



Delivering water and power®

SRP INTEGRATED SYSTEM PLAN

Background and Overview



SRP Integrated System Plan

What is an Integrated System Plan

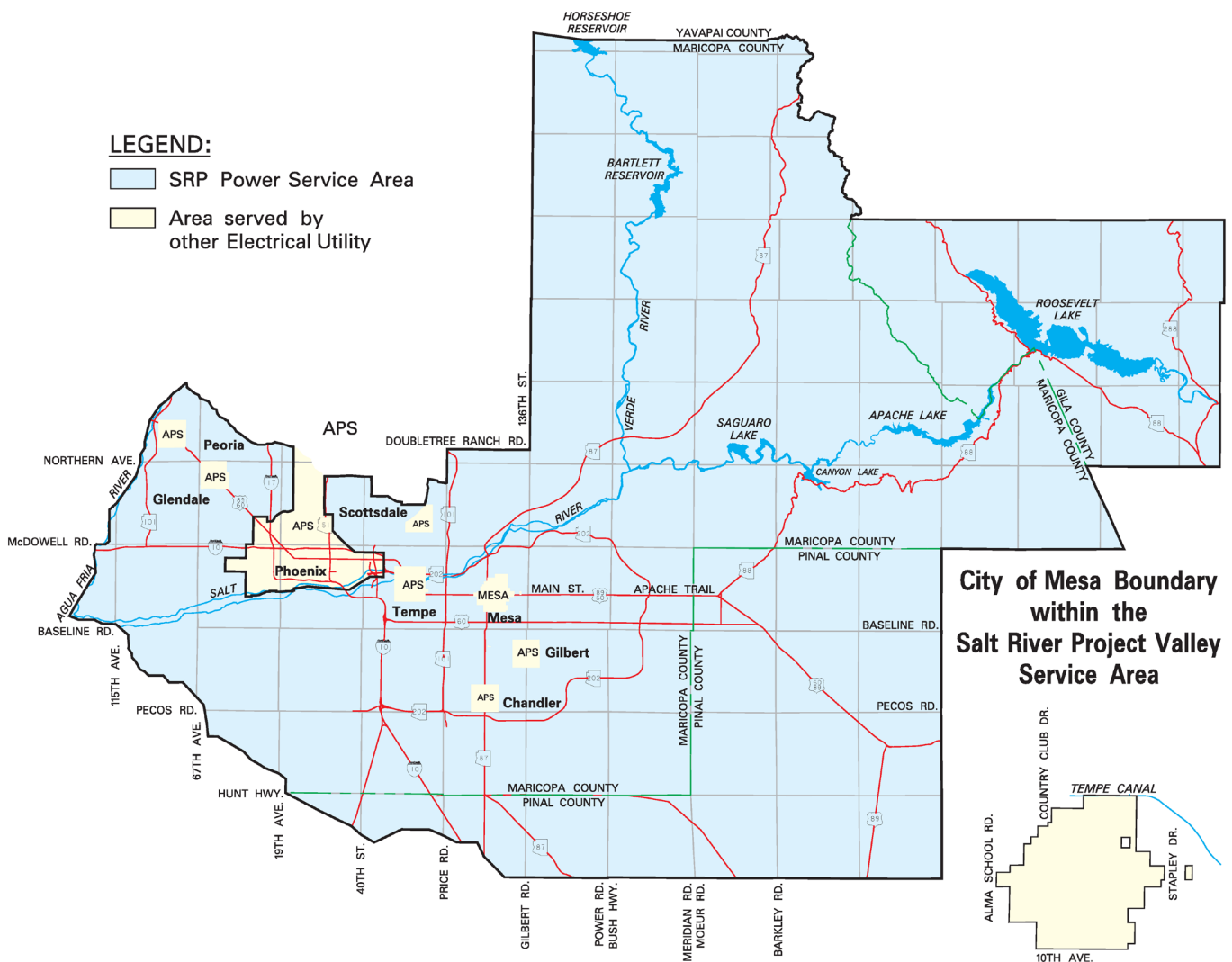
An Integrated System Plan is the blueprint for the power system of the future that includes all major power system pieces of meeting future customer demand: power generation, transmission, distribution and customer programs. The Integrated System Plan will help Salt River Project (SRP) plan for a future power system that balances reliability, affordability and sustainability while maintaining a high standard of customer service. During the Integrated System Planning process, SRP will collaborate with stakeholders and customers to build support for a shared vision for the future of the power system.

SRP Overview

SRP provides reliable, affordable water and power to more than 2 million people living in the Phoenix metropolitan area of central Arizona. SRP has provided these essential services for more than a century to meet the needs of customers and to help the Phoenix area develop into one of the nation's most vibrant regions.

As a community-based not-for-profit water and energy utility company, SRP acts in the best interest of the people it serves and strives to help build a better future for Arizona. Even before Arizona became a state, SRP was taking a leading role to help the region thrive. SRP intends to continue as a leader in both Arizona and the industry as SRP embarks on the leading path of integrated system planning.

SRP ELECTRIC SERVICE AREA



The 'Why' of Integrated System Planning at SRP

2020 was a year unlike any other. In the midst of a pandemic, the Phoenix metropolitan area saw the highest power demand in SRP's 118-year history. The area experienced population growth more than three times the national average, resulting in significantly increased near-term residential and commercial energy needs. The pandemic caused global supply chain disruptions and resource/employee shortages, which were felt in the electric power industry. Current and future trends show the industry is undergoing a dramatic transformation that is expected to accelerate. This transformation is driven by a variety of factors, including:

Customer's goals and partnerships: There is a growing awareness of the electric sector's potential role in achieving environmental and societal goals, with increased electrification and new technologies that can help both SRP's residential and commercial customers to achieve their own sustainability and energy goals. SRP is already seeing rapid adoption of rooftop solar, electric vehicles, and building electrification driving the need for more partnerships between SRP and customers.

Advances in digital and communications

technologies: Dramatic advances in digital energy and communications technologies have increased customer involvement in managing their energy use. Digital platforms like web portals and smartphone applications enable convenient monitoring and control of customer's energy use in real-time. Customer technologies include rooftop solar, batteries, and smart home technologies such as smart thermostats. Secure, safe, and user-friendly communication between these technologies and the grid will need to be enabled and improved in order to utilize the opportunities these technologies provide while meeting customer expectations.

Batteries and other storage technology advancements: Capital costs for battery technologies continue to fall while performance matures. Batteries and other storage technologies may provide a means to integrate large quantities of variable renewable energy generation, such as solar or wind, with the grid.

Climate change: Climate change affects the development of energy demand, especially in Arizona where cooling needs are often met by electric air conditioners. Climate change can also fuel wildfires and extreme, unpredictable weather events, and threaten water availability, which are additional challenges to maintaining a reliable power grid. Extreme temperatures impact the longevity and performance of infrastructure, including the equipment used to generate and

SRP 2035 Sustainability Goals to Consider in the Integrated System Plan

Generation Resources

- Reduce the amount of CO₂ emitted by generation by 65% (per MWh) from 2005.
- Reduce carbon intensity by 90% from 2005 levels by 2050.
- Achieve 20% reduction in generation-related water use intensity across all water types.
- Eliminate or offset power generation groundwater use in Active Management Areas (AMAs).

Customer programs:

- Energy Efficiency - Deliver over 3 million megawatt-hours of annual aggregate energy savings.
- Demand Response - Deliver at least 300 megawatts of dispatchable demand response and load management programs.
- Electric Transportation - Support the enablement of 500,000 electric vehicles (EVs) in SRP's service territory and manage 90% of EV charging through price plans, dispatchable load management⁴, original equipment manufacturer⁵ integration, connected smart homes, behavioral and other emerging programs.
- Electric Technologies - Expand portfolio of electric technology (non-EVs) programs to deliver 300,000 megawatt-hours of annual aggregate energy impact.

Grid enablement:

- Enable the interconnection of all customer-sided resources, including solar photovoltaic (PV) and battery storage, without technical constraints while ensuring current levels of grid integrity and customer satisfaction.

To learn more about SRP's 2035 Sustainability Goals visit <https://www.srpnet.com/environment/sustainability/2035-goals.aspx>

For more information about resource adequacy issues and regional power shortages being experienced in the Western United States check out these articles:

- Blackouts Threaten Entire U.S. West This Summer as Heat Awaits. Bloomberg Green. <https://www.bloomberg.com/news/articles/2021-05-13/u-s-west-facing-white-knuckle-summer-with-power-in-short-supply>
- How an Oregon Wildfire Almost Derailed California's Power Grid. Los Angeles Times. <https://www.latimes.com/business/story/2021-07-12/california-flex-alert-power-grid-heat-wildfire>

deliver power.

Regional markets and shortages: In response to new customer demands, new power generation technologies, and more extreme weather, momentum is gathering for the west to plan as a region, through organized market development. Recent extreme weather events triggered regional outages that impacted customers and communities across the western electric system. Utilities in the West need to ensure adequate power supply on their networks while looking to the developing markets for opportunities to buy and sell power.

Transitioning to a lower-carbon portfolio:

SRP is positioning its resource portfolio for a lower-carbon future by retiring coal plants, adding new renewable resources, adopting customer programs that reduce demand, integrating storage, adding flexible natural gas, and acquiring existing zero-carbon nuclear resources. All these efforts enable SRP’s achievement of the 2035 Sustainability Goals, which include carbon reduction goals to reduce the amount of CO2 emitted by generation by 65% (per MWh) from 2005, and by 90% by 2050.

Did you know?

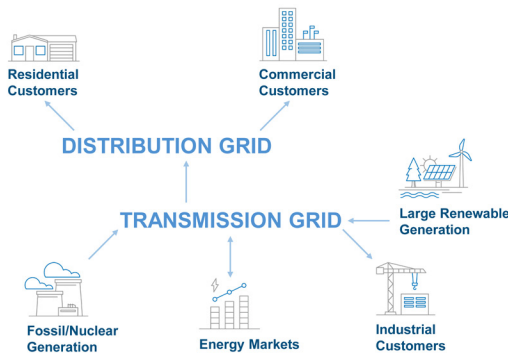
- SRP has already more than doubled its commitment to solar to 2,025MW by 2025, is adding 114MW of carbon free nuclear generation by 2023, 150 MW of Demand Response by 2022, and with the additions of 372MW of Battery Storage by 2023 SRP will have some of the largest solar plus battery installations in the country.
- Maricopa is the #1 fastest growing county in the U.S. The SRP service area is experiencing unprecedented economic development growth from tech firms and advanced manufacturing resulting in increased energy demand by 1.7% per year during the last decade.

Integrated Resource Planning to Integrated System Planning

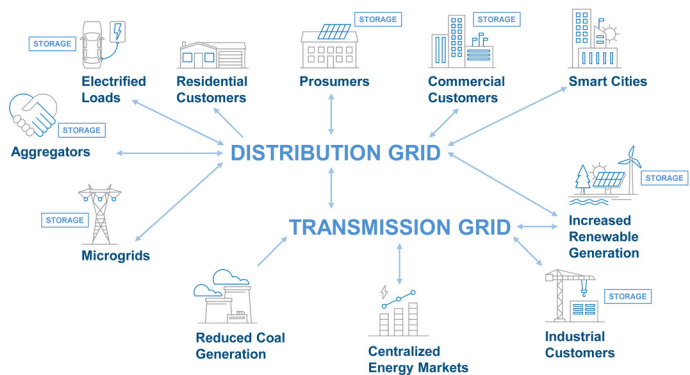
Typically, utility companies will produce an Integrated Resource Plan every 2-5 years to guide decisions around electricity generation resources, such as power plant retirements, refurbishments or new construction and development. In the past, Integrated Resource Plans guided SRP to plan long-term generation resource decisions by conducting structured analyses assessing risk and uncertainty. Given the many ongoing changes in the power sector, we must also adapt these traditional planning methods to optimally develop a safe, reliable, affordable and environmentally responsible power system. An integrated system planning approach is necessary to meet changing customer needs, such as enabling two-way power flow for rooftop solar additions, managing charging of electric vehicles and to anticipate the power system transition to a lower carbon, increasingly complex grid.

Given the effort needed to implement a holistic Integrated System Plan, SRP will focus the plan on the period 2025-2035. Consequently, for near-term planning decisions (2021-2024), SRP will continue to use the Integrated Resource Plan Strategic Resource Directions to guide near-term decisions.

Traditional Power System



Future Power System



To learn more about our last Integrated Resource Plan and/or background about Distribution Planning, Transmission Planning, and Forecasting efforts at SRP reference the [SRP ISP Summer Series Meeting 1: Since We Last Met” Pre-Read](#)

Integrated System Planning Vision

The first Integrated System Plan has the following objectives:

- Establish a collaborative system planning process with customer and stakeholder input.
- Evaluate the costs, risks and tradeoffs of different strategic approaches.
- Understand which system solutions are valuable in the face of critical uncertainties.
- Determine which activities SRP should undertake in the next 6 -10 years to plan for system solutions.

Did you know?

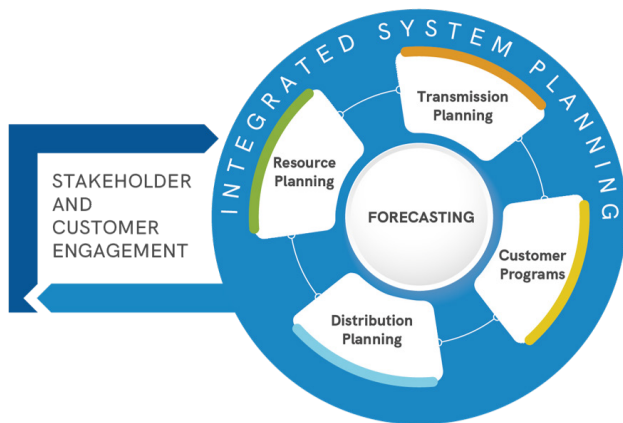
SRP created a new Integrated System Planning & Support Department in 2020 that works to enhance methods for cross-functional study execution and leads the development of the Integrated System Plan.

The Integrated System Plan will develop holistic plans to address grid needs across all SRP planning areas while considering developing trends in the power industry. These planning areas include Resource Planning, Transmission Planning, Distribution Planning and Customer Programs. Resource planners focus on large investments in power generation and storage.

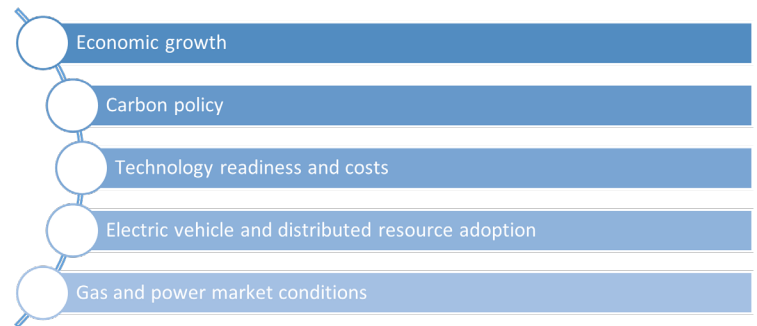
Transmission planners are concerned with the siting, development, and operation of high-voltage transmission lines. Distribution planners plan the network of transformers, lines and circuits that flow through our cities and neighborhoods, while the Customer Programs group plans the customer interface with the grid, which includes energy efficiency, electrification and demand response programs. The Forecasting group at SRP provides forward-looking data to the planning teams so that they can plan today for the future power needs of SRP customers.

Want to know more about Customer Programs at SRP? [See their full 2021 Customer Programs Report](#)

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Industry Trends



Stakeholder and Customer Engagement with the Planning Process

As part of our planning process, we are seeking feedback and comment from our stakeholders on each aspect of this process so that our system plan recommendation to SRP’s Board of directors will have fully considered this input in developing the recommendation.

SRP delivers power to diverse communities, individuals and organizations, and these stakeholders may hold varying views of the future and preferences for SRP’s path forward. Providing information to stakeholders about the challenges SRP faces and collecting feedback on these challenges will help us choose a prudent pathway moving forward.

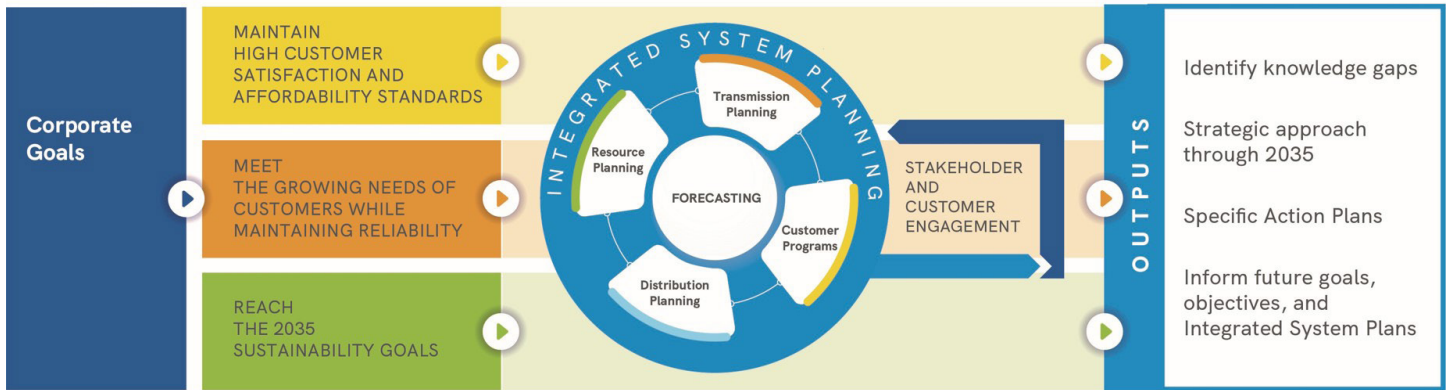
The Integrated System Plan provides stakeholders the opportunity to give feedback on future-facing analyses and their results. Inclusive, transparent and proactive dialogue with our stakeholders will help to improve and build support for the integrated system planning process.

Overarching Motivation

Specific Objectives

Analytical Processes: Integrated System Plan

The Way Forward



SRP needs stakeholder help in understanding the community vision of the Integrated System Plan and what challenges should be planned for from the perspective of our customers and community we service. Stakeholder and customer engagement efforts are planned to run throughout the integrated system planning process and to interact with the development of the Integrated System Plan at key touchpoints.