

Recommendation to Address Noise and other Impacts from Gas-Powered Leaf Blowers (GPLBs)

SUMMARY OF REQUEST

The Hyattsville Environment Committee (HEC) respectfully proposes that the City Council amend the Chapter 79 noise ordinance to **incrementally ban gas-powered leaf blowers** as follows:

- Effective July 1, 2022 - the use of gas-powered leaf blowers **by the City will cease entirely, including city staff and city contracts.**
- Effective January 1, 2023 - the use of gas-powered leaf blowers will be **prohibited on Sundays.**
- Effective July 1, 2023 - the use of gas-powered leaf blowers will be **prohibited on weekends and federal holidays.**
- Effective January 1, 2024 - the use of gas-powered leaf blowers will be **prohibited permanently.**

During this progression toward a ban on gas-powered leaf blowers, HEC proposes that the City support the following HEC initiatives to:

- Conduct educational and outreach campaigns directed toward City residents and landscape companies to facilitate a shift to manual, battery-powered, or electric-powered equipment. Also, combine outreach and education on environmental and soil health benefits of allowing leaves to biodegrade in place, a so-called “leave the leaves” campaign.
- Identify landscape companies that offer “quiet & clean” services without using GPLBs and provide these options to Hyattsville residents and businesses.
- Reach out to any businesses that sell GPLBs. Inform the businesses that they need to post signs that GPLBs will be banned in Hyattsville, similar to the requirement in DC.

THE CASE FOR A BAN

Negative impacts of the use of GPLBs have increasingly become an issue across the country, including Hyattsville. Hyattsville residents routinely complain to City Council members about noise from GPLBs. Many landscape maintenance service providers and some homeowners currently use “two-stroke” GPLBs that generate high levels of noise and harmful pollutants. The nuisance to residents of GPLBs has been magnified by the expansion of telework during the pandemic. To address these issues, many jurisdictions have implemented bans of GPLBs. Nearby, Washington DC and Chevy Chase Village have enacted a ban on GPLBs, effective January 1, 2022.

Using GPLBs comes with high costs for the health and safety of City residents, landscape workers, and the environment, as well as lowering the general quality of life. The justifications for a ban are explained below:

NEGATIVE IMPACTS OF GPLBS

- **Excessive Noise:** GPLBs produce noise levels that greatly exceed those recommended by the World Health Organization (55 decibels or less) (WHO, [Reference](#)). Noise from leaf blowers ranges from 102–115 decibels (“dBs”) at the ear of the operator (*Environ Toxicol Stud Journal*, [Reference](#)) and the lower frequency character noise of GPLBs allows this noise to travel farther and penetrate structures to be noticeably loud in indoor spaces. The U.S. Environmental Protection Agency and the National Institute for Occupational Safety and Health have declared noise levels above 85 dBs to be harmful. This level of noise can damage hearing, interfere with sleep, and increase blood pressure, adrenaline, and heart rates. This excessive noise affects residents and poses significant health risks for the workers using this equipment daily.
- **Pollution Impacts:** GPLBs emit hazardous air pollutants that affect landscape workers as well as City residents and our environment (Walker and Banks, [Reference](#)). The two-stroke engines used in GPLBs burn fuel less completely than the four-stroke engines typically used in cars and other larger equipment. As a result, GPLBs emit significant quantities of ozone-forming chemicals, fine particulate matter, carbon monoxide, and a variety of other toxic air pollutants (Edmunds.com, [Reference](#)).

ELBs are responsible for much lower quantities of these air pollutants, and their emissions occur mostly at power plants rather than in neighborhoods. Notably, GPLBs generate CO₂ at a rate per hour of use some 3 to 9 times higher than ELB. So, while the environmental impacts may be more difficult to perceive, they may be as or more deleterious than the noise created by GPLBs.

- **Harmful Health Impacts:** Pollutants emitted by GPLBs are well-known causes of a number of adverse health impacts (Walker and Banks, WHO, *Environ Toxicol Stud Journal*). Their chemical and particulate pollution can be inhaled by equipment operators and nearby residents. Even short-term exposure can be harmful. Children, seniors, people with chronic illness, and certainly landscape workers are at greatest risk.
- **Impact on Wildlife:** Studies show that birds, frogs, and other wildlife will move to avoid loud noises, reducing the abundance of wildlife in the ecosystem (Francis and Barber [Reference](#), Shannon and McKenna [Reference](#)). Like humans, wildlife is also adversely impacted by the pollution and greenhouse gases generated by GPLBs.

COST ANALYSIS:

In this analysis, we compare the costs to a contractor of using battery-powered vs. gas-powered blower models in these two differing circumstances -- first a small-to-medium blower used for routine cosmetic purposes, and then a large, powerful blower used for fall leaf removal and perhaps some spring cleanups. This cost comparison was developed by

the Environment Committee for the Town of Chevy Chase. For a detailed comparison of gas and electric leaf blower costs, refer to Appendix 4.

In addition, we will discuss a recommended City-run rebate program where Hyattsville residents and contractors would be eligible to trade-in used GPLBs for a rebate for the purchase of an ELB.

- **Cost Comparison of Gas and Electric Leaf Blowers:**

- Some landscape contractors contend that a more powerful blower is needed for fall leaf removal -- often involving a large quantity of heavy, wet leaves -- than for routine cosmetic blowing throughout the growing season. In our analysis, we compare the costs to a contractor of using battery-powered vs. gas-powered blower models in these two differing circumstances -- first a small-to-medium blower used for routine cosmetic purposes, and then a large, powerful blower used for fall leaf removal and perhaps some spring cleanups.
- For routine cosmetic purposes where a small to medium blower is needed, we estimate that battery-powered blowers (and corded electric blowers in the limited circumstances where they might be feasible) are nearly 40% less costly than gas-powered blowers for routine clean-up blowing (\$427/yr vs. \$669/yr).
- However, if a more powerful blower with a longer runtime is needed for fall leaf removal and perhaps some spring cleanups, we estimate that a battery-powered blower would be about 80% more costly than a gas blower (\$1,466/yr vs. \$810/yr).
- This analysis is based on 2020 performance and costs of leaf blowers. An analysis that reflects the expected continuing future improvements in battery performance and cost would likely show battery-powered blowers to be more cost-competitive with gas-powered blowers for both cosmetic and more demanding uses. For example, the cost per kWh for battery packs used for electric vehicles and home energy storage is projected to decline by about 2/3 between 2017 and 2024.

- **Rules and Costs for Hyattsville GPLB Trade-In Program:**

- This program is only eligible for Hyattsville households and landscape contractors that are physically located in Hyattsville.
- Limited to one blower trade-in per household or up to three for landscape contractors physically located in Hyattsville.
- Hyattsville households and landscape contractors cannot trade-in GPLBs for people or contractors that do not reside in Hyattsville. Doing so would result in a fine.

- Program would run for the duration of the ramp-up period (July 1, 2022 through January 1, 2024) and then for the year after the GPLB ban takes effect (January 1, 2024 through January 1, 2025).
- For a household, the trade-in value of the GPLBs would be two thirds the cost of the ELB, up to \$150. For a landscape contractor, the trade-in value of each GPLB (up to three) would be one half the cost of the ELB, up to \$300 each.
- Trade-ins would take place at the Hyattsville Department of Public Works building, by appointment only.
- Trade-ins will be conducted after households or landscape contractors purchase replacement ELBs. Hyattsville households or landscape contractors would bring their proof of residency, their old GPLB(s), the new ELB(s) they purchased, and the receipt for the purchase of the ELB to the Hyattsville Department of Public Works building, where city staff will process the reimbursement.
- Trade-in GPLBs will be safely disposed of and not repurposed or resold by the City of Hyattsville.
- The cost for Hyattsville to administer this program is contingent on the number of trade-ins it processes. With roughly 7,150 households, and some small subset of the total households employed as landscape contractors, the HEC estimates conservatively that demand for this program could cost roughly \$42,250.
 - If roughly 5 percent of Hyattsville households participate in the trade-in program (360 total) and the average trade-in value was \$100 (of a maximum of \$150) the cost for Hyattsville household trade-ins would be \$36,000. In addition to the households, if ten landscape maintenance contractors participate and the average trade in is 2.5 leaf blowers (of three max) for a trade-in value of \$250 each (of a maximum of \$300), the additional cost would be \$6,250. As such, the total estimated cost to administer the program would be \$59,875.
 - As the trade-in period would last multiple years, the HEC recommends that the City budget roughly one third of this amount, or \$14,000, for the first year of the program and then adjust this for ensuing years based on demand.
- **Non-Cost Benefits**
 - It is important to keep in mind that this cost analysis quantifies only the differential costs of gas- and battery-powered blowers to landscapers. The attached qualitative benefits analysis shows that battery-powered blowers offer very significant benefits over gas-powered blowers in terms of both noise and pollution. Moreover, electric motors and their parts last longer than combustion engines. And they do not require gas, oil, or engine maintenance, just charged batteries.

SUMMARY OF BENEFITS:

These are the benefits of switching from GPLBs to corded electric or battery-powered leaf blowers: (More details about the non-economic or qualitative negatives of GPLBs are found under Negative Impacts above.)

- Less noise and its attendant negative impacts
- Significantly reduced adverse effects on physical and mental health
- Considerable reduction in air pollution and greenhouse gases
- Protection of wildlife
- Improved landscape worker health and safety
- General improvement in quality of life

SUMMARY OF FINDINGS:

Following extensive analysis and consideration, the Hyattsville Environment Committee, respectfully requests that the City Council move to adopt our proposed phased program to ban the use of gas-powered leaf blowers.

To support this request, the Hyattsville Environment Committee has provided the following Appendix items:

- Studies of Health Impacts (Appendix 1)
- Proposed enforcement protocol (Appendix 2)
- FAQs on a gas-powered leaf blower ban (Appendix 3)
- Gas and electric cost comparison (Appendix 4)

Appendix 1 - Studies on Health Impacts

Leaf blowers produce 49 times more PM than a 2000 model automobile, and almost 500 times as much hydrocarbons. Palliser, (2010):

Effects of PM Exposure on Sensitive Groups like the elderly, people with chronic pulmonary disease, pre-existing heart diseases and the chronically ill are particularly vulnerable ((Valavanidis, et al., 2008).]

“Burden of Disease from Environmental Noise,” World Health Organization, 2011.

https://www.who.int/quantifying_ehimpacts/publications/e94888/en/

Two-Stroke Engines in Landscape Maintenance: A Growing Public Health Problem. Walker, E. and Banks, J. L. (2016). Institute of Noise Control Engineering.

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Airborne particulate matter and human health: toxicological assessment and importance of size and composition of particles for oxidative damage and carcinogenic mechanisms. Valavanidis, A., Fiotakis, K. and Vlachogianni, T. (2008). *Journal of Environmental Science and Health, Part C*, 26(4), 339-362. Retrieved from

<https://www.tandfonline.com/doi/abs/10.1080/10590500802494538>

Emissions Test: Car vs. Truck vs. Leaf Blower. Edmunds.com, Jason Kavanaugh, Dec. 5, 2011. <https://www.edmunds.com/car-reviews/features/emissions-test-car-vs-truck-vs-leaf-blower.html>

Hamra, G. B., N. Guha, A. Cohen, F. Laden, O. Raaschou-Nielsen, J. M. Samet, P. Vineis, et al. 2014. “Outdoor Particulate Matter Exposure and Lung Cancer: A Systematic Review and Meta-Analysis.” *Environmental Health Perspectives* 122 (9): 906- 911.

<http://dx.doi.org/10.1289/ehp/1408092>.

Francis, C., Barber, J. 2013. “A framework for understanding noise impacts on wildlife: an urgent conservation priority”. *Frontiers in Ecology and the Environment*.

<https://doi.org/10.1890/120183>

Shannon G., McKenna M., et al. 2015. “A synthesis of two decades of research documenting the effects of noise on wildlife”. *Biological Reviews*.

<https://doi.org/10.1111/brv.12207>

Appendix 2 – Proposed Enforcement Protocols

During the phase-in period of July 1 2022 through January 1 2024, citations for GPLB use infractions shall not be issued. The focus during this time will be community outreach and public education.

Citations will be issued by the Office of Code Compliance employees.

- 1st offense: City sends a warning/educational letter to the company and property owner (possibly with a copy of the quiet companies list).
- 2nd offense: City sends a citation to the company (\$250 fine) and notification letter to property owner that they will be fined if there are subsequent violations (possibly with a copy of the quiet companies list).
- 3rd offense: City sends a 2nd citation letter to the company (\$500 fine) and a citation to the property owner for \$100

Appendix 3 – FAQs on Gas-Powered Leaf Blower Ban

Question 1: What would a shift from GPLBs to battery-powered blowers mean in terms of carbon dioxide emissions?

Answer: Emissions from gas-blowers are substantially higher.

- Among large, powerful blowers suitable for fall leaf removal -- about 3 ½ x higher
- Among small/medium blowers suitable for routine cosmetic blowing -- about 9 x higher

Question 2. Aren't GPLBs just a "first-world problem," for privileged people with too much time on their hands?

Answer: On the contrary: indifference to the public-health and environmental-justice aspects of this issue reflects more of a "first-world" attitude.

The people most at risk of experiencing health issues caused by exposure to GPLBs emissions, inhalation of fine particulates, and hearing loss are the lawn workers who may be handling this equipment many hours a day, many days a week. These workers are typically low-wage, non-English speaking, and unlikely to be covered by health insurance; often they use the equipment without ear or nose protection.

Question 3: Are there any realistic alternatives to GPLBs?

Answer: Yes, and increasingly so. The revolution in battery technology is one of the fastest-developing fields of high-tech improvement. The demand for battery-powered transportation systems, from cars to aircraft, and the ceaseless expansion of battery-powered mobile equipment is rapidly driving down the cost and weight, and driving up the power and durability, of portable batteries. Lawn-equipment manufacturers are responding with a rapid sequence of new clean, dramatically quieter leaf blowers and other equipment.

Question 4: Is noise from GPLBs more than just a nuisance?

Answer: Yes. Increasing public-health evidence shows that rising exposure to urban and suburban noise has measurable effects on physical and mental health, especially in children and older populations. (WHO, 2011 - "Burden of Disease from Environmental Noise,").

Question 5: How can GPLBs be important enough to care about?

Answer: Compared with automobiles and power plants, two-stroke engines are a relatively small portion of total fossil-fuel use and polluting emissions. But they are anomalously inefficient: At a time when auto and aircraft engines are becoming dramatically cleaner and when power plants are moving to more sustainable energy sources, two-stroke engines are grossly dirty, dangerous, wasteful, and polluting. The easiest benchmark comparison: *using a standard two-stroke engine for 30 minutes puts out as much hydrocarbon and fine*

particulate aerial pollutants as driving a new Ford F-150 pickup truck some 3800 miles.

Because of their dirty inefficiency, two-stroke engines have been phased out of nearly all uses other than lawn equipment. Scooter and motorcycle makers have moved beyond them. As part of their environmental clean-up plans, many Asian and Latin American cities with serious air pollution problems have outlawed two-stroke engines.

Question 6: Have other US cities banned GPLBs?

Answer: Yes, and this list is growing. The largest City in the US to ban GPLBs is Los Angeles, with a population of more than two million. Nearby, Washington DC has a ban that will take effect January 1, 2022.

Appendix 4 – Cost Comparison of Gas and Electric Blowers

COST COMPARISON OVERVIEW: GAS VS. BATTERY

	Gas	Battery	Corded	Handheld	
What are the relative costs of gas and battery leaf blowers <u>for moderately demanding commercial work</u> ? (Relatively powerful backpack blower for spring cleanup and fall leaf removal -- 12 weeks/yr, 5 days/week, 4 hrs blowing/day)	\$810	\$1,466	\$882	Infeasible	Total annual cost/yr for one blower
What are the relative costs of gas and battery leaf blowers <u>for routine commercial work</u> -- 1x/week during growing season blow off lawn and hard surfaces? (Small backpack or maybe large handheld blower -- 32 mows/property per season, 26 weeks/yr, 5 days/week, 1 hr blowing/day)	\$669	\$427	Too costly	\$318	Total annual cost/yr for one blower
Sensitivity analysis -- cost comparison <u>for routine commercial work</u> during growing season, but assume that contractor already has the gas-powered equipment in new condition (i.e., no capital cost for this eqpt) and must purchase battery-powered to switch. Also assume 1 more battery set is needed per battery-powered blower than in base case. CONCLUSION: BATTERY-POWERED IS STILL LESS COSTLY THAN GAS- POWERED, THOUGH THE COST ADVANTAGE SHRINKS BY ABOUT 40%.	\$613	\$473	Too costly	\$374	Total annual cost/yr for one blower
What is the capital cost for a very small landscaper (2 blowers, owner + 1 helper) to switch over immediately from gas currently to battery?		\$ 4,898			
What is the capital cost/yr for a medium sized landscaper (8 blowers, 2 crews) to make this switch over a period of three years?		\$ 6,531			
What is the capital cost/yr for a large landscaper (40 blowers, 8 crews) to make this switch over a period of three years?		\$ 32,653			

CONTRACTOR COST COMPARISON BREAKDOWN: GAS VS. BATTERY

Case #1: Moderately demanding work -- relatively powerful commercial backpack blower to be used for spring cleanup and fall leaf removal. Or perhaps corded blower, but substantial logistical issues.

<u>Cost elements</u>			
	<u>Gas</u>	<u>Battery</u>	<u>Corded, if possible</u>
Capital costs			
Cost of leafblower (w/o fuel or battery)	\$ 470	\$ 499	\$ 65
Cost of one battery or one corded setup (100 ft cord, reel)		\$ 750	\$ 39
# of batteries needed/blower, or corded setups/blower	0	5.3	1
Cost of in-truck battery recharging station (TOO COSTLY FOR THIS CASE)	\$ -	\$ -	\$ -
Total capital cost	\$ 470	\$ 4,499	\$ 104
Annual total capital cost (simple amortization over useful life)	\$ 118	\$ 1,100	\$ 61
Annual cost for fuel or electricity (corded assumed free)	\$ 300	\$ 5	\$ -
Add'l annual labor cost: refill fuel or swap out/recharge batteries or manage cords	\$ 318	\$ 336	\$ 806
Annual cost for equipment maintenance	\$ 75	\$ 25	\$ 15
Total Annual Cost	\$ 810	\$ 1,466	\$ 882

Case #2: For routine blowing -- yard and hard surface cleaning during growing season, roughly weekly. Remove or spread grass trimmings, etc. -- Small backpack blower or maybe handheld

<u>Cost elements</u>			
	<u>Gas</u>	<u>Battery</u>	<u>Battery - handheld</u>
Capital costs			
Cost of leafblower (w/o fuel; w/battery set)	\$ 280	\$ 399	\$ 329
Cost of additional battery set (2 batteries; 1 for handheld)		\$ 366	\$ 225
# of battery sets needed/blower	\$ -	\$ 1	\$ 1
Cost of in-truck battery recharging station (TOO COSTLY FOR THIS CASE)		\$ -	\$ -
Total capital cost	\$ 280	\$ 399	\$ 329
Annual total capital cost (simple amortization over useful life)	\$ 56	\$ 67	\$ 55
Annual cost for fuel or electricity	\$ 86	\$ 1	\$ 1
Add'l annual labor cost to refill fuel or swap out & recharge batteries	\$ 478	\$ 340	\$ 243
Annual cost for equipment maintenance	\$ 50	\$ 20	\$ 20
Total Annual Cost	\$ 669	\$ 427	\$ 318

