Northwest Power and Conservation Council

May 25, 2011

MEMORANDUM

TO: Council Members

FROM: Charlie Grist

SUBJECT: Update on Centralia Coal Plant Retirement Agreement

Howard Schwartz will update the Council on the key provisions of recent Washington legislation to phase out operation of the 1,400 MW Centralia Power Plant located in Centralia, WA. The legislation specifies the retirement of one unit by 2020 and the second unit by 2025. Other provisions establish terms and conditions for mitigation of local economic impacts and treatment of power sales from the plant during the transition.

One issue that has surfaced in association with the closure is the effect that it would have on the transmission grid, including transmission plans for the area. Jeffrey Miller will brief the Council on a study done on the impacts of plant shut-down on the transmission system. Mr. Miller is Vice President and Manager of Planning for Columbia Grid, which conducted the study on transmission system impacts. The study, completed in April 2011, identified the technical transmission system issues associated with the planned closure of the Centralia Power Plant. Whether or not these issues will be a concern depends largely on the location of the replacement generation for Centralia.

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Washington Legislation to Close Centralia Coal Plant

Howard Schwartz

Washington State Staff, NW Power and Conservation Council/WA Department of Commerce Energy Office

Council Meeting

Whitefish, MT

June 7, 2011

Current Status of Centralia Coal Plant

- In service 1972 & 1973. Multiple PNW utility owners
- Originally mine mouth coal. Coal now imported
- Purchased by TransAlta from PNW utilities in 2000
- Two units; total 1450 MW total (both units)
- Has been producing about 1,000 aMW annually
- Operates as a merchant plant
  - Sells into electricity market on short-term contracts
- Long-term (+5 yr)contracts to WA utilities prohibited by Washington's Emissions Performance Standard

Key Provisions (I) of TransAlta Centralia Coal Plant Shut Down Bill (ESSB5769)

- Close one boiler by 2020; second by 2025
- TA and State to provide economic development assistance to Lewis County;
- Encourage replacement natural gas generation in Lewis County
- TransAlta will install further emissions controls by 2013
  - Should forestall more stringent standards per negotiations with EPA
  - If more stringent standards are imposed, TA is relieved of obligations under the bill.

Key Provisions (2) of TransAlta Centralia Coal Plant Shut Down Bill (ESSB5769)

- Amend WA Energy Performance Standard (EPS)
  - Allow long-term purchases by WA utilities of coal-based "transition power" through 2025
  - "Transition power" is electricity from a coal plant in WA that is scheduled to close by 2025
- UTC to allow partial treatment of power purchase as capital investment
  - Allow rate of return qualifying purchases
  - Only if the power purchase is competitive with other power supply options

Why the Deal?

- Governor Gregoire's 2009 Executive Order on Climate Change started negotiations with TransAlta to reduce emissions at coal plant
- TransAlta's desire for regulatory certainty
- Environmentalist's desire for certainty regarding closure
- Local economic pain put into the future with opportunity to mitigate much of it
- Persistence by legislators and negotiators

What Each Achieved

- Governor: Implements the Executive Order, closes coal plant with agreement of company, big progress toward green house gas targets.
- TransAlta: Regulatory certainty, possibility of long-term power sales contracts, ability to stay in Washington power market long term via new gas
- Environmental community: Certainty of coal retirement, prototype for future campaigns
- Local community: Slow closure, financial assistance for new economic development, good chance of continued TA presence

Next Steps

- Governor and TransAlta to execute MOA to lock in provisions of the bill and implement details
- Further investigation of transmission consequences of plant closures (See presentation by Columbia Grid)
- Exploration of timetable for new generation with potential developers, especially TA
- Start development of local economic assistance program

The Effect of the Centralia Power Plant Closure on the Grid

Northwest Power and Conservation Council Meeting
Whitefish Montana
June 2011

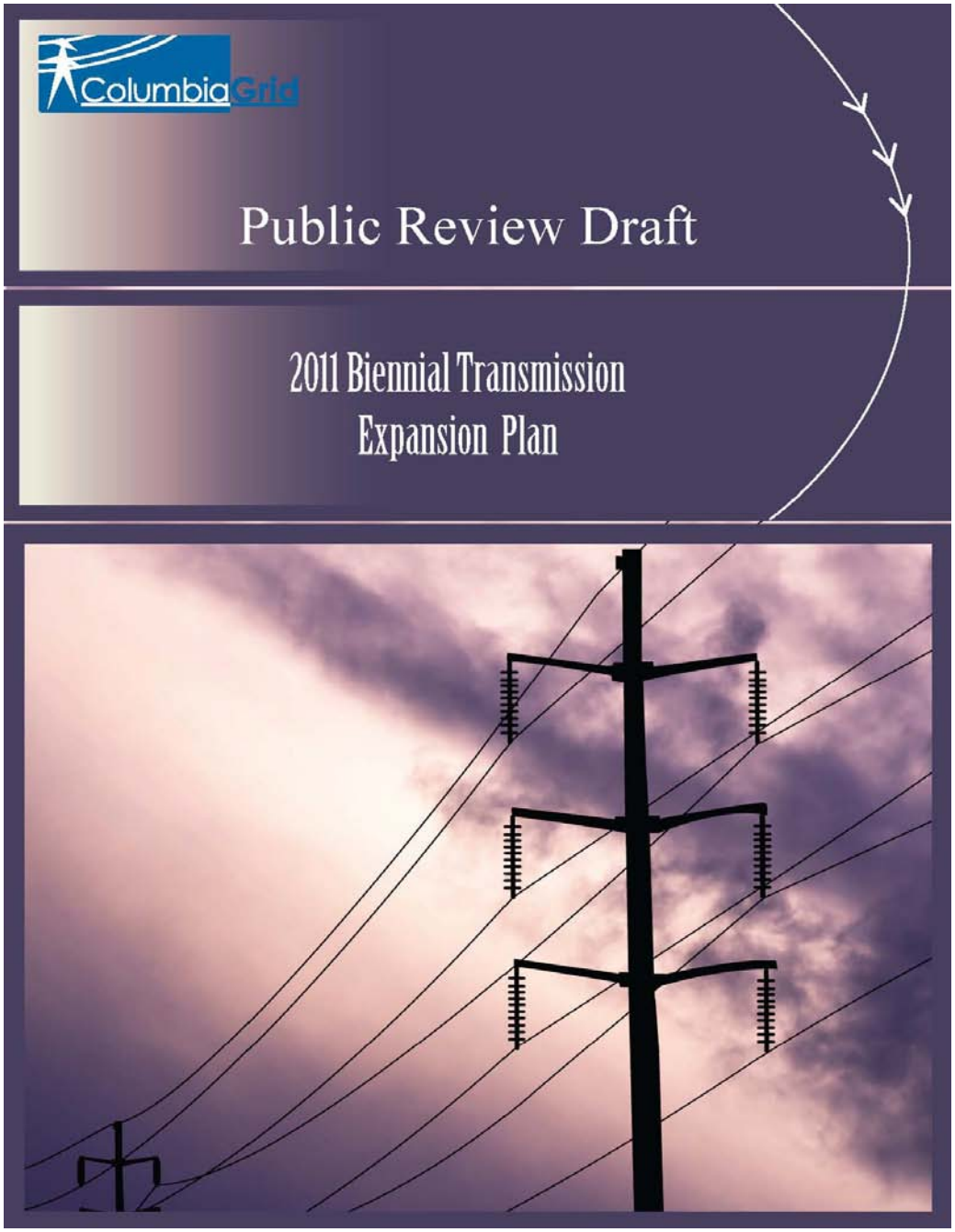
Jeffrey Miller

ColumbiaGrid

- Nonprofit membership corporation formed in 2006
- Independent Board
- Formed to improve reliability and the efficient use of the grid
- Coordinates the use and expansion of the grid through open and transparent processes.

Members/Participants

- Avista
- Bonneville Power Administration
- Chelan County PUD
- Cowlitz County PUD
- Grant County PUD
- Puget Sound Energy
- Seattle City Light
- Snohomish County PUD
- Tacoma Power
- Tonbridge Power
- Standing invitation to others



ColumbiaGrid Transmission Planning

Independent staff

Open stakeholder process

Develops Biennial Transmission Expansion Plan

Conducts studies focused on specific issues

Cost allocation

The Effect of the Centralia Power Plant Closure on the Grid

ColumbiaGrid

April 28, 2011

- Initiated in November of 2010
- Anyone was welcome to participate
- Weekly meetings
- Report approved unanimously

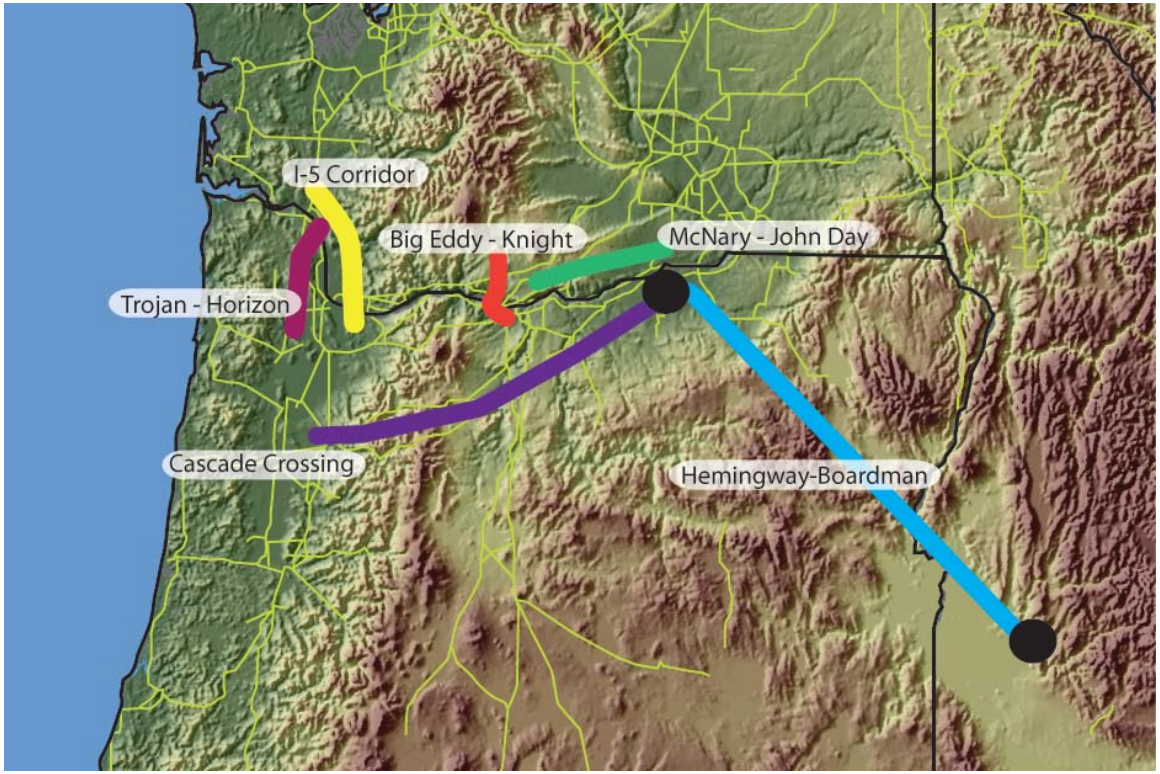
Conditions Studied

- 5 and 10-year Winter and Summer Peak
- 5-year Light Autumn
- High Transfers to and from British Columbia

Various Sources for Replacement Generation were Considered

1. Replace Centralia with power from California.
2. Replace Centralia with power from eastern Washington/Idaho (e.g. Lower Snake).
3. Replace Centralia with power from new local generators at Kalama (700 MW) and Grays Harbor (700 MW).
4. Replace Centralia with power from new local generators on site at Centralia (2-700 MW combined cycle plants).
5. Replace Centralia partially with power from a new local generator on site at Centralia (1-700 MW combined cycle plant) and partially with generation from eastern Washington/Idaho (e.g., Lower Snake).
6. Replace Centralia by increasing generation at other west-side plants.
7. Replace Centralia by increasing all Northwest generators in proportion to their rating up to their maximum capacity.
8. Replace Centralia by increasing all WECC generators in proportion to their rating up to their maximum capacity.

Potential Major Transmission Projects were Considered



Only McNary-John Day was included in the initial simulations

Results: Three Main Transmission Issues

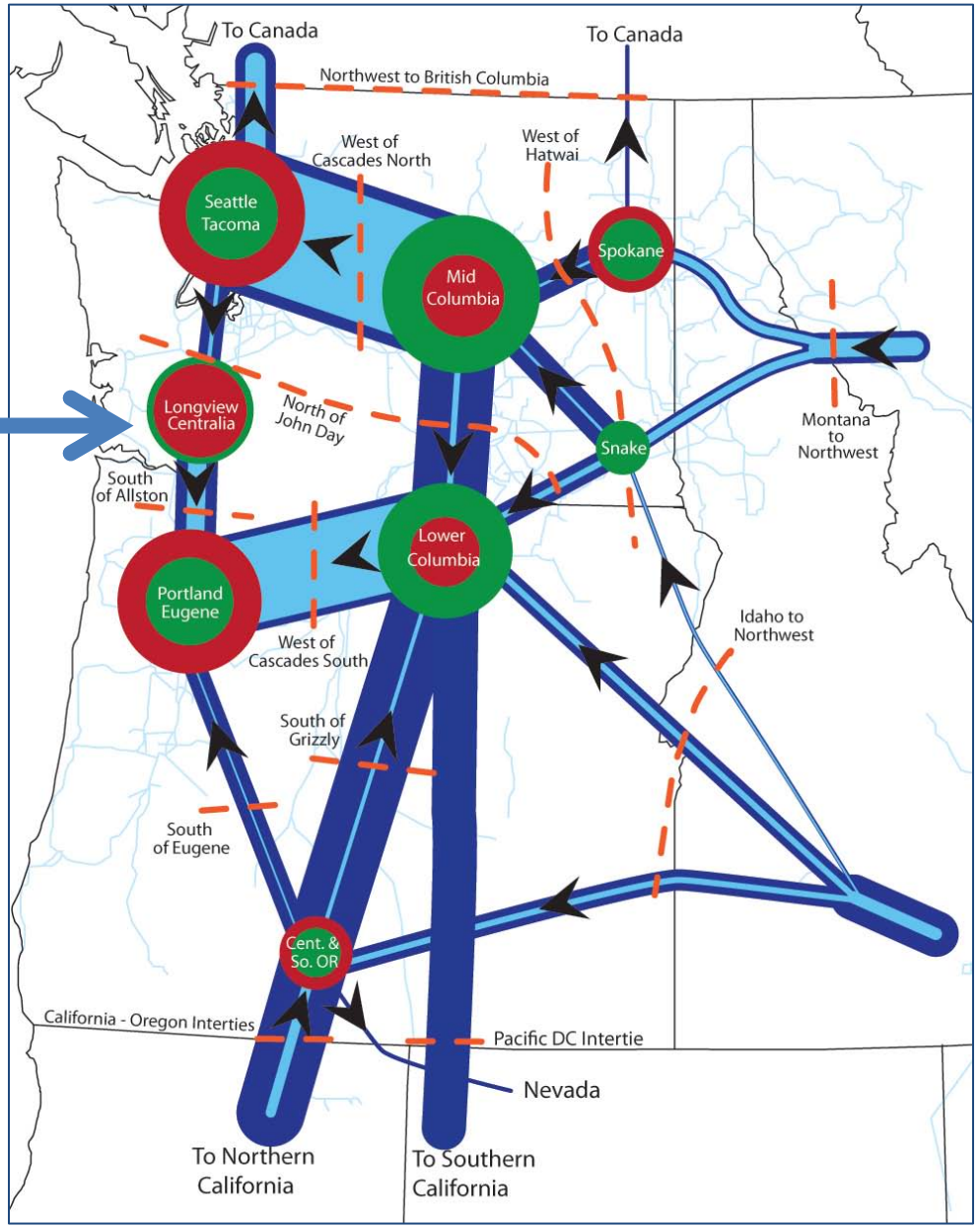
1) Overloading concern's in the Portland area during light load periods with high level's of transfers to British Columbia and low level's of west-side gas generation
2) Overloading concern's in the Tacoma/Olympia area (Raver-Paul) during high level's of transfers from British Columbia and low level's of west-side gas generation
3) Increased usage of the West of Cascades North and South transmission paths which can be a concern during winter peak load periods, particularly during high level's of transfers to British Columbia

Grid Overview

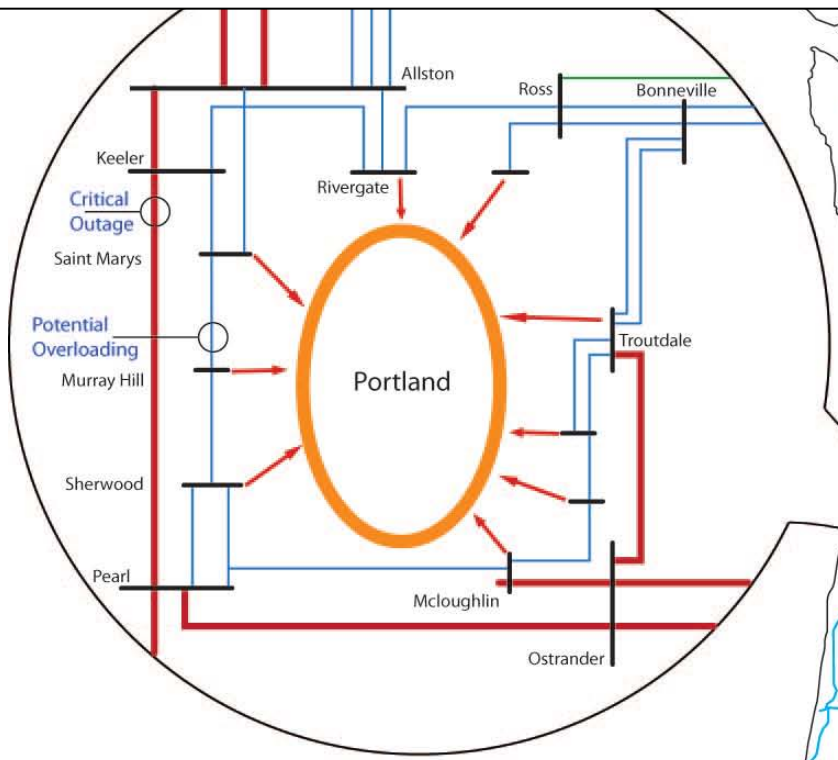
Centralia Location

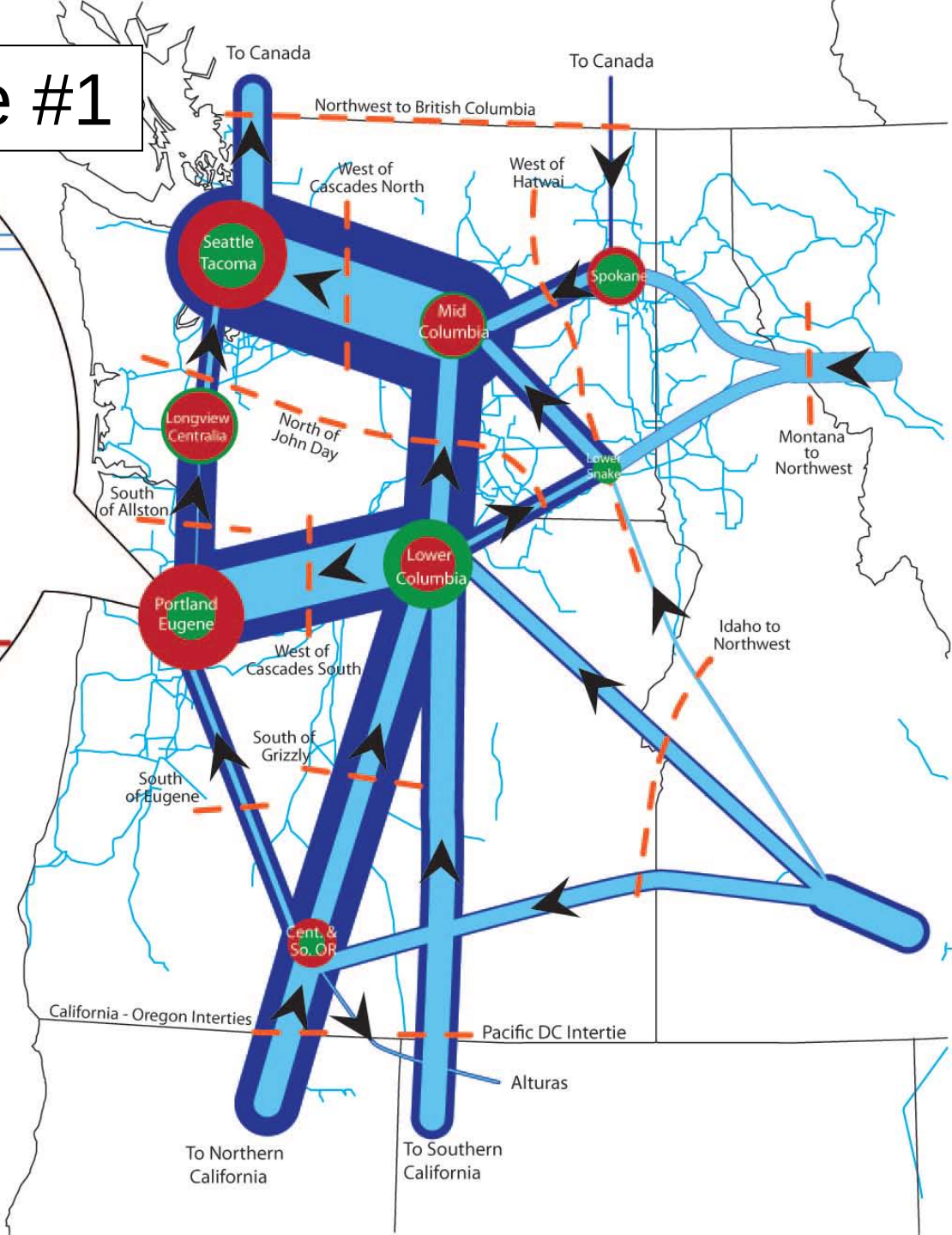
Typical Winter Conditions

- Generation
- Load
- Transmission Capability
- Transmission Loading
- Path Definition
- Path Flow Direction



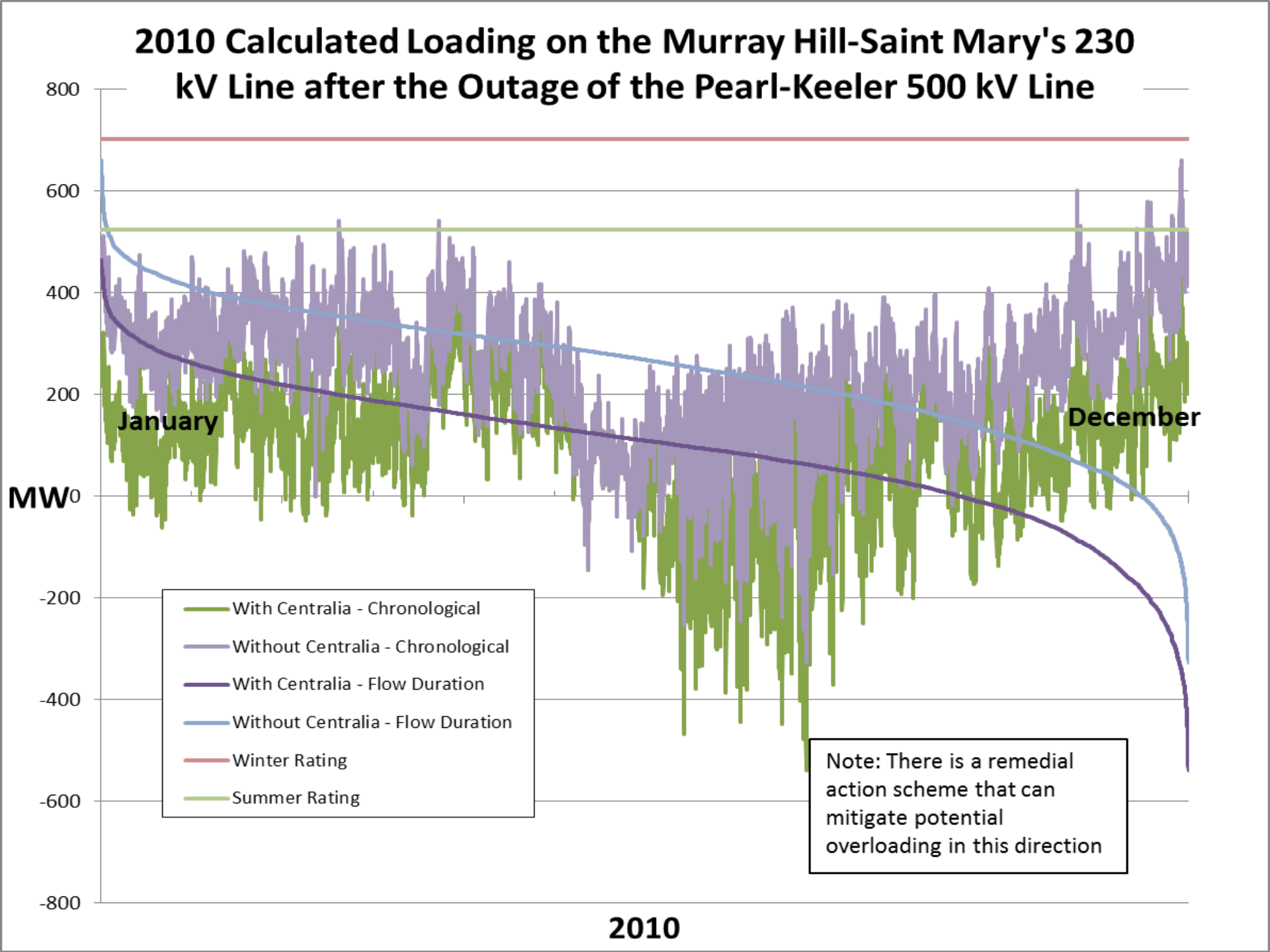
Portland Area Issue #1



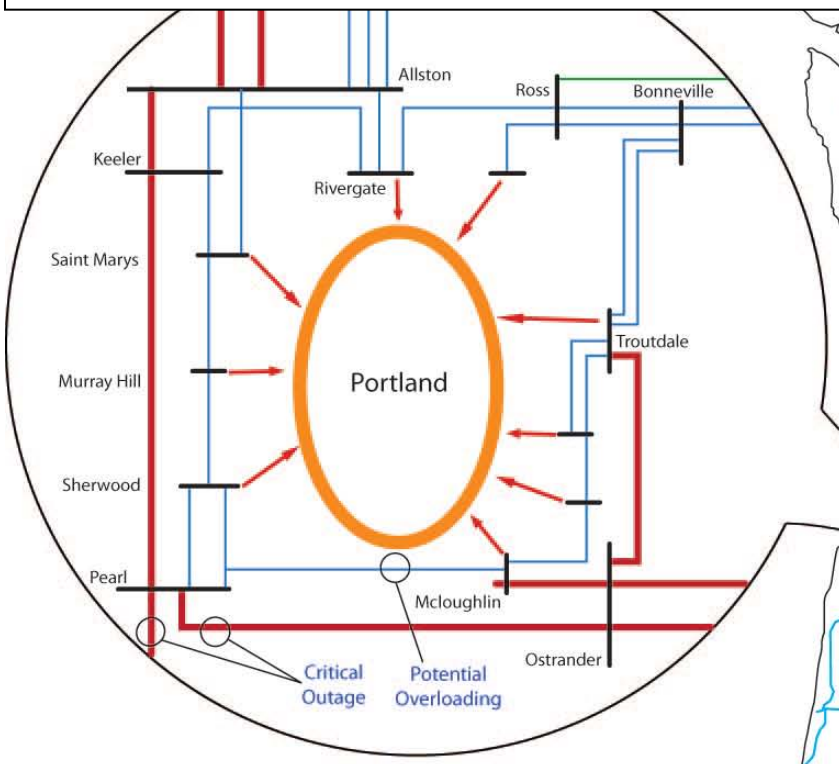


Concern: An outage of the Keeler-Pearl 500 kV line can overload the Murray Hill-Saint Mary's 230 kV line and some underlying 115 kV lines

Conditions: High south to north transfers and light load conditions


2010 Calculated Loading on the Murray Hill-Saint Mary's 230 kV Line after the Outage of the Pearl-Keeler 500 kV Line
800
600
400
200
0
-200
-400
-600
-800
MW
January
December
2010
With Centralia - Chronological
Without Centralia - Chronological
With Centralia - Flow Duration
Without Centralia - Flow Duration
Winter Rating
Summer Rating
Note: There is a remedial action scheme that can mitigate potential overloading in this direction

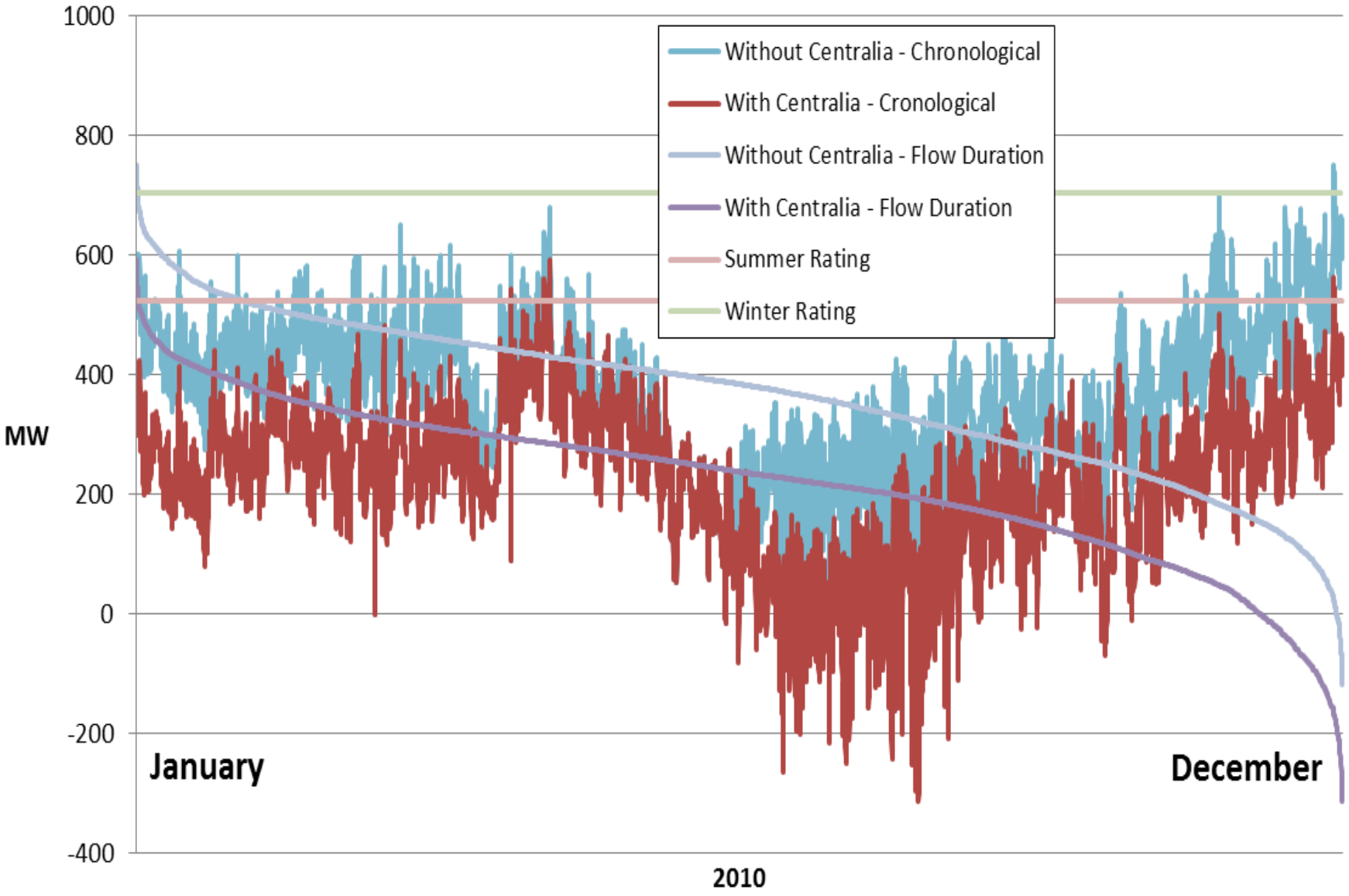
Portland Area Issue #2



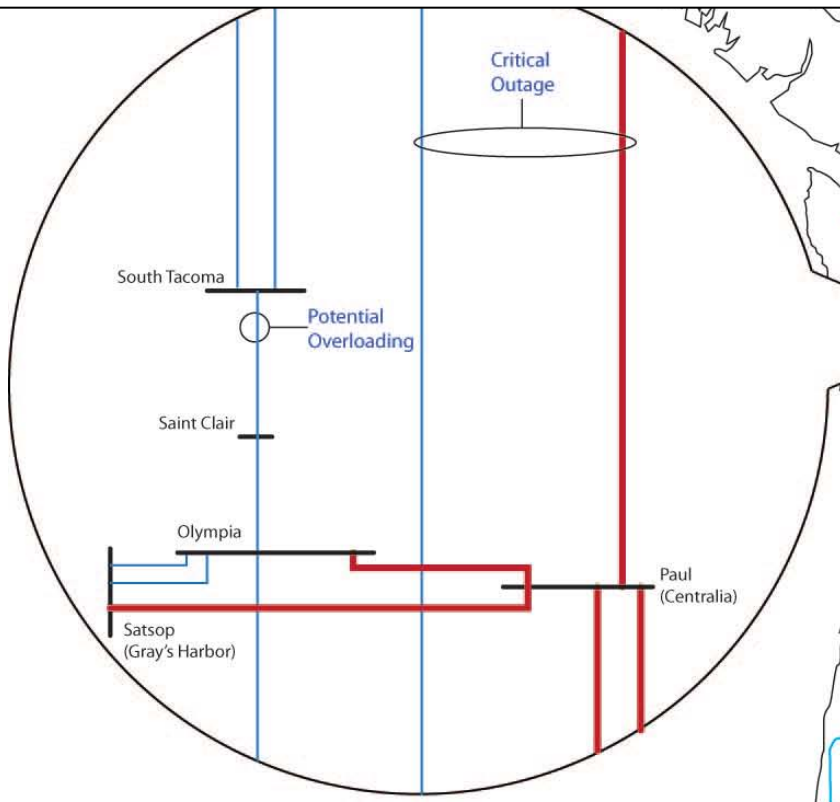
Concern: An outage of the Pearl-Marion and Pearl-Ostrander 500 kV lines can overload the McLoughlin-Pearl 230 kV line.

Conditions: High south to north transfers

2010 Calculated Loading on the McLoughlin-Pearl 230 kV Line With the Marion-Pearl and Ostrander-Pearl 500 kV Lines Out



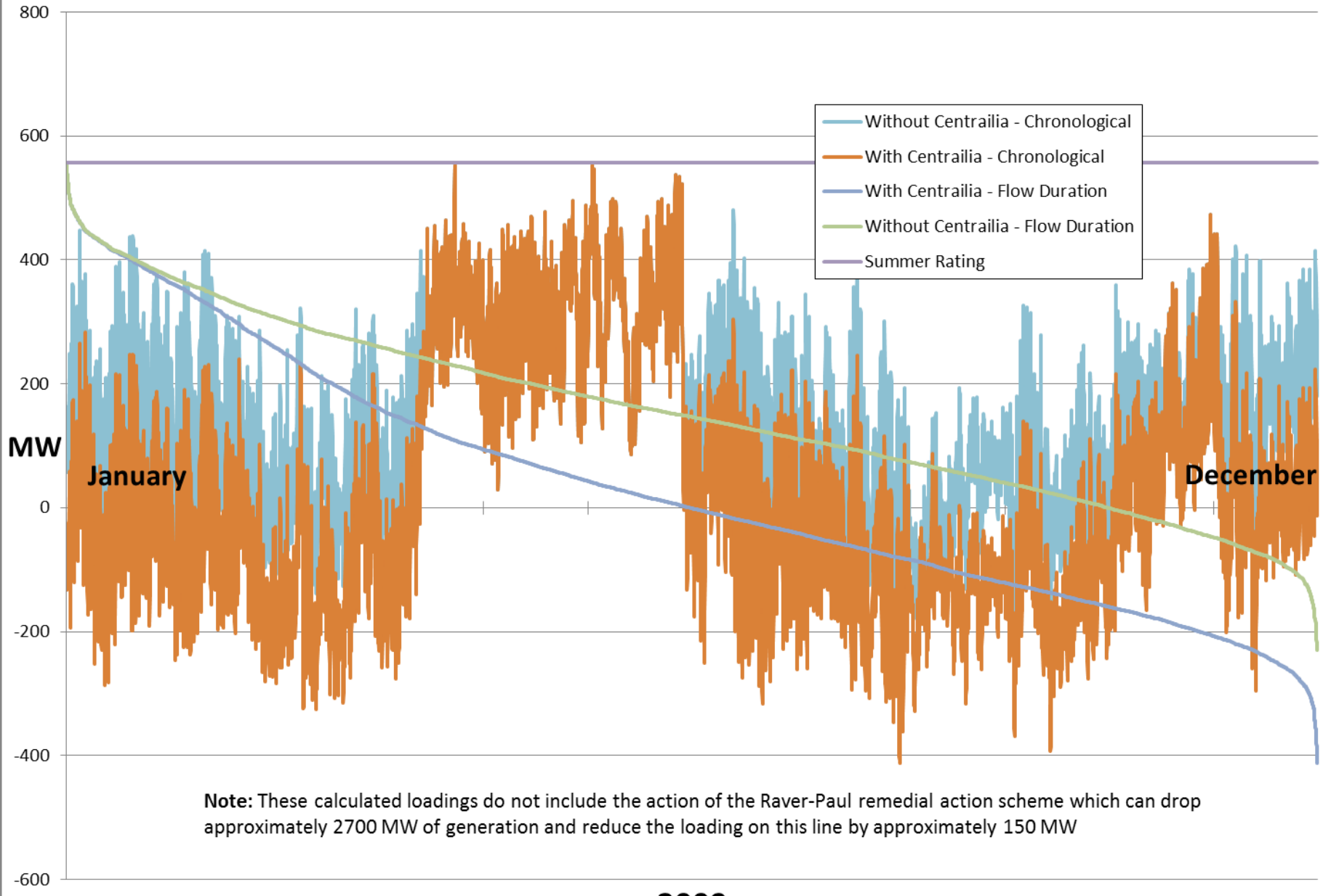
Raver-Paul Issue



Concern: An outage of the Raver-Paul 500 kV line and the Covington-Chehalis 230 kV line can overload the South Tacoma-Saint Clair 230 kV line and some underlying 115 kV lines

Conditions: High north to south transfers

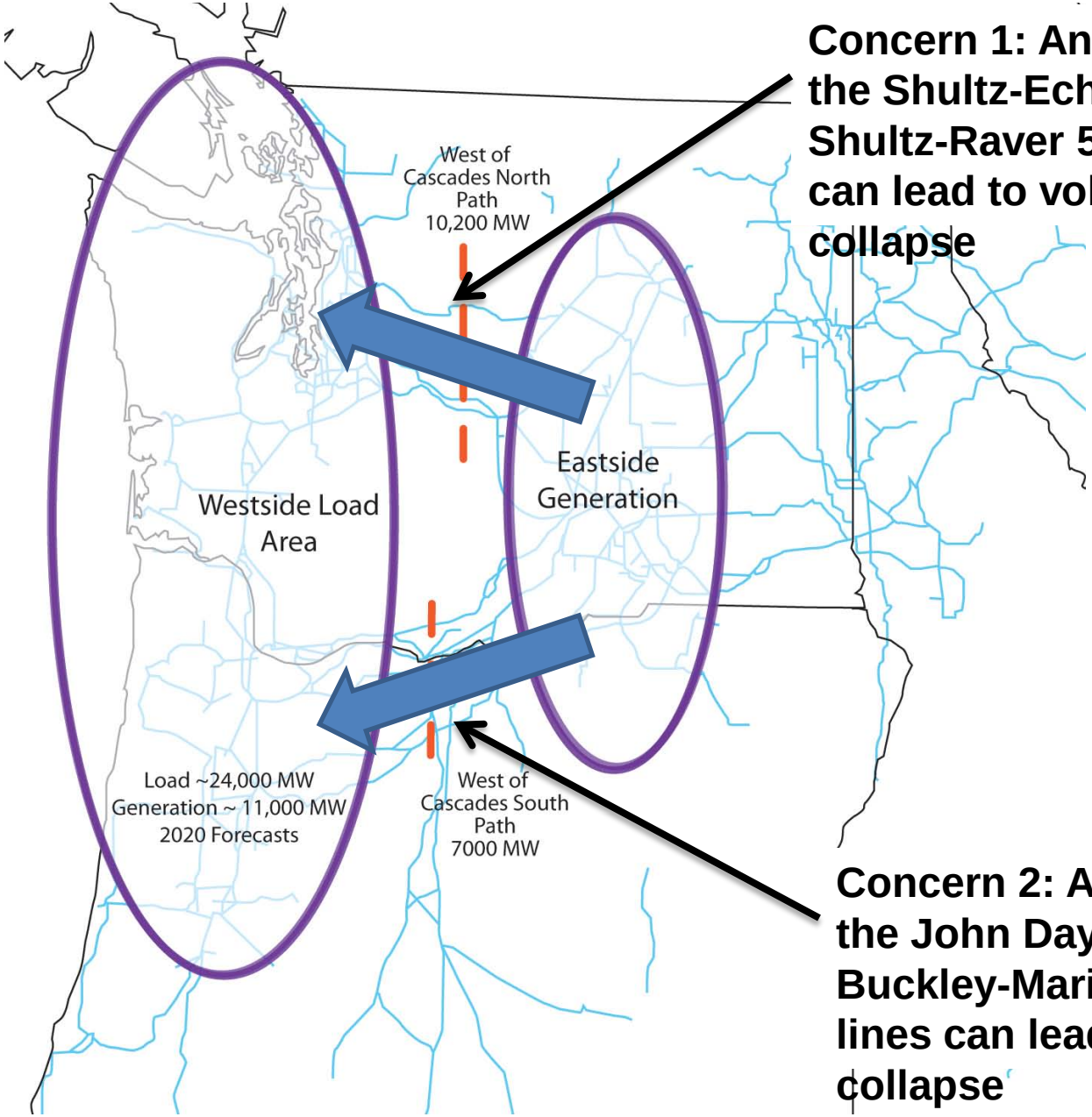
2009 Calculated Loading on the South Tacoma-Saint Clair 230 kV line following the outage of the Raver Paul 500 kV line and Covington-Chehalis 230 kV line



Note: These calculated loadings do not include the action of the Raver-Paul remedial action scheme which can drop approximately 2700 MW of generation and reduce the loading on this line by approximately 150 MW

West of Cascades Paths

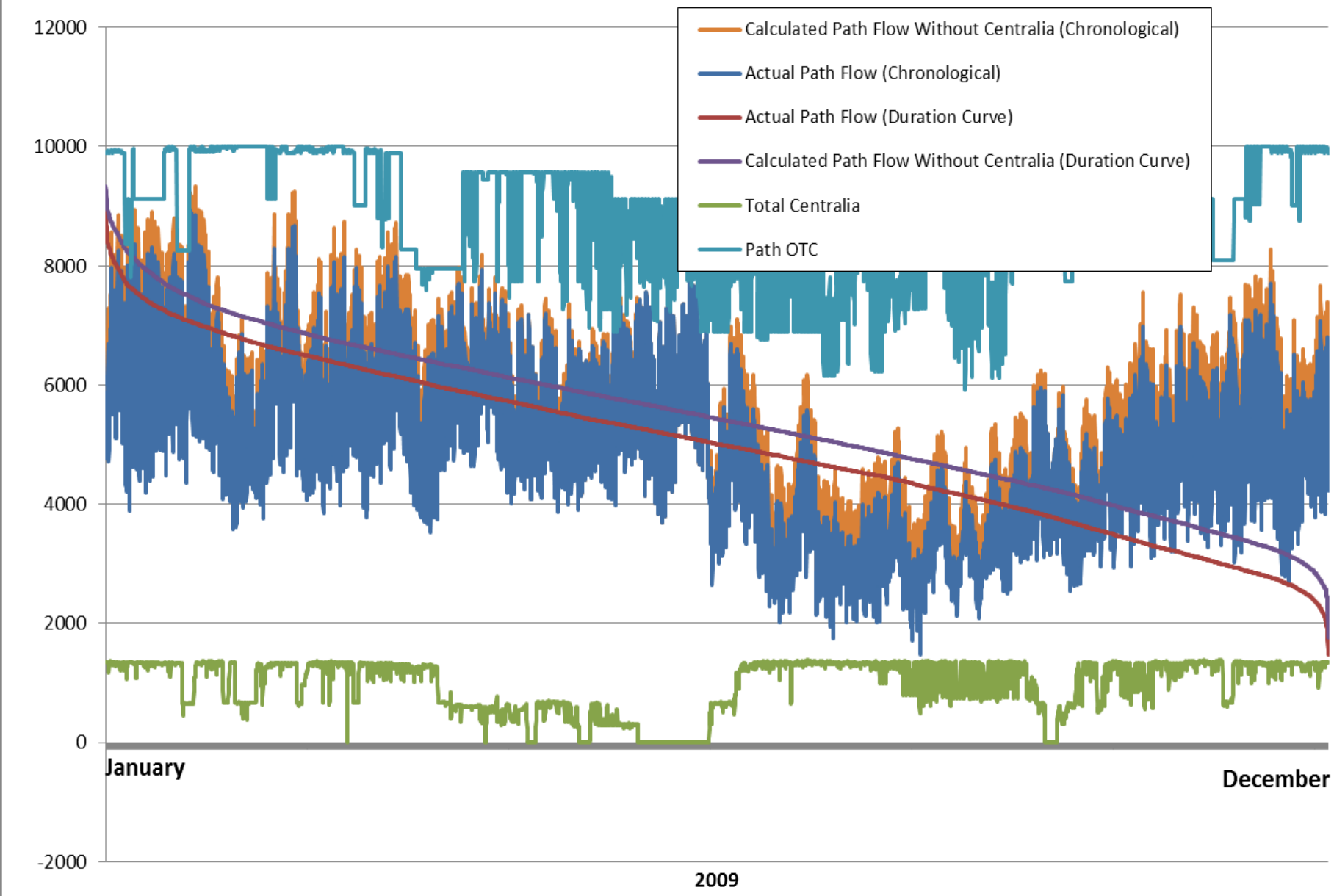
- Only a concern during the winter peak load period
- The West of Cascades North path was found to be more limiting than the West of Cascades South path
- The Total Transfer Capability of the paths will not change significantly with the closure of Centralia
- Path usage can be significantly affected if the replacement resource is on the east side of the Cascades
  - The West of Cascades North path could see increases of 200-450 MW following the outage of each Centralia unit if replaced from the east.
    - The further north the replacement (Chief Joseph versus COI), the greater the impact.
    - Replacing with resources from the John Day area would lead to an increase in West of Cascades North flow of approximately 300 MW for each Centralia unit.
- Additional west-side resources would help defer the need for new transmission investment across the Cascades



Concern 1: An outage of the Shultz-Echo Lake and Shultz-Raver 500 kV lines can lead to voltage collapse

Concern 2: An outage of the John Day-Marion and Buckley-Marion 500 kV lines can lead to voltage collapse

2009 Calculated Effect of Centralia Closure on West of Cascades North Path



Primary Conclusion

- The most significant impact identified was increased loading on the West of Cascades transmission paths if Centralia generation is replaced with generation east of the Cascades mountains.
  - The impact would be to advance the need for a new transmission line over the Cascade Mountains by several years.