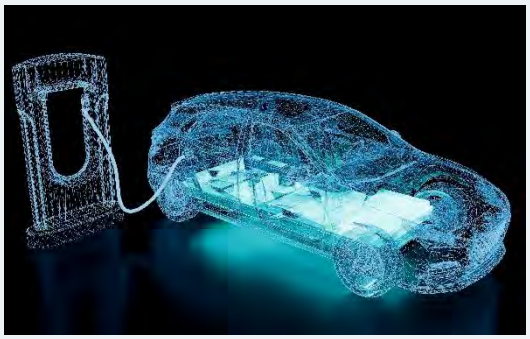
County:	Honolulu	Solid Waste Issue:	Lithium-ion Batteries Rechargeable Lithium-Ion (Li-ion) batteries including consumer, automotive and home power storage uses.
Population (2020 Census):	1.02 million		
Last Update to SWMP:	2019		
Waste Characterization Data:	There is no waste characterization data specific to Li-ion batteries available. According to the 2017 O‘ahu waste composition study, approximately 389 tons of batteries, including dry cell, rechargeable, and lead-acid batteries were disposed between Sep. 2016 and Aug. 2017 (<0.1% of the overall waste stream).[1]		
Waste Diversion Data:	There is no waste diversion data on Li-ion batteries recycling available. In FY2021, 6,883 tons of lead acid (car) batteries were recycled.[2] Using City Refuse collection services, in FY 2022, a total of 3,496 lead-acid batteries were recycled. An additional 630 non-lead acid batteries were also recycled.		
County Ordinances:	The County of Honolulu County does not have any ordinances regarding the management of waste managing Li-ion batteries. Li-ion batteries are subject to state regulations under (HAR 11-273.1; see State fact sheet for additional information).		
Overview:	The Honolulu Fire Department reports that from January 2020 to December 2022, a total of 58 fires were caused by Li-ion batteries on O‘ahu -- a 150% increase since 2020.[3]  The number of electric vehicles in in the State of Hawai‘i is expected to increase over the next few years. The Hawai‘i Auto Dealers Association predicts that by 2030, 33 percent of all new cars purchased in the state will be electric, with that number increasing to over 95 percent by 2045.[4] Given that the lifespan of EV Li-ion batteries is between eight to ten years, it is expected that the number of EV Li-ion batteries to be managed will continue to increase over the next few years. According to the 2019 ISWMP, residents of the City and County of Honolulu can deliver up to two lead acid batteries each month to a convenience center or transfer station at no cost.[2] The public is advised to drop off rechargeable (non-lead acid) batteries from cell phones, cordless phones, flashlights, laptop computers, and power tools in collection boxes at all Home Depot locations and Battery Bill's. Regular alkaline can be disposed of in the regular trash. There are County-contracted facilities permitted by the hazardous waste program to collect Li-ion batteries for recycling (see “Permitted Collectors and Recyclers/Processors” section).The City is evaluating the feasibility of expanding the list of battery types accepted to include Li-ion batteries.		
County Programs & Funding:	No programs or funding for Li-ion batteries were identified. The City educates residents to leave old lead-acid car batteries with the dealer, service station, or auto repair shop when purchasing a new one. City and County of		

	Honolulu residents can also drop off their car batteries at Going Green community recycling drives, which are held one to five times a month on Saturdays.[5]
Estimated Annual Material Type Generation:	**Estimated Number of Registered Vehicles for City and County of Honolulu (2022)[6]:** • Total Passenger and Freight Vehicles: 678,836 o Total Electric Vehicles: 17,681 **Estimated Number of EV Li-ion Batteries to be Managed Yearly[4]**: Predicted to steadily increase from an estimated total of 460 EV Li-ion batteries a year in 2022 to approximately 6,914 EV Li-ion batteries a year by 2039. **Estimated Number of Commercial Businesses and Residential Households with Photovoltaic (PV) System in O'ahu (2022)[7]:** 66,170 (96% residential, or approximately 63,520 homes). **Estimated Number of Homes with Li-ion Battery Storage Systems (2021)[4]:** 8,377 **Estimated Number of Home Li-ion Battery Storage Systems to be Managed Yearly:** Predicted to reach approximately 2,200 by 2039
Permitted Collectors and Recyclers/Processors:	Consumers can drop off their rechargeable Li-ion batteries (i.e., batteries from cellphones, laptops, and power tools) at Home Depot, Island Recycling Inc., and Battery Bill's LLC.The batteries, once collected, are shipped to the west coast for recycling.
News Articles:	*FireRescue1*: "Honolulu Fire Department warns of danger with Li-ion batteries, offers safety tips" *Hawaii News Now*: "Experts: Lithium batteries, found in more and more devices, are a rising fire risk" *KITV*: "Honolulu fire officials warn about lithium-ion batteries ahead of Christmas" *Hawaii News Now*: "HFD Lithium batteries, like those in electric cars and cell phones, blamed in dozens of Oahu fires" *Star Advertiser*: "HFD warns public of 'potential dangers' of lithium-ion batteries"
State Solid Waste Stream Issue Statement:	Li-ion batteries from consumer electronics, PV systems, and electric and hybrid vehicles comprise a small but increasing proportion of the state's total solid waste stream. Li-ion batteries contain varying chemistries which require different recycling processes. Furthermore, the chemistry of Li-ion batteries is expected to continue evolving, which could further complicate the recycling process. Li-ion batteries pose potentially adverse public health and environmental impacts if disposed improperly, due to their flammability and toxic chemicals in their composition. Li-ion batteries can contain toxic materials such as compounds from lithium, nickel, and arsenic as well as carcinogenic materials from nickel, arsenic, and occasionally cobalt, copper, and polypropylene. Improper disposal of Li-ion batteries may lead to these chemicals leaching into the soil to contaminate both surface and groundwater, negatively impacting human health. They may also combust, causing fires in collection trucks, processing facilities, and at the landfill. Presently, the Li-ion battery recycling industry is underdeveloped.

County Solid Waste Steam Issue Statement and Potential Solutions: (County to provide issue statement and potential solutions regarding the management of this material category.)	**Issue Statement –** The City and County of Honolulu Department of Environmental Services (ENV) is becoming increasingly concerned about the potential for battery fires at the refuse transfer, recycling and disposal facilities. **Potential Solutions** – ENV is exploring 1) adding more battery types to its battery recycling contract and 2) options for separate e-waste collection/drop-off. For H-POWER, on June 28, 2023, ENV issued notice to proceed to Covanta Energy to engage consulting firm Sargent & Lundy to conduct a comprehensive facility review with respect to fire prevention, detection, and protection.

[1] According to the 2017 Waste Composition Study, batteries are defined as any type of battery, including dry cell, rechargeable, and lead-acid batteries (e.g., car, flashlight, small appliance, watch, and hearing aid batteries). Source: 2017_Waste_Composition_Studies.pdf (honolulu.gov)
[2] 2019 Integrated Solid Waste Management Plan Update (honolulu.gov)
[3] Honolulu Fire Department warns of danger with lithium-ion batteries, offers safety tips (firerescue1.com)
[4] 2023 HNEI Act92 Final Report Clean Energy Products Waste Management (hawaii.edu)
[5] How to Dispose of Trash (honolulu.gov)
[6] Energy_Trend.pdf (hawaii.gov)
[7] Hawaiian Electric sees brisk pace of solar installations (hawaiianelectric.com)