Rondo Energy, Inc.
rondo.com

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Deputy Executive Officer
California Air Resources Board

December 21, 2023

Via electronic email submittal:

Re: Rondo Energy, Inc. Comments to November 16, 2023 Workshop: Potential Amendments to the Cap-and-Trade Regulation

Rondo Energy, Inc. (Rondo) appreciates this opportunity to submit comments on the Cap-and-Trade Program (Program) potential costs modelling and cost-containment provisions of the regulation. Rondo 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. We were pleased to see several slides focused on industrial emissions and industrial decarbonization earlier this year[1]. California burns more natural gas for industrial heat than for producing electricity—California's industrial facilities consume 30% of the state's natural gas. Decarbonizing this heat economically is central to achieving CA's climate and economic justice goals.

For years, CARB has been implementing AB 32 to send California on a path to reduce its greenhouse gas emissions. Now the state has a 2045 carbon neutrality goal that requires the reduction of GHGs in the "hard-to-decarbonize" industrial sector. Rondo was founded to deliver a critically-needed tool for industrial decarbonization: delivering continuous high-temperature heat from intermittent electricity. This new tool is now in operation in California and being taken up worldwide. Our previous comments provide background on the company and the technology[2].

Rondo is a California-based thermal energy storage (TES) company *currently* delivering zero-carbon heat for industrial processes, including for fuels, cement, chemicals, and food and beverage manufacturing facilities. TES systems, such as the Rondo Heat Battery, charge intermittently from an electricity source upon command, store the energy from that electricity as high-temperature heat (often in solid materials), and deliver the stored energy on demand as 24-7, consistent, high-temperature heat to industrial processes, to replace large-scale combustion of coal, oil, and natural gas for process heating (see Figure 1). The 2022 Scoping Plan Update highlights the need to replace traditional combustion technology, and Rondo is proud to be on the front edge of this transition.

Intermittent charging from wind and sun, continuous industrial heat delivery

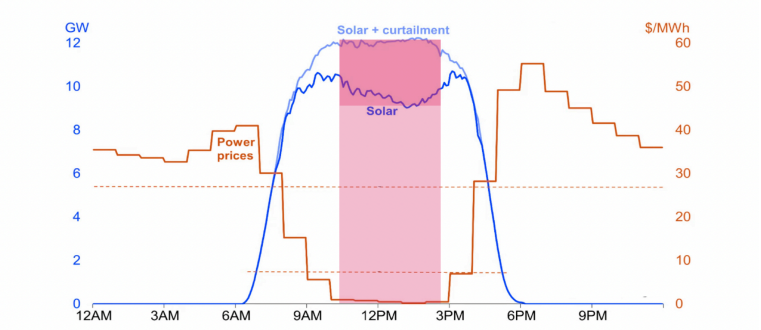
[1] https://ww2.arb.ca.gov/sites/default/files/2023-06/nc-CapTradeWorkshop_June142023_0.pdf
[2] https://ww2.arb.ca.gov/approved-comments?entity_id=29081

The focus of the November 16th workshop was on potential costs of Program implementation, and the high abatement costs assumed in the modeling (UC Davis presenter Jim Bushnell stated that new technology breakthoughs were not included in the modeling). Thermal energy storage is that 'new technolgoy' that can be deployed at a cost cheaper than the modeled results, as we are at the threshold of a new era in industrial decarbonization costs. Wind and solar power costs are just now falling below the price of fossil-fuel fired heat. Therefore, *intermittent* renewable electricity has gotten cheap enough to replace the combustion of fossil fuel.

The technology is ready, and projects are in construction and development around the world; but several policies significantly block its deployment here in California, most notably rules regarding grid connection, generation of renewable electricity, and market participation. To reach the very low costs of energy needed to replace fossil fuel combustion, every element of cost, from the generation of the renewable power through delivery and storage, is critical. *Cost is the instrument of the energy transition, and delivered electricity prices are setting the pace of transition.* Today's combination of electricity policies, including wholesale market participation, interconnection, transmission charge mechaisms, and siting of local renewable generation, effectively block the development of our decarbonization projects in California.

Rondo began in California and now has industrial decarabonization projects underway on three continents. As a company founded and headquarterd in California, Rondo is keen to develop and deliver in-state projects; we see early opportunities to deliver at least 20 million tons of GHG reductions at in-state industrial sources. These reductions would also serve a significant benefit to the state by retaining the industrial base (jobs and tax revenue), while reducing the criteria pollutant emissions in the country's most polluted air basins.

This transistion is currently being hampered by historic energy delivery pricing policies. These remnents of yesterday's grid should be evaluated, and updated as appropriate, to facilitate today reality and aggressive policy goals. We believe that small adjustments could enable big strides in achieving the state's objectives of environmental justice, climate mitigation, and economic growth.



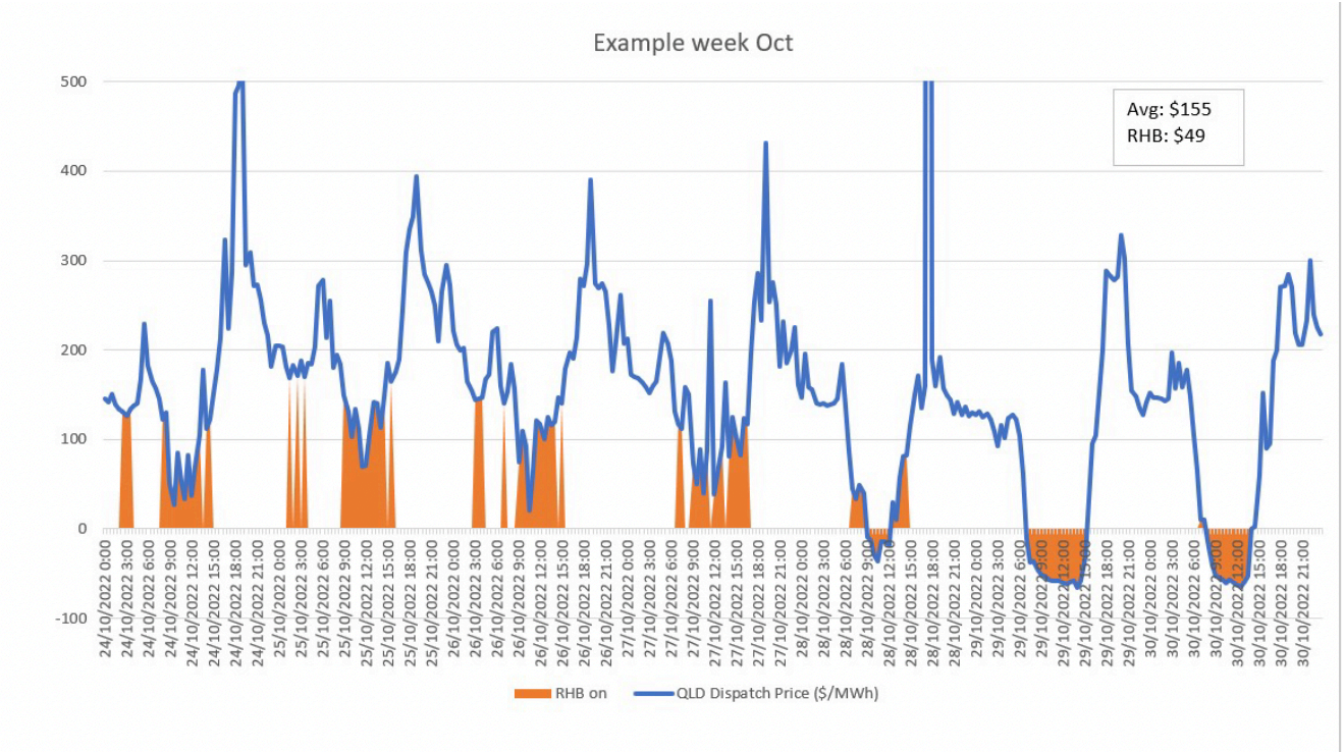
Rapid-charging improves grid pricing, cuts curtailment, and adds resilience at scale

Several small changes in California policies, none of which require state expenditure or increase costs for other stakeholders, could unlock rapid deployment of this technology.

We respectfully urge that CAISO be encouraged to complete its rulemaking process to charge for transmission on a cost-incurred basis. This process was suspended in 2018; its completion would bring California in line with most

other grid operaors and enable dispatchable loads to improve grid reliability, absorb curtailment, and reduce electricity prices for other participants. We further propose that Section 218 of the Public Utilities Code be adjusted to enable heat batteries to access local generation, in a means similar to the adjusments made for EV charging, so as to enable the construction of nearby (but not immediately adjacent) renewables. Each of these policy changes places no burdens on any other stakeholders and would unlock large decarbonization projects to go forward economically. The Section 218 adjustment is particularly salient for San Joaquin Valley APCD, as major reductions in PM can be achieved by transitioning local industries; and the grid access charge adjusments are required for achievement of South Coast AQMD's goals.

Enabling thermal batteries to participate as dispatachable loads – bidding in alongside dispatchable generation – will deliver valuable flexibility to the grid, stabilizing prices and supply, absorbing curtailment, and lowering electricity prices for other consumers[3]. They can be agile and dispatchable based on price and telemetry-connected, thus cutting electricity costs for other grid participants.



Another policy question that hinders in-state decarbonzation is the answer to this question: What is the carbon intensity (CI) of electric power? CA regulations today have four different answers. The answer that best serves the goal of industrial decarbonization is – Real-time nodal carbon intensity. This is currently used in the SGIP program[4]. It should be used for power CI calculations in all programs; this will drive new investments in wind and solar generation and faster, deeper decarbonization.

There are regulatory proceedings at CAISO, and opportunities at the CPUC, to update state grid policy such that they can assist, rather than detract, from the goals of electrification on industrial heat.

[3] Jenkins et al., Understanding the Role and Design Space of Demand Sinks in Low-carbon Power Systems
[4] https://www.cpuc.ca.gov/sgip

Conclusion

There are myriad benefits to generating industrial heat with renewable energy instead of fossil fuels. In addition to the significant GHG emissions reductions, eliminating combustion for thermal loads has direct local air quality benefits in the state's most impacted communities. The strength and stability of the Cap-and-Trade program are at the heart of this transition, along with the recognition that all agencies need to be working on the broader grid access issues.

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

Sincerely,
/s/

John O'Donnell
CEO, Rondo Energy, Inc.