

Maryland Energy

ADMINISTRATION

Powering Maryland's Future



EmPOWER Planning for 2020

June 29, 2012

Agenda

- ▶ Introduction
 - ▶ Malcolm Woolf, MEA
- ▶ Natural Gas Potential Study
 - ▶ Dick Spellman, GDS Associates, Inc.
- ▶ Combined Heat and Power and End-Use Fuel Switching
 - ▶ Kevin Lucas, MEA / Dick Spellman
- ▶ EmPOWER Results to Date and Business as Usual Forecast
 - ▶ Kevin Lucas
- ▶ Next Steps
 - ▶ Kevin Lucas

Introduction

- ▶ **Welcome!**
- ▶ **MEA has a responsibility to**
 - ▶ Report to Legislature on:
 - ▶ Progress to date
 - ▶ Whether to extend EmPOWER electric beyond 2015
 - ▶ Whether to set targets for natural gas in 2015 and 2020
 - ▶ Work in consultation with PSC and other stakeholders
- ▶ **First step in collaborative stakeholder process**
 - ▶ Utilities, Suppliers, Environmental Groups, State Agencies

Introduction

- ▶ **Goals of this meeting**
 - ▶ Robust discussion amongst stakeholders
 - ▶ Education on difference between and interaction of electric efficiency programs and natural gas efficiency programs
 - ▶ Planting seeds of thought on whether to extend EmPOWER, and if so, how best to structure future programs
- ▶ **We are not here today to**
 - ▶ Decide whether or not to extend EmPOWER
 - ▶ Determine exact programs and/or structure for extending beyond 2015

This is the start of a process, not the final step!

Introduction

▶ Tentative Schedule

- ▶ Stakeholder Meeting – Late June
- ▶ Draft EmPOWER 2020 Report – Late August
 - ▶ Incorporates formal and informal feedback from stakeholders
 - ▶ Includes options on whether and how to extend EmPOWER programs for electricity and natural gas
- ▶ Feedback from Stakeholders – Early September
 - ▶ Formal comments on Draft Plan requested
- ▶ Final EmPOWER 2020 Report – December
 - ▶ Incorporates feedback from stakeholders on Draft Report options
 - ▶ Includes recommendations on how to proceed

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Maryland Natural Gas Energy Efficiency Potential Study

Presented by Dick Spellman, GDS Associates
June 29, 2012

What is a Potential Study?

- ▶ “A potential study is a quantitative analysis of the amount of energy savings that either exists, is cost-effective, or could be realized through the implementation of energy efficiency programs and policies.”
- ▶ Source: National Action Plan for Energy Efficiency, Guide for Conducting Energy Efficiency Potential Studies, November 2007

Purpose of EE/DR Potential Study

- ▶ Quantifying the energy efficiency resource for system planning
- ▶ Determining “cost effective” potential
- ▶ Setting attainable energy savings targets
- ▶ Determining a funding level for delivering energy efficiency programs
- ▶ Designing programs to achieve the long-term potential
- ▶ Reassessing energy efficiency opportunities as conditions change

Key Inputs to This Study

- ▶ Costs, savings, and useful lives of natural gas energy efficiency measures
- ▶ Current saturation of natural gas equipment (space heating, water heating, cooking, etc.)
- ▶ Forecast of natural gas avoided costs
- ▶ Projections of future market penetration of natural gas energy efficiency measures

What This Study Does Not Include

- ▶ Analysis of savings from fuel switching
- ▶ Analysis of natural gas and electricity savings from combined heat and power projects (CHP)
- ▶ Work is underway to determine potential savings from CHP and fuel switching

Technical Potential

- ▶ Technical potential is the theoretical maximum amount of energy use that could be displaced by efficiency
 - Disregards cost-effectiveness testing
 - Does not examine willingness of end-users to adopt the efficiency measures
 - It is a “snapshot” in time assuming immediate implementation

Economic Potential

- ▶ Economic potential refers to the subset of the technical potential that is economically cost-effective as compared to conventional supply-side energy resources

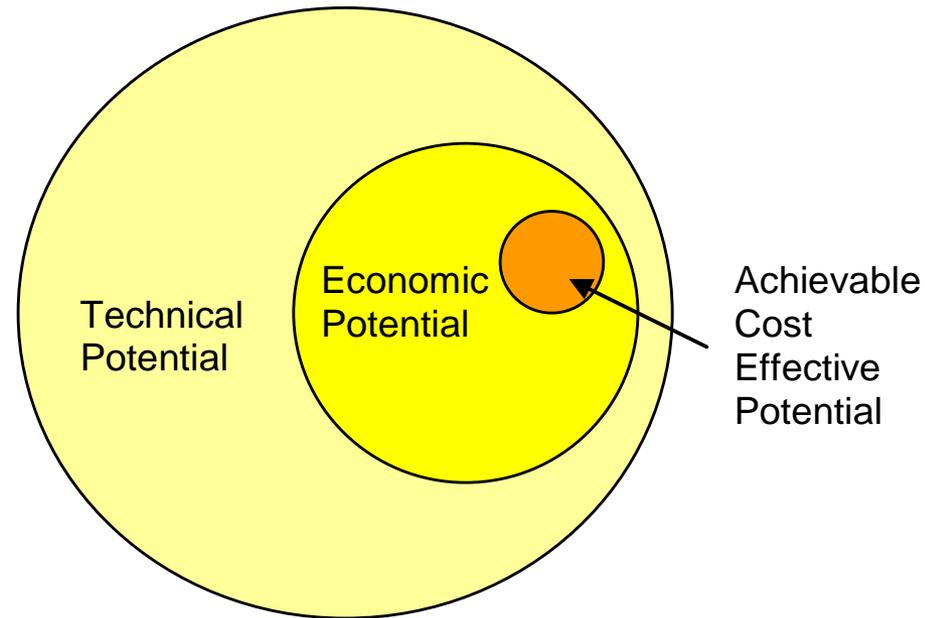
Achievable Potential

- ▶ Amount of energy efficiency that can realistically be expected to occur with aggressive programs
 - Takes into account real-world barriers to convincing end-users to adopt efficiency measures
 - Reflects non-measure costs of delivering programs (for administration, marketing, tracking systems, monitoring and evaluation, etc.)
 - Reflects that it takes time to ramp up program activity over time

Program Potential

- ▶ Program potential refers to the efficiency potential possible given specific program funding levels and designs
- ▶ Provides estimate of the achievable potential from a given set of programs and funding

Types of EE/DR Potential



Key Steps for a Potential Study

- ▶ Define objectives and the audience
- ▶ Determine if an advisory group is needed
- ▶ Review existing potential studies
- ▶ Develop scope of work, budget, project schedule and deliverables
- ▶ Select potential types to analyze
- ▶ Determine appropriate level of detail
- ▶ Select and define the methodology
- ▶ Collect data on measure costs, savings, useful lives, current saturation, etc.
- ▶ Calculate estimates of potential
- ▶ Present the results

Screening and Ranking Measures

- ▶ Need to establish priorities for program funding
- ▶ Use potential study results to identify measures that are the most cost effective and have the most savings
- ▶ Develop program portfolio using:
 - results of the potential study
 - input from interested stakeholders
 - guidance from any applicable governmental laws and regulations

2015 Potentials

Table 1-1: Natural Gas Energy Efficiency Potential - State of Maryland (MMBtu)

Summary of Maryland Natural Gas Efficiency Potential			
	Technical	Economic	Achievable 60% Market Penetration
2015			
Residential	29,819,002	22,381,729	3,948,109
Commercial	28,517,414	17,850,213	3,948,704
Industrial	4,008,769	3,619,976	728,595
Total MMBTU Savings	62,345,185	43,851,918	8,625,407
% of 2015 Forecasted Annual Sales	32.2%	22.7%	4.5%

2020 Potentials

Table 1-1: Natural Gas Energy Efficiency Potential - State of Maryland (MMBtu)

Summary of Maryland Natural Gas Efficiency Potential			
	Technical	Economic	Achievable 60% Market Penetration
2020			
Residential	31,552,018	23,709,143	10,300,041
Commercial	29,929,080	18,733,832	8,884,583
Industrial	4,042,010	3,649,993	1,250,492
Total MMBTU Savings	65,523,108	46,092,969	20,435,116
% of 2020 Forecasted Annual Sales	32.6%	22.9%	10.2%

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- ▶ **Combined Heat and Power and End-Use Fuel Switching**
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CHP and End-Use Fuel Switching

- ▶ End use applications, not power plant applications
 - ▶ This is **not** re-firing coal plants with natural gas
- ▶ Technical/economic potential being researched by GDS
 - ▶ Fuel Switching focus on residential and commercial sectors
 - ▶ Space Heating / Water Heating / Clothes Dryers
 - ▶ CHP focus on commercial, industrial, and institutional sectors
 - ▶ Report in late August
- ▶ Some CHP has been already been approved as part of EmPOWER
 - ▶ Roughly \$20m to develop 40 MW and 146,000 MWh of savings by the end of 2014

CHP and End-Use Fuel Switching

- ▶ **Differing infrastructure challenges**
 - ▶ Mains to neighborhood but not streets
 - ▶ Lines to street but not houses
 - ▶ Connection to houses but no internal gas piping
- ▶ **Programs will impact usage and demand for both natural gas and electricity**
 - ▶ All else equal, programs will increase natural gas use and reduce electricity use
 - ▶ Are electricity demand and energy displaced at the same rates?
 - ▶ How would this impact firm vs. interruptible service?
 - ▶ How would this impact natural gas targets (if set)?

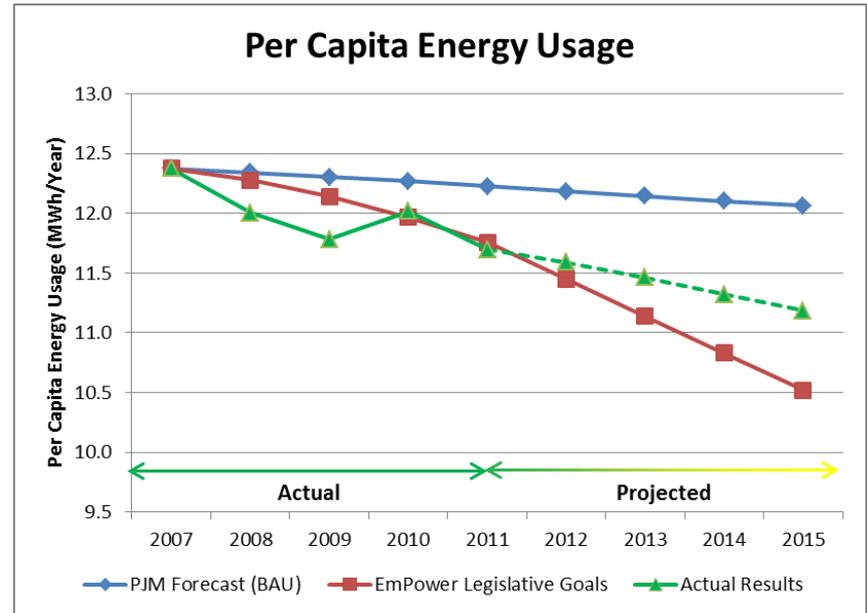
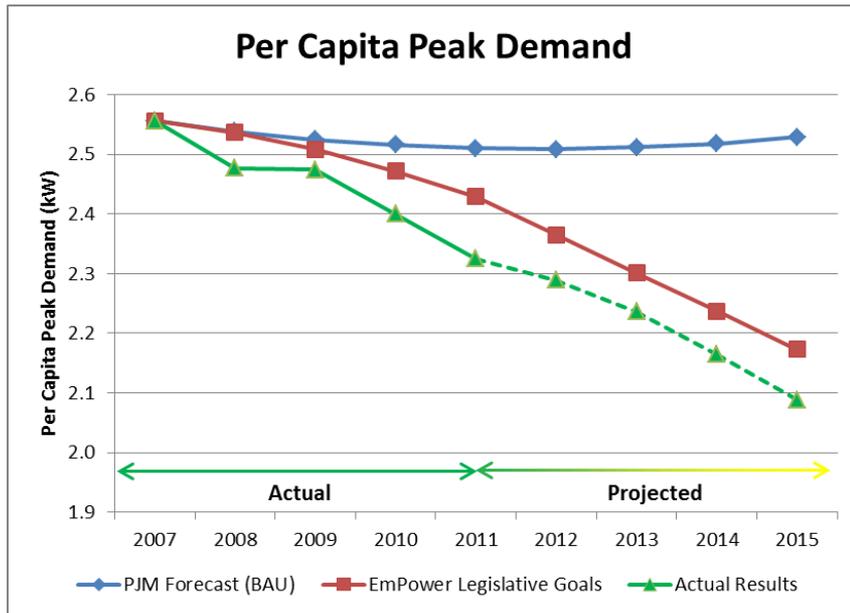
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Top-Down Results

- ▶ Actual results from 2007-2011
- ▶ Projected results from 2012-2015 based on proposed programs
- ▶ External factors (economy, weather) can heavily influence results
 - ▶ Peak Demand is weather normalized, but Energy Usage is not

Top-Down Results



Economic downturn and weather helped meet 2007-2011 energy usage targets, but currently proposed programs cannot keep pace.

Bottom-Up Results and Forecast

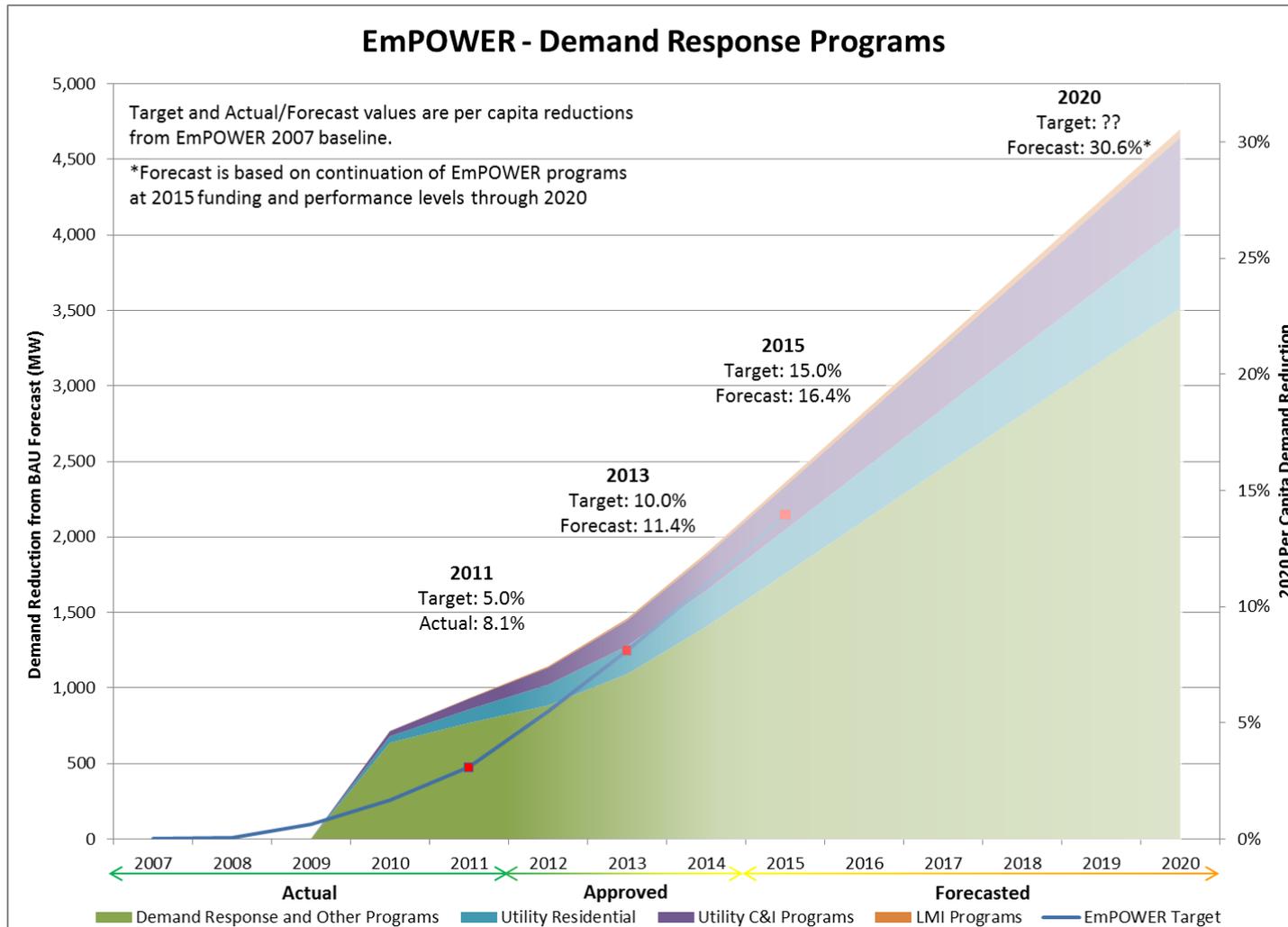
▶ Results

- ▶ Starts with BAU forecast and subtracts verified savings from 2007-2011 and projected savings from 2012-2015
- ▶ Isolates actual program performance from exogenous influences
- ▶ Does not include CSP programs with C&I sectors

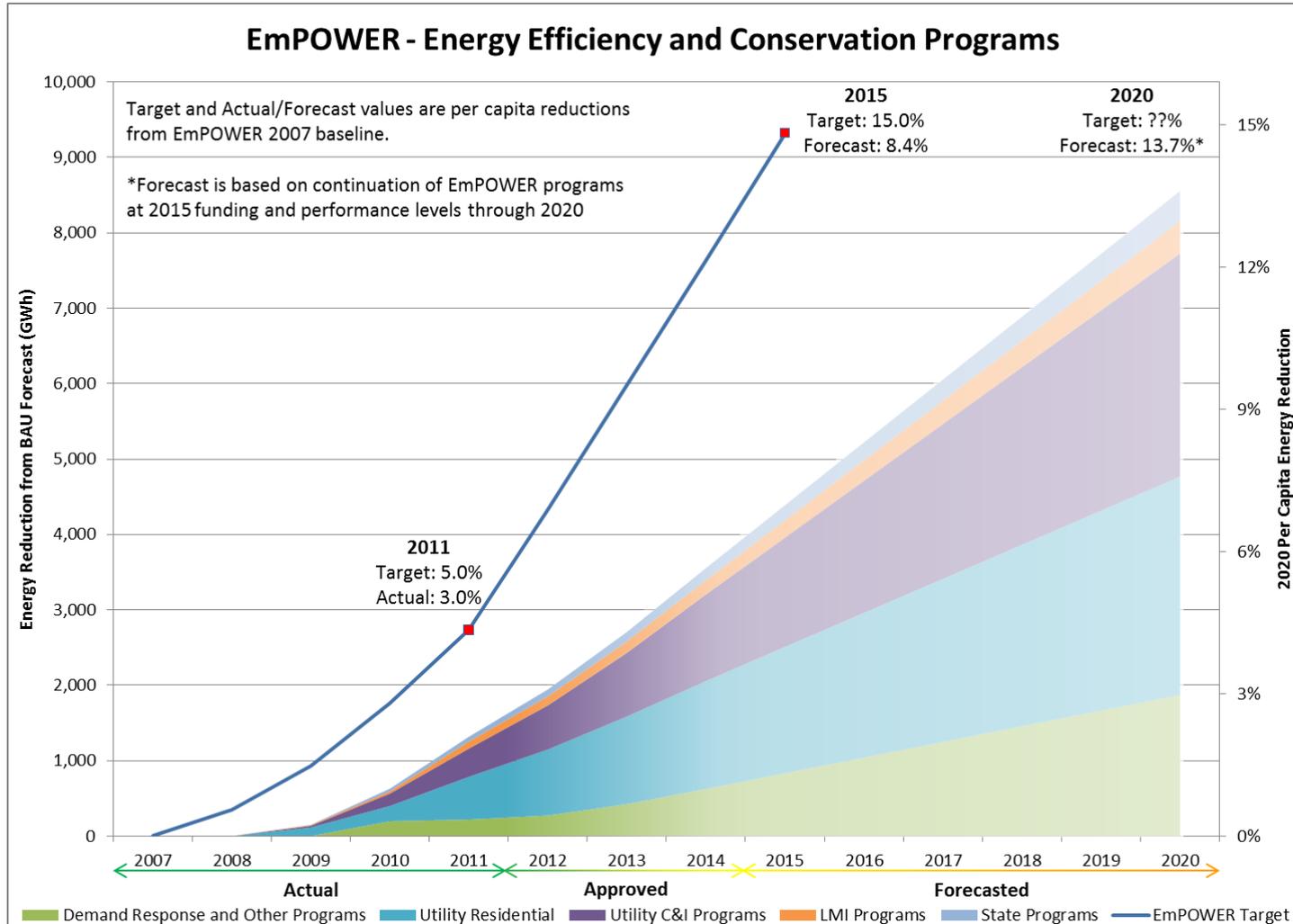
▶ Forecast

- ▶ Extended to 2020 based on 2015 program performance and participation levels
 - ▶ Saturation in certain programs (i.e. residential AC switches)
 - ▶ New programs needed to continue progress (i.e. dynamic pricing)

Bottom-Up Results: Demand Response



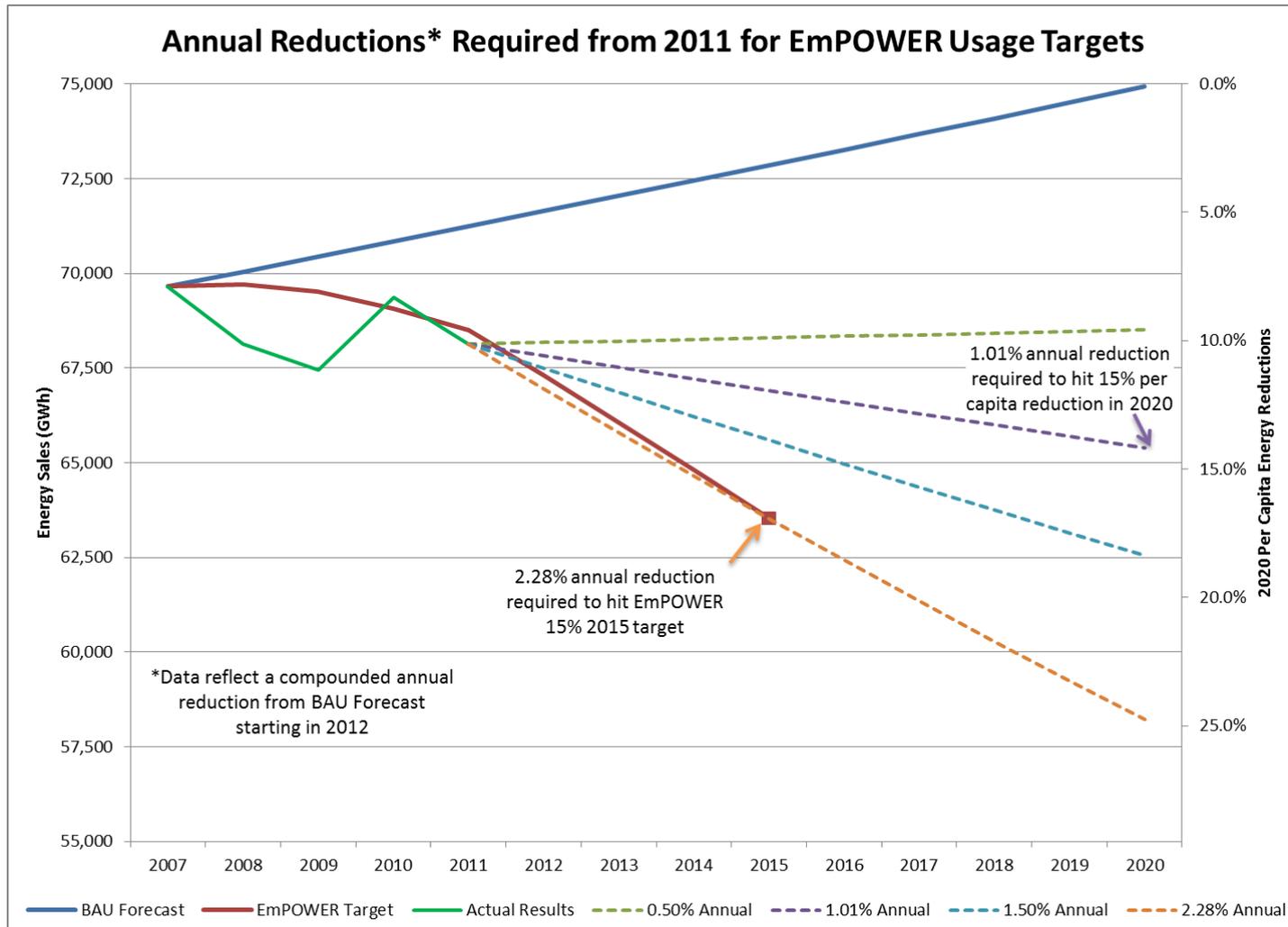
Bottom-Up Results: Energy Usage



Annual Reductions

- ▶ Starting from 2011 results, what annual reductions are needed to hit certain targets?
- ▶ Given certain annual reductions, where are we in 2015? In 2020?

Annual Reduction Results



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Things to Think About

- ▶ What has been working well with EmPOWER? What has not?
- ▶ Should EmPOWER be extended beyond 2015? Should natural gas targets be set?
 - ▶ If not, why not?
 - ▶ If so, how should the targets be set?
 - ▶ Per capita reduction?
 - ▶ % of sales?
 - ▶ All cost effective programs?
- ▶ What is the interplay between natural gas programs and electricity programs?

Next Steps

▶ Feedback Requested

- ▶ Your feedback is needed to help shape the Draft Report
- ▶ Comments can be formal or informal, but should be constructive and informative
 - ▶ If you have concerns, also think about potential solutions
 - ▶ Consider how to apply lessons from current programs to future ones
- ▶ Requested by July 31, 2012
 - ▶ Please email to MEA in PDF format
 - ▶ MEA will post all documentation and replies on our website

Thank You!

Questions?

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