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Grand Bay-Westfield – Corporate Energy Action Plan

GEMTEC Project: 101549.011

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Submitted to:

Town of Grand-Bay Westfield
609 River Valley Drive
Grand Bay-Westfield, NB E5K 1B3

Grand Bay-Westfield – Corporate Energy Action Plan

April 10, 2025
GEMTEC Project: 101549.011

GEMTEC Consulting Engineers and Scientists Limited
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Hanwell, NB, Canada
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April 10, 2025 File: 101549.011

Town of Grand Bay - Westfield
609 River Valley Drive
Grand Bay-Westfield, NB
E5K 1B3

Submitted via Email:

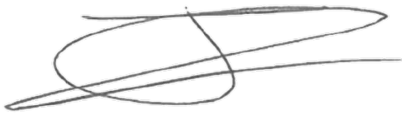
Attention: Mr. John Enns-Wind, Chief Administrative Officer (CAO)

Re: Grand Bay-Westfield – Corporate Energy Action Plan
609 River Valley Drive, Grand Bay-Westfield, NB

GEMTEC is please to submit this report for the Town of Grand Bay-Westfield – Corporate Energy Action Plan. This plan builds on the Town's long-standing commitment to sustainability and its leadership in energy management and conservation efforts. Driven by the Town's goal of establishing ambitious targets, this plan aims to reduce the municipality's environmental footprint while enhancing operational efficiency and cost-effectiveness.

If you have any questions regarding this report or if any of the information presented has been superseded by more recent data, please do not hesitate to contact our office for further clarification.

Respectfully submitted,



Jihad El Zamer, P.Eng., CAM
Municipal and Asset Management lead

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1.0 INTRODUCTION

The Town of Grand Bay-Westfield (Town) has a long-standing commitment to energy conservation and environmental stewardship. This following timeline, with the various initiatives and projects, showcases Grand Bay-Westfield's dedication to sustainability and leadership in addressing climate change challenges:

Early Initiatives (2003–2009)

- 2003: Began integrating energy-saving measures into building renovations.
- 2006: Adopted an anti-idling policy for its fleet.
- 2007: Partnered with NB Power to pilot LED streetlights.
- 2009: Conducted an energy audit of main facilities and the lagoon, resulting in a report identifying energy-saving measures to enhance efficiency and reduce GHG emissions.

Town of Grand Bay-Westfield
Grand Bay-Westfield, New Brunswick

Energy Audit

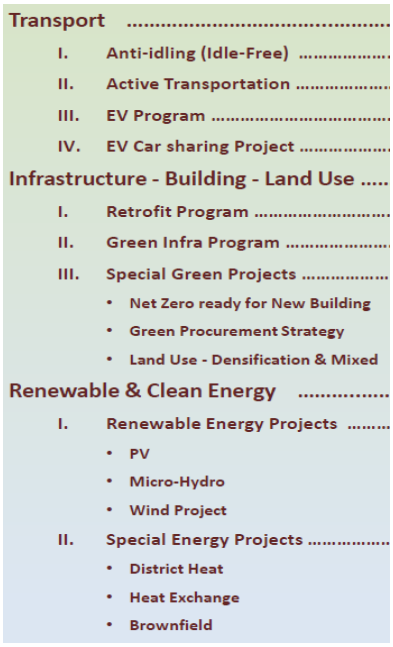
- 2009: Incorporated SMART CITY planning into the Municipal Plan By-law.

Strategic Partnerships and Projects (2010–2015)

- 2010: Joined the Atlantic Canada Regional Adaptation Collaboration (RAC).
- 2011:
    - Undertook a Regional LiDAR Mapping Project for predictive flood modeling.
    - Launched public awareness initiatives for water conservation and LED Christmas lighting.
    - Funded wetland rehabilitation at Blueberry Hill Nature Preserve.
- 2013:
    - Adopted smart growth sustainable subdivision community design.
    - Completed the Town-wide conversion to LED streetlights in partnership with NB Power.
    - Piloted thermal storage units through the NB Power Powershift Atlantic project.

- 2015:
    - Participated in QUEST's community energy planning initiative, focusing on implementation strategies.
    - Advancing Renewable Energy and GHG Reduction (2016–2019)
- 2016:
    - Installed the first Level 2 EV charging station at Brundage Point River Centre.
    - Participated in the UMNB Climate Change and Energy Initiative (CCEI), setting baselines for corporate and community GHG emissions in Carbon Dioxide Equivalent (CO2e).

- 2017: Adopted the 2010 National Building Code of Canada with new energy efficiency standards.
- 2018: Replaced Park lighting with LEDs, reducing Greenhouse Gas (GHG) emissions by 0.9 tCO2e.
- 2019:
    - Achieved status as an FCM (Federation of Canadian Municipalities) Partner for Climate Protection (PCP).
    - Adopted the Climate Change Action Plan with 2015 baseline energy use and GHG reduction targets:
        - ✓ 9% reduction for the Corporation by 2025 (38.7 tCO2e).
        - ✓ 7% reduction for the Community by 2025 (2,550 tCO2e), with a further 14% reduction by 2035 (5,100 tCO2e).



Recent Achievements (2020–2024)

- 2021:
    - Installed a 5.28 kW solar array for the sewage lagoon, cutting GHG emissions by 2.0 tCO2e.
    - Adopted the 2015 Canadian National Building Code and a new Community Climate Change Adaptation Plan.
- 2022:
    - Built a 70-kW solar array at the sewage lagoon, reducing corporate GHG emissions by 26.88 tCO2e under the Commercial Building Retrofit Program.
    - Amended Zoning By-law 122B, introducing a Flood Overlay Zone with a minimum floor elevation of 7.4m for new construction.
- 2023:
    - Met corporate GHG reduction goals.
    - Reduced peak power use by 50 kW during designated NB Power events, earning a $1,500 incentive.
- 2024:
    - Added its first EV to the Public Works Department fleet.
    - Secured “Charged for Change” funding to install five EV charging stations in partnership with Earth Day Canada and Aviva Canada.
    - Joined the Net Zero Communities Accelerator Program.
    - Received funding to update the Community GHG & Energy Action Plan.

In 2021, New Brunswick's Local Governance Reform expanded the boundaries of the Town of Grand Bay-Westfield, increasing its area by 39.35%, from 59.82 square kilometers to 83.36 square kilometers, and its population by 18%, from 4,967 to 5,866 residents.

In 2023, the Town transitioned to in-house snow control services, previously outsourced, leading to:

1- An expansion of its heavy equipment fleet, which primarily operates on diesel fuel.
2- The need for a new Works Depot to house staff and equipment for snow control.

With these changes in boundaries, demographics, and service delivery, the Town is updating its Energy Action Plan developed in 2019. GEMTEC Consulting Engineers and Scientists was engaged to support the Town in updating this plan by:

1- Developing a standard operating procedure and a tool to effectively track, record, and report the progress of GHG reduction on an annual basis relative to the 2030 action plan.

2- Reviewing and establishing the Town's baseline Greenhouse Gas (GHG) emissions to the year of 2023 (the year local governance reform took effect), including the results of actions previously taken. The baseline will incorporate the GHG associated with the increased Town boundaries.

3- Identifying opportunities to effectively reduce direct and indirect GHG's, associated with the Town's assets such as buildings and fleet, and the Town's programs and activities.

4- Establishing more aggressive targets to further reduce emissions by 2030 in consultation with the community. This includes implementing energy saving measures to reduce corporate emissions, and programs to incentivize the community in taking similar measures.

2.0 METHODOLOGY

GEMTEC followed a collaborative approach with the Town's staff and the community in conducting the scope of work. The following presents our tasks:

1- **Project kick-off meeting:** met with the Town's staff to identify the Project's stakeholders and establish the communication protocols. During this meeting, the scope of work and methodology was confirmed.

2- **Developed a standard operating procedure (SOP) template:** GEMTEC drafted a SOP To provide a clear, repeatable process for tracking, recording, and reporting annual GHG reduction progress toward the 2030 Energy Action Plan. See SOP in Appendix A.

3- **Developed a tool to effectively track, record, and report the progress of GHG reduction on an annual basis relative to the 2030 action plan:** GEMTEC customized a tool in Microsoft excel enabling the Town to effectively track its corporate energy consumption and calculate its corresponding GHGs. The tool also provides a report of these emissions by fuel type, department, and service. In this tool,
   - Electricity is tracked in kWh on monthly basis, based on NB Power bills.
   - Gasoline and Diesel are tracked in Liters based on receipts.
   - Propane is tracked in Liters, based on receipts.
   - Corporate solid waste is tracked in tonnes.

The tool provides the GHG coefficient associated with each type of fuel. This coefficient encompasses Carbon Dioxide (CO2), Methane (CH4), and Nitrogen Oxide (NO2), presented in kg of Carbon Dioxide equivalent (kg CO2e).

GHG emissions are calculated based on the fuel consumption and GHG coefficient, and the result is reported in equivalent tonnes of carbon dioxide (CO2e).

4- **Prepared an online public engagement survey:** the survey's objective is to gather community input. It consisted of eight questions and ran for a period of 27 days, from December 23, 2024, to January 20, 2025.

5- **Establish more aggressive goals and targets to further reduce emissions by 2030 in consultation with the community.** This includes implementing energy saving measures to reduce corporate emissions, and programs to incentivize the community in taking similar measures. the new baseline is based on the actual consumption data of the year 2024. **Section 7** of this report presents the new baseline with more details.

6- **Identified opportunities to effectively reduce direct and indirect GHG's, associated with the Town's assets.** GEMTEC identified effective options to reduce both direct and indirect greenhouse gas (GHG) emissions associated with the Town's assets, including buildings and fleet. **Section 4** of this report presents opportunities to reduce the corporate emission.

3.0 PUBLIC ENGAGEMENT SURVEY

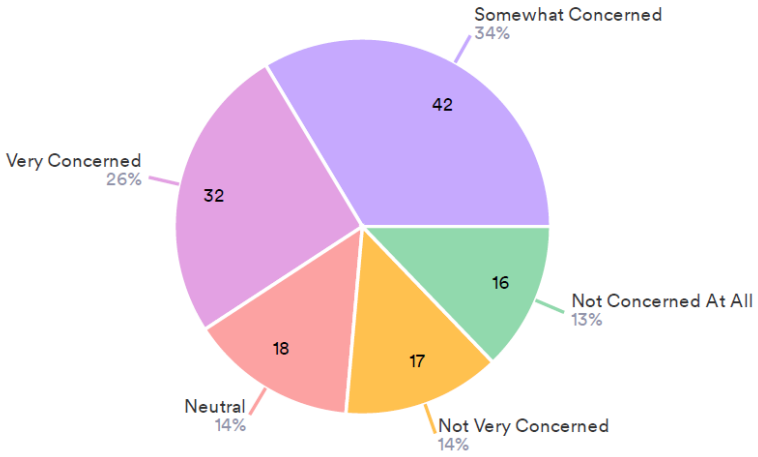
An online public engagement survey was developed to gather community input, consisting of eight questions and running for a period of 27 days, from December 23, 2024, to January 20, 2025.

A total of 125 residents participated, providing valuable insights on the topic. Below are some key questions and a graphical representation of the answers received.

The complete survey results are presented in Appendix B.

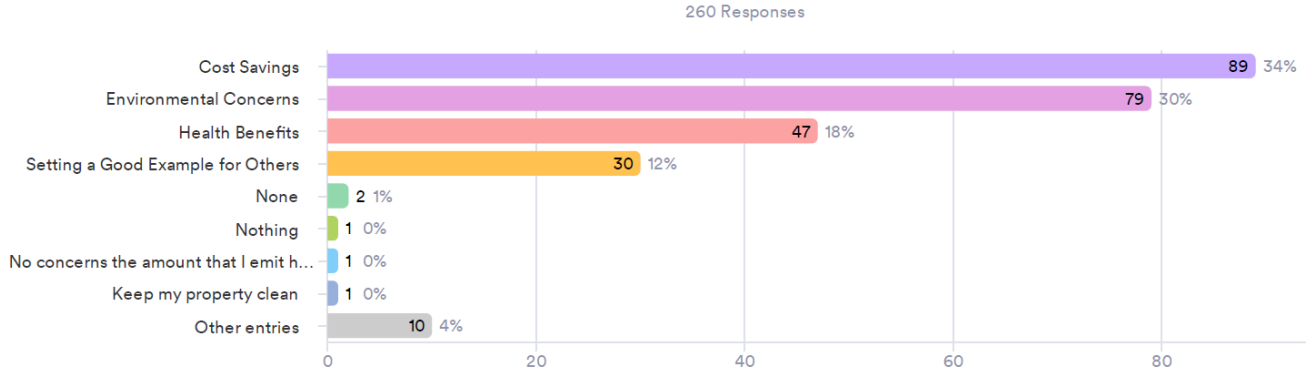
How concerned are you about the impact of Greenhouse Gas (GHG) Emissions on the environment and public health?

125 Responses



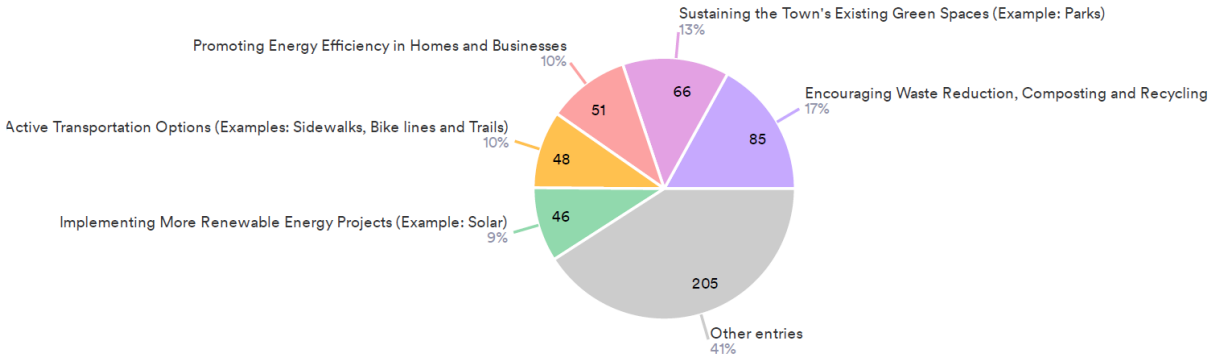
What motivates you to reduce Greenhouse Gas (GHG) Emissions? (Select all that apply)

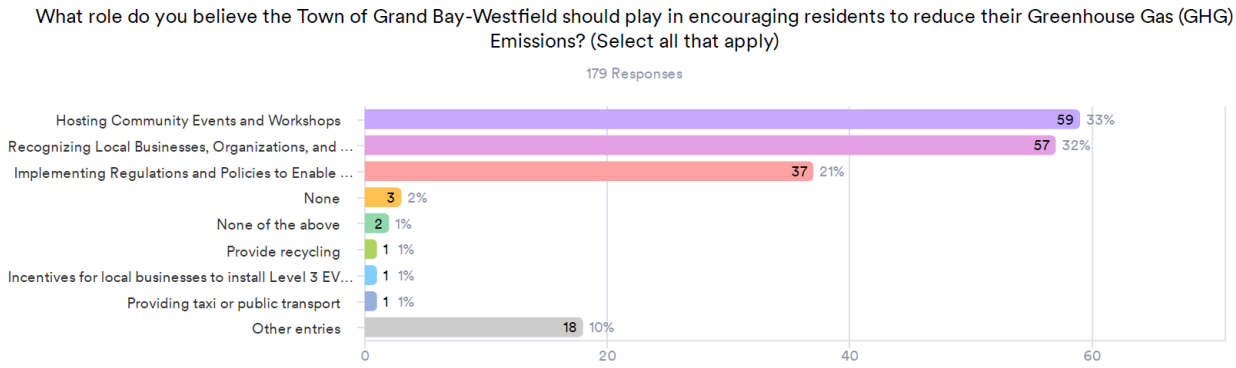
260 Responses



Which of the following actions should the Town of Grand Bay-Westfield prioritize to reduce Greenhouse Gas (GHG) Emissions? (Select all that apply)

501 Responses





4.0 GHG SAVINGS OPPORTUNITIES

The paragraphs below outline opportunities for reducing GHG emissions across various Town assets and operations, including corporate buildings, fleet, and overall municipal activities, as well as community-wide savings measures. By implementing some or all of these strategies, the Town can substantially lower energy consumption in its buildings, reduce utility costs, and promote more sustainable and environmentally responsible operations.

4.1 Corporate Buildings Energy Saving Measure

Making the Town's buildings more energy efficient involves a combination of improvements in insulation, heating and cooling systems, lighting, appliances, and building design. The audit conducted in 2009 still has a number of energy saving measures specific to each facility that can be implemented. Here are several strategies to increase energy efficiency, which can reduce energy costs, enhance comfort, and lower environmental impact:

4.1.1 Improve Insulation and Sealing

- **Improve Walls and Attics**: Add or upgrade insulation in attic areas to reduce heat loss in winter and keep cool air in during summer. Improving walls insulation is ideal when replacing siding. Rigid foam can be added to improve the walls' R-value.

- **Seal Air Leaks**: Use weather stripping and caulking to seal gaps around windows, doors, and other openings. Ensure that cracks, holes, and other sources of drafts are sealed to reduce energy loss.

- **Double- or Triple-Pane Windows**: when replacing existing windows at their end of life, install energy-efficient windows with low-E (low-emissivity) coatings that help keep heat inside during winter and block heat in summer.

- **Reflective Roofing Materials**: when replacing the roof, choose reflective or light-colored materials to reduce heat absorption.

4.1.2 Upgrade HVAC Systems

- **High-Efficiency HVAC**: Replace old baseboard heating and window unit cooling systems with Energy Star-rated units or high-efficiency models like heat pumps that provide better heating and cooling with less energy. Replace air handling units with electric heating coils with package heat pump units (example: Community Centrum unit).

- **Smart Building Controls**: Implement a building automation system to control lighting, HVAC, and other energy-consuming systems more efficiently. These systems can monitor energy usage and adjust settings based on occupancy and environmental conditions.

- **Regular Maintenance**: Schedule routine maintenance to ensure that your HVAC system is running efficiently. Change air filters quarterly and clean ducts to improve airflow.

4.1.3 Improve Lighting Efficiency

- **LED Lighting**: Replace incandescent or older fluorescent bulbs with energy-efficient LED bulbs. LEDs use up to 75% less energy and last significantly longer.

- **Occupancy Sensors**: Install motion sensors or automatic timers in less frequently used areas like hallways, bathrooms, and storage rooms to ensure lights are only on when needed.

- **Natural Lighting**: Maximize natural light by opening blinds to reduce the need for artificial lighting during the day.

4.1.4 Energy-Efficient Appliances and Electronics

- **Energy Star Appliances**: Upgrade to Energy Star-rated appliances (refrigerators, dishwashers, water heaters, etc.), which consume less energy compared to older models.

- **Power Management**: Use smart power strips that automatically turn off electronics when not in use and unplug devices that are not needed (standby power can waste energy).

4.1.5 Adopt Renewable Energy Solutions

- **Solar Panels**: Install more solar photovoltaic panels to generate electricity on-site, reducing reliance on the grid. Solar panels can be installed on roofs of gazebos and building structures throughout the Town. Solar power can be utilized for EV charging stations in public areas.

- **Geothermal Systems**: Geothermal heating and cooling systems can offer renewable energy alternatives, especially for new construction and in floor heating systems.

4.1.6 Enhance Building Envelope

- **Green Roof or Cool Roof**: Install a green roof with vegetation or a cool roof with reflective materials to reduce heat absorption and improve insulation.

- **Exterior Shading**: Use awnings, shade trees, or window films to reduce heat gain through windows in the summer.

4.1.7 Reduce Energy Waste in Operations

- **Energy Audits**: Conduct regular energy audits to identify inefficiencies in operations and develop a targeted action plan to address them. Ensuring compliance with the desired level of service can further optimize energy use. For example, instead of following a fixed schedule for lawn maintenance, set guidelines to cut the grass only when it reaches a specified height, reducing unnecessary fuel and equipment use.

- **Utilize EV in fleet where possible**: Transitioning to electric vehicles (EVs) within the fleet can significantly reduce fuel consumption and greenhouse gas emissions. Prioritize EV adoption for light-duty vehicles, maintenance vehicles, or frequently used transport where charging infrastructure is available. Consider hybrid or plug-in hybrid options in cases where full EV integration is not yet feasible. GEMTEC provided a payback calculator for EV so the Town can make informed decisions when renewing its fleet.

- **Employee Engagement**: Actively engage and train staff or facility occupants on energy-saving best practices. Encourage simple yet effective habits such as turning off lights when leaving a room, properly managing heating and cooling settings, using energy-efficient appliances, and reducing water waste. Implementing an employee awareness program or incentives for energy-conscious behavior can further enhance participation and long-term efficiency improvements.

4.1.8 Incentives and Rebates

- **Take Advantage of Incentives**: Many governments and utilities offer rebates or grants for energy-efficient upgrades. Research what programs are available for municipalities and use them to offset the cost of energy improvements.

4.2 Community Saving Measure

Encouraging the community to save energy requires a combination of awareness, education, incentives, and community engagement. The following presents a comprehensive approach to help promote energy conservation in your community:

4.2.1 Awareness Campaigns

- **Public Information Sessions**: Host workshops or seminars on the importance of energy efficiency, covering topics such as reducing energy bills, environmental benefits, and available incentives. These sessions can be incorporated during open Council meetings.

- **Social Media and Websites**: Use social media platforms, websites, and local news outlets to share tips on energy conservation. Regular posts about small changes that make a big difference can help spread awareness.

- **Community Bulletin Boards**: Post energy-saving tips and event announcements on bulletin boards in community centers, schools, and other public spaces.

- **Educational Materials**: Develop pamphlets, infographics, and videos that explain how simple actions (like turning off lights, using energy-efficient appliances, or sealing air leaks) can lead to significant energy savings. Water and electricity saving tips and good habits include, but are not limited to:

    - Reduce water consumption. Don't leave the water running.
    - Don't overfill your pots and kettles with hot water to boil it.
    - Don't take long showers – (pumping water, heating water treating wastewater).
    - Use programmable thermostats with setback temperatures.
    - Walk more- use your bike, scooter, etc.
    - Fixing drips promptly—one dripping tap or leaky toilet can waste thousands of liters of water per year.
    - Install low-flow fixtures, such as low-flow showerheads, faucets, and dual-flush toilets, to reduce water usage.
    - Use cold water for washing clothes when possible, as heating water consumes significant energy.
    - Run dishwashers and washing machines with full loads to maximize efficiency and reduce water and electricity use.
    - Unplug electronics and chargers when not in use to prevent phantom power consumption.
    - Switch to LED bulbs, which use significantly less energy and last longer than incandescent or compact fluorescent bulbs.
    - Make the most of natural light by opening blinds and curtains during the day instead of using artificial lighting.
    - Use power strips to easily switch off multiple devices when not in use.
    - Keep refrigerator and freezer doors closed as much as possible to maintain efficiency.

- Improve home insulation to reduce the need for excessive heating and cooling.
- Collect rainwater for watering plants and gardens instead of using well water that requires pumping.
- Use motion sensors or timers for outdoor lighting to reduce unnecessary energy consumption.
- Purchase energy-efficient appliances with ENERGY STAR ratings when replacing old ones.
- Air-dry clothes instead of using a dryer when possible.
- Check and clean HVAC and dryers filters regularly to maintain efficiency and reduce energy waste.

4.2.2 Energy Efficiency Competitions

- **Energy-Saving Challenges**: Organize friendly competitions between households, neighborhoods, schools, or local businesses to see who can reduce energy usage the most over a set period. Offer prizes such as energy-efficient products (LED bulbs, smart thermostats) or community recognition.
- **School Competitions**: Engage students with school energy-saving competitions or projects, like designing energy-efficient homes or calculating the energy savings from a class project. This can instill habits early in life and engage families through the students.

4.2.3 Incentives and Rebates

- **Utility Incentives**: Partner with local utility companies to promote rebates on energy-efficient appliances, lighting, and home insulation. Highlight available subsidies for installing renewable energy systems such as solar panels.
- **Recognition Programs**: Recognize businesses or households that make significant efforts to reduce their energy consumption. This could include awarding them as "Energy Champions" and sharing their stories publicly to encourage others.

4.2.5 Engage Local Schools

- **Energy Saving Campaigns in Schools**: Encourage schools to adopt energy-saving programs by turning off lights in empty classrooms, unplugging electronics at the end of the day, or setting efficient heating and cooling policies.
- **Student-Led Projects**: Support student groups or green clubs to take on energy-saving projects in schools or the community, such as organizing clean energy events or leading recycling programs.

4.2.6 Community Energy Events

- **Energy Fair**: Host an annual energy fair where local businesses, utility providers, and energy experts can display energy-saving products, renewable energy technologies, and conservation tips.

- **Neighborhood Energy Walks**: Arrange tours of energy-efficient homes or buildings in the community to demonstrate energy-saving techniques and technologies.

4.2.6 Promote Renewable Energy Options

- **Solarize Campaigns**: Create a community-wide initiative to help homeowners and businesses install solar panels. Bulk purchasing through a "Solarize" campaign can lower the costs, and community workshops can explain the benefits and incentives.

- **Renewable Energy Workshops**: Provide educational sessions on renewable energy sources, like solar, wind, or geothermal, and how individuals can take advantage of these technologies.

4.2.7 Use Public Spaces as Demonstration Areas

- **Green Buildings**: Retrofit the Town's buildings with energy-efficient technologies such as LED lighting, solar panels, and upgraded HVAC systems. Use these as demonstration sites to inspire residents.

- **Public Signage**: Place signs in parks and public buildings that highlight energy-saving measures taken and how much energy they save, encouraging others to follow suit.

4.2.8 Energy-Saving Pledge

- **Community Pledge Programs**: Launch a pledge program where community members commit to taking specific actions to reduce their energy use. For example, they might pledge to switch to LED bulbs, reduce water heating temperatures, or cut down on heating and cooling use.

- **Energy Saving Ambassadors**: Recruit community members to serve as energy ambassadors who promote energy-saving behaviors to friends, neighbors, and local organizations.

4.2.9 Partnerships with Local Businesses

- **Green Business Certifications**: Create a certification program for local businesses that commit to energy efficiency. Certified businesses could receive recognition on the town's website or in local media, as well as stickers or plaques to display at their location.

- **Business Workshops**: Partner with local chambers of commerce or business groups to host energy-efficiency workshops, helping local businesses identify energy-saving opportunities and available incentives.

4.2.11 Measure and Share Successes

- **Community Energy Dashboard**: Develop an online community energy dashboard to track energy consumption, energy savings, and the adoption of renewable energy sources across the community. This platform can also serve to highlight and celebrate progress toward the Town's energy and sustainability goals. Currently, Grand Bay-Westfield has 17 solar power installations producing a combined output of approximately 241 kilowatts. This equates to 41.5 watts of solar energy per capita—66 percent higher than the per capita solar generation in Fredericton, which stands at around 25 watts per person.

- **Energy Savings Reports**: Publish regular reports or newsletters highlighting community energy savings, featuring success stories of individuals, businesses, or schools that have significantly reduced their energy consumption.

4.2.12 Encourage Public Transportation and Green Commuting

- **Active Transportation Infrastructure:** Provide the infrastructure for active transportation such as bike lanes, sidewalks, trails, and paths.

- **Public Transport Incentives**: Promote public transportation, carpooling, biking, and walking to reduce the community's overall energy consumption from vehicles.

- **Electric Vehicle (EV) Programs**: Support the installation of EV charging stations and promote the use of electric vehicles by highlighting energy and cost savings compared to traditional fuel vehicles.

By combining education, incentives, and community engagement, the Town of Grand Bay-Westfield can effectively motivate residents to adopt energy-saving habits and foster a culture of sustainability.

5.0 CORPORTE EMISSIONS BASELINE

GEMTEC developed a customized GHG calculator for the Town of Grand Bay-Westfield in the form of an Excel-based tool. This calculator captures the Town's annual energy consumption across various municipal services and operations. Town staff can input actual usage data for different fuel types—such as propane, diesel, gasoline, and electricity—as well as the total tonnage of corporate solid waste, which contributes to methane emissions. The tool provides a comprehensive overview of the Town's greenhouse gas emissions and supports ongoing tracking and reduction efforts. In 2024, the Town's calculated corporate emissions are approximately 425 tonnes. Figures 1, 2, and 3 present these emissions by fuel type, department, and service.

Figure 1

GHG Totals by Fuel Type		
Fuel Type	**GHG Total**	**% From Total**
Propane	10	2%
Diesel	97	23%
Gasoline	59	14%
Electrical	254	60%
Solid Waste	7	2%
Total	**425**	**100%**

Figure 2

GHG Totals by Department		
Fuel Type	**GHG Total**	**% From Total**
Corporate	64	15%
Public Works	171	40%
Fire	58	14%
Recreation	40	9%
Utility	91	21%
Total	**425**	**100%**

Figure 3

GHG Totals by Service		
Fuel Type	**GHG Total**	**% From Total**
Administration	72	17%
Snow Control	83	19%
Road Maintenance	52	12%
Fire Response	54	13%
Recreation	6	1%
Waste Water Treatment	91	21%
Street Lighting	28	7%
Municipal Waste	7	2%
Community Space	32	8%
Total	**425**	**100%**

6.0 IMPACT OF CLIMATE CHANGE

Climate change is projected to impact energy consumption and greenhouse gas (GHG) emissions in the Town of Grand Bay–Westfield, primarily due to anticipated shifts in heating and cooling demands. Degree days are based on the assumption that when the outside temperature is 65°F (18.3°C), we don't need heating or cooling to be comfortable. Degree days are the difference between the daily temperature mean, (high temperature plus low temperature divided by two) and 65°F. If the temperature mean is above 65°F, we subtract 65 from the mean and the result is Cooling Degree Days. If the temperature mean is below 65°F, we subtract the mean from 65 and the result is Heating Degree Days.

Example1: The high temperature for a particular day was 90°F and the low temperature was 66°F. The temperature mean for that day was: (90°F + 66°F) / 2 = 78°F

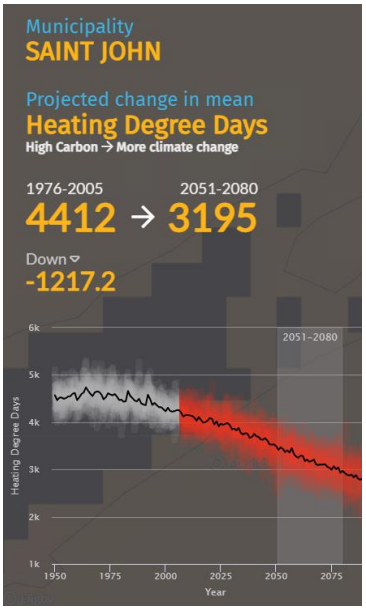
Because the result is above 65°F: 78°F - 65°F = 13 Cooling Degree Days.

Example 2: The high temperature for a particular day was 33°F and the low temperature was 25°F. The temperature mean for that day was: (33°F + 25°F) / 2 = 29°F

Because the result is below 65°F: 65°F - 29°F = 36 Heating Degree Days.

According to Climate Atlas projections for Saint John, by 2075, compared to 2005:

- Heating Degree Days (HDDs) are expected to decrease by 1,217 DD (a 27.5% reduction).
- Cooling Degree Days (CDDs) are expected to increase by 266 DD, nearly six times the current CDD levels.



On average, HDDs are expected to decline by 17.5 DD per year, while CDDs are projected to rise by 4 DD per year.

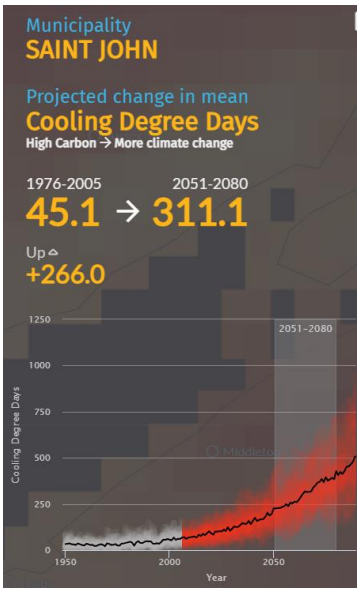
Although Grand Bay–Westfield-specific projections are unavailable, it is reasonable to expect similar trends due to its geographic proximity to Saint John.

These changes indicate a reduced need for heating during colder months but an increased demand for air conditioning in warmer months. However, since most Town-owned occupied facilities are heated but not air-conditioned, the overall impact of increasing CDDs is expected to be lower than the impact of decreasing HDDs.

Over the next 10 years, HDDs are projected to decline by approximately 175 DD (4.3%), potentially leading to 4-5% savings in heating energy consumption. Correspondingly, GHG emissions related to heating and cooling operations are expected to decrease by 4-5%.

7.0 NEW EMMISSIONS TARGET

The Town's growth—whether in land area or population—directly influences the demand for municipal services, which in turn affects greenhouse gas (GHG) emissions. Beyond growth, the introduction of new services, such as municipal solid waste collection, or the construction of new energy-consuming facilities, can also increase the Town's corporate emissions.



As a result, the Town's commitment to reducing corporate GHG emissions should reflect both population changes and the scope of services provided.

Currently, Grand Bay-Westfield has an estimated population of 5,800. In 2024, corporate emissions totaled 425 tonnes of CO_2e, which translates to approximately 73.3 kilograms of CO_2e per capita.

Looking ahead, the Town is committed to reducing its corporate greenhouse gas (GHG) emissions by 35 percent by the year 2035, using 2024 as the baseline year. The emissions reduction trajectory is outlined in the table below, which demonstrates a gradual decline in emissions through incremental efforts in the early years, followed by more significant reductions as larger initiatives are implemented. This target is achievable through the adoption of the GHG reduction measures identified in Section 4 of this report, which focus on improving energy efficiency across municipal operations and increasing the generation and use of renewable energy. These actions will support a steady decline in emissions and contribute to the Town's long-term sustainability goals. It is important to note, these reductions are highly impacted by NB Power's Electricity Emissions Intensity, which is forecasted to be reducing by approximately 60% by 2035.

Year	Emissions Goal	% Emissions Reductions
2024	425	Baseline
2025	423	0.43%
2026	424	0.22%
2027	422	0.65%
2028	409	4%
2029	404	5%
2030	286	33%
2031	278	35%
2032	286	33%
2033	275	35%
2034	285	33%
2035	276	35%

8.0 CLOSURE

Thank you for the opportunity to collaborate with the Town of Grand Bay-Westfield on the development of this Corporate Energy Action Plan. We are committed to supporting the Town in achieving its sustainability and greenhouse gas reduction goals, and we appreciate the trust placed in GEMTEC to assist in this important initiative.

We are confident that the strategies outlined in this Plan will provide a strong foundation for informed decision-making, measurable progress, and long-term environmental and financial benefits for the Town.

Should you have any questions or require further clarification on any aspect of the proposed work, please do not hesitate to contact the undersigned. We look forward to continued collaboration and the successful implementation of the Plan.

Sincerely,

Jihad El Zamer, P.Eng., CAM
Municipal and Asset Management lead

APPENDIX A

Standard Operating Procedure

Standard Operating Procedure (SOP) for Annual GHG Reduction Tracking

Document Control

- **Title:** GHG Reduction Tracking SOP
- **Prepared by:**
- **Date:**
- **Version:**

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1. Purpose

- To provide a clear, repeatable process for tracking, recording, and reporting annual GHG reduction progress toward the 2030 Energy Action Plan.

2. Scope

- This SOP applies to all units responsible for GHG-producing assets within the Town of Grand Bay-Westfield.

3. Roles and Responsibilities

- **Treasurer:** Oversee data collection, review emissions calculations, and report annual progress.
- **Environmental Specialist:** Maintain data integrity, conduct emissions calculations, and generate reports.

4. Definitions

- **GHG:** Greenhouse gases, including CO2, CH4, and N2O.
- **Emission Factors:** Constants used to convert fuel consumption into GHG emissions (e.g., kg CO2e per liter of diesel).

5. Procedure

A. Asset Identification and Classification

- **5.1.1** List all assets that consume fuels or contribute to GHG emissions (e.g., fleet vehicles, buildings, solid waste).
- **5.1.2** Record the type of fuel used by each asset (e.g., diesel, gasoline, electricity).
- **5.1.3** Record solid waste tonnage.

B. Data Collection

- **5.2.1** Track fuel usage monthly for each asset.
- **5.2.2** Record data in the designated tool (Excel calculator developed by GEMTEC for the Town of Grand Bay-Westfield for the purpose of recording energy consumption and calculating GHG emissions).
- **5.2.3** Use established emissions factors to calculate GHG emissions for each fuel type.

C. Data Verification

- **5.3.1** Verify accuracy by cross-referencing fuel purchase records and fuel logs.
- **5.3.2** Validate calculation formulas within the tool annually or upon updates to emissions factors.

D. Monitoring Progress

- **5.4.1** The baseline emissions value is based on the year 2023
- **5.4.2** Compare quarterly GHG emission data against baseline values.
- **5.4.3** Identify variances and investigate contributing factors.

E. Reporting

- **5.5.1** Prepare an annual internal report summarizing reductions achieved to date.
- **5.5.2** Submit the annual GHG Reduction Report, including year-over-year comparison and alignment with the 2030 target.

F. Review and Continuous Improvement

- **5.6.1** Annually review the SOP to incorporate changes in technology, asset inventory, or emissions factors.
- **5.6.2** Collaborate with departments to optimize practices for GHG reduction.

6. Record-Keeping and Documentation

- Maintain records for all data collected, calculations performed, and reports generated for a minimum of 5 years.

7. References

- Statistics Canada.
- The Government of Canada published grid electricity emission intensities factors.
- PCP Protocol, Canadian Supplement to the International Emissions Analysis Protocol

APPENDIX B

Public Engagement Survey

Grand Bay-Westfield

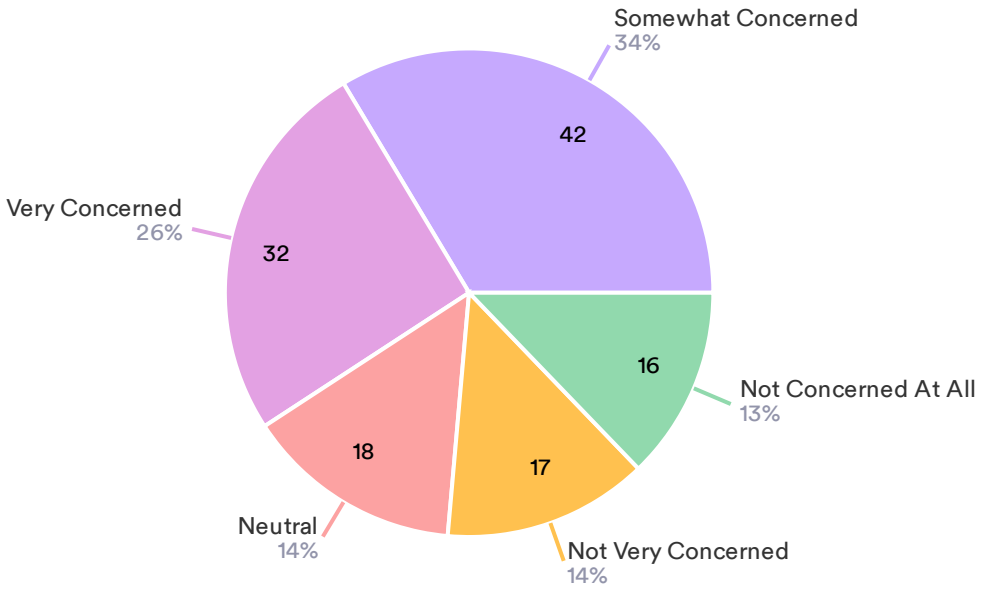
NEIGHBOURS BY NATURE

Greenhouse Gas (GHG) Emissions Reduction Survey

Greenhouse Gas (GHG) Emissions Reduction Survey

How concerned are you about the impact of Greenhouse Gas (GHG) Emissions on the environment and public health?

125 Responses

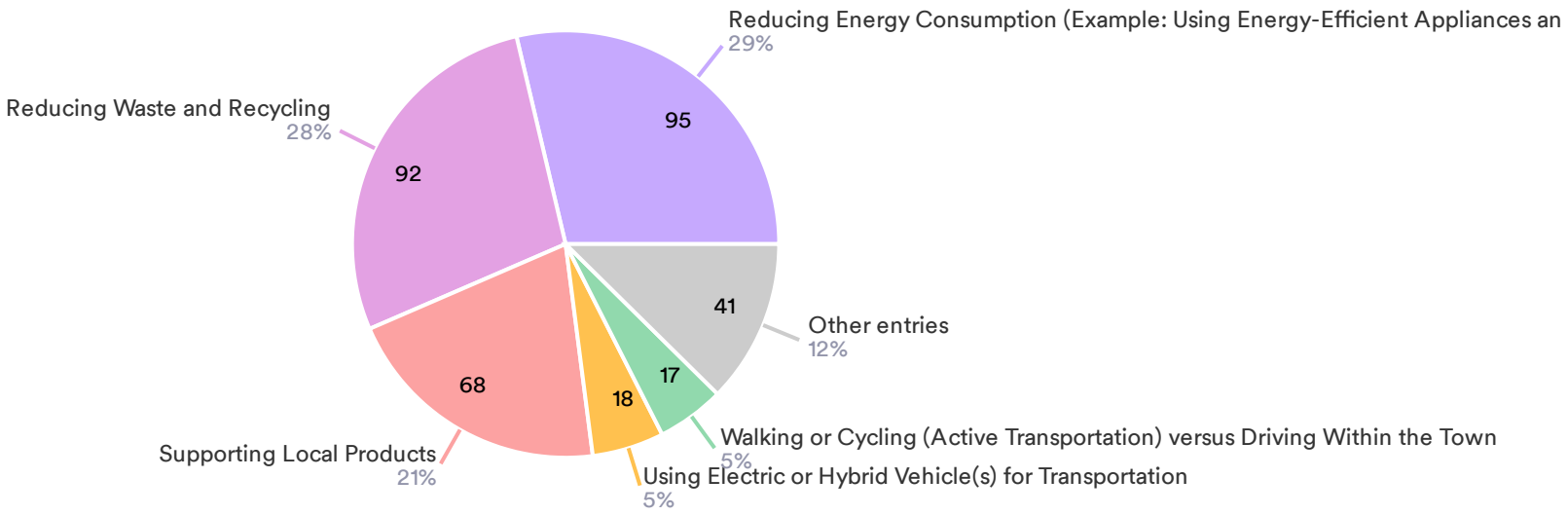


Data	Response	%
Somewhat Concerned	42	34%
Very Concerned	32	26%
Neutral	18	14%
Not Very Concerned	17	14%
Not Concerned At All	16	13%

Greenhouse Gas (GHG) Emissions Reduction Survey

Which of the following actions do you currently take to reduce your personal Greenhouse Gas (GHG) Emissions? (Select all that apply)

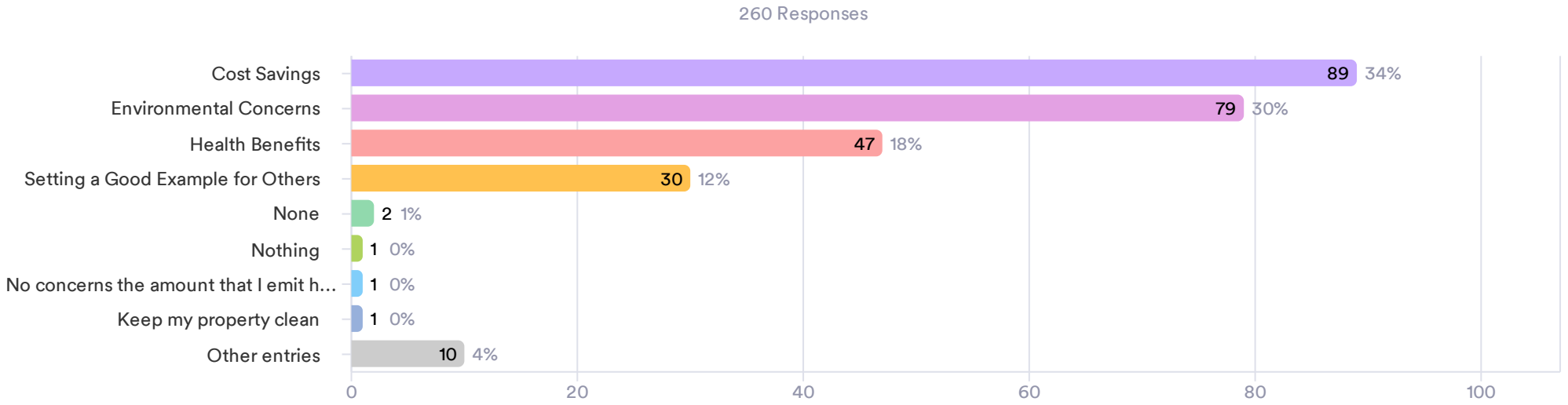
331 Responses



Data	Response	%
Reducing Energy Consumption (Example: Using Energy-Efficient Applia...	95	29%
Reducing Waste and Recycling	92	28%
Supporting Local Products	68	21%
Using Electric or Hybrid Vehicle(s) for Transportation	18	5%
Walking or Cycling (Active Transportation) versus Driving Within the To...	17	5%
Other entries	41	12%

Greenhouse Gas (GHG) Emissions Reduction Survey

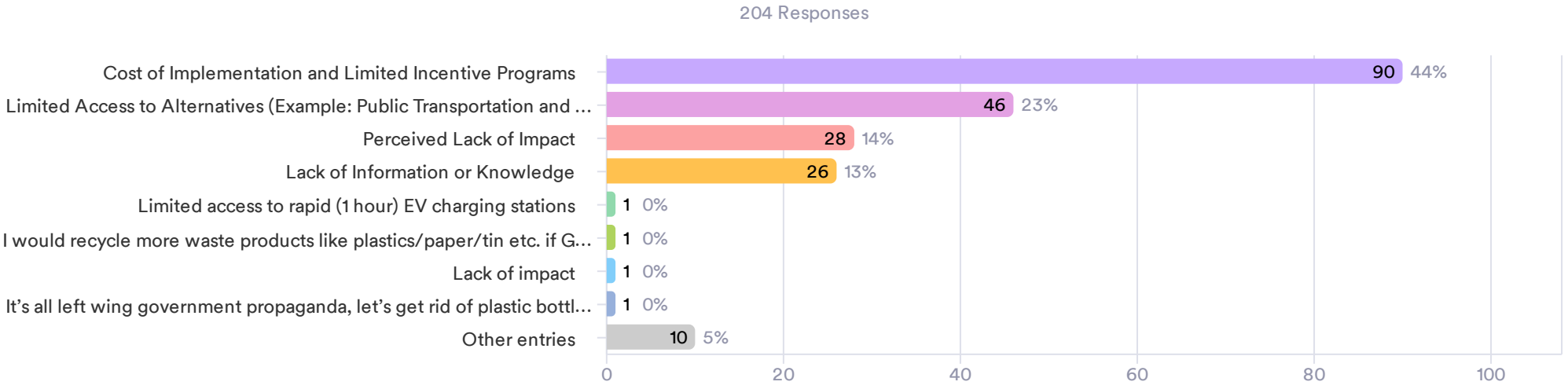
What motivates you to reduce Greenhouse Gas (GHG) Emissions? (Select all that apply)



Data	Response	%
Cost Savings	89	34%
Environmental Concerns	79	30%
Health Benefits	47	18%
Setting a Good Example for Others	30	12%
None	2	1%
Nothing	1	0%
No concerns the amount that I emit have no impact. The carbon tax st...	1	0%
Keep my property clean	1	0%
Other entries	10	4%

Greenhouse Gas (GHG) Emissions Reduction Survey

What are the main barriers that prevent you from taking more actions to reduce your Greenhouse Gas (GHG) Emissions? (Select all that apply)

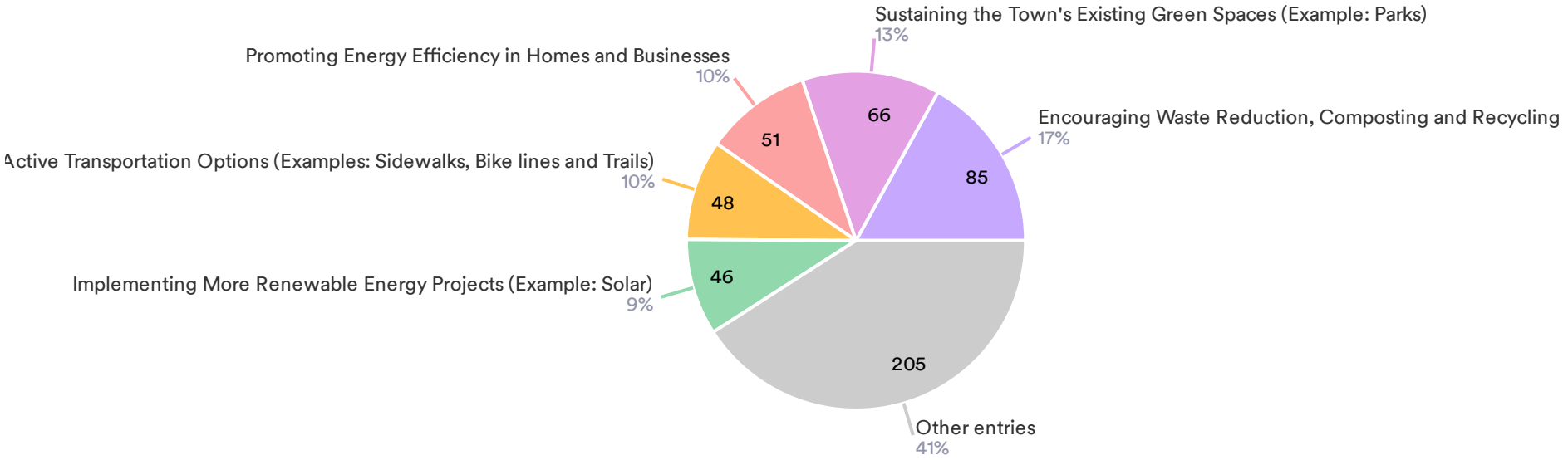


Data	Response	%
Cost of Implementation and Limited Incentive Programs	90	44%
Limited Access to Alternatives (Example: Public Transportation and Mor...	46	23%
Perceived Lack of Impact	28	14%
Lack of Information or Knowledge	26	13%
Limited access to rapid (1 hour) EV charging stations	1	0%
I would recycle more waste products like plastics/paper/tin etc. if GB...	1	0%
Lack of impact	1	0%
It's all left wing government propaganda, let's get rid of plastic bottles i...	1	0%

Greenhouse Gas (GHG) Emissions Reduction Survey

Which of the following actions should the Town of Grand Bay-Westfield prioritize to reduce Greenhouse Gas (GHG) Emissions? (Select all that apply)

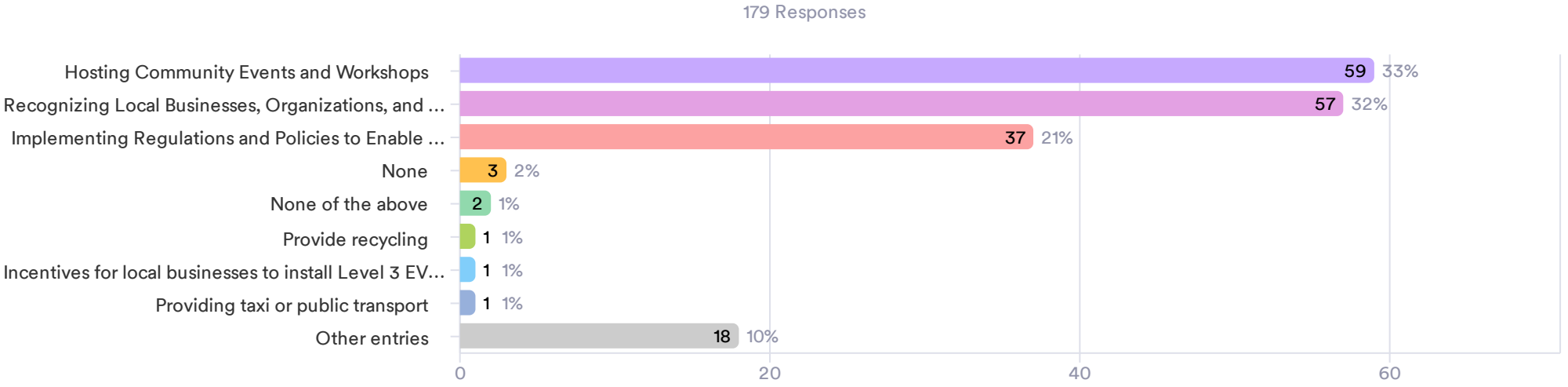
501 Responses



Data	Response	%
Encouraging Waste Reduction, Composting and Recycling	85	17%
Sustaining the Town's Existing Green Spaces (Example: Parks)	66	13%
Promoting Energy Efficiency in Homes and Businesses	51	10%
Enhancing Active Transportation Options (Examples: Sidewalks, Bike lin...	48	10%
Implementing More Renewable Energy Projects (Example: Solar)	46	9%
Other entries	205	41%

Greenhouse Gas (GHG) Emissions Reduction Survey

What role do you believe the Town of Grand Bay-Westfield should play in encouraging residents to reduce their Greenhouse Gas (GHG) Emissions? (Select all that apply)

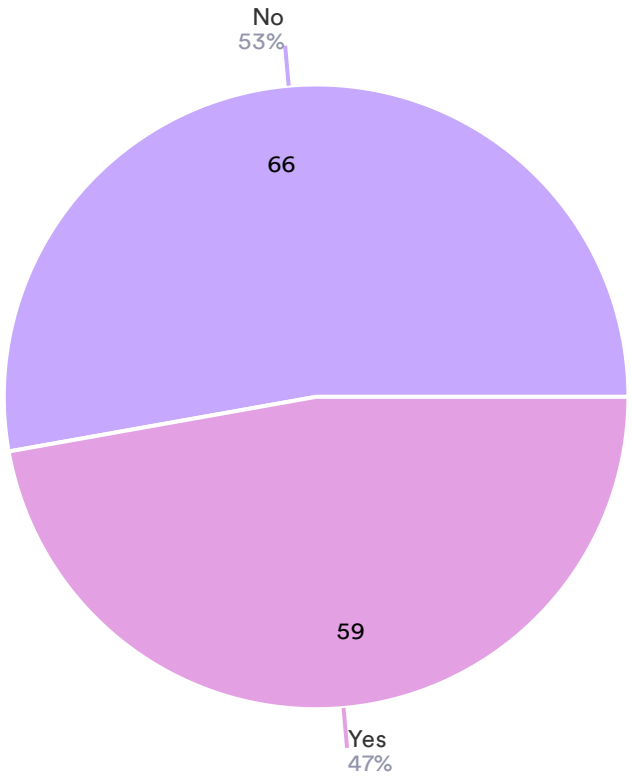


Data	Response	%
Hosting Community Events and Workshops	59	33%
Recognizing Local Businesses, Organizations, and Households for their ...	57	32%
Implementing Regulations and Policies to Enable Responsible Growth ...	37	21%
None	3	2%
None of the above	2	1%
Provide recycling	1	1%
Incentives for local businesses to install Level 3 EV chargers	1	1%
Providing taxi or public transport	1	1%
Other entries	18	10%

Greenhouse Gas (GHG) Emissions Reduction Survey

Would you be interested in participating in community workshops or events focused on reducing Greenhouse Gas (GHG) Emissions?

125 Responses



Data	Response	%
No	66	53%
Yes	59	47%

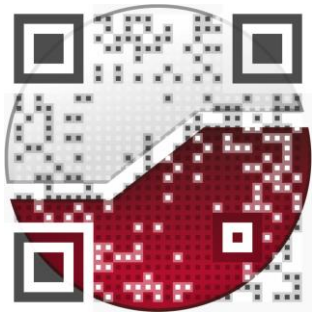
Greenhouse Gas (GHG) Emissions Reduction Survey

Please share any additional ideas or suggestions you have regarding Greenhouse Gas (GHG) Emissions reduction efforts in Grand Bay-Westfield.

40 Responses- 85 Empty

Data	Responses
How about having a " model home" that has reduced GHE that everyone sees	1
In my opinion, Grand Bay-Westfield's leading cause of GHG emissions is travel to Saint John, therefore the best way to reduce GHGs would be to reduce travel into the city. This could be done in two ways: 1. Reduce the towns reliance on the cities goods and services. 2. Offer frequent and convenient public transportation.	1
I believe all GBW'ers should be thinking Solar. It would be great to see the town develop an incentive or reward for those having Solar installed or already using Solar.	1
Don't waist money on this. Gbw is not the problem	1
Stop wasting tax payer money on projects that don’t return tax dollars to the community.	1
Improving all recycling and compost for residents and businesses. Reducing waste water.	1
The town should spend more of tax payers money on more important things like fixing the roads rather than wasting it on electric vehicles that are useless.	1
The cost of living and our taxes are currently already deflating the ability to live lives with some comfort and dignity. Lighting trees is not decreasing the towns footprint so dont ask residents to cough up more to be wasted on more statues and lights. Taxed to death with little to show for it by way of services already	1
Other entries	32

experience • knowledge • integrity



civil	civil
geotechnical	géotechnique
environmental	environnementale
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité