June 5, 2025

**In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard**

**PUC Docket Number(s): E-999/CI-24-352**

The following items from the Minnesota Forest Resources Council (MFRC) provide information and recommendations for PUC to consider for the purpose of establishing criteria and standards for biomass eligibility and establishing a fuel life-cycle analysis (LCA) framework for utility compliance with Minnesota's carbon-free standard in accordance with the Commission's November 7, 2024 Order in Docket No. E-999/CI-23-151

- Minnesota Statute 41A.25, Subd. 2e defines "biomass" as "any organic matter that is available on a renewable or recurring basis, including agricultural crops and trees, wood and wood waste and residues, plants including aquatic plants, grasses, residues, fibers, animal waste, and the organic portion of solid wastes". This definition, used for determining eligibility for state incentives provided for biofuel and bioenergy production, serves equally well for describing agricultural and forest biomass under the broader, inclusive definition of "biomass" in Minnesota Statute 216B.1691, Subd. (a)(5). This definition includes but is not limited to wood biomass associated with secondary harvest of logging residuals; harvest of dead, dying, diseased, damaged and other wood debris in the forest; wood-based saw mill and paper mill residuals; manufactured wood pellets, and wood-based construction waste.

- A December 13, 2024, report (***Forest LCA Report***) by the University of Minnesota entitled "Estimating current and future carbon stocks and emissions in Minnesota forests and forest products under multiple management scenarios" provides comprehensive carbon sequestration, storage, and emission estimates and projected trends for woody biomass sustainably harvested from Minnesota's 17.7 million acres of forest. A full copy of this report should be part of the official public record and made available for life-cycle analyses: https://mn.gov/frc/assets/MFRC_Carbon_Project_FINAL_REPORT_tcm1162-661769.pdf

- PUC's criteria, standards, and framework guidance for conducting carbon life cycle analysis wood biomass should explicitly include the option of using forest management considerations, including the data, methodology, and results contained in UMN's ***Forest LCA Report***. Importantly, such LCA guidance should allow for carbon sequestration and carbon dioxide emission reduction values derived across statewide, landscape scale, 100-year projected life cycle periods that include stand level forest growth, harvest, and regeneration over time as was reported in UMN's ***Forest LCA Report*** under "business as usual" management scenarios. This assessment estimates a net CO2-eq. emission reduction of approximately 1.25 Mt per acre per year under current forest management. For reference, there are about 2.3 Mt CO2-eq. in a cord of harvested wood.

  Using the same methodology as the ***Forest LAC Report***, increased management associated with forest biomass utilization is expected to increase the growth of in-forest and harvested wood product carbon pools, and the magnitude of fossil carbon offsets, provided that such harvest does not to exceed

Minnesota's maximum estimated 5.5 million cord annual sustainable harvest level (***GEIS on Timber Harvesting in Minnesota*** 1994 and pending 2025 MFRC report). This scenario represents a greater amount of biogenic carbon being used to offset fossil fuel emissions. In the absence of increased harvest, annual sequestration rates are estimated to decline over time as the forest ages under current harvest levels. Preliminary results suggest a doubling of carbon storage (in-forest, harvested wood products, and solid waste disposal sites) over 100 years versus a 35-50% increase under current management practices, intensities, and timber product distributions.

- UMN's ***Forest LCA Report*** also used "cradle to gate" and "gate to grave" life-cycle assessments that track the embodied carbon associated with timber harvesting, transport, processing/manufacturing, and end of life emissions. These emissions are by necessity associated with the primary product manufactured from the timber. Consequently, those emissions should ***not*** be assigned to the utilization of mill wastes for biomass energy. When combined with the underlying reality that most forest biomass will be emitted over a 100-year timeframe, mill waste and forest management residues truly do meet the "carbon free" bar.

- As a final consideration, it is important to note that all forests in Minnesota are sustainably managed under MN Stat. 89A.59. This statute includes the implantation of statewide forest management and timber harvesting guidelines designed to preserve and protect soil, water quality, wetland, stream, wildlife, and social resource values. Sustainable guidelines specific to the harvest of wood biomass, include provisions to leave at least 30% of the biomass onsite and unharvested.

- A Department of Natural Resources (DNR) report summarizing the woody biomass resource in Minnesota is attached. It contains 15 years of annual sustainable woody harvest data specifically for bioenergy purposes. These data provide a baseline for the harvest of wood biomass for bioenergy purposes going forward and is intended to be included with MFR C's comments for the docket record.

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