

2012 Performance Measures Report



The Georgia Community Wind Project. Photo by Catherine Chamberlain

Efficiency, Renewables, Smart Grid – Burlington Moving Forward!

Just as Burlington Electric Department had the vision to build the 50 megawatt McNeil wood-chip plant in Burlington's Intervale in 1984 and invest in energy efficiency starting in the early 1990s (two investments we continue to benefit from to this day) the current investment in ConnectCity, BED's smart grid project, will benefit our customers for decades to come.

BED is moving forward with upgrades that are bringing our aging distribution system into the 21st century in order to provide better outage management for our customers, better integration of small-scale renewable energy into our system and efficiency improvements at many levels – all which make Burlington a stronger community by improving our economy, protecting our environment and moving us toward a more sustainable future.

As we move further into the 21st century we will continue to move away from the large polluting base-load generators that emitted so much carbon dioxide and many other pollutants into our atmosphere and instead down a path to sustainability with greater efficiency and more small-scale renewable projects.

As future generations experience even more of the negative effects of global warming than we are experiencing at present they will appreciate our commitment to change and our investment in the future. "ConnectCity" truly is transforming BED into a utility of the 21st century. We are proud to be a part of BED during this time.

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

Spencer Newman, Chair
Scott Moody, Vice Chair
Robert Herendeen
Jean O’Sullivan
Mark Stephenson

To: All BED ratepayers and citizens of Burlington
From: Spencer Newman
Date: March 2013
Re: Performance Measures Report

We are pleased to present Burlington Electric Department’s Performance Measures Report for 2012. 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.

The big focus of 2012 continued to be ConnectCity, BED’s smart grid project, which was 50 percent funded by a grant from the U.S. Department of Energy. This project is updating our system in many ways and will improve reliability and efficiency while enhancing the ability to connect small-scale renewable energy projects to our distribution system. As with any project this complex and extensive, at times it has proven challenging. With support from its vendors BED worked through many interconnectivity issues, and is now beginning to bring systems online and see the benefits of the investment.

We take our commitment to customers for affordable electricity very seriously, and we once again were able to avoid a rate increase through careful budgeting and planning and favorable power supply conditions.

BED remains committed to energy efficiency as its No. 1 goal, closely followed by renewable energy. These goals are being implemented with a continued and strong effort to improve efficiency and with the negotiating and signing of several new renewable energy contracts. It is imperative that we make our electricity use as clean and low impact to the planet as possible. Visit our website at www.burlingtonelectric.com to read about the work we are doing in these areas.

At BED, we are proud of our 108-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 be leading the way in deploying smart grid technology to meet the 21st century needs of our customers.

INTRODUCTION

A department of City government, Burlington Electric Department is an essential part of Burlington’s infrastructure. As a public utility, BED – overseen by a citizen commission – embodies the community’s commitment to not-for-profit rates, local control, and sustainability.

Because it is a municipal department, the citizens of Burlington have the right to participate directly in the most important decisions about BED’s future. These community-based decisions have long reflected Burlington’s values in promoting sustainability. Starting with the McNeil plant that came on line in 1984 and continuing with energy efficiency when voters of Burlington wisely passed an energy efficiency bond in 1990 that kicked off our robust commitment to efficiency, considering it on par with generation, and more recently with hydro, wind and solar. Our citizens know the importance of system reliability and have repeatedly supported system investments, such as the \$36.6 million bond approved in 2009 for distribution upgrades and other projects.

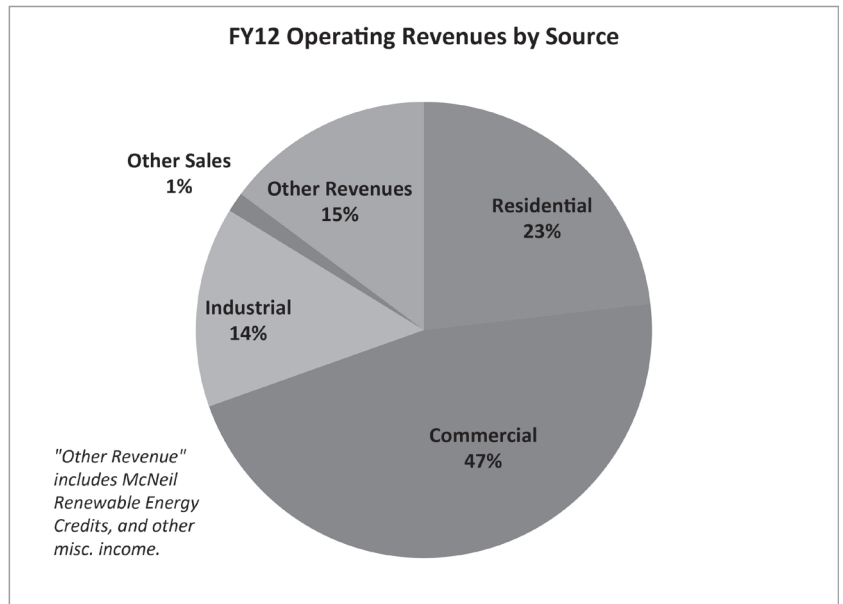
BED is proud to serve Burlington and will continue to be responsive to the community. This report is intended to help explain what we do and to help us measure our progress over time. We invite your comments and suggestions.

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 30% 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

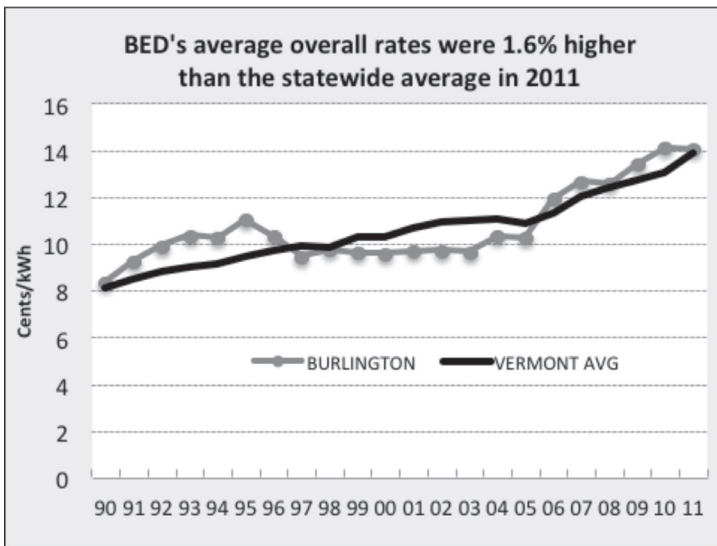
Like all Vermont utilities, BED is required to submit a quarterly Service Quality and Reliability Plan (SQRP) to the Vermont Department of Public Service. The SQRP establishes standards for a variety of performance criteria (see a selection of measures below).

Each utility is expected to meet these minimum performance standards. Over the years, BED has performed far better in most categories than required and continued to do so this year.

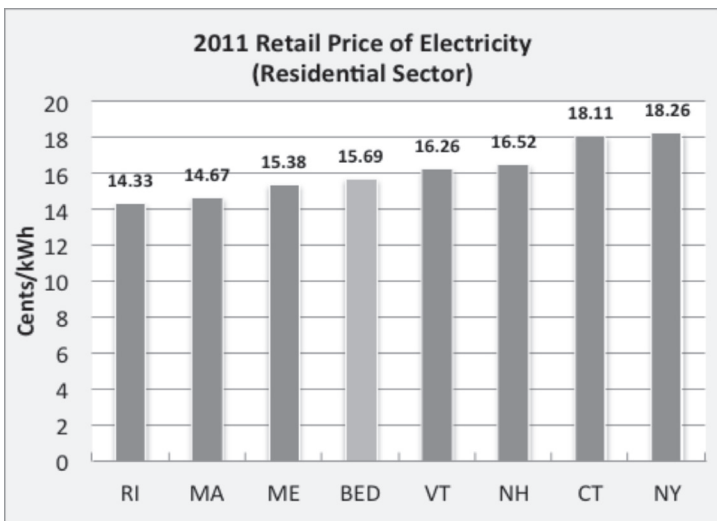
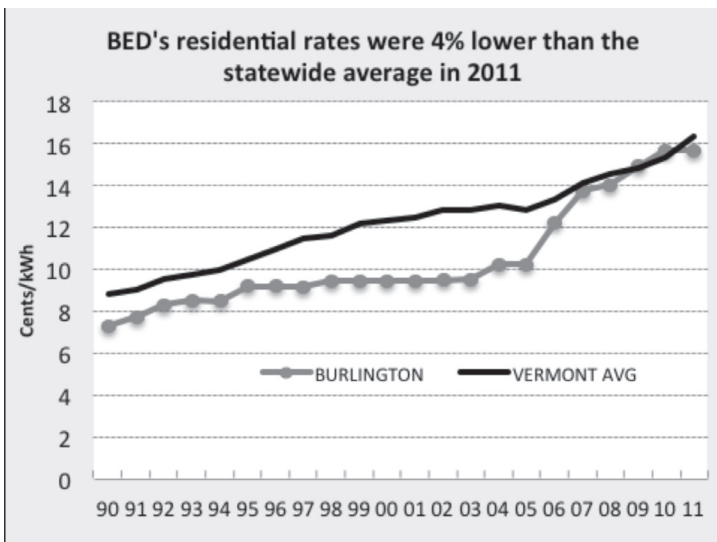
BED will continue to work hard on service quality and reliability. We know our customers expect no less.

Performance Area	Standard	BED
% Bills found inaccurate	0.1%	0.0%
% Bills estimated	5%	0.2%
% Customer requested work completed by promised delivery date	95%	100%
Average # of customer interruptions per year	2.1	1.4
Average duration of customer interruption (hours)	1.2	1.0
Lost time incidents / year (injury leading to lost work time)	< = 3.5	.92
Lost time severity (total work days missed due to injury)	< = 71	29.6

RATES & BILLS



(SOURCE: DEPARTMENT OF PUBLIC SERVICE, UTILITY ANNUAL REPORT DATA)



(AVERAGE PRICE COMPARED TO OTHER NORTHEASTERN STATES. SOURCE: EIA-861 DATA FOR CALENDAR YEAR 2010.) [HTTP://WWW.EIA.DOE.GOV/CNEAF/ELECTRICITY/ESR/ESR_SUM.HTML](http://www.eia.doe.gov/cneaf/electricity/esr/esr_sum.html)

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, 2011, or 2012, and expects no 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.

RESIDENTIAL CUSTOMERS

BED's residential rates were 4% lower than the statewide average in 2011.

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 27% less than the statewide average in 2011.

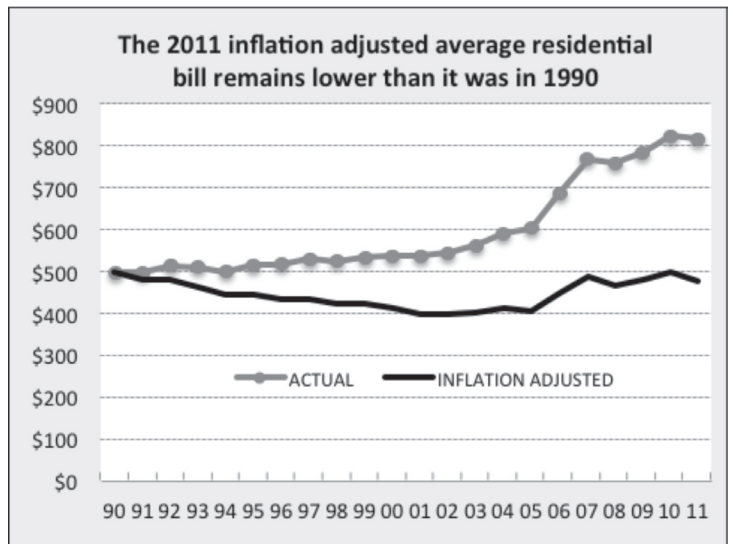
	Avg. Res. Rate / kWh	Avg. Res. Annual Bill
Burlington	15.69¢	\$817
Vermont	16.35¢	\$1,126

In 2011, an average Burlington residential customer paid \$309 less per year than the statewide average (and lower than the average for every state in the region). Overall, this represented aggregate savings of \$5.1 million in 2011 – 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 & BILLS

The 2011 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 2011 was 34% higher than in 1990.



COMMERCIAL & INDIVIDUAL CUSTOMERS

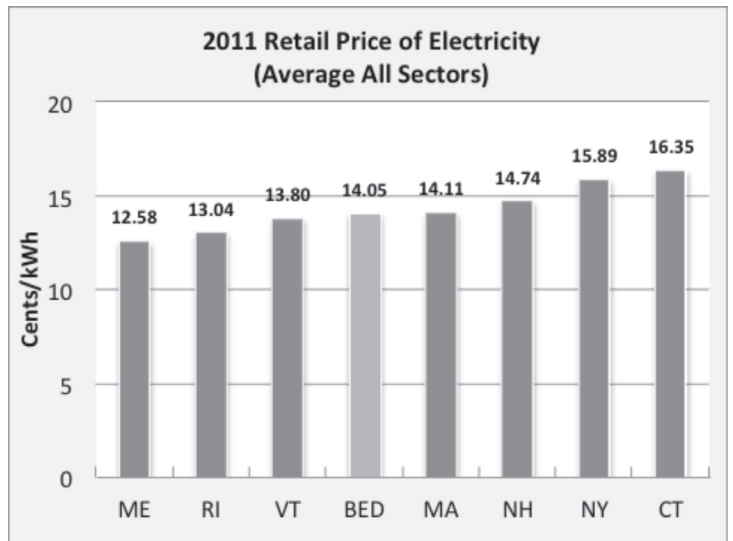
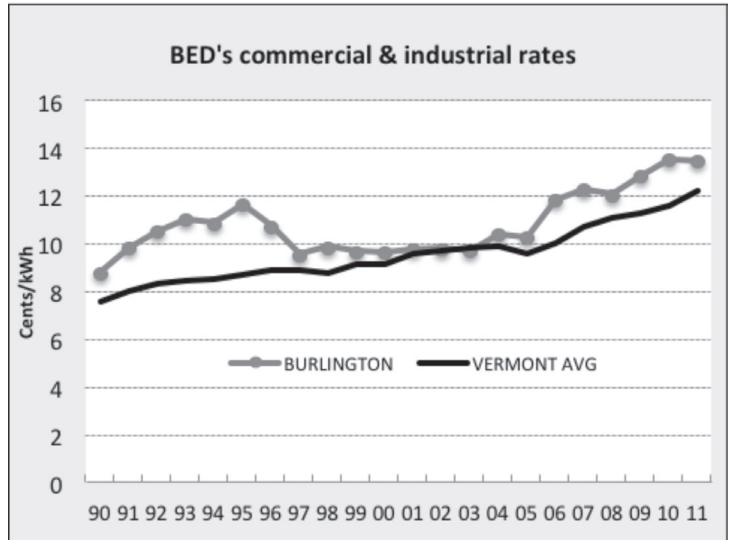
Average commercial and industrial rates have increased 10% since 2007. Although BED's rates remain higher than the statewide average, the gap is expected to close in the next few years.

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.

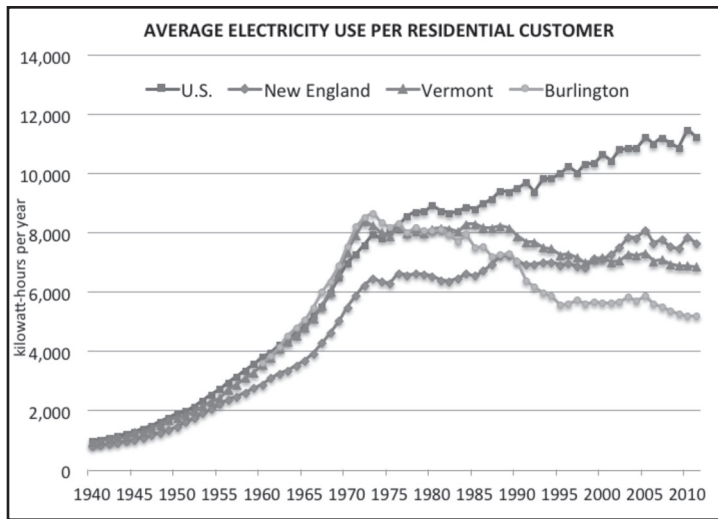
In addition, BED will make the final payment on the majority of its outstanding revenue bonds in 2014 (including those for the McNeil Plant). This will reduce costs and help stabilize rates going forward.

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 6 and 7). The combined effect is powerful.



ENERGY EFFICIENCY



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 2012, BED customers purchased more than 44,000 compact fluorescent and LED bulbs and fixtures, 170 washing machines, and close to 1,300 Energy Star consumer electronic products.

Altogether, **BED has invested \$19.3 million in energy efficiency and has leveraged another \$22.6 million in private funds** from our customers. Almost all of these dollars re-circulate in the local economy. The effect has been dramatic.

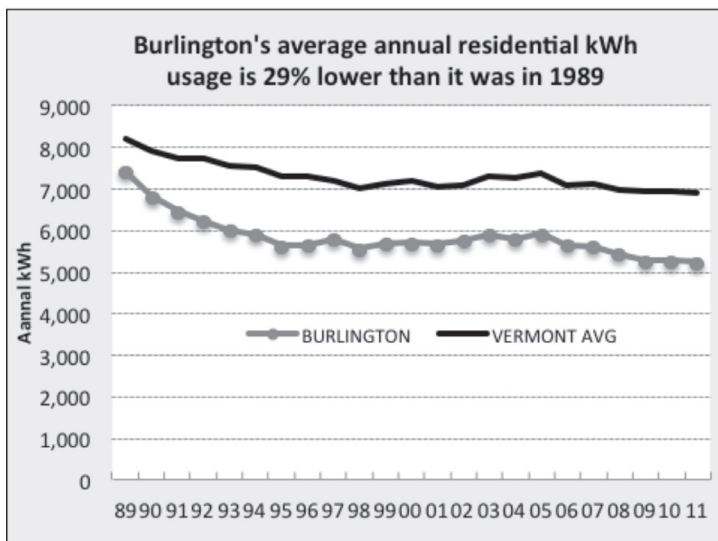
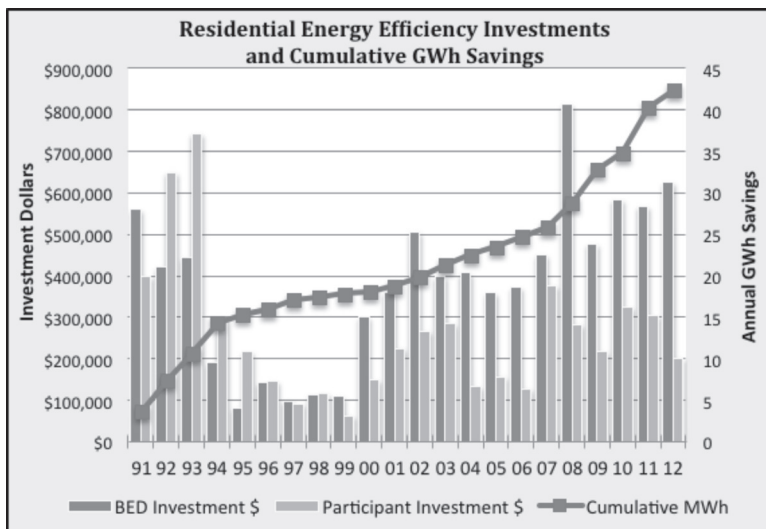
Overall electricity use in 2012 was 5.3% lower than in 1989. During the same period, statewide use of electricity increased by 8.1%.* Thus, we are meeting the needs of a growing local economy with less electricity than we used 23 years ago. **The efficiency investments saved Burlington customers \$15.4 million in 2012 alone.**

Furthermore, efficiency investments helped Burlington avoid the release of 20,310 tons of CO₂ in 2012, equivalent to removing 3,620 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 2012 to implement efficiency projects that save energy, enhance facilities, and improve competitiveness. Total customer savings were \$1,050,487. For example (next page):

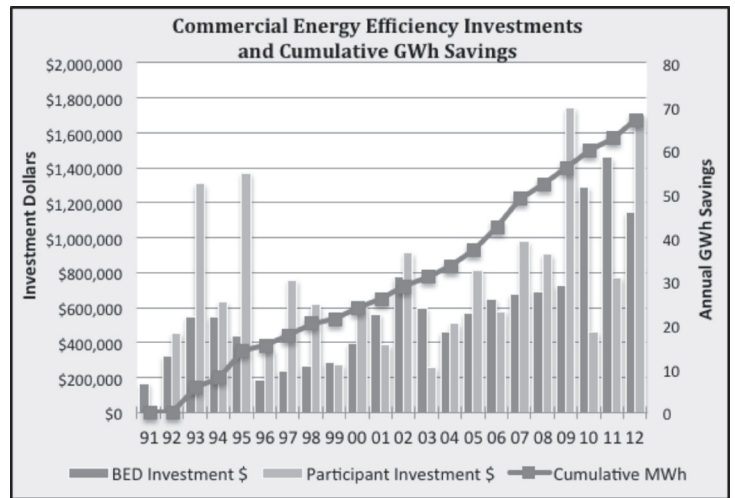
*Note: Population growth was similar for Burlington and the state (8% v. 11% respectively), but statewide job growth was greater than Burlington’s (17% v. 5%). This explains some portion of the variance.



ENERGY EFFICIENCY

- BED's Energy Services staff worked successfully with the University of Vermont to retrofit about 1,300 exterior site lights with LED's that are estimated to save about 500,000 kWh's per year. This project displaces the annual energy usage of approximately 100 Burlington homes.

- BED also worked closely with the Burlington Furniture Company on improvements to their heating and cooling system controls resulting in strong energy savings, a quick return on the investment, and increased comfort. Successful lighting projects were also completed at Burlington College's new home on North Avenue and Champlain College's Bader Hall project.

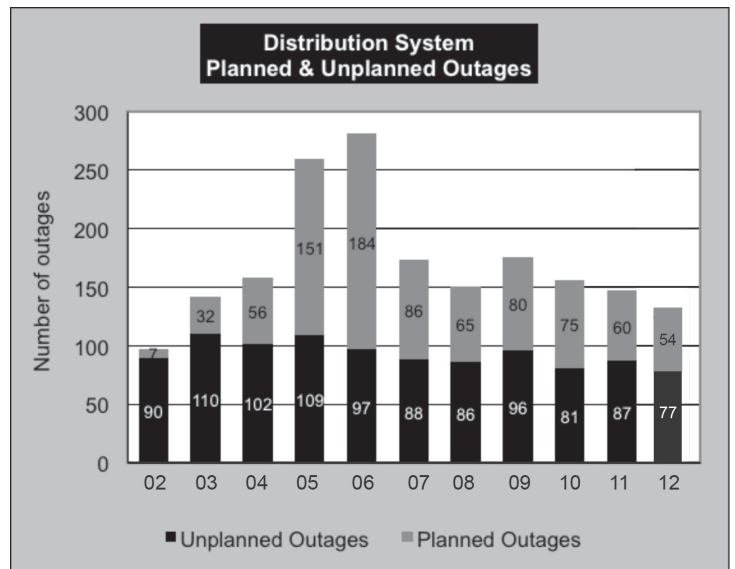


RELIABILITY

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 eliminated the last two 4.16 KV substations, leaving four small pockets of the 4.16 KV distribution system in the City with plans to upgrade these four remaining areas over the next 2-3 years. In 2012 BED extended an existing distribution circuit into the New North End to allow for greater flexibility in dealing with outages.

BED continued with the upgrade of the old 4.16 KV circuits to 13.8 KV, replaced old underground direct-buried cables with new cables in new conduits, and completed the installation of animal protectors on three circuits equipment that are not equipped with animal wildlife protectors. These changes have improved system reliability significantly and have reduced operating costs by reducing distribution system losses.



BED's power supply reflects a number of considerations including cost, renewability, predictability / reliability, stability vs. flexibility, 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 long been a leader in renewable energy development. BED's 2012 Integrated Resource Plan established a goal to continue seeking long-term renewable resources to fill the remaining supply gap without substantial rate impacts. Since the 2012 IRP was filed in September, 2012, BED has executed a five-year contract for energy from small existing hydro facilities, received approval to exercise the option and started discussions to pursue purchasing the Winooski One hydro facility, and the Georgia Mountain Community Wind Project in Georgia, Vermont, has come on line and begun delivering energy. Purchasing the Winooski One hydro facility will meet another 8 to 9% of the city's annual energy needs.

At this time, BED expects that its calendar 2013 purchases will be approximately 59% renewable. In addition it has approved and executed contracts for generation equivalent to 15 to 30% of BED's needs coming on line in the following years (2014+). As stated

earlier BED is currently negotiating to purchase the Winooski One hydro facility.

Integrated Resource Plan/Renewability:

BED's 2012 analysis of supply options found that renewable resources remain the best course of action (see www.burlingtonelectric.com; under "Power Supply" hit "Integrated Resource Plan"). However, such resources generally come at a premium price. In order to maintain stable rates and with the approval of the Electric Commission, BED can sell the rights to the renewable aspects of the output from the McNeil Plant and other renewable resources (Renewable Energy Credits or RECs). When RECs are sold however, BED loses the right to claim the output as renewable.

After accounting for the sale of McNeil REC's, 12% of BED's needs were met with renewable energy in 2011.

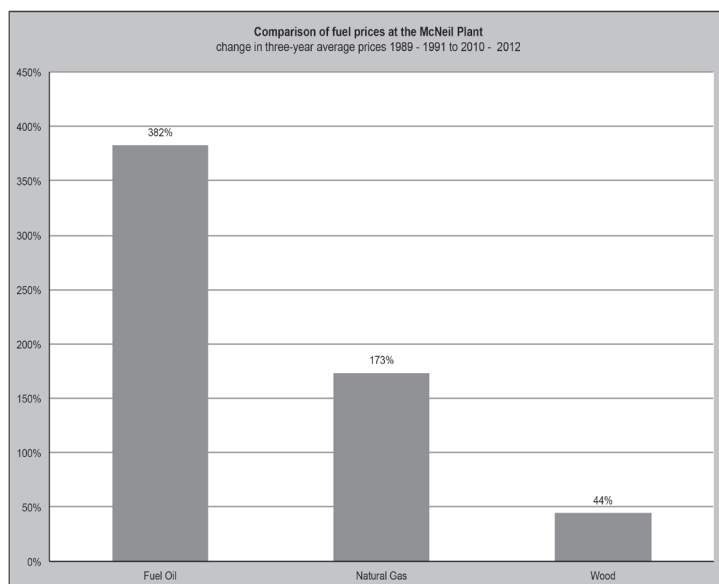
Prior to the sale of the RECs, BED received about 47% of its power from renewable resources.

The RECs were sold to reduce the rate impacts of purchasing long-term renewable resources. The BED Electric Commission has currently approved the sale of RECs through FY 2016 and continues to review the economics of selling RECs to control rates versus retaining the ability to claim renewability.

BED generally follows a policy of replacing the high valued RECs it sells by repurchasing RECs from existing renewable resources. Selling high-valued RECs and repurchasing lower-valued RECs helps control rate impacts to BED customers as well as allowing BED to continue to claim output as renewable. After replacing the RECs that had been sold, BED's renewable percentage was restored to the pre-sale values (see www.burlingtonelectric.com under the "Power Supply" tab for a more detailed discussion of REC transactions and their effect on renewability).

The McNeil Station

In 2012, 32% of BED's power came from McNeil. As the second largest generating station in Vermont, McNeil continued to provide a valuable source of power and reliability to the area. The capacity factor for the plant was about the same as in 2011 at 51.5%. During the major turbine outage in April 2011, it was discovered that the generator rotor needed rewinding. The parts were ordered, and the rewind was scheduled for September of 2012. Although McNeil is capable of burning wood, oil and gas, all generation during this period was from wood fuel.



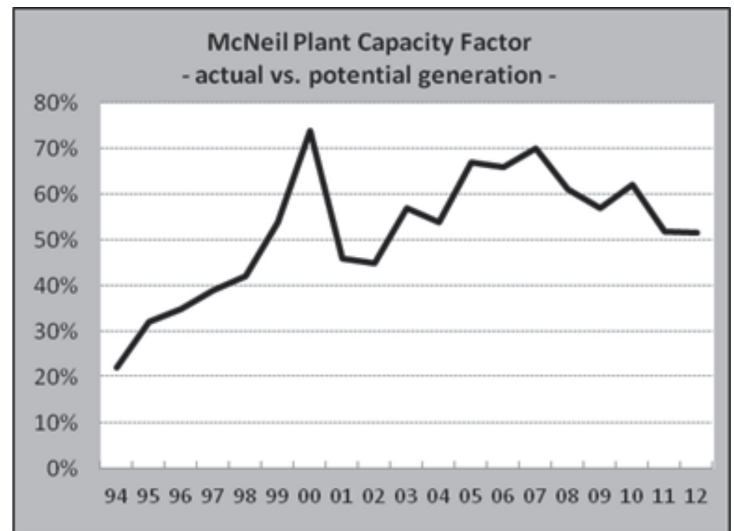
GENERATION • THE McNeil plant

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 net 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.



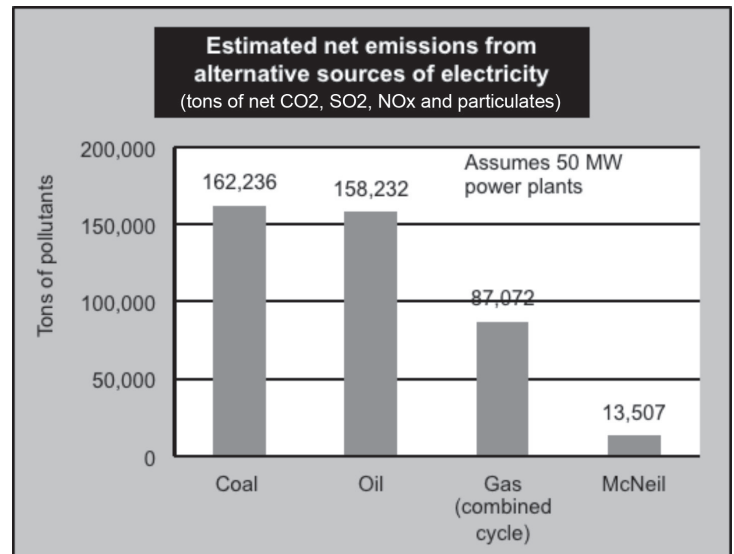
HARVESTING BIOMASS

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.

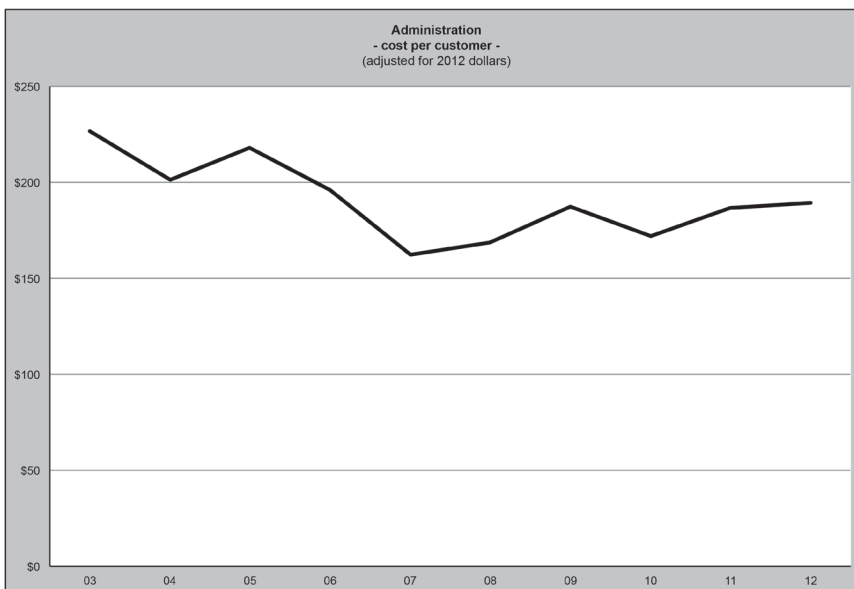
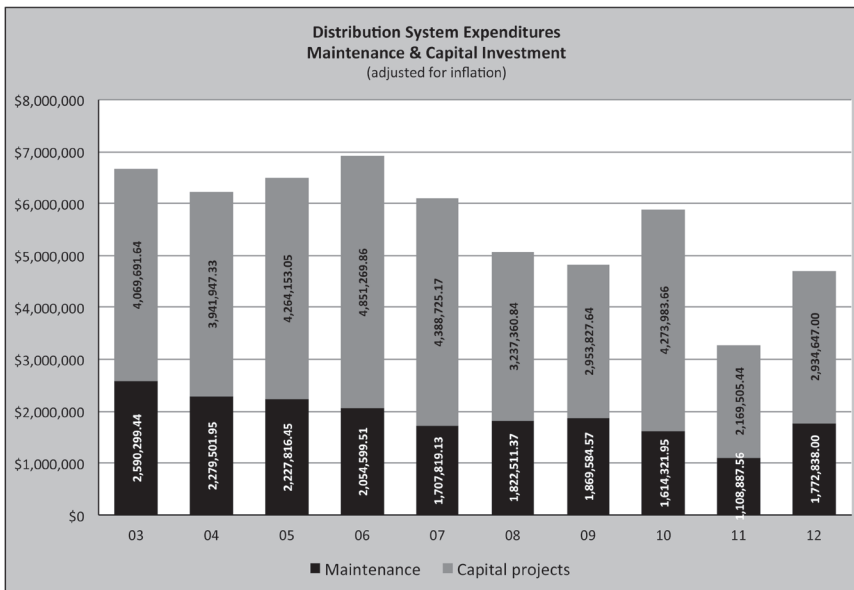
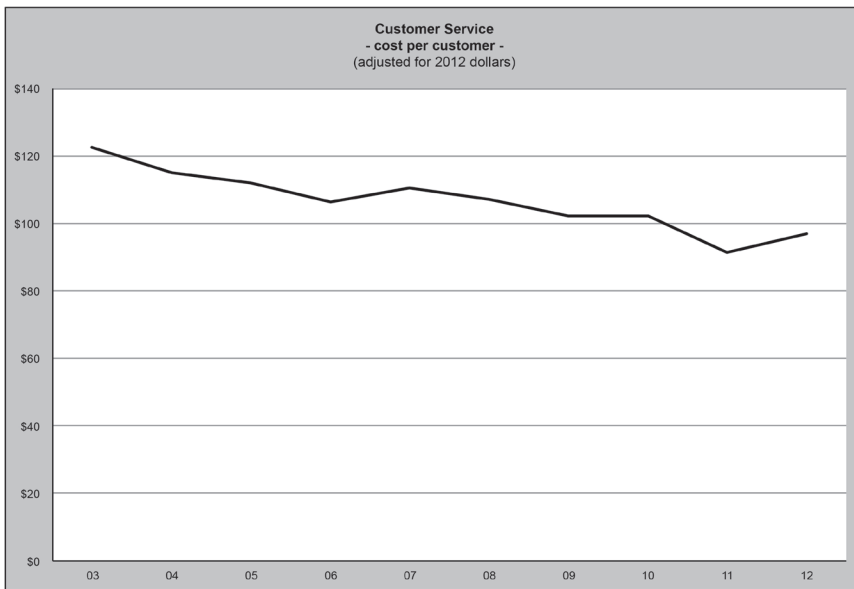
In 2012, McNeil Station used 357,118 tons of wood; 94% harvest residue, 4% sawmill residue and 2% clean recycled wood. McNeil foresters plan and monitor harvests on more than 5,000 acres per year within a 100 mile radius of Burlington. Harvest plans include protecting critical habitats and wetlands. 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 and businesses with a central location to dispose of clean waste wood at no charge. **In 2012, 6,850 tons of waste wood were diverted from local landfills to McNeil and processed into fuel, which conserved nearly 30,000 cubic yards of critical landfill space and reduced McNeil fuel costs by \$76,740.**



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 2.05% in 2011 and are expected to save approximately \$481,000 in FY'14.**

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 125 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 2003.**

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 municipal property tax rate would be more than nine cents higher than it is today. That means a family with a \$200,000 home saves about \$187 per year in property taxes, while paying only \$28 in franchise fees, a savings of \$159 per year.

BED Payments in Lieu of Taxes and Franchise Fee Transfers			
Fiscal Year	Payment in Lieu of Taxes (PILOT)	City Franchise Fees	Totals
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
2012	\$1,645,920	\$1,646,997	\$3,292,917
5 Yr. Totals	\$7,698,118	\$8,102,926	\$15,801,044

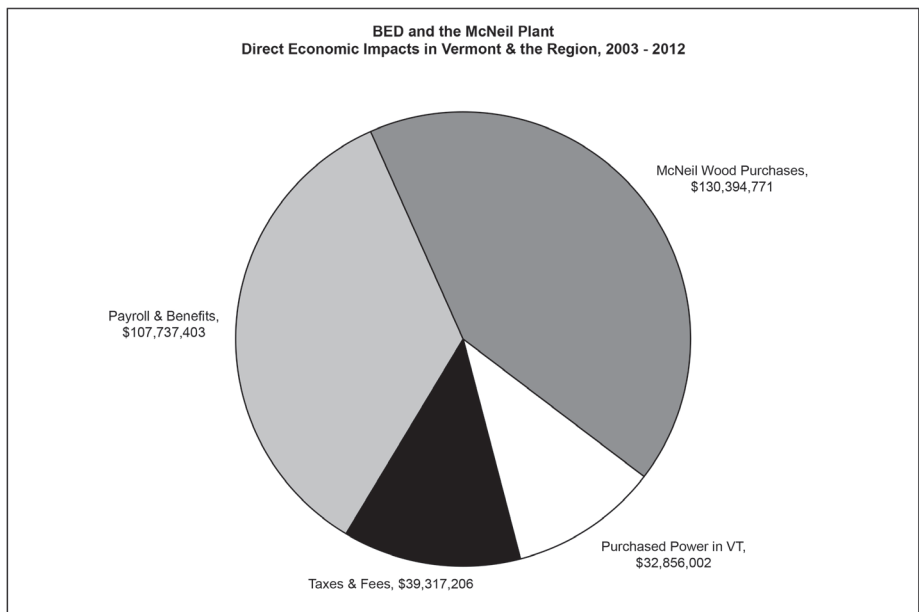
JOBS AND THE MULTIPLIER EFFECT

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 \$13.96 million for wood at the McNeil Plant last year. This led to \$12.4 million in additional economic activity, including \$6.2 million in wages for 162 jobs (one year only). Furthermore, we estimate that these activities produced \$754,000 in state and local tax revenues (not including \$3.28 million in PILOT and franchise fees for Burlington).**



Smart Grid's Guiding Principles

As we continue the implementation of *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.



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