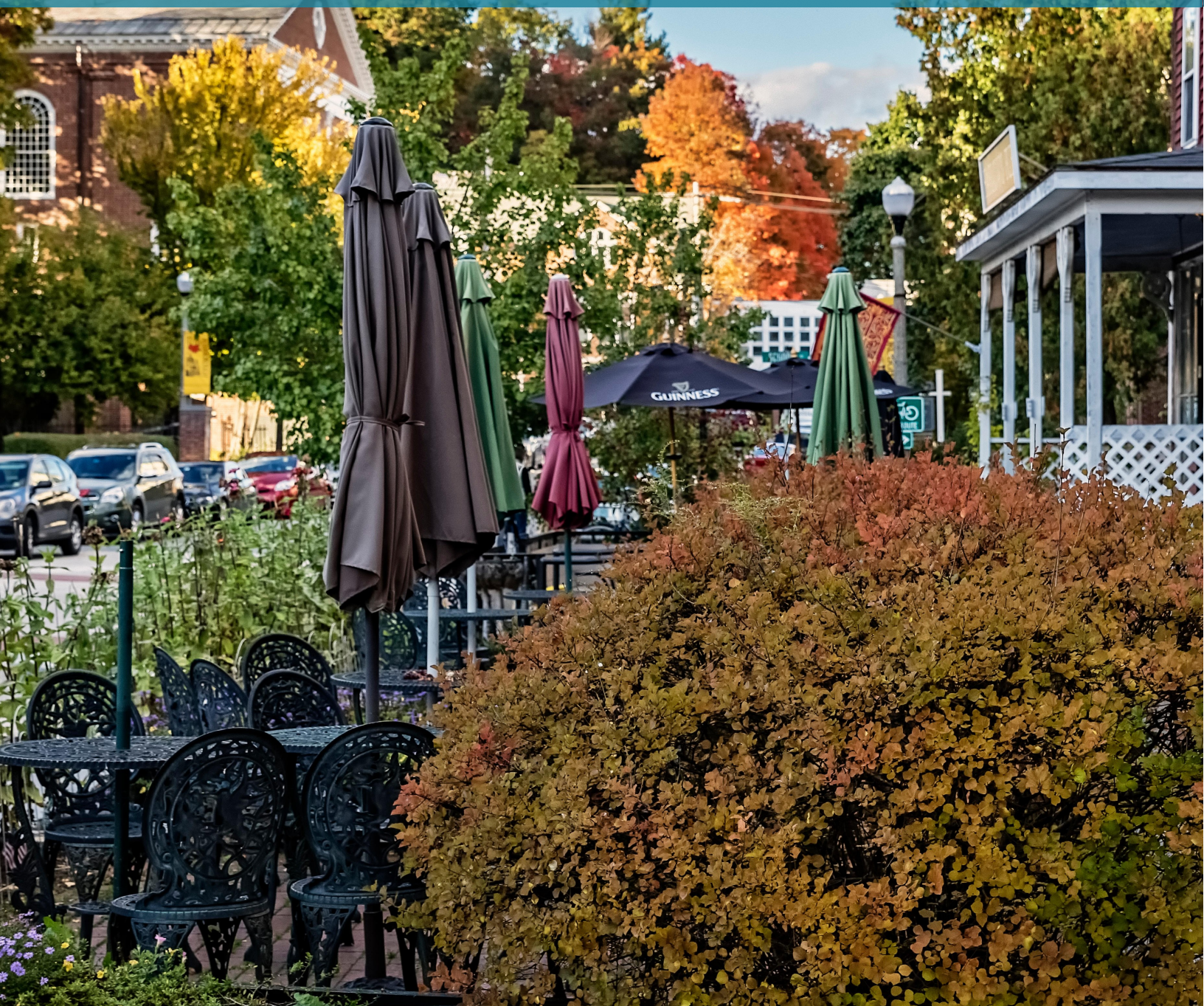
SECTION 03

Electricity



CURRENTLY IN PETERBOROUGH

30.6%
of townwide GHG emissions in 2021 are from this sector

72,697,000
kWh of electricity consumption in 2021

6.9%
On-site renewable energy generation townwide

Sources: see Peterborough GHG Inventory

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Electric energy use is a major contributor to greenhouse gas (GHG) emissions. The Electricity sector includes all residential, commercial, and industrial buildings. Greenhouse gas emissions from this sector come from **indirect emissions** – from fossil fuels burned *off-site* in order to supply that building with electricity. Building design plays a large role in determining the future efficiency and comfort of facilities. Increasing energy efficiency can help reduce GHG emissions and result in significant cost savings for both homes and businesses. The Peterborough community can also achieve climate resilience, and environmental, social, and economic benefits through enhancements to the built environment and renewable electricity generation.

Peterborough Energy Use Profile—Community Wide

Residential:
According to 2021 community wide data, the residential sector in Peterborough consumes nearly 23.67 million kWh annually. This is equal to 8,730 kWh per household, approximately 124% of the Hillsborough County average.

Commercial and Industrial:
The Peterborough commercial and industrial sector in 2021 consumed over 49 million kWh. This is equal to 18,060 kWh per job, approximately 112% of the Hillsborough County average.

Potential for Change in Peterborough

According to Town of Peterborough data, less than 3% of the Town's commercial building stock and less than 4.5% of the Town's housing stock was built in the last ten years. Meanwhile while nearly 57% of the commercial building stock and over 67% of the Town's housing stock is more than forty years old. Based on the age of the Town's building stock, significant renovations and new construction replacement projects may increase in the coming years. This means that a significant portion of the town's building infrastructure could be positively impacted and influenced through strategies that guide increased energy efficiency and increased renewable energy adoption.

	GHG emissions from electricity use (metric tons)	On-Site Renewable Energy (Share of total electric use)	Renewable energy purchased through Community Power
Goals			
Today	21,923	6.9%	0%
2030 Targets	0	25%	75%

Sources: see Peterborough GHG Inventory

STRATEGIES

The strategies on the following pages guide our path in meeting our climate goals for the Electricity sector. Each strategy is supported by a series of detailed actions to be explored and undertaken in order to carry out the vision and goals.

Action Implementation

The following are the proposed strategies and detailed actions in support of this section. Actions are anticipated to be implemented in three phases:*

- Phase 1: action initiation anticipated within 0-3 years of REP approval
- Phase 2 action initiation anticipated within 2-5 years of REP approval
- Phase 3 within 3-7 years of REP approval

*Phasing will be established by the PREP Team in collaboration with Town staff at initiation of plan implementation (see strategy CC1).

E1:

Increase adoption of high performance building construction technology, achieving 0.5% Net Zero households and commercial properties community-wide by 2030.

E2:

Increase on-site renewable energy from 6.9% to 25% of residential, commercial, educational, and industrial electric use by 2030.

E3:

Implement Community Power renewable energy purchasing, achieving at least 75% residential, commercial, educational, and industrial participation by 2030.

E4:

Increase on-site and locally generated renewable energy of Town operations' electricity consumption to 100% by 2030.

Strategy Action

ACTIONS

E1:

Increase adoption of high performance building construction technology, achieving 0.5% Net Zero households and commercial properties community-wide by 2030.

E 1-1	Establish a Net Zero Energy Building Guide providing building owners, renters, developers, designers, and contractors with detailed information on voluntary strategies to make new construction or significant renovation projects Net Zero Energy or Net Zero Energy ready.
E 1-2	Launch a platform and training program to share best practices, providing training to owners, builders, and designers, and promote the Town's voluntary Net Zero Energy Guide and Checklist and voluntary Solar-Ready Guide and Checklist. Include distribution of guides and checklists through building permit forms and information.
E 1-3	Explore establishing a Net Zero Ready ordinance for new commercial buildings, multi-family residential buildings, and residential subdivision construction that improves energy efficiency and supports increased adoption of net zero construction techniques. Reach for best practices such as Living Building Challenge, Architecture 2030, LEED, Passive House, net zero, etc. for new residential, commercial, and municipal buildings. Goal: achieve ordinance and compliance by 2028 with an anticipated average of 5 residential units annually (single family and/or multifamily units) by 2028.

E2:

Increase on-site renewable energy from 6.9% to 25% of residential, commercial, educational, and industrial electric use by 2030.

E 2-1	Establish a voluntary Solar Ready Guide and Checklist providing building owners, renters, developers, designers, and contractors with detailed information on strategies to make new construction or significant renovation projects fully Solar Ready enabling more cost efficient and easier installation of on-site solar arrays.
E 2-2	Promote the economic benefits of the Town's exclusion of solar PV from property taxation.
E 2-3	Establish a town information resource for residents and businesses seeking to generate their own renewable power. Include Town's voluntary Solar Ready Guide and Checklist.
E 2-4	Coordinate and promote a residential Solar Group Purchase or "Solarize" Campaign regularly to help reduce the costs of solar installation through volume purchasing power (goal, 50 households annually). Program design to focus on improved equity (residential and commercial) in its implementation and explore strategies to support local small business solar installers such as being set up to enable small installers to collaborate or having a competitive "marketplace" approach with more than one installer to choose from. NOTE: Action may be implemented in combination with the electrification and energy efficiency group purchase program action.
E 2-5	Identify the "Solar Top 20" commercial/industrial properties within the Town and produce detailed solar feasibility assessments for each site. Assessments to include potential solar generation and economic performance and return on investment estimates, information on financing and ownership models, and next step resources. Provide solar assessment reports to properties and conduct an informational workshop to assist building owners and businesses in understanding the assessments and next step potential. "Solar Top 20" assessment effort could be repeated regularly, particularly through 2030.

Strategy / Action	ACTIONS
E 2-6	Coordinate and promote a commercial Solar Group Purchase Campaign regularly to help reduce the costs of solar installation through volume purchasing power (goal, 500KW installed annually). Group purchase campaign could include/focus on properties identified in the "Solar Top 20" assessment effort and should include both direct purchase/ownership as well as 3rd party ownership options like Solar Lease and Power Purchase Agreements. Program design to explore strategies to support local small business solar installers and strategies to support local workforce development.
E 2-7	Organize and conduct a hydroelectric feasibility assessment to determine the cost effective hydro power capacity capable of serving the electric needs of the town. The assessment should include identification of potential socio-environmental impacts and opportunities, as well as projected generation potential, costs, and economic payback as well as other co-benefit potentials.
E 2-8	Amend ordinances to make solar installations easier, or establish a certification program for all new residential, multifamily and commercial construction. Explore establishing a "Solar-Ready" ordinance. Use Town's Solar Ready Guide and Checklist to support policy.
E 2-9	Explore creation of an ordinance ensuring that all homeowners can install solar panels regardless of where they live, including condominiums.
	E3: **Implement Community Power renewable energy purchasing, achieving at least 75% residential, commercial, educational, and industrial participation by 2030.**
E 3-1	Implement the Peterborough Community Power program with 100% renewable electricity supply by 2030. Renewable electricity supply to be provided through direct investment, renewable electricity purchases, and purchase of Renewable Energy Certificates (RECs), within New England (as close to Peterborough as possible).
E 3-2	Establish a Peterborough Renewable Energy Purchase master plan to identify appropriate renewable energy procurement sources and strategies and to map a procurement timeline.
E 3-3	Work with regional solar developers to offer Community Solar opportunities to residents, including renters and low/moderate income households. Explore issuing competitive Request for Proposals for Community Solar developments. Community solar agreements must allow Peterborough Community Power program to retain renewable energy credits (RECs) associated with the installation's energy generation.
E 3-4	Explore creation of incentive program for Community Power participants to encourage investment in distributed renewable energy systems within the community which provides compensation for power and green attributes of net metered on-site renewable energy generation.
E 3-5	Create Peterborough Community Power education and outreach materials clearly communicating the benefits of participation in Peterborough Community Power and promote and distribute to residences and businesses within the Town of Peterborough.
E 3-6	Conduct an assessment of utility scale energy storage solution options and establish a Peterborough appropriate Energy Storage Implementation Plan and schedule based on findings. Assessment should include review of Renewable Electrolysis (liquid fuels derived from renewable electricity) and Resilient Bidirectional Charging (two-way charging allowing the flow of energy to the grid to charge the vehicle as well as from the vehicle battery back to the grid) options.

Strategy Action

ACTIONS

E4:

Increase on-site and locally generated renewable energy of Town operations' electricity consumption to 100% by 2030.

E 4-1	Conduct a Municipal Facility Renewable Energy Feasibility and Master Plan study to explore the feasibility of on-site solar and other renewable strategies for all Town facilities. Study should explore a range of ownership options including purchase and third party ownership (such as Power Purchase Agreements) and should include exploration of micro-grid and solar+storage options for improved facility resilience. Study should also identify strategies such as community solar subscriptions combined with Renewable Energy Credit purchases, to achieve renewable energy at sites determined to be inappropriate for on-site solar to achieve 100% on-site and locally generated renewable energy of Town operations by 2030.
E 4-2	Install renewable energy on all Town buildings and sites, where feasible based on the findings and recommendations of the Municipal Facility Renewable Energy Feasibility and Master Plan study by 2029. Explore implementation of micro-grid, solar+storage and other options for improved facility resilience. Explore including municipal facility solar purchases in community-wide commercial solar group purchase campaigns.