

Alaska's Railbelt Electric System: Decarbonization Scenarios For 2050

Researchers at the Alaska Center for Energy and Power at UAA report that total annual electricity demand in 2050 will reach 8,704 gigawatts (GWh), about 85% more than in 2021. Peak demand equals 1,626 megawatts (MW), more than double the 2021 level. These higher loads come from population growth, electric vehicles, and heat pumps.

Additional baseline resources include the Bernice-Beluga HVDC line, upgrading Kenai-Anchorage

transmission to 230 kilovolts (kV), the Dixon Diversion hydro project, and 30 MW of new wind at Little Mount Susitna, plus 228 MW of residential rooftop solar. Healy unit 2 is retired. New batteries bring total battery capacity to 216 MW.

Scenario descriptions



Takeaways

These scenarios are illustrative. They demonstrate what is possible, not necessarily what is optimal. A low-carbon grid in 2050 with 70-95% carbon-free generation is possible, but

