BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON
UM 1716

In the Matter of	)	
	)	
PUBLIC UTILITY COMMISSION	)	COMMENTS BY
OF OREGON	)	NW ENERGY COALITION
	)	
Investigation to Determine the	)	
Resource Value of Solar.	)	
_____	)	

NW Energy Coalition ("NWEC") provides the following comments on the first phase of effort in Docket No. UM 1716.

The workshop process so far has been efficient and comprehensive in collecting and exchanging views among the Parties. We also appreciate the early filing of Staff's comments. As a result, rather than an extensive presentation, the elements we recommend to be included in the next phase of this proceeding are provided in the table in Appendix A. Below we summarize our views and respond to points made in the Staff comments.

Scope of the Proceeding

NWEC continues to have concerns that the scope of UM 1716 is not clearly delineated. Specifically, is it confined to consumer-supplied solar resources or to all solar, including developer and utility-owned facilities? Although this issue was raised at the June 19 workshop, it is still not completely resolved.

This proceeding arises in part from the review of the Volumetric Incentive Rate (VIR) Pilot Program (Docket No. UM 1559). However, some of the informal discussion so far in this proceeding has broadened the discussion to developer, utility and community-owned solar.

HB 2893 (2013) does not provide altogether clear direction. Section 4(1) states: "The Public Utility Commission shall study the effectiveness of programs that provide incentives for the use of solar photovoltaic energy systems." From the context of the rest of the bill, it appears that the scope is consumer-owned systems and incentives, but this bill can also be interpreted as legislative direction to investigate the general value of solar.

NWEC would not object to this proceeding having either a broad scope for all solar, or a more limited one focusing on consumer-supplied solar. Overall, the outcomes of this proceeding in providing a general framework and specifically delineated elements should be applicable to all solar and indeed, generically, to all resources. We simply request that the Commission provide clear guidance on this point as this proceeding continues.

Retaining a Consultant

NWEC supports Staff's recommendation to retain a neutral and independent consultant to support further technical work on this portion of UM 1716 based on a list of elements approved by the Commission. It will be important to carefully delineate both the scope and work plan for the consultant, and how parties to this proceeding will be able to provide input and review for the consultant work going forward.

Cost Perspectives Should Include All Categories

Parties in the proceeding have suggested four cost perspectives to include in considering the resource value of solar: utility, participating customer, non-participating customer, and societal. We strongly support including all proposed perspectives. Staff does not support the inclusion of "the different customer and society perspectives..." Staff Comments at 11. The societal perspective is crucial in the next phase of examining solar resource value elements, and both participating/non-participating customer and societal perspectives are important in the follow-on work within Investigation #2 concerning fixed cost recovery.

Elements Selected and Conceptual Approach for Further Review

In general, we agree with Staff that during this preliminary phase, "exploration of an element does not mean that it will ultimately be included in the RVOS." Conversely, we have not supported inclusion of some of the elements that have been suggested so far. However, because substantial technical work lies ahead, we are concerned about not overly restricting the elements that are passed on to the next stage, and this is reflected in our recommendations.

Staff's Attachment D includes overarching concepts to consider in the RVOS methodology, including type of solar technology, solar PV scale, levelization of costs and benefits and levelization period, the perspective to consider for the costs and benefits (utility, participating customer, non-participating

customer, and societal), and the duration and frequency of reassessment of the values and methodology for the RVOS.

Overall NWEC supports this approach, but in addition to incorporating all four proposed economic perspectives as noted above, we have considerable concern about the very broad brush applied to excluding significant aspects of societal benefits. Staff states that it "does not deny that there are societal benefits associated with solar systems. Staff believes that those benefits are not within the scope of utility ratemaking; most of those benefits are still speculative at best and thus should not be included in the calculation of the RVOS at this time."

In response, it is important to recognize that the impact of energy development of whatever type is profound for both the economy and the environment. We do not think these matters are merely "interesting" but rather can inform the perspective of the Commission, parties, the legislature and our state as a whole, even if they are not included directly in Commission regulatory scope, policies, tariff development, etc. Therefore, these broader "resource value of solar" questions should continue to inform this proceeding fully going forward.

At this point, the dividing line seems somewhat unclear. Included in the scope recommended by Staff would be environmental costs that are fully recognized as applied to electric generation – for example, pollution and greenhouse gas mitigation costs from Clean Air Act regulations. However, Staff would exclude prospective future costs for land, air and water impacts avoided because of solar development, which seem directly relevant, as well as indirect but nonetheless real benefits from increased employment, retained income and economic stability within Oregon.

Overall, we do not argue for inclusion of all conceivable costs and benefits, but it is important to consider impacts from a life-cycle and societal perspective and then determine which are applicable within the context of this proceeding, and which elements are relevant for each phase. Further, to the extent that consideration is more limited in a specific context to utility system costs and benefits, the scope for resource value should be tied explicitly to existing Commission precedent and approach. Finally, in any specific context where only benefits to the utility system are considered, only costs to the system also should be considered.

As to whether benefits and costs are arbitrary or speculative, that is a key purpose of the technical assessment going forward. First of all, based on experience here plus review of similar proceedings in

other states, we expect that a few elements will play a major role in defining the resource value of solar, and others will have a minor effect.

Second, there is continuum of analytical robustness and precision. Some elements will have strong empirical backing – for example, the reduction of transmission and distribution losses are well established values. Others such as the value of deferred capacity or future environmental and climate mitigation costs may have more of a speculative aspect but still be amenable to modeling and expert analysis. The next phase of the proceeding will help clarify those matters, but it is important not to prejudge outcomes based on the comprehensive but quick review we have now had.

Comments on Specific Proposed Elements

Again, we refer to our overall list of proposed elements in Appendix A. Here we provide brief comments on specific elements and points made by the Staff. In general we agree with Staff's proposed list of elements, with certain additions as noted below.

RVOS Elements Recommended for Inclusion	

• Avoided Energy Impacts
• Avoided Capacity Additions
• Line Losses
• Avoided Transmission and Distribution
• Compliance Value: RPS
• Security: Reliability, Resiliency, and Disaster Recovery
• Utility: Integration Impacts
• Utility: Administration Impacts
• Utility: Interconnection Impacts
• Financial: Market Price Response
	• Ancillary Services and Grid Support
	• Financial: Fuel Price Hedge
	• Operational Impacts
	• Avoided Natural Gas Pipeline Impacts
	• DSM Alternative Impacts
	• Environment: Compliance Impacts
	  ○ Carbon - Current
	  ○ NOx/SOx/Particulates - Current
	  ○ Other—Current (e.g. MATS - Mercury Air Toxics)
	  ○ Carbon-Future in the RVOS Investigation

Source: Staff Comments, July 15, 2015, p. 1.

Impacts. We agree with Staff's suggestion to change the element labels from "costs" to "impacts." In general, all of the elements represent net impacts, though some may have only costs, some only benefits, and some have both.

Valuation methodologies. Staff states that parties generally agree the ultimate RVOS will vary by utility, but the valuation methodologies should be the same. We concur, but note that values for particular elements may also vary. For example, estimation of transmission losses may vary because utilities have

different transmission networks, and may estimate losses in somewhat different fashion. It will be important to identify and resolve those variations. It may be appropriate to have identical methods in some cases but not others, although overall parameters such as the time duration of any analysis should be consistent.

Line Losses. Staff's comments include line losses both within Avoided Energy Losses (Staff proposed element #1) and Line Losses (element #3), with a caution about double-counting. We are inclined to think that all losses should be included in element #3 to avoid confusion.

Transmission and/or Distribution. The Staff's proposal combines transmission and distribution categories for line losses (Staff proposed element #3) and avoided expansion costs (element #4). In principle we have no objection but note that transmission and distribution costs and losses are traditionally accounted for separately. However, the consensus at the June 19 workshop was to combine them. We support that as long as it is understood the underlying calculations are done separately and, as noted above, may differ in specific methodology between utilities.

Additional Generation Impacts. We suggested two elements that could be carried forward or folded into existing elements: avoided generation O&M and loss of inertia, neither of which appears to fit into Staff's recommended elements. If solar is deployed at scale and especially if power electronics associated with inverters become active components at the grid edge, this may stabilize load and reduce the wear and tear on generation, especially fast-ramping operating and contingency reserve facilities. On the other side, retirement or unavailability of generation with spinning mass could reduce system inertia, requiring other investments to compensate, although again, power electronics associated with renewable energy or otherwise may make up some of the difference.

Environmental Compliance. This is a complex area because it covers a continuum of present and potential future costs, and those that are directly attributable to electric energy facilities and those that are indirect. As stated above, we do not support exclusive consideration only of current costs that are directly attributable to electric facilities. And the Staff comments rightly suggest that, most importantly, future potential costs of greenhouse gas regulation be considered, and we strongly support that.

One specific aspect that is not yet well defined now but has salience for this proceeding is life cycle methane emissions related to electric power production, particularly natural gas power plants. Methane is a short-lived climate forcer and has very different characteristics than carbon dioxide, a long-term forcer. Because of the time difference -- stretching at least three orders of magnitude further in duration, since

methane stays aloft in the atmosphere for about 10 years while a substantial fraction of CO2, perhaps as much as 20%, remains for at least 10,000 years – it is important to consider methane as a category needing its own value separate from CO2.

Fuller characterization of methane emissions from natural gas production and transportation awaits the data collection and analysis work currently underway in several major research projects. We anticipate assessing the interim state of analysis to help clarify this issue during the next stage of this proceeding.

Finally, we note that several commenters at the June 19 workshop also proposed consideration of water impacts, which is also amenable to analysis.

Capital Risk. Staff proposes to exclude this topic (element #18). NWEC proposed this element and wishes for it to receive further consideration. We noted that large new system additions – for example, a new power plant or transmission line – are "lumpy" investments with significant market timing risk concerning capital access and cost. (We also note very large solar plants in the multi-hundred MW range have similar concerns.) In contrast, more dispersed and smaller unit investments in solar, particularly consumer-owned, may have more timing flexibility and less capital risk. While we do not have specific references, we believe there may be expert financial analysis bearing on this question that could be identified in the next phase.

NWEC appreciates consideration of these comments and looks forward to the next phase of this proceeding.

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Appendix A. NWEC Proposed Elements for UM 1716

NWEC Proposed Element	NWEC Description	Staff Proposed Element
Avoided Energy Costs	Marginal energy costs for resources backed out by solar	1
Avoided Capacity Additions	Reduction of need for new generating resources given reduced average and peak demand due to solar	2
Avoided Generation O&M	Reduction of O&M from existing and new generation	
Loss of Inertia	Decrease of inertia from existing spinning mass in power plants displaced by solar	
Decreased Interconnection Costs	Decreased cost for new resource interconnection	9
Decreased Integration Costs	Decreased costs for other new equipment to accommodate new resources	7
Reduced Transmission line losses (System Losses)	Decreases in transmission flows and losses because distributed solar reduces system demand for generation	3
Reduced Distribution system losses	Decreases in distribution system flows and losses because distributed solar reduces customer demand at the meter	3
Avoided Transmission (and Distribution)	Deferred or avoided transmission expansion where solar decreases congestion and maintains use below path ratings and system operating limits	4
Avoided Distribution	Deferred or avoided distribution expansion where solar decreases congestion and maintains use below feeder and distribution system requirements.	4
Ancillary Services and Grid Support	Reduction in peak load and variability reducing contingency reserves and ancillary service requirements	6
Advanced Grid Support (Reliability)	Equipment associated with solar -- advanced inverters, power electronics, storage and data/comms devices -- can provide a wide range of ancillary and grid support services: voltage support, frequency support, vars, transient stability, energy imbalance, time shifting/storage.	6
Advanced Grid Support (Resilience/Restart)	Equipment associated with solar -- advanced inverters, power electronics, storage and data/comms devices -- can provide realtime telemetry, two-way signaling and coordinated restart services..	6
Avoided Natural Gas Pipeline Costs	Reduced gas transportation capacity additions	14
Avoided Renewable Costs	Customer supplied solar can reduce the need for new generating resources overall, including renewable resources.	5
Environment: CO2 (Carbon)	Reduction of thermal power CO2 emissions	25
Environment: Methane	Reduction of thermal power methane emissions	

Environment: Other Greenhouse Gases	Reduction of thermal power other greenhouse gas emissions	
Environment: NOx, SOx, particulates	Reduction of coal and gas power plant regulatory air emissions	25
Environment: Other	Reduction of marginal coal and gas impacts and incremental impact of solar on land, air and water resources including habitat, ecosystem services and support for biodiversity.	
Environment: Life Cycle Risk	Operational and life cycle risk (accidents, waste, etc.)	
Financial: Fuel Price Hedge (adjustable mechanism)	Reduced exposure to future gas and coal fuel cost volatility	12
Financial: Market Price Response	Decreasing demand relative to market supply	10
Security: Reliability and Resiliency (Risk)	Stabilize transmission and distribution (shaft risk, forced outage, locational diversity benefits) and faster recovery from outages	6
Social: Economic Development	More local economic stability through retained and respent income, stabilizing tax base, reducing energy cost volatility	
Compliance Value: RPS	Reduced annual sales lowers RPS requirements	5
Compliance Value: Other upcoming regulation	Potential effect of "public policy considerations" -- prospective federal, state and local regulation	
Utility: Integration Costs	Cost of additional equipment and operations beyond direct interconnection costs to manage solar inflow	7
Utility: Interconnection Costs	Cost of direct solar interconnection	9
Utility: Administration Costs	Incremental administration costs to manage solar resources	8
Operational Benefits	Improved forecasting, scheduling, dispatch/redispatch resulting from availability of solar	13
Capital Risk	Decreased risk of capital access and cost due to system impacts of solar (similar to market hedging and price risk reduction)	