NORTHERN TIER
TRANSMISSION GROUP

NTTG 2018-2019
Quarter 6
Stakeholder Meeting

Boise, Idaho

June 21, 2019

NTTG 2018-2019 Planning Cycle Q6 Milestones

NTTG Q6 Stakeholder Meeting

Agenda	
10:30 – 10:45	**WELCOME AND AGENDA REVIEW**
	2018-2019 DRAFT FINAL REGIONAL TRANSMISSION PLAN (DRTP)
10:45-11:30	• Quarter 6 Analysis and Study Results • Draft Final Regional Transmission Plan • 2019 Economic Study Request Update
11:30 – 12:00	**NEIGHBORING PLANNING REGION UPDATES**
	UPCOMING STAKEHOLDER OPPORTUNITIES
	STAKEHOLDER COMENTS/OTHER BUSINESS
12:00	**ADJOURN**

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Q6 Technical Studies
Robustness of the Draft Regional Transmission Plan

Boise, Idaho

June 21, 2019

Robustness Testing

NTTG's 2018-2019 Study Plan: Section V

- Analysis will be performed on the "dRTP's ability to reliably serve the transmission needs of an uncertain future"

NTTG's Attachment K:

- When determining the more efficient or cost effective set of projects, the Planning Committee may utilize the cost allocation scenarios to test the robustness of the projects considered in the Plan

Robustness Scenario Options

- The Cost Allocation analysis section in the Approved Study Plan proposed four scenarios to test the stability of an allocation made to a project:
  - Higher load forecast – 1000 MW increase
  - Lower load forecast – 1000 MW reduction
  - Replace wind with solar
  - Retire coal and replace with Wind and Solar
- The PPC study looked at scenario D in some detail.
- Scenario A is only a 4% increase over 10 years.

Q6 Robustness Scenario Selected

The TWG also reviewed the WECC long term planning tool and selected the following scenario:

- High load growth with a mix of new wind and solar resources
  - 2000 MW load increase
  - 4000 MW load increase
  - Resources for both cases would be supplied by a 50%/50% mix of solar and wind based upon energy production to meet the increased energy requirement

Q6 Robustness Scenario

- Load increase assumptions for 2000 MW and 4000 MW scenarios

Transmission Provider	2017 Summer Loads	2028 Forecasted Summer Loads	2000 MW Increase over 2028 Summer	4000 MW Increase over 2028 Summer
Idaho Power	3806	4299	4661	5022
Northwestern	1803	2030	2201	2372
PacifiCorp East	8870	9697	10513	11329
PacifiCorp West	3558	3589	3999	4310
Portland General	4023	4060	4402	4743
Total	22060	23775	25775	27775

Q6 Robustness Scenario

- Resource additions for 2000 MW and 4000 MW Scenarios

Transmission Provider	2000 MW		4000 MW	
	Solar	Wind	Solar	Wind
Idaho Power	489	279	978	559
Northwestern	257	131	515	263
PacifiCorp East	908	537	1817	1073
PacifiCorp West	428	298	855	596
Portland General	474	260	949	520
Total	2557	1506	5114	3011

- ❖ Calculated using Lf/Cf ratio for each BA

Q6 Robustness Scenario

- NTTG L&R balance

4000 MW Net Balance (Solar + Wind – Load)								
	A	B	C	E	F	G	H	I
Idaho Power	-254	-325	-302	-143	-83	-245	-49	-251
Northwestern	-64	-299	-67	43	-187	-230	-226	-65
PacifiCorp East	-55	-643	94	98	-100	-127	170	44
PacifiCorp West	-460	-1012	-525	-43	163	1	-910	268
Portland General	240	-672	229	184	-218	-59	324	242
Total	-593	-2951	-572	140	-426	-659	-691	238

- Most scenarios are deficit, used Pacific Northwest as swing, possible that additional gas resources would be added instead
- The 2000 MW scenario values are one half the above

Q6 Robustness Observations

- The dRTP configuration did not have significant issues with either the 2000 MW or 4000 MW scenario
- There were a number of local load service area and resource integration issues in the Heavy Summer, Heavy Winter and Heavy Import cases that surfaced.
- Could be result of uniform scaling of load, resource integration issues or case tuning of the incremental cases

Q6 Robustness Observations

- With increasing load, several load pockets began to show branch and transformer overloads
- Also a few load areas exhibited increased low voltages, indicating those areas may be subject to future facility mitigation.
  - All would be remediated during future planning processes should these scenarios begin to play out.

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NTTG 2018-2019 Draft Final Regional Transmission Plan

Boise, Idaho

June 21, 2019

Draft Final Regional Transmission Plan Status Update

- The NTTG Draft Final Regional Transmission Plan (dFRTP) has been updated with the results from the robustness analysis
  - Link to NTTG 2018-2019 Draft Final Regional Transmission Plan

- The dFRTP will be posted for stakeholder comment in July
- NTTG's Planning Committee will post and respond to all comments

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2019 Economic Study Request

Boise, Idaho

June 21, 2019

2019 Economic Study Request

- An Economic Study Request (ESR) was submitted in Q5 by Deseret Power on behalf of the “Joint Parties”:
  - Deseret Power,
  - Utah Association of Energy Users,
  - Utah Department of Commerce Office of Consumer Services,
  - Utah Associated Municipal Power Systems,
  - Utah Municipal Power Agency,

2019 Economic Study Request

- Study an alternative transmission configuration to:
  - Replace 500 kV Gateway West and South projects with one or two 345 kV lines between Windstar-Aeolus area to Populus-Borah-Midpoint area

- Following a review for completeness by the Technical Workgroup, additional clarification was submitted
  - Constraints between Midpoint and Hemingway should be addressed by extending the 345 kV to Hemingway
  - Path C constraints should be addressed by extending the 345 kV from Populus to Ben Lomond or Terminal

2019 Economic Study Request – Concerns

- Uncertainty whether this was an Economic Study Request or an Unsponsored Project
  - Value of looking at a 345 kV alternative when the 500 kV line is currently under construction?
- Simple economics is not the only consideration in the development of a transmission plan, e.g.
  - permitting processes,
  - substation constraints,
  - constructability,
  - in-service dates, etc.
- These constraints should be noted in the study report

2019 Economic Study Request – Concerns

- Gateway West ROW can accommodate a single transmission line. Where two lines are requested, additional ROW will have to be permitted and acquired
  - This acquisition/construction is unlikely to be completed within the 10-year cycle

- GW Central was built with a double-circuit 345 kV line, and to PacifiCorp's knowledge, an additional line route between Populus and the Salt Lake Valley would not be possible
  - Such a new line may not be required, but is part of the portfolio of options to consider

2019 Economic Study Request – Concerns

- Line routes are extremely challenging and Wyoming wind potential is high. Considering the likelihood of west-wide carbon reduction requirements, it would be imprudent to not fully utilize new line routes

2019 Economic Study Request - Approval

- The Planning Committee voted to accept the 2019 Regional Economic Study Request on April 24
  - Study results will be reported in the Regional Transmission Plan and provided to the requesting party
  - The study does not change the RTP but would inform the next planning cycle

ESR Study Plan Approval Process

- The TWG drafted a Study Plan for the approved Regional Economic Study Request that will be modeled in Quarter 7
- Planning Committee review and discussion of the Study Plan (May 29)
- Study Plan posted for stakeholder comment (May 24 thru June 10)
  - Link to the Study Plan for the 2019 Economic Study
  - Link to Stakeholder comments on the Study Plan for the 2019 Economic Study and NTTG's Draft Response

ESR Study Plan Approval Process

- Next Steps
  - Planning Committee review/approval of NTTG responses to comments and **ESR Study Plan approval** (June 26)
  - Economic Study Completed (Quarter 7)

Questions

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Regional Coordination

NTTG Stakeholder Meeting

June 21, 2019

Planning Region Updates

- CAISO – Gary DeShazo
- ColumbiaGrid – Larry Furumoso
- WestConnect – Charlie Reinhold

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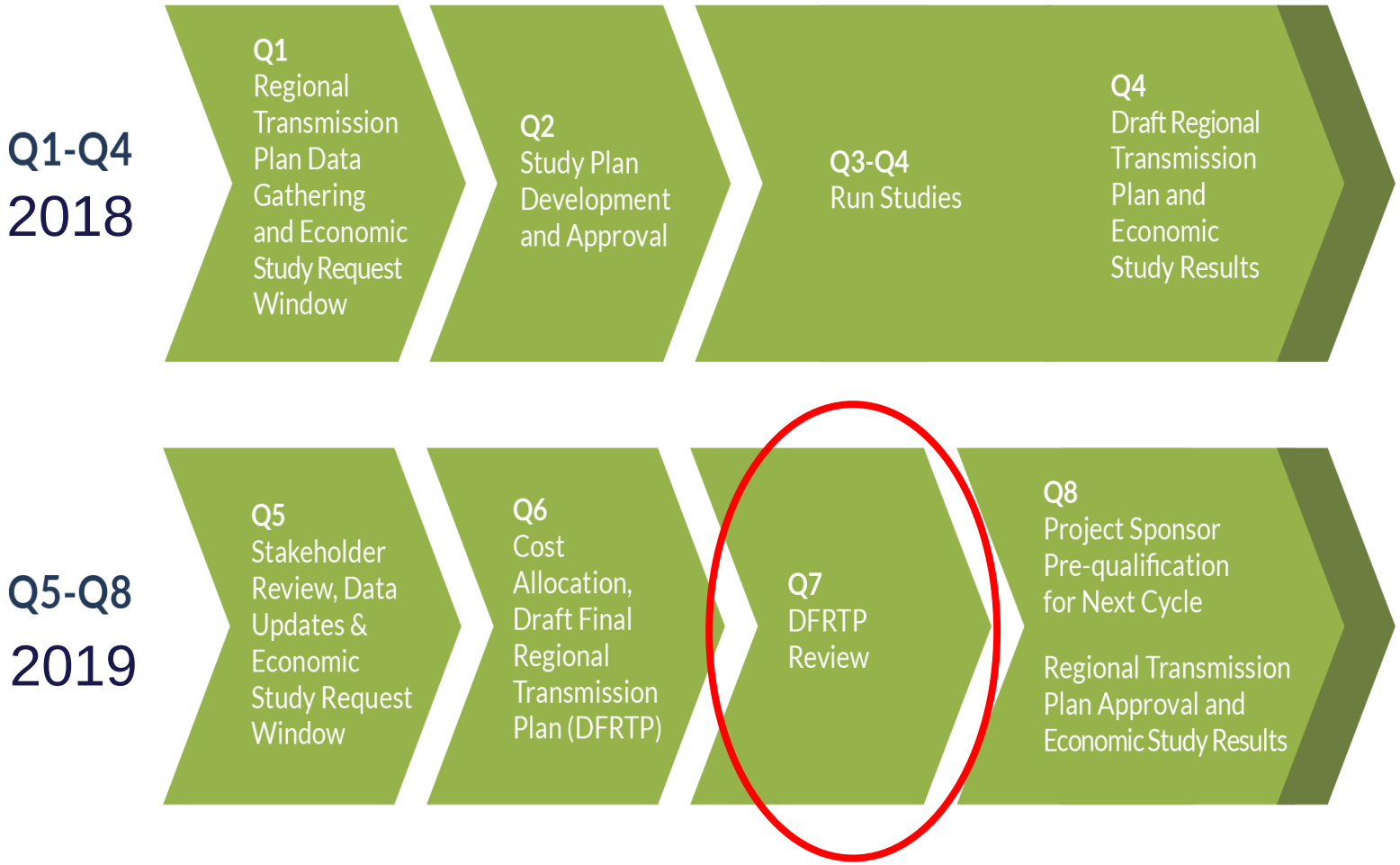
Next Steps and Upcoming Opportunities for Stakeholder Input

NTTG Stakeholder Meeting

June 21, 2018

NTTG 2018-2019 Planning Cycle



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Stakeholder Comments/ Other Business

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Thank You!