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 MW 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

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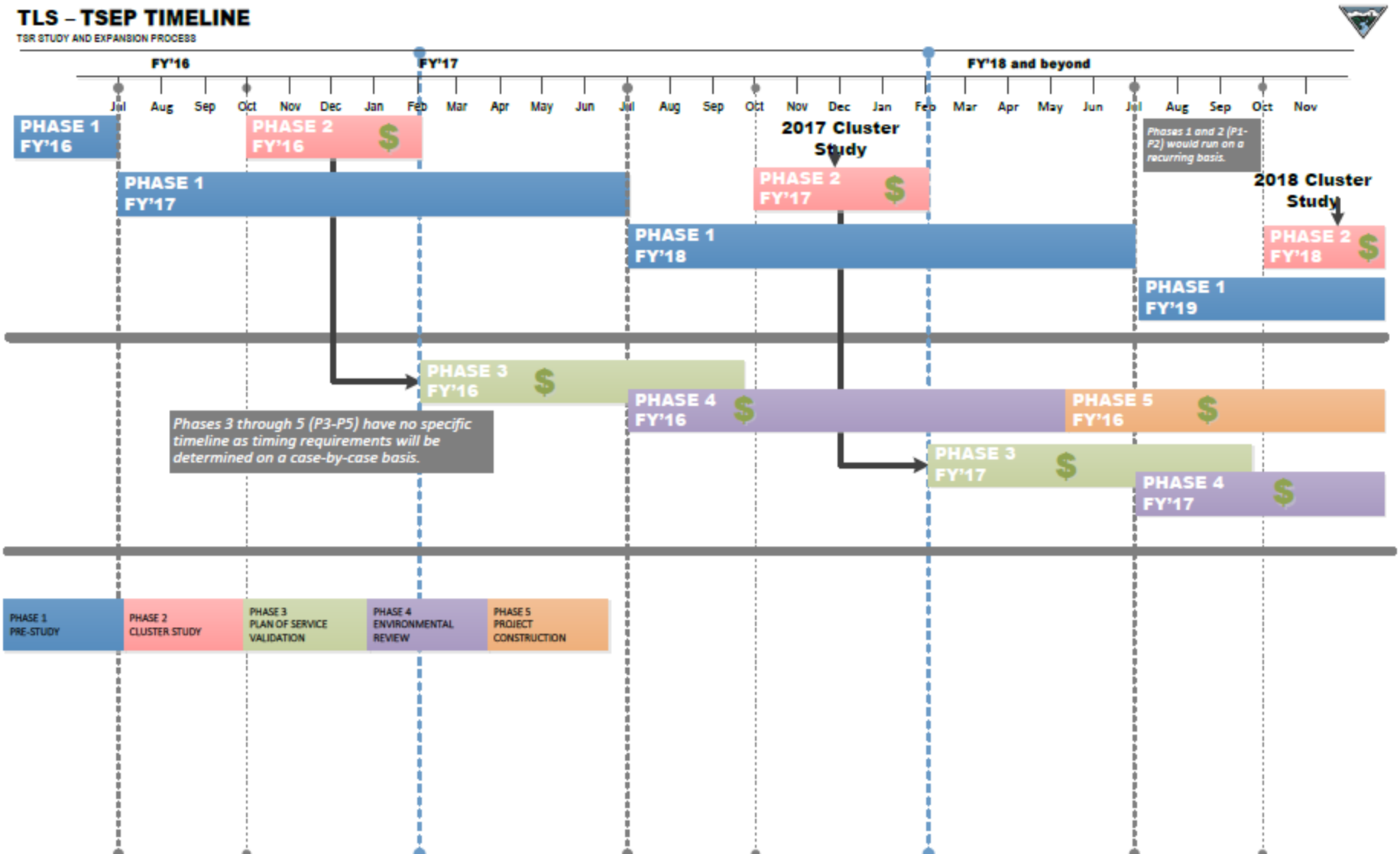
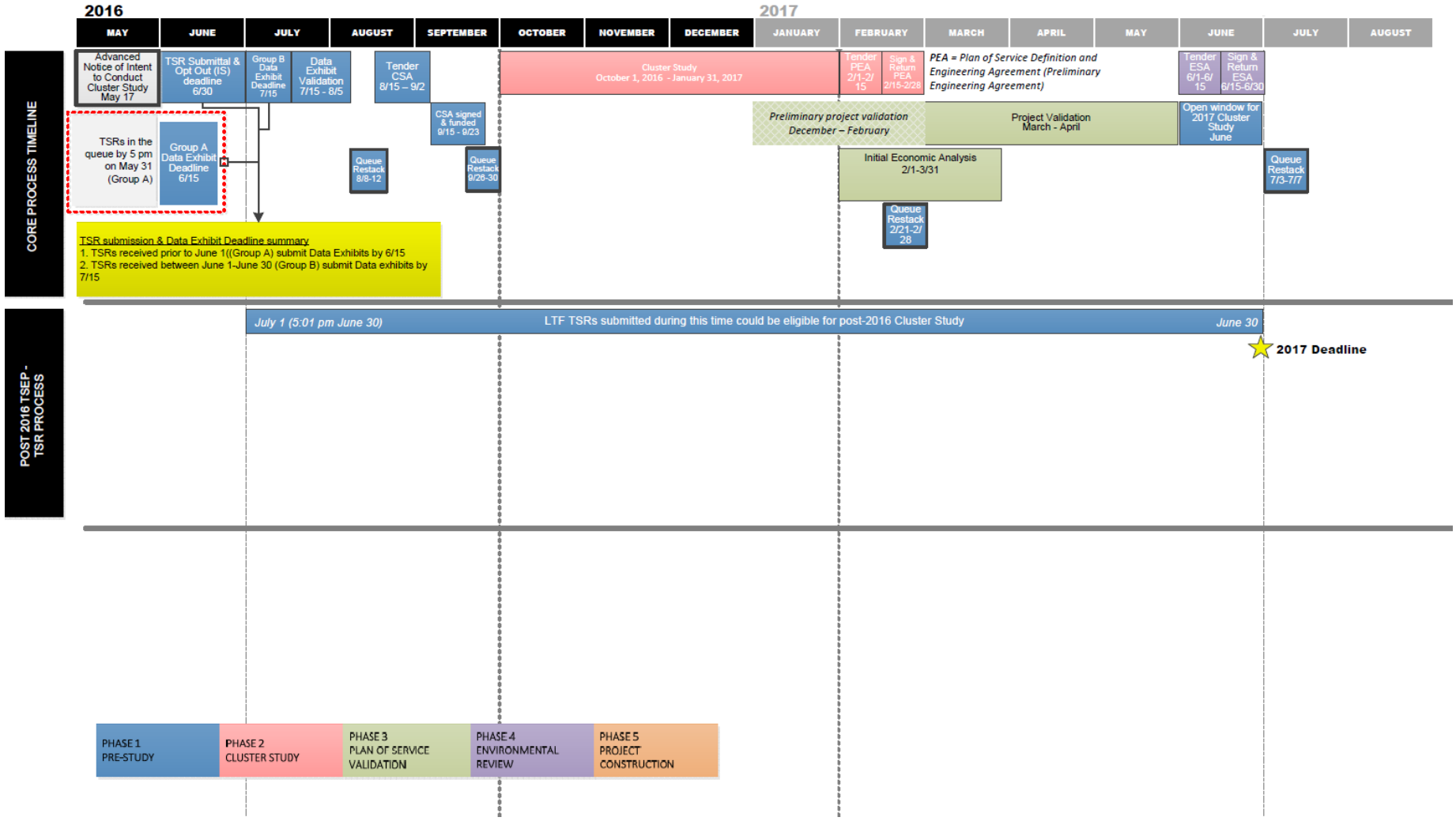
Note: this is when rolled-in vs. incremental rate determination is made


TLS – TSEP TIMELINE
TSR STUDY AND EXPANSION PROCESS
FY'16
FY'17
FY'18 and beyond
Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov
PHASE 1 FY'16
PHASE 2 FY'16
PHASE 1 FY'17
2017 Cluster Study
PHASE 2 FY'17
PHASE 1 FY'18
Phases 1 and 2 (P1-P2) would run on a recurring basis.
2018 Cluster Study
PHASE 2 FY'18
PHASE 1 FY'19
PHASE 3 FY'16
PHASE 4 FY'16
PHASE 5 FY'16
Phases 3 through 5 (P3-P5) have no specific timeline as timing requirements will be determined on a case-by-case basis.
PHASE 3 FY'17
PHASE 4 FY'17
PHASE 1 PRE-STUDY
PHASE 2 CLUSTER STUDY
PHASE 3 PLAN OF SERVICE VALIDATION
PHASE 4 ENVIRONMENTAL REVIEW
PHASE 5 PROJECT CONSTRUCTION

BPA TRANSMISSION TSR STUDY & EXPANSION PROCESS (TSEP)

DRAFT (VERSION 1.2) – MAY 16, 2016



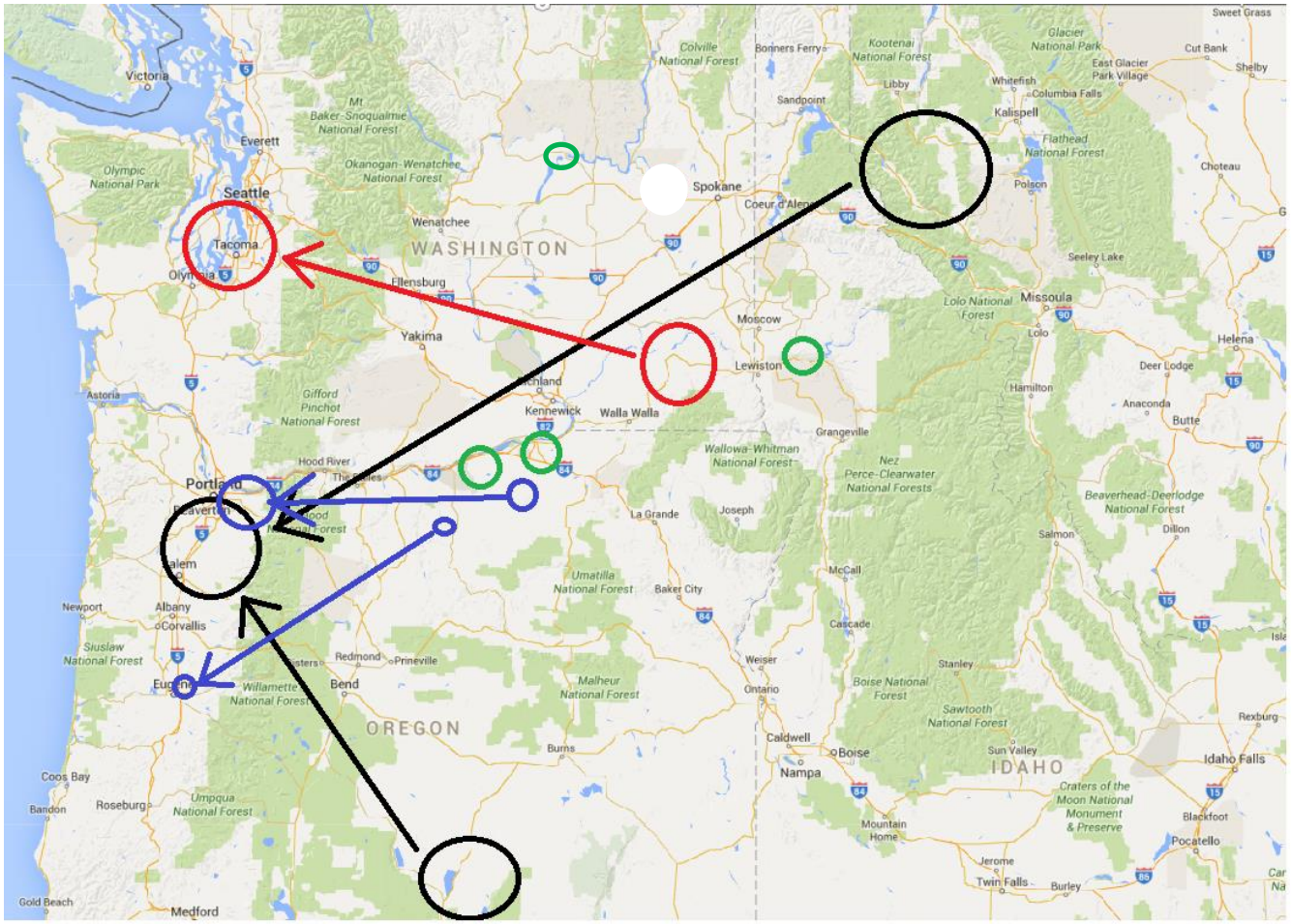
Eligible TSRs/MW for Participation

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

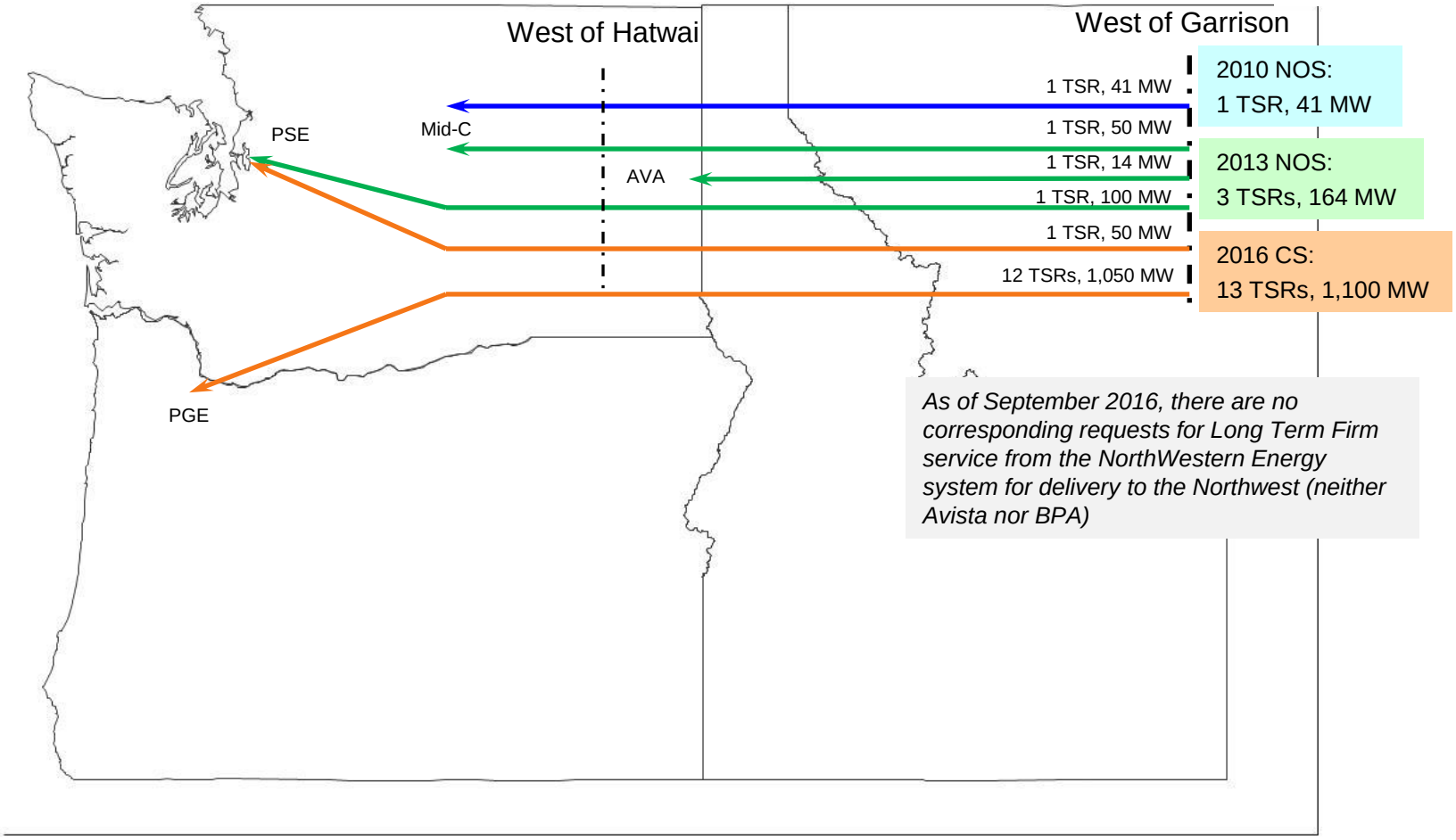
Customer	MW	# TSRs
Avangrid Renewables, LLC *[formerly PPM Energy, Inc. (Iberdrola)]*	200	3
BPA Power Services	1,000	4
Caithness Energy LLC	500	6
GreenWing Energy America Corporation	40	2
Horizon Wind Energy LLC	275	11
NewSun Energy Transmission Co.	220	19
Orion Renewable Energy Group, LLC	400	4
Pacific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

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)



2016 Cluster Study – Montana Requests



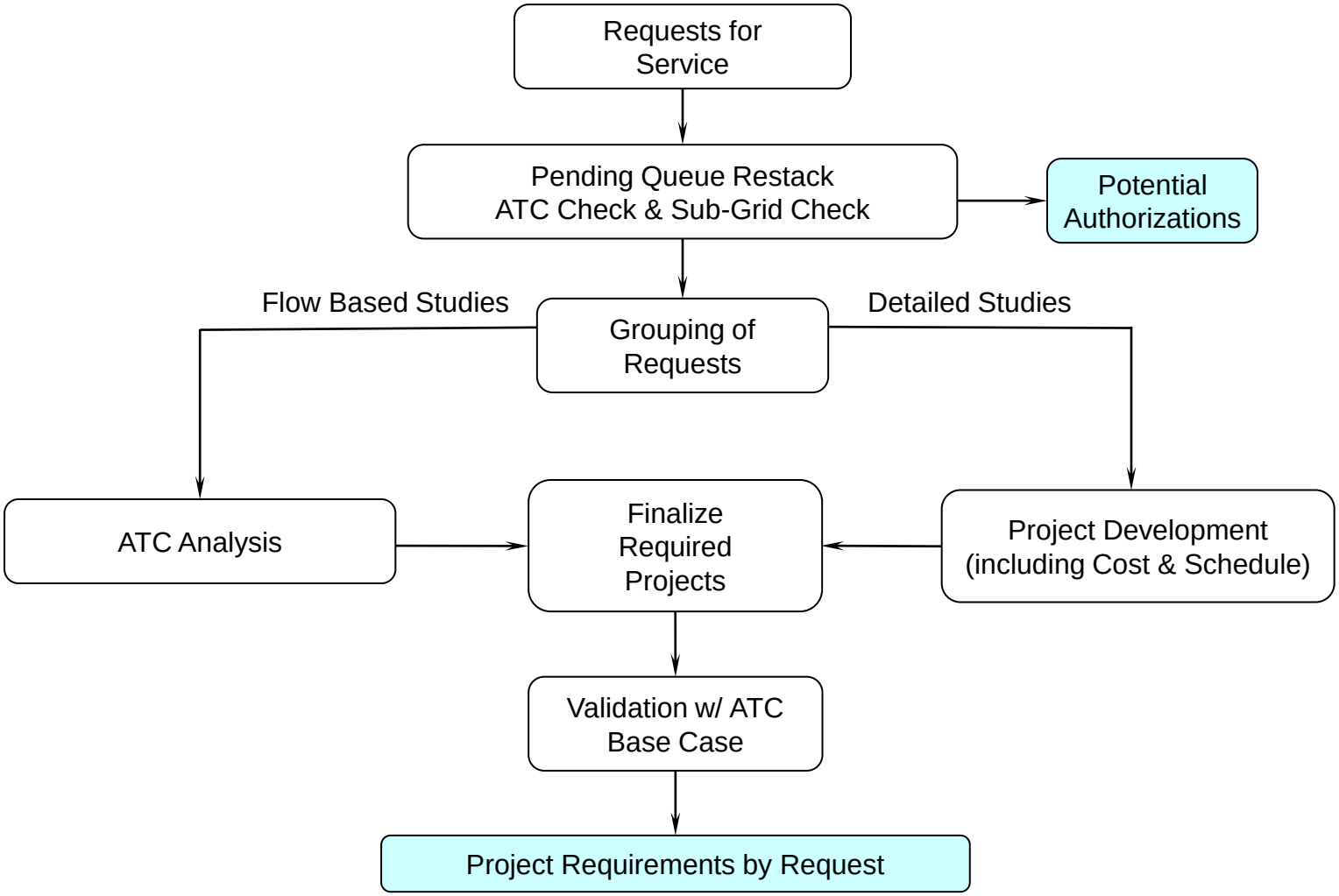
Why does BPA perform a cluster study?

- 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



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