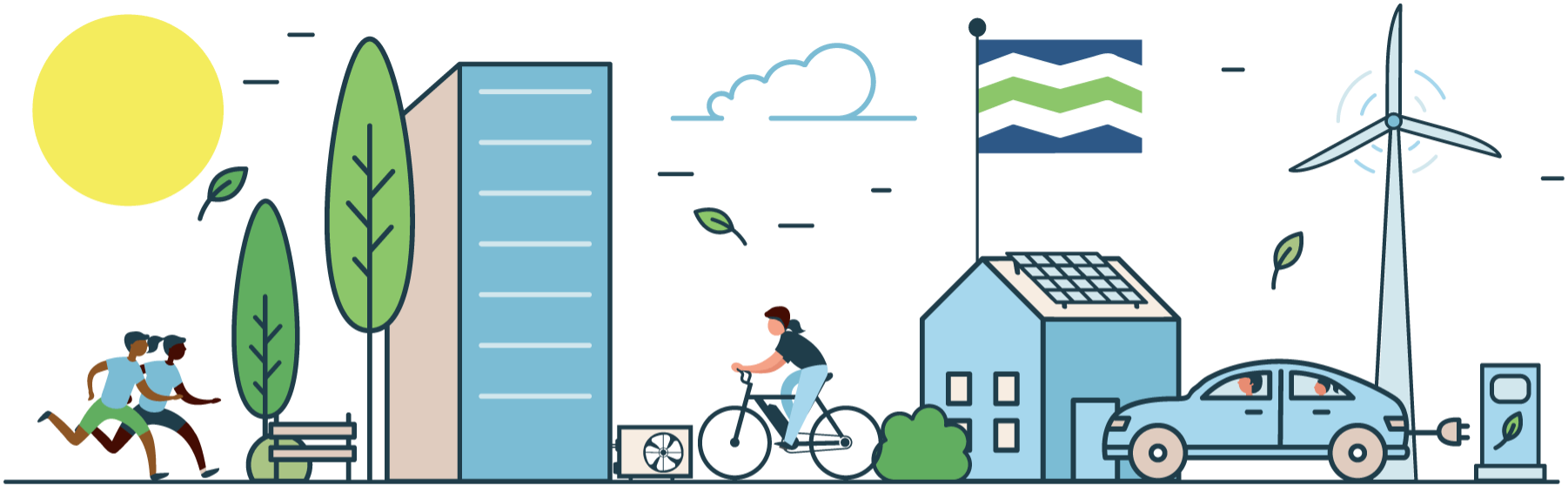


NET ZERO ENERGY

BURLINGTON VERMONT

NET ZERO ENERGY
BURLINGTON VERMONT

BURLINGTON Electric DEPARTMENT

CITY OF BURLINGTON, VT. ORGANIZED FEB. 21, 1865

Vermont's Renewable Energy Standard and Clean Heat Standard Proposal:

Parallels, Experience, Interactions

Context for Vermont's Renewable Energy Standard – Act 56 of 2015, 30 VSA 8005

- Department of Public Service proposal in 2015 laid out a program to replace SPEED with Vermont's first Renewable Energy Standard, bringing Vermont in line with the other New England states which all used renewable energy certificate compliance for renewable programs.

- Included Three Tier program –
  - Tier 1 – all renewables, large or small, new or existing – 55% starting in 2017 rising to 75% by 2032
  - Tier 2 – new, distributed generation 5MW or less, 1% starting in 2017, rising to 10% by 2032
  - Tier 3 – energy transformation projects, 2% of sales (BTU equivalency) in 2017, rising to 12% 2032

- See: https://legislature.vermont.gov/Documents/2016/WorkGroups/House%20Natural%20Resources/Bills/H.40/Witness%20Testimony/H.40~Darren%20Springer~Energy%20Innovation%20Program~1-23-2015.pdf;and https://legislature.vermont.gov/Documents/2016/WorkGroups/House%20Natural%20Resources/Bills/H.40/Witness%20Testimony/H.40~Darren%20Springer~SPEED%20Program-H.40%20briefing%20paper~2-10-2015.pdf;

Tier 3

- The earliest drafts of the Tier 3 program focused on thermal energy (not transportation) and included the BTU to megawatt hour equivalency while initially envisioning Tier 3 projects as alternative compliance for early versions of Tiers 1 and 2. As the overall program developed, Tier 3 was set out as its own critical requirement, which was unique in the nation (Washington State has since enacted similar requirement) and had several key roles to play within the RES, including:
  - Reducing upward rate pressure relative to Tiers 1 and 2;
  - Reducing fossil fuel use and greenhouse gas emissions in sectors beyond electric generation; and
  - Supporting innovation in the utility business model.
- Utilities in Vermont had started down the path already in 2014/2015, as noted in a Department memo at that time, Vermont's electric utilities had begun offering programs to support heat pump deployment, electric vehicle charging stations, and solar water heating. *Similarly, today, many fuel providers have started down the path towards renewable fuels and offering other clean technology services.*
- See: https://legislature.vermont.gov/Documents/2016/WorkGroups/Senate%20Finance/Bills/H.40/Witness%20Testimony/W~Darren%20Springer~H.40%20Q%20and%20A~4-14-2015.pdf and https://app.leg.wa.gov/RCW/default.aspx?cite=19.405.040 and https://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1691&context=wmelpr

Tier 3 – Policy Design Elements

- **The Tier 3 policy is flexible** -
  - Tier 3 anticipates inclusion of new technologies, which can be characterized for credit at the Technical Advisory Group. For example, when the program was designed there was little discussion of it being used to incentivize electric transit buses or electric mowers, but both technologies have since been included.
  - Tier 3 allows utilities to be innovative, and instead of a prescriptive one-size-fits-all approach, utilities can design incentives that meet their customers needs.
- **Credit process -**The Tier 3 process for regulatory credit relies on the Technical Advisory Group process to characterize measures for prescriptive use or allows for custom programs. Utilities therefore do not have to guess as to how much each heat pump or electric vehicle will be valued within Tier 3, they know ahead of time and can plan their annual budgets and Tier 3 programs accordingly.
- **Delivery Model and Economics -** The Tier 3 program design uses an alternative compliance payment structure to act as a cost cap on program incentives, supports a partnership model between utilities and other service providers, and through strategic electrification and demand management as well as enhanced low-income incentives Tier 3 can provide value for all customers and ratepayers.

NET ZERO ENERGY
BURLINGTON VERMONT

RES and Tier 3 Experience And Projections

- Strategic Electrification with Renewable Electricity – The Vermont RES has already helped significantly reduce GHG emissions in the electric sector, with most recent ANR data suggesting emissions declined from 1 million metric tons CO2e in 2015 to .49 million metric tons in 2017, with projections for 2022 of .08 million metric tons.
- According to Department of Public Service 2021 RES report, in 2020 the RES (all Tiers) reduced CO_2 emissions by more than 620,000 tons. Every utility met or exceeded their Tier 3 target.
- Tier 3 can act as a cost reducer for the overall RES, particularly with peak demand management – "expectation that Tier III of RES will lower compliance costs to some degree by increasing revenues from higher electric sales."
- Projecting out to 2030 –
  - "Overall, across all energy using sectors, the Department estimates that by 2030, on an annual basis, Vermont will consume around 17% less fossil-based energy than it does today in the baseline load forecast scenario, or approximately 21% less in the high forecast scenario, as a direct result of RES."
  - See: https://publicservice.vermont.gov/sites/dps/files/documents/2022%20CEP%20AppendixC%20Renewable%20Energy%20Standard%20Report.pdf

NET ZERO ENERGY
BURLINGTON VERMONT

Department of Public Service Tier 3 Measures and CO2 Reduction Projections

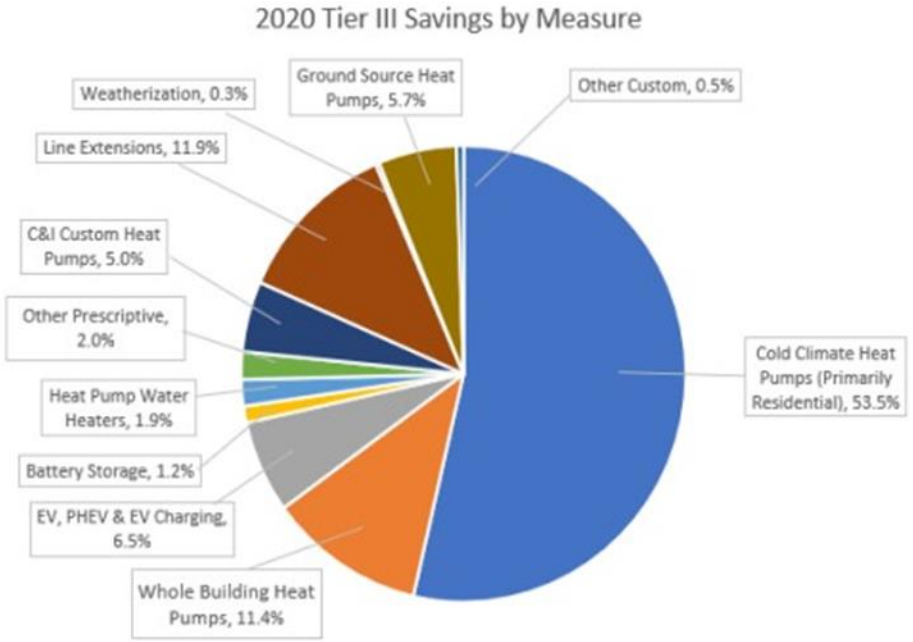


Figure 2. 2020 Tier III compliance measures

Figure 9. Annual CO2 savings due to the RES from all Tiers, 2021-2030.

NET ZERO ENERGY
BURLINGTON VERMONT

BURLINGTON Electric DEPARTMENT

CITY OF BURLINGTON, VT. ORGANIZED FEB. 21, 1865

Burlington Electric Department Experience with Tier 3

NET ZERO ENERGY
BURLINGTON VERMONT

BURLINGTON Electric DEPARTMENT

CITY OF BURLINGTON, VT. ORGANIZED FEB. 21, 1865

About Burlington Electric Department (BED)

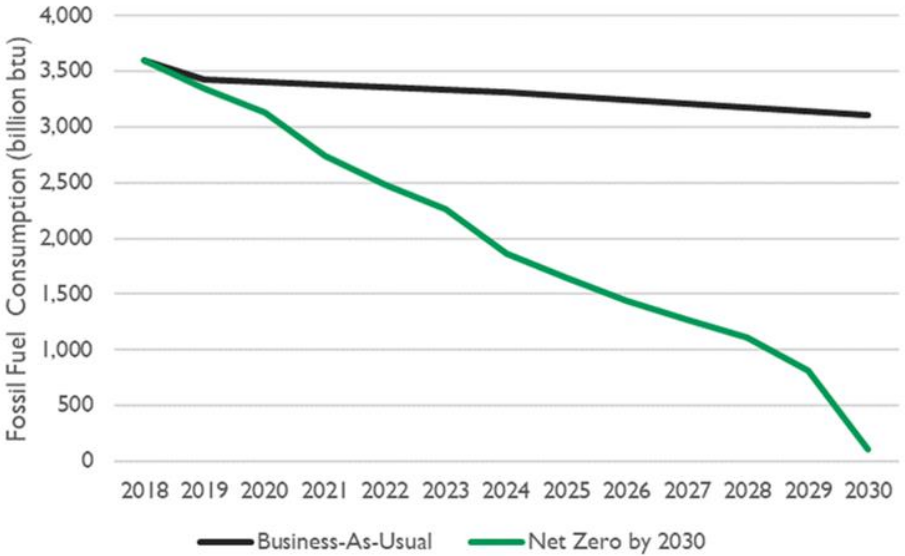
- Burlington's municipal electric utility
  - Public Power since 1905
  - 118 employees, including the McNeil Generating Station
  - Third-largest electric utility in Vermont
- 21,000+ customers
  - 17,282 residential, 3,983 commercial and industrial
  - 5,500-6,000 residential accounts turn over each year
- Electricity facts:
  - Summer peak: ~65 MW; Annual energy Use: ~330,000 MWH
  - McNeil is the largest energy producer in Vermont with Vermont Yankee Retirement
  - 100% of power from renewable generation as of 2014
  - No rate increase from 2009-2021; statewide average retail price of electricity increased approximately 21% during that time

NET ZERO ENERGY
BURLINGTON VERMONT

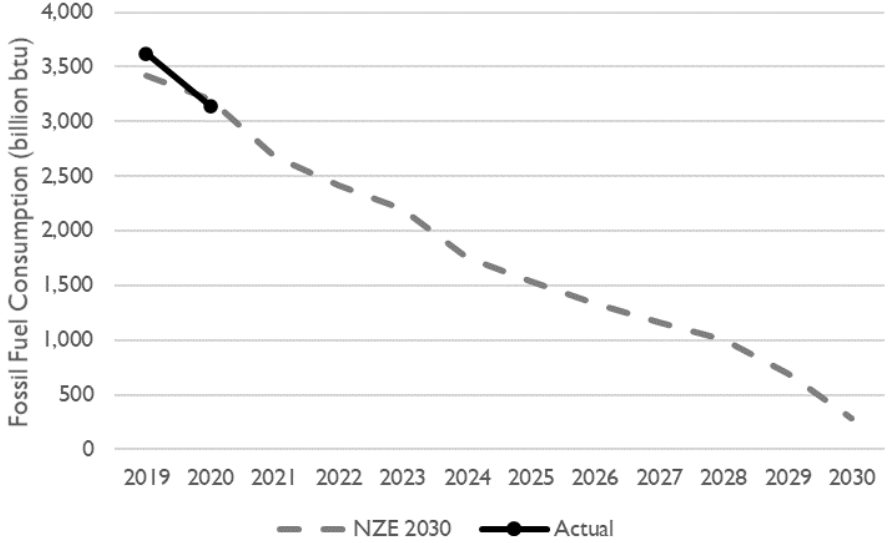
Currently Burlington is on the Net Zero Energy 2030 Path

Synapse Energy Economics Net Zero Energy Roadmap Update for 2019 and 2020 Data – Commissioned by BED

Roadmap Business as Usual compared to NZE Path



Actual Fossil Fuel Energy Consumption Thermal and Ground Transportation 2019-2020*



*2020 data includes impacts from pandemic such as reduced vehicle miles traveled

NET ZERO ENERGY
BURLINGTON VERMONT

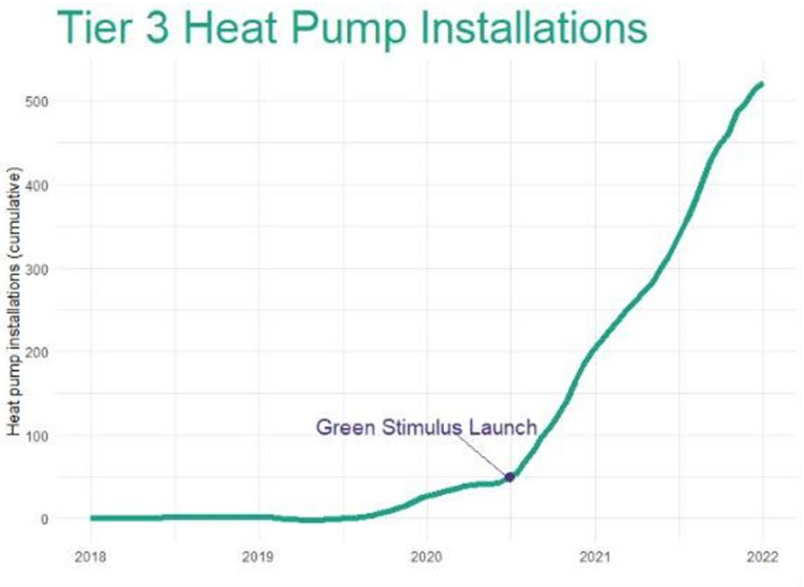
- **BED Core Tier 3 and Net Zero Energy Programs –** as a regulated utility BED invests in customer incentives and programs to reduce fossil fuel use under Tier 3 of Vermont's Renewable Energy Standard. Many strategic electrification incentives are now bolstered by our Green Stimulus which continues in 2022 (**www.burlingtonelectric.com/greenstimulus**).

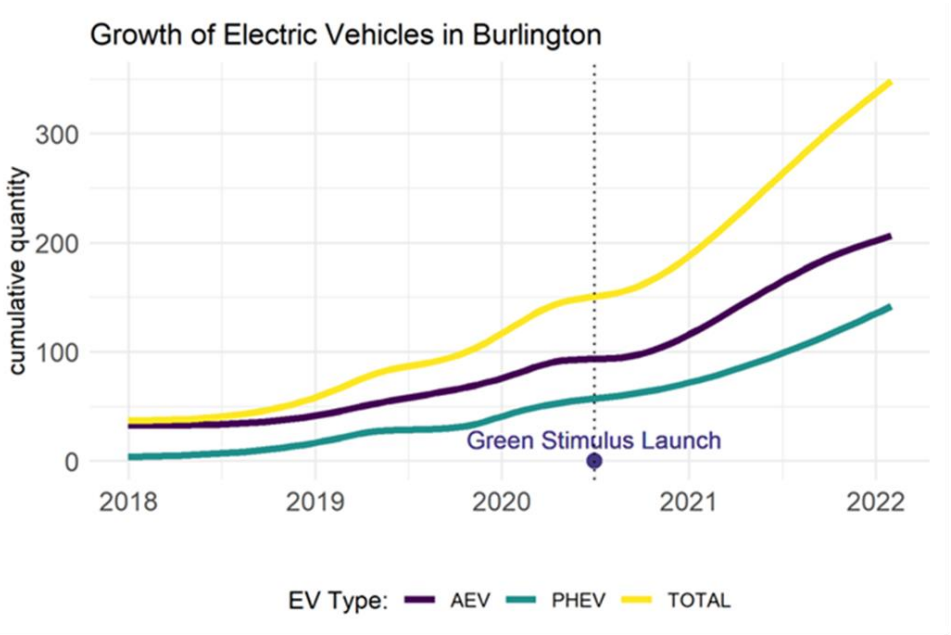
- **EV rebate** of $2,300, or $2,900 for low/moderate income (LMI) customers
- **PHEV rebate** of $2,000, or $2,300 for LMI customers
- **Pre-Owned EV/PHEV rebate** - $1,300, plus $200 for LMI customers
- **Incentive for residential charger** up to $900
- **EV Workplace Charging Station Incentive** of $3,000
- **EV Public Chargers** – 16 stations and 29 ports
- **E-Motorcycle** - $500 rebate
- **E-Bus incentive** – two buses delivered in 2020
- **Electric Induction Cooking –** up to $200 rebate
- **E-Bike rebate** of $200, 0% loans for low-income customers
- **E-Mower** rebate of $100 residential and $3,500 commercial
- **E-Snow Blower** - $15 rebate
- **Custom Programs –**VRF, geothermal, etc.

- **Cold-Climate Heat Pump rebate –** up to $3,350 including $400 LMI rebate
- **Central-Ducted Heat Pump rebate/discount –** up to $9,000
- **Air-to-Water Heat Pump rebate –** up to $12,400, including $400 for LMI customers
- **Heat Pump Water Heater rebate –** up to $1,000, plus $200 additional for LMI customers
- **Electric Forklift rebate –** up to $6,500
- **Electric Leaf Blower, Chainsaw, Trimmer rebates** - $50 residential, $150 commercial
- **Residential Loan Program**– as low as 0% for income-qualified customers for heat pumps, water heaters, Energy Star appliances
- **0% Commercial Loan Program–** on-bill finance for efficiency, heating and cooling, ventilation

NET ZERO ENERGY
BURLINGTON VERMONT

Growth in Heat Pump and EV Incentives

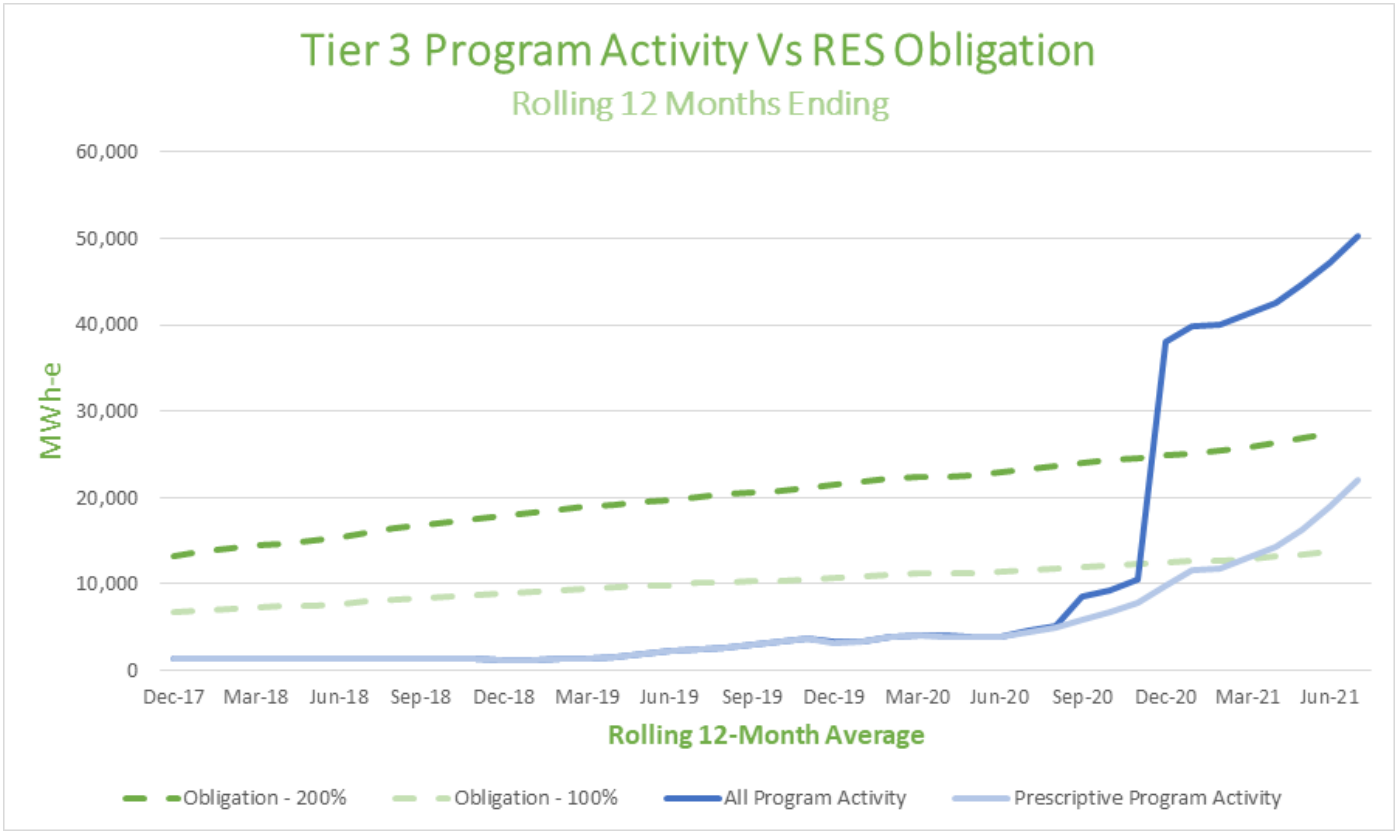




NET ZERO ENERGY
BURLINGTON VERMONT

BURLINGTON Electric DEPARTMENT

CITY OF BURLINGTON, VT. ORGANIZED FEB. 21, 1865



NET ZERO ENERGY
BURLINGTON VERMONT

Double Strategic Electrification (Tier 3) Incentive Funding FY23-25

- **Continue Green Stimulus –** Per PUC Order under Act 151 BED can keep Green Stimulus level incentives for heat pumps, EVs, through at least end of 2023.
- **Support Faster Progress Toward Net Zero Energy Goal –** Funding through Net Zero Energy Revenue Bond proposal for adoption rate double state Renewable Energy Standard compliance level. Incremental GHG reduction beyond business as usual of 47,000 tons lifetime, equivalent to nearly 100,000 barrels of oil consumed.

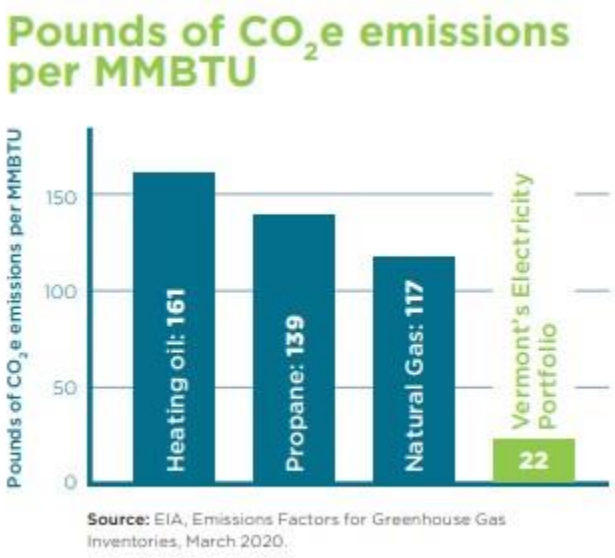
NET ZERO ENERGY
BURLINGTON VERMONT

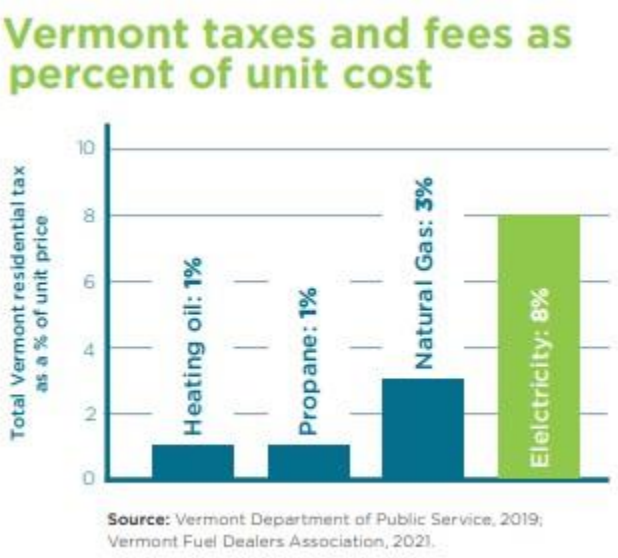
BURLINGTON Electric DEPARTMENT

CITY OF BURLINGTON, VT. ORGANIZED FEB. 21, 1865

Interactions Between Tier 3 and Clean Heat Standards

CO_2 emissions by fuel, and taxes/fees by fuel





See: https://www.eanvt.org/wp-content/uploads/2021/06/EAN-APR2020-21_finalJune2.pdf

NET ZERO ENERGY
BURLINGTON VERMONT

Interaction Between Clean Heat Standard and Tier 3 and Policy Recommendations

- **Clear Target -** Provide a clear, rising requirement for providers to meet, RES is a critical current tool for addressing emissions in electric, heating and transportation sectors, but on its own will only achieve a portion of the emissions reductions needed. Vermont needs additional strong policies like Clean Heat Standard;
- **Flexibility –** Both Tier 3 and Clean Heat Standard proposal avoid being prescriptive in terms of technologies or specific fuels, provided they meet emissions reductions goals in the legislation, to leave room for change and innovation and differences in service territories;
- **Add Policy Tools, Complement Existing Policies -** Keep Tier 3 in place to drive strategic electrification, and ensure Clean Heat Standard drives complementary additional investment in renewable fuels or decarbonization measures to enable greater emissions reductions; and
- **Credit –** White paper recommendation would allow for Tier 3 projects to continue to count toward utility requirements, but also potentially count toward the separate Clean Heat Standard requirement for fuel providers, creating a stronger investment in fossil fuel reduction measures than either program can achieve on its own. Critical that we make progress on emissions reduction and bring more dollars to the effort, and not get caught up in accounting exercises over attribution of credit that reduce overall investment in projects.