

Challenges to Powering a Renewable, Carbon-Free Future

In 2019, 25 percent of the Northwest's capacity to generate electricity came from power plants burning coal and natural gas. Replacing these plants with new carbon-free energy resources is the challenge.

Between 2020 and 2030, about 6,000 megawatts of electricity powered by coal in the Northwest is expected to be phased-out. This is enough electricity to power more than 4.3 million homes. Further, an additional 9,000 megawatts from natural gas-powered plants would need to be retired in the 2030s and 2040s to fully phase out fossil fuel generation and meet a 100 percent carbon-free generation goal.

Solar and wind power are fast growing, renewable resources the public often considers to replace fossil fuel power plants. Replacing fossil fuel with these renewable resources, however, is not simple.

Think of it as the difference between extraction vs. weather-based generation. Coal and natural gas supplies are extracted from the earth, stored and made continuously available.

But the availability of wind and solar power is based on the weather, which is why they are called intermittent resources.

Hydropower is also weather dependent. But unlike wind and solar, storage of water behind some dams provides much needed flexibility. Further, almost all hydropower facilities can provide some power



**SHIFTING THE NORTHWEST TOWARD
100% RENEWABLE,
CARBON-FREE
ELECTRIC GENERATION
BY 2045**

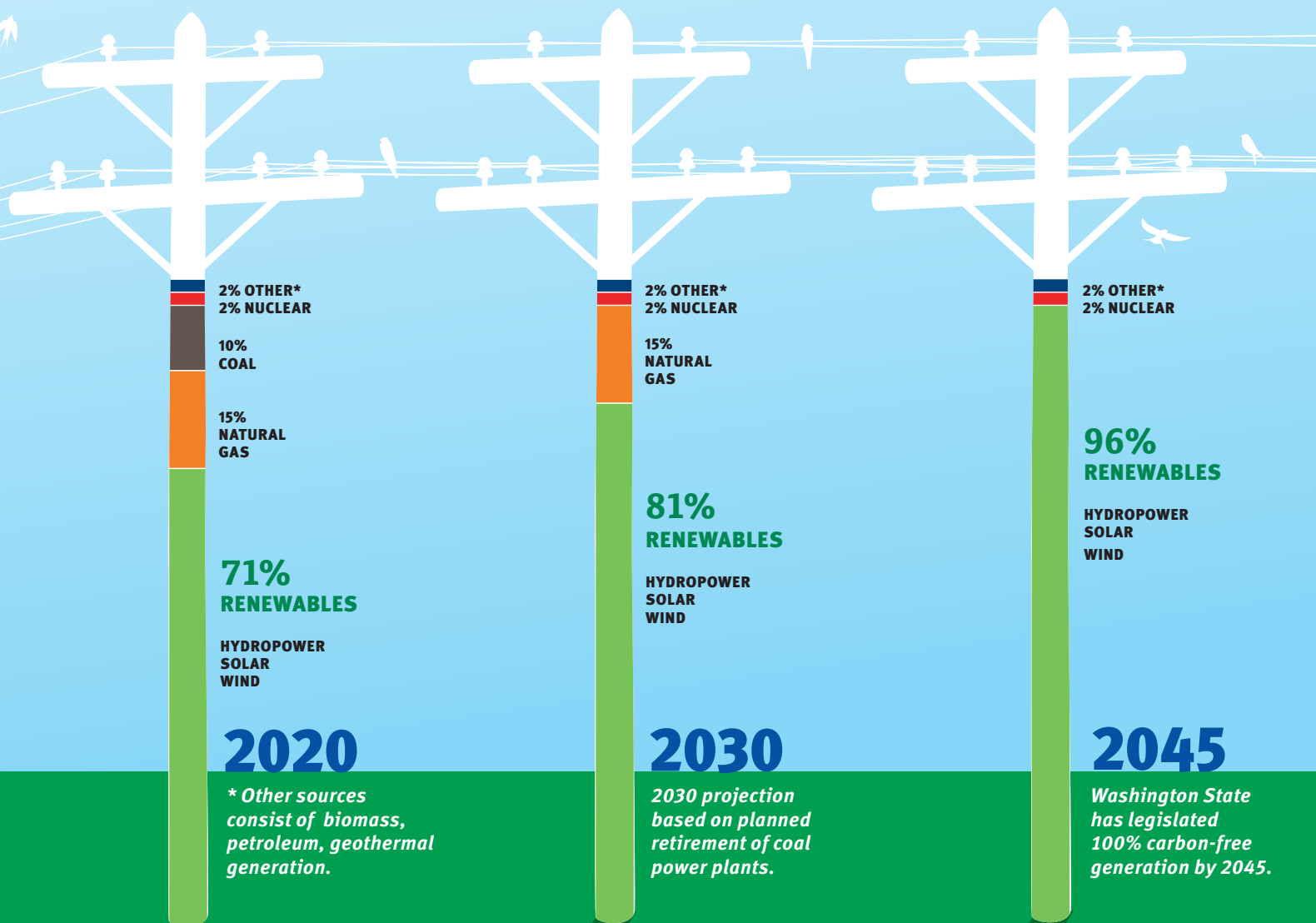


generation on demand as long as flowing water is available. As a result, hydropower also provides a critical renewable alternative to wind and solar power when the wind isn't blowing, or the sun isn't shining.

When weather dependent (renewable) power isn't available during a heat wave or cold snap, the chances of blackouts and brownouts (meaning no or not enough electricity to homes and businesses)

increase. Even if power is available, there can be spikes in the cost resulting in higher bills for electric utility customers.

Research by the Northwest Power and Conservation Council shows the likelihood of this type of shortage, called supply adequacy, skyrocketing from less than 5 percent in 2019 to more than 25 percent by 2026 without additional actions being taken. 🌍



2020

** Other sources consist of biomass, petroleum, geothermal generation.*

2030

2030 projection based on planned retirement of coal power plants.

2045

Washington State has legislated 100% carbon-free generation by 2045.