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Monarch Tractor 2021-2022 Investment Plan Update for the Clean Transportation Program

Additional submitted attachment is included below.

September 30, 2021

Patrick Brecht
California Energy Commission
1001 I Street
Sacramento, CA 95814

RE: Comments on the September 16 2nd Advisory Committee Meeting for the Clean Transportation Program

Dear Mr. Brecht:

Monarch Tractor appreciates the opportunity to submit comments regarding the revised Fiscal Year 2021- 22 Clean Transportation Program Investment Plan. We encourage the Commission to recognize the tremendous, near-term promise of zero emission vehicles (ZEVs) in the agricultural sector – including driver optional, compact electric tractors – and include funding for these vehicles and infrastructure to support them in the Investment Plan.

Monarch Tractor is an innovative, mission driven company, headquartered in Livermore, California, that is committed to enabling clean, efficient, and regenerative farming practices by making them economically viable. The Monarch Tractor brings together the benefits of electrification, automation, and insightful data to enable farmers to transition to more productive, precise, and sustainable farming practices. Providing a superior platform for farmers, Monarch Tractor is focused on delivering meaningful change for today’s farmers and the generations of farmers to come.

Significant Air Quality, Climate Benefits from Autonomous, Electric Tractors

Monarch’s compact tractor is an attractive platform for significantly reducing criteria and greenhouse gas emissions in the agricultural sector. The compact tractor segment offers the opportunity for significant emissions reductions due to its high volume, high utilization, and significant annual growth.

The Monarch is a zero-compromise solution, offering equal or greater performance compared to even the most advanced diesel tractors. We also offer a host of additional benefits for farmers, farming operations, and the environment – including improved worker health and safety, data driven precision applications, and exportable power where the tractor can be used as a mobile generator, displacing additional combustion from on-farm equipment.

By marrying automation together with data and electrification, we can generate far greater efficiencies for farmers as well as the environment, compared to just including electrification. In fact, we produced a fully electric tractor in 2018 without data or automation capabilities, and found electric drive alone does not provide enough value for most farmers to make the transition to ZEVs. Only by including automation and actionable data insights with a fully electric platform, can we generate substantial value for farmers while simultaneously eliminating

emissions. We've seen significant demand for this technology pairing from the farming community through deposits to secure earlier production slots and through planned conversions of fleets with 100+ tractors to the Monarch Tractor platform. The excitement transcends farm scale, geography and crop type.

With automation and the potential for emissions-free, 24-hour operations, a single Monarch Tractor can replace two or three diesel tractors operating 12- or 8-hours per day – providing outsized air quality, climate and energy benefits on a dollar-per-emission reduction basis. What's more, with lower operating costs, lower operating impacts, and precision operations – Monarch Tractors facilitate mechanized and regenerative farming practices. These operations sequester carbon in the soil and promote biodiversity, but are impractical and cost prohibitive for many California farmers today. The raw emission abatement combined with the other cascading effects from the Monarch Tractor show the opportunity to shift agriculture and food production from a climate challenge to instead be part of the climate solution. Supporting ZEV transitions for tractors, the keystone of the farm, is key to enabling agriculture as a broader climate solution.

To facilitate continuous operations, Monarch Tractors include swappable battery capability. This provides the added benefit of charging during off-peak hours and when renewables are available, and also opens opportunities for electrifying other operations on the farm or providing backup power during grid events. By electrifying the center of the farm ecosystem – the tractor – the State can pave the way for entire farm operations to be powered by renewable energy. We encourage you to explore these opportunities and others maximize the grid integration, climate and air quality benefits of ZEVs in the agricultural sector – through both the Clean Transportation Program and other programs at CEC, such as research and development through the Electric Program Investment Charge (EPIC) program.

ZEVs in Agriculture Needed to Meet State's Climate Goals

These technologies are market-ready and being deployed in the field today, and we expect to see a rapid increase in availability over the next 18 months.

While Monarch Tractor ultimately offers lower total costs of ownership than diesel tractors, initial costs are higher. There can be reluctance among farmers, who operate on slim margins, to commit up front capital to adopt these new technologies. Therefore, we see incentives for electric tractors and their charging infrastructure as especially important to deploying ZEVs in the agricultural and other off-road sectors. As you no doubt appreciate, these investments are critically important for accelerating ZEV deployment across a range of transportation sectors in California, and investments in tractor replacements have some of the most impactful emissions reductions of all ZEVs on the market today on a per-dollar basis.

Recommendations for Transforming Agricultural Operations to ZEVs

This is a market ready to scale. We encourage you to identify off-road and agricultural applications as eligible for CEC's infrastructure investments, ZEV manufacturing grants, and workforce development programs. Whether through EnergiIZE, some other existing program, or a new one, CEC should fold agriculture and off-road tractors – applications where the air quality,

climate, health and energy benefits are some of the greatest on a \$/ton of emission abatement basis – immediately and completely into the Clean Transportation Program.

We are also a company ready to scale in California, including ZEV manufacturing. Farmers in CA will have Monarch Tractors deployed in their operations in Q1 2022, and we anticipate our 30,000 sq. ft. ‘Production Facility 1’ in Livermore CA to be operating at full rate no later than Q4 2022, producing thousands of units annually for farmers along the west coast. We are currently taking steps to secure ‘Production Facility 2’, as well, and we look forward to hearing more about how CEC plans to support ZEV manufacturing in the State.

We also encourage you to specifically consider pilot projects and demonstrations to fully explore the potential for automated, electric tractors to not just reduce diesel pollution, but to shift agriculture from a “hard to abate” sector to a beachhead in the state’s efforts to electrify end uses and achieve deep decarbonization and ultimately, net-zero or net-negative emissions. These pilot programs could be supported through the Clean Transportation Program, EPIC, and/or other programs, and coordinated with vehicle incentive programs at CARB, healthy soils programs at CDFA, utility programs at CPUC, and others to achieve rapid transformation of vehicle stock, energy use, and emissions in the agricultural sector.

Finally, we encourage CEC to fully integrate ZEVs in the agricultural sector into its broader planning and programs, including the Integrated Energy Policy Report, Electric Vehicle Infrastructure Deployment Assessments, EPIC, electrification and grid resilience forums, and other relevant efforts. Efforts to support the adoption of zero emission tractors will allow California to continue its leadership in ZEVs and become the gold standard for the deployment of sustainable agricultural technologies.

We look forward to working with you to integrate all the benefits of driver-optional ZEV tractors rapidly and fully into California’s agricultural sector and work sites throughout the state. We are very excited to discuss these opportunities with you and answer any questions you may have about our company, technology, or market for ZEVs in the off-road and agricultural sectors. Please do not hesitate to reach out with any questions.

Sincerely,

Praveen Penmetsa
CEO and Co-Founder

Cc: Hannon Rasool
Laurie ten Hope