

NorthWestern Energy - 2018 Resource Procurement Plan

Resource Portfolio	Resource Portfolio Scenarios
Base	20-year planning horizon and life cycle cost recovery, no carbon, EIM entry in 2021, RTO entry in 2024, N-gas forward market prices per PSC, forward market electricity prices with declining market heat rates and increased volatility per Ascend Analytics.
Base + Unconstrained Expansion	Base portfolio with unconstrained optimal expansion analysis
Base + Optimal Expansion	Base portfolio with constrained optimal expansion.
Base + Hydro	Base portfolio with NorthWestern Energy identified hydro upgrades.
Base + Carbon + Optimal Expansion	Base portfolio, with carbon cost and optimal expansion.
Base + High Carbon + Optimal Expansion	Base portfolio, with high carbon cost and optimal expansion.
Base + High Natural Gas + Optimal Expansion	Base portfolio, with high natural gas prices and optimal expansion.
Short Term	Base portfolio assumptions with 15-year planning horizon and 15-year capital cost recovery.
Short Term + Optimal Expansion	Base portfolio with constrained optimal expansion. Constrained to meet EIM and RTO requirements.
Base + Wind	Base portfolio with 100 MW of wind.
Base + Solar PV	Base portfolio with 100 MW of solar PV.
Base + Renewables	Base portfolio with increased renewables (not yet defined).
Base with Li-Ion Battery	Base portfolio with 25 MW 100 MWh Li-Ion battery.
Base + Pumped Hydro	Base portfolio with pumped hydro.