

August 9, 2018

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RE: Energy Code Proposal EM050-2018 – Total System Performance Ratio (TSPR)

Chairman Jonlin and Members of the Energy Code Technical Advisory Group:

The Northwest Gas Association (NWGA) represents the distribution companies and transmission pipelines that serve 3.5 million residential and commercial natural gas consumers in Washington, Oregon, Idaho and British Columbia. The natural gas utilities that deliver this vital energy resource to 1.3 million consumers in Washington State include Avista Utilities, Cascade Natural Gas Corp, NW Natural and Puget Sound Energy.

Excluding petroleum for transportation, natural gas delivers half of the useful energy consumed in Washington State. In 2016, residents and businesses here used the equivalent of 70 million megawatt hours of energy from natural gas to heat their homes and businesses and to power industrial processes. Natural gas also provided the fuel to generate 11 million MWh of electricity.

The NWGA appreciates the opportunity to comment on the Energy Code Proposal EM050-2018, relating to an HVAC total system performance ratio. This proposal would add a requirement to the prescriptive path compliance option for systems serving occupancies subject to section C403.3.5 and would use energy use and carbon emissions to generate a Total System Performance Ratio (TSPR) to determine compliance. The NWGA has several concerns with the proposed revision.

It would add the requirement for a simulation to generate the TSPR. The prescriptive path for the occupancies subject to this section would no longer be truly prescriptive and would require additional steps, documentation, time and expense to show compliance.

The Standard Reference Design HVAC Systems against which the proposed design HVAC systems would be compared are either a water source heat pump system for large office or air source heat pump systems for the other occupancies (small office/library, retail, schools). Although these are viable systems for these occupancies, they are not the prevalent standard practice systems. By what criteria were these Standard Reference Designs selected?

The TSPR is calculated using an energy emissions factor. The proposed electricity emissions factor of 0.55lbs/kWh appears to be based in part on the average generation fuel mix for Washington State for a particular year, which changes from year to year. The widely accepted practice utilized by organizations like ASHRAE and the Northwest Power and Conservation Council (NWPC) to evaluate energy efficiency/conservation is the emissions rate of the *marginal or avoided resource*.

In a 2018 report, the NWPC states, “[S]ince the next megawatt of generation avoided would be available from the marginal unit, not an average of all the units online, the emissions of the

marginal unit would best represent the avoided carbon risk of serving the last unit of load.”¹ The NWPCC estimated that the 2016 avoided emissions rate in the Northwest power system was 1.83 lbs./kWh. The NWPCC forecasts an emissions rate decline to 0.91 lbs/kWh by 2021 due to coal plant retirements, before gradually increasing to 0.97 lbs./kWh by 2031.

NOTE: this artificially low emissions factor is included in the proposed energy code revision EP141-2018 replacing the whole building performance path with ASHRAE Standard 90.1 Appendix G *along with Washington State specific performance targets*. EP141-2018 was previously approved by the Energy Code TAG for consideration by the SBCC and should be withdrawn from consideration unless or until an appropriate avoided emissions factor is included.

Finally, the SBCC is now required to follow the more rigorous requirements of RCW 34.05.328, the significant legislative rule making requirements under the state administrative procedures act. These requirements explicitly require a thorough cost-benefit analysis as well as several other substantive requirements before adoption of a proposed rule. The NWGA believes that the rule making requirements of RCW 34.05.328 have not been met thus far, and this proposal is therefore not compliant with the law.

In conclusion, the prescriptive path is meant to keep compliance with the code as simple as possible. Adding the TSPR will complicate the process, add time and probably expense. If it is determined that the TSPR provides sufficient value, using the correct emissions factor in the denominator is critical. Using a factor too high or too low will skew the results toward a system choice that may not be the best for that building or for Washington’s emissions reduction goals.

Therefore, the NWGA opposes adopting EM050-2018 relating to an HVAC total system performance ratio.

Respectfully yours,



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¹ Northwest Power & Conservation Council, *Avoided Carbon Dioxide Production Rates in the Northwest Power System*, March 13, 2018