

DOCKETED

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EPIC 4 Investment Plan Scoping Industrial Decarbonization Workshop

Additional submitted attachment is included below.



California Energy Commission
Docket No. 20-EPIC-01
Docket Unit
715 P Street
Sacramento CA 95814

07/23/2021

RE: Comments Following the Electric Program Investment Charge: 2021-2025 (EPIC 4) Investment Plan Scoping: Industrial Decarbonization Workshop.

Kanin Energy appreciates the opportunity to respond to the California Energy Commission's solicitation in Docket 20-EPIC-01 for the EPIC Investment Plan Scoping Workshop on Industrial Decarbonization.

Kanin Energy is a clean energy development company that focuses on creating industrial decarbonization projects. Kanin's main objective is to decarbonize heavy industry through the installation of waste heat recovery technologies that capture and convert waste heat that is a by product of industrial processes to produce emission free baseload power utilized at facilities or exported to the grid. By reducing the consumption of natural gas use or power drawn from the electrical grid, Kanin's waste heat recovery projects help industrial facilities reduce emissions and increase energy resiliency. Waste heat to power (WHP) technologies can present a significant opportunity in decarbonizing heavy emitting sectors while enhancing the resiliency of California's power mix and contribute high-quality, emission-free baseload electricity generation to the grid. The CEC should consider the inclusion of technologies like WHP in their investment plan to reduce emissions from industrial processes. Kanin believes waste heat recovery and its forms of technology can play a vital role in helping California transition to a zero-emission energy economy and solution in achieving industrial decarbonization.

Kanin Energy appreciates the comments provided by the panelists for high temperature industrial heating and agrees that waste heat recovery can deliver a zero-emission, cost-effective source of electricity for the State of California while also maintaining market demand for critical products and services. Kanin would like to submit input to the following questions prompted by the CEC on the panel for high temperature industrial heating:

I. Where is the highest potential to switch from fossil fuels to zero-carbon process heating?

Industrial decarbonization is perhaps the most difficult sector for carbon abatement because of its scale and the requirements for a solution in terms of technology and capital. The industrial sector, accounts for one-third of global energy demand and 24% of global GHG emissions, as reported by the International Energy Agency¹. WHP adoption within the State of California can present a significant opportunity for emission reductions within the heavy industrial sector with 763 MW of WHP technical potential identified in a 2015 report from the DOE's Oak Ridge National Lab within California, the third-largest capacity within the United States². The commercial technology offers a low-hanging fruit for industrial facilities looking to lower emissions, and ultimately catalyzing other decarbonization and energy efficiency projects. Eventually, these systems can be modified

¹ International Energy Association, 2020

<https://www.iea.org/reports/tracking-industry-2020>

² Waste Heat to Power Market Assessment, ICF for Oak Ridge National Lab, March 2015,

<http://www.heatpower.org/wp-content/uploads/2015/02/ORNL-WHP-Mkt-Assessment-Report-March-2015.pdf>

to work with renewable fuels as they become more available, including hydrogen and renewable natural gas.

II. What research and demonstrations are needed to eliminate barriers and challenges for widespread adoption of waste heat recovery technologies?

Policy and government support are necessary for WHP to grow in adoption. As energy resiliency and grid resiliency become increasingly more important in face of new intermittent renewables and climate impacts, WHP has an important role to play. Although the technology has been proven and has many implementations across the world, WHP is still a nascent technology and will require government policy and support to truly scale. Policy and regulations in favor of WHP can significantly impact the economic and financial feasibility of a project and can increase the deployment and adoption of WHP technology. States that have not taken the time to fully understand WHP ignore the benefits of this energy resource and hinder the growth and potential of the sector.

Awarding EPIC funds for demonstration projects of WHP in specific environments to test the WHP benefits will accelerate technological advancements and increase adoption of waste heat recovery systems at scale. Microgrants awarded to industrial facilities or developers to conduct heat recovery feasibility studies would also be helpful in scaling adoption of WHP because it removes the initial barrier of understanding the recoverable energy potential available.

III. Can waste heat recovery technologies be applied across other industries?

There are numerous applications and potential for WHP and waste heat recovery in the industrial sector including, cement manufacturing, glass manufacturing, smelting, and steelmaking. Other industries with high potential for WHP include fertilizer manufacturing, biomass, refineries, hydrogen processing, natural gas processing and chemicals manufacturing. A WHP market assessment conducted by the U.S Department of Energy (DOE) has identified over 15 GW technical potential available in the U.S for WHP systems, presenting an enormous opportunity for the energy system. Additionally, WHP can play a role in the decarbonization of supply chains for scope 2 and 3 emissions that are becoming increasingly important for countries, consumers and consumer facing industries. WHP offers a competitive advantage for facilities seeking to meet these consumer demands and is beneficial in any industry with a waste heat source.

IV. How can the CEC facilitate the adoption of waste heat recovery technologies?

WHP is a readily available solution that allows heavy industry to decarbonize, while also providing additional benefits to electricity grids. The viability of WHP is established, but its adoption at scale has yet to be realized because political and economic conditions have not yet been aligned. Utilizing this undervalued resource will present significant benefits for heavy industrials. Furthermore, decarbonizing heavy industry through WHP can play an immediate role in helping transition the world's most polluting sectors towards a more sustainable future. The CEC should take advantage of these low risk and commercially available technologies that have been adopted internationally, like WHP that have 3.5 GW globally installed, and adopt them within the State of California by incentivising avenues for large scale deployment. The CEC can also support



demonstration projects by providing funding for waste heat technology as suggested in Part II of our response.

WHP captures heat energy from industrial processes, that would otherwise be vented into the atmosphere, and turns it into useful baseload electric power. WHP delivers a zero-emission alternative to the use of fossil fuels to provide a reliable 24/7 electricity resource. Kanin believes that WHP is a reliable, available source of energy that can immediately address California's major challenges, meet the state's emission reduction targets, while also increasing the States' market competitiveness. Our industrial partners, including those in California, cite energy resiliency, clean electricity, and power price certainty as major factors for their interest in our WHP projects.

Kanin Energy remains extremely supportive of the goals and efforts of the CEC to conduct a series of workshops to discuss the Electric Program Investment Charge 2021-2025 Investment Plan (EPIC 4 Investment Plan) and solicit public input on critical topics like industrial decarbonization. We thank you for the opportunity to provide input and can provide additional detail upon request.

Respectfully,

A handwritten signature in black ink, appearing to read "Janice", written in a cursive style.

Janice Tran
Chief Executive Officer
Kanin Energy