HRL LABORATORIES

2024 CORPORATE SUSTAINABILITY REPORT

EH&S
ENVIRONMENTAL, HEALTH AND SAFETY

CONTENTS

HRL COMPANY OVERVIEW

For more than 70 years, HRL Laboratories, LLC (HRL) scientists and engineers have been on the leading edge of technology, conducting pioneering research, providing real-world technology solutions, and advancing the state of the art. HRL is headquartered in Malibu, California and at the end of December 2024, operated four additional facilities in Southern California.

HRL's Laboratories:

HRL consists of four primary laboratories:

MTL: Microfabrication Technology Laboratory provides engineering, prototyping, and production services for semiconductor and microfabrication technologies.

SEL: Sensors and Electronics Laboratory develops state-of-the-art radio-frequency (RF), millimeter-wave, and electro-optical sensor subsystems and components.

VSL: Officially established in 2022, Vision Systems Laboratory develops infrared (IR) sensor products for aerospace and defense applications.

MML: Materials & Microsystems Laboratories focuses on using engineering qualified materials and readily available precursors to further technology in advanced materials, structures, coatings, and navigation.

HRL & SUSTAINABILITY

HRL strives to be good stewards of the resources with which we have been entrusted and good neighbors to our community. With this value in mind, HRL approaches environmental stewardship and sustainability with the same dedication we apply to our world-class science, technology, and engineering. HRL is committed to managing our resources in an ethical, practical, and purposeful manner consistent with our company mission. We implement practices and programs, educate employees, and take on challenges to reduce our environmental footprint.

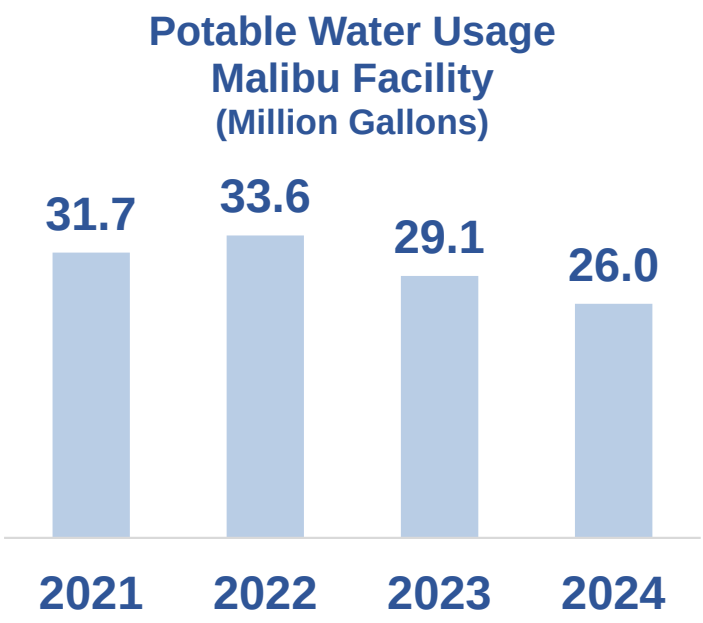
HRL's 2024 Corporate Sustainability Report:

The Environmental, Health, & Safety (EH&S) Department at HRL is proud to present the fourth annual Corporate Sustainability Report (CSR). This year's report builds upon data presented in the previous CSRs and identifies emerging trends. One purpose of the CSR is to assist HRL in evaluating and prioritizing potential future projects and initiatives that involve resource consumption and to provide the framework to track the impact of these efforts.

HRL continued to grow in 2024, expanding to over 1,000 employees! Headcount and operations continue to increase at the Lost Hills (located in Calabasas), Camarillo, and Westlake (located in Thousand Oaks) facilities, and the Malibu facility is as busy as ever. The 2024 CSR dives deeper into some of our key metrics to provide analysis on a per capita basis. This allows for evaluation progress while accounting for growth.

2024 HIGHLIGHTS

Potable Water Use at HRL Malibu Continues Downward Trend



Wet Scrubber Media Hazardous Waste Reduction

Reused approx. 4 cubic yards of wet scrubber media (a.k.a. scrubber balls)

Record Total Turnout for Planet HRL Events in 2024

HRL + TreePeople

Malibu Creek State Park Docents

HRL the Bay

Recovery from the Franklin Fire

HRL Malibu took a direct hit from the Franklin Fire in December 2024. Thanks to the efforts of the HRL Emergency Response Team and local fire departments, HRL Malibu's main structures survived relatively unharmed. Malibu Canyon and the area surrounding HRL Malibu was severely burned. However, over the past few months, life has returned to the canyon.

February

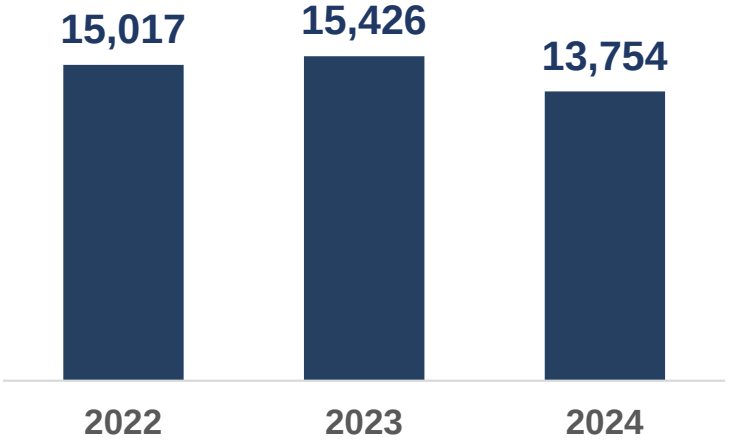
June

ENVIRONMENT

HRL is committed to reducing our environmental impact by implementing building management systems, equipment, and training to conserve resources and operate efficiently. Key sustainability metrics are summarized below. The values in each graph represent combined totals from all HRL facilities. **Click on the graphs to find out more about each topic.**

Greenhouse Gas and Climate

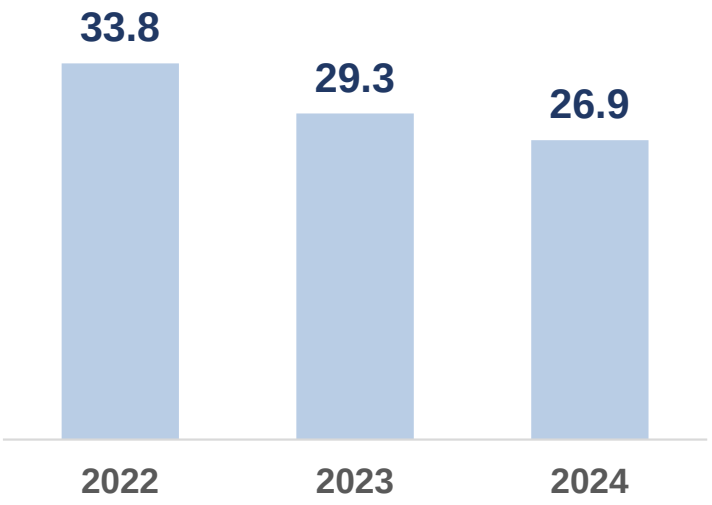
GHG Emissions
MT CO_2e* / Year



*metric tons carbon dioxide equivalent

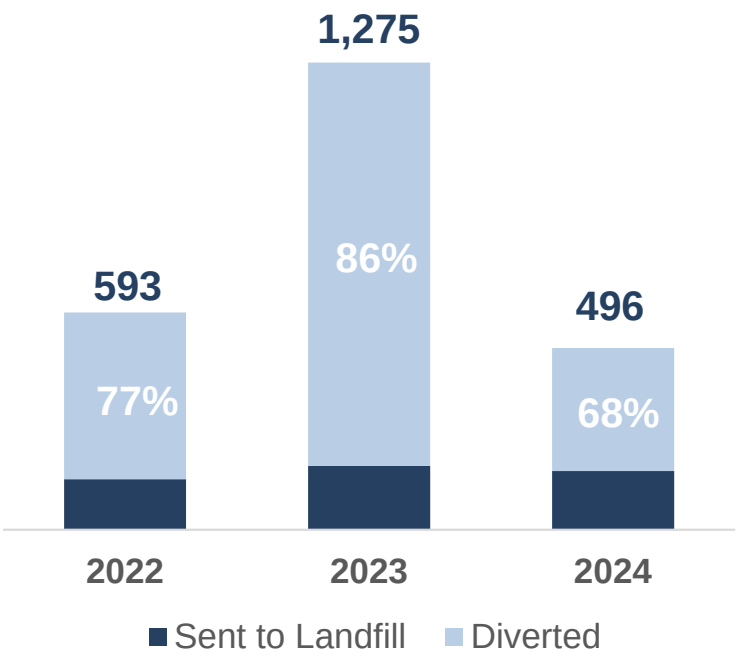
Water

Potable Water Withdrawal
Million Gallons



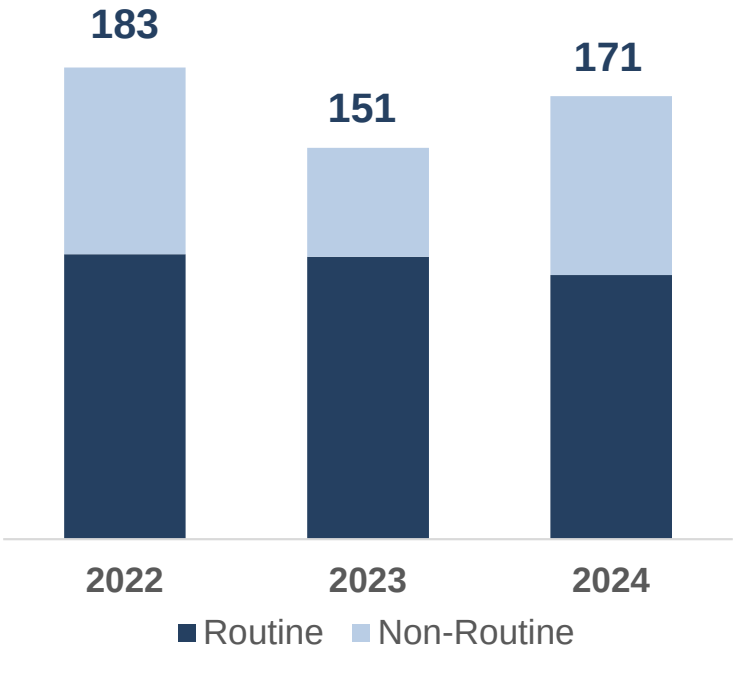
Solid Waste

Tons Disposed & % Diverted



Hazardous Waste

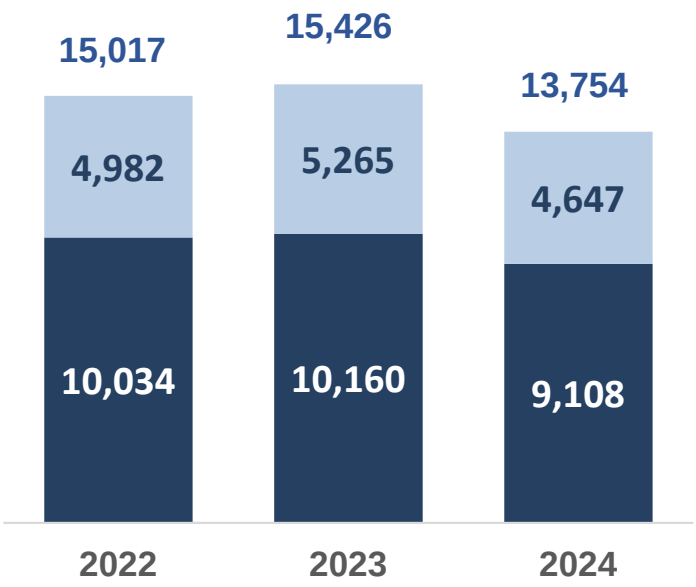
Tons Disposed



GREENHOUSE GASES & CLIMATE

The impacts of climate change affect all communities and businesses regardless of size, location, or activity. HRL understands that everyone must do their part in reducing emissions of GHGs.

Total GHG Emissions in MT CO_2e*



Scope 1**: On-Site stationary combustion equipment, semiconductor manufacturing, HRL-owned vehicles, and refrigerant loss

Scope 2**: Off-site (purchased) electricity generation.

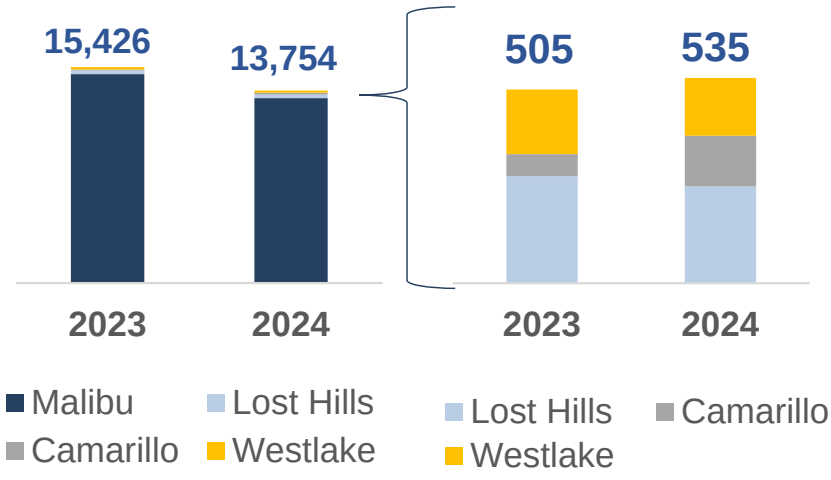
The Malibu facility continues to be the primary source of GHGs as it contributed 95.8% of HRL's total emissions in 2024 (down from 96.5% in 2023). Lost Hills, Camarillo, and Westlake saw minimal changes in GHG emissions in 2024 vs. 2023. Lost Hills, Camarillo, and Westlake are expected to have larger relative contributions to total GHG emissions in 2025 and beyond.

The primary sources of HRL's GHG emissions are natural gas combustion in on-site micro-turbines, boilers, and a regenerative thermal oxidizer (RTO), plus off-site (purchased) electricity generation.

GHG emissions decreased by approximately 11% in 2024 compared to 2023. The decrease was primarily due to a reduction in refrigerant leaks in 2024 compared to 2023. In addition, the carbon intensity (cardon dioxide equivalent released per megawatt-hour of electricity produced) of electricity provided by So Cal Edison (SCE) decreased by 15% in 2024 compared to 2023.

HRL does not expect this downward trend to continue over the next few years as Camarillo, Lost Hills, and Westlake ramp up operations. However, emissions will be monitored, and energy efficiency measures will be implemented where feasible.

GHG Emissions by Facility in MT CO_2e



***: MT CO_2e = metric tons carbon dioxide equivalent*

****: Scope 1 Emissions are direct emissions generated from equipment and processes owned or controlled by HRL. Scope 2 Emissions are indirect emissions associated with the production of electricity purchased by HRL. (https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-i.pdf)*

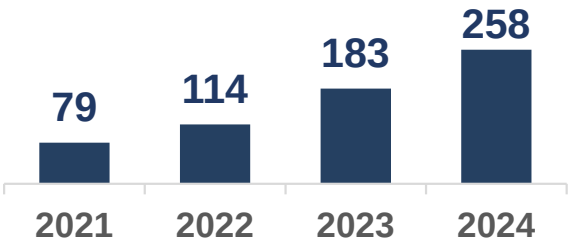
GREENHOUSE GASES & CLIMATE

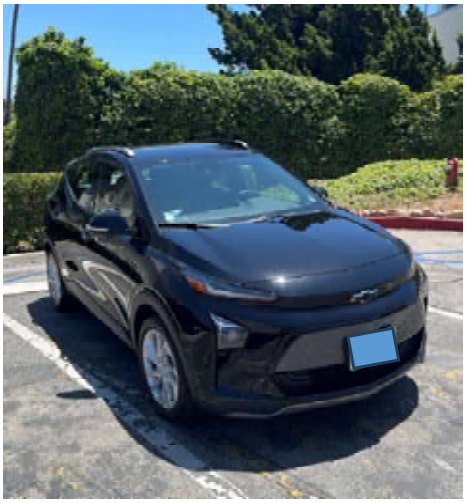
Electric Vehicles at HRL:

Although EVs are not emission-free from a global perspective, they generate far fewer GHGs per mile than traditional combustion engine vehicles. Given HRL's facilities' locations, public transportation options are very limited. EVs represent the best and most-likely way for HRL to reduce employee commute emissions. HRL provides on-site vehicle charging at no cost to employees. Electricity consumed at the Lot 8 EV chargers during 2021, 2022, and 2023 is presented in the graph to the right. EV charging at Lot 8 increased by 60% in 2023 compared to 2022. Additional EV charging occurred at Malibu Lots 1, 2, and 6 and HRL's non-Malibu facilities, but is not captured in this analysis due to a lack of precise metering.

In addition to employee vehicle charging, HRL replaced two gasoline-powered vehicles with two fully-electric Chevrolet Bolts. The two bolts were driven a combined total of approximately 13,000 miles in 2024. On a per mile basis, electric vehicles generate approximately one fifth the amount of GHGs produced by standard gasoline vehicles.

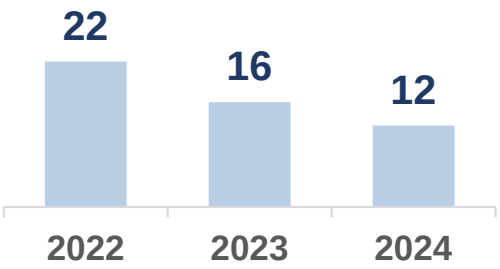
Lot 8 EV Charging in MWh**





GHG Emissions per Capita:

GHG Emissions per Capita
MT CO2e / person / year



HRL experienced significant growth in 2023 and 2024 with overall headcount increasing from approximately 690 people in 2022 to 1,131 people in 2024. GHG emissions can be analyzed on a per-capita basis to compare year-over-year metrics while accounting for growth. HRL's total GHG emissions on a per-capita basis are shown in the graph to the left. The significant drop is due to the large increase in headcount and a slight decrease in emissions. HRL's per-capita GHG Emissions are expected to stay the same in 2025 vs 2024. Overall GHG emissions are expected to increase slightly. However, the headcount is also expected to increase. These factors are expected to approximately cancel each other out in 2025.

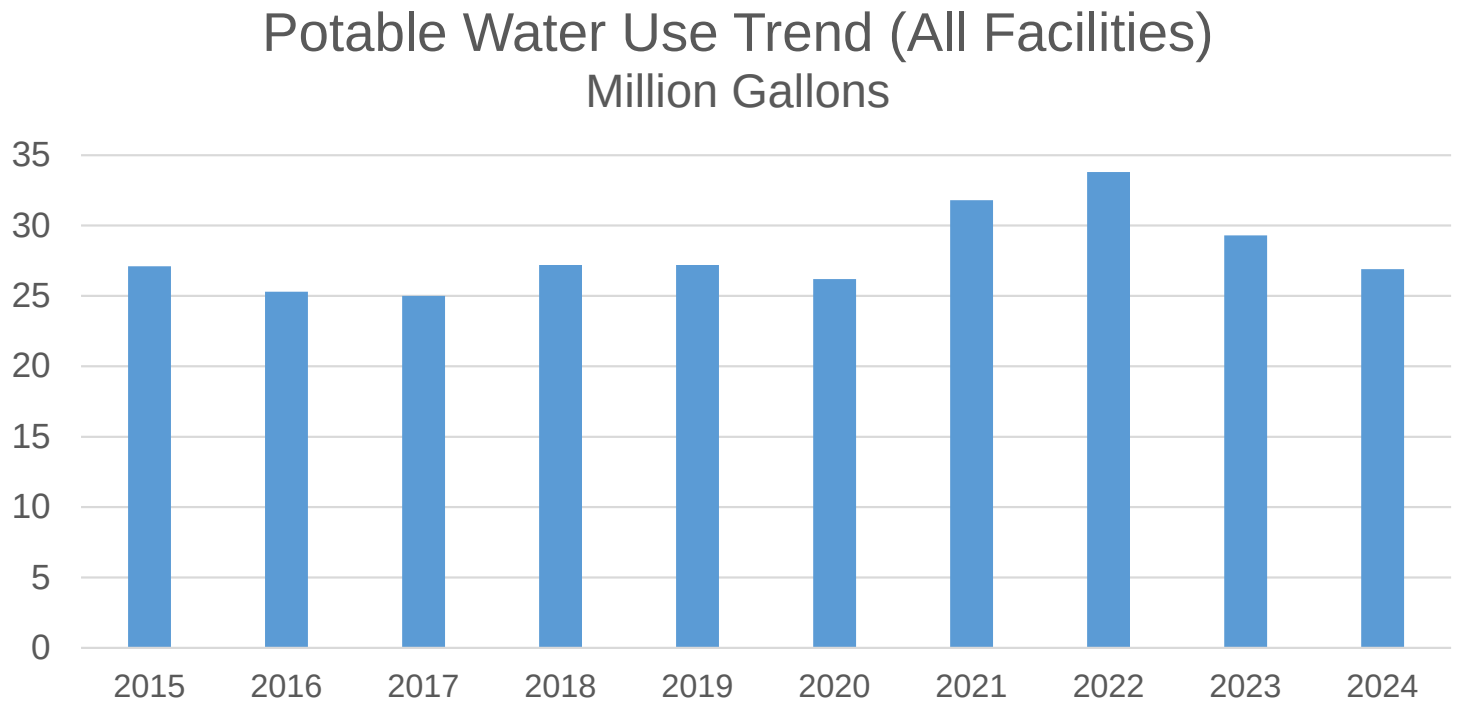
Goals:

HRL saw substantial growth in 2024 and continues to grow rapidly in 2025. GHG emissions are expected to increase in 2025 and the following years as HRL continues to add headcount and ramp up operations at the Lost Hills, Camarillo, and Westlake facilities. Therefore, it is not feasible to quantify a GHG emissions target at this time. However, HRL will continue to implement energy efficiency measures where feasible to curtail overall and per capita GHG emissions.

**: Employee commute emissions are considered Scope 3: Indirect Emissions and not quantified as part of the CSR.*
***: MWh = Megawatt-hours electricity*

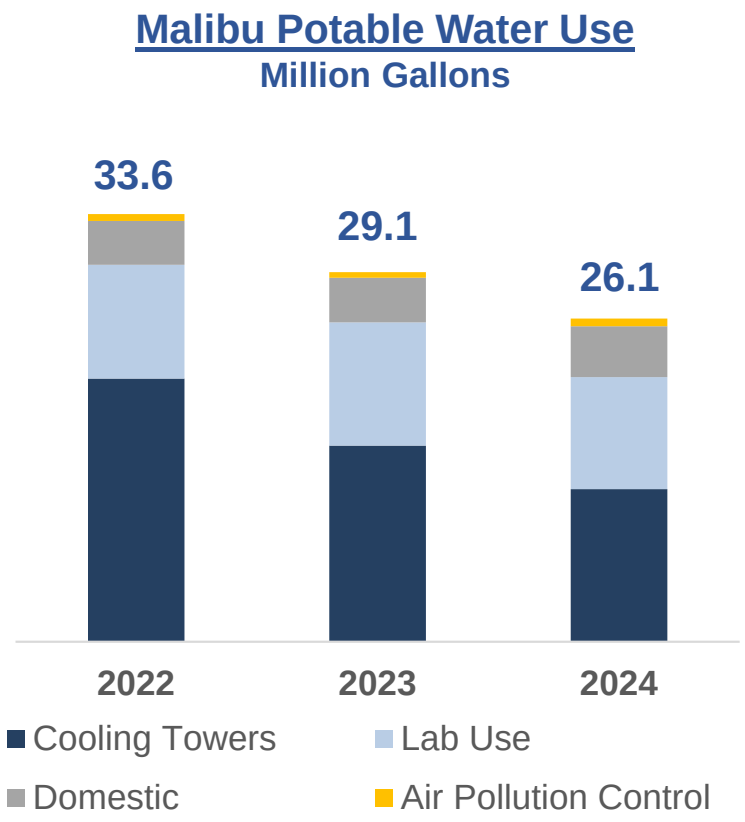
WATER

Water conservation is a crucial component of California's long term water strategy. HRL's water usage is tracked using utility bills for all five facilities and individual water meters at the Malibu facility.



After a sharp increase in 2021 and 2022, HRL's potable water use has been on a downward trend in 2023 and 2024. HRL used 6.9 million fewer gallons of potable water in 2024 compared to 2022 (a 20% decrease). This decrease is primarily due to a significant reduction in potable water usage at the Malibu facility cooling towers. In 2023 and 2024, the HRL Facilities Department employed multiple strategies to increase water efficiency within the towers. Details can be found on the following page.

The Malibu facility continues to be the dominant water user of HRL's five facilities, accounting for 97% of overall potable water use. However, this is down from 99% in 2023, and water use at the Lost Hills, Camarillo, and Westlake facilities are expected to increase over the next few years as more operations come online.



WATER

Water Conservation Efforts:

More people, production, and tools require more domestic and industrial water supply. As headcount and operations increase while water infrastructure remains constant, it is up to each HRL employee and lab group to use water efficiently and to notify Facilities Management of any leaks.

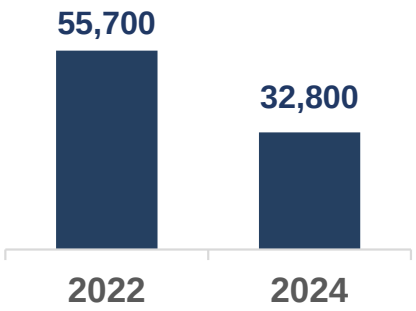
HRL's primary water conservation effort on the facility level is the reuse of recycled water for landscape irrigation at the Malibu facility. Water from laboratory sinks in Malibu is treated and pumped to the landscape tank for reuse, and nearly all of the water discharged from the cooling towers is reused as landscape irrigation.

As stated in the previous page, HRL used 6.9 million fewer gallons of potable water in 2024 compared to 2022 (a 20% decrease). The primary reduction of water usage was achieved in the Malibu facility cooling towers. Although the exact reason for the decrease cannot be determined with 100% certainty, the HRL Facilities Department employed multiple strategies over the past two years to increase water efficiency within the towers:

- New water treatment scheme to maintain performance while reducing blowdown
- Thorough cleaning of tower basins and media
- Increased monitoring of cooling system parameters

For these and likely additional reasons, potable water usage in the Malibu facility cooling towers decreased by approximately 41% in 2024 compared to 2022.

Potable Water Usage (GPD)
Malibu Facility Cooling Towers



Goals:

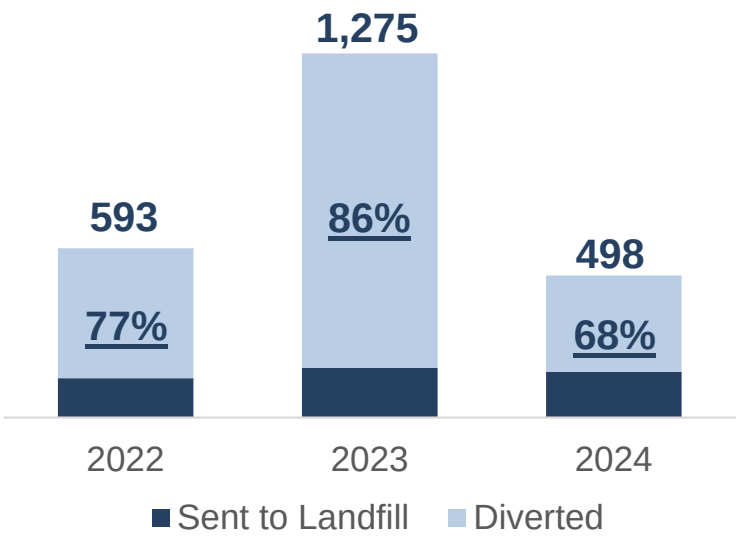
HRL's water conservation goal remains unchanged from 2021: Assuming the Civic Center Water Treatment Facility (CCWTF) is fully operational, HRL's goal is to reduce potable water use at the Malibu facility by 15% compared to 2021 levels by 2030. The HRL Malibu facility used 31.7 and 26.1 million gallons of potable water in 2021 and 2024, respectively. This represents a 17% reduction, and HRL achieved its goal in 2024 without connection to CCWTF!

Regardless of the downward trend in potable water usage over the last two years, HRL will continue to work with the City of Malibu to connect to the CCWTF. Once operational, HRL would send a portion of its wastewater to the CCWTF and receive recycled, non-potable water in return. Water received from the CCWTF could be used in HRL's cooling towers and air pollution control devices, which would directly replace potable water withdrawal. This will help further reduce potable water usage at the Malibu facility.

SOLID WASTE

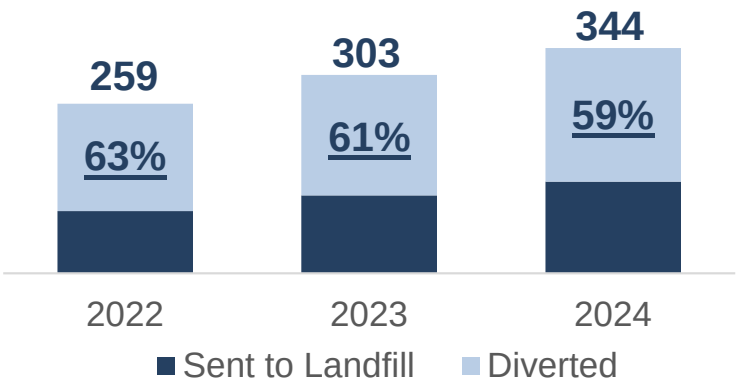
Waste reduction and diversion from landfills results in a variety of environmental benefits including conserving raw materials, reducing energy used for goods production, and extending the life-span of existing landfills. Effective waste reduction and diversion starts at the point of generation.

Solid Waste Disposal - Total
(Tons and % Diverted from Landfills)



HRL's overall diversion rate dropped significantly compared to 2023 due to the drastic decrease in construction and demolition (C&D) waste (C&D Waste has a high diversion rate). Despite the drop in overall diversion rate, overall waste generation decreased significantly (61%) and total waste sent to landfill decreased slightly (8%) in 2024 compared to 2023.

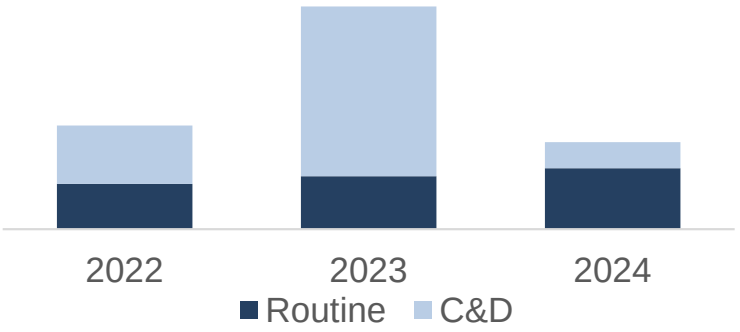
Routine Waste Diversion
(Tons and % Diverted from Landfills)



Solid waste at HRL is generated from a variety of sources including chemical containers, equipment and part packaging, campus construction and renovation, and an on-site cafeteria. The quantity of solid waste generated each year varies depending on the size, scale, and number of projects undertaken during the year.

The primary goal for solid waste is to minimize generation. However, waste is an inevitable part of doing business, so HRL works to divert as much solid waste away from landfills as possible via recycling, reuse, and donation.

Routine vs. C&D Waste



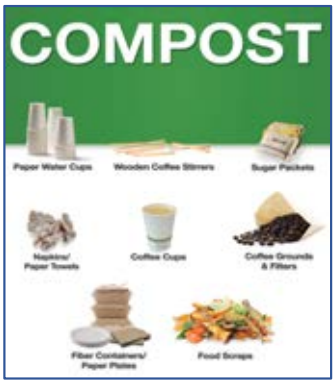
To accurately compare solid waste metrics between years, routine waste (trash, organics, recycling, wood, scrap metal, etc.) has been separated from C&D waste. Routine waste generation and diversion is more predictable and repeatable each year. HRL's diversion efforts (recycling, compostable collection, etc.) are captured in our routine waste metrics. Routine waste generation has increased over the past two years, which is consistent with HRL's overall growth.

SOLID WASTE

HRL's Waste Reduction and Diversion Efforts:

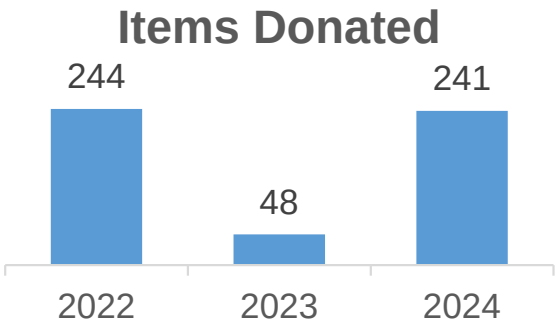
Waste Segregation

HRL runs a robust waste segregation program to separate recyclables, compostable materials, and trash (material sent to landfill). Project managers and contractors are trained on proper waste segregation generated by construction projects. HRL employees are provided information on how to properly dispose of food-related waste. By the end of 2023, all HRL facilities had three-stream waste systems. **Reminder to all HRL employees: no one sorts your trash after you place it in the bin, so please do your part to properly segregate your waste at the start!**



Reuse/Donation:

HRL donates electronic devices to a non-profit organization, which provides electronic equipment, installation services, and technical support to communities. In 2024, HRL donated a total of 232 devices, including laptop and desktop computers. Donations in 2023 were significantly lower compared to 2022 and 2024. This was due to natural fluctuation in laptop turnover and timing of donation pickups (e.g. one in late 2022 and one in early 2024).



Goals:

California has set a state-wide diversion goal of 75% by 2020. However, the state's overall waste diversion percentage for 2022 was 41%. HRL is committed to doing its part to help California achieve its waste diversion goals.

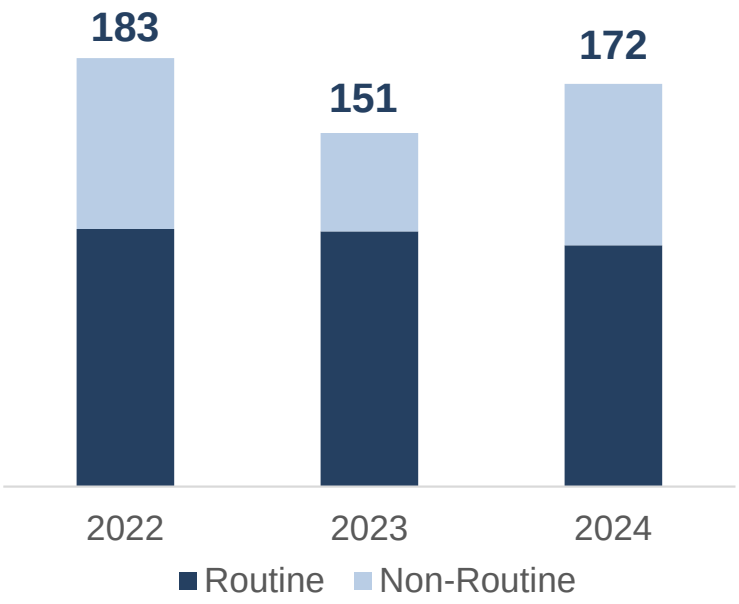
HRL's solid waste diversion goals are 72% Diversion by 2025 and 75% Diversion by 2030. We hit 68% diversion in 2024, which is 4% shy of our goal. High diversion rates achieved in 2022 and 2023 relied heavily on the recycling and reuse of C&D waste generated by large construction projects. Diversion of routine wastes need to be increased to consistently hit our overall diversion rate goals.

In addition to diversion percentage, HRL will continue to look for opportunities for reuse or donation to reduce overall waste generation.

HAZARDOUS WASTE

Generation of hazardous waste is an inevitable part of HRL's core business activities. For this report, hazardous waste is defined as any waste that includes a Federal or California Hazardous Waste Code.

Hazardous Waste Disposal (Tons)

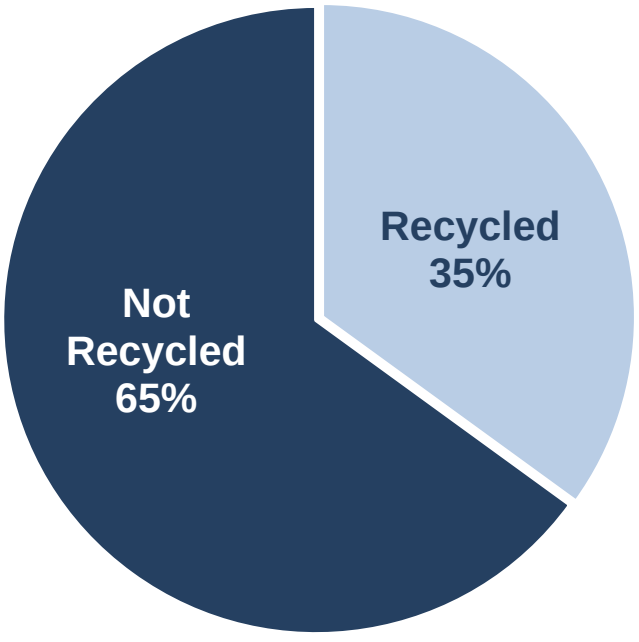


Hazardous waste can be broken down into two categories: routine and non-routine. Routine hazardous waste is generated from typical or continuous operations and includes, but is not limited to, solvent waste, spent corrosives, and wastewater from air pollution control devices. Non-routine waste is generated from one-off occurrences, such as cleanup operations, construction projects, and upset conditions.

Overall hazardous waste increased by 13% in 2024 vs. 2023. However, routine hazardous waste decreased by 6% in 2024 vs. 2023. The decrease was primarily driven by a reduction in shipments of waste scrubber water. Some types of routine wastes, including solvent waste, increased in 2024 vs. 2023 due to increased overall operations.

Routine Hazardous Waste - Off-Site Recycling 2024

All hazardous waste generated by HRL is shipped off-site for treatment and/or disposal. Certain types of hazardous waste can be recovered or recycled. Wherever possible, HRL requests that waste shipped offsite be recycled via energy recovery or metals recovery, as applicable. Recycling is easier for routine waste as there's more time to plan and set up recurring shipments. In addition, non-routine wastes are often impossible to recycle given their nature (e.g. spill cleanup materials). The chart to the right shows what percentage of HRL's routine hazardous waste was recycled in 2024.



HAZARDOUS WASTE

HRL's Current Hazardous Waste Reduction Efforts:

HRL is subject to California Senate Bill (SB) 14, the Hazardous Waste Source Reduction and Management Review Act, which requires hazardous waste generators to consider and assess potential source reduction techniques. In 2023, HRL revisited and updated its SB-14 Waste Minimization Plan by identifying its major waste streams and researching applicable reduction technologies and practices.

HRL has implemented the following measures to reduce the quantity of hazardous waste generated by laboratory activities:

- Operational review to maximize useful life of chemicals
- Chemical inventory system to reduce over-purchasing and promote transfer of chemicals between labs
- Employee training to explain and demonstrate procedures and practices that minimize waste generation
- Filtration and reuse of chemicals in circumstances that do not interfere with product quality

Goals:

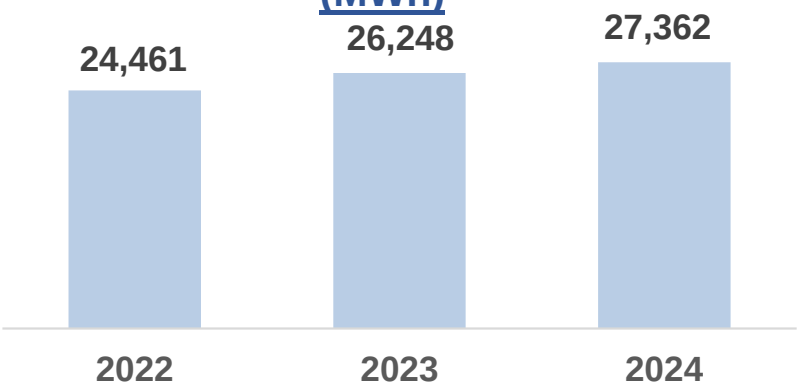
HRL will periodically evaluate on-site recycling technology to assess feasibility and cost-effectiveness. If an on-site recycling technology is found to be both technologically and economically viable, HRL will pursue its implementation

No specific technologies were identified in 2024. However, during 2024 winter shutdown, the EH&S and Facilities Maintenance teams recovered and reused approximately 4 cubic yards of scrubber media while performing biannual maintenance on Wet Scrubber 2. Going forward, scrubber media will be recovered and reused each time maintenance is performed on the wet scrubbers.

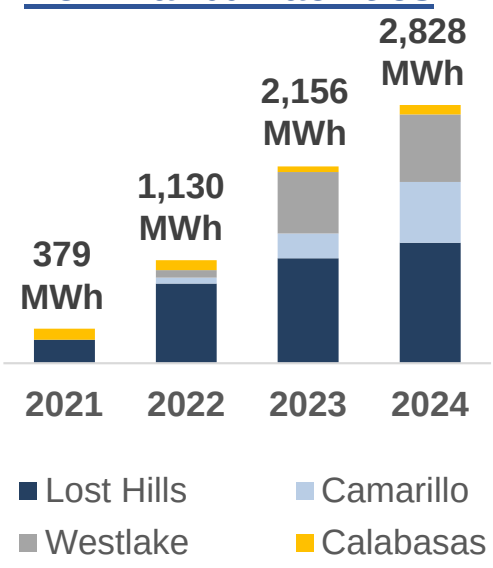
ELECTRICITY

Electricity for all HRL's facilities is provided by Southern California Edison (SCE). In addition to electricity purchased from SCE, the Malibu facility has two banks of micro-turbines that produce electricity onsite. These turbines produce a total of approximately 7,500 megawatt-hours (MWh) per year. Analysis performed in this section focuses on purchased electricity. The turbines are accounted for in the GHG and Natural Gas sections.

Purchased Electricity – All Facilities (MWh)

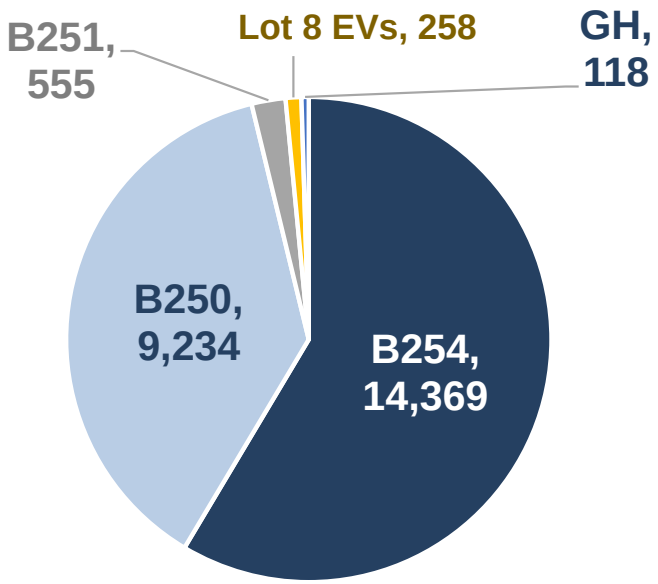


Electricity Use Non-Malibu Facilities



The Malibu facility uses the vast majority of HRL's total electricity. However, Lost Hills, Camarillo, and Westlake's contributions are increasing year-over-year as they ramp up operations. Malibu accounted for 90% of HRL's total purchased electricity in 2024, 92% in 2023, and 95% in 2022. This trend is expected to continue in 2024 and 2025. The new facilities will meet CALGreen design standards, which will result in increased energy efficiency compared to Malibu.

Purchased Electricity – Malibu 2024



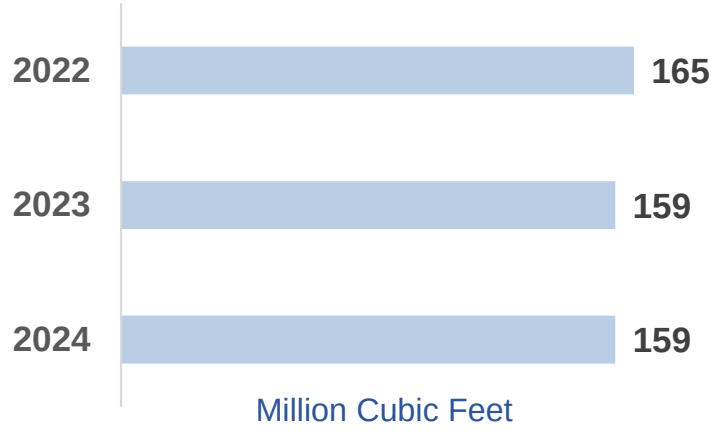
The Malibu facility has multiple electrical meters, so electricity use can be tracked building-by-building. As one would expect, the main laboratory buildings consume the vast majority of electricity. Building 254 is the leading consumer, followed by Building 250. Building 762 (currently under construction) is expected to be a large contributor starting in 2026.

Values in MWh, GH = Greenhouse

NATURAL GAS

Natural gas consumption has remained constant for the past three years. This is because HRL's primary natural gas-fired equipment operates at a near-steady state.

Natural Gas Consumption – All Facilities



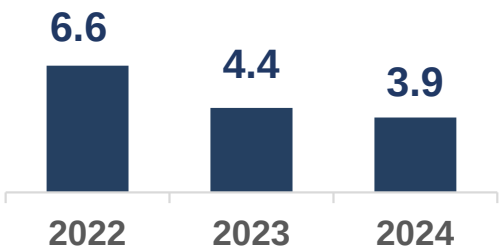
Natural gas usage at the Lost Hills, Camarillo and Westlake facilities will increase as operations ramp up. However, Malibu is HRL's primary natural gas consumer (99% in 2024). Natural gas use at Lost Hills, Camarillo, and Westlake is expected to be far less than Malibu even when operating at full capacity.

Since Malibu is the driver of HRL's natural gas consumption, relatively constant natural gas usage is expected for the foreseeable future. Major infrastructure changes (e.g. removing the micro-turbines) would be required to make significant impacts to HRL's natural gas consumption.

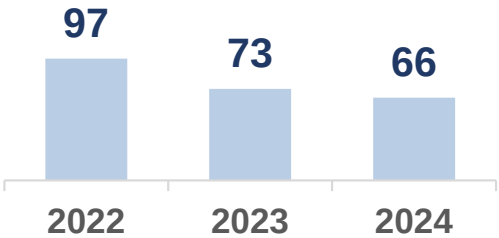
Electricity and Natural Gas Consumption Per Capita

Similarly to GHG emissions, natural gas and electricity consumption can be analyzed on a per-capita basis to account for growth. Natural gas and electricity usage per person are presented below.

Natural Gas Usage per Capita
100 cf / person / day



Electricity Usage per Capita
kWh / person /day



Per-capita natural gas and electricity usage are expected to stay the same in 2025 vs 2024. Electricity use at the non-Malibu sites is expected to increase significantly in 2025. However, the headcount is also expected to increase. These factors are expected to approximately cancel each other out in 2025.

Values in 100 cubic feet (cf) and kilowatt-hour (kWh) are common units for utility bills.

GOALS

HRL's sustainability goals were established in 2021 with the inaugural CSR and remain unchanged for 2024.

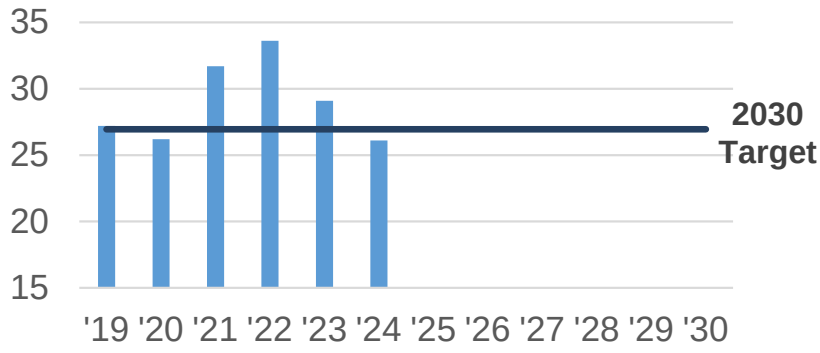
Greenhouse Gases and Climate

Due to the uncertainty of future greenhouse gas (GHG) emissions from the Camarillo, Lost Hills, and Westlake facilities, establishing a science-based GHG reduction target is not currently possible. Our goal is to use the data presented in this report to develop a path forward. A quantitative GHG target will be developed in future reports.

Water

HRL expects to reduce its future potable water withdrawal by receiving recycled water from the City of Malibu's Civic Center Water Treatment Facility. Based on this, our goal is to reduce potable water withdrawal at the Malibu facility by 15% compared to 2021 levels by 2030.

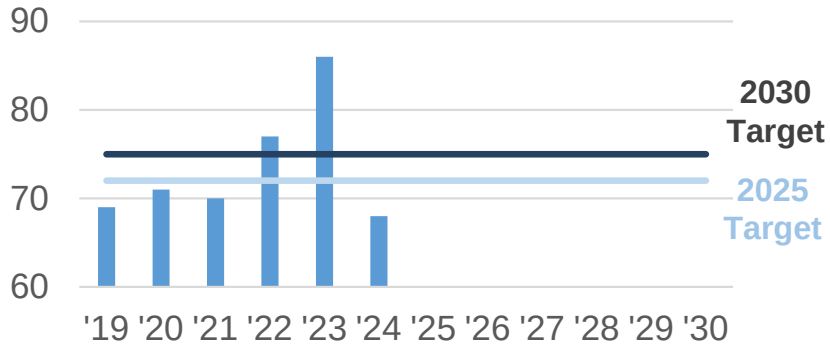
Malibu Potable Water Use (Million Gallons)



Solid Waste

California set a state-wide diversion goal of 75% by 2020. However, the state-wide diversion rate in 2022 was 41%. HRL is committed to doing its part to help California achieve its target and has a set a goal to achieve 75% diversion by 2030 with an interim goal of 72% by 2025. We hit an overall diversion rate of 68 in 2024, which is 4% shy of our goal. High diversion rates achieved in 2022 and 2023 relied heavily on the C&D waste generated by large construction projects. Diversion of routine wastes need to be increased to consistently hit our overall diversion rate goals.

Solid Waste Diversion (%)



Hazardous Waste

As HRL's operations continue to grow, hazardous waste generation will increase. HRL will continue our hazardous waste reduction practices at our existing facilities, while planning hazardous waste reduction measures into our new facilities' designs. Currently, most types of on-site hazardous waste recycling have been ruled out due to technological unviability, among other reasons. However, HRL will periodically evaluate methods of on-site recycling and reuse to assess feasibility and cost-effectiveness.

PLANET HRL

Planet HRL is the volunteer wing of HRL's sustainability program. HRL employees, friends, and family members donate their time to help clean up and strengthen the local environment and community. Planet HRL held three events in 2024: a tree planting event with Tree People, a park cleanup with Malibu Creek State Park, and a beach cleanup with Heal the Bay.

Urban Tree Planting

HRL volunteers and guests joined forces with Tree People for an urban tree planting event in San Fernando, CA. Together we planted, supported, and watered 17 saplings!

Park Cleanup

In June of 2024, approximately 50 volunteers went off-trail in Malibu Creek State Park and picked up trash along Malibu Creek. HRL's partnership With the park allows us to make a positive impact in the natural area in our backyard.

Beach Cleanup

In November 2024, HRL volunteers participated in a cleanup event at Will Rogers State Beach. The event was hosted by Heal the Bay, which provides education and preservation services for the Santa Monica Bay and up and down the Pacific Coast. HRL has partnered with Heal the Bay since 2018.

ACKNOWLEDGEMENTS

An effective sustainability program requires company-wide buy-in and participation by everyone from entry-level employees all the way to upper management. Thank you to all HRL employees and contractors that help minimize waste generation, properly segregate waste, and help HRL processes and equipment operate in an efficient manner.

The EH&S department would like to give special thanks to the following departments that provided time, effort, and data to help keep our sustainability program running and to make this report possible.

- HRL Facilities Maintenance for:
  - Providing bins and dumpsters, plus coordinating disposal for our various waste streams
  - Providing water usage data and helping maintain the dozens of water meters at the Malibu facility
- HRL Shipping and Receiving for helping making sure solid waste ends up in the proper bins.
- OneSource Janitorial Staff for tirelessly collecting our recyclables, organics, and trash for proper disposal.
- Planet HRL volunteers for showing up, helping organize, and providing supplies for our events rain or shine!
- HRL Accounts Payable for assisting in the collection of data from the utility companies that service the various HRL facilities.
- HRL Media for posting and sharing this report.

Thank You!