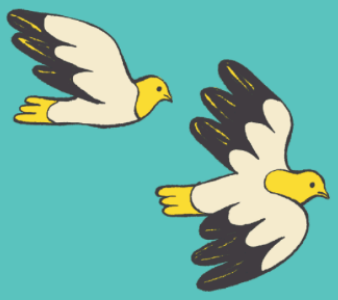
MOTIVATING NET-ZERO ACTION IN RURAL, REMOTE, AND INDIGENOUS COMMUNITIES



Municipality of Wawa

NET-ZERO ACTION PATHWAY

QUEST Prepared by QUEST Canada

1. COMMUNITY CONTEXT

Based on the shores of Wawa Lake in Ontario's Algoma District, Wawa is a small town with a population of approximately 2,700. Situated along the Trans-Canada Highway, it sits between the larger cities of Sault Ste. Marie and Thunder Bay. Various boards and committees (e.g., Algoma Public Health, Heritage Committee, and Economic Development and Tourism Advisory Committee) and the Municipal Council, composed of the Mayor and four Councillors, govern the municipality.

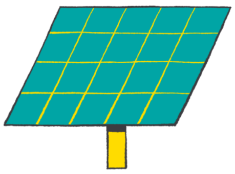
Significant temperature drops and cold climate have presented themselves as important factors in infrastructure and transportation planning. The community faces challenges such as electric vehicle feasibility and extra costs for suitable heat pumps due to the cold winter months. Additionally, Wawa's surrounding gold mines and mining industry maintain deep ties to the town's identity, economy, and history. Local residents may be cautious or skeptical of new technologies such as heat pumps and electric vehicles, reflecting a preference for communication strategies that meet their needs.

Wawa is connected to the provincial power grid and houses a large number of hydroelectric generation infrastructure, including a Hydro One transmission connection centre outside its municipal boundaries and multiple hydroelectric dams and infrastructure. The East-West Tie transmission line, a major transmission line that contributes a significant amount of energy to the grid, runs directly through the community.

Participants also report benefiting from Ontario's microFIT Program and utilizing solar energy. Approximately ⅓ of residents rely on pellets or wood as a primary or secondary heat source with community interest in using biomass. As most of the power to the community comes from hydro dams it is already considered "green" in a lot of contexts, which poses difficulties when applying to grants focused on greenhouse gas reduction as Wawa fails to meet qualifying thresholds.

2. WHAT WE HEARD FROM THE COMMUNITY

2.1 Top Community Priorities:



1. Local Power and Energy Sovereignty

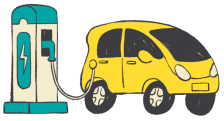
Reducing dependence on outside energy sources, instead utilizing the energy from rivers and dams to lower energy costs. Interest in biochar, biomass, solar, and using water from the mines for heat but especially in the benefits of hydroelectric dams.

2. Local Governance

Focusing and prioritizing Wawa is key. Uplifting local decision-making and policy that reflect the town's needs, rather than provincial interests. Ensuring the benefits of local energy and resources support the community before outward expansion (e.g., exports).

3. Community Education

Educating residents on energy usage, net-zero, waste reduction, and appliance and home upgrades. Building learning opportunities for not just adults in the community, but the younger generation in schools.



4. Green Infrastructure and Transportation

Improving transit for walking and biking, increasing EVs, installing solar panels, renovating homes, and developing new buildings from sustainable materials.

5. Partnerships

Building knowledge networks and workforce networks. Connecting with corporate/industry partners and the local Indigenous community to collaborate.

2.2 Hopes for the Future (Vision Statement):

"By 2040, Wawa will be a self-sufficient community with reliable local energy systems (especially hydroelectric), strong partnerships, and a prosperous, sustainable economy. Shaped by local policies that reflect the town's needs, residents benefit from lower energy costs, green buildings and transportation, and profitable energy exports to Michigan and nearby communities."

2.3 Concerns / Barriers:

Funding and Financial Barriers:

The town heavily relies on grants to take action, but grant writing requires significant time and effort with no guarantee of funding. Restrictive grant eligibility, limited staff capacity, and capital cost barriers present challenges.

Energy Justice:

Residents expressed concern regarding the local power provider that owns the hydro dams around Wawa as they promised community royalties only to later withdraw them. For the dams within Wawa's boundaries, they only receive a fixed, non-indexed payment from the government.

Community Priorities:

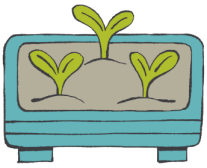
Most residents are motivated by affordability, cost-effectiveness, or convenience, rather than emissions reduction. Climate change is of low concern for many, and some community members have expressed skepticism about anthropogenic climate change. Efforts in communication and education must also recognize the perspectives of Wawa's community.

Community Culture and Lifestyle:

The town has a strong culture of cars and driving with limited uptake in walking or biking. Initiatives such as a walking challenge and food composting program have seen little success and low participation.

Local Climate Constraints:

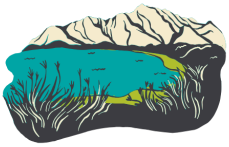
From the struggle to source an electric bus—after the supplier determined it would not function efficiently in Wawa's climate—to having to pay extra for a heat pump rated to colder temperatures, Wawa's climate heavily shapes the community's planning. Building on existing concerns about road maintenance and closures in the winter, another consideration is how the cold will affect EVs and the ability to cover far distances in wintertime.



Accessing Support:

Provincial and federal programs, such as those for home renovation and energy incentives, have been difficult to access. There is little information readily available about the programs and participation.

Climate Vulnerability:



Climate extremes are worsening, and the more vulnerable or marginalized members of the community—particularly those who are low-income and elderly—are at higher risk. Housing insecurity is of high concern, especially regarding Wawa's older, low-income residents living in many of its single households. During extreme heat, the municipality opens a cooling center for the homeless population and those without AC.

3. Pathway for Net-Zero Action (Timeline)

TIMEFRAME	ACTION	DESCRIPTION	CO-BENEFITS & EQUITY	NOTES / DEPENDENCIES
By 2030	Strengthen local partnerships and knowledge networks	Connect with corporate/industry partners and the local Indigenous community to share resources, knowledge, and collaborate.	• Builds relationships • Promotes shared knowledge • Creates potential for cost savings	• Goal alignment • Communication and outreach • Trust-building
	Develop a net-zero plan	Establish a comprehensive plan for the municipality that outlines emissions reduction targets, renewable energy adoption, and efficiency measures across housing, transportation, and local industries.	• Centers local autonomy • Strengthens community planning • Supports long-term sustainability	• Municipal leadership • Data and community input • Alignment with regional and provincial policies
	Update energy plans and policies	Revise to promote energy retention within the community, local needs and benefits, inclusivity, and green infrastructure goals.	• Uplifts community priorities • Supports long-term sustainability	• Overview of current energy usage, plans, and policies • Input from municipal departments, utility providers, and community members
	Initiate waste reduction and	Begin recycling and composting programs, establish community	• Enhances public spaces	• Funding allocation • Technical expertise

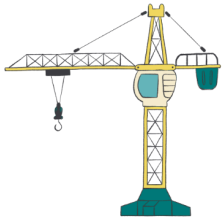
	green infrastructure projects	gardens and greenhouses, and integrate renewable energy features like solar panels into new or existing buildings.	• Promotes community stewardship • Supports community health and well-being	• Long-term maintenance planning
	Launch education and engagement programs	From school curricula to adult workshops, educate residents on net-zero, energy efficiency, retrofitting, waste reduction, and sustainable practices like eating traditional foods and learning to grow food.	• Builds community knowledge and awareness • Encourages youth engagement • Supports community health	• Coordination between schools, local organizations, and municipal offices • Strong community engagement and uptake
By 2035	Construct local energy systems	Having explored options like biochar, solar, tidal, and geothermal, utilize local resources for power. Efficiently harness hydroelectric power.	• Strengthens energy sovereignty • Promotes local economic opportunities	• Funding allocation • Technical expertise and capacity • Alignment with the municipal energy plans
By 2045	Operate as a self-sustaining, net-zero community	Utilize local renewable energy sources, integrate green infrastructure, and promote sustainable transportation like EVs while fostering active community engagement in green initiatives.	• Centers long-term sustainability and energy sovereignty • Supports community health and well-being	• Sustained community leadership and direction • Monitoring and maintenance • Continued community engagement

	Establish an energy export system	Develop infrastructure and policies to export surplus renewable energy to neighboring communities like Michigan, generating revenue and regional collaboration.	• Contributes to economic stability • Generates local economic opportunities • Builds relationships with other communities	• Wawa's stable, secure energy self-sufficiency • Transmission infrastructure • Regional agreements • Regulatory approval • Market conditions

4. Implementation Needs (from Visioning Barriers)

Access to Funding:

The municipality relies on government grants, but the application process is time-intensive and uncertain. Dedicated funding support, simplified application processes, and long-term funding streams are needed to help Wawa plan strategically.

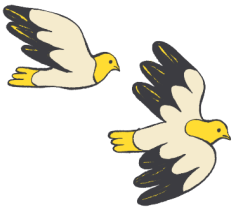


Technical Support:

Capacity challenges limit the municipality's ability to implement sustainable technologies. With limited staff and labour barriers, Wawa will often work with generalists rather than specialists like HVAC installers. Improved access to skilled contractors and tradespeople—potentially through local training programs or partnerships with trades schools—would strengthen Wawa's technical capacity.

Local Policy:

Residents need locally relevant policies that reflect rural conditions and needs. Wawa's community priorities have been constrained by policy misalignment (e.g., policies from Toronto not being applicable to Wawa). Local decision-making, community planning, and community-driven bylaws are key.



Strategic Communication:

While many residents are aware of climate change, it is not considered an immediate concern, leading to hesitance toward emissions-reduction initiatives. Some of this resistance is shaped by media as well as lifestyle and car dependency. Education and promotion of net-zero goals—via ads, newsletters, and community campaigns—should focus on making sustainability practical for Wawa's rural context. Messaging must be accessible, avoiding technical jargon and clearly outlining financial benefits and savings.

5. Potential Action Menu

If Wawa chooses to focus on a small number of high-impact actions over the next year, the following options could be explored and prioritized based on local capacity, funding, and community interest:

- Exploring a dedicated Net-Zero or Community Energy coordination role
- Testing different education and outreach approaches aligned with Wawa's practical, hands-on culture
- Scoping local energy opportunities (hydropower, biomass, community renewables)
- Piloting home energy and heating assessments, starting with priority households
- Deepening partnerships with Indigenous communities, industry, and regional service providers
- Phasing in green infrastructure, transportation, and waste-reduction initiatives suited to local conditions

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1. Governance, Leadership & Local Capacity

Purpose: To strengthen local leadership, coordination, and institutional capacity so Wawa can effectively plan, fund, and manage community energy and net-zero initiatives over time.

Option 1.1: Exploring a Municipal Net-Zero / Community Energy Lead role

Why now: Residents identified limited staff capacity and grant complexity as major barriers. A dedicated role responds directly to this challenge and helps ensure Wawa does not miss funding that could lower local energy costs. Options to explore may include:

- Testing different role structures (full-time, shared service, contract-based)
- Focusing responsibilities on funding, partnerships, and community engagement
- Embedding the role across departments (Public Works, Housing, Economic Development)

Option 1.2: Convening a cross-sector working group

Why now: Community members emphasized the value of local knowledge and skepticism of outside experts. A working group centers Wawa voices and builds trust in decision-making. Options to explore may include:

- Including trades, Elders, business owners, tourism operators, and Indigenous partners
- Piloting quarterly meetings or project-specific task groups
- Experimenting with shared decision-making models

2. Community Engagement, Education & Communication

Purpose: To build trust, increase awareness, and ensure energy and climate information is practical, locally relevant, and aligned with Wawa's values and lived experience.

Option 2.1 Trying community-priority-oriented messaging approaches

Why now: Residents shared that climate change is not a top concern and cost matters most. Practical, savings-focused messaging aligns with what motivates the community.

- Testing messages focused on cost savings, durability, reliability, and self-sufficiency
- Using trusted local voices (miners, tradespeople, teachers)
- Leveraging existing community spaces (radio, hardware stores, rec centre)

Option 2.2 Expanding school and community learning

Why now: Community members expressed interest in education for both youth and adults. Hands-on learning reflects Wawa's practical culture and builds local skills.

- Partnering with schools on energy and climate modules
- Offering hands-on adult workshops (retrofits, heat pumps, DIY sealing)
- Showcasing local case studies and lived experiences

3. Local Energy Feasibility & Infrastructure

Purpose: To better understand which local energy solutions are technically, economically, and socially viable for Wawa before making major investments.

Option 3.1 Hydropower value retention

Why now: Residents raised concerns about broken royalty promises and lack of community benefit. Exploring value retention responds directly to energy justice concerns.

Option 3.2 Biomass, biochar & waste heat

Why now: Community members showed strong interest in biomass and mine water heating. Acting now builds on existing ideas and local assets. Options to explore may include:

Option 3.3 Municipal retrofit readiness

Why now: Older homes and high heating costs were major concerns. Assessments can immediately help priority households save money and improve comfort.

Options to explore may include:

- Examining regulatory pathways for community benefit
- Exploring cooperative or community ownership models
- Mapping grid constraints and opportunities
- Scoping forestry-residual-based systems
- Exploring mine water geothermal or heat recovery
- Identifying sites for hybrid renewable systems

Options to explore may include:

- Piloting home energy assessments
- Testing cold-climate heat pump solutions
- Building a local contractor network

4. Resilience, Housing & Community Infrastructure

Purpose: To strengthen community resilience to climate extremes, grid disruptions, and aging infrastructure while improving safety and quality of life

Option 4.1 Emergency preparedness enhancements

Why now: Residents highlighted growing climate extremes and risks to seniors and low-income households. Strengthening systems protects those most vulnerable.

- Reviewing and enhancing warming/cooling centre operations and communication during winter road closures
- Developing a registry for vulnerable seniors and check-in protocols
- Improving storm and outage communications

Option 4.2 Green infrastructure & active transportation pilots

Why now: Residents noted limited walking and biking options. Small pilots allow testing what fits Wawa's climate and lifestyle.

- Improving sidewalks, lighting, and trails, especially near key destinations
- Testing small pilots (bike share, e-bike rebates)
- Explore installing strategically located EV chargers at strategic, sheltered locations with cold-weather considerations

5. Partnerships & Workforce Development

Purpose: To grow a skilled local workforce and strengthen partnerships that support long-term community energy and economic development goals.

Option 5.1 Trades and training collaborations

Why now: Wawa faces a shortage of specialized contractors. Training locals responds directly to this capacity gap.

- Partnering with Confederation College, Sault College, and skilled-trades unions
- Offering training in heat pumps, building envelopes, solar mounting
- Linking apprenticeships to local energy projects such as biomass, biochar, and renewable projects

Option 5.2 Indigenous and industry collaboration

Why now: Community members prioritized partnerships and reconciliation. Formal collaboration ensures projects benefit everyone.

- Creating regular dialogue spaces with nearby First Nations for knowledge sharing
- Exploring forestry partnerships for biomass and biochar initiatives
- Testing benefit-sharing models with hydropower operators

6. Long-Term Planning & Local Energy Autonomy

Purpose: To support Wawa's long-term vision for energy affordability, local control, economic development, and potential energy export opportunities.

Option 6.1 Community-led net-zero planning

Why now: Residents stressed the need for locally driven policy instead of one-size-fits-all approaches. A community-led plan ensures Wawa's priorities guide action.

Option 6.2 Exploring future energy export potential

Why now: The community's vision includes using local energy for economic benefit. Exploring exports supports this long-term goal.

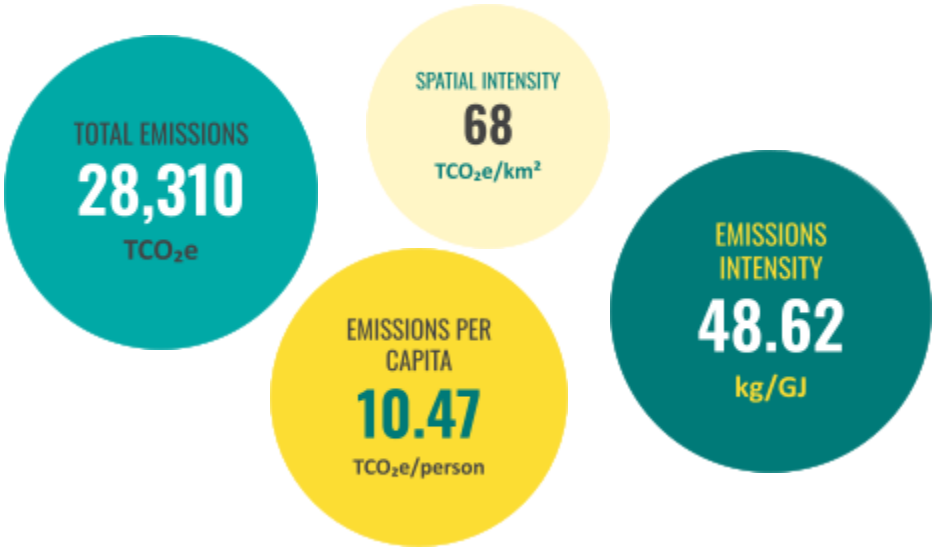
- Setting locally defined targets based on local priorities (affordability, jobs, resilience)
- Integrating hydropower, biomass, and renewable feasibility study findings
- Building simple GHG tracking tools
- Assessing regulatory feasibility for exporting power to Michigan and surrounding communities
- Exploring governance and partnership models
- Aligning export strategies with economic development goals

6. GHG Modelling

In 2023, the Municipality of Wawa produced approximately 28,310 of CO_2-equivalent (tCO_2e) in emissions. This equates to 10.47 tCO_2e per capita and 68 Tonnes per square kilometer (spatial intensity).

The largest sources were Commercial/Institutional Buildings (41.5%) and Residential Buildings (25.3%).

Greenhouse Gas Emissions Overview



* Municipality of Wawa, Baseline Emissions, 2023. Source: Municipality of Wawa, ON Community GHG Inventory and Net-Zero Modelling Baseline 2023, Page. 8

The GHG Modelling Report explored what it would take for the Municipality of Wawa to reach net-zero emissions by 2050 — a goal aligned with provincial and national climate targets. The modelling shows this is achievable, but will require sustained action across key areas of community life.

To explore the full scenarios, assumptions, and data behind these findings, see the Municipality of Wawa, ON Community GHG Inventory and Net-Zero Modelling Baseline 2023.

7. Appendices (Optional)

Appendix A: Municipality of Wawa, Visioning Session, Live Graphic Recording by Emma Richard

Appendix B: Municipality of Wawa, ON Community GHG Inventory and Net-Zero Modelling Baseline 2023 by Climate Neutral