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EMPOWER MARYLAND

PROGRESS TO DATE AND "BUSINESS AS USUAL" FORECAST

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 demand by 2015. Since its inception, EmPOWER Maryland has helped fund measures that will reduce energy usage of ratepayers by over 1.4 million MWh per year and save $175 million annually. These savings will continue for years, with currently existing measures saving ratepayers $2.6 billion over their useful life.

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 initially 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.

DEMAND RESPONSE PROGRAMS PROGRESS TO DATE

EmPOWER Maryland demand response programs have been very successful since their inception. As of the end of 2011, electric distribution companies (EDCs) have developed approximately 930 MW of demand response capability[1], or the equivalent power output capacity of two natural gas plants. Some of this capacity has cleared the PJM capacity market auction, and as a result, Maryland will receive over $221m in payments between 2009 and 2014. Based on PSC filings in fall 2011, proposed demand reduction 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 projected results through 2015. The top down approach looks at actual results from 2007 to 2011, and projects the impacts of programs from 2012 to 2015. It is important to note that the top down approach is heavily dependent on non-programmatic factors such as general economic output.

From this perspective, the currently planned utility programs will, in aggregate, will exceed the 15% per capita reduction from the 2007 baseline.

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

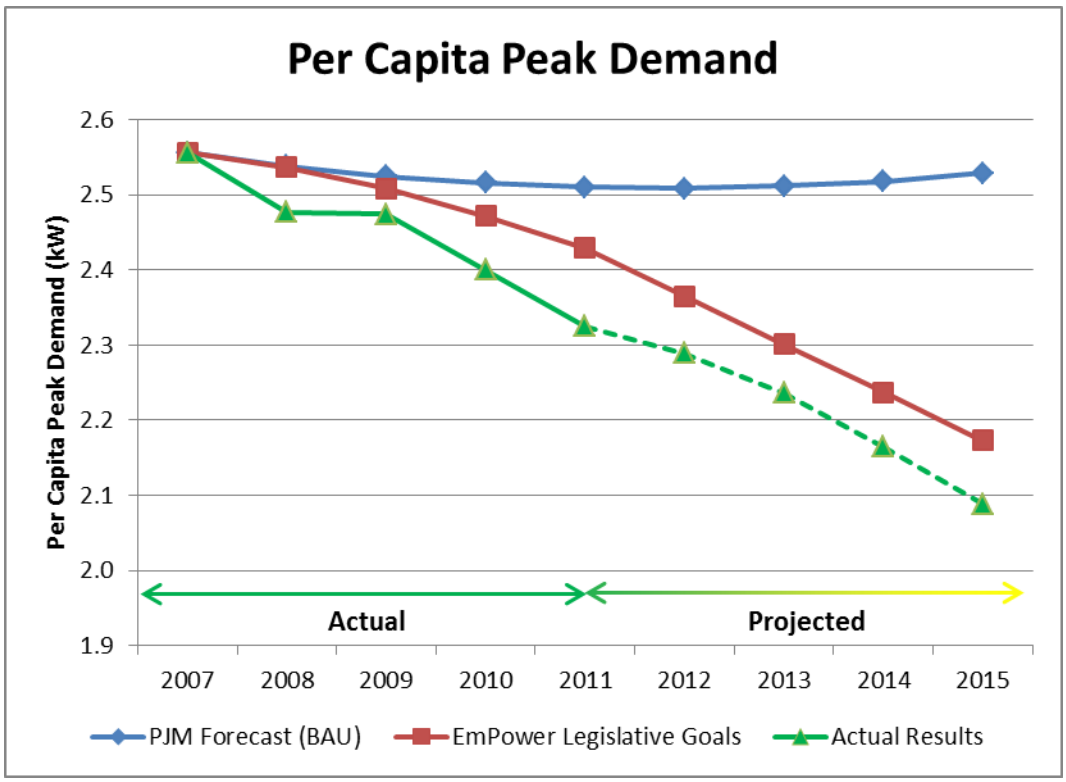

Figure 1 – Top-Down Demand Response Progress

Figure 2 depicts a "bottom up" approach to project the actual achieved demand savings, projected demand savings, and forecasted demand savings from the 2007 to 2020 time period. Data from 2007 to 2015 were pulled from MEA and EDC filings with the PSC. Data through 2010 were verified through evaluation, measurement, and verification (EM&V) procedures at each EDC. Data from 2011 is projected, but not yet verified. 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 business as usual (BAU) forecast for peak demand.

Estimates for future savings were projected by assuming that program participation and effectiveness continues at the 2015 levels from 2016 to 2020. It is important to realize two critical factors that are embedded in this assumption: first, that greater participation or new programs will be able to deliver a consistent level of demand savings in a cost effective manner; second, that existing participants continue in the demand reduction programs until 2020 and beyond. To the extent that these two assumptions fall short, it will likely mean that maintaining the same level of performance after 2015 will either be more expensive, more difficult, or both.

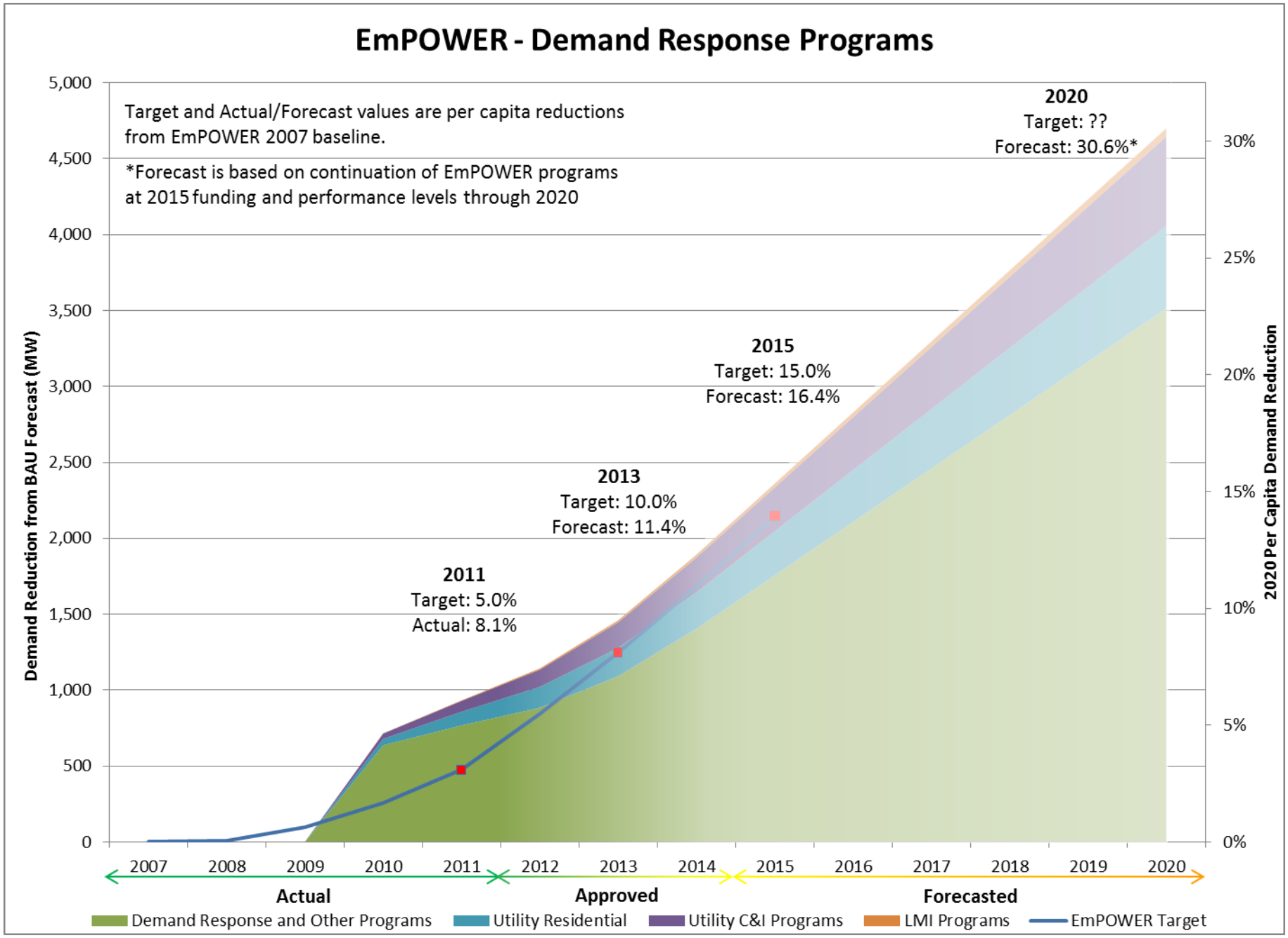

Figure 2 – Bottom-Up Demand Response Progress

It is important to revisit the embedded assumptions of this forecast. There are a number of challenges that would be involved in reducing demand by nearly 500 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 demand response resources clear in their capacity auctions. 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 may enable customers to more closely monitor their behavior. Smart grid deployments could lead to new ways of time shifting demand. Improvements in buildings and appliance performance due to more stringent building codes and efficiency standards will be realized as assets turn over. If the Renewable Portfolio Standard solar carve-out is met with distributed generation, more than 1,000 MW of PV will be available to help offset demand on sunny days.

Given the challenges in forecasting the future, assuming a constant investment rate and performance expectation is reasonable for discussion purposes. Should stakeholders and legislators decide to extend EmPOWER Maryland beyond 2015, we will need more detailed forecasts and potential studies in order to set appropriate and achievable goals.

As seen above, these assumptions result in demand programs that are expected to exceed the 2013 and 2015 targets. The 2011 target has already been exceeded. Currently proposed programs will result in a forecasted 16.4% reduction over the 2007 baseline per capita demand by 2015. Extrapolating the 2015 performance forward would result in a reduction of more than 4,700 MW from the original forecasted peak demand and a corresponding 30.6% reduction in per capita demand. If this forecast is realized, Maryland's 2020 demand would be 12,213 MW compared to the 2007 demand of 14,387 MW.[2]

ENERGY EFFICIENCY AND CONSERVATION PROGRAMS PROGRESS TO DATE

While the demand programs have been very successful, the energy efficiency and conservation programs have been more challenging. Part of this discrepancy may be due to the difference in value of demand and energy reducing programs in the PJM market.

Demand savings can be monetized through the capacity markets, and implementing them can avoid expensive infrastructure projects whose costs would be allocated to all rate payers. These benefits accrue independently of an individual customer's behavior (other than signing up for the program, of course). On the other hand, energy savings are largely realized through lower bills to the participants of the program rather than to all users[3], and achievable savings depend much more on an individual customer's behavior. Since its inception, EmPOWER Maryland has helped fund measures that will reduce energy usage of ratepayers by over 1.4 million MWh per year and save $175 million annually. These savings will continue for years, with currently existing measures saving ratepayers $2.6 billion over their useful life.

Regardless of the reason, energy reduction programs have fallen short of the target. Figure 3 shows the "top down" approach for energy efficiency and conservation programs. From this

[2] The MW reduction is lower than the 30.6% per capita reduction due to population growth from 2007 to 2020.

[3] Energy Efficiency is eligible for inclusion in the capacity market auctions, and reductions in LMP through lower energy use at peak times can be gained. However, revenues from energy programs are substantially smaller than revenues and avoided cost savings from demand programs.

view, is 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 demand response goal is weather normalized, the energy efficiency and conservation goal is not. The sag relative to the EmPOWER goal from 2007 to 2009 was largely due to weather and economic factors more so than verifiable program results. Regardless of the historic results, it is clear from this view that the projected programs will fall behind the target line from 2012 to 2015.

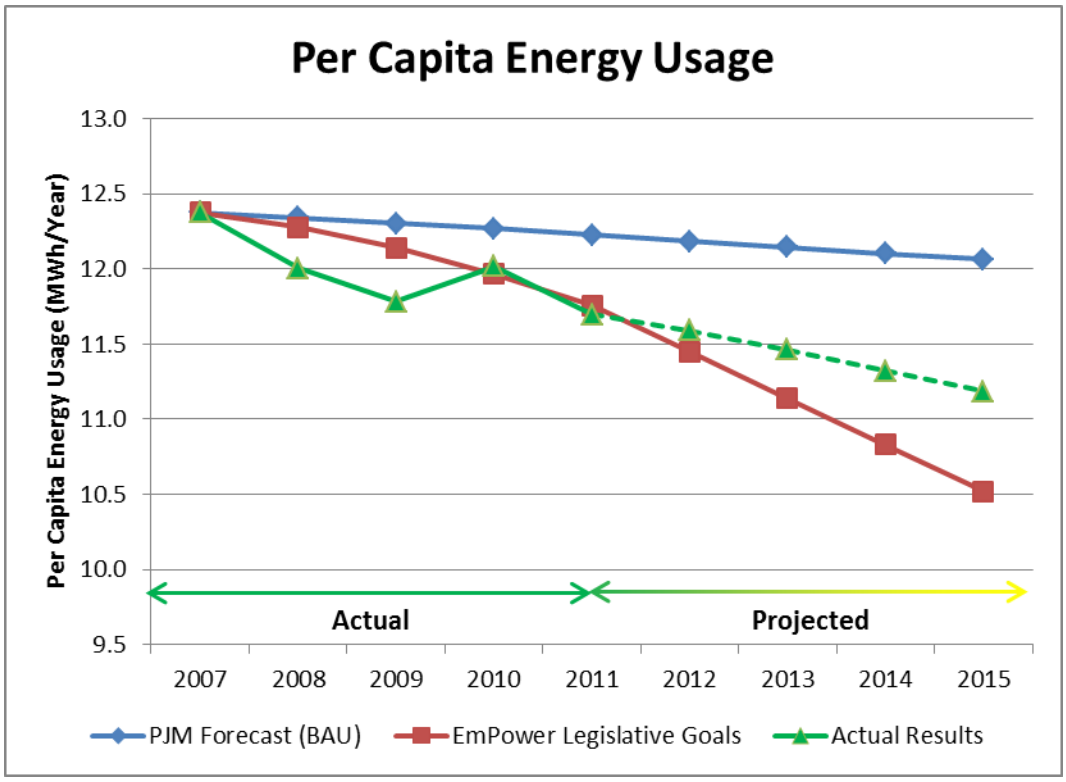

Figure 3 – Top-Down Energy Efficiency and Conservation Progress

The same set of assumptions from the bottom-up demand response graph was used to generate the following bottom-up energy efficiency and conservation progress graph in Figure 4. In this graph, 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 severely short of the goal.[4]

2011 bottom up results are less than two thirds of the target, at 3.0% vs. 5.0%. 2015 results are projected to trail by a similar margin, 8.4% vs. 15.0%. Even if programs are continued at the 2015 funding levels and performance results, the forecasted achievement in 2020 would be 13.7% energy savings below a 2007 baseline.

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

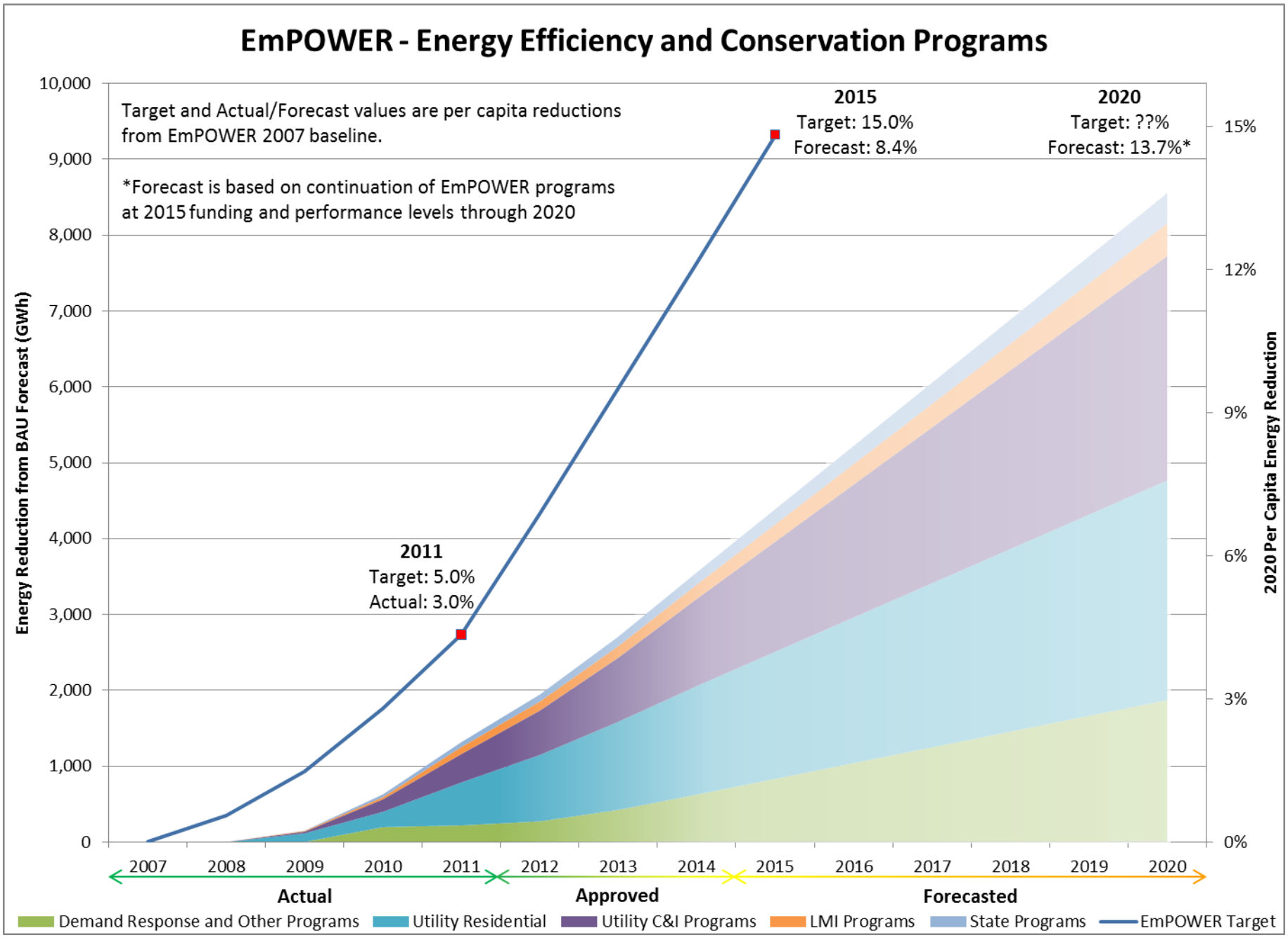

Figure 4 – Bottom-Up Energy Efficiency and Conservation Progress

ANNUAL REDUCTIONS REQUIRED FOR CERTAIN TARGETS

Figure 5 moves away from actual program results and focuses on the percentage reduction that would be needed to achieve certain per capita reduction goals.

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, while a 1.50% annual reduction would bring per capita consumption about 18% below the 2007 baseline.

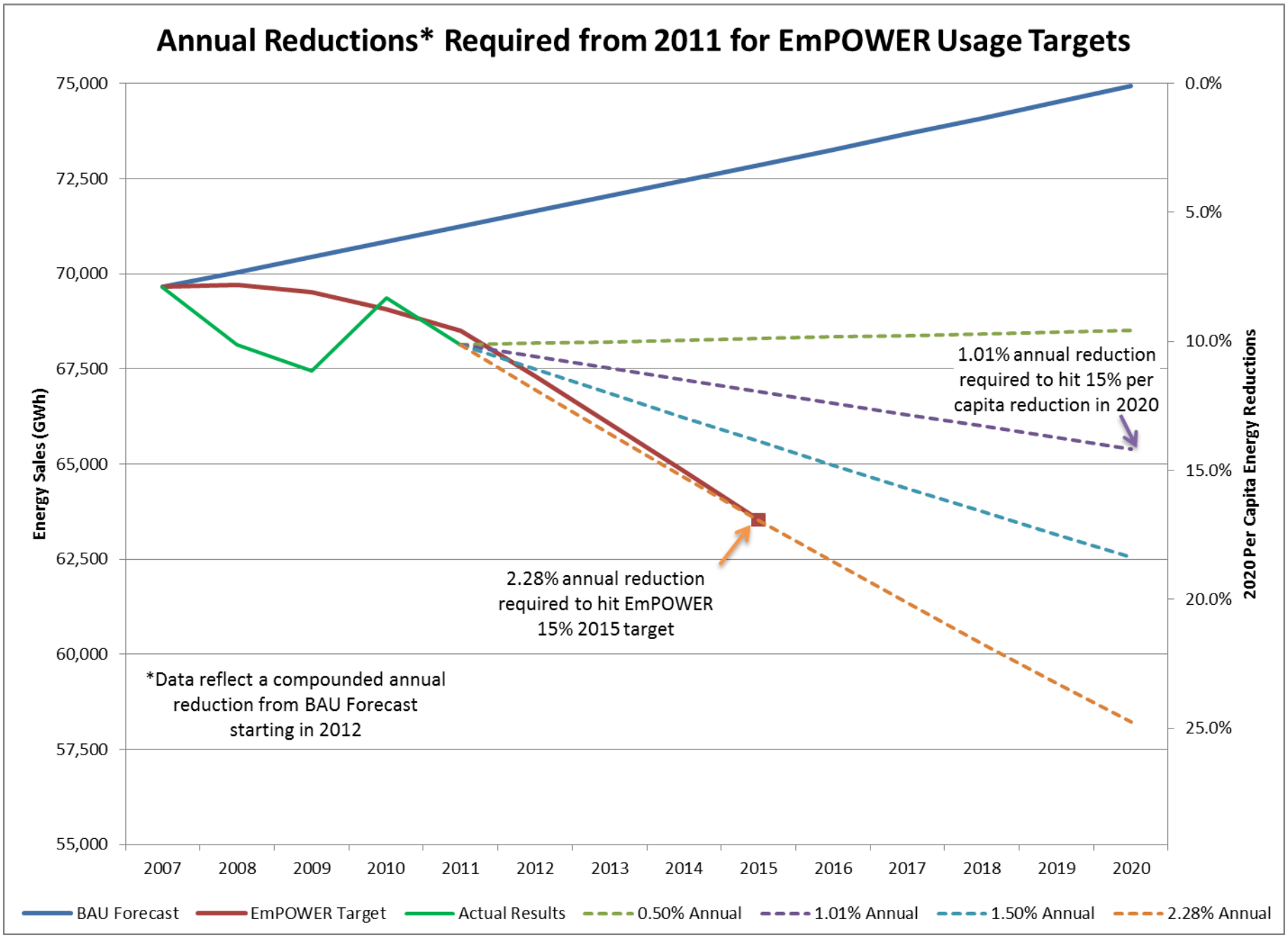

Figure 5 - Annualized Reduction Results