



Leadership Steering Committee Meeting Q3 2012

The Commonwealth of Massachusetts
Accelerated Energy Program
2012-2014

www.mass.gov/dcam/aep



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Lt. Governor Timothy P. Murray

Secretary Jay Gonzalez
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Division of Capital Asset Management and Maintenance
D · C · A · M · M

Secretary Richard K. Sullivan
Commissioner Mark Sylvia



Welcome & Introductions

AEP Quarterly Report Review

Project Highlight: Salem State University

Resources: Facility Advisor Contract Expansion

DOER Update

Questions and Answers

AEP Recognition

DCAM and DOER recognize **Don Zanetti** from BSB. Don is always supportive and provides valuable insight, expertise, and direction. He always sees opportunity in a challenge. Given the complexity of the Capitol buildings the project teams are grateful for Don's optimism.

Some of his Q3 contributions to the AEP include:

- Managing the State House lighting project
- Championing the upcoming Capitol Complex AEP energy and water efficiency upgrades
- Actively participating in the AEP "Inreach" and Technical Support working group

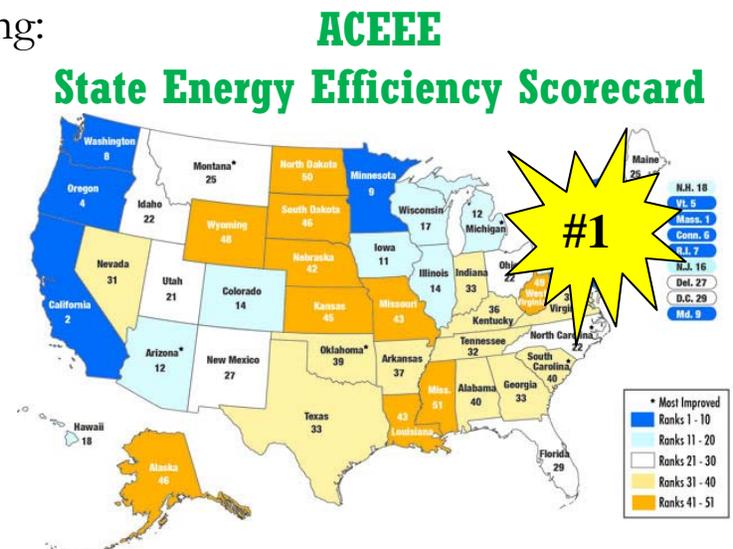
Thank you Don for your dedicated efforts!



AEP Overview

- The AEP was established in December 2011 to accelerate the implementation of energy and water projects across the Commonwealth. DCAMM is working with DOER and numerous partners to retrofit 700 sites throughout the Commonwealth.
- In Q3 2012, the American Council for an Energy Efficient Economy (ACEEE) ranked Massachusetts number one in the nation for energy efficiency for the second straight year, awarding it the highest possible score for government programs.
- In Q3 2012, the AEP team accomplished the following:

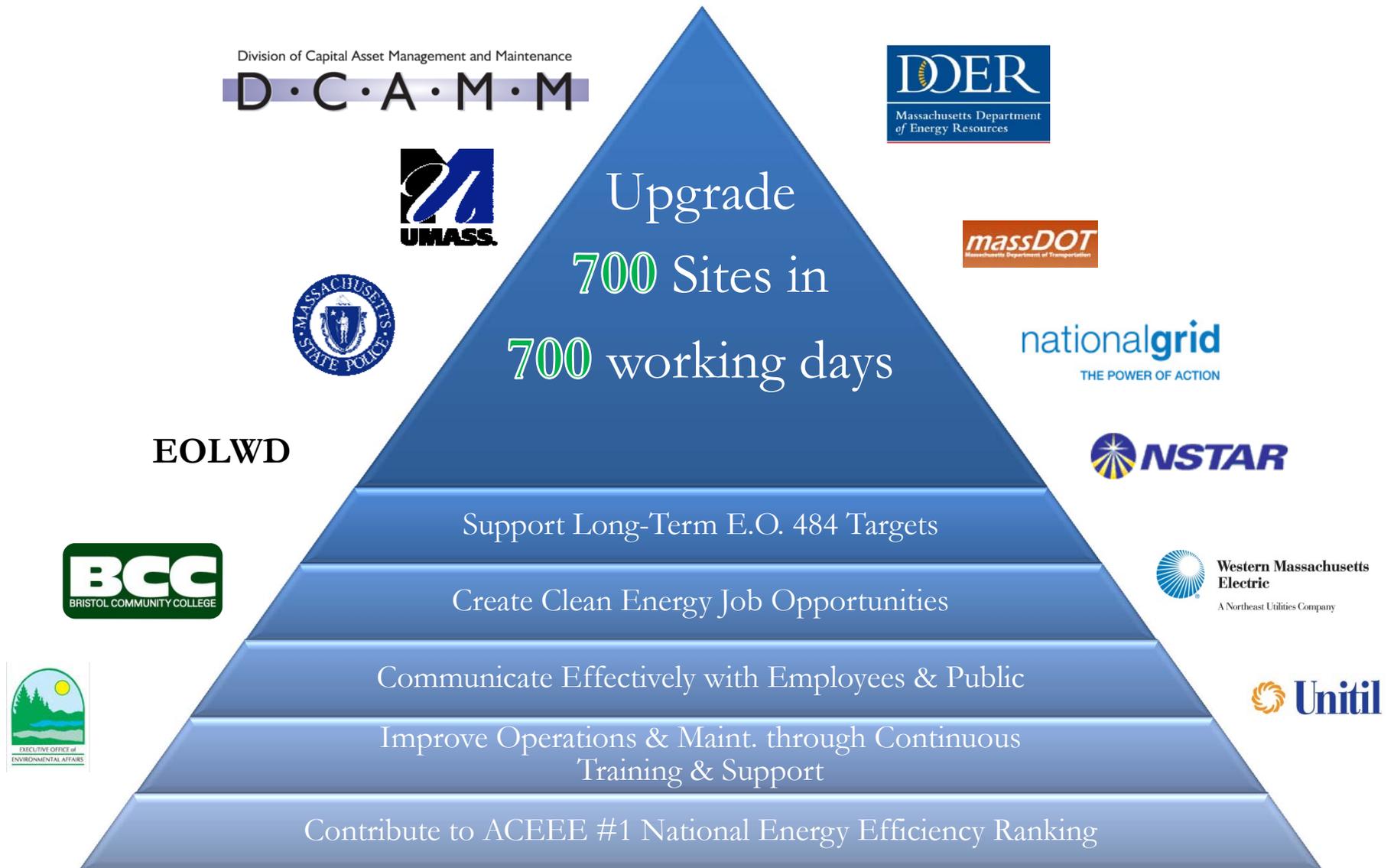
- Finalized Planning and Implementation Strategy
- Prioritized all sites in the AEP and allocated work across program timeline
- Revised Financial Projections
- Initiated Energy Studies at 79 Sites
- Completed Energy Projects at 10 Sites



**Massachusetts was ranked #1
Nationally for Energy Efficiency by
ACEEE for the **second straight year!****

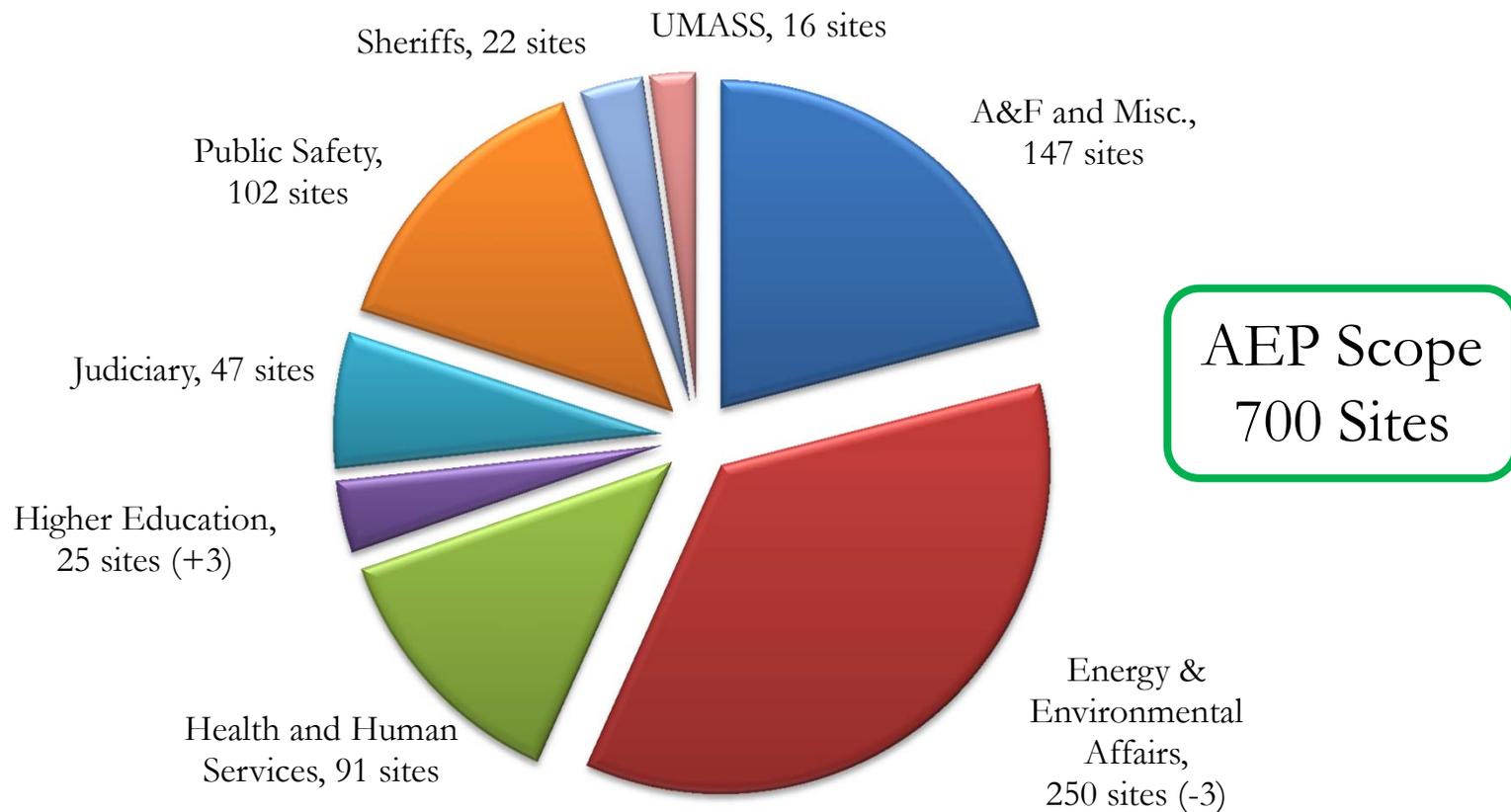
Program Goals & Objectives

The Commonwealth of Massachusetts
Accelerated Energy Program

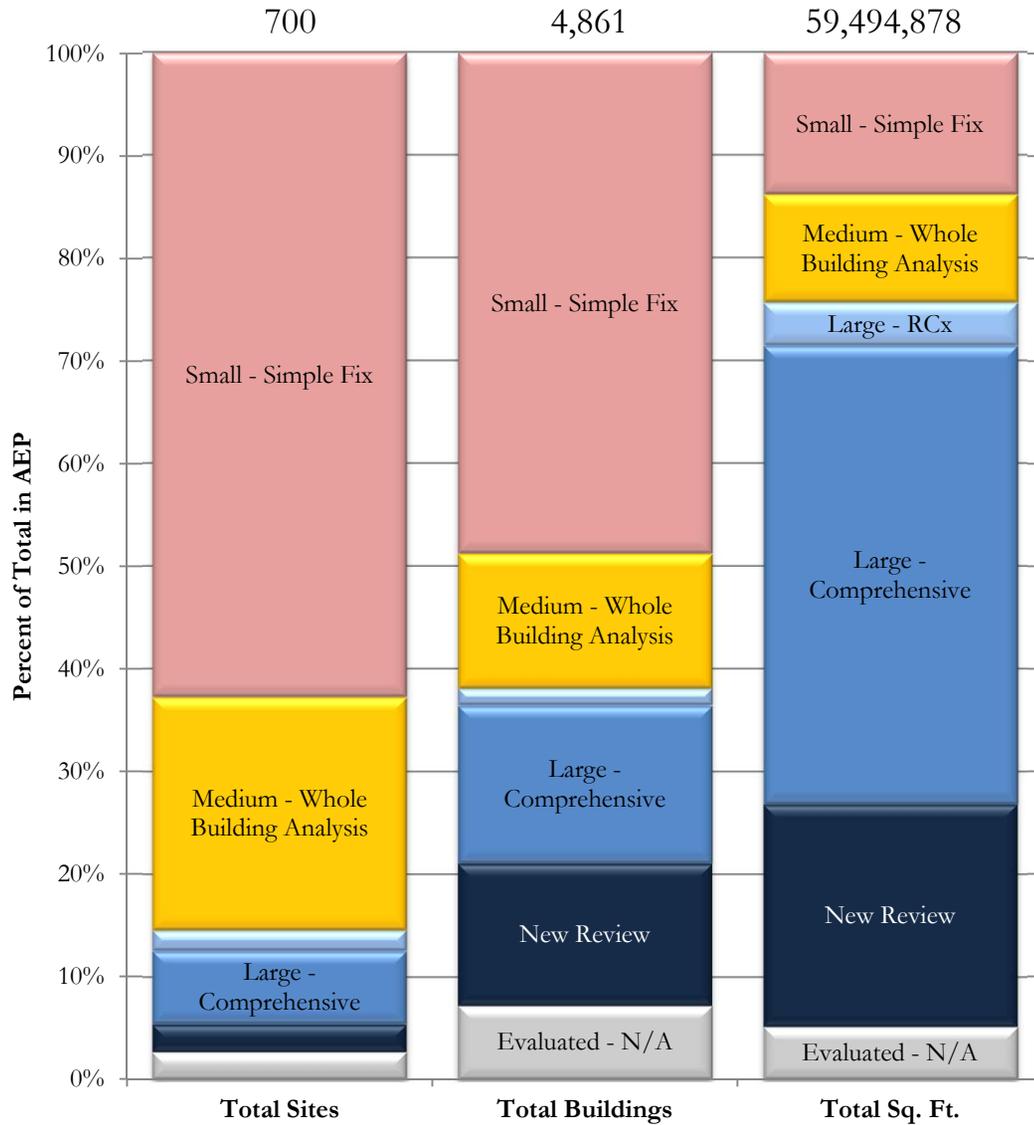


Program Definition

There are 818 sites in the Commonwealth's capital asset inventory. A total of 118 were excluded from the AEP because they are not currently in use, are considered retrofitted through recent prior projects, or do not consume energy. The remaining 700 sites will be retrofitted in the AEP. The numbers in parentheses indicate changes from the Q2 Report.



Implementation Plan



Implementation Group	Q2	Q3
Simple Fix	438	439
Whole Building Analysis	162	159
Retro-Commissioning	14	14
Comprehensive	48	50
New Review	16	19
Evaluated – N/A	22	19

Implementation Planning Charrette

In Q3, the AEP team participated in a two day planning and prioritization Charrette. The goal of the Charrette was to prioritize all of the sites in the AEP and allocate the work by quarter across the program timeline. The Charrette was divided into two sessions:

- Session I focused on prioritizing the 64 sites in the Comprehensive and Retro-Commissioning implementation groups.
- Session II focused on prioritizing the 534 sites in the Simple Fix and Whole Building Analysis implementation groups.



AEP team ranking implementation prioritization criteria.

AEP Site Implementation Overview

Implementation Group	2012			2013				2014		Total
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Simple Fix	40	49	48	57	64	61	60	28	32	439
Whole Building Analysis	24	27	36	16	5	31	5	10	5	159
Retro-Commissioning		2	2	2	2	2	2	2		14
Comprehensive Retrofit		9	9	7	4	12	6	3		50
New Review			1		3			15		19
Evaluated N/A										19
Total	66	87	96	89	79	106	75	63	39	700

Maximize Energy & Water Conservation

Opportunities for energy and water savings continually evolve as economics change and technology advances. Through the AEP, DCAMM and DOER will maximize energy and water conservation.

The Accelerated Energy Program establishes an AEP standard that all 700 sites will achieve. Some energy-leading Commonwealth facilities already exceed it, and others have the potential to do so.

Actions that energy leaders can take to exceed the current AEP standard include:

- **Deeper measures.** Implementing improvements and innovative technologies that will yield energy reductions of 35% or more.
- **Renewable energy.** Increasing the use of clean energy to reduce the Commonwealth's carbon footprint.
- **Integration with facility operations.** Training operations staff to maximize and sustain energy and water savings.
- **Preventative maintenance.** Developing a plan for preventative maintenance to keep systems operating at optimum efficiency.



Mount Wachusett Community College

The table below describes the AEP standard for different site types.

Large Sites (i.e. hospitals, colleges)	Small Sites (i.e. police barracks, career centers)	Occasional Use Sites (i.e. ice rinks, state parks)
<p>Reduce total site energy use by 25%.</p> <p>Projects <i>must</i> include:</p> <ol style="list-style-type: none"> 1) Lighting retrofits 2) Water retrofits 3) Space conditioning (HVAC, boilers, etc.) <p>Projects are likely to include <i>many</i> of the following:</p> <ol style="list-style-type: none"> 1) Lighting, Lighting controls 2) Efficient motors, Variable frequency drives 3) Heating and Cooling improvements 4) Ventilation sensors and controls 5) Building envelope improvements 6) Upgraded Building/Energy Management System 7) Plug load reduction (vending machines, printers, computers, etc.) 8) Low-flow water fixtures 9) Installation of on-site renewable/clean energy 10) Other 	<p>Reduce total site energy use by 20%.</p> <p>If baseline data is not available, reduction target will be reached by implementing <i>at least six</i> of the following measures:</p> <ol style="list-style-type: none"> 1) Lighting 2) Lighting controls 3) Motors 4) Heating and Cooling improvements 5) Ventilation sensors and controls 6) Building envelope improvements 7) Upgraded Building/Energy Management System 8) Plug load reduction 9) Low-flow water fixtures 10) Installation of on-site renewable/clean energy 11) Other 	<p>Retrofit <i>at least three</i> of the following systems, if applicable:</p> <ol style="list-style-type: none"> 1) Lighting 2) Lighting controls 3) Motors 4) Air conditioning 5) Plug load uses 6) Water fixtures 7) Other <p>If three are not applicable, then retrofits of as many that are applicable.</p>

We plan to retrofit **700** Sites

In a total of **700** Working days

We have initiated work at **184** Sites in the AEP

And now have **168** Sites **In Progress**

And **16** Sites with **Completed** projects

Key Metrics

Goal	Metrics	Target	Q3 Actuals*	%	
Accelerate delivery of energy	Sites Retrofitted (Total #)	700	16	2%	
	<i>Retrofitted Facilities over 100,000 Sq. Ft.</i>	50	1		
	<i>Retro-Commissioned Facilities over 50,000 Sq. Ft.</i>	14	0		
	<i>Whole Building Analysis Facilities</i>	159	12		
	<i>Quick Fix Facilities</i>	439	1		
	<i>"New Review"</i>	17	2		
	<i>Investment in Energy Projects (Total \$)</i>	\$427M	\$3.2M		
	<i>Annual Energy & Water Savings (Total \$)</i>	> \$43M	\$0.8M		
	<i>Average Payback on Total Investment</i>	≤ 10 Years	5 Years		
	Sites In Progress		168	24%	
	Sites Evaluted - Not Applicable		19	3%	
Communicate progress and encourage full participation.	Public Website with Quarterly Updates	Quarterly	Updated		
	Total # of Unique Visitors per Month (Public Website)				
Create clean energy job opportunities across the Commonwealth.	Workforce / Jobs Created (Total)				
	- <i>AEP Certified Laborers (Total #)</i>		TBD		
	- <i>Voc Tech School / Community College Jobs Created (Total #)</i>				
	Workforce / Jobs Created				
	- <i>Minorities</i>	15.3%	TBD		
	- <i>Women</i>	6.9%			
M/WBE Participation (Project Commitment / Awards)					
	- <i>Design Contracts</i>	17.9%	TBD		
	- <i>Construction Contracts</i>	10.4%			

LBE Target



*Q3 actuals represent complete sites.

Jobs Created

The AEP will create clean energy jobs throughout the Commonwealth. DCAMM estimates for AEP job creation are based on a Deloitte and Touche approach used for ARRA.

9 FTE jobs per \$1 million invested on energy and water conservation projects



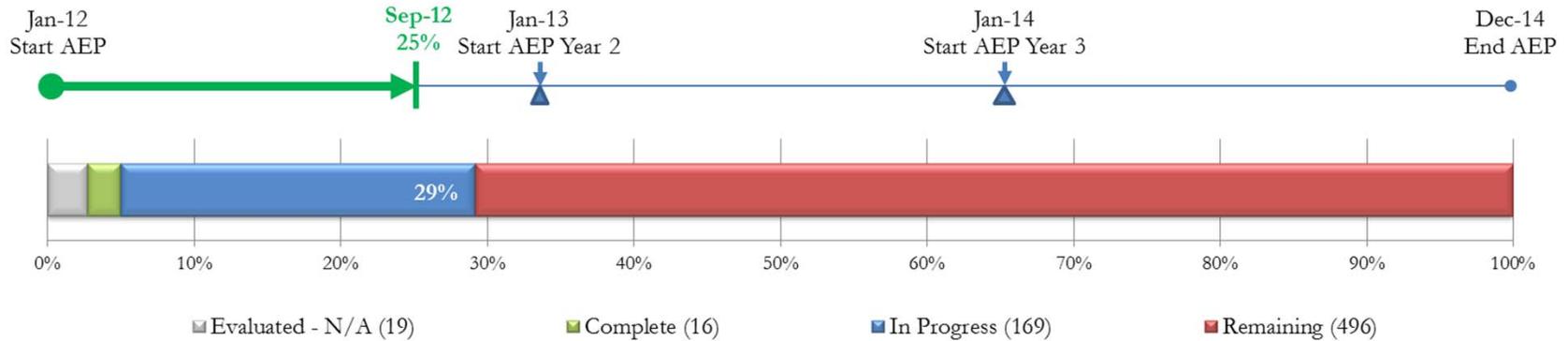
AEP budget of \$427 million before contingency
AEP budget of \$470 million including contingency



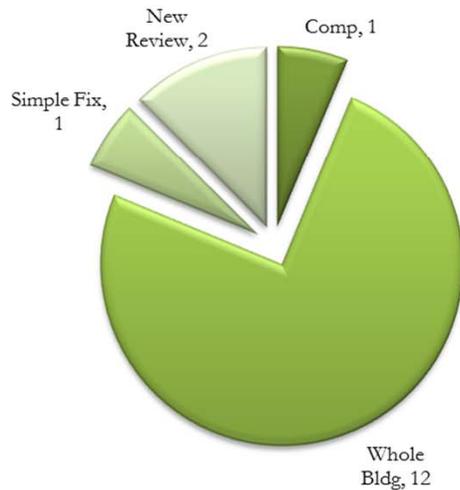
3,800 – 4,200 FTE clean energy jobs created through the AEP



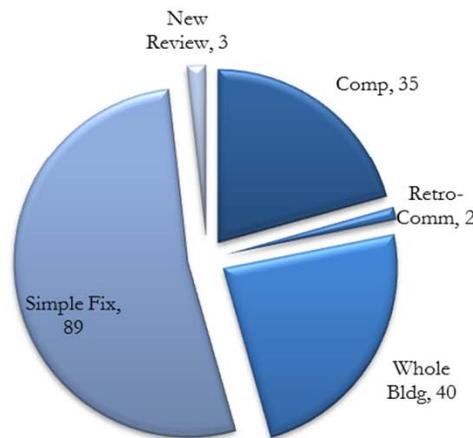
Program Status



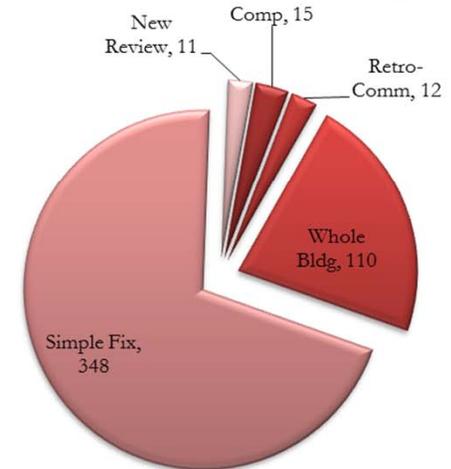
Number Complete (16)



Number In Progress (169)

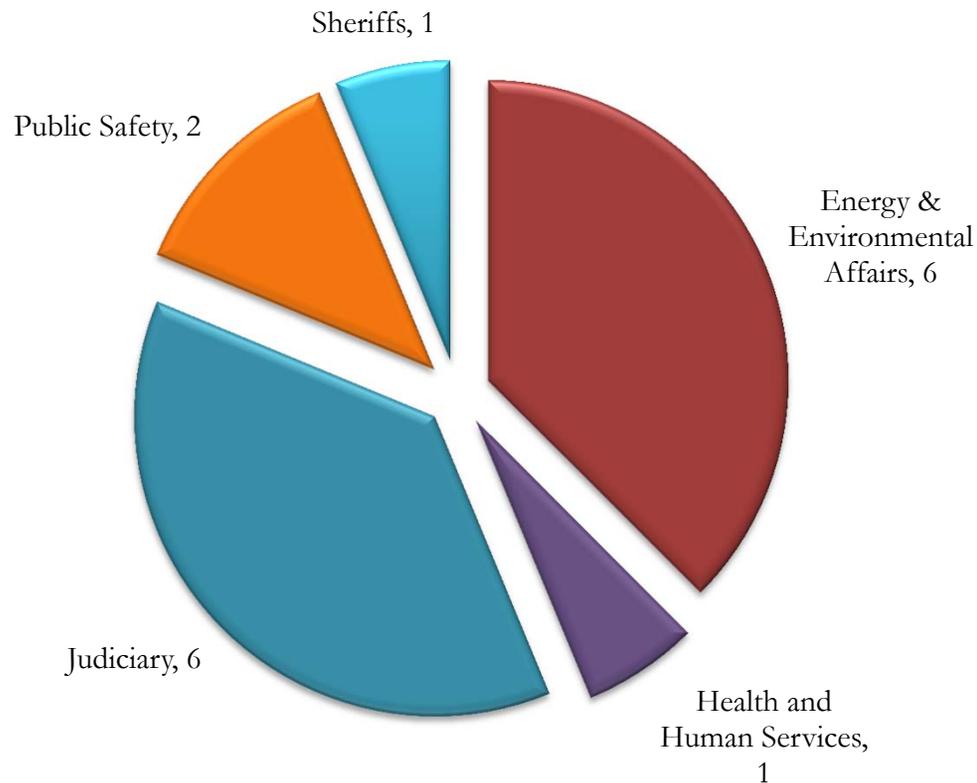


Number Remaining (496)



Program Status – Complete Sites

Complete:
16



Implementation Estimate:
\$3.2 Million

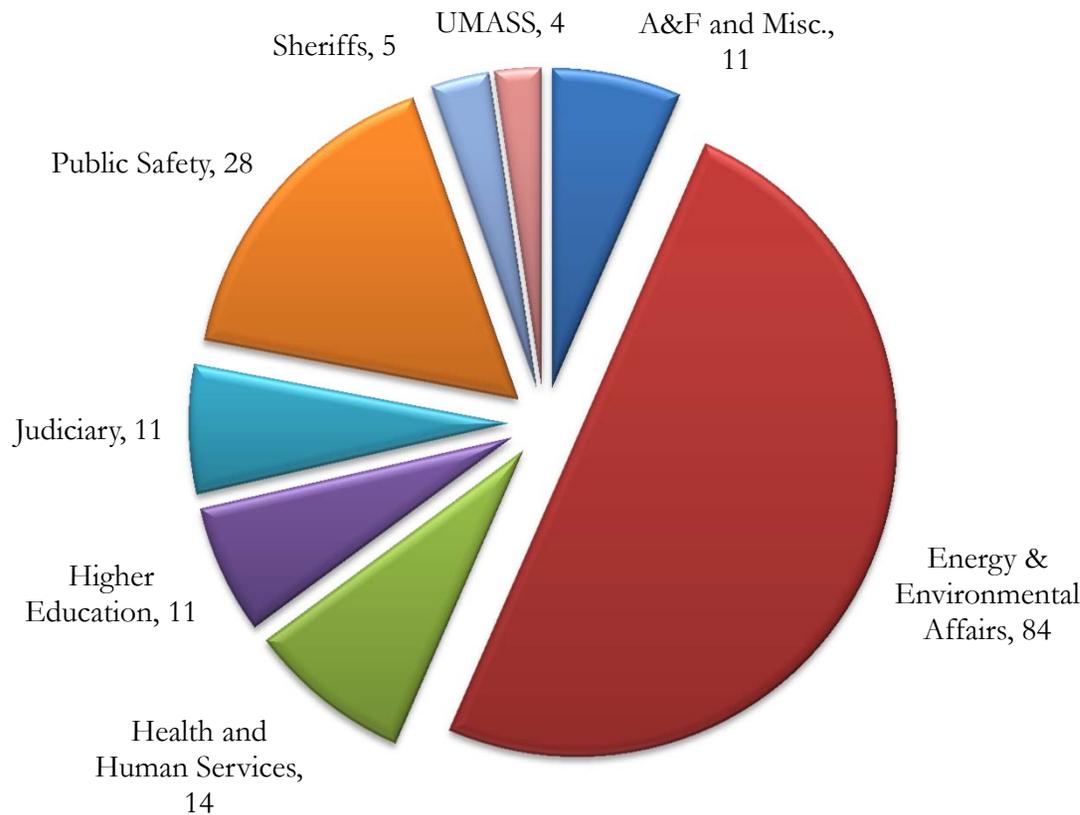
Estimated Annual Savings:
\$0.8 Million

The following major milestones have been achieved through Q3 2012:

- Indoor lighting upgrades were completed at five Trial Courts and one Sheriff’s Department site.
- One Department of Conservation and Recreation skating rink has been retrofitted with a reflective ceiling. All projects were managed by DOER using ARRA funding.
- The construction contract was signed at the Taunton State Hospital Complex for final design and installation of several measures at the Goss Building.

Program Status – In Progress Sites

In Progress:
168



Implementation Estimate:
\$281 Million

Estimated Annual Savings:
\$24.5 Million

The following major milestones have been achieved through Q3 2012:

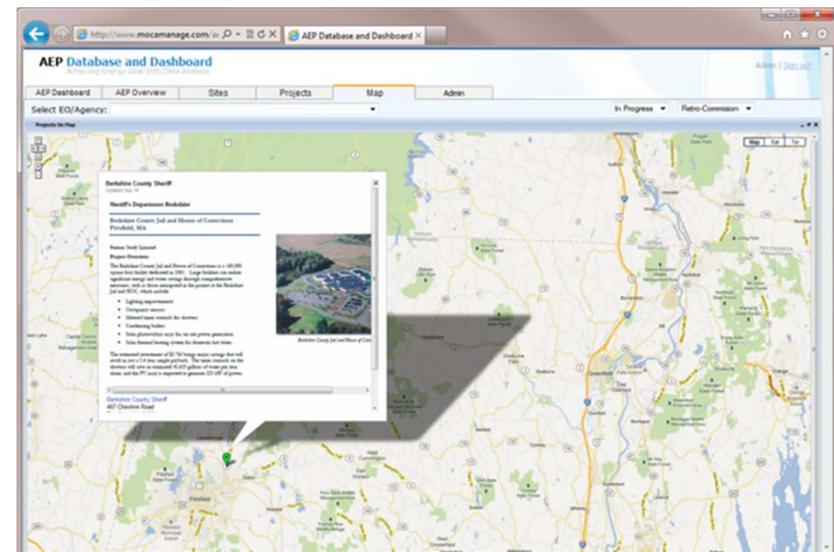
- Energy & Environmental Affairs – Audits initiated at 76 sites
- Taunton Career Center – Retro-Commissioning analysis initiated
- State House – Construction started on lighting project
- North Central Correctional Institute Gardner – RFP issued for comprehensive energy and water retrofit
- Northern Essex Community College – Construction contract signed for comprehensive energy and water retrofit
- Sheriff’s Department Berkshire – Preliminary design completed for condensing boiler and solar thermal system.

AEP Database & Dashboard

DCAMM is developing a temporary data warehouse and dashboard to improve the quality control of AEP data and streamline the generation of common reports for multiple internal stakeholders. The effort will augment the existing DCAMM technology with additional functionality to address the specific needs of the AEP.

The AEP Database and Dashboard is a customized software solution built to support the AEP. Several key elements of the solution are:

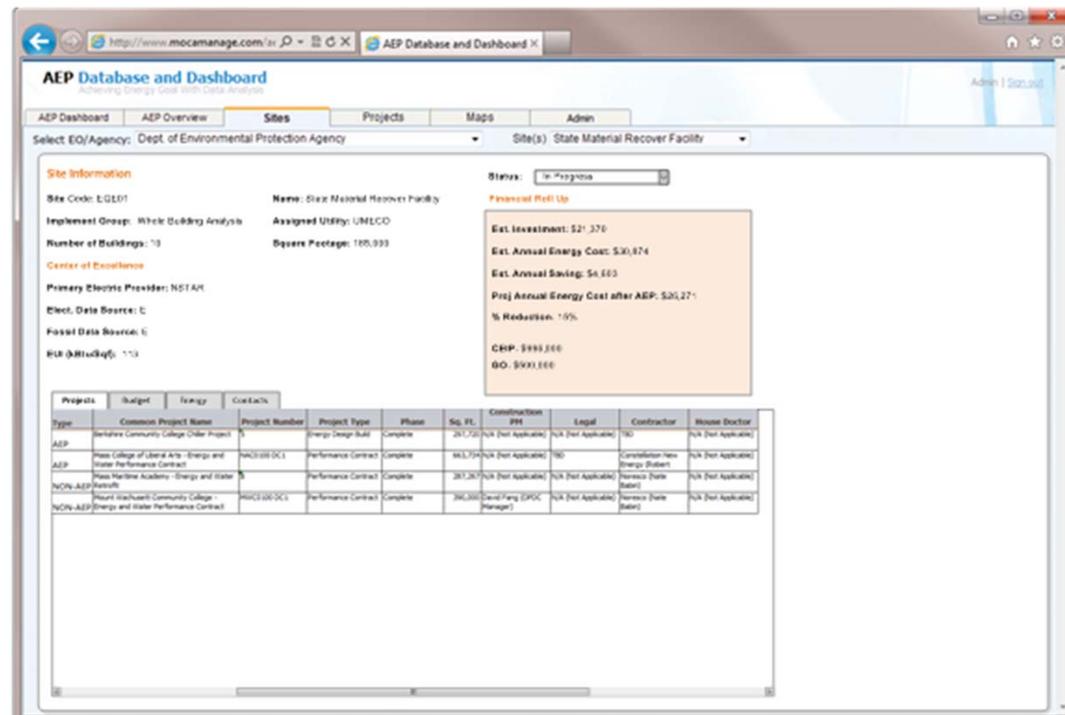
- Data acquisition from multiple data sources
- Validation and quality control rules
- Consolidated data storage (warehouse)
- Alert processing and email notifications
- Web dashboard and standardized web reports



The Sites Page allows the user to drill down to the site and associated project level information. This section provides navigation from secretariat, to agency to site. It lists all 800+ sites, with an ability to get information graphically and in data format by site and then by all associated projects.

Data displayed on the Sites Page will be pulled for the following primary databases:

- Energy Projects Database
- CAMIS
- PMAS/MMARS
- EEMS/MEI



AEP Spotlight – Simple Fix

Massachusetts Department of Transportation

MassDOT Statewide Energy Efficiency Audits

MHD Dartmouth Faunce Corner – D5

MHD Mattapoisett Depot – D5

MHD Sharon/Walpole Depot – D5

MHD Dartmouth State Road – D5

Status: **Audit Complete**

Project Overview:

- Simple Fix energy audits were performed by NXEGEN and managed by NSTAR.
- Sites are located within NSTAR electric utility territory.
- Audits addressed lighting measures only.
- Implementation of these ECMs at these sites yield a cumulative savings of over \$12k annually with an average payback of 3.6 years
- Utility incentives are based on \$0.13/KWH and will account for 33% of project funding.



Administration Building – South Boston



AEP Spotlight – Whole Building Analysis

The Commonwealth of Massachusetts
Accelerated Energy Program

Military Division

Concord Armory Concord, MA

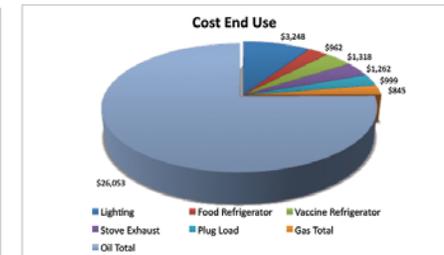
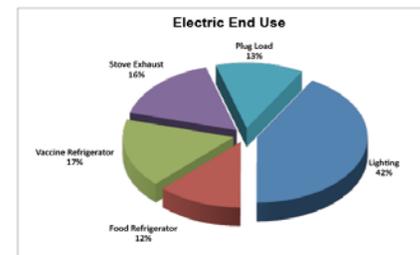
Status: **Audit Complete**

Project Overview:

- 36,500 square foot facility consisting of a gymnasium, offices, classrooms and a cafeteria.
- Currently whole building has one heating zone.
- Whole Building Analysis may include:
 - Lighting improvements
 - Occupancy sensors
 - Upgrade HVAC controls - will save 1,891 gallons of oil per year
 - Insulation
 - Window replacement
 - Refrigerator replacement
- Total estimated investment of \$61k & \$19k annual savings -- 3.2 year simple payback.



Military Division Armory, Concord, MA



**Utility Costs and Electric End Use from EE&D Audit*

Higher Education

Salem State University Salem, MA

Status: **Audit Underway**

Project Overview:

- The audit contract was signed by DCAMM, Salem State University, and Constellation New Energy on 8/30/2012.
- First phase of the construction contract to include campus-wide upgrade to:
 - Lighting,
 - Lighting controls
 - Motor replacements
 - Programmable thermostats
 - High-efficiency gas boilers
 - Domestic water fixtures
- Expected to start with the signing of the Energy Services Agreement in January, 2013.
- Anticipated total contract value is expected to be around \$5,000,000 with estimated savings \$400,000 per year.



Salem State University



Judiciary

Worcester Trial Court Worcester, MA

Status: **Audit Complete**

Project Overview:

- 427,000 square foot building was built in 2007.
- Strategic Building Solutions, LLC conducted a retro-commissioning audit in September to investigate existing system operation and identify potential conservation measures for installation.
- Recommended measures require approximately \$690k investment and will yield nearly \$225k in energy savings annually.
- Total anticipated energy cost reduction of 25% and a simple payback of 3.1 years for recommended measures.

Other Judiciary Sites:

- 26 other sites are bundled into larger projects that are currently in construction or study.



Worcester Trial Courthouse

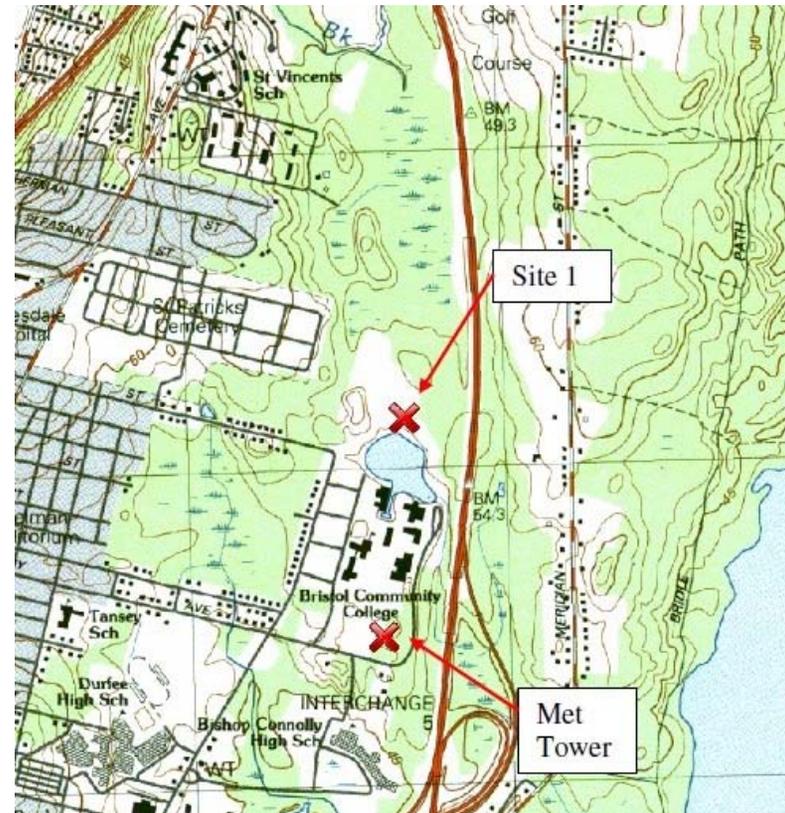
Higher Education

Bristol Community College Fall River, MA

Status: **Study Complete**

Project Overview:

- A feasibility study for a wind turbine generator was completed by Meridian Associates
- 900 kW wind turbine generator will be installed
- Bristol CC has been selected as a 2012 DOER Clean Energy Grant recipient. The \$600,000 grant will partially fund the wind turbine installation on campus
- Project has an 11 year payback
- DCAMM is currently finalizing the RFP for the wind turbine generator project and will issue the RFP on October 9, 2012. Proposals are due by November 7, 2012.



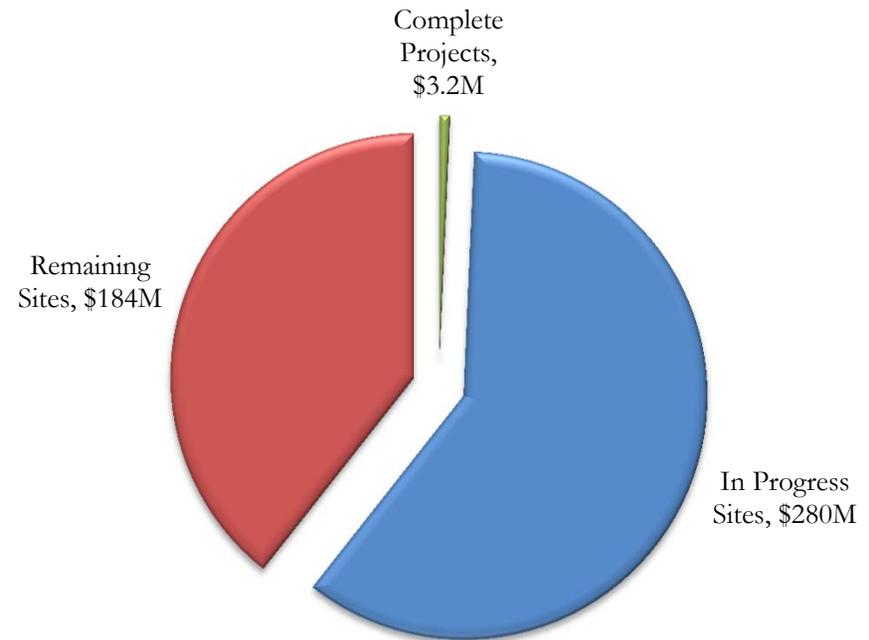
Proposed location for wind turbine generator and MET Tower

Financial Plan - Investment

AEP Financial Management

- A&F approved a base AEP budget of \$427,082,539 well as a 10 percent contingency, resulting in a total AEP budget of \$469,790,793.
- The current AEP working estimate is a combination of known costs for projects in progress or completed and estimate projections for future projects.

**AEP Total Budget:
\$470 Million**

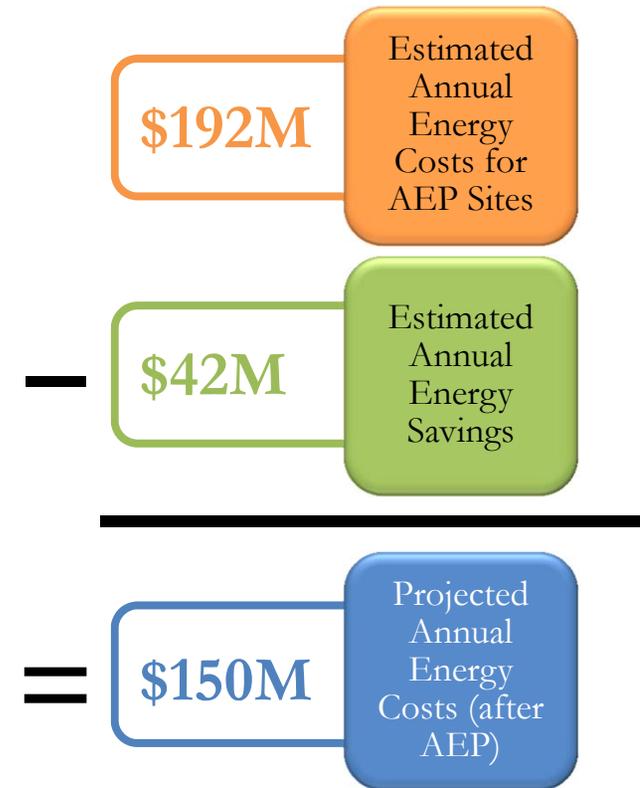
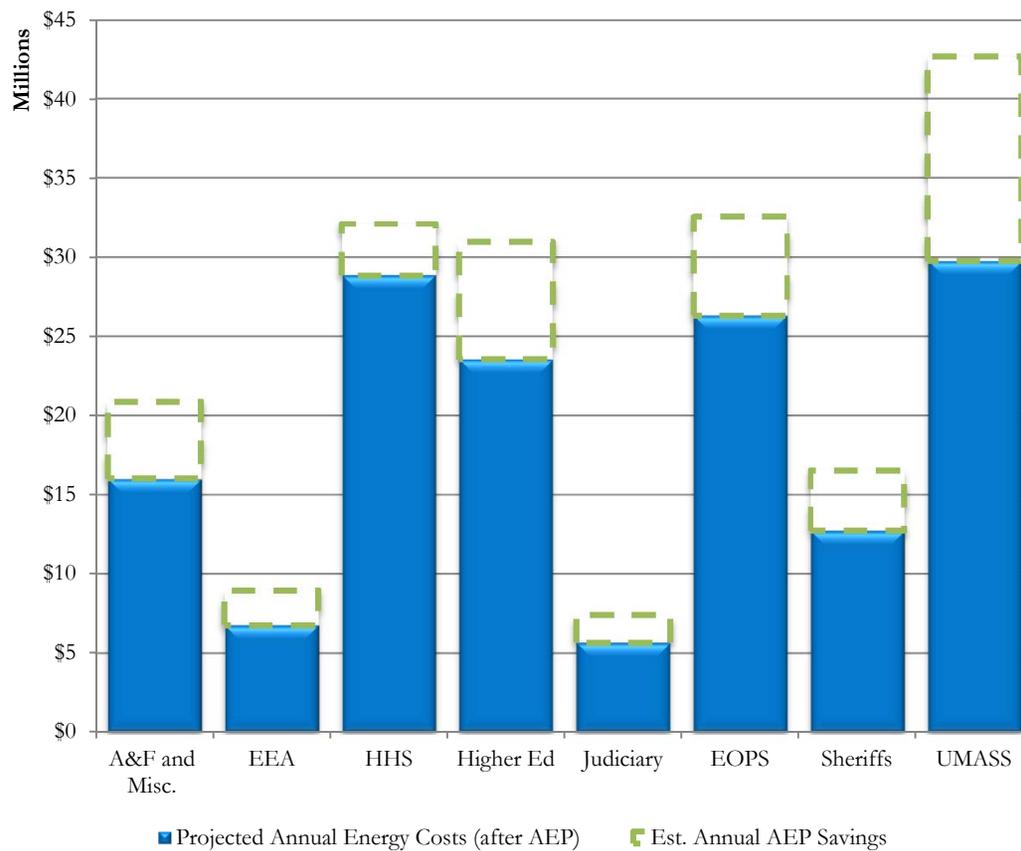


Status	Investment	CEIP Bonds	GO Bonds	Percentage Utility Rebate	Utility Rebate	Other Funds	Estimated Savings
Complete Projects	\$ 3,235,654	\$ 55,293	\$ 2,285,737	28%	\$ 894,624	\$ -	\$ 751,960
In Progress Sites	\$ 280,588,440	\$ 192,473,027	\$ 60,549,080	9%	\$ 24,725,897	\$ 2,840,436	\$ 24,463,045
Remaining Sites	\$ 184,172,031	\$ 114,362,868	\$ 42,856,996	15%	\$ 26,952,168	\$ -	\$ 17,265,792
AEP Working Estimate Total	\$ 467,996,125	\$ 306,891,189	\$ 105,691,812	11%	\$ 52,572,688	\$ 2,840,436	\$ 42,480,797

Financial Plan – Energy Costs & Savings

Projected Annual Energy Cost Reductions

- Shown below are energy costs for AEP sites, with anticipated reductions from current levels represented by green dashed areas.
- Savings estimates generated using historical data.



Program Exposures

Throughout Q3, the AEP team was able to mitigate many of the program risks through innovative solutions. In order to resolve uncertainty around identifying and scheduling individual projects, the team developed a detailed implementation strategy and prioritized all of the sites in the AEP – both individual large projects and bundles of smaller sites. Additionally, DCAMM expanded the existing pool of Facility Advisors in order to ensure that the necessary resources were available to implement the AEP over the next three years.

Exposures Mitigated in Q3 2012

Risk Identifier	Risk	Impact Description	Risk Score (1=Low 6=High)	Timeline	Risk Response	Risk Owner (Working Group)
Implementation Planning						
IP-R2	Lack of consensus in definition of "Green" and set benchmark for completion	Cannot accurately track progress of AEP	2	Near term	Collaboratively develop a definition for completion.	Data & Performance Management / Communications
IP-R4	All requested funding not in place (bond bills, utility rebates, etc.)	Not enough funds to complete program	4	Near term	Develop a project prioritization list based on highest return on investment or critical needs.	Procurement
Project Management						
PM-R4	Inadequate House Doctor resources to perform all audits	Not able to perform all audits in a timely manner	4	Near term	Expand current pool of approved House Doctors to handle higher volume of audits.	Audits
Standards & Process Creation						
SP-R2	Inadequate procurement/contracting resources to handle increased volume of projects	Program implementation is delayed beyond 3 years	3	Near term	Augment existing procurement/contracting staff by outsourcing or bring in additional long term hires within DCAM.	Procurement / Labor & Workforce Development

Working Group Accomplishments

	Q3 2012	Q4 2012
Communications	Developed Strategic Public Relations and Stakeholder Engagement Campaign	AEP Public launch
Simple Fix	Initiated work at 76 smaller sites within Energy & Environmental Affairs	Initiate work at 84 smaller sites within Judiciary and Public Safety
Audits & RCx	Developed standardized audit template	Initiate Retro-Commissioning audits
Outreach & Tech Support	Distributed site survey to facility managers	Collect and analyze site survey results, follow-up with facility managers
Building Codes	Developed roadmap for building codes	Develop revised matrix and accessibility policy
Data & Performance	Prioritized all AEP projects using criteria defined by the AEP team	Develop AEP Database & Dashboard
Procurement	Explored innovative contract options with utilities, comptroller, and DCAM business units	Finalize process for utility vendors
Leasing	Identified all leased spaces in privately owned sites	Develop prioritized list of leased spaces
Labor & Workforce	Established new working group	Develop framework for AEP Certification Program

Facility Advisor Contract Expansion

DCAMM analyzed the needs of the AEP and determined that the pool of consultants was not sufficient to meet the goals of the AEP. To address the potential shortfall of consulting firms, DCAMM identified 32 new consulting firms, including 8 firms certified by the Supplier Diversity Office, to expand the consultant pool.

Using the results from the analysis on consulting firms, DCAMM solicited proposals for qualified firms to become approved Facility Advisors. In response to the solicitation, DCAMM added 30 new qualified consulting firms in Q3 to support the AEP.

The table below provides an overview of AEP consulting services required by implementation group. It highlights the type of firm capable of providing the required services.

Impl Group	Electric Service Provider	DELIVERY OF SERVICES							
		Audits	Water Survey	RCx Audits	30% Design Services	65% Design Services	100% Design Services	Constr. Mgmt	Constr.
SF ¹	Utilities	Utility Prog	HD/FA/Util				Utility Prog	Utility Prog	Utility Prog
	Municipal	HD/FA	HD/FA				HD		
WBA ²	Utilities	HD/FA/Util	HD/FA/Util		HD/Util	HD/Util	HD/Util		
	Municipal	HD/FA	HD/FA		HD	HD	HD		
RCx			HD/FA	HD/FA	HD	HD	HD	HD	
Comp ³		HD	HD		HD	HD	HD	HD	
New Review ⁴		HD	HD/FA						

Legend

Adequate
Shortfall
None
Not Applicable

Thank you!

We greatly appreciate your
time and guidance.