



# 2011 Performance Measures Report



## Burlington — Moving Forward

Burlington is a great city, and Burlington Electric Department (BED) — its municipally owned utility — does its best to help promote this well-deserved reputation. We want our customers to be as excited as we are about our smart grid project — called ConnectCity. With the help of the US Department of Energy, BED is moving forward with upgrades that will bring our electrical system into the 21st century. This project will provide us with greater system efficiencies and improved system reliability. Better integration of small-scale renewable projects into the grid will enhance our environment. As new ways for our customers to use energy efficiently are enabled by this advanced technology, we will guide them in choosing rate options that can help them save money.

We encourage all our customers to read the latest on ConnectCity at [www.connectcityburlington.com](http://www.connectcityburlington.com).



Photo: Brad Pettengill Photography

**Burlington Electric Commission**  
**585 Pine Street**  
**Burlington, Vermont 05401**

Spencer Newman, Chair  
Paul Hines, Vice Chair  
Robert Herendeen  
Scott Moody  
Jean O'Sullivan

To: All BED ratepayers and citizens of Burlington  
From: Spencer Newman  
Date: March 2012  
**Re: Performance Measures Report**

We are pleased to present Burlington Electric Department's Performance Measures Report for 2011. We have been preparing these reports since 1998 for the benefit of the Burlington City Council and our ratepayers. Each year, BED conducts a comprehensive self-examination and presents the findings in this report. Performance measurement helps us achieve several important goals for the organization, involving accountability, service, costs, strategic planning and management.

Our big focus this year continued to be moving our distribution system into the 21<sup>st</sup> century with Smart Grid. This project, which was 50 percent funded with an American Reinvestment and Recovery Act (ARRA) grant from the U.S. Department of Energy, will overall improve our system with better reliability and outage management, along with enhancing the environmental goals of increased renewable energy and energy efficiency, and helping to reduce peak loads.

It is imperative that we make our energy use as low impact to the planet as possible. Smart Grid will lead the way in this effort. Visit our website at [www.burlingtonelectric.com](http://www.burlingtonelectric.com) to see the latest updates on this major project, which will take place over several years. We are in the midst of entirely changing the way we provide for the electrical needs of our customers; this project will allow us to work even more closely with Burlington's residents and businesses to make the most efficient use of our natural resources.

At BED, we are proud of our 107-year history as a publicly owned utility. We are proud to have led with energy efficiency and renewable energy, and we are very proud to have been awarded the ARRA grant that has allowed us to move forward with Smart Grid.

## INTRODUCTION

Burlington Electric is a department of City government and an essential part of Burlington's infrastructure. But BED is more than that. As a public utility, BED is an expression of the community's commitment to **not-for-profit rates, local control, and sustainability**.

In addition to not-for-profit rates, BED offers customers the right to participate directly in the most important decisions about the future of the utility. This illustrates the importance of community-based decisions about our energy future because they reflect local values such as **renewable energy** (residents supported the construction of the McNeil Generating Station 28 years ago); **energy efficiency** (residents approved an \$11.3 million bond to help reduce energy consumption in 1990); **system reliability** (residents approved a \$36.6 million bond in 2009 for upgrades and other projects), and environmental protection (reduced consumption means less pollution).

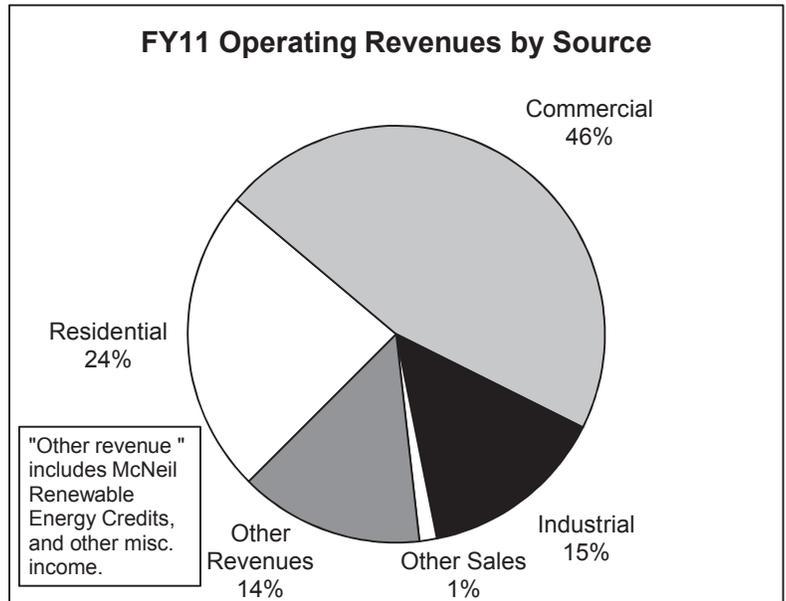
We're proud to serve Burlington and will continue to be responsive to the community. This report is intended to help explain what we do and to help us measure our progress over time. We invite your comments and suggestions.

## MARKET & REVENUES

**BED provides electric service to more than 16,300 residential customers and 3,700 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. This is a remarkable amount of account management for a utility of this size and contributes to somewhat higher than average customer service costs.

On the other hand, BED has two large customers that represent 29% of total sales. Not surprisingly, commercial and industrial customers use much more electricity than residential customers and account for 61% of revenues.

All BED customers expect certain fundamental services — reliable and safe electricity, professional and courteous service, and affordable bills. Each customer group has unique needs, however. That's why we have tailored our programs and services to meet the needs of each group.



## SERVICE QUALITY & CUSTOMER SATISFACTION

Like all Vermont utilities, BED is required to submit a quarterly **Service Quality and Reliability Plan (SQRP)** to the Department of Public Service. The SQRP establishes standards for a variety of performance criteria (see a selection of measures below).

Each utility is expected to meet these minimum performance standards. BED performed far better in most categories than required. In only two areas did BED exceed the state standard:

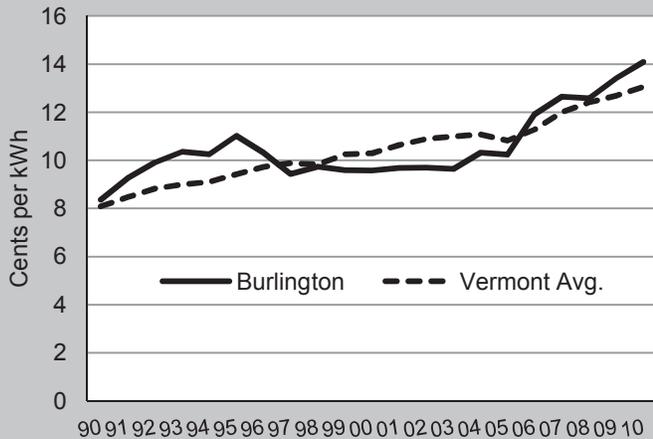
1. Average duration of customer interruption: Due to a building fire, BED was asked by the Fire Dept. to de-energize a main line. As a result, hundreds of customers were without power for hours.
2. Lost time severity: The total number of work days missed was due solely to one accident, which resulted in a significant back injury to an employee.

BED will continue to work hard on service quality and reliability. We know our customers expect no less.

Performance Area	Standard	BED
% Bills found inaccurate	0.1%	0.0%
% Bills estimated	5%	0.8%
% Customer requested work completed by promised delivery date	95%	100%
Average # of customer interruptions per year	2.1	0.6
<b>Average duration of customer interruption (hours)</b>	<b>1.2</b>	<b>1.4</b>
Lost time incidents / year (injury leading to lost work time)	< = 3.5	.97
<b>Lost time severity (total work days missed due to injury)</b>	<b>&lt; = 71</b>	<b>147.5</b>

# RATES AND BILLS

**BED's overall average rates were 7.9% higher than the statewide average in 2010**

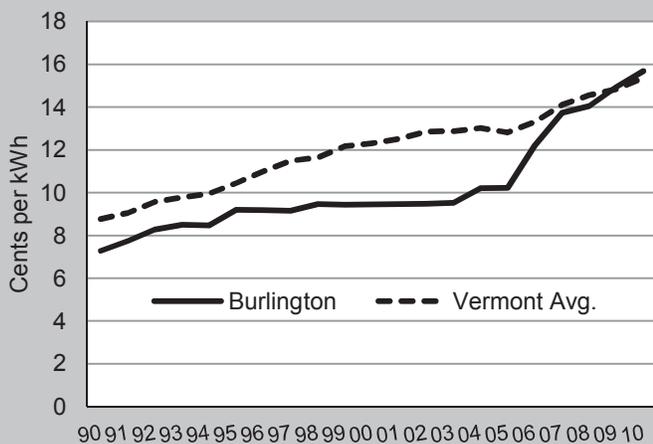


Utilities have different rate designs that make comparisons difficult. The easiest way to measure performance is to compare *average revenues per kilowatt-hour* - total revenue divided by kWh sales. This is called "average rates" and is a standard measure for the price of electricity to the consumer.

BED had a rate increase in 2009; did not have one in 2010 or 2011; expects no increase for FY 2012 (which is more than half over); and – as of now – is not planning an increase for FY 2013.

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.

**BED's residential rates were only 2% higher than the statewide average in 2010**



## RESIDENTIAL CUSTOMERS

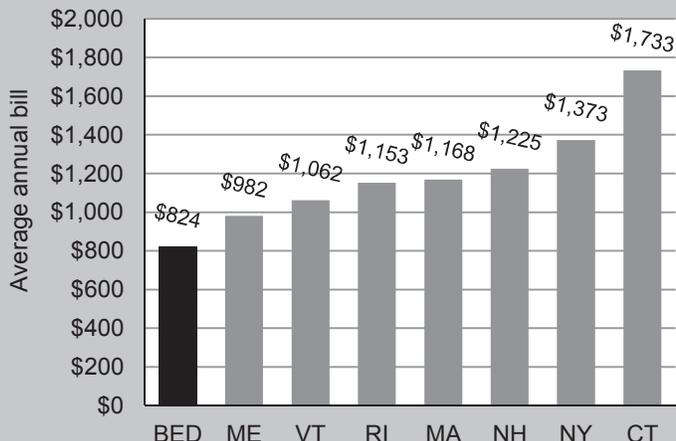
**BED's residential rates were only 2% higher than the statewide average in 2010.**

In addition to competitive rates, Burlington residents have managed their electric use through energy efficiency (see p.5). The combination has produced relatively stable bills for Burlington residents.

**Burlington's average residential bills were 22% less than the statewide average in 2010.**

	Avg. Res. Rate / kWh	Avg. Res. Annual Bill
<b>Burlington</b>	<b>15.68¢</b>	<b>\$824</b>
<b>Vermont</b>	<b>15.38¢</b>	<b>\$1,062</b>

**Burlington's avg. annual residential bill was 22% lower than the statewide average in 2010**



**In 2010, an average Burlington residential customer paid \$238 less per year than the statewide average (and lower than the average for every state in the region).** Overall, this represented aggregate savings of \$3.9 million in 2010 – money that could be saved or spent in the local economy. These savings also help lower housing costs, which is important in Burlington's tight housing market.

*Note:* Some of the difference in usage and bills reflects the number of small rental units in Burlington.

# RATES AND BILLS

The 2010 inflation-adjusted average annual residential bill was still lower than in 1990. This is especially noteworthy in contrast to the rising 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 2010 was 81% higher than in 1990.

## COMMERCIAL & INDUSTRIAL CUSTOMERS

Average commercial and industrial rates have increased 10% since 2007. Although BED's rates remain higher than the statewide average, the gap is expected to close in the next few years.

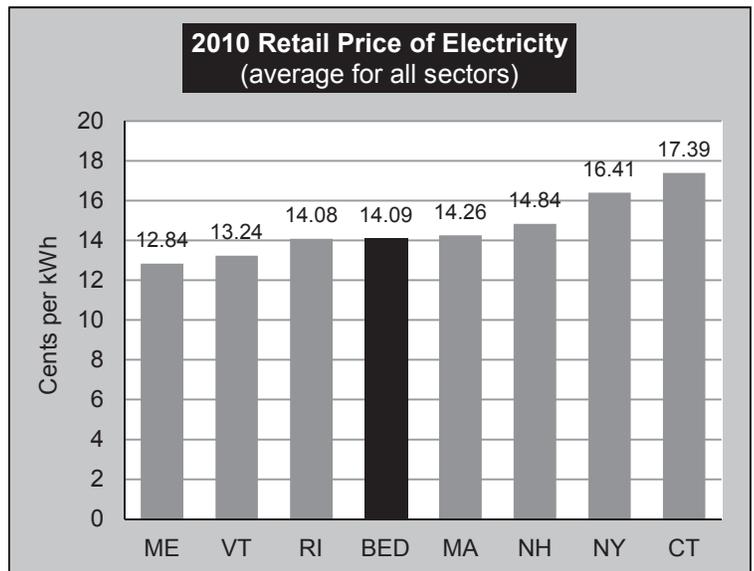
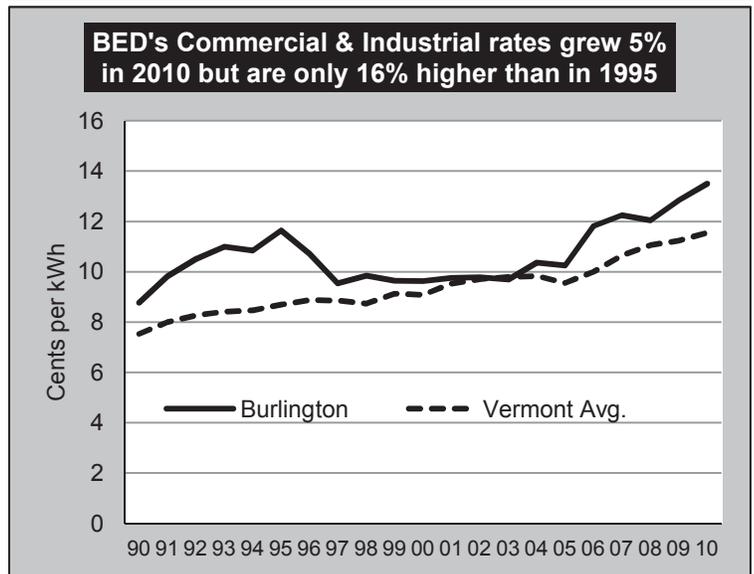
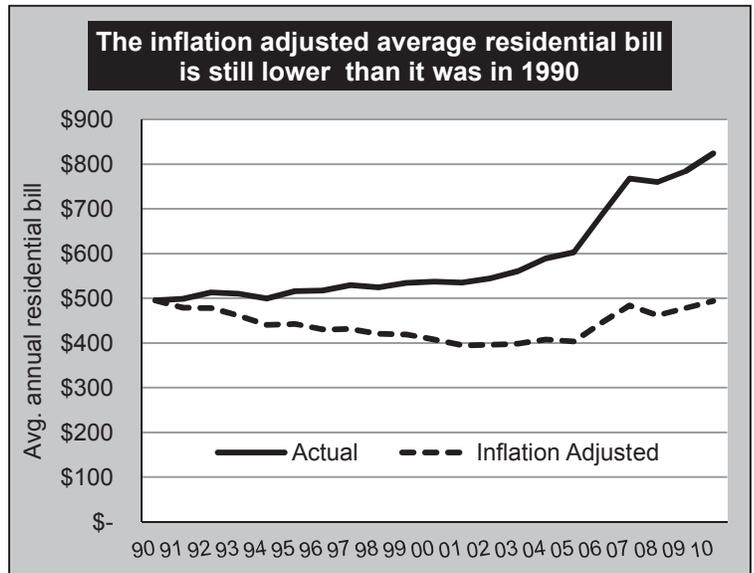
Recent rate increases were driven largely by expiring power contracts at old prices and the need to replace them with contracts at higher market rates. Fortunately, the majority of impacts from the deregulated markets are already built into our rates.

CVPS and GMP have not yet absorbed as much of the new market prices because of their existing Hydro Quebec and Vermont Yankee contracts. When the contracts expire in 2012, those utilities will have to replace them, probably at higher cost. At that point, their rates (and the statewide average) will very likely catch up with BED's increases.

In addition, BED will make the final payment on the majority of its outstanding revenue bonds in 2014 (including those for the McNeil Plant). This will reduce costs and help stabilize rates going forward.

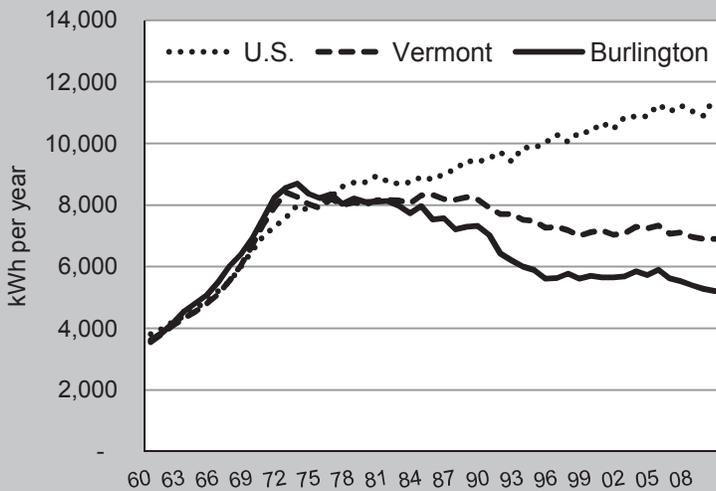
The bottom graph shows a comparison of BED's overall rates with other New England states. To the extent electric rates are a real or perceived issue for economic development, Burlington is in good shape within the region.

In any case, rates are still only half the picture. Along with the efforts to reduce rates, BED's Energy Services staff have helped C&I customers reduce their consumption through energy efficiency initiatives (see pages 5 and 6). The combined effect is powerful.

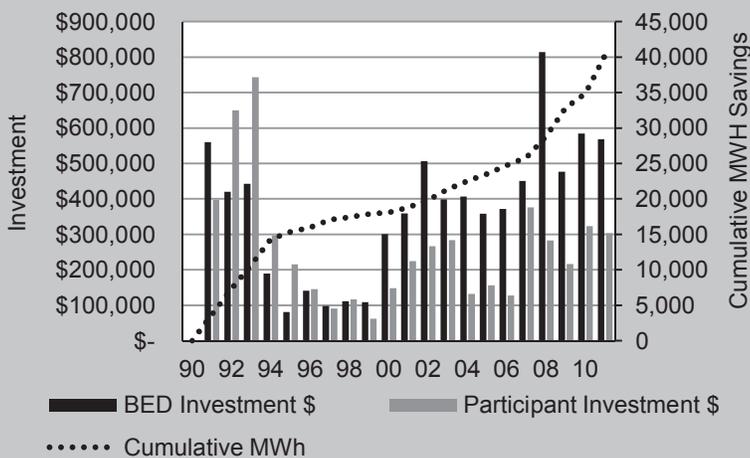


# ENERGY EFFICIENCY

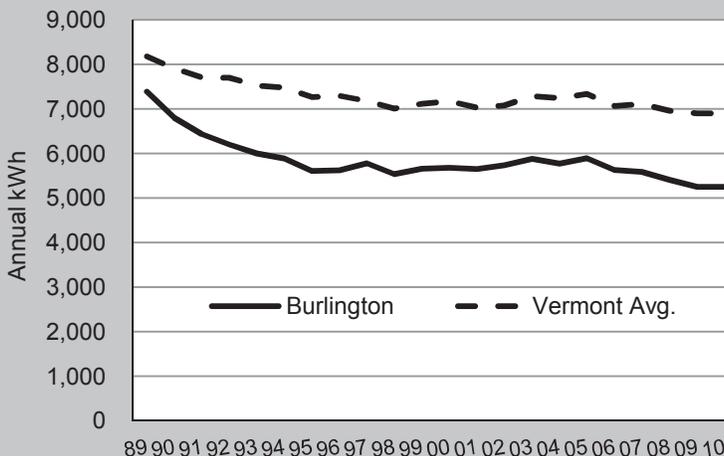
**Average use per residential customer**



**Residential Energy Efficiency Investments and Cumulative MWh Savings**



**Burlington's average annual residential electric usage is 29% lower than the state wide average**



Burlington voters approved an \$11.3 million energy efficiency bond in 1990. BED invested those funds wisely and the results are described below. BED customers (like all others statewide) pay a small monthly charge that supports BED's energy efficiency efforts.

BED partners with Efficiency Vermont on the retail products program. Customers receive rebates for buying Energy Star lighting and appliances at local retailers. In 2011, BED customers purchased more than 60,000 compact fluorescent bulbs, 350 washing machines, and 400 refrigerators.

Altogether, **BED has invested \$17.9 million in energy efficiency and has leveraged another \$20.7 million in private funds** from our customers. Almost all of these dollars re-circulate in the local economy. The effect has been dramatic.

**Overall electricity use in 2011 was 4.7% lower than in 1989.** During the same period, statewide use of electricity increased by 8.3%.\* Thus, we are meeting the needs of a growing local economy with less electricity than we used 21 years ago. **The efficiency investments saved Burlington customers \$16 million in 2011 alone.**

Furthermore, efficiency investments helped Burlington avoid the release of 53,798 tons of CO<sub>2</sub> in 2011, equivalent to removing 14,046 cars from the highways.

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

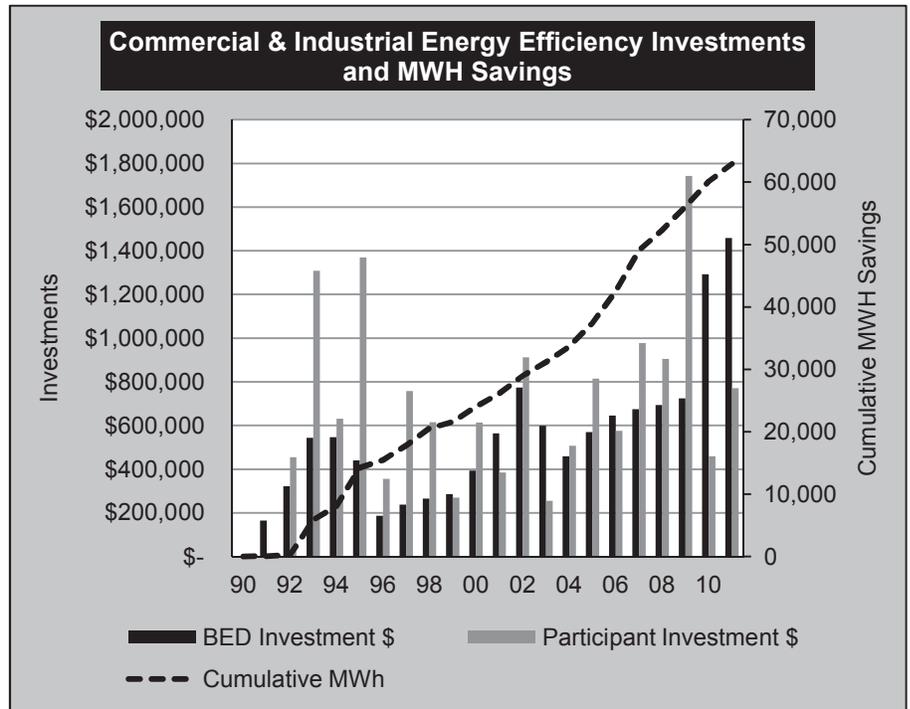
BED's Energy Services staff worked with dozens of customers in 2011 to implement efficiency projects that save energy, enhance facilities, and improve competitiveness. Total customer savings were \$1,241,032. For example (next page):

\*Note: Population growth was similar for Burlington and the state (8% v. 11% respectively), but statewide job growth was greater than Burlington's (17% v. 5%). This explains some portion of the variance.

## ENERGY EFFICIENCY

BED's Energy Services staff worked successfully with the Fletcher Free Library on a lighting retrofit and improved HVAC controls package that is estimated to reduce electricity usage by 30% and also help to solve comfort issues.

BED also worked closely with City Market to install dozens of LED interior and exterior fixtures. All the fixtures are automatically controlled by a software program based on occupancy and day lighting that turns off or dims the fixtures as needed. The project resulted in substantial energy savings and reduced maintenance costs.



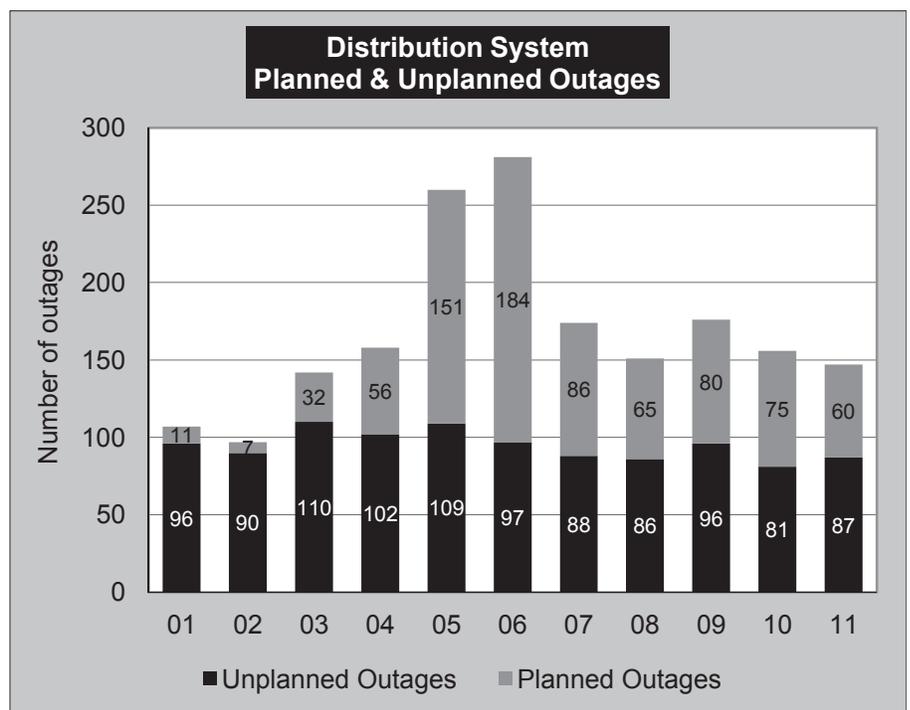
## RELIABILITY

An interruption of power is considered an outage if it exceeds five minutes. Outages are either planned or unplanned. Planned outages are generally shorter in duration, affect a smaller number of customers, and are warned in advance giving customers time to prepare. Planned outages allow BED staff to safely perform routine maintenance and upgrade facilities. Unplanned outages usually impact a larger number of customers, occur without warning, and are generally longer in duration. Most are caused by weather, equipment failure, and animal or tree contact.

BED's increased investments in capital improvements are intended to improve reliability, and they are paying off. Unplanned outages were up slightly last year, but are 21% lower than the peak in 2003.

BED moved a large transformer from the waterfront to the McNeil Plant and installed a new circuit between McNeil and the East Avenue substations. These changes have improved system reliability significantly and have reduced operating costs by eliminating GMP transmission charges.

According to the Lawrence Berkeley National Laboratory, BED is in the top tier in the nation for reliability (2008 data).



## POWER SUPPLY

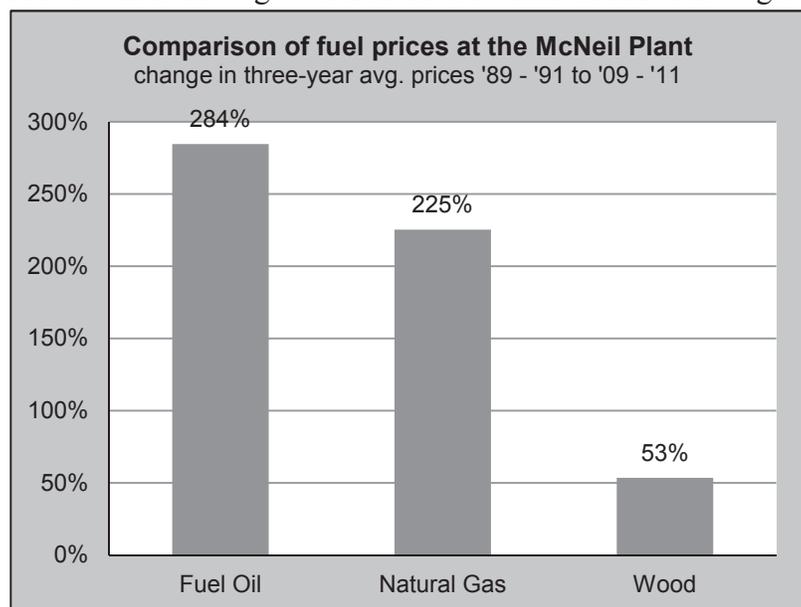
BED's power supply reflects a number of considerations including cost, renewability, predictability / reliability, diversity, and other economic and environmental impacts. While cost is always critical, other factors influence purchase decisions. BED has succeeded in maintaining comparatively low and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

**Global Warming & Future Power Supply:** Generating electricity with fossil fuels contributes to climate change. BED has been a leader in renewable energy development. BED's latest Integrated Resource Plan established a goal to meet 100% of Burlington's needs with renewable resources by the end of 2012. Since the last report, BED has received approval for the long-term purchase of hydro power from Hydro Quebec, and the Vermont Wind Project in Sheffield Vermont has come on line and begun delivering energy. At this time, BED expects that its calendar 2012 purchases will be approximately 58% renewable. In addition it has additional approved and executed contracts for generation equivalent to 15 - 20% of BED's needs coming on line in the following years (2013+). Lastly BED holds an option to purchase a hydro resource beginning in 2013 that will meet a further 8 - 9% of the city's needs. BED is negotiating to purchase that output. This leaves approximately 10-20% of BED's need that has not yet been met with long-term contracts for renewable power.

**Integrated Resource Plan / Renewability:** BED's analysis of supply options found that renewable resources were the best course of action (see <https://www.burlingtonelectric.com/>). However, such resources generally come at a premium price. In order to maintain stable rates, BED can sell the rights to the renewable aspects of the output from the McNeil Plant and other renewable resources (Renewable Energy Credits or REC's). When REC's are sold however, BED loses the right to claim the output from renewable resources.

After accounting for the sale of McNeil REC's, 11% of BED's needs were met with renewable energy in 2010. **Prior to the sale of the REC's, BED received about 45% of its power from renewable resources** (the renewability percentages are lower than the prior year due to some reduction in McNeil operation resulting from a planned maintenance outage).

The REC's were sold to reduce the rate impacts of purchasing long-term renewable resources. The BED Electric Commission has currently approved the sale of REC's through FY 2013 and continues to review the economics of selling REC's to control rates versus retaining the ability to claim renewability.



**The McNeil Station:** In 2011, 32% of BED's power came from McNeil. Recent dramatic reductions in natural gas prices, make operating for McNeil something of a concern in 2012. However, the relatively low cost of wood and the competitive advantage conferred by the ability to sell RECs should still allow for reasonable operations. If necessary, the McNeil Plant can burn fuel oil or natural gas in addition to wood. As the chart at left shows, however, wholesale prices for natural gas and fuel oil have grown dramatically over the years while wood prices have remained relatively stable.

## GENERATION – THE McNEIL PLANT

The McNeil Station is dispatched by ISO New England, which controls all of the region's power plants. The decision to run a plant is based on regional demand, reliability needs, and the bid price, which reflects fuel costs at each plant.

The Plant ran somewhat less in 2011 due to a major overhaul of the turbine, which occurs every six or seven years.

ISO does not consider the total cost of producing power because it excludes most "externalities" such as environmental and secondary economic impacts. However, ten states now require fossil fueled units to purchase carbon credits in order to operate. This incorporates environmental costs into the economics of these units. Because **McNeil uses a renewable fuel** (biomass, considered carbon neutral), it provides a competitive advantage.

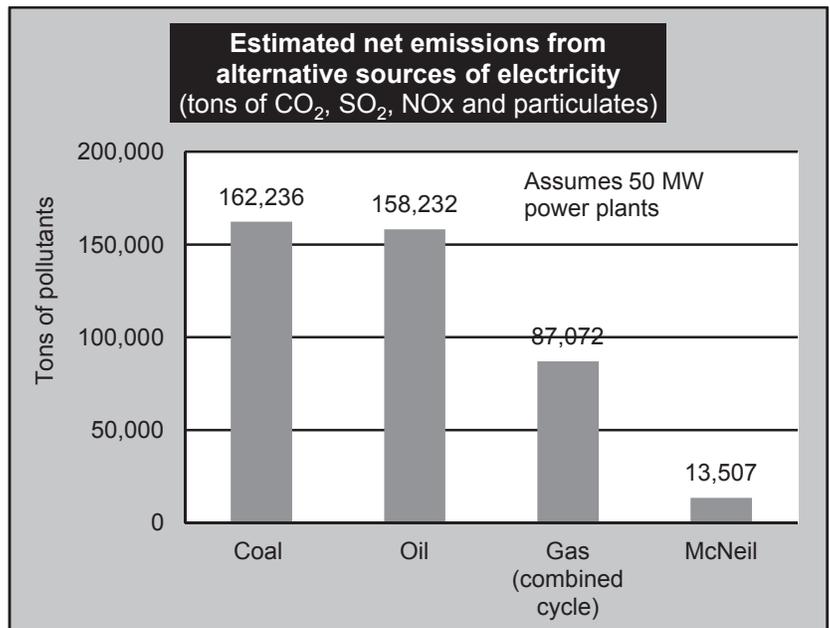
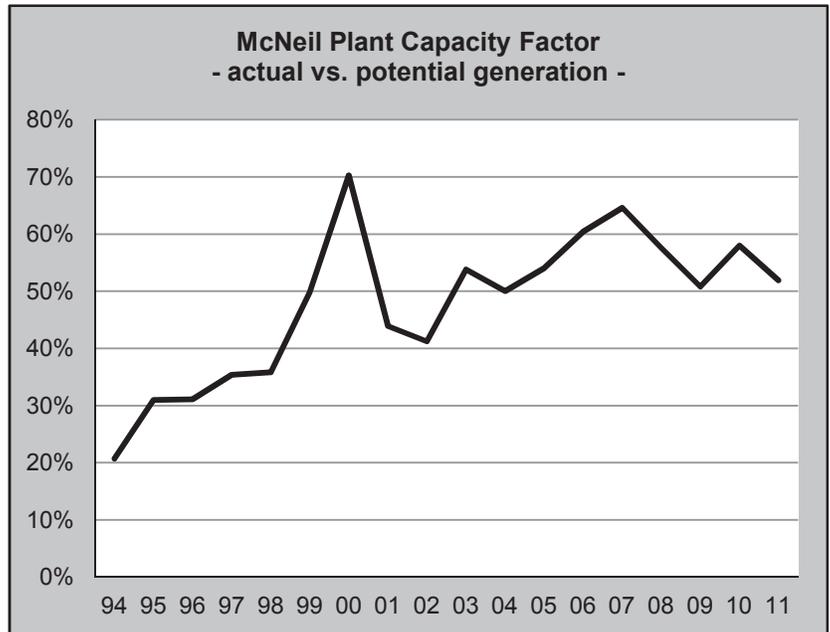
All power plants that burn fuel emit certain substances into the air. Until we are able to switch completely to pollution-free technologies like wind, solar, and hydro, we must continue to reduce demand whenever possible.

### HARVESTING BIOMASS

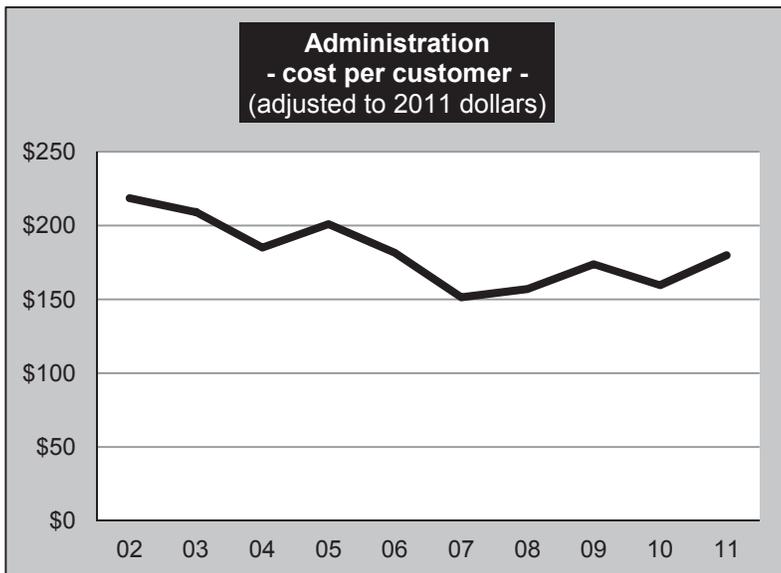
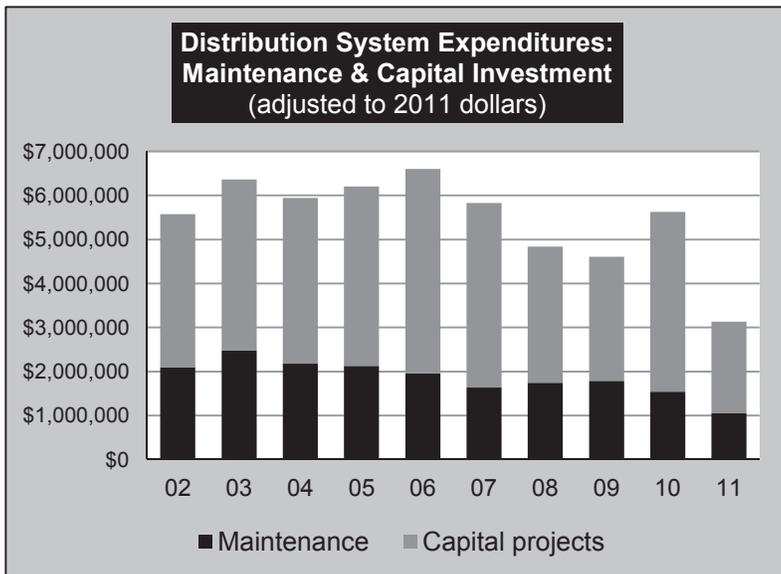
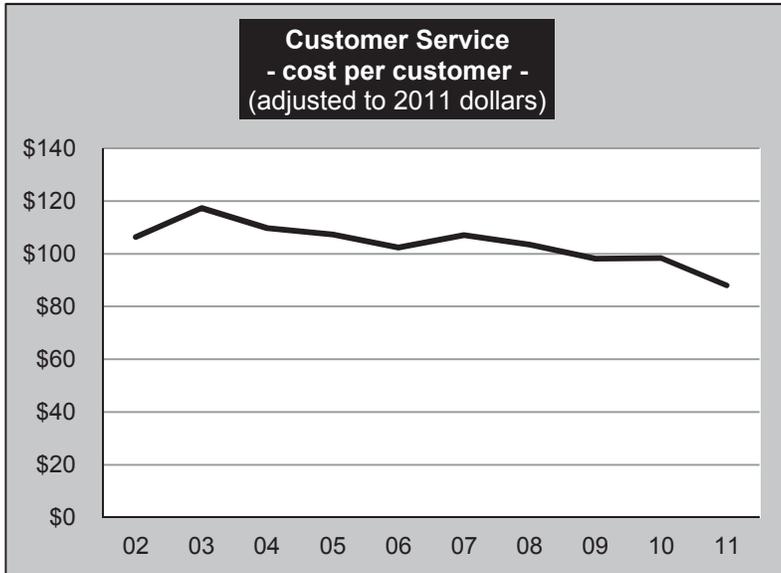
McNeil's wood harvesting standards are comprehensive, field-proven means to harvest biomass fuel sustainably, and have been used as a model in developing forest management certification criteria. In 2011, McNeil Station purchased 341,780 tons of wood; 93% harvest residue, 4% sawmill residue and 3% clean recycled wood. McNeil foresters plan and monitor harvests on more than 5,000 acres per year within a 100 mile radius of Burlington. Harvest plans include protecting critical habitats and wetlands. For example:

- McNeil makes available portable skidder bridges for free (on loan) to loggers.
- McNeil foresters encourage the use of low-impact harvesting equipment on sensitive sites.
- McNeil manages its wood fuel inventory to minimize delivery disruptions during inclement weather and to avoid environmental impacts of harvesting during sensitive times of the year.

McNeil continues to operate the Burlington Waste Wood Depot, which provides local residents with a central location to dispose of clean waste wood at no charge. **In 2011, over 10,000 tons of waste wood were diverted from local landfills to McNeil and processed into fuel, which conserved nearly 43,000 cubic yards of critical landfill space and reduced McNeil fuel costs by \$111,542.**



## OPERATING EFFICIENCY



Approximately 6,000 of our 16,000 residential customers change locations each year, which is a primary driver of customer service costs. BED has managed to lower and stabilize these costs over the last ten years. **Adjusted for inflation, the cost per customer has declined 25% since 2003.** Among other things, this reflects considerable savings from consolidating job functions and the productivity of our staff.

Adjusted for inflation, the average cost of maintaining the distribution system is \$1.8 million / year. In addition, BED makes long-term investments to improve the system, to extend its useful life, and to accommodate new development. Capital projects include equipment upgrades, line extensions and new underground conduits and cables.

These investments improve system reliability and reduce unplanned outages. Distribution system efficiency measures include conversion from 4.16 KV to 13.8 KV, load balancing, installation of capacitor banks, etc. **The changes have reduced line losses from 4% in 1996 to 2.2% in 2011 and are saving about \$469,000 annually.**

Capital expenses were lower than usual last year because one planned project was delayed and another cost less than expected.

The administrative costs of running BED have declined significantly since the late 1990s from staff reductions (down from 164 employees in 1996 to 124 today) and greater efficiencies. Since then, BED has continued to work hard to control costs. However, since the customer base is stable, any cost increases (e.g., health care, salaries, insurance, etc.) result in higher costs per customer. Nevertheless, **adjusted for inflation, the administrative cost per customer has declined 18% since 2002.**

# ECONOMIC IMPACTS

## TAXES AND FEES

As a municipal entity, BED is not required to pay property taxes. However, BED makes an annual payment in lieu of taxes (PILOT) that makes us the largest property taxpayer in the City. BED also collects a 3.5% franchise fee for the City.

This is significant because these payments come from all customers (and the joint owners of the McNeil Station), including nonprofit entities such as UVM

and Fletcher Allen that don't pay property taxes. This is a more equitable distribution of the burden of financing City operations and is an important benefit of public power.

**If not for BED's PILOT and the franchise fee, the combined property and school tax rate would be almost \$0.09 higher than it is today. That means a family with a \$200,000 home saves about \$172 per year in property taxes, while paying only \$29 in franchise fees, a savings of \$143 per year.**

BED Payments in Lieu of Taxes and Franchise Fee Transfers			
Fiscal Year	Payment in Lieu of Taxes (PILOT)	City Franchise Fees	Totals
2007	\$1,329,161	\$1,561,087	\$2,890,248
2008	\$1,422,118	\$1,555,177	\$2,977,295
2009	\$1,545,262	\$1,581,818	\$3,127,080
2010	\$1,513,864	\$1,640,653	\$3,154,517
2011	\$1,570,954	\$1,678,281	\$3,249,235
<b>5 Yr. Totals</b>	<b>\$7,381,359</b>	<b>\$8,017,016</b>	<b>\$15,398,375</b>

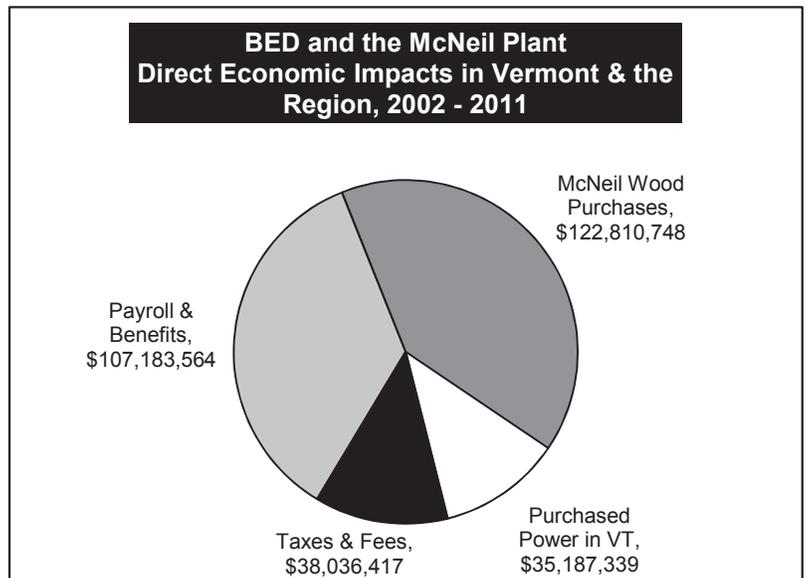
## JOBS AND THE MULTIPLIER EFFECT

One of the benefits of the decision to build the McNeil Generating Station is that a considerable amount of money remains in Vermont and the region. In addition to providing 40 jobs for Vermonters at the Plant, BED's wood fuel purchases also contribute to the Vermont economy, supporting North Country landowners, processors, and haulers. It is especially noteworthy that much of this activity has occurred in the northernmost counties of Vermont, where most economic indicators lag behind the rest of the state.

In addition, sustainable harvesting of wood fuel results in environmental benefits and a reliable long-term fuel source. A sustained market for low-grade wood at McNeil allows landowners to improve the future value of their woodlands. This encourages residents to own and maintain undeveloped forestland, which provides many public benefits such as clean water, wildlife habitat, and land for recreation.

The economic impact of BED's operations includes payroll, local taxes, wood purchases, and other power purchased within Vermont. **BED's total direct contribution to the Vermont economy over the past 10 years was \$303 million.**

The indirect benefits are significant as well. For example, wood purchases have a powerful "multiplier effect" as the money circulates through the economy. Including transportation costs, **BED and the Joint Owners spent \$11.2 million for wood at the McNeil Plant last year. This led to \$10.2 million in additional economic activity, including \$5 million in wages for 135 jobs (one year only). Furthermore, we estimate that these activities produced \$619,000 in state and local tax revenues (not including the \$3.25 million in PILOT and franchise fees for Burlington).**



# Smart Grid's Guiding Principles

Over the next two years, as we implement *ConnectCity* (BED's Smart Grid project), BED wants to assure our customers that their interests and privacy concerns are paramount. Below are the "Guiding Principles" that we have developed with the state-wide eEnergy Vermont Communications Group. We believe they align with fundamental consumer interests and expectations. The Principles are:

1. **Expectation of privacy.** Consumer billing and usage data will not be shared with any third party without the consumer's consent except as required by law.
2. **Expectation of effective communication.** Consumers will receive accurate, timely, clear communication that enables them to understand new services, technologies and rate structures and allows them to make informed energy choices suited to their lifestyles.
3. **Expectation of security.** The utility will secure all consumer data and comply with industry-standard cyber security protocols and practices.
4. **Expectation of choice.** Consumers will have choices among rate structures, in-home devices and appliances that enable them to take advantage of smart grid benefits.
5. **Expectation of safety.** Smart grid will be implemented using technologies and materials that meet industry standards and have been demonstrated by scientific research not to pose health risks to people and communities where they are installed.
6. **Expectation of consumer benefit.** The smart grid will be implemented in a manner designed to maximize value to Vermont consumers.

