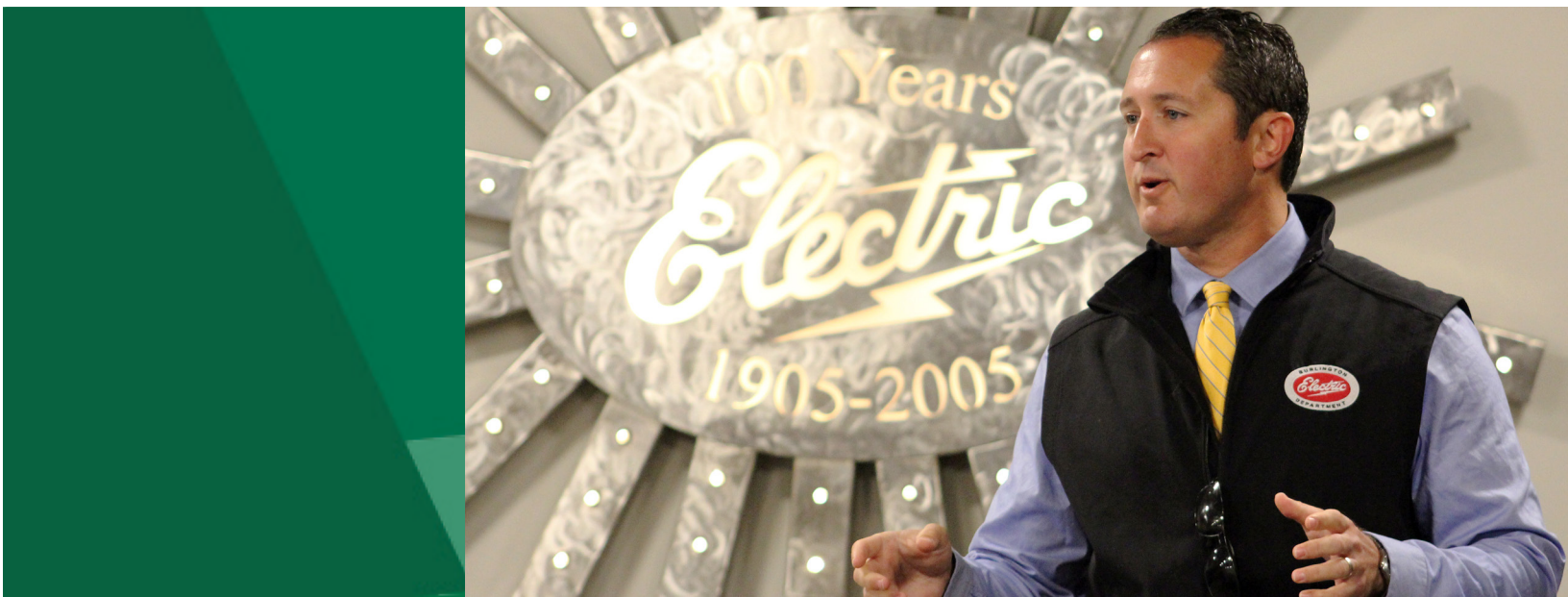




PERFORMANCE MEASURES REPORT 2018





YEAR IN REVIEW

BURLINGTON ELECTRIC DEPARTMENT
Darren Springer, General Manager

The Burlington Electric Department (BED) is pleased to present the 2018 Performance Measures Report. BED presents this annual report to highlight organizational goals and to share the findings for the benefit of our customers and the entire Burlington community.

In 2018, BED continued to focus on our mission to serve the energy needs of our customers in a safe, reliable, affordable, and socially responsible manner.

At BED, safety continues to be our number one value and, this past year, BED continued our work on maintaining a culture of excellence around safety. We took our safety training efforts to the next level by introducing our first-ever “Safety Day,” during which BED lineworkers, meter and substation technicians, engineers, and all other members of the operations team attended various educational sessions, including

lineworker pole-top retrieval, chainsaw safety, and confined space rescue.

We know reliability is critical for all of our customers, and BED achieved very strong results when it came to keeping the lights on. In 2018, on average, less than one-third of our customers experienced an unplanned outage, and the average duration for unplanned and planned outages was approximately 54 minutes. Those numbers far exceed our reliability goals and are the result of the hard work of BED’s operations team, including our line crews, power system coordinators, engineers, and technicians. BED prioritizes investments in our distribution grid in our annual capital budget to ensure that our system is modern and resilient.

In 2018, BED’s Customer Care team continued its work on meeting its strategic objective to deliver

exceptional customer care to the Burlington community. BED is proud of our efforts to reduce customer complaints tracked by the Vermont Department of Public Service (DPS). This past year, BED served our customers without a single customer complaint to the DPS. During 2017 and 2018, BED had its best two years in terms of answering customer calls quickly, reducing hold-time, and taking care of our customers' inquiries and requests more quickly than ever before.

We are proud to have gone another year without a rate increase, having not raised rates since 2009. BED balances prudent financial management with forward-looking innovation, embodied in our 2018-19 Strategic Direction, which includes the goal outlined by Mayor Miro Weinberger and adopted by the Burlington Electric Commission of helping Burlington become a "Net Zero Energy City" by 2030.

BED approaches this Net Zero Energy goal with the benefit of having become in 2014 the first city in the nation to source 100 percent of our power from renewable generation. The BED Generation team manages multiple energy generation facilities, including the McNeil Generating Station, the Winooski One hydroelectric plant, and several solar generation projects throughout our community.

reduce energy consumption. Visit burlingtonelectric.com/save to learn more.

Achieving the Net Zero Energy goal will mean not only continuing our progress in the electric sector, but also transforming our heating and transportation sectors. To help analyze our best options to reach Net Zero Energy, BED conducted a Request for Proposals in 2018 to identify a partner to create a Net Zero Energy Roadmap. BED selected Synapse Energy Economics (along with its transportation partner RSG) to work with us on creating a Roadmap that will provide a baseline of energy use and greenhouse gas emissions across the electric, thermal, and ground transportation sectors. From this baseline, the Roadmap will offer analysis of various pathways to achieve the City's Net Zero Energy goal, with an eye on solutions that provide the best economic and environmental outcomes for Burlingtonians. Look for the Roadmap report to be available in summer 2019.

To make meaningful progress on our Net Zero Energy vision of producing or sourcing as much renewable energy as we consume, we continued to advance energy innovation programs in 2018. We continued to offer electric vehicle (EV) and plug-in hybrid vehicle (PHEV) rebates on the purchase or lease of EVs, with enhanced rebates for low- and moderate-income customers.

As we look to a Net Zero Energy future, we continue to benefit from our successful energy efficiency programs, which save Burlington Electric customers millions of dollars annually.

As we look to a Net Zero Energy future, we continue to benefit from our successful energy efficiency programs, which save Burlington Electric customers millions of dollars annually. Today we use approximately six percent less electricity in Burlington than we did in 1989, and we continue to offer various ways for Burlingtonians to

We prepared for the January 2019 launch of our new residential home EV charging rate that makes charging an EV substantially cheaper than fueling up on gasoline. We also launched a new electric bike (E-bike) rebate program. BED's E-bike instant rebates of \$200 are available only at our local partner retailers. In addition,



BED customers may borrow an E-bike through our “try before you buy” lending library with our partner Local Motion. You can learn more about our EV and E-Bike programs by visiting burlingtonelectric.com/ev and burlingtonelectric.com/ebike.

We know that, for EV drivers, finding a place to charge is vital. Therefore, in 2018, we launched a new \$1,000 incentive for installation of new workplace charging stations. BED is working with interested commercial customers to benefit from both our incentive and available state charging station grants (as part of the Volkswagen settlement) to work toward building a broader EV charging network. For more information visit burlingtonelectric.com/news/215.

To make the process of “going solar” easy for our customers,

we continue to offer our Solar Shopper program. Quite simply, you visit burlingtonelectric.com/solar, answer 10 questions, and, within three business days, receive estimates from one or more of our six solar installer partners.

To help cut emissions and create another clean transportation option, BED is working with Green Mountain Transit, the Vermont Agency of Transportation, and other partners in an effort to add new electric buses (E-buses) to the local fleet. We expect to see new E-buses in the local fleet in late summer or early fall 2019.

Energy innovation is at the heart of BED’s strategic initiatives. Again in 2018, BED ran our voluntary “Defeat the Peak” energy use reduction program to test customer willingness to reduce loads on critical days.

This program was a pilot for future community-based programs and rates that BED will use to engage our customers in reducing energy use during peak energy times. In 2018, BED continued piloting advanced water heater load control devices to allow BED to modify the consumption patterns of electric water heaters without affecting customers’ comfort while providing benefits for the grid.

In 2018, BED continued to work on the concept of creating a district energy system (DES) that would tap into available thermal energy from the McNeil Generating Station to provide heat to customers in Burlington. BED testified in favor of legislation that would make thermal efficiency funds available to support the DES, and that legislation was passed unanimously by the Vermont



Legislature and signed into law in 2018. In addition, the City Council approved a filing with the Vermont Public Utility Commission (PUC) on the subject of DES, and the PUC ruled that the City of Burlington could locally regulate a DES under Vermont law. BED continues to work with potential customers and stakeholders, as well as our partner Corix Utilities, to advance this project.

BED was recognized by the American Public Power Association (APPA) in 2018 with the E.F.

Scattergood System Achievement Award for sustained achievement and excellent customer service. This national recognition reinforces the positive role BED is playing as a public, municipally-owned utility in driving energy innovation and delivering value for our customers and community.

We are not finished with energy innovation; rather we are just getting started. In 2019, customers can look for new BED home heating solutions that cut greenhouse gas emissions, sign up for our new residential EV

rate, and benefit from new incentives for electric lawn equipment.

BED is proud to serve Burlington each and every day, and will continue to strive to provide excellent service. This report is intended to help explain what we do and help us measure our progress over time. [We invite your comments and suggestions by clicking here.](#)

We have created this report as an electronic download available on our website, rather than in print form, saving many trees and \$1,500 in printing costs.



SAFETY IS OUR #1 VALUE

In addition to the safety accomplishments set forth above in the “Year In Review” section of this report, in 2018, BED completed the update of the Transmission and Distribution Accident Prevention Manual. Input was sought from the entire employee base, and all changes were reviewed and implemented by the Safety Committee. The same update has begun for our Generation Facilities Manual, including the McNeil Generating Station, the Gas Turbine, and the Winooski One Hydroelectric Facility. BED will complete this manual update during the first half of calendar year 2019.

The state’s Service Quality and Reliability Plan (SQRP) numbers took a slight downturn from the previous year, but overall they remain strong. The two measured areas

include LTIR (Lost Time Incident Rate), which is the number of incidents with days away from work, and LTSR (Lost Time Severity Rate), which is the number of lost work days over the whole year.

The LTIR stayed below the SQRP baseline which reflects the strength of BED’s Return to Work program by providing a path for an injured employee to return to work sooner in a limited or restricted duty assignment. It is a win-win for BED and the injured employee as we continue to benefit from the employee’s productivity, and it has been shown that the healing process (both physically and mentally) tends to be quicker if one continues to work and contributes in some type of manner. While BED sustained only two out-of-work injuries, the LTSR rose above the SQRP baseline as one injury accounted for 99 percent of the total lost time.

Looking forward to 2019, BED is working on some exciting improvements for the Safety Program that include additional field training, dedicated safety days, and the completion of the Operations Training Yard.

	BED 2018	SQRP Baseline
LTIR	1.89	≤ 3.5
LTSR	109.75	≤ 71

2018 SERVICE QUALITY & RELIABILITY

100%

Customer requested work completed by promised delivery date

0%

Customer bills found inaccurate

0%

Customer bills estimated

Target
2.1

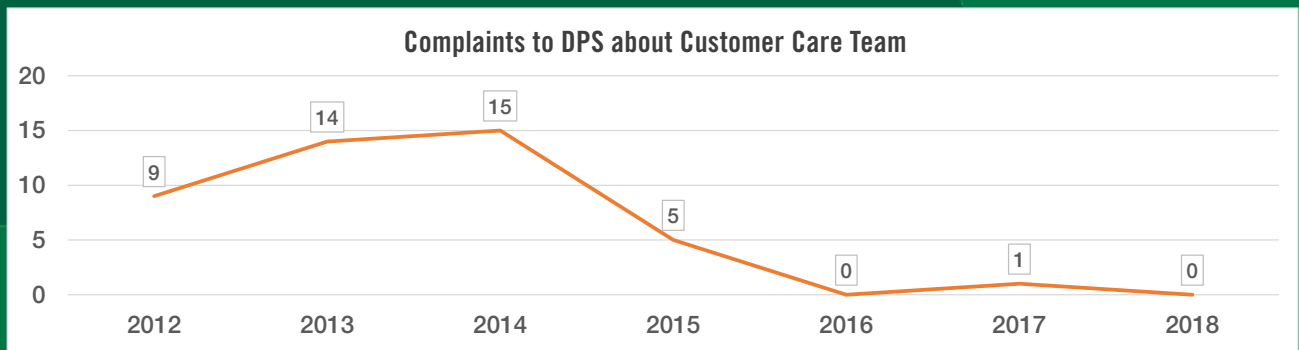
Actual
0.4

Average number of customer unplanned and planned interruptions per year

Target
1.2

Actual
0.9

Average hours of customer unplanned and planned interruptions





ABOUT BED

Delivering public power to Burlington since 1905

Burlington Electric Department (BED) is a department of City government and an essential part of Burlington's infrastructure. BED is Vermont's largest municipally owned electric utility serving more than 21,000 customers. BED is the exclusive provider of electric service to the City of Burlington, an area of approximately 16 square miles, and to the Burlington International Airport in South Burlington.

As a municipal utility, BED is an expression of the community's commitment to not-for-profit rates, local control, and sustainability.

A public power utility offers customers the right to participate directly in the most important decisions about the future of the utility. Such participation demonstrates the importance of community-based decisions about our

energy future because they reflect local values such as renewable energy and a drive toward a Net Zero Energy City.

BED is a recognized national leader in green energy with our 2014 milestone achievement of sourcing 100 percent of our power from renewable generation. With a focus on low and stable rates and a commitment to energy efficiency, BED's 21,000 customers use less power today than they did in 1989, at rates that have not changed since 2009.

BED currently has approximately 117 full-time employees working between our Pine Street headquarters and the McNeil Generating Station in the Intervale. In addition to its 50 percent ownership share of the McNeil Station, BED owns and operates a fleet



of generation including Winooski One Hydroelectric Facility, a large solar array at the Airport, a roof-mounted solar array at the Pine Street offices, and a gas turbine facility for emergency power. BED also purchases power both in Vermont and regionally, including wind power from Georgia Mountain Community Wind, Vermont Wind in Sheffield, Hancock Wind in Maine, and hydroelectric power from small Vermont producers, the Vermont hydro plants located on the Connecticut River, as well as larger hydro power units in New York and Quebec.

With strong support from Mayor Weinberger and the City Council, BED has entered contracts for the purchase of energy from renewable resources, and we have advanced initiatives to meet our Net Zero Energy goals. These forward thinking decisions allow BED to provide stably-priced power to our customers and to lead through energy innovation.

We thank our community members for their support of many ballot items over the years, including the revenue bond to acquire Winooski One – a key link to helping us

Our customers used less electricity in 2018 than they did in 1989.

BED has proudly operated its own energy efficiency programs since 1990, serving both residential and commercial customers with technologies and incentives to save money and use less energy. Even with advances in renewable energy, efficiency remains the foundation of our work to keep Burlington sustainable.

achieve our renewable generation goals – and votes to support strong energy efficiency measures and improve system reliability.



RATES & BILLS

The average Burlington residential customer paid \$390 less per year than the statewide average and lower than the average for each state in the region.

BED provides electric service to 17,208 residential customers and 3,878 commercial and industrial customers. For a variety of reasons, including a very large number of students, BED's turnover in residential accounts is more than 6,000 per year.

BED has two large customers that represent 29 percent of total sales. Commercial and industrial customers use much more electricity than residential customers and account for 74 percent of electricity sales.

Whether residential, commercial or industrial, BED customers expect and deserve certain fundamental services: reliable and safe electricity, exceptional customer service, and affordable bills. BED last raised its rates 10 years ago, in 2009.

Although rates are an important indicator, they tell only part of the story. A customer's bill reflects the rate times the amount of electricity used. Thus, customers who are more efficient and use less power have lower bills.

Residential Customers

BED's residential rates were 9.9 percent lower than the statewide average in 2017. In addition to competitive rates, Burlington residents have managed their electric use through energy efficiency. The combination has produced relatively stable bills for Burlington residents over the years. Burlington's average residential bills were 34 percent less than the statewide average in 2017.

In 2017, an average Burlington residential customer paid \$390 less per year than the statewide average and

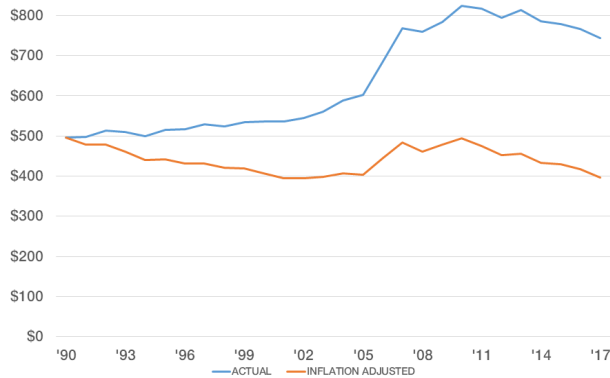
lower than the average for each state in the region. Overall, this represented aggregate savings of \$6.7 million – money that could be saved or spent in the local economy. Some of the difference in usage and bills reflects the number of small rental units in Burlington.

The 2017 inflation-adjusted average annual residential bill was still lower than in 1990. This is especially noteworthy in contrast to the fluctuating costs of other energy sources. For example, according to the U.S. Department of Energy, the inflation-adjusted price of natural gas for residential customers in 2017 was 29 percent higher than in 1990.

	Rate / kWh	Average Residential Bill
Burlington	15.92¢	\$744
Vermont	17.67¢	\$1,134

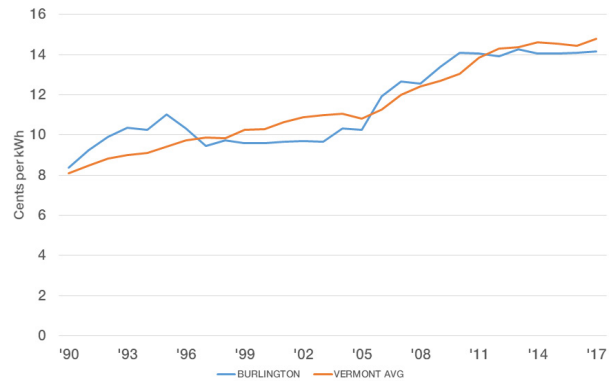
Utilities have different rate designs that make comparisons difficult. The easiest way to measure performance is to compare average revenues per kilowatt-hour – total revenue divided by kWh sales. This is called “average rates” and is a standard measure for the price of electricity to the consumer. The most recent rate data from the Vermont Department of Public Service is for calendar year 2017.

The 2017 inflation adjusted average Residential bill remains lower than it was in 1990.



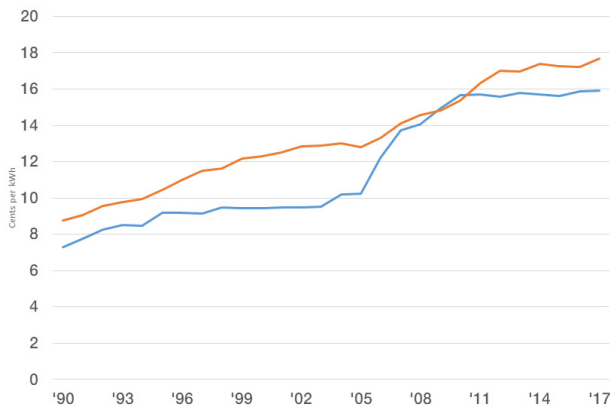
Source: Utility Annual Reports, VT Department of Public Service

BED's overall rates were 4.3% lower than the statewide average in 2017.



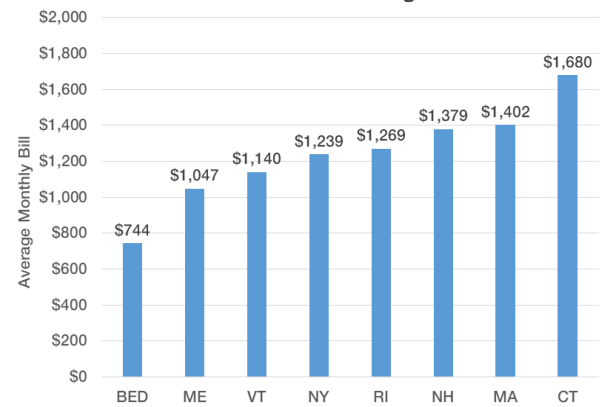
Source: Utility Annual Reports, VT Department of Public Service

BED's residential rates were 9.9% lower than the statewide average in 2017.



Source: Utility Annual Reports, VT Department of Public Service

Burlington's average annual residential bill was 35% lower than the statewide average in 2017.



Source: Energy Information Administration

Commercial & Industrial Customers

Commercial and industrial rates have not increased since 2009. Although BED's commercial and industrial rates remain slightly higher than the statewide average, the gap has closed in recent years as rates from other utilities continue to rise.

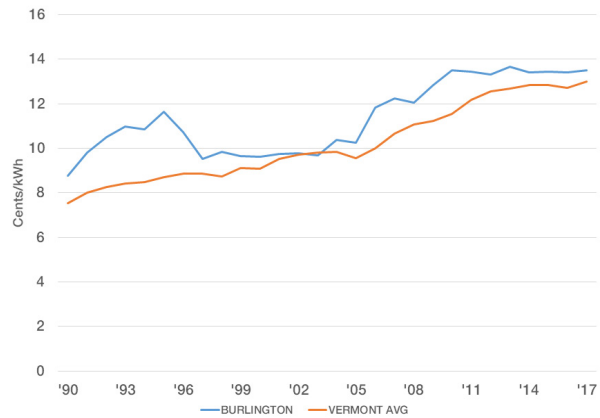
As the long term contracts entered into by BED in recent years have started to deliver energy, and we depend less on the New England spot markets, BED's average rates have stabilized.

In addition, BED made its final payment on the majority of its outstanding revenue bonds in 2014 (including those for the McNeil Plant). No longer having this financial obligation has reduced costs and will continue to benefit ratepayers going forward.

The bottom right graph shows a comparison of BED's overall rates with other New England states. Burlington rates are very competitive within the region.

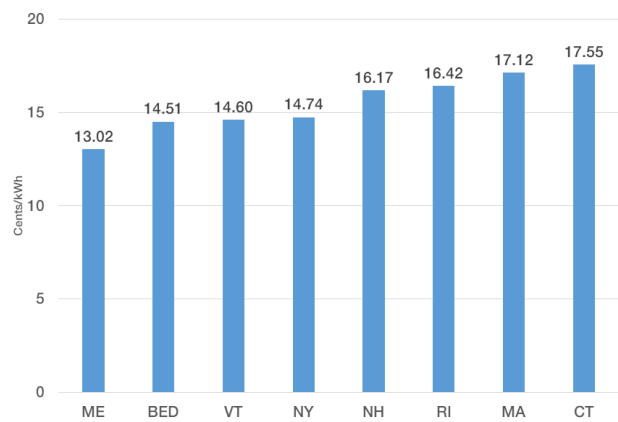
In any case, rates still represent only half the picture. Along with the efforts to reduce rates, BED's Energy Services staff has helped commercial and industrial customers reduce their consumption through energy efficiency initiatives.

Commercial & Industrial Rates



Source: Utility Annual Reports, VT Department of Public Service

2017 Retail Price of Electricity
(Residential, Commercial, and Industrial Average)



Source: Energy Information Administration



Two of our many visitors to the McNeil Generating Station.

BED IN THE COMMUNITY

In 2018, our employees engaged with the Burlington community through many meaningful community events, including the Spectrum Sleep Out, Kids Day at Burlington's Waterfront Park, BED's annual Energy Efficiency Calendar Contest open to all Burlington 4th graders, Art Hop and Kids Hop, and the Operation Fire Cuffs holiday



toy drive, benefiting the University of Vermont Children's Hospital. Additionally, BED engages with students from grade school to college levels and offers internships for those interested in exploring a career at a forward-looking utility.

As part of United Way's "Live United" campaign, BED raised over \$8,000 from employees to support United Way charities.



Our BED team is proud to participate in these and other activities in an effort to give back to the community we love so much.



photo: Brian Jenkins



BED TO THE RESCUE

Burlington Electric lineworker crews work tirelessly each day to ensure that the Burlington community receives safe and reliable electricity. Whether restoring power after unplanned and planned (for upgrades, equipment changes) outages, building a new line to supply power to a business or home, or changing transformers, cutouts, and fuses, our lineworkers work year-round, snow, rain, or shine to keep the lights on. For example, in November 2018, when a dump truck slid backwards into a pole on an icy Ledge Road, and the pole split in half and was resting atop the truck. BED worked with Consolidated Communications to replace the broken pole, transfer all the equipment to the new pole, and remove the broken pole from the truck.

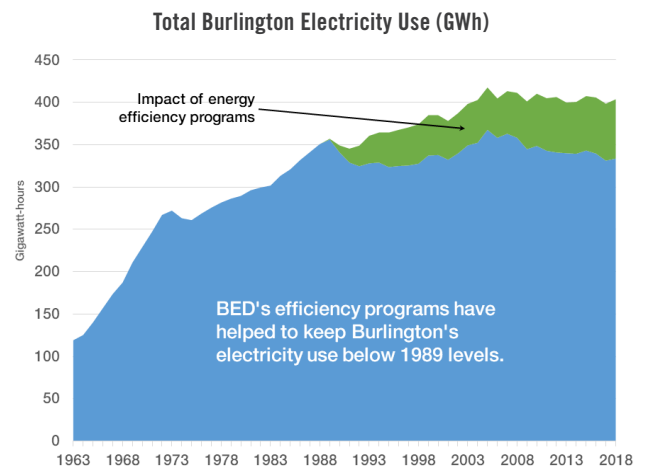
BED also participates in a mutual aid program, whereby we assist other utilities around Vermont in restoring power after large storms, as we did in November 2018 when BED sent crews to assist Washington Electric Co-op, Green Mountain Power, and Stowe Electric in restoring power after a severe snow storm that cut power to 1,000s of customers across the state.



ENERGY EFFICIENCY

In 2018, BED customers received incentives for hundreds of energy efficiency improvements, including high efficiency heating and cooling equipment, highly insulated building envelopes for new construction projects, nearly 29,000 LED bulbs and fixtures, 150 high-efficiency washing machines and clothes dryers, and nearly 100 high-efficiency refrigerators and freezers.

BED has developed and administered energy efficiency programs that have become a model for others around the country and the world. These services provide Burlington homes and businesses, including municipal buildings and schools, with a complete range of energy efficiency solutions that have proven to be extremely effective over the past 29 years. In fact, Burlington's annual electricity consumption last year was approximately 6.1 percent lower than in 1989 when the programs began. In other words, we are meeting the needs of a growing local economy with less electricity than we used a quarter century ago. During the same period, statewide use of electricity increased by 8.4 percent.



Through 2018, BED has invested more than \$33.5 million in efficiency efforts. These funds have leveraged an additional \$34.5 million from customers for a total of \$68 million invested since the inception of the programs. During 2018 alone, BED saved nearly 6,600 mWh of energy from efficiency measures installed during that year, which will result in 79,200 mWh of savings over the life of the installed measures. This equates to enough energy to serve approximately 1,400 Burlington residential customers for 12 years. Further, from the efficiency measures installed in 2018, BED customers are expected to save \$700,000 on their electric bills in 2019 and \$10.7 million over the life of the installed measures.

Energy Efficiency in the Community

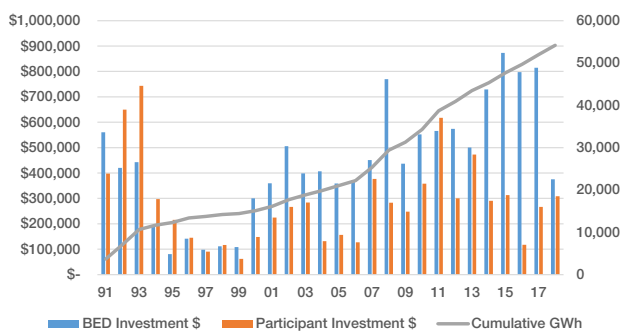
BED's energy efficiency programs will continue to play a major role in BED's strategic vision to make Burlington a Net Zero Energy City. BED continues to encourage building owners to reduce energy loads through weatherization, deep energy retrofits, and Net Zero Energy building practices. Burlington is experiencing a strong increase in new construction activity, leading to BED working on multiple new construction projects

throughout the City with its partners, including the University of Vermont, University of Vermont Medical Center, Champlain College, Burlington City Place, the Community Sailing Center, Cambrian Rise, City Market South, the new YMCA, and the Burlington School District. Further, BED, in partnership with Vermont Gas Systems, continues to offer energyChamp for residential customers, allowing them to take power over their energy use by engaging with an easy-to-use website – energyChamp.org – designed to help customers visualize and understand their energy use, affordably improve their efficiency, and protect the planet.

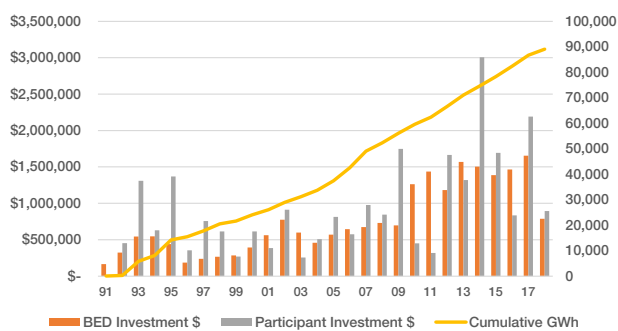
All customers pay for efficiency in their bills, so BED has programs tailored for all rate classes. The graphs on this page show the distribution of resources and savings for residential, commercial, and industrial customers.

Energy efficiency continues to be a win-win situation for Burlington customers through the avoidance of increasingly costly electricity purchases, their associated infrastructure growth and capital expenses, their environmental impacts, and through the increase in local economic activity from the efficiency improvement work.

Residential Energy Efficiency Investments and Cumulative GWh Savings



Commercial Energy Efficiency Investments and Cumulative GWh Savings



BURLINGTON SUSTAINABILITY PROGRAM

We are committed to long-term, systemic change in the electric, thermal, and ground transportation sectors.

The Sustainability Program is dedicated to advancing programs, initiatives, and partnerships to advance energy innovations and the City's transition to Net Zero Energy. Based on the principles of cross-sectoral collaboration and systematic efforts to create lasting change and improve the quality of life for all Burlingtonians, activities this year included: continued leadership and support to the Burlington 2030 District (a private sector driven initiative to reduce greenhouse gases from transportation, water, and building energy use by 50 percent by 2030), including the addition of more than two million square feet of commercial and institutional space to the District's footprint; partnering with Renewable Energy Vermont on the launch of the Vermont Energy Access Coalition, created to help ensure that all Vermonters can access new energy innovations, including EVs, solar energy, and heat pump technology; work to advance the deployment of EVs and E-bikes, including partnerships with key funding agencies such as VSECU, Vermont Federal Credit Union, and Green Mountain Credit Union; and continued work with a variety of City departments and partners, including the Chittenden Area Transportation Management Association, Energy Action Network, the Chittenden Solid Waste District, Local Motion and the area's bike shops, including non-profit Old Spokes Home, and others.

In addition to work in Burlington, the Sustainability Program continues to pursue and engage in various projects with partner cities around the country, including work with other Urban Sustainability Directors Network (USDN) member cities, and in particular, collaboration on



the creation of a guidebook for cities on how to ensure equitable energy transformation, and a project dedicated to building electrification in the residential sector. The Sustainability Program also helped secure funds to support the 2030 District in its use of Property Energy Plans (PEPs) for commercial properties and energy benchmarking.



POWER SUPPLY

Managing biomass, hydro, wind, and solar energy

BED's power supply reflects a number of considerations including cost, renewability, predictability, reliability, diversity, and other economic and environmental impacts. While cost is always critical, other factors influence purchase decisions. BED has succeeded in maintaining comparatively low and stable rates, while continuing our commitment to renewables and, to the extent possible, keeping money in Vermont by supporting Vermont-based renewable generation.

In 2015, Vermont enacted a renewable energy standard (RES). An RES is a requirement that utilities serving Vermont customers provide specific amounts of the energy that their customers use from renewable resources.

Beginning in 2017, Vermont's RES has three distinct requirements to help the state's energy sector advance

in its efforts to become powered by renewable energy sources. First, Vermont utilities will need to ensure that 55 percent of the energy they provide comes from existing renewable resources. Second, part of the 55 percent must come from new net metered or small renewable resources. Third, Vermont utilities will be required to look for ways to substitute electric energy for fossil fuels where it can be done in an economical manner, such as replacing gas cars with electric vehicles. The target percentages for all of these requirements have increased periodically beginning in 2018.

BED essentially has already met the full targets for providing existing renewable energy, i.e. the 75 percent level for existing renewable resources that will apply in 2032. Likewise, based on its resource portfolio, BED filed a petition with the Vermont Public Utility Commission



Counter display at one of our commercial customers' storefront.

(PUC) documenting that, as of 2015, BED possessed, owned, and contracted renewable resources sufficient to meet 100 percent of its expected retail sales in 2017. In recognition of this achievement, BED was able to modify its targets for the second RES requirement that addresses new renewable resources. BED will accept new net metering resources, and retire any Renewable Energy Certificates (RECs) from these resources, but has no specific volume target. In August 2018, BED filed a report with the PUC demonstrating its compliance with these requirements for 2017.

2018 and 2019. This acquisition replaced an expiring Maine hydro contract with local Vermont hydro (from dams located on the Connecticut River). BED signed a contract for 2.5 MW of solar PV (South Forty Solar) in Burlington that has successfully come fully online as of January 2018. BED is excited about these new resources and, further, about the fact that the energy prices for the Great River Hydro contract are lower than those of the Nextera hydro contract it replaced.

Beginning in 2004, BED's analyses of supply options consistently have found that renewable resources were

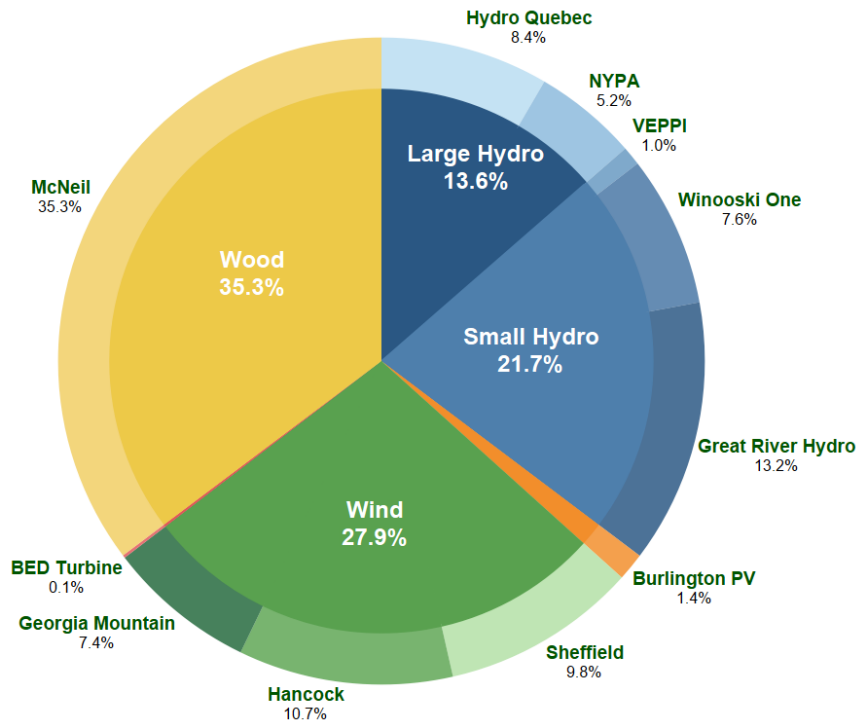
BED has succeeded in maintaining comparatively low and stable rates while continuing our commitment to renewables.

In December 2016, Hancock Wind in Maine became operational and provides BED with a 13.5 MW entitlement to its energy pursuant to a 10-year contract. At the close of 2017, BED signed its most recent hydro contract with Great River Hydro for 7.5 MW during on-peak hours during

the best course of action. However, such resources generally come at a premium price. To maintain stable rates, BED may choose to sell the rights to the renewable aspects of the output from the McNeil Plant and other renewable resources such as wind, hydro, and solar

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 chart represents energy supplied and purchased by BED



projects in the form of RECs. BED participates as a seller and a buyer of RECs in the New England market and, importantly, once all transactions are accounted for, makes certain that BED's power is 100 percent renewable by replacing any RECs it sells with replacement RECs.

Of BED's calendar year 2017 purchases (the last full year settled with the New England Power Pool Generation Information System), 100 percent was sourced from renewable resources before accounting for

REC transactions. This percentage of energy from renewable resources has continued in 2018, though final 2018 reporting is not yet available.

BED sold many of the RECs from McNeil and its wind and hydro resources. The RECs from these valuable sources were sold to reduce the rate impacts of purchasing long-term renewable resources. The Burlington Electric Commission currently has approved the sale of RECs five years into the future and continues to review the economics of selling RECs to

control rates versus retaining the ability to claim renewability from our own resources.

BED also buys RECs from some generators that have existed for many years and, therefore, command a lower price for their RECs. By doing so, BED creates revenue from REC sales to keep rates lower, while still maintaining a renewable power supply and supporting the operations of these existing renewable resources. After accounting for all REC transactions, including both REC sales and purchases, BED's supply portfolio was served 100 percent from renewable resources. In fact, for 2017, BED retired RECs in excess of its energy needs and expects to do so again for 2018. BED retires the excess RECs to go beyond its regulatory requirements and offset the energy needed for transmission and distribution losses, as well as electricity used by BED's facilities.

Integrated Resource Plan

On November 15, 2017, the Vermont Public Utility Commission approved BED's 20-year integrated resource plan (IRP), with final approval closing the docket received in December 2018. During 2019, BED will be developing and preparing to file its next IRP. As BED's energy needs are met largely

McNEIL STRONG FOR 35 YEARS

Located in Burlington's Intervale, the McNeil Generating Station is managed and operated by BED under a joint ownership agreement with Green Mountain Power and Vermont Public Power Supply Authority. Commissioned in 1984, the 50 MW biomass plant is Vermont's largest generator of electricity.



through owned generation and purchase power agreements, the focus of the currently-approved IRP centered on strategic electrification programs designed to encourage the adoption of small scale distributed generation (i.e. behind the meter PV) and emerging technologies such as electric buses, all-electric vehicles, electric bikes, and EV charging stations. Customers are encouraged to visit burlingtonelectric.com/IRP, where results from this process have been posted.

As a result of the IRP, in January 2019, BED became one of the first utilities in the nation to offer a residential electric vehicle (EV) charging rate. With the new rate, customers can charge their EVs during specified off-peak hours for 45 percent less than the current

residential service rate. In addition to this load shifting effort, BED is working on several demand response programs to forward its City-wide load control strategy. The next IRP will be for 2020 and will continue to focus on these efforts, as well as BED's Net Zero Energy Roadmap, which will be finalized during summer 2019.

McNeil Generating Station

After 35 years of producing renewable energy, the McNeil Generating Station continues to contribute to the local economy. The station purchased 374,519 tons of wood during calendar year 2018 (CY18), the majority of which was purchased within a 60-mile radius of the plant from approximately 82 wood suppliers bringing sustainably

harvested wood chips to the plant six days a week. During CY18, the plant produced 245,500 net mWh of power and had a capacity factor of 56.5 percent. The annual capacity factor for McNeil is defined as the ratio of its actual output to its potential output if it were possible for it to operate at full capacity continuously for one year.

The McNeil Waste Wood Yard ground 4,095 tons of waste wood at a cost of \$11.53 per ton or \$47,215.35 in grinding costs. If we purchased 4,095 tons at \$28/ton (our normal cost for purchasing chips) the cost would have been \$114,660. The grinding saved \$67,445 in fuel costs for CY18. This waste wood, if not used for the production of electricity, would have found its way to a landfill and taken up valuable

space. Of this waste wood, each year approximately 10 tons of Christmas trees are turned into electricity, and then the ash byproduct is used as an organic fertilizer.

Two types of ash are produced at McNeil: fly ash, which is used as an organic fertilizer; and bottom ash, which is used as an aggregate in construction. In CY18, 8,622 wet tons of fly ash were recycled from McNeil with a majority being spread on fields at nearly 75 farms that enjoyed the benefit of improved soils and crop production.



Organic fly ash being spread on a farmer's field

Wood ash is the best source of local organic potassium, is fast-acting, and quickly raises soil pH while building healthy soils. Additionally, 3,820 wet tons of bottom ash were recycled and utilized at two construction sites. The McNeil Generating Station is proud of its commitment to sustainability as it works to recycle 100 percent of its wood ash each year.

Managing Costs, While Investing in the Future

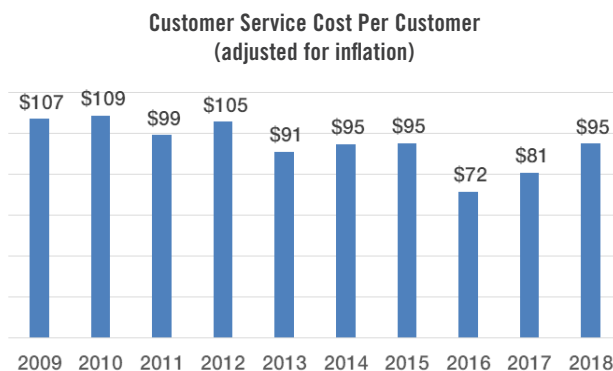
BED continues to undergo a strategic transformation as part of its transition to “Utility 2.0.” As part of this ongoing effort, we are continuing to review policies and processes to achieve efficiencies, increase worker productivity, lower costs and prepare for replacement

of our Customer (CIS), Financial (FIS), Workforce Management (WMIS) and Meter Data Management (MDM) systems. These four systems form the backbone of our utility business, are the heart of everything we do, are heavily integrated, and need updating. These carefully coordinated technology upgrades will allow for our digital transformation and provide us with the right tools to lead BED into the future.

In 2018, BED signed a four-year contract with its employee union, International Brotherhood of Electrical Workers (IBEW) Local 300. The agreement ensures competitive pay for IBEW employees, while managing labor costs for BED.

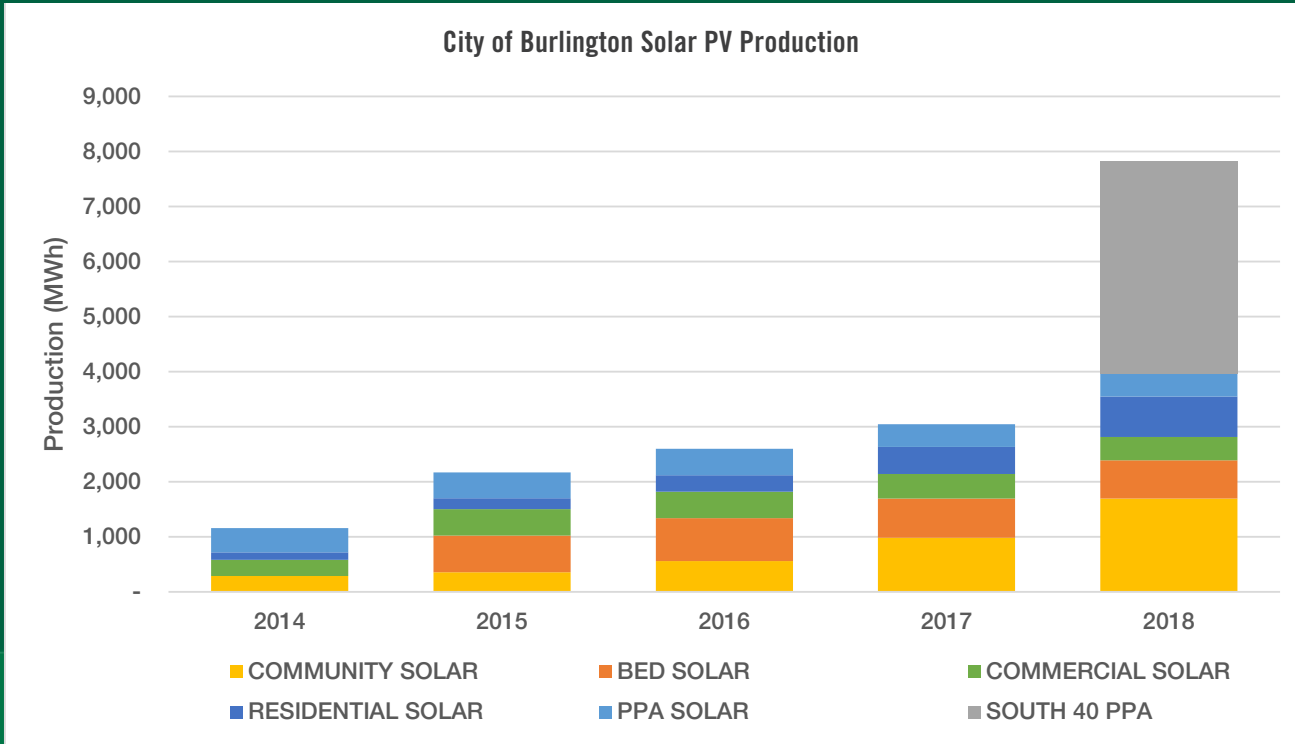
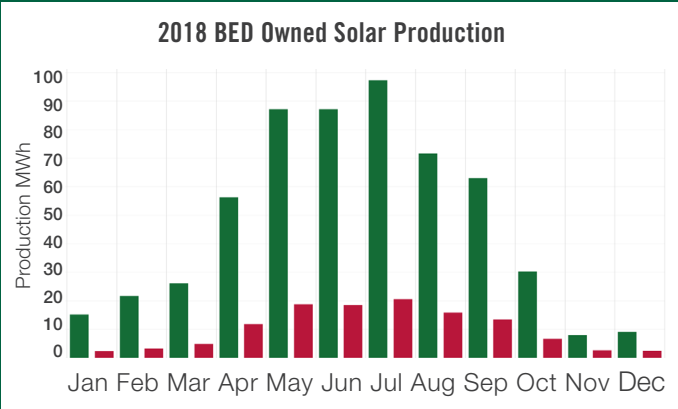
Despite market pressures, BED has stabilized costs and is proud to have held rates steady since 2009. Maintaining stable and affordable rates benefits all our customers.

BED continues its focus on distribution system maintenance, spending approximately \$1.8 million a year. At the same time, BED makes long-term investments to improve the system, extend its useful life, and accommodate new development.



CATCHING SOME RAYS

Between BED’s solar array at the Burlington International Airport and the array at the Pine Street offices, we produced 693 MWh of electricity. By harnessing the power of the sun, BED produced energy when we needed it the most: in the summer. BED is a summer-peaking utility, meaning that our largest loads are during summer months. Solar helps ease the load. Total energy deliveries from solar resources in Burlington include those from the two BED-owned arrays mentioned above, from a number of solar arrays under contract to BED, and from arrays under the Vermont net metering programs. Total solar output from these sources continues to climb and saw a large increase in 2018 due to the South Forty Solar array’s coming online. Below is the annual photovoltaic generation that BED has seen over the last six years.



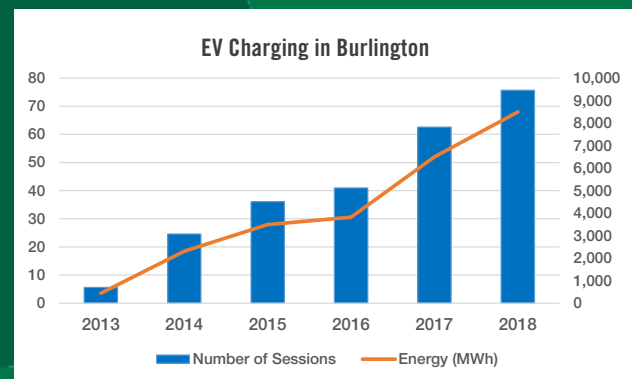
PLUGGED IN

After our first electric vehicle (EV) charging station came online in May 2013, BED has not looked back. Since then, we have added 14 stations for a combined total of 27 ports available for charging. With a robust network for public charging around Burlington in place, in May 2017, BED launched its EV rebate program, offering a \$1,200 rebate on the purchase or lease of a new all-electric vehicle (AEV), and then in June added plug-in hybrids (PHEVs) to its EV rebate program, offering a \$600 rebate on the purchase or lease of a PHEV. Then, in October, BED increased by \$600 its EV rebates for low- to moderate-income (LMI) Burlingtonians. In February 2018, BED partnered with local credit unions – VSECU, Green Mountain Credit Union, and Vermont Federal Credit Union – to make EV purchases more attainable through offering low- and, under certain circumstances, no-interest loans. Since the EV rebate program launch, BED has awarded its customers with 67 rebates. In January 2019, BED launched its new residential EV charging rate allowing typical drivers to charge their vehicles during off-peak hours for the equivalent of \$0.60 per gallon of gasoline. Also in January 2019, BED added a \$400 charging station incentive and increased its incentives on the purchase and lease of PHEVs to \$1,000, with an enhanced rebate increase to \$1,500 for LMI customers. By working together to charge



during ideal times, EV drivers and BED can save money and make the electric grid more efficient. For details, visit burlingtonelectric.com/ev.

BED also is providing incentives to Green Mountain Transit (GMT) to transition part of its diesel bus fleet to battery electric buses. The first two E-buses are due to arrive on our streets in late summer or early fall 2019. Each bus is expected to displace up to 7,025 gallons of diesel fuel annually and avoid 77 tons of CO₂. Meanwhile, BED has partnered with Local Motion and other local retailers to offer a \$200 incentive toward the purchase of an E-bike. For details, visit burlingtonelectric.com/ebike.



SOCIAL MEDIA

This year, Burlington Electric continued its award winning marketing and social media efforts by garnering an international acknowledgement for our efforts. For the first time ever, BED was a finalist in the category for the Best Green Energy Brand for the Charge Energy Branding Awards in Reykjavik, Iceland. Finalists hailed from various countries across the globe such as New Zealand, France, Finland and the UK.



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@BurlingtonElectricDepartment



BED also earned an Award of Excellence gold medal acknowledgement from the American Public Power Association (APPA) for its social media and website work. The Award of Excellence is the highest acknowledgement a public utility can receive in any communication category.

GIVING BACK

As a municipal entity, BED is not required to pay property taxes. However, BED makes an annual payment in lieu of taxes (PILOT). In FY18, BED paid \$2,328,924. We collect a 3.5 percent franchise fee for the City.

This is significant because these payments come from all customers. This is a more equitable distribution to finance City operations and is an important benefit of public power.

Fiscal Year	Payment in Lieu of Taxes	City Franchise Fees	Totals
2014	\$1,872,967	\$1,659,807	\$3,532,774
2015	\$1,950,434	\$1,648,148	\$3,598,582
2016	\$2,186,381	\$1,640,470	\$3,826,851
2017	\$2,275,586	\$1,605,945	\$3,881,531
2018	\$2,328,924	\$1,607,119	\$3,936,043
5 Yr. Totals	\$10,614,292	\$8,161,489	\$18,775,781



**BURLINGTON
ELECTRIC
DEPARTMENT**

BURLINGTON ELECTRIC COMMISSION
Gabrielle Stebbins, Chair – Scott Moody, Vice Chair
Jim Chagnon – Sabina Haskell – Robert Herendeen

585 Pine Street • Burlington, VT 05401
(802) 865-7300 • burlingtonelectric.com