



Appendix B: February 2020 Update

Current Business Environment¹

Changing customer desires, technology advancements in natural gas extraction and supply chain efficiencies in renewable and battery-storage development are upending long-term trends in utilities' resource portfolios nationwide. As a result, energy storage technology continues to mature, and coal-fired generation continues to be displaced by natural gas, wind and solar resources. Moreover, several utilities and state governments have recently announced net-zero carbon and carbon-free generation goals. These trends are driven by a combination of economics, customer preferences, technological advancements and societal momentum for carbon reduction.

As these external forces evolve, it is important for SRP to assess these changes and test them against the 2017-2018 Integrated Resource Plan (IRP) key driver assumptions. Doing so ensures that SRP's strategic directions are still sufficiently comprehensive and appropriate in today's business environment.

With this in mind, SRP regularly reviews and updates its resource plan to identify how best to secure the power necessary to meet the growing electricity needs of its customers reliably, sustainably and at the best value. This planning process examines market conditions, including projected customer demand for electricity along with forecasted fuel supply and technology costs. These external key drivers affect SRP's business environment and influence the resource decisions that SRP makes. During SRP's most recent annual resource planning process, conducted in 2019-2020, SRP produced new retail peak demand, natural gas and technology cost forecasts. All of these forecasts are consistent with the scenario ranges used during the 2017-2018 IRP process.

In addition to external market conditions, SRP considers current and future corporate objectives, such as carbon reduction targets, which the resource plan must aim to achieve. Through the 2035 Sustainability Goal Stakeholder Process, SRP committed to steadily and meaningfully decrease its carbon emissions intensity from generation resources. In this process, SRP established a more aggressive carbon reduction goal, increasing the 2035 carbon emissions intensity reduction to 62% from 2005 levels as compared to the previous target of 33% from 2016 levels. Additionally, SRP set a long-term goal for 2050, targeting the reduction in its carbon emissions intensity by 90% from 2005 levels. These more aggressive targets will drive a material change in SRP's future resource portfolio.

As growth in demand is anticipated to continue at three times the national average through the end of the decade and beyond, more resources will be needed to meet the needs of SRP customers. The future development and acquisition of these resources will continue to be consistent with the 2017-2018 IRP strategic directions, taking into account demand-side resource management, alternatives to fossil-based fuel generation and, where necessary, natural gas generation to meet peaking needs and balance renewable generation intermittency.

SRP has evaluated the external key drivers impacting its resource strategy, from changing economic trends and established carbon reduction goals to significant growth in forecasted load. In light of these evaluations, SRP believes the 2017-2018 IRP strategic directions are still sufficiently comprehensive and

¹ The preparation of this February 2020 update was completed prior to the COVID-19 pandemic impacting Arizona and SRP's customers and communities. Future updates will address SRP's response to the pandemic and any implications for the IRP action plan in a post-COVID-19 environment.

appropriate. As such, SRP continues to implement an IRP action plan based on these strategic directions. The following pages share more details on this action plan.

Implementation of 2017-2018 IRP Conclusions

During the 2017-2018 IRP process, stakeholders provided input and guidance on elements that have formed SRP’s strategic directions for resource decisions. These strategic directions, summarized below, have guided SRP’s resource decisions since completion of the 2017-2018 IRP process.

Element	Strategic Resource Directions
Coal Generation	Further reduction in coal generation; address implications for employees and communities.
Natural Gas Generation	Develop flexible natural-gas generation options to meet peak demand and integrate renewables.
Renewable Energy ²	Grow renewables portfolio to reduce CO ₂ intensity and manage costs; expand opportunities for customer-dedicated projects.
Energy Storage	Add cost-effective energy storage to support additional renewable energy integration and as an alternative to major commitments in new-build natural gas generation.
Nuclear Generation	Preserve option for new nuclear generation in mid-to-late 2030s with focus on small modular technology.
Customer Programs	Develop and promote energy efficiency programs and new customer-side demand management programs and technologies.
Market Resources	Expand participation in regional markets.
New Technologies	Pursue pilot projects and research and development efforts for innovative applications of new power generation, load management, energy storage and electrification.

The following sections describe major resource initiatives completed or underway as part of SRP’s IRP action plan, which is based on the strategic resource directions described above.

Coal Generation

SRP recently completed a comprehensive assessment of the remaining coal fleet, which included an analysis of risks associated with joint ownership, fuel supply, regulatory and legislative action, environmental policies, transmission systems and impacts to the communities in which these plants operate. The results from this assessment have helped to inform strategic action plans for future coal

² For current and future IRP-related discussions, Renewable Energy and Energy Storage have been separated into two strategic directions.



retirements on SRP's system. Initial findings and proposed action plans resulting from the assessment were shared with stakeholders during the 2019 IRP Biennial Workshop.

Since the 2019 Workshop, SRP has made changes to the company's coal exit strategy, including a decision on the planned retirement of Coronado Generating Station (CGS) units 1 and 2, two of the three remaining coal units wholly-owned by SRP. In January 2020, SRP announced plans to retire all 773MW of both units no later than 2032. This decision balanced customer affordability, adequate transition timing for employees and the surrounding communities, carbon reductions goals, forecasted peak load growth, anticipated developments in load-serving technology and regulatory and technical hurdles. The 415MW of SRP-owned capacity at Springerville Generating Station continues to be evaluated and a retirement plan for this resource has yet to be determined.

In addition to the Coronado and Springerville plants, SRP currently has ownership of 527MW of cumulative nameplate generating capacity from jointly owned coal plants located outside of the state of Arizona. These assets include Craig Generating Station units 1 and 2, Hayden Generating Station Unit 2, and Four Corners Power Plant units 4 and 5. Aside from the previously announced exit from Craig Unit 1 by December 2025, the exact timeline of SRP's exit from the other jointly owned coal assets is yet to be determined and requires agreement by all participating owners. SRP and the other participant owners have continued to engage one another and based on progressing negotiations, and SRP aims to reduce generation from these sources in the mid-2020s to mid-2030s.

Natural Gas Generation

In March 2019, SRP completed the purchase of Coolidge Generating Station. Prior to the purchase, the full output from this resource was being delivered to SRP through a power purchase agreement. Acquiring the asset gives SRP access to its full capacity for the entire useful life of the facility, extending beyond the expiration of the original agreement. While the acquisition does not add additional capacity to the peak-serving resource portfolio, it does allow SRP to preserve financial flexibility by taking advantage of low borrowing costs and gaining operational experience to apply to similar assets. The 12 combustion turbines at Coolidge are designed for quick and flexible dispatch, which will help facilitate further integration of renewables and continue to perform a valuable role in SRP's mission to provide sustainable, reliable and affordable power. Additionally, the site includes more than 100 acres of undeveloped land and infrastructure, which can support an expansion of at least double the existing capacity.

Prior to making investments in new units, SRP continues to seek cost-effective alternatives tied to existing gas generation resources. Using established relationships with research partners and vendors, SRP has identified low-cost modifications to SRP's existing natural gas resources that will increase the capacity, flexibility and efficiency of these plants. These modifications to existing units will enable the integration of greater amounts of renewables and delay the need to build new resources, ultimately saving money for SRP's customers. These upgrades, which began in the fall of 2019, will continue over the next five years across the natural gas combined-cycle units.



Renewable Energy

Since the initial announcement in November 2018 to add 1,000MW of new solar by 2025, SRP has executed contracts for 300MW of solar. The first 200MW is expected to come online by the end of 2020 and will be dedicated to a select number of SRP's commercial and industrial customers to assist in the realization of their renewable energy and sustainability goals. Due to the success of the initial customer offering, an additional 100MW was contracted and dedicated to another subset of large customers and will come online by the end of 2021. As a result of the All-Source RFP issued in 2018, SRP entered contracts with two solar-plus storage projects totaling to 338MW of solar paired with 3-hour and 4-hour storage (additional details about these projects are provided in the following Energy Storage section).

SRP intends to meet the remaining balance of the original 1,000MW by 2025 commitment through proposals submitted to an RFP issued in January for up to 400MW of solar. SRP intends to select at least 200MW of the solar to be developed on the Navajo Nation to support the energy transition proclamation made in April 2019 known as the "Navajo Háyoołkááł (Sunrise) Proclamation." This proclamation emphasizes the Nation's pursuit and prioritization of renewable energy development in an effort to diversify its economy and energy portfolio. Solar energy selected through this RFP and sited on the Navajo Nation will serve as a platform to strengthen and diversify sources of revenue for the northern tribal community, as well as spur additional renewable development on the Navajo Nation. Projects selected from this RFP are also intended to be online prior to the end of 2023.

Separate from the 1,000MW of solar by 2025, the Kayenta Solar facility on the Navajo Nation was expanded by 28MW and reached commercial operation in August 2019, bringing the total size of the facility to approximately 55MW. SRP has agreements with the Navajo Tribal Utility Authority (NTUA) under which SRP purchases all of the renewable energy credits from the facility. The proceeds from this project support "Light Up Navajo," a joint program between the NTUA and the American Public Power Association dedicated to the electrification of homes on the Navajo Nation.

Energy Storage

In alignment with SRP's strategic direction to integrate energy storage, SRP has contracted several utility-scale battery storage projects. Most recently, SRP entered into power purchase agreements for two solar-plus battery storage projects totaling 338MW as a result of the All-Source RFP released in 2018. These projects aided in suspension of SRP's plans for a self-build natural gas peaking plant that was scheduled for commercial operation in the early-to-mid 2020s. The first project is Sonoran Energy Center, located in Little Rainbow Valley, south of Buckeye, Arizona. It will consist of approximately 250MW of solar with 250MW of 4-hour duration lithium ion batteries intended to shift abundant, carbon free, day-time solar energy to serve the early evening peak load. The second project is Storey Energy Center to be constructed south of Coolidge, Arizona. Storey will pair approximately 88MW of solar with 88MW of 3-hour lithium ion batteries. Both plants are intended to be online by June 2023.

In addition to the projects above, SRP utilizes and purchases power from both Pinal Central Energy Center (20MW of solar paired with 10MW 4-hour battery) and Dorman Battery Energy Storage System (10MW 4-hour stand-alone battery), which came online in 2018 and 2019, respectively. The Agua Fria 25MW 4-hour stand-alone battery is currently under construction and is expected to begin commercial operation in the first quarter of 2021. This project will be owned and operated by SRP. Each of these battery



projects contributes to SRP’s “battery learning plan”, which was recently deployed to monitor industry and technology developments and gain the necessary operation, procurement and design knowledge to integrate additional batteries in the future.

Nuclear Generation

SRP has taken measured steps to develop and preserve the option for new nuclear generation in the mid-to-late 2030s, including the initial pursuit of an Early Site Permit (ESP). Due to recent developments in the industry, SRP has decided not to submit an ESP application, but continues to be engaged in nuclear industry working groups. Engagement includes participating on a number of boards and groups, including the NuScale Advisory Board, Nuclear Energy Institute and SMR Start, Nuclear Non-Operating Owners Group, the Electric Power Research Institute (EPRI) and regulatory tracking.

Customer Programs

SRP is committed to further developing and promoting a portfolio of energy efficiency (EE) programs focusing on those with peak demand reduction benefits. Over the past eight years, SRP has met or exceeded its savings goals, which have grown from 1.50% to 2.00% in that time frame. During FY20, the final year under the Sustainable Portfolio Principles (SPP) Objective, SRP is again in a position to exceed its 2.00% annual saving target as mid-year results indicate that the EE programs delivered savings equal to 1.12% of SRP’s retail requirements—representing more than 339,000 MWh of incremental savings.

SRP has also established new annual MWh goals for its energy efficiency programs within the 2035 Sustainability Goal framework and increased funding for these EE/demand response programs. The new sustainability goal is to deliver more than 3 million MWh of annual aggregate energy savings by the end of FY35.

Additionally, SRP has developed programs in the categories of demand response, battery storage system incentives and electric transportation and technology initiatives to aid in delivering greater customer and resource value.

SRP’s demand response programs are designed to reward both residential and commercial customers for reducing their electricity use during periods of high demand, while maintaining the reliability of the grid. In SRP’s residential Bring Your Own Thermostat (BYOT) demand response program, participants agree to brief, limited conservation events, which adjust their thermostats during peak electric demand periods from May 1st through October 31st. Through mid-year, SRP grew its residential BYOT program to more than 30,000 smart thermostats, up from 21,000 in fiscal year 2019. The 2018 All-Source RFP sought cost competitive, commercial demand response options. As a result of this RFP process, SRP has selected and entered into an agreement with a commercial demand response aggregator for up to 80MW of capacity by the close of FY26. Through these two programs, SRP’s portfolio of demand response resources are on track to surpass its goal to secure 40MW of demand response capacity by the end of FY20. SRP’s long-term 2035 Sustainability demand response goal is to deliver at least 300MW of dispatchable demand response and load management programs by 2035.

As part of the development and promotion of new customer-side demand technologies, SRP initiated a residential Battery Storage Incentive Program that supports the study of how residential customers use battery systems, how they perform in Arizona’s desert environment, and how the battery systems affect



the operation of the grid. The program provides an incentive of up to \$3,600 toward a customer's purchase and installation of a qualifying home energy storage system. The incentive is available to up to 4,500 SRP residential electric customers on a first-come, first-served basis during a 36-month period, which began May 1, 2018. To date, there are 527 customers who have participated in this incentive program and commissioned systems.

Beyond customer-side demand management and storage programs, the 2017-2018 IRP concluded that other cost-effective options, such as the electrification of transportation and other technologies, would be considered and implemented as a means of meeting SRP's strategic objectives and reducing carbon emissions. In the 2035 Sustainability stakeholder process, SRP committed to support the enablement of 500,000 electric vehicles (EVs) in SRP's service territory. The goal also targets managing 90% of EV charging through price plans, dispatchable load management, original equipment manufacturer integration, connected smart homes and other behavioral and emerging programs.

In an effort to support the adoption of EVs, SRP currently provides a Workplace EV Charging Program for its business customers, which offers a \$500 rebate toward the installation of each new charging port. Over the coming year, additional program offerings will be designed and implemented to further SRP's electrification transportation initiatives. Additionally, SRP is continuing to expand its plug-in EV fleet with a goal of 100% of SRP sedans being electric by 2021. Employees with electric vehicles have access to workplace charging stations at 18 SRP facility locations. SRP also offers an EV price plan, similar to the Time-of-Use Price Plan, which provides customers price savings when charging vehicles during lower-priced off-peak hours.

From an electric technology perspective, SRP has established a long-term goal of expanding its portfolio of electric technology (E-Tech) programs (non-EVs) to deliver 300,000 MWh of annual aggregate energy impact by 2035. The portfolio currently consists of offering rebates for electric forklifts, infrastructure for truck refrigeration units and a pathway to submit custom electrification projects. Over time, SRP's E-Tech program will be expanded to include additional cost-effective electrification measures and programs.

New Technologies

SRP continues to be deeply involved in ongoing research and development (R&D) programs within the industry. To aid in promoting these programs, SRP is engaged in improving processes for the management of these programs internally, and is also seeking to create more opportunities for collaboration with external researchers.

Since the 2017-2018 IRP, SRP implemented a new Innovation Pipeline Process to strengthen the organization's current and planned innovation and technology efforts. As part of this effort, eight Innovation and Technology Priorities were developed. These priorities include Customer-Sided Technologies, Utility-Scale Storage, Integration of Utility-Scale Renewables, Electrification, Water Resources and Conservation, Asset Optimization, Information and Operational Technology and Telecommunications, and Emerging Technologies. Additionally, SRP developed an enterprise-wide Innovation and Technology Plan that documents existing and planned research activities that address the Innovation and Technology priorities. In 2019, SRP updated the enterprise-wide Innovation and Technology Plan to reflect completed projects, added new research efforts and developed a list of research gaps for each of the eight priorities. Further, SRP identified the Top 20 innovation and technology high-impact projects, which will receive elevated focus and collaboration to ensure their



success and maximize their value to SRP. This Innovation Pipeline Process provides the foundation for evaluating technologies and proceeding with R&D projects that provide the most value to SRP and its customers.

SRP is continually seeking to both strengthen its relationships with current research partners and extend its reach to include a broader range of collaborators.

In October 2019, SRP held its second annual EPRI Day. The event brought together more than 200 SRP subject matter experts and EPRI research managers to discuss challenges facing the industry and to review results from some of the cutting-edge research projects EPRI is conducting to address those challenges. In addition, SRP expanded its university research program to include both the University of Arizona and Northern Arizona University, while maintaining its longstanding research collaboration with Arizona State University. For the 2019-2020 academic year, SRP supported a combined 42 research projects between the three universities on a wide variety of energy, transmission, water-resource and forest-health topics.

Market Resources

On April 1, 2020, SRP fulfilled its agreement with the California Independent System Operator (CAISO) to enter into participation in the Western Energy Imbalance Market (EIM). EIM is a real-time, five-minute energy market available to non-CAISO members. Advanced market systems automatically find the lowest-cost energy to serve real-time consumer demands of participating utilities. SRP expects to benefit from the EIM by having more efficient access to low-cost resources across a significant portion of the western region, as well as supporting the integration of renewables.