January 29, 2025

Will Seuffert, Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, #350
Saint Paul, MN 55101

In the Matter of an Investigation into Implementing Changes to the Renewable Energy Standard and the Newly Created Carbon Free Standard under Minn. Stat. § 216B.1691

PUC Docket Number: E-999/CI-23-151

Center for Resource Solutions (CRS) appreciates the opportunity to comment on compliance reporting and verification under Minnesota Statute 216B.1691, Minnesota's Renewable Energy Standard and the newly created Carbon Free Standard (CFS).

Introduction to CRS and Green-e®

Center for Resource Solutions (CRS) is a 501(c)(3) nonprofit organization that creates policy and market solutions to advance sustainable energy and has for over 25 years provided policymakers and other stakeholders around the world with renewable energy and carbon policy analysis and technical assistance. CRS also administers the Green-e® Energy program, the leading independent certification for voluntary renewable electricity products—including renewable energy certificates (RECs)—in North America. In 2023, Green-e® certified retail renewable energy sales in Minnesota totaling more than 3.9 million megawatt-hours (MWh), serving over three thousand retail purchasers, including 177 Minnesota businesses.[1]

[1] See the 2024 (2023 Data) Green-e® Verification Report here for more information: https://resource-solutions.org/g2024-2/

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CRS Comments on Topic Questions

Having overseen for more than 27 years North America's most rigorous certification program guaranteeing exclusive ownership of clean energy attributes, CRS is uniquely qualified to ascertain how proposed CFS compliance reporting and verification methods impact the voluntary market for renewable and carbon-free electricity and to provide guidance on the best methods to avoid double counting and support voluntary procurement.

After analyzing several different ways that RFS compliance reporting and verification could permit double counting of clean energy attributes, CRS below proposes a solution constitent with the CFS authorizing statute, that prevents double counting and garners several additional benefits for Minnesota utilities and ratepayers.

Topic 2. By which criteria and standards should the Commission measure a utility's compliance with the CFS?

CRS is concerned that any compliance reporting and verification method that permits utilities to claim on behalf of their customers the emissions attributes of purchased power without owning and retiring the corresponding Renewable Energy Credits (RECs) risks double counting attributes that have already been sold and undermining the voluntary market for carbon-free renewable electricity.

Every MWh of carbon-free renewable energy generated in Minnesota creates a corresponding REC. The physical nature of the bulk power grid makes it impossible or impractical to track any specific unit of generation to any connected consumer. Given these limitations, contractual instruments like RECs become the only reliable method of tracking units of generation fed into the grid to units of power consumed by end-users. Procuring and retiring RECs creates an indelible chain of custody establishing the purchaser's exclusive ownership of the generation attributes of the

power from which the REC derived. No other method can verify exclusive ownership of these attributes.

RECs are the fundamental instruments for allocating to consumers the non-power attributes of renewable generation and the legal market instrument normally required to verify ownership of those attributes. Retiring RECs is the primary method markets use to track non-power attributes to load and to establish an exclusive right by the owner to claim those attributes.

In the United States, for example, RECs are the sole means to claim usage of grid-connected renewable electricity and the most common compliance instrument for consumption-based or delivery-based state renewable portfolio standards (RPS), including Minnesota's Renewable Energy Standard (RES), which requires utilities to retire RECs to demonstrate compliance.[2] No other instrument conveys exclusive ownership of the attributes of clean energy, including the emissions-free and carbon-free characteristics of renewable generation.[3]

Permitting Minnesota's utilities to claim any volume of clean power without having to obtain and retire the corresponding RECs allows utilities to claim they have purchased power generated without emitting carbon dioxide even when the emissions avoided by consuming this power are the basis of someone else's emissions reduction claim. Double claiming attributes that are the basis for emission reductions claims distorts accurate emissions accounting and deviates from widely accepted market protocols and the best practices of well-respected national and international organizations like the U.S. Environmental Protection Agency (EPA),

[2] Indeed, the Commission has acknowledged that RECs, "were created as a regulatory tool to measure and monitor utility compliance with statutory renewable-energy obligations—REC retirement is the only measure by which the Commission evaluates compliance with the Renewable Energy Standards." *Order Determining Renewable Energy Credit Ownership Under Minn. Stat. § 216B.164*, Docket No., E999/CI-13-720, July 22, 2014, p.4.
[3] See CRS, *The Legal Basis for Renewable Energy Certificates* version 2.0, April 2023. https://resource-solutions.org/wp-content/uploads/2015/07/The-Legal-Basis-for-RECs.pdf

White House Council on Environmental Quality (CEQ)., and the World Resource Institute's Greenhouse Gas Protocol (GHGP).[4]

To measure a utility's compliance with the CFS, CRS recommends that the Commission adopt the same mechanism that has bolstered the success of Minnesota's RES, accelerated the state's transition to carbon neutrality, and contributed to Minnesota's reputation as a clean energy leader. As with their renewable energy obligations under the RES, utilities should demonstrate compliance with the CFS by procuring and retiring RECs[5] corresponding to their obligated volumes of carbon-free generation.

Topic 3. What considerations should the Commission take into account regarding the double counting of Renewable Energy Credits (RECs) to meet multiple requirements?

Requiring utilities to demonstrate compliance with the CFS by obtaining and retiring RECs has the added benefit of reducing the risk of double counting attributes applied for compliance with the RES. While compliance toward the RES may count toward compliance with the CFS, both standards must require certificates to demonstrate compliance and ensure accurate accounting of qualifying attributes.

If, for example, a broader range of technologies may be used to obtain the qualifying attributes to demonstrate compliance with the CFS than with the RES, then RECs tracking and conveying the aggregated attributes of renewable and carbon-free generation are essential to avoid double counting in the compliance reporting for each standard, as well as verifying that the qualifying attributes are not the exclusive property of voluntary purchasers.

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[4] See World Resources Institute, Greenhouse Gas Protocol Corporate Accounting and Reporting Standard revised edition, March 2004. https://ghgprotocol.org/corporate-standard
and White House Council on Environmental Quality, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, 88 FR 1196, January 9, 2023.
https://www.federalregister.gov/documents/2023/01/09/2023-00158/national-environmental-policy-act-guidance-on-consideration-of-greenhouse-gas-emissions-and-climate

[5] . . .or another tradeable contractual instrument conveying the carbon-free attributes of power generated without emitting carbon dioxide.

Topic 4. How should net market purchases be counted towards CFS compliance?

In addition to the risk of double counting created when RECs are not required for compliance reporting, CRS is concerned about the inevitable double counting of RECs that arises by applying a systemwide annual average fuel mix to ascertain the portion of a utility's net purchases from a regional transmission organization (RTO) that is carbon-free and may be applied for partial compliance with the CFS.

There are several reasons applying a systemwide annual average fuel mix double counts attributes of carbon-free generation and creates inaccurate estimates of the carbon-free energy consumed in Minnesota.

First, permitting utilities to claim for partial compliance the carbon-free portion of net purchases derived through a systemwide average fuel mix without retiring the corresponding RECs divorces reported generation attributes from actual volumes of generated electricity. This method of compliance reporting understates the amount of carbon-free electricity procured by utilities that are diligently meeting the standard while overstating the total volume of carbon-free electricity consumed in Minnesota.

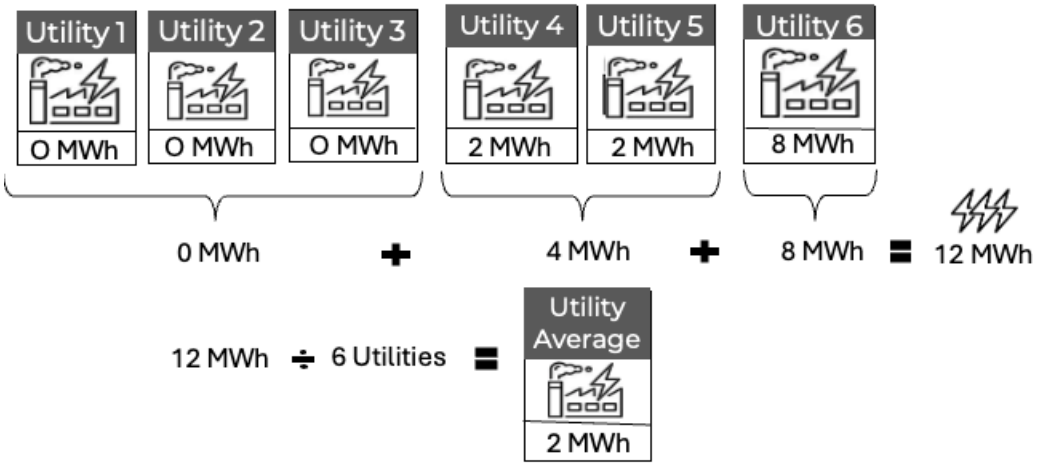
Unlike a REC, which represents a standard unit (1 MWh) of power with specified attributes, attributes derived through a systemwide annual fuel mix are calculated, not tracked, which creates a "free-rider" problem that could discourage utilities from exceeding their CFS benchmarks and can create wide disparities between reported volumes of carbon-free generation and the actual amount of carbon-free power consumed.

Imagine, for example, six utilities delivering 12 total MWh of carbon-free electricity out of a total 60 MWh delivered to Minnesotans within the service territory of their regional transmission organization.[6] Assume three utilities deliver 0 MWh of carbon-free power, two utilities deliver 2 MWh of carbon-free power each, and one utility delivers 8 MWh of carbon-free power. Under this scenario, the systemwide average fuel mix would be 20% carbon-free generation. If we apply the 20% average to

[6] For illustrative purposes, we assume that each utility delivers 10 MWh of power to the system annually.

determine the amount of carbon-free generation each utility may claim for partial compliance with the CFS, the result is 2 MWh each. It is easy to see how calculating carbon-free power generated by utilities reporting their compliance with the CFS overestimates the total amount of carbon-free power delivered by some utilities and vastly underestimates the contribution of others.

Figure 1 – Sample Average Fuel Mix of System Including 6 Reporting Utilities



If every utility reported only the carbon-free electricity derived from the system average mix, the utility that contributed 8 MWh would report for compliance only one-quarter of the carbon-free electricity it actually contributed to the system-wide mix.

This method of calculating partial compliance distributes any carbon-free generation a utility procures in excess of the system-wide average to every other reporting utility in the RTO's service territory. This creates a free rider problem that disincentives over-procurement of carbon-free generation by utilities that choose to meet or exceed CFS benchmarks while presenting an inaccurate picture of Minnesota's actual consumption of carbon-free electricity.

Second, applying a system-wide average fuel mix sends incorrect market signals and undermines balanced enforcement of CFS regulations. As the example above

illustrates, using a system-wide average mix to determine the portion of net purchases a utility may claim for partial compliance allows utilities that may not have generated a single kWh of carbon-free power to claim for compliance purposes the carbon-free generation procured by other utilities or by voluntary purchasers. Allowing utilities to report carbon-free electricity that was procured and sold entirely by others does not assist the Commission in identifying which utilities are complying with the standard but may actually obscure which utilities are falling behind in meeting their CFS benchmarks. Rather it characterizes any utility's net purchases as matching those of every other utility in the system, making it challenging for regulators and ratepayers to make distinctions between them.

Third, permitting utilities to derive carbon-free generation from the systemwide annual average fuel mix results in double counting attributes and mischaracterizes Minnesota's fuel mix as cleaner than it is. The system-wide average mix necessarily includes generation whose attributes have already been purchased by voluntary procurers who hold the exclusive right to claim the attributes. Permitting a utility to partially comply with the CFS by counting attributes owned by voluntary purchasers artificially reduces the utility's compliance obligation and forces the voluntary REC purchaser to unwittingly subsidize that compliance.

Fourth, without accounting for voluntary purchases, applying the system-wide average mix permits the sale of attributes that have already been claimed and voids the benefits of voluntary procurement. If obtaining and retiring RECs is not required to verify compliance and there is no provision requiring utilities to reduce their reported consumption of carbon-free power by the amount of carbon-free power purchased through the voluntary market, utilities are free to sell RECs generated from the very power whose carbon-free attributes it has used to comply with the CFS. Selling attributes that have been claimed for compliance runs afoul of long-held market-based accounting principles and destroys confidence in voluntary REC markets, Voluntary purchasers buy RECs not to support utilities in meeting their compliance obligations, but to make additional contributions that go beyond

regulation and make a real difference to the environment. Because the voluntary procurement is no longer surplus to the carbon-free generation utilities are required to procure anyway, double counting of the carbon-free attributes undermines the laudable objectives of voluntary purchasers.

CRS's Proposed Solution

To avoid double counting attributes that only the purchaser has the right to claim, CRS recommends applying, "*an applicable subregional fuel mix*," as permitted under Minnesota Statute 216B.1691, Subdivision 2d(b)(ii). CRS proposes requiring utilizes to use a subregional residual mix to determine the percentage of annual net purchases from a regional transmission organization that it may count as carbon-free. Specifically, CRS suggests that the Commission require utilities claiming partial compliance apply a residual mix reported by the U.S. Environmental Protection Agency (EPA) for the subregion under EPA's Emission & Generation Resource Integrated Database (eGRID) where the utility's operations are located.[7]

Using eGRID subregional fuel mixes to calculate the percentage of net purchases that count towards partial compliance with the CFS has several advantages over using the RTO's system-wide annual fuel mix.[8]

First, using eGRID subregional residual mixes avoids double counting of attributes that have been procured by voluntary purchasers and are their exclusive property to

[7] Until EPA finalizes residual mixes for each of the 26 eGRID subregions, reporting utilities could be permitted to calculate the portion of net purchases that is carbon-free using the eGRID subregional residual mix emissions rates reported annually by CRS's Green-e©-certified Energy program. These residual mixes are calculated by subtracting all certified retail sales from the annual systemwide aggregate volume before disaggregating the remaining volume by fuel type. While this calculation is not as accurate in characterizing the residual mix than one subtracting all voluntary purchases from the systemwide mix, it is far more accurate than employing a system-wide average mix and sufficiently prevents double counting of attributes until EPA has completed development of its eGRID subregional residual mix calculations. See Green-e © Residual Mix Emissions Rate Tables, https://www.green-e.org/residual-mix.

[8] We note that applying a subregional residual mix to net purchases from an RTO characterizes generation that is produced on a regional level and transacted in a wholesale market using data describing the unattributed power delivered from a transmission topology that has a much smaller geographical footprint Ideally, the Commission would calculate an RTO-specific residual mix using wholesale market data to account for specified purchases, which would employ a residual mix calculation consistent with guidance developed through CRS's Clean Energy Accounting Project (CEAP). However, we refrain from proposing a solution the Commission cannot employ. Minn. Stat. §216B.1691 prohibits the Commission from prescribing an RTO-specific residual mix because facially it is neither a system-wide annual average fuel mix nor "an applicable subregional fuel mix."

claim (see above). A residual mix represents generation and emissions that remain after specified power purchases have been allocated.[9] Residual mix calculations verified through retirement of RECs, therefore, creates an indelible record tracking the attributes of carbon-free electricity from generation to consumption and ensuring those attributes are claimed exclusively by a single owner.

Second, because eGRID subregional residual mixes are calculated and reported by EPA, using them for calculating the percent of net purchases that may apply for partial compliance ensures that utilities apply a consistent percentage and that all utilities are subject to a mix calculated by an independent third-party. Not only does this simplify compliance reporting for utilities claiming partial compliance, relying on a single, independent source accessible (and accountable) to the entire U.S. citizenry ensures fundamental fairness in compliance calculations.

Third, subregional residual mixes use far more granular data and so provides more accurate estimations of the portion of a utility's consumed generation that is actually carbon-free. To define eGRID subregions, EPA applies information about the specific topology of existing transmission infrastructure to the regions and balancing authorities delineated by the North American Electric Reliability Corporation (NERC), the organization that develops and enforces standards ensuring the reliability and security of the North American bulk power grid. The subregions, therefore, replicate the physical constraints of the electricity grid and minimize the effect of electricity transfers between subregions.[10]

Residual mixes calculated at this level of granularity produce better estimations of the carbon-free portion of the generation actually consumed by utilities within the subregion. Calculating fuel mix at this level of specificity ensues that a non-complying utility cannot benefit from carbon-free electricity purchased by utilities in

[9] See Center for Resource Solutions (CRS), *Guidance for Calculating Residual Mix,* Clean Energy Accounting Project (CEAP) Report, March 6, 2024. https://resource-solutions.org/document/030624/
[10] U.S. Environmental Protection Agency (EPA), *Frequent Questions about eGRID*,, epa.gov, last updated January 24, 2025.. https://www.epa.gov/egrid/frequent-questions-about-egrid

neighboring subregions and provides the Commission with far more precise information about which utilities are on target to meet their CFS benchmarks and which are falling short.

Fourth, using eGRID subregional residual mixes is consistent with existing residual mix emissions factors, which are currently reported by eGRID subregion.[11] This consistency simplifies the transition toward 24/7 hourly matching of generation to load. While eGRID reports generation data annually, it is the basis of available datasets estimating monthly and even hourly emissions factors.[12] Moreover, existing databases used to calculate monthly and hourly residual mix emissions factors often report data for eGRID subregions rather than the service territories of RTOs or balancing authorities. Until 24/7 hourly matching is available across the bulk power grid, these estimates provide the most accurate method of matching supplied generation to specified load on a monthly or hourly basis. Calculating the applicable fuel mix for partial compliance reporting using eGRID subregional data matches the scope of data used for monthly and hourly estimates and avoids the complex conversions required to generate compatible annual, monthly, and hourly residual mix emissions factors. Reducing the burden on utilities that must execute complex calculations, encourages more utilities to transition toward reporting critical data with sufficient granularity to develop more accurate emissions inventories and more precise estimates of carbon emission reductions.

An accurate calculation of a subregional residual mix requires an accounting of the RECs (or other contractual instruments) generated and retired on behalf of the utility's customers over a specified period and is consistent with the compliance reporting the Commission currently requires under Minnesota's RES and mirrors

[11] CRS's Green-e© Energy program, for example, has reportsedresidual mix emissions factors exclusively by eGRID subregion since 2019. See https://www.green-e.org/residual-mix . [12] See National Energy Research Laboratory (NREL), Open Energy Data Initiative (OEDI), Hourly Energy Emissions Factors for Electricity Generation in the United States, *US Monthly and Hourly Emissions Factors by eGRID Subregion* [data set], Latest Update: February 20, 2023. https://data.openei.org/submissions/276 .
[12] See National Energy Research Laboratory (NREL), Open Energy Data Initiative (OEDI), Hourly Energy Emissions Factors for Electricity Generation in the United States, *US Monthly and Hourly Emissions Factors by eGRID Subregion* [data set], Latest Update: February 20, 2023. https://data.openei.org/submissions/276 .

global best practices in applying market-based accounting to procured carbon-free electricity.

CRS appreciates the opportunity to comment on CFS compliance reporting and verification of the RES and CFS. Our staff stand stands ready to assist the Commission in seeing that the standards are implemented in a manner that advances the use of sustainable, carbon-free energy in the best interests of all Minnesotans.

Sincerely,
____/s/_____

Chris Cooper
Policy Director
Center for Resource Solutions (CRS)