
    - ✓ Transient Stability
  - Short Circuit

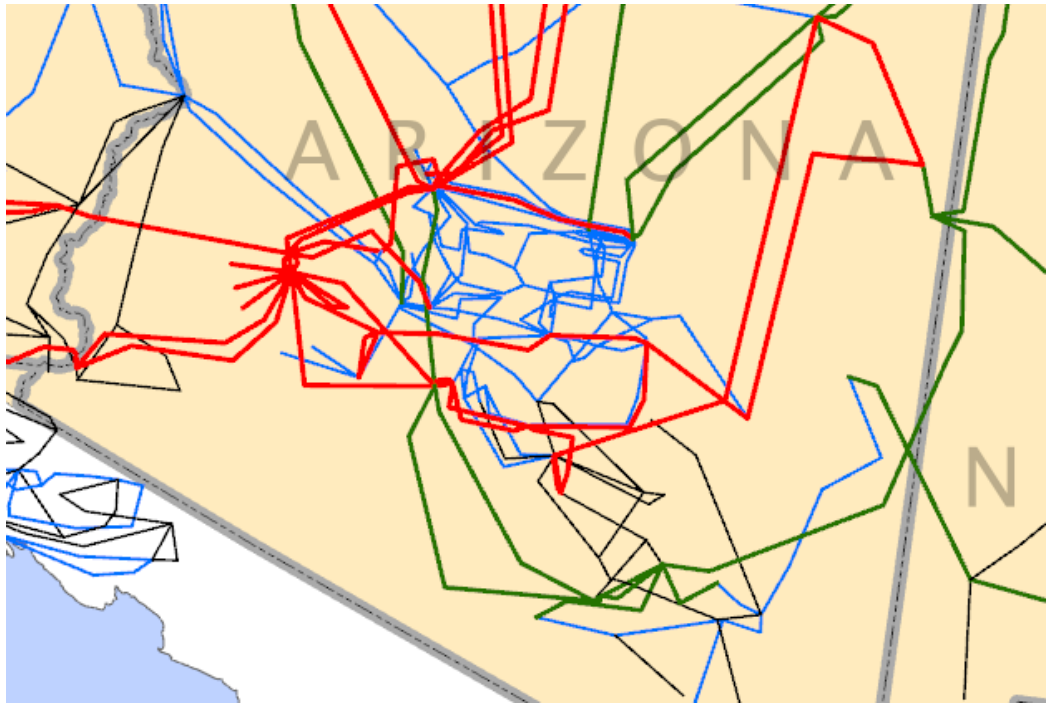


Types of Transmission Planning Studies

- Annual Financial Plan (6 years)
- Ten-Year Plan for the Arizona Corporation Commission
- System Impact Studies (SIS)
  - Large Generator Interconnection Procedures (LGIP) – based on FERC Order 2003
  - Large Customer Load Requests
- Regional Planning Studies as part of WestConnect – based on FERC Order 1000
- Various other studies

Issues and Special Considerations

- Current
  - High volume of interconnection requests – lots of speculative projects
  - Queue processing and time to interconnect
  - Affected systems
  - Siting process
- Future
  - Potential FERC rule making
  - Development of Western markets



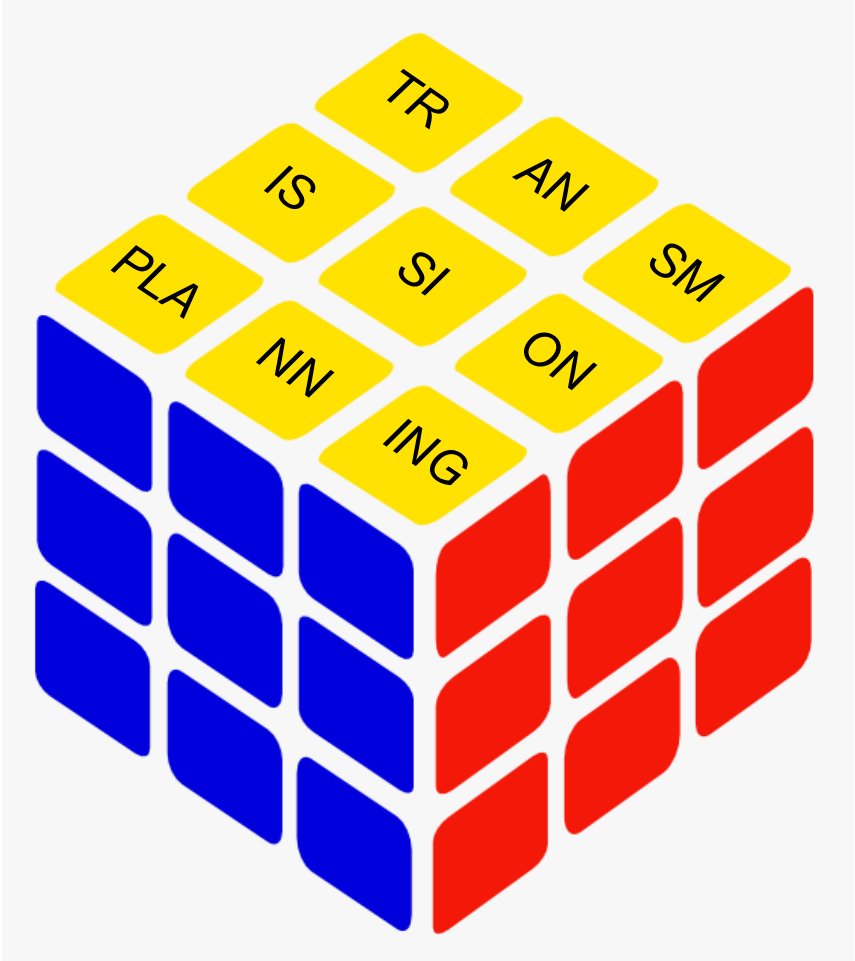
2035 Sustainability Goals

- Carbon Emission Reduction
  - Interconnection Studies for new generation
  - Guidance for RFPs

Transmission Planning & the Integrated System Plan

Considerations for Integrated System Plan

- The impacts to transmission needs across different load and resource scenarios
- How upgrade costs for new resources vary across different parts of the system
- Identification of no-regrets long lead-time actions across a wide range of scenarios
- Thresholds of penetration for inverter-based resources that start to cause significant reliability challenges



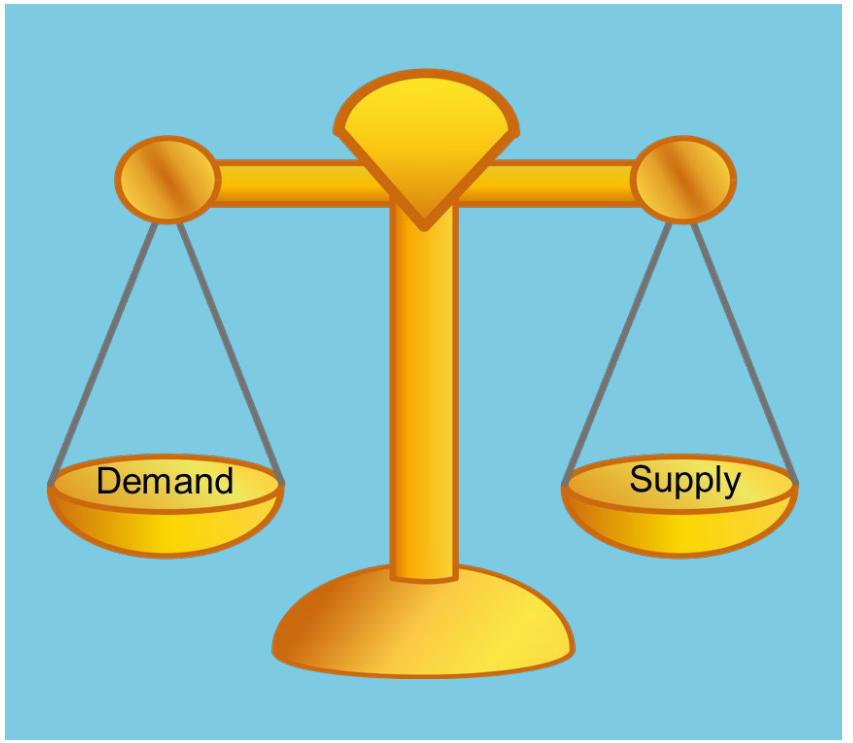
Resource Planning

Michael Reynolds
Manager, Resource Analysis & Planning (SRP)

Resource Planning & the Integrated System Plan

"Traditional Resource Planning" identifies resources to serve customer demand. Assumptions are typically simplified to allow useful resource analysis:

- Customer demand is an input
- Power flows are one-way
- Modeling constraints keep the solution feasible



Integrated System Planning takes steps toward improving simplified "resource planning" elements.

Traditional Resource Planning Process

Resource Portfolio Overview

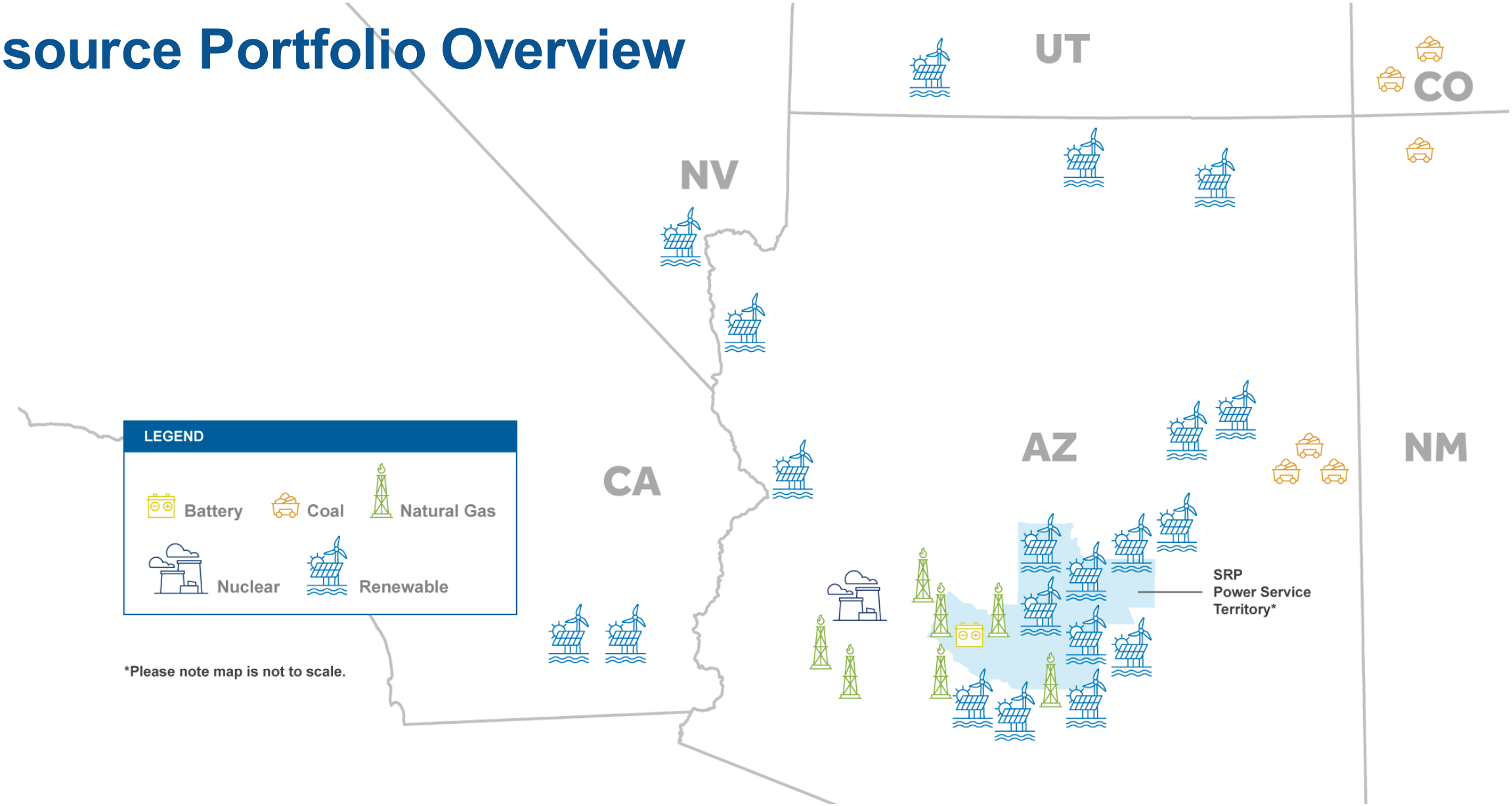
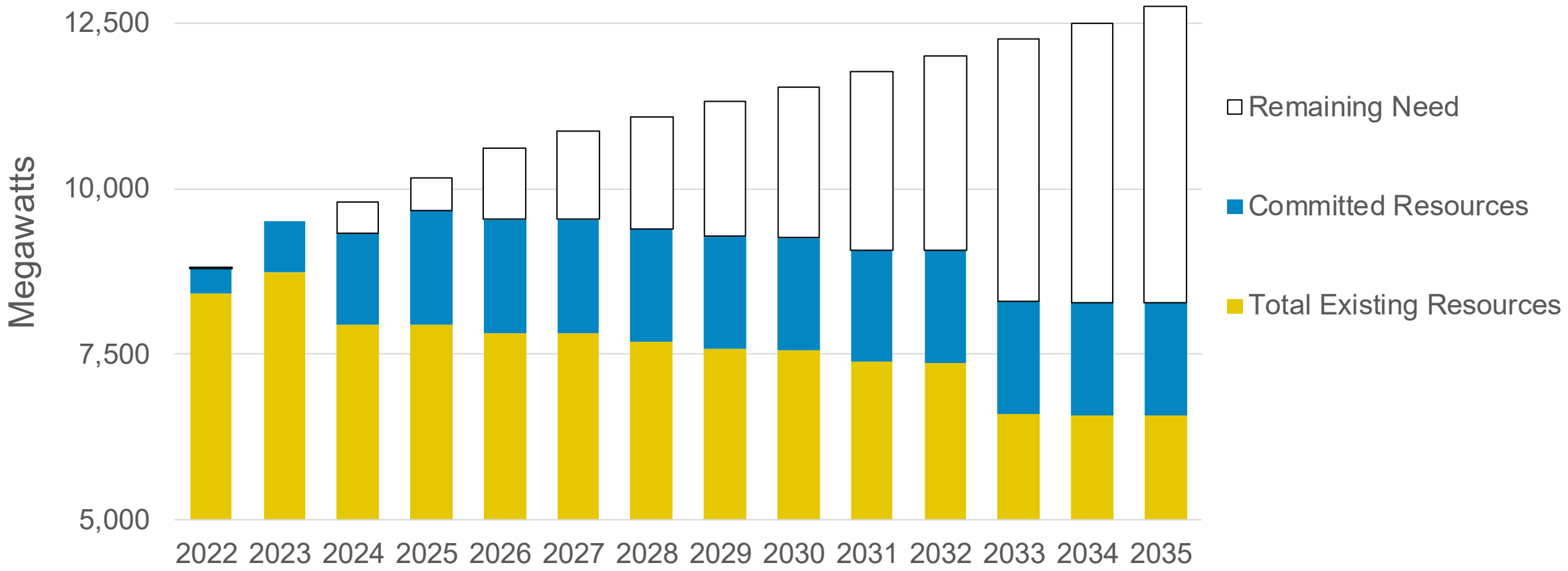


Illustration of Potential Remaining Need



SRP Principles of Collaboration

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

Draft SRP Principles of Collaboration

SRP will

1. Communicate the source for data inputs and modeling methodologies
2. Share major assumptions and modeling practices including benchmarking to industry best practices and ranges of assumptions used by others
3. Aim to share information in a manner that is concise and understandable to all Advisory Group members
4. Provide all Advisory Group members equal opportunity to access available information
5. Solicit Advisory Group input on the study plan analyzed by SRP
    - Input is taken through defining the scenarios, sensitivities, strategic approaches, and metrics
    - Members are welcome to suggest input data and assumptions, if desired. These will be considered through dialogue and study sessions before proceeding to analysis. If it is decided to not move forward to analysis, the reasoning (*i.e,* duplicative, best practice) will be provided in a timely manner.
6. If a material error is discovered in SRP's assumptions or modeling, that error will be communicated to the Advisory Group and corrected in a timely manner.
7. Work to develop collaborative solutions to Advisory Group member request for information. Considerations include:
    - SRP will continue to be responsible business partners. Where confidentiality agreements are in place, SRP is legally obligated to meet those requirements
    - SRP diligently safeguards both customer information and Critical Energy Infrastructure Information (CEII)

Coffee Break

Scenario Planning Framework for the Integrated System Plan: Part 1

Nick Schlag
E3 Partner

Scenario design framework

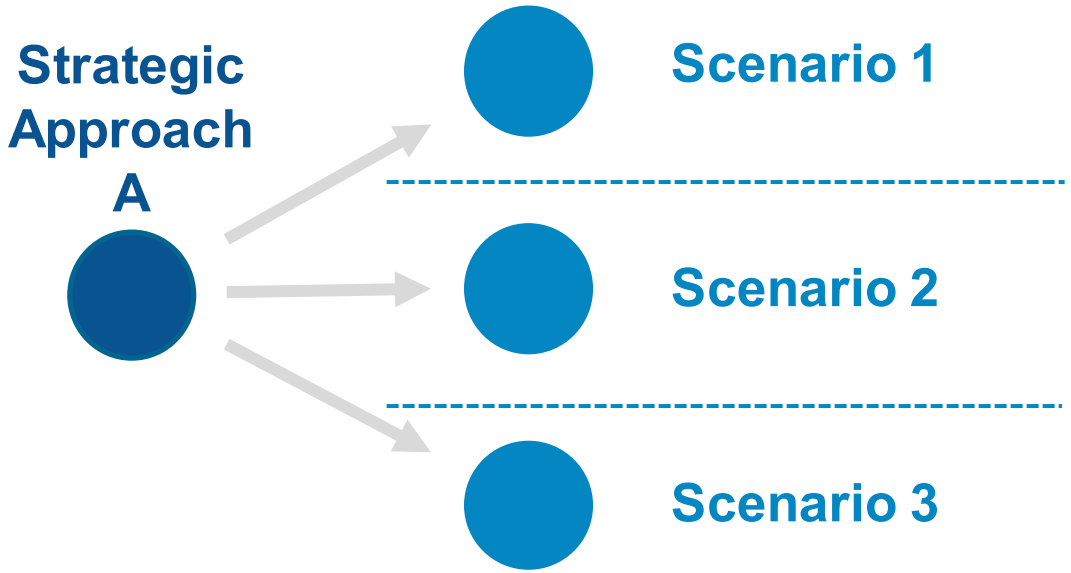
A **scenario** defines a plausible future state of the world around us, reflecting societal, technological, economic, environmental, and political trends & conditions

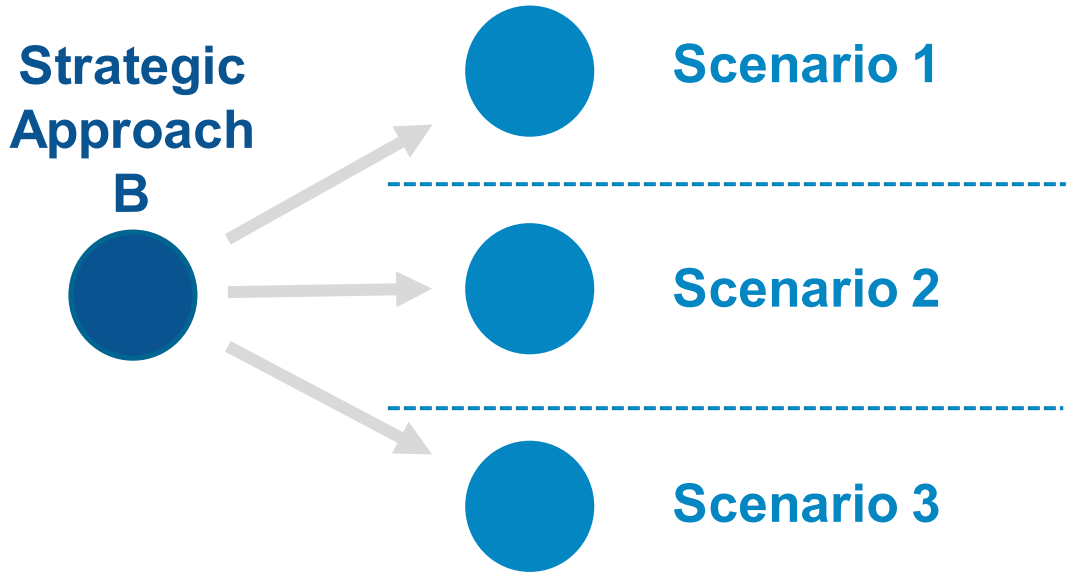
A **strategic approach** represents a possible set of choices that could allow SRP to meet its objectives

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

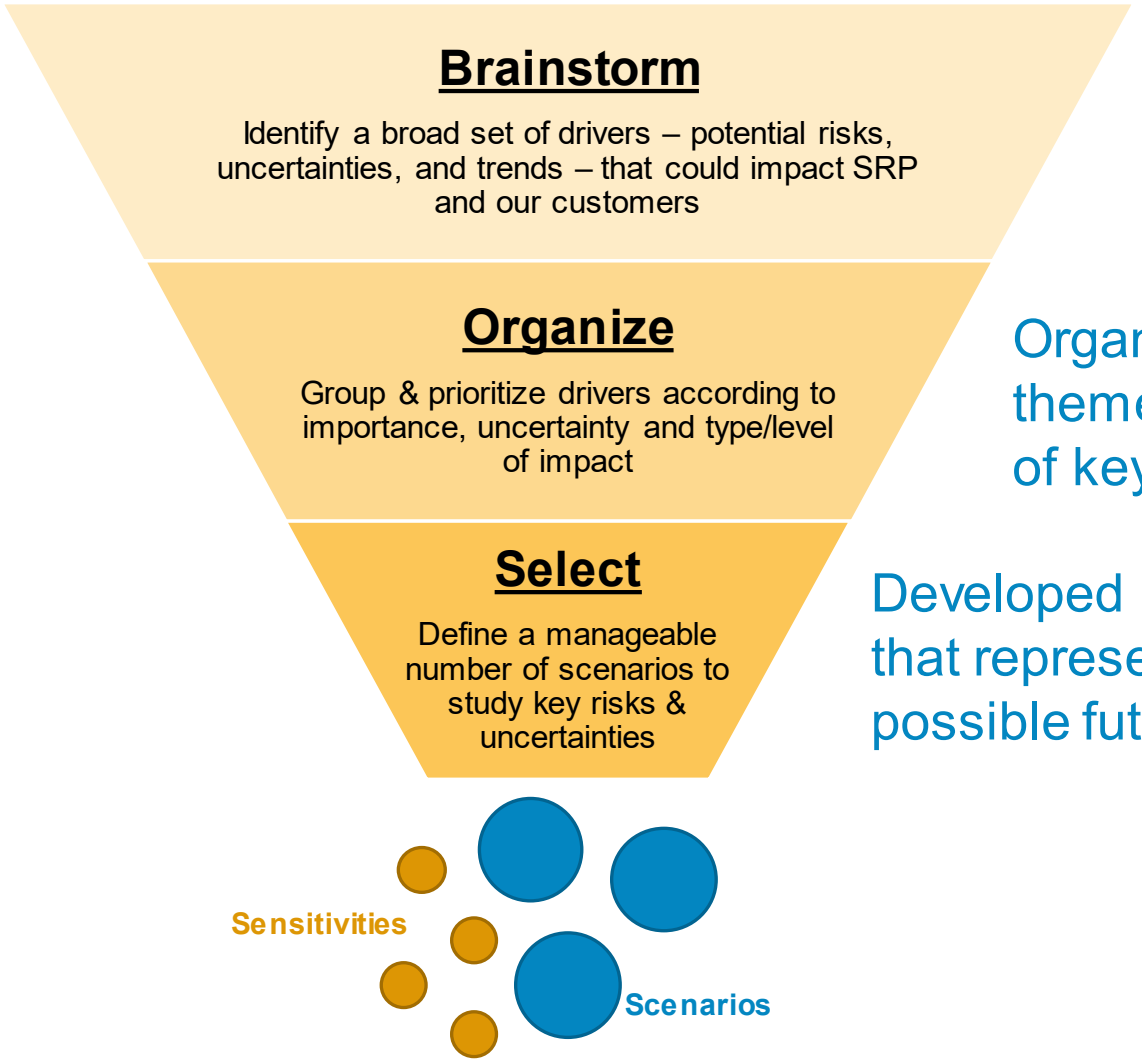




Goals of scenario development

- Capture a diverse set of distinct possible future conditions
- Incorporate factors that can be studied quantitatively using available analytical tools
- Provide support for clear and easy-to-understand decisions

Scenario development process



Conducted brainstorming internally and with the Advisory Group to ensure broadest coverage of key trends

Organized brainstorming results into themes and used these to build out a list of key drivers for scenario planning

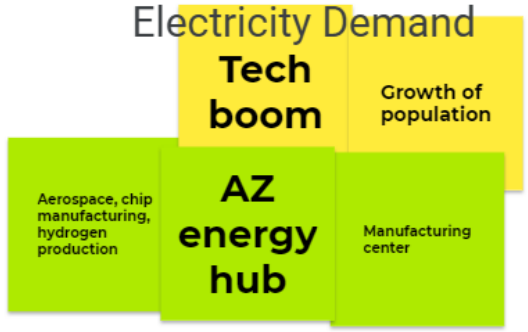
Developed a set of proposed scenarios that represent a diverse set of distinct possible future conditions

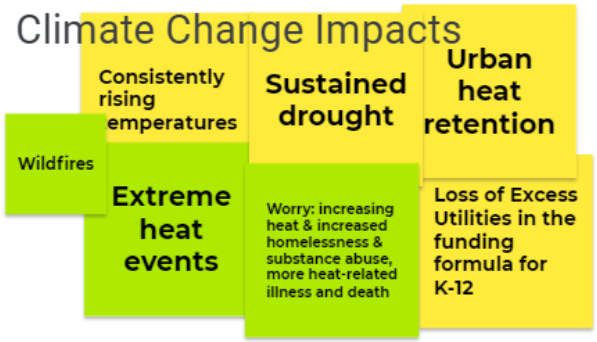
Results from 12/6 Brainstorming

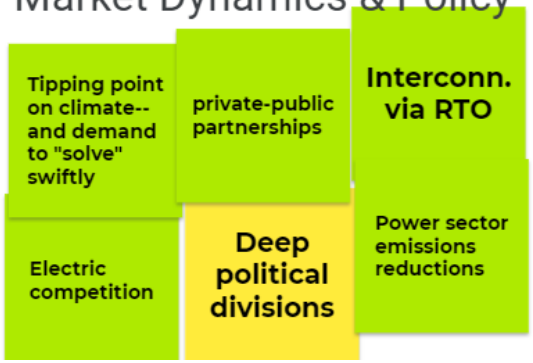
Questions for brainstorm:

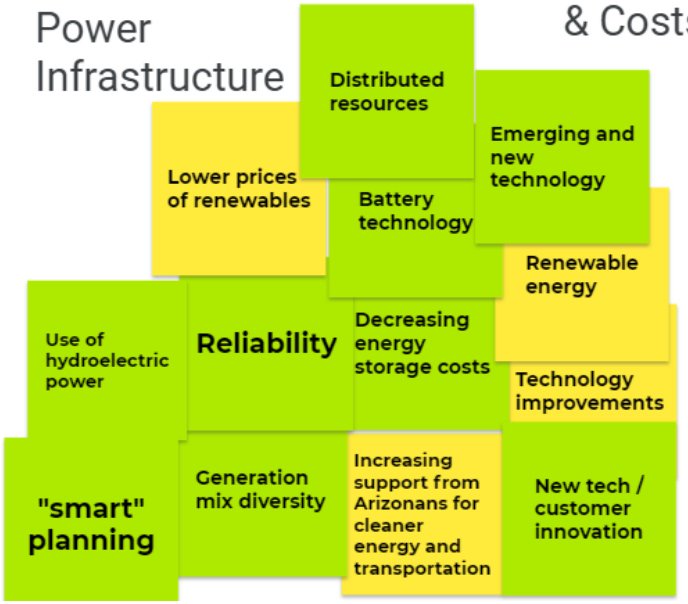
In the past two decades, what changes have had the biggest impacts on Arizona? What changes were most unexpected?

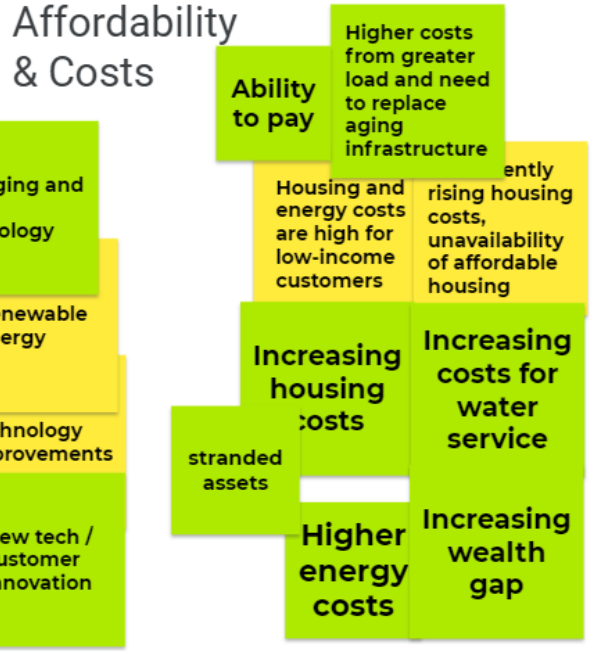
What trends do you expect to see in Arizona within the next two decades?











What We Heard

What trends do you expect to see in Arizona within the next two decades?

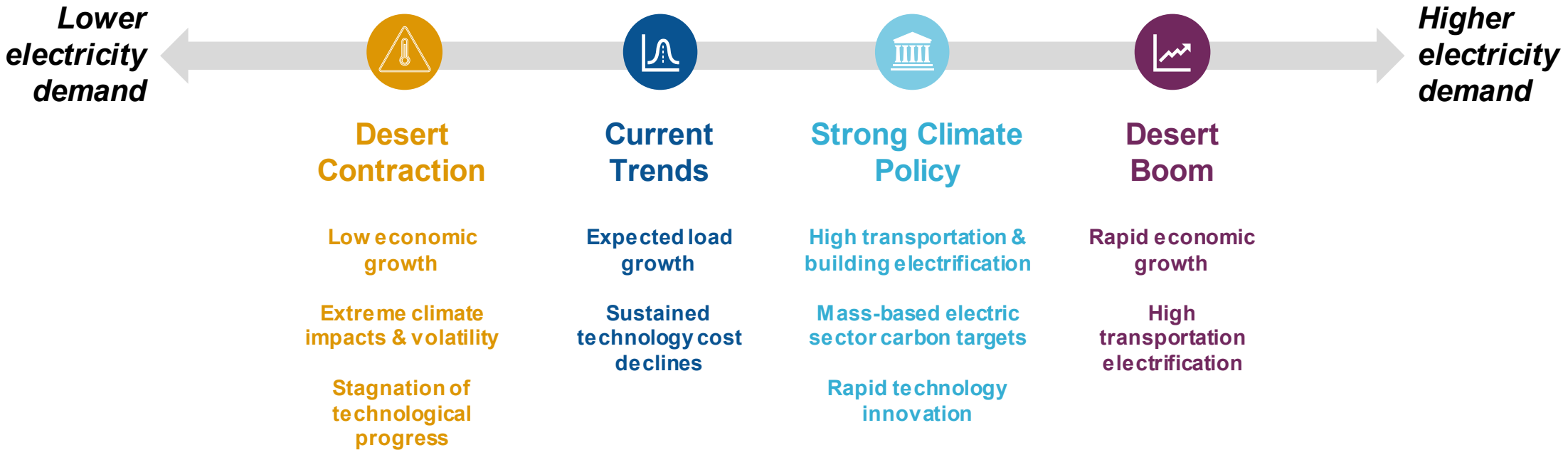
Advisory Group Top Themes

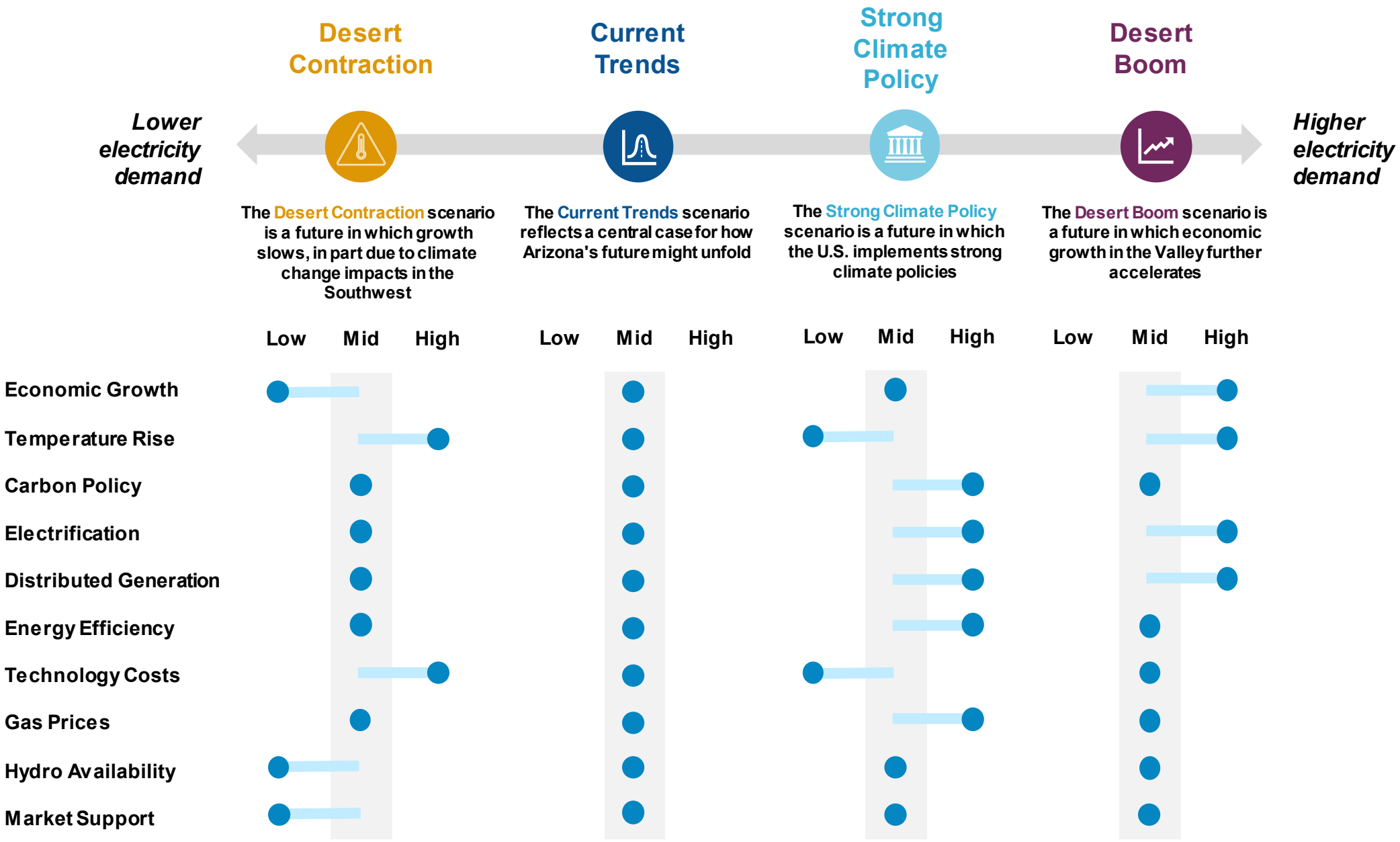
- **Climate change impacts**, including higher temperatures, drought, and wildfires
- Increased interest in **clean energy** and **emissions reductions** in response to climate change
- **Improved technologies** for renewables, batteries, and emerging technologies
- **Continued growth** in the greater Phoenix area, with potential for acceleration across industries
- **Societal changes**, including demographic shifts, changes in behavior, impacts of COVID, partisanship, increased housing and water costs, changing workforce
- **Closer collaboration** between customers and utilities to create benefits for all customers
- More interactions with regional energy system through **new markets** (*e.g.,* ISO)
- Need to maintain **reliability** and **affordability** for all customers

Key Drivers for Scenarios

- Economic Growth
- Temperature Rise
- Carbon Policy
- Electrification
- Distributed Generation
- Energy Efficiency
- Technology Costs
- Gas Prices
- Hydro Availability
- Market Support

Overview of Proposed Scenarios

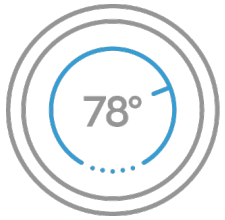




Note: factors that don't vary across scenarios are explored in sensitivities

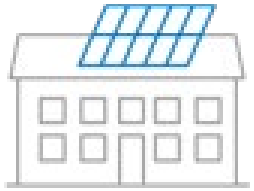
Proposed Sensitivities

Customer Participation

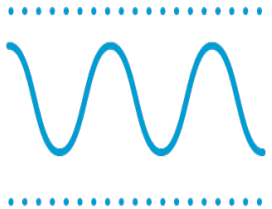


High Demand Response

High Energy Efficiency



High DG Adoption

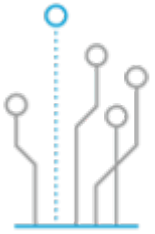


Increased Load Management

Market Variables

RTO Assessment

High & Low Gas Prices



High & Low Technology Costs

Next Steps and Wrap-Up

Joan Isaacson
Lead Facilitator (Kearns & West)

Next Steps

Advisory Group Meetings

- ***February 11th 9:00AM-11:00AM (MST)*** - ISP Advisory Group Study Session: Integrated System Plan Modeling Ecosystem [Virtual]- ***Optional***
- ***February 15th 9:00AM-1:00PM (MST)*** - Scenario Planning Framework- Part 2 & Strategic Approach Options- Part 1 [Virtual]
- ***March 14th 9:00AM-1:00PM (MST)*** - Strategic Approach Options- Part 2 & Metrics [Virtual]

* March meeting time subject to change & may transition to hybrid event

Large Stakeholder Group Meetings

- ***Spring 2022*** - ISP Large Stakeholder Group: Integrated System Planning Study Plan [Virtual] *(Time and Date TBD)*

Stakeholder Communication Email:

IntSysPlan@srpnet.com

Integrated System Plan: Informational Portal

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