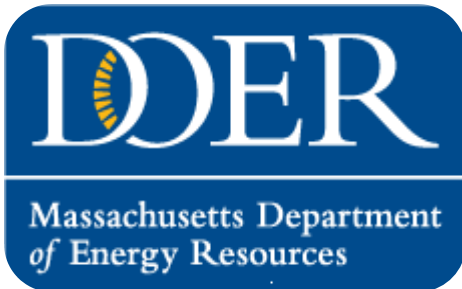


Creating A Greener Energy Future For the Commonwealth



Massachusetts Incentives for Combined Heat and Power

Mass Save Energy Efficiency incentives and the Alternative Portfolio Standard

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Director, Renewable Energy Division**

*U.S. DOE / IIP
Webinar*

**CHP in the U.S.:
Jumpstarting
Implementation**

November 20, 2013

Overview of MA Policies for CHP

MASS SAVE – Utility Energy Efficiency Program

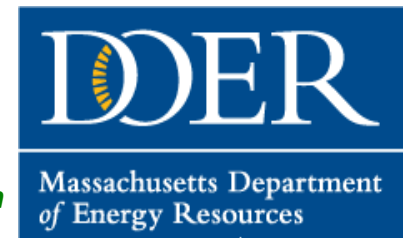
Alternative Energy Portfolio Standard (APS)

MASS SAVE – Utility Energy Efficiency Program (Grant Support)

- All cost-effective EE is mandated by Green Communities Act of 2008 funded through a System Benefit Charge on electric ratepayers, as well as contributions of RGGI auction funds, with lost revenues captured through de-coupling.
- CHP is included as Energy Efficiency measure, if it can pass a B/C test
- Provides rebates of up to \$750/kW, and 50% cost of feasibility studies.

Alternative Energy Portfolio Standard – APS (Performance Based Support)

- Operates in conjunction with state's Renewable Energy Portfolio Standard (RPS) programs
- Creates obligation of all retail electricity suppliers to acquire Alternative Energy Certificates (AECs) Minimum Standard – 3% in 2013 to 5% in 2020.
- Alternative Compliance Payment rate is \$21.43 in 2013.
- APS supports non-RE technologies, nearly all is CHP.
- For CHP, AECs are provided for efficiency gains due to electric and thermal production.



MASS SAVE Energy Efficiency Program for CHP Incentive Structure

- Green Communities Act of 2008 recognizes CHP as an Energy Efficiency Measure eligible for incentives by utilities.
- Rebate Incentive Structure
 - Small systems (<150 kW): \$750/kW
 - Larger systems (\geq 150 kW): up to \$750/kW
 - Rebate limited to no more than 50% of installed cost.
- Benefit/Cost Ratio (BCR) Test considers operational and electric grid value of CHP project. Analysis is on a case-by-case basis, typically with hourly simulation.
- Only high efficiency CHP units likely to demonstrate threshold $BCR > 1$.

MASS SAVE Energy Efficiency Program for CHP

Recent Outcomes

- For projects awarded, Benefit/Cost ratios have ranged between 1 and 2.
- For 2011:
 - CHP has represented 30% of Commercial/Industrial EE Target Savings
 - \$/kWh savings have been the lowest of all MASS SAVE measures.

Link to Guide for the MASS SAVE CHP Incentive Program

<http://www.masssave.com/business/building-or-equipment-upgrades/find-incentives/~media/Files/Business/Applications%20and%20Rebate%20Forms/CHP%20Incentive%20Guidebook%20-%20dated%2011-18-10.ashx>

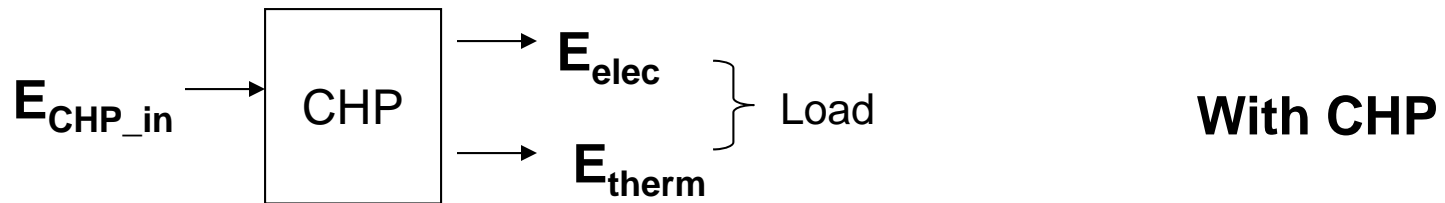
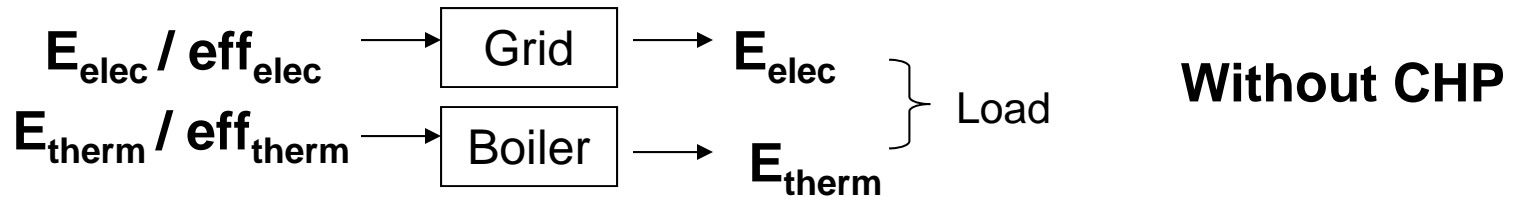
Alternative Energy Portfolio Standard

- Established under Green Communities Act 2008. Provides for RPS-type program for alternative (non-renewable) technologies. Program administered under DOER APS Regulation 225 CMR 16.00.
- Creates obligation of all retail electricity suppliers to acquire Alternative Energy Certificates (AECs) equal to a set percentage of load served. Program compliance obligation began in 2009; Minimum Standard increases to 5% by 2020; ACP Rate is \$21.43/MWh increasing with CPI.
- Eligible technologies include flywheels, CHP, gasification with carbon capture/sequestration, paper-derived fuels. Nearly 100% of AECs generated are from CHP units.



Alternative Energy Portfolio Standard

AECs for CHP Account for Primary Fuel Savings



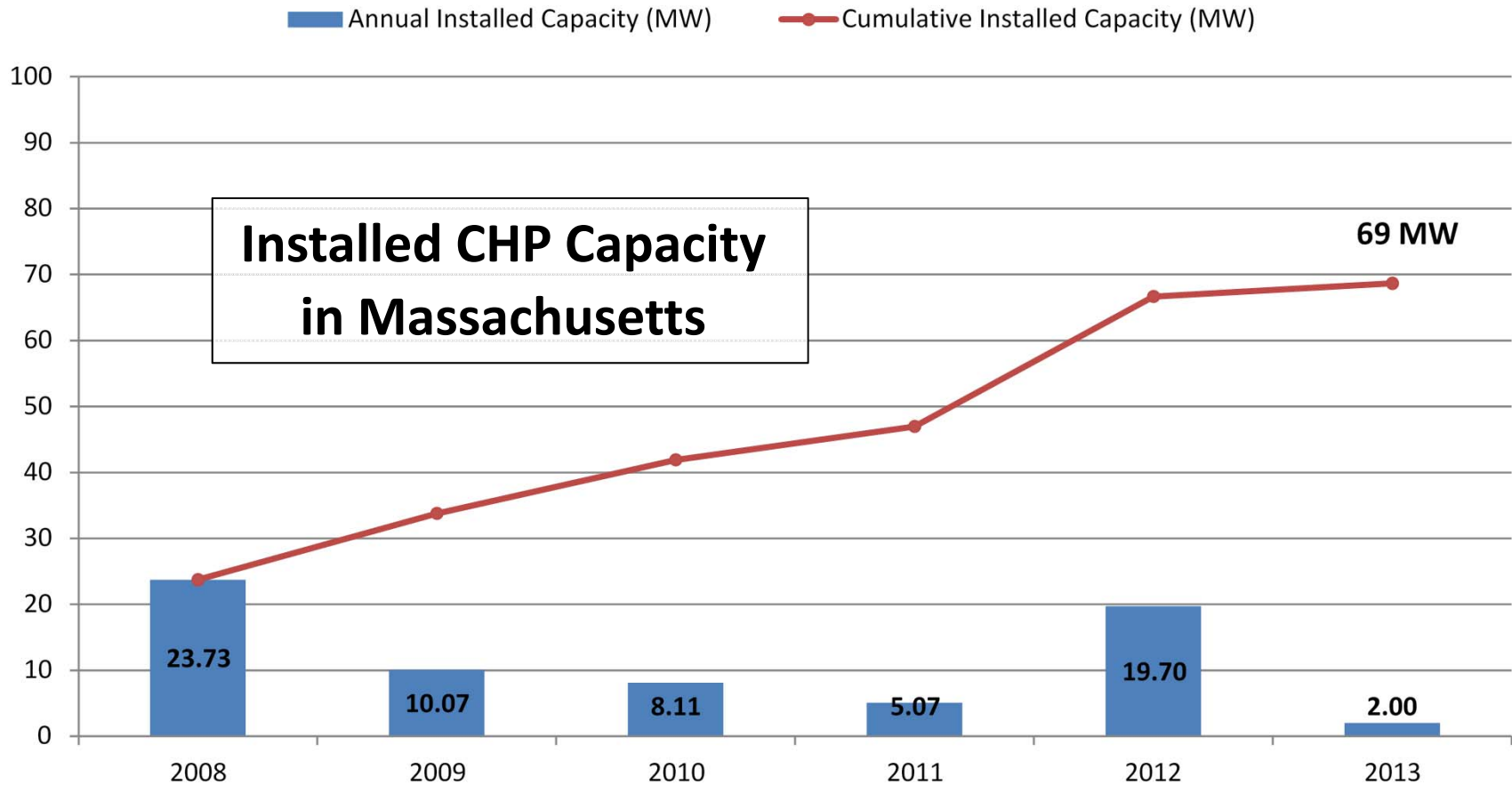
Alternative Energy Credits (AECs) calculated as **primary energy savings** by subtracting the primary fuel inputs (with average overall electric and thermal efficiencies of 0.33 and 0.80, respectively, and all energy units expressed in MWh).

$$\text{AECs} = E_{\text{elec}}/0.33 + E_{\text{therm}}/0.80 - E_{\text{CHP_in}}$$

Guidelines for APS Eligible CHP Systems

- Metering, subject to independent verifier, is required to demonstrate useful thermal and power output. Metering requirements relaxed for small systems.
- Program supports incremental CHP
 - Provides incentive for existing electric-only power plants to add useful thermal load, or for thermal-only plants to add electric generation.
- CHP Projects must serve thermal load in MA
- CHP Units may also qualify for utility MASS SAVE Funding
- APS Guideline for CHP at:
www.mass.gov/eea/docs/doer/rps-aps/aps-chp-guidelines-jun14-2011.pdf

Slow, Steady Growth in CHP



Creating a Cleaner Energy Future for the Commonwealth

CHP for Energy Security

- DPU Grid Modernization – MA DPU issued a Notice of Inquiry and convened Steering Committee which filed report in July 2013 to inform Grid Mod docket on issues including CHP/district energy, micro-grids, etc.
- DOER and Executive Office of Energy and Environmental Affairs beginning to look at Energy Resiliency for critical infrastructure in cities and towns, under the Climate Adaptation initiatives under the Global Warming Solutions Act and subsequent Clean Energy and Climate Plan.
- MA Military Bases Energy Program –working with 6 DoD military bases in MA to assess clean energy opportunities to increase energy security and reliability, and reduce GHG emissions.