

Falling Behind on Energy Efficiency

Maryland Risks Missing
Its Electricity Savings Goals

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Executive Summary

Maryland has a great deal to gain from smart investments in improved energy efficiency. Energy efficiency can address many of the problems the state faces from high electricity use, including high energy bills, pollution, and reliability issues, while boosting the economy. In fact, every dollar invested in energy efficiency can yield up to \$4 in savings for individual consumers.

In order to take advantage of its full potential for energy efficiency, the state adopted the EmPOWER Maryland Act in 2008, establishing clear energy efficiency goals for the state. However, the Public Service Commission (PSC), the agency responsible for overseeing the bulk of EmPOWER Maryland's energy savings goals, has failed to properly manage efforts by the state's five investor-owned utilities to meet efficiency targets. If current programs do not improve, **Maryland risks missing its 2015 energy savings target by as much as 52 percent.**

To get Maryland back on track, the Public Service Commission must do more to ensure that utility programs are

achieving their share of EmPOWER Maryland targets and approve all efficiency programs that deliver a net benefit to Maryland and our economy.

EmPOWER Maryland addresses critical energy problems in the state.

- High energy prices caused an increase of \$400 in annual electricity costs for the average household in the state between 1999 and 2009.
- Future increases in demand for electricity could result in the need for costly high-voltage power lines or new power plants.
- Maryland relies heavily on dirty power sources, such as coal and nuclear power, which emit health-threatening pollution.

Energy efficiency programs implemented in Maryland in the past two years have already delivered significant benefits for the state.

- Because of efficiency measures adopted in the past two years by more than 150,000 Marylanders through utility and state-run energy efficiency programs, consumers will spend \$60 million less on electricity every year and as much as \$900 million less over the life of the investments.
- Energy efficiency job training programs have served more than 1,000 workers.

The EmPOWER Maryland Act required utilities to achieve additional electricity savings, saving more money for ratepayers and decreasing air pollution.

- Utility-run efficiency programs can be very effective when fully implemented. In the last three months of 2010, utilities achieved 35 percent of

their electricity savings for the whole year—despite the fact that many programs didn't launch until the second quarter.

- By the end of 2010, utilities had saved enough electricity through their EmPOWER Maryland programs to avoid global warming emissions equal to those from 650,000 cars operating for a year.
- Meeting 2015 efficiency goals could save ratepayers \$288 million annually, assuming that efficiency savings are spread out evenly across the lifetime of the efficiency measures.
- These investments would also help the state avoid construction of at least one coal-fired power plant and create 8,000 new jobs.

Figure ES-1. Energy Efficiency Savings in 2015 if Utilities Continue to Deliver Savings at Current Rate versus EmPOWER Maryland Goals

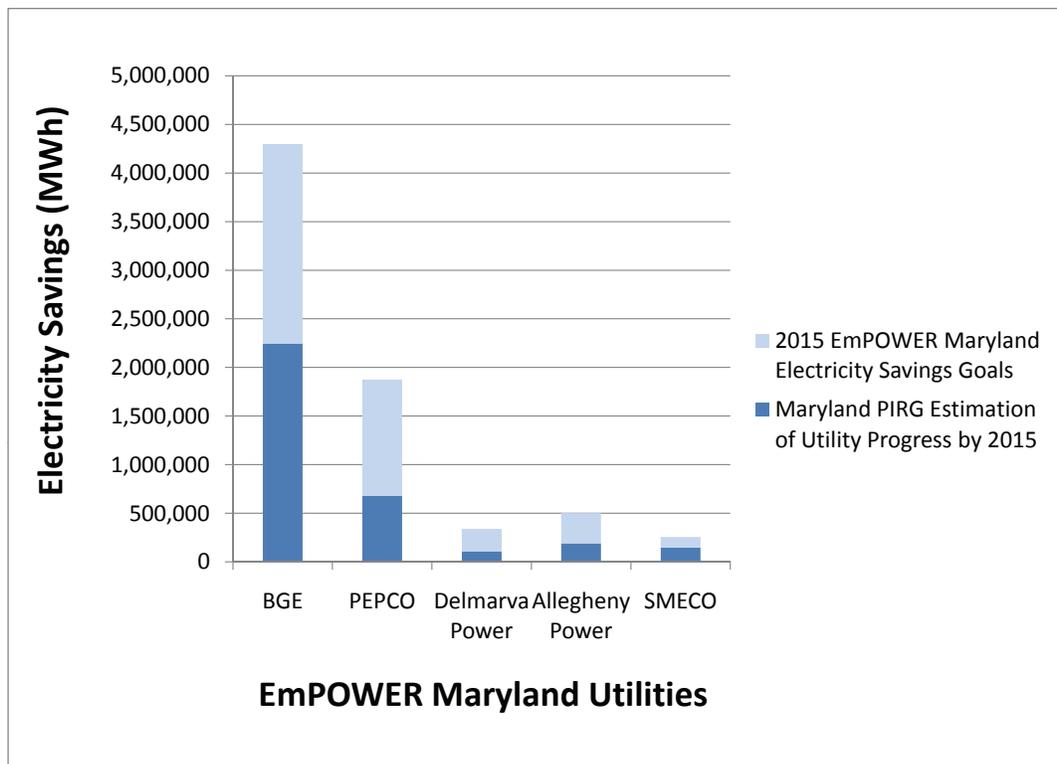
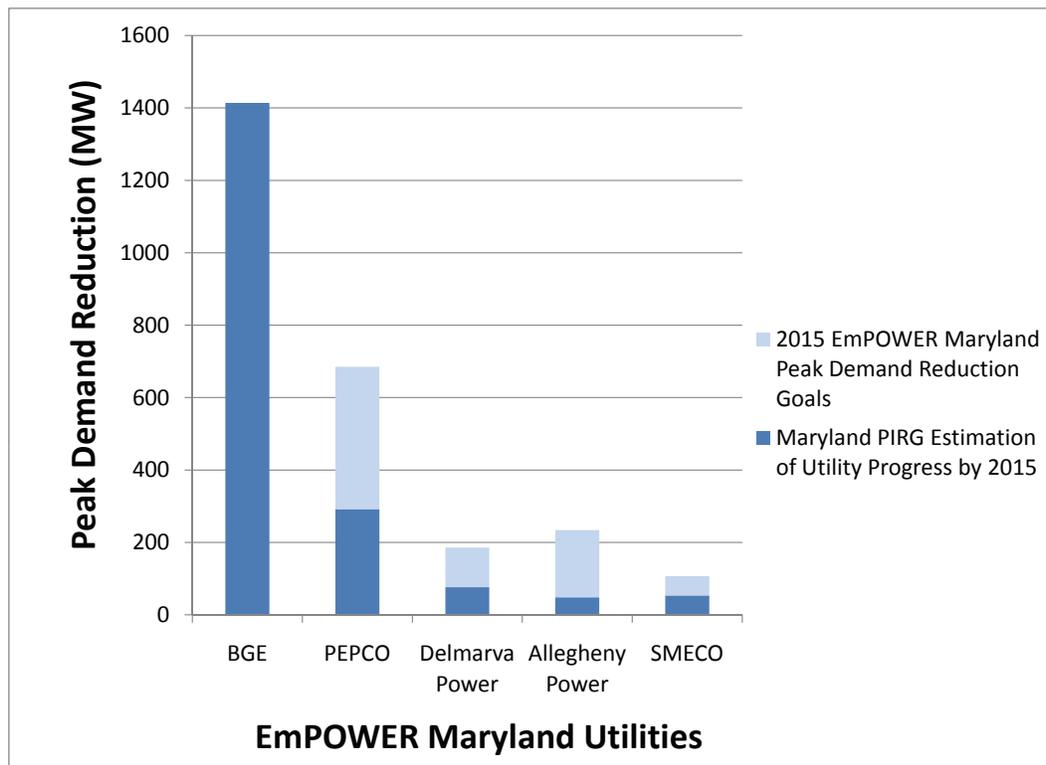


Figure ES-2. Peak Demand Reductions in 2015 if Utilities Continue to Achieve Reductions at Current Rate versus EmPOWER Maryland Goals



* Calculations include progress to date from program launch and assumes that utilities achieve the same quarterly savings through the end of 2015 as in the fourth quarter of 2010. It also assumes that state and federal programs achieve at least half of the energy savings and peak demand reduction goals for which utilities are not responsible under EmPOWER Maryland.

Based on progress made by utilities in 2009 and 2010, Maryland is likely to miss the 2015 energy savings targets established by EmPOWER Maryland by as much as 52 percent.

- If utility programs achieve the same quarterly savings from 2011 to 2015 as they did in the final quarter of 2010, utilities will achieve only 46 percent of their EmPOWER Maryland electricity savings targets and 72 percent of their peak demand reduction goals in 2015.
- Non-utility efforts to meet EmPOWER Maryland targets have accomplished relatively little; the bulk of electricity savings in the state so far have been achieved by utilities.
- Even if state and federal programs manage to achieve half of the non-utility share of EmPOWER Maryland targets—an optimistic assumption—Maryland would still fall about 52 percent short of overall targets.

Actions by the Public Service Commission (PSC) have impaired progress toward meeting the goals of EmPOWER Maryland.

The PSC has delayed implementation of EmPOWER Maryland, preventing delivery of meaningful savings early in the program.

- Due to its unclear program guidelines and drawn-out approval process, the PSC delayed program launch for most utility programs for almost a year after EmPOWER Maryland was enacted.
- The PSC failed to ensure that utilities launched efficiency programs in a timely manner after receiving PSC approval.

The PSC has not created a system for timely evaluation of utility programs, resulting in planning problems.

- The PSC has yet to make many important decisions about program evaluation, which affects the PSC's ability to discern where utilities are succeeding or failing.

The Public Service Commission is restrictive in the types of programs it allows utilities to pursue, leaving many efficiency opportunities untapped.

- The PSC has set an unreasonable standard for "cost-effectiveness" and applies it inconsistently, hindering utilities' ability to design effective programs.
 - The PSC does not consider social and environmental benefits of energy efficiency legitimate criteria for program approval.
 - The PSC has rejected programs

that pass nationally-recognized cost-effectiveness tests, leaving utilities without a clear indication of how to design programs to gain PSC approval.

- The PSC has been hesitant to approve efficiency programs where benefits are not distributed evenly among all rate-payers, which leaves many legitimate efficiency programs on the table.

The PSC has not held utilities accountable for their electricity savings shortfalls.

- The PSC has approved utility plans that will not meet EmPOWER Maryland targets and has failed to impose consequences on utilities when they do not hit interim goals.

The state and the PSC must improve EmPOWER Maryland implementation and support additional efficiency programs.

The PSC must do more to ensure that utilities meet their share of the EmPOWER Maryland goals. The PSC should:

- 1) **Recognize all the benefits of energy efficiency** – The Public Service Commission should follow the lead of states that have adopted a broader cost-effectiveness test to capture benefits of energy efficiency that include avoided costs of building transmission lines and power plants, as well as public health benefits of using less energy.
- 2) **Enforce timelines and targets** – Utility failure to meet electricity savings targets or reporting deadlines set by the PSC should have clear consequences for the utility.

In addition, the state should:

- 1) **Restore state funding for energy efficiency** – Of the money the state receives for selling carbon allowances in the Regional Greenhouse Gas Initiative (RGGI), the General Assembly set aside 46 percent for energy efficiency investments in 2009. In 2011, this percentage fell to 20 percent.
- 2) **Create a stakeholder advisory board** – Like other states, Maryland should coordinate an independent energy efficiency stakeholder advisory board made up of utility representatives, consumer groups, energy efficiency experts, contractors and other interested parties, that meets regularly to advise the PSC on EmPOWER Maryland program development and implementation.
- 3) **Coordinate programs statewide** – Experience in other states teaches us that coordinated programs with a single brand are more effective than separate efforts. When each utility offers different programs, it complicates outreach, education and training for consumers and contractors.
- 4) **Develop natural gas savings goals** – Many homes in Maryland are heated by natural gas. We lose significant opportunities to save energy by failing to adopt and work towards a statewide natural gas savings goal. The state should establish a natural gas efficiency standard, and the PSC should cultivate strong natural gas savings programs among utilities.

Introduction

Electricity is a keystone of modern living. We use it to cool our homes in the summer months, communicate with the world around us, and illuminate our homes and businesses so that we can continue to function when the sun goes down. Energy efficiency provides a way for Maryland residents to use the energy that powers our day-to-day lives more efficiently, decreasing the need for new power. In Maryland, the positive impacts of efficiency investments have already begun rippling through the state's economy.

Energy efficiency is a fast, cheap, and effective way to save consumers millions of dollars every year on power bills, delivering up to \$4 in savings for every \$1 invested.¹ In Maryland—where energy efficiency is underdeveloped and the potential for savings is considerable—investments in efficiency can translate to savings for consumers of hundreds of millions of dollars every year.² When consumers spend less on their power bills, they have more money to spend at local businesses to buy goods and services.

Efficiency investments can also create more jobs in the state. The Maryland Energy Administration has worked to train more than 1,000 individuals since 2008 to

take on weatherization projects.³ Investing in energy efficiency can help create new opportunities for workers already in the construction, retail, and manufacturing trades.

In order to capitalize on the job-creation and economic benefits of efficiency, the state adopted the EmPOWER Maryland Energy Efficiency Act, which set goals to cut per-capita electricity use. The EmPOWER Maryland goals are among the most aggressive in the country.⁴ Unfortunately, Maryland is not on track to reach them.

These goals are achievable, however. Maryland has numerous opportunities for energy efficiency that have yet to be tapped. Utilities and the state's Public Service Commission must therefore take advantage of all opportunities to curb consumption. Doing this will allow the state to achieve EmPOWER Maryland goals, making Maryland a national leader in saving energy. Meeting the goals of EmPOWER Maryland will deliver unprecedented benefits to the state's residents and economy while creating thousands of new jobs.

Maryland Faces Unprecedented Energy Challenges

Reliable access to electricity at a reasonable cost is crucial to Maryland's economy and the well-being of its residents. Unfortunately, high demand for electricity—combined with the state's reliance on dirty power sources—has contributed to system instability, high energy prices, and increased pollution that threatens Marylanders' health and contributes to global warming. Between 1999 and the beginning of 2009, electricity prices for residential customers increased 27 percent (adjusted for inflation).⁵ As a result, the typical household in the state experienced a \$400 increase in annual electricity costs, from \$1,250 per year in 1999 to \$1,650 per year by the end of 2008.⁶ This spike in utility bills forced many Marylanders to adjust their family budgets and seek ways to cut energy use.

Improved energy efficiency can help Maryland address these problems, offering a simple and inexpensive way to contain rising costs and reduce pollution from power plants. Unfortunately, energy efficiency in Maryland is severely underdeveloped, as the state made virtually no investments

in energy efficiency after deregulation of its electricity market in 1999. In 2004, for example, Maryland utilities spent a paltry one cent per capita on efficiency (compared to Vermont's \$22.54 or California's \$10.60).⁷ But the state has re-launched efforts to reduce electricity use through the EmPOWER Maryland Energy Efficiency Act. Under this program, electric utilities and the state have roles in reducing the overall demand for electricity.

Between 1999 and the beginning of 2009, the typical household in the state experienced a \$400 increase in annual electricity costs.

Maryland Set Strong Goals to Cut Consumption with EmPOWER Maryland

The EmPOWER Maryland Energy Efficiency Act of 2008 grew out of an initiative by Gov. Martin O'Malley to set goals for reduced per-capita electricity consumption in Maryland. The targets set in the EmPOWER Maryland legislation are aggressive: 15 percent reductions in per-capita consumption and in peak demand below 2007 levels by 2015. Maryland's five utility companies are key to achieving these goals, as they are responsible for two-thirds of the electricity savings targets and all of the peak demand targets outlined in the legislation.⁸ The remaining portion of the EmPOWER Maryland target may be achieved through a variety of non-utility programs, such as federal programs through the American Recovery and Reinvestment Act or efficiency standards for appliances set by the state.

Achieving a lasting reduction in per-capita energy use of 15 percent through energy efficiency would have a significant impact on consumer power bills and the overall stability of the energy market. It would also decrease pressure on system infrastructure, increase service reliability, and reduce harmful air pollution, improving public health and helping to curb the

impact of global warming. It would help prevent a rise in electricity prices once the state's economy recovers and electricity demand increases. Meeting EmPOWER Maryland goals would support thousands of new jobs and stimulate the state's lagging economy.

Although they have fallen behind on reaching EmPOWER Maryland goals, utilities have made a significant contribution to the energy efficiency benefits achieved by the state in the last two years. Since the launch of their programs, utilities have saved nearly 660,000 MWh in electricity—avoiding carbon dioxide pollution equivalent to that emitted by more than 650,000 cars per year.⁹ Because of efficiency measures taken in the last two years by more than 150,000 Marylanders through utility, state, and federal programs, consumers will spend \$60 million less on electricity every year, and up to \$900 million less over the life of the investments, according to the Maryland Energy Administration.¹⁰ Tens of thousands of Marylanders have replaced outdated and inefficient appliances, yielding savings up to 9,000 MWh in energy savings annually.¹¹ Additionally, training programs in

energy efficiency have educated more than 1,000 workers to help homeowners and businesses save up to 20 percent on their electricity bills.¹²

Despite significant energy savings and reduced consumption, the state's EmPOWER Maryland program is far behind where it should be. The program's halfway point is approaching at the end of 2011,

and utilities are significantly behind on their energy savings goals. These large shortfalls indicate that utilities, the Public Service Commission, and the Maryland Energy Administration must include more aggressive measures to save energy as they draft new plans in 2011 to achieve EmPOWER Maryland targets over the next three years.

Utilities Are Falling Short of Their EmPOWER Maryland Energy Efficiency Goals

Based on progress as of the end of 2010, utilities' programs are not on track to achieve EmPOWER Maryland targets for the 2009 to 2011 planning period. Although there is still a year left in this accounting period, utility programs to date have only achieved 14 percent of the 2011 benchmark for reducing electricity consumption; they have had greater success in reducing peak demand, having achieved 42 percent of 2011 goals so far. (See Figures 1 and 2.) The relative success of the peak demand reduction programs is largely attributable to BGE, which has already met its 2011 peak demand target.

The data in Figure 1 and Figure 2 show the scant electricity savings utility programs have delivered from their respective launch dates through the end of 2010. Two-thirds of the way into the first three-year phase of EmPOWER Maryland, utilities have achieved only 14 percent of the savings needed by the end of 2011.

This slow progress not only means that Marylanders are missing out on energy efficiency opportunities now, but it will also impair the state's ability to meet its 2015 EmPOWER Maryland targets. Even if

utilities continue to achieve the same level of quarterly savings on an annual basis as they did in the fourth quarter of 2010—their most productive quarter—they will only achieve 46 percent of their goals for electricity savings. (See Table 1, page 12.)

Similarly, utilities appear likely to fall short of peak demand targets. In the last quarter of 2010, utilities cut peak demand by about 61 MW.¹³ If they achieve comparable reductions in peak demand every quarter over the next five years, they will end up saving about 1,880 MW, falling roughly 28 percent short of their 2015 EmPOWER Maryland goal of 2,600 MW. (See Table 2, page 12.)

Utilities are responsible for only two-thirds of the energy savings under the EmPOWER Maryland Act, leaving the rest of the savings goals to other initiatives, most of which are overseen by the Maryland Energy Administration (MEA). These non-utility initiatives launched to date are modest and unlikely to produce enough savings to achieve the remainder of the state's energy savings goal. The Maryland Energy Administration's investments in energy efficiency for FY 2011 are expected

Figure 1. Each Utility's Electricity Savings Progress to Date by End of 2010 Versus 2011 EmPOWER Maryland Interim Targets

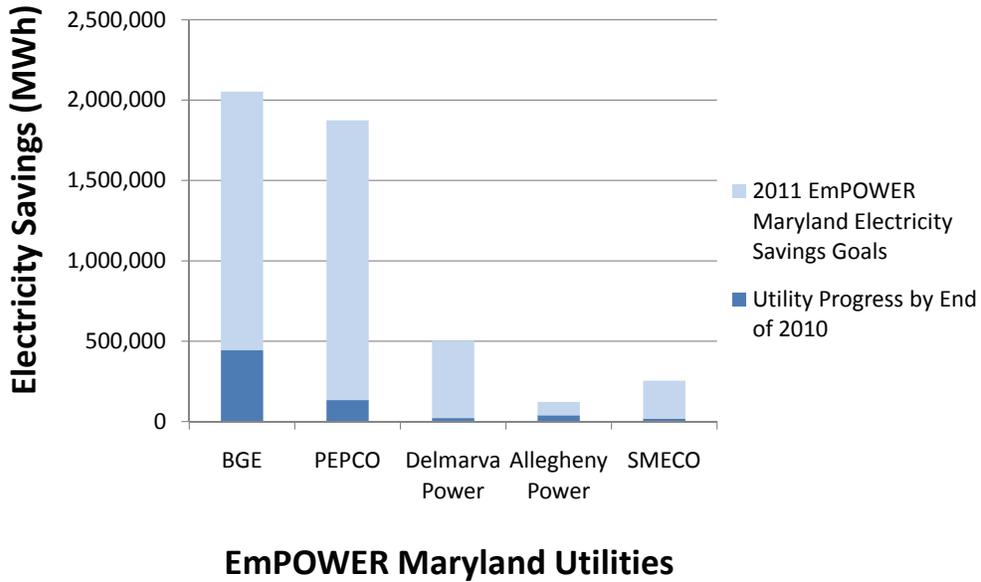


Figure 2. Each Utility's Peak Demand Reduction Progress to Date by End of 2010 Versus 2011 EmPOWER Maryland Interim Targets

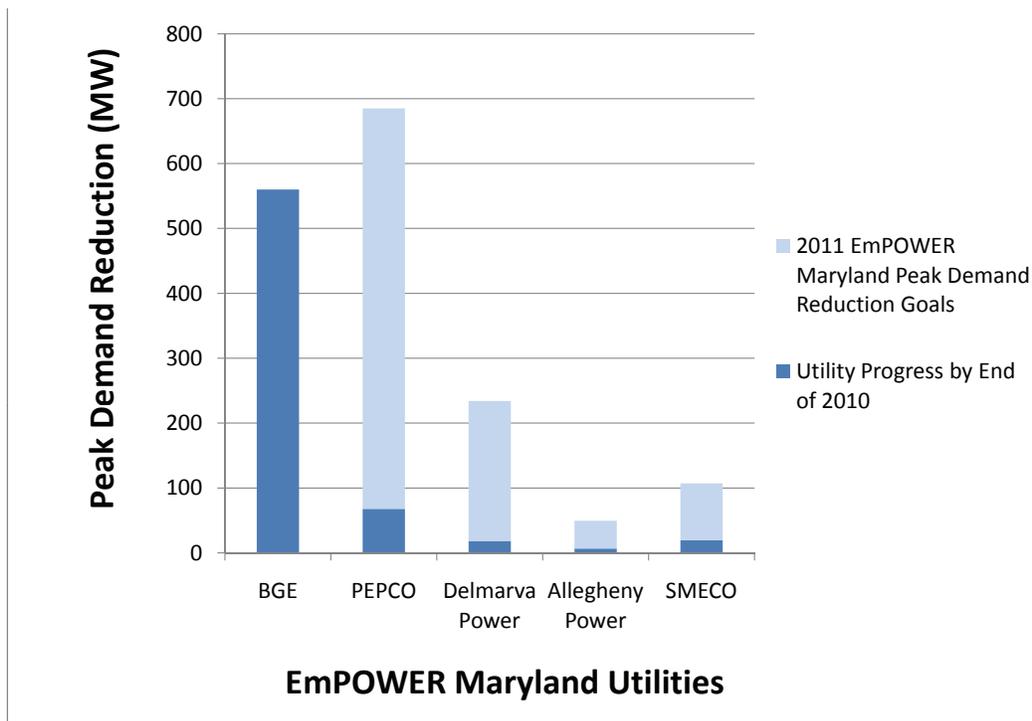


Table 1. Energy Efficiency Savings to Date, Savings if Utilities Continue to Deliver Savings at Current Rates, and EmPOWER Maryland Goals.

Utility	Program-to-Date savings (MWh) through End of 2010	Electricity Savings (MWh) in 2015	2015 EmPOWER Maryland Electricity Savings Goal (MWh)	Percent Shortfall
BGE	443,824	2,246,104	4,297,095	48%
PEPCO	134,179	681,519	1,874,656	64%
Delmarva Power	22,925	108,045	338,760	68%
Allegheny Power	40,227	190,147	503,202	62%
SMECO	18,494	146,614	254,827	43%
Total Utility Savings	659,649	3,372,429	7,268,540	54%
Non-utility Savings		1,968,731	3,937,461	50%
Total EmPOWER Maryland Savings		5,341,160	11,206,000	52%

Table 2. Peak Demand Reductions to Date, Reductions if Utilities Continue to Achieve Reductions at Current Rates, and EmPOWER Maryland Goals.

Utility	Program-to-Date Peak Demand Reduction (MWh) through End of 2010	Peak Demand (MWh) Savings Reduction in 2015	2015 EmPOWER Maryland Peak Demand Goal (MWh)	Percent Shortfall
BGE	560	1,414	1,411	0%
PEPCO	68	292	685	57%
Delmarva Power	18	76	186	59%
Allegheny Power	7	49	234	79%
SMECO	19	53	107	50%
Total Utility Savings	672	1,884	2,623	28%
Non-utility Savings		48	95	50%
Total EmPOWER Maryland Savings		1,932	2,718	29%

to save 44,500 MWh of electricity.¹⁴ The state's goal for energy savings by non-utility programs, however, is 3,937,461 MWh by 2015.¹⁵ And of the 464,000 MWh of savings in 2010 that MEA credits to its joint action with utilities, the majority was accomplished by utilities.¹⁶ Even with the

generous assumption that MEA programs and federal programs will achieve half of the remaining energy savings goals, **Maryland could still fall short of its energy savings goals by as much as 52 percent.**¹⁷ (See Table 1.)

Figure 3. Energy Efficiency Savings in 2015 if Utilities Continue to Deliver Savings at Current Rate Versus EmPOWER Maryland Goals

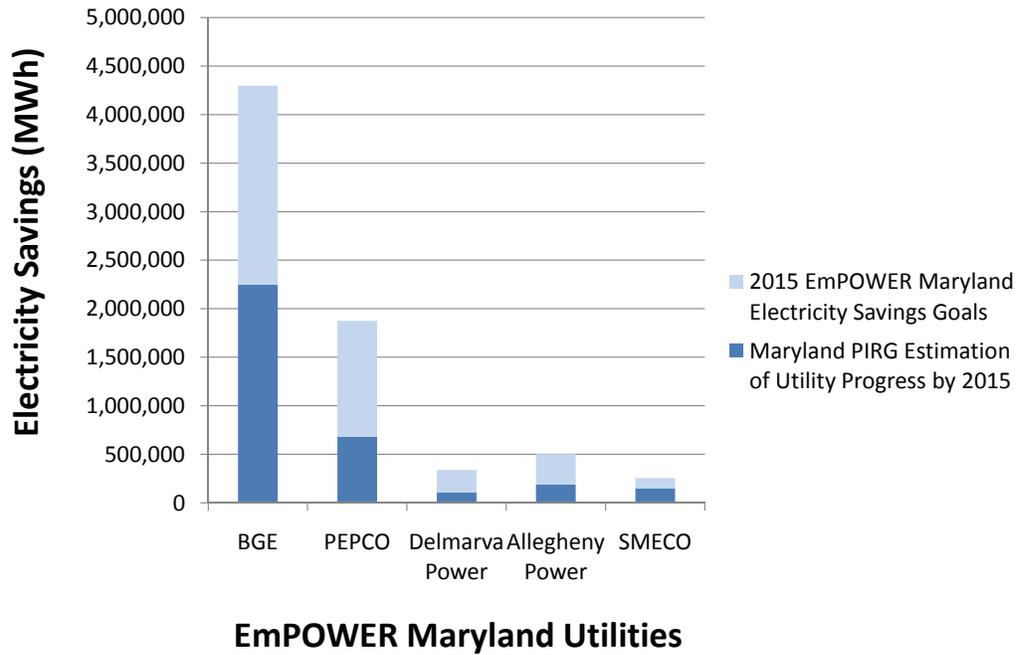
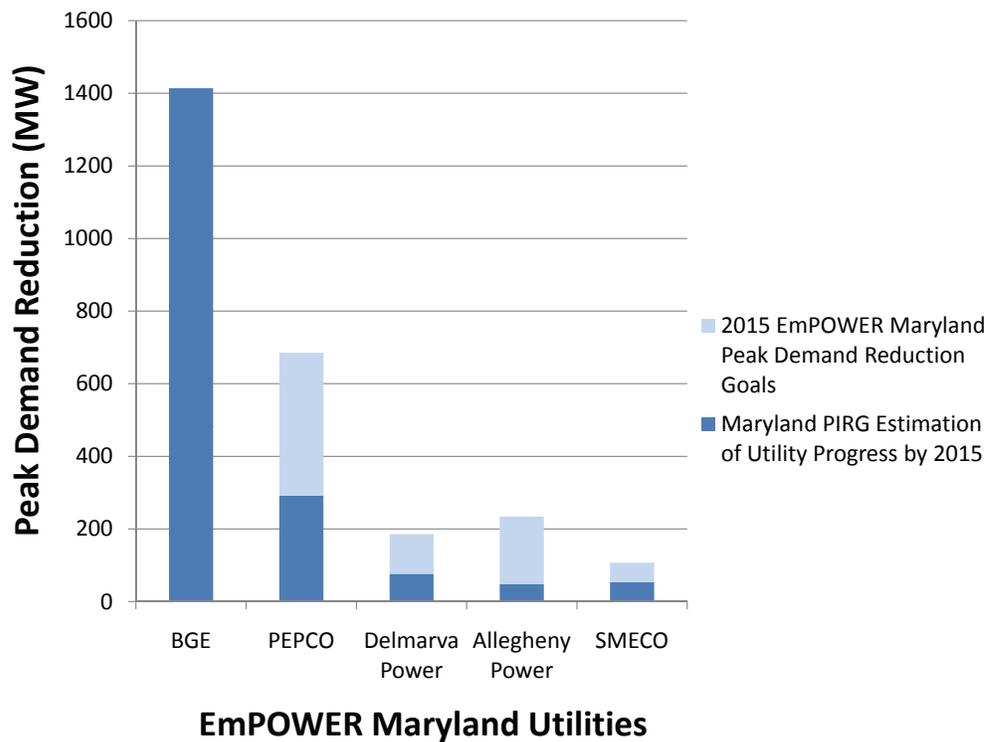


Figure 4. Peak Demand Reductions in 2015 if Utilities Continue to Achieve Reductions at Current Rate Versus EmPOWER Maryland Goals



Non-Utility Energy Efficiency Programs Have Been Weakened as the General Assembly Strips Funds from Efficiency Programs

Budget cuts for efficiency programs have hindered the state's ability to achieve greater energy savings. Maryland is one of 10 Northeastern states that participate in the Regional Greenhouse Gas Initiative (RGGI), a cap-and-trade program designed to reduce greenhouse gas emissions from power plants; the program has brought more than \$148 million to the state since 2008.¹⁸ The money goes into the state's Strategic Energy Investment Fund (SEIF), nearly half of which (46 percent) was originally allocated for energy efficiency.

In 2010, however, Governor O'Malley proposed and the General Assembly approved cutting efficiency funding to 20 percent of the SEIF funds in 2011, with 50 percent of SEIF funds now going toward helping utility consumers pay their bills.¹⁹ The governor proposed similar diversions in 2011 through fiscal year 2014.²⁰ Bill-paying assistance can provide a critical lifeline for consumers during difficult economic times, but diverting money from energy efficiency programs eliminates another important set of benefits for consumers while ensuring higher electricity consumption in the years to come.

Other funding sources for efficiency programs are disappearing as well, leaving agencies such as the Maryland Energy Administration without resources to run programs; the agency will lose \$24 million in efficiency funding from the American Recovery and Reinvestment Act after 2011.²¹

The High Cost of Energy Efficiency Shortfalls

While the EmPOWER Maryland program has already delivered significant benefits to the state, historic and projected shortfalls indicate that the state is not taking advantage of its full potential for energy efficiency. Marylanders, therefore, are missing out on many of the benefits EmPOWER Maryland was designed to deliver.

Consumers Will Spend More on Power

Achieving EmPOWER Maryland goals for electricity savings would reduce the amount of electricity required to power Maryland's homes and business, resulting in lower rates of consumption and savings on electricity expenses. Because of potential shortfalls in electricity savings from utility programs, consumers will use an extra 3.9 million MWh of electricity in 2015, which will cost ratepayers around \$468 million.²² (See Table 1.) However, investing in energy efficiency to avoid producing 3.9 million MWh

could save consumers up to \$288 million, assuming that the efficiency savings are spread out evenly across the lifetime of the efficiency measures.²³ With strong, ongoing efficiency programs to cut consumption, consumers could save even more on an annual basis.

Fewer Jobs Will Be Created

Energy efficiency creates jobs in two ways: directly and indirectly.

Jobs can be created through new employment opportunities in the energy efficiency sector. Workers are needed to improve insulation and sealing of homes; skilled architects, engineers, and builders are required to perform energy-efficient new construction and remodeling; and trained manufacturing workers are needed to build energy-efficient appliances. In 2008, the American Council for an Energy Efficiency Economy estimated that meeting the goals of EmPOWER Maryland would create an estimated 12,000 new jobs by 2015 and add \$462 million in wages.²⁴

That level of employment is equivalent to that created by 100 small-sized manufacturing firms relocating to the state.²⁵

Energy efficiency can also create jobs indirectly by giving people extra money to spend, stimulating Maryland's economy. Because energy efficiency lowers electricity bills, Marylanders could reduce the amount of money they spend to import electricity every year (about \$1.8 billion) and instead spend it on in-state goods and services.²⁶

Maryland will only be able to capitalize on all of the economic and job-creation benefits projected under EmPOWER Maryland if it improves its progress toward the EmPOWER Maryland goals. For example, an energy savings shortfall of nearly 52 percent in 2015 could mean that the state would miss out on more than 4,100 new jobs.²⁷

Future Demand Increases Can Jeopardize System Reliability

A key factor that shapes decisions about Maryland's electric infrastructure is the amount of power needed to keep the lights on during periods of peak demand. The demand for electricity varies widely over the course of the year and the course of any given day. Demand for power on a hot summer day when air conditioners are running can be two to three times as great as in the middle of the night during a time of moderate temperatures. Even though periods of peak demand represent a tiny fraction of the time the electrical system must function, millions of dollars of infrastructure must be in place to ensure reliable electricity service during those times.

Since the recession in 2008, Maryland has experienced a significant drop in electricity consumption, reducing pressure

on the state's power system.²⁸ However, as electricity demand increases as the economy recovers, Maryland may again need to address system reliability questions. Before the recession, the U.S. Department of Energy labeled parts of Maryland's power grid—such as the Baltimore/Washington metropolitan area and the Delmarva Peninsula—“critical congestion areas,” where transmission lines were overcrowded and nearing inadequacy.²⁹ Proposed solutions to this problem included multistate transmission lines or a new nuclear power plant that were projected to cost anywhere from \$1.8 billion to \$9 billion.³⁰ Meeting the EmPOWER Maryland goals would reduce or eliminate the need for expensive infrastructure upgrades paid for by all consumers.

Fortunately, Maryland's utilities have been more successful at achieving reductions in peak demand than they have at achieving electricity savings. In fact, BGE has already met its 2011 goal and will likely surpass its 2015 goal if it continues to achieve progress comparable to 2010. But other utilities aren't doing as well as BGE,³¹ and if they do not collectively increase reductions in peak demand over the next five years, Maryland could need an additional 739 MW of generating capacity power by 2015, which is roughly equivalent to building a new, coal-fired power plant.³² (See Table 2).

Public Health and the Environment Suffer

Energy efficiency could help the state avoid many of the worst environmental and health impacts associated with the generation of electricity—including the emission of harmful air pollutants that cause asthma and other respiratory diseases. Unfortunately, every missed opportunity to save

energy contributes to Maryland's already severe air quality and pollution problems.

The majority of the electricity in Maryland—including imported electricity—comes from dirty sources: In 2008, 58 percent of the electricity generated in Maryland came from coal-fired power plants, 31 percent from nuclear power, and 4 percent from natural gas.³³ Coal-fired power plants are major contributors to Maryland's poor air quality. The majority of Marylanders live in areas with excessive levels of ground-level ozone pollution, which damages lung tissue and causes short-term swelling.³⁴ In 2010, all but two Maryland counties evaluated by the American Lung Association for ozone received "F" letter grades; the other two received "C" grades. Several of those counties also received poor grades for particulate matter, or soot, which contains hundreds of toxic chemicals, some of which cause cancer, irritate lung tissues, or cause changes in the function of the heart that increase the risk of heart attacks.³⁵ Particulate pollution can also cause irreversible damage to children, interfering with the growth and development of the lungs.³⁶ In Maryland, there are more than 110,400 children with pediatric asthma who are especially vulnerable.³⁷

The state's reliance on coal-fired power plants also contributes heavily to its environmental problems, including global warming. Electricity generated for consumption by Marylanders produced nearly 46 million metric tons of global warming pollution in 2005, or 42 percent of the state's total emissions of global warming pollution.³⁸ Without significant action, global warming will cause flooding of coastal areas as sea level rises, yield stronger

Electricity generated for consumption by Marylanders produced nearly 46 million metric tons of global warming pollution in 2005, or 42 percent of the state's total emissions of global warming pollution.

and more damaging storms, and threaten public health with intensified heat waves and smog.³⁹ Maryland is especially vulnerable to rising seas. In the Chesapeake region, relative sea level rise could be as great as 3.4 feet by the end of the century.⁴⁰

Failing to meet the efficiency goals of EmPOWER Maryland will incur significant costs for the state. Without efficiency improvements, Marylanders will not only spend millions of dollars every year on unnecessary electricity, but they will also be exposed to increased health-threatening and global warming pollution from power plants. The state will also miss out on big opportunities to increase jobs in the state and pump money back into the local economy. Therefore, it is critical that the Public Service Commission take strong action to ensure that utilities are doing everything they can to cut Maryland's electricity consumption.

The Public Service Commission Fails to Ensure that Utilities Deliver Energy Savings

The Maryland Public Service Commission (PSC) is responsible for ensuring that utilities propose and implement programs that will achieve EmPOWER Maryland goals, while protecting the interests of the state's ratepayers. Unfortunately, the PSC has failed to properly administer the program and enforce EmPOWER Maryland targets, delaying important decisions and rejecting legitimate efficiency programs.

The PSC Delays EmPOWER Maryland Implementation, Creating Planning Problems

The PSC's slow approval of utility energy efficiency programs is one key reason the state has fallen way behind in its progress toward the EmPOWER Maryland goals. The Maryland Energy Administration reported earlier this year that "[f]our of the five major Maryland utilities (PEPCO, Delmarva, Allegheny and SMECO) received their final PSC approval for program implementation in August 2009. As

a result, many of the utility programs are just getting underway."⁴¹ The PSC delayed the launch of these utility programs until it was satisfied with the entire suite of programs included in each utility's proposals, from residential lighting to commercial and industrial HVAC. Unfortunately, it took more than a year and half and a dozen hearings with the PSC for the utilities to adjust their program offerings to satisfy the PSC's criteria for program approval.

Additionally, the PSC did not require utilities to launch programs immediately after receiving PSC approval, which has also prevented meaningful reductions in energy use early in the program. Allegheny Power, for instance, waited until 2010 to formally launch its residential programs.⁴² Delmarva, SMECO, and Pepco also waited to launch their low-income programs for more than six months after receiving program approval.⁴³

However, the large gains that utilities finally achieved in the last quarter of 2010 suggest that utility programs are capable of delivering significant savings as long as they are implemented in a timely manner. With all programs active as of the second quarter of 2010, utility savings dramatically

increased in the fourth quarter of 2010; in those three months alone, utilities achieved 35 percent of their savings for the entire year.

The PSC has also failed to enforce reporting timelines for utilities, which on numerous occasions have ignored PSC directives to present information on important dates. In early 2009, neither Pepco nor Delmarva followed PSC directives to include updates to their proposals in time for PSC hearings, pushing back the approval process by at least two months.⁴⁴ Similarly, utilities missed a January deadline in 2011 for reporting interim evaluation data to the PSC, which squeezed the PSC's timeline for drafting new plans for 2012-2014 based on 2009-2011 progress.⁴⁵ The PSC has never penalized the utilities for obstructing the administrative process, even though administrative delays have had a profound impact on the overall speed of EmPOWER Maryland implementation.

Finally, the PSC has yet to make many specific decisions about program evaluation, affecting its ability to determine where utilities are failing. In turn, without direction from the PSC, utilities have not been able to make adjustments to their programs. In late 2010, Crissy Godfrey, director of the PSC's Demand Side Management Division, cited three major problems in the PSC's evaluation process:

- The PSC allows utilities and their hired consultants to negotiate dates and evaluation principles, which “leads to long review periods and reduces the amount of time to complete the evaluation work itself.”⁴⁶
- The PSC has not yet established which algorithms, calculation approaches, or variable inputs are appropriate for all utilities to include in their estimation of electricity savings—each utility currently has

its own methods of calculation, preventing accurate and comparable savings estimates.⁴⁷

- The PSC has no uniform cost-effectiveness model for all utility programs. Each utility has built its own cost-effectiveness model, and, as a result, “The Commission lacks basic information on the cost-effectiveness results of current programs to compare with the forecasted cost-effectiveness of the program from 2008, or simply to be reassured that the current programs are still cost-effective....”⁴⁸

Less than a year before utilities are to create new plans to take them through the 2012-2014 compliance period, the PSC's failure to complete its evaluation criteria means that utilities will be creating new plans that do not learn from the lessons of the past. Clearly, there are huge gaps between program implementation and utility program design, and also between utility program design and the state's EmPOWER Maryland goals. Utilities must design programs that will move the state closer to its EmPOWER Maryland targets, and they must improve their implementation of those programs. It is up to the PSC to ensure that utilities are doing all they can to accomplish these tasks, but so far, it has failed to do so.

The PSC Fails to Hold Utilities Accountable for Energy Savings Shortfalls

The PSC is the entity authorized to regulate Maryland's utilities, but it has not used its power to push them to meet their EmPOWER Maryland targets.

The PSC has approved programs that set savings goals far below EmPOWER Maryland targets. For example, the 2011 EmPOWER Maryland interim goal for energy savings is 503,202 MWh for Delmarva Power, but in its plan approved by the PSC, the company set its target for the same benchmark at 149,288 MWh, less than 30 percent of the EmPOWER Maryland goal.⁴⁹ Similarly, both Pepco and SMECO's 2011 targets represent around 30 percent of their EmPOWER Maryland goals.⁵⁰ Utilities will continue to fail to meet EmPOWER Maryland goals if the PSC continues to approve plans with interim targets that are lower than those laid out by the state.

Although utilities have consistently failed to meet even the targets they have set for themselves for the last two years, the PSC has yet to hold utilities accountable. And although utilities are far below halfway to meeting their 2011 EmPOWER Maryland interim targets—and will be planning in 2011 for 2012-2014—the PSC has given no indication that it will use its authority to spur utilities to improve their savings rates.

The PSC fails to hold utilities accountable when they do not achieve the savings they project in their plans. For example, although Delmarva set its 2011 interim target for reducing peak demand at 137 MW (which is 40 percent less than its EmPOWER Maryland target of 234 MW), it has achieved a peak demand reduction of only 18.3 MW with no consequences to date.⁵¹

The PSC has approved programs that set savings goals far below EmPOWER Maryland targets.

The PSC Must Take Advantage of All Efficiency Opportunities

If Maryland is going to get back on track to meet its 2015 EmPOWER Maryland goals, the PSC must do more to ensure that utilities are taking advantage of available efficiency opportunities. However, the PSC has demonstrated that it has very narrow and inconsistent criteria for program approval, and, as a result, utilities are limited in the kinds of efficiency measures they design and pursue. This leaves numerous opportunities for bigger energy savings untapped.

The EmPOWER Maryland Act directs the PSC to approve all “cost-effective” efficiency programs to move the state towards its goals to reduce consumption. However, based on the decisions it made during its initial 2008 review of utility proposals, it is unclear how the PSC defines “cost-effective” or how cost-effectiveness is used (or not used) in conjunction with other criteria in ultimate decisions. Evidence suggests, however, that the PSC's criteria for energy efficiency are very conservative and unreasonably exclude many types of programs that take advantage of valuable opportunities to save energy.

In 2008, the PSC requested that utilities include data on the cost-effectiveness of all of their programs in their original proposals. Cost-effectiveness can be measured according to five nationally recognized cost-effectiveness tests, each of which includes slightly different criteria for determining whether the benefits of a program outweigh costs. The Total Resources Cost Test (TRC), for instance, will determine whether an efficiency program will reduce total energy costs in a utility service area over time, counting the cost of energy efficiency improvements to both utilities and consumers. The Ratepayer Impact Measure (RIM) test is useful to show how energy efficiency will affect consumers'

electricity rates. (See text box on page 22 for more information about cost-effectiveness tests.)

The cost-effectiveness tests can provide valuable information for both policymakers and utilities about the overall social and economic impact of particular efficiency programs. The PSC acknowledges that its counterparts in other states use these tests.⁵² However, according to the PSC, “The Commission does not consider itself bound to follow or accept any particular calculation of cost-effectiveness—the EmPOWER Maryland Act does not refer to any definition, from California or elsewhere.”⁵³

Unfortunately, this refusal to set a clear standard for cost-effectiveness leaves utilities without an indication of how to design programs to gain PSC approval, which resulted in major delays for program launch in 2008-2009 among the utilities. For example, in August 2008 the Commission rejected BGE’s Residential Energy Star Products Program, its Gas and Electric HVAC Program, its Energy Star New Construction Program, and its Energy Star Appliance Program. The rejections came despite the fact that, with a few minor exceptions, all were cost-effective and had been “extensively reviewed and approved by a large, diverse group of stakeholders...whose role is to protect the interests of customers or to provide objective, unbiased opinion,” according to Commissioner Allen Freifeld, who dissented from the PSC’s opinion and complained that it offered “little guidance” to utilities for presenting better alternatives.⁵⁴ The reasons outlined by the PSC for its rejection of BGE’s programs in August 2008 reveal other elements of the PSC’s decision-making process that work against EmPOWER Maryland goals. For example, the Commission rejected BGE’s appliance program because it wanted more information about whether “more rigorous building codes and efficiency standards

applied to new construction and remodeled homes, or accelerating the onset of more stringent federal standards” could produce better results than the appliance program BGE had presented.⁵⁵ The PSC’s interest in building codes is irrelevant because it has no purview over the programs and policies of the state and federal governments. EmPOWER Maryland directs the PSC to review utilities’ proposals to reduce per-capita energy consumption—not provide analyses of what the state and federal government could accomplish more efficiently than utilities.

The August 2008 decision also indicates that the PSC has been hesitant to approve efficiency programs in which the benefits are not distributed evenly among all rate-payers, even at the cost of pursuing the best efficiency opportunities. In 2008-2009, the PSC approved some utility program proposals only after they had been revised to “allow every residential ratepayer to achieve savings in excess of program costs,” even though in some cases, these revisions increased program costs and decreased energy savings.⁵⁶

The PSC’s review process should acknowledge that everyone benefits from energy efficiency, regardless of where the savings take place. A home weatherization program overseen by the MEA in 2010, for instance, retrofitted the homes of 3,000 renters, collectively saving them \$294,000 on their energy bills in one year. While the rest of the state’s ratepayers didn’t receive that same direct benefit, they do benefit from the 6,500 MWh of electricity saved by the program annually.⁵⁷ Electricity saved means less congestion on power lines, reducing the need to build expensive new transmission capacity in the future.

Ideally, given that all consumers are helping to pay for energy efficiency programs, all would be able to participate in energy efficiency programs and experience some relief on their utility bills. However, limiting the state’s energy efficiency invest-

Proper Accounting Leads to Better Energy Programs

Creating good energy policy in Maryland requires accounting for all the benefits of energy efficiency – not just to the utilities and ratepayers, but also to the state’s economy and public welfare. In order to weigh the costs of a particular efficiency program against its anticipated benefits, policymakers use several “cost-effectiveness tests.”

“The choice of tests and their applications reveal the priorities of the states and the perspectives of their regulatory commissions,” according to the Regulatory Assistance Project, a non-profit organization composed of former utility regulatory commissioners, in a report on cost-effectiveness best practices.⁵⁹ Some tests, such as the Societal Cost Test (SCT), measure “energy efficiency as a resource,” valuable in its own right for its long-term potential to deliver social and environmental benefits.⁶⁰ Other tests, such as the Ratepayer Impact Measure (RIM) test, focus more narrowly on how ratepayers are affected by specific energy efficiency measures.

Policymakers’ decisions about which of the cost-effectiveness tests to use reveal how they prioritize the various benefits of energy efficiency. For example, states that have structured their cost-effectiveness rubrics to reflect their environmental and energy priorities have some of the best efficiency programs in the country. Five states currently use the Societal Cost Test as their primary test: Arizona, Maine, Minnesota, Vermont, and Wisconsin.⁶¹ Of these, Maine, Minnesota, and Vermont were ranked among the top 10 states for energy efficiency in 2010 by the American Council for an Energy Efficient Economy (ACEEE).⁶² Wisconsin was ranked 11th, and Arizona, a “most improved state,” climbed 11 spots since 2009 and is now ranked 18th.⁶³

Currently, Maryland is ranked 23rd in the country for its energy efficiency programs, most likely due to its high efficiency targets (for which it received two out of three possible points).⁶⁴ However, its electricity program budget and savings in recent years scored quite low (0.5 out of five possible points).⁶⁵

Maryland’s ranking on program implementation is unlikely to change until the PSC agrees to follow the example of other states that have successful programs. The PSC has stated that if it chooses to defer to a test, it will choose the TRC.⁶⁶ However, the TRC does not account for many legitimate benefits of energy efficiency, including reduced carbon emissions (which currently have a price tag of \$1.86 per U.S. ton)⁶⁷ and other environmental impacts, improved aesthetics, or increased human comfort. Ignoring these benefits leaves efficiency opportunities untapped and works against the achievement of EmPOWER Maryland’s ambitious goals.

ments to programs that can be structured to allow all ratepayers to participate ignores the fact that energy efficiency opportunities are not evenly distributed. Older homes, appliances and equipment use energy more inefficiently and present greater potential for savings. For Maryland to meet the goals of EmPOWER Maryland, the state will have to focus resources where the most power is currently being wasted—and thus those consumers will experience the greatest bill relief.

“The Commission’s desire to craft the perfect program has led it to reject good programs,” Commissioner Allen Freifeld said in his 2008 opinion. “The Commission’s desire to have ‘better’ programs is laudable but is not a reason to turn down the best programs available. Unless and until clearly superior alternatives are before us, we should be willing to adopt programs that have been shown time and again to work.”⁵⁸

Policy Recommendations

If Maryland is to achieve its 2015 goal to reduce per capita electricity consumption 15 percent below a 2007 baseline, the Public Service Commission must move more quickly, help utilities develop more ambitious efficiency programs, and require utilities to fulfill their plans. More and better efficiency programs, in turn, will lead to greater benefits for job creation and reductions in consumers' electricity bills.

The overall EmPOWER Maryland shortfall of 52 percent cited in this report assumes that state or federal programs will achieve at least half of the 2015 electricity savings goals for which utilities are not responsible under EmPOWER Maryland. Despite this generous assumption, the overall EmPOWER Maryland shortfall clearly indicates that the PSC must change the way it evaluates future utility programs to take advantage of all the energy-saving opportunities the state offers. If Maryland is to get back on track, the PSC must approve all efficiency programs that deliver a net benefit to the state and economy.

In order to achieve the goals outlined in the EmPOWER Maryland Act, the PSC must do more to ensure that utilities meet

their share of the EmPOWER Maryland goals. The PSC should:

- 1) Recognize all the benefits of energy efficiency** – The Public Service Commission should follow the lead of states that have adopted a broader cost-effectiveness test to capture benefits of energy efficiency that include avoided costs of building transmission lines and power plants, as well as public health benefits of using less energy.
- 2) Enforce timelines and targets** – Utility failure to meet electricity savings targets or reporting deadlines set by the PSC should have clear consequences for the utility.

The state should:

- 1) Restore state funding for energy efficiency** – Of the money the state receives for selling carbon allowances in the Regional Greenhouse Gas Initiative (RGGI), the General Assembly set aside 46 percent for energy efficiency investments in 2009. In

2011, this percentage fell to 20 percent.

- 2) **Create a stakeholder advisory board** – Like other states, Maryland should coordinate an independent energy efficiency stakeholder advisory board made up of utility representatives, consumer groups, energy efficiency experts, contractors, and other interested parties that meets regularly to advise the PSC on EmPOWER Maryland program development and implementation.
- 3) **Coordinate programs statewide** – Experience in other states teaches

us that coordinated programs with a single brand are more effective than separate efforts. When each utility offers different programs, it complicates outreach, education, and training for consumers and contractors.

- 4) **Develop natural gas savings goals** – Many homes in Maryland are heated by natural gas. We lose significant opportunities to save energy by failing to adopt and work towards a statewide natural gas savings goal. The state should establish a natural gas efficiency standard, and the PSC should cultivate strong natural gas savings programs among utilities.

Methodology

EmPOWER Maryland 2011 Shortfall by Utilities

The 2011 EmPOWER Maryland benchmark represents the end of the 2009-2011 program planning period and pinpoints the savings utilities should achieve by the end of the year in 2011. There is therefore still one year left in the accounting period for that EmPOWER Maryland interim target. We compared these interim targets with the progress made to date by all utility programs, from their respective launch dates through fourth quarter of 2010.⁶⁸

EmPOWER Maryland 2015 Shortfall by Utilities

The 2015 EmPOWER Maryland shortfall was calculated by assuming that utilities achieve the same electricity savings achieved in the fourth quarter of 2010 (by far the strongest quarter for energy electricity to date) in each quarter through the end of 2015.⁶⁹ We then added this figure to savings already achieved by utilities since program launch and compared the total savings figure to the 2015 EmPOWER Maryland goals.⁷⁰

Overall EmPOWER Maryland Shortfall

The overall EmPOWER Maryland goal for electricity savings represents MWh saved by utilities and by other programs, which together equal a 15 percent reduction in per capita electricity consumption below 2007 levels, per the EmPOWER Maryland Energy Efficiency Act.⁷¹ We used this number as a baseline for comparison between 2015 targets and projected MWh savings by utilities and other agencies.

We made an assumption that by 2015, non-utility programs would achieve one-half of their overall electricity savings goals.⁷² We combined this number with projected savings by utilities in 2015 (see above calculation), resulting in an estimate of electricity savings in 2015 by both utility programs and other programs.

Savings Lost by Ratepayers in 2015

Based on the above assumptions, utility electricity savings will fall 3,896,111 MWh short of 2015 goals.

The amount of savings given up by ratepayers was calculated by subtracting

the average levelized cost of energy efficiency, 4.6 cents per kWh, from the current average retail price of electricity for Maryland ratepayers, 12 cents per kWh.⁷³ The difference, 7.4 cents per kWh—or \$74 per MWh—represents what consumers could save over the lifetime of efficiency investments by purchasing efficiency over

electricity (assuming steady electricity prices).⁷⁴ Multiplying \$74 by 3,896,111 MWh, the potential electricity savings shortfall in 2015, yields \$288 million, which is what consumers will waste annually by paying for electricity they wouldn't otherwise need.

Notes

1 Maggie Eldridge, et al., American Council for an Energy-Efficient Economy, *Energy Efficiency: The First Fuel for a Clean Energy Future*, February 2008.

2 Malcom Woolf, *2010 – Year in Review*, Maryland Energy Administration, downloaded from energy.maryland.gov/2010review.html, 4 February 2011.

3 Ibid.

4 Maryland Commission on Climate Change, *Climate Action Plan: Interim Report to the Governor and the Maryland General Assembly*, 14 January 2008.

5 U.S. Department of Energy, Energy Information Administration, *Electric Power Annual 2008*, 21 January 2010. Adjusted for inflation using data from Federal Reserve Bank of Minneapolis, *Consumer Price Index, 1913-*, downloaded from www.minneapolisfed.org/Research/data/us/calc/hist1913.cfm, 9 February 2010.

6 U.S. Department of Energy, Energy Information Administration, *Form EIA-861, Annual Electric Power Industry Report*. Data for bundled sales only. Adjusted for inflation using data from Federal Reserve

Bank of Minneapolis, *Consumer Price Index, 1913-*, downloaded from www.minneapolisfed.org/Research/data/us/calc/hist1913.cfm, 9 February 2010.

7 Walt Auburn, Maryland Energy Administration, *EmPOWER Maryland, Our “Potential” Energy Future* (presentation), 13 March 2008.

8 Maryland General Assembly, *Senate Bill 205*, 26 March 2008.

9 Vehicle equivalent calculated assuming 19.654 pounds of carbon dioxide per gallon of gasoline, per U.S. Department of Energy, Energy Information Administration, *Voluntary Reporting of Greenhouse Gases Program, Fuel and Energy Source Codes and Emission Coefficients*, downloaded from www.eia.doe.gov, 10 January 2006. In 2008, the average vehicle achieved 20.8 miles per gallon, per U.S. Environmental Protection Agency, *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 Through 2008*, EPA420-S-08-003, September 2008. In 2008, about 4.5 million vehicles were registered in Maryland, and the state logged 55 billion vehicle miles traveled (Federal Highway Administration, *Highway*

Statistics 2008, April 2010); Pollution equivalent calculated assuming 1,139 lb/MWh of carbon dioxide emissions annually, per U.S. EPA *eGRID2010 Version 1.0, Subregion Year 2005 Data*, downloaded from www.epa.gov/cleanenergy/energy-resources/egrid/index.html, 24 February 2010.

10 See note 1.

11 Ibid.

12 Ibid.

13 Maryland Public Service Commission, *Efficiency & Conservation and Demand Response Program Savings, Wholesale Level: Year to Date tables in Q4 2010 EmPOWER Maryland Reports (Case Nos. 9153, 9154, 9155, 9156 and 9157)*, 31 January 2011.

14 Maryland Energy Administration, *EmPOWERing Maryland Clean Energy Programs FY 2011 (Draft)*, downloaded from energy.maryland.gov/aboutus.html, 6 February 2011.

15 Statewide goal is 11,206,000 MWh per Maryland Energy Administration, *Maryland Energy Outlook (Draft)*, 1 December 2009. Utilities must achieve 7,268,539 MWh per Maryland Public Service Commission, *EmPOWER Maryland Targets and Population* (spreadsheet), 15 August 2008. Goals are cumulative.

16 See note 2.

17 See Methodology for calculation.

18 Regional Greenhouse Gas Initiative, *CO₂ Auctions, Tracking, and Offsets, Auction 10 Results*, downloaded from www.rggi.org/market/co2_auctions/results, 25 February 2011.

19 Dept. of Legislative Services, *Department of Human Resources Office of Home Energy Programs, Operating Budget Data*, downloaded from mlis.state.md.us/2011rs/budget_docs/all/Operating/N00I0006_-_DHR_Office_of_Home_Energy_Programs.pdf, 9 March 2009.

20 Maryland House of Delegates, *Bill HB 72, Budget Reconciliation and Finance Act of 2011*, as introduced on 21 January 2011, available at mlis.state.md.us/2011rs/bills/hb/hb0072f.pdf.

21 Maryland Energy Administration, presentation to the Strategic Energy Investment Advisory Board, 10 June 2010.

22 Calculation assumes steady electricity prices. Multiply projected shortfall in 2015 (3.9 million MWh) by current cost of electricity, 12 cents per kWh, to calculate cost per U.S. Energy Information Administration, *Average Retail Price of Electricity to Ultimate Customers by End-Use Sector by State*, 14 January 2011.

23 Energy efficiency investments to avoid 3.9 million MWh of electricity would cost consumers about \$179 million, as the average cost of energy efficiency for consumers is 4.6 cents per kWh (on average three times cheaper than producing electricity), per Katherine Friedrich et al., American Council for an Energy Efficient Economy, *Saving Energy Cost-Effectively: A National Review of the Cost of Energy Saved Through Utility-Sector Energy Efficiency Programs*, September 2009, available at www.aceee.org/sites/default/files/publications/researchreports/U092.pdf.

24 See note 1.

25 Ibid.

26 Maryland imports 30 percent of its electricity, per U.S. Department of Energy, Energy Information Administration, *Maryland Nuclear Profile*, September 2010; Total retail sales of electricity in Maryland is 63,325,777 MWh per year, and the average retail price of electricity is 12 cents/kWh, per U.S. Energy Information Administration, *Average Retail*

Price of Electricity to Ultimate Customers by End-Use Sector by State, 14 January 2011; transmission and distribution costs estimated at 2.7 cents per kWh, per Jay Hancock, "Welcome BGE Number Crunchers," *The Baltimore Sun*, 8 June 2007.

27 Calculation assumes that the number of jobs forgone is proportional to the amount of energy savings not achieved. Therefore, Maryland will miss out on 4,160 (52 percent) of the 8,000 jobs projected to be created by EmPOWER Maryland by 2015, per Maggie Eldridge, et al., American Council for an Energy-Efficient Economy, *Energy Efficiency: The First Fuel for a Clean Energy Future*, February 2008.

28 Energy Information Administration, *Maryland Electricity Profile*, downloaded from www.eia.gov/cneaf/electricity/st_profiles/maryland.pdf, 24 February 2011.

29 Maryland Public Service Commission, *Electric Supply Adequacy Report of 2007*, January 2007; Philip Rucker, "Proposed High-Voltage Line Would Stretch Across Maryland," *Washington Post*, 26 August 2007.

30 \$1.8 billion transmission line: Ken Ward Jr., "PATH Map Made Public: High-voltage line to East will Cross a Dozen Counties," *The Charleston Gazette*, 16 May 2009; \$9 billion nuclear power plant: Gus G. Sentementes, "Constellation Pulls Out of New Calvert Cliffs Nuclear Power Venture," *The Baltimore Sun*, 10 October 2010.

31 See note 13.

32 Assumes 500 MW of capacity for one power plant.

33 U.S. Department of Energy, Energy Information Administration, *Maryland Electricity Profile 2008*, March 2010.

34 American Lung Association, *State of the Air 2010*, downloaded from www.stateoftheair.org, 7 February 2010.

35 Poor grades: American Lung Association, *State of the Air 2010*, downloaded from www.stateoftheair.org, 7 February 2010; health effects: J. Pekkanen et al., "Daily Variations of Particulate Air Pollution and ST-T Depressions in Subjects with Stable Coronary Heart Disease: The Finnish ULTRA Study," *American Journal of Respiratory Critical Care Medicine* 161: A24, 2000.

36 C. Pope et al., "Lung Cancer, Cardiopulmonary Mortality, and Long-Term Exposure to Fine Particulate Air Pollution," *Journal of the American Medical Association* 287: 1132-1141, 2002.

37 See note 34.

38 Maryland Commission on Climate Change, *Climate Action Plan*, August 2008.

39 Ibid.

40 Ibid.

41 Maryland Energy Administration, *Operating Budget Testimony*, downloaded from www.dbm.maryland.gov/agencies/operbudget/Documents/2011/BudgetTestimony/D13A13_Maryland%20Energy%20Administration.pdf, 20 January 2011.

42 Allegheny Energy, *Potomac Edison's EmPOWER Maryland 2009 Annual Report*, 1 February 2010.

43 Office of People's Counsel, *Comments on the 2009 EmPOWER Maryland Annual Report*, Case Nos. 9153, 9154, 9155, 9156, and 9157, 17 March 2010.

44 Pepco: Maryland Public Service Commission, *Order No. 82836*, 13 August 2009; Delmarva: Public Service Commission, *Order No. 82835*, 13 August 2009.

45 Maryland Public Service Commission, *Stenographer's Record Hearing Date December 16, 2010*. Case Nos. 9153, 9154, 9155, 9156,

9157, 28 December 2010, per Maryland People's Counsel Paula Carmody.

46 Maryland Public Service Commission, *Staff of the Public Service Commission - Comments on the Third Quarter 2010 EmPOWER Maryland Programmatic Report*, 7 December 2010.

47 Ibid.

48 Ibid.

49 Maryland Public Service Commission, *Comments of the Public Service Commission Staff: Third Quarter 2010 EmPOWER Maryland Programmatic Report, Case No. 9156*, 7 December 2010.

50 Maryland Public Service Commission, *Comments of the Public Service Commission Staff: Third Quarter 2010 EmPOWER Maryland Programmatic Report, Case Nos. 9155 and 9157*, 7 December 2010.

51 See note 49.

52 Maryland Public Service Commission, *Letter Order 08-18-08, Case No. 9154*, 18 August 2008.

53 Ibid.

54 Ibid.

55 Ibid.

56 Pepco, SMECO, Allegheny, and Delmarva: Maryland Public Service Commission, *Order Nos. 82836, 82834, 82825, and 82835*, August 2009.

57 Maryland State Energy Investment Fund, *Clean Energy Accomplishments FY 2009 and FY 2010*, downloaded from www.energy.state.md.us/documents/FY09andFY10SEIFAccomplishmentsbook.pdf, 1 February 2011.

58 See note 53.

59 Energy and Environmental Economics,

Inc. and Regulatory Assistance Project, *Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*, November 2008.

60 Ibid.

61 See note 59.

62 American Council for an Energy Efficient Economy, *The 2010 State Energy Efficiency Scorecard*, October 2010, available at www.aceee.org/files/pdf/ACEEE-2010-Scorecard-Executive-Summary.pdf.

63 American Council for an Energy Efficient Economy, *The 2009 State Energy Efficiency Scorecard*, October 2009, available at www.swenergy.org/news/news/documents/file/2009-10-ACEEE_2009_State_EE_Scorecard.pdf.

64 See note 62.

65 Ibid.

66 See discussion of PSC use of cost-effectiveness on page 22. TRC: Maryland Public Service Commission, *Letter Order 08-18-08, Case No. 9154*, 8 August 2008.

67 See note 18.

68 Interim targets: See Maryland Public Service Commission, *Comments of the Public Service Commission Staff: 2010 Third Quarter EmPOWER Maryland Programmatic Report, Case Nos. 9153, 9154, 9155, 9156 and 9157*, 7 December 2010; progress to date: See "Reported Gross Annualized Energy Savings (MWh) and Reported Coincident Peak Demand Reduction (MW)" in *Energy Efficiency & Conservation and Demand Response Program Savings, Wholesale Level: Program to Date tables in Q4 2010 EmPOWER Maryland Reports (Case Nos. 9153, 9154, 9155, 9156 and 9157)*, 31 January 2011.

69 See "Reported Gross Annualized Energy Savings (MWh) and Reported

Coincident Peak Demand Reduction (MW)” in *Energy Efficiency & Conservation and Demand Response Program Savings, Wholesale Level: Year to Date tables in Q4 2010 EmPOWER Maryland Reports (Case Nos. 9153, 9154, 9155, 9156 and 9157)*, 31 January 2011.

70 Maryland Public Service Commission, *EmPOWER Maryland Targets and Population* (spreadsheet), 15 August 2008

71 Maryland Energy Administration, *Maryland Energy Outlook* (Draft), 1 December 2009.

72 Savings goals listed in note 71.

73 Average cost of energy efficiency:

Katherine Friedrich et al., American Council for an Energy Efficient Economy, *Saving Energy Cost-Effectively: A National Review of the Cost of Energy Saved Through Utility-Sector Energy Efficiency Programs*, September 2009, available at www.aceee.org/sites/default/files/publications/researchreports/U092.pdf; average retail price of electricity: U.S. Energy Information Administration, *Average Retail Price of Electricity to Ultimate Customers by End-Use Sector by State*, 14 January 2011, available at www.eia.doe.gov/cneaf/electricity/epm/table5_6_b.html.

74 Assuming efficiency savings are spread out evenly across the lifetime of the efficiency measures.