



A First Look at Progress
Toward Meeting EmPOWER
Maryland Goals

Maryland PIRG
Foundation

Utility Work Ahead

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Meeting EmPOWER Maryland Goals

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Executive Summary

Energy efficiency lowers energy bills, makes electricity service more reliable, and helps protect public health. Recognizing these benefits, Maryland adopted the EmPOWER Maryland Act in 2008, establishing clear energy efficiency goals for the state.

However, Maryland is not on track to achieve all of these goals. While utilities are planning to cut power use at peak times according to state goals, they have failed to propose adequate energy efficiency programs. As a result, Maryland is likely to fall roughly 25 percent short of the energy savings promised under the EmPOWER Maryland Act.

Maryland's utilities must do more to deliver the benefits of energy efficiency to Marylanders. The Public Service Commission needs to make sure that utilities are doing their part to make Maryland more energy efficient.

Maryland uses vast amounts of electricity, forcing Marylanders to spend millions of dollars on high power bills. High consumption also increases the public health impacts of energy use.

- Marylanders used 4,710 kilowatt-hours of electricity per person in 2009, 18 percent more than in 1990.
- Power prices have soared since Maryland restructured its electricity industry. In 1999, the average residential customer paid \$1,250 a year for electricity; by 2008 the average bill had increased more than 30 percent to \$1,650. Commercial customers experienced an even larger increase.
- Electricity generated for Marylanders produced nearly 46 million metric tons of global warming pollutants in 2005, or 42 percent of the state's total emissions.

By using energy more wisely, Marylanders can cut their electricity consumption, save money, boost the state's economy and reduce the environmental impacts of electricity generation. Meeting the goals of the EmPOWER Maryland Act could:

- Save consumers and businesses \$861 million annually by 2015;

- Add 8,000 new jobs in the state by 2015; and
- Reduce carbon dioxide emissions from Maryland power plants by nearly 7 million metric tons in 2015.

If the state is to achieve the goals of the EmPOWER Maryland Act and reap the benefits of energy efficiency, utilities must develop strong programs.

- Recognizing the benefits of efficiency, the EmPOWER Maryland Act calls for a 15 percent reduction in per capita electricity consumption by 2015 and a 15 percent cut in per capita peak demand for electricity.
- The act calls on utilities to achieve two-thirds of the overall electricity savings, with state government responsible for the remaining third. Utilities must reduce per capita electricity consumption 5 percent by 2011 and 10 percent by 2015. Utilities are responsible for 100 percent of the goal for peak demand savings.

Maryland's utilities have only partially risen to the challenge. The plans designed by the utilities will exceed the peak demand goal in both 2011 and 2015, and will save money for consumers. However, total projected energy savings fall short and utilities are not on track to achieve even those projected savings.

- Though **Baltimore Gas and Electric** drew praise from the PSC for some of the innovative and cost-effective programs it proposed, its overall plan is inadequate. If BGE achieves all the savings it projects, the utility will reach only 52 percent of its efficiency goal for 2011. Its programs are more successful at cutting peak demand and BGE is projected to exceed its goals in

both 2011 and 2015. BGE launched all its programs in 2009, but obtained small savings.

- **Pepco** expects to achieve just 71 percent of its energy efficiency goal in 2011, with savings declining by 2015. In 2009, Pepco had started only one of its residential programs and none of its non-residential programs.
- Because **Delmarva** has the same parent company as Pepco, Delmarva's efficiency programs are essentially the same as Pepco's, but it achieves slightly lower savings because it didn't adequately tailor the programs to its different customer base. Delmarva's implementation effort is just as poor as Pepco's.
- In contrast to the other utilities, **Allegheny Power** has drafted a plan that comes quite close to achieving its EmPOWER Maryland goals for reducing total energy consumption. In 2011, Allegheny Power expects to achieve 90 percent of its overall electricity savings goal. However, Allegheny Power's implementation of programs has been very slow, producing almost no savings in 2009.
- Though **SMECO** did more than other utilities to maintain energy efficiency programs after Maryland deregulated its electricity market, the utility has not developed a strong plan for meeting its EmPOWER Maryland goals. SMECO expects to achieve 73 percent of its electricity savings goal in 2011, but only 65 percent in 2015. SMECO waited until 2010 to launch most of its programs.

See Table ES-1 for details on each utility's anticipated savings.

Table ES-1. Each Utility's Expected Progress Versus Its EmPOWER Maryland Goals

	2011		2015	
	Percent of electricity savings goal achieved	Percent of peak demand goal achieved	Percent of electricity savings goal achieved	Percent of peak demand goal achieved
BGE	52%	232%	63%	138%
PEPCO	71%	128%	63%	75%
Delmarva Power	55%	109%	59%	76%
Allegheny Power	90%	72%	94%	53%
SMECO	73%	46%	65%	32%
Total*	58%	180%	64%	109%

*Total for these five utilities, adjusted for the different size of each utility

The good news is that all the programs that the utilities plan to offer will provide net savings for Maryland consumers.

- Pepco's programs will produce \$3.73 worth of benefit for every \$1 invested in energy efficiency. Allegheny Power's programs return the smallest net benefit but still substantial savings of \$1.60 for every \$1 invested.
- Program benefits can also be measured in terms of the cost of energy saved through efficiency versus energy that would have to be purchased. While residential customers must pay an average of 12 cents for a kilowatt-hour of electricity, efficiency investments cost just 2.6 to 3.5 cents per kilowatt-hour.

If utilities fail to meet their share of the EmPOWER Maryland targets, it will be near impossible for the state to meet the energy efficiency goals of the act. Assuming that the state meets its share of the EmPOWER Maryland

targets (which is unlikely, given that the state has diverted energy efficiency funds to direct bill assistance) and that utilities achieve the savings they expect with the programs they have currently designed, in 2015 Maryland will be 25 percent short of meeting the EmPOWER Maryland energy savings goal.

Even though demand for electricity has declined in recent years as rates have risen and the economy slowed, Maryland's problems with electricity consumption remain. As the economy picks back up, the state will face difficult and expensive choices of how to meet its growing demand for power. Investing in efficiency can help Maryland avoid spending billions on new transmission lines or new generation capacity.

The state still has time to get back on track to meet the goals of EmPOWER Maryland. Energy efficiency programs can be implemented quickly, and the first benchmarks in the EmPOWER Maryland Act are set for 2011. To achieve the goals of EmPOWER Maryland, the following must occur:

- The Public Service Commission (PSC) must hold the electric utilities accountable to ensure they do their part to make Maryland more energy efficient.
 - Utilities must revise their efficiency programs to achieve greater savings.
 - Utilities need to promptly implement their existing plans.
- The Public Service Commission should acknowledge all the benefits of energy efficiency. Though the PSC says it does not use any single test of cost effectiveness, it appears to rely most heavily on the relatively narrow “total resource cost test” instead of a broader measure of cost-effectiveness that would allow the state to capture more of its energy efficiency potential.
- Maryland needs to strengthen its commitment to other energy efficiency efforts.
 - The Governor and the General Assembly have diverted funds intended for energy efficiency improvements to paying the bills of low-income consumers. While this eases the immediate burden of high utility bills for those customers, their bills will be just as high next year because their homes will continue to be inefficient to heat. Energy efficiency funding needs to be restored to provide a long-term solution to high energy bills.
 - In addition, the state should improve enforcement of building codes, strengthen appliance efficiency standards, offer stronger incentives for efficiency, and increase investment in energy efficiency-related research and development.

Introduction

Maryland electricity customers are hurting. High prices and inefficient power use have caused bills to skyrocket, straining household budgets, sometimes to the breaking point.

In 1999, the year that Maryland deregulated the sale of electricity, the typical household spent \$1,250 per year on power.¹ By 2008, the annual cost of power had risen to more than \$1,650 (adjusted for inflation), forcing many Marylanders to adjust their family budgets and seek ways to cut energy use.

Customers, in an attempt to keep their power bills manageable, may have waited until later in the fall to turn on their furnaces and kept their homes colder than in past winters. Yet such measures can cut power use only so far, and may not be an option for some consumers. One new mother attributed her high power bill to having to heat her poorly insulated home enough to keep her twins comfortable.²

Limiting energy use and reshuffling family budgets isn't enough to enable all customers to pay their bills. With the economic downturn, this problem has been getting worse. In 2008, customers of Allegheny, BGE, Delmarva and Pepco were

at least 30 days late in paying \$1.6 billion worth of energy bills. In 2009, that amount increased 24 percent to \$1.9 billion.³ When customers fall too far behind on their bills, utilities can shut off power. Because so many customers were at risk of losing power in early 2009, the Public Service Commission temporarily barred utilities from cutting off power and instead required them to offer multi-month payment plans to customers prior to termination.⁴

A more lasting and powerful approach to help consumers deal with high power bills is to improve energy efficiency – with measures such as better insulation to keep the house comfortably warm even as the furnace turns on less often, or a more efficient refrigerator that safely chills food while using less electricity. Better efficiency can lower power bills. Blowing insulation into the walls of a home can cut \$90 from a family's annual power bill, while replacing an old refrigerator with a new, energy-efficient one can save \$40 every year.⁵

Consumers often need help identifying or paying for efficiency improvements, and that is the role utility companies must

fill as they help the state achieve the energy efficiency goals laid out by the EMPOWER Maryland Act. Achieving the

energy savings envisioned in the law will ease the burden imposed on consumers by high electricity prices.

Why Maryland Needs Strong Energy Efficiency Programs

Reliable access to clean electricity at a reasonable cost is crucial to Maryland's economy and the well-being of the state's residents. Unfortunately, inefficient energy use and rising demand, coupled with increasing electricity prices, have caused consumers' power bills to soar. Because Maryland imports 23 percent of its electricity from other states, millions of dollars that Marylanders spend on electricity leaves the state, draining the local economy.⁶ Furthermore, high electricity use can threaten the reliability of the state's electricity grid. Finally, much of our power comes from dirty sources that damage public health and the environment.

Improved energy efficiency can help Maryland address these problems, offering a simple, inexpensive and quick way to contain rising costs and reduce the strain on Maryland's energy system. Maryland has ample energy efficiency potential, but has only begun to develop that resource.

Maryland's Electricity Challenges

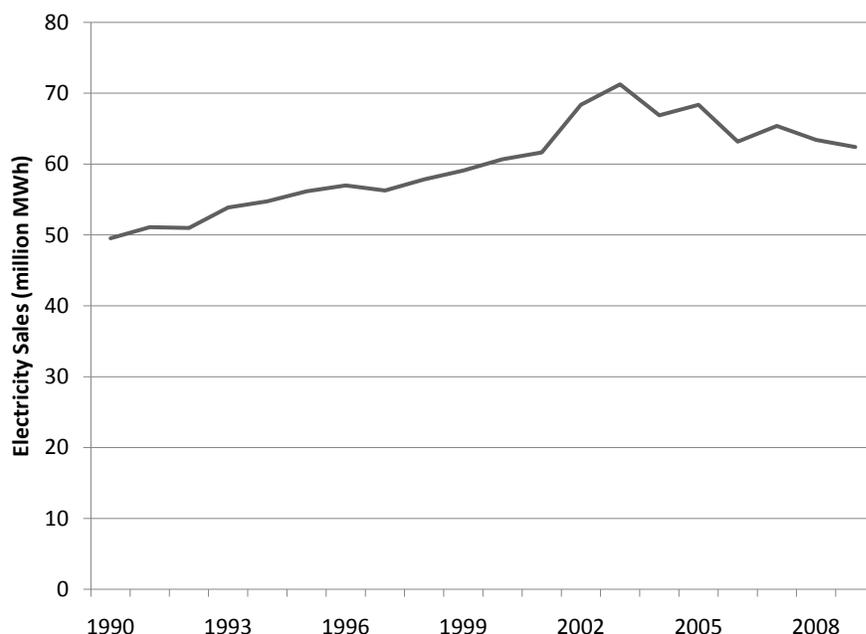
Inefficient Energy Use

At the heart of Maryland's energy problem lies high demand for power.

Marylanders use more electricity than they did a decade ago. (See Figure 1.) From 1990 to 2009, total electricity consumption in Maryland increased by 26 percent.⁷ Some of the increase in electricity use since 1990 is attributed to population growth, but rising per capita energy consumption has also played a role. Maryland residential customers used an average of 4,710 kWh of electricity in 2009, 18 percent more than in 1990.⁸ Use has fallen some since 2003 due to higher rates, the recession and efficiency measures.

Even though demand for electricity has declined in recent years, Maryland's consumption of power still presents chal-

Figure 1. Maryland's Annual Electricity Consumption, 1990-2009⁹



lenges in the form of high bills and environmental degradation. As the economy picks back up, the state will face difficult and expensive choices of how to meet its growing demand for power. Investing in efficiency can help Maryland avoid spending billions on new transmission lines or new generation capacity.

Annual consumption figures don't tell the full story of electricity use in Maryland. Electricity consumption varies by time of day, rising when people turn on computers at work and falling at night, and with the weather. In the middle of the hottest summer days, when air conditioners are running full blast and all other typical day-time demands are occurring, electricity use peaks. Peak demand influences how much power distribution infrastructure is required.

High Costs

Power prices have skyrocketed in Maryland in recent years due to changes in Maryland's electricity market. High electricity consumption has meant that as prices have

risen, Marylanders have experienced big increases in their power bills.

In 1999, Maryland lawmakers passed a law deregulating the state's electricity system, believing that if consumers were allowed to choose which electricity supplier to buy their power from, electricity suppliers would compete for business and consumers would pay less for power. That competitive market failed to materialize.

When the temporary rate caps on electricity prices expired (at different times for different utilities), electricity prices skyrocketed. For residential customers, the price per kilowatt-hour of electricity increased by 27 percent (adjusted for inflation) from 1999 to 2009.¹⁰ (See Figure 2.) Commercial customers experienced even a larger increase, with rates rising 61 percent. Because Marylanders use so much electricity, these rate increases translated to large increases in bills. In 1999, the average residential customer paid \$1,250 a year for electricity; by 2008, the average bill had increased more than 30 percent to \$1,650 (adjusted for inflation).¹¹ (See Figure 3.)

Figure 2. Maryland Electricity Rates Have Increased Dramatically Since 1999¹²

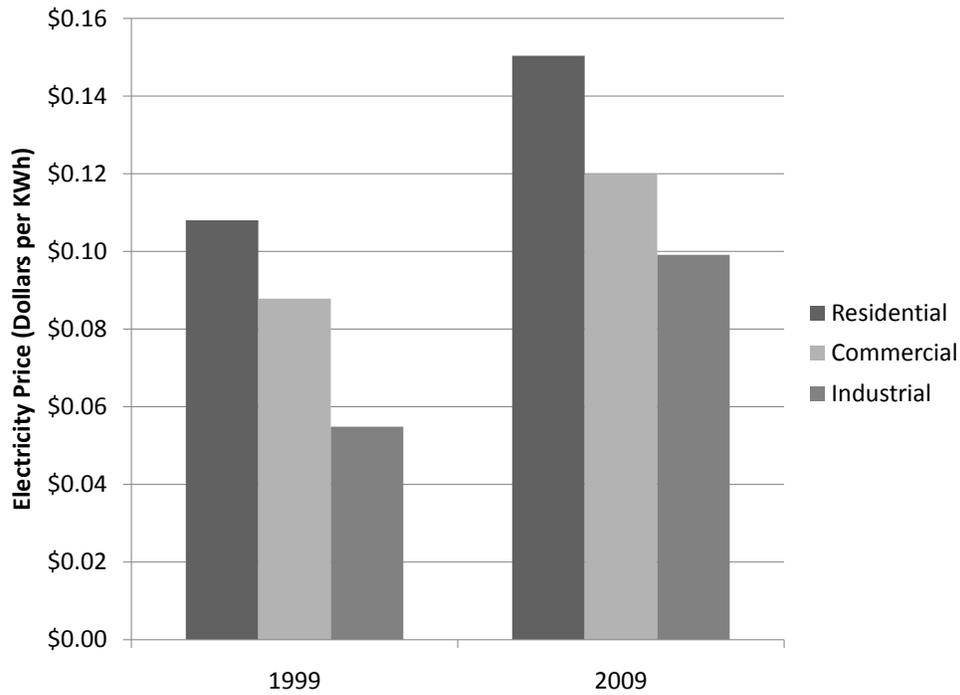
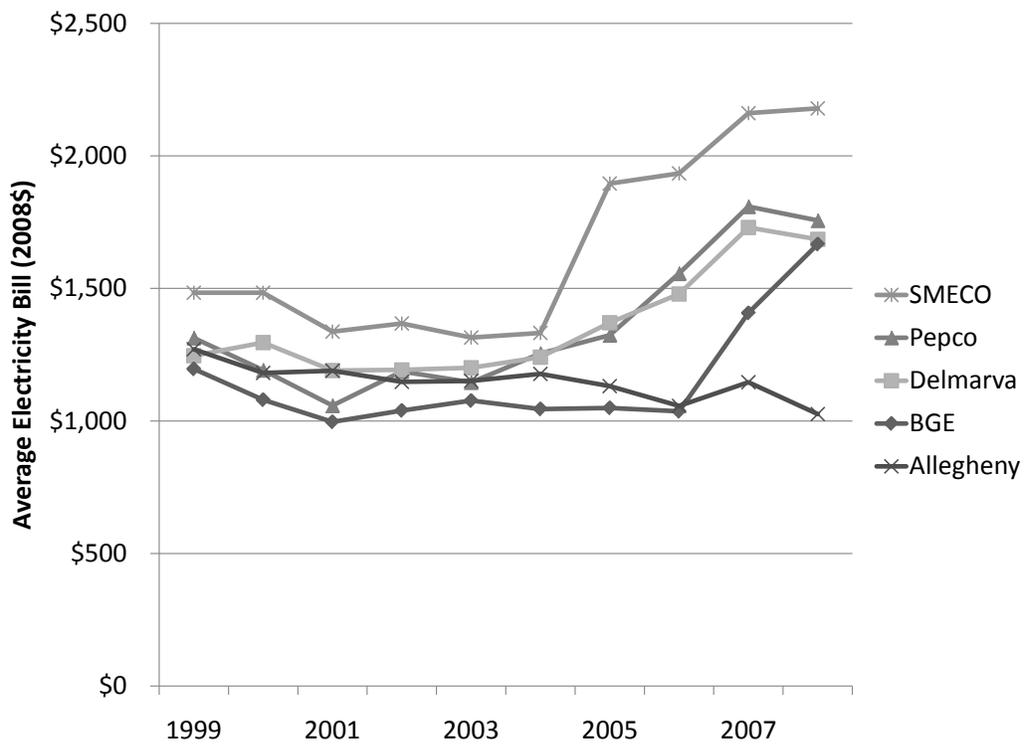


Figure 3. Average Annual Electricity Bills Paid by Maryland Residential Customers¹³



Reliability Concerns

In addition to burdening customers with large electricity bills and weakening the state's economy, high electricity consumption could threaten the stability of the state's power system. If power demand is too high, generators and transmission lines cannot guarantee a steady, uninterrupted supply of electricity to all consumers, particularly at times of peak demand.

Maryland cannot address the problem by simply importing more power from other states. The U.S. Department of Energy has designated both the Baltimore/Washington metropolitan area and the Delmarva Peninsula as "Critical Congestion Areas," where transmission lines are overcrowded.¹⁴ Thus, to avoid reliability problems, Maryland would need to build new high-voltage power lines, which cost billions; to construct even more expensive new capacity such as a nuclear power

plant; or to cut electricity use through efficiency.

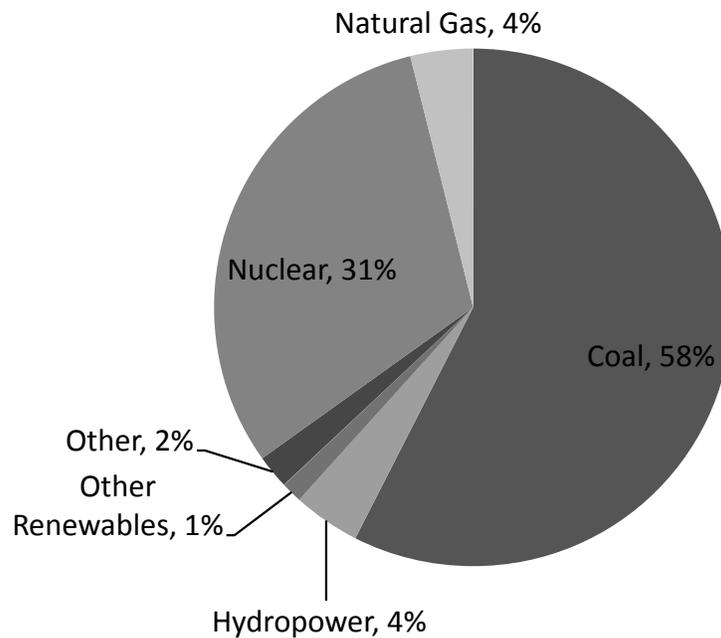
Public Health and Environmental Damage

Most of the electricity consumed in Maryland comes from dirty sources that harm public health and cause significant environmental damage.

In 2008, 58 percent of the electricity generated in Maryland came from coal-fired power plants, 31 percent from nuclear, and 4 percent from natural gas. Only 4.5 came from hydropower and other renewables.¹⁵ (See Figure 4.) The power that the state imports is also predominantly from dirty sources.

Coal-fired power plants are major contributors to Maryland's poor air quality, releasing soot and smog-forming pollution that contributes to respiratory and cardiovascular disease. The majority of Mary-

Figure 4. Percentage by Fuel Source of Electricity Generated in Maryland¹⁶



landers live in areas with excessive levels of ground-level ozone pollution.¹⁷ Ozone damages lung tissue and causes short-term swelling. With long-term exposure, even at low levels, it causes permanent and irrevocable damage. Soot pollution, which can cause lung cancer, reached unhealthy levels on 90 occasions in 2007.¹⁸

The state's reliance on old coal-fired power plants contributes heavily to the problem of global warming. Electricity generated for consumption by Marylanders produced nearly 46 million metric tons of greenhouse gases in 2005, or 42 percent of the state's total emissions of global warming pollution.¹⁹ Without significant action, global warming will cause flooding of coastal areas as sea level rises, yield stronger and more damaging storms, and threaten public health with intensified heat waves and smog.²⁰ Maryland is especially vulnerable to rising seas.²¹ Along the Chesapeake region, relative sea level rise could be as great as 3.4 feet by the end of the century.

The EmPOWER Maryland Energy Efficiency Act

Maryland has three options to deal with the problems of its electricity system: reduce power demand with energy efficiency, add transmission capacity to import power from out of state, or build new power plants. Recognizing that energy efficiency is cheaper, cleaner and faster than the other two choices, Maryland's leaders have laid out a clear vision for reducing electricity use in the EmPOWER Maryland Act.

For nearly a decade after the deregulation of its electricity market, Maryland allowed investments in energy efficiency to lapse.²² Investment in energy efficiency plummeted from 1.8 percent of annual

utility revenues in the 1990s, equaling as much as \$100 million annually, to almost nothing after deregulation. In 2004, Maryland spent a paltry one cent per capita on energy efficiency (compared to Vermont's \$22.54 or California's \$10.60, for example).²³ During these years of little to no investment, even the most basic energy efficiency improvements were ignored. Consequently, Maryland now uses more energy than would be the case if we had pursued energy efficiency aggressively. The silver lining, however, is that Maryland has a wealth of efficiency opportunities still available to be tapped today.

In the past few years, Maryland has relaunched efforts to save energy, first and foremost with the EmPOWER Maryland program. Governor O'Malley proposed the EmPOWER Maryland program in 2007, and in April 2008, the Maryland General Assembly approved the EmPOWER Maryland Energy Efficiency Act of 2008. Under the program, both electric utilities and the state have a role in reducing the overall need for electricity.

The program aims to reduce per-capita electricity consumption by 15 percent below 2007 levels by 2015 using energy efficiency, and to reduce per-capita peak demand by the same amount with efficiency and load management measures. Utility companies are responsible for implementing programs to achieve two-thirds of the efficiency goals laid out in EmPOWER Maryland, while state programs will achieve the rest.²⁴ By 2011, utility companies will need to reduce per capita electricity consumption by their respective customers by 5 percent below 2007 levels. By 2015, they will need to achieve a 10 percent reduction.

The EmPOWER Maryland Act assigns all responsibility for reductions in peak demand to utilities. Utilities must reduce peak demand by 5 percent by 2011, by 10 percent by 2013, and by 15 percent by 2015.²⁵

Benefits of Meeting the EmPOWER Maryland Goals

Achieving the goals of EmPOWER Maryland will deliver substantial benefits for the state. Maryland has extensive energy efficiency resources that can be tapped to save money for consumers, avoid the need to build costly new power plants, and lessen the environmental impact of electricity consumption.

Savings for Consumers

Although buying a more efficient piece of equipment or retrofitting a home to be more energy efficient requires an initial investment, energy efficiency saves consumers money over time by cutting their electricity consumption and power bills.

Efficiency investments range widely in price. Some, like replacing inefficient incandescent bulbs with much more efficient compact fluorescent bulbs, are inexpensive and produce strong savings for each dollar spent. Other efficiency upgrades, such as sealing air leaks in an old home, are far more expensive but can also produce significant savings for the money invested. Replacing windows in that home may be equally expensive but less beneficial. By choosing the measures that are most cost-effective, utilities can capture the greatest savings at the lowest cost to ratepayers.

Of utility-operated energy efficiency programs surveyed in 16 states, outlays by utilities ranged from 1.6 cents per kWh to 4.4 cents per kWh. When efficiency expenditures by individuals and businesses are added to the amount that utilities spend, the average cost of efficiency is 4.6 cents per kWh, far below the cost of buying power.²⁶ For example, the average retail price of power in Maryland in 2007 was 11.5 cents per kWh.²⁷

Efficiency has value in the regional power market, which can help offset the cost paid by consumers. Under the rules of the regional power grid, any utility with

verifiable efficiency savings can sell its efficiency capacity. The PSC has ordered utilities to use revenue earned through selling their efficiency capacity to help offset the cost of efficiency programs for ratepayers.²⁸

Investments in energy efficiency also avoid the need for expensive infrastructure upgrades paid for by all consumers. Constructing a new power plant or power line can cost billions of dollars. A proposed transmission line to bring electricity to Maryland from West Virginia is estimated to cost \$1.8 billion, or more than \$300 for every Maryland resident.²⁹ Boosting efficiency to avoid new infrastructure costs thereby makes energy cheaper – not just for those who make the investments, but for the entire economy by relieving upward pressure on the price of electricity. A study by the American Council for an Energy Efficient Economy (ACEEE) estimates that reducing electricity demand in Maryland by 15 percent per capita by 2015 would lower power prices by 0.2 cents per kilowatt-hour.³⁰

Energy efficiency and reduced power consumption would also reduce Maryland's exposure to price spikes, supply disruptions and other repercussions of our reliance on fossil fuels. Rate increases, such as those that have affected Maryland's electricity consumers in the past few years, would have smaller consequences in a highly efficient system.

An analysis by ACEEE found that meeting the goals of EmPOWER Maryland will save consumers and businesses \$861 million annually by 2015.³¹ Cumulative savings will be \$1.9 billion through 2015.

Rapid Implementation

Building a new power line or new power plant can take years, whereas energy efficiency resources can be developed quickly. A new natural gas-fired power plant requires several years for planning and con-

struction, while a new nuclear plant can take a decade or longer to complete. In contrast, energy efficiency measures can be implemented in a matter of months. Regionally, recent improvements in energy efficiency in other states and declines in energy use due to the economic recession have occurred so quickly that several new high-power transmission lines proposed by energy companies may not be necessary.³²

New Jobs and Economic Growth

In addition to saving money on energy, investments in efficiency will generate jobs for Maryland workers and economic development for Maryland communities. The reason is simple: energy efficiency gives people extra money to spend, which can stimulate Maryland's economy and create jobs. Investments in efficiency also replace expenditures for fuel (much of which is imported from out of state) with expenditures for labor and materials produced at home.

Energy efficiency investments also create jobs directly. Workers are necessary to improve insulation and sealing of homes; skilled architects and builders are required to perform energy efficient new construction and remodeling; and trained manufacturing workers are needed to build energy-efficient appliances.

Meeting the goals of EmPOWER Maryland will result in a net increase in employment, creating the equivalent of 8,000 new jobs by 2015 and add \$462 million in wages.³³

Reduced Public Health and Environmental Impact

Using less power could mean a reduction in power plant pollution and public health costs for the treatment of asthma and other diseases that are triggered by air pollutants. Energy efficiency will also help reduce Maryland's contribution to global warming. Meeting the goals of the

EmPOWER Maryland Act would cut carbon dioxide emissions by nearly 7 million metric tons in 2015, equal to roughly 22 percent of emissions from Maryland's electricity production in 2007.³⁴

EmPOWER Maryland: Ambitious and Achievable

The goals of EmPOWER Maryland are ambitious and achievable. In a national survey of state energy efficiency savings goals, Maryland has some of the strongest targets; only four states have higher standards.³⁵

To meet the 2015 goal established by EmPOWER Maryland, the state will need to reduce electricity consumption by approximately 1.5 to 1.8 percent per year below projected levels. Delaware, New York, Massachusetts and Vermont have higher goals; Iowa and Minnesota have goals that are nearly as high.³⁶ In 2007, Vermont cut its electricity use by 1.8 percent while California, even after decades of strong investment in energy efficiency, still managed to curb electricity use by 1.3 percent.³⁷

An analysis by Synapse Energy Economics of energy efficiency programs in several states suggests that more ambitious and larger energy efficiency programs obtain savings at a lower cost per kWh than do more modestly sized endeavors.³⁸ In other words, when a utility seeks to obtain greater annual energy savings relative to total sales, the amount of money spent for each unit of savings is smaller. The authors of this study theorize that this result might occur because utilities spread out administrative costs, better organize and design their programs, or achieve economies of scale in providing services (installing multiple efficiency measures during one trip to a customer's home).

Achieving the objectives of EmPOWER Maryland will require prompt implementation of strong energy efficiency programs by electricity utilities and the state. Below, we evaluate the performance of the

five electric utility companies in Maryland that are required to operate efficiency programs to achieve the goals of EmPOWER Maryland.

Utilities' Energy Efficiency Plans Fall Short

To meet the goals of EmPOWER Maryland, the state needs well-designed energy efficiency programs that are implemented quickly and thoroughly.

Five electric utilities are responsible for improving energy efficiency in their service territories. Baltimore Gas and Electric (BGE), Pepco, Delmarva Power, Allegheny Power, and Southern Maryland Electric Cooperative (SMECO) are each responsible for achieving a 10 percent reduction in per capita energy use by their customers by 2015 and a 15 percent reduction in peak demand. Each utility has had to design a package of energy efficiency programs that will enable its customers to reduce electricity use. Before offering these programs to customers, the utilities submitted their plans to the Public Service Commission (PSC) for approval.

The programs designed by Maryland's utilities are not ambitious enough to enable Maryland to achieve its targets for reducing electricity consumption. Table 1 shows each utility's expected progress toward its share of the state's efficiency goals and their collective progress toward the utility share of the EmPOWER Maryland standard.

Below, we discuss the quality of each utility's energy efficiency plans and how the plans might be improved. We also briefly discuss utilities' speed in implementing their programs. Prompt implementation of energy efficiency programs is important because the first deadline established by the EmPOWER Maryland Act is coming up next year. Savings from energy efficiency measures grow over time. For example, if a program provides funding to weatherize 1,000 homes annually, savings will come from just 1,000 homes in the first year, will double to 2,000 homes in the second year, and will increase by half to 3,000 homes in the third year. Delaying the start of efficiency measures will make it much harder to achieve the timeline established by the EmPOWER Maryland Act.

BGE

As the state's largest utility, BGE's efficiency programs will have a large impact on how close the entire state comes to meeting the EmPOWER Maryland goals. BGE projects that its programs will deliver

Table 1. Each Utility's Expected Progress Versus Its EmPOWER Maryland Goals

	2011		2015	
	Percent of electricity savings goal achieved	Percent of peak demand goal achieved	Percent of electricity savings goal achieved	Percent of peak demand goal achieved
BGE	52%	232%	63%	138%
PEPCO	71%	128%	63%	75%
Delmarva Power	55%	109%	59%	76%
Allegheny Power	90%	72%	94%	53%
SMECO	73%	46%	65%	32%
Total*	58%	180%	64%	109%

*Total for these five utilities, adjusted for the different size of each utility

Utilities' Planned Programs Are Cost-Effective

We compared the cost effectiveness of the programs proposed by each utility. Most of the programs approved by the PSC are cost-effective, meaning the efficiency investments cost less than the benefits they deliver.³⁹ One measure of cost-effectiveness is the life-cycle cost of each kilowatt-hour saved compared to the cost of buying a kilowatt-hour of electricity. By this yardstick, both the residential and commercial programs planned by each utility are highly cost effective. Table 2 shows the average cost of energy saved through each utility's programs. Allegheny projects the lowest cost for energy saved through residential programs at a cost of little more than 2.5 cents per kWh, compared to a retail price of nearly 12 cents per kWh for electricity.⁴⁰ The lowest cost commercial programs are offered by Pepco, with an average cost of less than a penny per kWh saved.⁴¹

Table 2. Projected Average Cost of Electricity Saved Through Efficiency, 2009-2011, Versus Current Price of Electricity⁴²

Utility	Average Cost of Efficiency Investments (\$/kWh)	Net Savings Compared to Cost of Buying Power (\$/kWh)	Average Cost of Efficiency Investments (\$/kWh)	Net Savings Compared to Cost of Buying Power (\$/kWh)
BGE	\$0.035	\$0.084	\$0.027	\$0.089
PEPCO	\$0.028	\$0.091	\$0.007	\$0.109
Delmarva Power	\$0.031	\$0.088	\$0.011	\$0.105
Allegheny Power	\$0.026	\$0.093	\$0.011	\$0.105
SMECO	\$0.034	\$0.085	\$0.020	\$0.096

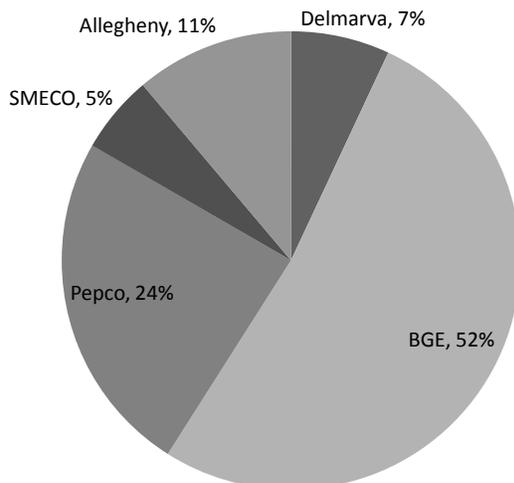
Assuming average residential cost of electricity is \$0.119/kWh and average commercial cost of electricity is \$0.116/kWh.

BGE's Customers

BGE's customers are located in Baltimore City and Baltimore County, and parts of Anne Arundel, Calvert, Carroll, Howard, Harford, Montgomery, and Prince George's counties.⁴³ The utility had 1.1 million residential customers, 116,000 commercial customers, and 5,200 industrial customers in 2007. BGE is the state's largest utility, selling 32.8 million MWh of electricity in 2007, or 52 percent of all power sold in the state.⁴⁴ BGE's 2007 revenues were \$2.4 billion.

BGE's residential customers experienced an average increase in their bills of 39 percent from 1999 to 2008.⁴⁵ Nearly 32,000 customers had their power shut off in 2009 for failing to pay their bills. Customers whose accounts were at least 30 days past due owed \$1.2 billion, up from \$1.0 billion in 2008.⁴⁶

Figure 5. BGE Is Maryland's Largest Utility as Measured by Percent of Total Electricity Sales⁴⁷



a relatively small reduction in overall energy use, but a large reduction in peak demand. It has implemented its programs more quickly than other utilities, but is nonetheless behind schedule.

Description of Planned Efficiency Programs

For residential customers, BGE has planned several programs. Customers will be able to purchase efficient lights and appliances at a discount, either with a rebate

or a price markdown subsidized by BGE. A gas and electric heating/cooling program will provide financial incentives for the purchase and quality installation of higher efficiency equipment. To improve the efficiency of new homes, BGE will offer financial incentives to builders.

Home energy audits will identify energy efficiency opportunities in existing homes. For customers who pay for a full energy audit, BGE will pay part of the cost of efficiency upgrades. For customers who choose a simpler audit and consent to

taking certain free energy efficiency measures, BGE will pay for the full cost of the audit. For low-income customers, BGE will offer up to \$5,000 worth of home weatherization and appliance replacement for free. BGE also intends to offer a program to encourage renters to upgrade their residences, something typically left to landlords even though renters bear the cost of high energy bills. To improve the efficiency of residential buildings with four or more units, BGE will offer free energy audits.

BGE divides non-residential customers into two classes, according to size.⁴⁸ For small commercial customers, BGE offers financial help with replacing functional but inefficient equipment, and with purchasing more efficient replacements for equipment that has failed.

Large commercial and industrial customers can improve their efficiency through three programs.⁴⁹ Through an on-site audit program, BGE will suggest ways to improve efficiency and provide financial assistance for the purchase of new equipment. A few customers will be able to participate in the custom incentive program, in which BGE will pay some of the cost of evaluating facility-wide energy use with suggestions for improvement. Finally, BGE will offer technical and financial help to improve the efficiency of heating, cooling, and building controls.

To promote its efficiency offerings, BGE expects to spend \$2.5 million annually on publicity and marketing.⁵⁰

Projected Electricity Savings and Cost Effectiveness

BGE's planned efficiency programs fall nearly 50 percent short of the company's share of the EmPOWER Maryland goals. If BGE fully implements its plan, in 2011 the utility will achieve only 52 percent of its savings goal. By 2015, BGE will reach 63 percent of its goal.⁵¹ BGE's planned

peak demand programs are more effective, delivering 232 percent of the peak demand target in 2011 and 138 percent in 2015.⁵²

The PSC evaluated the cost effectiveness of BGE's plans using the total resource cost (TRC) metric. The TRC is a widely used but narrow standard that weighs the cumulative cost of efficiency investments against the benefits. Total costs include money contributed by the utility (from ratepayers) and by the individual customer who is benefitting directly from the efficiency upgrade. The benefits are fairly narrowly defined and are those experienced by the individual customer, all ratepayers, and the utility. All of BGE's residential, commercial and industrial programs are cost-effective as measured by the TRC.

BGE also provided a calculation of the cost-effectiveness of its programs in terms of cents per kilowatt-hour. The life-cycle cost of saved power ranges from 1.1¢/kWh saved for the non-residential custom program to 4.1¢/kWh saved for the small customer retrofits.⁵³ Programs for residential customers provide savings at a cost of 0.9¢/kWh saved to 9¢/kWh saved. In contrast, residential and small commercial customers pay nearly 12¢/kWh for power they use.⁵⁴

Implementation Status

BGE has launched all its efficiency programs, though some began months after the PSC approved the utility's plans. Energy efficiency improvements reduced consumption by 111,000 MWh, 63 percent short of BGE's expected savings for 2009.⁵⁵ Despite lower than projected energy savings, BGE's administrative costs exceeded projections.

The number of customers participating in the programs and total savings in the last few months of 2009 jumped significantly, suggesting BGE may obtain bigger savings in coming months.

Evaluation

BGE's plan falls far short of the 2011 and 2015 efficiency savings goals but surpasses the peak demand goals. There are multiple ways that BGE could improve its efficiency programs.

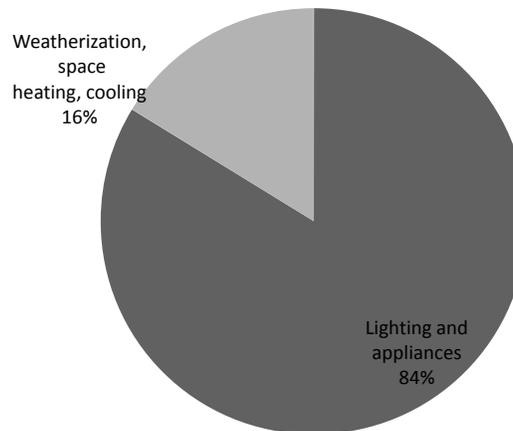
The efficiency savings that BGE anticipates in the residential sector come predominantly from improvements in lighting and appliance efficiency: 84 percent of BGE's projected residential savings result from widespread use of compact fluorescent bulbs and the replacement of inefficient appliances.⁵⁶ In contrast, a 2008 study of energy efficiency potential in Maryland found that lighting and appliance upgrades represent only 52 percent of cost-effective potential savings in homes. In the average Maryland home, weatherization and improved heating and cooling systems are key to 48 percent of possible savings.⁵⁷ BGE could increase its residential electricity savings by expanding its programs that help seal air leaks and improve heating/cooling efficiency.

However, looking at the average Maryland home, which is heated with natural gas rather than electricity and with a natural gas hot water heater, masks the huge potential for electricity savings in the 34 percent of Maryland homes that use electricity for both space and water heating.⁵⁸ These electric-only homes have twice the energy savings potential of the average home (6,000 kWh versus a little more than 3,000 kWh for the average home) and have more ways in which to save energy. BGE would reap especially large savings by structuring its weatherization, heating and cooling programs to target these homes.

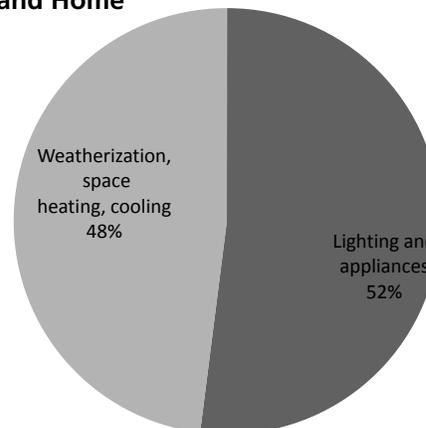
BGE could increase its efficiency savings from the commercial and industrial sectors, too. In BGE's calculation of the cost-effectiveness of its planned efficiency programs, the commercial and industrial sectors have the potential for significant amounts of additional efficiency improvements. BGE

Figure 6. Comparison of Residential Efficiency Potential Versus BGE's Projected Savings⁵⁹

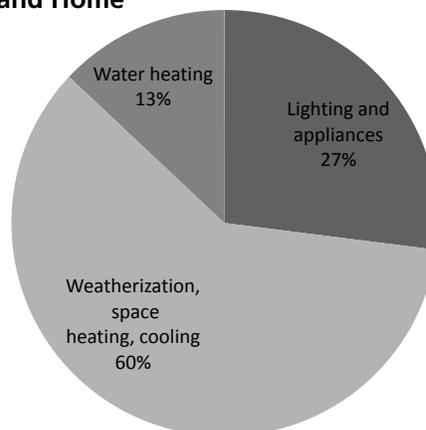
6a. BGE's Planned Savings



6b. Savings Potential in a Typical Maryland Home



6c. Savings Potential in an All-Electric Maryland Home



evaluated the cost-effectiveness of its programs using four different metrics. Even with the most conservative of those, the TRC test cited frequently by the PSC, efficiency programs for large commercial, industrial and institutional customers provided savings of \$2.69 for every dollar invested.⁶⁰ That's a higher rate of return than estimated for small commercial and residential programs (which nonetheless are all expected to be cost effective).

Using a cost test that includes additional factors, such as the benefit of avoided environmental and public health damage through curbing electricity consumption, BGE's commercial programs are even more beneficial, saving \$3.60 for every dollar spent.⁶¹

BGE should expand its commercial and industrial programs, raising incentives, training more staff, and engaging in greater outreach to customers.

Measuring the Costs Versus Benefits of Energy Efficiency

A variety of approaches are available for measuring the costs and benefits of energy efficiency investments. Though the PSC does not explicitly tie its approval of energy efficiency programs to the results from any single test of cost-effectiveness, the commission often cites the results of the "total resource cost" (TRC) test.

The TRC compares the amount of money spent by the utility and by customers on efficiency upgrades with the cost savings from lowered energy demand. Unfortunately, the TRC omits many benefits of efficiency. It doesn't consider the environmental or public health benefits of reducing energy use, it omits the increased system reliability that occurs when demand is lower, and it ignores the avoided cost of new generation and transmission capacity.⁶² In short, it provides a very narrow assessment of the value of efficiency programs.

A more comprehensive – and thus more accurate – test is the societal benefits test, which does incorporate broader impacts of cutting energy use. Most important for Maryland's consumers, the societal benefits test more fully recognizes that all consumers benefit from energy efficiency measures installed by a minority of consumers. For example, because of recent energy efficiency improvements in Maryland and the region, combined with a weak economy, plans for a \$1.8 billion power line have been slowed after energy forecasts showed the line will not be needed as soon as expected.⁶³ The cost of building the line will be paid for by ratepayers; delaying (or ultimately avoiding) its construction will mean real savings for all consumers.

The PSC's comments on programs proposed by various utilities suggest that it does not fully recognize the broad benefits of energy efficiency. In its attempt to be certain that fees collected from ratepayers are spent wisely, the PSC is failing to provide consumers all the benefits that are possible through efficiency. Taking a more comprehensive view would enable utilities to more readily craft programs to meet their EmPOWER Maryland goals.

The PSC could facilitate expansion of BGE's and other utilities' programs by using a more comprehensive evaluation of the costs and benefits of efficiency measures. (See "Measuring the Costs Versus Benefits of Energy Efficiency.")

Pepco

The efficiency programs proposed by Pepco, the state's second largest utility, include a number of good measures, but they fall far short of saving enough energy. Pepco's plan misses both the 2011 and 2015 goals for reducing overall electricity use. It meets the 2011 peak demand goal, but not the 2015 goal. The utility has barely begun implementing its programs.

Description of Planned Efficiency Programs

Pepco proposed, in its filings to the PSC and its approved plan, to deploy a set of programs focused on consumer incentives for purchasing energy efficiency products.

Pepco plans to operate four residential efficiency and conservation programs. A lighting and appliance efficiency and conservation program will provide incentives for consumers to choose efficient options, and will educate the public about efficient alternatives. A "Home Energy Performance with Energy Star" program will provide homeowners with free energy audits, and recommend steps they can take to improve their home's efficiency. A similar program for low-income customers, meanwhile, will also provide free and subsidized services and products to help these residents implement the recommendations of the audit. Lastly, a residential heating and cooling program will promote the installation of more efficient central heating and air conditioning units.⁶⁷

Pepco will also implement four primary

programs to promote efficiency and conservation for commercial and industrial customers. A program of uniform rebates available to all commercial and industrial customers will encourage businesses to purchase efficient lighting products and commercial and industrial machinery. A "custom incentive" program, meanwhile, will offer subsidies tailored to individual businesses' needs. A heating and cooling program similar to its residential equivalent will incentivize the purchase and installation of more efficient heating and air conditioning equipment. Lastly, a program focused on building management and maintenance will work to educate businesses on low-cost practices to improve efficiency, and help them adopt those practices.⁶⁸

To promote awareness of all of these programs, Pepco will spend \$1.3 million annually on a publicity and marketing campaign.⁶⁹

Pepco initially proposed two solar power programs. One of these would have involved placing solar panels on power substations; the other would have involved issuing low-interest loans to customers to enable them to put up solar panels of their own. The PSC rejected both of these proposals as insufficiently cost-effective.⁷⁰

Projected Electricity Savings and Cost Effectiveness

The portfolio of efficiency and demand management programs proposed by Pepco and approved by the PSC will enable Pepco to achieve 128 percent of its peak reduction target in 2011, but only 71 percent of its electricity savings target.⁷¹ In 2015, it will achieve 75 percent of its peak reduction target and only 63 percent of its electricity savings target.⁷²

In terms of cost-effectiveness, the PSC expects each program, except for the low-income home efficiency program, to return positive value to customers based on

Pepco's Customers

In 2007, Potomac Electric Power Company (Pepco) served 470,200 residential customers, 46,800 commercial customers, and 11 industrial customers in Montgomery and Prince George's counties. Pepco had 2007 revenues of \$1.3 billion and total sales of 15.4 million MWh, or 24 percent of all electricity sold in Maryland.⁶⁴

Pepco's residential customers spent an average of 34 percent more for their electricity in 2008 than in 1999.⁶⁵ More than 13,000 Pepco customers had their power cut off in 2009 for failing to pay their bills. In the first two months of 2010 compared to the first two months of 2009, 7 percent more customers were at least 30 days behind in paying their bills and collectively they owed \$415 million, nearly 50 percent more than delinquent customers in 2009.⁶⁶

the TRC metric. Pepco expects its energy efficiency and conservation programs to create savings of \$3.73 for every dollar invested in efficiency. The non-residential programs are expected to return 6.14 times their cost, while the residential programs are expected to return 2.04 times their cost. Among the most cost-effective programs are the non-residential custom incentives program and the residential lighting and appliances program.⁷³

Implementation Status

Pepco has been extremely slow to implement its programs. In 2009, residential customers could participate in Pepco's lighting and appliance program, but Pepco did not start its low-income residential effort, Home Performance with Energy Star, or HVAC programs.⁷⁴ Pepco's performance with commercial and industrial customers was worse. Only one of its non-residential programs provided service to customers, and that program completed work for just four customers. In total, Pepco saved 48,000 MWh in total consumption, a third of what Pepco had originally planned for 2009. The utility cut peak demand by 3.3 MW from programs implemented in 2009.

Evaluation

Pepco's plan fails to meet its share of the EmPOWER Maryland energy efficiency goals, though the utility expects to achieve large reductions in peak demand. Pepco's slow start with actually offering programs to customers throws into doubt its ability to meet its already low goals.

In the residential sector, in contrast to BGE, Pepco expects to obtain significant efficiency savings not only from lighting and appliance efficiency improvements but also from weatherization, heating and cooling improvements. To meet its share of the EmPOWER Maryland goals, Pepco must adopt more measures to encourage residential efficiency, offer higher incentives, and broaden its marketing and outreach plan.

Like BGE, Pepco should boost its commercial and industrial efficiency offerings. Pepco's analysis of the cost-effectiveness of non-residential programs shows that the utility has far from tapped out all cost-effective options.⁷⁵ Though Pepco expects to obtain additional energy efficiency savings from other efforts not included in its EmPOWER Maryland filings, it needs to strengthen its EmPOWER Maryland plan and to implement it quickly.

Delmarva Power

Though Delmarva's plans are essentially the same as Pepco's, Delmarva is even farther from meeting its goals for cutting overall electricity use. Delmarva meets the peak demand goal for 2011 but falls short in 2015. The utility's implementation pace is just as slow as Pepco's.

Description of Planned Efficiency Programs

Delmarva Power (Delmarva) proposed, in its filings to the PSC and its approved plan, to deploy a set of programs focused on consumer incentives for purchasing energy-efficient products. The slight majority of the savings are from residential energy efficiency and conservation programs, with the remainder coming from non-residential programs.

Delmarva and Pepco are owned by the same holding company, Pepco Holdings International (PHI), and they prepared and submitted the same set of programs to the PSC.⁷⁹ Differences in savings result from the differing customer bases of the two utilities. For an overview of the programs that Delmarva plans to implement, see the description of Pepco's plan.

To promote awareness of all of these programs, Delmarva will spend \$950,000 annually on a publicity and marketing campaign.⁸⁰

Projected Electricity Savings and Cost Effectiveness

As ordered into implementation by the PSC on December 31, 2008, the set of programs Delmarva plans to implement will achieve the EmPOWER Maryland targets for peak demand in 2011 only, but will fall significantly short of the targets for other goals. In 2011, the approved program is projected to achieve 109 percent of the peak demand reduction goal, but only 55 percent of the overall utility electric energy reduction goal.⁸¹ In 2015, Delmarva projects its program to achieve 76 percent of the peak reduction goal and 59 percent of the overall energy savings goal.⁸²

Delmarva, like Pepco, submitted expected values for its programs using the TRC metric. The programs Delmarva is implementing have an expected value to ratepayers nearly 2.6 times greater than their cost.⁸³ The non-residential programs are expected to return 3.66 times their cost, while the residential programs are expected to return \$2 for every dollar invested.

Delmarva's Customers

Delmarva Power serves customers in Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester counties, and a portion of Harford county.

In 2007, Delmarva served 171,000 residential customers, 25,600 commercial customers, and 260 industrial customers. It had total revenues of \$417 million. Delmarva delivered 4.4 million MWh of power to its customers in 2007, or 7 percent of the power sold in the state.⁷⁶

The average residential bill increased by 35 percent from 1999 to 2008.⁷⁷ Rising bills and the slower economy have taken a toll on customers' ability to pay: customers who were at least 30 days behind on their bills in 2009 collectively owed \$176 million, 29 percent more than similarly delinquent customers in 2008.⁷⁸

After accepting bids for implementation services, Delmarva reported to the PSC that costs were exceeding projections by approximately 20 percent, in part because of modifications made to the program by the PSC. Nonetheless, all programs except for the low income program continue to register as cost-efficient on the TRC.⁸⁴

Implementation Status

Like Pepco, Delmarva has made little progress in implementing its programs.⁸⁵ Only one of its four residential programs was up and running in 2009. Its non-residential programs yielded just 177 MWh of savings in 2009. Delmarva's total savings in 2009 were 10,000 MWh, versus savings of 34,000 MWh in its plan, and peak demand savings were just 0.6 MW, compared with 21 MW anticipated in Delmarva's plan for 2009.

Evaluation

Delmarva's planned efficiency programs will meet barely half of its EmPOWER Maryland goal and its slow start in implementing those programs suggests that it may fail to meet even that level of savings.

Like Pepco, Delmarva is planning on establishing other programs that would help reduce electricity consumption by its customers. These plans, including smart meters, are not included in Delmarva's assessment of its progress toward meeting its EmPOWER Maryland goals. If these efforts obtain the savings projected by Delmarva, the utility should achieve reductions equal to 73 percent of its share of the EmPOWER Maryland target.⁸⁶ Thus, Delmarva still must ramp up its energy efficiency and conservation efforts.

Delmarva's projected residential savings come from a balanced mix of programs: 53 percent of savings stem from lighting and appliance efficiency improvements, 41 percent from weatherization and heating/

cooling upgrades, and 8 percent from efficiency efforts for low-income customers.⁸⁷ But Delmarva needs greater total savings. To boost residential savings, Delmarva should expand the reach of its programs with better outreach and higher incentives.

Though Delmarva expects to obtain more than half its total savings from the commercial sector, it could achieve greater cost-effective savings particularly from its custom rebate program that helps provide tailored efficiency improvements to commercial customers. Delmarva estimates that its custom rebate program provides more than \$10 of savings for every dollar invested, suggesting that it could cost-effectively spend more money on custom rebates.⁸⁸

Delmarva may be reluctant to invest more in commercial sector efficiency programs because it wants to maintain investments in the residential and commercial sectors proportional to how much those customers are paying for efficiency programs through surcharges on their utility bills. However, given that benefits of efficiency accrue to all customers, even those who don't directly participate in efficiency improvements, Delmarva should invest in efficiency programs that will provide the biggest "bang for the buck."

In addition, Delmarva should investigate how to better tailor its efficiency options to its customer base. Delmarva projects lower savings than Pepco, despite offering the same list of programs, suggesting it didn't adequately adjust the programs to its different customer base.

Allegheny Power

Allegheny Power's proposed efficiency programs come closer to meeting the overall electricity use reduction goals than

Allegheny's Customers

Allegheny's customers are in Garrett, Allegany, Washington, and Frederick counties, and part of Montgomery County. As of 2007, Allegheny Power served 216,000 residential customers, 27,000 commercial customers, and 2,800 industrial customers in Maryland. The utility had \$428 million in in-state revenues that year, and delivered 7 million MWh of electricity (11 percent of the state's total) to its customers.

Residential customers served by Allegheny actually had lower average bills in 2008 than in 1999.⁸⁹ Nonetheless, in 2009, customers who were at least 30 days late to pay their bills owed 34 percent more than in 2008.⁹⁰

any other utility's, but it fails to achieve the peak demand reductions for either 2011 or 2015. A good plan means nothing until Allegheny implements it, which it failed to do in 2009.

Description of Planned Efficiency Programs

Potomac Edison Co., commonly referred to as Allegheny Power (AP), intends to meet its EmPOWER Maryland obligations with a mixture of programs in which energy efficiency and conservation programs account for the bulk of efficiency savings; very little comes from efforts targeting peak demand. AP's earlier CFL distribution program, already completed, has already provided substantial savings.⁹¹

AP has planned several programs for residential customers. The largest of these are a mail-in rebate program for CFL light bulbs and a similar program for Energy Star appliances. Two other programs offer rewards for installing efficient heat pumps and air conditioners.⁹² Lastly, AP will implement a home energy audit program, and a version of that program targeted at low-income customers will offer grants for purchasing efficient products.⁹³ Because AP initially submitted versions of

these two home energy audit programs that the PSC found to be ineffective or incomplete, they were not approved until August 2009, months after the utility's other programs.⁹⁴

For non-residential customers, the PSC approved four of AP's proposed programs. An air conditioning program will provide mail-in rebates for efficient air conditioners. A lighting program will provide incentives for a wide range of more efficient commercial and industrial light fixtures. A program targeted at electric motors will promote the use of variable frequency drives, an energy-saving technology. Lastly, a custom program will work with large customers to provide subsidies tailored to that specific business's use of electricity.⁹⁵

AP also plans to replace some transformers and streetlights with more efficient models.⁹⁶

The PSC also rejected several of AP's proposed programs for being too expensive, or for lacking sufficient substance. A commercial heat pump replacement program and further subsidies for efficient motors were both rejected as being cost ineffective, even though by 2015 they were cost neutral or produced positive results.⁹⁷ A residential loan program, meanwhile, was rejected due to the fact that it failed

to provide any subsidy or added benefit to customers beyond identifying a source for the loan.⁹⁸

Projected Electricity Savings and Cost Effectiveness

AP's initial proposals fell significantly short of the utility's EmPOWER Maryland targets. Its revised filings in response to the PSC's order that it revamp several of its programs, however, will come significantly closer to meeting the goals. In 2011, AP expects to achieve 90 percent of its overall electricity savings goal and 72 percent of its peak demand reduction goal.⁹⁹ By 2015, the utility expects its compliance with the electricity savings goal to reach 94 percent, while its peak demand goal attainment will decline to 53 percent.¹⁰⁰

In terms of cost-effectiveness, AP's programs on average will produce \$2.20 in savings for every dollar invested.¹⁰¹ The commercial air conditioning and lighting programs score best, returning 3.1 times their cost; the combined home inspection and low income assistance programs score worst but still are cost effective, returning 1.3 times their cost.¹⁰²

Implementation Status

Allegheny Power has yet to achieve meaningful reductions in energy use because the company waited until 2010 to formally launch its residential programs, except for its low-income program, which began in November 2009.¹⁰³ The utility provided efficiency assistance to 207 residential customers in 2009 (just 0.5 percent of the number expected) and saved 60 MWh (1.5 percent of projected residential savings). Allegheny Power did not reduce power consumption at all for non-residential customers. Despite failing to achieve energy savings, Allegheny Power overspent its budget for administering the programs.

Evaluation

The package of efficiency programs that Allegheny has assembled is projected to yield much greater efficiency savings than what any other utility has planned. Nonetheless, Allegheny's plans still fall short of its EmPOWER Maryland goal, and its current implementation progress is slow.

Allegheny's expected sources of savings in the residential sector come from a mix of lighting, appliance efficiency, weatherization and heating/cooling improvements, but Allegheny needs bigger results.¹⁰⁴ To get greater savings from these programs Allegheny could restructure them to make it easier for customers to participate. For example, customers who want to receive a \$1.50 rebate on compact fluorescent light bulbs have to mail in a reimbursement request to Allegheny, a requirement that is likely to significantly decrease consumer participation. To make it easier for customers to receive the rebate, Allegheny could work with local retail outlets to subsidize the cost of each light bulb sold with a point-of-sale rebate.

Allegheny has room to boost savings in the commercial sector. On average, the commercial programs that Allegheny has planned are more cost-effective than its residential programs, suggesting that Allegheny could expand its commercial programs and still provide a net benefit to its customers.¹⁰⁵

In contrast to the larger utilities in the state, Allegheny's plan fails to meet its peak demand goals and must do more to curb power use during times of high use. In Allegheny's EmPOWER Maryland filing, peak demand savings occur only as a result of general efficiency measures, not any explicit measures to cut peak demand. Allegheny should pursue programs that will produce a more immediate reduction in peak demand, as other utilities have.

SMECO

SMECO's projected electricity savings in 2011 and 2015 fall far short of the EmPOWER Maryland goal and are roughly the same as the savings expected by BGE and Pepco. The utility's expected peak demand savings are small, and it has been very slow to implement its programs.

Description of Planned Efficiency Programs

SMECO plans to implement a mixture of demand response and energy efficiency and conservation (EE&C) programs; for the EE&C programs, it plans to draw 52 percent of its savings from the residential sector and 48 percent from non-residential customers.¹¹⁰

SMECO's two existing programs – which it maintained even when other utilities had canceled their efficiency offerings – are both targeted at home energy performance. Since 1993, SMECO has offered incentives for constructing new

homes to Energy Star standards, and since 1996, it has offered home energy audits, with immediate installation of efficiency products, through its PowerWise program.¹¹¹ Beyond continuing and expanding both of these programs, SMECO will further subsidize its energy audits for low-income customers.¹¹² The utility also plans to promote awareness and offer subsidies for residential air conditioning units and hot water pumps, encourage its residential customers to purchase efficient light bulbs and appliances through a mixture of mail-in rebates and manufacturer and retailer incentives.¹¹³

For non-residential customers, SMECO initially proposed a standardized rebate program that would target certain kinds of lighting fixtures and appliances for all businesses, and was ordered by the PSC to implement that program and to add a custom rebate program modeled on those the other utilities proposed.¹¹⁴

SMECO will also implement a demand response program, which will replace a pre-existing peak load reduction program.

SMECO's Customers

The Southern Maryland Electric Cooperative (SMECO) provides electricity to customers in Charles and St. Mary's counties, and parts of Prince George's and Calvert counties. SMECO is the smallest utility subject to the EmPOWER Maryland requirements. As of 2007, SMECO served 131,000 residential customers and 12,900 commercial customers in southern Maryland. The utility had \$435 million in total revenues, and delivered 3.5 million MWh of electricity, 5.5 percent of the statewide total.¹⁰⁶ SMECO sells the highest percent of its electricity to residential customers of the large utilities – 62 percent as opposed to a weighted average of 43 percent for the group as a whole.¹⁰⁷

SMECO's residential customers experienced a bigger increase in their electricity bills from 1999 to 2008 than customers of any other utility. Bills rose 47 percent from 1999 to 2008.¹⁰⁸ Recent data on how many customers are behind on their power bills suggests that customers are struggling with the cost of electricity: 14 percent more customers were at least 30 days behind on their bills in the first two months of 2010 compared to the first two months of 2009.¹⁰⁹

Under the old program, customers were paid a small amount each year to install a switch that SMECO could use to temporarily turn off air conditioners or hot water heaters during demand peaks. This program is now technologically outdated, so SMECO intends to replace it with a more advanced and flexible system of “smart thermostats.”¹¹⁵

Projected Electricity Savings and Cost Effectiveness

SMECO’s proposed programs fall significantly short of hitting the EmPOWER Maryland goals, particularly for peak demand reduction. In 2011, SMECO projects that it will reduce overall electricity consumption by 73 percent of the required amount, and peak demand by only 46 percent of the requirement. By 2015, the utility expects that it will hit 65 percent of its electricity savings target, and only 32 percent of its peak demand target.¹¹⁶

On cost-effectiveness measures, all of SMECO’s programs except for the low income program score as cost effective. The portfolio as a whole returns benefits 2.27 times greater than its costs.¹¹⁷ Within the program, the residential programs generate savings of \$1.82 for every dollar spent, while the non-residential programs produce savings of \$2.96 per dollar. Particularly effective are the non-residential custom program and the residential lighting and appliances program.

Implementation Status

SMECO has only partially begun its residential efficiency programs.¹¹⁸ In 2009, it started part of its lighting program, but not its appliance program. The utility didn’t begin offering on-site home energy audits, HVAC programs, or low-income programs until 2010. Though SMECO launched its commercial programs, it did not achieve any electricity savings from

them in 2009. Overall, SMECO saved 248 MWh of electricity, just 2 percent of what it had planned, and 0.06 MW of peak demand, 3 percent of expected savings.

Evaluation

SMECO, alone among Maryland’s major utilities, maintained several energy efficiency and conservation programs after the state deregulated its electricity market, yet its current EmPOWER Maryland plan delivers low energy savings and meager cuts to peak demand.

Lighting and appliance upgrades dominate the company’s residential programs, providing nearly three-quarters of projected savings. Weatherization and HVAC measures, along with some programs for low-income customers, provide the rest. As discussed earlier regarding BGE’s residential programs, an analysis of residential energy efficiency potential in Maryland suggests that weatherization, along with heating and cooling improvements, is key. Boosting only lighting and appliance efficiency is inadequate. SMECO needs to enhance its offerings for home energy audits, weather sealing, duct sealing, and other measures to improve the efficiency with which homes can be kept at a comfortable temperature.

SMECO has structured its efficiency programs to emphasize savings for residential customers, who are its biggest customer base. However, because SMECO needs to achieve greater efficiency savings if it is to meet its EmPOWER Maryland goals, it should boost its commercial programs, where greater cost-effective savings potential exists. While it is true that residential customers will be paying a monthly fee that will help fund commercial efficiency programs, it is also the case that all customers are expected to benefit from reduced electricity use through lower need for investments in new transmission and generating capacity.

SMECO's peak demand efforts come nowhere close to meeting its EmPOWER Maryland goals. While it may be more difficult to reduce peak demand from residential customers than commercial and industrial customers and thus SMECO's residential-heavy customer mix presents a challenge, the cooperative must explore additional programs for cutting peak demand.

That could include pursuing an unusually high participation rate by commercial and industrial customers, and building upon the results of smart meter and advanced infrastructure tests that other utilities are conducting.

Like other utilities, SMECO needs to speed up implementation of its programs.

Conclusion and Policy Recommendations

Energy efficiency has multiple benefits for all Marylanders. It lowers energy bills for consumers who install energy efficiency measures and, by reducing demand for power and lowering energy prices, also provides savings for those who don't participate. Energy efficiency makes the electricity grid more reliable. It also helps to reduce air pollution that threatens public health and contributes to global warming. Unfortunately, Maryland isn't on track to capture its full energy efficiency potential, in part because utilities are failing to do what is needed to deliver the benefits of energy efficiency to Marylanders and because the PSC is unwilling

to acknowledge the full benefits of energy efficiency.

Even if state-run incentive programs and standards achieve their full share of the EmPOWER Maryland goals, Maryland will fall 25 percent short of meeting the act's targets because of the shortcomings of utility-run programs. (See Table 3.) However, it is increasingly unlikely that the state will meet its share of the EmPOWER Maryland goals because public funds intended for energy efficiency have been diverted to help consumers pay their utility bills. Thus, it is all the more important that utilities meet their share of the efficiency goals.

Table 3. Current Energy Efficiency Plans Will Fall Short of EmPOWER Maryland Goals

Statewide EmPOWER Goal (MWh)	11,206,000
Five Utilities' EmPOWER Goal (MWh)	7,268,539
Savings Expected from Five Utilities (MWh)	4,670,000
Shortfall, even if state achieves 100% of its share (MWh)	2,800,667
Percentage Shortfall	25%

Achieving the goals of EmPOWER Maryland will require the following steps:

1) The Public Service Commission needs to require electric utilities to meet their goals under the EmPOWER Maryland Act.

- Utilities should develop stronger plans. According to the utilities' assessment of the cost-effectiveness of their planned programs, Maryland still has a great deal of cost-effective efficiency potential. Greater energy efficiency is possible with increased incentives, expanded programs, and better public outreach.
- Utilities must implement their programs promptly. In its order approving BGE's proposal for efficiency and conservation measures, the PSC reiterated the importance of acting quickly to begin efficiency programs if Maryland is to meet the goals of the EmPOWER Maryland Act.¹¹⁹ It should hold utilities accountable to their goals.

2) The PSC should acknowledge all the benefits of energy efficiency.

Though the PSC says it does not use any single test of cost effectiveness, it appears to rely most heavily on the relatively narrow "total resource cost test" instead of a more inclusive measure of cost-effectiveness. A better test would include all the benefits of efficiency, including the public health benefits of reducing energy use, the avoided cost of new generation and transmission capacity, and the increased system reliability that occurs when demand is lower. If the PSC is willing to

count all the benefits of efficiency that accrue even to non-participating consumers, Maryland will be able to capture more of its energy efficiency potential.

3) The Governor and General Assembly should restore funding for energy efficiency.

The Governor and the General Assembly have diverted funds from energy efficiency to paying the power bills of low-income consumers. Half of the diverted funds were to have been spent providing free or nearly free energy efficiency improvements for low-income customers. While the transfer of funds eases the immediate burden of high utility bills for customers struggling with higher power costs, cutting funding for efficiency programs is counterproductive in the long run. Investing in efficiency will lower power bills for all customers year after year.

4) In addition, Maryland needs to boost its non-utility energy efficiency efforts.

An evaluation of the state's energy efficiency policies and programs by the American Council for an Energy-Efficient Economy suggests that although Maryland is in the top 25 percent of states, a number of steps are available to provide additional benefits, including:

- Improve enforcement of building codes to reduce energy consumption in new buildings and in buildings that undergo major renovations. Maryland has strong building codes, but could do far more to ensure compliance with the codes.
- Offer incentives for the installation of combined heat and power,

in which an integrated system both generates electricity and provides thermal energy.

- Provide more information about and incentives for energy efficiency.
- Invest more in energy efficiency-related research and development.
- Adopt additional appliance efficiency standards. Stronger standards are available for several appliances for which the federal government has not already set standards.¹²⁰

Notes

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