Energy Facility Siting Council Meeting
Virtual Meeting
January 28, 2022
Opening Items:

- Call to Order
- Roll Call
- Announcements
Announcements:

• Reminder that this meeting is being held in its entirety via teleconference and webinar.

• Reminder to Council and to anyone addressing the Council to please remember to state your full name clearly, and no not use the speakerphone feature, as it will create feedback.

• You may sign up for email notices by clicking the link on the agenda or the Council webpage.

• You are also welcome to access the online mapping tool and any documents by visiting our website.
Announcements continued:

• Please silence your cell phones

• Please use the “Raise Your Hand” feature in Webex to speak during the public comment period, or press *3 to raise your hand if you are participating by telephone.

• Energy Facility Council meetings shall be conducted in a respectful and courteous manner where everyone is allowed to state their positions at the appropriate times consistent with Council rules and procedures. Willful accusatory, offensive, insulting, threatening, insolent, or slanderous comments which disrupt the Council meeting are not acceptable. Pursuant to Oregon Administrative Rule 345-011-0080, any person who engages in unacceptable conduct which disrupts the meeting may be expelled.
Agenda Item A  
(Action Item & Information Item)

Consent Calendar
January 28, 2022

• December Council Meeting Minutes
• Council Secretary Report
Agenda Item B  
(Action Item)

Annual Financial Assurance Update

January 28, 2022
Sisily Fleming, ODOE Fiscal Analyst
## Annual Financial Assurance Update

### 2022 Proposed Financial Institutions

<table>
<thead>
<tr>
<th>Financial Institutions</th>
<th>Letter of Credit</th>
<th>Bond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank of America N.A.</td>
<td>Federal Insurance Co</td>
<td></td>
</tr>
<tr>
<td>Bank of Nova Scotia (NY Agency)</td>
<td>Fidelity &amp; Deposit Co of MD</td>
<td></td>
</tr>
<tr>
<td>Bank of the West</td>
<td>Hanover Insurance Group</td>
<td></td>
</tr>
<tr>
<td>Barclay's Bank, PLC (NY Branch)</td>
<td>Liberty Mutual Insurance Company</td>
<td></td>
</tr>
<tr>
<td>Citibank, N.A.</td>
<td>SAFECO Insurance Co of America</td>
<td></td>
</tr>
<tr>
<td>CoBank</td>
<td>Travelers Casualty &amp; Surety Co of America</td>
<td></td>
</tr>
<tr>
<td>Helaba (NY Branch of Landesbank Hessen-Thueringen GZ)</td>
<td>Westchester Fire Insurance Co</td>
<td></td>
</tr>
<tr>
<td>JP Morgan/Chase Bank, N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUFG Bank, N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natixis (NY Branch)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royal Bank of Canada (NY Branch)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royal Bank of Scotland Connecticut Branch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US Bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wells Fargo Bank, N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sumitomo Mitsui Banking Corporation (SMBC, NY Branch)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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[Image of OREGON DEPARTMENT OF ENERGY logo]
6. If the Surety provides written notice of intent to cancel this bond prior to the Principal fulfilling its obligation to retire the facility and restore the site, but Principal does not provide alternate financial assurance approved by the Council within 90 (ninety)–60 (sixty) days after the date the notice of intent to cancel is received by the Obligee from the Surety, the Surety will be obligated to pay monies to the Obligee, limited to the penal sum of this bond, upon demand by the Obligee prior to the effective date of the cancellation.
Proposed LOC Template Modification

(page 1, paragraph 4)

It is a condition of this Letter of Credit that it shall be automatically extended without amendment for successive one (1) year periods from the present or any future Expiration Date hereof, unless we provide you with written notice by overnight courier or registered mail of our election not to extend this Letter of Credit at least sixty one hundred twenty (60120) days prior to any such Expiration Date (the present or any future expiration date as aforesaid is referred to herein as the "Expiration Date").
Council Decision Options

Option 1
Staff Recommendation
Approve recommended templates and financial institutions for use in 2022

Option 2
Approve recommended templates and financial institutions for use in 2022, with changes
2022 Legislative Session Overview

January 28, 2022
Christy Splitt, ODOE Government Relations Coordinator
2022 SESSION

Concepts that involve the Oregon Department of Energy

- Two Bills Involving Heat Pump Incentive Programs
- Energy Security Plan (Critical Energy Infrastructure Hub Bill)
- Environmental Justice Council Changes
- HB 2021 Responsible Labor Standards Fix
- Landscape Sprinkler Efficiency Standard
- Oregon Global Warming Commission Natural and Working Lands

Next Steps

This slide will be updated after 2022 session bills are released on Monday, January 24th.
Other Energy Legislation Oregon Energy is tracking…

• Allowing local jurisdictions to adopt Oregon’s reach code as their building code
• Community solar property tax exemption

This slide will be updated after 2022 session bills are released on Monday, January 24th.
LOOKING AHEAD TO 2023

• Legislative Concepts
  - February 25, 2022: agency proposals due to Director Benner
  - April 15, 2022: due to Department of Administrative Services
  - June 3, 2022: DAS approved concepts due to LC
  - December 9, 2022: Pre-Session Filing Deadline

• Agency Budget
  - March 18, 2022: agency proposals due to Director Benner
  - May 30, 2022: current service level budget due to DAS
  - June 30, 2022: agency recommended budget numbers due
  - July 29, 2022: agency budget narrative due to DAS
Agenda Item D
(Information Item)

PUBLIC COMMENT

Phone Commenters: Press *3 to raise your hand to make comment, and *3 to lower your hand after you’ve made your comment.

Webinar Commenters: Open the Participant list, hover over your name and click on the “Raise Your Hand icon”.

Cheryl McKearin
Host, me

Thomas Okon
How to Raise Your Hand in Webex:

**Webinar Participants**
The bottom right of the main window is a set of icons:
  - Click on “Participants”
The bottom right of the participant window is a hand icon, click on the hand:
  - Clicking on it again will lower your hand.

**Phone Participants**
Press *3 on your telephone keypad to raise your hand.
Press *3 again on your telephone keypad to lower your hand.
BREAK
Agenda Item E
(Action Item)

Stateline Wind Project
Council Review/Decision on the Proposed Order
on Request for Amendment 6 of the Site Certificate

January 28, 2022
Chase McVeigh-Walker, ODOE Senior Siting Analyst
Presentation Overview

• Facility Overview and Site Certificate History

• Request for Amendment 6 (RFA6) Proposed Changes and Procedural History

• Proposed Order (Action Item)
Facility Overview

Certificate Holder: FPL Energy Vansycle, LLC (Stateline 1&2) and FPL Energy Stateline II, Inc. (Vansycle II)

Parent Company: NextEra Energy Resources LLC.

Type of Facility: 222 MW (operational) wind facility made up of two units:
Stateline 1 & 2: 123 MW
Vansycle II: 99 MW
Facility Site/Site Boundary Location

Site Boundary

- Private land, within Umatilla County, near Helix

Site Certificate History

Site Certificate effective Sept. 14, 2001

Site Certificate Amended Five Times:

- May 2002
- June 2003
- June 2005
- March 2009
- May 2019
Requested Amendment Components

Proposed Wind Turbines Changes

• Replace blades and nacelles (repower) of 43 existing wind turbines
• Decommission and replace up to 4 existing wind turbines
• Construct and operate up to 2 wind turbines
  • Total not to exceed 45, 2.6 MW wind turbines (99 to 119 MW)

• Construct and operate 50 MW of battery energy storage

• Temporary and Permanent disturbance of up to 210.9 acres, and 12.1 acres respectively (temp. road improvements, laydown areas)
## RFA6 Procedural History

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Responsible Party</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Request for Amendment 6</td>
<td>Certificate Holder</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td>Type A Determination</td>
<td>ODOE</td>
<td>Oct. 19, 2021</td>
</tr>
<tr>
<td>Complete RFA6 Received</td>
<td>Certificate Holder</td>
<td>Nov. 19, 2021</td>
</tr>
<tr>
<td>Draft Proposed Order Issued</td>
<td>ODOE</td>
<td>Nov. 23, 2021</td>
</tr>
<tr>
<td>DPO Public Hearing</td>
<td>EFSC</td>
<td>Dec. 16, 2021</td>
</tr>
<tr>
<td>Proposed Order and Notice of Request for Contested Case Issued</td>
<td>ODOE</td>
<td>Dec. 21, 2021</td>
</tr>
<tr>
<td>Deadline to Request Contested Case</td>
<td>DPO Commentors</td>
<td>Jan. 20, 2022</td>
</tr>
</tbody>
</table>
## RFA6 Procedural History Cont’d

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Responsible Party</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Council Review of Proposed Order as Final Order</td>
<td>EFSC</td>
<td>Today, Jan. 28, 2022</td>
</tr>
<tr>
<td>Council Issuance of Final Order and possible issuance of Amendment Site Certificate</td>
<td>EFSC</td>
<td>Today, Jan. 28, 2022</td>
</tr>
</tbody>
</table>
Summary of Changes

• Amended Conditions based on Council’s review and comments on the DPO

• Updated findings of fact to Section III.K. *Historic, Cultural, and Archaeological Resources*, Section III.P.1. *Public Health and Safety Standards for Wind Energy Facilities*, and Section III.P.2. *Cumulative Effects Standard for Wind Facilities* based on Council’s review and comments on the DPO

• Administrative updates to Section I. *Introduction*, and Section II. *Amendment Process*

• Administrative updates made to Draft Amended Site Certificate reflecting changes made to DPO conditions
Overview of Proposed Order

Standards where there were no new impacts or where no new/amended conditions were recommended:

- Section III.F. Protected Areas (DPO pg. 61-67)
- Section III.I. Threatened and Endangered Species (DPO pg. 83-84)
- Section III.J. Scenic Resources (DPO pg. 84-86)
- Section III.L. Recreation (DPO pg. 92-94)
- Section III.O. Division 23 Standards (DPO pg. 106)
- **Section III.P.2. Cumulative Effects Standard for Wind Energy Facilities (DPO pg. 111-114)**
- Section III.Q.1. Noise Control Regulations (DPO pg. 116-119)
- Section III.Q.2. Removal-Fill (DPO pg. 119-121)
- Section III.Q.3. Water Rights (DPO pg. 121-123)
### Overview of Proposed Order

#### Summary of Changes – Amended Conditions

<table>
<thead>
<tr>
<th>Standard</th>
<th>Condition(s)</th>
<th>Summary of Changes</th>
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</thead>
<tbody>
<tr>
<td>Structural</td>
<td>Conditions 140 and 141</td>
<td>Modified to require foundation suitability analysis; annual inspection and monitoring scheme for repowered wind turbines; and, establish foundation mitigation or remediation</td>
</tr>
<tr>
<td>Soil Protection</td>
<td>Condition 152</td>
<td>Not incorporated into Proposed Order; <strong>Condition numbering adjusted</strong></td>
</tr>
<tr>
<td>Land Use</td>
<td><strong>Condition 152 (was Condition 153)</strong></td>
<td>Clarified CUP requirement and included specification for zoning permits</td>
</tr>
<tr>
<td></td>
<td><strong>Condition 153 (was Condition 154)</strong></td>
<td>Clarification for Emergency Response Plans requirements and distribution</td>
</tr>
<tr>
<td></td>
<td><strong>Condition 154 (was Condition 155)</strong></td>
<td>Include GIS data requirement and clarified setback requirement</td>
</tr>
<tr>
<td>F&amp;W Habitat</td>
<td><strong>Condition 156 (was Condition 158)</strong></td>
<td>Clarify the intent of the review and approval process of the final Noxious Weed Control Plan</td>
</tr>
<tr>
<td>R&amp;FA</td>
<td>Condition 157</td>
<td>Not incorporated into Proposed Order</td>
</tr>
<tr>
<td>Waste Min</td>
<td>Condition 144</td>
<td>Specify management of waste and recycled materials; and include recycling evaluation</td>
</tr>
</tbody>
</table>
Overview of Proposed Order

**Structural Standard [OAR 345-022-0020]**
Proposed Order, Section III.C. (Starting on p. 35)

Conditions 140 and 141 – Modified to require certificate holder to (prior to repowering):

- Complete a foundation suitability analysis
- Develop and implement a minimum annual inspection and monitoring scheme for the 43 repowered wind turbines, and submit scheme to the Department for review and approval in consultation with DOGAMI or a third-party consultant
- Establish that any foundation mitigation or remediation deemed necessary through the final turbine foundation suitability analysis be described and submitted to the Department to determine whether the changes require a site certificate amendment
Overview of Proposed Order

Soil Protection [OAR 345-022-0022]
Proposed Order, Section III.D. (Starting on p. 42)

Condition 152 – Not incorporated into Proposed Order; condition numbering adjusted
Overview of Proposed Order

Land Use [OAR 345-022-0030]
Proposed Order, Section III.E. (Starting on p. 51)

Condition 152 – Clarified CUP requirement and included specification for zoning permits

Condition 153 – Clarification for Emergency Response Plans requirements and distribution

Condition 154 – Include GIS data requirement and clarified setback requirement
Overview of Proposed Order

Fish and Wildlife Habitat [OAR 345-022-0060]
Proposed Order, Section III.H. (Starting on p. 94)

Condition 156 – Clarify the intent of the review and approval process of the final Noxious Weed Control Plan
Overview of Proposed Order

Retirement and Financial Assurance [OAR 345-022-0050]
Proposed Order, Section III.N. (Starting on p. 82)

Condition 157 – Not incorporated into Proposed Order
Overview of Proposed Order

Waste Minimization [OAR 345-022-0120]
Proposed Order, Section III.N. (Starting on p. 121)

Condition 144 – Specify management of waste and recycled materials; and include recycling evaluation
### Council Decision on the Proposed Order

<table>
<thead>
<tr>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Recommendation</td>
<td>Approve Proposed Order with Modifications and adopt Final Order</td>
<td>Deny Proposed Order, direct staff to make changes and re-issue Proposed Order</td>
</tr>
<tr>
<td><em>Approve Proposed Order and Adopt Final Order</em></td>
<td><em>Changes from Proposed Order to Final Order would be non-substantive and administrative in nature only. Examples include updating Department “recommended findings” to “Council findings” and updates to the procedural history (Section I.D. of the proposed order).</em></td>
<td></td>
</tr>
</tbody>
</table>
Biglow Canyon Wind Farm
Transformer Failure Overview

January 28, 2022
Duane Kilsdonk, ODOE Compliance Officer
Lenna Cope, Portland General Electric Senior Environmental Specialist
BIGLOW CANYON WIND FARM

• 450 MW Wind Energy Facility with 217 Wind Turbines

• Site Certificate issued on June 30, 2006

• Operating since December 21, 2007

• Amended 3 times – last amendment was October 2008

• Owned and operated by Portland General Electric

• Located in northeast Sherman County
• 9 Transformer spills in 15 years of Operation

• Approximately 3,222 gallons of non-PCB mineral oil spilled and cleaned up

• Reporting Requirements
  • Condition 37 - Public Health and Safety Standards for Wind Energy Facilities, OAR 345-024-0010
  • Condition 81 - Waste Minimization, OAR-022-0120

• Reporting to ODOE has occurred consistent with conditions in all 9 instances except that one incident was reported late in 2017
Biglow Canyon Wind Farm Oil Releases

LENNACOPE
PORTLAND GENERAL ELECTRIC
JANUARY 28, 2022
ENERGY FACILITY SITING COUNCIL MEETING
## PGE Wind Power Assets

<table>
<thead>
<tr>
<th>Site</th>
<th>Year Operational</th>
<th>Capacity (MW)</th>
<th># Turbines</th>
<th>Turbine Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biglow Phase 1</td>
<td>2007</td>
<td>125</td>
<td>76</td>
<td>Type I</td>
</tr>
<tr>
<td>Biglow Phase 2</td>
<td>2009</td>
<td>150</td>
<td>71</td>
<td>Type IV</td>
</tr>
<tr>
<td>Biglow Phase 3</td>
<td>2010</td>
<td>175</td>
<td>70</td>
<td>Type IV</td>
</tr>
<tr>
<td>Tucannon</td>
<td>2014</td>
<td>267</td>
<td>116</td>
<td>Type IV</td>
</tr>
<tr>
<td>Wheatridge</td>
<td>2020</td>
<td>100</td>
<td>40</td>
<td>Type III</td>
</tr>
</tbody>
</table>
Transformer Tank Rupture Causes

- Load and temperature changes degrade transformer oil hydrocarbons
- High variability of load on wind turbine transformers increases degradation, compared to standard (transmission & distribution) transformers with less variability
- Resultant dissolved gases build up in oil
- If not removed, gas accumulation will over-pressurize the tank and may cause a rupture
- Tank rupture typically results in release of transformer fluid
Transformer Loading Differences

Wind transformers loaded differently compared to load serving utility transformers

- Graph represents the same timespan for transformers at Biglow as compared to load serving transformers
- Load serving transformers have predictable peaks and valleys and follow a consistent usage pattern
- Wind transformers experience unpredictable peaks and valleys, with no consistent usage pattern
Biglow Canyon

Installed capacity: 450 MW
Construction started: 2007
Last phase operational: 2010

<table>
<thead>
<tr>
<th>OERS #</th>
<th>Spill Location</th>
<th>Size of Spill (gallons)</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021-1546</td>
<td>#353</td>
<td>300</td>
<td>2</td>
</tr>
<tr>
<td>2020-2358</td>
<td>Substation</td>
<td>100</td>
<td>NA</td>
</tr>
<tr>
<td>2020-1048</td>
<td>#365</td>
<td>166</td>
<td>2</td>
</tr>
<tr>
<td>2019-2155</td>
<td>#457</td>
<td>400</td>
<td>3</td>
</tr>
<tr>
<td>2017-1897</td>
<td>#9</td>
<td>600</td>
<td>1</td>
</tr>
<tr>
<td>2016-3006</td>
<td>#4</td>
<td>~200</td>
<td>1</td>
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<tr>
<td>2013-2462</td>
<td>#69</td>
<td>600</td>
<td>1</td>
</tr>
<tr>
<td>2011-1524</td>
<td>#415</td>
<td>476</td>
<td>3</td>
</tr>
<tr>
<td>2010-2207</td>
<td>#457</td>
<td>100</td>
<td>3</td>
</tr>
</tbody>
</table>

Phase 1: 76 - 1.65 MW Type I turbines
Phase 2: 71 - 2.3 MW Type IV turbines
Phase 3: 70 - 2.3 MW Type IV turbines
Wind Turbine – Transformer Technology

Early wind technology (e.g., all three phases of Biglow)
  • Scaled technology quickly to meet rapidly increasing interest in wind power
  • Essentially copied existing utility distribution transformer design specifications

Industry recognized transformer design vulnerabilities approx. 2012
  • Increased rate of dissolved gas generation
  • Frequent failures

New PGE design standards have improved reliability
  • Current industry standards do not address the issue
  • PGE specifications add features based on operational and reliability observations and features have been implemented across our fleet

Industry Monitoring standards are lacking
  • No industry standard to compare results for decision making, PGE making prudent choices
  • Online monitoring is cost prohibitive
BREAK
Overview of Electrical Generation and Consumption in Oregon and the Region

January 28, 2022
Adam Schultz, ODOE Senior Policy Analyst
Stephanie Kruse, ODOE Facilities Engineer 3
• **Electric System 101:** Electric power system basics
• **Northwest today:** Current resource build
• **Northwest tomorrow:** Modeled resources to achieve carbon goals
• **Concluding Thoughts:** Big picture context
Electric System 101

Yaquina Head Lighthouse, Newport, Oregon
Overview of Electricity System Delivery
ELECTRICITY: GENERATED FOR YOU IN REAL-TIME

Source: Vox
ELECTRICITY: GENERATED FOR YOU IN REAL-TIME

Generated by power plants

Balanced in real-time

And delivered into your home

Source: How NYC Gets Its Electricity, NY Times (February 2017)
ELECTRICITY: GENERATED FOR YOU IN REAL-TIME
HYPOTHETICAL UTILITY DEMAND PROFILE

Once-per-decade cold snap
Comparing Electricity to Milk: What’s Missing?
Comparing Electricity to Milk

Milk Production Capacity

Milk Distribution System

Milk Consumption
Comparing Electricity to Milk

Electricity is just like Milk!

(1) Pour a bowl of cereal
(2) Walk to your front door
(3) Milk you need is produced in *real-time* by the cow
(4) Milk you need is delivered *at that moment* by the milk man
(5) You open your front door and receive that fresh, cold milk
(6) Pour that milk onto your cereal & enjoy!
What’s Missing: Storage

Bulk Storage

Local Storage
GASOLINE AND NATURAL GAS: ROLE OF STORAGE
ELECTRICITY: GENERATED FOR YOU IN REAL-TIME

Generated by power plants

Balanced in real-time

And delivered into your home

Source: How NYC Gets Its Electricity, NY Times (February 2017)
**WHY DOES STORAGE MATTER?**

*Figure 1: Days of End-Use Fuel Storage in the U.S. Based on Average Daily U.S. Consumption by Fuel Type*

- **Gasoline:** 25.2 days
- **Natural Gas:** 34.7 days
- **Electricity:** <0.1 days

*Derived from U.S. EIA data comparing average volumes of stored energy to average daily consumption for total gasoline (barrels consumed vs. weekly stocks); natural gas (mcf consumed vs. working natural gas in storage); and electricity (MWh of daily consumption vs. MWh of stored electricity).*
Energy & Capacity
(...and flexibility)
Energy 101: Energy vs. Capacity

Capacity Needed:
~41,000 MW (+ reserves)

Energy Needed:
~765,000 MWh

Source: CAISO, Demand Trend, 08/04/2021
...plus Flexible Capacity

Demand trend
System demand, in megawatts, compared to the forecasted demand in 5-minute increments.

Source: CAISO, Demand Trend, 08/04/2021
...plus Flexible Capacity

Net demand trend

System demand minus wind and solar, in 5-minute increments, compared to total system and forecasted demand.

Source: CAISO, Net Demand Trend, 08/04/2021
…plus Flexible Capacity

Net demand trend
System demand minus wind and solar, in 5-minute increments, compared to total system and forecasted demand.

Source: CAISO, Net Demand Trend, 04/22/2021
…plus Flexible Capacity

Supply trend

Energy in megawatts broken down by resource in 5-minute increments.

Source: CAISO, Supply Trend, 04/22/2021
Impacting the Power Sector in the PNW Today

Mid-Columbia Average Hourly Prices

Source: Draft 2021 Power Plan, p. 6-48
Shifting Needs Throughout the Year

Source: US EIA
Dispatching Power Plants
HYPOTHETICAL UTILITY DEMAND PROFILE

Once-per-decade cold snap

Customer Demand for Electricity (MW)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Typical Winter Day
Typical Summer Day
Very Cold Winter Day
Capacity Planning vs. Power Markets

Hypothetical Utility Demand Profile:
Typical Summer Day

Power Demand (MW)

Hours of the Day
Capacity Planning vs. Power Markets

Hypothetical Utility Demand Profile:
Typical Summer Day

Power Demand (MW)

Hours of the Day
Capacity Planning vs. Power Markets

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Capacity Planning vs. Power Markets

Hypothetical Utility Demand Profile:
Typical Summer Day

Hours of the Day
Power Demand (MW)
Capacity Planning vs. Power Markets

Hypothetical Utility Demand Profile:
Typical Summer Day
Variability of Regional Hydro Energy Output

Figure 12. 80 years of hydro generation

Median (50th percentile)

Critical (8th percentile)

Source: PNUCC, Fig. 12, p.
Balancing Authorities in the West

Responsibility of each Balancing Authority:

- Reliably planning and operating the high-voltage grid
- Matching generation with demand in real-time
- Managing imports and exports

Source: CAISO
Transmission Lines in the Western Electricity Coordinating Council
Current Electricity Resource Build in the Pacific Northwest
PNW: Installed Capacity vs. Annual Energy

Pacific Northwest Electric Generation: Installed Capacity (MW) vs. Annual Energy (aMW)

* Energy generating capability of hydro based on average water year conditions.

Source: NW Power Council, Generating Resources Database, Sept. 2021
Long-view: Development of NW Power Capacity

- Pre-1970: Hydro Era
- 1970-1990: Coal Era + Natural Gas + Wind
- 1990-2015: Natural Gas + Wind
- Current Era: Solar + Storage + Coal

Source: PNUCC, Generating Resource Trends, slide 3
More challenging to find clean MWh to replace energy from coal/gas in winter

Coal is retiring rapidly. These black bars will be replaced.

Solar just starting to register.
Forecasting the Future: Regional Resource Build Necessary to Achieve Decarbonization Goals
2021 Plan: Baseline Projection of West-wide Build

West-wide Projection: Baseline projection for what will be required across western states to meet clean energy targets

Source: Draft 2021 Plan, p. 6-45
Deep Decarbonization: Renewable Build in PNW

Cumulative New Resource Build

80 GW of New Solar & Wind Capacity

Source: Deep Decarbonization Pathways Study, p. 73
Coal Retirements Across the West Continuing

Coal in the Western Interconnection (2019-2033)

Western Interconnection retirements (~21,000 MW, includes Northwest)

Northwest retirements (~4,000 MW)

Source: PNUCC, Generating Resource Trends, slide 8
Pacific Northwest 
Electricity Mix in 2050

Deep Decarbonization Pathways: 
Projected electricity resource mix in the Pacific Northwest in 2050

Source: Pathways to a Clean Energy Future, Fig. 12, p. 34
Battery Storage: Fast-moving Target

CAISO Transmission Planning Process:
Base Case Forecast of Battery Storage Capacity

Source: CAISO, Slide 11
Off-shore wind potential in Oregon:

- World-class resource off southern Oregon coast
- Deep waters require floating platforms
- HB 3375 requires ODOE to study key issues in report due in September 2021

Source: NREL
Concluding Thoughts

Trillium Lake, Mt. Hood
Oregon’s Electricity Production (2018)

(2018)

- Hydro: 67.0%
- Wind: 14.1%
- Biomass: 16.5%
- Solar: 1.8%
- Natural Gas: 0.1%
- Geothermal: 0.6%

Energy by the Numbers | Page 22,24
Resources Used to Generate Oregon’s Electricity
Based on 2019 data, this chart shows the energy resources used to generate the electricity that is sold to Oregon’s utility customers.

Oregon’s Electricity Consumption (2019)

Oregon Electricity Mix Over Time

Energy by the Numbers | Pages 9-10
Report includes 2018 data; ODOE now has 2019 data available
Comparing Generation and Consumption

Oregon’s Electricity Generation and Consumption (2018)

Oregon Exports
- 68% of wind generation
- 66% of geothermal generation
- 38% of hydroelectric generation
- 12% of solar generation

Oregon Imports
- 88% of coal based electricity
- 100% of nuclear electricity
Final Thoughts

• **Variability:** Variability is a major driver in the electric sector—in terms of renewable generation output and end-use consumption.

• **Exports:** Electricity exports from Oregon are mostly driven by surplus hydropower output in the spring months.

• **Imports:** Major differences exist across the energy sector—while much of Oregon’s electricity consumption comes from in-state generation, it imports nearly 100% of its transportation fuels.
Thank you!

Adam Schultz
Lead, Electricity & Markets Policy Group
Adam.Schultz@energy.Oregon.gov

Stephanie Kruse
Energy Facilities Engineer
Stephanie.Kruse@energy.Oregon.gov
Golden Hills Wind Project
Council Review of Construction Compliance

January 28, 2022
Duane Kilsdonk, ODOE Compliance Officer
Sarah Esterson, ODOE Senior Policy Advisor
Golden Hills Wind Project

Certificate Holder: Golden Hills Wind Farm, LLC
Certificate Holder Owner: Avangrid Renewables, LLC
Facility Location: Sherman County

Approved
400 MW, 51 turbines

Final Design
200 MW, 51 turbines
Construction Status

Phase 1 (O&M building)  June 18, 2020 (commencement)
Phase 2 (51 wind turbines +)  April 2022 (completion)
Compliance Update

**Excess Disturbance/Topsoil Management/Erosion**
Applies to: Conditions GEN-MC-02, GEN-OE-03, CON-SP-01, PRE-LU-08, GEN-SP-01
- ODOE Records Requests on: Aug. 19, Sept 8, Dec. 13
- ODOE Site Inspections on: Sept 1, Nov 5, Dec 8, Dec. 14
- Cert holder Responses on: Aug 24, Sept 17, Dec 16
- Next Steps: ODOE to issue request for corrective action plan from cert holder

**1200-C Permit Requirements/Waters of the State**
Applies to: Condition GEN-SP-01
- DEQ issuance of violation/pre-enforcement notification on: Oct 4, Dec 21
- Cert holder: self-reported noncompliance on Dec 15 and issued stop-work order at the site; initiated corrective action plan process. Corrective action plan expected in January 2022
Agenda Item I
(Information Item)

Cascade Renewables Transmission Project
Overview of Potential EFSC-Jurisdictional Facility

January 28, 2022
Christopher Hocker, Cascade Renewable Transmission, LLC
Cascade Renewable Transmission Project

ODOE EFSC Council Meeting
01 Introductions
02 Project Overview
03 Technical Considerations
01 Introductions
# Introductions

<table>
<thead>
<tr>
<th>CRTS Team</th>
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<tbody>
<tr>
<td><strong>Chris Hocker</strong>, PowerBridge Planning</td>
<td><strong>Victor Holten</strong>, Sun2o Partners, Managing Partner</td>
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<tr>
<td><strong>Ernie Griggs</strong>, PowerBridge Project Manager</td>
<td><strong>Suzy Cavanagh</strong>, HDR EFSC Lead</td>
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<td><strong>Chris Benson</strong>, PowerBridge Operations Manager</td>
<td><strong>Amy Dammarell</strong>, HDR Compliance Lead</td>
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<td><strong>Susan Brown</strong>, PowerBridge Project Coordinator</td>
<td><strong>Rona Spellecacy</strong>, HDR Project Manager</td>
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<td><strong>Kelly Goodman</strong>, Project Representative</td>
<td><strong>Mike Ott</strong>, HDR Section 408 Review Lead</td>
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<tr>
<td><strong>Corey Kupersmith</strong>, Sun2o Partners, Managing Partner</td>
<td><strong>Malia Bassett</strong>, HDR Environmental Planner</td>
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02 Project Overview
Project Drivers

- Policy
- Proximity
- Deficiency
## Transmission Need Drivers

Long-term Available Transfer Capacity ("ATC") across the Cascades is insufficient to address five key regional drivers:

1. WA & OR public policy requirements mandating 80% renewable energy by 2030
2. West of Cascades load growth in the Seattle and Portland load centers
3. Retirement of the 1,340 MW Centralia Coal Plant located west of the Cascades
4. State climate policies driving electrification of buildings and transportation
5. Replacement of >4GW of east of Cascades fossil generation with eastern renewables

Cascade Project can help the PNW meet climate policies while maintaining system reliability.
Renewable Energy Need

**Washington**
- Washington utilities need to procure significant quantities of new renewable energy to meet Clean Energy Transformation Act ("CETA") targets in 2030.
- PSE has estimated a renewable energy need of over 2GW of nameplate capacity by 2030 \(^1\).
- Driven both by siting feasibility and economics, new utility scale renewable projects will be almost solely located east of the Cascades.

**Oregon**
- Passage of HB 2021 in 2021, requiring PGE and PacifiCorp to have renewables supply 80% of energy mix by 2030, and 100% by 2040, necessitate a significant ramp up in renewable procurement to meet Oregon Public Policy.
- Load growth driven by electrification and renewable interest of large corporate customers could result in additional near-term renewable energy procurement needs as well.

**PSE Renewable Procurement\(^1\)**

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**PGE Renewable Procurement\(^2\)**

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1) PSE 2021 IRP, Annual Resource Addition Preferred Portfolio.
2) Per PGE filing in Docket UM 21-06, assuming 30% renewable resource capacity factor, September 13, 2021, and PGE filing in Docket UM 19-03 September 17, 2021.
Cross Cascade Constraint

BPA Renewable Interconnection Queue Analysis (MW)

West of Cascade Resources: 0.7% of Total
East of Cascade Resources: 99.3% of Total

BPA ATC Less Pending Queue on Cross Cascades South (MW)

New Transmission is needed to deliver east of Cascade renewables to west of Cascade load centers

Source: BPA ATC Less Pending Queue as of 10/6/2021. BPA Active Generator Interconnection Queue as of 10/6/2021. Includes interconnection requests received, in study, and completed study. Does not include Withdrawn or Energized projects or any proposed stand alone Energy Storage projects.
Project Components

• In-river construction
• Land to water transitions
• Upland construction
• Converter stations

Photos: (top) A cable lay barge supports the jet plow installation of Neptune Regional Transmission System's 500kV HVDC underwater cable in New Jersey's Raritan River during 2005; and (bottom) Transbay Cable HVDC VSC Converter Station in San Francisco, CA.
In-River Construction

- Jet plow Installation
  - Buried cable bundle (2 main cables + fiber optic)
  - 18-inch trench width
  - Resettlement of sediment
  - Rate of advancement

- Installation Considerations
  - Depth
  - Bedrock
  - Constraints (Human/Natural)
  - Utility crossings
Photos: The Neptune marine cable bundle is secured aboard the installation barge and fed into New Jersey’s Raritan River.
Land to Water Transition

- Horizontal Directional Drilling
  - Size
  - Placement + Direction

- Installation Considerations
  - Depth
  - Distance to shore
  - Constraints (Human/Natural)

Photo: A typical layout of key elements in an HDD water-to-land cable transition as seen from a proposed HVDC submarine project in New York’s Hudson River.
Interconnections (OR)

- Converter station at both ends of HVDC cable, sited near utility substations

- Western termination in Portland at PGE Harborton substation via underwater (HDD) AC cable connecting to CRTP converter station.

- Eastern termination in The Dalles at BPA Big Eddy substation via overhead AC transmission line connecting to CRTP converter station.
## Timing and Schedule

<table>
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03 Technical Considerations
Technical Considerations

• Natural and Cultural Resources
• Bonneville Dam Vicinity
• Navigation Features
Cultural and Tribal Resources

FIGURE 4
Tribal Resources

- In-Lieu Site
- Treaty Fishing Access Site
- Fish Processing Site
- Substation
- Kilometer Marker
- Proposed Alignment

[Map showing locations of tribal resources along a river]
Natural Resources

- Species protected under the Endangered Species Act
- Important native migratory fish
- Work "windows" (seasonal restrictions)
- Water quality considerations; inclusive of the Willamette Superfund site
- Wetlands and waters of the U.S.

Photo: Pacific Lamprey.
Bonneville Dam

- Physical Routing and Considerations
- Ownership verification
- Considerations/Input from USACE
Navigation Features

• Working in proximity to channel
• Minimum depths and other considerations
• Pre-dredging options and related sediment management

Photo: The USACE dredge vessel Essayons.
Agenda Item J
(Action Item)

Nolin Hills Wind Power Project
Hearing Officer Appointment

January 28, 2022
Sarah Esterson, ODOE Senior Policy Advisor
Nolin Hills Wind Power Project

Proposal: 600 MW wind and solar PV energy generation facility

Site Boundary: 48,196 acres with 1,896 acres (2.9 sq. miles) of solar PV

Location: Northwest Umatilla County, near Echo

Applicant: Nolin Hills Wind, LLC (Capital Power Corporation)

Status: Reviewing preliminary ASC for completeness
Oregon Office of Administrative (OAH) Hearings

• Provides an independent and impartial forum for citizens and businesses to dispute state agency actions
• 65 professional administrative law judges (ALJ) for approximately 70 state agencies
• ODOE/EFSC is one of the few agencies not required to utilize OAH
• Entered into agreement with OAH in 2017 based on their expertise in contested cases and the number of ALJ’s who could serve as Hearing Officers for EFSC
• To date EFSC has appointed the OAH ALJ’s as Hearing Officers for the following projects:
  o B2H Transmission Line – ALJ Allison Greene Webster
  o Obsidian Solar Center – ALJ Joe Allen
  o Bakeoven Solar Project – ALJ Joe Allen
  o Madras Solar Energy Facility – ALJ Joe Allen
  o Eugene to Medford Transmission Line Amendment 4 – ALJ Joe Allen
  o Wagon Trail Solar Project – Joe Allen
Staff Recommended Hearing Officer

Kate Triana

• Has conducted contested cases for 14 other state agencies since 2013

• Oregon State Bar Certified

• Juris Doctorate from Willamette University College of Law

• Bachelor’s Degree in Psychology from Colorado State University
Council Options

Option 1
Appoint ALJ Kate Triana as Hearing Officer (staff recommendation)

Option 2
Do not appoint ALJ Kate Triana as Hearing Officer for specified reasons
Adjourn