

# NET ZERO ENERGY

BURLINGTON VERMONT



## About Burlington Electric Department (BED)

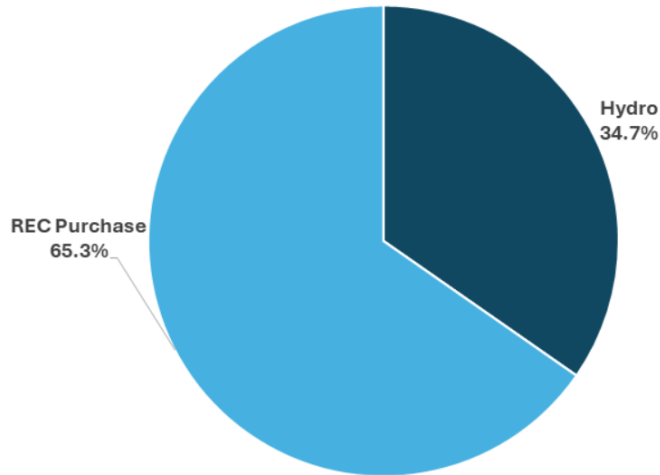
- Burlington's municipal electric utility
  - Public power since 1905
  - 123 employee positions, including the McNeil Generating Station; 86 are IBEW positions
  - Third-largest electric utility in Vermont
- 21,000+ customers
  - 17,282 residential, 3,983 commercial and industrial
  - 5,500-6,000 residential accounts turn over each year
- Electricity facts:
  - Summer peak: ~65 MW; annual energy use: ~330,000 MWH
  - 100% of power from renewable generation as of 2014





## Energy Supply

### 2023 BED RENEWABILITY AFTER REC TRANSACTIONS



<https://www.burlingtonelectric.com/our-energy-portfolio>. BED 2023 REC retirements and renewable generation supply both exceeded 2023 retail sales.

## OUR ENERGY PORTFOLIO

The table below shows the resources that provided BED's energy supply in 2023.

### BED ENERGY SUPPLY, JANUARY-DECEMBER 2023

Winter Peak MW	52.5			
Summer Peak MW	63.8			
Energy Use (MWH)	327,967			
Resource	Fuel Type	Location	Capacity (MW)	Energy (MWH)
McNeil	Wood	Vermont	25.0	92,399
Hancock	Wind	Maine	13.5	29,479
Sheffield	Wind	Vermont	16.0	24,177
Georgia Mountain Community	Wind	Vermont	10.0	23,615
Hydro-Québec	Large Hydro	Quebec	n/a	52,416
NYPA	Large Hydro	New York	2.6	17,592
Winooski One	Small Hydro	Vermont	7.4	36,180
Great River Hydro	Small Hydro	Vermont	n/a	43,800
Burlington	Solar	Vermont	3.4	4,981
BED Gas Turbine	Oil	Vermont	22.0	472
ISO New England Exchange – Net	Various (system mix)	New England	n/a	2,855
Total Gross Generation & Purchases				325,112



## 2030 Vision: Make Burlington a Net Zero Energy city by eliminating fossil fuel usage across electric, thermal, and ground transportation sectors.

- The City Council adopted the Net Zero Roadmap in September 2019.
- Burlington's Net Zero goal is the most ambitious local climate change plan in the nation that BED is aware of, recognized by the Smart Electric Power Alliance as the *"first US Net-Zero 2030 plan."*
- All Departments of the City play a role in supporting implementation.
- Synapse Energy Economics updates the Roadmap progress data, drawn from BED, VGS, DMV, and Vermont and Chittenden County travel data.



Emery Nichols, Ms. Rochman Champlain Elementary

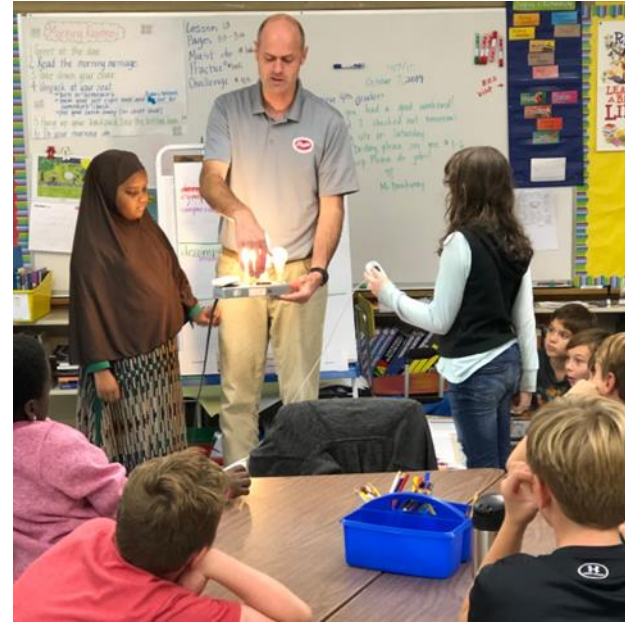




## Net Zero Energy Roadmap Update 2023 Data

Performed by Synapse Energy Economics

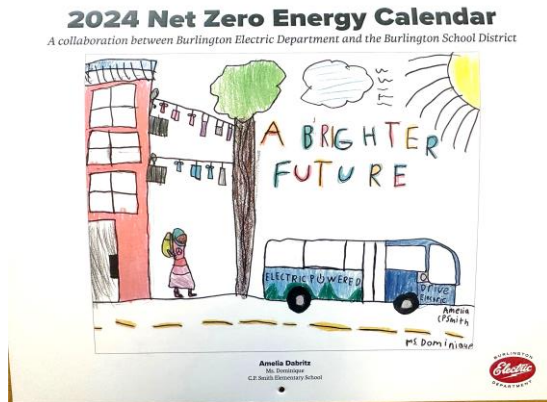
Commissioned by BED





## Net Zero Energy Roadmap Update Highlights

- Greenhouse gas emissions in ground transportation and thermal/buildings sector **down 18.2% in 2023** relative to 2018 baseline
- 2023 was second largest year-over-year reduction at -8%, behind pandemic-impacted 2020 -14%
- 2023 reductions driven by thermal/buildings sector, with **natural gas consumption in 2023 at its lowest levels** since Roadmap tracking started.





## Net Zero Energy Roadmap Update Highlights (continued)

### Burlington's progress is ahead of state/national pace –

- **Burlington natural gas consumption is down 19%** since 2018, statewide natural gas consumption is down 9% over same period.
- **Burlington's ground transportation fuel consumption is down 13%** since 2018, compared to an approximate 4.3% decline in ground transportation fuel emissions nationally 2018-2022.

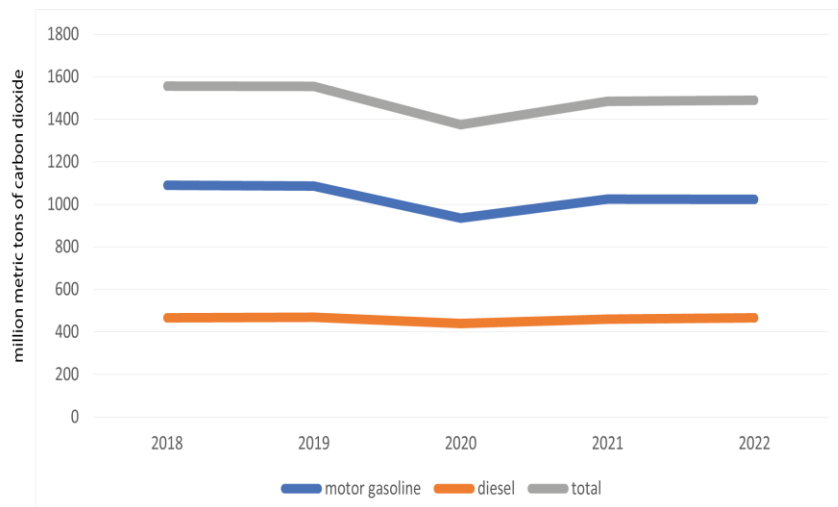
### Initiatives to-date that have supported progress –

- Primary renewable heating ordinance, carbon fee ordinance, rental weatherization ordinance
- BED heat pump, EV, and dozens of other incentives, with enhanced incentives for income-qualified customers
- EV charging infrastructure – public and Parks, multi-family buildings, CarShare, off-peak home charging rate
- *NZE revenue bond \$20 million investment*
- Electrifying City fleet and GMT buses
- BED Energy Assistance Program
- VMT reductions; remote and hybrid work options
- On-bill financing partnerships with VHFA, EDA



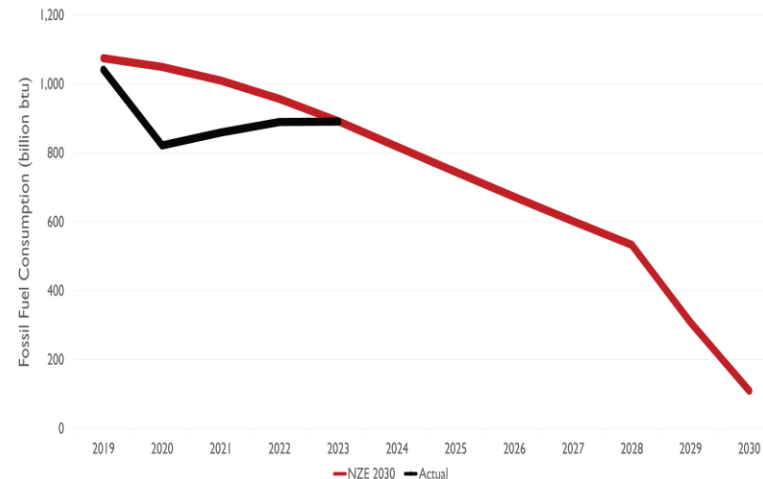
## U.S. Motor Gasoline and Diesel CO2 Emissions 4.3% reduction 2018-2022

### TRANSPORTATION CO<sub>2</sub> EMISSIONS BY FUEL SOURCE



## Burlington Gasoline & Diesel Consumption 13% reduction 2018-2023

### GASOLINE AND DIESEL CONSUMPTION 2018-2023







## Vermont

(not weather normalized)

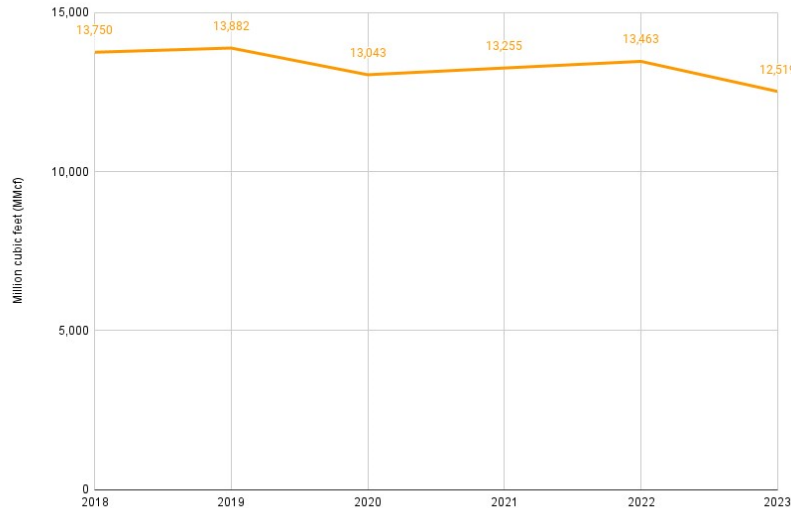
**9% reduction 2018-2023**

## Burlington

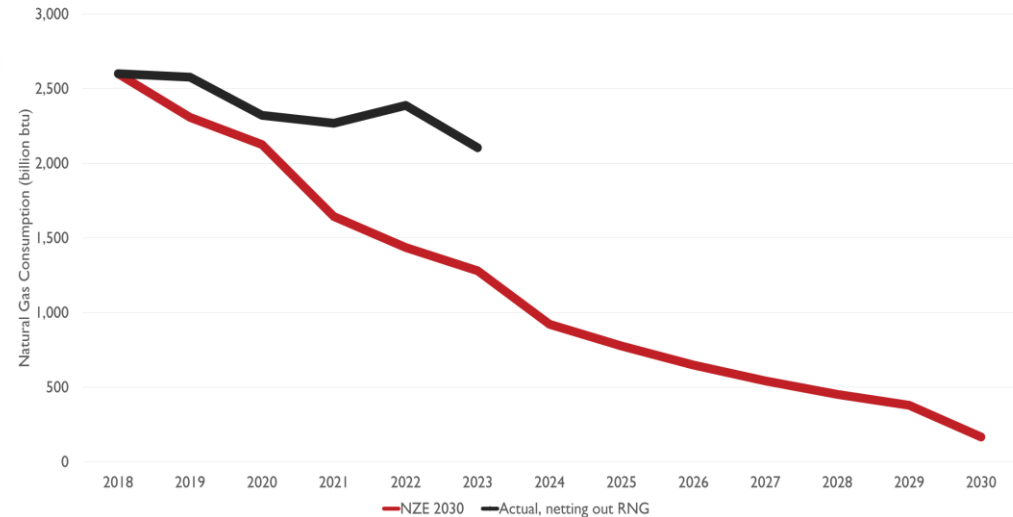
(not weather normalized)

**19% reduction 2018-2023**

Vermont total fossil gas sales, 2018-2023



**TOTAL NATURAL GAS CONSUMPTION 2018-2023**

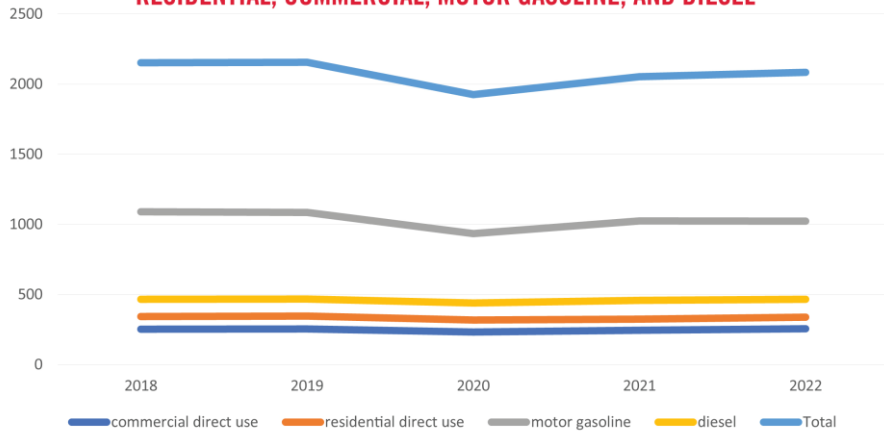




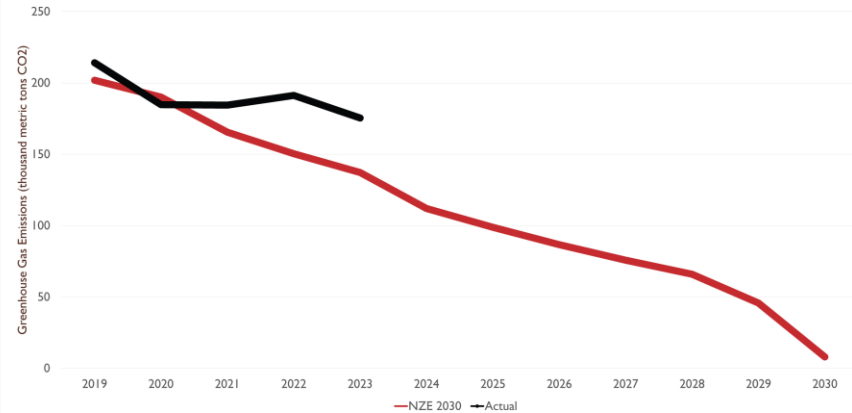
U.S., 2018-2022  
3.3% reduction

Burlington, 2018-2023  
18.2% reduction

U.S. ENERGY-RELATED CO<sub>2</sub> EMISSIONS FROM RESIDENTIAL, COMMERCIAL, MOTOR GASOLINE, AND DIESEL



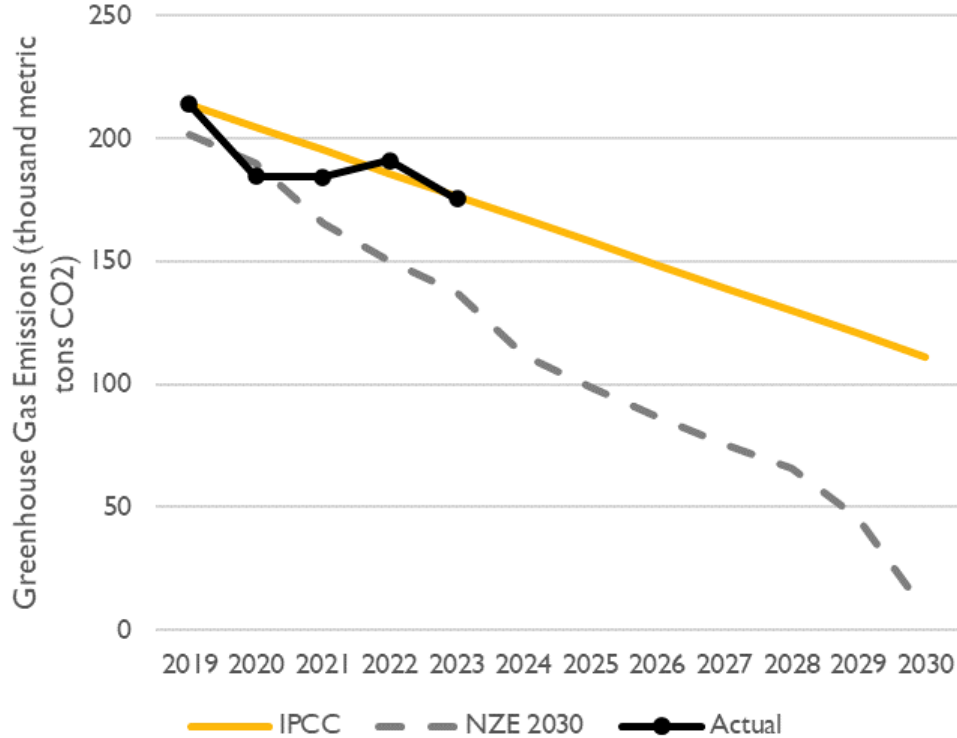
GHG EMISSIONS: THERMAL AND GROUND TRANSPORTATION 2018-2023



<https://www.eia.gov/environment/emissions/carbon/>

# NET ZERO ENERGY

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## Progress Since Launching Green Stimulus in June 2020

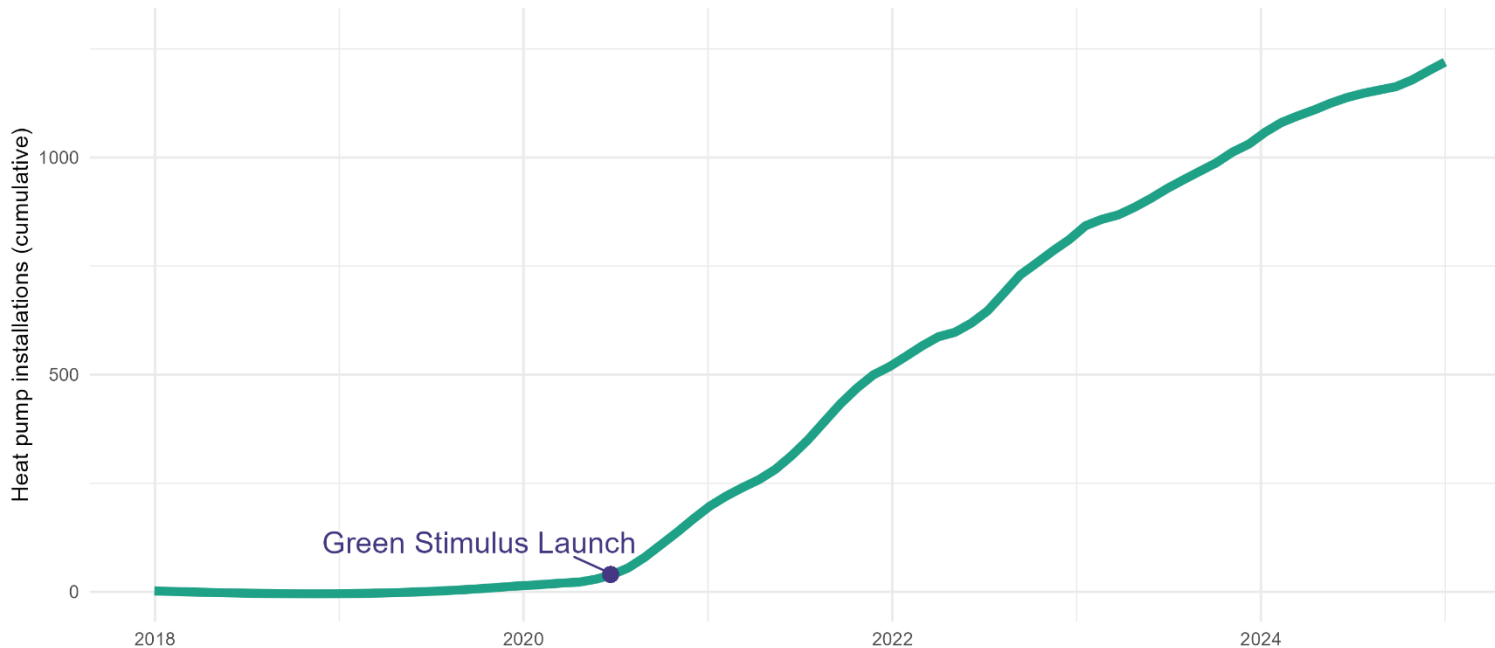




## Over 2,900 heat pumps installed in Burlington to-date

*Tier 3 incentivized increased 30x since launch of Green Stimulus in June 2020*

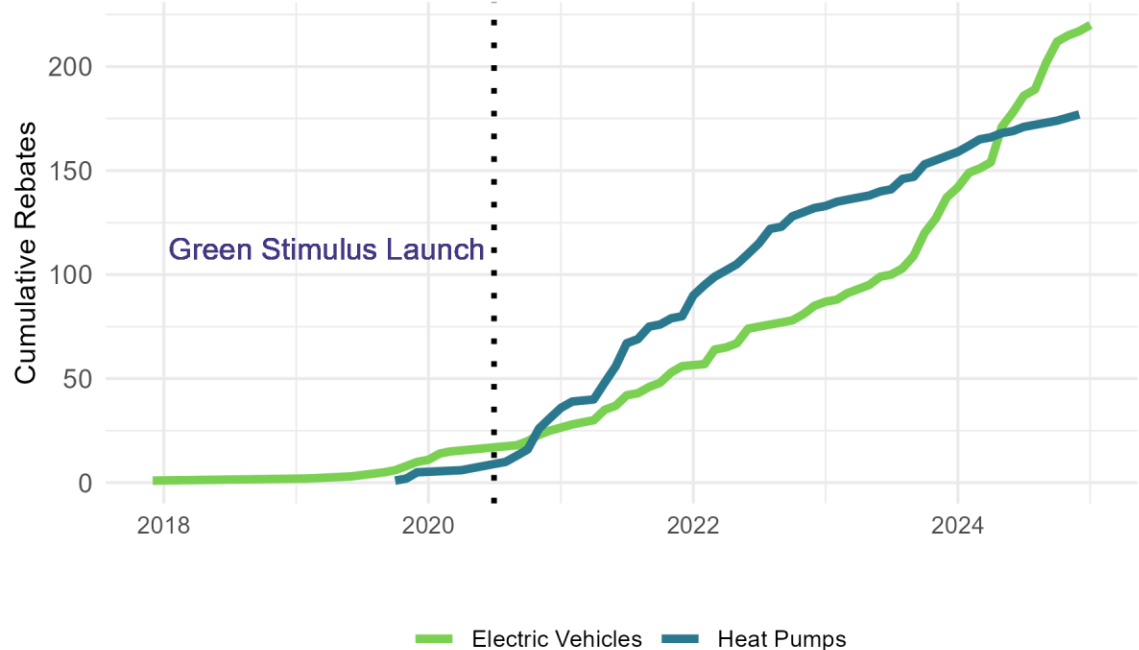
## Tier 3 Residential Heat Pump Installations





**23%** of BED's EV/PHEV rebates and **13%** of heat pump rebates have been enhanced rebates available to income-qualified customers, as of early 2025

## Improved Accessibility to Tier 3 Programs





## Net Zero Energy Revenue Bond – Climate Financing





## BED Revenue Bond Basics

- Authorized under City Charter § 3-421 and General Bond Resolution adopted by Board of Electric Commissioners in 1981
- Requires approval of a majority of Burlington voters
- Payable solely from BED rates and revenues, not City General Fund or property taxes
- An obligation only of BED, not of the City (does not affect City's debt ratio or policy)
- BED has used issued revenue bonds several times since 1981 – for McNeil Generating Station construction, initial Energy Efficiency funding, AMI/Smart Grid infrastructure, purchasing Winooski One hydroelectric facility, and most recently for the 2022 Net Zero Energy Revenue Bond







## 2022 Net Zero Energy Revenue Bond

- **First-of-its-kind-in-nation** – BED's \$20 million 2022 Net Zero Energy Revenue Bond has supported:
  - grid upgrades raising capacity from 77 megawatts to 80 megawatts,
  - key technology systems upgrades (including the new Meter Data Management System and customer portal),
  - EV charging infrastructure (including first modern public fast charger in our network),
  - EV fleet conversion (including first all-electric bucket truck in Vermont), and
  - renewable plant investments.

BED has as of late 2024 spent over \$13.4 million of the 2022 revenue bond and expects to utilize the remainder in FY25 capital projects.





## **\$20 Million *Net Zero Energy and Grid Reliability* Revenue Bond Proposal – approved with 79.6% of vote in November 2024**

The proposed Net Zero Energy and Grid Reliability Bond will build on the 2022 bond by:

- continue grid upgrades to increase capacity further to 90 megawatts to support adding more EVs, heat pumps, geothermal systems, E-buses and more in Burlington;
- complete technology systems upgrades (including customer information system);
- invest in our renewable plants including relicensing at Winooski One and wood chip dryer efficiency measure for McNeil,
- support EV fleet conversion (ten new BED EVs, second all-electric bucket truck, and electric forklift) replacing fossil fuel and older vehicles, and
- invest in up to 200 new EV chargers (up to 47 fast chargers) with matching funds from nearly \$5 million competitive federal grant.





## Net Zero Energy Next Steps

- New BED programs launched in January 2025: Increased income-qualified incentives for heat pumps, heat pump water heaters, pre-owned EVs, increased E-bike incentives, increased EV charging incentives, Switch and Save income-qualified water heater changeout, Moduly battery pilot program and heat pump bill credit pilot program (pending approval) supported by U.S. DOE GRIP grant. <https://www.burlingtonelectric.com/2025rebates/>
- Continue to expand outreach and engagement to increase equitable access to programs, EV charging survey <https://www.burlingtonelectric.com/newchargers>
- Inflation Reduction Act incentives/rebates; awaiting income-qualified rebates from State
- Carbon Fee Ordinance began Jan. 1 2024
- BED energy benchmarking work

