



November 18, 2015

David Walker  
Engineer/Analyst  
Wyoming Public Service Commission  
2515 Warren Ave, Suite 300  
Cheyenne, WY 82002

Subject: Wyoming PSC Reliability Question Concerning EPA 111(d)

Dear Mr. Walker:

The Northern Tier Transmission Group (NTTG) received your request on behalf of the Wyoming Public Service Commission (PSC) concerning loads and resources within the NTTG footprint or western interconnection with respect to the direction outlined in the Environmental Protection Agency's (EPA) Clean Air Act Section 111(d).

NTTG understands the request is to assess whether or not the following set of assumptions would be catastrophic for reliability in the NTTG footprint or the western interconnection:

- All existing coal-fired generation ceased by 2027
- All existing gas-fired generation operating at 75% of capacity by 2027, assume no new gas-fired generation
- Renewable generation may be added at any location, but must be supported by existing facilities

This request was examined at a high level by the NTTG Technical Work Group (TWG) from a load and resource perspective to determine what the resource shortfall would be, if any, under these assumptions using data readily available to the TWG. The TWG examined three 2024 Western Electricity Coordinating Council (WECC) power flow cases produced by the TWG for development of the 2014-2015 NTTG Regional Transmission Plan. The three power flow cases were developed using load levels and dispatch of generation based on output of the WECC Transmission Expansion Planning Policy Committee (TEPPC) 2024 production cost model. The power flow cases represent the following system conditions:

1. Conditions with maximum NTTG footprint net export
2. Peak coincident summer load within NTTG footprint
3. Peak coincident winter load within NTTG footprint

Resource surplus/deficit levels in the Northwest U.S. (Washington, Oregon, Idaho, Montana, Wyoming, northern Nevada & Utah) were calculated using data from each of the three cases using the following assumptions:



- All coal-fired generation offline
- All existing and planned gas-fired generation online with output equal to 75% of capacity and 100% capacity
- All other existing and planned resources (e.g. hydro, wind, solar) dispatched as originally in the power flow cases

Using these assumptions, there will be severe generation deficits by the year 2024 in the Northwest U.S. Red numbers in the tables below are expected deficit numbers, in MW, for each scenario:

**2024 Totals for Northwest Area - Original Case Data**

	NTTG Case Description		
	Max Export	Summer Peak	Winter Peak
Load MW	38,748	42,673	43,305
Total Gen MW Available	46,084	46,995	44,116
Surplus/(Deficit) MW	7,336	4,322	811

**2024 Totals for Northwest Area - No Coal, 75% Gas\***

Coal Gen MW Removed	10,782	10,679	10,181
Gas Gen MW Added	790	534	3,133
Total Gen MW Available	36,092	36,850	37,068
Surplus/(Deficit) MW	(2,656)	(5,823)	(6,237)

\*No coal, gas output at 75% maximum, all other resources dispatched as originally in case

**2024 Totals for Northwest Area - No Coal, 100% Gas\*\***

Coal Gen MW Removed	10,782	10,679	10,181
Gas Gen MW Added	4,357	4,100	6,700
Total Gen MW Available	39,659	40,417	40,635
Surplus/(Deficit) MW	911	(2,256)	(2,670)

\*\*No coal, gas output at 100% maximum, all other resources dispatched as originally in case

These results are based on readily available NTTG planning data and are therefore limited to a load and resource balance perspective only. There are other reliability-related concerns not taken into account including:

- Requirements for holding operating or planning generation reserve capacity
- Issues due to transmission constraints or electrical system performance under normal or contingency conditions
- Assessment to determine if capacity of existing gas pipelines is sufficient to operate all gas units at 100% at the same time
- Growth of load between 2024 and 2027 that may result in larger resource deficits



If you have any questions concerning these results, please contact the NTTG Planning Committee.

Sincerely,

A handwritten signature in black ink that reads "David M. Angell".

David M. Angell

2014-2015, Chair NTTG Planning Committee