NET ZERO ENERGY

BURLINGTON VERMONT

AGENDA:

1. BED BACKGROUND
2. NET ZERO ENERGY GOAL AND ROADMAP FINDINGS
    a. Business as Usual
    b. 2030 and 2040 Scenarios
3. NEW PROGRAMS AND INCENTIVES

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Burlington Electric Department (BED)

- **Burlington's municipal electric utility**
  - Public Power since 1905
  - 118 employees, including the McNeil Generating Station
- **21,000+ customers**
  - 17,196 residential / 3,876 commercial and industrial
  - >6,000 residential accounts turn over each year
- **Electricity facts:**
  - Summer Peak: ~65 MW / Annual energy Use: ~350,000 MWH
  - Third largest electric utility in Vermont
  - McNeil is the largest energy producer in Vermont with VY Retirement
  - 100% of power from renewable generation as of 2014
  - No rate increase since 2009

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- **BED is an Energy Efficiency Utility (EEU) appointed by the PUC.**
- **Strong Track Record:**
  - Electricity consumption - 6.1% *lower* than in 1989 (1990 $11.3 million bond for efficiency)
  - Over same period statewide electric consumption increased 8.4%.
  - Over same period U.S. electric consumption increased approximately 29%.
  - Over $70 million invested by BED and our customers in efficiency.
  - Energy efficiency investments in Burlington are saving our customers $12 million annually on electric bills, including avoided energy and transmission and capacity costs.

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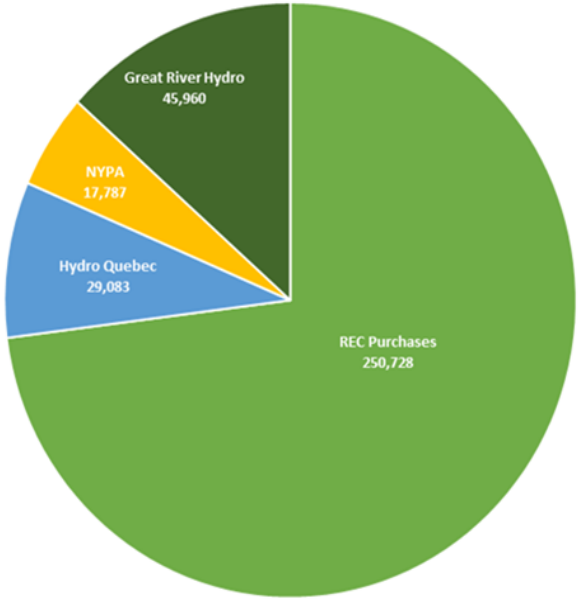
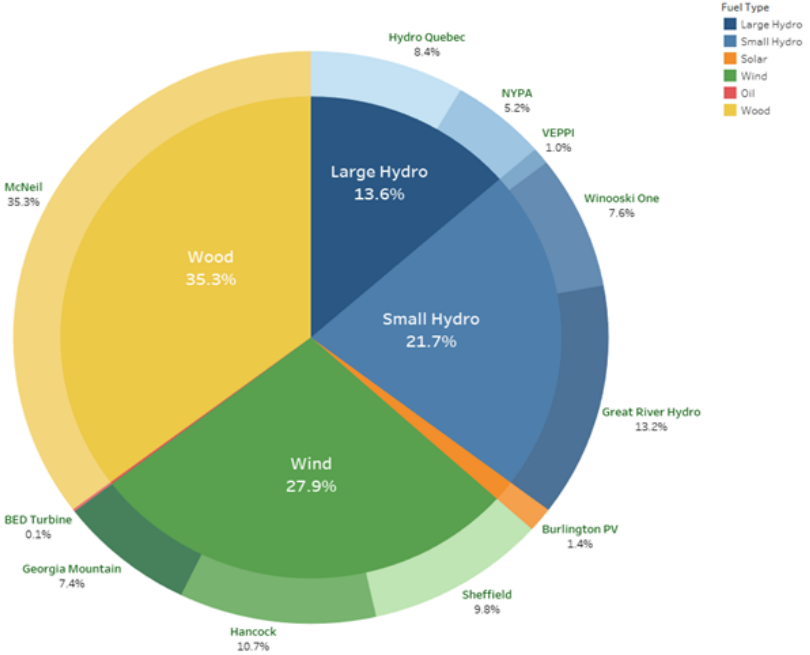
CY 2018 BED RENEWABILITY
Including REC Sales & Purchases



Note: The above graph depicts Renewable Energy Certificates (RECs) that have been retired against BED's electric sales for calendar year 2018. BED retired VT Tier 1 Compliant RECs in excess of electric sales for 2018 by approximately 3%.

2018 BED ENERGY SUPPLY BY SOURCE



NOTE: BED has no contracts for resources fueled by Natural Gas, Nuclear or Coal. 0.1% of generated energy comes from Oil used at the BED turbine. The energy supply profile exceeded sales. The above represents energy supplied and purchased by BED prior to REC sales.

- **BED Tier 3 Energy Innovation Programs**
  - **EV rebate --** $1,200, or $1,800 for low/moderate income customers
  - **PHEV rebate --** $1,200, or $1,500 for low/moderate income customers
  - **Tier 3 incentive for residential EVSE** tied to new BED Residential Charging Rate(credit) – charge off-peak for equivalent of 60 cents a gallon of gas
  - **EV finance partnerships --** VSECU, Vermont Federal and Green Mountain Credit Unions
  - **EV Workplace Charging Station Incentive --** $1,000
  - **EV Public Chargers** – 14 stations and 26 ports
  - **E-Bus incentive** – two buses with an option for more
  - **E-Bike rebate --** $200 at local retail shops

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BED Goal: To Become a Net Zero Energy city by transitioning off of fossil fuels in the thermal and ground transportation sectors

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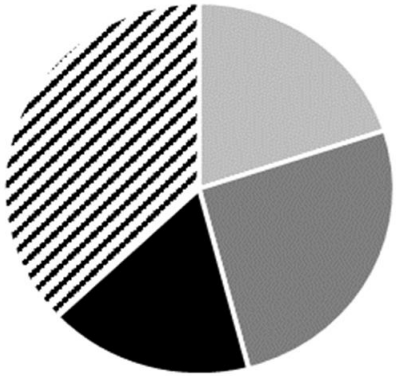
Net Zero Energy Roadmap with Synapse and RSG

- Establish baseline of energy use across all sectors.
- Determine Business-as-Usual (BAU) projection in each sector out to 2030.
- Analyze pathways to Net Zero Energy by 2030 - including cost-benefit
- Present analysis and pathways to Net Zero Energy

Synapse Energy Economics, Inc.

RSG the science of insight



- Residential Buildings
- Commercial Buildings
- Transportation: Burlington Vehicles
- Transportation: Non-Burlington Vehicles

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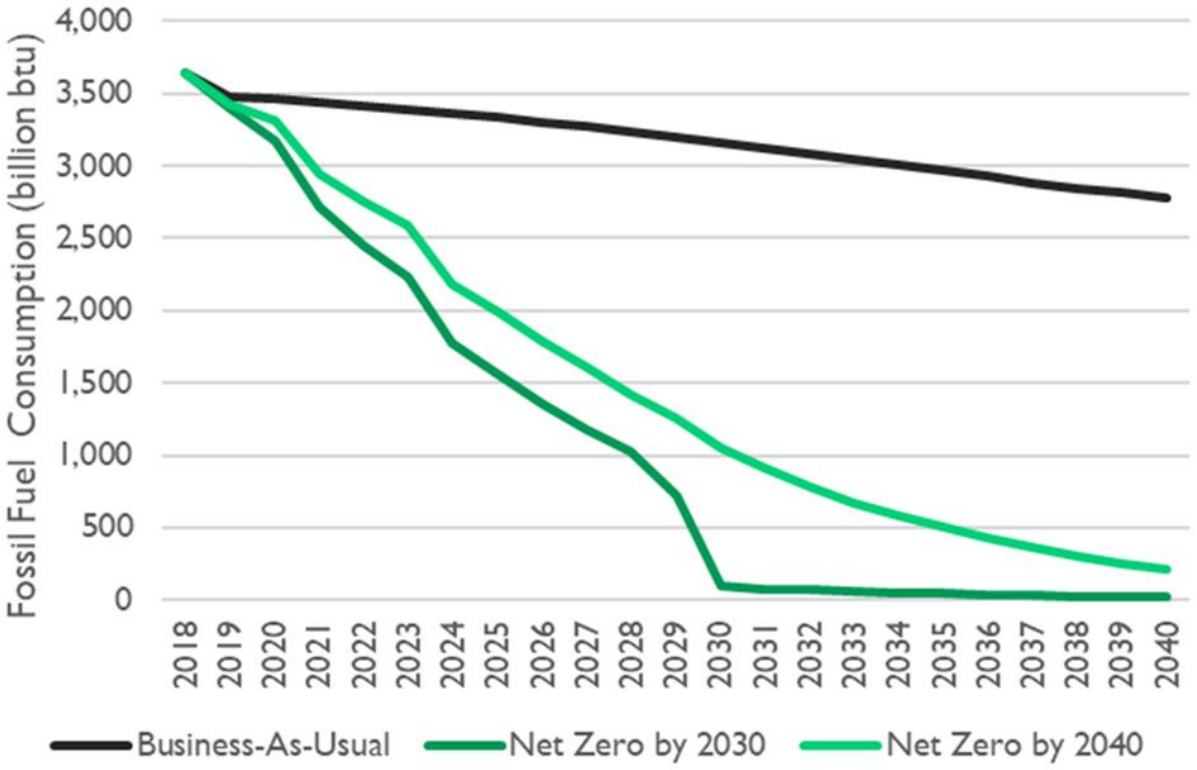
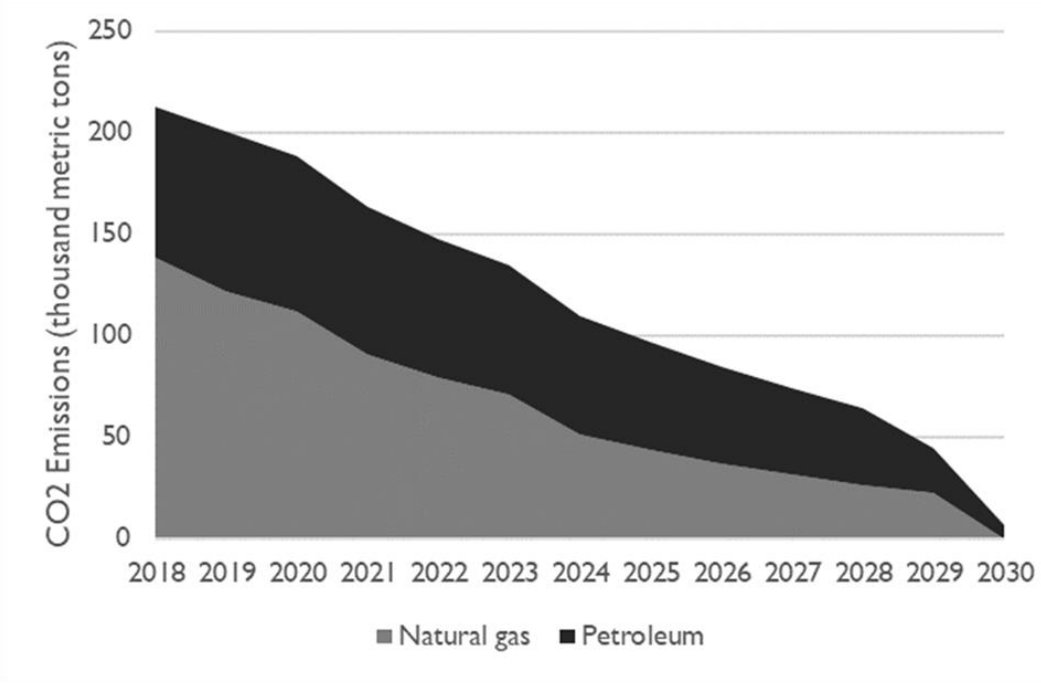


Reduction in CO2 Emissions for NZE 2030



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1 Efficient electric buildings	60%	40% of commercial floor space and 95% of households are heated by electric heat pump and water heating systems
2 Electric vehicles	20%	80% of vehicles are battery electric (and 10% plug-in-hybrid)
3 District energy	15%	40% of commercial floor space is heated by a district energy system
4 Alternative transport	5%	Household annual vehicle miles traveled decrease 15%

BED New Programs

Thermal:

- Up to $2,250 for cold-climate heat pump incentives (includes enhanced incentive for low/moderate income customers)
- New heat pump hot water incentive
- Up to $6,500 for electric forklifts
- Energy efficiency standards for rental housing
- Energy efficiency workforce training

Transportation:

- Up to 2 EV rebates per household or business, more for fleets
- Level 1 charging cord for off-peak EV rate (60 cents a gallon equivalent)
- More than 20 new EV chargers, including at multi-family buildings
- CarShare EV

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