Montana Transmission Service Requests & BPA’s Study and Expansion Process

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Montana to Washington Plan of Service
West of Garrison/West of Hatwai 2010 NOS Cluster Study Results

**Montana to Washington Upgrade Project (M2W)**
- Estimated Direct Cost of $145 M
- Upgraded and new reactive compensation among Garrison, Hatwai and Bell Substations
- West of Hatwai TTC: Increase from 4,250 MW to 4,800 MW
- West of Garrison TTC: Increase from 2,200 MW to 2,800 MW

**Garrison to Ashe 500 kV line**
- 2010 Estimated Direct Cost of $950 M
- Approx. 420 miles of 500 kV line including series compensation between Garrison and Central Washington (Ashe Sub.)

Neither project addresses additional requirements on NorthWestern Energy system and filter requirements at Colstrip

Excerpted from 2010 Network Open Season Cluster Study Results

Presented January 27, 2011
Components of TSEP

**P1 - Pre-study:**
- Customer TSR submittal and ATC assessment;
- Period between close of last TSR deadline and next TSR deadline for Cluster Study participation (typically June-May);
- \$ - TSR deposit and processing fee

**P2 - Cluster Study:**
- BPA tenders Study Agreements following TSR deadline;
- BPA commences and completes study (120-day study period);
- Results: preliminary plan of service scope, cost, and schedule;
- \$ - Customer’s pro rata share of costs by MW

**P3 - Plan of Service Validation and Preliminary Engineering:**
- Refinement of cost and scope of Cluster Study results;
- Estimation of Environmental Review scope and costs;
- \$ - Customer’s pro rata share of costs by MW

**P4 - Environmental Review:**
- Required NEPA review of environmental impacts based on identified plan of service;
- Includes Record of Decision on preferred route, and whether to build the project;
- \$ - Customer’s pro rata share of costs by MW

**P5 - Project Construction:**
- Construction and Energization of identified transmission project;
- \$ - Customer secures its pro rata MWV share of construction costs (letter of credit, etc.)

**Costs associated with 2016 TSEP Process**
- \$ = 1 month’s transmission service charge + $2,500
- \$ = (for this cycle, based on eligible TSRs) $300 per MW requested
- \$ = TBD
- \$ = TBD

Note: this is when rolled-in vs. incremental rate determination is made
Phases 3 through 5 (P3-P5) have no specific timeline as timing requirements will be determined on a case-by-case basis.
Eligible TSRs/MW for Participation

- As of August 31\textsuperscript{st}, there were 12 customers with 65 eligible TSRs, totaling 3,264 MW of incremental transmission service.

<table>
<thead>
<tr>
<th>Customer</th>
<th>MW</th>
<th># TSRs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avangrid Renewables, LLC [formerly PPM Energy, Inc. (Iberdrola)]</td>
<td>200</td>
<td>3</td>
</tr>
<tr>
<td>BPA Power Services</td>
<td>1,000</td>
<td>4</td>
</tr>
<tr>
<td>Caithness Energy LLC</td>
<td>500</td>
<td>6</td>
</tr>
<tr>
<td>GreenWing Energy America Corporation</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>Horizon Wind Energy LLC</td>
<td>275</td>
<td>11</td>
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<tr>
<td>NewSun Energy Transmission Co.</td>
<td>220</td>
<td>19</td>
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<tr>
<td>Orion Renewable Energy Group, LLC</td>
<td>400</td>
<td>4</td>
</tr>
<tr>
<td>Pacific Northwest Generating Co-op</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>PacifiCorp</td>
<td>55</td>
<td>1</td>
</tr>
<tr>
<td>Portland General Electric Marketing</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>Puget Sound Energy Marketing</td>
<td>357</td>
<td>7</td>
</tr>
<tr>
<td>SunPower Corporation Systems</td>
<td>167</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,264</strong></td>
<td><strong>65</strong></td>
</tr>
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</table>
Four Main Drivers of TSRs

1. Renewable bids for PGE’s RFP
   • ~1,000 MW from Montana wind
   • +400 MW from central and southern Oregon (mostly solar)
     • Deferred for at least a year

2. BPA Power Services’s potential upgrades at McNary, Dworshak, John Day, and Grand Coulee (1,000 MW)

3. Renewable bids for PAC’s RFP (+200 MW)
   • PAC selected only REC bids

4. Puget bringing resources at Tucannon and Central Ferry to load (+300 MW)
As of September 2016, there are no corresponding requests for Long Term Firm service from the NorthWestern Energy system for delivery to the Northwest (neither Avista nor BPA).
Why does BPA perform a cluster study?

- Conventional tariff processes allow for a Transmission Service provider to address customer requests for service in a serial fashion.
- Given the amount of requests (100s of requests) and associated demand (1,000s of MWs) for service in BPA’s transmission queue, BPA had trouble handling requests in a serial fashion that would meet the required tariff timelines.
- Further, customers were required to respond individually to development of required system improvements – facing financial commitment for the entire project(s).
- The result was a transmission queue that BPA could not manage and there were no projects proceeding to development that would facilitate the requested service.
- BPA developed a cluster study process that allowed BPA to address all participating requests for service with an aggregate set of projects. The cluster study also allowed for a mechanism by which the financial commitment necessary for proceeding with required expansion could be shared.
What goes into a cluster study?

- Determine which requests could be met from existing system capability and which requests require system reinforcement.
- Identify study areas for those requests requiring system reinforcement:
  - Perform technical studies to develop plans of service for the study areas;
  - Determine the increased capacity resulting from resulting plan(s) of service, cost, schedule and energization date.
- Attribute requests with project or group of projects that would accommodate the requested service.
- Model all requests, along with existing commitments in an out-year ATC base case in order to demonstrate that the interconnected transmission system, together with the required reinforcements, would be able to provide the requested service.
Cluster Study Process

- Requests for Service
  - Pending Queue Restack
  - ATC Check & Sub-Grid Check
    - Potential Authorizations
  - Flow Based Studies
  - Detailed Studies
    - Grouping of Requests
    - Finalize Required Projects
      - Project Development (including Cost & Schedule)
      - Validation w/ ATC Base Case
        - Project Requirements by Request
  - ATC Analysis
Notables

- In total, 5,018 MW and 92 TSRs were submitted for this TSEP cycle, however, several requests failed to meet deadlines for either data or deposits and were removed from consideration.

- The total amount of MW ultimately included in the study can still change significantly between today and October if any customers fail to execute and advance fund the Cluster Study.
Legacy Items

- Network Open Season (NOS) projects completed to date:
  - McNary-John Day
  - Central Ferry-Lower Monumental
  - Big Eddy-Knight

- I-5 Reinforcement
  - Final EIS has been released and decision expected 2016

- Montana to Washington (M2W)
  - Project was cancelled in 2014 due to a lack of sufficient participation to justify continuing with NEPA review
  - If an upgrade in this location is identified as being needed in TSEP, BPA will repurpose as much of the work previously completed as possible

- Northern Intertie
  - Third party system upgrades needed in the Puget Sound area