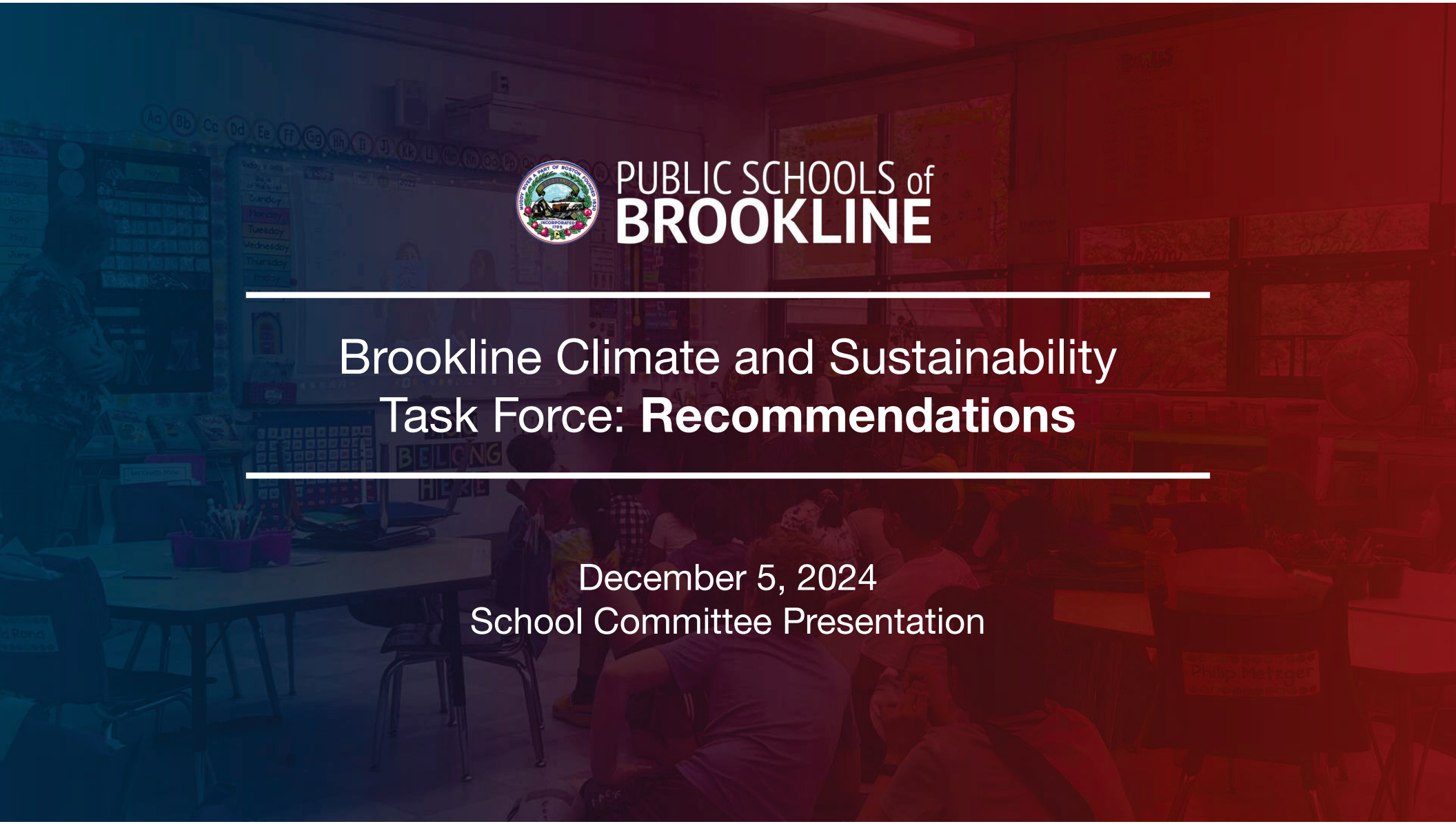

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Brookline Climate and Sustainability Task Force: **Recommendations**

December 5, 2024
School Committee Presentation

Climate and Sustainability Task Force: Background

- In May 2023, the School Committee issued a call for volunteers for a Climate/Sustainability Task Force
- The mandate of this Task Force is to:
  1. **Inventory town assets** (initiatives, organizations, activities, investments, funded positions) already working in this area, identifying those that PSB can partner with, leverage, or scale to achieve relevant objectives of the Sustainability Policy;
  2. **Issue recommendations for PSB actions** (such as further policies, coordination mechanisms, or investments) to achieve relevant objectives of the Sustainability Policy; and
  3. **Present these recommendations** to the School Committee and other interested stakeholders for possible action.

Brookline Climate and Sustainability Task Force:
Group 1: Education and Engagement

Group 1: Education and Engagement

The **Education and Engagement** group focused on curriculum development, outdoor learning, extracurricular experiences, pedagogy and empowering youth to participate in civic engagement.

Group participants

- **Roger Grande**, BHS Social Studies; Brookline Farm-to-School; BHS garden leader; Teacher, Climate Science and Social Change
- **Min Song**, English Department Chair and Environmental Studies Program Steering Committee member, Boston College
- **Loren Stolow**, Ed.M, early childhood educator

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Why are we recommending a sustainability curriculum?

Climate change will increasingly challenge the integrity of our infrastructure, tax our natural resources and built environment, impact governance and our social fabric, and strain our mental and physical health and wellbeing.

Our recommendations aim to design a scope of essential learning to prepare young people to thrive in a climate disrupted world, engage civically and professionally to lead a sustainable transition, and to support educators to help their students meet these goals.

Recommendations

1. Outdoor learning for all students, every year
2. Invest in student competencies
3. Invest in educators

BHS Student Sustainability Survey

February-April, 2024

[Complete results are available here]

Background & Approach

BACKGROUND
The data presented in this deck is sourced from the 2024 BHS Student Sustainability Survey. This study was undertaken to support sustainability efforts and climate change initiatives at BHS.

The survey explored a number of areas including:

- Students' global warming acumen and attitudes
- Global warming's impact on their lives both in and out of school
- Their political views and demographic information

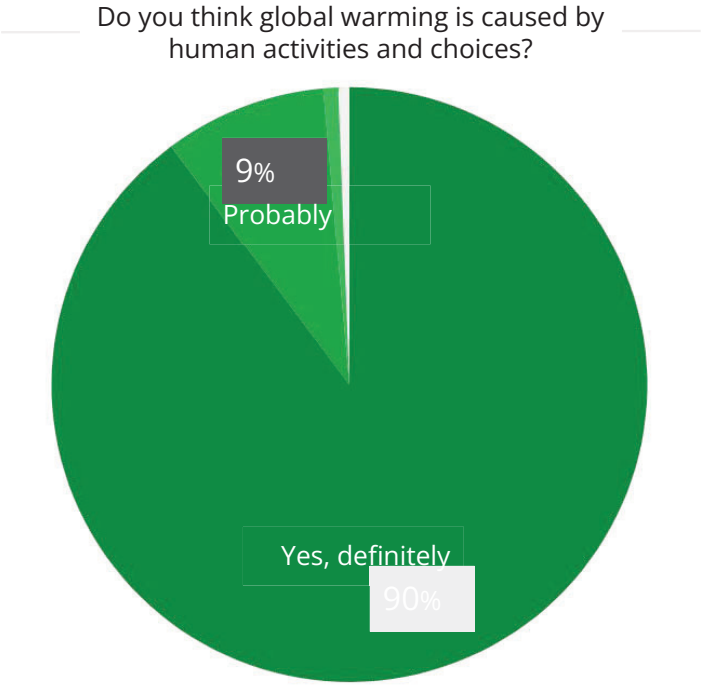
APPROACH
Data were collected via a 21-question online survey, which ran from February 28 to April 25, 2024.

A total of 475 BHS students participated in the study and all grades were represented as detailed in the table below.

	Sample size
9th | Freshman	86
10th | Sophomore	75
11th | Junior	183
12th | Senior	130

Nearly all BHS students are confident global warming is happening and 9 in 10 believe humans are responsible

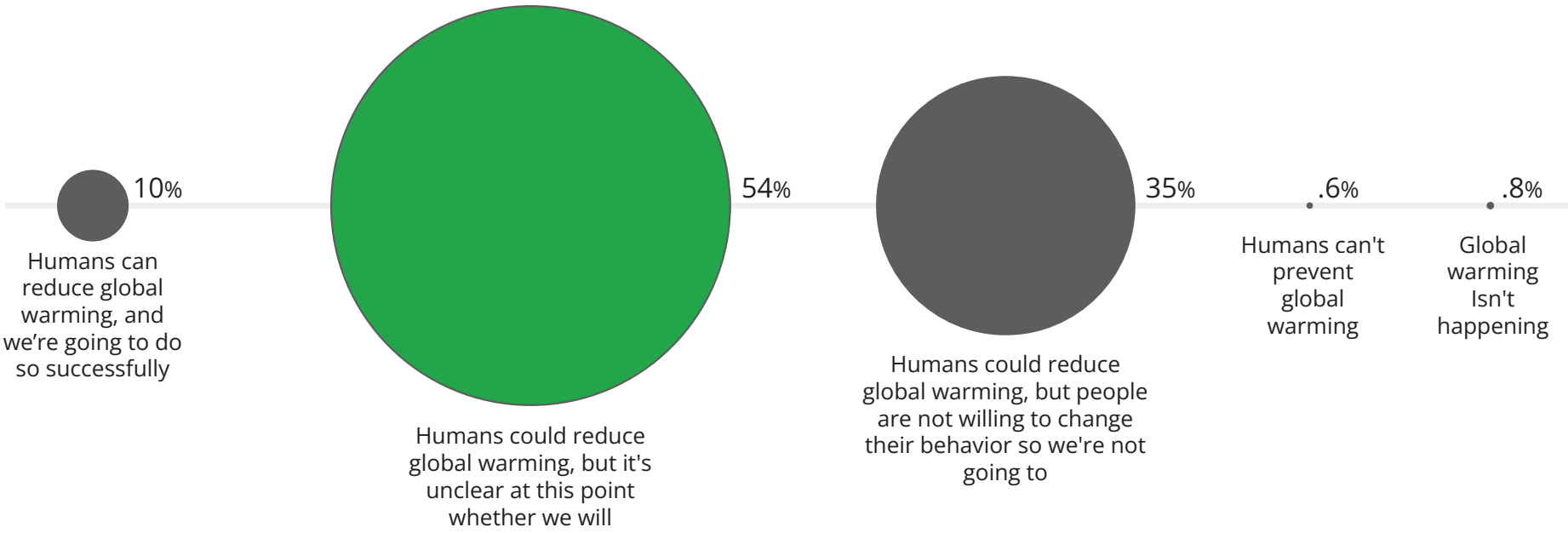
CLIMATE CHANGE KNOWLEDGE



Based: All respondents (n=475) • Q1. Global warming is the idea that the average temperature of the earth, on land and in water, has been rising and will continue to rise. Do you think that global warming is happening? Q2. Do you think global warming is caused by human activities and choices?

9 in 10 BHS students are not confident global warming will be stopped

VIEWS ON CLIMATE CHANGE

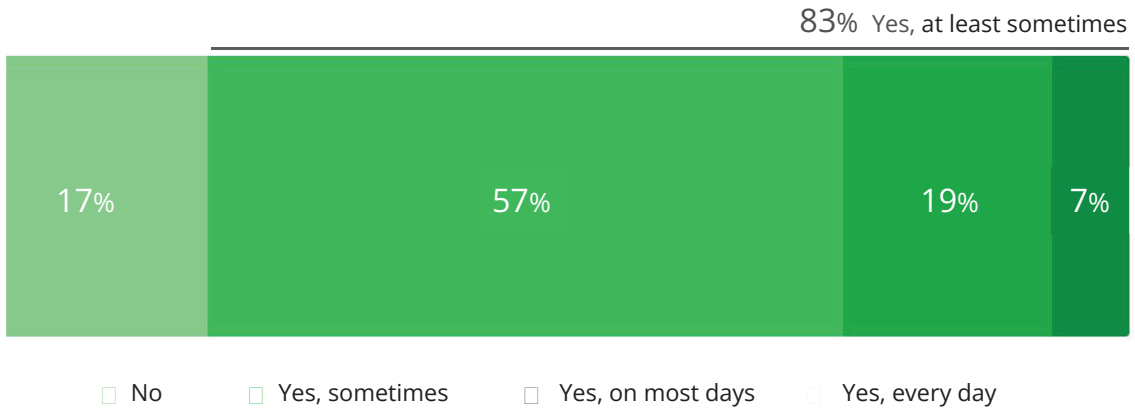


Based: All respondents (n=475) • Q8. Which of the following statements comes closest to your view?

Over 8 in 10 BHS students have thought about climate change and for 1 in 4, it's on their minds "most days"...

CLIMATE CHANGE'S PRIMACY

In the past month, have you thought about climate change?



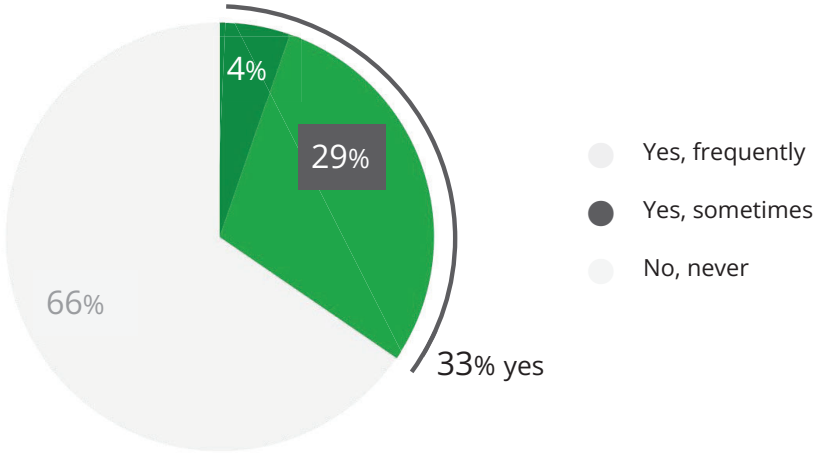
Based: All respondents (n=475) • Q9. In the past month, how much had you thought about global warming (before starting this survey)?

...and it's taking a toll

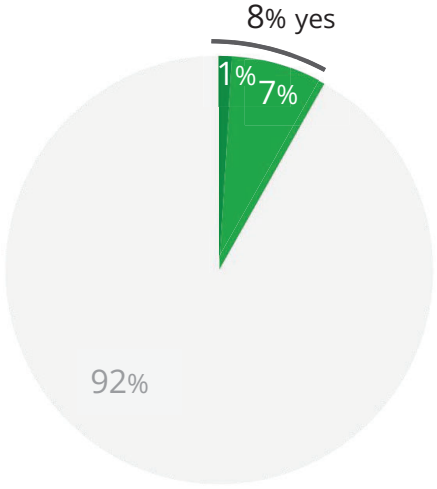
1 in 3 BHS students say climate change negatively impacts their mental health at least sometimes and nearly 1 in 10 report it inhibits their ability to performance normally in school.

CLIMATE CHANGE'S IMPACT ON MENTAL HEALTH & WELL BEING

In the past month, have you had thoughts or feelings about climate change that negatively impact your mental health or emotional well being, or cause you anxiety or depression?



In the past month, have you had thoughts or feelings about climate change that interfere with your ability to function normally in school?



Based: All respondents (n=475) • Q10. In the past month, have you had thoughts or feelings about climate change that negatively impact your mental health or emotional well being, or cause you anxiety or depression? Q11. In the past month, have you had thoughts or feelings about climate change that interfere with your ability to function normally in school?

Recommendation 1: [short-term]

Outdoor learning for all students, every year

Outdoor learning experiences, including school gardens, can enhance learning in all curricular areas and are an essential component of climate and sustainability education—including social-emotional experience.

- Provide consistent and ongoing support of Gardens and reinstate Garden Coordinator stipends at every K-8 school and BHS.
- Identify and disseminate educator resources to lead diverse, outdoor learning experiences.

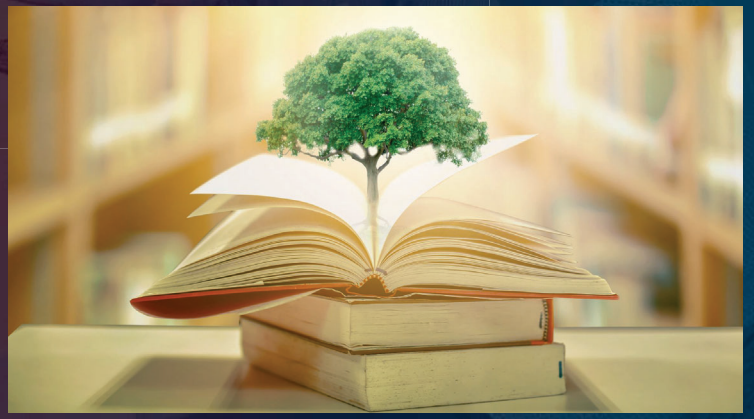
Recommendation 2 [medium-term]

Integrate student competencies for sustainability literacy:

skills for stewardship and resilience in a world transformed by climate change.

2A. Launch PSB Sustainability Education Team

PSB educators from different levels and disciplines, OTL staff members, community members tasked with accomplishing our recommendations.



2B. Identify learning outcomes

Sustainability Education Team reviews existing environmental literacy learning outcomes and identifies exemplary resources build knowledge, citizenship, and resilience for a climate-disrupted world.

Knowledge

Adopt interdisciplinary approach to understanding how human activities contribute to—and can mitigate—the effects of climate change.

Citizenship

Increase opportunities to model informed decision making and consensus building. Empower students to practice advocacy and take action to secure their future.

Resilience

Enhance opportunities to build capacity for climate resilience, including physical and social-emotional wellbeing. Prioritize learning in natural spaces.

2C. Scope and sequence: ***Pilot in select grades***

Integrate existing and new sustainability learning across all grade levels and disciplines so that it is sequenced developmentally to achieve learning outcomes by high school graduation.

> 100 PSB educators who responded to our survey reported that they already offer numerous opportunities for students to learn and think about climate and sustainability issues. However many of these opportunities are the result of voluntary, individual efforts. This places special demands on a handful of active teachers, and is inconsistent from year to year and across schools.

Example: integrating of citizenship [empowerment]

Sample service projects for select grade levels,:

- 1st grade: plant lettuce in school garden
- 3th grade: outdoor clean up
- 5th grade: food drive
- 7th grade: testing water and soil
- 8th grade: manage school-wide composting
- 10th grade: assist cafeteria composting
- 11th grade: Advisories, other manage indoor farm

*Sample pilot

Recommendation 3 [long-term]

Invest in educators:

Leadership and professional development

3A. Identify district-wide leadership

- Hire Lead Sustainability Educator to provide ongoing support and coordination to Sustainability Education Team
- Identify sustainability lead educators in each school. Provide stipend, modeled on garden educators.

3B. Offer system-wide professional development

- Learn fundamentals of climate change and sustainability education, emphasizing interdisciplinary approach: (knowledge - behavioral - resilience)
- Meet by grade level and discipline to identify points of intersection between existing curriculum and Sustainability Learning Outcomes.
- Revise (or design) interdisciplinary curriculum that cultivates citizenship and allows students to imagine constructive responses to the challenges that climate change presents.

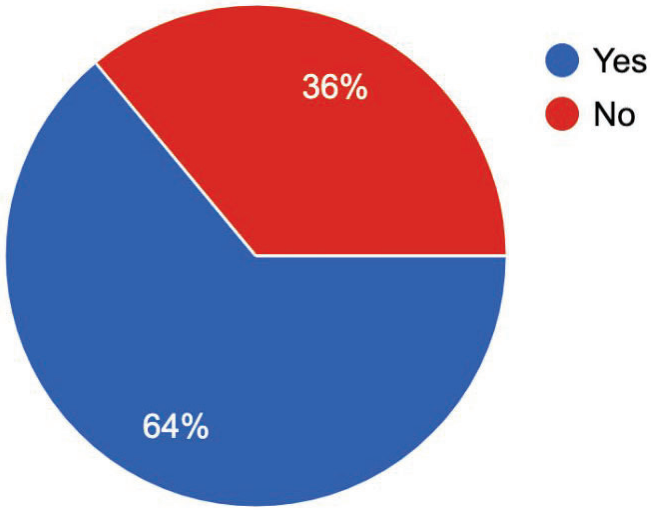
PSB Educator Sustainability Survey

January-March, 2024

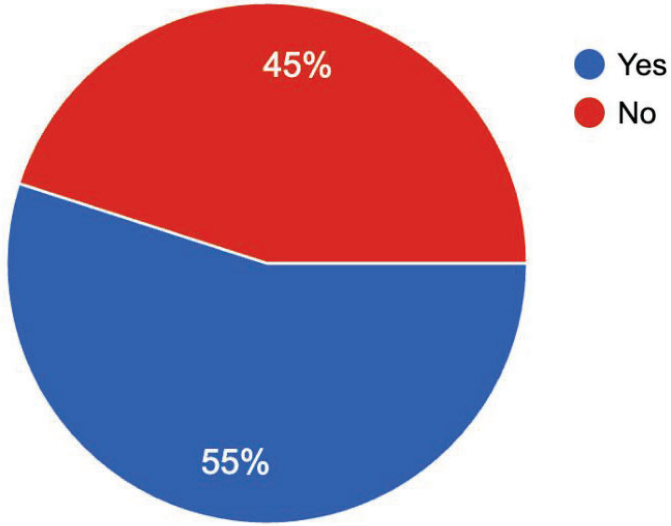
Complete results are available here

2023 PSB Educator Survey: 111 respondents

Is there curriculum you would like to add or professional development or other support for developing learning experience related to climate change and sustainability?



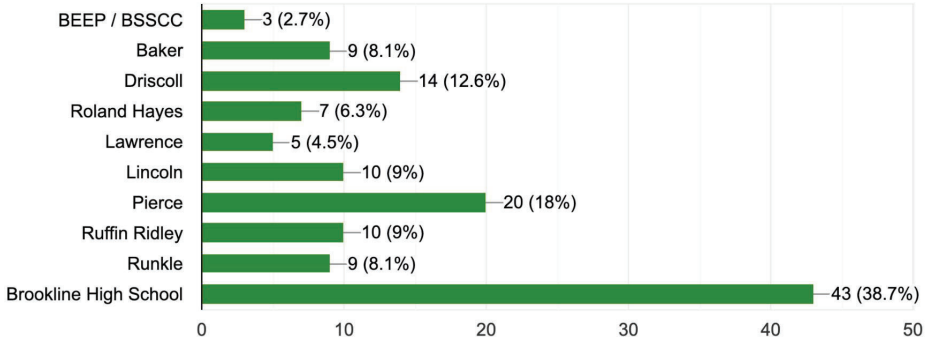
Do your students experience any of the following during the school year: Gardening, other outdoor learning, field trips, or experiential learning connected to climate change, sustainability or foundations to those concepts?



Survey respondents broadly represent PSB by school and grade

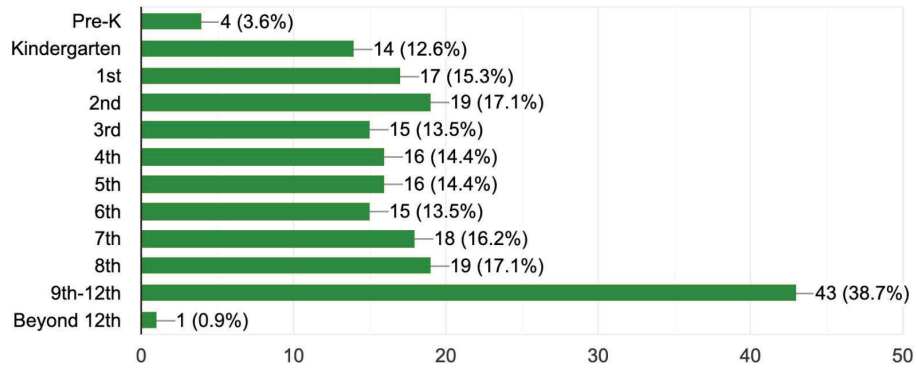
School(s) you work at

111 responses



Grades you teach or work with students

111 responses



Recommendations

1. Outdoor learning for all students, every year
2. Invest in student competencies
3. Invest in educators

Brookline Climate and Sustainability Task Force:
Group 2: Energy, Buildings, and Outdoor Spaces

Group 2: Energy, Buildings, and Outdoor Spaces

The **Energy, Buildings, and Outdoor Spaces** group focused energy conservation and efficiency; renewable and alternative energy; electrification; high-performance buildings; green building standards; outdoor learning; and green schoolyards and recreational spaces.

Group participants

- **Andrew Berstein** – Independent power producer manager
- **Doron Bracha** – Founder – Accent Home Inspection
- **Christi Electris** – Co-founder and Executive Director of Croatan Institute
- **David Manor** – Director, Solartec
- **Matthew Yamatin** – Sustainability Program Director, Thermo Fisher Scientific

Advisor

- **Helen Charlupski** – Brookline School Committee member

Priority Recommendations

Recommendation	Type of recommendation	Period of implementation	Expected outcome(s)
1. Annual Reporting of Climate and Energy (e.g., EUI, carbon emissions)	Human resource investment	Short term (1 – 2 years)	Awareness of progress made by PSB and facilitate engagement by students, teachers and the community.
2. Formalize fossil fuel free & zero emission plan for PSB	Capital Planning	Short term (1 – 2 years)	Clarify financial resources to achieve Sustainability Policy commitment
3. Identify funding mechanism(s) and seek approval for financing the fossil fuel free & zero emissions plan	Financial Investment	Medium term (2 – 5 years)	Enable achievement of Sustainability Policy commitment Reduce cost inefficiencies and investment in stranded assets

Secondary Recommendations

Recommendation	Type of recommendation	Period of implementation	Expected outcome(s)
4. Partner with local volunteer subjct matter expeerts (e.g., Harvard)	Partnership	Immediate	More desirable outcomes aligned with leading best practices (e.g., PFAS free)
5. Annual training/reminders for educators and staff on quick wins to reduce energy use (e.g., plug loads).	Human resource investment Curriculum	Short term (1 – 2 years)	Reduced energy / water use in buildings will lower costs and provide EUI improvement
6. Evaluate and select preferred purchasing approach for onsite solar projects	Guidance statement	Short term (1 – 2 years)	Streamline decision making for subsequent projects

Additionally – an evaluation of artificial turf was conducted and is included in final report

Recommendation #1: Annual Reporting of Climate and Energy KPIs

- **<u>Action</u>: Annual Reporting of Climate and Energy** to communicate progress towards commitments laid out in the Sustainability Policy. For example, report current and historical EUIs for each school and for PSB.

  Reporting should be standardized, clear, and concise so students, staff, educators, parents, and the communicate can readily understand without specific knowledge of energy or climate topics.

- **<u>Timeline and Resourcing</u>**: Assign responsibility to appropriate personnel within PSB or Town of Brookline by end of SY2024-25. Publish first report by end of 2025.

- **<u>Outcomes</u>**: Standardized and accessible communication of progress can be used by students and educators for classwork and for engaging the community on how school funding supports the Town's long-term commitments.

Dashboard from Parkway Schools in St. Louis.

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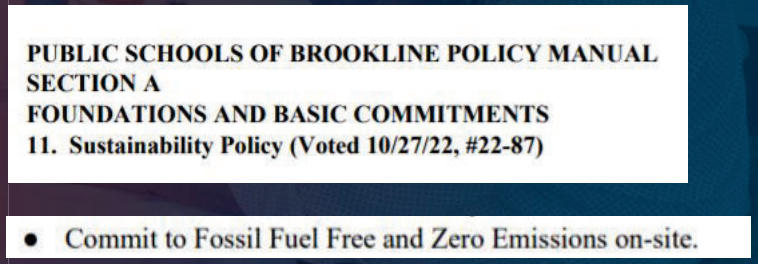
Recommendation #2: Formalize fossil fuel free plan for PSB

- **<u>Action</u>: Formalize fossil fuel free plan** to provide the Town with clear visibility into actions and funding necessary to meet Sustainability Policy commitment.

  PSB in coordination with Town (Building Department) to develop formal, long-term plan with actions, timelines and costs to achieve fossil fuel-free at each school.

- **<u>Timeline and Resourcing</u>**: Complete plan by 2026. May require consultants to support plan development.

- **<u>Outcomes</u>**: Clarity regarding human and financial resources needed to meet Sustainability Policy commitments with timelines. Plan will serve to measure progress towards goals.



PUBLIC SCHOOLS OF BROOKLINE POLICY MANUAL
SECTION A
FOUNDATIONS AND BASIC COMMITMENTS
11. Sustainability Policy (Voted 10/27/22, #22-87)

- Commit to Fossil Fuel Free and Zero Emissions on-site.

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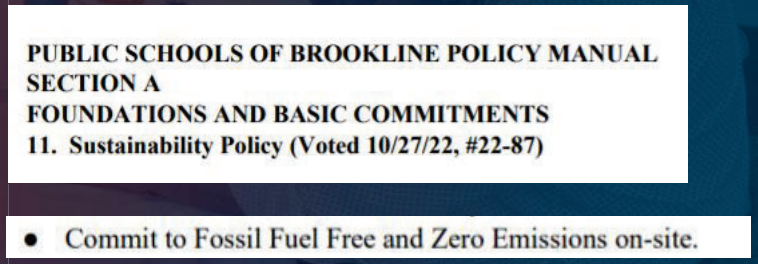
Recommendation #3: Funding approval for fossil fuel free plan

- **Action:** PSB, in coordination with the Town of Brookline, should explore and identify funding mechanisms to fully finance the formal, long-term fossil fuel-free and zero-emission plan.

  Potential funding sources may include government incentives and grants, a green revolving fund, or financing approved through Town ballot measures.

- **Timeline and Resourcing**: Complete by no later than 2030

- **Outcomes**: A funded capital plan will enable achievement of the fossil fuel-free and zero-emission goals as well as avoid cost inefficiencies and investments in assets that would need to be replaced before reaching the end of their operational life.



PUBLIC SCHOOLS OF BROOKLINE POLICY MANUAL
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- Commit to Fossil Fuel Free and Zero Emissions on-site.

Brookline Climate and Sustainability Task Force:
Group 3: Food Services and Waste

Group 3: Food Service and Waste

The **Food Service and Waste** group focused on farm-to-school initiatives; zero waste/waste management; composting; school gardening; recycling and reuse; water use efficiency; and organic foods.

Participants

- Deane Coady, Solid Waste Advisory Committee member
- Ezra Kleinbaum, BHS senior, student leader
- Amie Lindenboim, Parent, HUD Enforcement Analyst
- Christopher Mutty, Town Meeting Member, Executive Director, Brookline Chamber of Commerce
- Macari Allyn, BHS junior
- Aviv-Schwab-Jacobson, BHS junior

Advisors

- Sasha Palmer, PSB Food Service Director
- Rebeca Salguero Palacios, Sustainability Coordinator

Recommendations

Summary of Recommendations	Type of recommendation	Period of implementation	Expected outcome(s)
1. **Composting**: Compost 100% of food waste from all ten BPS kitchens and cafeterias	Policy	Medium Term (SY25/26)	• Minimize food waste and reduce carbon footprint. • Connect composting activities with curriculum standards
2. **Food rescue**: Repurpose leftover food from all BPS kitchens and cafeterias by implementing a district wide food rescue plan.	Policy	Short Term (SY24/25)	• Minimize food waste and reduce carbon footprint. • Provide students with an opportunity to learn about and participate in a program to provide healthy food to residents with limited means to purchase groceries.
3. **Reusables**: Move to reusable foodware and eliminate single-use plastics from all meals.	Policy	Medium Term (SY25/26)	• Achieve zero waste goals • Minimize health risks associated with plastics usage
4. **Staffing**: Make Food Service Sustainability Coordinator position permanent	HR Investment	Long Term (SY26/27)	• Allow the continuity of established sustainability initiatives and development of new ones to further goals

Recommendation #1: Compost 100% of food waste

- **Description**: PSB already composts in all school kitchens and 5 of 10 school cafeterias. **Group 3 recommends that the School Committee commit to composting in the remaining 5 of 10 cafeterias.**
- **Timeline**: DPW and PSB Food Services are willing to partner to provide infrastructure, a how-to guide, and basic training for up to three schools/year.
- **Outcomes**: Diverting 100% of food waste to compost in all schools will reduce trash; reduce carbon emissions; connect composting activities with composting curriculum standards; and reach an achievable sustainability milestone for the Town.

Recommendation #2: Commit to implementing a PSB food rescue plan

Description: The Food Services Sustainability Coordinator, PSB school nurses, and DPH together will develop a Food Rescue Plan for PSB. **Group 3 recommends that the School Committee commit to supporting this plan.**

The Plan will consist of two parts: (1) a "share table" where students can donate or partake of unopened, pre-packaged, or whole food; and (2) an existing partnership with the Brookline Food Pantry that allows this food to be distributed during holidays and school vacations.

Timeline: The Food Rescue Plan will be developed during SY24-25 for implementation starting in SY25-26.

Outcomes: Rescuing unused food from cafeterias will reduce PSB's food waste and carbon footprint, improve the health and wellness of PSBs students, and provide students with an opportunity to learn the importance of food security.

Recommendation #3: Move to reusable foodware and eliminate single-use plastics

- Description: Food Services is committed to achieving a zero waste environment by converting to reusables and eliminating single-use plastics. Eight schools have dishwashers and four have begun using reusables. **Group 3 recommends that the School Committee commit to using reusables and eliminating single-use plastics in the remaining schools**, where feasible.
- Timeline: Food Services is working to onboard the remaining schools as soon as SY24/25. (An existing donor grant and the Pierce rebuild will cover the remaining dishwashers.)
- Outcomes: Switching to resusables reduces solid waste, carbon emissions, and harmful chemicals; and lowers long-term food services and waste management costs. It provides a learning opportunity for students and staff in sustainable living practices.

Recommendation #4: Make the Sustainability Coordinator Position Permanent

- Description: A 0.75 FTE Sustainability Coordinator position was established in August 2023, funded yearly for a three-year pilot period by a private donor.

  The sustainability gains over the past year and those described on the previous three slides are dependent on the championship of a Sustainability Coordinator.

  Food Services aims to fund this position beginning in SY26/27 from its revolving fund with increased revenue from increased uptake and from savings through its sustainability practices. **Group 3 recommends that the School Committee approve this position.**

- Timeline: position grant funded through SY25/26
- Outcomes: Continuation and Enhancement of sustainability best practices.

Brookline Climate and Sustainability Task Force:
Group 4: Transportation

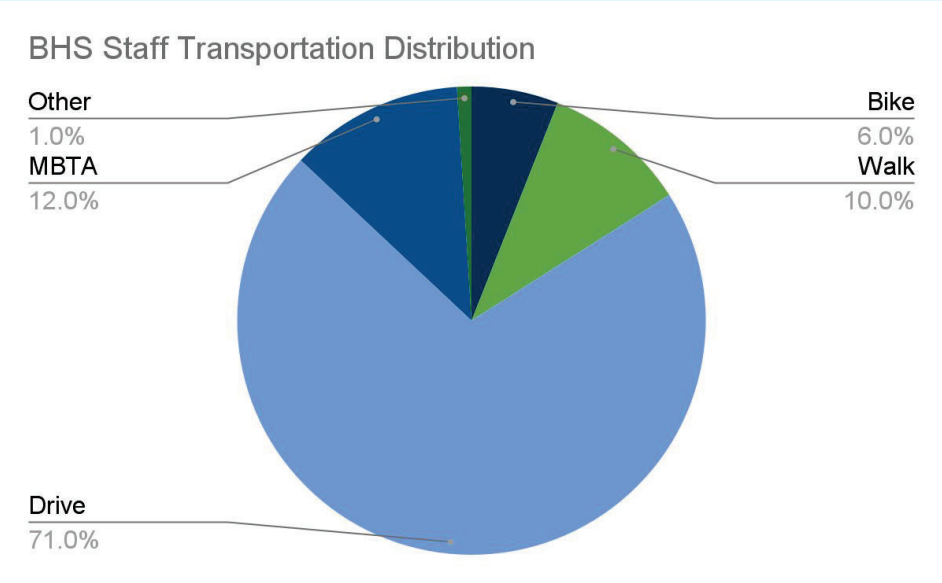
Sustainability Task Force Transportation Subcommittee Recommendations

Members of Transportation Subcommittee

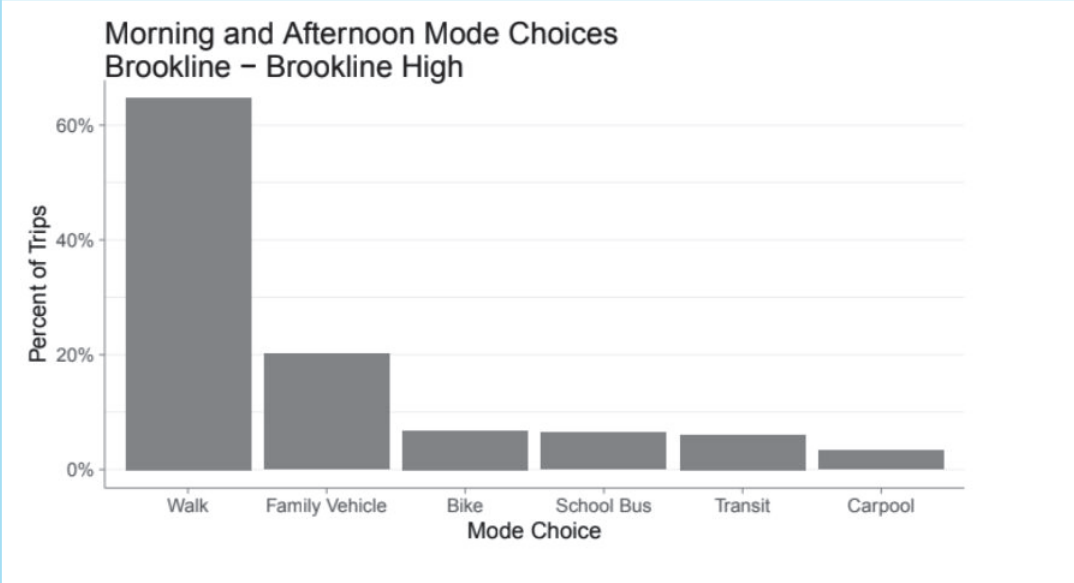
Eric Colburn - BHS English teacher; advisor, Climate & Food Justice Club; member, Safe Routes to School Task Force
Tia Percheva - BHS senior
Amarjot Ranu - BHS senior; intern, Brookline Community Development
Maya Gewurz - BHS senior
Layla Noubir - BHS SWS senior
Alina Samarasan - BHS senior
Toby Sillman - BHS senior; member, Brookline Bicycle Advisory Committee
Audrey Chang - BHS junior
Amirah Saalik - BHS SWS senior
Marina Turchin - BHS SWS junior

RECOMMENDATIONS	TYPE	IMPLEMENTATION TIMELINE	EXPECTED OUTCOMES
4.1 Incentivizing greener staff commuting	Policy	Short term (1-2 years)	Reduction in % of teachers driving; lower GHG emissions from teacher commutes
4.2 Switch to electric vans and, eventually, electric buses	Policy	Medium/long term (2-5 years)	Electric vans for students w/ special needs & sports teams; will reduce GHG
4.3 Bicycle infrastructure advocacy (through BAC, T Board)	Policy/ sponsorship	Long term (5+ years)	Safer bike lanes; more student and staff bike use; reduced fuel consumption
4.4 Restricting car idling (and/or close streets around schools!)	Human resource investment	Short/long term (1-5 years)	Reduced GHG, etc. emissions around schools → lower rates of asthma and other respiratory conditions

Current Transportation (BHS Staff and Students)



Primary mode of transportation to school for BHS Staff
Source: BHS Staff Survey, 2024



Primary mode of transportation to school for students
Source: BHS Parent Travel Survey, 2022

Recommendation #1: Incentivizing Greener Staff Commuting

(as recommended by consultants in 2019)

4.1.1 Subsidized Staff Charlie Cards

4.1.2 Non-driving Subsidy

4.1.3 Repurposing off-street parking spaces

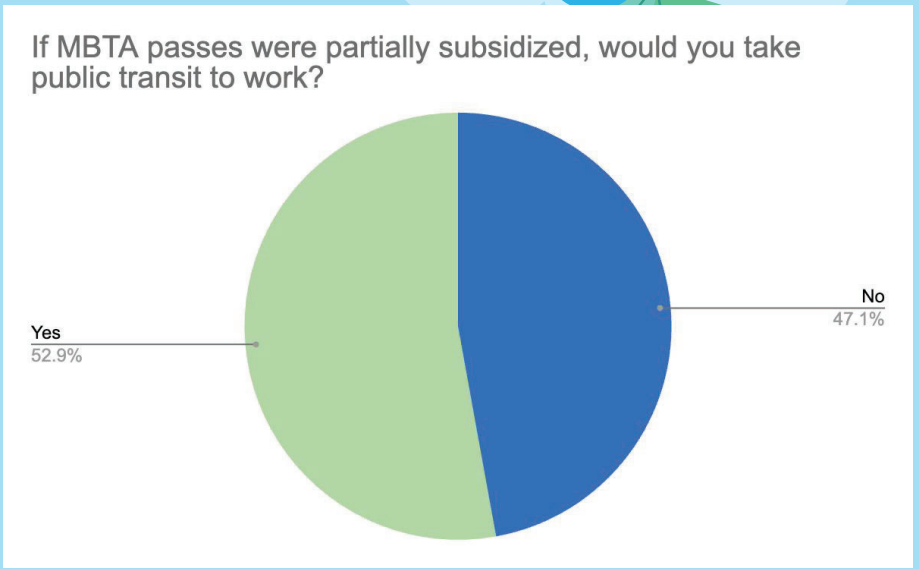
Biggest carbon emission reducer!

~ Incentivizing Greener Staff Commuting ~

4.1.1

Subsidized Staff Charlie Cards

- Subsidies are common (e.g. the City of Boston covers 65% of employee Charlie Cards)
- Of the over 71% of BHS staff currently drive, **53% said they would switch from driving to public transportation** if subsidized Charlie Cards were available
- With a 50% subsidy:
  - If 200 staff switched and got Monthly Link Passes ($90), it would cost 90,000$/year
- This would result in **significant emissions savings**:



If just 10% of PSB staff switched (200 people), it would save over 110 tons of CO_2 emissions per year.

If 20% switched, then this would save over 220 tons of CO_2 emissions per year.

~ Incentivizing Greener Staff Commuting ~

4.1.2

Non-driving Subsidy

Subsidizing Brookline staff who don't get a parking sticker (OR who own an electric vehicle) could increase the share of staff who commute car-free:

If 20% of staff switched to car-free commuting, it would save over 220 tons of CO2 emissions per year.

Cost:

- If the school provided a $50 monthly subsidy to teachers who don't use a parking permit/spot:
  - If 320 (~20% of staff) used it, this would cost $160,000 yearly
  - BUT: if only 170 parking spots were rented out at $90/month, this would actually generate a $15,300 surplus

~ Incentivizing Greener Staff Commuting ~

4.1.3

Repurposing off-street parking spaces

Parking inventory

- Most staff parking is on-street, but the school system currently has 200+ off-street parking spaces.
- These spaces are large resource devoted to non-sustainable commuting: the market value of an off-street parking space in Brookline is over $200 per month, so...
    - These parking spaces cost the town close to half a million dollars a year ($200/mo/space X 12 mos/year X 200+ spaces = $480,000+/year)

We recommend...

- Either renting out these spaces and using the income to incentivize car-free commuting OR
- Using the lots for something more productive and sustainable (e.g affordable housing units)

Recommendation #2: Electric Vans and Buses

2.1 Electric Vans (short-term)

2.2 Electric Buses (long-term)

4.2.1

Electric Vans (soon!)

ELECTRIC VAN ADVANTAGES

ELECTRIC VANS

We recommend switching all of our diesel fueled vans to electric vans (special education, field trips, METCO)

PARKING

- Charging stations which are more cost efficient and accessible
- Already have space for vans

MODEL FOR ELECTRIC SCHOOL BUSES

- Will shows potential for electric school buses
- Establishes infrastructure for buses

CLOSE SPORTS GAMES

- Instead of bus: fewer emissions

~ 4.2 Electric Vans and Buses ~

ELECTRIC VEHICLE INFRASTRUCTURE

- Electric Van Option:
    a. Mercedes-Benz Sprinter 15-seat Passenger Van retails for $66,530
    b. Model 1 offers customizable electric passenger vans- up to 20 seats.

4.2.2

Electric Buses (eventually)

~ 4.2 Electric Vans and Buses ~

ELECTRIC VEHICLE INFRASTRUCTURE + FUTURE ELECTRIC BUSES

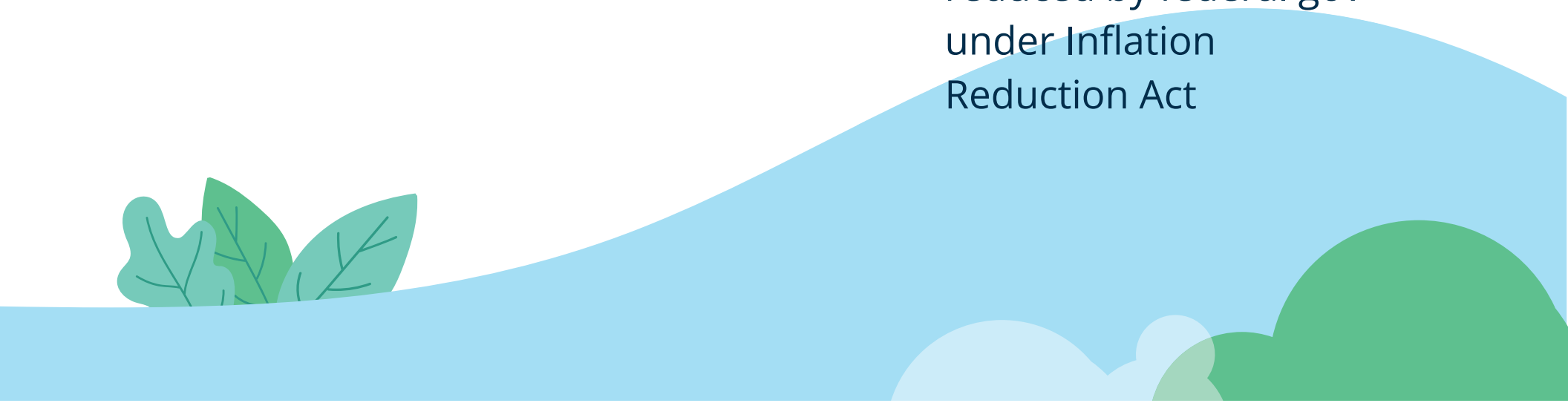
- Diesel bus gets 8 mpg
- 2 South Brookline buses run 50 miles/day → 12.5 gallons per day, 2,275 gallons per year
- 22.5 lbs of emissions/gallon → 26 tons CO_2 emissions/year

COSTS OF ELECTRIC BUSES

Costs of charging stations unclear

Space to park electric buses

Each bus costs around $400K but can be reduced by federal gov under Inflation Reduction Act



Recommendation #3: Bicycle Infrastructure Advocacy

1. Work with the Bicycle Advisory Committee and the Transportation Board to create safer bike infrastructure
2. Safer bike lanes will lead to reduced GHG emissions due to fewer car trips
3. More student and staff biking!

~ 4.3 Bicycle Infrastructure Advocacy ~

CURRENT BIKE INFRASTRUCTURE IS INADEQUATE

- Townwide bicycle infrastructure is inadequate and includes hardly any protected bike lanes

- Hundreds of students bike to school, yet they often lack safe routes as a result of existing car-centric infrastructure around Brookline schools

WE RECOMMEND

School Committee should adapt the sustainability policy to include:

- Endorsing Bicycle Advisory Committee's recommendations for safer bike lane infrastructure across the town (esp. near schools) and coordinate with BAC on implementation
  - At least one School Committee member should attend a Transportation Board meeting on a monthly basis to track the progress of implementing new bike lanes
- Working to close or severely restrict car traffic around BHS and elementary schools during school hours
- Prioritizing the promotion of biking and walking in transportation-related communications AND vocally support bike lane infrastructure currently being debated (e.g. Washington St.)
- Establishing bike parking standards @ BHS and elementary schools

If 100 students choose to bike rather than drive, we would save 28 tons of CO_2 from being emitted into the atmosphere on an annual basis.

If 100 staff choose to bike rather than drive, we would save 70 tons of CO_2 emissions.

Recommendation #4: Restricting Car Idling

- Schools should work to enforce the State's idling ban ($100 fine after five minutes)
  - Mandate anti-idling signs (currently at FRR, Driscoll; needed at other schools)
  - Monitor at each school should report idling (school administrators and other drop-off monitors)

Dream Recommendation: close streets around schools during school hours!

THANK YOU

PUBLIC SCHOOLS of BROOKLINE