CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: TRANSPORTATION AND ENVIRONMENT COMMITTEE

FROM: Zachary Struyk

SUBJECT: **Electric Leaf Blower Outreach Results Status Report**

DATE: October 11, 2024

Approved

Date: 10/24/2024

RECOMMENDATION

Accept the staff report on the status of the leaf blower market in San José.

BACKGROUND

Air Quality, Health, and Climate Impacts of Gas-Powered Leaf Blowers

Small off-road engines are spark-ignition engines used in lawn and garden equipment as well as other outdoor power equipment and specialty vehicles. The population of small off-road engines is similar to that of light-duty passenger vehicles, yet according to the California Air Resources Board, total smog-forming emissions from small off-road engines exceed emissions from light-duty passenger cars in the state. Operating a gas-powered commercial backpack leaf blower for just one hour emits smog-forming pollution comparable to driving a new light-duty passenger car about 1,100 miles — approximately the distance from Los Angeles to Denver (over 15 hours of driving). By 2031, small off-road engine smog emissions are projected to be nearly twice those from passenger cars.[1]

Research has found that during the operation of gas leaf blowers, landscapers and gardeners may be exposed to high concentrations of carbon monoxide and particulate matter intermittently. At low exposure, carbon monoxide can cause headaches, dizziness, weakness, and nausea. Meanwhile, particulate matter is associated with hospital admissions, respiratory symptoms and illness, and changes in lung function. Some toxic compounds in gas exhaust are carcinogens, and ozone is a strong irritant that can cause airway constriction, coughing, sore throat, and shortness of breath.[2]

[1] California Air Resources Board – Small Engine Fact Sheet
[2] California Air Resources Board – A Report to the California Legislature on the Potential Health and Environmental Impacts of Leaf Blowers

Hearing loss is another concern. At the operator's ear, a leaf blower can be as loud as 90-105 decibels. Just two hours of exposure at 90 decibels can cause hearing damage. Continual exposure to loud noise can cause stress, anxiety, depression, high blood pressure, and heart disease.[3] These health effects are especially worrisome since workers who perform this work are historically from environmental justice communities, which are already disproportionately afflicted by air pollution and other health risks.

Smog and greenhouse gas (GHG) emissions are formed by different pollutants that affect different layers of the atmosphere. Smog emissions are typically trapped close to the ground and create a brownish haze that can trigger respiratory symptoms. The effects of smog are local, regional, and national. On the other hand, GHGs can stay in the atmosphere for over 100 years. They trap heat in the atmosphere, causing global climate change.[4]

In 2019, the Transportation & Environment Committee approved San José Clean Energy's (SJCE) program selection framework. The top criterion in this framework is that programs "maximize GHG reduction opportunities."[5]

In 2021, off-road vehicles, which include leaf blowers among other lawn and garden equipment, made up 5% of San José's communitywide GHG emissions.[6] Based on data from the California Air Resources Board's off-road emissions inventory, staff determined that leaf blowers in San José emit approximately 4,393 metric tons of carbon dioxide equivalent (MT CO_{2e}) per year, or 0.09% of annual GHG emissions in San José.[7]

Electric leaf blowers do not emit harmful air pollutants and result in much lower GHG emissions, as batteries would be charged with SJCE's 60% renewable power product.

California Law and Incentives

In 2021, State Assembly Bill 1346 banned the sale of new gas-powered small off-road engines, including leaf blowers, effective January 1, 2024, citing emissions of smog-forming pollutants like nitrous oxides, reactive organic gases, and particulate matter. The bill does not affect equipment that was purchased or already owned before the regulations took effect and only applies to new small off-road engines produced on or after January 1, 2024. Therefore, equipment dealers and retailers are still selling gas-powered stock manufactured pre-2024.

State Senate Bill 170 appropriated $30 million to the California Air Resources Board Clean Off-Road Equipment Incentive Project to provide incentives for professional

[3] Center for Disease Control – Vital Signs: Too Loud! For Too Long! Loud noises damage hearing.
[4] United States Environmental Protection Agency – Greenhouse Gas Versus Smog Forming Emissions
[5] Memo to the Transportation and Environment Committee, June 3, 2019
[6] City of San José 2021 Inventory of Communitywide Greenhouse Gas Emissions
[7] California Air Resources Board Off-Road Emissions Inventory

landscaping services in California operated by a small business or sole proprietor. The program launched in November 2022 and exhausted funds in October 2023. There are currently no known plans to reopen this program.

Status of Gas Leaf Blower Ordinances and Electric Leaf Blower Programs in the Region

Many California cities and towns, including over a dozen in the Bay Area, have implemented bans on gas leaf blowers citing noise, environmental, and health concerns (see Attachment A for a non-exhaustive list of Bay Area towns that have bans). Several Bay Area cities have programs to aid the adoption of electric leaf blowers. The most common programs are post-purchase rebates for businesses and residents, though there are other models. Examples include:

- City of Menlo Park established the Electric Garden Voucher Program wherein businesses and residents can qualify for a voucher that can be redeemed to purchase electric garden equipment like leaf blowers. In September 2024, Woodside Town Council approved a similar program.

- City of Mountain View partners with the Day Worker Center of Mountain View to provide a range of electrical gardening tools for employers who hire workers. The Day Worker Center also coordinated theory sessions and hands-on training for the workers to learn how to use the electric equipment effectively.

Leaf Blower History in San José

The City Council has considered methods to decrease the use of gas-powered leaf blowers due to their potential adverse health effects since at least 2014.[8]

During the discussion on the SJCE Programs Roadmap Status Report at the April 23, 2024, City Council meeting (Item 6.1), Council requested that staff[9]:

> (1) Add a $500 rebate for battery-powered leaf blowers purchased by commercial landscaping companies in San José to the list of proposed programs in the SJCE Roadmap.
>
> (2) Conduct outreach with local landscaping companies to analyze the battery-powered leaf blower battery loads and charging requirements for gardening-related business operations.

Per the Office of Economic Development and Cultural Affairs, there are 1,377 businesses under the landscaping classification with active business tax licenses in San José. Of those, 1,286 have five or fewer employees.

[8] Memo to the Rules and Open Government Committee, April 3, 2019
[9] Memo to the City Council, April 23, 2024

ANALYSIS

Stakeholder Engagement

Staff has conducted months of research and stakeholder engagement to understand leaf blower technology, market status, emissions impact, and the feasibility of an SJCE program to incentivize the adoption of electric leaf blowers. Staff interviewed over a dozen stakeholders including professional landscapers, local equipment dealers, staff from cities with leaf blower programs, and homeowners who hire gardeners.

Interviews with landscapers were revealing; they expressed both skepticism about the blowing power and battery life of electric leaf blowers and concerns that completing the same work would take them longer, driving up costs. A key finding from speaking to landscapers, equipment dealers, and other cities is that landscapers generally only use electric equipment in the places they are required to due to ordinances. This raises concerns that, without an ordinance in San José, an incentive program could subsidize the use of electric leaf blowers in smaller, more affluent cities while small businesses continue using gas leaf blowers in San José.

Economics of Electric Leaf Blowers

In its robust economic analysis, the Santa Cruz Coalition for a Healthy and Safe Environment compared the costs of top-of-the-line commercial blowers – one gas and one electric. At $2,261, the upfront cost of the electric leaf blower and a heavy-duty backpack battery, purported to last a full workday, is almost four times as much as comparable gas equipment. However, the gas and oil mixture needed to power inefficient gas blower engines is very costly compared to electricity. Maintenance costs for electric are negligible compared to gas. Thus, annual operational costs for the gas blower are estimated to be 20 times as much as electric – $2,708 versus $125.60. In five years of ownership, a landscaper could save over $10,000 by switching to electric.[10]

Gas Leaf Blower GHG Emissions and Potential Program Impact

Though gas leaf blowers overall comprise a very small slice of Earth-warming emissions, staff found that the potential lifetime reductions of a leaf blower program could be significant and cost-effective.

In Table 1, staff compared the impact of spending $100,000 to incentivize different electric technologies: residential heat pump water heaters, commercial electric leaf blowers (ELBs) and accompanying charger and batteries, and electric vehicles. For the ELBs, staff made projections for three scenarios:

[10] Santa Cruz Coalition for a Healthy & Safe Environment – The Economics of Switching to Battery-Powered Leaf Blowers: A Cost Comparison

- Scenario A: Landscapers receive a $1,000 post-purchase rebate and only use the ELB for 10% of their jobs, in areas where there is an ordinance against gas.
- Scenario C: Landscapers receive a $1,000 post-purchase rebate but opt to use the ELB for 25% of their jobs.
- Scenario D: Landscapers surrender their gas leaf blower and receive a $2,000 voucher to purchase an ELB, ensuring that they will use the ELB for all of their work.

The trade-in program, in particular, appears to be a cost-effective way to decrease GHG emissions, in addition to the aforementioned air quality and health benefits.

Table 1. Lifetime GHG Emissions Comparison

	Scenario A	**Scenario B**	**Scenario C**	**Scenario D**	**Scenario E**
Electric technology	100 ELBs used for 10% of jobs	50 heat pump water heaters (residential)	100 ELBs used for 25% of jobs	50 ELBs used for 100% of jobs	40 electric vehicles
Incentive	$1,000 rebate	$2,000 rebate	$1,000 rebate	$2,000 trade-in voucher	$2,500 rebate
Lifetime emissions reduction (MT CO_{2e})	259	371	648	1,295	2,347

Racial Equity Impact Analysis

The landscapers interviewed for this memo expressed concerns that regulations on gas leaf blowers will negatively impact their small businesses and livelihoods. Though staff's research shows that electric leaf blowers can net savings for these operators, especially through the addition of an SJCE incentive, education and engagement would be necessary to make the businesses aware of these benefits.

At the same time, these operators bear the worst health effects of the gas equipment. Aiding the transition to electric leaf blowers through a program could be an opportunity to improve overall health and profitability.

The Office of Racial and Social Equity explored the potential racial equity impacts of restricting the use of gas leaf blowers. Many landscaping professionals who operate this equipment are Latino immigrants or of Latino descent.[11] There is concern that, without a

[11] Public Policy Institute of California – California's Workforce Is Diverse, but Many Occupations Are Not

strong transition plan that considers the unique needs of that community, the burden of lowering GHG emissions may be unduly placed on Latino small businesses. Therefore, staff will conduct further stakeholder engagement and analysis to design a program that will ensure more equitable outcomes and report back to the Transportation & Environment Committee at the next annual SJCE Programs Roadmap Status Report.

Next Steps

Staff will conduct further stakeholder engagement and analysis to determine whether an electric leaf blower incentive should be included in the suite of SJCE programs and, if so, how the program should be designed. This analysis would include researching:

1. Likelihood and drivers for professional landscapers to participate in a trade-in voucher program and surrender their gas leaf blowers.
2. A pathway to recycle traded-in gas leaf blowers.
3. A residential program design that could incentivize homeowners to purchase an electric leaf blower for their landscaper to use at their homes, to reduce the burden on the small businesses.
4. Other program design options, like a post-purchase rebate.

Staff anticipates reporting back to Transportation & Environment Committee on the results of that further engagement and analysis at the next annual SJCE Programs Roadmap Status Report in March 2025.

COORDINATION

This memorandum has been coordinated with the City Attorney's Office, City Manager's Budget Office, the Office of Economic Development and Cultural Affairs, Office of Racial and Social Equity, and the Environmental Services Department.

/s/
ZACHARY STRUYK
Acting Director, Energy

For questions, please contact Kate Ziemba, Senior Environmental Program Manager, Energy at kate.ziemba@sanjoseca.gov.

ATTACHMENTS

Attachment A: List of Bay Area Cities with Gas Leaf Blower Ordinances and Electric Leaf Blower Programs as of October 8, 2024
Attachment B: Gas Leaf Blower Greenhouse Gas Emissions (Charts)