Maryland Energy ADMINISTRATION

Powering Maryland's Future

REPORT TO THE SENATE FINANCE COMMITTEE AND HOUSE ECONOMIC MATTERS COMMITTEE TO DISCUSS WHETHER TO MODIFY EMPOWER MARYLAND TARGETS BEYOND 2015

The Maryland Energy Administration (MEA) is pleased to present this report to the Senate Finance Committee and House Economic Matters Committee to discuss the future direction of EmPOWER Maryland.

In 2008, the State passed the EmPOWER Maryland Energy Efficiency Act.[1] The current legislation set targets for electric energy and demand reductions through 2015. Specifically, the Act set a goal of a 15% reduction from a 2007 baseline in per capita electricity consumption and peak demand by 2015.[2]

The Act also directed MEA, in consultation with the Public Service Commission, to review the anticipated achievement of the goals of EmPOWER Maryland, to determine whether electricity consumption and peak demand reduction targets should be modified beyond 2015, and to advise the legislature on the feasibility of setting energy savings targets for natural gas companies.

This report details the steps that MEA has taken to perform these analyses and serves as the fulfillment of our requirement to report to the Senate Finance Committee and House Economic Matters Committee. We welcome the opportunity to address your Committees during the 2013 session to continue our discussion about EmPOWER Maryland.

Sincerely,

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[1] EmPOWER Maryland Energy Efficiency Act of 2008, 2008 Md. Laws Ch. 131
[2] *Id.* at B(2)(I)-(II)

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List of Acronyms

ACEEE	American Council for an Energy Efficient Economy
BAU	Business as Usual
C&I	Commercial and Industrial
CCHP	Combined Cooling, Heating, and Power
CHP	Combined Heat and Power
DOE	Department of Energy
DR	Demand Response
DRIPE	Demand Reduction Induced Price Effect
DSR	Demand Side Resource
EDC	Electric Distribution Company
EEC	Energy Efficiency and Conservation
EERF	Energy Efficiency Reconciliation Factor
EIA	Energy Information Administration
EMV	Evaluation Measurement and Verification
EPG	EmPOWER Planning Group
GGRA	Greenhouse Gas Reduction Act
GWh	Gigawatt-Hour
HVAC	Heating Ventilation and Air Conditioning
kWh	Kilowatt-Hour
LMI	Low and Moderate Income
MEA	Maryland Energy Administration
MMBTU	Million British Thermal Units
MW	Megawatt
MWh	Megawatt-Hour
OPC	Office of People's Council
PJM	PJM Interconnection, LLC
PPRP	Power Plant Research Project
PSC	Public Service Commission
PV	Photovoltaic
RGGI	Regional Greenhouse Gas Initiative
SOS	Standard Offer Service
TRC	Total Resource Cost
TRM	Technical Reference Manual

EXECUTIVE SUMMARY

In 2008, the Maryland General Assembly passed the EmPOWER Maryland Energy Efficiency Act ("the Act").[3] The legislation set a target reduction of 15% from a 2007 baseline for per capita electricity consumption and peak demand by 2015. From its inception through September 2012, EmPOWER Maryland has helped to fund measures that will reduce energy usage of ratepayers by 2.0 million MWh per year, will reduce peak demand by over 1,000 MW, and will save ratepayers $250 million annually in avoided electricity bills. These savings will continue for years, saving ratepayers $3.7 billion over the useful life of currently installed measures.

While EmPOWER's statutory authority and program reduction targets will continue beyond 2015, any revision to the reduction targets beyond 2015 will require legislative action. The Act directed MEA, in consultation with the Public Service Commission (PSC), to review the anticipated achievement of the goals of EmPOWER, determine whether electricity consumption and peak demand reduction targets should be modified beyond 2015, and advise the legislature on the feasibility of setting energy savings targets for natural gas companies.

To determine whether electricity and natural gas targets should be set beyond 2015, MEA has worked with relevant stakeholders, including electric and gas utilities and suppliers, the environmental advocacy community, and state agencies, to develop this report and its recommendations. PSC Staff provided valuable insight and review during this process, but the contents of this report should be viewed as MEA's recommendations and may not represent the consensus position of the Commission or PSC Staff.

Maryland has made excellent progress and has achieved real results through the EmPOWER programs to date. Ratepayers will save billions of dollars as a result of programs already implemented and are positioned to save billions more in future savings. Credit is due to the many players who helped to advance the original legislation, who worked to design and implement the original programs, and who continue to push all parties forward.

Yet the programmatic progress to date, particularly in the electricity consumption programs, has been aided both by tailwinds of the economic downturn and by mild weather. When (not if) the economy accelerates its growth, when (not if) electricity and natural gas demand increases, and when (not if) electricity and natural gas prices resume their historic upward trajectory, Maryland will face anew the challenge of how to best meet our future energy needs.

After a thorough review of program performance to date, and based on feedback received through our stakeholder review process, MEA concludes that electricity and natural gas goals should be set beyond 2015. Further, MEA concludes that demand-side resources are the least-cost, lowest-risk solution to meet the anticipated increase in energy demand, and that the State should maximize the implementation of these resources as the first means of meeting our increasing energy needs. We also note that these programs will by design bring economic benefits to ratepayers and the State, will help create new jobs, and will assist in meeting the emission reduction goals of the Greenhouse Gas Reduction Act.

MEA recommends additional investment in energy efficiency and conservation programs for both electricity and natural gas and continued investment in demand response programs for electricity. In this report, we have laid out a framework and a path forward that will provide

[3] EmPOWER Maryland Energy Efficiency Act of 2008, 2008 Md. Laws Ch. 131

the necessary information to the 2014 General Assembly so that it can make an informed decision on how to best set specific EmPOWER goals for electricity and natural gas usage and electric peak demand beyond 2015.

MEA also proposes a number of major changes to the EmPOWER programs that will leverage the substantive work and experience that has been developed since 2009. These changes, collectively referred to as EmPOWER 3.0, are intended to work together in a holistic manner and should not be viewed as independently implementable. Rather, we expect substantial synergies from a coordinated development, design, and deployment of new programs. The changes proposed below will take time, effort, coordination, and cooperation to be prepared for the 2014 legislative session and the 2015-2017 program implementation cycle.

The intent of EmPOWER 3.0 is to introduce an analytically rigorous set of procedures and metrics that can be applied to demand response and energy efficiency and conservation program design and implementation. The process starts through a collaborative effort to determine how much energy and demand savings are available for a given level of investment under a cost effectiveness test that analyzes the true benefits of avoiding the marginal unit of energy supply. This action would be performed in a coordinated manner with direct input from relevant stakeholders. Our plan is for this group to make a consolidated recommendation to the 2014 General Assembly with achievable savings levels that will enable reasonable and achievable reduction goals to be set beyond 2015.

MEA's EmPOWER 3.0 recommendations can be summarized as follows and are discussed in more detail in the remainder of the report.

1. Determine the true lifetime value of saving a MWh of electric energy, a MW of electric capacity, and an MMBTU of natural gas (the "avoided cost of supply").
2. Define the parameters of the cost effectiveness test to be used when analyzing a portfolio of programs.
3. Establish the EmPOWER Planning Group, comprised of state agencies including MEA and the Public Service Commission, electric and gas suppliers and utilities, and other public and private stakeholders, to collectively determine the quantity and cost of achievable savings available in Maryland by fuel type and sector.
4. Set achievable EmPOWER goals that specify minimum annual energy and demand reduction while authorizing the Commission to approve programs up to the cost effectiveness test threshold.
5. Implement programs through standardized offerings following industry best practices to the greatest extent possible.

We look forward to discussing this report and its contents with your Committees.

INTRODUCTION

In 2008, the Maryland General Assembly passed the EmPOWER Maryland Energy Efficiency Act. The legislation set a target reduction of 15% from a 2007 baseline in per capita electricity consumption and peak demand by 2015. From its inception through September 2012, EmPOWER Maryland has helped to fund measures that will reduce energy usage of ratepayers by 2.0 million MWh per year, will reduce peak demand by over 1,000 MW, and will save ratepayers $250 million annually in avoided electricity bills. These savings will continue for years, saving ratepayers $3.7 billion over the useful life of currently existing measures.

Maryland's utilities offer a diverse array of programs for residential, commercial, and industrial energy efficiency. In addition, residential customers in 4 of the 5 participating utilities have the option to enroll in residential demand response programs. Programs began in 2009, with a second round of program planning and approvals in the fall of 2011. Updated and improved programs have been rolling out throughout early 2012. Residential programs include appliance, HVAC, and lighting rebates, Home Performance with ENERGY STAR, and Quick Home Energy Checkups. For commercial and industrial customers, utilities offer lighting and equipment rebates, retro-commissioning, and rebates for custom projects.

While EmPOWER's statutory authority and current targets will continue beyond 2015, any modification of specific reduction targets beyond 2015 will require legislative action. As mentioned above, the EmPOWER Maryland Act specifically directs MEA, in consultation with the PSC, to evaluate the modification of reductions targets:

> *SECTION 4. AND BE IT FURTHER ENACTED, That, on or before December 31, 2012, the Maryland Energy Administration, in consultation with the Public Service Commission, shall:*
>
> > *(1) review the anticipated achievement of the goals specified under §7–211(b)(2) of the Public Utility Companies Article as enacted by this Act for purposes of determining whether electricity consumption and peak demand reduction targets should be set beyond 2015; and*
> >
> > *(2) after providing opportunity for public comment, report its findings, in accordance with § 2–1246 of the State Government Article, to the Senate Finance Committee and the House Economic Matters Committee.*
>
> *SECTION 5. AND BE IT FURTHER ENACTED, That on or before December 31, 2012, the Maryland Energy Administration, in consultation with the Public Service Commission, shall:*
>
> > *(1) study the feasibility of setting energy savings targets in 2015 and 2020 for natural gas companies; and (2) after providing opportunity for public comment, report its findings, in accordance with § 2–1246 of the State Government Article, to the Senate Finance Committee and the House Economic Matters Committee.*

To determine whether electricity and natural gas targets should be modified beyond 2015, MEA has worked with relevant stakeholders, including electric and gas utilities and suppliers, the environmental advocacy community, and state agencies, to develop this report and its recommendations. As part of this process, MEA published several background documents and hosted stakeholder meetings in the summer and fall of 2012. PSC Staff provided valuable insight and review during this process, but the contents of this report should be viewed as MEA's recommendations and may not represent the consensus position of the Commission or PSC Staff.

The remainder of this report is divided into the following sections and appendices that provide background and context to our ultimate recommendations:

Main Report

EmPOWER Progress to Date and "Business as Usual" Forecast

A discussion on the past performance of EmPOWER programs, including a "business as usual" forecast that projects program performance through 2020.

Best Practices for Energy Efficiency and Conservation Programs

This section provides a high level overview of best practices implemented in other states that have achieved high program savings.

MEA Recommendations

This section discusses the ultimate recommendations of MEA.

Appendices

Potential Studies for Natural Gas, Combined Heat and Power, and Fuel Switching Programs

Summary of three reports detailing the potential savings in electricity and natural gas are provided. The full reports are available on MEA's website.[4]

Additional Discussion of Other States' Energy Efficiency and Conservation Programs

This section provides a comparison of Maryland's programs to those in other states, including a discussion about approach, goals, funding, and program implementation.

Options for Extending EmPOWER Goals Beyond 2015

Several options are discussed for each potential goal structure, including goal reduction methods, elements of cost effectiveness, and other characteristics.

Initial Stakeholder Comments

MEA received written feedback from nearly a dozen entities after our kickoff meeting in June, 2012. This section summarizes their comments; the full documents are available on MEA's website.

Draft Report Stakeholder Comments

Stakeholders were invited to provide additional feedback on the options for extending EmPOWER goals beyond 2015. Summaries are included here, with the full documents available on MEA's website.

[4] http://energy.maryland.gov/EmPOWER3/index.html

EMPOWER MARYLAND PROGRESS TO DATE AND "BUSINESS AS USUAL" FORECAST

Power versus Energy

The EmPOWER Maryland policy sets goals to reduce both the electric power needed to keep the lights on (peak demand) and electric energy used over the course of a year (energy usage or consumption). While power and energy are sometimes used interchangeably, they represent two very different aspects of our electric system.

Peak demand is a measure of the maximum amount of power that is needed by the entire State at one time, and typically occurs on hot summer days. If there is not enough power to meet the demand on those days, blackouts or brownouts could result. Electric power, also called capacity, is measured in watts, and is often found in multiples of 1,000 (kilowatt or kW) and 1,000,000 (megawatt or MW). As a reference point, a large shopping mall may require 10-15 MW of power during summer months. Other common measures of power are horsepower and tons of refrigeration.

Energy is a measure of how much power is used over a certain time. Electric energy is commonly measured in watt-hours, with 1,000 watt-hours (kilowatt-hour or kWh) and 1,000,000 watt-hours (megawatt-hour or MWh) used as common multiples. For example, an oven that uses 4,000 watts or 4 kW of power and runs for two hour would use 8,000 watt-hours or 8 kWh over that time. An average residential household uses about 1,000 kWh or 1 MWh per month. Other common measures of energy are calories and British thermal units (BTUs).

Residential and small commercial ratepayers in Maryland are charged only for their electric energy use, and utility rates in usually expressed in cents per kWh. Large commercial and industrial customers are charged for both electric energy and power, with electric energy in cents per kWh and for electric power in dollars per kW. For these customers, the charge for power is sometimes called a "demand charge" or "standby charge" and is typically based on the maximum amount of power needed in a month.

Residential and small commercial natural gas customers are charged for their energy use, with bills often shown in dollars per therm.[5] Larger commercial and industrial natural gas customers may pay a fixed distribution service charge for a maximum level of daily gas deliveries or they can sign up for interruptible service which allows gas utilities to stop their natural gas supply during high need or "design" days or when that customer's gas supply has not been delivered on the interstate pipeline system.[6]

In the context of EmPOWER, demand response (DR) programs are primarily designed to reduce the amount of power needed, while energy efficiency and conservation (EEC) programs are primarily designed to reduce the amount of energy consumed.[7] A common DR measure is an air conditioner switch that enables utilities to reduce or shut off a volunteer customer's air conditioner for a limited time on hot days. By reducing or shutting off hundreds or thousands

[5] A therm is equivalent to 100,000 BTU or 0.1 MMBTU

[6] Most larger non-residential customers contract for their gas supply with licensed retail gas suppliers who are also responsible for arranging transportation on the interstate pipeline system.

[7] While DR measures also reduce energy usage, and EEC measures also reduce demand, those are important but secondary effects.

of air conditioners at the same time, utilities can reduce their power needs by hundreds of MWs when the power grid is under stress. Common EEC measures are HVAC duct sealing and additional insulation, both of which reduce the amount of energy it takes to heat or cool a house. Over the course of a year, hundreds or thousands of kWh of electric energy and therms of natural gas energy can be saved by preventing the loss of hot or cool air.

Current EmPOWER Program Targets and the Business As Usual Forecast

This remainder of this section discusses the progress of EmPOWER DR and EEC programs to date, and forecasts program performance through 2020 under a specific set of assumptions. The reductions are presented in relation to the "business as usual" (BAU) forecast that was developed by the PSC using utility and PJM[8] data. It estimates what energy usage and peak demand would be absent any particular policy. That is, if the State did nothing to try to reduce its energy usage, the BAU forecast is a best guess of future energy demand based on economic and population trends.

In setting the goals for each electric distribution company[9] (EDC), the Commission calculated the projected difference between the EmPOWER reduction goal and the BAU forecast. The BAU forecast was updated in 2011 to account for the economic downturn and to reflect updated population figures from the Maryland Department of Planning. The following chart aggregates the current targets for DR and EEC programs.

Summary of Current EmPOWER Policy and 2015 BAU Forecast				
	Usage		Peak Demand	
	Total (MWh)	Per Capita (MWh)	Total (MW)	Per Capita (kW)
2007 Actual	69,649,617	12.38	14,387	2.55
2015 Forecast	72,852,242	12.06	15,269	2.53
2015 EmPOWER Target	63,599,143	10.52	13,134	2.17
Reductions Needed from BAU	**9,253,099**	**1.54**	**2,135**	**0.36**

Table 1 - Current EmPOWER Policy and 2015 BAU Forecast

These aggregate targets are allocated to each EDC based on their own population and BAU forecasts. In the current EmPOWER planning process, the Commission has interpreted the language in the Act that EDCs must design EEC programs to achieve "at least 5% by the end of 2011 and 10% at the end of 2015" to set the EDC EEC targets at 10% rather than 15%. In this report, all figures will be relative to the full 15% reduction targets for DR and EEC programs.

Demand Response Programs Progress to Date

EmPOWER Maryland DR programs have been very successful since their inception. Through September 2012, EDCs have developed approximately 1,035 MW of DR capability,[10] which is

[8] PJM Interconnection, Inc., is the regional transmission operator for 13 states and the District of Columbia. It also administers the energy and demand markets in which Maryland participates.

[9] Electric distribution companies, commonly referred to as electric utilities, are the entity responsible for delivery electricity to end users. In Maryland, there are four major investor-owned utilities (BGE, Pepco, Delmarva Power and Light, and Potomac Edison) and nine coops or municipal utility providers.

[10] Data taken from utility filings with the PSC on their EmPOWER 2012-2014 program proposals.

the equivalent power output capacity of a large coal power plant. Some of this capacity has cleared the PJM capacity market auction and, as a result, Maryland will receive over $221 million in payments between 2009 and 2014 that will reduce the EmPOWER customer surcharge. Based on PSC filings in Fall 2011, proposed DR programs will actually exceed the EmPOWER Maryland 2015 target of a 15% reduction in per capita demand.

Figure 1 shows a "top-down" measurement of the progress to date and the projected results through 2015, consistent with the way the Act currently specifies the targets. The top down approach looks at actual results from 2007 to 2011, and projects the impacts that programs planned for 2012 to 2015 will have on the annual peak demand. In this calculation, the yearly peak demand – that is, the most power that the State needed to meet its load at any given point in the year – is divided by the projected population in the manner prescribed by the Act. This calculation is weather normalized to adjust for hotter than normal or cooler than normal summers.

As seen in Figure 1, the currently planned utility programs in aggregate are expected to exceed the 15% per capita reduction from the 2007 baseline. However, this approach is heavily dependent on non-programmatic factors such as general economic output. As an example, the 2011 revisions to the EmPOWER targets reduced the 2015 peak demand forecast from 15,870 MW to 15,269 MW, largely based on new economic forecasts that incorporated the Great Recession impact. While the forecast was only reduced by 3.8%, it lowered the EmPOWER reduction targets by over 20%. If the economy were to remain unexpectedly sluggish, or accelerate faster than currently anticipated, the 2015 target could swing in either direction.

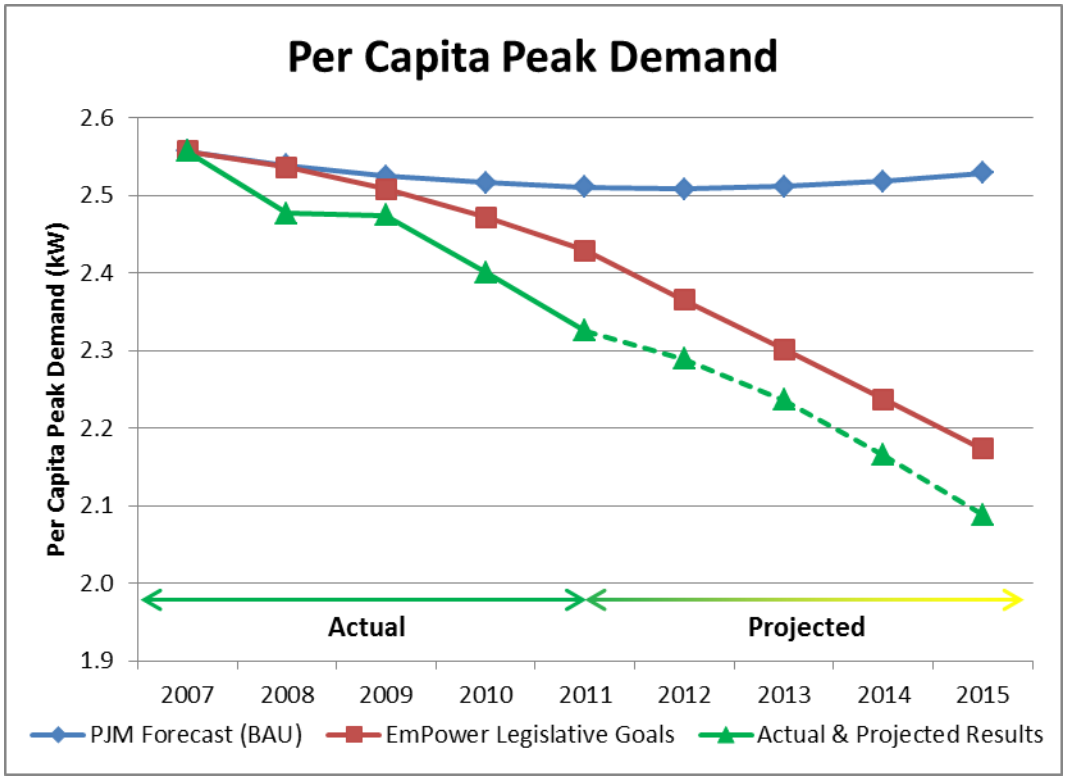


Figure 1 - Top-Down DR Progress

Figure 2 depicts a "bottom-up" calculation from the 2007 to 2020 time period to project the actual achieved DR savings, projected DR savings based on already-approved programs, and forecasted DR savings based upon program continuation assumptions. This method differs from the top-down approach in that it depicts the actual energy savings attributable to the

program rather than a measure of peak demand reduction, some of which may be attributable to the program and some of which may be attributable to other reasons, such as the downturn in the economy.

In the following chart, data from 2007 to 2015 were derived from MEA and EDC filings with the PSC. Data through 2011 were verified through evaluation, measurement, and verification (EMV) procedures at each EDC. Data from 2012 to 2015 were based on EDC forecasts for their proposed programs. EDC data were augmented by MEA program results that were run in-house before wider utility roll out. Reductions are relative to the BAU forecast for peak demand growth.

Estimates for future savings were projected by assuming that program effectiveness continues at 50% of the 2015 levels from 2016 to 2020. Two critical factors are embedded in this assumption: first, that continued participation in existing programs or new programs will be able to deliver incremental DR savings in a cost effective manner; second, that existing participants continue in the DR programs until 2020 and beyond. To the extent that these two assumptions fall short, it will likely mean that further decreasing peak demand after 2015 will either be more expensive, more difficult, or both.

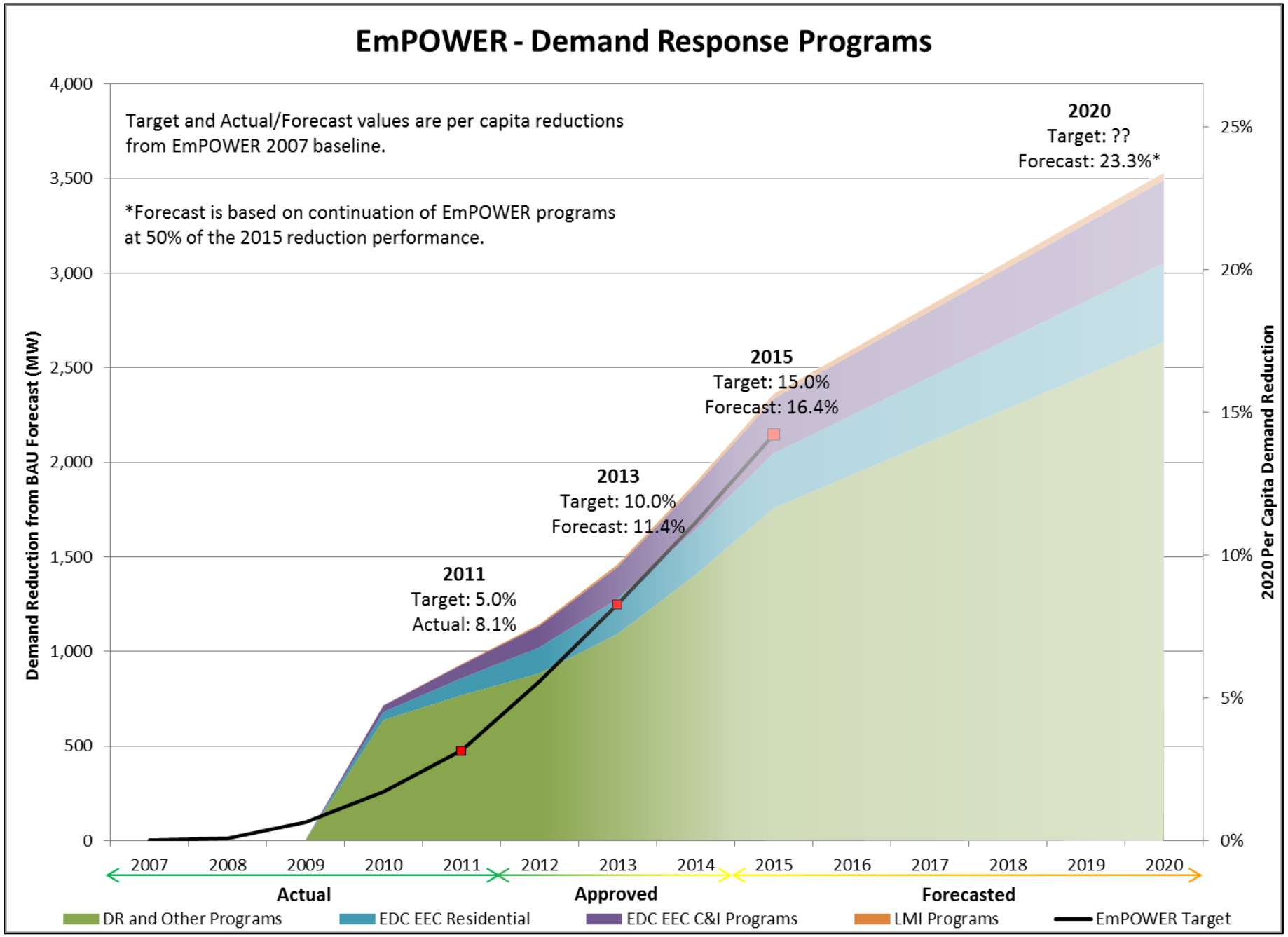


Figure 2 - Bottom-Up DR Progress

A Note about the Embedded Assumptions

It should be noted that MEA is not recommending setting a particular reduction goal for a particular year. As explained later in the Recommendation section, we propose determining the achievable cost-effective savings through a comprehensive, analytically rigorous stakeholder process. It may turn out that the cost-effective DR and EEC savings are higher or lower than those presented here. Notwithstanding that possibility, it is still informative to see how the current trajectory of program savings evolved over time.

It is also important to revisit the embedded assumptions of this forecast that demand response programs would continue to achieve reductions beyond 2015 at 50% of the 2015 rate. There are a number of challenges that would be involved in reducing demand by nearly 250 MW for multiple years between 2015 and 2020. By that time, the "low hanging fruit" may have been picked. PJM could change the rules on how DR resources are sold into their market, which may affect the financial incentives available to these resources.[11] Electric vehicle sales could increase without corresponding technology or price signals to prevent charging during the day. All of these scenarios would make it more difficult to sustain the level of demand reduction seen in recent years.

On the other hand, new innovations in dynamic pricing that enable customers to adjust their energy consumption based on market-based prices may incent customers to more closely monitor their energy consumption behavior. Smart grid deployments could lead to new ways to shift demand away from peak hours to other times of day. Improvements in buildings and appliance performance due to more stringent building codes and efficiency standards will be realized as assets turn over. If a substantial portion of the Renewable Portfolio Standard is met with behind-the-meter distributed generation, hundreds of MW of capacity may be available to help offset demand on sunny days.

On balance, and given the substantial demand reduction already achieved through relatively inexpensive direct load control programs, we assume for the sake of discussion that demand reduction programs would be able to achieve approximately 50% of the performance of recent fully funded years. The actual amount that will be achievable will depend on the specific parameters that are adopted in future EmPOWER planning procedures.

As seen in Figure 2 above, these assumptions result in DR programs that are expected to exceed the 2013 and 2015 targets. The 2011 target has already been exceeded. DR programs as currently proposed will result in a forecasted 16.4% reduction over the 2007 baseline per capita demand by 2015. Extrapolating 50% of the 2015 performance forward would result in a reduction of more than 3,500 MW from the original forecasted peak demand and a corresponding 23.3% reduction in per capita demand. If this forecast is realized, Maryland's 2020 demand would be 13,509 MW compared to the 2007 demand of 14,387 MW.[12]

[11] Currently, DR resources can bid into an auction run by PJM and, if they clear the auction, receive payments for their participation. These DR rules have changed in the past and could change in the future in ways that may affect the size of the payments. If payments available to DR resources decrease, this could affect market participation.

[12] The MW reduction is lower than the 23.3% per capita reduction due to population growth from 2007 to 2020.

Energy Efficiency and Conservation Programs Progress to Date

While the DR programs have been very successful, the EEC programs have faced more challenges. Part of this discrepancy may be due to the difference in value of demand and energy reducing programs in the PJM market, as well as the fact that DR programs tend to have low or no out-of-pocket costs.

To date, energy reduction programs have fallen short of the target. Figure 3 shows the "top-down" approach for EEC programs consistent with how the statute defines the goal. From this view, it appears that progress to date has been in line with expectations. However, the top-down results can be heavily influenced by non-programmatic factors such as economic output and weather.

Importantly, while the DR goal is weather normalized per the Act, the EEC goal is not. As a result, the EEC results are impacted by both economic factors and weather factors. Cool summers and warm winters will impact the EEC results, but not the DR results. In fact, the apparent reduction relative to the EmPOWER goal from 2007 to 2009 was largely due to weather and economic factors more so than verifiable program results. The warm winter of 2012 and the reduced output of Sparrow's Point will likely skew 2012 results lower. Even with these recent downward pressures on energy use, it is clear from this view that the projected programs increasingly will fall behind the target line from 2013 to 2015.

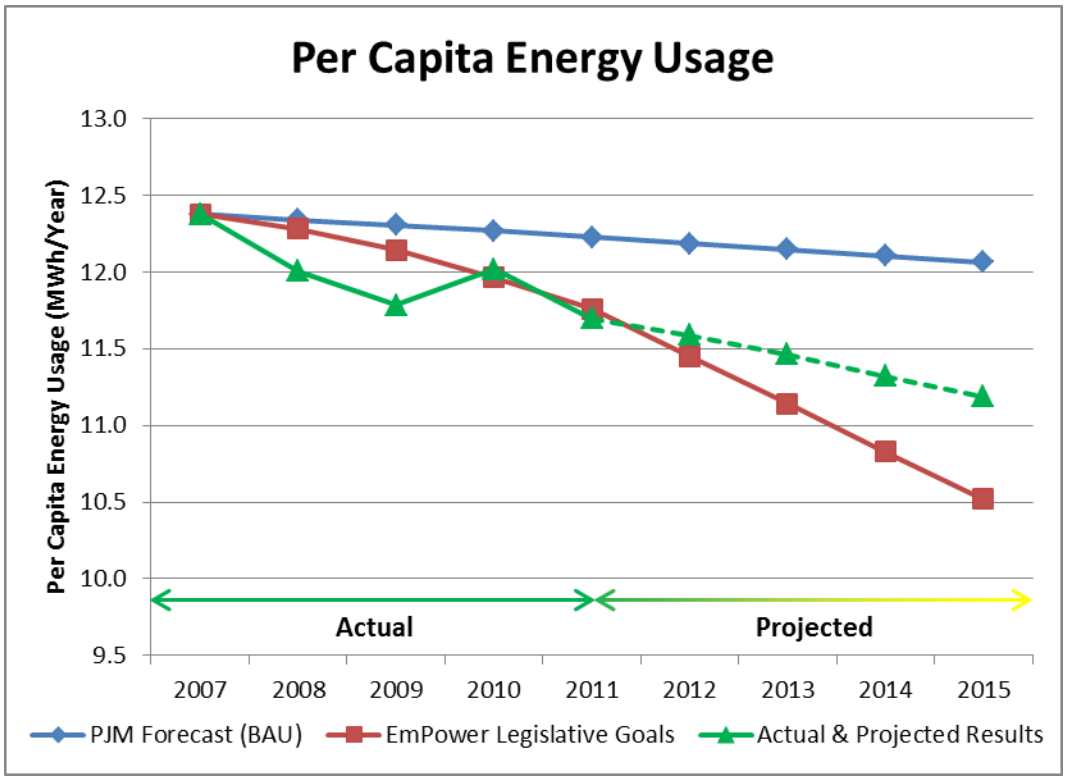


Figure 3 - Top-Down EEC Progress

The same set of assumptions from the bottom-up DR graph in Figure 2 was used to generate the following bottom-up EEC progress graph in Figure 4. Because this graph is only showing program results, rather than a final sales figure, external factors such as weather and economic output are removed. Here, a specific reduction goal for each year is shown along with actual program results against the target.

While the top down graph showed good progress through 2011, the bottom-up approach shows programs were quite short of the goal.[13] The 2011 bottom-up savings are less than two thirds of the reduction target, at 3.0% vs. 5.0%. 2015 results are projected to trail by a similar margin, 8.3% vs. 15.0%. Even if programs are continued at the full 2015 funding levels and performance results, the forecasted EEC achievement in 2020 per capita energy usage would be 13.7% below a 2007 baseline. Projections based on current program performance show that the 2015 reduction target will not be met by 2020.

[13] The two graphs can be reconciled by attributing much of the 2007-2011 performance against the EmPOWER target to weather and economic impacts.

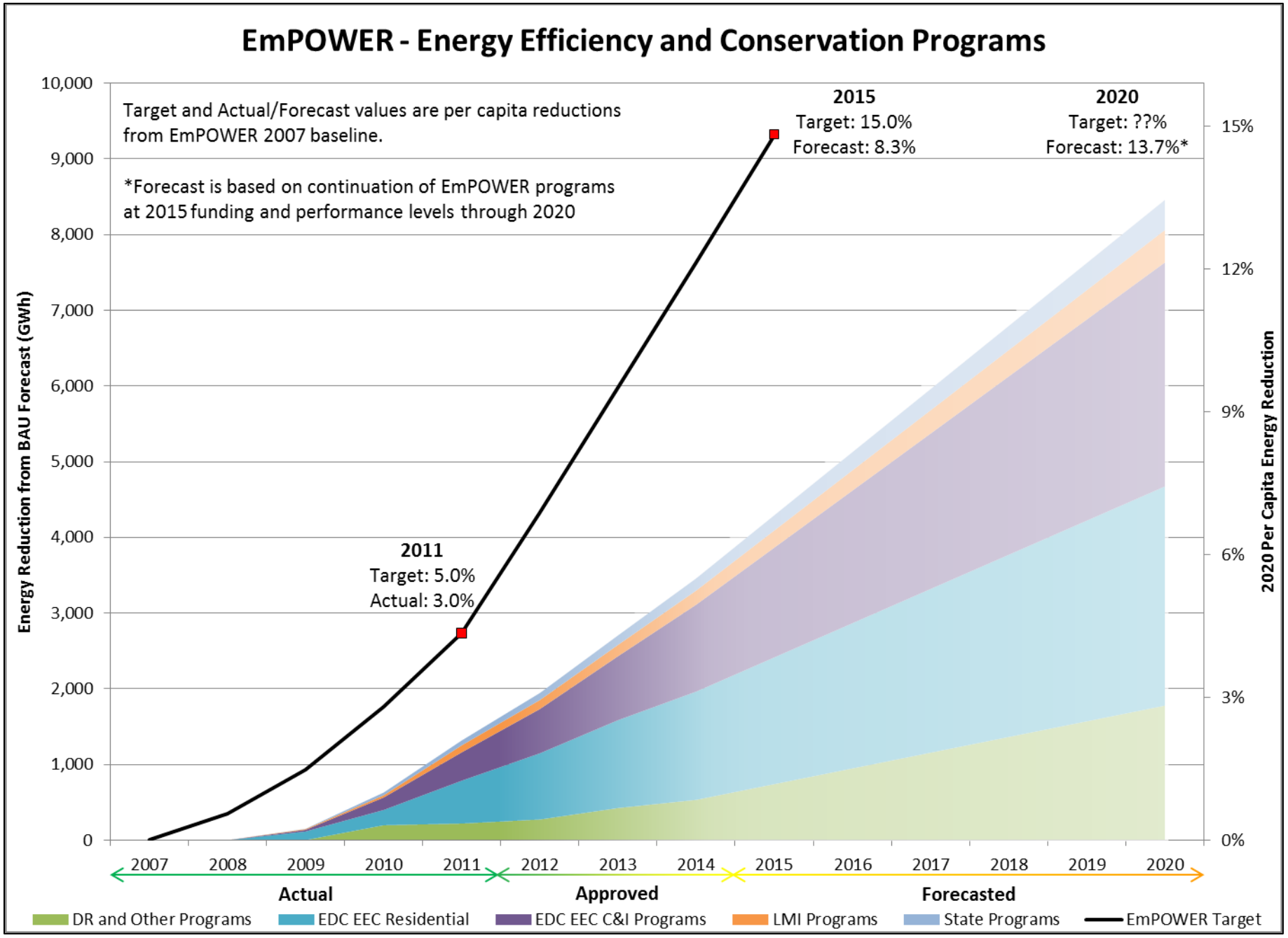


Figure 4 - Bottom-Up EEC Progress

The following chart blends the "top-down" data with the "bottom-up" data and attempts to isolate the impact of non-programmatic factors such as the economy and weather. In this view, the reductions attributable to actual programs are shown in red, while reductions attributable to other factors such as the weather and the economy are shown in green. Although program reductions begin to accelerate in 2011, they are projected to fall well short of the 2015 targets even after being influenced by the economic downturn.

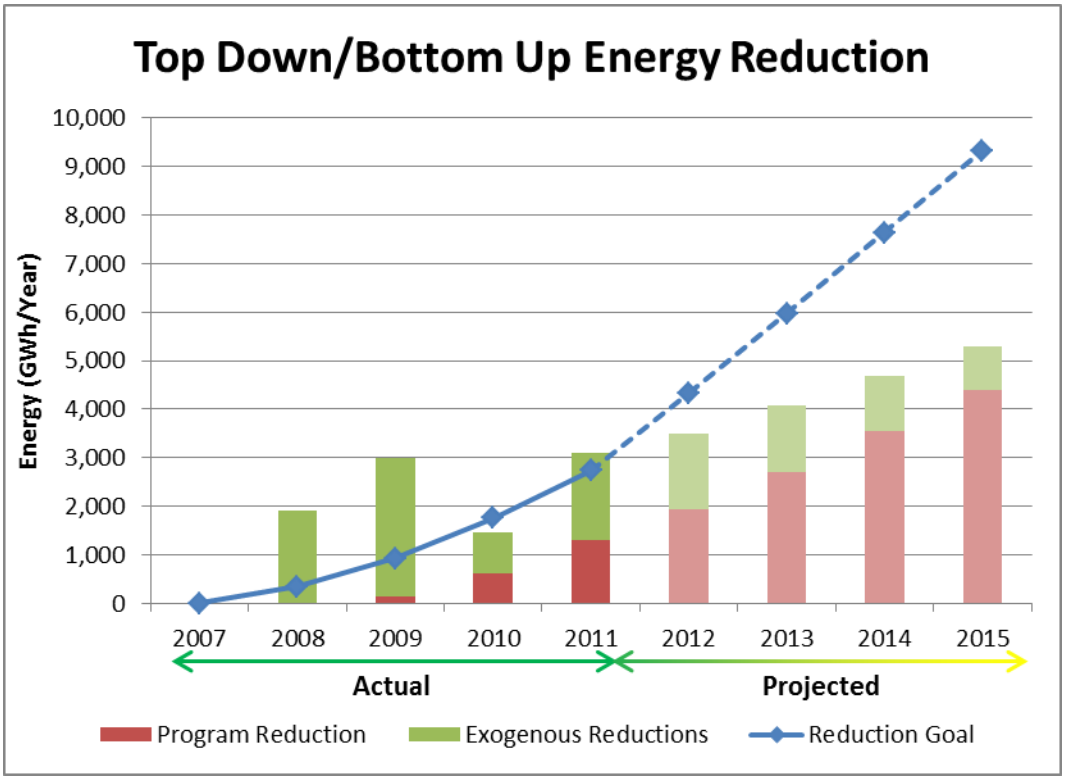


Figure 5 - Top-Down/Bottom-Up Energy Reduction

Annual Reductions Required for Certain Targets

Figure 6 moves away from actual program results and focuses on the percentage reduction that would be needed to achieve certain per capita reduction goals. This figure is for illustrative purposes only as substantial study is needed to determine a reliable estimate of the achievable level of savings.

As seen below, based on results through 2011, an annual, compounded reduction of 2.28% per year from the BAU forecast would be required to hit the 15% reduction goal in 2015. If the 2.28% rate of reduction from 2012 were continued to 2020, the per capita consumption would be roughly 25% lower than the 2007 baseline. This corresponds to an actual consumption of 58,211 GWh in 2020, compared to a 2007 consumption of 69,649 GWh and a 2020 BAU forecast of 74,928 GWh.

Two other data points are included in the graph, showing the results of a 0.50% and 1.50% annual reduction from the 2011 starting point. For the 0.50% annual reduction, energy use would stay relatively flat on an absolute basis (effectively offsetting population growth) while dropping nearly 10% on a per capita basis; a 1.50% annual reduction would bring per capita consumption about 18% below the 2007 baseline.

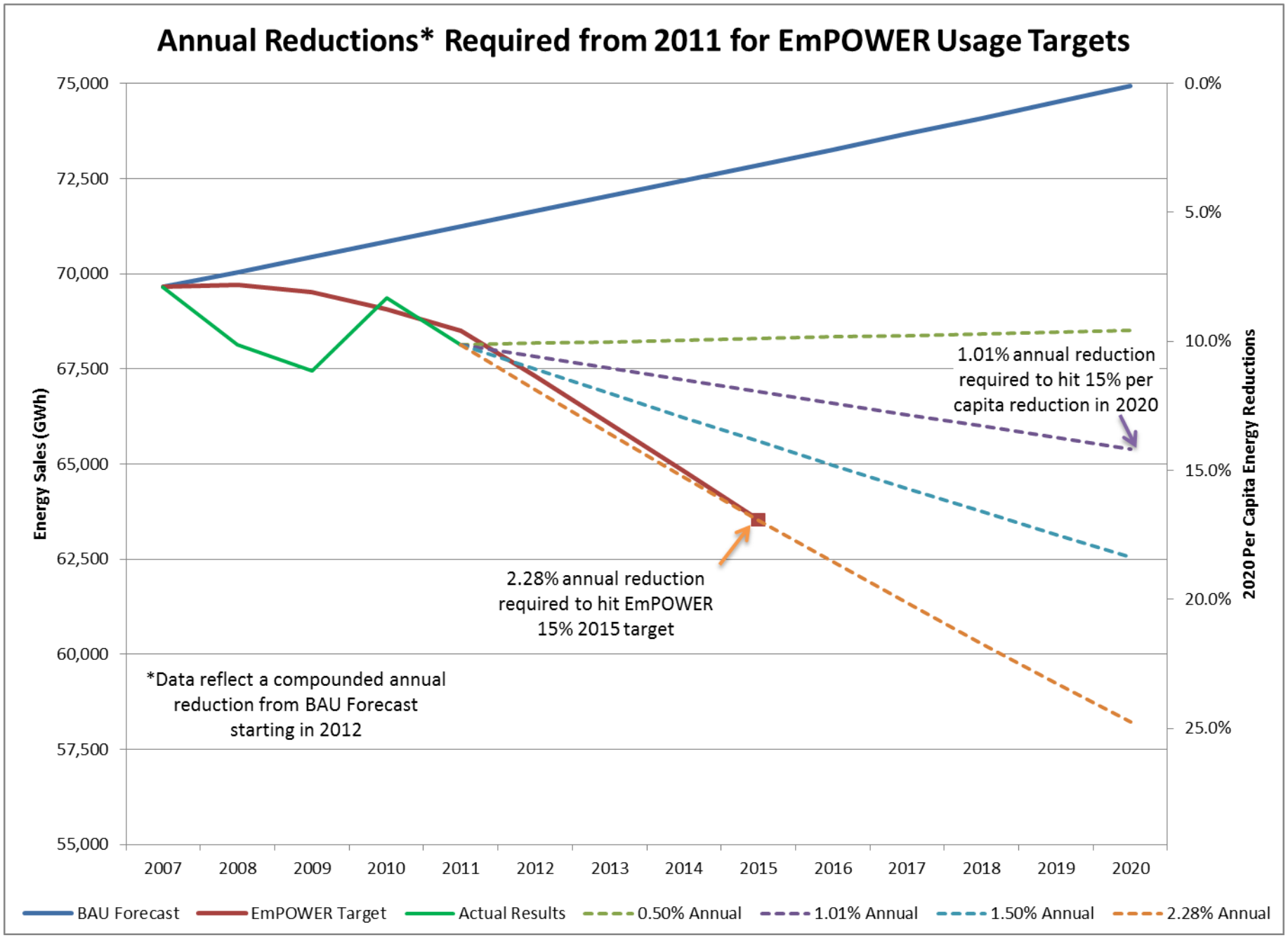


Figure 6 - Annualized Reduction Results

BEST PRACTICES FOR ENERGY EFFICIENCY AND CONSERVATION PROGRAMS

MEA examined the program portfolios of states with very successful energy efficiency programs and found only subtle differences in energy efficiency program offerings. The suite of EEC and DR programs administered by Maryland's utilities is largely consistent with the best practices of states with very successful energy efficiency programs. However, differences exist in the overall structure of the program framework and within the details of individual programs.

A June 2011 report from the American Council for an Energy-Efficient Economy (ACEEE) entitled "Energy Efficiency Resource Standards: A Progress Report on State Experience"[14] identified key strategies of very successful states to achieve high savings. These strategies were assembled from in-depth interviews with seasoned energy practitioners from all the major energy efficiency programs around the country, and only the most significant strategies were included in the ACEEE report:

- Increasing program funding, considered a fundamental requirement in order to achieve greatly enhanced savings impacts.
- Identifying and prioritizing targeted technologies and end uses, especially those that contribute significant energy savings.
- Developing programs capable of delivering "deep" savings first, and then seeking "broad" participation, meaning programs are designed to capture the most possible savings per customer. This generally means customers must enact more measures, with greater incremental gains, to achieve deep savings.
- Creating programs for new and emerging technologies, including conservation voltage reduction and combined heat and power.
- Extending portfolios with programs to reach new and under-served markets, including multifamily buildings.
- Taking on innovative advertising and promotional channels and increasing incentives to raise customer participation.

Many successful states have been operating energy efficiency programs in some form for 20 or more years, and program administrators understand what works. Residents and businesses in these states are familiar with the concept of energy efficiency thanks to years of program marketing, feedback, and evaluation. In contrast, Maryland went through a period of time when no efficiency programs were administered by the utilities, and the State essentially started from scratch in 2008. Although program experience and maturity only happen over time, Maryland must take action to create a climate for a dramatically expanded set of energy efficiency efforts that result in significant energy saving.

According to the ACEEE report, Maryland achieved just over 0.5% electricity savings from program results (i.e. a "bottom-up approach") compared to retail sales in 2010, the first full year with programs in place. Maryland was one of only two states out of twenty in the country in that year achieving less than 80% of their near-term target. Nine states, including

[14] http://aceee.org/research-report/u112

Washington, Connecticut, and Massachusetts, achieved more than 1% annual savings compared to sales, and the top-performing state in the country, Vermont, achieved more than 2% savings.

Program progress improved in 2011, and new programs were approved to be implemented in 2012-2014. As part of the 2012-2014 program development process, the Commission and the utilities have implemented pilots for several of these recommendations, such as combined heat and power and conservation voltage reduction, but Maryland should look to the strategies outlined in the ACEEE report for additional improvement to the utility programs.

Given that Maryland administers many of the same programs as the leading states, there must be other structural differences that have led to our relatively lower performance. One of the clearest divergences is in the area of overall program funding. In 2011, the Maryland utilities spent about $17 per capita on EEC programs, exclusive of DR. In comparison, New York spent $39, Connecticut spent $41, Vermont spent $67, and Massachusetts spent nearly $79 per capita on energy efficiency programs in that same year.[15] By further contrast, from 2007 to 2011, Maryland has spent nearly $1,400 per capita per year for retail electric service and $325 per capita per year for retail natural gas service.[16]

There is a significant relationship between the amount of per capita spending on energy efficiency programs and the energy savings produced by high performing states. In 2011, New York, Connecticut, and Massachusetts achieved savings of 1.3% to 1.4% of electricity sales, while Vermont achieved more than 2% savings of electric sales. These figures correspond with the higher per capita spending on EEC programs. With its lower spending levels, Maryland utilities were able to produce much smaller savings of about 0.6% of electric sales in 2011.

More interestingly, the states that have had high per capita EEC spending are also dramatically increasing their spending in future budgets. Massachusetts will increase spending on electric EEC programs by 215% between 2010 and 2013, increasing their budget from $300 million in 2010 to $650 million in 2013. New York will see a 167% increase, moving from $560 million in 2010 to $930 million in 2013. Rhode Island will increase by 260%, from $31 million in 2010 to $82 million in 2013.

While it is important to be prudent when spending ratepayer dollars, program budgets need to be at a minimum level for an energy efficiency program to gain traction in the market and produce the energy and dollar savings for a broad population of consumers across the state. While Maryland has continued to increase its budgets, it lags well behind other leading states.

Maryland ratepayers have paid an average of just under $10 *billion* a year for retail electricity and natural gas service between 2007 and 2011.[17] All of these EEC and DR investments cost substantially less than buying electricity and natural gas and therefore will deliver net economic benefits to the State. Many other states in our region have reflected this fact by increasing their EEC program budgets, and Maryland is well positioned to effectively deploy additional resources and continue to bring energy and monetary savings to ratepayers.

For additional discussion on this topic, please see Appendix B.

[15] Northeast Energy Efficiency Partnerships. *New England Energy Efficiency Snapshot: Energy Efficiency Policy By the Numbers*. Spring/Summer 2011.
[16] EIA retail Electricity and Natural Gas data for Maryland.
[17] Ibid.

MEA RECOMMENDATIONS

Although it may be easier to focus on challenges that have been faced when trying to reach the ambitious 2015 EmPOWER goals, it is crucial to acknowledge the progress that has been made and the successes realized since the EmPOWER Act was passed in 2008. Through the hard work and leadership of many parties, including the utilities, the Commission, PSC Staff, MEA program managers, and many other vested stakeholders, EmPOWER Maryland is off to a strong start.

Progress to Date: A Strong Start

EmPOWER Maryland has been instrumental in bringing DR and EEC resources to market. Through September 2012, the DR program measures have produced over 1,000 MW of demand side resources. Further, programs currently proposed through 2015 are forecasted to deliver a total of 2,360 MW of DR and are projected to exceed the current legislative goal by achieving a per capita reduction of 16.4%.

The EEC programs went from almost no savings at the start of 2010 to saving nearly 3%[18] of Maryland's total annual energy usage by the end of 2012. From its inception through September 2012, EmPOWER Maryland has helped fund measures that will reduce energy usage of ratepayers by 2.0 million MWh per year and will save $250 million annually. These savings will continue for years, saving ratepayers $3.7 billion over the useful life of currently installed measures. By 2015, EEC programs are projected to deliver 4.4 million MWh of annual savings, delivering an 8.4% per capita reduction but falling short of the 15% legislative goal.

Since the first program cycle in 2009-2011, many positive changes have been made to increase the effectiveness of the EmPOWER programs. The Commission shifted to measuring programs at the portfolio level, rather than the program level. A pilot program for CHP programs is currently underway in two utilities. PSC Staff has worked hard to standardize and streamline the EmPOWER reporting requirements, reducing the administrative burden on utility, PSC staff, and MEA staff. The Commission has recognized the potential of on-bill financing for EEC programs and convened a work group to study the issue further.

These positive steps can be collectively referred to as EmPOWER 2.0, to reflect the considerable thought and effort that went into the enhancements. The results were incorporated into the 2012-2014 program cycle, and the MWh savings in the second cycle are projected to almost double those realized in the first. As laudable as this progress is, however, it is still falling short of the potential of EEC programs to deliver cost effective savings to Maryland ratepayers. With that in mind, as we consider further enhancements to the EmPOWER policy, the focus of programs should reflect and respond to the challenges of the current marketplace rather than simply striving to meet existing goals.

When the EmPOWER Maryland Energy Efficiency Act was passed in 2008, it was done so under a very different set of circumstances than exist today. Utility rate caps, in place since the 1999 deregulation of the energy market, had recently been removed, resulting in a 72% rate increase for BGE customers in 2007 and a 39% increase for Pepco customers in 2006. PJM wholesale

[18] As measured by the "bottom-up" methodology. The latest figure from 2011 from a "top-down" methodology consistent with the Act is a 5.5% per capita reduction.

delivered energy prices[19] were on their way to historic highs, eventually peaking at $115/MWh in the summer of 2008.[20]

As frustrating as the high energy prices were for ratepayers, the larger issue at the time was warnings from PJM, the regional transmission operator in which Maryland is located. In October 2007, PJM warned the Commission of capacity resource shortages that were projected to cause rolling blackouts in central Maryland as soon as 2011, particularly if two major transmission projects were delayed.[21] The immediate threat to the power grid was a forecasted lack of capacity resources. It was under this backdrop that the EmPOWER Act was passed and that the PSC ultimately ordered 400 MW of additional DR through Case 9149[22] over and above any EmPOWER savings.

In the years since 2008, the energy market has been transformed. Capacity threats projected in 2007 and 2008 were mitigated by the economic downturn and a robust response from EmPOWER Maryland programs. Energy prices have seen an unprecedented drop due to reduced demand and the availability of inexpensive natural gas supplies brought to market largely through hydraulic fracturing. Altogether, these factors have resulted in wholesale prices falling nearly 60% from a peak of $115/MWh in July 2008 to an average of $48.40 through the first 9 months of 2012.[23] Additionally, two major transmission lines, the PATH and MAPP projects, once deemed critical to maintaining reliability in Maryland, were cancelled by PJM this past summer.

What Now?

With the immediate threat of rolling blackouts reduced for now, and an unprecedented drop in electricity and natural gas prices, there are those who question the value of continued, much less accelerated, investment in programs designed to use less energy.

They are wrong.

In fact, now is exactly the right time to redouble our efforts and to explicitly define in the statute the critical parameters of the EmPOWER program that will accelerate reductions in both electricity demand and electricity and natural gas energy usage. The reason is simple: avoiding the next unit of energy supply brings substantially more benefits to Maryland than using the next unit of energy supply.

To better understand this concept, it is important to know what challenge we are currently facing. As discussed earlier, electricity consumption, demand, and prices, as well as natural gas prices, have all fallen in recent years. The question is whether these trends will continue, or whether they will return to their historic relationship with population and economic growth. More simply, what is the projected long-term demand of electricity and natural gas, and what is the best way to meet those demands?

[19] Energy (LMP), Capacity, Transmission, and Ancillary Services
[20] 2008 State of the Market Report for PJM, Monitoring Analytics.
[21] Testimony of Michael J. Kormos, Case No. 9117, Phase II, at 3-4.
[22] http://webapp.psc.state.md.us/Intranet/Casenum/CaseAction_new.cfm?CaseNumber=9149 "In the Matter of the Investigation of the Process and Criteria for Use in Development of Request for Proposal by the Maryland Investor-Owned Utilities for New Generation to Alleviate Potential Short-Term Reliability Problems in the State of Maryland."
[23] State of the Market Report for PJM, Q3 2012, Monitoring Analytics.

In the near and medium term, the direction of this demand is clear. Projections from the utilities (through the PSC), PJM, and EIA all show increases. The Maryland utilities are projecting net annual increases – *after* the currently planned EmPOWER programs are taken into account – of 0.94% and 1.24% through 2025 for peak demand and energy usage, respectively.[24] PJM forecasts annual net demand growth in the BGE and Pepco regions of 1.1% and 0.9%, respectively, through 2022.[25] The EIA Annual Energy Outlook projects a 1.0% and 0.7% annual increase in delivered electricity consumption and natural gas consumption, respectively, through 2040.[26] These increases compound over time, and present a future where we need 13% more electric power and 18.5% more electric energy than today by 2025 – a figure that already includes current and projected EmPOWER program savings.

The Path Forward: Supply Side or Demand Side?

Despite the current programs enacted through EmPOWER, we still face a forecasted increase in electricity and natural gas usage and electricity demand. The implication – and thus the choice – is clear: should we invest more in demand-side resources such as EEC and DR programs to avoid the increase in energy demand, or should we invest more in supply-side resources to build infrastructure such as power plants and transmission lines to meet rising demand? There is no longer a question of *if* we will face this decision, but rather a question of *what* is the best way to address the challenge. In our view, the unequivocal solution is to first invest heavily in cost-effective demand-side resources to avoid as much of the increase as possible, and only then invest in strategic supply-side resources to meet any remaining requirements.

To help explain this conclusion, one must consider where energy prices are projected to be in the future. While electricity prices have come down substantially in recent years, EIA projects real electricity prices (meaning without considering inflation) to stay relatively flat and then to increase steadily between 2020 and 2040.

The case is more stark for natural gas. Prices have been temporarily depressed below a sustainable level due to the oversupply of shale gas. EIA projects natural gas prices will bottom out in 2012, and then rise at an average annual rate of 2.2% *above inflation* through 2025.[27] Considering that natural gas power plants tend to set the price of wholesale electricity in Maryland during peak times, and that electricity from natural gas power plants is making up an increasing proportion of total generation, an increase in natural gas prices will put additional upward pressure on electricity prices.[28]

Finally, as the country exits from the recession and the economy rebounds, Maryland may see a return of the 1.5%-2.0% gross electric peak demand and usage growth that occurred in the

[24] http://webapp.psc.state.md.us/Intranet/Reports/2011_2020%20TYP%20(FINAL%202_8_12).pdf Table A-4(b) and A-5(b)

[25] http://pjm.com/~/media/documents/reports/2012-pjm-load-report.ashx p 40.

[26] http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2013ER&subject=16-AEO2013ER&table=2-AEO2013ER&region=1-5&cases=early2013-d102312a

[27] http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2013ER&subject=16-AEO2013ER&table=3-AEO2013ER&region=1-5&cases=early2013-d102312a

[28] Broadly, the PJM locational marginal price is set by the last (marginal) resource needed to meet the current market demand in a particular geographic area. During peak times, the marginal resource is typically a natural gas-fired generator. If the price of natural gas increases, the cost of electricity from the marginal resource will also increase. Due to the way PJM runs their energy market, an increase in the operating costs of the marginal resource will increase the price for all energy sold in that time period and location, all else equal.

early- and mid-2000s. Increases in electric demand and electric and natural gas usage put upward pressure on wholesale market prices and will most likely result in higher retail prices.

In an energy landscape with increasing prices, if all else is equal, a decision to invest in demand-side resources such as EEC and DR programs will become increasingly profitable as time goes by, while a decision to invest in market-based supply-side resources and build more infrastructure will become increasingly expensive.

Layered into this consideration is the increasing focus on the electricity sector's contribution to greenhouse gas emissions. Maryland passed the ambitious Greenhouse Gas Reduction Act (GGRA) in 2009, which calls for a 25% emission reduction from a 2006 baseline by 2020. EmPOWER Maryland is critical to achieving this goal. Further, the Regional Greenhouse Gas Initiative (RGGI) is undergoing a program review that will likely reduce the number of allowances auctioned as part of the regional cap and trade program. Because electric and natural gas emissions are directly tied to electricity and natural gas consumption, helping achieve the GGRA goals and reducing Maryland's emissions under RGGI can both be accomplished by increasing investment in electricity and natural gas EEC programs.

When planning to meet the projected electricity demand of the State, there is value of having "steel in the ground" – that is, to invest in strategic supply-side resources such as power plants and transmission upgrades. The Commission has laid out a solid argument for this need for standard offer service in Maryland in their Case 9214 and has authorized a new natural gas fueled generation plant through a "contract for differences" where ratepayers received a secure source of supply for 20 years.[29]

While the Commission and the market should continue to analyze the need for supply-side investment, Maryland's policy should be to first maximize cost effective demand-side investments. Increasing investment in demand-side resources will unconditionally reduce the need for supply-side investment. In fact, a recent report from ISO-NE[30] shows that aggressive EEC programs can offset a significant portion of their projected demand growth and fully offset their projected energy growth.[31] Further, demand-side investment can generally be implemented at a lower cost than supply-side investment, with no fuel price or supply risk, and with all net savings accruing directly to the ratepayer.

EmPOWER 3.0

It is within this context that MEA proposes a number of major changes to the EmPOWER policy, while leveraging the substantive work and experience that has been developed since 2009. These changes, collectively referred to as EmPOWER 3.0, are intended to work together in a holistic manner and should not be viewed as independently implementable. Rather, there are substantial synergies expected from a coordinated development, design, and deployment of new programs. The changes proposed below will take time, effort, coordination, and cooperation to be ready for the 2014 legislative session and the 2015-2017 program implementation cycle.

[29] "IN THE MATTER OF WHETHER NEW GENERATING FACILITIES ARE NEEDED TO MEET LONG-TERM DEMAND FOR STANDARD OFFER SERVICE"
http://webapp.psc.state.md.us/Intranet/casenum/CaseAction_new.cfm?CaseNumber=9214.

[30] ISO New England is the independent system operating and is roughly the New England equivalent to PJM.

[31] http://www.iso-ne.com/nwsiss/pr/2012/ee_forecast_final_12122012_post.pdf

The intent of EmPOWER 3.0 is to introduce an analytically rigorous set of procedures and metrics that can be applied to DR and EEC program design and implementation. The process starts through a collaborative effort to determine how much energy and demand savings are available for a given level of investment under a cost effectiveness test that analyzes the true benefits of avoiding the marginal unit of energy supply. This action would be performed in a coordinated manner with direct input from relevant stakeholders. Our plan is for this group to make a consolidated recommendation to the 2014 General Assembly with achievable savings levels that will enable reasonable and achievable reduction goals to be set beyond 2015.

One may ask why this process is not already in place for the EmPOWER proceedings. While some aspects of it have been implemented in the past, there has not been a consistent application of cost effectiveness tests or avoided cost calculations. Further, while the Commission's view on cost effectiveness has evolved over time, the definition has never been codified in a formal manner.

In a 2008 order on BGE's proposed EmPOWER programs, the Commission noted that cost effectiveness is currently undefined in the Act, and that "the Commission finds this omission relevant."[32] Absent specific guidance from the legislation, the Commission "reads the EmPOWER legislation as directing it to use its best judgment, to be good stewards of ratepayer funds, and to ensure that any programs it approves achieve a direct and appropriate return for the ratepayers' investments."[33] The Commission continued "[i]n the Commission's view, it is not good enough simply to achieve a 1:1 cost/benefit ratio – the programs need to provide good value to ratepayers and accomplish their objectives with an absolute minimum of administrative expenses.[34]

It is entirely appropriate, and in fact necessary, that the Commission rigorously scrutinize proposed DR and EEC programs to ensure that they are free of excessive administration overhead and that they provide a good investment for ratepayer funding. However, when a program is well designed, with reasonable levels of administrative overhead, we diverge from the Commission's view that it is not good enough to achieve a 1:1 cost/benefit ratio, particularly when the cost effectiveness test is appropriately designed to capture the program's true costs and true benefits.

We respect the Commission's diligent focus on cost impacts of EmPOWER programs, and commend them on the progress they have made since the passing of the Act. However, as discussed above, in the face of rising demand for energy and capacity, the only choice for ratepayers is to meet those needs with supply-side or demand-side resources. In fact, any portfolio achieving a 1:1 cost/benefit ratio under our proposal will *necessarily* provide good value to ratepayers as it will be the least-cost option for meeting rising demand.

The avoided cost study and cost-effectiveness tests we propose here will be analytically rigorous, and will be performed in a transparent manner to incorporate feedback from interested parties, thus addressing the Commission's concerns that "overly inclusive or imprecise set of assumptions could render the [cost-effectiveness] calculation meaningless." [35] Further, a very similar avoided cost determination process has been in place for ISO-NE for

[32] Commission Letter Order to BGE, August 18, 2008, Maillog # 108061, p. 4.
[33] Ibid.
[34] Ibid. p. 6,9
[35] PSC Order 84569, December 22, 2011 p 17.

more than a decade and has been used extensively by multiple state commissions for their EEC and DR proceedings.

MEA Recommendations

Our hope is that EmPOWER 3.0 will determine an analytically rigorous achievable savings level, and provide the General Assembly with the information needed to set Maryland's demand-side resource policy in statute. Armed with sufficient legislative guidance on the EEC and DR policies, the Commission and EDCs will be better able to perform their role of designing and implementing effective programs that maximize ratepayer benefits.

MEA's EmPOWER 3.0 recommendations can be summarized as follows and are discussed in more detail shortly.

1. Determine the true lifetime value of saving a MWh of electric energy, a MW of electric capacity, and an MMBTU of natural gas (the "avoided cost of supply").
2. Define the parameters of the cost effectiveness test to be used when analyzing a portfolio of programs.
3. Establish the EmPOWER Planning Group (EPG), comprised of state agencies, electric and gas suppliers and utilities, and other public and private stakeholders, to collectively determine the supply curve (quantity and cost) of achievable savings available in Maryland by fuel type and sector.
4. Set achievable EmPOWER goals that specify a minimum annual energy and demand reductions while authorizing the Commission to approve programs up to the cost effectiveness test threshold.
5. Implement programs through standardized offerings following industry best practices to the greatest extent possible.

1. Determine the Lifetime Value of Savings – the "Avoided Cost of Supply"

The initial step in EmPOWER 3.0 is to commission an "Avoided Cost of Supply" study to analytically determine how valuable energy and demand savings actually are. While there are a number of cost proxies that could be used without performing this analysis, such as the full retail rate, the SOS energy-only cost, or the wholesale price of delivered energy, these do not capture all of the externalities that should be considered in the calculation. To truly value the avoided cost of supply, one must take a broader view of what the impact will be across the system when the marginal unit of supply is not needed.

The parameters of the avoided cost of supply should be explicitly defined in the EmPOWER statute to provide the legislative guidance that the Commission noted was lacking in the original statute. MEA recommends including the following items in the avoided cost of supply calculation for electricity: avoided wholesale energy (MWh), avoided wholesale capacity (MW), avoided environmental compliance costs (such as RPS RECs and RGGI allowances), and avoided transmission and distribution investments. For natural gas, the avoided cost of supply calculation should include avoided wholesale energy (MMBTU), and avoided distribution investments. Additionally, these costs should be calculated in a levelized manner for the lifetime of each measure.

As part of this analysis, the co-benefits associated with installing measures to avoid the marginal unit of supply, such as a reduction of fuel oil needed to heat a house that had additional insulation installed, should also be calculated. While not necessarily part of the

avoided cost calculation, much of the information would be available from the same analysis. The report would include data on the marginal cost of fuel oil and propane, as well as the energy and capacity DRIPE[36] (price suppression) effects.

While EmPOWER proceedings have been using some measure of avoided cost in their cost effectiveness tests, it has not been applied in a consistent manner. By specifying what items to include in an avoided cost of supply calculation, all participants in EmPOWER 3.0 will be working from a level playing field with known rules. MEA recommends that the avoided cost calculation be updated prior to each three-year program cycle to incorporate the latest fuel price and load forecasts, and to capture any changes in environmental compliance regulations.

2. Define the Parameters of the Cost Effectiveness Test to be used when Analyzing Programs

MEA recommends using the Total Resource Cost (TRC) test at the sub-portfolio level, that is, performing one cost effectiveness test for Residential programs and one cost effectiveness test for C&I programs. On the benefits side, in addition to the avoided cost of supply, the Commission should include cost savings from avoided non-electric fuel such as natural gas, heating oil, and propane, as well as energy and capacity DRIPE.

The savings from other fuels is an important parameter to capture. If a person with fuel oil heat installs insulation to reduce their electricity consumption in the summer, they will mostly likely also benefit from reduced fuel oil cost in the winter. That benefit is both real and quantifiable, and the savings associated with the secondary fuel should be included on the benefit side of the ledger when deciding whether to approve the EEC measure.

The same is true for energy and capacity DRIPE. Unlike fuel co-benefits, DRIPE will benefit all Maryland ratepayers whether or not they participate in the EmPOWER programs. EmPOWER participants will see their energy bills reduced through two methods: lower usage, and lower price for the energy they do use. While non-participants do miss out on the larger savings due to energy usage reduction, they still benefit from lower prices on their existing energy usage. The magnitude of this savings will be determined as part of the Avoided Cost of Supply study.

We also recommend including these parameters in the statute so that all parties know the guidelines under which their programs will be analyzed.

3. Establish the EmPOWER Planning Group and Determine Achievable Savings

The EmPOWER Planning Group (EPG) would be a new stakeholder group headed by MEA and PSC Staff. It would consist of representatives from gas and electric utilities, gas and electric suppliers, state agencies such as OPC and PPRP, and private stakeholders such as academia, industry and labor representatives, environmental groups, and consumer advocates.

The EPG can be viewed as an expansion of the workgroups currently managed by PSC Staff. By bringing together both policy group and implementation groups during the program planning and development process, the EPG would develop a unified plan for electric and natural gas EEC programs in the state. The EPG would provide input to the achievable potential study process, ensuring that the parameters that went into developing the EEC supply curve reflected a

[36] Demand Reduction Induced Price Effect: Reductions in the quantity of energy and capacity that customers will need in the future due to efficiency and/or demand response programs result in lower prices for electric energy and capacity in wholesale markets. http://www.synapse-energy.com/Downloads/SynapseReport.2008-08.0.MA-Electric-Utility-Energy-Efficiency.08-075.pdf

balanced view of stakeholder inputs. When completed, the achievable potential study should reflect a consensus view of what EEC programs can be implemented, and at what price. By working together to develop the supply curve, the EPG will be able to present a vetted set of implementation options to the General Assembly.

The EPG would simultaneously work to standardize program design and development across the utility territories as much as possible. By bringing together best practices from past and current Maryland programs, as well as insights from participants active in other states' EEC programs, the administrative overhead of the programs can be reduced. Further, when the General Assembly makes a decision as to the appropriate EmPOWER 3.0 goal levels, the program design and development will be well under way.

The EPG should be made a permanent part of EmPOWER planning and should replace the current workgroup process run at the PSC. Coordination will be needed to make an orderly transition from one workgroup structure to the other, but most of the parties would be experienced and able to quickly transition. We suggest the Avoided Cost of Supply and Achievable Potential studies be updated prior to each new three year planning cycle to incorporate the latest information on fuel cost projections, compliance costs and policies, and available savings. The EPG should continue to have input on these issues, and should potentially be leveraged to perform a mid-cycle evaluation of what is working well and what is falling short.

4. Set Achievable EmPOWER Goals based on EPG Input

The main function of the EPG will be to provide the General Assembly with information needed to set a policy objective for EmPOWER 3.0. The Avoided Cost of Supply and TRC Cost Effectiveness Test will set the economic ceiling for energy savings. By definition, any portfolio of programs that passes the TRC Test will be less expensive than procuring other means of supply. Further, by definition, this portfolio will produce positive net economic benefit to the State.

MEA recommends setting a floor for annual electric consumption and peak demand and natural gas consumption goals, while authorizing the Commission to approve programs in excess of the floor but that still pass the TRC cost effectiveness test threshold. Note that in Figure 9, the area is red has higher net portfolio costs and, thus, a TRC less than 1.0. Areas in yellow and green have lower portfolio costs and, thus, TRCs greater than 1.0.

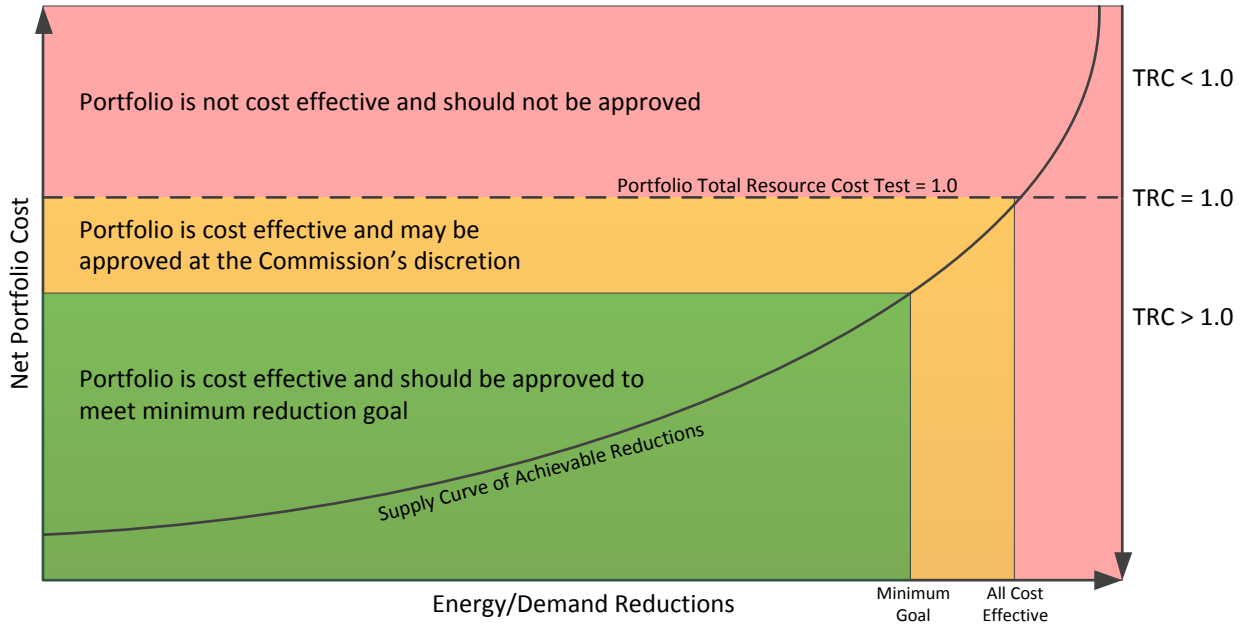


Figure 7 - Achievable EmPOWER Goal Illustration

An output of the EPG process will be the "achievable reduction supply curve" for EEC programs that will contain cost estimates for varying levels of savings. While still dependent on forecasted values, these figures will be based primarily on forecasts that will have been updated every three years. With that information, the General Assembly can make a policy decision to invest a certain minimum amount in attaining the reduction goals.

MEA recommends setting a minimum specified annual savings goals for each technology, denoted in millions of MWh of electric energy consumption, MW of electric peak demand reduction, and MMBTUs or therms of natural gas energy, that correspond to the investment level selected by the General Assembly. For the maximum transparency to all parties, we suggest that the goals be explicit (e.g. a specific quantity of MWh to be saved) rather than referenced to a forecasted figures (e.g. population or percentage of sales). Whatever specific value is selected, the General Assembly can then be assured that their choice will deliver net economic benefits to the State, and that all program savings ordered up to the avoided cost cap will continue to be beneficial.

Through this method, the policy decision of the minimum amount to invest in EEC programs will be made by the General Assembly, implemented through programs developed by the EPG, and managed under the oversight and guidance of the Commission.

5. Implement EEC Programs through Standardized Offerings Following Industry Best Practices

With the appropriate policy guidance from the General Assembly in place, and with a program design and development process informed by the same parties responsible for implementation, the Commission should be well positioned to oversee an efficient rollout of the new programs. We would expect to see the EPG continue to analyze the benefits of CHP and fuel switching programs, on bill financing, and targeted enhancements to existing EmPOWER programs to increase their market penetration.

That said, there are still a number of decisions that the Commission can make that will affect the trajectory of the savings realized. MEA recommends that the following items be considered when finalizing the programs and implementation.

Focus Programs on EEC savings rather than DR savings.

As discussed above, EmPOWER was originally conceived during a period of threats to the reliability of the power grid. While these threats have been somewhat mitigated due to the recession, increasing the State's DR capabilities continues to be a crucial area of investment. That said, when looking at the economic benefit realized by participants in EmPOWER programs, larger savings are attainable through a reduction of energy use rather than through cost savings associated with reductions from peak demand.

Fortunately, a number of programs that will provide electric usage reductions will also deliver electric demand reductions as well. CHP and fuel switching implementations will offset both electric energy and demand, and smart grid-based programs will have both benefits as well. As such, there will certainly be continued DR MW savings, even if the focus of the program shifts towards EEC programs.

Additionally, the impact of the State's electricity and natural gas usage on greenhouse gas emissions is due to energy consumption, not peak demand levels. Reducing greenhouse gas emissions as part of the GGRA strategy comes through using less electricity and natural gas. EmPOWER is a significant contributor to reductions envisioned by the GGRA, and both economic and environmental benefits will be increased by a focus on EEC programs.

Focus programs on commercial and industrial sectors.

Although numerous studies show that more savings are available at lower costs from the commercial and industrial sectors than from the residential sector, EmPOWER spending to date has been heavily weighted towards residential DR programs. In fact, roughly 75% of the cumulative planned EmPOWER spending through 2015 has gone or will go to the residential sector. As EmPOWER tries to increase the quantity of energy and natural gas savings, it is appropriate to focus efforts in the areas with the best "bang for the buck." Given the relative lack of spending and savings from the C&I sector, and the likely prevalence of less expensive savings, the EPG should consider increasing program development aimed at the C&I sectors and recommend to the Commission to increase future program spending in these sectors

Direct utilities to standardize program offerings, coordinate implementation, and centralize shared functions where possible.

The Commission has already taken a number of steps to increase the standardization of programs across utilities,[37] but additional steps should be considered to maximize the programs' effectiveness. They will also help keep administrative costs down by, for example, standardizing and leveraging marketing materials across utilities. Additionally, when a customer has both natural gas and electric service, evaluation and installation of measures for both fuels should be done in a coordinated fashion.

Implement banded incentive/penalty provisions.

A number of utilities have filed comments in EmPOWER hearings arguing that the current statute does not authorize penalties. To address this issue, the statute should be adjusted to enable the Commission to provide penalties as well as incentives, but should not make those penalties mandatory and should provide the Commission with discretion on how best to implement incentives and penalty provisions.

[37] Ibid, p 6-10.

While the expectation is that utilities will adhere to the statutory requirements of EmPOWER 3.0, there is still room for the Commission to provide rewards and disincentives for performance. Rather than offering any incentive or penalty for expected performance, the Commission could implement a banded incentive program. As an example, under this mechanism, performance between 80% and 120% of a utility's goal would not elicit any response. Performance below 80% would be penalized, while performance above 120% would be rewarded.

Require small electric cooperatives and municipal electric companies to participate in their "parent" utility's EmPOWER 3.0 offerings.

The current statute enables the Commission to direct small electric cooperatives and municipal electric companies to offer EEC programs to their customers. MEA recommends that the Commission require the "parent" utility (the major utility in which the small coop or muni is geographically located) to act as the program implementer for any small coops or munis in their geographic region.

Consider LMI program adjustments to reduce ratepayer impacts.

As cognizant as the General Assembly is about ratepayer impact writ large, it is particularly invested in minimizing the impact to low- and moderate-income ratepayers. Maryland can follow the example of other states and lower the EmPOWER surcharge on customers who qualify for the EUSP.

Maintain funds for pilot/early stage programs.

MEA commends the Commission for recently shifting the calculation of cost effectiveness to the sub-portfolio level, rather than at the individual program level. This allows a suite of programs to be analyzed together and offers the ability for more mature programs to help defray the costs of pilot and early-stage programs that may not yet be cost effective.

MEA is committed to implementing strategic pilot programs with its SEIF funding, but the funding available to MEA is of a different magnitude than that available to ratepayer-funded EmPOWER programs. The EPG should continue to develop promising programs that, while not yet cost effective on their own, may result in significant future savings when brought up to scale. MEA further suggests that the EPG, the utilities, and the Commission coordinate early-stage funding with MEA's SEIF funding to ensure that the best candidates for future reductions are being field tested. Combining the funding and expertise of both MEA and the utilities to push early-stage ideas to maturity will ensure that a robust pipeline of EEC and DR programs will be available for the next three year program cycle.

Ensure rate recovery for non-decoupled natural gas and electric utilities

With the exception of Potomac Edison, municipal and small cooperative utilities, all of Maryland's electric utilities (and the vast majority of electric distribution service revenue) are decoupled. This means they can recover their distribution costs independent of their actual electricity sales. However, some natural gas utilities are not decoupled. When designing the natural gas programs, the Commission should ensure that natural gas utilities do not face a reduction in revenue if there is a reduction in natural gas sales caused from EEC programs.

CONCLUSION

Maryland has made excellent progress and has achieved real results through the EmPOWER programs to date. Ratepayers will save billions of dollars as a result of programs already implemented, and they are positioned to save billions more in future savings. Credit is due to the many players that helped to advance the original legislation, that worked to design and implement the original programs, and that continue to push all parties forward.

Nonetheless, the progress to date, particularly in the electricity consumption programs, has been aided by tailwinds of the economic downturn and mild weather. When (not if) the economic picks back up, when (not if) electricity and natural gas demand increases, and when (not if) electricity and natural gas prices resume their upward trajectory, Maryland will face anew the challenge of how to best meet our future energy needs.

After a thorough review of program performance to date, and based on feedback received through our stakeholder review process, MEA concludes that electricity and natural gas goals should be set beyond 2015. Further, MEA concludes that demand-side resources are the least-cost, lowest-risk solution to meet the anticipated increase in energy demand, and that the State should maximize the implementation of these resources as the first means of meeting our increasing energy needs. We also note that these programs will by design bring economic benefits to ratepayers and the State, will help create new jobs, and will assist in meeting the emission reduction goals of the Greenhouse Gas Reduction Act.

MEA recommends additional investment in EEC programs for both electricity and natural gas and continued investment in DR programs for electricity. In this report, we have laid out a framework and path forward that will provide the necessary information to the 2014 General Assembly to make an informed decision about how to best set specific EmPOWER goals for electricity and natural gas usage and electricity peak demand beyond 2015.

Our hope is that EmPOWER 3.0 will determine an analytically rigorous achievable savings level, and provide the General Assembly with the information needed to set Maryland's demand-side resource policy in statute. Armed with sufficient legislative guidance on the EEC and DR policies, the Commission and EDCs will be better able to perform their role of designing and implementing effective programs that maximize ratepayer benefits.

We look forward to discussing this report and its contents with your Committees.

APPENDIX A

SUMMARY OF POTENTIAL STUDIES FOR NATURAL GAS, FUEL SWITCHING, AND COMBINED HEAT AND POWER

Due to the current favorable market conditions for natural gas, the ongoing economic incentives for electricity peak demand reduction, and the significant efficiency and greenhouse gas benefits of targeted direct natural gas use, MEA considered the potential for electricity and natural gas reductions in Maryland in a more cohesive manner. We expect that the potential electricity demand and usage reductions from implementing end-use fuel switching[38] and combined heat and power (CHP) programs will be of particular interest to future EmPOWER programs. In fact, the Commission has recently approved a number of CHP incentives and is currently reviewing several fuel switching program proposals. We expect these programs to become increasingly important to the future reduction strategies of EmPOWER.

To that end, MEA has worked with GDS Associates to produce several studies that investigated the potential to reduce natural gas use and investigate the potential of CHP and fuel switching programs to reduce electricity usage and demand. This section briefly summarizes key aspects and results of these reports. These documents were made available to the stakeholders and helped inform the feedback and recommendations contained in this report. Although the full documents are available on MEA's website[39] for reference, the planning process described in this document will substantially update these reports.

Maryland Natural Gas Energy Efficiency Potential Study

MEA worked with GDS Associates to prepare a report on natural gas energy efficiency potential in Maryland. The report was finalized in late 2011 and outlines a number of cost-effective gas programs that, in aggregate, could significantly reduce the State's consumption of natural gas. This report did not examine the potential for combined heat and power or fuel switching in the state.

Natural Gas Fuel Switching Potential in Maryland

GDS Associates produced a study that examines the potential for fuel switching programs in the state, and its impact on electricity usage and demand. The report was finalized in September 2012 and projects the potential of electricity usage and demand savings through end-use fuel switching from electric appliances to natural gas appliances.

Maryland Combined Heat and Power Market Assessment

This report was prepared by the U.S. DOE Mid-Atlantic Clean Energy Application Center and provides economic, market, jobs and carbon reduction information regarding applying CHP and combined cooling, heating and power (CCHP) systems in Maryland. It also assesses the impact of state incentives and rules changes on CHP and CCHP adoption rates, economic, environmental and employment impacts.

[38] In the context of this report, fuel switching is limited to end-use fuel switching, such as exchanging an electric water heater for a gas water heater.

[39] http://energy.maryland.gov/EmPOWER3/index.html

Maryland Natural Gas Energy Efficiency Potential Study

Background

This study estimates the technical, economic, achievable, and program potential for natural gas energy efficiency savings in Maryland over a 10 year period (2012 to 2021) and determines achievable potential for the years 2015 and 2020.

This report was prepared for MEA in November, 2011, by GDS Associates. The study screened for cost effectiveness using the Total Resources Cost (TRC) test for three achievable scenarios representing high (80%), medium (60%), and low (40%) market penetration levels. Over 140 measures were examined for cost effective potential savings across the residential, commercial, and industrial markets in Maryland.

The measures included:

- Energy efficient natural gas water heaters and related water heating measures such as low flow shower heads, faucet aerators, pipe insulation and heat recovery systems
- Energy efficient natural gas boilers and furnaces and related space heating measures such as pipe insulation, boiler maintenance and control, heat recovery and ventilation control
- Building envelope improvements including attic, wall and floor insulation, weatherization, proper air/duct sealing, and energy efficient windows
- HVAC controls including programmable thermostats and energy management systems
- Energy efficient cooking including commercial griddles, ovens, fryers and steamers
- Energy efficient clothes washers, dryers and commercial laundry systems
- Energy efficient industrial process heating technologies

Findings

For a 60% market penetration, total achievable potential for natural gas energy efficiency savings in Maryland by 2015 is approximately 4.5% of the forecasted retail natural gas sales in 2015 and 10% of the forecasted retail natural gas sales in 2020. The study did not consider any increases in natural gas use through fuel switching or CHP.

Summary of Maryland Natural Gas Efficiency Potential			
Achievable with Market Penetration of:	**80%**	**60%**	**40%**
2015 (MMBTU)			
Residential	5,196,489	3,948,109	2,665,691
Commercial	5,264,938	3,948,704	2,632,469
Industrial	971,460	728,595	485,730
Total; MMBTU Savings	11,432,887	8,625,408	5,783,890
% of 2015 Forecasted Annual Sales	**5.9%**	**4.5%**	**3.0%**
2020 (MMBTU)			
Residential	13,557,142	10,300,041	6,954,603
Commercial	11,846,111	8,884,583	5,923,056
Industrial	1,667,323	1,250,492	833,661
Total; MMBTU Savings	27,070,576	20,435,116	13,711,320
% of 2020 Forecasted Annual Sales	**13.5%**	**10.2%**	**6.6%**

Table 2 - Natural Gas Efficiency Potential

The study recommended further research to provide better primary data to estimate the potential savings. Those recommendations include:

- Baseline studies that report the (1) saturation of natural gas equipment, (2) the penetration of high efficiency natural gas equipment and (3) the penetration of energy efficient building practices for the residential, commercial and industrial sectors
- A detailed statewide forecast of natural gas sales and customers with a breakdown of forecast natural gas sales by sector, building type and end use
- Compile historical data on natural gas consumption, customers, and use per customer
- Developing a Natural Gas Energy Efficiency Measure Technical Reference Manual (TRM) that identifies natural gas energy efficiency measure savings, cost, and life-times

Natural Gas Fuel Switching Potential in Maryland

Background

The purpose of this study is to estimate the technical, economic, and achievable fuel switching potential associated with natural gas fuel switching in the residential and commercial sectors in the State of Maryland over a 10 year period (2013 to 2022).

This report was prepared in August, 2012, for MEA by GDS Associates. Natural gas fuel switching potential is defined as the potential over time of energy efficient natural gas equipment replacing standard electric equipment. The study screened for cost effectiveness using the TRC test for three achievable scenarios representing high (80%), medium (60%), and low (40%) market penetration levels. Measures were examined for cost effective potential savings across the residential and commercial markets in Maryland.

GDS estimated the natural gas fuel switching potential for the following measures:

- Residential Space Heating
- Residential Water Heating
- Residential Clothes Dryers
- Commercial Space Heating
- Commercial Water Heating

For this study, natural gas availability is defined as the percent of electric customers in Maryland that either currently possess a natural gas account yet maintain selected electric-consuming end-uses (e.g., electric space heating, water heating, and/or clothes drying equipment) or are on a natural gas main but are not connected. Based on a review of the BGE and Washington Gas fuel switching program filings made for EmPOWER Maryland, GDS estimates that approximately 6.5% of current electric customers are on a natural gas main, but not connected. It is assumed that this percentage will remain unchanged over the 10 year study period.

Findings

For a 60% market penetration, total achievable potential for fuel switching programs in Maryland by 2015 is approximately 0.25% of the forecasted retail electricity sales in 2015, and 0.97% of the forecasted retail electricity sales in 2020. It is instructive to note that the primarily limited factor in this analysis is the availability of natural gas. The 0.97% reduction of sales is achieved through the 6.5% of electric customers who are on gas mains but do not have connections. If there were a concerted effort to increase access to natural gas service, the savings from this program would increase correspondingly.

Summary of Maryland Natural Gas Fuel Switching Potential			
Achievable with Market Penetration of:	**80%**	**60%**	**40%**
2015 (MWh)			
Residential	165,873	62,236	41,749
Commercial	108,160	81,120	54,080
Total MWh Savings	274,033	143,356	95,829
% of 2015 Forecasted Annual Sales	**0.48%**	**0.25%**	**0.17%**
2020 (MWh)			
Residential	719,425	373,597	249,214
Commercial	288,427	216,321	144,214
Total MWh Savings	1,007,852	589,918	493,429
% of 2020 Forecasted Annual Sales	**1.65%**	**0.97%**	**0.81%**

Table 3 - Fuel Switching Potential

Maryland Combined Heat and Power Market Assessment

Background

The purpose of this report is to provide economic, market, jobs and carbon reduction information the results from installation of combined heat and power (CHP) and combined cooling, heating and power (CCHP) systems in Maryland. It also assesses the impact of state incentives and rules changes on CHP and CCHP.

The report was prepared by the U.S. DOE Mid-Atlantic Clean Energy Application Center in October 2010.

At the time of the report, Maryland's entire CHP installed base consisted of 20 sites totaling 828 MW. 697 MW are installed in five sites covering chemicals, pulp and paper, primary metals and solid waste-to-power facilities. Of the 828 MW installed, 557 MW of CHP was installed prior to 2000. The remaining 272 MW of CHP installed after 2000, with the last being installed in 2008.

The report estimated 10 and 20 year Technical Market potential for CHP in Maryland Technical potential. The Technical Market Potential projection does not consider screening for economic rate of return, or other factors such as ability to retrofit, owner interest in applying CHP, capital availability, natural gas availability, and variation of energy consumption within customer application/size class.

The study included a number of hypothetical incentives including:

- Capital Grant Program: a $5 million cap on the capital reduction incentive and no limitation on installed capacity.
- Alternative Energy Credit Program: This program would add a Tier III to the current Maryland Renewables Portfolio Standard covering high efficient clean power including CHP and waste heat-to-power that meet local air emissions regulations and meet a minimum annual efficiency requirement of 65%. The model assumed a $10/MWh credit paid over a seven year period.
- 0% Loans: In Maryland, a qualified commercial, institutional, or industrial entity with end-use energy efficiency projects including CHP is eligible for interest-free loans and grants through the Clean Energy Solutions Capital Investment (CESCI) program.
- Permit-by-Rule regulation: Currently, CHP plants in Maryland must undergo new source review. A long-term goal would be to create a Maryland "Permit by Rule" regulation that would apply to all CHP systems meeting the requisite EPA/DEP emissions requirements resulting in substantial time and applications cost savings.
- Export: Export potential was developed based on power limited facilities. These facilities have large thermal loads that can be serviced by CHP systems; however, to meet these thermal loads, excess electricity must be generated. This scenario assumes excess electricity is sold at wholesale market rates.

Findings

The Technical Market potential was used to create a set of market penetration estimates based on an ICF[40] CHP Market Model. This model allowed assumptions for policy measures (e.g., rebates, loan rates), market segmentation, prices, savings, and other economic factors to determine CHP projections with and without export of excess electricity. Some of the model's key results were:

Summary of Maryland Combined Heat and Power Potential				
"With Export" 10 Year (2020) Results	**Base Case**	**$900/kW Capital Incentive**	**Multiple Measures 1***	**Multiple Measures 2****
Economic Potential (MW)	249	1,118	674	556
Market Penetration (MW)	206	914	538	443
Electricity Avoided (MWh)	1,592,000	6,914,000	4,031,000	3,318,000
% of 2020 Electricity Forecast[41]	**(2.2%)**	**(9.7%)**	**(5.7%)**	**(4.7%)**
Incremental Onsite Fuel Use (MMBTU)	8,588,000	37,814,000	22,341,000	18,627,000
% of 2020 Natural Gas Forecast	**4.2%**	**18.6%**	**11.0%**	**9.2%**

Table 4 - Combined Heat and Power Potential

* - Includes $450/kW capital incentive, 0% interest loan, and permit by rule regulation

** - includes $10/MWh AEC, 0% interest loan, and permit by rule regulation

[40] ICF – ICF International was the Technical support contractor for the U.S. DOE
[41] Total sales from PSC Ten Year Plan 2011-2020

APPENDIX B

REVIEW OF OTHER STATE'S ENERGY EFFICIENCY AND CONSERVATION PROGRAMS

MEA examined the program portfolios of states with very successful energy efficiency programs and found only subtle differences in energy efficiency program offerings. The suite of energy efficiency programs administered by Maryland's utilities is largely consistent with the best practices of states with very successful energy efficiency programs. However, differences exist in the overall structure of the program framework and within the details of individual programs.

A June 2011 report from the American Council for an Energy-Efficient Economy (ACEEE) entitled "Energy Efficiency Resource Standards: A Progress Report on State Experience"[42] identified key strategies of very successful states to achieve high savings. These strategies were assembled from in-depth interviews with seasoned energy practitioners from all the major energy efficiency programs around the country, and only the most significant strategies were included in the ACEEE report:

- Increasing program funding, considered a fundamental requirement in order to achieve greatly enhanced savings impacts.
- Identifying and prioritizing targeted technologies and end uses, especially those that contribute significant energy savings.
- Developing programs capable of delivering "deep" savings first, and then seeking "broad" participation, meaning programs are designed to capture the most possible savings per customer. This generally means customers must enact more measures, with greater incremental gains, to achieve deep savings.
- Creating programs for new and emerging technologies, including conservation voltage reduction and combined heat and power.
- Extending portfolios with programs to reach new and under-served markets, including multifamily buildings.
- Taking on innovative advertising and promotional channels and increasing incentives to raise customer participation.

Many successful states have been operating energy efficiency programs in some form for 20 or more years, and program administrators understand what works. Residents and businesses in these established states are familiar with the concept of energy efficiency thanks to years of program marketing, feedback, and evaluation. By contrast, Maryland went through a period of time when no efficiency programs were administered by the utilities, and the State essentially started from scratch in 2008. Although program experience and maturity only happens over time, Maryland must take action to create a climate for a dramatically expanded set of energy efficiency efforts that result in significant energy saving.

[42] http://aceee.org/research-report/u112

According to the ACEEE report, Maryland achieved just over 0.5% electricity savings compared to retail sales in 2010, the first full year with programs in place. Maryland was one of only two states out of twenty in the country in that year achieving less than 80% of their near-term target. Nine states, including Washington, Connecticut, and Massachusetts, achieved more than 1% annual savings compared to sales, and the top-performing state in the country, Vermont, achieved more than 2% savings.

Program progress improved in 2011, and new programs were approved to be implemented in 2012-2014. As part of the 2012-2014 program development process, the Commission and the utilities have implemented pilots for several of these recommendations, such as CHP and conservation voltage reduction, but Maryland should look to the strategies outlined in the ACEEE report for additional improvement to the utility programs.

Given that Maryland administers many of the same programs as the leading states, there must be other structural differences that have led to our relatively lower performance. One of the clearest divergences is in the area of overall program funding. In 2011, the Maryland utilities spent about $19 per capita on EEC programs, exclusive of DR. In comparison, Connecticut is projected to spend $43, Vermont will spend $70, and Massachusetts will spend nearly $83 per capita on energy efficiency programs in that same year.[43] There is a significant relationship between the amount of per capita spending on energy efficiency programs and the energy savings produced by high performing states. In 2010, Connecticut and Massachusetts achieved a 1.4% electricity savings compared to sales, while Vermont achieved more than 2% savings.

While it is important to be prudent when spending public dollars, spending needs to be at a level for an energy efficiency program to gain traction in the market and produce the energy and dollar savings for a broad population of consumers across the state at a cost that is in most cases less than the cost of electricity.

Energy Efficiency Spending of Maryland Utilities					
	2010 (Forecast)	**2010 (Actual)**	**2011 (Forecast)**	**2011 (Actual)**	**2012 (Forecast)**
PE	$15,880,000	$6,540,000	$16,930,000	$12,448,000	$21,616,000
BGE	$47,500,000	$57,660,000	$58,760,000	$70,181,000	$73,332,000
DPL	$6,700,000	$2,730,000	$7,842,000	$4,434,000	$9,393,000
Pepco	$17,040,000	$9,950,000	$21,362,000	$14,376,000	$37,822,000
SMECO	$5,230,000	$4,670,000	$5,290,000	$7,226,000	$6,623,000
Total	$92,350,000	$81,550,000	$110,184,000	$108,665,000	$148,786,000
Per Capita	**$16.20**	**$14.31**	**$19.33**	**$19.07**	**$26.11**

Table 5 - Energy Efficiency Spending in Maryland

[43] Northeast Energy Efficiency Partnerships. *New England Energy Efficiency Snapshot: Energy Efficiency Policy By the Numbers*. Spring/Summer 2011.

Energy Efficiency Spending by Other State's Utilities[44]				
	2010 Per Capita Spending	**2010 Energy Savings (MWh)**	**2010 cents / kWh Saved**	**2010 Energy Savings as % of Sales**
Maryland	$14.31	387,452	2.13	0.6%
Massachusetts	$46.28	625,000	3.80	1.4%
Vermont	$60.20	114,000	3.30	2.0%
Connecticut	$48.30	423,000	4.08	1.4%

Table 6 - Energy Efficiency Spending by Other State's Utilities

It is important to note that different states measure cost effectiveness in different ways. While other states may spend more per capita dollars on energy reduction programs, they also authorize programs that spend more per kWh of reduction than in Maryland. Based on the data above, and assuming a 10 year measure life, in 2010, Maryland spent approximately 2.1 cents for every kWh of reductions. By contract, Massachusetts, Vermont, and Connecticut spent 3.8 cents, 3.3 cents, and 4.1 cents, respectively. While these costs are all significantly below the avoided cost of electricity supply, it warrants comment that the utility commissions in those states weigh cost and savings differently than Maryland. Connecticut, for example, authorized a suite of programs that are, in aggregate, roughly twice as expensive on a per-kWh basis as Maryland, but which still deliver savings relative to purchasing electricity from the power grid.

For 2012 and 2013, Massachusetts, Vermont, Rhode Island, and Connecticut are the clear leaders in per capita spending of the Northeast states. Of the other states, Maryland's per capita spending is about average, growing from $21 in 2012 to $29 in 2013. However, Maryland's goals are on par with – or more aggressive than – these states which are spending double or triple per capita.

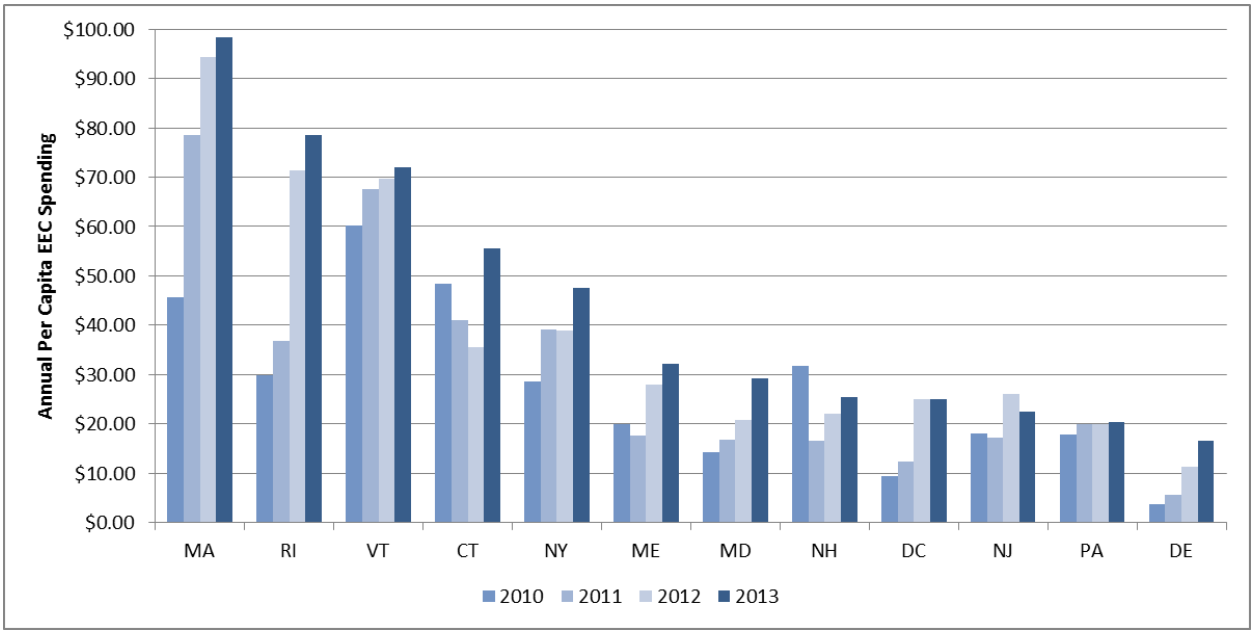


Figure 8 - Per Capita Energy Efficiency in the Northeast, 2010-2013

[44] Ibid.

Of course, there are a number of states spending about the same as or less than Maryland on energy efficiency, including Pennsylvania, Delaware, New Hampshire, New Jersey, and the District of Columbia. However, with the exception of Pennsylvania, none of these states have binding electricity savings goals for 2012, and many of their energy efficiency programs have an uncertain future. There is a clear connection between the amount of spending on efficiency programs and the success of the programs.

Northeast States EEC Spending			
	2012 Per Capita Spending	**2012 Binding Goal[45]**	**2013 Per Capita Spending**
Massachusetts	$95	2.4% of electricity sales, 1% of gas sales	$97
Rhode Island	$71	1.7% of electricity sales 0.6% of gas sales	$79
Vermont	$69	2% of electricity sales	$72
Connecticut	$36	No binding goal	$55
Maryland	$21	2.28% of electricity sales	$29
Delaware	$11	No binding goal	$17
District of Columbia	$25	No binding goal	$25
New Hampshire	$21	No binding goal	$25
New Jersey	$25	No binding goal	$21
Pennsylvania	$19	1% of annual electricity sales	$20

Table 7 - 2012 and 2013 Per Capita Spending Comparison

Looking Forward: Massachusetts 2013-2015

Massachusetts recently released its 2013-2015 energy efficiency plan, under which they expect to invest $2.0 billion and realize $8.92 billion in economic benefits to the state just from measures installed in those three years. Its savings goal increases substantially over the already aggressive targets from the previous years, as it is now working to save the equivalent of 2.55% of statewide electricity sales and 1.12% of statewide gas sales annually. Goals were analytically set based on savings reductions found in the most recent EMV findings. While this is an extremely aggressive target – much more aggressive than Maryland's EmPOWER Maryland goal[46] – program administrators feel it is fully achievable and will deliver very high net economic benefits to the state.

Projected program offerings in Massachusetts continue to be diverse and wide-ranging, with a large focus on maximizing savings from commercial and industrial customers. The 2013-2015 plan continues the successful practice of targeting specific C&I customer segments. For the residential sector, Massachusetts will begin a new initiative to reach economically challenged neighborhoods. They will also redouble efforts to publicize and educate residents and businesses about the programs and benefits of investing in energy efficiency.

[45] Source: November 2012 report from the Northeast Energy Efficiency Partnership (NEEP), "A Regional Roundup of Energy Efficiency Policy in the Northeast and Mid-Atlantic States"

[46] To hit their 10% of the 15% EmPOWER goal, Maryland utilities must achieve 264,000 MWh each quarter from Q3 2012 to Q4 2015. This equates to 1,056,000 MWh of savings each year, which is 1.6% of statewide annual projected sales in 2015. Utilities achieved 202,900 MWh of savings in Q2 2012.

Of particular note are the budget and savings numbers that Massachusetts expects to achieve over the next three years. Program budgets reflect the cost of achieving all cost-effective energy savings. From 2013-2015, Massachusetts utilities expect to spend a total of $1.5 billion on electricity reduction programs and an additional $523 million on gas efficiency programs. As shown in the graphs below, budgets have steadily increased since 2010. In each year from 2013-2015, program administrators will spend well over $650 million on programs. In comparison, Maryland utilities have budgeted $200 million in 2012, $208 million in 2013, and $267 million in 2014.[47]

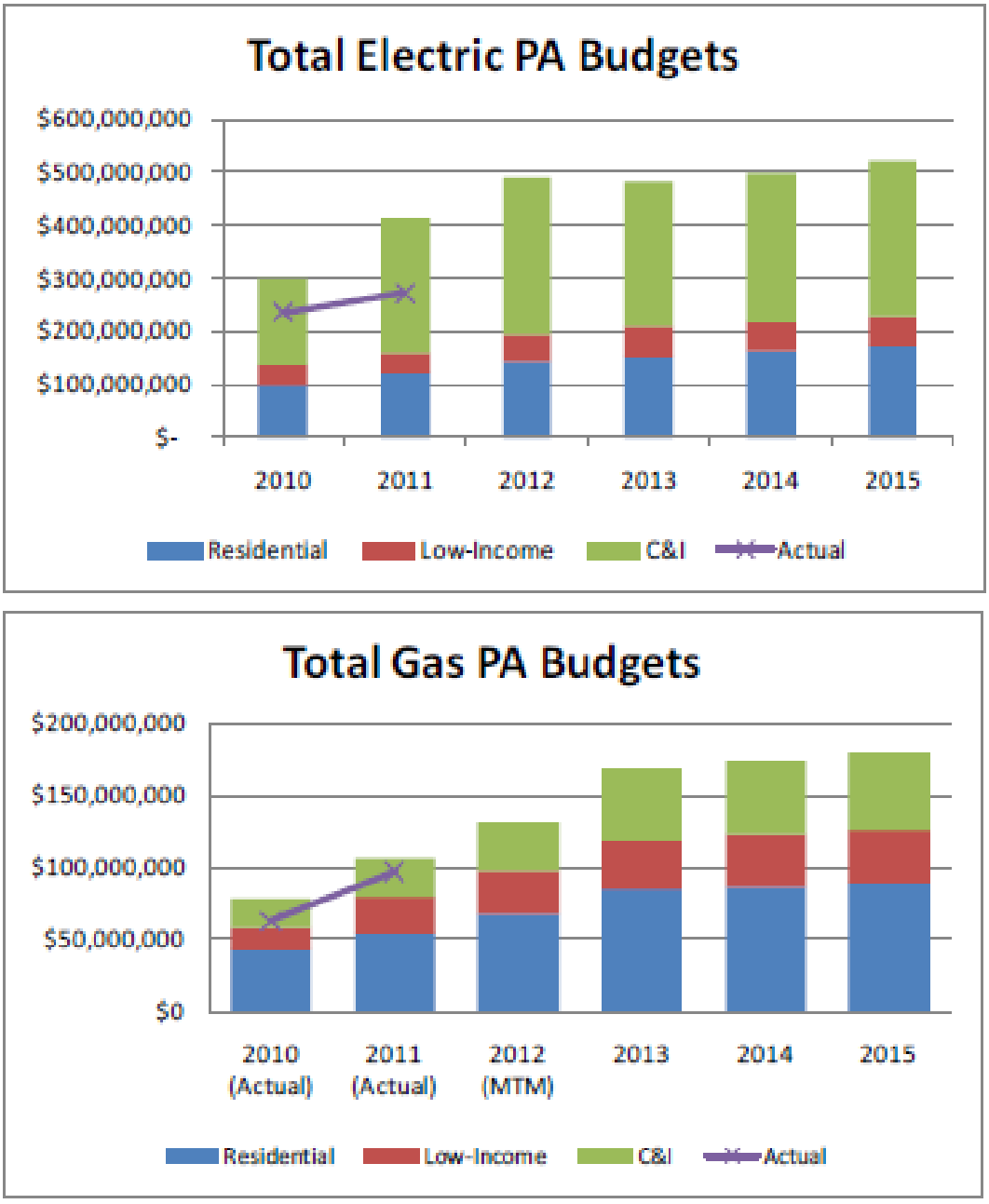
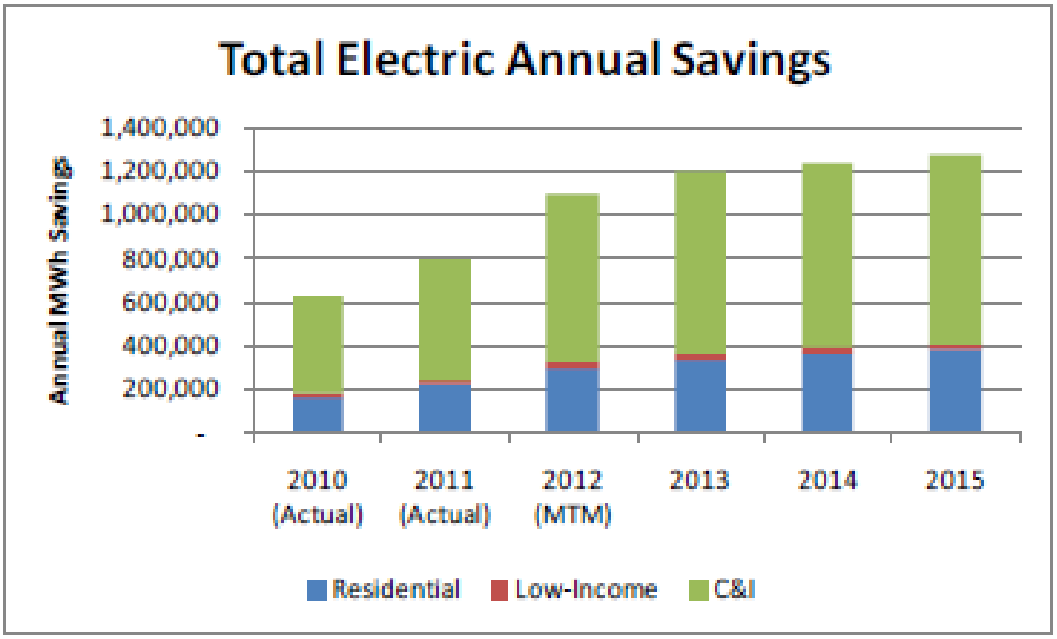


Figure 9 - MA Electric and Gas EEC Budgets

[47] Data from utility EmPOWER filings for 2012-2014 programs

Massachusetts expects to save approximately 1.2 million MWh and 25 million therms annually beginning in 2013. This is approximately equivalent to the *total* electricity savings achieved by Maryland's utilities from 2009 to mid-year 2012.



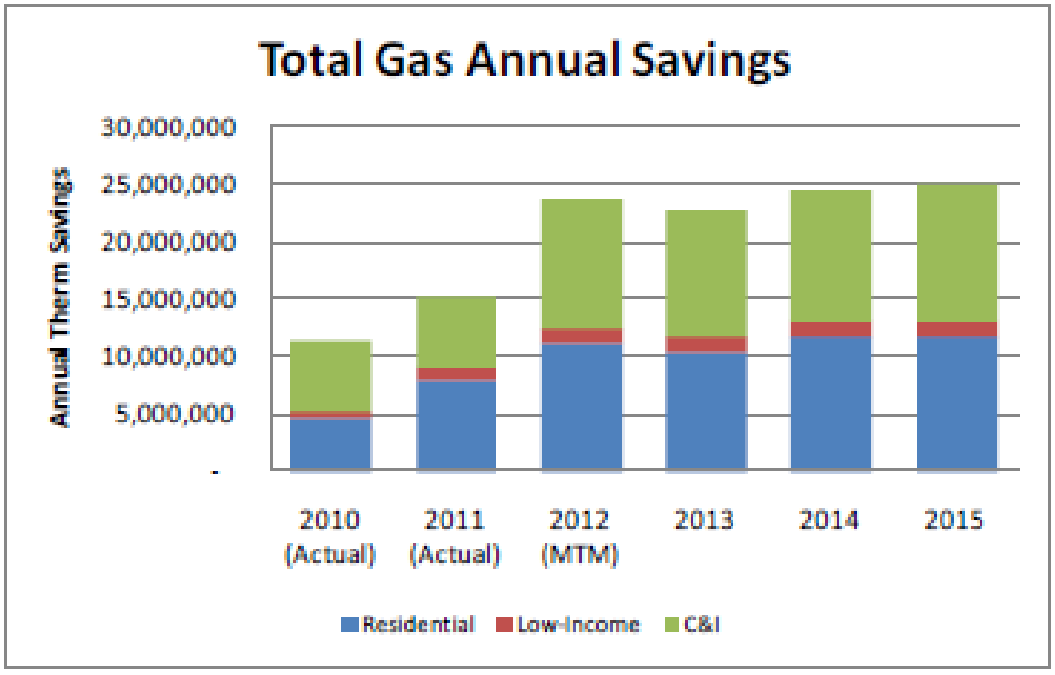


Figure 10 - MA Electric and Gas Annual Savings

Massachusetts recovers costs for the program through a systems benefit charge of 2.5 mills (0.25 cents) per kWh for all electric customers (excluding those who are served by a municipal lighting plant) that has been in place for more than a decade. This accounts for 28% of funding for 2010-2012. The Energy Efficiency Reconciliation Factor (EERF) was approved as part of their Green Communities Act and authorizes recovery for additional program costs from electric customers in proportion to the costs of the programs for their sectors (residential, commercial, and industrial). The EERF provides 58% of funding for 2010-2012. The remainder of the program funding comes from Regional Greenhouse Gas Initiative auction proceeds (11%) and forward capacity market payments (3%).

APPENDIX C

HOW TO CONSTRUCT EMPOWER GOALS BEYOND 2015

Programs that are aimed at reducing electricity consumption face more challenges than those aimed at reducing electricity peak demand. They have different reduction potential across sectors, fewer available market-based incentives, and face behavioral factors that strongly influence program performance. These additional challenges have been reflected in the results: EEC programs are falling behind their targets, while DR programs are meeting their targets.

While the current statute orders natural gas utilities to implement cost effective EEC programs, those programs have not faced the same level of focus from the Commission over the past five years as electricity programs. As such, they may face certain start-up implementation challenges that electricity programs have already overcome.

Although it is critical to analyze all the EmPOWER programs (electricity consumption, electricity peak demand, and natural gas consumption) as a cohesive, integrated policy, the factors discussed above suggest that it is best to separately analyze each program's reduction goal characteristics when considering whether to set goals beyond 2015.

These characteristics can be broadly grouped into three categories:[48] the method for setting the reduction goal, the way the program defines cost effectiveness, and other aspects of each program's goal. The goal can be constructed by selecting one or more characteristics from each group. Some of these recommendations will be mutually exclusive for a particular program, such as setting a specific EEC reduction goal and setting an annual EEC reduction goal. However, multiple characteristics can be paired together for each program to formulate an overall structure for EmPOWER reduction goals beyond 2015.

This appendix will not suggest a composite goal per program, or even a single methodology for all EmPOWER policies. Rather, it will present the characteristics of potential program reduction goals that have been gleaned from program experience in Maryland and other states that has been shaped by specific feedback from other state agencies and our broad and diverse stakeholder group. Although each program goal could be constructed from the same group of characteristics, a particular grouping that may make sense for electricity usage may not make sense for natural gas efficiency programs.

We do not anticipate that all stakeholders will agree on the best characteristics for a given program, or even be consistent across programs. However, by presenting a broad array of options, we hope to spark productive debate in advance of making final recommendations to the Senate Finance Committee and House Economic Matters Committee. The Final Draft of this report will be expanded to include comments from stakeholders on these options, and that feedback will shape our final recommendations.

In this section, any specific figures are illustrative only and do not represent the current projections or recommendations of MEA or the PSC.

[48] We recognize there are slight nuances within the options, such as using a single year for a baseline or a multiple year average for the baseline. For simplicity, we only present the high level detail here.

Reduction Goal Methods

Do Not Revise Existing Targets Beyond 2015

It is important to note that the current EmPOWER statute maintains the existing electricity usage and demand reduction targets beyond 2015. This option would leave those targets in place. This does not imply all programs would cease to exist after 2015, but rather that program targets would not be revised when measuring future program performance.

Annual Percentage Reduction of Sales – "Top-Down" Approach

In this option, EmPOWER goals would be tied to a specific reduction of total sales in the state. For example, when applied to the electricity usage goal, if 2015 sales were 70,000 GWh, and the law specified a 1% annual reduction of previous year's sales, the 2016 sales goal would be 69,300 GWh. Achievement of the goal would be based on a final accounting of the annual sales and would be influenced by non-programmatic factors such as the economy and weather.

Annual Reduction based on Percentage of Sales – "Bottom-Up" Approach

This is a slight variation of the previous where goals would be tied to implemented measures rather than overall sales. In this instance, a 1% reduction goal based on sales of 70,000 GWh would require implementation of 700 GWh of program reductions. As this is a bottom up approach, it specifically excludes external influences on electricity sales from the general state of the economy and weather. For instance, if utility programs demonstrate 700 GWh of verified savings, but the final annual sales were 69,600 GWh due to an extremely hot summer, the goal would have been deemed met.

Specific Reduction Goal in Specific Year

In this option, a specific top down or bottom up goal would be assigned to a particular year, such as a 10% reduction from 2015 sales by 2020. Following along the previous example, the top down approach would require a final 2020 sales figure of 63,000 GWh.

Cost Effective Definitions

Do Not Define Cost Effective in Statute

The current statute includes reference to cost effectiveness, but does not specifically define what cost effective is. Rather, the statute directs the Commission to determine the definition of cost effectiveness in their regulatory proceedings.

Define Cost Effective in Statute Based on Industry-Standard Tests

Numerous cost effective tests, such as Total Resource Cost Test, Program Administrator Cost Test, Ratepayer Impact Measure Test, Participant Test, and Societal Test[49] have been used at various times in EmPOWER proceedings. The statute could specify which test or tests to apply, and define a range of results that are deemed cost effective. These could be applied on an individual program level, a sector level, or a portfolio level.

Define Cost Effective in Statute Based on Avoided Cost

[49] More information is available in the California Standard Practice Manual at http://www.energy.ca.gov/greenbuilding/documents/background/07-J_CPUC_STANDARD_PRACTICE_MANUAL.PDF

In this option, any program that saves a kWh at a cost lower than the avoided cost of electricity would be defined as cost effective. The avoided cost could be defined in statute in any manner of ways. Potential examples would include the customer retail rate, the avoided cost of generation and transmission (i.e. retail rate excluding distribution), or the wholesale price of delivered electricity (i.e. the wholesale cost including energy, capacity, transmission, and other PJM charges). Alternatively, the statute could stay silent on the definition of avoided cost and allow the Commission to define it in regulatory proceedings.

Other Characteristics

Weather Normalization

Weather has a substantial influence on the amount of electricity consumed. While current goals for peak demand are weather normalized, goals for electricity consumption are not. Under a weather normalization mechanism, the annual goal would be adjusted up or down based on the weather from that period. If the electricity usage goal was adjusted to be weather normalized, in the "Top-Down" approach example the final sales figures of 69,700 GWh would be adjusted to eliminate the impact of the hot summer. If the weather normalized sales figure was 69,300, then the top down goal would be hit. Note that this only eliminates the impact of weather, and not other effects such as economic activity.

Baseline Year

The current targets use 2007 as the baseline year for consumption reductions. This could be maintained, or the baseline year could be updated to something closer to the new goals. For example, 2014 could be used as the baseline for 2020 goals. This would account for program performance up to that point and enable the future goal to be measured on future performance. The baseline year definition could also be expanded to include a multiple year trailing average that would smooth out unusual influences that may disproportionally impact a single year's results.

Per Capita Metrics

EmPOWER targets are currently defined on a per capita basis. Although this has the benefit of adjusting targets for population growth, it faces challenges as population is only officially determined once a decade during the federal census. Further, it assumes there is a direct relationship between energy usage and population which does not always hold true.[50] While the Maryland Department of Planning can provide population forecasts, they are subject to adjustments. Recent adjustments to current EmPOWER programs from updated population forecasts resulted in some utility targets being substantially increased while other utility programs were substantially reduced. Shifting away from a per capita metric would eliminate these issues.

[50] Total energy usage in certain utility territories can be heavily influenced by commercial and industrial customers. If a large industrial customer were to dramatically reduce their usage, it would impact the per capita usage figure even if individual citizens did not change their behavior.

APPENDIX D

INITIAL STAKEHOLDER COMMENTS

The following is a summary of stakeholder comments that MEA received regarding the June 29, 2012, meeting on EmPOWER Planning for 2020. This document is MEA's interpretation of the comments and is provided only for the stakeholders' convenience. We suggest viewing the original author's comments on our website[51] for a more detailed understanding of their positions.

American Council for an Energy-Efficient Economy (ACEEE)

ACEEE recommends extending electricity EmPOWER targets beyond 2015 and introducing natural gas targets. Specifically, they suggest following 24 other states that currently base targets on annual sales without a per capita adjustment. ACEEE suggests annual reduction targets of 1.5% for electricity sales and 1% for natural gas sales, using the average of the previous two years as the baseline for each new program year target. If natural gas programs are started, they encourage joint electric and gas programs when appropriate to reduce costs or increase savings, with each utility getting credit for their fuel (gas or electricity) savings. ACEEE references studies that show that energy efficiency cost less per kWh than new generation, and high levels of investment can mitigate increasing energy prices in the long run.

Baltimore Gas and Electric (BGE)

BGE reiterates comments it has made before the Public Service Commission that recent adjustments to population and forecasted usage has resulted in the current EmPOWER metrics being skewed, with some utilities facing reduction targets of 10% and 17% while others face reduction targets of 2% and 2% for energy and demand, respectively. BGE recommends the future EmPOWER electric energy metric be shifted to a "bottom up" approach targeting 0.5% annual reductions from 2014 weather normalized sales to avoid the per capita issues. They do not recommend additional electric demand reduction programs, citing market saturation in areas served by utilities and an active third party provider market. BGE recommends that no natural gas targets be set as other program such as CHP and fuel switching may drive increased natural gas use, but they do recommend encouraging incentives for the purchase of energy efficient natural gas appliances. Finally, BGE recommends language in the law on cost recovery be reinforced, and suggests that utilities, rather than state agencies or the free market, are the appropriate entity for managing and delivering the EmPOWER incentive programs with market-based implementation and installation of the actual measures.

Joint Comments by Chesapeake Climate Action Network, Environment Maryland, Interfaith Power and Light, MD League of Conversation Voters

The Joint Commenters (JC) suggest that reduced funding relative to other high performing New England and Mid-Atlantic states contributes to Maryland's lack of success in achieving its electricity usage reduction goals. JC suggests several legislative changes, including extending EmPOWER targets to 2020 for electricity and natural gas, mandating an "all cost-effective"

[51] http://energy.maryland.gov/EmPOWER3/index.html

approach as opposed to a top-down consumption approach, creating a public benefits fund to pool resources and reduce administrative overhead, and increasing the share of RGGI proceeds to energy efficiency to at least their original statutory level of 46 percent. They also suggest regulatory changes that reward exceptional utility program performance while penalizing poor performance, broaden the PSCs cost-effectiveness test to include avoided costs such as RGGI and RPS compliance, and make on-bill financing available to ratepayers.

Columbia Gas of Maryland

Columbia Gas of Maryland could support the proposal of a statewide natural gas energy efficiency program provided that certain conditions are considered that would make the offering of such programs beneficial to all ratepayers and the utilities. They are concerned that certain local distribution companies (LDCs) do not have a Revenue Normalization Adjustment[52], and would want to be able to recover costs due to lost sales from efficiency programs. Columbia also notes that smaller LDCs may face different resource and budget challenges than larger utilities and could see value in exemptions or modified programs for smaller LDCs.

Columbia Gas does not support specific energy savings targets for natural gas usage, but does support programs that encourage the wise use of natural gas, including end-use fuel switching. They acknowledge that reporting requirements are necessary but recommend that those requirements be developed with an eye towards minimizing implementation costs, particularly for small LDCs. Finally, Columbia Gas offered several specific comments and recommendations on the GDS Natural Gas Potential Study report, noting that the report did not include recovery of lost revenue from throughput reduction.

Maryland Power Plant Research Program

PPRP agrees that MEA's projection of program performance beyond 2015 may be optimistic, and suggests that market forces may make sustained performance difficult with less "low hanging fruit" available and low conventional energy prices. If EmPOWER goals are extended through 2020, PPRP suggests that they be based on a revised baseline that incorporates achievements of the initial programs and continue to be measured on a per capita basis. They also suggest effectively utilizing technology improvements related to the smart meter deployment. PPRP suggests more focus be placed on energy reduction programs rather than demand reduction programs due to higher market incentives that already exist for demand side programs. Finally, PPRP recommends expanding targets to natural gas program as well, but notes the importance of calculating energy savings net of fuel switching impacts and suggests looking at program design by California, Connecticut, and Massachusetts.

Northeast Energy Efficiency Partnerships (NEEP)

NEEP recommends extending electricity EmPOWER targets beyond 2015 and introducing natural gas targets. They also recommend recalibrating both current and future EmPOWER targets away from a per capita measurement and towards an "all cost effective" approach utilized by Massachusetts, Rhode Island, and Vermont. NEEP also suggests a minimum annual performance level to be refined by further analysis, but around 1.5% for electricity and 0.75% for natural gas. They suggest modifying the cost effective test to include other energy benefits

[52] Revenue Normalization Adjustment is similar to electricity decoupling and allows a distribution utility to recover their authorized costs regardless of sales volume.

such as environmental and RPS costs, to be applied to the program level rather than measure level, and to consider the Utility Cost Test as a supplement to the Societal Cost Test or the TRC. NEEP supports a structured performance incentive to reward achievement, and suggests increasing overall program spending to achieve higher results. Finally, NEEP recommends coordinating programs with building energy codes and appliance standards and supports common EM&V protocols.

The P3 Group

The P3 Group raises concerns about curtailment service providers failing to deliver committed DR resources and asks whether the Maryland PSC should require a measurement and verification system independent of PJM. They also point out discussions at EPA that suggest that some forms of DR are behind the meter diesel generators which tend to generate high emissions on the hottest days of the year. The P3 Group asks whether EmPOWER participants should be required to disclose the type of technology that is being used to deliver the DR. Finally, they ask whether electricity received from behind the meter generation be required to comply with the state's RPS.

Sierra Club

Sierra Club recommends extending electricity EmPOWER targets beyond 2015 and introducing natural gas targets. They also recommend implementing an incentive and penalty program based on performance. Sierra Club suggests a blend between an "all cost effective" approach and long term targets to prevent program development stagnation over the long term.

Terra Logos

Terra Logos comments that the historic subsidization of conventional power production using public funds and the externalization of environmental degradation and health impacts serve to artificially lower the cost of conventional energy and make it more challenging for clean power and fuels to compete. Terra Logos recommends that Maryland include the hidden costs of conventional power production and the non-financial benefits of clean energy production when developing plans for EmPOWER 2020.

APPENDIX E

DRAFT REPORT STAKEHOLDER COMMENTS

The following is a summary of stakeholder comments that MEA received regarding the Draft Report to the Senate Finance Committee and House Economic Matter Committed published September 2012. This document is MEA's interpretation of the comments and is provided only for the stakeholders' convenience. We suggest viewing the original author's comments on our website[53] for a more detailed understanding of their positions.

American Council for an Energy-Efficient Economy (ACEEE)

ACEEE supports a "bottom up" approach to goal setting based on percentage of sales, and suggests an annual goal of 1.5% for electricity. ACEEE also supports including natural gas goals as power of EmPOWER, and suggests an annual reduction goal of 1.0% for natural gas usage. The suggest setting these goals in legislation based on recent experiences in Maryland and other states. ACEEE also recommends defining a cost effective test in statute based on industry standard tests. They comment that while the Maryland PSC uses a "modified and very strict" version of the Total Resource Cost (TRC), they make adjustments that are not in line with the practices of other states. As an alternative, ACEEE recommends using a Utility Cost Test rather than the current modified TRC test. Finally, ACEEE suggests a rolling baseline using the previous two or three years of sales to allow for program goals to adjust.

Baltimore Gas and Electric (BGE)

BGE reiterates their comments that electricity goals should be set at an annual energy reduction of 0.5% from a 2014 weather normalized baseline for the years 2016-2020. They comment that the Natural Gas Energy Efficiency Potential Study may overstate the achievable savings, even in the lowest 40% market potential penetration goal, and that the report does not include a feedback mechanism from Fuel Switching and Combined Heat and Power (CHP) programs. BGE points out that MEA erred in stating that BGE has filed a fuel switching program with the PSC. Rather, they have developed a draft version for comments but it has not filed. MEA apologizes for this oversight. Regarding the Fuel Switching Potential Study, BGE comments that the report may have overstated the achievable savings of the policy given the necessary investments to convert to natural gas.

BGE states they are a strong supporter of CHP technology and anticipates receiving approximately 10 MW of projects in their current CHP RFP cycle. Notwithstanding that, they have concerns about the Combined Heat and Power Potential Study. Specifically, they note that exporting excess electricity generation at wholesale market rates is not in the spirit of EmPOWER programs which encourage customers to use energy more effectively. BGE also takes issue with the potential market penetration figures for a $900/kW incentive that project over 900 MW of CHP by 2020. They note that projections from BGE and PHI using the same $900/kW incentive are projected to incent 10-20 MW per year, or between 80-160 MW by 2020.

[53] http://energy.maryland.gov/EmPOWER3/index.html

BGE notes that they would have to increase spending by a factor of four to match the spending in Massachusetts' program, and are sensitive to bill impacts of EmPOWER charges. They also find that establishing penalties for poor performance under the current EmPOWER structure is not justified as results are affected by influences out of the utility's direct control.

Joint Comments by Chesapeake Climate Action Network, Environment Maryland, Interfaith Power and Light, MD League of Conversation Voters

The Joint Commentors (JC) suggest utilizing a "bottom up" goal approach for both electricity and natural gas. They suggest setting reduction requirements through a combination of long term goals based on all cost effective measures, and short term goals based on percentage of sales. JC recommend defining cost effective as a total resource cost test that fully incorporate the benefits and avoided costs of proposed programs and portfolios. As examples, the JC list benefits such as environmental, public health, reliability, and other non-energy benefits. They suggest measuring these benefits against the avoided wholesale price of delivered electricity. The JC suggest moving away from per capita metrics and that a bottom up approach would avoid the need to perform weather normalization.

The JC suggest that additional spending will be needed to meet their more aggressive goals, and propose increasing the EmPOWER surcharge, increasing the RGGI auction allowance dedicated to energy efficiency programs, or creating a public benefits charge to pool the State's financial resources into a single funding mechanism. They also suggest creating incentives for exception utility performance and implementing penalties for poor performance. Finally, they recommend exploring on-bill financing as a method to increase ratepayer participating in existing programs.

In their supplemental comments, the JC suggest the State set a minimum goal for State facilities of a 20% reduction in energy use and conduct research through state departments, colleges, and universities into the development, application, and promulgation of cost-effective energy-saving technologies.

Columbia Gas of Maryland

Columbia Gas of Maryland reiterates their earlier comments that this is not an appropriate time to set natural gas reduction goals for 2015 and 2020, but rather to focus on educating consumers in making wise energy choices based on all of the options available to them. They point out that consumers are increasing switching to natural gas due to low gas prices, and that the American Gas Association cites that natural gas is three times more efficient than electricity in proving energy for end-use applications. Columbia Gas is concerns that setting reduction goals may counter these trends towards an "efficient and cost-effective energy source."

Columbia Gas notes that natural gas usage has declines roughly 1% per year for the past 40 years without mandatory reduction goals. They support the notion of a stateside natural gas energy efficiency program in Maryland, with certain considerations. Primarily, they do not feel that specific reduction goals are appropriate, suggest an exemption from small utilities, allow both costs and lost revenues to be fully recoverable on a timely basis, and note the increasing challenge of meeting cost effective tests given the low price of natural gas.

Energy Future Coalition (EFC)

The Energy Future Coalition supports extending and strengthening the two electricity goals beyond 2015, but suggest that broader causes are at the root of the utility underperformance to date. EFC suggest that utilities should be incented based on performance as part of a broader redefinition of the utility regulatory construct. EFC suggests a pilot to test if changes to the utility paradigm can lead to greater reliability, savings, and satisfaction for ratepayers.

Maryland Alliance for Fair Competition (MAFC)

MAFC identifies itself as representing HVAC, Heating, Cooling, and Plumbing Contractors in the Baltimore-Washington corridor and request to be included in future stakeholder discussions. They also suggest stronger efforts be made in all future energy programs to include greater formal representation of the groups on the "front lines" in the marketplace. MAFC recommends unifying the various utilities' programs in terms of marketing, incentives, and goals. The current method of having different goals and even program names for each utility is not cost effective and increases customer confusion. They recommend implementing several aspects of other states' successful programs, such as standardizing rebate amounts, increasing incentives, different cost effective tests, and spending more on programs with greater potential.

MAFC supports a fuel switching program, and suggests expanding the HVAC focus to include more than electricity to technologies such as hydronic and steam boilers. They also recommend including a programmatic focus on whole home performance. They suggest letting the Commission determine the definition of cost effectiveness in their regulatory proceedings, with a study on the true efficacy of the TRC mandated as part of the process of determination.

Maryland Power Plant Research Program (PPRP)

PPRP makes several suggestions to increase the approachability of the report, including expanding on the definition of "top-down" and "bottom-up." They suggest including a discussion of the BAU forecast origins and the impact of the economic recession. Further, they recommend explaining the assumptions behind the exogenous reductions related to weather and economic factors, and clarifying how DR payments are incorporated into the EmPOWER surcharge.

Northeast Energy Efficiency Partnerships (NEEP)

NEEP reiterates their support of extending EmPOWER to a second phase and incorporating natural gas goals as well. They recommend the final report emphasis that energy efficiency is Maryland's least cost energy resource, that it support changes to the EmPOWER savings goals, and that regulatory adjustments could be made to enhance performance beyond 2015. NEEP points out that energy efficient costs between 3 and 4 cents per lifetime kWh, "far below the average retail price of 12.70 cents/kWh in Maryland." They suggest that this cost may continue into the future, even in states such as Massachusetts where substantial savings have already been realized. They point to a study showing that energy efficiency investment is not only lower cost, but also lower risk than most other sources of conventional and renewable generation.

NEEP notes that most highly successful programs in the northeast include some variation of the "all cost effective efficiency" approach. They favor using a "bottom-up" approach that sets binding, realistic goals that link utility performance to annual retail sales. They suggest the

goals set by the Commission, perhaps with the legislature setting a minimum goal of 1.0 to 1.5 percent of annual retail sales as guidance to the Commission. NEEP also recommends ensuring that the TRC test, if continued to be used, should include the full range of customer benefits as well as costs. They note that other states have implemented the use of performance based incentives and suggest addressing this in the final report.

Potomac Edison

Potomac Edison supports the option that Maryland not revise existing targets beyond 2015 at this time, citing uncertainty as to what goals would be appropriate or affordable in the years 2016 and beyond. They note that current EmPOWER program costs are amortized over five years, so payments for pre-2016 programs will already continue beyond 2016. Potomac Edison suggests deferring the issue of goal setting beyond 2016 for now and that the Commission in conjunction with MEA review Maryland's status relative towards the 2015 targets.

Potomac Edison states that the current statute process appropriate direction to the Commission relative to considerations that should factor into program approvals including cost effectiveness and suggest that legislative changes are neither necessary nor appropriate. They also suggest that weather normalization is neither necessary nor appropriate and are rendered unnecessary through protocols used in the evaluation process.

Richard Reis – Conservation Engineering, LLC

Mr. Reis suggests the State set a minimum goal for state facilities. He suggests that a 40% reduction in lighting loads is feasible by 2015 through the implementation of technologies such as bi-level lighting for stairwells and hallways, introducing natural light where possible, and replacing incandescent list with CFLs or LED technology, among others. Mr. Reis recommends extending the EmPOWER goals to 2020 with a 30% overall electrical energy reduction and be expanded to include demand reduction from other stationary sources such as natural gas, propane, and fuel oil. He suggests revising all building costs to require or encourage energy savings, and to remove the exclusive or monopolistic authority of preferred contractors. Finally, Mr. Reis suggests conducting research through state departments, colleges, and universities into the development and application of cost-effective energy saving technologies.