March 26, 2025

Connecticut General Assembly Senators
Legislative Office Building
Hartford, CT 06106-1591

RE: Proposed S.B. No. 4 – Session Year 2025

Dear Senator:

The Northeast Chapter of the Combined Heat and Power Alliance (the "NE Chapter") respectfully submits this statement in support of Proposed S.B. No. 4 (the "Proposed Bill"), which you introduced.

The NE Chapter is a group of manufacturers, system developers, engineers, and end-user representatives with the purpose of reducing energy costs and carbon emissions using the highly efficient technology of Combined Heat and Power ("CHP"). The NE Chapter and its member organizations fully support the Proposed Bill's goals and objectives to improve service and reduce costs for electricity ratepayers in Connecticut and believe that CHP technology will play a critical role in facilitating the Proposed Bill's mission. In addition to supporting energy affordability, access, and accountability to Connecticut's ratepayers, the NE Chapter strongly believes that CHP will play a crucial role in reducing greenhouse gas emissions in the near- to mid-term when compared to current projected marginal grid emissions. The United States Department of Energy shares this sentiment in stating that "CHP can provide significant greenhouse gas emissions reductions in the near- to mid-term as marginal grid emissions continue to be based on a mix of fossil fuels."[1]

CHP can assist Connecticut in reducing its high electricity rates.

Connecticut residents face electricity rates 91% higher than the national average. Between 2014 and 2024, electricity rates have almost doubled. Even adjusting for inflation, Connecticut's average electricity rates have increased by over 30%. Electricity rates have already increased, again, in 2025.[2] Due to anticipated increases in electricity demand, and the federal government's animus towards renewable energy development, Connecticut is likely to continue to rely on natural gas for its energy needs for the foreseeable future.[3] As long as Connecticut is utilizing natural gas, it should ensure that such usage is done in the most efficient and cost-effective manner possible. That manner is CHP. By recovering and reusing heat from on-site electricity production, CHP systems typically achieve efficacies of 65 to 80%. Some CHP

[1] US Department of Energy, Industrial Decarbonization Roadmap, Sep. 2022 at 14, https://www.energy.gov/sites/default/files/2022-09/Industrial%20Decarbonization%20Roadmap.pdf
[2] Sena Wazer, "CT's energy story: high utility rates and reliance on natural gas", CT Mirror, February 25, 2025. https://ctmirror.org/2025/02/25/cts-energy-story-high-utility-rates-and-reliance-on-natural-gas/
[3] Jan Ellen Spiegel, "Could Trump force the region into more of the fossil fuel it's trying to get away from", CT Mirror, February 11, 2025. https://ctmirror.org/2025/02/11/trump-energy-emergency-ct-fossil-fuels/

systems achieve efficiencies approaching 90%.[4] These efficiencies directly translate to reduced electricity costs for Connecticut's ratepayers.

CHP is a long-established energy efficiency and cost savings measure.

Operating at higher total system efficiency than is achievable with separately produced heat and power, CHP reduces customers total energy bills. Reduced energy costs improve business margins and profitability. In the case of non-profit or government enterprises, less spent on energy costs allows the organization to dedicate more resources to their core mission. Reducing energy cost burdens for an enterprise fosters economic development opportunities in the form of jobs and a more competitive business environment. Accordingly, Connecticut should consider incentivizing the adoption of CHP systems to advance the purpose of the Proposed Bill and improve service and reduce costs for ratepayers.

CHP reduces CO_2 emissions, <u>today</u>.

According to a 2019 study by ICF, CHP emissions are estimated at 652 lbs. CO_2/MWh when accounting for offset boiler emissions.[5] The eGRID non-Base load emissions rate, a suitable estimate of marginal generation most likely to be offset by CHP and other DERs, is 900.5 lbs. CO2/MWh for eGRID 2021 Sub-region NEWE.[6] CHP provides significant carbon savings relative to marginal emissions across the region. In addition to improving service and reducing costs to ratepayers, CHP systems provide carbon savings relative to marginal grid emissions in Connecticut. As such, policies that encourage the adoption of CHP systems should be adopted to further the objectives of the Proposed Bill.

CO_2 reductions <u>today</u> are more valuable than future reductions.

CHP is reducing carbon emissions today — not 5 or 10 years out — given that it is still a cleaner resource for heat and power rather than separate generation by traditional central power plants and on-site boilers. Atmospheric CO_2 accumulation is cumulative and any attempt to discourage use of this carbon reducing technology is counterproductive vis-à-vis the state goals. The Time Value of Carbon is the concept that greenhouse gas emissions cut today are worth more than cuts promised in the future, due to the escalating risks associated with the pace and extent of climate action. "Because emissions are cumulative and because we have a limited amount of time to reduce them, carbon reductions now have more value than carbon reductions in the future. The next couple of decades are critical."[7] Accordingly, Connecticut should reward CHP systems that are actively reducing carbon emissions today.

[4] Environmental Protection Agency, CHP Benefits. https://www.epa.gov/chp/chp-benefits
[5] ICF. "As the grid gets greener, combined heat and power still has a role to play." https://www.icf.com/insights/energy/chp-role-in-decarbonization
[6] Environmental Protection Agency, Subregion Output Emission Rates (eGRID2021): eGRID Subregion RFCE, Non-Baseload output emission rates, January 30, 2023. https://www.epa.gov/system/files/documents/2023-01/eGRID2021_summary_tables.pdf
[7] Larry Strain. "Time Value of Carbon", Carbon Leadership Forum, April 2020.

As the grid gets cleaner, CHP can and will evolve to low and non-emitting fuel sources.

Existing CHP systems can and do utilize biogas, biofuels, and hydrogen fuels. All natural gas-fueled CHP is compatible with renewable gas. The U.S. Department of Energy's Combined Heat and Power eCatalog of recognized packaged CHP systems denotes many systems are clean fuels compatible today, including:[8]

- 46 existing CHP packages capable of running on digester gas;
- 4 existing CHP packages capable of running on landfill gas;
- 59 existing CHP packages capable of running on a hydrogen blend; and
- 5 existing CHP packages that are 100% hydrogen capable.

Greater availability of equipment options is soon to become available. Most existing turbines and engines can operate on hydrogen mixtures up to 10-40%. All major engine and gas turbine manufacturers are working on the capability to operate at high levels of hydrogen, targeting 2030 for 100% hydrogen prime movers.[9] CHP systems can be changed out or modified in the field to operate on high hydrogen-fuel blends and/or 100% hydrogen fuel. CHP operating and installed today is easily adaptable to low-carbon and zero-carbon fuels including clean hydrogen. To meet the objectives of the Proposed Bill, Connecticut should encourage the adoption of CHP systems that are expected to evolve to low and non-emitting fuel sources in the near future, while improving service and decreasing costs for ratepayers now.

Conclusion

CHP saves energy, lowers costs, reduces criteria pollutants, and avoids CO_2 emissions. CHP remains a beneficial component of a reliability, cost, and carbon mitigation strategy by avoiding CO_2 emissions now, in the present and near term. As the grid decarbonizes, CHP can, and will, de-carbonize as well. There's a large existing base of systems operating on renewable fuels. Available equipment for delivering low and no carbon heat and power from CHP systems will continue to expand significantly over time. CHP is not technology lock in. Systems can be readily adapted and replaced. If better alternatives are available, CHP can be reevaluated at the site, reconfigured to support decarbonization, or retired if it proves to be an impediment to decarbonization.

CHP can work in complimentary fashion, assisting decarbonization and electrification, by reducing some of the service risks, and increasing the affordability of electrification schemes. CHP facilitates a 100% renewable grid, by providing necessary grid services, as a distributed and dispatchable resource. Considering the obstacles that renewable energy deployment will face in the coming years and the anticipated increase in energy demand, Connecticut is like to continue to rely on natural gas for its energy

[8] U.S. Department of Energy, Combined Heat & Power eCatalog, Last Accessed June 2023. https://chp.ecatalog.ornl.gov/search
[9] Combined Heat and Power Alliance, Clean Hydrogen and CHP: A Roadmap for Industrial and Commercial Decarbonization, March 2022. https://chpalliance.org/resources/publications/clean-hydrogen-and-combined-heat-and-power-a-roadmap-for-industrial-and-commercial-decarbonization/

needs. Connecticut should ensure that such utilization of natural gas is done in the most efficient and affordable way possible, which is provided by CHP technology.

Accordingly, Connecticut should adopt policies that encourage the adoption of CHP systems to meet the Proposed Bill's goals and objectives to improve service and reduce costs for electricity ratepayers in Connecticut.

Respectfully,

The Northeast Chapter of the Combined Heat and Power Alliance