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California Air Resources Board

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The [Renewable Thermal Collaborative](https://www.renewablethermal.org/) (RTC) is grateful for the opportunity to comment on the California Air Resources Board’s 2022 Scoping Plan Update. The RTC appreciates the Air Resources Board’s commitment to advancing California’s climate ambitions and public solicitation for comments throughout the process.

We agree with the ARB that electrification of industrial processes will play a significant role in decarbonizing industry, along with green hydrogen. However, to maximize both near- and long-term industrial emissions reduction potential, we respectfully encourage the inclusion of other renewable thermal technologies—including renewably sourced thermal energy storage—in the Scoping Plan reduction pathways modeling and in the policy scenarios that the modeling informs. In particular, we respectfully suggest that additional modeling focus on renewable thermal energy through indirect electrification.

While the benefits of direct electrification of industrial processes are clear and direct electrification is well-represented in the PATHWAYS modeling assumptions, we believe the modeling misses a critical opportunity to address indirect electrification of industrial thermal processes. Indirect electrification refers to the intermittent consumption of electric power (in this case sourced from renewables) and its conversion into continuous heat that can be stored through various available materials. As consumption is intermittent and occurs during times of excess renewable power generation, thermal storage with indirect electrification does not add to peak load on the grid. This is especially advantageous in a future with far greater direct electrification to decarbonize major emitting sectors (e.g., transportation and buildings) and with significantly higher peak demands. As a technological solution that is available today through several California-based providers, indirect electrification also offers the potential for near-term emissions reductions in communities that are disproportionately bearing the health and environmental impacts of large industrial emitters while protecting jobs in sectors with high heat demand.

We express support for ARB’s emphasis on renewable hydrogen in reduction pathways and the inclusion of renewable natural gas in modeling assumptions for industry. Given the scale of the industrial decarbonization challenge, it is our hope that ARB continues with an approach that maximizes the potential of these and other renewable thermal technologies, including renewably sourced thermal energy storage, sustainable biomass, biogas, geothermal, landfill gas, and solar thermal.

The RTC is the leading coalition of large thermal energy users committed to decarbonizing their Scope 1, thermal emissions. Our collaborative currently consists of [21 members](https://www.renewablethermal.org/our-members/), including 15 corporations, one university system, three cities, one hospital system, and one state government, with membership growing each year. Our sponsors include renewable thermal providers and service firms. RTC members recognize the growing demand and necessity for renewable heating and cooling and the urgent need to meet this demand in a manner that delivers sustainable, cost-competitive options at scale.

Decarbonizing industrial and process heat is critical to our members and to reducing global emissions. Worldwide, energy used for heating and cooling is approximately 50 percent of total global final energy demand and 39 percent of energy-related carbon dioxide emissions. In the U.S., thermal energy for industrial production generates 12.5 percent of total GHG emissions (833.2 million metric tons of CO2e). Tackling this neglected wedge of emissions is critical to decarbonizing industrial emissions by 2050 and ensuring a just, 1.5°C future.

To achieve California’s decarbonization goals while avoiding the economic impacts of industrial shutdowns, we suggest the ARB take an approach to its reduction pathways and scenarios in the Scoping Plan Update that captures the full potential of the range of renewable thermal technologies. The full suite of available renewable thermal technologies can contribute significantly to industrial decarbonization in California as well as advancing environmental justice and protecting local economies.

Thank you for leading the way and for your consideration.

Sincerely,

The Renewable Thermal Collaborative