



Cheryl Laskowski
LCFS Branch Chief
California Air Resources Board

September 19, 2022

Via electronic submittal: [LCFS Comment Docket](#)

Re: Rondo Energy Comments on August 18, 2022 Workshop: Potential Changes to the LCFS

Rondo Energy (Rondo) appreciates this opportunity to submit comments regarding potential changes to the LCFS regulation. Rondo strongly supports CARB's ongoing efforts to solicit the latest information and the lowest-cost, least-risk pathways to achieve California's climate, environmental, and economic goals. Rondo submitted previous comments to the December and July LCFS workshops and incorporates them by reference here.^{1,2} This comment letter continues to build upon those initial thoughts in the spirit of CARB's iterative approach to policy making.

Rondo is a California-based company which has developed an innovative technology to deliver zero-carbon heat for a wide range of industrial processes, including liquid fuel production. The Rondo Heat Battery (Heat Battery) provides continuous high-temperature heat without combustion. The Heat Battery captures intermittent renewable electricity, stores that energy as high-temperature heat in simple solid material, and delivers high-temperature heat around the clock. This technology harvests overgeneration of solar and wind energy, cuts the cost of clean energy, and reduces the Carbon Intensity (CI) of all fuel production processes that use heat, including liquid fuel production, the refining of biofuels, and the extraction and refining of petroleum derived fuels.

Rondo's Heat Battery can be energized either through a grid connection or through off-grid renewable energy sources. Because the Heat Battery can charge intermittently, a grid-connected Heat Battery can be set up to only charge, or consume electricity, when costs and generation emissions are at their lowest—during peak renewable generation times. In contrast, most other industrial electrification technologies have a continuous energy demand, and need to consume power regardless of the current generation mix powering the grid. They appear as net load to the grid and exacerbate the duck curve. Technologies like Rondo's, with fully controllable electricity demand, can therefore use truly zero-carbon energy in a way that technologies with continuous demand cannot.

Controllable electric demand has the added benefit of grid stabilization by shifting energy consumption to the time of day when renewable electricity supply is the highest. Facilities with a Heat Battery will have the capacity to also provide zero-carbon stored energy back to the grid at times of greatest need. This increased capacity factor for renewable power enables greater use renewables, with less curtailment, and if properly managed can reduce the potential risk of blackouts during periods of short supply.

As CARB considers updates to its methodology for calculating emission factors under this LCFS revision, Rondo requests incorporating real time grid carbon intensity, rather than grid average carbon intensity, into the calculation when determining CI benefits and credits under the program. For California

¹ <https://www.arb.ca.gov/lists/com-attach/151-lcfs-wkshp-dec21-ws-ATNWIYIFgBWcBNwA3.pdf>

² <https://www.arb.ca.gov/lists/com-attach/34-lcfs-wkshp-jul22-ws-WmgGMIZnVT4KPAQ8.pdf>



and other states with strong wind and solar penetration, electricity mix and marginal emissions vary dramatically by time of day, and grid average CI is not reflective of the true emissions realized by LCFS credit recipients. More importantly, using a grid average carbon intensity methodology would be a missed opportunity to shift the state's energy load to maximize renewable power's biggest benefits of low-emissions during high generation times of day. The LCFS can incent controllable demand which be a powerful driver that supports lower emissions from sources of thermal energy consumption, increased renewable energy penetration, and grid stabilization. But before those benefits can be realized, the LCFS needs to update how emission factors are calculated.

There are organizations that track and report real-time grid CI scores. WattTime is one such organization. They have developed an accepted methodology for real-time grid carbon intensity calculations, or marginal emissions modeling. The California Public Utility Commission has already approved and adopted WattTime's real-time grid emissions for the Self-Generation Incentive Program (SGIP) Carbon signal to require behind the meter energy storage in California to reduce carbon emissions. WattTime's peer-reviewed technique is available online [here](#). Using WattTime's methodology for electricity CI across all LCFS pathways, credit generation and geographies would allow CARB to incorporate real-time grid carbon intensity into emission factor calculations without undue administrative burden. This incentive would spark additional reduction investment right at the source of fuel production. A real time Grid Carbon Intensity could allow Midwest Ethanol, for example, to replace natural gas boilers with wind electricity that would otherwise be curtailed.

The LCFS's emission factor calculations are the US's best implemented standard for evaluating and impacting fuel sector emissions. We believe that real-time grid carbon intensity is a critical next step in moving that standard forward not just for California, but for the country as a whole. We look forward to more detailed technical conversations.

Sincerely,
/s/

John O'Donnell
CEO, Rondo Energy

