TSR Study and Expansion Process

December 7, 2021
Overview

- The TSR Study and Expansion Process (TSEP)
- Overview of the 2021 Cluster Study Results
- Observations for 2022 Cluster Study Participation
- Cluster Study Participation Tips
TSEPN Overview

Pre-Study

Cluster Study

4 Months

Preliminary Engineering

6 - 48 Months*

Environmental Study

4 - 48 Months*

Project Construction

4 - 48 Months*

Phase 1

Phase 2

Phase 3

Phase 4

Phase 5

*Estimated range; actual timelines vary based on project scope and/or environmental impacts

Customer Closeout Package – Study participants are provided with a study report, a closeout letter detailing the requirements for each of their TSRs to obtain service, and an election form to determine the next steps for each of their TSRs. If applicable, the customer may be tendered an offer for LTF service.

Next Step Agreements - Prior to the commencement of a next phase, BPA will provide customers with updated information on the rate treatment, percentage shares of projects, other non-binding information, such as estimated project costs or timelines. An offer of CFS, if applicable, maybe be made at this time. BPA will provide the customer with Preliminary Engineering or Environmental Study agreements, or both as is applicable.

Service Agreement - Prior to the construction decision, BPA will determine whether to offer the requested service at an embedded or incremental rate. BPA will offer the Customer a service agreement for the requested service.
2021 Cluster Study Overview
2021 Cluster Study Findings

- BPA evaluated 116 new transmission service requests (TSRs), representing 5,842 MW of transmission demand
  - Eleven (11) TSRs, totaling 305 MW were awardable without transmission upgrades.
  - Twenty-eight (28) TSRs, totaling 2,008 MW, require an upgrade on the BPA system to enable firm service.
  - Seventy-seven (77) TSRs, totaling 3,529 MW, require an upgrade AND resolution of impacts to third-party Transmission Providers.
  - Seventy-four (74) TSRs were determined to be eligible for Conditional Firm Service (CFS) for a total of 3,677 MW.
2021 Cluster Study: Type of Resources

- Hydro: 691 MWs
- Solar: 3,101 MWs
- Wind: 1,540 MWs
- Solar+Storage: 450 MWs
- Solar or Wind: 200 MWs
- Thermal: 200 MWs
- Wind+Solar+Storage: 800 MWs

1,540 MW represent requests for study of multiple paths “duplicative requests” and therefore not all of these MW represent unique resources.
TSR Demand by Geographic Region

- **NORTH_CENTRAL_OR**: 1,450
- **MIDC AREA**: 1,300
- **CENTRAL OR**: 1,220
- **CENTRAL WA**: 1,080
- **LOWER COLUMBIA**: 200
- **SW WA COAST**: 200
- **MCNARY**: 191
- **UPPER COLUMBIA**: 110
- **LOWERSNAKE**: 41
- **TRI CITIES**: 28
- **BC/US BORDER**: 12
- **EUGENE AREA**: 10
- **PORTLAND/SALEM_AREA**: 1,851
- **SEATTLE/PUGET_AREA**: 1,424
- **MIDC_AREA**: 635
- **UMATILLA**: 500
- **CENTRAL_OR**: 480
- **SOUTHERN INTERTIE**: 412
- **CENTRAL_WA**: 340
- **NE_WASHINGTON_&_IDAHO**: 200

Graphic provided by sankeymatic.com

Pre-decisional. For Discussion Purposes Only.
TSEP Customer Actions

- Based on Customer Elections:
  - 9 TSRs for 220 MW accepted LTF Offers
  - 2 TSRs for 85 MW rejected LTF offers
  - 24 TSRs for 2,011 MW withdrawn by customers
  - 51 TSRs requested BPA send Conditional Firm Service (CFS) offers, representing 1,341 MW of service
  - 75 TSRs for 2,824 MW requested BPA send next stage agreements to support upgrades (these activities are customer funded)
# 2021 Cluster Study Projects

<table>
<thead>
<tr>
<th>Plan of Service</th>
<th>Direct Cost Estimate ($M)</th>
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<tbody>
<tr>
<td><strong>PEA/ESA Participation Projects</strong></td>
<td></td>
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<tr>
<td>Cross Cascades North Reinforcement</td>
<td>$42.60</td>
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<tr>
<td>• Schultz-Raver #3 and #4 500 kV Series Compensation</td>
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<tr>
<td>Portland Area Reinforcement</td>
<td>$8.20</td>
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<tr>
<td>• Pearl-Sherwood-Mcloughlin Reinforcement</td>
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<tr>
<td>Satsop Area Project</td>
<td>$0.50</td>
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<tr>
<td>• Aberdeen Tap to Satsop Park-Cosmopolis #1 115 kV line upgrade</td>
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<tr>
<td><strong>Withdrawn Projects</strong></td>
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<tr>
<td>Raver-Paul Reinforcements</td>
<td>$745.30</td>
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<tr>
<td>• New 500 kV substation, Coulee-Olympia line upgrade and Olympia substation expansion</td>
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<tr>
<td>Fort Rock Reinforcement</td>
<td>$29.60</td>
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<tr>
<td>• Grizzly-Captain Jack 500 kV line upgrade</td>
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<tr>
<td>Grandview sub-grid area</td>
<td>$8.30</td>
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<tr>
<td>• Grandview-Red Mountain 115 kV line rebuild</td>
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</table>
# TSEP Projects

<table>
<thead>
<tr>
<th>Projects</th>
<th>MWs*</th>
<th>TSRs</th>
<th>Customers</th>
</tr>
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<tbody>
<tr>
<td>MT RAS</td>
<td>500</td>
<td>5</td>
<td>2</td>
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<tr>
<td>M2W</td>
<td>320</td>
<td>4</td>
<td>2</td>
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<tr>
<td>Schultz-Wautoma</td>
<td>2,499</td>
<td>73</td>
<td>13</td>
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<tr>
<td>Maupin Upgrade</td>
<td>140</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Monroe-Novelty</td>
<td>600</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Satsop</td>
<td>300</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>LaPine Subgrid</td>
<td>113</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Schultz-Raver</td>
<td>2,264</td>
<td>72</td>
<td>11</td>
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<tr>
<td>Pearl-Sherwood-Mcloughlin</td>
<td>934</td>
<td>48</td>
<td>8</td>
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* The same MWs can be included in multiple individual projects.
2022 TSEP Kicking Off
2022 Cluster Study Preliminary Observations

- Initial TSR submission for the 2022 Cluster Study included 153 TSRs for 11,831 MWs.
- 275 MWs offered service
- 21 customers signed CSAs
Comparison to Past Studies

<table>
<thead>
<tr>
<th>Year</th>
<th>TSRs Submitted</th>
<th>MWs Submitted</th>
<th>TSRs In Study</th>
<th>MW In Study</th>
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<tbody>
<tr>
<td>2008</td>
<td>316</td>
<td>11,464</td>
<td>153</td>
<td>6,410</td>
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<tr>
<td>2009</td>
<td>83</td>
<td>4,867</td>
<td>34</td>
<td>1,553</td>
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<tr>
<td>2010</td>
<td>121</td>
<td>7,304</td>
<td>76</td>
<td>3,759</td>
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<tr>
<td>2013</td>
<td>--</td>
<td>--</td>
<td>50</td>
<td>3,673</td>
</tr>
<tr>
<td>2016</td>
<td>--</td>
<td>--</td>
<td>51</td>
<td>2,042</td>
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<tr>
<td>2019</td>
<td>127</td>
<td>5,183</td>
<td>105</td>
<td>3,993</td>
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<tr>
<td>2020</td>
<td>72</td>
<td>4,518</td>
<td>62</td>
<td>3,871</td>
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<tr>
<td>2021</td>
<td>178</td>
<td>11,539</td>
<td>116</td>
<td>5,842</td>
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<tr>
<td>2022</td>
<td>153</td>
<td>11,831</td>
<td>144</td>
<td>11,118</td>
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2022 Cluster Study: Type of Resources

1,867 MWs represent requests for study of multiple paths “duplicative requests” and therefore not all of these MW represent unique resources.
TSR Demand by Geographic Region

- Eugene: 2,200
- Central WA: 1,880
- Midc Area: 1,801
- Central OR: 1,514
- Tri Cities: 1,470
- Umatilla: 1,142
- BC/US Border: 720
- Portland/Salem Area: 4,635
- Seattle/Puget Area: 3,307
- Midc Area: 1,041
- Montana: 820
- Central WA: 520
- Umatilla: 475
- Lower Snake: 150
- Tri Cities: 90
- Central OR: 80
2022 Cluster Study Next Steps

- Pre-Study Phase
  - Establish power flow models
- The official 2022 Cluster Study kicks off the first week of January 2022.
- Anticipated completion date is early May 2022.
- Anticipated release date of the study report and customer packages is mid to late June.
TSEP Participation Tips
Participation Tips

- **Queue time matters**
  - Reviewed for service within 30 days of receiving a Completed Application.
  - Before study, if queue changes could get service.
  - After study, higher queued TSRs may not need to participate in a plan of service.

- **Become a customer as soon as possible**
  - Could take several months to complete requirements for becoming a customer – plan ahead!
  - Work with your Transmission Account Executive
Participation Tips

- **Know your resource**
  - The more a customer can tell BPA about the type, size, and Point of Interconnection the better.
  - If a specific POR has not yet been established for the resource then use NEWPOINT.
  - Comments for a NEWPOINT POR should be specific to a voltage and either a substation or a line, or a GI plan of service (the GI number alone is not sufficient).

- **Know the ultimate load to be served**
  - Use PODs consistent with both the ultimate load being served and the receiving party
  - Use the most generic POD available, such as a contiguous POD (CNTGS)
Questions?