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*Comment Received From: Zelos Energy  
Submitted On: 10/4/2024  
Docket Number: 23-ERDD-01*

## **Zelos Energy Comments on California Battery Pilot Manufacturing Line Concept**

Zēlos Energy, based in San Leandro, develops safe and affordable rechargeable alkaline batteries for uses including backup power and for pairing with solar or wind. We are pleased to be a 2020 CEC grant recipient to scale-up our technology to benefit California ratepayers.

We wish to provide the following suggestions on the funding concept:

1. Please include non lithium-ion chemistries as eligible to participate in the pilot line.
2. Please consider locating the facility in San Leandro.

We have also attached a more detailed comment letter here.

*Additional submitted attachment is included below.*



## Zēlos Energy Ltd.

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[zelos.energy](https://zelos.energy)

October 4, 2024

### **Comment Letter, California Battery Pilot Manufacturing Line Funding Concept**

Dear California Energy Commission Colleagues,

Thank you for the opportunity to comment in response to the September 20, 2024 Scoping Workshop: **California Battery Pilot Manufacturing Line Funding Concept**, Docket #: 23-ERDD-01 Project Title: Electric Program Investment Charge (EPIC).

Zēlos Energy, based in San Leandro, develops safe and affordable rechargeable alkaline batteries for uses including backup power and for pairing with solar or wind. We are pleased to be a 2020 CEC grant recipient to scale-up our technology to benefit California ratepayers.

#### **We wish to provide the following suggestions on the funding concept:**

1. Please include non lithium-ion chemistries as eligible to participate in the pilot line.
2. Please consider locating the facility in San Leandro.

#### **In detail, we offer these comments as follows.**

- **Please include non lithium-ion chemistries as eligible to participate in the pilot line**

#### ***Lithium-ion batteries present multiple challenges for California's clean energy future, including:***

- A. **Safety risks.** Over 5,000 fires occur annually in the US from Li-ion, per the Consumer Product Safety Commission. In California, there have been multiple recent incidents of extended closures of critical roadways from Li-ion fires in transit.
- B. **Supply chain risks.** Li-ion depends heavily on problematic materials sourcing, such as child labor in developing countries. It also involves substantial supply chain reliance on strategic competitor nations subject to pricing and availability uncertainties.

#### ***By contrast, our rechargeable alkaline chemistry offers many advantages, and we urge you to allow the inclusion of companies like ours into the future pilot line:***

- A. **Abundant and easy to source materials**
  - Zinc (Zn) and Manganese (Mn) readily available at low cost
- B. **Long cycle life**
  - 1,300 cycles to 80% energy retention
- C. **Low-cost**
  - 50% less per cycle (LCOS) compared to lead-acid or lithium-ion
- D. **Environmentally friendly**
  - ~5x lower Carbon footprint vs lithium-ion or lead-acid
- E. **Safe**



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- Non-flammable and non-toxic materials
- F. **Manufacturable and scalable**
- No dry room required – can utilize existing standard equipment
- G. **Great potential for technology expansion**
- Roadmap for 70%+ lower costs and higher energy density (200Wh/L)

### ***Federal research and development efforts are moving beyond lithium-ion technologies.***

- The DOE Office of Clean Energy Demonstrations is currently soliciting applications for a \$100M program specifically addressing non lithium-ion pilot projects. Please see the summary posting for more information: <https://www.energy.gov/oced/articles/oced-issues-notice-intent-100-million-non-lithium-long-duration-energy-storage-pilot>
  - Stanford University is home to a new Aqueous Battery Consortium that is working on non lithium-ion chemistries. Please see <https://abc-hub.stanford.edu/about> for additional specifics.
  - Limiting the pilot line to one chemistry presents the risk that the facility, and the ratepayer investment in it, will become outdated and not will not serve future technology advancement needs.
  - Instead, we believe that opening the facility to chemistries other than lithium-ion will help ensure its long-term relevance and success in continuing California’s remarkable accomplishments as a national and global leader in clean energy.
- **We recommend locating the facility in San Leandro. San Leandro offers benefits including the following:**
    - **Central location.** The city is in the center of the Bay Area, easily accessible to many nearby battery companies, as well as all three Bay Area airports, Silicon Valley, and reasonable driving distance from Sacramento and the Central Valley.
    - **Existing facilities.** San Leandro has a long history of manufacturing, with many locations suitable for uses such as a pilot line.
    - **Responsive and supportive local government.** The City of San Leandro is an excellent partner for businesses, new initiatives, and manufacturing entities, making it easy to locate a facility in the city.
    - **Local talent pool.** The San Leandro area is home to a wide variety of core talent for a pilot line, including technical, engineering, scientific, and managerial personnel.
    - **Proximity to academic facilities.** San Leandro is close to institutions including UC Berkeley, Berkeley Lab, and Stanford University, CSU East Bay, and numerous community colleges.

Thank you for your work on this pilot line opportunity. We welcome your feedback, and we are open to any questions or requests for further information.

Sincerely,



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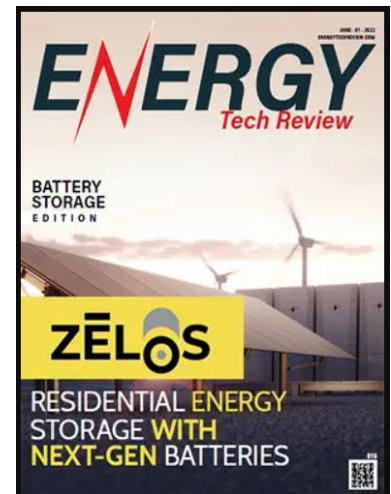
### About Zēlos Energy Ltd.

Zēlos Energy is an innovative California rechargeable battery startup. We strive to develop the next generation of affordable, safe, and sustainable clean energy products. Our patented rechargeable alkaline battery technology provides safe, economical, and sustainable solutions for both consumer and industrial uses.

Products in development include deep cycle storage batteries, lead-acid replacement, and low-cost cylindrical formats – for uninterruptible power supply (UPS), energy storage solutions (ESS) for wind and solar, and military and marine uses.

Our completely non-toxic alkaline chemistry avoids the fire, safety, and supply chain risks of options such as lead-acid and lithium-ion.

We are headquartered in San Leandro, and our team has more than 100 years of combined experience.



In 2020, we were awarded a competitively-selected multi-year \$1.8 million California Energy Commission grant for R&D scale-up in alternatives to Li-ion.



For more information, please visit <https://www.zelos.energy/>