Transmission Planning
Attachment K Public Input Meeting

FERC Order 1000, 2018-19 Biennial Planning Cycle
Quarter 2 Meeting

June 14, 2018

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Pacific Power | Rocky Mountain Power

Agenda

Pacific Time	**Topic**	**Presenter**
9:00 – 9:05	• Greetings and Introductions	Jamie Austin
9:05 – 9:20	• Explain the Planning Process ○ Present finalized methodology/planning criteria/process to be used; ○ Coordinate with other Processes on Reliability ▪ Discuss planning goals; ▪ Discuss Assumptions; ○ Present a proposed Economic Congestion Study, or cluster of studies, to conduct during the first year of the planning cycle.	
9:20 – 9:35	• Generator Interconnection Studies	Brian Fritz
9:35 – 9:45	• Status of Ongoing Area Planning Studies	Scott Beyer, Jake Barker
9:45 – 10:00	• PACW Local Area Studies: ○ Finding Reports: ▪ Dalreed / Arlington / Sherman County Area Study ▪ Nebo Area Study	Greg Linden Jake Maxfield

The Planning Process

Jamie Austin

FERC Orders: 890 & 1000

Process

- Finalized methodology/planning criteria/process to be used;
  - Coordinate with other in-house study processes on reliability
    - TPL Transmission Planning Studies;
    - **Five Year Area Studies;**
    - **Generator Interconnections Studies**
- PacifiCorp plans to review with Stakeholders the status of 5-yrs studies as they become available, in the Attachment K stakeholder process. Reviews will include:
  - Methodology
  - Criteria
  - Assumptions
  - Databases
  - Results

Economic Planning Studies

Background

- The Economic studies identify “significant and recurring” congestion.
- Stakeholders can submit study requests through the OASIS process.
- No study requests were submitted in Q1
- Next chance to submit requests will be in Q5

Local Participation

Focus Groups

- **The Transmission Provider (TP), PacifiCorp, may at its discretion but with stakeholder input, establish focus groups during Quarter 1, to identified area planning issues**
  - The focus group will review available data and the impact of any previous Transmission System Plan (TSP) on Transmission Service to the identified area, and provide recommendations to the TP to be considered for incorporation into the planning assumptions and/or final TSP.
  - Membership to the focus groups will be open to all stakeholders, Network Customers, and Eligible Customers.
  - The Transmission Provider will act as the facilitator for the focus group.
  - The focus group shall address as many issues as possible via email and teleconference.
  - Each focus group shall select a chairperson to set the timeline for discussion and developing recommendations within the scope of 8 Quarter Planning Cycle.
  - All recommendations of the focus group must be based on the consensus of the focus group.
  - The TP may consider but is not required to implement recommendations.

PacifiCorp 8 Quarter Process

Time Line

PAC BIENNIAL TRANSMISISON PLANNING CYCLE 2018-2019				
	Quarter	Date	Technical Studies Activities	Economic Studies Activities
Year 1 -2018	Q1	Jan - Mar	Data Collection	Data Collection for Economic Studies
	Q2	Apr - Jun	Reference Case Development	Reference Case Development
	Q3	Jul - Sep	Technical Studies to determine System Adequacy	Economic Studies to Identify Congestion
	Q4	Oct - Dec	Draft Report on System Adequacy	Draft Reporting
Year 2 - 2019	Q5	Jan - Mar		Data Collection for Re-Study • Re-Study Requests • Economic Study Second Year Requests
	Q6	Apr - Jun	Draft Report Review	Draft Re-Study Review
	Q7	Jul - Sep	Final Report and Review	
	Q8	Oct - Dec	Final Transmission Plan approval	

Generator Interconnection Studies

Brian Fritz

Generation Interconnection Process






PACIFICORP

POWERING YOUR GREATNESS

Generation Interconnections

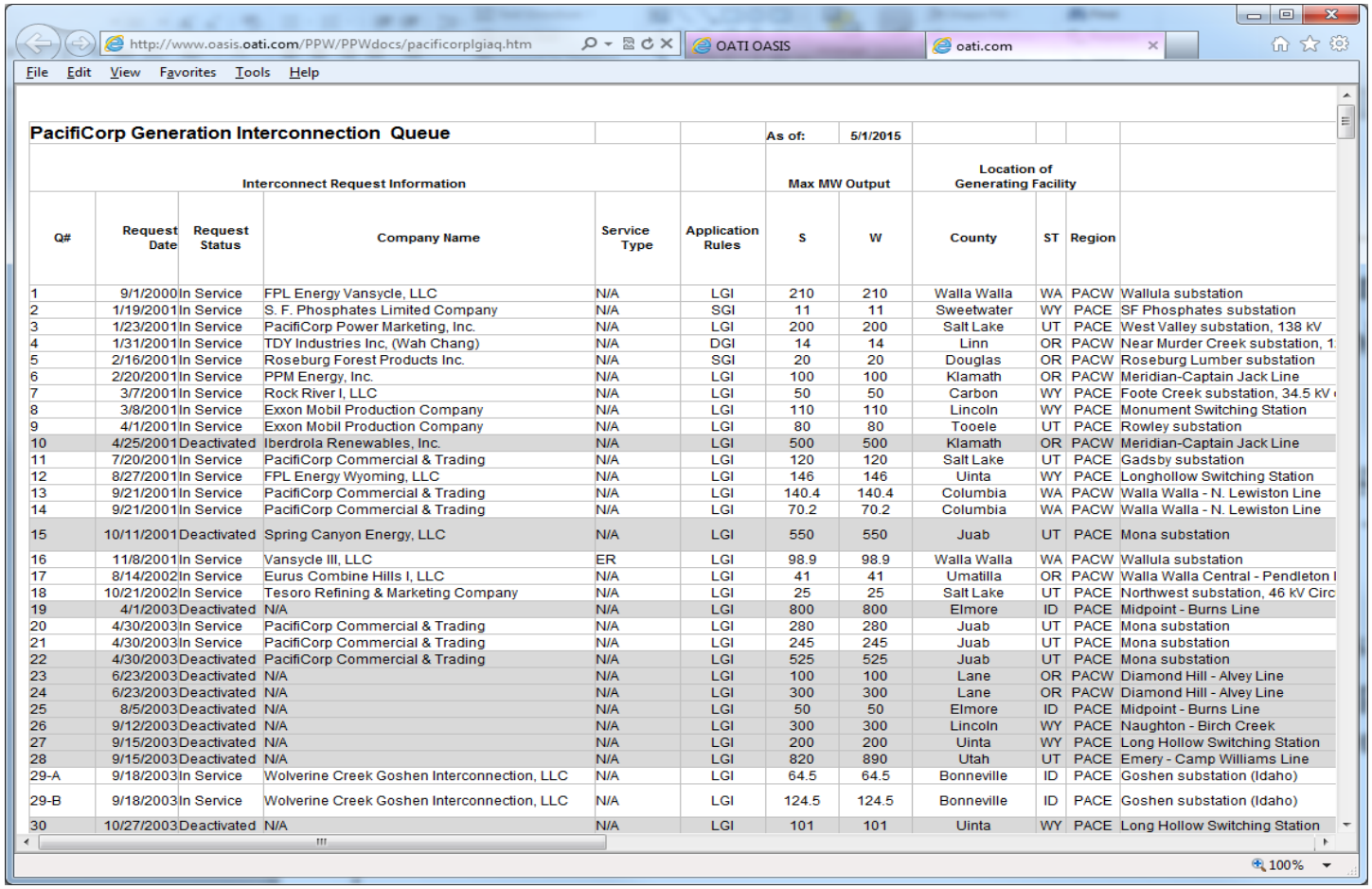
- Customers wishing to interconnect generation to PacifiCorp's transmission or distribution system that do not qualify for Net Metering

- Managed by Transmission Services
  - Robin Moore and John Sullivan manage the generation interconnection projects
  - Kris Bremer manages the generation interconnection group

- Primary purpose is to manage the process by which PacifiCorp provides non-discriminatory access to all entities that desire to build a generation facility and interconnect to PacifiCorp's electric system

Generator Interconnection Queue

– All generator interconnection requests are managed through the interconnection queue (available on OASIS).



http://www.oasis.oati.com/PPW/PPWdocs/pacificorplgiaq.htm — OATI OASIS — oati.com

File Edit View Favorites Tools Help

PacifiCorp Generation Interconnection Queue — As of: 5/1/2015

Interconnect Request Information						Max MW Output		Location of Generating Facility			
Q#	Request Date	Request Status	Company Name	Service Type	Application Rules	S	W	County	ST	Region	
1	9/1/2000	In Service	FPL Energy Vansycle, LLC	N/A	LGI	210	210	Walla Walla	WA	PACW	Wallula substation
2	1/19/2001	In Service	S. F. Phosphates Limited Company	N/A	SGI	11	11	Sweetwater	WY	PACE	SF Phosphates substation
3	1/23/2001	In Service	PacifiCorp Power Marketing, Inc.	N/A	LGI	200	200	Salt Lake	UT	PACE	West Valley substation, 138 kV
4	1/31/2001	In Service	TDY Industries Inc, (Wah Chang)	N/A	DGI	14	14	Linn	OR	PACW	Near Murder Creek substation, 1
5	2/16/2001	In Service	Roseburg Forest Products Inc.	N/A	SGI	20	20	Douglas	OR	PACW	Roseburg Lumber substation
6	2/20/2001	In Service	PPM Energy, Inc.	N/A	LGI	100	100	Klamath	OR	PACW	Meridian-Captain Jack Line
7	3/7/2001	In Service	Rock River I, LLC	N/A	LGI	50	50	Carbon	WY	PACE	Foote Creek substation, 34.5 kV
8	3/8/2001	In Service	Exxon Mobil Production Company	N/A	LGI	110	110	Lincoln	WY	PACE	Monument Switching Station
9	4/1/2001	In Service	Exxon Mobil Production Company	N/A	LGI	80	80	Tooele	UT	PACE	Rowley substation
10	4/25/2001	Deactivated	Iberdrola Renewables, Inc.	N/A	LGI	500	500	Klamath	OR	PACW	Meridian-Captain Jack Line
11	7/20/2001	In Service	PacifiCorp Commercial & Trading	N/A	LGI	120	120	Salt Lake	UT	PACE	Gadsby substation
12	8/27/2001	In Service	FPL Energy Wyoming, LLC	N/A	LGI	146	146	Uinta	WY	PACE	Longhollow Switching Station
13	9/21/2001	In Service	PacifiCorp Commercial & Trading	N/A	LGI	140.4	140.4	Columbia	WA	PACW	Walla Walla - N. Lewiston Line
14	9/21/2001	In Service	PacifiCorp Commercial & Trading	N/A	LGI	70.2	70.2	Columbia	WA	PACW	Walla Walla - N. Lewiston Line
15	10/11/2001	Deactivated	Spring Canyon Energy, LLC	N/A	LGI	550	550	Juab	UT	PACE	Mona substation
16	11/8/2001	In Service	Vansycle III, LLC	ER	LGI	98.9	98.9	Walla Walla	WA	PACW	Wallula substation
17	8/14/2002	In Service	Eurus Combine Hills I, LLC	N/A	LGI	41	41	Umatilla	OR	PACW	Walla Walla Central - Pendleton
18	10/21/2002	In Service	Tesoro Refining & Marketing Company	N/A	LGI	25	25	Salt Lake	UT	PACE	Northwest substation, 46 kV Circ
19	4/1/2003	Deactivated	N/A	N/A	LGI	800	800	Elmore	ID	PACE	Midpoint - Burns Line
20	4/30/2003	In Service	PacifiCorp Commercial & Trading	N/A	LGI	280	280	Juab	UT	PACE	Mona substation
21	4/30/2003	In Service	PacifiCorp Commercial & Trading	N/A	LGI	245	245	Juab	UT	PACE	Mona substation
22	4/30/2003	Deactivated	PacifiCorp Commercial & Trading	N/A	LGI	525	525	Juab	UT	PACE	Mona substation
23	6/23/2003	Deactivated	N/A	N/A	LGI	100	100	Lane	OR	PACW	Diamond Hill - Alvey Line
24	6/23/2003	Deactivated	N/A	N/A	LGI	300	300	Lane	OR	PACW	Diamond Hill - Alvey Line
25	8/5/2003	Deactivated	N/A	N/A	LGI	50	50	Elmore	ID	PACE	Midpoint - Burns Line
26	9/12/2003	Deactivated	N/A	N/A	LGI	300	300	Lincoln	WY	PACE	Naughton - Birch Creek
27	9/15/2003	Deactivated	N/A	N/A	LGI	200	200	Uinta	WY	PACE	Long Hollow Switching Station
28	9/15/2003	Deactivated	N/A	N/A	LGI	820	890	Utah	UT	PACE	Emery - Camp Williams Line
29-A	9/18/2003	In Service	Wolverine Creek Goshen Interconnection, LLC	N/A	LGI	64.5	64.5	Bonneville	ID	PACE	Goshen substation (Idaho)
29-B	9/18/2003	In Service	Wolverine Creek Goshen Interconnection, LLC	N/A	LGI	124.5	124.5	Bonneville	ID	PACE	Goshen substation (Idaho)
30	10/27/2003	Deactivated	N/A	N/A	LGI	101	101	Uinta	WY	PACE	Long Hollow Switching Station

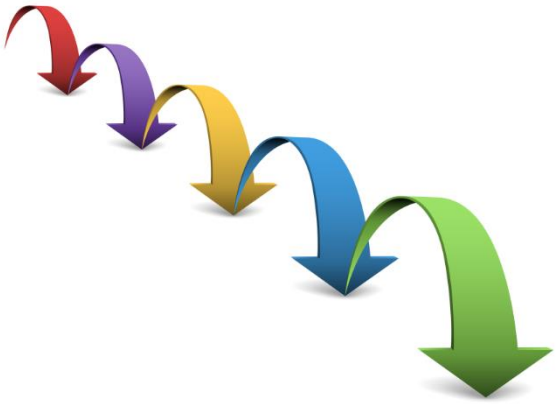
100%

Purpose of Interconnection Queue

- Treat all customers equally.
  - Requests managed in the order received.
  - Common interconnection requirements.
- Maintain safety of the system.
- Maintain reliability of the system.
- Ensure appropriate cost responsibility for interconnection costs.
- Comply with regulations.

Process

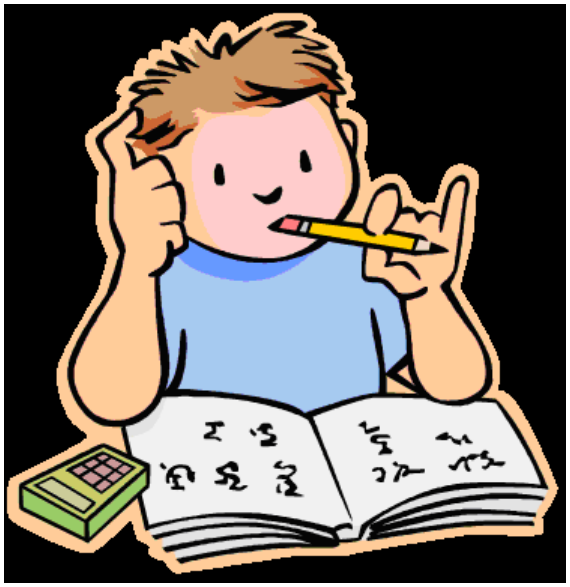
1. Application/validation
2. Scoping meeting
3. Feasibility study (optional)
4. System impact study
5. Facility study
6. Interconnection agreement
7. PacifiCorp financial and engineering
8. Engineering, procurement and construction
9. As Built & Closeout (Post Commercial Operations)



Timing – Steps 1-6: 1 Year or more; Step 8: 6 to 30 Months; Step 9: 3-6 months

Types of Studies

- Feasibility Study
  - Optional
  - Planning & P&C Only
- System Impact Study
  - All Engineering Disciplines
- Facilities Study
  - Project Management
- Others
  - Fast Track
    - Certain small generators
    - Must Pass Pre-defined criteria
    - If Pass, Straight to Interconnection Agreement
  - Pre-Application Report
    - Provides Basic Information on Proposed Interconnection Facilities



Know What Lies Ahead

Cost Responsibility

- Customers pay actual study costs, regardless of requested deposits.
  - Upon customer termination of the process or signing the interconnection agreement, the account is reconciled and a refund or invoice is compiled.
- Distribution interconnections pay all costs of modifications required for interconnection and delivery.
- Non-QF Transmission interconnections pay all costs of modifications, but receive transmission credits for network upgrades.
- QFs pay all costs of modifications required for interconnection.

Setting Expectations

- Interconnection studies require a year or more
- Construction begins after interconnection agreements are signed
- Construction timelines are clearly provided
- Interconnection customers should contact transmission services for interconnection timelines prior to committing to power purchase agreement delivery dates
- Interconnection does not provide for deliverability of the resource, requires transmission service agreement
- Clear customer communication that the interconnection does not provide transmission service

Local Area Studies Update - PACW

Scott Beyer

Time-line

5-yr studies - West

Study Area	State	Existing Study Completion Date	Update Study Status	Comments
Crescent City	CA	Feb-17		
Grants Pass	OR	Dec-15		
Hood River	OR	Nov-15		
Pendleton/Hermiston/Enterprise	OR	May-17		
Walla Walla/Wallula	WA	Dec-09	85%	
Roseburg	OR	Sep-10	40%	
Portland	OR	Mar-11		
Dalreed/Arlington/Sherman County	OR	Mar-11	100%	Completed May 2018
Klamath Falls	OR	May-11		
Lakeview/Alturas	OR	May-11		
Coos Bay	OR	Aug-11	0%	Plan to kickoff June 2018
North Oregon Coast	OR	Sep-17	100%	Completed September 2017
Yakima	WA	Dec-11	95%	
Medford	OR	Sep-12		
Willamette Valley	OR	Dec-12		
Junction City/Cottage Grove	OR	Dec-12		
Central Oregon	OR	Mar-13		
Yreka	CA	Dec-14		

Local Area Studies Update – PACE

Jake Barker

Time-line

5-yrs studies – East

Study Area	State	Last Studied	Update
Nebo	UT	Apr-18	Complete
Ogden	UT	Aug-14	40% Complete
Utah (Southwest)	UT	Dec-14	60% Complete
Pavant	UT	Feb-15	60% Complete
Goshen	ID	Jun-15	
Powder River	WY	Nov-15	90% Complete
Montpelier	ID	Feb-16	
Utah Valley	UT	Apr-16	
Honeyville/Malad	UT	May-16	
Grace	ID	Jul-16	
Smithfield	ID	Jul-16	
Price	UT	Jul-16	
Utah (Southeast)	UT	Jun-16	
Vernal	UT	Nov-16	
Sigurd	UT	Feb-17	Presented Q5
North Salt Lake	UT	Feb-17	Presented Q5
Wyoming (Southern)	WY	Mar-17	Presented Q5
Salt Lake Valley	UT	May-17	Presented Q6
Tooele	UT	Jun-17	Presented Q6
Wyoming (West)	WY	Oct-17	Presented Q8
Park City/Midway	UT	Oct-17	Presented Q8
Big Horn	WY	Nov-17	Presented Q8

Dalreed / Arlington / Sherman County Area Study

Greg Linden, P.E.

Dalreed / Arlington / Sherman County System Overview

Study Covers:

Transmission 230 kV & 69 kV:

- Dalreed 230-34.5 kV
- DeMoss (BPA) 115-69 kV

Distribution Substations 69-12.47 and 69-20.8 kV:

- Arlington
- Blalock
- Gordon Hollow

Distribution Substations 34.5-4.16 kV:

- Simtag
- Willow Cove

Transfer Substation 69-34.5 kV Creek
The 20.8 kV system from Gordon Hollow to Wasco was not modeled

Dalreed / Arlington / Sherman County System Overview

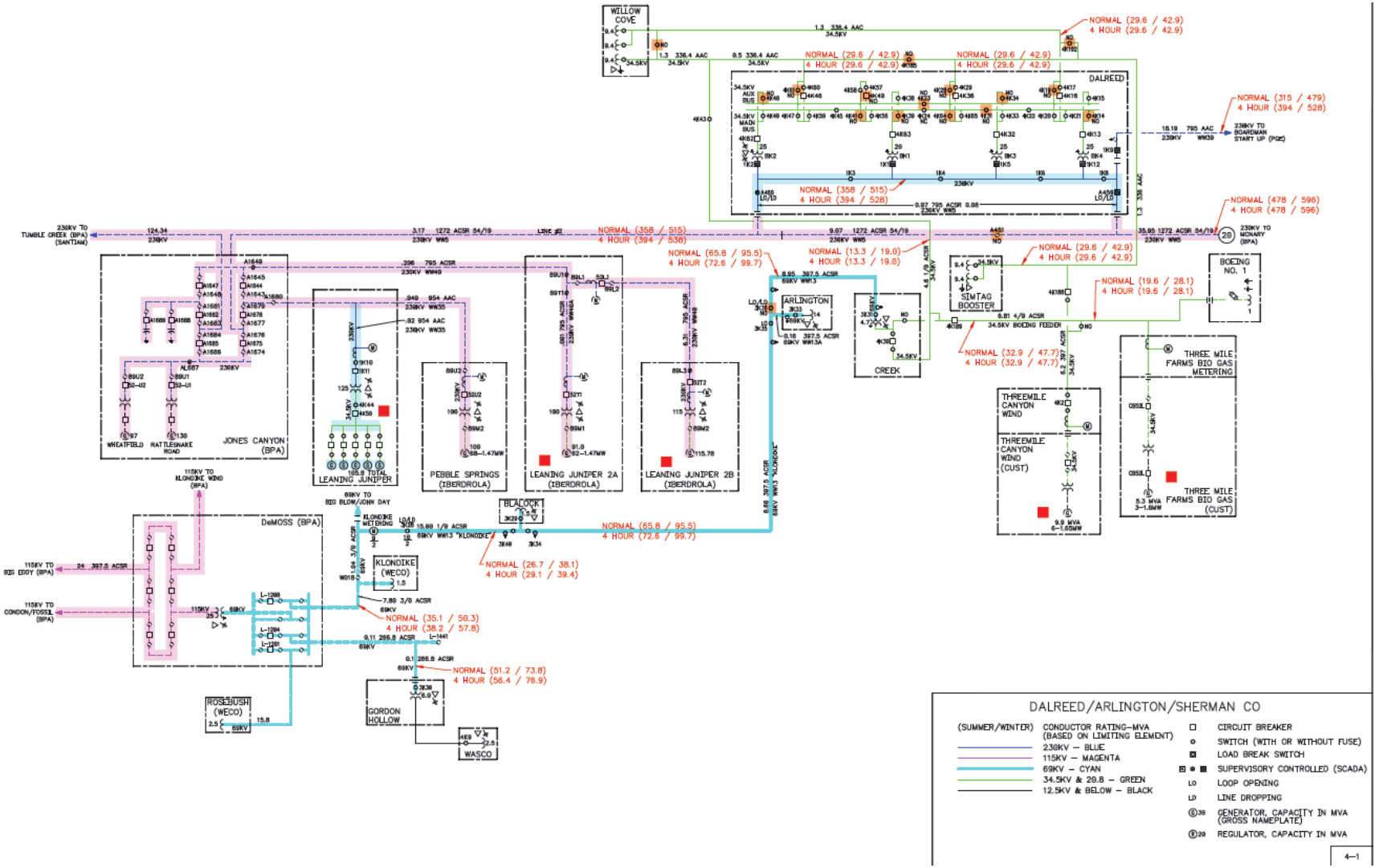
Transmission Sources

- 230 kV Source to Dalreed via Jones Canyon (BPA) and McNary (BPA)
- 69 kV Source from DeMoss (BPA)

Limited transfer capability between the Arlington 69 kV and Dalreed 34.5 kV systems via the Creek Substation

Local Generation at Threemile Canyon and Threemile Farms assumed offline during peak loading level.

Dalreed / Arlington / Sherman County System Overview



PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Pacific Power | Rocky Mountain Power

Area Load Growth – Dalreed

Base System Load

Season (Non-Coincidental)	System Load	Utilization
Summer 2018	45.7 MW	65.3%
Winter 2017-2018	5.9 MW	7%

Growth Rate

Season	Dalreed
Summer	0.0%
Winter	0.0%

Projected Load Growth

Season (Non-Coincidental)	System Load	Utilization
Summer 2021	46.3 MW (block load additions totaling 0.6 MW)	66.1%
Winter 2021-2022	5.9 MW	7%

Area Load Growth – Simtag & Willow Cove

Base System Load

Season (Non-Coincidental)	System Load	Utilization
Summer 2017	40.7 MW	86.8%
Winter 2017-2018	0.0 MW	0.0%

Growth Rate

Season	Simtag, Willow Cove
Summer	0.0%
Winter	0.0%

Projected Load Growth

Season (Non-Coincidental)	System Load	Utilization
Summer 2021	40.9 MW	87.3%
Winter 2021-2022	0.0 MW	0.0%

Area Load Growth – Arlington, Blalock, Gordon Hollow

Base System Load

Season (Non-Coincidental)	System Load	Utilization
Summer 2017	5.5 MW	54.2%
Winter 2017-2018	8.8 MW	72.3%

Growth Rate

Season	Arlington, Blalock, GH
Summer	0.0%
Winter	0.0%

Projected Load Growth

Season (Non-Coincidental)	System Load	Utilization
Summer 2021	5.5 MW	54.2%
Winter 2021-2022	8.8 MW	72.3%

Planned System Improvements

Study Period 2018 thru 2022/23:

Because there is a very limited load growth and an adequate existing system, there are not load driven upgrades needed through the end of the study period.

Contingencies

The Dalreed Substation is fed from the Jones Canyon (BPA) to McNary (BPA) 230 kV line and will be without power with the loss of the line. After it is determined which side of the Dalreed Substation the fault is on, open the appropriate switch in Dalreed and re-energize the substation. Both 230 kV sources easily have the capacity to serve the entire substation. In the unlikely case of faults on both sides of the line, repair the source with the quickest correction time and re-energize.

With the addition of a fourth power transformer at the Dalreed Substation, the substation has the capacity to serve the entire load off of the remaining three transformers. In the fall, winter, and early spring, for planned construction all load can be fed off of one transformer due to the pumping load being offline.

For the loss of the Big Eddy 115 kV line to DeMoss (BPA) or a loss of the 115 to 69 kV transformer at DeMoss (BPA), use the Creek Substation to feed the 69 kV system from the 34.5 kV feeder fed from Breaker 4K46 out of the Dalreed Substation. The ability to transfer load is good for both the summer and winter loading conditions.

Contingencies

For the loss of the Dalreed Substation or a permanent fault on the 34.5 kV system beyond Breaker 4K46, a portion of feeder load can be fed from the 69 kV source through the Creek Substation. Open switch 4K43 on the 34.5 kV line and serve up to 3.75 MVA at 0.82 PF for either the summer or winter seasons. Full pumping load at Willow Cove Bank 1 cannot be supported.

For the loss of a 34.5 to 4.16 kV, 9.375 MVA transformer at the Simtag or Willow Cove Substations, install the spare, which is located in the Dalreed Substation.

For the loss of a power transformer at the Arlington, Blalock or Gordon Hollow Substations, install an available mobile transformer (115 x 69 – 20.8 x 12.47 x 4.16 kV 10.2 MVA mobile located in Portland).

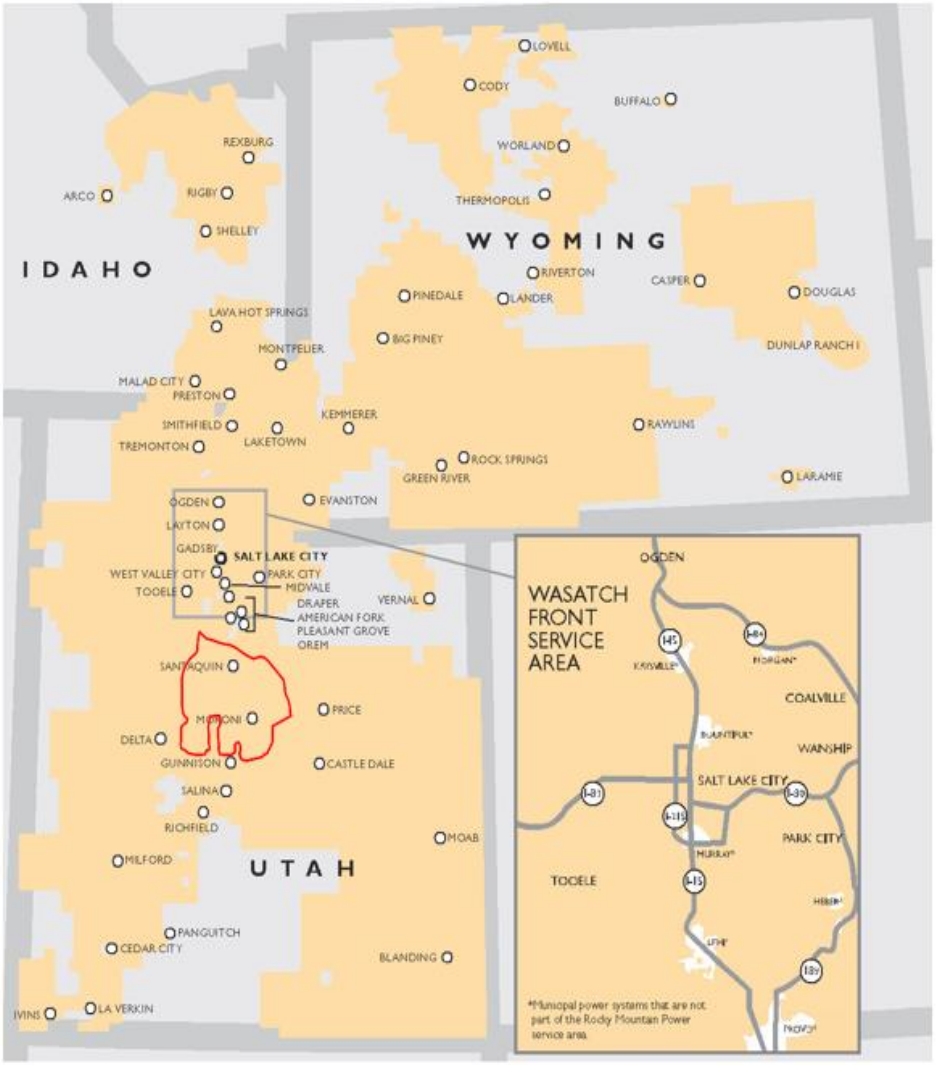
Dalreed / Arlington / Sherman County Area Study

- Any Questions?

Nebo Area Study

Jake Maxfield

Nebo Study Findings



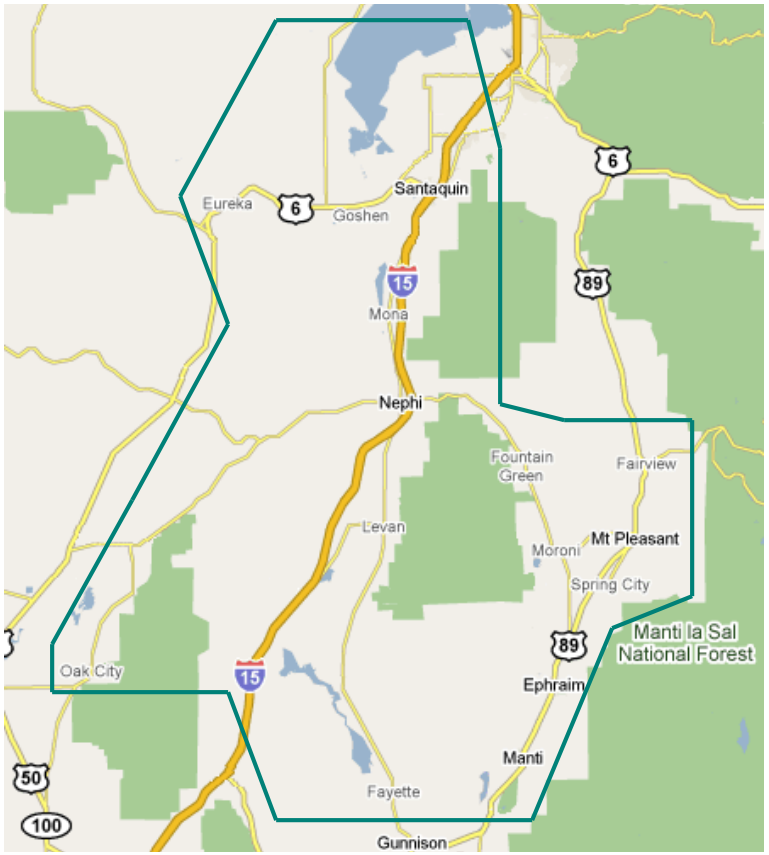
Area Planner: Nathan Wilson

Kicked off by: Jake Maxfield

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

Pacific Power | Rocky Mountain Power

Nebo System Overview



- Nebo Study encompasses parts of Millard, Juab, Utah and Sanpete counties
- Major communities are Santaquin, Nephi, Manti, Ephraim and Moroni
- Municipalities in the area include Ephraim, Fairview, Levan, Manti, Mt. Pleasant, Nephi, Oak City and Spring City

Nebo Study Information

- Main transmission sources into the area include multiple 345 kV lines and one 138 kV line originating at Spanish Fork substation
- Local generation includes 676 MW of PacifiCorp and third-party owned generation
- The area has 29 PacifiCorp owned substations
- Area transmission includes 138 kV and 46 kV
- The area is summer peaking

Nebo Load Growth

- Base System Loads
  - Summer 2018: 100 MVA
  - Winter 2017-18: 97 MVA
- Growth
  - Average Summer: 1.6%
  - Average Winter : 1.2%
- Projected System Loads
  - Summer 2022: 114 MVA
  - Winter 2021-22: 103 MVA
- Area Utilization Factor: 58%
- The area is summer peaking

Nebo N-0 Conditions

There were no issues identified under N-0 conditions

Nebo N-1 Conditions

There were no issues identified under N-1 conditions

Any questions or comments?

Attachment K
2016-17 Biennial Planning Cycle
Q3 Public Meeting

September, 2018

PacifiCorp

Q & A Session

Contact Information – Link to PacifiCorp OASIS:
http://www.oasis.oati.com/ppw/index.html

For Attachment K related comments\questions, address your requests to:

TransmissionPlanningProposal@PacifiCorp.com


QUESTIONS