Northwest **Power** and **Conservation** Council

March 31, 2015

MEMORANDUM

TO: **Power Committee**

FROM: **Tom Eckman**

SUBJECT: **Reporting Power System Carbon Footprint**

BACKGROUND:

Presenter: Tom Eckman

Summary: The staff is seeking Council guidance on the criteria to use in determining which generating facilities to include when reporting Northwest Power System carbon dioxide emissions from Regional Portfolio Model (RPM) scenario analysis. Staff will present three alternatives:

1. Report the carbon dioxide emissions from plants currently assumed to be dispatched to serve Northwest loads in the RPM and GENESYS.
2. Report the carbon dioxide emissions from plants affected by the EPA's proposed 111(b) and 111(d) carbon emissions reduction regulations.
3. Report the carbon dioxide emissions from plants whose cost is being paid for by consumers in Northwest states which are subject to 111(d), even if they are not dispatched to meet Northwest loads.

Relevance: Establishing a consistent definition of the Northwest power system's carbon footprint is required so that RPM results across scenarios can be compared. Moreover, stakeholders need a clear definition of the criteria

used by the Council for reporting forecast carbon dioxide emissions so they are aware of the comparability with other policy or regulatory goals.

Workplan: 1. B. Develop Seventh Power Plan and maintain analytical capability. Complete metrics/outputs for RPM

Background: One of the many metrics reported by Council's Regional Portfolio Model (RPM) is the emissions of carbon dioxide from the burning of fossil fuels to produce electricity. Collectively, the total carbon emissions are referred to as the NW Power Systems "carbon footprint." Unfortunately, there is not a standard definition of the boundaries of that footprint.

The RPM and GENESYS models use identical data sets for existing generating facilities. The criterion for including a specific generating facility in RPM and GENESYS modeling is that the plant is dispatched to meet Northwest load. As a result, carbon emissions from plants located Idaho, Montana, Oregon and Washington as well as those located in states adjoining the region that serve Northwest consumers are included in the RPM's "carbon footprint."

In contrast, under the Environmental Protection Agency's (EPA) proposed Clean Power Plan (CPP) regulations for existing power plants [111(d)] only those plants within the confines of the four Northwest states will be counted toward the state's carbon emission goals. This definition of the region's "carbon footprint" excludes plants in adjoining states that serve Northwest loads. For example, carbon emissions from the Jim Bridger coal plants in Wyoming and the North Valmy coal plant in Nevada would not be counted toward regional emissions limits. In addition, EPA's regulations would exclude carbon emissions from multiple non-utility owned generators, such as the Amalgamated Sugar and Weyerhaeuser co-generation facilities in Idaho and Washington that serve consumers in the region and whose emissions are also tracked in the RPM.

In addition to the RPM's and EPA's definitions of the NW power system's carbon footprint there is a third alternative. This definition of the region's carbon footprint would include all generating facilities whose costs are being recovered in Northwest retail revenues, regardless of whether the plants are dispatched to serve Northwest loads. This definition might be considered, because the cost of compliance with the EPA's proposed 111(d) regulation will be presumably be recovered on those same consumers. For example, Oregon and Washington consumer pay for a portion of the Dave Johnston coal plant in Wyoming even though it is not dispatched to meet Northwest loads. However, any 111(d) compliance cost imposed on the Dave Johnston plant would affect Oregon and Washington consumers.

Staff recommends that the Council adopt the RPM's definition of the region's carbon footprint and provide emissions data for generating

resources consistent with those affected by EPA's 111(d) regulations within the four Northwest states. The staff does not believe that including the emissions of plants that are not dispatched to meet Northwest loads in its analysis would provide useful information since changes to their dispatch as a result of EPA's 111(d) regulations would not me modeled in the RPM.

Reporting Power Systems Carbon Footprint

March 7, 2015

Issue – A Consistent Definition of What's Included in NW Power System's Carbon Footprint is Needed

- Establishing a consistent definition of the Northwest power system's carbon footprint is required so that RPM results across scenarios can be compared.
- Stakeholders need a clear definition of the criteria used by the Council for reporting forecast carbon dioxide emissions so they are aware of the comparability with other policy or regulatory goals.

Alternative Definitions

- Emissions from plants currently assumed to be dispatched to serve Northwest loads in the RPM and GENESYS.
- Emissions from plants affected by the EPA's proposed 111(b) and 111(d) carbon emissions reduction regulations located in NW States.
- Emissions from plants whose cost is being paid for by consumers in Northwest states which are subject to 111(d), even if they are not dispatched to meet Northwest loads (i.e., not modeled in RPM/GENESYS).

Alternative 1	Number of Plants	Modeled in RPM/GENESYS Nameplate Capacity (MW)
Total Thermal Plants	84	16,787
Coal	17	7,349
Natural Gas	57	9,329
Petroleum	10	109

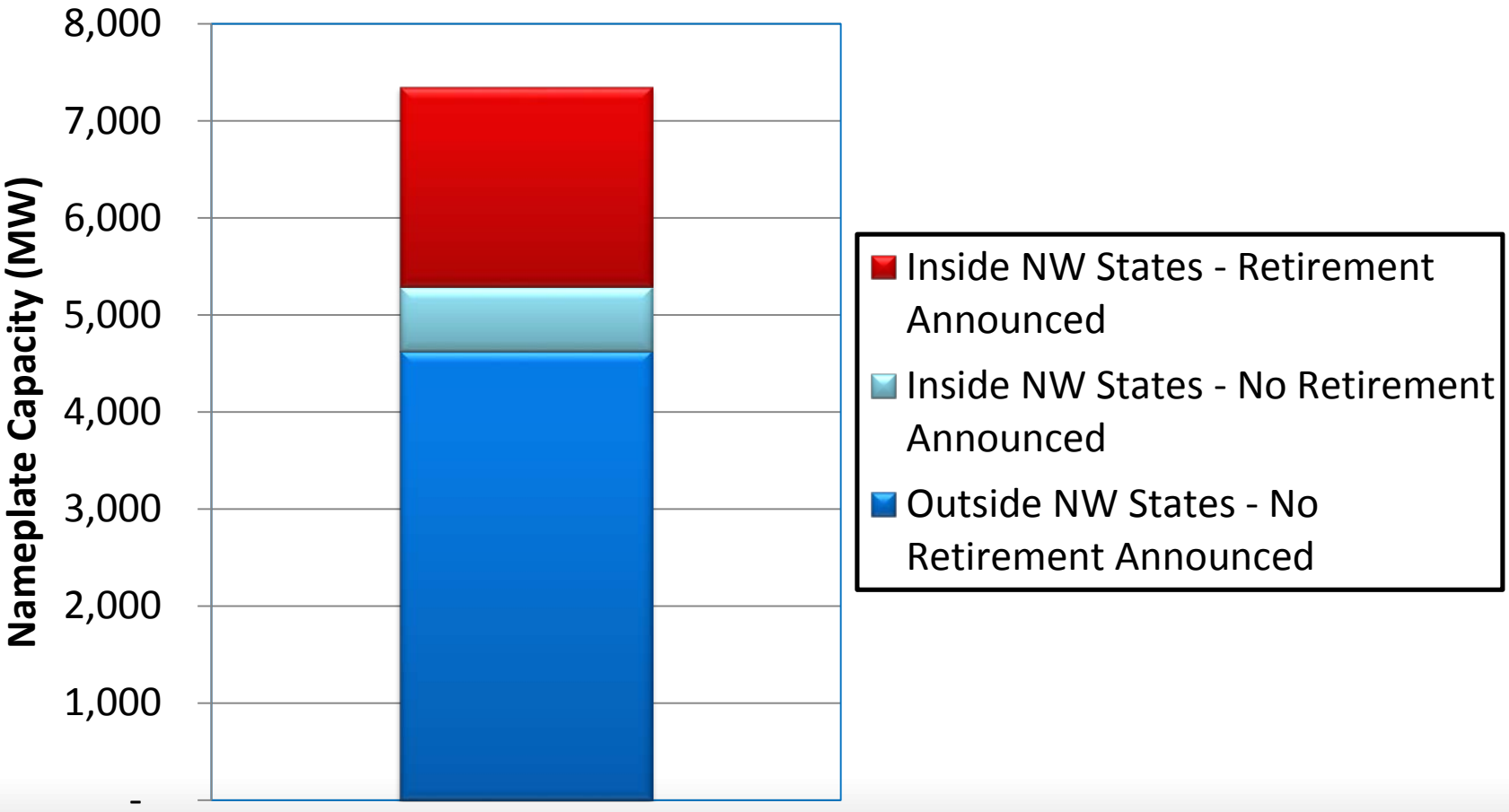
Alternative 2	Number of Plants	Affected by EPA 111(d) Located in NW States Nameplate Capacity (MW)
Total Thermal Plants	74	12,044
Coal	12*	4,827
Natural Gas	57	7,218
Petroleum	0	-

*Includes two coal plants (J E Corette and Lewis and Clark that not modeled in the RPM/GENESYS . Corrette plant is scheduled to retire in 2015.

Alternative 3	Number of Plants	Affected by EPA 111(d) Not Located in NW States and Not Modeled in RPM/GENESYS, but May Affect NW Consumers Nameplate Capacity (MW)
Total Thermal Plants	14	6,676
Coal	9	4,562
Natural Gas	5	2,114
Petroleum		-

Factors to Consider

Nearly two-thirds of the coal-fired generation capacity used in the NW is located outside the four NW States



Factors to Consider

Emissions from Out-of-Region Plants Aren't Driven by NW Electricity Demand

- While the cost of future 111(d) or other regulatory compliance may be borne NW consumers
  - Electricity demand inside the region does not determine the dispatch of these plants
  - Without being able to model these plants dispatch we cannot forecast their emissions under alternative carbon emissions policy scenarios

Staff Recommendation

- Report carbon dioxide emissions from all plants modeled in RPM/GENESYS including those not located within NW State boundaries whether or not they are affected by EPA's proposed 111(d) regulations
- Also report carbon dioxide emission from those plants modeled in the RPM/GENESYS located within the NW State boundaries that are affected by EPA's proposed 111(d) regulations
  - Excludes J E Corrette plant which is closing and Lewis & Clark (50 MW) in MT