



TEUC Presentation

Burlington Electric Department

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BED Overview

- Burlington's municipal electric utility
 - Public Power since 1905
 - 117 employees, including 36 at the McNeil Generating Station
 - Owned fiber optic loops and upgraded SCADA system
 - ~96% advanced meter deployment
- 20,000+ customers
 - 16,763 residential / 3,829 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 generator in Vermont with VY Retirement



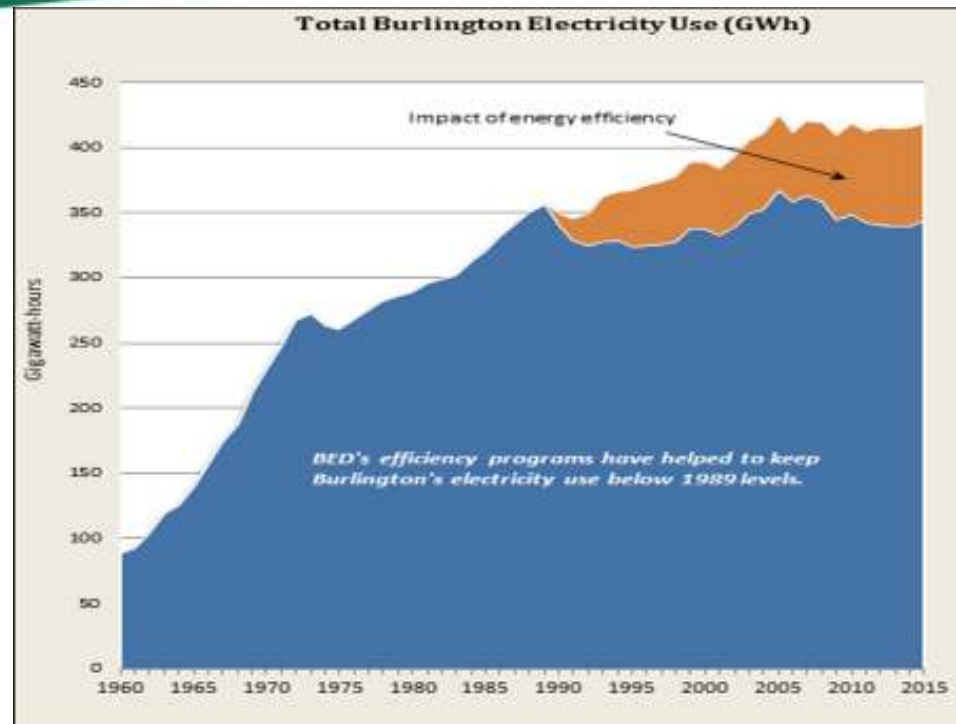
BED Efficiency Program

Efficiency is Cornerstone of Energy Innovation

- ❑ Electric use today down about 4% from 1989.
- ❑ Total BED investment of \$28.8 million since 1990.
- ❑ BED saves an estimated \$4.1 million annually in direct costs (\$2.2 million energy, \$0.5 million capacity, and \$1.4 million transmission) from these investments - even at today's low energy prices.
- ❑ BED's customers save approximately \$11 million annually on their electric bills.
- ❑ On-bill financing available for commercial customers.
- ❑ Examples of business efficiency projects include HVAC and ventilation controls, LED fixtures with occupancy sensors.



BED Energy Efficiency

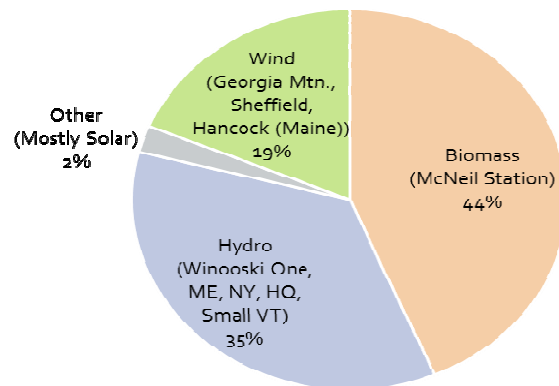




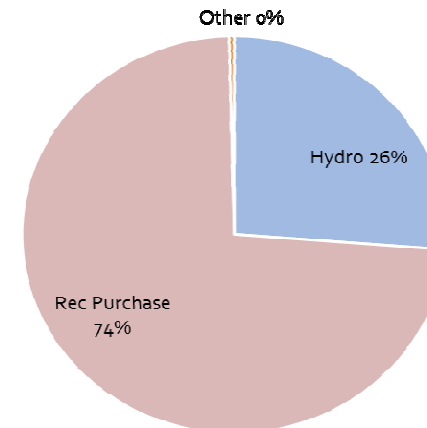
National Leader in Renewable Energy

First city in the nation to source 100% of energy from renewable generation

BED Owned & Purchased Power
Resources CY2016



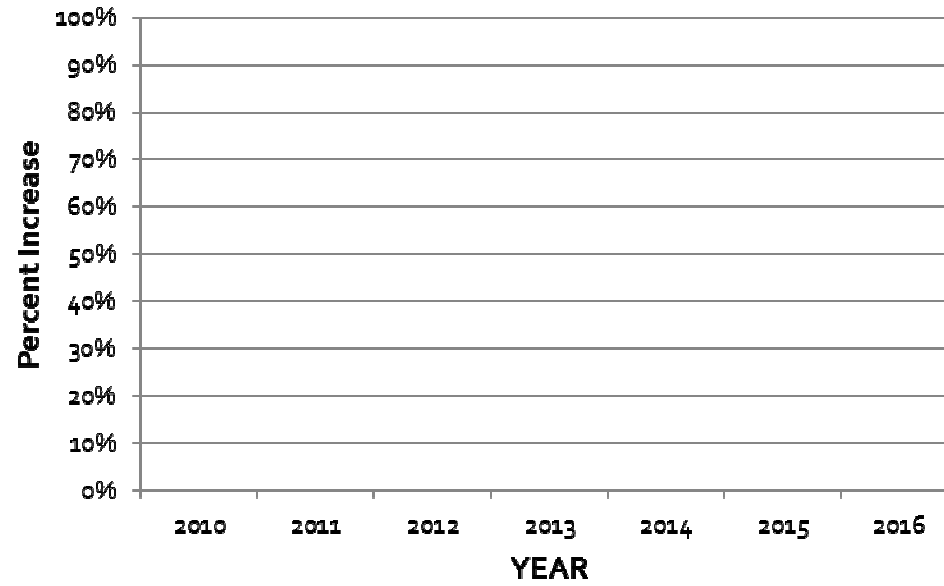
BED Renewability, including REC Sales & Purchases
CY2016 (estimated)





No Rate Increase Since 2009

BED Rate Increase by Fiscal Year





Supporting Local Clean Energy Economy

- McNeil plant wood chip procurement – Mostly within 60 miles of the plant, support local forestry economy
 - *McNeil purchased from 56 different suppliers in FY16 (not including sub-contractors)*
 - *Vast majority of these suppliers are relatively small Vermont-based*
- New load control pilot program – *Packetized Energy*
 - *Using water heaters as a "virtual power plant" using emerging technology identified by the U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) as one of the most promising technologies for coordinated distributed energy resources*
- Airport solar project - *Encore Redevelopment*
- Burlington City Schools Solar – *AllEarth Renewables and Encore Redevelopment*
- Accel-VT Energy Accelerator with VT Sustainable Jobs Fund and VCET
- EV charging stations at *Hannafords, Church Street Marketplace, UVM* – over 600 charges by out-of-state visitors annually
- BED and DPW rooftop solar with *DC Energy Innovations*
- BED solar/storage demo project with *Northern Reliability*



Clean Energy Innovation

- ❑ **Electric Vehicles** – In 2017 for the first time ever BED began offering rebates for electric vehicles and plug-in hybrid vehicles, and an enhanced incentive for low and moderate income customers. This program continues in 2018.
- ❑ **Electric Buses** – BED is working with Green Mountain Transit, VTrans, and other partners to help bring 4 new electric buses to Burlington in 2018.
- ❑ **Electric Bikes** – BED is partnering with Local Motion to offer modest incentives for electric bikes, and create an E-bike lending library for bike sharing.
- ❑ **Solar Shopper** – BED launched a new solar program for customers in 2017, providing a customized solar estimate to interested customers from up to six Vermont-based solar installer partners within 3 business days.
- ❑ **Cold-Climate Heat Pumps** – BED is now offering oil and propane customers an enhanced incentive for purchase of cold-climate heat pumps, and working to coordinate this with weatherization services.



District Energy

- ❑ BED has been working with Corix, our partner, on finally bringing district energy to Burlington.
- ❑ Initial feasibility study showed a district energy system could be cost-competitive with business as usual.
- ❑ Initial plan uses three energy sources: 1) “waste” heat from McNeil; 2) steam heat from McNeil turbine; 3) natural gas generators for peaking and backup
- ❑ Scenario would involve running system from McNeil plant up to UVM Medical Center, and over to downtown.
- ❑ Potential customers are reviewing individual economic assessments from Corix.
- ❑ GHG emissions reduction in natural gas/heating sector in Burlington of approximately 13-15 percent from just initial proposed system, which could expand over time.



Coming in 2018

- ❑ BED is working on offering a clean energy finance program to customers through partnership with local banks/credit unions
- ❑ Electric vehicle charging rate to prioritize off-peak charging
- ❑ Examine net zero milestones and pathways
- ❑ Continue EV rebates, solar shopper, and other new programs
- ❑ Look at options to support more community solar



BURLINGTON ELECTRIC DEPARTMENT 2017-18 STRATEGIC DIRECTION

MISSION

To serve the energy needs of our customers in a safe, reliable, affordable, and socially responsible manner.

VALUES

Safety, Integrity, Community,
Engagement, Innovation

2030 VISION

Make Burlington a "net zero energy city" across electric, thermal, and ground transportation sectors by managing demand, realizing efficiency gains, and expanding local renewable generation, while increasing system resilience.

STRATEGIC OBJECTIVES

<p>Create a nimble organization by transforming our business platform and developing our human capital to best leverage an era of rapid change in the energy industry.</p>	<p>Deliver exceptional customer care by enhancing personal service and increasing engagement across all channels to efficiently resolve customer issues and proactively promote energy efficiency and other program opportunities.</p>	<p>Leverage our electric assets to take advantage of high intensity, bi-directional energy made possible by distributed energy resources.</p>
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STRATEGIC INITIATIVES

<p>Establish modern, simple full function customer care platform</p> <p>Create service delivery model focused on high quality customer care</p> <p>Develop web and social media platforms, plus other forms of promotion, to increase engagement</p> <p>Focus on making our programs work for all customers, especially rental and New American populations</p> <p>Coordinate with other City departments to promote customer ease-of-use</p> <p>Re-orient energy efficiency model to create even more customer value</p>	<p>Strengthen distribution and generation assets to increase reliability and efficiency</p> <p>Implement asset maintenance plan for Michal, Wisconsin One, and distribution system</p> <p>Establish Michal knowledge transfer program to be completed within three years</p> <p>Upgrade field computing and pilot grid automation</p>	<p>Empower employees with modern technology</p> <p>Overhaul IT backbone for core business functions (IT Forward)</p> <p>Implement collaborative model between end user and technology</p> <p>Build shared data center with City</p> <p>Enhance cyber security capabilities</p>	<p>Advance nationally significant energy innovation</p> <p>Launch solar pilot to speed adoption</p> <p>Advance district energy, microgrid, and electric transportation projects</p> <p>Launch citywide demand reduction strategy</p> <p>Develop dynamic rates and green pricing plans</p> <p>Use facilities to showcase the impact of low energy technologies</p> <p>Establish milestones to achieve vision by 2030</p> <p>Integrate energy efficiency, demand reduction, and distributed resources in regulatory planning and program design</p>	<p>Budget and manage risk to maintain stable rates</p> <p>Develop and test alternative revenue plans</p> <p>Build a suite of financial options to support solar and storage purchases</p> <p>Maintain inventory system</p> <p>Develop learning organization model to enhance employee education and training</p>
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