POLICY BRIEF

School Environmental Noise and Student Learning: A Policy Brief for Illinois Schools

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Submitted to: Illinois State Legislators, Senate Education/Environment Staff, ISBE Officials, Superintendents, School Board Members, and Facilities Directors

Executive Summary

Gas-powered landscaping equipment — particularly leaf blowers — is a familiar feature of school grounds maintenance. What may be less recognized is the degree to which high-intensity, intermittent noise from this equipment can intrude on the learning environment. During instructional hours, noise from gas-powered leaf blowers and similar machinery can reach levels far exceeding the background noise thresholds recommended by the World Health Organization for classroom and outdoor educational settings.

Research on environmental noise and children's cognition consistently indicates that elevated noise levels can impair speech perception, listening comprehension, reading, and short-term memory — and that these effects are more pronounced in children than in adults. Students with ADHD, auditory processing difficulties, autism spectrum sensitivities, hearing challenges, and anxiety may face a disproportionate burden when exposed to unpredictable high-intensity noise during instruction.

Illinois currently has no consistent statewide standard restricting the use of gas-powered leaf blowers or similar high-noise landscaping equipment near students during instructional hours. This gap leaves schools without clear guidance on a manageable, preventable source of acoustic disruption.

Ban the Blower, a student-led public health and education policy initiative, has documented responses from multiple Illinois school districts and has contributed to discussions about how districts can address this issue at the local level. Based on documented district responses, at least five Illinois school districts — representing 36 schools — have adopted or are reviewing restrictions on the use of gas-powered landscaping equipment during instructional hours.

This brief recommends that Illinois legislators, the Illinois State Board of Education (ISBE), and school districts take the following steps:

- Review model guidance limiting high-noise gas-powered landscaping equipment during instructional hours near classrooms, special education spaces, outdoor learning areas, entrances, and playgrounds.
- Consider a pilot program supporting districts in implementing time-of-day restrictions or transitioning to battery-powered alternatives.
- Support consistent statewide guidance — whether through agency recommendation, legislative resolution, or pilot initiative — to protect learning time and accessible school environments.

1. The Problem: Landscaping Noise During Instructional Hours

School grounds require regular maintenance, and landscaping crews are a normal part of school operations. Gas-powered leaf blowers, in particular, are widely used for grounds upkeep throughout the school year — including during fall and spring months that coincide with peak instructional time.

The sound produced by commercial-grade gas-powered leaf blowers is not equivalent to ordinary background noise. Research by Walker and Banks (2017), presented at the Children's Environmental Health Network Research Conference, measured sound from commercial-grade gas-powered leaf blowers at over 100 decibels at the source, with levels exceeding WHO outdoor daytime noise guidelines at distances up to 800 feet. The study also documented a dominant low-frequency component in leaf blower noise that is not fully captured by standard A-weighted decibel ratings — and that this low-frequency component is responsible for the equipment's ability to penetrate walls and windows, reaching indoor classroom environments even when equipment is operated some distance away.

Environmental noise guidelines for children, including those from the WHO, recommend that

background sound pressure levels in classroom settings should not exceed 35 dB(A), and that outdoor daytime sources near playgrounds and learning spaces should remain below 55 dB. Gas-powered leaf blowers operating anywhere on or near school grounds can substantially exceed both thresholds — even at considerable distances.

Unlike steady-state background noise (such as HVAC systems), the noise from gas-powered landscaping equipment tends to be intermittent, variable, and unpredictable. Research suggests that changing-state and unexpected sounds may be particularly disruptive to cognitive performance, attention, and memory in children. When equipment is operated near windows, entrances, or outdoor learning spaces during class time, the disruption can be direct and immediate.

2. Educational Equity and Disability Access

The effects of environmental noise are not evenly distributed among students. Certain populations may face a meaningfully greater burden when high-noise landscaping activity occurs during instructional time.

Students with ADHD

Attention regulation is a central challenge for students with ADHD. Research on auditory selective attention in children indicates that students with attention disorders are more impaired than typically developing peers by noise in speech perception and listening tasks (Klatte et al., 2013). Intermittent, unpredictable noise — the type produced by gas-powered leaf blowers — has strong potential to capture attention and interrupt the sustained focus that classroom instruction requires.

Students with Auditory Processing Disorders

Students with auditory processing difficulties rely on clear acoustic conditions to decode spoken language. Research consistently shows that children require more favorable signal-to-noise ratios than adults to achieve comparable speech comprehension, and that children with language or processing disorders are still more impaired under adverse listening conditions (Klatte et al., 2013). High background noise introduced by landscaping equipment during instruction may significantly reduce intelligibility for these students.

Students on the Autism Spectrum

Many students with autism spectrum conditions experience heightened sensitivity to sound, including unexpected or loud noises. Research cited by Walker and Banks (2017) specifically identifies autistic children as a population especially vulnerable to the health and cognitive effects of noise. Sudden bursts of high-intensity noise from landscaping equipment can be acutely distressing and disruptive for these students.

English Language Learners

Research on second-language learners shows that even skilled non-native speakers, whose performance in quiet conditions may be comparable to native speakers, are outperformed by native listeners under conditions of noise or reverberation (Klatte et al., 2013). Students learning in their non-native language depend on clear listening conditions to access content.

A Note on School Responsibility

Schools have a responsibility to provide learning environments that are accessible to all students. While this brief does not make specific legal claims, it is worth noting that adequate acoustic access to instruction is a component of accessible and equitable education. When avoidable, preventable noise sources interfere with the learning environment during instructional hours, schools may have grounds — and arguably an obligation — to address them through scheduling and operational decisions.

3. Scientific and Educational Evidence

A body of peer-reviewed research supports the conclusion that environmental noise can meaningfully impair children's cognitive performance and learning outcomes. The following summarizes key findings relevant to school landscaping noise.

Klatte, Bergström, and Lachmann (2013)

This peer-reviewed review article, published in Frontiers in Psychology, synthesizes research on both acute and chronic effects of noise on children's cognitive performance. Key findings relevant to this brief include:

- Children's speech perception is more impaired than adults' by unfavorable listening conditions, and adult-like performance in complex listening situations may not be achieved until age 10 or later.
- Noise-induced disruption was found not only in auditory tasks but also in non-auditory tasks, including serial recall of visually presented lists and reading comprehension.
- Children with language or attention disorders are more impaired than typically developing peers in noisy conditions.
- Indoor noise and reverberation in classroom settings are associated with poorer performance in verbal tasks.
- Changing-state sounds — that is, auditory streams that are variable and unpredictable — may be especially disruptive to working memory, even at low intensity.

The authors conclude that even though reported effects are typically small in magnitude, they warrant attention from policymakers given the potential for long-term impacts and the accumulation of risk factors in noise-exposed children.

Basner et al. (2014) — The Lancet

This comprehensive review, published in The Lancet, examines both auditory and non-auditory health effects of noise exposure. Among its findings relevant to school settings:

- WHO estimates that approximately 45,000 disability-adjusted life-years are lost annually in high-income Western European countries among children aged 7–19 due to environmental noise exposure — primarily attributed to cognitive impairment.
- The RANCH study of 2,844 children near three major European airports found a linear exposure-effect relationship between aircraft noise at school and reading comprehension, with a 5 dB increase in noise exposure associated with a delay in reading age of approximately one to two months.
- The authors conclude that any reduction in noise levels at school should improve children's cognition, suggesting there is no safe threshold below which noise has no effect on learning.
- Noise is associated with annoyance, sleep disturbance, cardiovascular effects, and cognitive impairment — underscoring that its impacts are not limited to hearing loss alone.

Walker and Banks (2017) — Children's Environmental Health Network

This pilot study, presented at the 2017 Children's Environmental Health Network Research Conference, measured sound from commercial-grade gas-powered leaf blowers and characterized the frequency components and reach of that sound. Key findings:

- Sound levels at the source exceeded 100 dB for both A-weighted and unweighted measures.
- Excepting high-frequency components, all measured metrics exceeded WHO outdoor daytime noise limits at distances up to 800 feet from the source.
- Low-frequency (LF) and mid-frequency (MF) sound dominated at all distances; the LF component persisted at high levels far from the source and is responsible for the ability of leaf blower noise to penetrate walls and windows.
- Standard A-weighted decibel ratings used in manufacturer specifications underrepresent the low-frequency component, meaning that published ratings may substantially underestimate the sound's real-world impact indoors.

The authors conclude that the ability of gas-powered leaf blower sound to travel long distances and penetrate building structures puts the health and cognitive functioning of children at risk in both outdoor and indoor settings.

WHO Guidelines for Community Noise (1999) and Related Guidance

The World Health Organization's Guidelines for Community Noise recommend that background noise in classrooms not exceed 35 dB(A) during teaching sessions, and that outdoor daytime noise near schools and playgrounds remain below 55 dB(A). These thresholds provide a useful reference point for assessing the potential impact of landscaping equipment operating near schools during instructional hours.

4. District-Level Impact: What Ban the Blower Has Documented

Ban the Blower is a student-led initiative focused on the educational and public health impacts of gas-powered landscaping noise in school settings. Through direct outreach to Illinois school districts, the project has researched how districts currently manage landscaping activities relative to instructional time, and whether districts have adopted or are considering restrictions.

Based on documented district responses, five Illinois school districts — representing a combined total of 36 schools — have adopted restrictions limiting the use of gas-powered landscaping equipment during instructional hours. These districts made operational decisions based on their own assessment of the issue; Ban the Blower's outreach contributed to raising awareness and supporting district-level discussion.

Beyond formal adoption, outreach through this project has prompted additional district-level conversations, facilities reviews, and vendor coordination discussions in a number of other Illinois districts. These conversations suggest that awareness of the issue is growing, and that districts are receptive to practical guidance when it is presented with credible evidence and a workable policy framework.

This district-level progress demonstrates that the policy question is both tractable and relevant. The absence of statewide guidance, however, means that outcomes depend entirely on whether individual districts happen to learn about the issue and choose to act — a fragmented approach that does not serve all students equally.

5. State-Level Policy Context

Illinois does not currently have a consistent statewide standard or guidance document addressing the use of high-noise gas-powered landscaping equipment near students during instructional hours. Noise restrictions in Illinois law tend to focus on occupational settings or general community noise ordinances, rather than on the specific context of school-day landscaping near learning spaces.

ISBE has not, to this author's knowledge, issued guidance specifically addressing school-day noise from landscaping equipment. The Illinois Pollution Control Board and Illinois EPA address certain categories of noise, but school landscaping activity during instructional hours falls outside the scope of current regulatory frameworks in a practical sense.

Senator Fine's Chief of Staff, in response to outreach from this project, indicated that this work provides a strong foundation for future efforts — including potential legislation, agency guidance, or pilot programs focused on school areas. This response does not indicate that legislation has been introduced or is guaranteed, but it reflects a recognition from legislative staff that the issue is credible and worth further attention.

The absence of a statewide standard creates an equity gap: students in districts that happen to have proactive facilities directors or responsive administrators may benefit from scheduling protections that students in other districts do not receive. Consistent, clear state-level guidance — even if nonbinding — would help establish a baseline expectation for all Illinois schools.

6. Policy Options

The following three options represent realistic pathways for state-level action. They are not mutually exclusive and could be pursued in combination or in sequence.

Option A: Nonbinding State Resolution

The Illinois General Assembly could pass a nonbinding resolution encouraging school districts to avoid scheduling gas-powered leaf blowers and similar high-noise gas-powered landscaping equipment during instructional hours, particularly near classrooms, special education spaces, outdoor learning areas, entrances, and playgrounds.

Advantages: Requires no regulatory infrastructure; signals legislative awareness; creates political visibility for the issue; allows districts to adopt the recommendation voluntarily at their own pace.

Limitations: No enforcement mechanism; inconsistent uptake likely without accompanying guidance or resources.

Option B: ISBE Guidance Recommendation

The Illinois State Board of Education could issue guidance recommending that Illinois school districts restrict the use of high-noise gas-powered landscaping equipment during

instructional hours near learning spaces. ISBE guidance would complement existing academic and health standards by addressing the acoustic environment as a component of a healthy, accessible school environment.

Advantages: Reaches districts directly through existing ISBE communication channels; creates a credible statewide reference point; can be implemented without legislation.

Limitations: Advisory only; may require ISBE resources to develop and disseminate guidance effectively.

Option C: Pilot Program for District Transition

Illinois could establish a pilot program supporting a defined cohort of school districts in implementing time-of-day restrictions for gas-powered landscaping equipment, and/or transitioning toward battery-powered equipment for near-building and near-classroom use. The pilot could collect data on implementation costs, vendor contract language, and student and staff experience before broader rollout.

Advantages: Generates real-world evidence for Illinois-specific conditions; supports districts in managing transition costs; creates a model for broader adoption; demonstrates good-faith investment in the issue.

Limitations: Requires funding and administrative coordination; scope limited until results inform expansion.

7. Recommended Model District Policy

Model District Policy: School-Day Landscaping Noise Restrictions

Policy Statement

In order to protect instructional time and support an accessible learning environment for all students, [District Name] adopts the following policy regarding the use of gas-powered leaf blowers and similar high-noise gas-powered landscaping equipment on district property.

Scope

This policy applies to all district employees, contractors, and vendors responsible for grounds maintenance at district facilities, including schools, administrative buildings, and all properties used for educational purposes.

Restriction

Gas-powered leaf blowers, gas-powered lawn mowers, and other high-noise gas-powered landscaping equipment shall not be operated during instructional hours within hearing range of classrooms, special education spaces, outdoor learning areas, school entrances, or playgrounds. For planning purposes, 'instructional hours' are defined as the period from [30 minutes before first bell] to [30 minutes after final dismissal bell], on days when school is in regular session.

Preferred Practice

The district encourages the scheduling of high-noise landscaping activity before or after instructional hours. Where feasible, the district encourages the use of battery-powered or electric alternatives to gas-powered equipment, particularly for use near occupied buildings during any hours.

Vendor Contracts

All contracts with landscaping vendors shall include language requiring compliance with this policy. Vendors shall coordinate with the district's facilities director to schedule high-noise activities outside instructional hours.

Exceptions

This policy may be waived in cases of genuine emergency, safety need, or extraordinary circumstances as determined by the district's facilities director in consultation with building administration. Emergency exceptions shall be documented.

Implementation

The district's facilities director is responsible for implementing this policy, communicating requirements to all relevant staff and vendors, and reviewing compliance on a reasonable periodic basis. Questions regarding interpretation of this policy should be directed to the facilities director.

8. Implementation Considerations

Districts considering restrictions on school-day landscaping noise may have questions about practical feasibility. The following addresses common concerns.

Scheduling

In most cases, the most direct solution is scheduling: high-noise landscaping activity is moved to early morning before students arrive, after dismissal, or on weekends and non-school days. Groundskeeping staff and vendors generally have flexibility in scheduling, and many districts that have reviewed this issue report that early-morning or post-dismissal scheduling is achievable without significant disruption to maintenance routines.

Vendor Contract Language

Districts that use external landscaping vendors can address this issue through contract language. Standard vendor agreements can be updated to require scheduling of high-noise activity outside instructional hours as a contract condition. This approach allows districts to establish expectations during procurement rather than addressing conflicts case by case.

Battery-Powered Equipment

Battery-powered leaf blowers and lawn equipment have improved substantially in recent years and are now widely available for both residential and commercial applications. For districts interested in a longer-term transition, battery-powered equipment can reduce noise levels, eliminate exhaust emissions near students, and simplify scheduling concerns. The upfront cost of equipment transition may be a barrier for some districts, which is one reason a pilot program with state support could be valuable.

Costs and Resource Considerations

For most districts, implementing time-of-day restrictions does not require significant new expenditure — it is primarily a scheduling and communication matter. For districts using contract vendors, updating contract language involves minimal administrative cost. Districts exploring equipment transition may face higher upfront costs, but may find long-term savings in fuel and maintenance; state support through a pilot program could help offset initial investment.

Seasonal Needs and Exemptions

Illinois schools have legitimate landscaping needs throughout the school year. The model policy framework proposed in this brief does not prohibit landscaping; it restricts the timing of high-noise activity during instructional hours. Emergency exceptions for safety or extraordinary circumstances are included in the recommended policy language. Districts can also work with vendors to develop seasonal schedules that accommodate both instructional and grounds-maintenance needs.

9. Specific Ask

Possible Legislative or Agency Action

Ban the Blower respectfully asks that Illinois legislators, ISBE, and school districts consider the following actions:

- Illinois General Assembly: Consider passage of a nonbinding resolution encouraging school districts to avoid scheduling high-noise gas-powered landscaping equipment during instructional hours near classrooms and other learning spaces.
- Illinois State Board of Education: Review the evidence presented in this brief and consider issuing guidance recommending school-day restrictions on high-noise landscaping activity near students.
- Illinois legislators and education agencies: Consider supporting a pilot program — with modest state investment — to help a defined group of districts implement scheduling restrictions or transition toward battery-powered equipment, with results informing broader state guidance.
- Illinois school districts: Review the model policy language provided in Section 7 and assess whether current landscaping scheduling practices adequately protect instructional time and the acoustic environment for all students.

This is not a request for significant new regulatory infrastructure. It is a request that Illinois provide clear, consistent, and evidence-informed guidance on a manageable and preventable source of disruption to school learning environments.

10. Conclusion

The noise produced by gas-powered leaf blowers and similar landscaping equipment is not simply a neighborhood nuisance. In school settings, it is a source of acoustic disruption that can interfere with the conditions students need to learn — conditions that research has consistently linked to speech perception, listening comprehension, reading, attention, and short-term memory.

For students who already face challenges in those areas — including students with ADHD, auditory processing disorders, autism spectrum sensitivities, or hearing and listening challenges — the burden of unexpected, high-intensity, intermittent noise during instruction is not trivial. These students deserve school environments where avoidable acoustic disruptions are managed thoughtfully.

The good news is that this problem is solvable. Scheduling landscaping activities outside instructional hours is, in most cases, a feasible and low-cost intervention. Illinois school districts that have already adopted restrictions demonstrate that the change is practical and can be implemented without disrupting normal school operations.

What is currently missing is consistent guidance at the state level. Without it, protections depend entirely on whether a given district happens to become aware of the issue and prioritize it. Statewide guidance — even nonbinding — would help establish a baseline expectation that serves all Illinois students, not just those fortunate enough to attend districts with proactive leadership on this issue.

Ban the Blower respectfully urges Illinois legislators, ISBE, and school district leaders to review this brief, consider the model policy language provided, and take steps appropriate to their authority and role. Students deserve learning environments that are not interrupted by preventable noise. This is a manageable, evidence-based, and equitable step toward that goal.

References and Sources

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