MEMORANDUM

1914 Willamette Falls Drive, Suite 260
West Linn, Oregon 97068
t: 503.344.6637 f: 503.344.6693
www.nwga.org
Twitter: @nwgas

TO: Council Members, Washington State
Building Code Council
Mr. Stoyan Bumbalov, Managing Director, Washington SBCC
Mr. Henry Odum, Ecotope

FR: Dan Kirschner, Executive Director
NW Gas Association

DT: April 1, 2022

RE: Follow-up Comments, Analysis & Corrections on the Cost Benefit Analysis "103_Economic_Package", "136_Economic_Package" and "179_Economic_Package"

DELIVERED VIA ELECTRONIC MAIL:
sbcc@des.wa.gov; stoyan.bumbalov@des.wa.gov; henry@ecotope.com

Thank you for the opportunity to review the draft Cost Benefit Analysis at the public hearing on March 16, 2022. While some of the concerns expressed in our March 11, 2022 comment letter were addressed by Ecotope, the draft CBA still failed to address some critical pieces, either adequately or in some cases, at all.

WSEC-C-CR102, 21-GP1-103
Requiring Heat Pumps for Space Heat and Banning Fossil Fuel Heating
Comments on the Cost Benefit Analysis "103_Economic_Package"

GENERAL COMMENTS

- Limited Occupancy Type
  - Only two occupancy types were analyzed – Retail and Office. Space uses with high occupancy loads such as Gyms, Auditoriums, Places of Religious Worship and Classrooms were not included nor analyzed. Both the inclusion and analysis of these spaces is important because of the high corresponding ventilation load in these

occupancy types. Analyzing these space types would show a greater deviation in operating costs between gas and electric heat because tempering outside air in low ambient conditions is likely more expensive when using electric resistance heat.

- Costs of Gas Infrastructure
    - The report references gas infrastructure costs as a "burden" to the building owner, but the owner does not see those costs. Such costs include Plan Review, Meter and Service Extension. According to the Ecotope report, these costs are approximately $18,316. In reality, these costs are incurred by the gas utility provider and should not be included as part of the construction costs paid by the end user.
    - During the Cost Benefit Analysis testimony by Jonny Kocher from RMI, the proposal proponent, he claimed that eventually the rate payer would incur the gas infrastructure expense because the current depreciation schedules used by the gas utility are not aligned with Washington state energy strategy and he assumed, without any foundation or analysis, that the allowances for line extensions will be reduced over time. That is speculation at best and not relevant to this code cycle. That will only become relevant should the Legislature makes the changes that Mr Kocher alludes to, but not before then.

SUMMARY AND RECOMMENDATIONS FOR SPACE HEATING

We would like to emphasize the importance of a thorough, complete and balanced economic study that includes all commercial building types in both predominant Climate Zones of Washington State. The two building types analyzed are arguably the most advantageous for Heat Pumps. Presenting an outdated report from another state does not provide sufficient analysis for the far-reaching economic impacts this proposed code change will have on the commercial building industry.

Additionally, there was no analysis presented concerning the retrofit costs incurred by building owners to convert to heat pumps from gas equipment which may be required by most like-in-kind HVAC system changeouts under section C503.4.5 in the current draft CR102. The absence of any consideration of these costs as a burden to owners represents t best an inaccurate analysis and at worst evidence of a potential bias in the incomplete analysis presented, particularly when the cost of gas infrastructure was inaccurately attributed as a burden to owners.

WSEC-C-CR102, 21-GP1-136
Heat Pump Water Heating
Comments on the Cost Benefit Analysis "136_Economic_Package"

GENERAL COMMENTS

- Limited Occupancy Type
  - Only one occupancy type was analyzed – multifamily housing. For what was supposed to be a complete, not cursory and fragmented analysis, the absence of analysis of the impacts on much higher energy users like hospitals and laboratories is a critical flaw.

- Not Reflective of the Commercial Market
  - The energy saving and carbon impact implications for this single occupancy type appear to be extended to all commercial buildings. Most commercial space – office, retail, etc. – will have much lower domestic hot water demands and will therefore fall under the exceptions in the current version of this proposal. That means under this proposal, most commercial space will be served by electric resistance water heaters, for which the energy and carbon impacts have not been evaluated in any sufficient or reasonable way.

SPECIFIC COMMENTS

- Missing Space Cost Impact
  - No accounting was done for the larger mechanical space required to house the tanks and other appurtenances required for HPWH systems – pumps, more piping, etc. Ecotope asserted, without any particular grounding in research or analysis, that that these mechanical rooms only take up 'waste' space in parking garages. This is contrary to our experience that all space in commercial buildings has a price, whether it consumes available parking spaces or requires additional structure and building materials for a rooftop mechanical penthouse. Ecotope is an experienced expert at designing HPWH systems – they should have exact space requirements for HPWH systems as compared to traditional gas-fired systems, but failed to make that a visible part of their analysis. Please add this cost to the Life Cycle Cost Analysis.
  - For anecdotal reference, we know of a multifamily project under construction with an electric heat pump water heating system. The mechanical room for that project is approximately 1320 square feet – including ventilation shafts required to get air into and out of the space to supply the heat pumps, clearances around heat pumps for airflow and maintenance, etc. We estimate a traditional gas-fired water heater system would occupy 340 square feet. The difference is equivalent to 6 leasable parking spaces – certainly not 'waste' space.

- No OPEX Detail
    - Appendix C of the Ecotope report shows details for capital expenses, but no details for operating expenses. Operating expenses can be significant and impact costs for the life of a building. We ask that this information be shared so that stakeholders are able to assess the completeness of the cost benefit analysis review.

- Life-Cycle Analysis Updates
    - The suggested revisions to water heating operating costs will affect the rest of the cost-benefit and life-cycle analyses. Life Cycle Cost Analyses are typically sensitive to economic inputs. Since operating cost details were not available for public review, the validity of those analyses is in question. This is significant because the Social Life Cycle Cost of the gas-fired and heat pump systems were close – within 5%.

WSEC-C-CR102, 21-GP1-179
Electrical Receptacles
Comments on the Cost Benefit Analysis "179_Economic_Package". The comments below were not addressed during the March 16, 2022 hearing.

- Estimated Costs Not All-Inclusive
    - The revised cost per receptacle is within reason – for the receptacle itself and wiring to the dwelling unit electrical panel. However, there are many other costs still not accounted for:
        - larger electrical panels in each dwelling unit
        - larger feeders to serve those panels from house panels
        - larger or greater number of house panels
        - larger feeders from main switchgear to those house panels
        - larger switchgear
        - larger feeders from the electrical service to the main switchgear

Also, for a normal project the added cost of utility-side electrical service feeders and transformers will often be borne by the electric utility, but that is not a given. In the case of this proposal, "cost to serve" is more likely since dwelling unit appliance loads will not be online when construction is complete, or anytime soon thereafter.

Please include these additional costs for measure 179 costs into the cost/benefit analysis.

OVERALL SUMMARY AND RECOMMENDATIONS

We strongly encourage the Code Council to require the code change proponents and Ecotope to provide a more thorough economic analysis for these proposed changes before considering putting them into code.

###