SRP Integrated System Plan
Large Stakeholder Group Meeting #3
ISP Early Key Findings

May 12th, 2023

Welcome

Bobby Olsen
Senior Director, Corporate Planning, Environmental Services & Innovation, SRP

Welcome SRP Board and Council Observers

John Hoopes
SRP Association Vice President

Chris Dobson
SRP District Vice President

Anda McAfee
SRP Board Member

Jack White
SRP Board Member

Larry Rovey
SRP Board Member

Krista O'Brien
SRP Board Member

Suzanne Naylor
SRP Council Member

Rocky Shelton
SRP Council Member

PLANNING TOGETHER, PLANNING BETTER

120+ community organizations invited to participate

Safety & Sustainability Minute

Safety

Think safety first, assign a water watcher at the pool

Sustainability

Reduce water evaporation by putting a cover on the pool

Meeting Introduction

Joan Isaacson
Senior Facilitator, Kearns & West

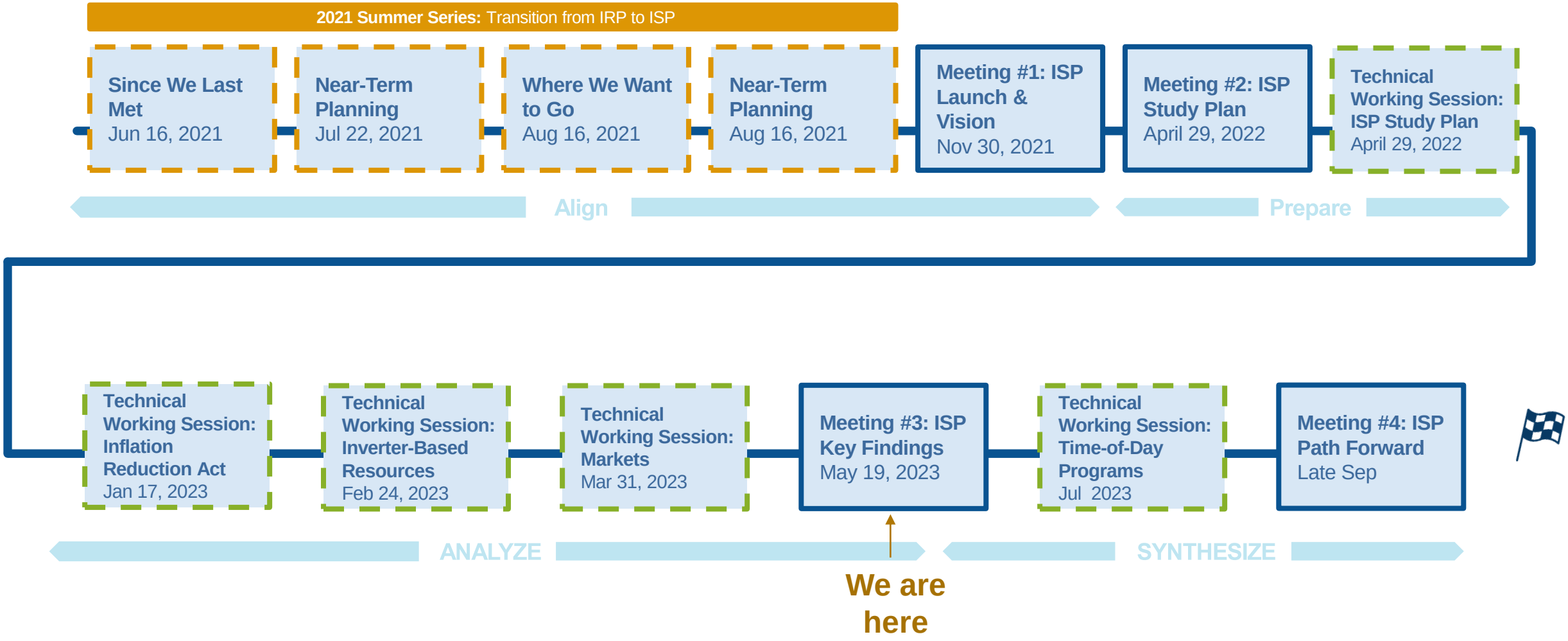
Meeting Objectives:

- Inform stakeholders on the process to interpret the results and ISP outputs
- Update on analytical process and key findings
- Share initial strategy themes and gather feedback

Agenda:

Time		Topics	Discussion Lead
10:00-10:10	**10 min**	Welcome & Opening Remarks	**Bobby Olsen (SRP)** **Joan Isaacson (K&W)**
10:10-10:30	**20 min**	Where We Are Today & Approach to Complete the Integrated System with Q&A	**Angie Bond-Simpson (SRP)**
10:30-11:25	**55 min**	Review of Early Key Findings with Q&A & Engagement Activity	**Angie Bond-Simpson (SRP)**
11:25-11:35	**10 min**	Break	
11:35-11:55	**20 min**	Initial System Strategy Themes & Engagement Activity	**Angie Bond-Simpson (SRP)**
11:55-12:00	**5 min**	Next Steps and Wrap Up	**Maria Naff (SRP)**
12:00-1:00	**60 min**	Stakeholder Appreciation Lunch & Networking with ISP Subject Matter Experts	**Subject Matter Experts:** Jed Cohen (SRP) - Forecasting Nathan Morey (SRP) - Customer Programs Melissa Martinez (SRP) - Distribution Planning Justin Lee (SRP) -Transmission Planning Joe Hooker & Arne Olson (E3) - Long-term Capacity Expansion/Generation Resources

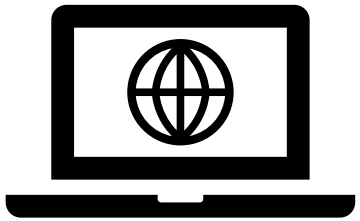
Integrated System Plan (ISP)
Large Stakeholder Group Meeting Overview



Guides for Productive Meeting

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

Poll Instructions
Three ways to participate



BY COMPUTER

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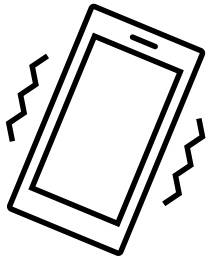
www.pollev.com/kwp271
on your internet browser.



BY SMART PHONE

Go to
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on your internet browser.

BY TEXT MESSAGE

Text
kwp271 to 22333
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 a phrase or short sentence to answer:

How does your organization plan for transformational change?

Submit multiple responses if desired.

How does your organization plan for transformational change?

Open Text Responses:

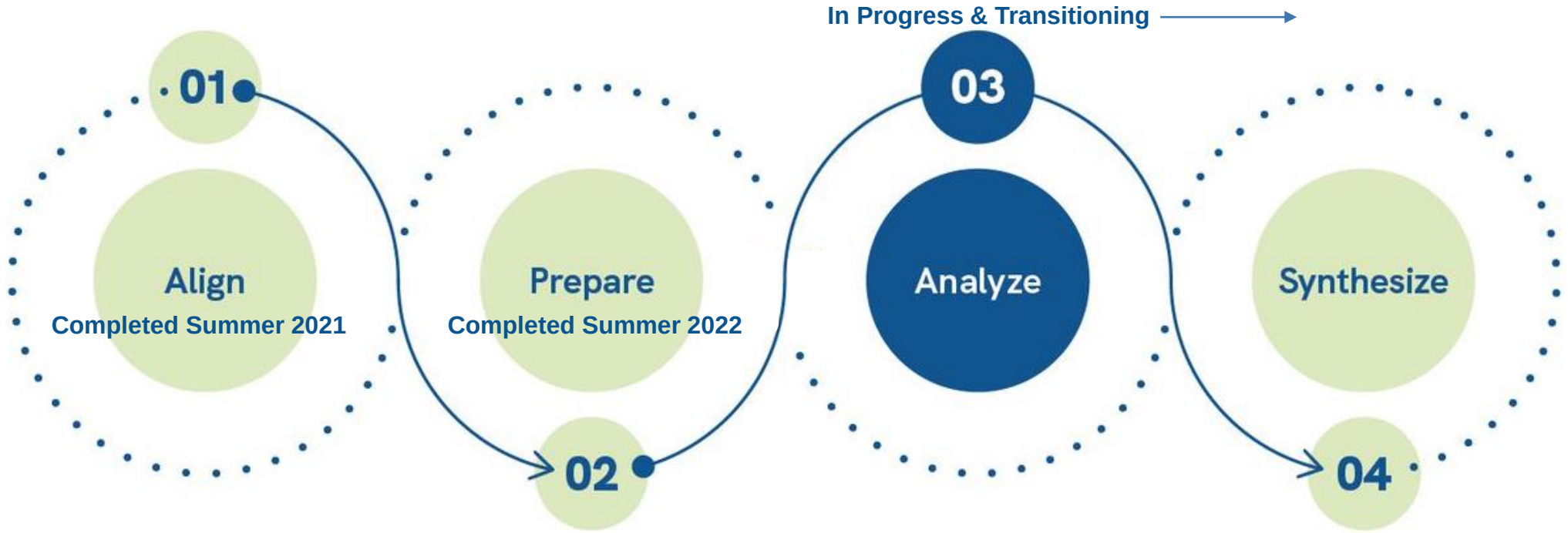
- Developing new solar generation and battery energy storage systems.
- By listening to our partners and the public, providing training, and being open to change. Using good research to inform our decisions.
- Convene our faculty, envision desirable future, create task force, conduct research, make a plan, share and revise, implement.
- We spend time to ensure that we understand the problem and then get all departments involved.
- Understand the end state and identify potential roadblocks early.
- Open and transparent process.
- We are starting to look at how rules will have to change to adapt to new technologies.
- Difficult without knowing utility plans/priorities.
- By using more solar.
- Clear objectives.
- Utilizing pilot programs to inform new customer program offerings.
- Understand recommendations of all stakeholders to determine strategy.
- Involve all staff and volunteers.
- The President says bring me big ideas.
- We stay up to date on current technology trends.
- Risk management approach.
- Develop evolving renewable energy projects.
- Seek out the best data and most accurate information possible.
- Gradually.
- Discuss with internal teams first.
- We gather data on the pros and cons of the change.
- Ongoing - planning for change all year round.
- Transportation Electrification Activators.

Where We Are Today & Approach to Complete the Integrated System Plan

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

SRP ISP ROADMAP

Stakeholder Engagement and Public Outreach



Align on objectives of the first ISP

Collaboratively develop study plan*:

Gather input data

Perform system analysis

Validate and share results

Recommend new SRP system strategies

Recommend near-term actions

SRP updated the study plan assumptions in February 2023 to incorporate impacts from the Inflation Reduction Act.

Draft Products of the ISP

- Review metrics
- Discuss trends, tradeoffs & findings
- View outcomes through Guiding ISP Principles

Develop System Strategies

Draft a Balanced System Plan

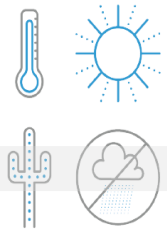
Identify ISP Actions

The Scenarios in the Integrated System Plan

Lower electricity demand

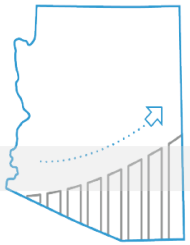
Higher electricity demand

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

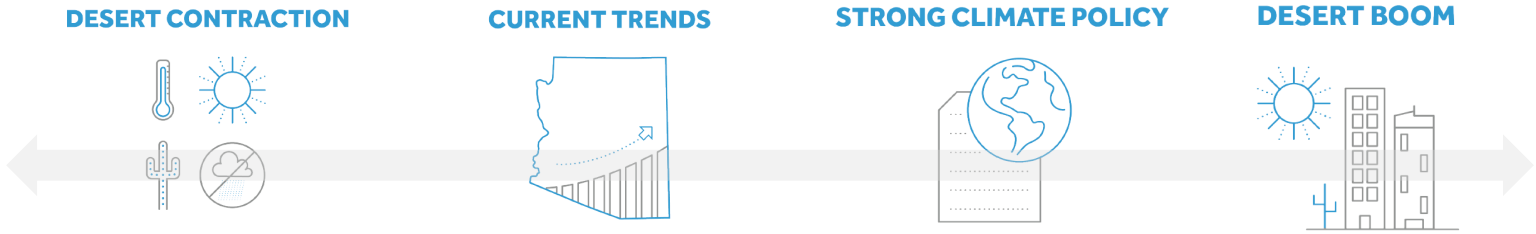
The Desert Boom scenario is a future in which economic growth in the Valley further accelerates.

These scenarios are designed to test how future power systems perform across a range of plausible futures. SRP will not be picking one of these scenarios as a result of the ISP.

Scenarios

Lower electricity demand

Higher electricity demand



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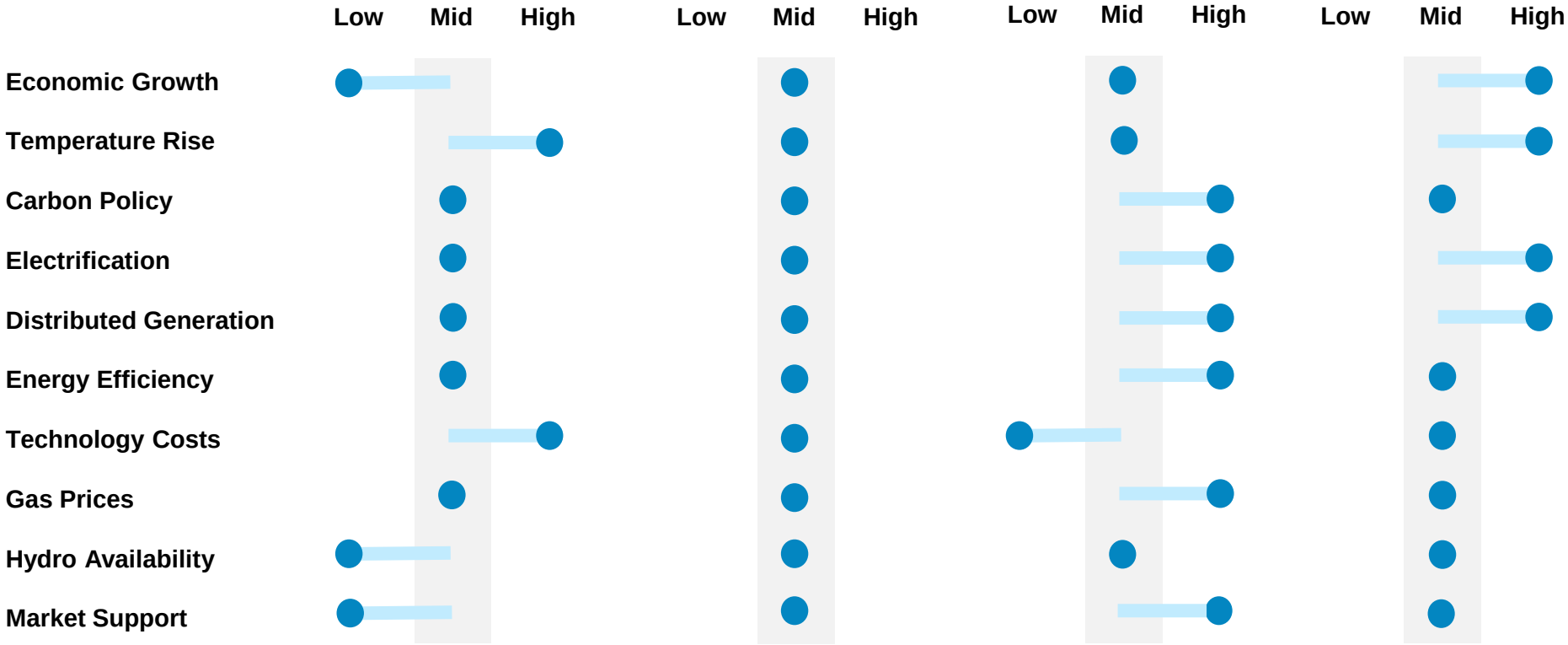


The Strategic Approaches in the Integrated System Plan

Technology Neutral

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

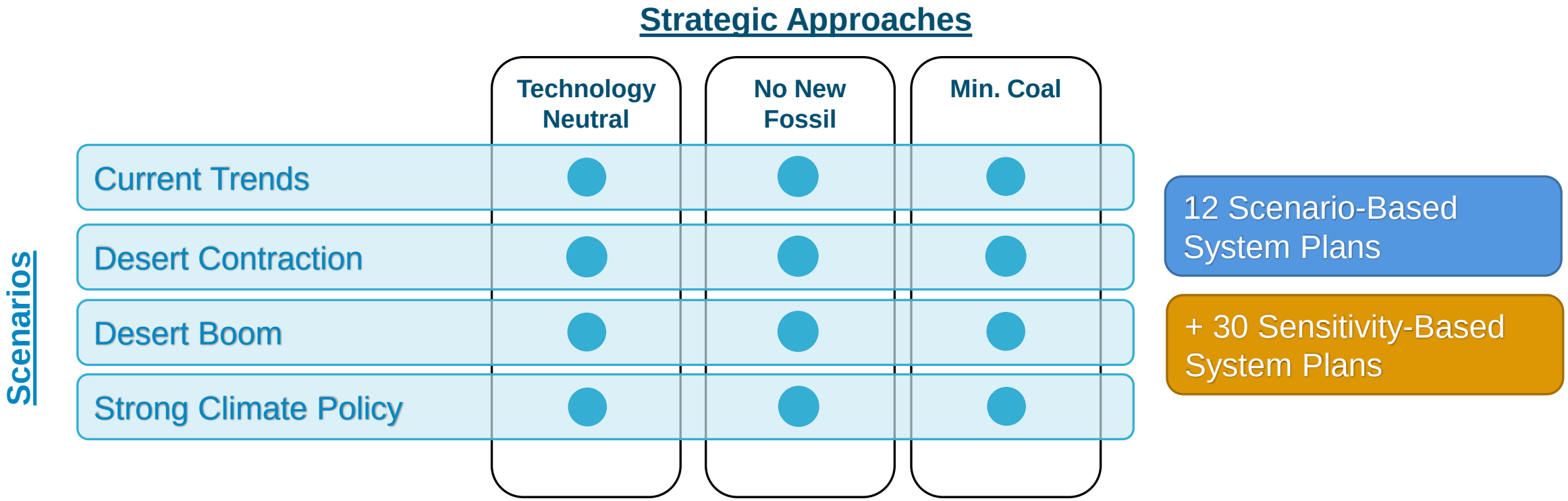
No New Fossil

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

Minimum Coal

*No New Fossil + SRP **reduces power generation from coal** and analyzes the system-wide impacts while maintaining reliability*

System-Wide Analysis

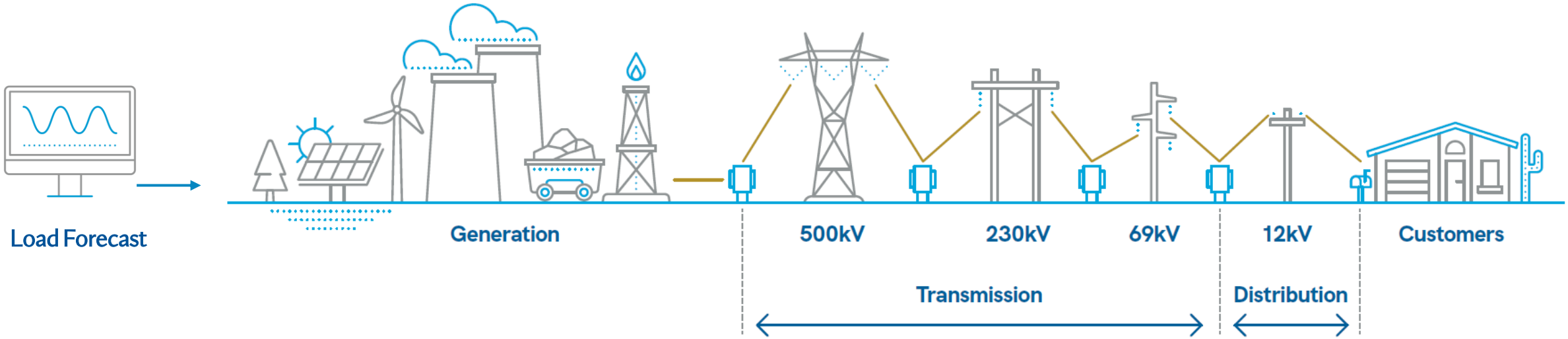


Questions?

Review of Key Findings w/ Q&A & Engagement Activity

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

ISP Results from the System Perspective



Integrated System Plan Analysis Overview

Forecasting

How much energy does SRP need to plan for, to meet customer's needs in 2035?

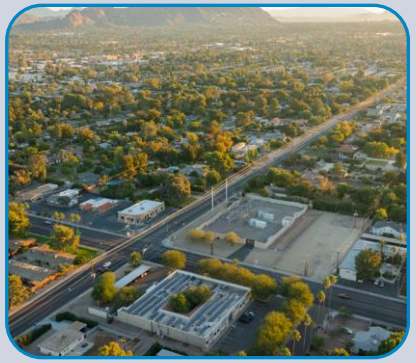
Generation

(Long-Term Capacity Expansion Model)

What generation resources does SRP need to add to its system to maintain reliability and achieve SRP's 2035 Sustainability Goals?

Transmission Planning

What new transmission infrastructure is needed to deliver energy reliably to SRP's service territory?



Distribution Planning

What new distribution infrastructure is needed to deliver energy reliably to SRP customers' homes and businesses?

Customer Programs

How do SRP's customer programs need to evolve during the plan period?

Subject Matter Experts

Forecasting: Jed Cohen – Manager, Forecasting, SRP

Customer Programs: Nathan Morey – Manager, Product Development, SRP

Distribution Planning: Melissa Martinez – Manager, Distribution Planning, SRP

Transmission Planning: Justin Lee – Manager, Transmission System & Planning, SRP

ISP Long-Term Capacity Expansion: Arne Olson – Senior Partner & Joe Hooker – Director, E3

SRP's Integrated System Plan
Early Key Findings

Scenario: Current Trends

Reflects a central case for how Arizona's future might unfold

CURRENT TRENDS

Peak Demand & Customer Programs

3.0%
peak load growth rate

500,000*
electric vehicles on the road

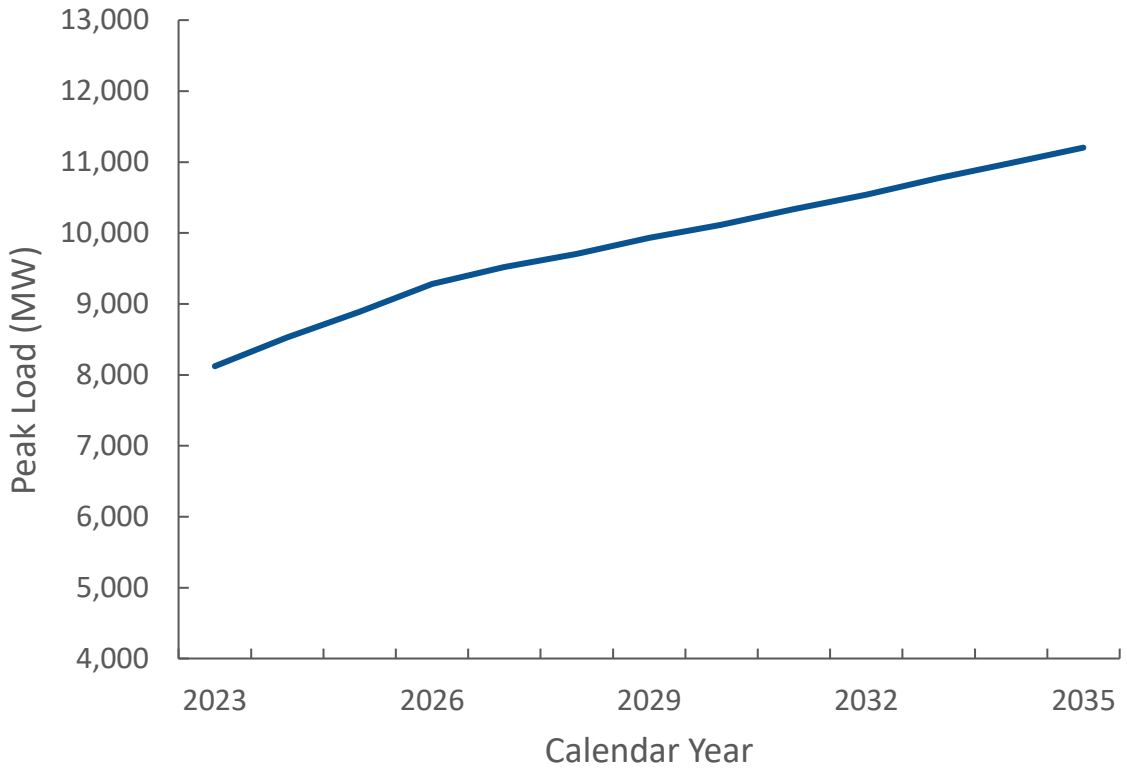
3,800 GWh*
total energy efficiency programs

1,300 MW
total distributed solar

300 MW*
total demand response

*2035 Sustainability Goals

Peak Load Forecast

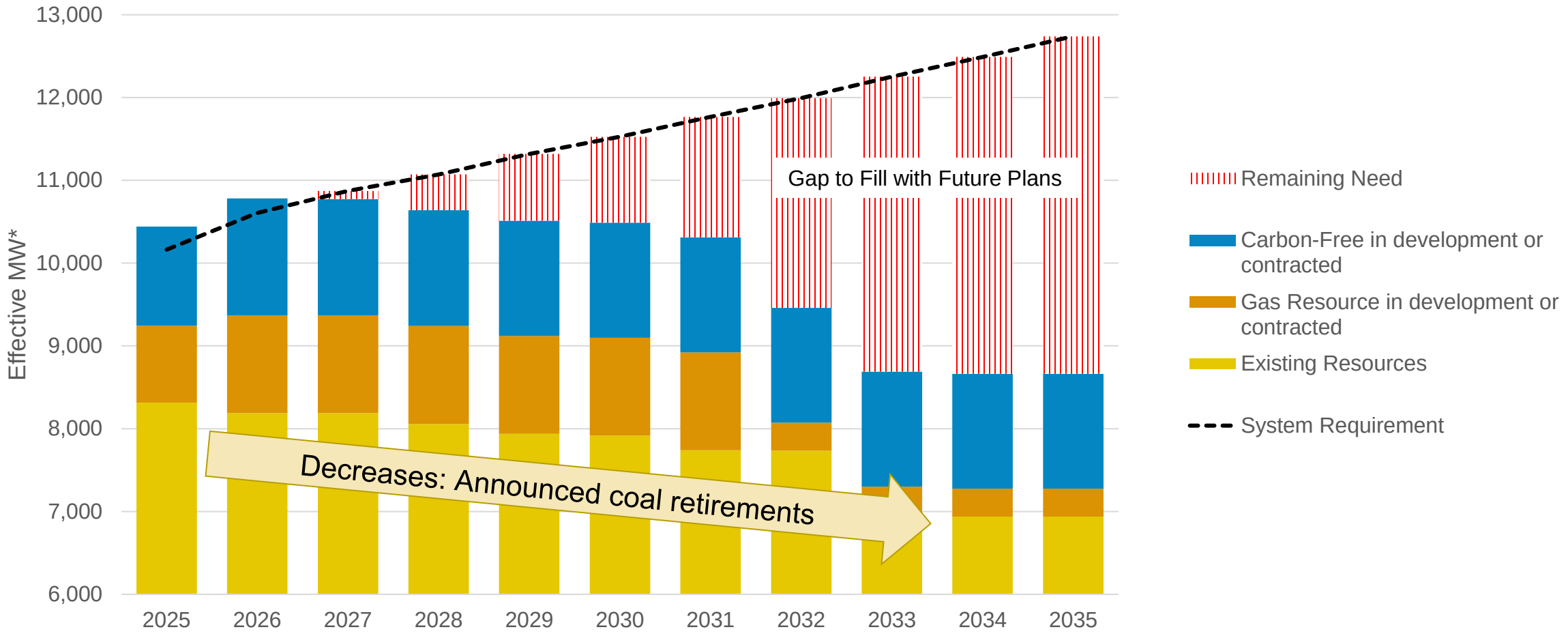


Current Trends

Growth Rate: 3.0%

Future Resource Needs (2025-2035)

Current Trends Scenario



*Effective MW represents how each resource serves SRP's reliability needs, which is usually less than nameplate MW.

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Generating Resources

Natural gas and renewables are part of a least-cost portfolio. Without firm resource options, higher levels of renewables and storage, including pumped storage are required.

1,300 MW - 1,800 MW
coal plants retired

Natural Gas
is part of a least-cost portfolio

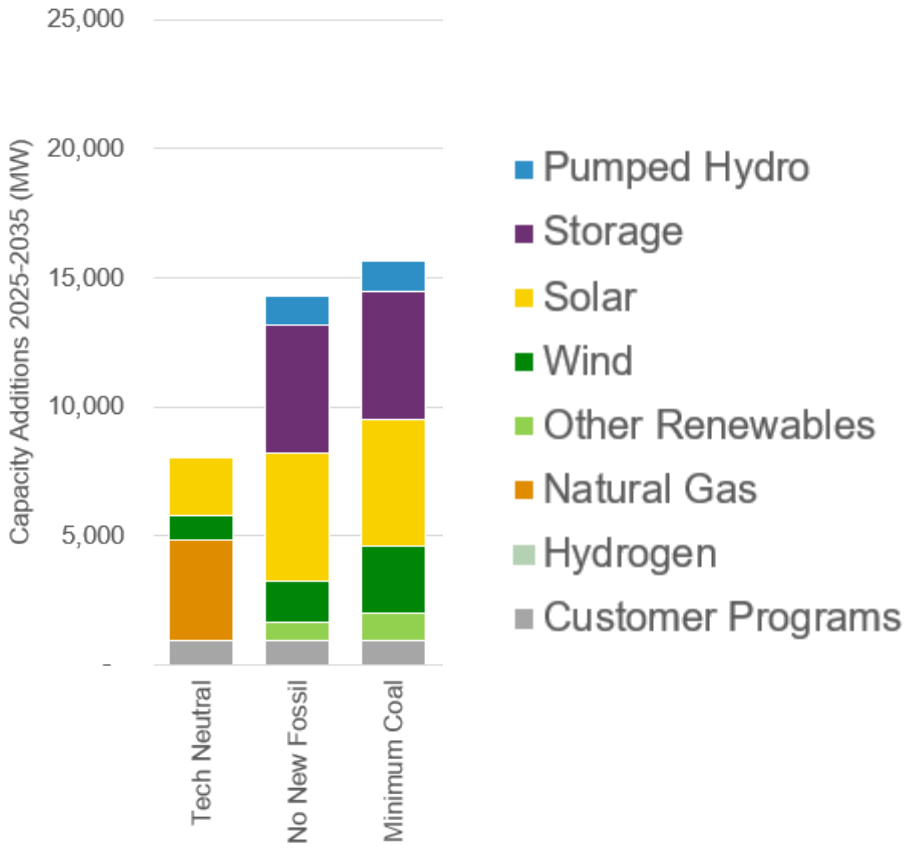
3,000 MW - 8,000 MW
additional solar and wind

Battery and Pumped Storage
required if firm option unavailable

16% planning reserve
achieved

*2035 Sustainability Goals

Modeled Resource Additions, 2025-2035 (MW)



Current Trends

Draft results subject to change

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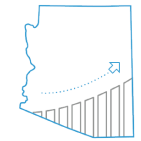

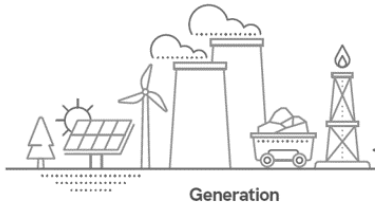

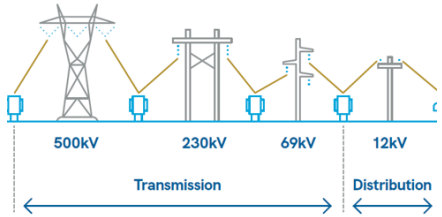

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Grid Infrastructure Needs

Follows closely with currently plans, and requires significant amounts of new grid infrastructure

Location of generation matters
impacts transmission infrastructure

>120 miles of 230 kV and 20-140 miles of 500 kV Transmission

19% increase in substation bays
to meet future load growth

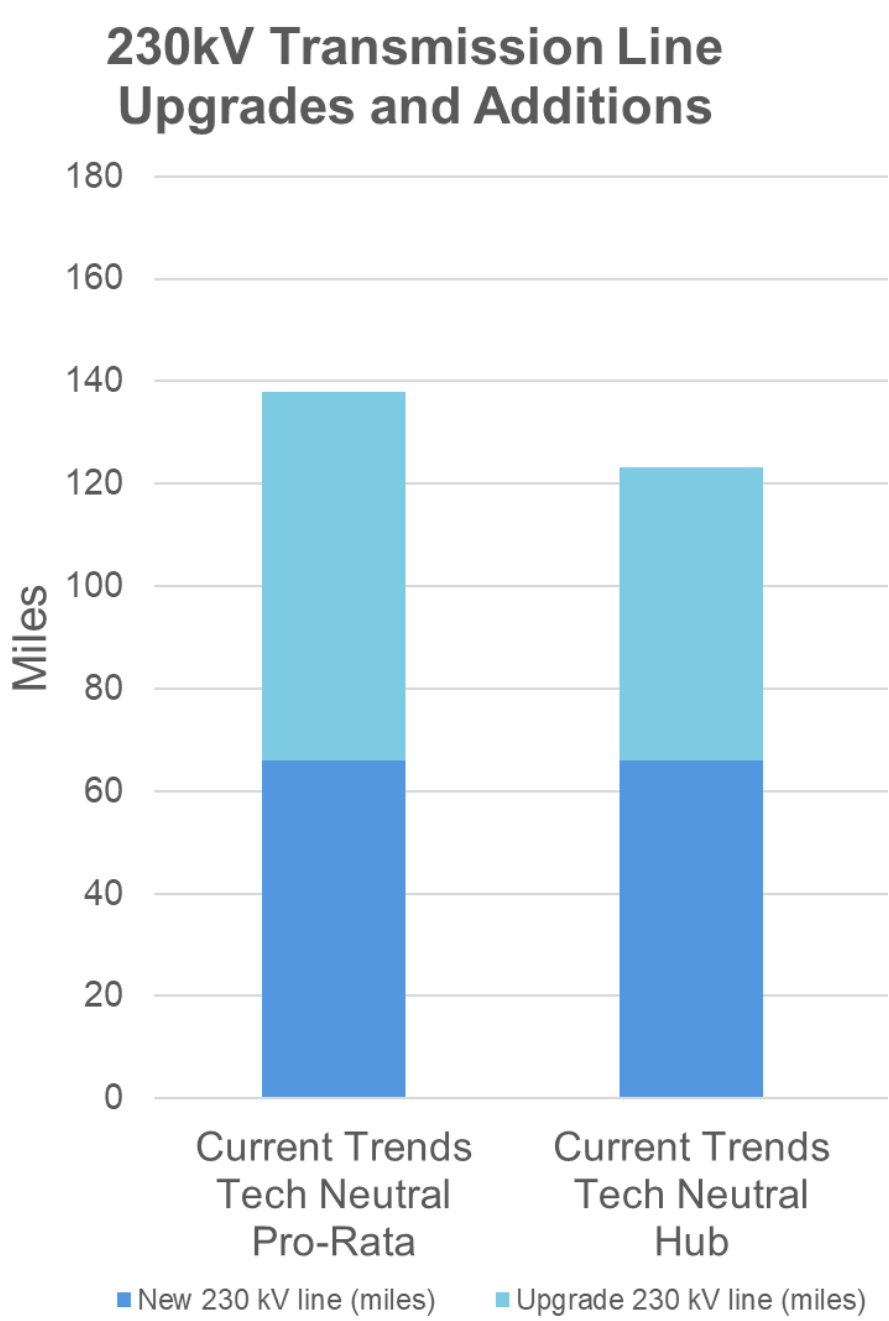
Growth patterns follow changing customer mix

Southeast Valley Growth
capacity constraints occur in heavily developed areas

*2035 Sustainability Goals

Infrastructure Needs: Transmission

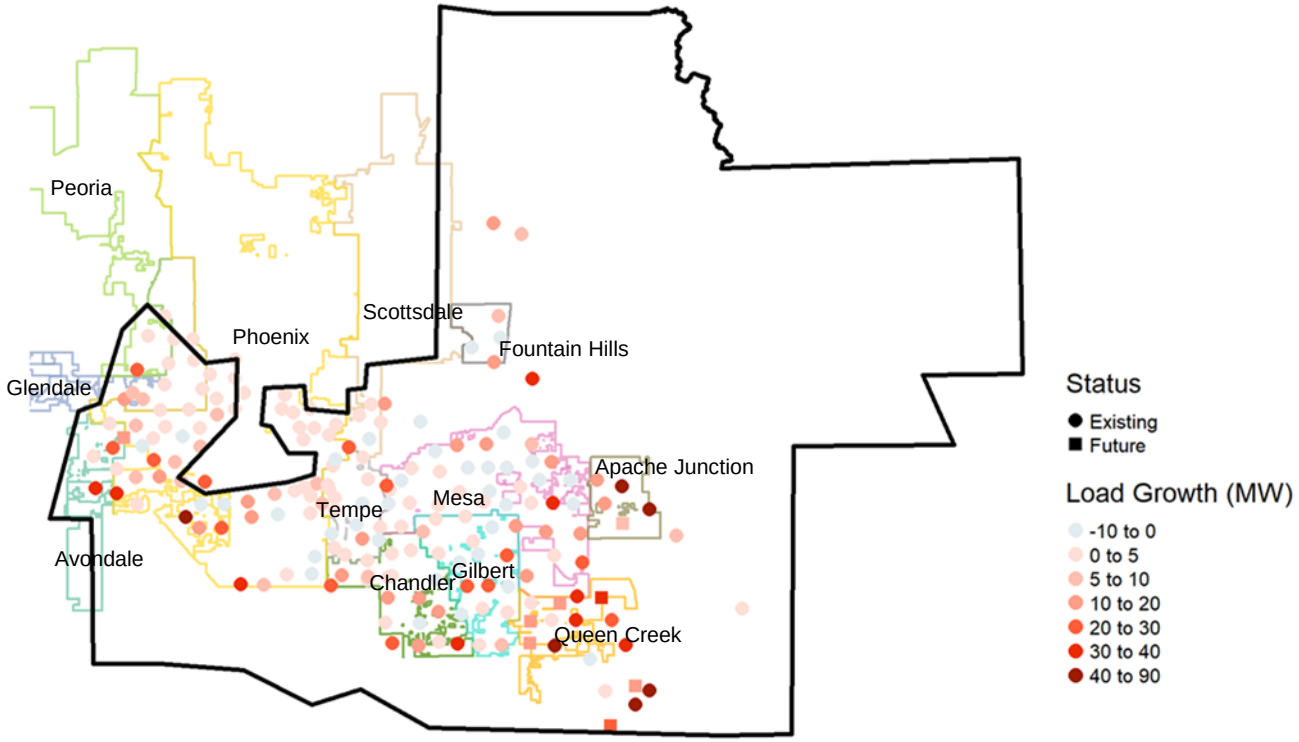
- ✓ 230kV line upgrades and additions
- ✓ Increases in 500/230kV transformers (long lead time)
- ✓ Additional 500kV

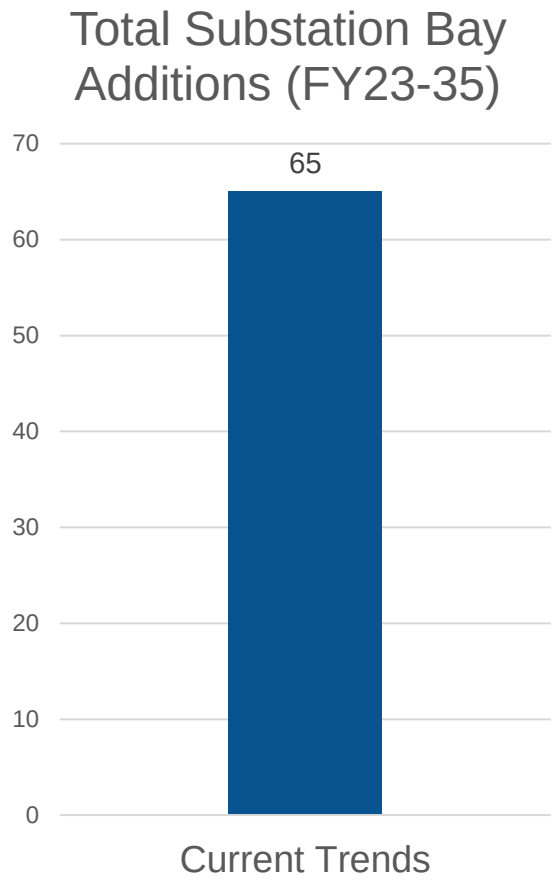


Infrastructure Needs: Distribution

Load Growth Through 2035 by Distribution Substation

Current Trends Scenario





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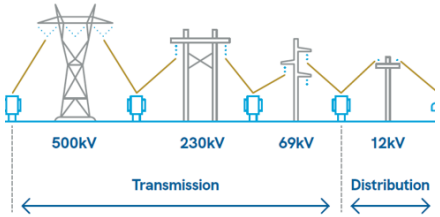

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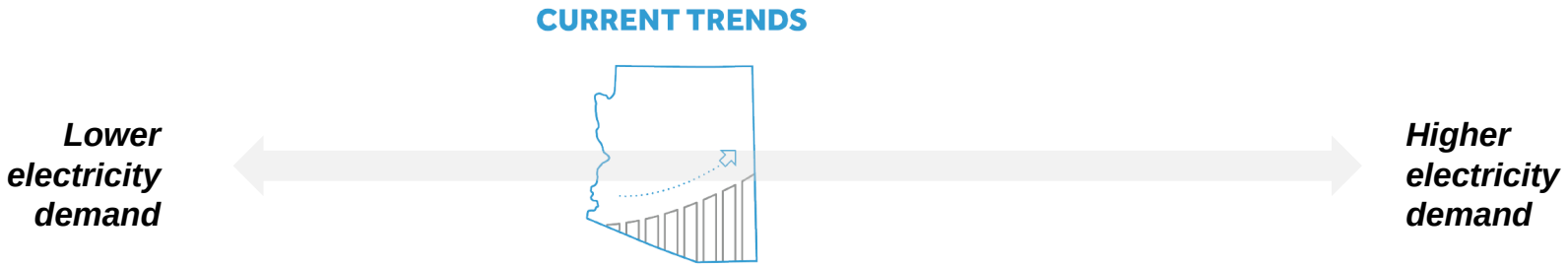

The Current Trends scenario reflects a central case for how Arizona's future might unfold.

Analysis Highlights:

- Rapid expansion of the power system
- Doubling or tripling generation capacity
- The location of generating resources can have a significant impact on transmission investment needs.
- Distribution infrastructure driven by rezoning and growth throughout the valley and new infrastructure needs in the Southeast Valley

Questions?

Scenario: Desert Contraction

Growth slows, in part due to climate change impacts in the Southwest

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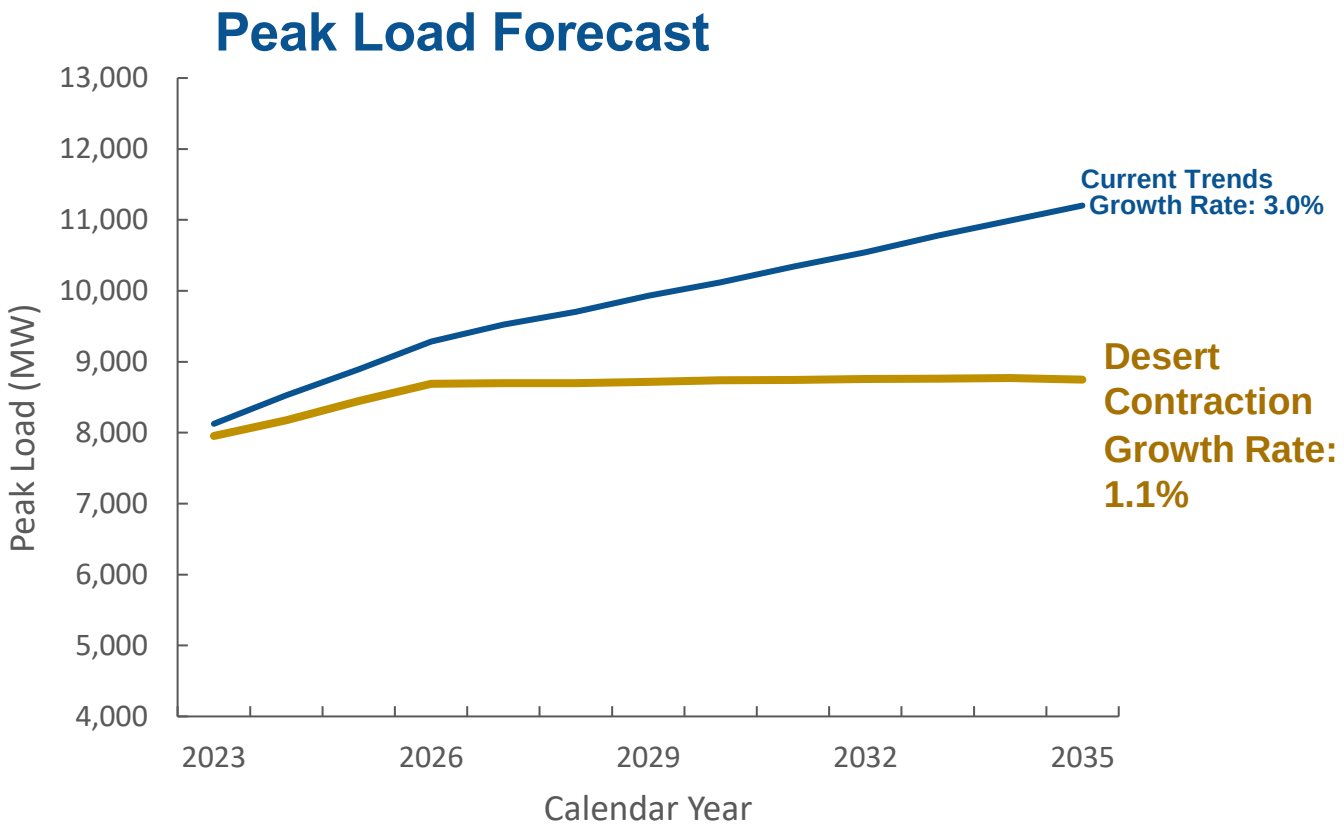

Growth rates calculated as compound annual growth rates

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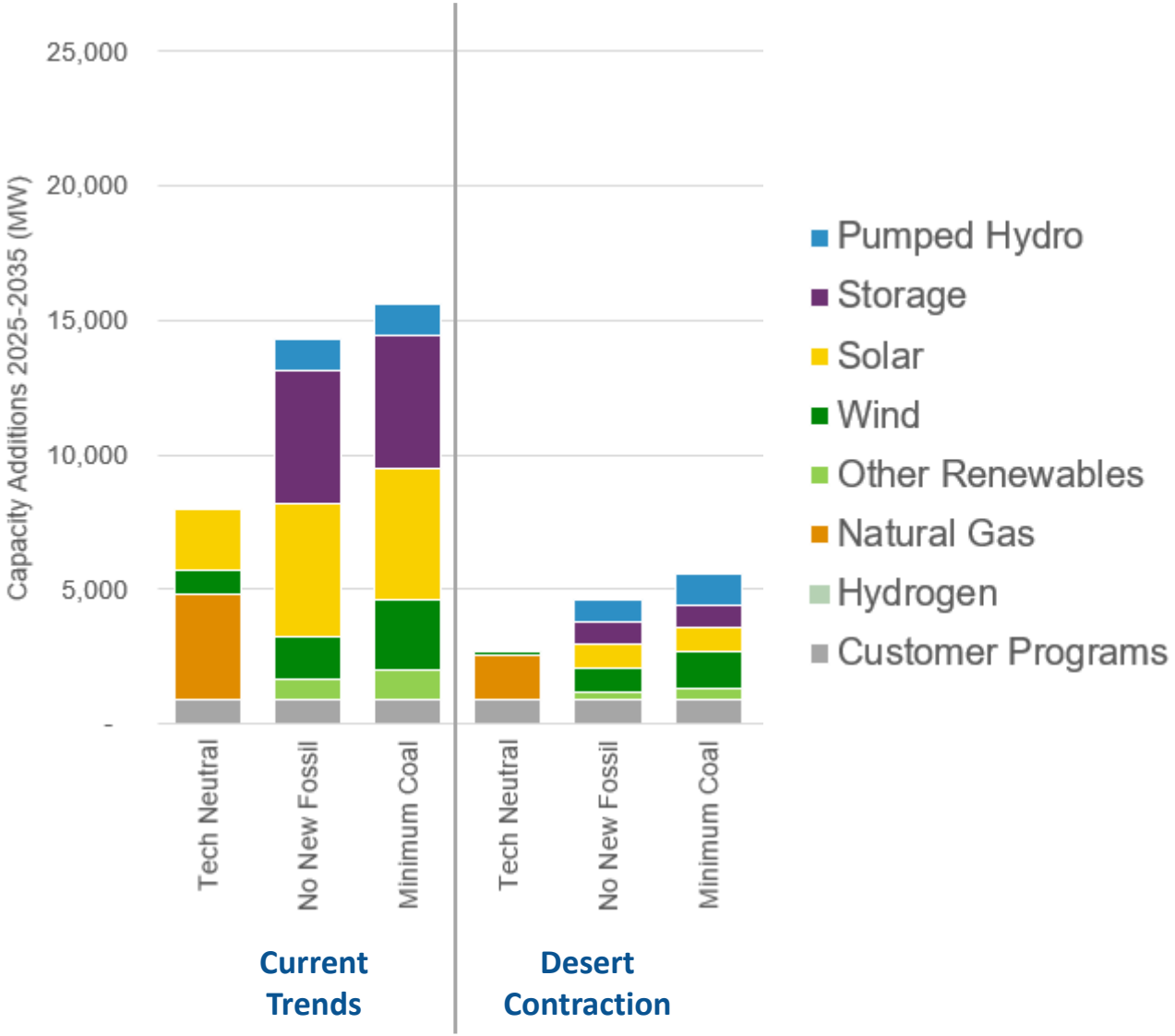

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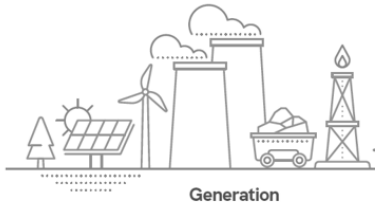

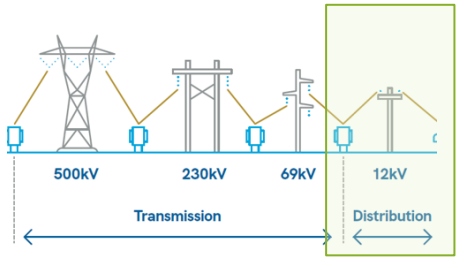

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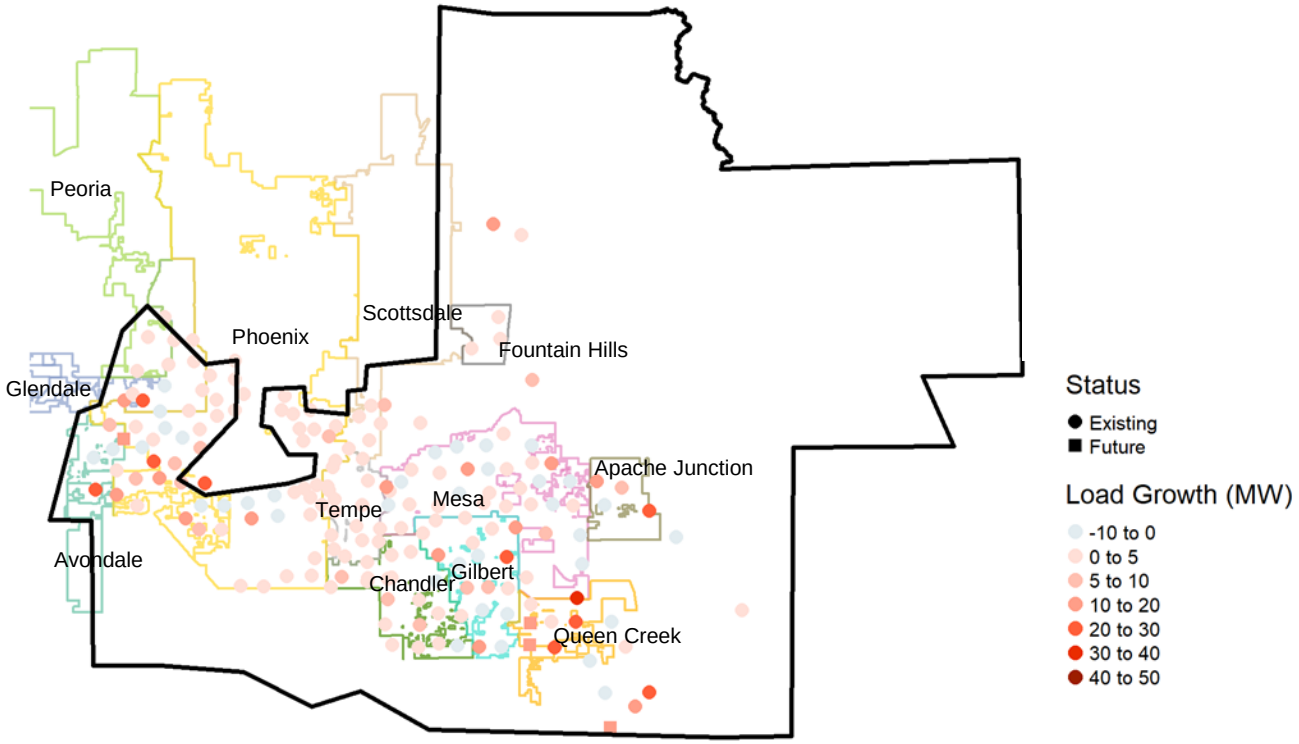
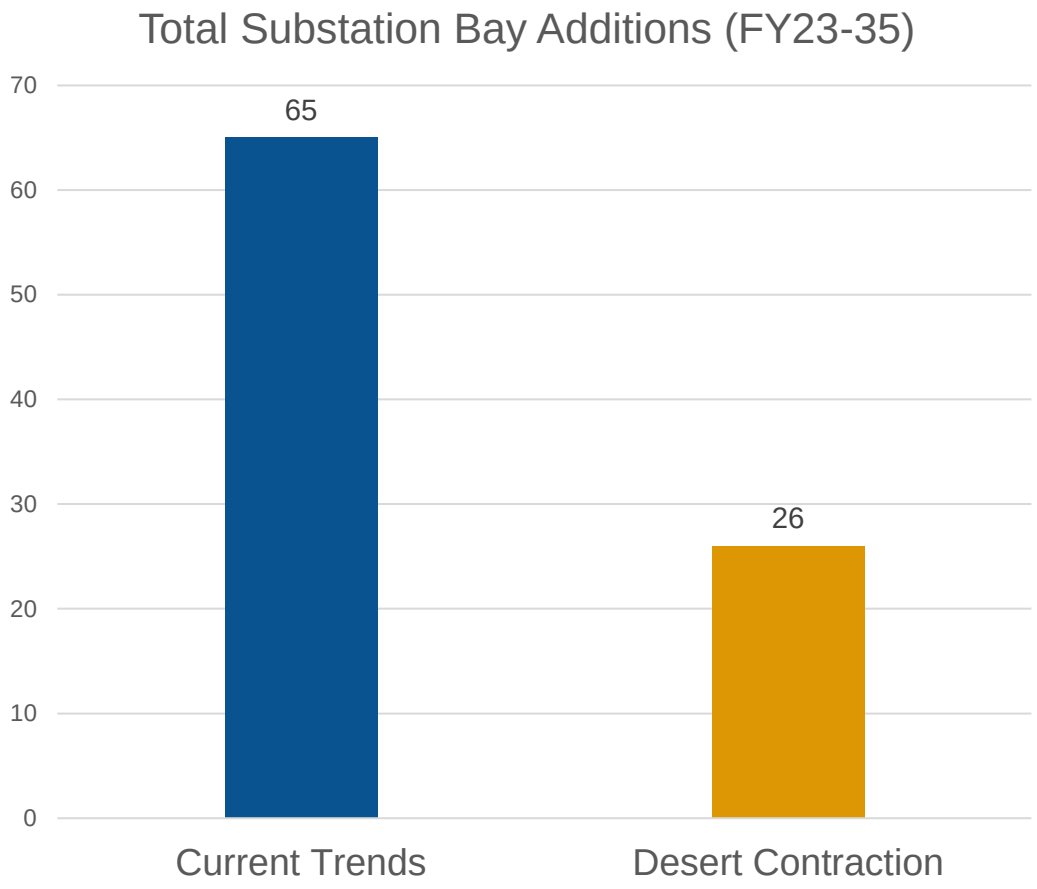
Load Growth Through 2035 by Distribution Substation

***Desert Contraction* Scenario**





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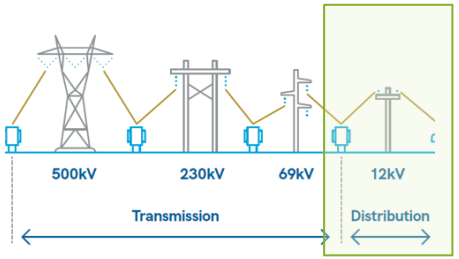

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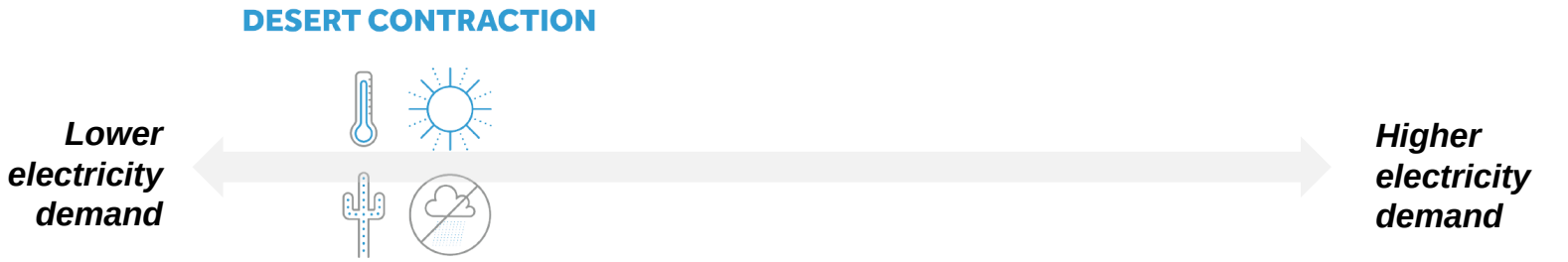


The Desert Contraction scenario is a future in which growth slows, in part due to climate change impacts in the Southwest.

Analysis Highlights:

- Infrastructure including new resources needed despite stagnant growth.
- Transitioning away from coal requires replacement investment.
- Redevelopment and Southeast Valley growth drive distribution investments.

Scenario: Desert Boom

Economic growth in the Valley further accelerates

DESERT BOOM

Load Forecast

Customers

Peak Demand & Customer Programs

4.0%
peak load growth rate

600,000
electric vehicles on the road

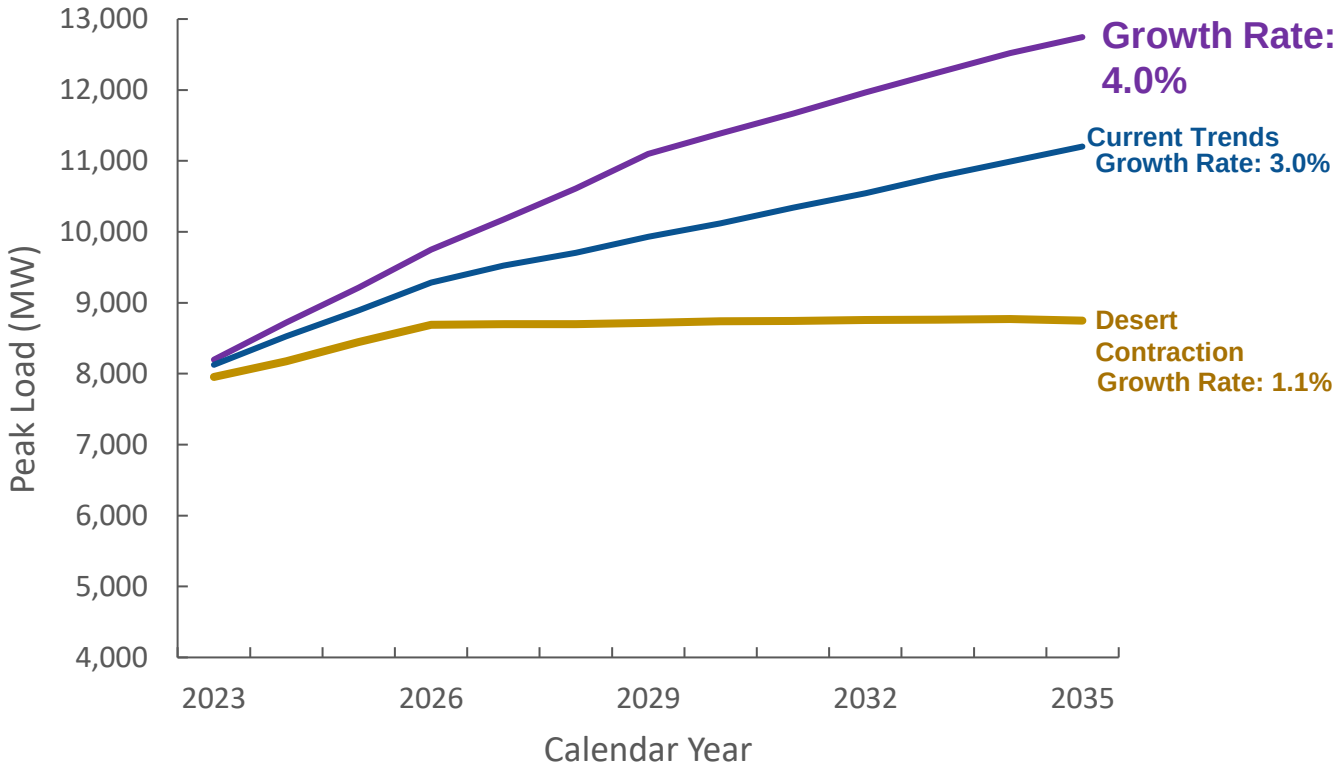
3,800 GWh*
total energy efficiency programs

1,800 MW
total distributed solar

300 MW*
total demand response

*2035 Sustainability Goals

Peak Load Forecast



Growth rates calculated as compound annual growth rates

Scenario: Desert Boom

Economic growth in the Valley further accelerates

DESERT BOOM

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Generating Resources

High load growth requires significant capacity additions. Without firm resources available, the system is unable to meet reliability requirements.

1,300 MW - 1,800 MW
coal plants retired

Natural Gas
is part of a least-cost portfolio

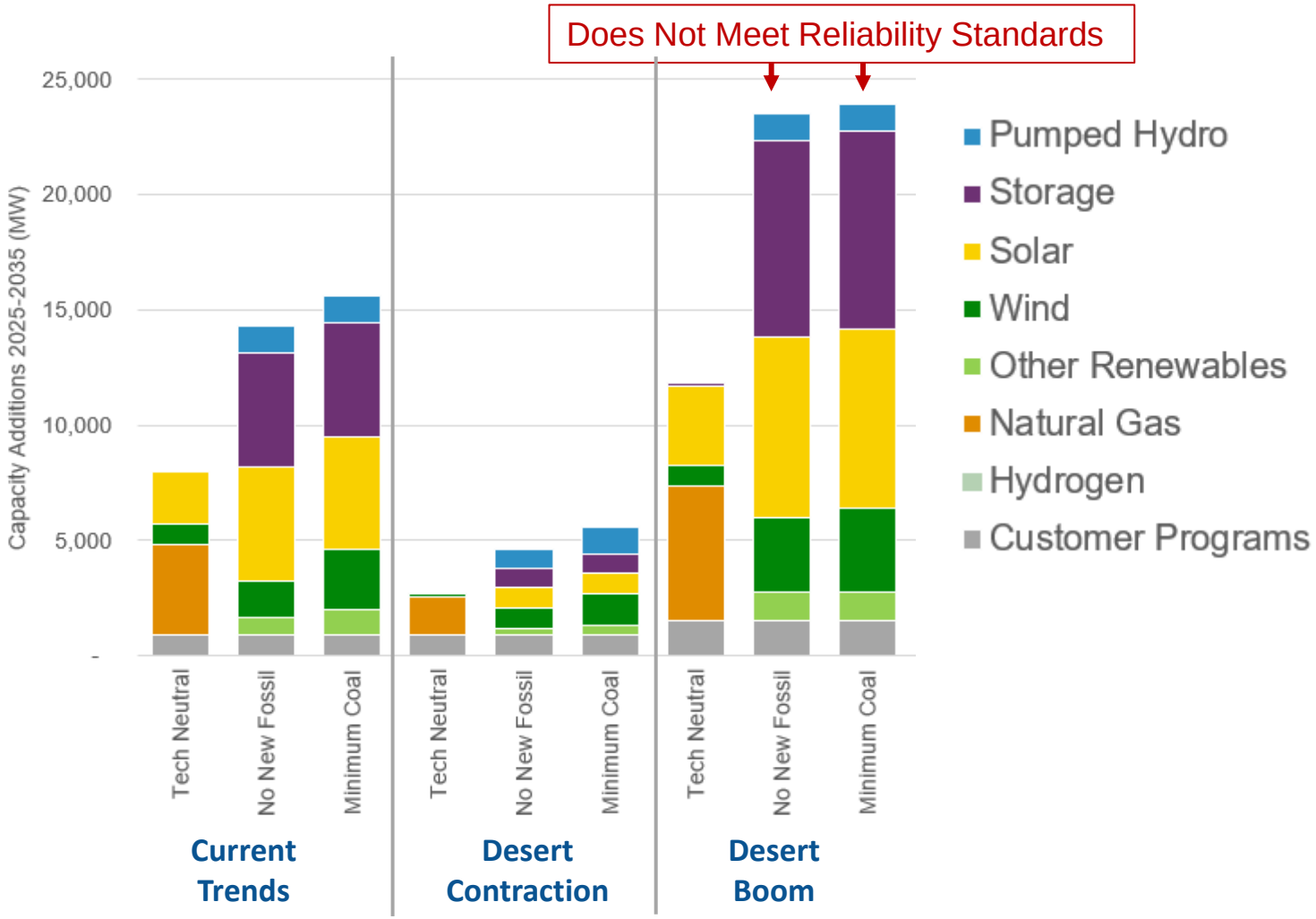
4,000 MW - 11,000 MW
additional solar and wind

10,000 MW battery and pumped storage
required if firm option is unavailable

16% planning reserve margin
not achieved in No New Fossil or Min. Coal Strategic Approaches

*2035 Sustainability Goals

Modeled Resource Additions, 2025-2035 (MW)



Draft results subject to change

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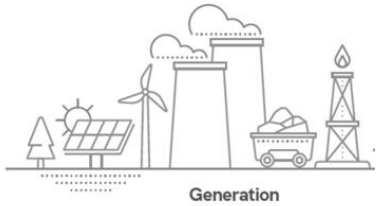

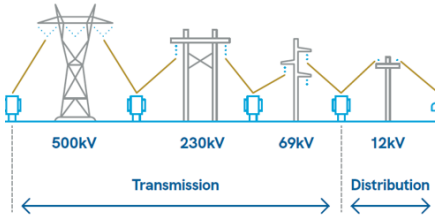

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Grid Infrastructure Needs

Load growth occurs in areas with more land availability and requires significant amounts of new infrastructure

Location of generation matters
impacts transmission infrastructure

>150 miles of 230 kV and 20-140 miles of 500 kV Transmission

24% increase in substation bays
to meet future load growth

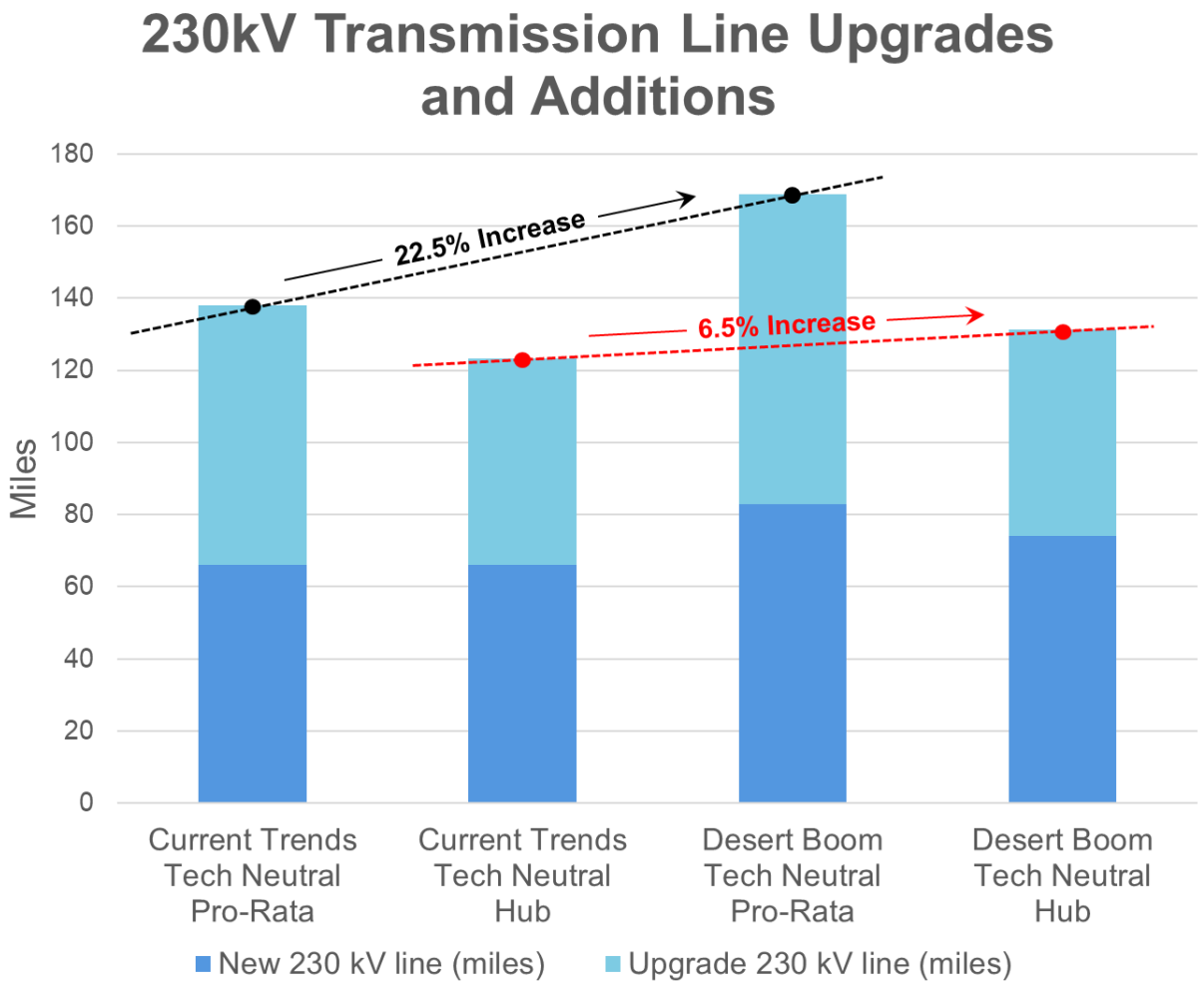
Growth patterns follow changing customer mix

Southeast Valley Growth
capacity constraints occur in heavily developed areas

*2035 Sustainability Goals

Infrastructure Needs: Transmission

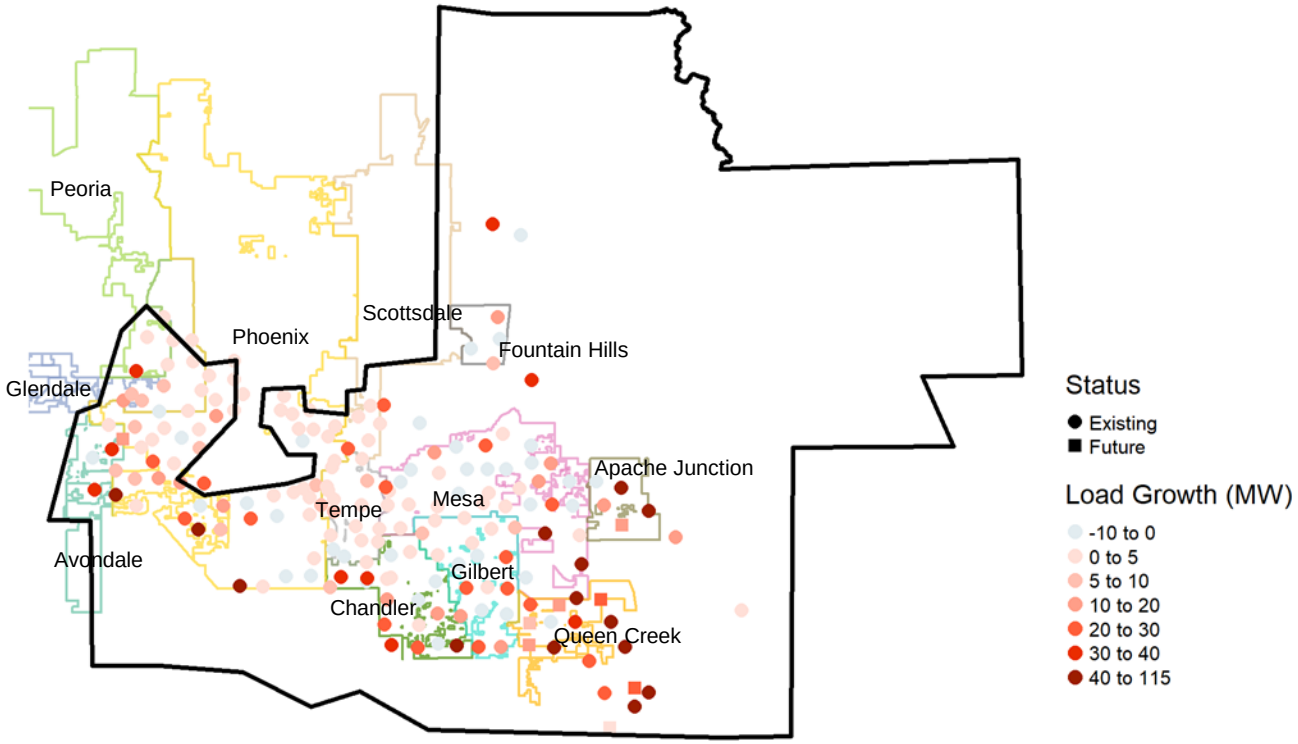
- ✓ Increased number of 230kV line upgrades and additions
- ✓ Increases in 500/230kV transformers (long lead time)
- ✓ Additional 500kV

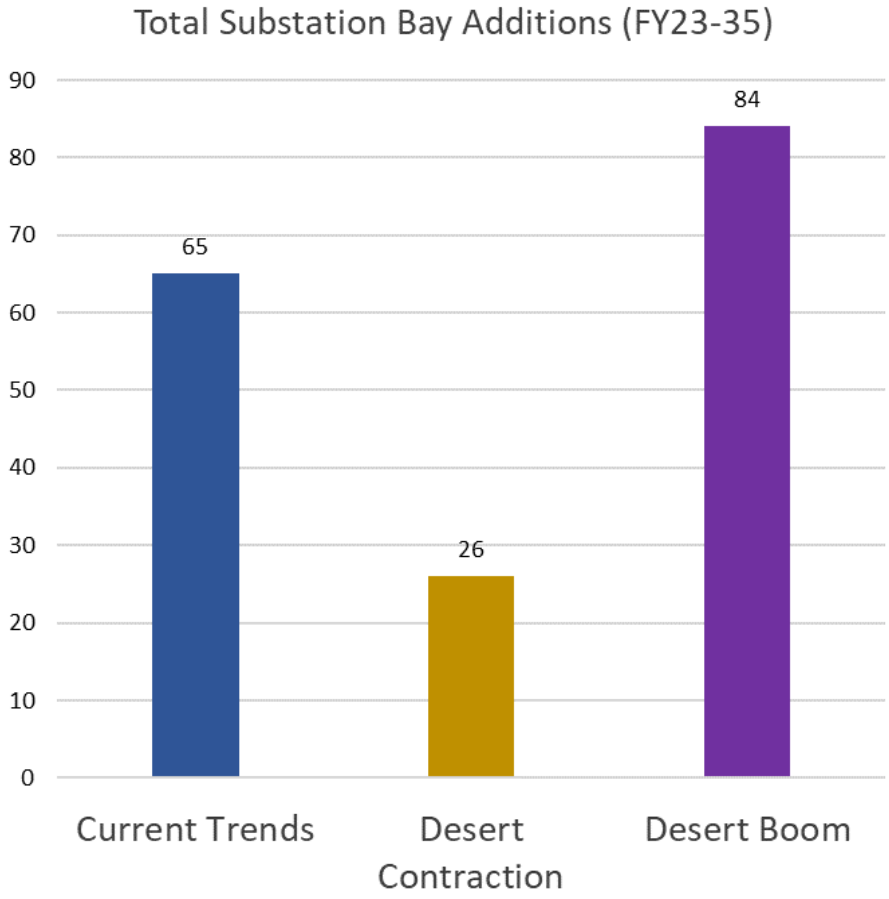


Infrastructure Needs: Distribution

Load Growth Through 2035 by Distribution Substation

Desert Boom Scenario





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Economic growth in the Valley further accelerates

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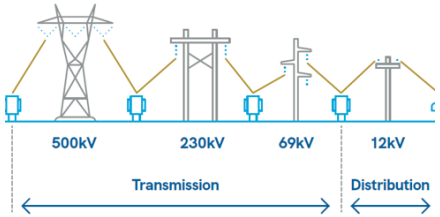

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Scenario:
Desert Boom

DESERT BOOM

Lower electricity demand ← → *Higher electricity demand*

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

Analysis Highlights:

- Pace of expansion requires extremely rapid development = more risk
- Without a firm capacity resource available the system cannot meet reliability requirements.
- The location of generating resources can have a significant impact on transmission investment needs.
- More granularity needed to plan for reliability on the distribution system.

Scenario: Strong Climate Policy

U.S. implements strong climate policies

Peak Demand & Customer Programs

2.9%
peak load growth rate

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total energy efficiency programs

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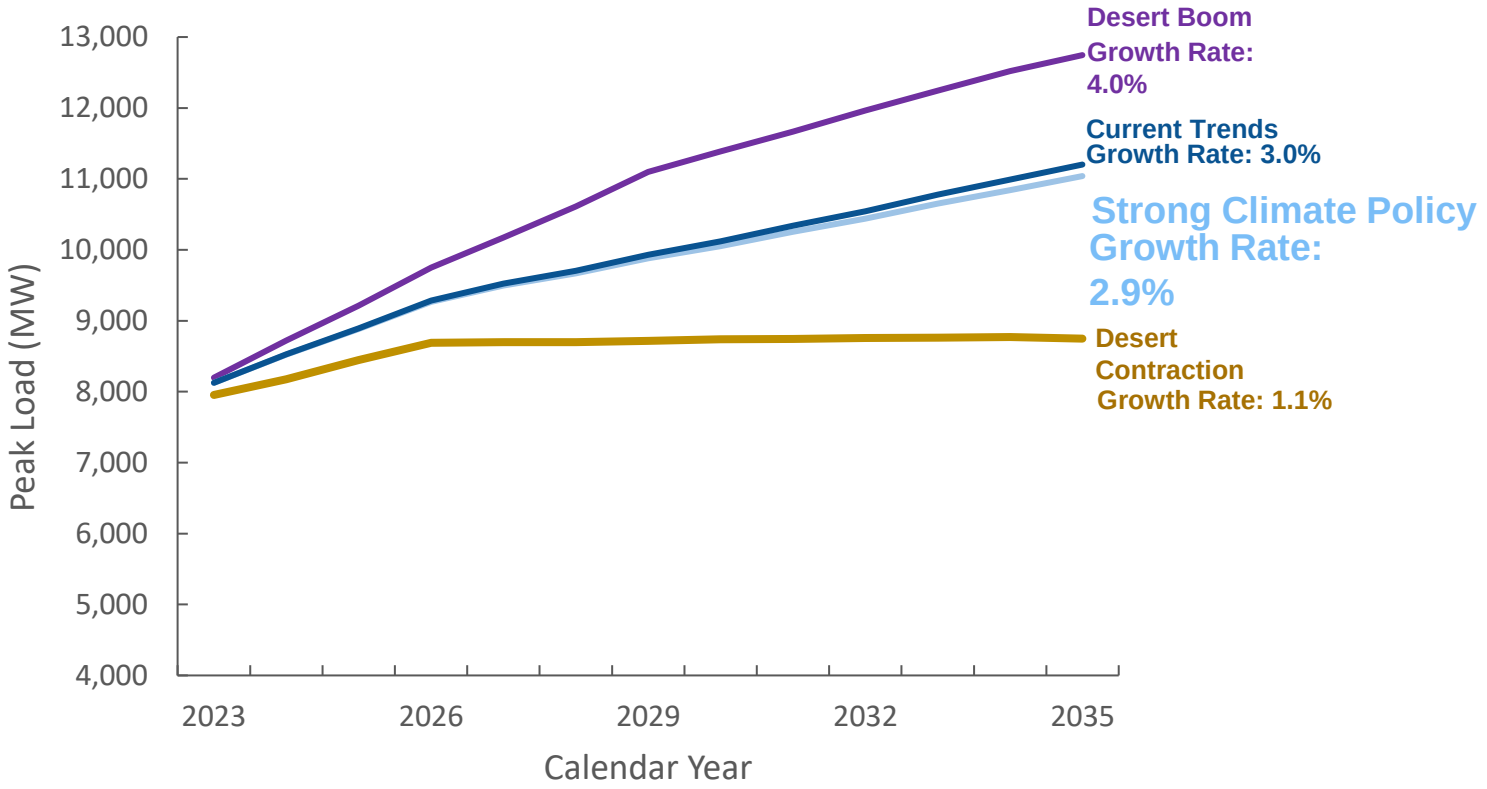
Peak Load Forecast



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In all cases, meeting strong climate goals requires high levels of renewables and battery storage as well as reliance on emerging technologies that provide clean, firm power.

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100 MW – 700 MW Hydrogen
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13% planning reserve margin
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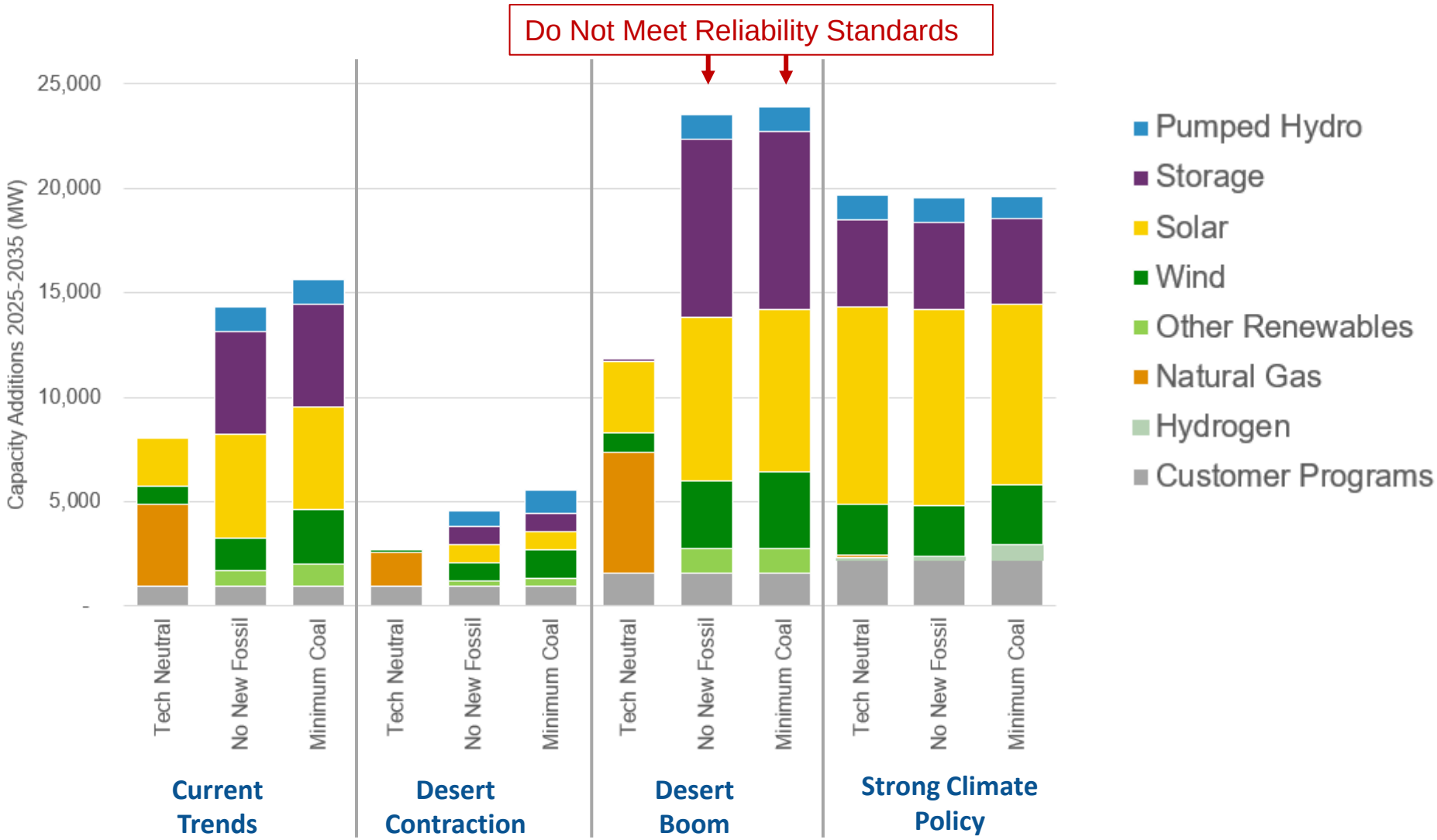

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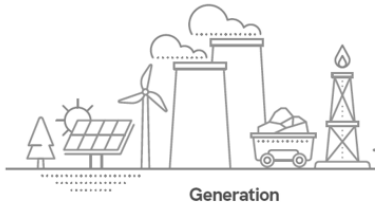

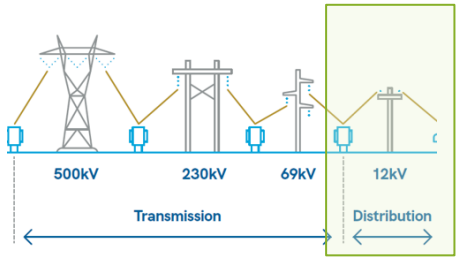

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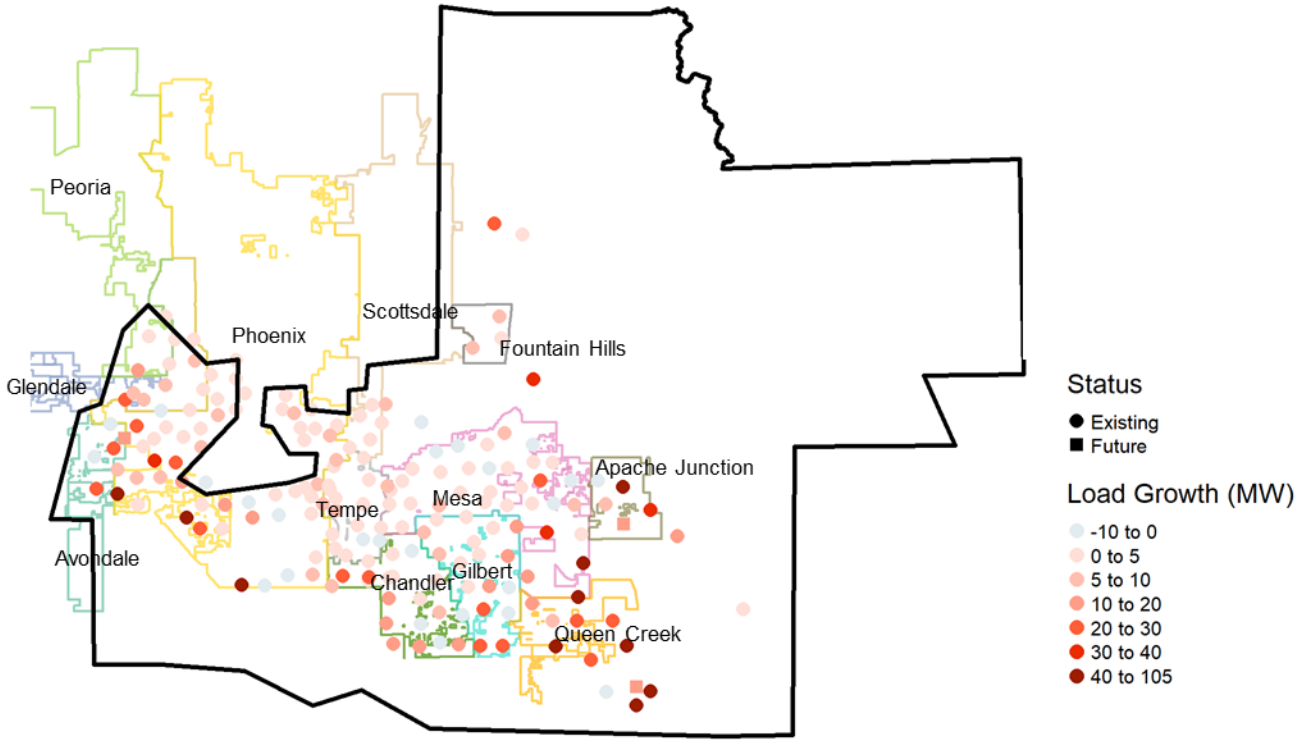

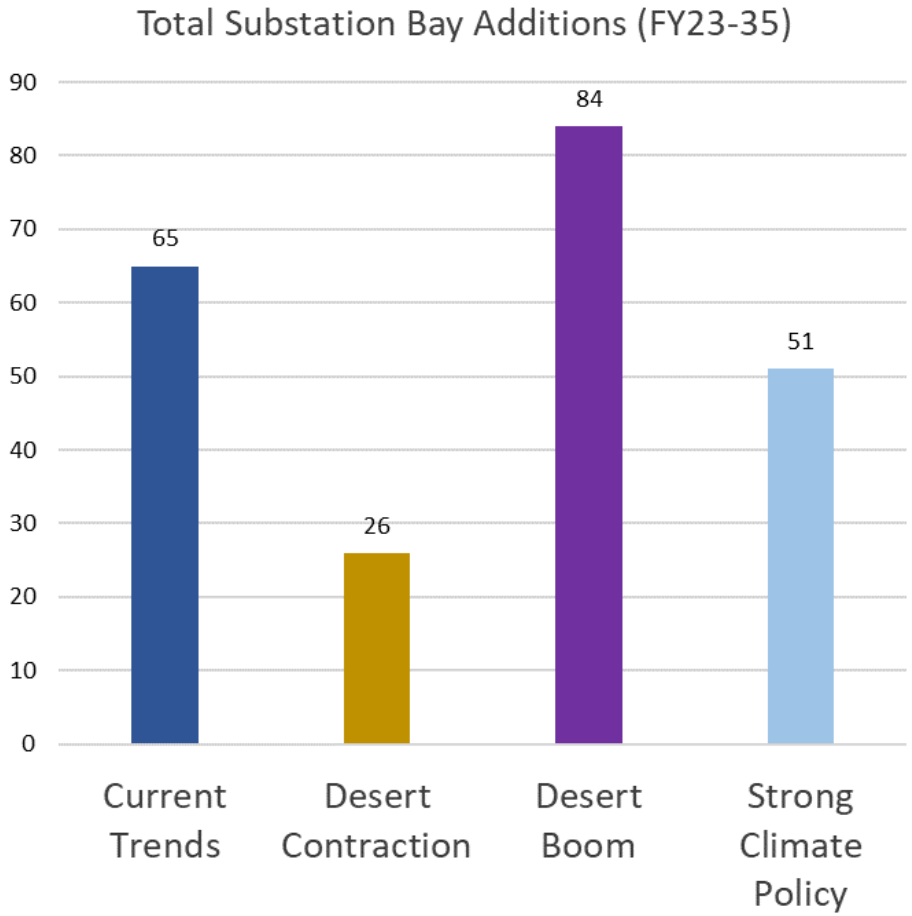

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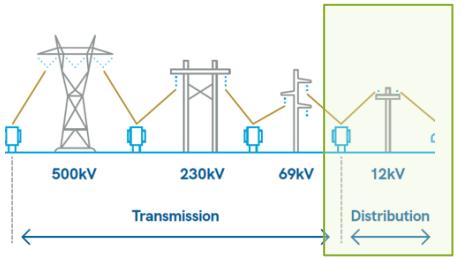

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Scenario: Strong Climate Policy

STRONG CLIMATE POLICY

Lower electricity demand

Higher electricity demand

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

Analysis Highlights:

- If U.S. government enacted strong climate policy, SRP would need to accelerate renewable & storage deployment significantly.
- Rapid development of green hydrogen infrastructure and commercial availability needed to provide firm capacity.
- Customer programs provide opportunity to defer infrastructure outside of the study period.

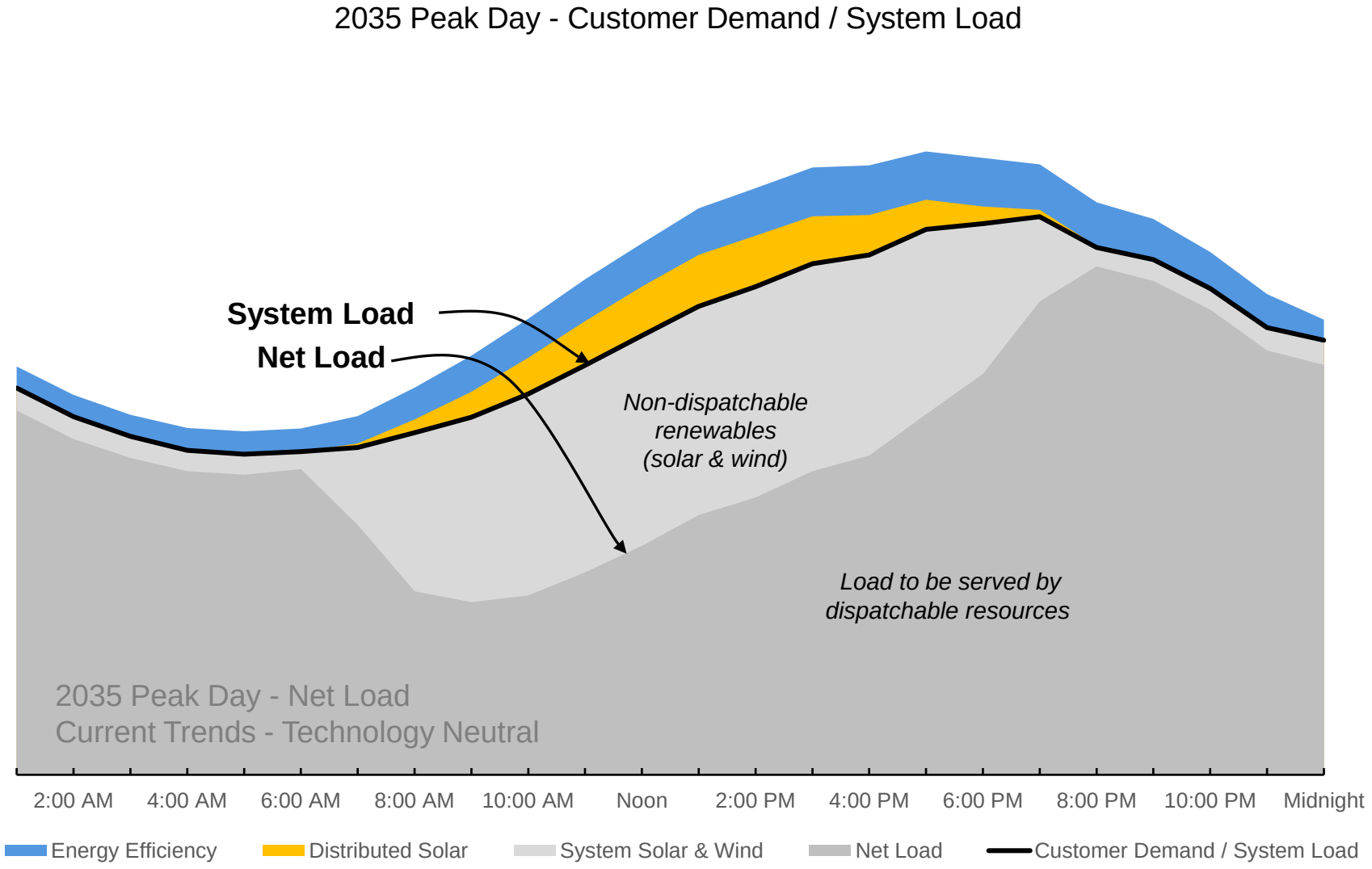
FEDERAL POLICY

Questions?

Customer Programs

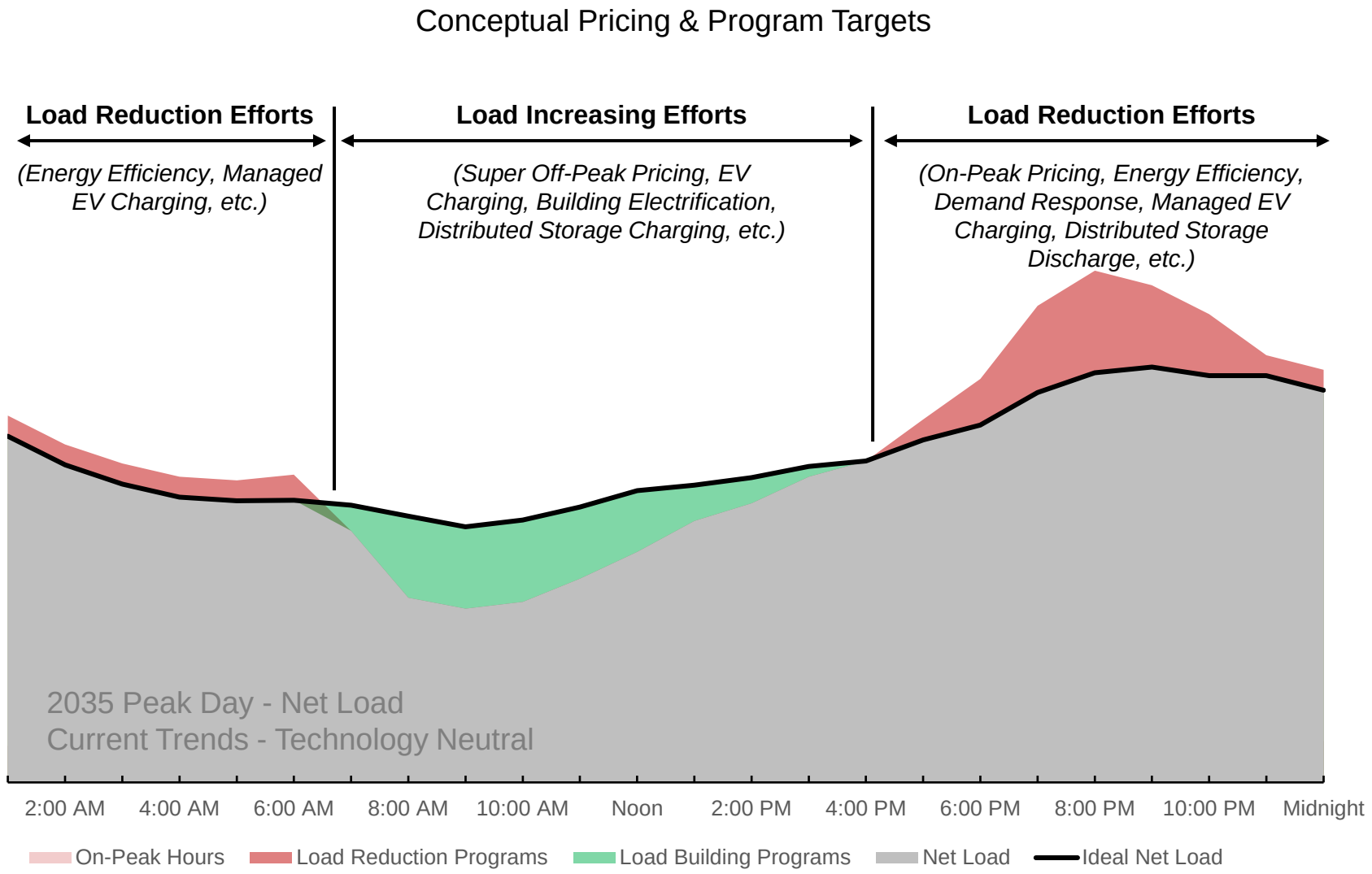
Customer Programs Key Findings

- ✓ Program and price plan design will shift to Net Load in most cases.
- ✓ Educational campaigns and initiatives will be needed to reset customers' understanding of when to consume and when to conserve energy.



Customer Programs Key Findings

- ✓ Pricing, Energy Efficiency & Demand Response will evolve to target later hours.
- ✓ Storage will become more valuable to Distributed Solar.
- ✓ Transportation and Beneficial Electrification programs can leverage mid-day hours to maximize carbon reduction impacts.



SRP's Integrated System Plan

Early Key Findings Summary

Integrated System Plan
Summary of Early Key Findings

Resources & Infrastructure

- ✓ SRP will need to build up to 7 times as many new resources in the next decade than in the last decade to serve customers while achieving reliability and sustainability goals.
- ✓ Significant investment over the next decade is needed to strategically build out new grid infrastructure to connect new resources and customers, while achieving reliability and sustainability goals..
- ✓ Without new firm generation capacity, the system cannot satisfy reliability requirements under a high load growth scenario

Customer Programs

- ✓ Need to evolve programs and price plans to shift consumer behavior and education is needed to reset customers' understanding of 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 accelerate renewable & storage deployment significantly.
- ✓ 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.

Roundtable Chat Key Findings:

What's a key finding that you see as important for the ISP?

What's a key finding that you see as important for the ISP?

Open Text Responses:

- Possibility of siting battery at the distribution level as new resource
- Reducing the potential of DSM to meet resource adequacy in strategic approaches.
- Resource adequacy is extremely important in all scenarios.
- SRP will need an all-in solution (renewables, DERs, DSM, customer programs) to meet its future net peak.
- Capacity shortages may be alleviated by building new transmission.
- The size of the infrastructure buildout.
- That SRP is allowing for resources that are not real at this point such as hydrogen yet constraining what is real — customer programs — in this modeling.
- Long-term planning to hedge against supply chain issues.
- Cost of implementation and impact on customers. More rate increases?
- Tech neutral strategy has practically no solar. How can that be?
- More 500kV transmission.
- Keeping peak load growth contained has huge benefits in terms of making lots of things easier.
- The need for significant capacity increase in the short term.
- The role that customer programs can play in mitigating the growth issues.
- Knowing the energy generation applications that are being received for development on federal land.

Questions?

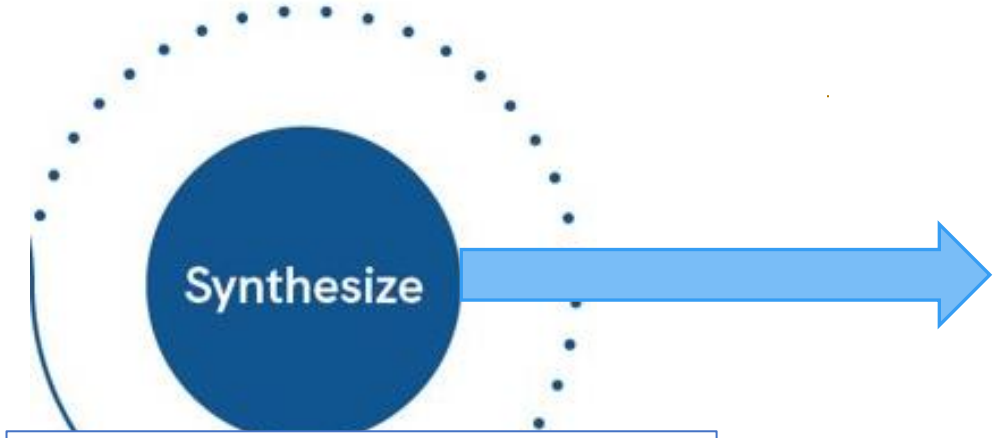
Break

Initial System Strategy Themes & Engagement Activity

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

System Strategies

The System Strategies are the **Board-approved**, **long-term strategies** for planning and operating the power system through 2035.



- Review metrics
- Discuss trends, tradeoffs & findings
- View outcomes through Guiding ISP Principles

1. Develop System Strategies

Emerging Strategy Themes

- Evolve Customer Programs & Price Plans
- Develop and Preserve Optionality
- Build and Leverage Partnerships
- Proactive Siting for System Investments/Additional Infrastructure
- Prepare and Equip the Workforce

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Poll Everywhere Question:

Based on these themes, what are potential strategies SRP could consider for the ISP?

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Open Text Responses

- Systematic, ambitious initiatives to use solar electrons at time of generation.
- Eye to rate affordability.
- Opportunity to leverage SRP's independent governance to optimize tools for growth.
- Plan for a future that eliminates carbon dioxide emissions.
- Use ex-coal transmission more efficiently for new renewables.
- Relax DR/EE constraints and allow the model to consider all reliable and affordable peak-reducing measures that are available.
- Leverage the distribution more in your analysis. Apply programs strategically to resolve distribution issues and bulk issues simultaneously.
- Aligning all-source RFP with siting and transmission priorities/constraints.
- More policy advocacy at State Federal level to support appropriate scenario(s).
- Doubling down on customer programs.
- Conduct as much sighting in SEV now as possible.
- Continue to increase stakeholder feedback opportunities. Provide opportunity for a two-way dialogue rather than only one-way information sharing.
- Go with a conservative approach, but feel free to adjust as any forecast has much more error over time.
- Customer programs, even with tax incentives most cannot afford rooftop solar.
- More insight into drivers of system change and what of those drivers SRP could influence to exceed 2035 goals.
- Allow stakeholders access to models and data to enable a real outside evaluation of findings.
- Encourage and support for behind the meter systems for commercial/industrial.
- Proactive siting of system assets.
- Information sharing for building partnerships.
- Model the impacts of TOU rates on shaving peak demand.
- Non-wire solutions in load pockets at the distribution level.
- Systematic, ambitious programs to constrain peak load growth.
- Providing transparency and adequate lead time for any future RFPs.
- Start planning for long-term transmission needs today.
- We need foresight into future load growth.

Wrap Up and Next Steps

Maria Naff
Manager, Integrated Planning (SRP)

2023 Engagement Calendar

We are here

Large Stakeholder Group #3:

ISP Early Key Findings

May 12th 2023

Large Stakeholder Group #4:

ISP Path Forward

Late Sept 2023

Technical Working Session:

Evolution of Time-of-Day (use) Programs

July TBD

Next Steps

Large Stakeholder Group

- Technical Working Session on Evolution of Time-of-Day (use) Programs in July (date TBD)
- Meeting #4 in late September

SRP Team

- Complete ISP analysis
- Develop draft system strategies
- Finish conducting Phase 3 ISP Customer Research Effort

Stakeholder Communication Email:

IntSysPlan@srpnet.com

Integrated System Plan: Informational Portal

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

thank you!