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BEFORE THE
CALIFORNIA ENERGY COMMISSION

IN THE MATTER OF:
Solicit Public Comments on Status of Research on Clean Energy Alternatives to Diesel Backup Generator Systems **Docket No. 19-ERDD-01**

RE: Comments of the Heat is Power Association: Waste Heat to Power Technologies as a Clean Energy Alternative to Diesel Backup Generator Systems

The Heat is Power Association (HiP) appreciates the opportunity to respond to the California Energy Commission's solicitation in Docket 19-ERDD-01 regarding alternatives to diesel backup generator systems.

HiP, a non-profit organization committed to promoting the efficient use of zero-emission electricity generated from industrial waste heat, is the trade association for the waste heat to power (WHP) industry. One of HiP's missions is to educate policy makers about the value of waste heat as a clean baseload energy alternative, supporting energy resiliency, and as an economic driver in heavy industrial regions. WHP captures heat energy from industrial processes, that would otherwise be vented into the atmosphere, and turns it into useful baseload electric power. The process uses no additional fuel, involves no combustion, and produces no incremental emissions. As the Commission explores clean alternatives to diesel backup generator systems, we urge you to consider zero emission, resilient baseload WHP generation as a readily available alternative for large waste heat generating and energy consuming C, I & I facilities.

The State of California faces a challenge in meeting the State's clean energy goals while already experiencing the extreme weather events attributable to climate change. As the Commission has recognized, California's heightened risk for severe weather events and electric power outages has resulted in the counter-productive increased use of dirty diesel generator systems. WHP can play a role as a clean, distributed energy alternative providing reliable baseload electricity for many of California's large commercial, industrial, and institutional (C, I&I) energy consumers.

Onsite WHP systems ensure businesses can keep the production lines rolling and data centers operating in the face of wildfires and other severe weather events and grid outages. WHP systems are typically available over 90% of the time, which is similar to diesel generators. But the difference is that WHP generates electricity with zero emissions. In contrast, intermittent clean power sources like wind or solar have capacity factors between 20-30% and, as such, cannot reliably function as either baseload or backup generation. WHP is an available and reliable source of energy which offers the best of all worlds - emission free, reliable baseload power which can be delivered to California's critical infrastructure, such as hospitals, universities, and data centers, and decrease disruptions to California's industries, businesses, and communities.

The Heat is Power Association (HiP) is the trade association for the waste heat to power (WHP) industry. WHP uses waste heat from industrial processes to generate electricity with no additional fuel, no combustion, and no incremental emissions. HiP educates policy makers about clean energy from waste heat and advocates for policies that provide parity for WHP with other sources of clean energy.

Additionally, there is minimal risk when deploying WHP systems since these are well-established technologies, such as steam cycle and organic Rankine cycle turbines. Systems vary in size and complexity: ranging from 25 kW modular designs that can be installed in a couple of hours, operated and monitored remotely, and decommissioned and redeployed as needed, to custom configurations that can generate more than 100 MW from high volume, high-temperature waste heat streams. These systems are commercially available for deployment right now, and because they are fuel-flexible they can be modified to work with renewable fuels as they become available at scale, including hydrogen.

Besides resiliency, WHP can provide California's industrial sector with a solution that reduces emissions while increasing market competitiveness. A 2015 report from the DOE's Oak Ridge National Lab identified a 763 MW WHP technical potential within California, the third-largest capacity within the United States[1]. That potential is undoubtedly even greater today. With the industrial sector accounting for 21% of total GHG emissions in the State[2], California should take every opportunity to promote carbon reductions in this large energy consuming sector. This is a sector that requires large volumes of high-temperature heat that is likely to be produced by combusting fossil fuels for many years before renewable gas, hydrogen or other resources become available at the scale needed to provide baseload thermal energy for industrial operations. Getting WHP to scale and capturing as much energy as possible from every quantum of fuel as quickly as possible is a readily available strategy to decarbonize California's industrial sector sooner rather than later.

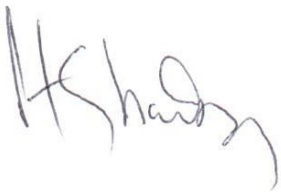
WHP can also reduce the overall environmental impact of industrial operations on fence-line communities. By displacing diesel-fueled backup generators, WHP systems reduce not only carbon emissions, but also the load of criteria air pollutants, including sulfur dioxide, nitrogen oxides, volatile organics, and particulates, that are generated by combusting diesel fuel and contaminate the air in vulnerable communities close to industrial operations.

The adoption and deployment of WHP can accelerate the ability of California to meet its SB 100 goals, including displacing fossil fuel consumption, reducing air pollution, diversifying the energy generation portfolio, and contributing to the safe and reliable operation of the electrical grid[3]. Additionally, the new federal Investment Tax Credit (ITC) enacted in the Consolidated Appropriations Act, 2021, 26 U.S.C. 48(a)(5), now makes WHP more affordable for California's C, I & I sectors. The new ITC provides a 26% Investment Tax Credit (ITC) for "waste energy recovery property," a credit equivalent to that provided for wind and solar generation technologies[4].

[1] Waste Heat to Power Market Assessment, ICF for Oak Ridge National Lab, March 2015, http://www.heatispower.org/wp-content/uploads/2015/02/ORNL-WHP-Mkt-Assessment-Report-March-2015.pdf
[2] California Air Resources Board https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf
[3] Senate Bill No. 100 https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100
[4] Consolidated Appropriations Act, 2021 https://rules.house.gov/sites/democrats.rules.house.gov/files/BILLS-116HR133SA-RCP-116-68.pdf

We thank you again for the opportunity to provide input and would be happy to provide additional details regarding WHP as a resilient, scalable, and clean energy alternative to backup diesel generators.

Respectfully submitted: Date: February 11, 2021



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