ENE Comments To The New Hampshire State Energy Advisory Council On Navigant's Resource Potential Study

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ENE (Environment Northeast) is a non-profit clean energy research and policy organization headquartered in Maine with offices in New England and Canada. We appreciate the opportunity to provide written comments to the State Energy Advisory Council and Navigant Consulting, Inc. regarding the resource potential study.

Biomass

Navigant's estimates on biomass availability rely in part on Appendix 8 of the New Hampshire Climate Action Plan (CAP). While the exact methodology used to translate those estimates of fuel availability into technical potential is not detailed, we want to caution that the energy content of available wood listed in Table 7 of the Appendix has not been limited in any way by merchantability, transportation limitations, or sustainability (beyond available growth). Elsewhere the CAP assumes 50% of unharvested growth is available for biomass, but this is not calculated in the Appendix. The figure of 26,650 BBTUs from the 2003 unharvested growth in New Hampshire's forest seems very close to what is given as the technical potential of residential thermal fuel in Navigant's resource potential study. The more limited economic potential in the resource potential study is given as 20,000 BBTU.

The BBTU estimate in the CAP is derived from a calculation of 2.08 million available tons of biomass per year (20% moisture content). Other studies have found a similar annual available growth, but have come up with much smaller amount of energy realistically available when adjusting for the fact that a large portion of this wood is suitable for much higher value products, such as sawtimber, and the fact that not all landowners are interested in harvesting. Goernt et al (2012)[1] uses only 30% of annual growth less removals available for biomass to adjust for merchantibility, leaving 738,000 metric dry tons a year in New Hampshire. A study by the Biomass Thermal Energy Council[2] finds 2.53 million green tons in 2025 as available growth, but excludes the portion of the harvest used for higher value wood, and reduces this by 50% to be conservative. This leaves an estimate of 400,000 green tons/year (250,000 tons at 20% moisture) in the state. Furthermore, for logistical and sustainability reasons, it is unrealistic to assume that more than 65% of logging residue would be removed from site.

The current low value of biomass in practice provides a constraint on overall harvesting. The policy prioritization process should clarify what limits have been used to assess the technical versus total potential, and take into account the fact that reaching the technical limitations of the biomass resource may be undesirable for economic and sustainability reasons. The energy strategy should not undermine

[1] Goerndt, M.E., Aguilar, F.X., Miles, P., Shifley, S., Song N. and H. Steltzer. 2012. Regional Assessment of Woody Biomass Physical Availability as an Energy Feedstock for Combined Combustion in the US Northern Region. *Journal of Forestry:* April/May 2012 p. 138-148.

[2] Biomass Thermal Energy Council. 2010. Heating the Northeast with Renewable Biomass A Vision for 2025.

other goals of the CAP, such as preserving the carbon sequestration potential of forests and promoting durable wood goods.

Cross-sector constraints

Navigant has noted that their resource study does not include a cross-sector analysis. Final goals in the energy strategy for the transportation, thermal and electric sector must take this into account, particularly as relates to the biomass availability noted above. This also has potential relevance for natural gas availability in the transportation and thermal sector.

Thermal Sector

ENE believes that geothermal potential should not be presented as separate from electric thermal potential (slides 16-17) in the resource potential study because electric ground-source heat pumps are essentially an electricity-based technology.

Energy Efficiency Resources

Navigant should clarify how technical and economic potential results for energy efficiency are derived for the year 2025. The 2009 PUC report, *Additional Opportunities for Energy Efficiency in New Hampshire*, which is cited as a data source, present results for the year 2018. Additionally, savings numbers reported in slides 10-12 of the resource potential study seem to be different from numbers in the cited PUC report.

Respectfully submitted,

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