

Climate Action

South Burlington Energy Committee
presentation to
South Burlington City Council

“Climate Change is projected to significantly affect human health, the economy, and the environment in the United States...

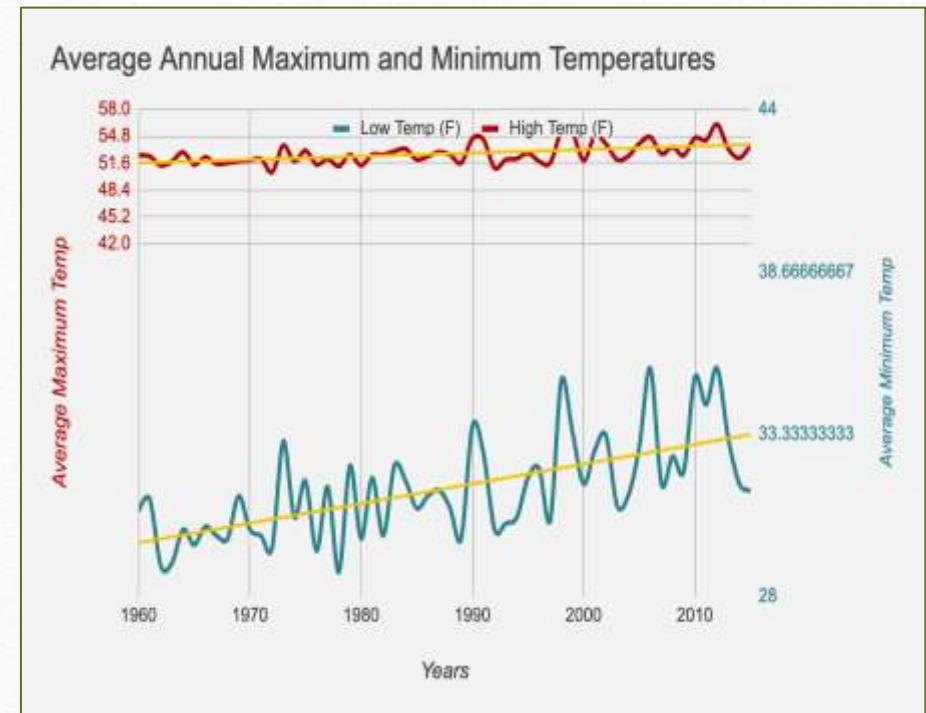
...without substantial and sustained reductions in greenhouse gas emissions (GHGs) and regional adaptation efforts, there will be substantial and far-reaching changes over the course of the 21st century with negative consequences for a large majority of sectors.”

- US National Climate Assessment 2018, US Global Change Research Program

Climate Change in Vermont

- **More rain, floods and intense storms**
 - Rainfall up 71% in most intense storms since 1958
- **Winters warmer and less snow**
 - Snow season is 8 days shorter since 1970, hurting tourism and winter recreation jobs
- **Health impacts worsening**
 - VT highest per capita rate of Lyme disease in US in 2017, compared to almost none in 1990s
 - VT now 5th highest in asthma rate in the US (costs \$7 million/year)
- **Federal disaster declarations up**
 - Growing each decade since 1990 (10, 12, 18) compared to (3,3,2) in the previous 3 decades

VT Temperatures steadily increasing



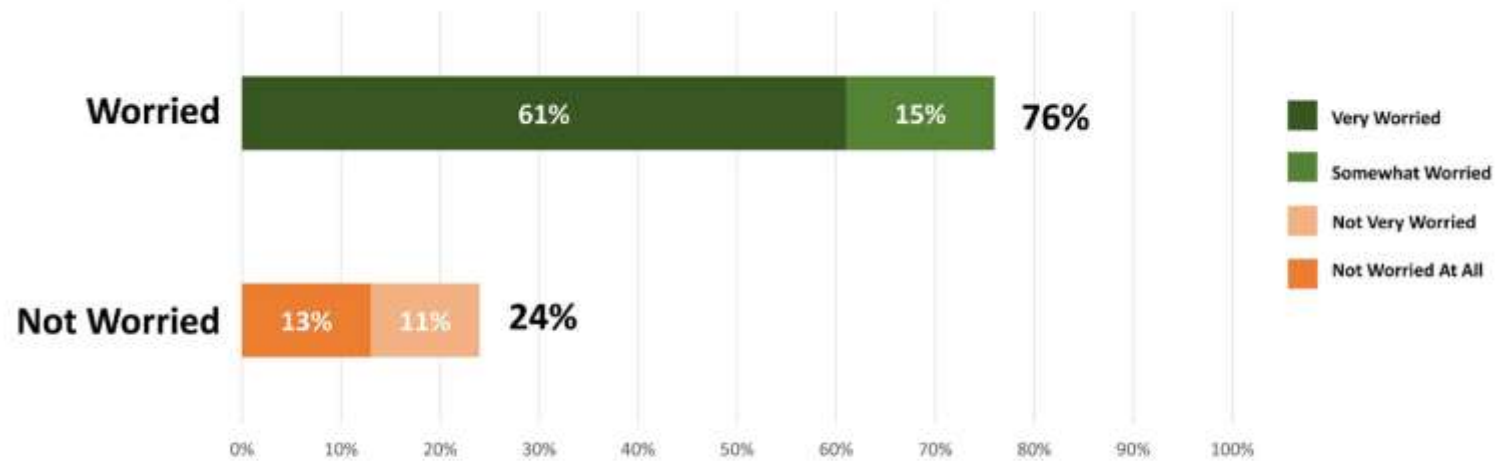
Source: VT Agency of Natural Resources

Climate Polling Results – Survey of 786 Vermont Voters

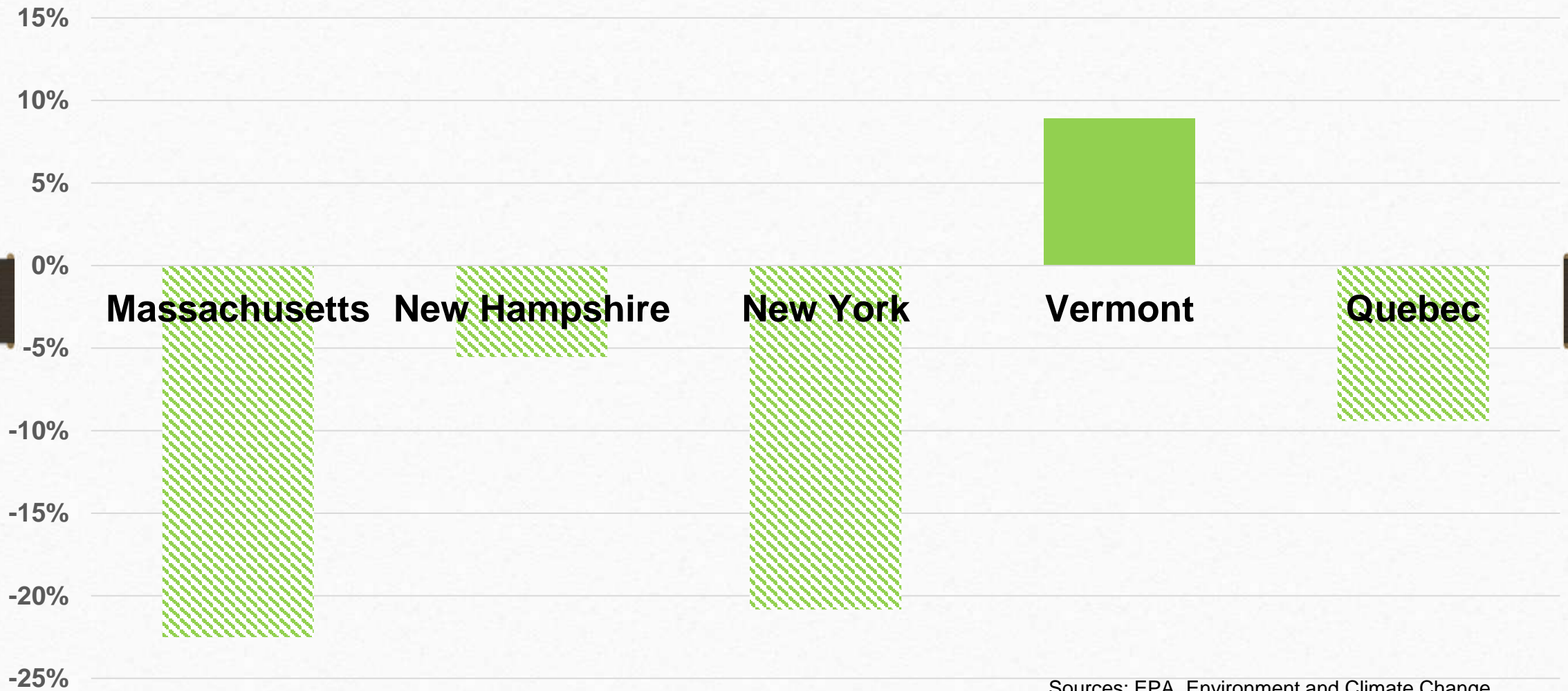
Conducted by Vermont Conservation Voters and Vermont Public Interest Research Group

More than three-quarters are worried about global warming, with 61% “very worried” ...

How worried are you about global warming?



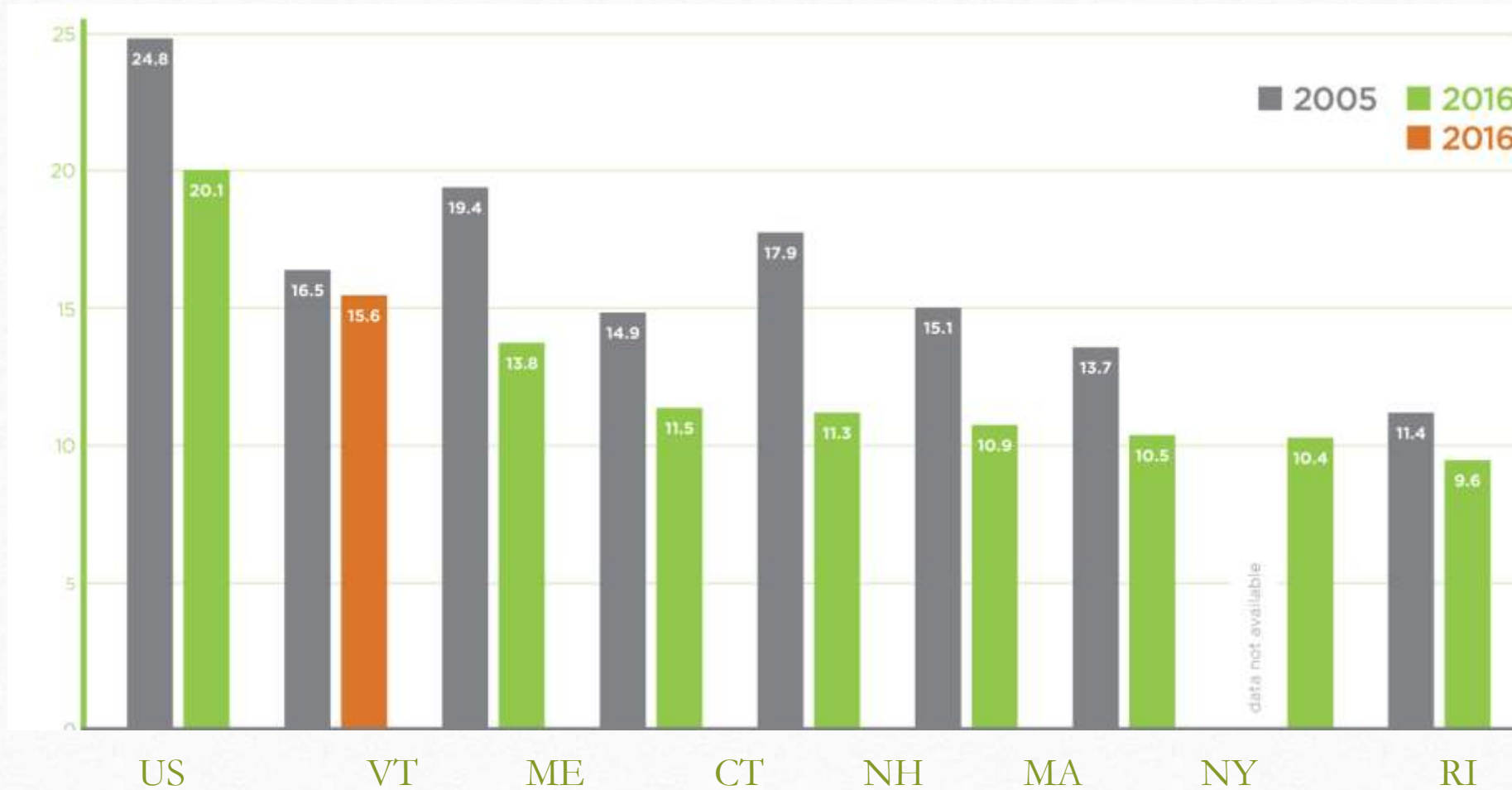
1990-2016: CO2 Emissions from Fossil Fuel Combustion Million Metric Tons CO2 (MMTCO2)



Sources: EPA, Environment and Climate Change

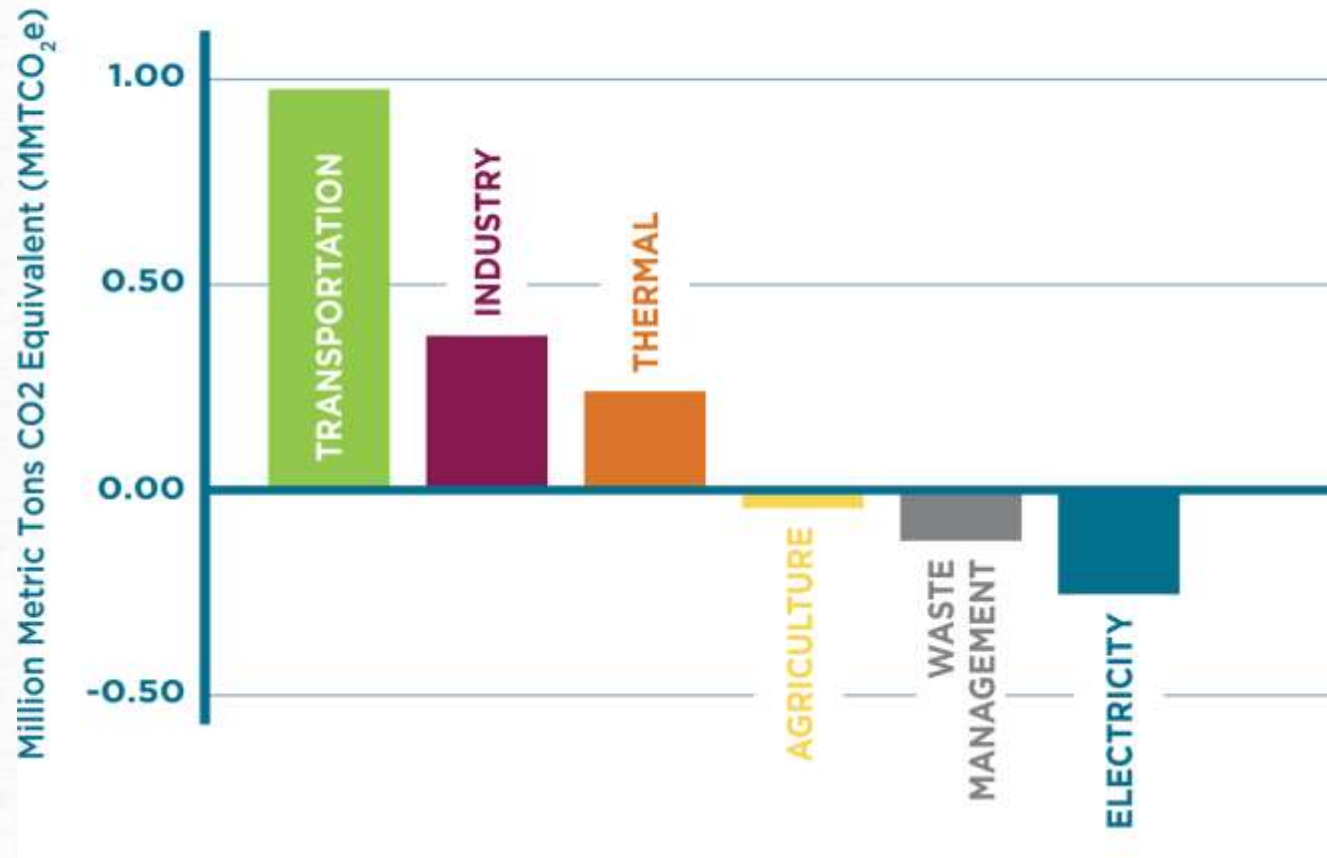
VT now has highest per capita emissions in the region

(metric tons CO₂e per person)



WHY? Transportation and Thermal are INCREASING emissions

Total net change in VT GHG emissions,
1990 vs 2016:¹ 1.11 MMTCO₂e



SB Climate Change Commitments

In August of 2017, the City of South Burlington

- Joined the Vermont Climate Pledge Coalition and committed to meet or exceed the US obligations under **the Paris Climate Agreement to reduce GHGs by 26-28% below 2005 levels by 2025**
- Directed the City Manager to work with appropriate committees and the public to undertake the creation of a South Burlington Climate Action Plan that:
 - a) includes specific goals
 - b) identifies sectors of South Burlington (municipal, institutional, commercial, residential) that contribute to GHG emissions, and
 - c) develops strategies that effectively address these emissions

In 2014, the City Council adopted an Energy Efficiency Resolution

- Reduce energy usage 20% by 2020 (from 2008 baseline)*
- Develop an Energy Efficiency plan
- Report results to City Council on annual basis

BUT, data is not collected and maintained to enable the City to determine whether it is meeting the goals described in these resolutions.

What has SB accomplished to date?

Specific energy projects (by sector)

Electricity

- New high efficiency streetlights city-wide
- New low-energy use traffic lights installed city-wide
- 2.1 MW Solar Landfill covering appx 50% of City and School electricity use. In 2019 provided appx. \$170,000 in revenue.
- SB Energy Prize 2 yr campaign – residents cut annual electricity and gas, saving \$750,000/year
- Street, traffic and police station converted to LEDs in 2019/2020

Thermal

- Energy saving improvements in heating (HVAC) a few years ago:
 - Police station
 - Fire Station
 - Department of Public Works
- Insulation projects in 2020; Thermometer adjustments/replacements
- SB Energy Prize 2 yr campaign – residents cut annual electricity and gas, saving \$750,000/year

Transportation

- Penny for Paths investment in extending bike/ped network
- First City Plug-in Electric Hybrid (leased) and charging station (2019)
- 12 planned Public EV charging stations at New City Center (with VW Settlement Funds in 2021)
- Interim Zoning addressing efficient land-use
- Fast Chargers: 1 Fast Charger at Freedom Nissan/ 8 Tesla SuperChargers at Healthy Living
- Level 2 Public Charging stations: 32+ across the city

Energy Project Reserve Fund

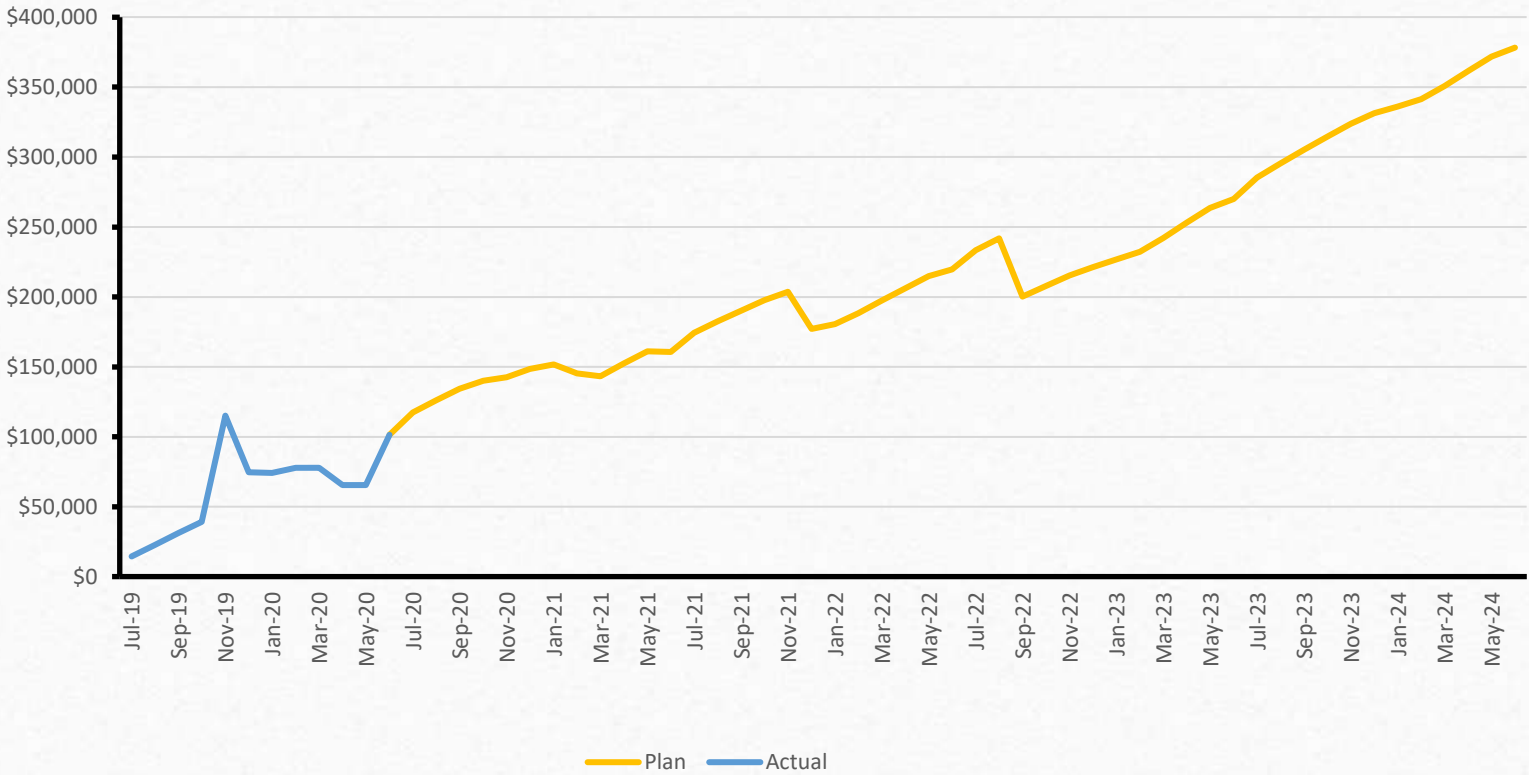
- In January of 2019, the City of South Burlington created the Energy Project Reserve Fund
- Money saved by the City through investments in energy efficiency/renewable energy projects are invested into the Fund
- The Fund is then used to make further capital improvements to City Facilities that reduce the use of energy, with the tax dollars saved then re-invested into the Fund
 - 80% of estimated project savings are re-invested
 - The Fund is intended only to be used for projects that save energy

Energy Project Reserve Fund Financials

	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20
Income											
Solar Array	3,697.55	\$3,806.95				\$39,224.20	\$8,011.65	\$7,880.86	\$7,494.94	\$6,952.77	\$6,952.77
Police Station Lights	\$400.00	\$400.00	\$400.00	\$400.00	\$400.00	\$400.00	\$2,840.40	\$315.60	\$315.60	\$315.60	\$315.60
Power Factor Capacitor							\$383.10	\$383.10	\$383.10	\$383.10	\$383.10
Stewardship Fund							<u>\$4,950.53</u>				
Total Income (cumulative)	<u>\$136,153.09</u>	<u>\$139,960.04</u>	<u>\$139,960.04</u>	<u>\$139,960.04</u>	<u>\$139,960.04</u>	<u>\$179,184.24</u>					
Expense											
Police Lights		-\$11,110									
Power Factor Capacitor					\$7,000						
Building Study	\$4,255										\$5,000
Street & Traffic Lights											
Public Works Ventilation			4,320.00								
Public Works Insulation				3,485.00		3,485.00					
Small Electric Tools									\$2,000		
Public Works Thermostats				1,825.00							
Adaptive Traffic Lights											
Water Turbine											
Total Expense (cumulative)	<u>\$62,032.18</u>	<u>\$62,032.18</u>	<u>\$62,032.18</u>	<u>\$74,342.18</u>	<u>\$74,342.18</u>	<u>\$77,827.18</u>					
Plan Balance	<u>\$74,120.91</u>	<u>\$77,927.86</u>	<u>\$77,927.86</u>	<u>\$65,617.86</u>	<u>\$65,617.86</u>	<u>\$101,357.06</u>					

Energy Project Reserve Fund Financials

Energy Fund Balance
(incorporates current capital fund projects)



**This is a start, but there is so
much more that we can do!**



Proposed actions to reduce Municipal/School Footprint

Electricity

- Install solar on City Center
- Install solar and water turbine in wastewater treatment plant
- The City and the School District should work together to maximize allowable solar Net Metered generation, with the additional 1MW allowed for schools.
- Investigate renewable energy generation/storage to satisfy existing load (without resorting to net metering)
- The City should work with GMP/PUC to allow for electricity generated by wastewater treatment plants to be net metered for city use (increasing the city cap)

Thermal/Building

- Wherever feasible, all new heating equipment purchased should be electric (e.g. cold climate heat pumps) or advanced wood heat (e.g. high efficiency pellet/chip)
- City to encourage school to establish a revolving fund to ensure revenue for future climate actions.
- School should focus on replacement of HVAC systems in revised school budget

Transportation

- At the point of purchase/replacement, the City and School should ensure, wherever feasible that:
 - ✓ All new fleet vehicles are electric
 - ✓ All new mowers, leaf blowers, snow blowers and other equipment are electric
 - ✓ The schools have charging stations installed for staff use
- City and School should introduce incentives for public employees to use carshare/carpool, transit or EVs.
- Install EV charger at every major public/school venue (use Revolving Fund)
- School should seek grants to assist in electrification of bus fleet
- School should identify ways to incentivize school bus use, and discourage student vehicle use
- Improve timing of lights on Dorset and Williston

Proposed actions to reduce Commercial Footprint

Electricity

The City should require that all new commercial development be solar-ready and EV-ready

- The 2020 Vermont Commercial Building Energy Standards include requirements for solar-ready zones on commercial buildings that municipalities can choose to adopt
- Note that 2020 Vermont Residential Stretch Code will require residential developments to be solar-ready effective 1/1/2020.

The City should work with GMP and the local chamber/business community to promote more commercial rooftop solar, sufficient to include EV charging

Climate Business Leaders

The City could develop an award program for businesses that have demonstrated their commitment to energy efficiency, renewables, sustainable transportation, and other carbon-reduction strategies.

Awards/incentives from VGS and Efficiency Vermont could be developed.

Transportation

The City should work with GMP (through Tier III initiatives) to encourage local businesses to:

- take advantage of incentives to electrify their fleets
- Provide onsite EV charging
- Shift all landscaping equipment to electric at time of purchase of new equipment
- Provide incentives to employees to use carshare/carpool, bikes, transit or EVs



Proposed actions to reduce Residential Footprint

Electricity

The 2020 Vermont Residential Stretch Code will require residential developments to be solar-ready effective 1/1/2020.

Thermal/Building

The City should work with Efficiency Vermont and landlords to target weatherization actions in low income and multi-unit housing (learning from Burlington's program with BED)

Housing

The City should incentivize dense development close to already built environments/public transportation and implement a framework for considering the GHG implications of different types of development

Establish a system for disclosure of residential home energy efficiency ratings

Transportation/Housing

City should work to develop/incentivize more public transit

- Assist GMT with public transportation advocacy, and develop more frequency and routes
- Ensure there is a shelter at every bus stop
- Establish park & ride/carpool lots to connect with public transportation, (e.g. I-189 Exit)
- Work with GMP/private sector to add more EV charging stations at schools, malls, businesses
- Learn from Montpelier micro-transit pilot

City/School should incentivize walking/biking

- Bike lane assessment required when roads are repaved
- Periodic Open Streets event (perhaps closing northbound lane of Dorset Street and/or Market Street)
- Showcase bike path with an annual event (marathon/half marathon/5k)
- Work with Bike & Ped Committee to mobilize public participation in increasing bike and ped pathways for short trip local transportation
- Incent walking, busing, biking to school/discourage private vehicle use. Establish covered bike parking at school.

Consolidate trash hauling services

To achieve the City's goals we need
a Climate Action Plan!

What is a Climate Action Plan?

A Climate Action Plan (CAP) is a strategy document that outlines a collection of measures and policies to reduce GHG emissions.

- ✓ Defines GHG reduction goals based on local priorities
- ✓ Prioritizes policies and actions to successfully reduce emissions
- ✓ Provides a guiding framework for achieving those goals
- ✓ Facilitates coordination across SB departments and community stakeholders
- ✓ Serves as the roadmap for a local government to implement municipal and community-wide programs, projects and policies.

NET ZERO
MONTPELIER



Burlington and Montpelier have developed CAPs
that can be used as reference



Goal: to achieve Net Zero Energy use by 2030

Thermal Energy

1. Implement deep efficiency retrofits to public and private buildings through Efficiency Vermont
2. Develop new finance products to fuel the low- and middle-income markets
3. Undertake extensive public outreach and neighbor-to-neighbor education efforts from trusted local sources in the City

Transportation Energy

1. Reduce vehicle miles traveled through expanding public transportation options
2. Shift from gas powered vehicles to high efficiency Electric Vehicles
3. Install a robust EV charging infrastructure
4. Install renewably-powered EV charging capacity at homes, businesses and public institutions.

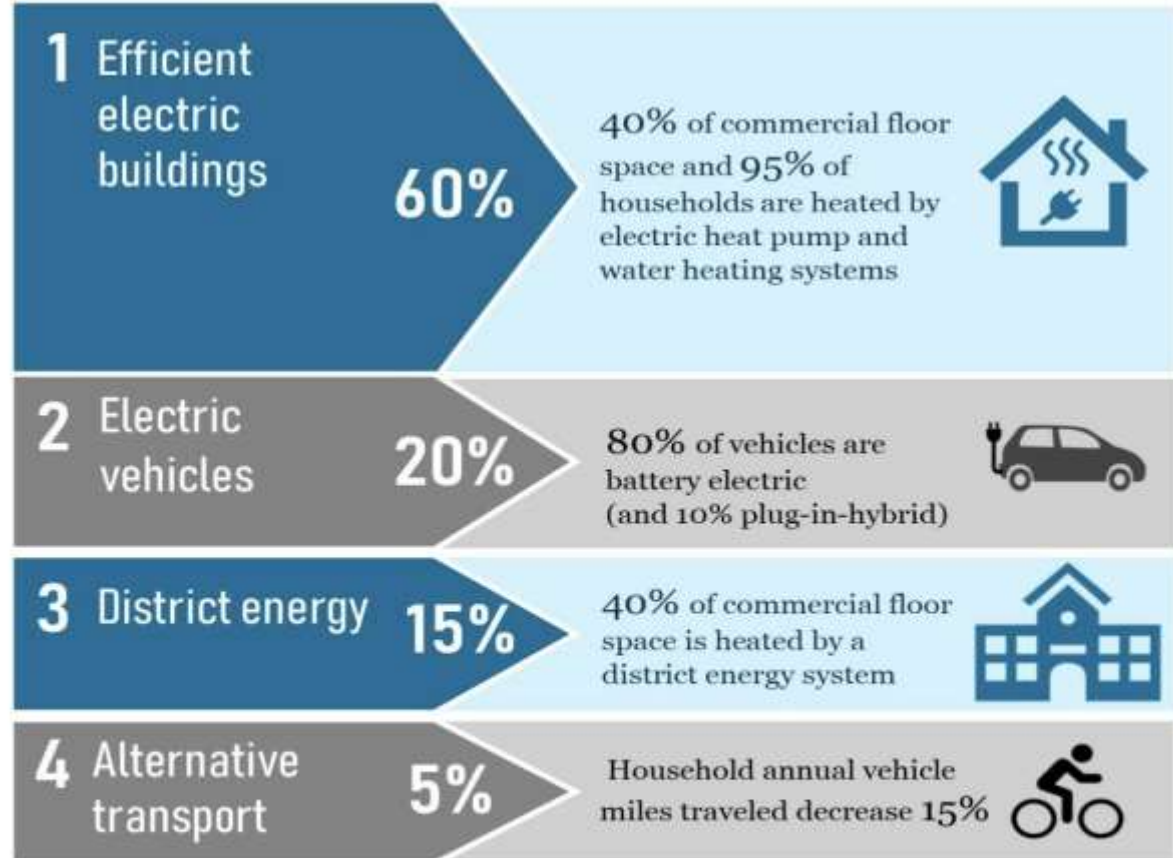
Electric Energy

1. Increase renewable power as we move to strategic electrification through cold climate heat pumps and electric vehicles
2. Expand solar capacity through a “community net-metering” approach to solar energy
3. Develop new community ownership models for larger solar and wind projects to increase local investment and reduce opposition.



Goal - Net Zero Energy by 2030

4 Fossil Fuel Energy Reduction Pathways



ENVIRONMENTAL, ECONOMIC, AND SOCIAL BENEFITS

- Safer and more comfortable living spaces
- Improved air quality
- Healthier residents due to improved air quality and more active modes of transport
- Increased property values
- Reduced congestion
- Economic development
- Support for local jobs
- A more resilient city
- A better planet for future generations



Climate Action Plan Steps*



* Climate Smart Communities Climate Action Planning Guide, March 2014

Proposed Next Steps for a CAP

1. Assign a staff person to manage the overall process
2. Form an advisory committee with broad representation from the community.
 - The advisory committee should include representation from relevant SB committees, as well as other stakeholders from the community (including businesses, academia, philanthropic organizations, faith-based groups and other local interest groups)
3. Set a timeline for CAP completion
4. Measure City's GHG footprint and ensure annual tracking.

(SBEC has been unable to source data to determine how well the City is performing with respect to its 2017 pledge)

Tracking and Reporting

1. Track fuel bills in a publicly-accessible manner; include 2+ years of historical
 - a) Electricity (also show PV and other RE generation)
 - b) Natural Gas (specify portion of renewable NG purchased)
 - c) Oil, propane
 - d) Gasoline for vehicles and equipment; note 2-stroke applications
2. Translate to GHG equivalents using standard factors
3. Create charts of GHG emissions by month
 - a) All city-owned properties
 - b) By building (where possible)
 - c) By department (where possible)
4. Track energy projects, including estimated savings and measured impacts
5. Develop similar tracking for residential and commercial emissions

Summary of Next Steps

1. City Council directs the City to develop a Climate Action Plan (CAP)
2. Assign a staff person to manage the CAP process
3. Begin to track emissions/energy
4. Form an advisory committee with broad representation from the community
5. Proposed new actions to be taken in advance of or as part of a CAP (see previous Municipal, School, Commercial and Residential Actions)
 - Incentivize dense development (and re-development) close to already built environments
 - Consider GHG implications of development
 - Require solar-ready for commercial development
 - Develop a Climate Business Leaders award
 - Incentivize/implement more transit, walking and biking options
 - Develop more Park & ride; bus shelters; more bike lanes; open street events; covered bike parking; bike path showcase; public advocacy.
 - Accelerate installation of public EV charging stations

Climate Action

*...making South Burlington cleaner,
more affordable,
healthier,
and better prepared for the future.*