

## NorthWestern Energy - 2018 Resource Procurement Plan

Resource Portfolio	Portfolio Assumptions
<b>Current</b>	<ul style="list-style-type: none"> <li>• 20-year planning horizon, with</li> <li>• Life cycle capital cost recovery,</li> <li>• Base load growth,</li> <li>• Existing portfolio of resources,</li> <li>• No carbon cost,</li> <li>• Forward market N-gas prices - ICE with EIA escalation,</li> <li>• Forward market electricity prices, with declining market heat rates and increased volatility per Ascend Analytics.</li> </ul>
<b>Unconstrained</b>	<ul style="list-style-type: none"> <li>• <b>Current</b>, with</li> <li>• Unconstrained optimal expansion analysis.</li> </ul>
<b>Base</b>	<ul style="list-style-type: none"> <li>• <b>Current</b>, with</li> <li>• Constrained optimal expansion analysis to achieve WECC reserve margin requirements by 202X.</li> </ul>
<b>S.T. Base</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, but with</li> <li>• 15-year planning horizon, and</li> <li>• 15-year cycle capital cost recovery.</li> </ul>
<b>Wind</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, plus wind</li> </ul>
<b>Solar PV</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, plus solar PV</li> </ul>
<b>Renewables</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, plus increase renewables</li> </ul>
<b>Hydro</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, plus NorthWestern Energy identified hydro upgrades.</li> </ul>
<b>Li-Ion</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, plus Li-Ion battery.</li> </ul>
<b>Pumped Hydro</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, plus pumped hydro storage</li> </ul>
<b>Carbon</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, with</li> <li>• Net Metering Study carbon costs.</li> </ul>
<b>High Carbon</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, with</li> <li>• High carbon costs.</li> </ul>
<b>High N-Gas</b>	<ul style="list-style-type: none"> <li>• <b>Base</b>, with</li> <li>• High natural gas prices.</li> </ul>