

**Comments of the Western Power Trading Forum
To the Washington Department of Ecology
on Electricity Imports via Organized Electricity Markets**

August 23, 2023

Clare Breidenich, Director
WPTF Carbon and Clean Energy Committee
Email: cbreidenich@aciem.us

The Western Power Trading Forum¹ (WPTF) appreciates the opportunity to provide input to the Washington Department of Ecology (Ecology) on its consideration of rules for Electricity Imports via Organized Electricity Markets. As WPTF has previously stated, development of robust rules pertaining to electricity imported through an organized electricity markets is necessary to ensure environmental integrity of the Climate Commitment Act (CCA) and to facilitate linkage to the California and Quebec cap-and-trade programs. Although our comments below are provided in the context of the ongoing discussions related to greenhouse gas (GHG) accounting and attribution discussions under SPP Markets+, WPTF strongly recommends that consistent rules should also be adopted for the California Independent System Operator's Extended Day-Ahead Market (EDAM) as well as the Western Energy Imbalance Market (EIM). Consistency in GHG accounting and attribution rules is necessary to ensure that, in a potential future with two organized markets in the West, covered electricity entities that participate in one market are subject to the same compliance rules as entities that participate in the other market. Consistency will also help to avoid creating GHG 'seams' between the two markets that would undermine market efficiency.

Before addressing our substantive recommendations, WPTF offers comment on the appropriate role of the organized market operators (i.e. SPP and CAISO) and their market design development, versus the role of state environmental regulators, such as the Department of Ecology (Ecology). In the absence of state GHG pricing programs like the CCA, there would be no basis for market operators to include provisions to enable GHG accounting and attributions within the market optimization. This interpretation has been confirmed by the Federal Energy Regulatory Commission (FERC) in its April 2021 policy statement concerning "Carbon Pricing in Organized Wholesale Electricity Markets"², which explicitly recognizes states' sole authority to determine carbon prices and rules pertaining to electricity within their jurisdiction. As an example, the policy statement notes FERC's acceptance of the CAISO's approach to how resources outside of CAISO offer and are attributed to California in the CAISO day-ahead market and EIM based on GHG pricing program requirements determined by the California Air Resources Board (CARB). Thus, a threshold question for FERC when it reviews the GHG accounting and attribution provisions in SPP's proposed Tariff for Markets+ will be whether there is a basis for these tariff provisions in Washington state law, as set out in the CCA and program rules. WPTF believes that design and implementation of CCA requirements within the organized market is the appropriate role of the market operator. However, the ability of the market operator to get FERC approval for design and tariff approved will ultimately depend on clear provisions in the CCA regulations regarding the assignment of the compliance obligation for electricity imported to Washington, and any conditions limiting imports to Washington.

Our comments below propose CCA rules that we believe would both provide a legal basis for GHG accounting and attribution provisions in organized electricity market tariffs and support an implementation approach within these markets that would best ensure environmental integrity of the CCA. Before making these recommendations, we first discuss the potential for emissions leakage in the organized electricity markets.

¹ WPTF is a diverse organization of over 90 members comprising power marketers, generators, investment banks, public utilities and energy service providers, whose common interest is the development of competitive electricity markets in the West.

² <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020CC9B6-66E2-5005-8110-C31FAFC91712>

Emissions Leakage

The problem of emission leakage in the electricity sector (termed secondary dispatch in the CAISO's parlance, and megawatt (MW) redesignation in SPP's) is not inherent to organized electricity markets but is rather the result of imposing carbon pricing to a limited geographic area within a broader market footprint. If all jurisdictions within the Western interconnection adopted common GHG pricing, emissions leakage would be eliminated because all generation within the market would be subject to the same carbon costs.

However, if rules for how GHG costs are accounted and energy is attributed to load to Washington are not well designed, organized electricity markets could create significant emissions leakage. This is because in optimizing for least total cost for the market footprint, the market will tend to assign zero emission energy to load in Washington and leave energy from emitting generation outside the state. This phenomenon in and of itself should not be considered emissions leakage, because imposition of carbon prices on the electricity sector is intended to change the economics of dispatch, and in the case of a program that also regulates electricity imports, importation of energy; by its nature, a cap-and-trade program will have the effect of 'pulling' clean energy into the state. This is not emissions leakage but rather an intended outcome of the program.

The real problem arises when the optimization algorithm displaces emitting generation within the GHG pricing state and replaces it with a less-efficient, *higher emitting* generation outside the GHG area so as to reduce overall market operating costs. When this occurs, emissions in the market footprint as a whole would actually be *greater* than they would be if the cap-and-trade program didn't exist! To avoid this outcome, SPP has been exploring conditions for when energy from clean resources located outside Washington can be attributed to state load. While establishing such conditions would generally prevent emitting generation within Washington from being displaced by less efficient, higher emitting generation outside, if these conditions are too constrained, they could paradoxically create the reverse problem where emitting generation outside Washington is displaced by less-efficient, higher emitting generation inside Washington – again leading to higher emissions than a counterfactual without the CCA.

The goal then should be a market design that results in a correct dispatch of resources and avoids an increase in emissions within the market footprint as a whole, relative to a counterfactual without GHG pricing. Specifically, we should seek a solution that, on balance, does not change the dispatch order of gas resources within the market footprint, relative to the dispatch order based on energy offers only. Because both the operating (fuel) costs of a gas resources and its GHG costs are directly correlated to the resource's heat rate, if all resources faced the same fuel costs (and assuming no congestion), then the merit order dispatch for those resources would be the same with and without carbon pricing. While the placement of non-emitting and high-emitting (e.g. coal) resources within the merit-order dispatch order relative to gas resources for serving load in the GHG area should change, the order of gas resources relative to each other should not.

In WPTF's view, a market design that implements appropriate conditions for specified imports and enables unspecified imports to occur via application of a hurdle GHG price is best able to maintain the correct dispatch order and avoid emissions leakage. We provide specific recommendations on CCA program rules to enable such a design below.

Proposed Program Rules for Specified Imports

- 1) To enable carbon costs of individual resources to be factored into market optimization and used to determine the volume of energy imported as specified, Ecology must adopt a definition of electricity importer for specified imports via organized markets. The rule should define this as the entity that offers/bids the resource into that market.
- 2) Ecology should also adopt criteria in the program rules, for specified imports to minimize emissions leakage in organized markets. Such criteria should be applied for both energy imported through the organized electricity markets, and energy imported bilaterally, and should be in addition to the requirement that the electricity importer be a generation providing entity or have a specified contract for the resource.

WPTF proposes that Ecology adopt rules that require clean energy from a resource to meet one of the following conditions to be eligible to be imported as specified:

- a. The energy must be contracted to a Washington utility under a specified contract, as currently defined in the reporting rule; or
 - b. The energy is surplus.
- 3) Ecology should define surplus energy. Considerations of how surplus energy is defined and identified is complicated by the competing clean energy mandates in the West, different types of non-emitting resources, and different types of market participants (e.g. independent power producers and electric utilities). WPTF welcomes further discussion on this topic but offers the following initial recommendations.
 - a. Energy generated by an entity's hydro-electric projects should be considered surplus when that generation is in excess to the entity's load and other obligations (i.e. specified sales);
 - b. Energy generated by non-hydroelectric renewable resources or discharged by non-hydroelectric storage resources should be considered surplus when that energy is in excess of the volume needed to satisfy any contractual obligations and volume needed to comply with any RPS, clean energy or other procurement mandate. The timeframe/granularity for assessing whether imported energy is surplus should be consistent with the applicable contracts and/or the mandate set by the appropriate regulator in the state in which that entity resides.
 - 4) Ecology should modify the Mandatory Reporting Regulation to require Electric Power Entities to submit, or make available to a verifier on request, documentation to demonstrate that imported energy has complied with these eligibility requirements in the organized markets. Such documentation could include
 - a. a report, similar to that submitted by Asset-Controlling Suppliers, showing all generation, market purchases, sales and retail load;
 - b. Compliance reports for relevant state procurement with relevant mandates;
 - c. Renewable resource contracts; and
 - d. Metered charge and discharge data for storage resources.
 - 5) Ecology should revise the mandatory reporting rule to provide that any energy imported as surplus that does not meet these requirements will be treated as unspecified for reporting and compliance purposes.

Additionally, we encourage Ecology to explore the possibility of registering and assigning emissions factors for specified resources in advance of each compliance year. During the August 17th meeting of the SPP Markets+ GHG Taskforce subgroup discussion the draft Tariff language, SPP staff expressed a need to validate GHG bid adders for market power mitigation concerns. Since the emission factor component of the GHG bid adder of a resource located outside Washington that offers specified energy must be validated in advance of energy offers, market operators would need a value assigned by the Department of Ecology before the year in which energy transactions occur (and emission obligation related to these transactions) occur.

Unspecified Imports Discussion

WPTF believes that enabling unspecified imports to occur through organized markets, in addition to specified imports, would have significant advantages over a pure specified import approach. If the organized market design is effective in addressing secondary dispatch/MW redesignation associated with unrestricted specified imports, there will be periods where the market runs out of energy eligible to be imported as specified, or the eligible energy is uneconomic to be imported into Washington. Under these conditions, the market would be forced to dispatch Washington resources, even if there is lower cost (and potentially lower emitting) generating capacity available outside of Washington that is not eligible to be imported as specified. This outcome would raise costs for Washington electricity consumers, relative to an approach that allows for unspecified imports, and could create emissions leakage.

Determination of the electricity importer

If unspecified imports into Washington are allowed via organized markets, these imports could not be assigned to any specific resources, because the energy from those resources would either be ineligible to be imported as specified energy, or because the resource operator was not willing to allow that energy to be attributed to Washington state load. Ecology must therefore determine which entity will be considered the electricity importer for any unspecified imports via the organized markets. While some entities have proposed that the compliance obligation could be assigned to the market operator itself or to a third party, WPTF considers this problematic.

The First Jurisdictional Deliverer approach relies on the concept of causality; that is the electricity importer is the entity that caused the import to occur. Thus, for bilateral transactions, the electricity importer is the entity that schedules the import into the state (i.e. the purchasing-selling entity on the leg of the physical path of the e-tag that crosses the state border). Similarly, for specified imports via organized markets, the electricity importer is the entity that bids the resource into the market and indicates willingness for that energy to be imported to Washington. As neither a market operator nor a third party causes an electricity import to occur, it would be inappropriate to assign the compliance obligation to one of these. (Nor is it clear that a market operator would accept this role.)

Instead, WPTF therefore recommends that the compliance obligation for emissions associated with unspecified imports via organized markets be assigned to Washington utilities in proportion to their net purchases from the market, similar to how Ecology currently assigns the obligation for EIM imports. Placing the compliance obligation on utilities would be consistent with the FJD approach, because utilities participating in the organized markets cause any unspecified imports through their purchase of energy from those markets. Further, we note that FJD approach includes

the word “jurisdictional” and the original Western Climate Initiative definition explicitly stated that the compliance obligation would flow to the next buyer of the energy, when the first importer identified is not jurisdictional to the state. This is the basis for the CCA’s deference to the Bonneville Power Administration (BPA’s), and placement of the compliance obligation for emissions associated with BPA’s import to Washington on BPA’s customers. Because schedulers for resources that support unspecified imports to Washington would not be jurisdictional to Washington because they have not elected to make their energy available as a specified import, or this energy does not meet conditions for a specified import, it would be appropriate for the compliance obligation to roll downstream to the Washington utility buyer.

In conjunction with placing the compliance obligation for unspecified organized market purchases onto Washington utilities, Ecology must also direct the market operator to either refund revenue collected for unspecified market to the utilities or not collect revenue these purchases, so that the assignment of the compliance obligation does not impair the utilities’ ability to mitigate rate payer impacts. (Note that when unspecified imports occur, the hurdle price for these imports will set the market GHG shadow price, which would determine the prices paid by Washington load for specified imports. The carbon costs for these market purchases are offset by the allocation of allowances to utilities.)

Emission Factors for Unspecified Imports

To attain CCA program goals effectively, Ecology should be concerned about two different emission factors related to unspecified imports via organized markets. The first is the emission factor used in the market optimization for unspecified imports. The second is the emission factor used to assign the compliance obligation to Washington utilities for unspecified purchases in the organized markets. These emission factors need not be the same. WPTF believes that use of a dynamic or ‘shaped’ marginal emission factor would be more appropriate for market dispatch because it would provide for more accurate price formation and better mitigate emissions leakage than a static emission rate. Use of a generation-weighted residual-average emission factor would be appropriate for determining compliance because when multiplied by the actual volume of unspecified imports it

Determination of the emission factor used in the market optimization for unspecified imports

The market operator will need to use an emission factor to calculate a hurdle price (the emission factor multiplied by the allowance price) for unspecified imports to be used in the market optimization. The extent to which the hurdle price leads to appropriate dispatch and attribution of unspecified imports depends on the emission factor used. If the emission factor is too low, unspecified imports will be greater than they should be. This may displace emitting generation in Washington that should be dispatched, or specified imports that should occur. This would shift emissions that should be regulated in Washington as generation or specified imports, outside the state and lead to higher emissions within the market footprint as a whole. In contrast, if the emission factor is too high, unspecified transfers will be lower than they should be. This would increase energy prices within Washington, and would not necessarily reduce emissions, but could also lead to higher emissions due to the need to call upon a less efficient, higher emitting resource inside Washington.

To avoid these unintended consequences, the emission factor used in the market optimization should be dynamic (or ‘shaped’) and reflect actual grid conditions. WPTF believes that the ideal

emission factor would represent the emission factor of the marginal *emitting* resource within the entire market footprint for each interval, if the entire market were dispatched on energy prices alone (i.e. without consideration of GHG costs). A market design solution that gets close to this ideal emission factor for use in the GHG hurdle is best able to maintain the correct dispatch order for resources both inside and outside Washington when carbon is included^{3,4}.

Ecology should direct that the market operator use a dynamic or shaped emission rate for determining the hurdle rate in an hour, such that the emission rate is close to the actual emission rate of the marginal emitting resource in each interval.

Determination of the Emission Factor used for compliance

The default emission factor currently used in both the Washington and California program dates back to 2008, when the WCI was developing its framework for electricity imports. In addition to being outdated, that emission factor was based on a static, backward-looking analysis of resource generation within the West. With the advent of regional organized markets, we have the opportunity to greatly improve the accuracy of emissions regulated under the CCA by using dynamic emission factors for unspecified market imports.

Given that a market operator has access to real time dispatch and transfer data, WPTF recommends that rather than use the current default emission rate for unspecified imports, Ecology should instead request the market operator to calculate a dynamic unspecified emission factor for unspecified imports. This emission factor should ideally represent the generation-weighted, average emission factor of residual energy in that interval. That is, the emission factor would be calculated based on the actual emission and generation of all dispatched energy outside Washington, that has not been imported to Washington as specified. The market operator should calculate this emission factor for each five-minute interval; The emission factor would then be multiplied by each utility's unspecified purchase in that interval, and summed for hours to calculate the utility's annual compliance obligation for unspecified market purchases. The summed emissions information could be provided directly to each purchasing utility for reporting of compliance emissions, and to Ecology for verification of utility reports. Compliance emissions under this approach would be far more accurate than if calculated based on a single, static and dated default emission factor.

³ In general, addition of a carbon cost does not alter the dispatch order of gas resources to other resources. This is because both the energy cost of a gas resource and the carbon cost are directly tied to the resource's heat rate. All else being equal, higher heat rate resources, will have higher fuel costs and higher carbon costs than a more efficient resource. While addition of a carbon cost could change the dispatch order of coal relative to gas, this requires coal to be inframarginal and the carbon cost to be sufficiently high that that energy plus carbon cost for the coal resource is higher than the energy plus carbon cost of a gas resources. Within a broader organized energy market, where the carbon pricing is restricted to a limited geographic footprint (e.g. Washington within SPP or EDAM), if coal is inframarginal based on energy costs, then the addition of carbon costs for consideration of whether energy from the coal resource is attributed to load in the carbon pricing area will not change dispatch of the coal resource. If there is sufficient load outside Washington to consume the output of the coal resource, its dispatch will not be affected. Thus, there is not need to use the emission factor of a coal resource for setting the hurdle price – this will only raise costs in Washington.

⁴ It is not sufficient to use the emission factor of the marginal resource in an hour, as this resource may be non-emitting. If a zero emission factor is used, unspecified transfers would displace emitting generation within Washington that should be dispatched. The hurdle emission factor should only be set to zero during conditions of renewable oversupply.

Relationship between the Emission Factor used for the hurdle price in the market optimization and that used for reporting and compliance

Some stakeholders assert that same emission factors must be used in the optimization as for reporting and compliance. WPTF agrees that Ecology must decide how each emission factor is determined (or what it should reflect), but we disagree that the emission factors must be the same. The assertion that the same emission factor must be used for both market optimization and for determining compliance emissions seems to be based on a concern that if the two emission factors differ, that revenue collected from market settlement for unspecified imports could be insufficient to cover compliance costs for these imports. WPTF agrees that this outcome would occur if the marginal emission factor used in determining the hurdle price was lower than the emission factor for determining carbon emissions. However, this outcome is extremely unlikely if Ecology were to direct the market operator a) to use an emission factor reflecting a *marginal emitting* resource for determining the hurdle rate for optimization (e.g. a gas peaker), b) to use a residual generation-weighted average emission factor for compliance emissions and c) to calculate both with the same granularity (e.g. five minutes). Under this approach the emission factor used for market optimization will be higher than the emission factor used for determining compliance emissions, because the optimization EF would be from an emitting resource at the top of the dispatch stack and the compliance EF would be an average of emissions of all resources in the dispatch stack (that are not specified imports), most of which would have emission rates less than the marginal emitting resource⁵.

Because of this, WPTF considers it far more likely that the revenue collected from market settlement from unspecified imports would be greater than the amount needed to acquire allowances for compliance. This is a much more tractable problem: Ecology could simply direct the market operator to recycle the excess revenue back to the utilities and require the utilities to invest this revenue in approved greenhouse gas mitigation activities.

⁵ Although coal in the dispatch stack would have approximately twice the weight of a gas resource in a residual average EF calculation, coal's influence on this EF would be diluted by zero emission resources in the dispatch stack.