MEMORANDUM

TO: Council Members
FROM: Gillian Charles

BACKGROUND:
Presenter: Gillian Charles
Summary: Staff will present a summary of near-term resource acquisitions identified in utility integrated resource plans (IRPs) – both within the region and across the western interconnect (WECC). In addition, staff will provide a sneak peak at proposed resources in the development pipeline. This information can serve as a useful reference check when developing a power plan – however they are certainly not meant to be an apples-to-apples comparison.

Relevance: Analysis for the draft 2021 Power Plan indicates a significant buildout of regional resources in the first five years, in particular cheap solar PV and wind (~5 gigawatts of renewables by 2027 in the baseline conditions). In addition, analysis for the plan’s wholesale electricity price forecast indicates a WECC-wide buildout of new resources by around 2033 that is equal in magnitude to the existing capacity in the WECC (~270 gigawatts). In total, the buildout reaches over 400 gigawatts by the end of the power planning period (2041).

June 9, 2021
Council Meeting
Gillian Charles
Western Interconnect (WECC)

WECC covers portions of 3 countries in North America:

- **Canada** (British Columbia, Alberta)
- **United States** (Washington, Oregon, Idaho, Montana, California, Nevada, Wyoming, Utah, Colorado, Arizona, Mexico, and small portions of South Dakota and Texas)
- **Mexico** (small portion of Baja)

This presentation includes data from all of WECC and just the US portion of WECC (US WECC)

2020 and Beyond - New Electricity Paradigm

- Clean energy and greenhouse gas reduction policies and goals
- Coal unit retirements
- New natural gas build uncertainty
- Once-through cooling unit retirements or repowering
- Cheap and plentiful renewable resources
Clean and Renewable Policies and Goals

RPS = Weighted average sales obligated to comply & weighted average target for each year of the plan

Clean energy = Weighted average sales obligated to comply & weighted average target for each year of the plan (incl. RPS)

- Renewable portfolio standard/goal
- Clean energy standard/goal
By 2028, the Pacific Northwest will have retired ~ 4,400 megawatts of its coal capacity, leaving just four units in operation (Colstrip 3, 4 and Jim Bridger 3, 4).

By 2030, WECC will have about 40% of the installed coal capacity it had in operation in 2019, going from ~35,000 megawatts to ~13,500 megawatts in just over a decade.
Potential Buildout* of New Resources – Region & WECC

Roughly 5 GW of new renewable resources acquired in Pacific Northwest (Power Act Region) in the action plan period

Roughly 200 GW of new resources acquired across the WECC by 2028
(For reference, the installed nameplate capacity in 2020 was ~270 GW)

*Analyses from draft 2021 Power Plan, baseline conditions
Integrated Resource Plans

Aggregate of US WECC-wide (portion of) and region-wide identified new resources
What is an IRP?

• An Integrated Resource Plan is a utility’s roadmap to understand and plan for future resource needs

• Least-cost, least-risk analysis includes:
  • Load and resource balance
  • Forecast of future demand, fuel prices, market
  • Cost and availability of new energy efficiency and generating resources
  • Various scenarios

• Action plan (2 – 5 years), along with a long-term strategy (20+ years)

• IRPs are developed every 2-3 years; continuous evolution
• Extensive stakeholder outreach and engagement
• IRPs tied to procurement requests
Each utility is unique – aka “caveats”

- Every utility is unique, and thus every IRP is unique
- When aggregating identified resource needs, it is important to keep in mind that IRPs are reflective of a moment in time – some are pre-“clean policy” and are being updated (but not available yet)
- Utilities have different ways of structuring IRPs
  - Some IRPs have very specific resources and dates, some have ranges
  - Staff has made assumptions in order to aggregate
- Most “certainty” in action plan period – typically the next 2-5 years; some utilities do not provide resource acquisition estimates beyond that
  - The Council’s power plan is not intended to be compared with aggregate regional or western-interconnect IRPs; rather, it is a good reference check
    - We coordinate with WECC-wide stakeholders to ensure we are representing external to the region loads, policies, planned retirements, and resource limitations in our price forecast
IRPs Aggregated in Analysis

<table>
<thead>
<tr>
<th>IRP or Bulk Procurement Request</th>
<th>Latest IRP/IRP Update</th>
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<tbody>
<tr>
<td>Avista</td>
<td>April 2021</td>
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<tr>
<td>Puget Sound Energy</td>
<td>April 2021</td>
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<tr>
<td>Idaho Power</td>
<td>Oct 2020</td>
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<tr>
<td>NorthWestern Energy</td>
<td>Dec 2020</td>
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<tr>
<td>PacifiCorp</td>
<td>Oct 2019</td>
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<tr>
<td>Portland General Electric</td>
<td>Jan 2021</td>
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<td>Arizona Public Service</td>
<td>June 2020</td>
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<td>Nevada Energy</td>
<td>Dec 2019</td>
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<td>Tucson Electric Power</td>
<td>June 2020</td>
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<tr>
<td>Public Service of Colorado (Xcel)</td>
<td>March 2021</td>
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<td>El Paso Electric Co</td>
<td>Jan 2019</td>
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<tr>
<td>Public Service of New Mexico</td>
<td>Jan 2021</td>
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<tr>
<td>California CEC IRP/CPUC Procurements*</td>
<td>2020/2021</td>
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Sales from these utilities represent about ~ 70% portion of US WECC

* The California Energy Commission (CEC) develops a state-wide IRP, followed by the California Public Utilities Commission issuing new procurement estimates for the state’s load serving entities.
Aggregated Identified New Generating Resource* Needs (Cumulative) - ~70% of US WECC

**2022 – 2025 timeframe with most “certainty”**

- ~70,000 MW new capacity identified by 2024, of which almost **ALL** is clean or renewable
- ~90,000 MW new capacity identified by 2030
- ~110,000 MW new capacity identified by 2035

*Aggregation does not include demand-side resources such as energy efficiency, demand response, and in some cases distributed generation*
Aggregated Identified New Generating Resource* Needs (Cumulative) - ~70% of US WECC

- Significant wind, solar, and solar + storage
- Standalone storage and some clean energy-specified new resources
- Some geothermal and biomass, as well as hydro
- Distributed generation – often rooftop solar
- Repowered wind is not explicitly included in these identified resources
• Non-specified contracts seeking dispatchable and capacity resources could be met with any combination of technologies including renewables, gas, nuclear, storage, and demand side resources

• Often solicited as an “all source” request for proposals

Aggregated Identified New Generating Resource* Needs (Cumulative) - ~70% of US WECC
- Californian – no new natural gas, but ~1,500 MW of efficiency improvements, repowering, and expansions at existing plants
- Introduction of alternative fueled combustion turbines
- Of the new natural gas (specified technology), about 32% CCCT and 68% gas peakers
Aggregated Identified IOU New Generating Resource* Needs (Cumulative) – Power Act Region

* Aggregation does not include demand-side resources such as energy efficiency, demand response, and in some cases distributed generation
Proposed Project Dev’t Queue
Proposed Projects in the Development Pipeline (Completely separate from IRP data)

US WECC-wide Proposed Resources - as of 6/2/21

- Wind
- Solar
- Nuclear
- Pumped Storage
- Battery Storage
- Energy Storage
- Compressed Air Energy Storage
- Natural Gas Combined Cycle
- Natural Gas Turbine
- Natural Gas Internal Combustion
- Geothermal
- Biomass
- Hydro

Proposed Nameplate Capacity (MW)

Estimated Online Date

Data compiled from S&P Global
Questions?