JOSH GREEN, M.D.
GOVERNOR OF HAWAI'I
KE KIA'ĀINA O KA MOKU'ĀINA 'O HAWAI'I

STATE OF HAWAII
DEPARTMENT OF HEALTH
KA 'OIHANA OLAKINO
P. O. Box 3378
Honolulu, HI 96801-3378
doh.testimony@doh.hawaii.gov

KENNETH S. FINK, M.D., M.G.A., M.P.H.
DIRECTOR OF HEALTH
KA LUNA HO'OKELE

Testimony in SUPPORT of SB0103
RELATING TO ELECTRIC VEHICLE BATTERIES

SENATOR GLENN WAKAI, CHAIR
SENATE COMMITTEE ON ENERGY AND INTERGOVERNMENTAL AFFAIRS
SENATOR MIKE GABBARD, CHAIR
SENATE COMMITTEE ON AGRICULTURE AND ENVIRONMENT

Hearing Date, Time and Room Number: January 29, 2025, 1:00 PM, Room 224

Fiscal Implications: N/A.

Department Testimony: The Environmental Management Division, Solid and Hazardous Waste Branch (EMD-SHWB) provides the following testimony on behalf of the Department of Health (Department). The Department supports this measure, which establishes an electric vehicle (EV) battery recycling and reuse working group in the Hawai'i State Energy Office. The Department agrees that it is prudent to gather more information about the current options for end-of-life EV batteries and develop policy to encourage proper recycling and disposal, as this waste stream will increase in the future. The Department defers to the Hawai'i State Energy Office on any specific recommendations relating to the working group's structure and purpose and looks forward to participating as co-chair.

Offered Amendments: None.

Thank you for the opportunity to testify on this measure.

HAWAII STATE ENERGY OFFICE
STATE OF HAWAII

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LT. GOVERNOR

MARK B. GLICK
CHIEF ENERGY OFFICER

South Beretania Street, 5th Floor, Honolulu, Hawaii 96813 Telephone: (808) 451-6648
ing Address: P.O. Box 2359, Honolulu, Hawaii 96804 Web: energy.hawaii.gov

Testimony of
MARK B. GLICK, Chief Energy Officer

before the
SENATE COMMITTEES ON
ENERGY AND INTERGOVERNMENTAL AFFAIRS
AND
AGRICULTURE AND ENVIRONMENT

Wednesday, January 29, 2025
1:00 PM
State Capitol, Conference Room 224 and Videoconference

In support of
SB 103

RELATING TO ELECTRIC VEHICLE BATTERIES.

Chairs Wakai and Gabbard, Vice Chairs Chang and Richards, and Members of the Committees, the Hawai‘i State Energy Office (HSEO) supports SB 103, with suggested amendments, which convenes a working group within the Hawai‘i State Energy Office, co-chaired with the Department of Health, to examine options for recycling, reuse, or repurposing of electric vehicle batteries.

The rapid development of the electric vehicle (EV) industry brings exciting opportunities for innovation and sustainability. As we navigate the complexities of living in an island state, we have the chance to pioneer effective management practices that ensure health and safety while addressing regulatory requirements. For example, by incorporating circular economy principles that prioritize safety, affordability, and sustainability, we can help to develop local industries managing the processing of LIBs at the end of their useful lifetime (EOL) and in a way that creates and retains good paying jobs in Hawaii, as well as set a positive example for others to follow and contribute to a greener future.

The batteries within electric vehicles provide a pathway towards decarbonizing our transportation sector. The Decarbonization Report prepared by HSEO pursuant to Act 238 (2022) and submitted to the Hawai‘i Legislature in December 2023 mentions how “ground transportation sector tailpipe emissions comprise 38% of all transportation emissions in Hawai‘i. In 2019, ground transportation contributed 4.03 MMT CO2e, making up 18.3% of the aggregated state gross total of 22.01 MMT CO2e emissions.”[1] In addition to this observation, the report also states that decarbonization requires a two-prong approach: reducing the amount of energy for ground transportation and transitioning to zero-emission vehicles.

As Hawai‘i develops a more resilient energy economy, it is important that the transition be equitable, economic, resource-efficient and above all practically executable. HSEO agrees with the intention of convening a group of experts in technology, law, government and industry to develop a report that can inform the management practices for EV batteries in Hawai‘i, along with the supporting required regulatory framework. To that end, we recommend adding HNEI as a member, as they have already, in collaboration with HSEO researched the framework for management of EOL LIBs over three reports [2,3,4][1]. In addition, HNEI will, this year and in collaboration with HSEO and the Hawaii Energy Policy Forum, lead a new working group of participants across the full logistical train of participants in Hawaii, in defining the requirements (i.e. insurance, utilities, land, first responders, State and Federal) for a number of options to manage the processing of EOL LIBs. Understanding these requirements is essential to our development of sound policy that the entire industry is likely to support and be able to execute.

In support of this, HSEO respectfully recommends the following:

1. One addition to page 3, line 7:

   `(3) One representative from the battery energy storage industry;`

   This provides clarity and supports the focus on batteries.

2. One addition to page 4, line 5:

   `Potential stationary energy storage systems as a second option,`

   This narrows the scope to systems that are pertinent to the bill and avoids potential confusion.

HSEO is dedicated to developing effective solutions for reuse and EOL management of EV batteries that enhance energy security and use of materials.

Thank you for the opportunity to testify.

[1] Hawai‘i State Energy Office (2023). Hawai‘i Pathways to Decarbonization Report to the 2024 Hawai‘i State Legislature Act 238 (SLH 2022). Available at: https://energy.hawaii.gov/wp-content/uploads/2022/10/Act-238_HSEO_Decarbonization_FinalReport_2023.pdf pages 102 and 106
[2] https://www.hnei.hawaii.edu/wp-content/uploads/Waste-Management-of-EOL-PV-Panels-and-LIBs-in-Hawaii.pdf.
[3] https://www.hnei.hawaii.edu/wp-content/uploads/HNEI-Act92-Supplemental-Report-Clean-Energy-Products-Waste-Management.pdf.

January 28, 2025

Senate Committee on Energy and Intergovernmental Affairs (EIG) and Committee on Agriculture and Environment (AEN)
Hawaii State Capitol
415 South Beretania Street
Honolulu, HI 96813

RE: Redwood Materials' Written Testimony and Suggested Language for Senate Bill 103, Relating to Electric Vehicle Batteries

Dear Chairs Wakai and Gabbard and Vice Chairs Chang and Richards and Members of the EIG and AEN Committees,

As the leader in the sustainable end-of-life management of electric vehicle (EV) batteries, Redwood Materials is supportive of SB103. We recognize the bill's significance in advancing sustainable practices in EV battery management and have some minor suggestions to improve the legislation and resultant working group. Redwood is at the forefront of ensuring that the United States meets its clean energy and electric vehicle (EV) ambitions. We are dedicated to developing a domestic, secure, and sustainable battery supply chain and work across the battery ecosystem with emphasis on repurposing and recycling end-of-life EV batteries.

In regard to recycling, our strategic approach includes:

- **Recycling:** We focus on collecting and recycling end-of-life lithium-ion batteries from consumer devices to EV battery packs, turning these items into high-value battery materials.
- **Refining and Processing:** Our facilities process and refine critical minerals contained in these batteries, ensuring their optimal reuse.
- **Re-manufacturing:** We specialize in re-manufacturing sustainable battery materials, particularly cathode active materials, essential for domestic battery manufacturing.

Our company's mission aligns with the objectives of SB 103, advocating for responsible and sustainable management of electric vehicle (EV) batteries at end-of-life. Today, Redwood receives more than 20 GWh of lithium-ion batteries annually, which equates to more than 250,000 electric vehicles, 1.57 billion cell phones, or 60,000 metric tons/year. The vast majority of lithium-ion batteries recycled in North America come through our doors.

Redwood's Engagement in Hawaii

Redwood recognizes Hawaii's pioneering role in sustainable energy and battery deployment. In collaboration with Kaua'i Island Utility Cooperative (KIUC), we've worked on decommissioning the first-generation battery storage system at the Anahola substation,, a 4.6 MWh battery energy storage system (BESS). The successful decommissioning and recycling of these initial projects serve as an industry model for future gigawatt-scale projects.

Additionally, we contributed to the EPA's Maui Wildfire Response by facilitating the safe transport of fire-damaged lithium-ion batteries from Maui to our Northern Nevada facilities for proper recycling. This effort was part of our commitment to environmentally responsible practices in emergency situations. We have also engaged with the University of Hawaii in their research on EV battery recycling. By hosting their researchers at our facilities, we shared insights into our methods for EV battery circularity, aiming to contribute to broader knowledge in this field and inform local policy development.

Last year, over 250,000 electrified vehicles reached the end of their lifecycle in the United States, presenting a crucial opportunity for sustainable practices in battery management. Our involvement in policy development and environmental sustainability initiatives, both locally and nationally, positions us as a key contributor in this evolving industry.

Proposed Amendment

Redwood Materials was an original member of CalEPA's The Lithium-ion Car Battery Recycling Advisory Group and played a pivotal role in advocating for the inclusion of an industry-first definition of an 'authorized propulsion battery recycler' in New Jersey's recently passed EV & Hybrid Vehicle Battery Recycling law. This was a significant measure in emphasizing the importance of advanced recycling capabilities and ensuring responsible end-of-life management of batteries beyond traditional, less efficient recycling processes.

In light of our experience and expertise, we propose a simple but important language amendment to SB 103. In addition to an e-waste recycler and automotive recycler, we strongly suggest the following language be included in the bill regarding membership on the commission:

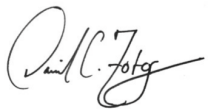
'One representative from a company specializing in the recycling of electric vehicle batteries, with demonstrated expertise in providing end-of-life battery management solutions, including recovering materials from end-of-life batteries and manufacturing sustainable battery materials.'

This language change is vital to ensure that the commission or study group formed under this bill recognizes and integrates the unique expertise and capabilities required in advanced EV battery recycling and end-of-life management of EV batteries. This expertise should be explicitly reflected in the commission membership and is not adequately captured under the current framework.

Should this policy move forward, Redwood Materials expresses its keen interest and commitment to serve on Hawaii's working group, bringing our expertise and experience from our involvement in sustainable battery management in both Hawaii and nationwide. Redwood Materials is committed to advancing our industry, driving circularity in battery material production, and collaborating with partners and policymakers. Regarding electric vehicles, we are dedicated to reducing costs, enhancing sustainability, and fostering innovation, contributing to a more sustainable future.

Thank you for considering our testimony and proposed amendment. We look forward to the possibility of a meaningful collaboration.

Sincerely,



Daniel C. Zotos
Senior Manager of Public Affairs & Advocacy
Redwood Materials
daniel.zotos@redwoodmaterials.com

January 29, 2025

Tony Belot

91-56 Hanua Street

Kapolei, HI 96707

abelot@rdus.com

Senator Glenn Wakai, Chair, Committee on Energy & Intergovernmental Affairs
Senator Mike Gabbard, Chair, Committee on Agriculture and Environment

RE: SB 103, Relating to Electric Vehicle Batteries

Chair Wakai, Chair Gabbard, and members of the committees,

Radius Recycling (formerly Schnitzer Steel Industries), is a world leader in sustainable and environmentally responsible recycling. The Company was listed as one of TIME's 100 Most Influential Companies of 2023, recognized as the Most Sustainable Company in the World by Corporate Knights in 2025, and has been honored by Ethisphere as one of the World's Most Ethical Companies® for ten consecutive years.

SB 103 recognizes the need for Hawai'i to maximize the recycling and reuse of electric vehicle batteries and establishes a working group to recommend electric vehicle battery management practices. An important goal for the state is to preserve our local environment while concurrently optimally utilizing resources through recycling.

As our organization routinely encounters these batteries in our recycling stream, we strongly support the inclusion of at least one or more representatives from the automotive recycling industry. Such a representative will, we believe, contribute a significant and valuable viewpoint, grounded in practical experience, concerning the safe, environmentally responsible, and efficient handling of end-of-life electric vehicles.

Radius Recycling is deeply appreciative of the intent of this measure to assure that there is proper recycling and disposal of EV batteries. We look forward to serving as a resource to policymakers on EV recycling.

Sincerely,

Tony Belot, Government and Public Affairs Manager, Radius Recycling

SIERRA CLUB OF HAWAIʻI

SENATE COMMITTEE ON ENERGY AND INTERGOVERNMENTAL AFFAIRS
SENATE COMMITTEE ON AGRICULTURE AND ENVIRONMENT

January 29, 2025 1:00 PM Conference Room 224

In SUPPORT of SB103: Relating to Electric Vehicle Batteries

Aloha Chair Wakai, Chair Gabbard, Vice Chair Chang, Vice Chair Richards, and Members of the Committees,

On behalf of our over 20,000 members and supporters, the Sierra Club of Hawaiʻi **SUPPORTS** SB103**,** which will help to address the growing waste stream concerns associated with lithium ion batteries used in electric vehicles.

Our islands' failure to account for our continuous production of solid waste, and the externalized costs of our consumption-based economy, have resulted in significant and ever-growing impacts to our environment, our public health, and overall quality of life. Leachates from our landfills threaten to contaminate our water resources and nearshore areas; toxic emissions and ash from Oʻahu's waste-to-energy facility have raised the risks of lung and heart disease, neurological complications, reproductive issues, and cancer in nearby, largely Native Hawaiian communities; and our limited land areas and our sensitive environments and groundwater sources severely limit the space we have available to receive and store our waste byproducts.

Unfortunately, while electric vehicles are helping to reduce our dependency on fossil fuels and further our progress towards a net negative carbon footprint by 2045, the lithium ion batteries that power them may exacerbate our solid waste conundrum. Notably, the storage, transportation, and disposition of such batteries present unique waste management challenges, particularly given the potential for fires and toxic chemical releases, the limited options for affordably off-shipping used and damaged batteries, and the lack of any proper lithium battery processing much less recycling facilities in our islands. As more and more electric vehicles are imported, these unique challenges will only increase over time.

Accordingly, the Sierra Club supports this measure's efforts to begin the process of researching and planning for the management of electric vehicle batteries entering our waste stream, including through potential battery recycling and reuse. Not only may this head off a looming hazardous waste crisis, but innovative strategies for recycling and reuse could also result in educational opportunities and economic benefits for local residents and businesses.

Accordingly, the Sierra Club of Hawaiʻi respectfully urges the Committees to **PASS** SB103. Mahalo nui for the opportunity to testify.

SanHi
GOVERNMENT STRATEGIES
A LIMITED LIABILITY LAW PARTNERSHIP

DATE: January 29, 2025

TO: Senator Glenn Wakai
Chair, Committee on Energy and Intergovernmental Affairs

Senator Mike Gabbard
Chair, Committee on Agriculture and Environment

Submitted Via Capitol Website

FROM: Tiffany Yajima

RE: **SB 103 – Relating to Electric Vehicle Batteries**
Hearing Date: Wednesday, January 29, 2025 at 1:00 p.m.
Conference Room: 224

Dear Chair Wakai, Chair Gabbard, and Members of the Joint Committees,

On behalf of the Alliance for Automotive Innovation ("Auto Innovators") we submit this testimony in **support** of S.B. 103, Relating to Electric Vehicle Batteries, which establishes a working group to study how to maximize the recycling and reuse of electric vehicle batteries. This measure also tasks the group to make recommendations on electric vehicle battery management practices with a report to the legislature before the 2026 legislative session.

The Alliance for Automotive Innovation is the singular, authoritative and respected voice of the automotive industry. Focused on creating a safe and transformative path for sustainable industry growth, the Alliance for Automotive Innovation represents the manufacturers producing nearly 99 percent of cars and light trucks sold in the U.S. Members include motor vehicle manufacturers, original equipment suppliers, technology, and other automotive-related companies and trade associations.

As the representative of both the makers of electric vehicles and electric vehicle batteries, Auto Innovators is willing to and interested in serving as a resource to the state on this working group. We would also suggest that the group consider current programs that exist today to manage EV battery recycling, and suggest that the working group be given additional time to organize and develop comprehensive battery management best practices. For that reason, we would propose changing the report submission deadline to 20 days prior to the 2027 legislative session.

First Hawaiian Center
999 Bishop Street, Suite 1400
Honolulu, HI 96813
T 808-539-0400
F 808-533-4945

Currently, in the life cycle of a battery, when an EV battery begins to show signs of failure, these battery modules or packs can first be refurbished to as good or better quality and performance levels through the replacement of worn or deteriorated components which can be re-certified to OEM specifications. If a battery module or pack cannot be reused, these batteries and components can also be refurbished on the secondary market to fulfill a different use from what was originally intended. At the end of the life of a battery, EV batteries can be processed to recover the maximum amount of raw materials for reuse in similar or alternative industries.

For vehicles that have reached their end-of-life and that are unwanted without parts removed by a dismantler, Automakers have adopted a “Full Vehicle Backstop” program. The Full Vehicle Backstop program covers the whole electric vehicle and not just the battery. Under the program, the vehicle manufacturer is responsible to accept the vehicle and ensure that it is properly dismantled and the lithium-ion battery is properly reused, refurbished, or recycled.

As we continue the shift to an electric vehicle future, Auto Innovators is interested in supporting this working group to provide input on EV battery management practices.

Thank you for the opportunity to submit this testimony.

LATE

SENATE COMMITTEES ON ENERGY AND INTERGOVERNMENTAL AFFAIRS and AGRICULTURE AND ENVIRONMENT

JANUARY 29TH, 2025

SB 103, RELATING TO ELECTRIC VEHICLE BATTERIES

POSITION: SUPPORT

Coalition Earth **supports** SB 103, relating to electric vehicle batteries, which establishes an Electric Vehicle Battery Recycling and Reuse Working Group within the Hawai'i State Energy Office and requires the working group to examine how to maximize the recycling and reuse of electric vehicle batteries and recommend electric vehicle battery management practices. Requires a report to the Legislature.

According to a report produced by the Hawai'i Climate Change Mitigation and Adaptation Commission, global sea levels could rise more than three feet by 2100, with more recent projections showing this occurring as early as 2060. In turn, over the next 30 to 70 years, approximately 6,500 structures and 19,800 people statewide will be exposed to chronic flooding. Additionally, an estimated $19 billion in economic loss would result from chronic flooding of land and structures located in exposure areas. Finally, approximately 38 miles of coastal roads and 550 cultural sites would be chronically flooded, on top of the 13 miles of beaches that have already been lost on Kaua'i, O'ahu, and Maui to erosion fronting shoreline armoring.

As we work to reduce carbon emissions and stave off the worst consequences of climate change, we must begin preparing for the adverse impact of sea level rise on our shores. We are now quantifying the speed at which we must act. We cannot continue to develop the 25,800-acre statewide sea level rise exposure area–one-third of which is designated for urban use–without risking massive structural damage and, potentially, great loss of life.

Just two years ago, we witnessed the impact of the climate emergency on our shores. On August 8, 2023, wildfires swept across Maui and killed at least 100 people, making it one of the nation's deadliest natural disasters. The spread of the fires has been attributed to climate change

conditions, such as unusually dry landscapes and the confluence of a strong high-pressure system to the north and Hurricane Dora to the south. The wildfires destroyed over 2,200 structures, including numerous residential buildings, historic landmarks, and school facilities. In September 2023, a report from the United States Department of Commerce estimated the total economic damage of the wildfires to be roughly $5.5 billion. Investing in renewable energy generation could not be more urgent, given the growing threat of climate catastrophes to our island home.

Therefore, **our state should take steps to accelerate our transition to a clean energy economy and continue our fight against climate change, including by strengthening policies related to electric vehicles.** A growing number of people are adopting electric vehicles in Hawai'i. As of December 2024, there were about 35,000 registered electric vehicles in the state–a 30 percent increase from prior years. As electric vehicle usage continues to quicken and EV batteries enter the local waste stream, we should prepare proper recycling and disposal practices to prevent such batteries from damaging our environment.

For recycling purposes, EV battery packs are shipped to a facility specializing in battery disassembly and reprocessing of their components. Parts like steel, copper, and aluminum scrap metal usually go into the nationwide metals-recycling stream. The plastics may not be recyclable, but they constitute a small proportion of the total contents of an EV battery pack. EV battery cells, on the other hand, include lithium, cobalt, manganese, nickel, and, to a lesser extent, aluminum. When they are ground up, the resulting stream is purified in various ways, and the end of the process is a pure supply of the desired metals.

Additionally, an EV battery pack is assumed to be at the end of its life when it has no more than 70 to 75 percent of its original capacity. Yet, hitting this mark may take 10 years or more. Even with a quarter or more of peak capacity gone, aging battery packs still offer plenty of energy storage—20-to-90 kilowatt-hours, or up to three days' worth of electricity for the average U.S. household. Many experts believe a robust "second use" industry is emerging to buy and repurpose used battery packs, extending their lives by a decade or longer.

Coalition Earth is a nongovernmental organization that works to preserve the well-being of people and our planet. We champion policies that advance climate resilience, clean energy, public health, and economic fairness for working families. Contact us at info@coalitionearth.org.

To the Honorable Chair and Members of the Committee:

My name is Tahan Bapna, and I am a sophomore in high school. I am writing in strong support of S.B. 103, which establishes an Electric Vehicle Battery Recycling and Reuse Working Group. This bill demonstrates foresight and responsibility in addressing the environmental challenges associated with Hawaii's growing electric vehicle (EV) adoption.

As EV usage continues to increase, Hawaii is taking the right step in planning ahead for the sustainable management of EV batteries. With over 34,000 registered EVs in the state and more entering the market each year, the potential for environmental harm from improperly disposed batteries is a critical concern. EV batteries contain valuable materials that can be recycled and reused, but they also pose risks if not managed correctly. This bill ensures that Hawaii is proactive in addressing these challenges.

One of the key strengths of this bill is its focus on collaboration. By creating a working group that includes representatives from industries such as EV manufacturing, energy storage, recycling, and environmental advocacy, S.B. 103 ensures that multiple perspectives are brought to the table. This collaborative approach is vital for developing best practices that are not only environmentally responsible but also feasible for implementation in Hawaii's unique context.

The focus on reusing batteries as a first option, exploring their use as energy storage systems as a second option, and prioritizing recycling as a third option reflects a thoughtful hierarchy that prioritizes resource efficiency. Additionally, the emphasis on studying the cost, safety, and environmental impacts of in-state versus out-of-state recycling options ensures that the working group's recommendations will balance sustainability with practicality.

I particularly appreciate that the bill directs the working group to address barriers and opportunities in EV battery recycling and reuse. This forward-looking analysis will help Hawaii identify gaps in infrastructure, assess economic feasibility, and develop policies that reduce waste, encourage innovation, and support a circular economy.

Establishing this working group is not just about managing EV batteries; it's about creating a model for how Hawaii can responsibly handle technological advancements while staying committed to its environmental and climate goals. By passing S.B. 103, Hawaii will be setting an example for other states in addressing the environmental challenges of EV adoption.

Thank you for the opportunity to provide testimony. I urge you to pass S.B. 103 to ensure Hawaii continues to lead the way in sustainability and responsible energy practices.

Sincerely,
Tahan Bapna

SB-103
Submitted on: 1/27/2025 11:12:25 AM
Testimony for EIG on 1/29/2025 1:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Alexander White	Individual	Support	Written Testimony Only

Comments:

I'm writing in support of SB103.

Leadership from the State is necessary on this complicated and hazardous issue.

Due to the similarity between electric vehicle batteries and other large form high capacity batteries (like residential solar backup batteries), I emplore you to expand the scope of this proposed working group to include those batteries. Your proposed working group member composition is already inclusive of the industry.

Additionally, please consider the neighbor islands as the group member composition is poised to consist entirely of Oahu stakeholders.

Thank you for addressing this pressing issue.

LATE

SB-103
Submitted on: 1/26/2025 1:15:32 PM
Testimony for EIG on 1/29/2025 1:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Jacqueline S. Ambrose	Individual	Support	Written Testimony Only

Comments:

YES to- Establishes an Electric Vehicle Battery Recycling and Reuse Working Group within the Hawaii State Energy Office. Requires the working group to examine how to maximize the recycling and reuse of electric vehicle batteries and recommend electric vehicle battery management practices. Requires a report to the Legislature.

LATE

SB-103
Submitted on: 1/28/2025 4:11:35 PM
Testimony for EIG on 1/29/2025 1:00:00 PM

Submitted By	Organization	Testifier Position	Testify
Johnnie-Mae L. Perry	Individual	Oppose	Written Testimony Only

Comments:

I, Johnnie-Mae L. Perry OPPOSE SB 103 Relating To Electric Vehicle Batteries for the following reason.

What is the likehood that this recycling center be located at the westside of Honolulu, O'ahu, like the leeward coast, Campbell Industrial Park? 99%