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Via electronic submittal: [Scoping Plan Comment Docket](#)

Re: Rondo Energy Comments on March 15, 2022 Preliminary Modeling Results Workshop

Rondo Energy appreciates this opportunity to submit additional comments regarding the 2022 Scoping Plan Update. Rondo Energy (Rondo) strongly supports CARB’s ongoing efforts to solicit the latest information and the lowest-cost, lowest-risk pathways to achieve California’s climate, environmental, and economic goals. Rondo previously submitted broader comments to the Kick-Off workshop¹, as well as initial Scenario comments². This comment letter builds upon those initial thoughts in the spirit of CARB’s iterative approach to policy making.

Rondo is a California-based company developing and delivering technology to deliver zero-carbon energy for industrial processes and power generation—replacing combustion with clean intermittent electricity, thus providing “direct emission reductions” as required under California’s AB 197³. Our technology creates the opportunity – even larger than was shown in the presentation of preliminary modeling results⁴ – to replace fossil fuel combustion with less expensive renewable electric power. The “persistent sources of emissions” that were discussed are exactly what our technology targets. Rondo’s Heat Battery captures and stores intermittent electricity and delivers heat around the clock at temperatures high enough to power all of California’s industrial processes. Due to high efficiency and rapid intermittent charging that can be managed by the grid operator, indirect electric heating can greatly contribute to industrial electrification targets at lower costs than any other pathway, while improving grid reliability. Relative to electrolytic hydrogen for industrial heat, half the total new renewables are required.

This Scoping Plan update can drive critical policies forward to achieve true carbon neutrality and to transition to a low-cost, low-carbon future. Zero-carbon industrial heat powered by intermittent electricity is a least-cost decarbonization pathway for multiple sectors, including glass, cement, food production, and transportation fuels/feedstocks. Multiple regulatory and policy matters will need to be addressed to enable its deployment over the coming years; it is critical that this class of solutions be strongly highlighted in the upcoming Draft Plan.

Slide 9 of the E3 presentation shows that these persistent emissions (regardless of alternative) need to be offset with CDR reductions to achieve statewide Carbon Neutrality. By eliminating “persistent emissions” at the source, Rondo’s technology provides a double benefit. For every ton of industrial emissions reduced, a ton of CO₂ doesn’t need to be handled and sequestered by the yet-to-be-proven CDR system. Reducing the size of the eventual CDR system, including ‘off-grid’ electrical infrastructure will provide significant cost savings. And the elimination of combustion today will improve local air quality in critically impacted communities.

¹ <https://www.arb.ca.gov/lists/com-attach/86-sp22-kickoff-ws-ATNdagY3B2NWYAkW.pdf>

² <https://www.arb.ca.gov/lists/com-attach/50-sp22-concepts-ws-U2ECNQQ1BW9WYQAQ3.pdf>

³ https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB197

⁴ <https://ww2.arb.ca.gov/sites/default/files/2022-03/SP22-Model-Results-E3-ppt.pdf>

The impact of industrial heat can't be understated, and the value of its associated products can't be ignored. California needs a Draft Plan that highlights ways to decarbonize without deindustrializing. The figure below shows the energy used by industrial sector, and also highlights that many of these facilities are in disadvantaged communities and/or extreme non-attainment air quality basins. During the workshop, staff stated the need to also reduce criteria pollutants in furtherance of the State SIP strategies. Replacing fossil combustion with zero-carbon industrial heat eliminates combustion byproducts of NOx, PM and CO₂ in these communities and air basins that need it the most.

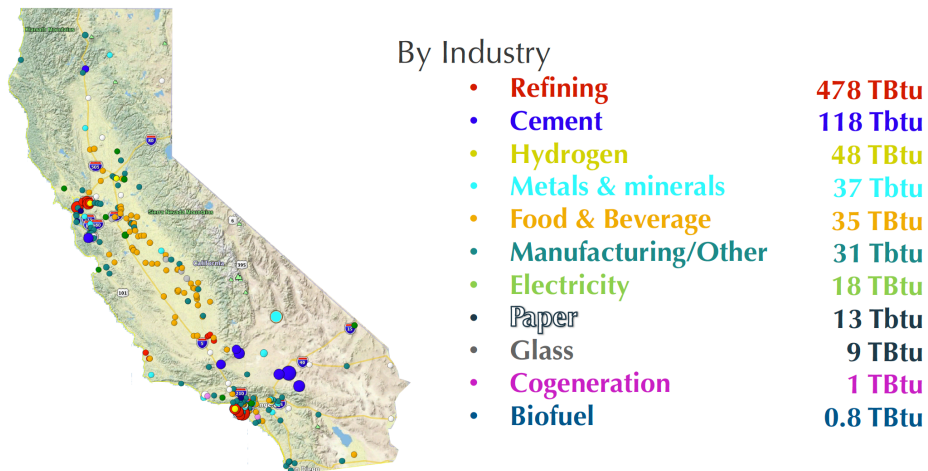


Figure 1 California Industrial Heat Energy Use, By Industry

Rondo is supportive of the modeling looking at industrial electrification, and has previously suggested that *indirect electrification* be considered in the modeling as well. From the PowerPoint presented at the workshop, it is difficult to ascertain if this was modeled. We respectfully request that the Draft Plan include indirect electrification of industrial heat for several of the sectors highlighted, including fuels (extraction and refining), metals, food and beverage, cement and glass.

It's clear that enormous amounts of low-cost, zero-carbon industrial energy are needed to keep California's economy growing without sacrificing its climate goals. Fossil fuel burning for industrial heat today is significant, and has been one of the areas previously deemed to be "hard to decarbonize" in the transition to a zero-carbon future in past Scoping Plans, but this 2022 Update can be different. **This update can realistically, and finally, project industrial heat emission reductions.** Thermal storage technology is available in the timeframe of this Scoping Plan Update, and therefore should be included as a viable reduction strategy and should be promoted as a shining example of California's leadership and the far-reaching impacts of having a consistent and reliable "price on carbon".

In addition to direct decarbonization of the industrial sector, these industrial heating systems can be coupled to the grid to become large *dispatchable loads* that absorb intermittent peak-hour electricity at very large scale, and serve the very large heating energy needs of industrial facilities with zero-carbon energy, as illustrated below. The Draft Plan should include flexible energy rules and tariffs to promote these types of technologies.

The Draft Plan should be technology-neutral and results-based. Decarbonization is not limited to traditional battery technology or a hydrogen economy. Let the innovation of the 5th largest economy in the world loose by setting emission targets and providing the right policy signals. Technology-specific mandates shackle the hands and spirit of today's innovators. California is at a spectacular moment of opportunity for finding solutions to the world's climate technology challenges.



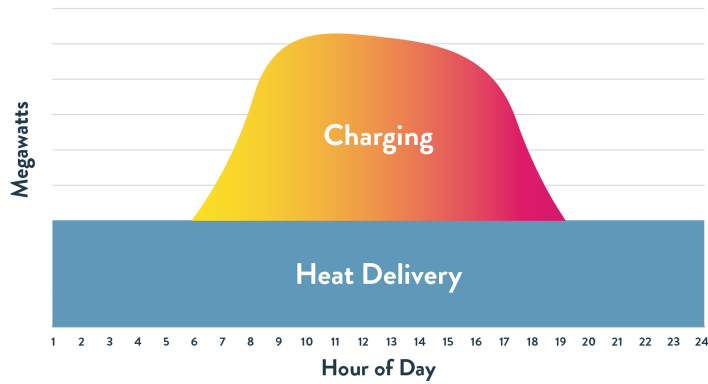


Figure 2 Indirect Electrification: intermittent power to continuous heat

Renewable thermal heat replaces combustion. These solutions can decarbonize the “hard to get” reductions that have eluded previous planning efforts. And because this technology directly reduces in-basin combustion, the benefits to local air quality – and the impacted communities in which industrial facilities operate – are direct, significant, and permanent.

We believe the time is now for California to focus on this cross-sector technology, accelerate emissions reductions without increases in cost, and lower criteria and toxic air emissions. It starts with inclusion of zero-carbon industrial heat being included in the Draft Plan.

Thank you for the opportunity to provide these comments. We look forward to continued discussions.

Sincerely,
/s/

John O’Donnell
CEO, Rondo Energy

