

Overview of Energy Issues

January 15, 2021

DEPARTMENT OF PUBLIC SERVICE

BEFORE HOUSE ENERGY & TECHNOLOGY COMMITTEE

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Topics Covered

- Jurisdictional Overview
- Vermont's distribution utilities
- VELCO and ISO-NE
- Components of electric rates
- Residential and commercial cost of electricity,
- Cost of electricity in VT
- Forecasted load and demand

Jurisdictional Overview

Federal Energy Regulatory Commission (FERC)

- Sale of electric energy at wholesale (sale for resale) in interstate commerce
- Transmission of electric energy in interstate commerce
- Setting reliability requirements

Federal Power Act

VT Public Utility Commission (PUC)

- Retail sales
- Siting of transmission and generation facilities
- Renewable energy requirements
- Service quality requirements

Title 30 of Vermont Statutes

VT Public Service Department

- Ratepayer advocate in regulated utility matters
- State Energy Office
- Telecommunications Policy
- Consumer Affairs
- Comprehensive Energy Plan

Title 30 of Vermont Statutes

Vermont's Distribution Utilities

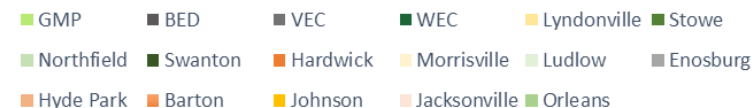
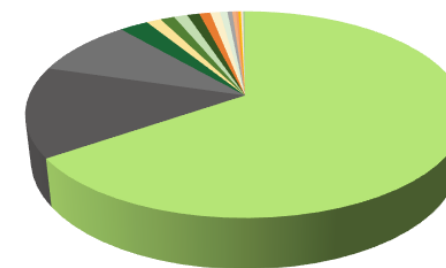
Vermont Electric Utilities

- 1 IOU (serving $\frac{3}{4}$ of VT load or 260,000 customers)
- 2 Coops
- 14 Municipals
- 1 transmission utility (VELCO)

Vermont Renewable Deployment

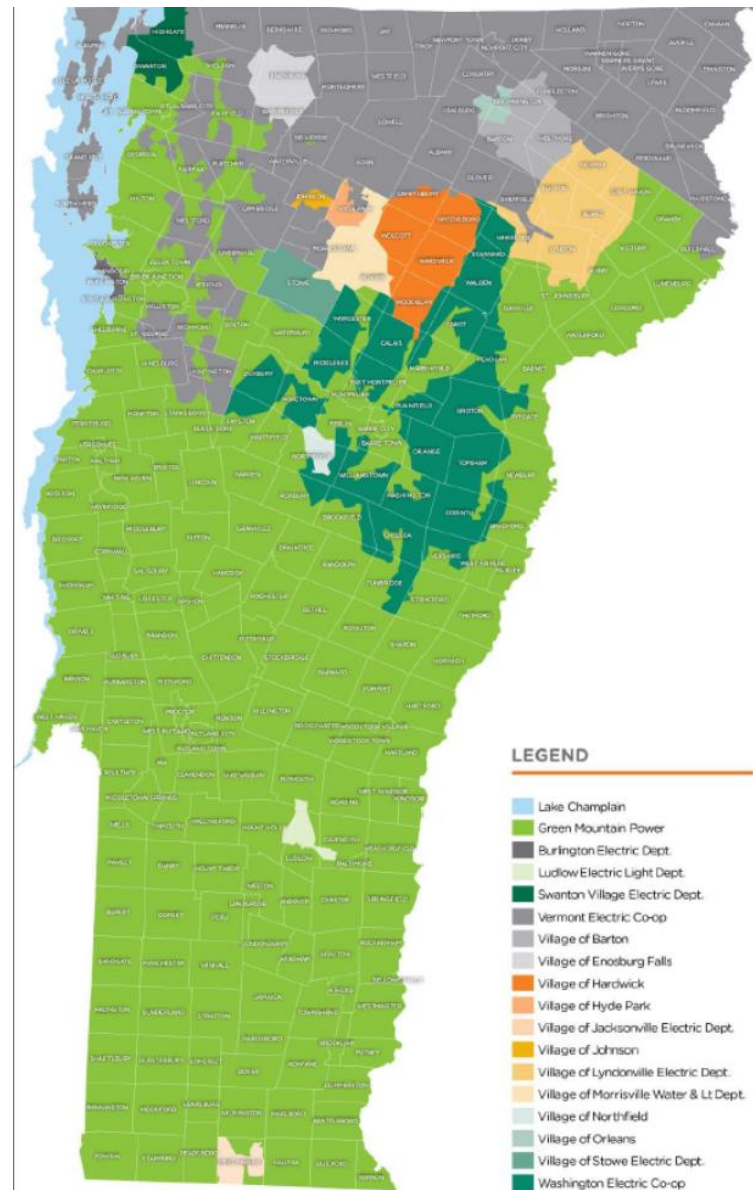
- 380 MW Solar PV
 - 150 MW Wind
 - 200 MW In-State Hydro
 - 70 MW Biomass
 - 8 MW Landfill Gas
 - 5 MW Methane Digesters
- 1000 MW Peak**

Share of VT load



1 Natural Gas IOU

- ~53,000 customers in 3 counties



Vermont's Energy Efficiency Utilities

Efficiency Vermont

- “Statewide” Electric & Thermal Efficiency Programs for unregulated fuels

Burlington Electric Department

- Electric and unregulated Thermal Efficiency services in own territory

Vermont Gas Systems

- Natural Gas Efficiency Services

30 V.S.A §209 creates an Energy Efficiency Charge to acquire “all reasonably available cost- effective energy efficiency”

- Directs revenues from Vermont’s participation in Regional Greenhouse Gas Initiative and Forward Capacity Market to Thermal Fuels

VELCO (Vermont Electric Power Company)

Owned by Vermont's distribution utilities

- Established 1956 to access energy from New York Power Authority

Subject to federal and regional reliability standards and operational control by ISO-NE

Funded through:

- Regional Network Service (RNS)– pays for transmission that provides regional reliability; same rate for all New England Transmission Owners
- Vermont Transmission Agreement – pays for local transmission and any other costs not recovered under RNS

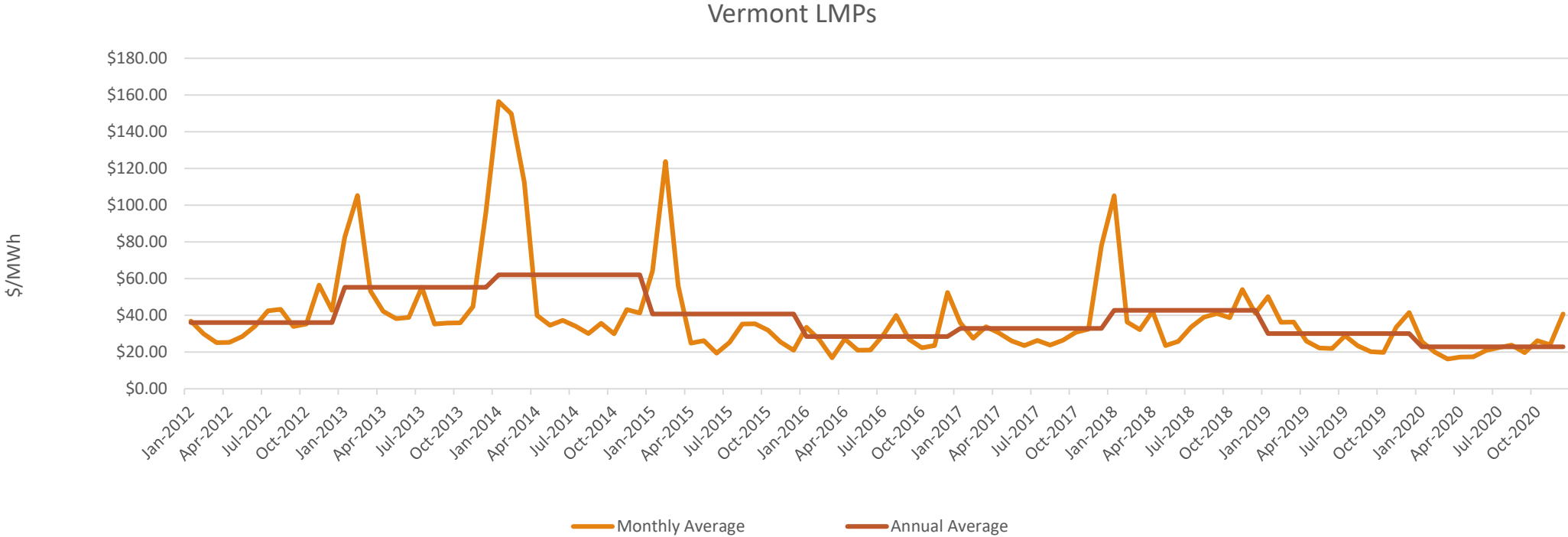
ISO New England

Regulated by the Federal Energy Regulatory Commission

Responsible for:

- Designing and implementing wholesale electricity markets
 - Day-ahead and Real-time Energy Markets, Forward Capacity Market, Ancillary Services
 - Generally, generators over 5 MW required to participate in these markets
- Operating the New England transmission system
 - VELCO owns but operation is under the direction of ISO-NE
- Power system planning to meet federal and regional reliability standards

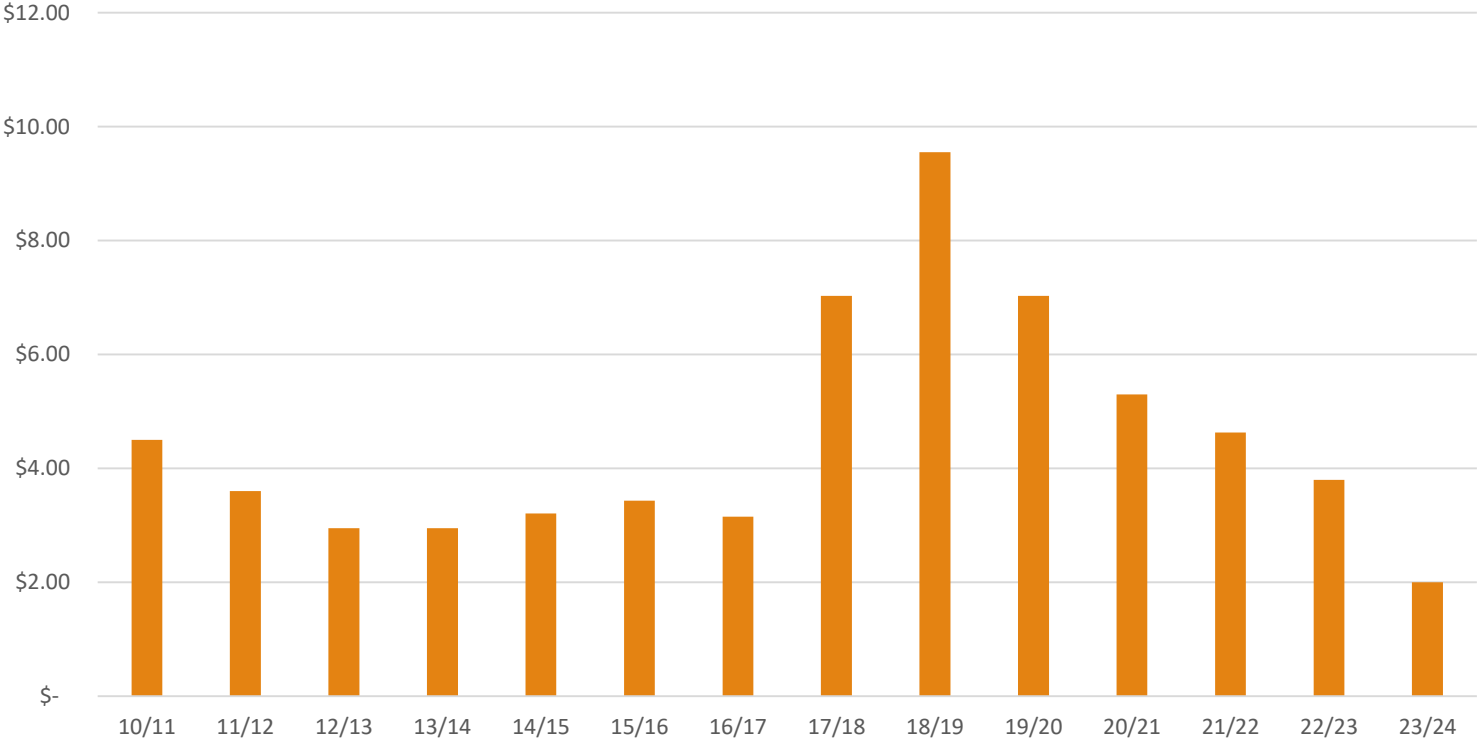
New England Wholesale Energy Prices



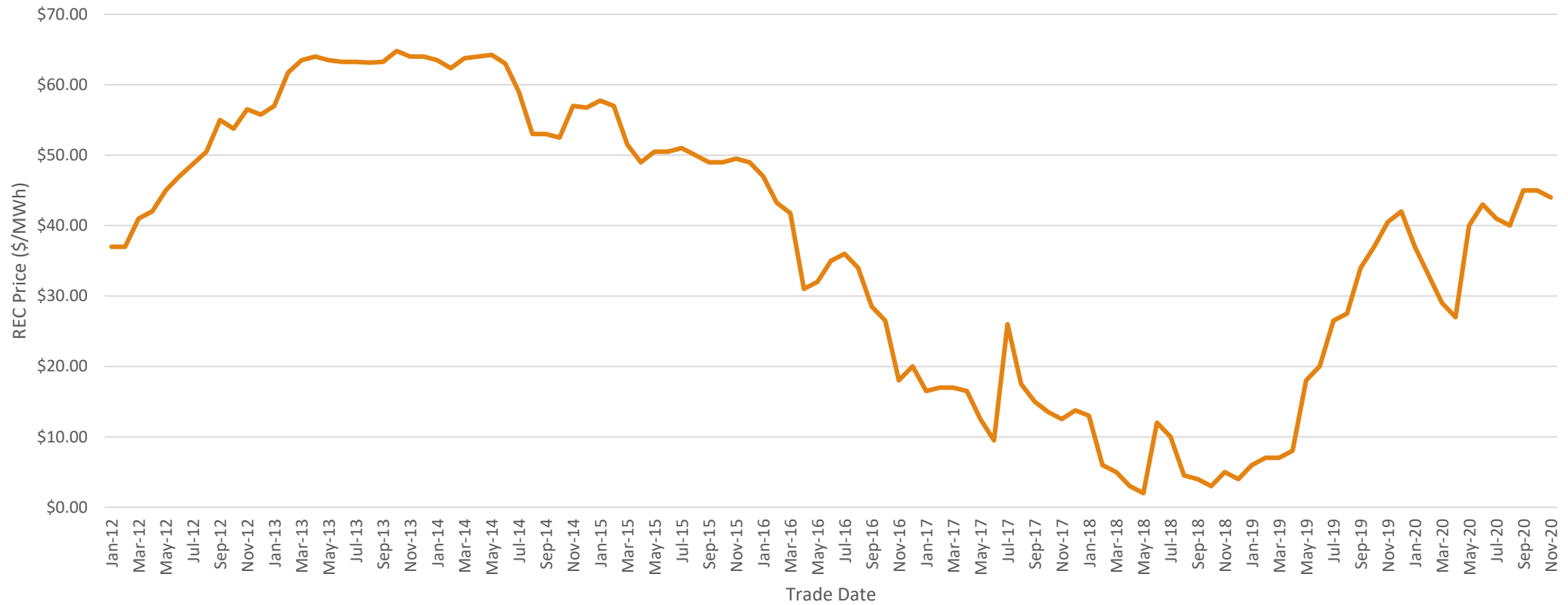
Prices shown are real-time, Vermont zone averages

New England Capacity Prices

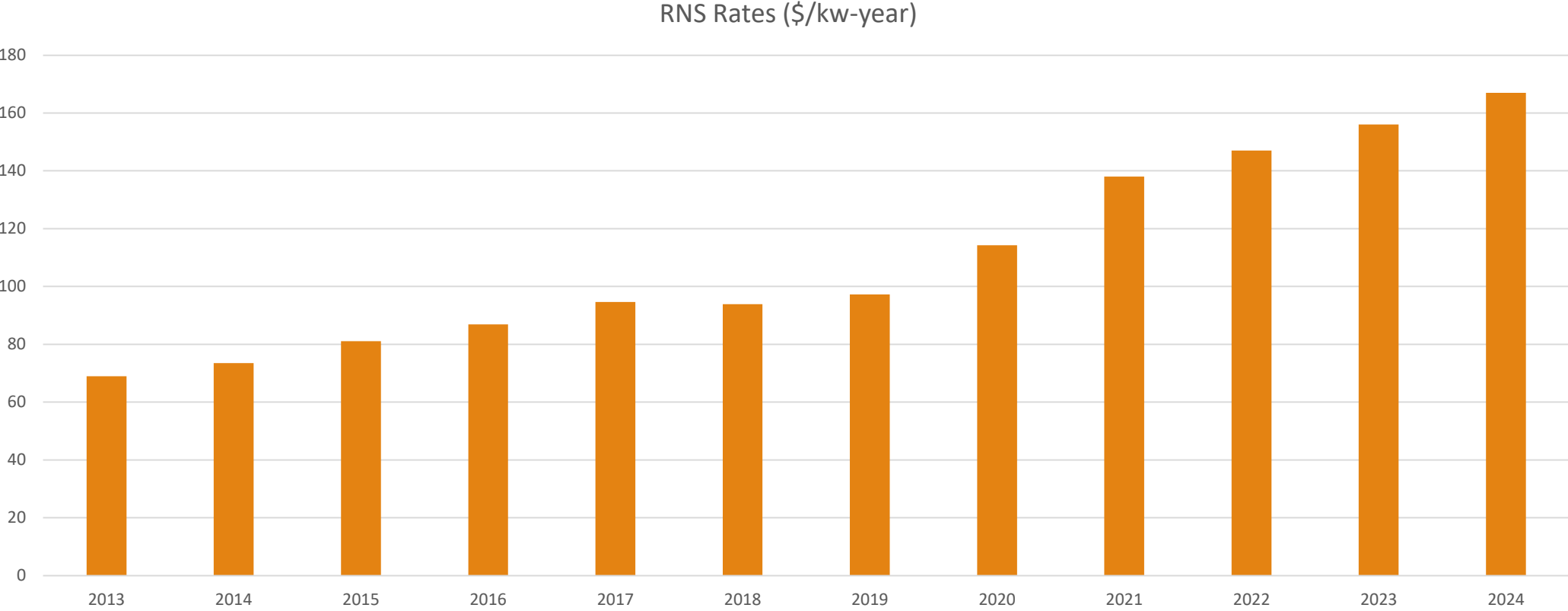
FCA Prices (\$/kW-month)



MA Regional Class I REC Prices



Regional Transmission Costs





Power Supply and
Transmission (approx.
61%)

Energy
Capacity
Renewable Energy Credits
Regional Network Service



Other Operations and
Maintenance (approx.
16%)

Distribution
Customer Accounts
A&G expenses



Capital Costs (approx.
23 %)

Return on equity or Times
Interest Earned Ratio,
Depreciation, Income Tax,
Interest

Components of Electric Rates

Elements of an Electric Bill

Customer Service Charge

- Designed to recover the costs including meter, and line drop

Energy (per kWh) Charge

- Typically, the majority of the electric bill; designed to recover costs not covered by customer service charge
- Many municipal and cooperative utilities include Inclining Block Rates, with initial block of kWh that is relatively inexpensive and next block is significantly more expensive

Energy Efficiency Charge

- Funds the Energy Efficiency Utilities, designed to acquire “all reasonably available cost-effective efficiency” resources

Demand Charge

- Does not apply to most customers; designed to recover costs associated with high peak loads

Distribution Utility Electric Rates

Residential Rates can vary widely

Ludlow

Customer Charge: \$6.56
First 100 kWh: \$0.0523
Above 100 kWh: \$0.1179

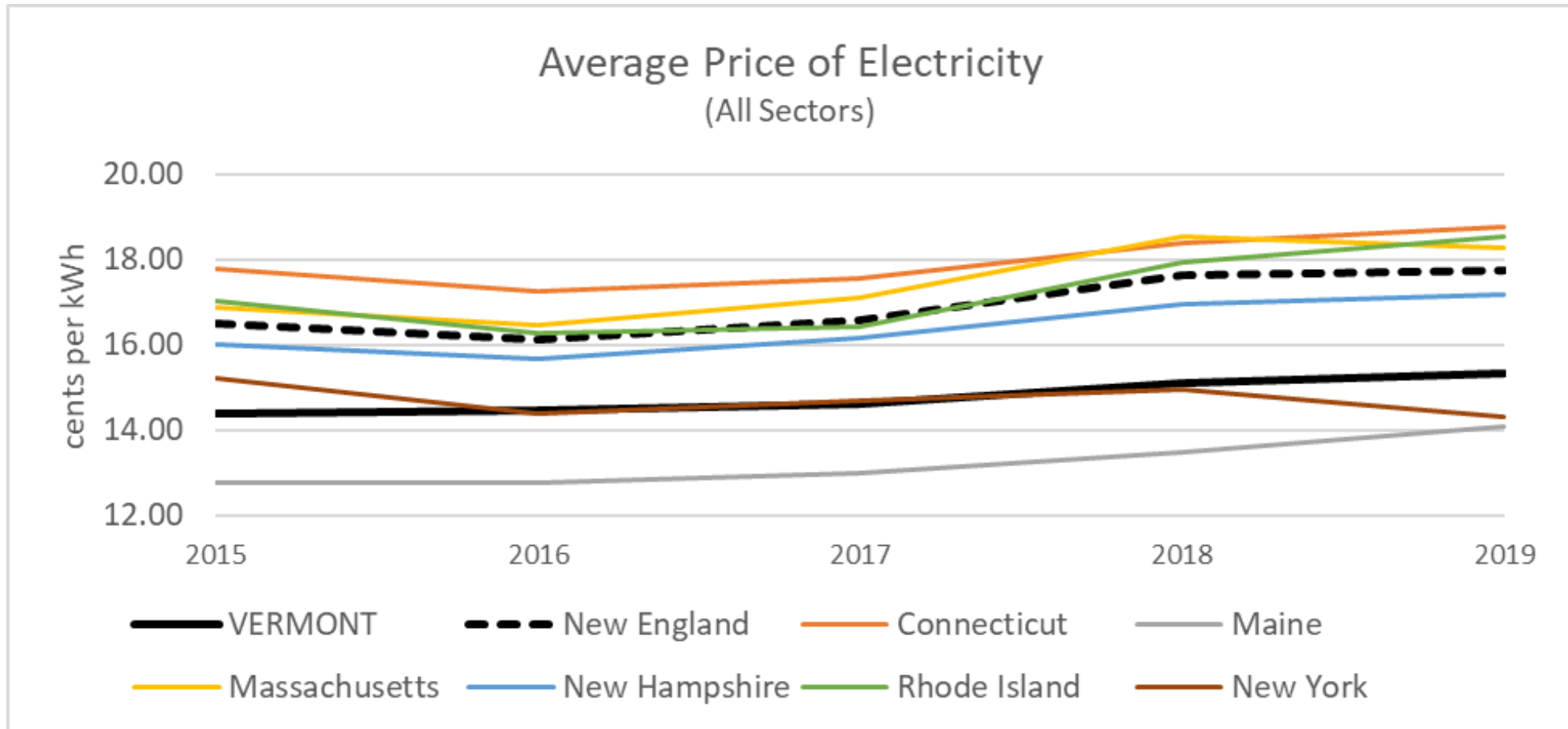
WEC

Customer Charge: \$18.01
First 100 kWh: \$0.08476
Above 100 kWh: \$0.23292

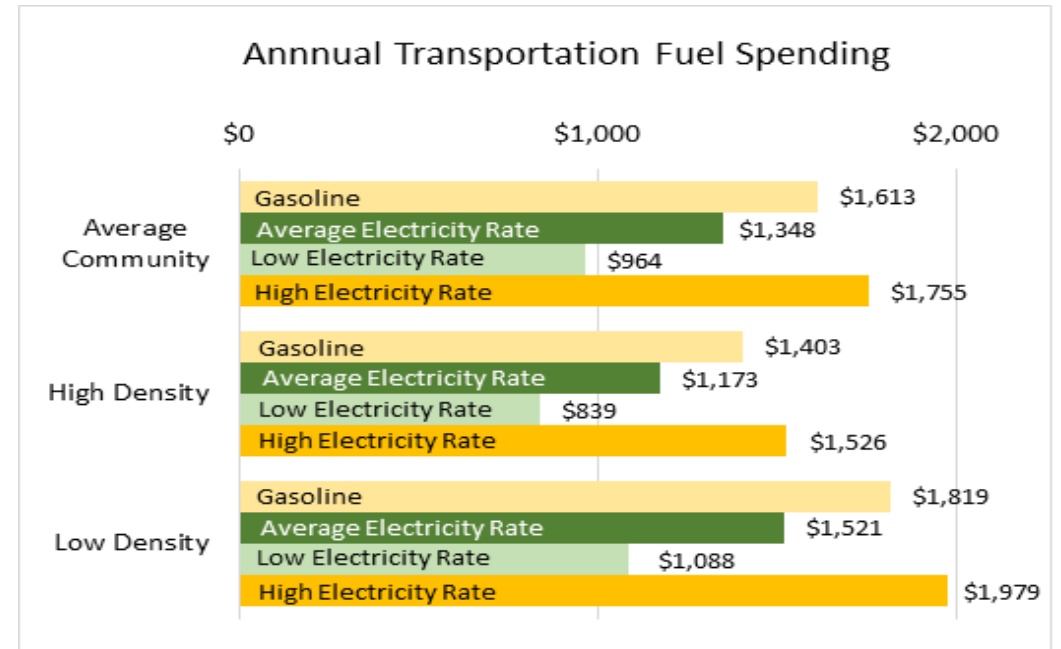
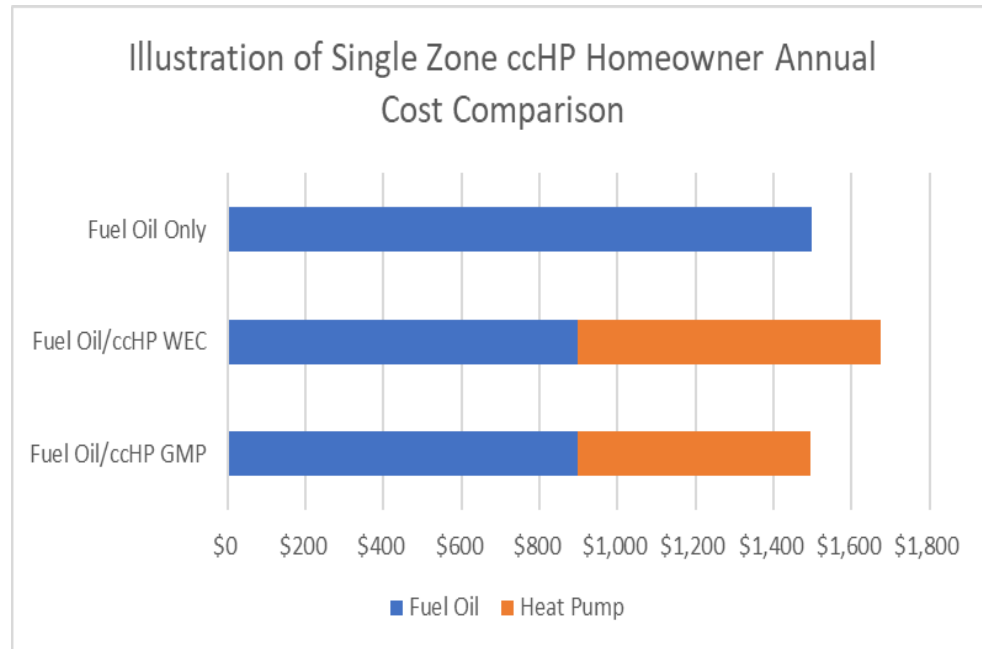
GMP

Customer Charge: \$14.76
Usage: \$0.16859

Vermont and Regional Electric Prices



Cost Implications

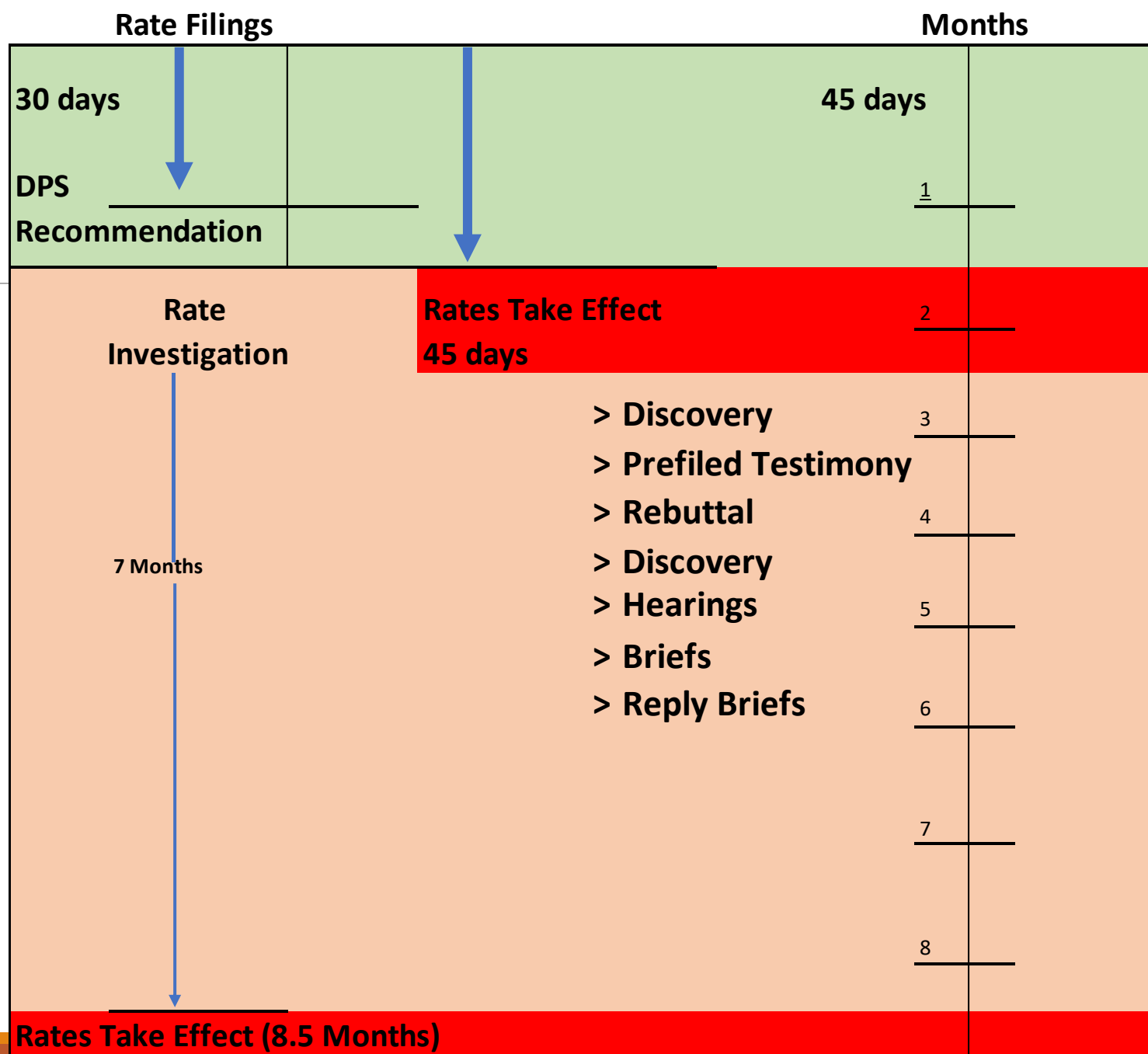


* Heat Pump Example is over a single year, assuming \$2.50/gallon fuel oil, 40% heat displacement, 2.5 COP

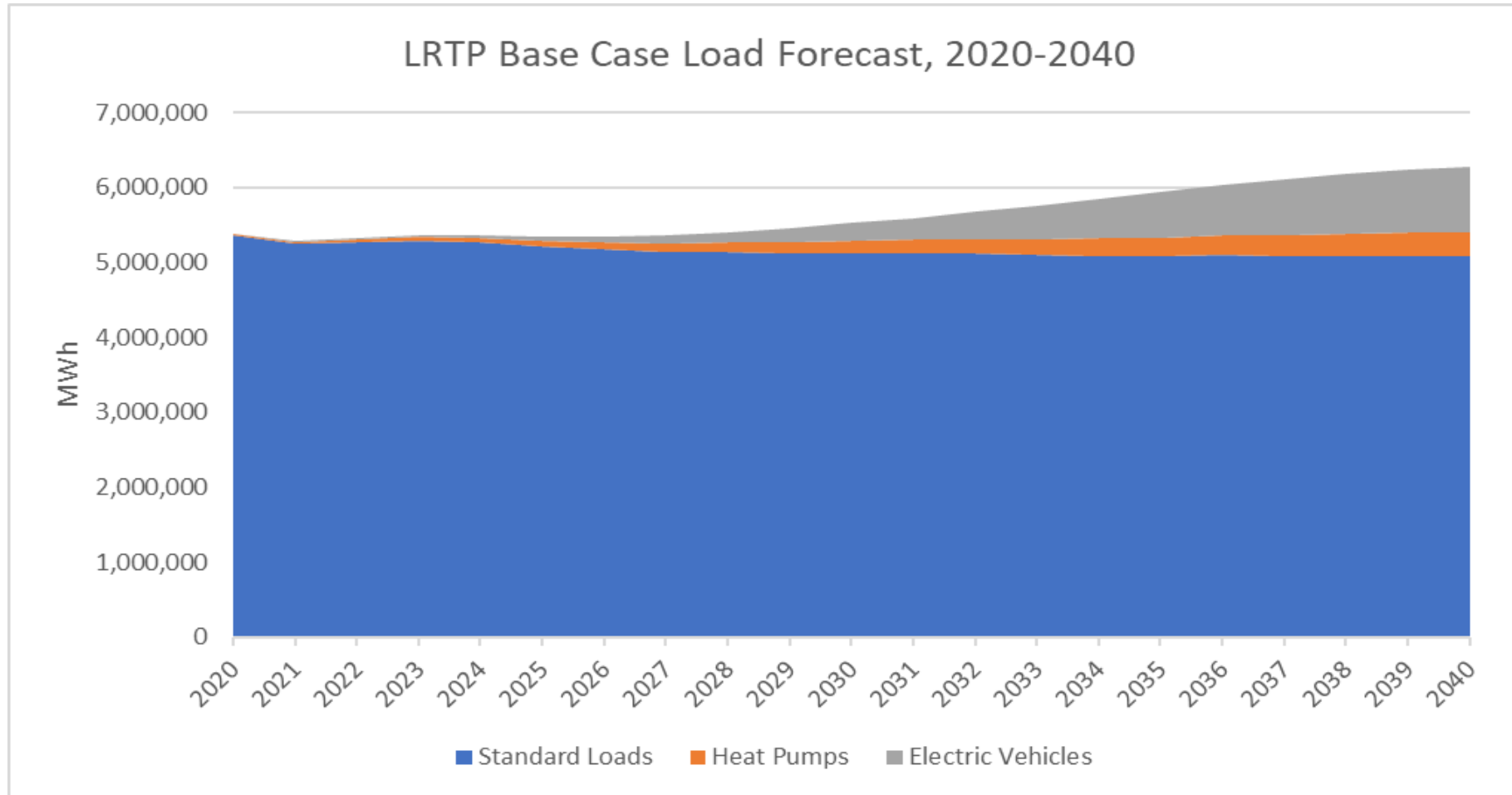
** Trans example assumes household VMT from three different communities, household VMT, sedan internal combustion engines with similar all-electric models, electric rates that vary between one available off-peak EV rate and highest retail rate

Traditional Rate Case Filing

30 V.S.A. §225, 226, and 227

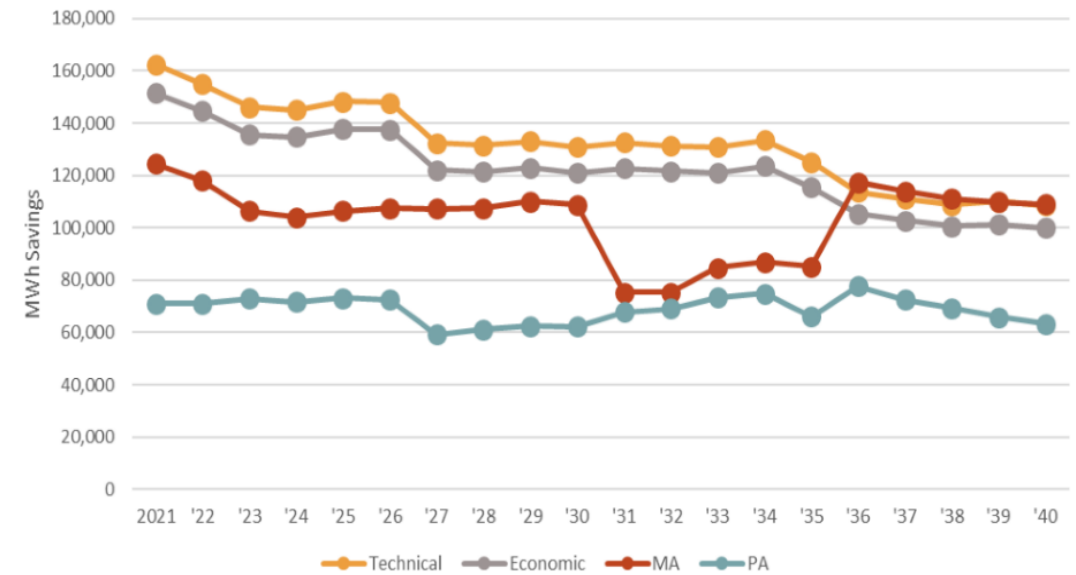
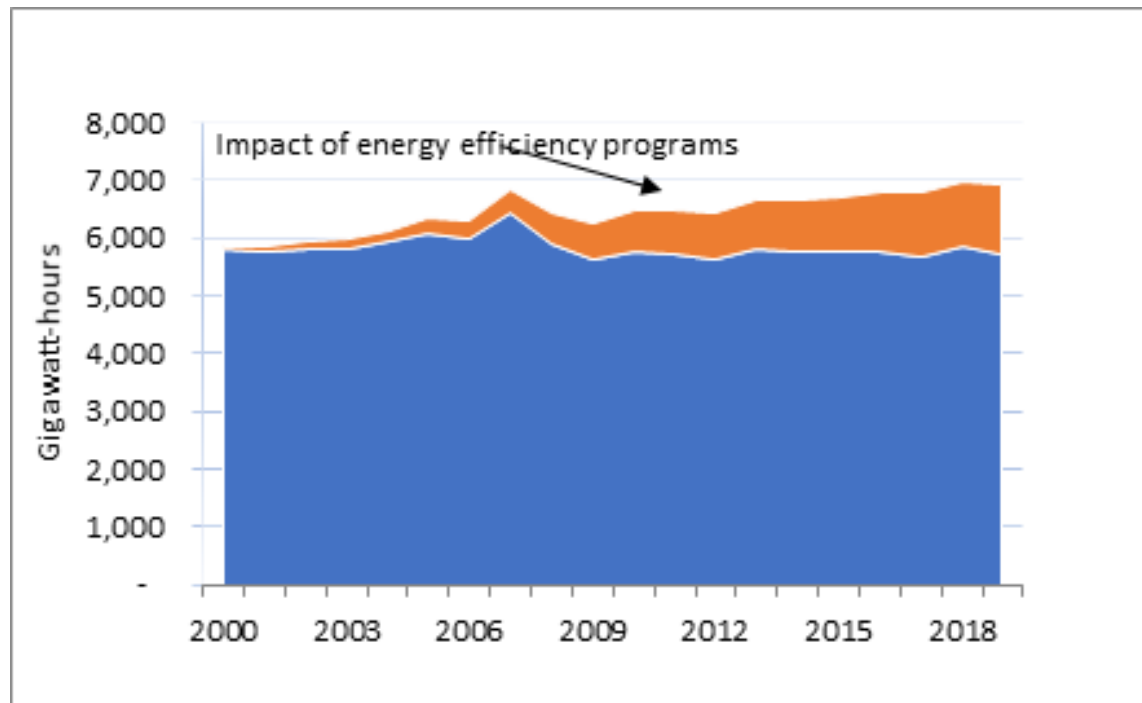


Vermont Load Forecast



Source: 2020 Long-Term Electric Energy and Demand Forecast Report, Vermont Electric Power Company, prepared by Itron (in press, but will be available at: <https://www.vermontspc.com/>)

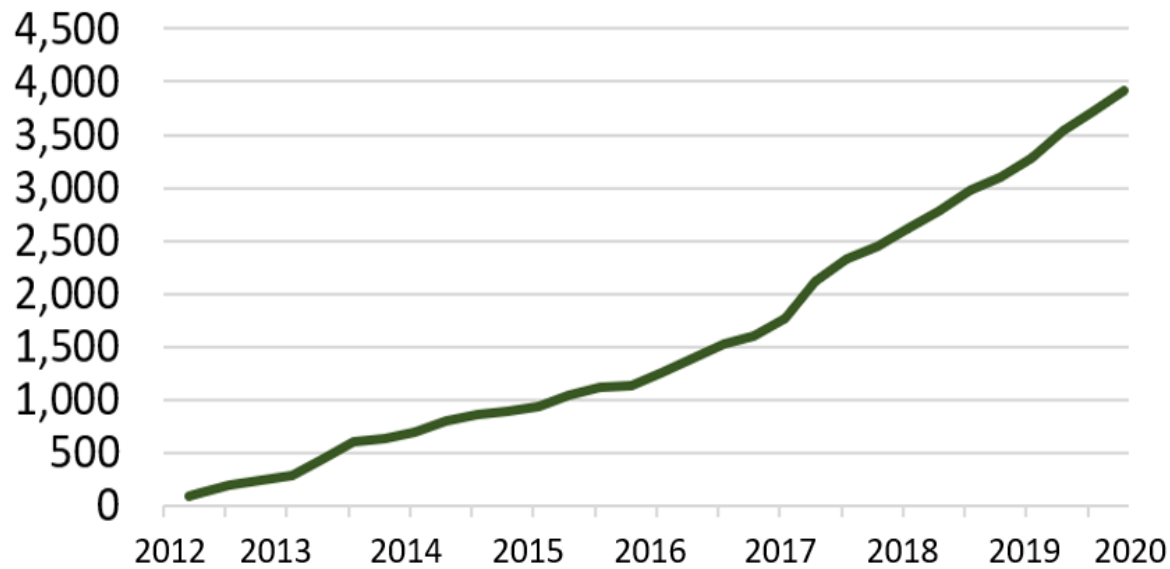
Traditional Electric Efficiency in forecast



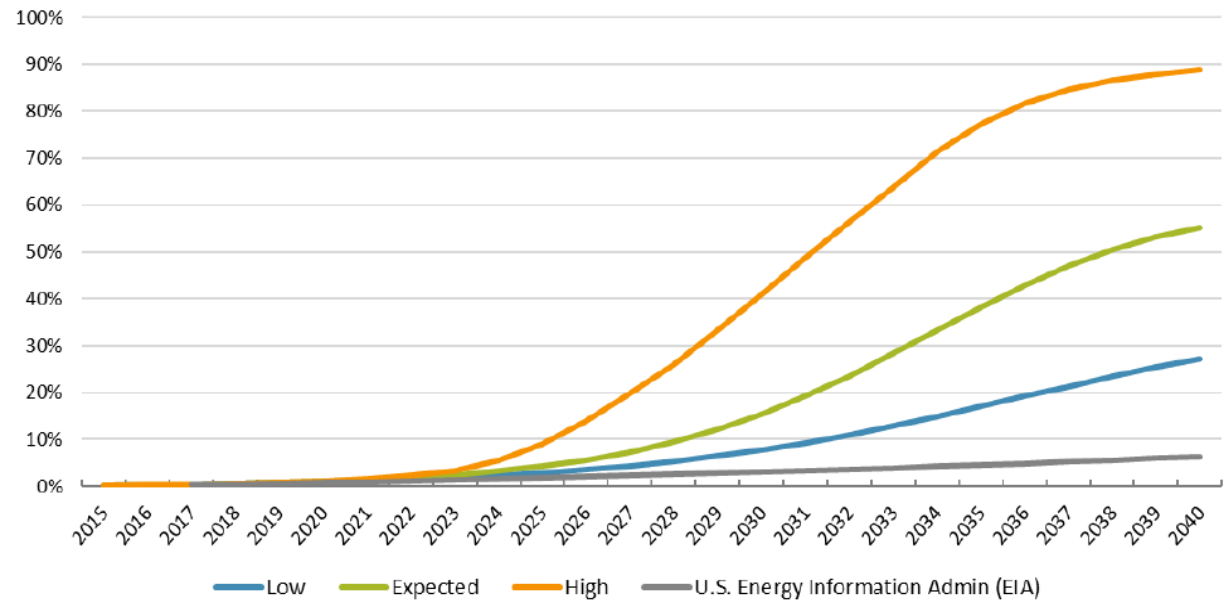
Electric Vehicles

Registered Electric Vehicles in Vermont

October 2012 – April 2020



EV Share of Total LDV Registrations

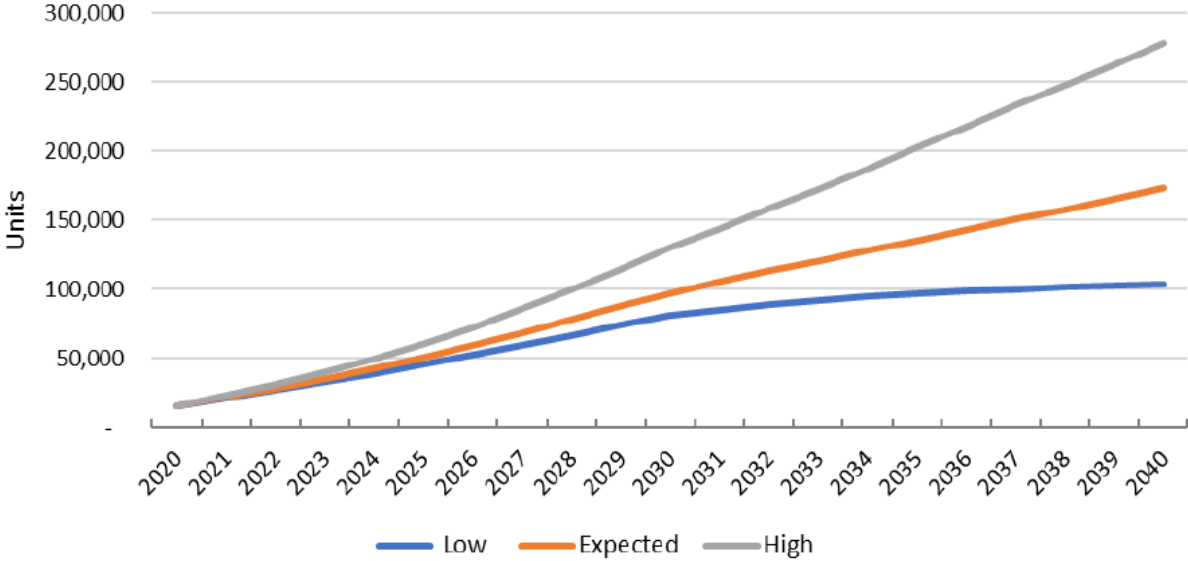


Heat Pumps

ANNUAL HEAT PUMP SALES IN VT

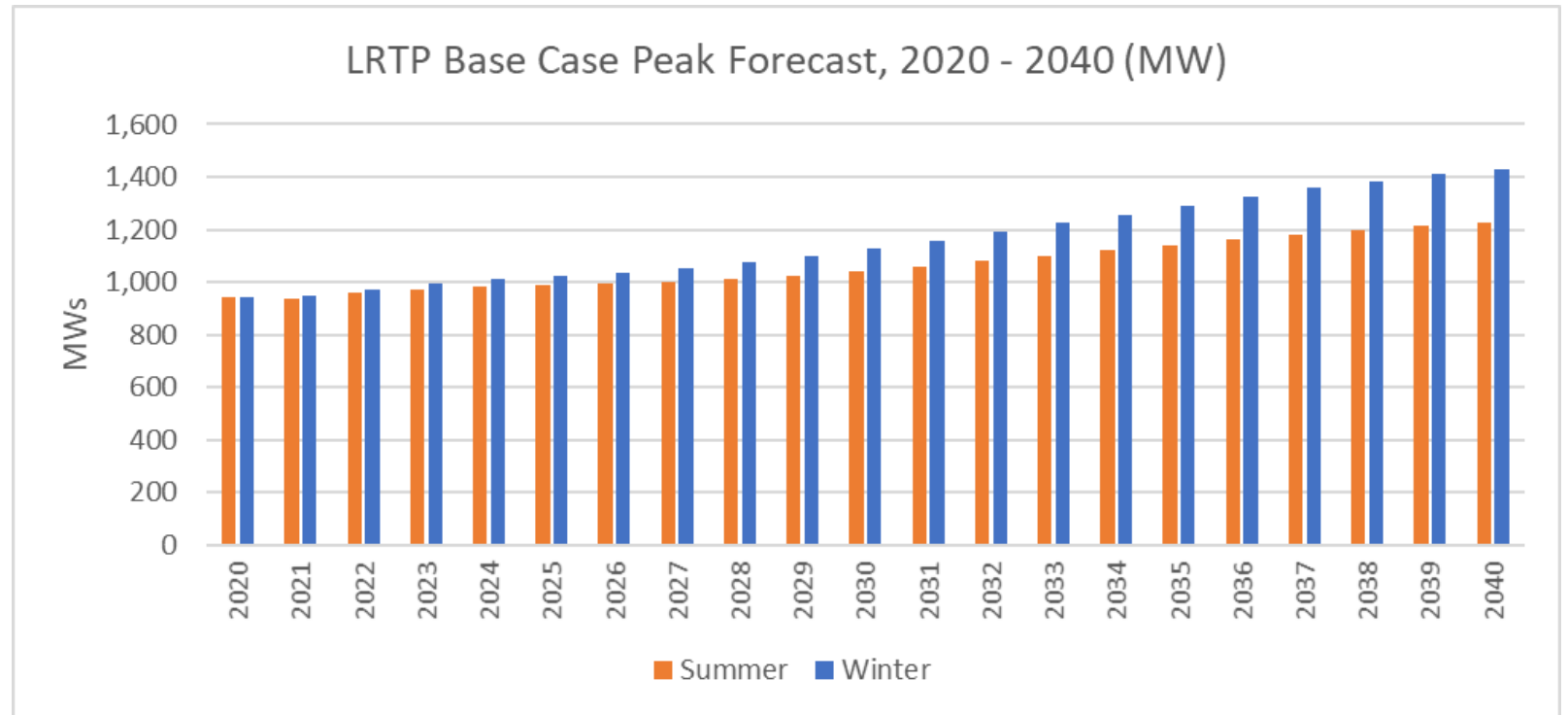


Heat Pump Projections



Vermont Peak Load Forecast

- Includes base forecast of EVs, Heat Pumps, Solar
- Assumes NO load control



Vermont Seasonal Load Profiles

