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 Climate Solutions
 Community Action Center
 Community Action Partnership Assoc. of Idaho
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 Earth and Spirit Council
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 Renewable Northwest Project
 Save Our Wild Salmon
 Sea Breeze Power Corp.
 Seattle City Light
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 Sierra Club, Idaho Chapter
 Sierra Club, Montana Chapter
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 Smart Grid Northwest
 Snake River Alliance
 Solar Installers of Washington
 Solar Oregon
 Solar Washington
 South Central Community Action Partnership
 Southeast Idaho Community Action Agency
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 Student Advocates for Valuing the Environment
 Sustainable Connections
 The Climate Trust
 The Energy Project
 The Policy Institute
 Trout Unlimited
 Union Of Concerned Scientists
 United Steelworkers of America, District 12
 US Green Building Council, Idaho Chapter
 Washington Environmental Council
 Washington Local Energy Alliance
 Washington State Department of Commerce
 Washington State University Energy Program
 YMCA Earth Service Corps



NW Energy Coalition

for a clean and affordable energy future

From: JJ McCoy
 Senior Policy Associate
 NW Energy Coalition

July 22, 2016

To: Washington Department of Ecology

Re: Comment on Clean Air Rule 2nd CR 102

Thank you for the opportunity to comment on the draft Clean Air Rule, which aims to lower Washington's carbon emissions via a "baseline and credit" mechanism that requires polluters to either reduce carbon emissions directly each year or acquire emissions reduction units (ERUs) through one of several pathways.

We appreciate the efforts of Gov. Jay Inslee and the Washington Department of Ecology staff to address this important issue. Climate science tells us that each day's carbon emissions – every time we turn the ignition key or flick on a light switch – will warm the atmosphere for more than 100 years and acidify the oceans for more than 1,000 years. These long-lasting consequences impose a huge burden on future generations of humans and every other species residing on the planet. It is vitally important to reduce these emissions now and drive the clean energy transition that is within our grasp. We also appreciate that Ecology is operating within a zone of restricted legal authority that provides, at best, incomplete and imperfect tools to address carbon pollution.

We would like to echo the comments of others that the rule should be far stronger than it is. Addressing many of these issues will require additional legislation, and we call on the Washington Legislature to act.

- The 30% reduction in covered emissions by 2035 is insufficient. Science-based limits would call for far steeper reductions for Washington to do our proportional share in keeping the planet from warming beyond 2°C, as prescribed in international agreements.
- The rule does not cover all emissions in the state: a more comprehensive framework is required.
- The rule also specifically does not cover emissions from electric power imported into the state. This creates a significant risk of emissions leakage if electricity generation migrates to other states via our multi-state transmission grid.

The NW Energy Coalition has the following technical comments and suggestions at this time:

1. **The regulation should address cases of total and permanent exit by electricity generating units (EGUs) in the same way it addresses curtailment by other covered parties.** This is necessary to address potential leakage issues and avoid perverse incentives. Several utility companies have stated publicly that they may consider shutting down EGUs in Washington and purchasing (or generating) power out of state in response to price signals generated by the CAR. The CAR as currently drafted would allow the EGUs to sell 100% of their former emissions (minus the compliance path) as ERUs forever, a source of ongoing revenue. This could be an incentive to shut down Washington facilities, resulting in high rates of carbon leakage and possibly net increases in global emissions if those out-of-state power purchases have higher emission rates than the closed Washington facility. The CAR must take steps to avoid this unwanted outcome.

We recommend the following be added to the definition of “Curtailment” in WAC 173-442-020(1)(k) (on p. 2):

“Permanent Shutdown – Complete and permanent shutdown of an EGU will be considered a curtailment from the date of shutdown. Any ERUs generated due to a complete and permanent shutdown will be deposited in the reserve account in the same manner as curtailments by other covered parties.”

We would also recommend that the applicability sections of WAC 173-442-030 (on pp. 3-5) and the reporting requirement sections WAC 173-442-210 (p. 21) address mandatory exit from the CAR in the case of total and permanent shutdown. As drafted, exit from reporting requirements is a voluntary choice by the covered entity if emissions fall below the compliance threshold. An EGU that completely and permanently shuts down may have an incentive to continue reporting under the CAR in order to sell ERUs to other covered parties. Ecology should compel exit from regulation under the CAR in the event of total and permanent shutdown on an appropriate timeframe.

2. **Temporary curtailment by EGUs should also be addressed.** WAC 173-442-020(1)(k)(ii) (p. 2) provides a blanket exemption from the curtailment rules for EGUs. We agree that capacity factors for EGUs vary widely for many legitimate reasons, including weather and hydro conditions. However, it should be possible to construct a minimum level of functioning that is beyond normal operations needs. In addition to the rule for complete and permanent closure suggested above, Ecology should consider a temporary curtailment standard for EGUs.

We recommend the following:

“An EGU will be considered to be in curtailment in any calendar year in which the EGU generates megawatt hours totaling less than 5% of its nameplate rating for power generation multiplied by 8,760 (i.e. the number of hours in a year). Ecology may deposit ERUs generated during a temporary curtailment into the reserve account. However, if the covered party demonstrates to Ecology that the temporary curtailment occurred due to normal electricity system operations (including hydro conditions), then Ecology may elect not to deposit the resulting ERUs into the reserve account.”

3. **Issues for Regulatory Consideration – The Utilities & Transportation Commission (UTC) should consider policy on the use of ERUs from closed or curtailed Washington electric generating facilities.** While this comment is beyond the scope of the CAR, the prospect of using ERUs from shuttered natural gas generating facilities raises several fundamental regulatory issues, which the UTC should monitor:
 - a. **Stranded Assets** – First, if a regulated utility were to close a gas-powered EGU based on a dispatch model’s response to price signals resulting from the CAR, this closure could potentially strand hundreds of millions of dollars’ worth of undepreciated capital assets, which would no longer be used and useful to the electric utility ratepayers. The UTC should provide guidance on whether those capital assets, so stranded, would continue to be recoverable in utility rates or considered a shareholder loss.
 - b. **Cross-subsidization** – Secondly, it may be the case that a parent company operating an EGU also operates a natural gas utility. ERUs generated by the electricity business could potentially be traded or used for compliance by the co-owned natural gas utility. This raises questions of potential cross-subsidization between the two sets of regulated utility ratepayers. The UTC would need to address what price the natural gas utility should be required to pay to compensate the electric utility ratepayers for any such ERUs, possibly based on market rates or renewable energy credits (REC) price proxies.
4. **We concur with the proposed transition to the Clean Power Plan (CPP).** WAC 173-442-040(4) (p. 6) provides an exemption for stationary sources, like natural gas power plants, which may eventually be regulated under the federal CPP. We agree that the CPP offers a more comprehensive framework to address multi-state emissions and concur with the approach that provides a glidepath for transition into the CPP if and when that regulation is in force.
5. **Emissions Reduction Activities and Programs – The eligibility and process is unclear.** WAC 173-442-160, (p. 15) has multiple passive voice statements – “Ecology will accept” and “the following must occur” – that leave it unclear *who* may generate ERUs via activities and programs, or by what process they are recognized. We recommend a clear statement that “Any party operating in the state of Washington who can potentially generate ERUs, including parties not regulated by the CAR, may register with Ecology as an operator of emissions reduction activities and programs” per a simple, prescribed process. This will also foster transparency, as the covered parties will have access to lists of potential sources of ERUs to achieve compliance.
6. **The energy efficiency pathway requires additional specification.** We recommend that Ecology coordinate with the Dept. of Commerce (Commerce) and the Utilities & Transportation Commission (UTC) to develop concurrent rules that achieve the following:
 - a. **ERUs derived from energy efficiency should also reflect transmission and distribution losses.** WAC 173-442-160(5)(a) (on p.16) and/or WAC 173-442-160(5)(c) (on p. 17) – Each MWh conserved at the retail level avoids slightly more than one MWh of generation due to the presence of transmission and distribution losses. ERU generators from conservation should get credit for those avoided

emissions as well. Federal and California Air Resources Board formulas for grid losses are roughly as follows:

$\text{Emissions Rate}_{\text{total}} = \text{Emissions Rate}_{\text{generation}} / (1 - \text{TL}_{\text{grid subregion}})$
with transmission losses in percentage decimal form.

A grid loss rate of 0.0694 may be appropriate (based on the 2009-2012 average of EPA eGRID loss factors for the WECC NWPP subregion). These are available at <https://www.epa.gov/energy/egrid>.

- b. **ERUs derived from energy efficiency should reflect multi-year energy savings. This will require additional reporting to Commerce and the UTC.** Utilities currently report *first-year* MWh conservation totals relative to a biennial target, but each conservation measure persists for many years. So, one MWh of reported conservation might result in 5-20 MWh saved over its lifespan. (See Table 2, below, for example calculations and potential market sizing). We recommend the following:

The CAR should specify that conservation ERUs reflect multi-year savings by the following formula:

$$\text{ERU}_{\text{utility,biennium}} = \text{ER} * (\text{EE}_{\text{utility, biennium}} - \text{Target}_{\text{utility,biennium}}) * \text{ML}_{\text{utility,biennium}}$$

where

$\text{ERU}_{\text{utility,biennium}}$ = The emission reduction units generated by each utility in that biennial reporting period, in MT CO₂e

ER = Avoided emissions rate, including T&D losses (see above), in MT CO₂e / MWh

$\text{EE}_{\text{utility, biennium}}$ = First-year energy efficiency achieved by the utility in the biennium, in MWh

$\text{Target}_{\text{utility,biennium}}$ = The utility's Energy Independence Act target for the biennium, in MWh

$\text{ML}_{\text{utility,biennium}}$ = [NEW Reporting] Weighted average measure life, in years, reported by the utility for measures installed in the biennium.

We recommend that Commerce and the UTC modify their EIA reporting requirements to add average measure life for CAR purposes only. Measure lives should be reported at the utility level each year, reflecting a weighted average measure life across all the measures installed, weighted by the energy conserved. Measure lives should reflect adopted protocols of the Regional Technical Forum (see <http://rtf.nwcouncil.org/measures/>), where available. In the case of more customized industrial or commercial measures, utility estimates may be used.

7. The rule should use a higher energy-to-carbon conversion rate that reflects marginal dispatch conditions in the region, per EPA guidance and the AVERT model.

WAC 173-442-160(5)(c) (on p. 17) adopts Washington's emission performance standard of 970 lbs CO₂e / MWh as the conversion rate of energy efficiency or renewable energy MWhs to carbon equivalents. EPA guidance and carbon mitigation literature suggest that renewable energy and energy efficiency programs be credited at the *marginal* effect they have on emissions and at the regional level, since power is traded widely across the region. Washington's emission performance standard governs "baseload electric generation" per RCW 80.80.040, defined in RCW 80.80.010 as units with a capacity factor (utilization) of more than 60%. As a result, this choice is not necessarily reflective of *marginal* generation, especially in the short term. Marginal generation may also involve peaker plants with higher emissions rates, particularly if co-incident with system peaks.

Kartha and Lazarus (<http://www.oecd.org/environment/cc/1943333.pdf>) suggest that emissions rates should be the average of the "build margin", reflective of long-term changes in the system and the "operating margin", reflective of short-term changes in dispatch. This method may be appropriate since both renewable energy and energy efficiency programs have multi-year lives and possibly different short-term and long-term effects.

Table 1 – Carbon Conversion Factor Calculation for EE & RE

AVERT Model Outputs for NWPP, 2015 Data File

Marginal Capacity or Energy	Type	Hourly Profile	MWH Displaced	CO ₂ reduced (Short Tons)	lbs CO ₂ / MWH
1 aMW	Energy Efficiency	Constant	8,800	6,400	1,455
1 MW	Wind	Default	2,200	1,600	1,455
1 MW	Utility PV	Default	1,700	1,300	1,529
1 MW	Rooftop PV	Default	1,300	1,000	1,538

EE Operating Margin w T&D Losses 1,563

Average RE Operating Margin 1,507

Build Margin (Emissions Performance Standard) 970

EE Recommended Emissions Rate
(Build Margin + Operating Margin)/2 1267

RE Recommended Emissions Rate
(Build Margin + Operating Margin)/2 1239

SOURCE: <https://www.epa.gov/statelocalclimate/avoided-emissions-and-generation-tool-avert>

Per the Kartha and Lazarus methodology:

- Washington's emission performance standard may be considered an upper limit for the build margin.
- The EPA's AVERT model can supply estimates of the operating margin for the region. (available at <https://www.epa.gov/statelocalclimate/avoided-emissions-and-generation-tool-avert>)

As shown in the above calculation table, a conversion rate of 1267 lbs CO₂e/MWh for energy efficiency programs and 1239 lbs CO₂e/MWh for renewable energy programs (RECs) may be appropriate using this methodology. The Commerce Department and the Northwest Power and Conservation Council should commission a study to identify and evaluate an appropriate factor. In addition to the elements described here, the factor may also need to consider interactions with the state's renewable portfolio standard, as California has done. The CAR should also provide for a periodic update cycle (annually, or no less than once a compliance period) to reflect annual updates to the AVERT model and 5-year updates to the emissions performance standard.

8. **The NW Energy Coalition is concerned that the CAR energy efficiency pathway may degrade utilities' I-937 compliance. The rule could give all utilities an incentive to lowball their efficiency targets.** Under the Energy Independence Act (I-937), utilities set their own energy efficiency targets using methods that are supposed to reflect conservation potentials determined by the NW Power and Conservation Council for the region. However, there is considerable judgment exercised in the setting of those targets, and we're perennially concerned that some utilities do not set their targets high enough. Indeed, utilities routinely exceed their targets by substantial amounts, which suggests the targets were too gentle. The targets are supposed to reflect a) what's technically possible, b) what's cost effective, and c) what's achievable programmatically. By far, the largest falloff occurs in that last step, which is also the most subject to judgment. By allowing utilities to sell energy efficiency that exceeds their 937 targets, the CAR may encourage utilities to aim low in order to maximize the MWhs that are available for sales into the CAR. At the same time, the revenue opportunity may provide an incentive to pursue more conservation, so the net effect is hard to determine in advance. One solution would be to allow all energy efficiency achieved under 937 to generate credits under the CAR, while also steepening the compliance curve for covered parties accordingly to arrive at the same net result. However, we do not have a recommendation for how to implement that method at this time.
9. **Voluntary participants should be subject to an emissions reduction pathway the same as mandatory participants.** WAC 173-442-030(6) (on p. 4) – We concur with comments filed by the Stockholm Environment Institute that voluntary participants should also receive an emissions reduction pathway and generate ERUs relative to that pathway, to avoid potential gaming of the system.
10. **Double counting of emissions reductions appears to be highly prevalent in this system and will likely exceed the 2% reserve capacity set aside to address it.** Of the potential compliance pathways, all of the natural gas efficiency would appear to be double counted as would any emissions reduction programs involving transportation fuels. In addition, some of the REC, energy efficiency, and combined heat and power work will be double counted, though the level may be complex to determine. We recommend that Ecology:

- a. Establish a statewide aggregate cap on covered emissions.
- b. Periodically revisit the reserve requirement levels and emissions reduction pathways in light of actual double-counting experience.
- c. Periodically lower the covered parties' emissions reduction pathways (i.e. increase the compliance obligation) to keep the state at its aggregate cap depending on the level of double counting found.

Thank you for your consideration, and feel free to contact me at (206) 295-0196 or jj@nwenergy.org if you would like to discuss these issues further.

Regards,

JJ McCoy

CC: Glenn Blackmon, Greg Nothstein, Tony Usibelli, Dept. of Commerce
David Danner, Philip Jones, and Ann Rendahl, UTC
Lauren McCloy and Brad Cebulko, and Deborah Reynolds, UTC

Table 2 – Illustration of Recommended Energy Efficiency ERU Generation Method and Sizing Relative to Compliance Obligation
Adapted from Commerce 2012-2013 Energy Independence Act Report

Conservation Targets and Acquisitions				NWEC Calculations				Market Sizing		
Utility	2012-13 Conservation Target (MWh)	2012-13 Conservation Acquired (MWh)	2014-15 Conservation Target (MWh)	First-Year Conservation Achieved Above Target (MWh)	Total Conservation with Assumed Persistence (MWh)	ERUs at Conversion Rate (MT CO2e)	Value to Utility at Assumed Price (Dollars)	Year	Total CAR Compliance Obligation* (MT CO2e)	Annual Conservation ERUs as % of Compliance Obligation
Avista	108,589	171,570	76,086	62,981	503,848	289,563	\$ 1,737,375	2018	860,558	139%
Benton PUD	26,981	32,984	23,740	6,003	48,024	27,600	\$ 165,598	2019	1,721,117	70%
Chelan PUD	29,609	35,887	18,221	6,278	50,223	28,863	\$ 173,179	2020	2,581,675	46%
Clallam PUD	18,151	19,061	12,054	911	7,286	4,187	\$ 25,123	2021	3,606,815	33%
Clark Public Utilities	99,338	116,360	87,863	17,022	136,176	78,261	\$ 469,564	2022	4,631,956	26%
Cowlitz PUD	73,584	158,224	56,940	84,640	677,116	389,140	\$ 2,334,841	2023	5,657,096	21%
Grant PUD	99,843	118,695	32,675	18,852	150,819	86,676	\$ 520,056	2024	6,683,777	18%
Grays Harbor PUD	14,980	21,096	12,702	6,116	48,928	28,119	\$ 168,714	2025	7,710,459	16%
Inland Power	6,912	15,582	9,110	8,670	69,358	39,860	\$ 239,162	2026	8,737,140	14%
Lewis PUD	15,155	17,160	11,563	2,005	16,040	9,218	\$ 55,310	2027	9,766,750	12%
Mason PUD #3	10,674	19,762	5,791	9,088	72,703	41,783	\$ 250,697	2028	10,796,361	11%
Pacific Power	76,291	111,924	74,703	35,633	285,060	163,825	\$ 982,949	2029	11,825,971	10%
Peninsula Light	8,234	13,146	5,729	4,912	39,296	22,583	\$ 135,501	2030	12,861,152	9%
Puget Sound Energy	666,000	782,591	621,120	116,591	932,728	536,041	\$ 3,216,245	2031	13,896,332	9%
Seattle City Light	210,328	257,268	207,437	46,941	375,527	215,816	\$ 1,294,896	2032	14,931,512	8%
Snohomish PUD	150,672	210,629	116,508	59,957	479,659	275,661	\$ 1,653,966	2033	15,969,248	8%
Tacoma Power	99,338	134,524	70,956	35,186	281,491	161,774	\$ 970,642	2034	17,006,984	7%
Total	1,714,678	2,236,463	1,443,197	521,785	4,174,283	2,398,970	\$ 14,393,818	2035	18,044,719	7%
Note: Pacific Power reported a 2012-13 target of 76,291 to 79,322 MWh.				*from Ecology CAR Cost-Benefit Report, p. 18						
Source: Utility reports submitted June 1, 2014. Available at:				Assumed Conversion Rate (see comment)				1267 lb CO2e / MWH		
http://www.commerce.wa.gov/EIA				Assumed Weighted Average Measure Life				8 years		
				Assumed Price per ERU				\$6		

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Revised 7/14/2014 (Pacific Power revision)

Revised 9/2/2014 (Puget Sound Energy revision)

Revised 9/24/2014 (Avista revision)