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Comments to the Northwest Power and Conservation
Council regarding

Seventh Power Plan: Quantifiable Environmental Costs
and Benefits

By Alan Journet Ph.D.

Co-Facilitator; October 19th 2014

1a Should the Council also consider, in crafting the methodology, the residual effects a resource might have on the environment after compliance with environmental regulations?

There can be little doubt that the greatest threat facing humanity in the coming decades will be the consequences of our using the air as a free dumping ground for our carbon pollution. Future generations will pay dearly for our arrogance and uncaring approach to this dilemma.

The only way to address this looming disaster is to reduce our emissions of greenhouse gases. Using a market place approach to address the carbon pollution problem is probably the most likely procedure to receive support. This means that those of us using fossil fuels, the transportation and combustion of which results in carbon pollution, should be paying the cost of the emissions our actions cause.

The most important emissions contributing to the problem are carbon dioxide and methane, the latter causing some 35 – 85 times the problem of the former. Emission of these gases into our atmosphere causes global warming and a vast array of climate chaos events that directly or indirectly (through food prices, for example) cost all of us money.

1b Are there reasonable methods for quantifying the costs of such effects?

The Office of Management and Budget has calculated estimates of the social cost of carbon dioxide emissions through 2050 depending on various discount rates. The rate discounted to 2007 dollars with a middling discount rate of 3% is \$57 per ton of Carbon dioxide.

http://www.whitehouse.gov/sites/default/files/omb/inforeg/social_cost_of_carbon_for_ria_2013_update.pdf

Meanwhile, later EPA calculations suggest a middling discounted 2035 value of \$60 per ton of CO2 emitted calculated in 2011 dollars.

<http://www.epa.gov/climatechange/EPAactivities/economics/siscounted cc.html>

In both these calculations, however, one has to wonder whether the discount rate is appropriate since it assumes money spent now is devalued against the future. In this case, however, steps taken now are much more important than steps taken later – so

the appropriate Discount rate may be zero – or, indeed, a negative number. This would markedly elevate the social cost estimate.

2a A likely approach for the Seventh Plan, along with assuming continued compliance with state renewable portfolio standards, is to use regulations recently proposed by the U.S. Environmental Protection Agency to determine the environmental costs of carbon emissions. Under Section 111(b) of the Clean Air Act, EPA has proposed regulations to control the carbon emissions from new power plants. Should the Council estimate the costs of compliance with the 111(b) proposed regulations and use those estimates as the environmental costs associated with carbon emissions of new resources? If so, are there considerations and difficulties the Council should be aware of in developing cost estimates out of the proposed regulations?

A major drawback to the calculations designated above is that they focus on carbon dioxide and do not account for the problems associated with natural gas (methane) resulting from extraction emissions and fugitive emissions during transport. Because of the emissions during extraction and the fugitive emissions during transport, methane becomes much more difficult to assess.

A major concern is that a focus on carbon dioxide can result in encouraging a switch to natural gas. If the methane emissions resulting from natural gas are as serious as many recent assessments suggest, switching to natural gas may actually impose greater costs than continuing with oil or coal.

http://www.eeb.cornell.edu/howarth/publications/Howarth_2014_ESE_methane_emissions.pdf

2b alternatively, should the Council use some other approach to develop environmental cost estimates for new carbon-emitting resources, such as the use of an environmental-damage or social-cost-of-carbon approach? (Note that the EPA developed its proposed regulations for both new and existing power plants using an incremental social-cost-of-carbon approach.)

If calculations reflecting the social cost of methane use were available, these should be incorporated. Otherwise, an improved approach would be to develop Integrative Assessment methods that calculate the cost of methane use.

2c EPA also proposed a complicated set of regulations under Section 111(d) of the Clean Air Act that individual states are to implement to reduce carbon emissions from the existing power system. While the Council does not propose to use the 111(d) draft regulations for estimating the environmental costs of new carbon-emitting resources, the region might benefit if the Council assumes, in at least some of its planning scenarios that the existing power system must comply with the proposed 111(d) regulations. To do so should affect the amount and economic dispatch of existing carbon-emitting resources, require additional resources to make up the difference, and give the region insight into the effects and costs of compliance with Section 111(d) at a regional scale. The Council also could model other scenarios, including a scenario that does not include considerations of Section 111(d), as well as a scenario that simply assumes the elimination of some percentage or all of the carbon emissions from the region's power system and estimates the cost of that scenario as well. Should the Council consider in the

planning process compliance with 111(d) regulations? If so, what scenarios should the Council run and why?

A major concern with the EPA proposed CO2 regulation is that it focuses on Carbon dioxide emissions. States can meet the EPA requirements by encouraging a shift to natural gas powered utilities. While combustion of natural gas assuredly emits less carbon dioxide than does the combustion of coal or oil, if the methane emissions resulting from natural gas extraction and transport are as serious as recent calculation suggest, a switch to natural gas powered utilities could actually create a more serious greenhouse gas scenario than the current situation.

2d How should the Council deal with some of the uncertainties and complications of the proposed 111(d) regulations, such as the difficulty with the baseline used in the proposed rule, and the fact that this and other aspects of the proposed regulations may change in the final regulations, and the relationship of the regional approach to power planning by the Council to the state-by-state approach of the proposed regulations?

A standard problem in determining how to respond to proposed rules is judging the extent to which those proposed rules actually will become law. What we have to hope is that a growing awareness among federal legislators of the problems confronting us from global warming will result in the approval of regulations that are at least as stringent as those proposed by the EPA. If we are to take this problem seriously, we have to assume that there will come a time in the near future when Congress becomes generally aware of this problem and supports reasonable steps designed to address it. This optimism again suggests that considerations in the future will encompass rules at least as stringent as those proposed. Given this optimism, it seems prudent to plan accordingly.

2e alternatively, should the Council take a different approach (other than assuming compliance with 111(d)) to understand and factor in the carbon costs of the existing system?

Given the weakness in the EPA proposals in terms of their failure to account for methane fugitive emissions, it would be prudent to develop proposals that take this issue into account also. One has to hope that future actions by the EPA will redress the errors generated by this limitation. NWPCC could be 'ahead of the curve' if it acknowledged this shortcoming and developed proposals that incorporate this oversight.

3a. Have methods and information developed in recent years that would allow for the quantification of environmental benefits to a broader degree for the resource cost estimates?

Besides the references above, I am unaware of other efforts at quantifying the social cost of carbon (carbon dioxide and methane) emissions.

3b Of most particular interest is whether the Council can and should factor into the costs of a new resource the "benefit" of being able to reduce some existing activity that has an environmental cost? For example, installing energy efficiency measures in a home where wood is burned for heat may result in less wood burning and thus reduce air emissions and associated health effects. Obviously, the Council should consider these benefits to the environment and public health in some fashion in its planning. But, is it possible to quantify these kinds of environmental benefits? And can these benefits be said to be the "direct" benefits of and "directly attributable" to the new resource, or are the benefits incidental or

indirect as the result of contingent behavior choices (e.g., some people might choose to burn less wood; others might choose to burn as much and be warmer)?

3c Should the resource costs for all new non-fossil-fueled energy resources include a quantified estimate of the value of the environmental benefits of replacing existing fossil-fueled generating plants? Note that such an estimate would not affect the cross-comparison of the cost effectiveness of all the new non-fossil fueled resources?

In principle this constitutes a wise idea. We should accept the reality than no energy source is totally benign. Even solar and wind generation require resource consumption and cost emissions in their construction, installation, and maintenance. They also occupy land (or sea) that otherwise could be retained for natural systems, agriculture, forestry, fisheries, or wildlife habitat.

3d If the environmental benefits of a new resource in displacing existing activities cannot be quantified or cannot be said to be directly attributable to the new resource, and thus not part of the methodology, how should the Council give due consideration to these environmental benefits in the plan?

One of the disadvantages of conventional fossil fuels is that their purchase involves supporting entities out of the region. Wind turbine and solar facilities, meanwhile, can be developed much more locally. While the general principle of buying locally has many advantages in the greenhouse gas arena (reducing transportation costs, for example), it has the added economic advantage of keeping financial resources to cycle through rather than leave the region. While this may be difficult to assess directly, it potentially could become a prominent consideration if 'supporting local economies' were incorporated into the NWPC criteria.

4a for renewable resources such as wind, solar, biomass, and wave-power generating plants, how should the Council, in its methodology, properly identify the environmental effects of renewable resources, identify the relevant regulatory schemes that address those effects, and quantify the resource compliance costs?

Determining how to quantify these concerns is outside my sphere of competence. However, it certainly makes good sense that such consideration should be incorporated into the assessment.

4b or, should the Council take a different or additional approach to identifying and quantifying the environmental costs of renewable resources in the methodology?

Ditto.

4c The agencies and tribes recommend the Council support and even lead a region-wide effort to assess the suitability of sites for terrestrial and aquatic energy projects, prioritize possible in a manner similar to the Council's "protected areas" for new hydropower development, and in general examine potential site-specific and system-wide impacts to fish and wildlife. Is that an appropriate role for the Council, and do others agree with the agencies and tribes that this should be a priority use of the Council's and the region's resources? How would the Council and the region conduct and fund such an assessment, which could take years?

One of the refrains we hear frequently from regulatory agencies is that they would like, for example, to take into consideration the impact of projects on greenhouse gas emissions / global warming, but this is outside their purview of items to consider. It seems to me that the region is best served by the Council taking as broad an approach as possible in evaluating the costs / benefits of alternative proposals and strategies in terms of the regional, national, and global environment.

4d Whether or not the Council uses the Seventh Power Plan to initiate such a major assessment effort, how should the Council give due consideration to these effects in the resource strategy for the plan?

Please see 4c above.