



**City of Dallas**

# **GAS-POWERED LANDSCAPE EQUIPMENT POLICIES**

**Environment & Sustainability  
Committee**

**August 1, 2022**

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Office of Environmental Quality and Sustainability

# OVERVIEW

- Update from December 01, 2021 ENVS Briefing
- Park Board Information
- Environmental Health Committee Recommendations
- Impacts of Change
  - Environmental
  - Equity
  - Fiscal
- Policy Options



# TIMELINE to DATE



## Staff Research/ Stakeholder Engagement

Sustainable  
Procurement  
Policy  
Adopted  
May 5, 2021

ENVS Committee  
Briefing  
December 1, 2021  
Initial Program  
Information

Park Board  
Briefing,  
May 19, 2022  
Park Department  
Pilot Program

EVC  
Environmental  
Health Committee  
Recommendation  
June 8, 2022

EVC  
Recommendation  
August 10, 2022



# Types of Leaf Blowers



Type of Equipment	Primary Use		Windspeed	Material Moved (CFM)**	Operating Noise (dB)	Weight Range (lbs)	Cost Range (2021 \$)
	Comm'l	Resid'l					
*Gas-powered Hand-held	X	X	>180 MPH	400-450	73-100	9-12	~\$100 - 200
Backpack	X		~200 MPH	910-940	75-125	23-26	~\$300 - 550
Battery Electric - Handheld	X	X	110-165 MPH	530-580	64	8-9	\$150 - 200
Backpack	X		145 MPH	600	64	13-20	\$400 - 1,200

**Data Sources:** <https://www.protocolreviews.com/gas-vs-battery-powered-leaf-blowers/> | <https://www.popularmechanics.com/home/tools/g37442980/best-gas-leaf-blowers/>

\* Gas-powered data reflects more commonly used 2-stroke motor

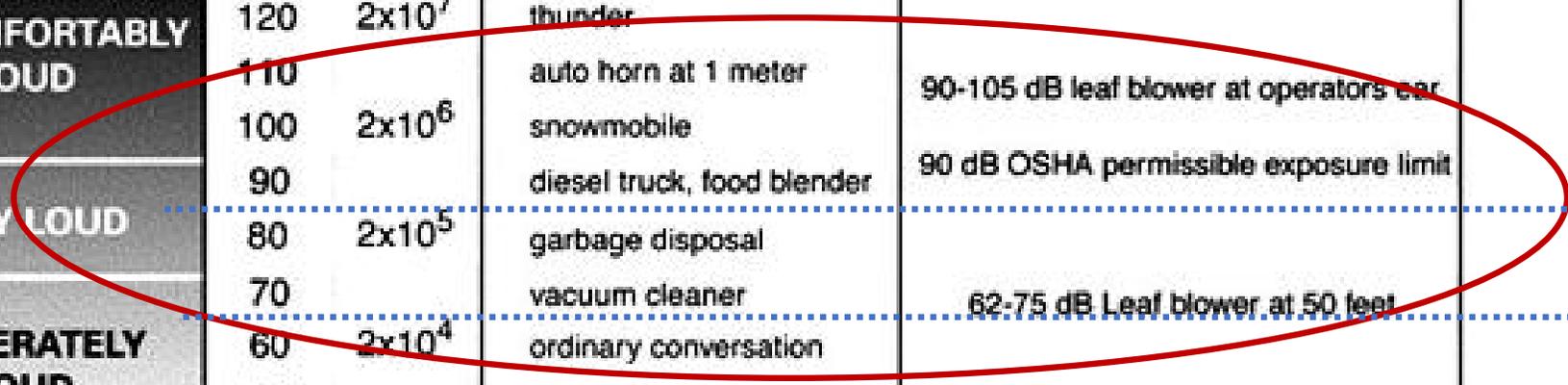
\*\*CFM= Cubic Feet /Minute





# Sound Level Chart

Perceived Sound Level	Sound Level	Examples	Leaf Blower Reference
<b>PAINFULLY LOUD</b>	160	2x10 <sup>9</sup>	OSHA limit for impulse noise
	150		
	140	2x10 <sup>8</sup>	
<b>UNCOMFORTABLY LOUD</b>	130	power drill	90-105 dB leaf blower at operators ear 90 dB OSHA permissible exposure limit
	120	thunder	
	110	auto horn at 1 meter	
<b>VERY LOUD</b>	100	2x10 <sup>6</sup>	90 dB OSHA permissible exposure limit
	90		
<b>MODERATELY LOUD</b>	80	2x10 <sup>5</sup>	62-75 dB Leaf blower at 50 feet
	70		
	60	2x10 <sup>4</sup>	
<b>QUIET</b>	50	average home	
	40	2x10 <sup>3</sup>	library
<b>VERY QUIET</b>	30	quiet conversation	
	20	2x10 <sup>2</sup>	soft whisper
<b>BARELY AUDIBLE</b>	10	rustling leaves	
	0	2x10 <sup>1</sup>	threshold of hearing



dB= decibels  
μPa= micro Pascals



# Dallas Park & Recreation Overview



- ~2,600 pieces of small equipment
  - ~530 Leaf Blowers
- Majority of small equipment is **4-cycle**
  - Use gasoline and oil mixture
  - Comply with the California Act Resource Board (CARB) regulations
- Small number of **2-cycle** equipment that are specialized and used only a few times a year



# Dallas Park & Recreation Green Strike Teams



- **Piloting Green Strike Teams for two districts**
  - Use electric (lithium battery-powered) hand-held landscaping equipment
  - Blowers, line trimmers, hedge trimmer, small chainsaw and pole saw
- Strike Teams have 3 men crews
- District 1 maintains the area around White Rock Lake; areas are maintained on a two-week schedule
- District 3 maintains parks in the downtown area; each park is maintained once a week



# Dallas Park & Recreation Pilot Results



## District 1 – White Rock Lake

- Electric Equipment not sufficient
  - Not powerful enough to maintain growth after two weeks
  - Slowed down rate of work

## Employee buy-in was low

- Batteries are heavy
- Equipment is less powerful
- Prefer gas powered equipment

## District 3 – Downtown

- Using equipment for three years
  - Operating well
  - Batteries lasted as long as they should
  - Quality of work is good
  - Reliable
  - No repair cost, only cost to replace batteries
- **Significant emissions savings**



# Dallas Park & Recreation Pilot Results



## Emissions Savings of Green Strike Teams

### Based on Operating Equivalent Gas-Powered Equipment

Type	Model	Fuel Type	Units	Use	Annual Use (hrs)	HC Emissions (lb/yr)	NOX Emissions (lb/yr)	CO2 Emissions (T/yr)
Blower (Large)	BR600	4-Cycle Gas	1	3 hrs/day	540	37.91	27.82	9.61
Handheld blower (small)	BG86	4-Cycle Gas	1	3 hrs/day	540	10.67	7.83	2.71
Line trimmer	FS131	4-Cycle Gas	3	6 hrs/day	1,080	113.73	83.47	28.84
Chainsaw	MS170	4-Cycle Gas	1	3 times per year for 6 hrs each use	18	0.67	0.49	0.17
Hedge trimmer	HL91K	4-Cycle Gas	1	4 times per year for 6 hrs each use	24	0.53	0.39	0.13
Pole Saw	HT103	4-Cycle Gas	1	3 times per year for 6 hrs each use in Fall	18	0.47	0.34	0.12
<b>Total Annual Emissions</b>						<b>163.98 lbs</b>	<b>120.34 lbs</b>	<b>41.58 tons</b>



# Dallas Park & Recreation Future Efforts



- Increase employee buy-in through communication of the benefits of reduced emissions, less noise, and health benefits
- Conduct a side-by-side comparison of fuel powered equipment versus new electric equipment since technology has advanced in the last three years
- Add Green Strike Teams to Park Maintenance Districts with parks that have a weekly maintenance schedule and moderate grass/vegetation growth
- Funding/grant for an electric Zero-Turn mower for District 3, downtown parks that will further reduce emissions

Mower	Model	Fuel Type	Units	Daily Use (hrs)	Annual Use (hrs)	HC Emissions (lb/yr)	NOX Emissions (lb/yr)	CO2 Emissions (T/yr)
Scag – Zero Turn	STTII-72-31KB/DF	3 - cylinder duel fuel	1	5	900	161.77	97.80	130.71

**Conclusion: Electric equipment was successfully used for the maintenance of some parks but not all parks**



# EVC – Environmental Health Committee

*“The committee recommends that the Environmental Commission support a phased transition from gas-powered landscaping equipment to battery-operated or electric-hybrid equipment to reduce particulate matter and other pollutants that affect health and contribute to poor air quality.”*

- Candace Thompson, Chair

Memorandum to the Environmental Commission, June 8, 2022



# Leaf Blower Impacts on Air Quality



- <sup>(5)</sup> 1.2 billion gallons of gas are burned per year by United States garden equipment.
- About 1/3 of this material is discharged as aerosols during equipment use.
- Leaf blowers emit pollution levels comparable to automobiles<sup>(1)</sup>
- A 2011 test by the car experts at Edmunds showed that [“a consumer-grade leaf blower emits more pollutants than a 6,200-pound 2011 Ford F-150 SVT Raptor.”](#)  
<sup>(1)</sup><sup>(4)</sup>
- The two-stroke engine (in the Edmunds study) emitted nearly 299 times the hydrocarbons of the pickup truck and 93 times the hydrocarbons of the sedan.
- Leaf blowers emit carbon monoxide and nitrogen oxides. <sup>(1)</sup> Nitrogen oxides are precursors to ground level ozone; North Texas is in Severe Non-Attainment status.
- Switching to electric (battery or plug in) leaf blowers would sharply reduce air pollution<sup>(1)</sup>



# Leaf Blower Impacts on Public Health



- Children and the elderly are especially vulnerable to the dust (particulate) and toxic emissions from leaf blowers
- Manufacturers recommend a 50 feet minimum safe distance for bystanders.
- The low frequency noise from leaf blowers can penetrate most barriers such as walls. This contributes to hearing loss for adjacent residents.
- In densely populated neighborhoods, a gas blower can affect up to 15 times the number of households as an electric leaf blower.
- Equity impacts can be associated with both the use, and the potential transition away from using two-stroke landscape equipment.



# Potential Impacts of Change: Environmental



<i>Estimated Probable Reductions in GHG Emissions</i>				
<b>Municipal Equipment</b>	<b>#Gas</b>	<b>#Electric</b>	<b>Reduction in #CO2e/Unit/ Year</b>	<b>Reduction in MTCO2e/Year</b>
Push Mowers	2,400		25	30
Ride-on Mowers	980	1	131	64
Handheld Blowers	189	19	5,420	512
Back Pack Blowers	245		19,220	2,354
Line Trimmers/ Edgers	594	14	28,950	8,598
Hedge/ Pole Trimmers	299	21	260	39
Chain Saws	395	17	340	67
MISC	323	14	240	39
			<b>Total:</b>	<b>11,665</b>
<b>Community Equipment</b>	<b>#Gas</b>	<b>#Electric</b>	<b>Reduction in CO2e/Unit/ Year</b>	<b>Reduction in CO2e/Year</b>
Push Mowers	117,100	70,260	25	1,464
Ride-on Mowers	3,407	75.7	131	223
Handheld Blowers	63,725	59,125	5,420	172,695
Back Pack Blowers	6,813	757	19,220	65,473
Line Trimmers	6,813	757	28,950	98,618
Pole Trimmers	776.25	86.25	260	101
Chain Saws	776.25	86.25	240	93
			<b>Total:</b>	<b>338,666</b>



# Potential Impacts of Change: Fiscal



Municipal Equipment`	#Gas	Cost/Unit	Conversion Cost
Push Mowers	2,400	\$ 400	\$ 960,000
Ride-on Mowers	980	\$ 5,000	\$ 4,900,000
Handheld Blowers	189	\$ 300	\$ 56,700
Back Pack Blowers	245	\$ 600	\$ 147,000
Line Trimmers/ Edgers	594	\$ 250	\$ 148,500
Hedge/ Pole Trimmers	299	\$ 450	\$ 134,550
Chain Saws	395	\$ 450	\$ 177,750
MISC	323	\$ 350	\$ 113,050
<b>Total: \$</b>			<b>6,525,000</b>
Community Equipment	#Gas	Rebate	Implementation Cost
Push Mowers	46,840	250	11,710,000
Ride-on Mowers	1,363	2500	3,406,500
Handheld Blowers	25,490	250	6,372,500
Back Pack Blowers	2,725	300	817,560
Line Trimmers	2,725	200	545,040
Pole Trimmers	310.5	200	62,100
Chain Saws	310.5	200	62,100
<b>Total: \$</b>			<b>22,976,000</b>

*Estimated  
Probable Cost  
Impacts  
Associated with  
Conversion*

# Impacts of Change: Equity



- Most landscapers using gas-powered lawn care equipment are subject to exposures to toxic gas & oil, carcinogenic emissions, noxious exhaust, and unsafe noise levels .
- Most lawn crews are unprotected and work full-time at the source of emissions and noise. Workers have few options and little agency. <sup>(5)</sup> Failure to act continues this legacy.
- Between 2002 and 2016, the number of professional ground maintenance workers, including supervisors, grew by 85 percent to 1.6 million, according to Quiet Communities. <sup>(6)</sup>
- A large portion of landscape workers are Hispanic<sup>7</sup>.
- In 2021 the average annual income for landscape workers was \$30,160 and the average hourly wage was \$14.50 an hour<sup>(8)</sup>
- ***Any movement towards reducing or eliminating gas-powered leaf blowers in Dallas will need to address equity considerations related to potential impacts to local landscape crews.***



# Related City of Dallas Codes and Ordinances:



- **Does not directly ban gas-powered lawn equipment....**
- **Stormwater Ordinance:** Section 19-118.2(f)(5) of the Dallas City Code prohibits discharge of garbage, rubbish and yard waste into the storm drain with fines of up to \$2,000 per occurrence.
- **Code enforcement:** Chapter 30 and Chapter 51A-6.102 for noise violations. 51A-6.102 regulates noise by decibel level. These regulations have maximum decibel thresholds that change dependent on the property zoning.

*(F) **Exceptions:** the following activities, as long as they are conducted between the hours of 7:00 AM. – 10:00 PM., M-F and between 8:00 AM. and 7:00 PM – weekends and holidays:*

*(i) **Lawn maintenance.***

(1) A person may not conduct a use that creates a noise level that exceeds the levels established in Subsections (b) through (e) or that exceeds the background level by five dB(A), whichever is greater.

Decibel Limit	A Scale
(dBA re 0.0002 Microbar)	<b>56</b>

Maximum Permissible Daytime Decibel Limits at the Bounding Lot Line of an Office, Retail, Mixed Use, Multiple Commercial, P(A), WR with a Shopfront Overlay, or WMU District

Decibel Limit	A Scale
(dBA re 0.0002 Microbar)	<b>63</b>

Maximum Permissible Daytime Decibel Limits at the Bounding Lot Line of a Use in a CS, LI, or IR District

Decibel Limit	A Scale
(dBA re 0.0002 Microbar)	<b>65</b>

Maximum Permissible Daytime Decibel Limits at the Bounding Lot Line of a Use in the IM District



# Common Approaches in Use/ Dallas Options:



- **Bans on gas-powered lawn equipment:** some are complete bans; some are partial bans related to towards blowers and mowers.
- California implemented state-wide policy in 2018 promoting “*sale and use of emissions free landscape equipment after July 1, 2022*” and relied on local Air Boards to implement local action; rather than “a ban”.
- Most cities address equity challenges through **equipment exchanges, rebates and incentives;**
- Some **cities worked with local merchants /landscape professionals** to develop and implement program.
- Many programs included an **implementation time lapse of 6 months to 2 years** between ordinance adoption and the date for enforcement, to allow for: budgeting, public education, exchange/replacement activities, and training.
- Many **worked with local landscape equipment stakeholders** towards conversion.



# Sustainable Procurement Policy



**Sustainable Procurement Policy** adopted by City Council through CR 21-098 in May 26, 2021 to guide City procurement decisions that positively impact the City's social, economic, and environmental health.

- Working group formed to:
  - maintain an environmentally preferred products lists,
  - identify sustainability labels and standards for specifications,
  - analyze citywide purchases for efficiency and waste reduction opportunities,
  - and make other recommendations related to the social, economic, and environmental aspects of contracting.
- These measures have been incorporated into AD4-05, and apply to current efforts related to landscape equipment.



# Sustainable Procurement Actions



Citywide Landscaping /Landscape equipment contracts:

- Landscape Equipment Contract - used by 12 departments; includes options for electric, battery-electric and two-stroke equipment including a variety of mowers, string-trimmers, leaf blowers and other ancillary equipment. The City expends approximately **\$135,000 per year** for this equipment.
- Landscaping Services Contract - 11 current contracts for landscape services, that are used by 19 departments. These contracts rely primarily on traditional gas-powered equipment. The City expends approximately **\$1.2 million per year** for these services.
- Landscape Services Procurement (underway): Advertised in January 22, 2022; includes options for gas- and non-gas powered equipment line items:
  - 15 City properties identified for electric equipment pilot.
  - 2 contracts totaling about **\$32.3M**, are on the draft September 14, 2022 City Council Agenda.





# Questions or Comments?



# References



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- <sup>2</sup> <https://science.howstuffworks.com/transport/engines-equipment/two-stroke.htm>
- <sup>3</sup> Sapate, K.D, et al Pollution Aspects of Emissions From Small Two-Stroke Automobile Engines, Nature Environment and Pollution Technology, 2008: <https://neptjournal.com/upload-images/NL-19-6-6-comB-112.pdf>
- <sup>4</sup> Su, Tanli. “Lifestyle Eco-Actions: “Gas-Powered Leaf Blowers” Sierra Club: <https://www.sierraclub.org/loma-prieta/blog/2017/08/lifestyle-eco-actions-gas-powered-leaf-blowers>
- <sup>5</sup> <https://www.momscleanairforce.org/leaf-blowers-health/>
- <sup>6</sup> Kaysen, Ronda. “On Banning Leaf Blowers” New York Times. March 17, 2017: <https://www.nytimes.com/2017/03/17/realestate/on-banning-on-leaf-blowers.html>
- <sup>7</sup> <https://www.osha.gov/SLTC/landscaping/index.html>
- <sup>8</sup> Time, Forest. “Pay Rate for Lawn Care Workers”. Houston Chronicle. <https://work.chron.com/pay-rate-lawn-care-workers-2784.html>; updated to 2021 through Zip recruiter data for Dallas, TX.
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<https://www.theatlantic.com/magazine/archive/2019/04/james-fallows-leaf-blower-ban/583210/>  
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<https://www.popularmechanics.com/home/tools/g37442980/best-gas-leaf-blowers/>



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<sup>11</sup>American Heart Association. Facts: Danger in the Air -Air Pollution and Cardiovascular Disease. Accessed 1/6/14 at [http://www.heart.org/HEARTORG/Advocate/IssuesandCampaigns/Advocacy-Fact-Sheets\\_UCM\\_450256\\_Article.jsp](http://www.heart.org/HEARTORG/Advocate/IssuesandCampaigns/Advocacy-Fact-Sheets_UCM_450256_Article.jsp)

<sup>12</sup>American Lung Association. State of the Air 2018. <https://www.lung.org/research/sota/city-rankings/msas/dallas-fort-worth-tx-ok#ozone>

<sup>13</sup>Integrated Science Assessment for Particulate Matter- Final Report, US Environmental Protection Agency, December 2009, EPA/600/R-08/139F.

<sup>14</sup>Provisional Assessment of Recent Studies on Health Effects of Particulate Matter Exposure, US Environmental Protection Agency, December 2012, EPA/600/R-12/056F.

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<sup>20</sup>Blumenstiel, Alexander D. Gasoline Engine Leaf Blower Health Hazards, Environmental Harm, Legislation and Alternatives For the White House Environmental Justice Advisory Council, Ph.D. December 7, 2021. EPA-HQ-OA-2021-0683-0049. <https://www.regulations.gov/document/EPA-HQ-OA-2021-0683-0049>

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<sup>22</sup>Assembly Bill Report on Bill 22-234, “Leaf Blower Regulation Amendment Act of 2018”, State of California. [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=202120220AB1346](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB1346)





# Cities With Leaf Blower Restrictions

Arlington, MA	Lawndale, CA	Santa Monica, CA
Aspen, CO	Los Altos, CA	Scarsdale, NY
Belvedere, CA	Los Angeles, CA	Scottsdale, AZ
Berkeley, CA	Malibu, CA	Sunnyvale, CA
Beverly Hills, CA	Mamaroneck, NY	Tampa, FL
Boulder, CO	Maplewood, NJ	Tiburon, CA
Brookline, MA	Menlo Park, CA	Toronto, ON
Cambridge, MA	Mill Valley, CA	<b>San Antonio, TX</b>
Carmel, CA (banned in 1975 – first city in the USA)	Montclair, NJ	Sunnyvale, CA
Claremont, CA	New Rochelle, NY	Tampa, FL
Del Mar, CA	Oyster Bay, NY	Tiburon, CA
Dobbs Ferry, NY	Palm Beach, FL	Toronto, ON
Evanston, IL	Los Altos, CA	Vancouver BC
Foster City, CA	Palo Alto, CA	Washington, DC
Framingham, MA	Pelham Manor, NY	Westchester County, NY
Hastings, NY	Pelham, NY	West Hollywood, CA
Honolulu, HI	Portland, OR	White Plains, NY
<b>Houston, TX</b>	Portsmouth, NH	Winnetka, IL
Indian Wells, CA	Rye, NY	Yonkers, NY
Laguna Beach, CA	Santa Barbara, CA	<b>(Highland Park, TX – under consideration)</b>





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