

RESOURCE ADEQUACY

Keeping the lights on today
and in the future.

When you flip a light switch, plug in your phone or adjust your thermostat, you expect electricity to be available instantly. More than 19 million people in Southwest Power Pool's (SPP) region make billions of choices every day that change the demand for electricity. **Resource adequacy** is the ability of utilities' generation to meet all end-use customer energy demand. Utilities need to be able to serve their customers under all conditions, 24 hours a day, 7 days a week.

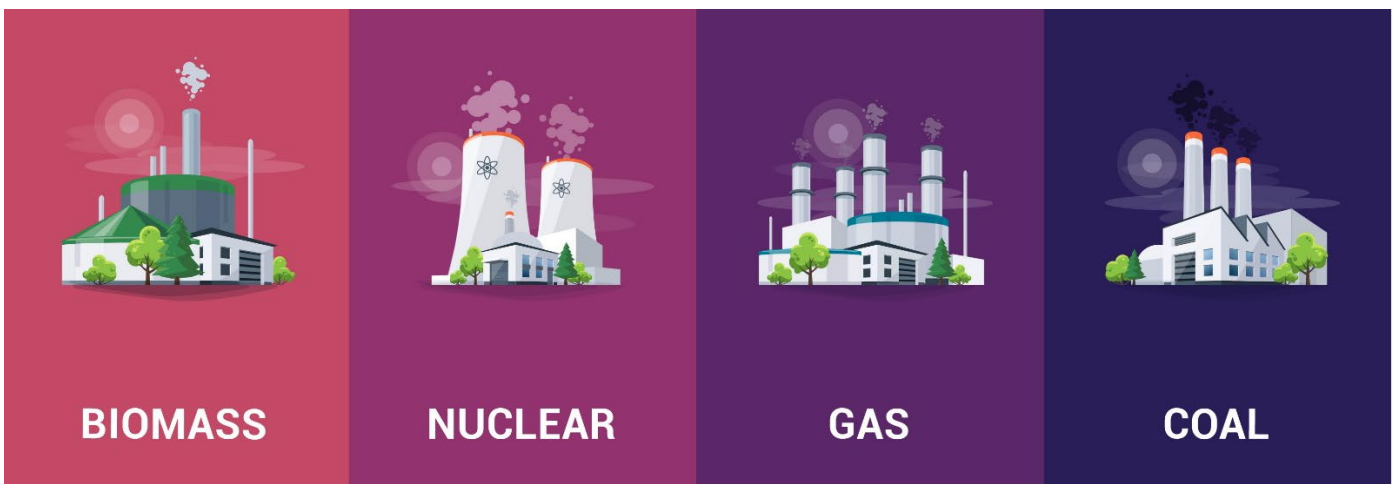
SPP works with our members to ensure a reliable supply of power, adequate transmission infrastructure and competitive wholesale electricity prices. Reliability of electricity is our number one job. That's why we continuously work together with our members to ensure our grid has adequate resources to meet today's needs, respond to tomorrow's challenges, and keep the lights in the future.



Why is **resource adequacy** important?

SPP ensures generators in our region have the capacity to serve customers 24/7. The grid can't store large amounts of energy. Utilities have to generate the exact amount needed for each second of the day. This requires reserve generation ready to respond to changing energy demand. SPP members use **planning reserve margin (PRM)** to ensure they are ready: customer-serving utilities are required have a marginal amount of capacity standing by, above the maximum forecast for energy demand.

Accreditation is the process SPP uses to determine the amount of energy we can expect from a generator on any given day. Renewables depend on resources that vary in availability: wind, sun and water. Coal and gas generation depend on a finite supply of fuel. Nuclear resources can take days to ramp up to full power. All resources require maintenance. PRM and accreditation help ensure **resource adequacy** for SPP's region by accounting for changes in demand for energy and availability of generating resources.





What are the **challenges** to resource adequacy?

The power grid is experiencing increased variability of generation, more extreme weather and higher demand than ever. Renewables have reduced the cost of wholesale energy and decreased carbon emissions, but their **availability** varies, and they can create **congestion** on transmission lines as energy travels from wind and solar-rich rural areas to urban areas of high demand.

Renewables often replace older conventional units that **retire**. The remaining conventional units experience more strain, require more **maintenance**, have more frequent **outages**, and are more often required to be held in **reserve**.

A changing climate, more extreme **weather**, and record periods of **extreme heat and cold** increase demand for energy and put a strain on the grid. The demand for energy is also increasing due to increased **electrification**: construction of server farms, electric vehicles, conversion of fueled appliances to electric, and more.

Addressing these challenges isn't free or easy. There is a **cost** to maintain adequate infrastructure and to build, connect or secure contracts for additional generation.

How is SPP ensuring resource adequacy **today**?

SPP and its stakeholders have taken decisive action to address both PRM and accreditation. These changes won't be easy, but are critical to ensure reliability. They recognize the true costs of an industrywide change in generation resources, incentive performance, will spur innovation, and maintain service in our changing system.

Planning Reserve Margin

- We collaborated with stakeholders in 2022 to raise our planning reserve margin (PRM)
- In 2023, PRM for SPP's energy balancing authority will go from 12 to 15%

Performance-based Accreditation

- In 2023, SPP will implement effective load carrying capability for wind, solar and storage accreditation.
- SPP will phase in performance-based accreditation for conventional resources over next six years.

How will SPP strengthen adequacy in the **future**?



Our grid is constantly changing. SPP expects our future to be more **electrified**, with more electronic devices and appliances and huge growth in the demand to fuel **electric vehicles**. Customers directly affect resource adequacy more than ever. Homes and businesses are increasingly part of **demand response** programs that reduce or shifts their electricity usage during peak periods. **Distributed energy resources** – generators owned or operated by customers that offset their energy needs – are increasing, and in some cases, contributing energy back to the grid.

We are seeing rapid growth of **energy storage** that will strengthen resource adequacy in the future. It will require a massive investment in **infrastructure** to build and connect batteries on a scale to serve cities. It will also take a collaborative investment of time and resources to work together with our members to design the **systems and policies** that will allow energy storage to meet its full potential.

