
GWSA Regulations – Emitting Electricity Generators Stakeholder Meeting

Massachusetts Department of Environmental Protection

Boston, MA

November 7, 2016



GWSA Regulations - Electricity Sector Stakeholder Meeting

Executive Order 569:

“The Department of Environmental Protection shall promulgate final regulations that satisfy the mandate of Section 3(d) of [GWSA] by August 11, 2017, having designed such regulations to ensure that the Commonwealth meets the 2020 statewide emissions limit mandated by the GWSA....The Department of Environmental Protection shall:

...consider limits on emissions from, among other sources or categories of sources, the following: (i) leaks from the natural gas distribution system; (ii) new, expanded, or renewed emissions permits or approvals; (iii) the transportation sector or subsets of the transportation sector, including the Commonwealth’s vehicle fleet; and (iv) gas insulated switchgear...”

September 16, 2016



GWSA Regulations - Electricity Sector Stakeholder Meeting

Massachusetts Supreme Judicial Court:

“...this court concluded that the plain language of [GWSA, Section 3(d)] requires the department to promulgate regulations that address multiple sources or categories of sources of greenhouse gas emissions, impose a limit on such emissions that may be released, limit the aggregate greenhouse gas emissions that are released from each group of regulated sources or categories of sources, set greenhouse gas emissions limits for each year, and set limits that decline on an annual basis.”

May 17, 2016



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Global Warming Solutions Act of 2008

Section 3(c):

“Emissions levels and limits associated with the electric sector shall be established by the executive office and the department, in consultation with the department of energy resources, based on consumption and purchases of electricity from the regional electric grid, taking into account the regional greenhouse gas initiative and the renewable portfolio standard.”

Section 3(d):

“The department shall promulgate regulations establishing a desired level of declining annual aggregate emission limits for sources or categories of sources that emit greenhouse gas emissions.”



Overview of Required Reductions

2020 Emission Limit	25.0% below 1990 Emissions
2013 Actual Emissions (most recent inventory)	19.7% below 1990 Emissions
Additional Reductions Needed (2013 – 2020)	5.3% below 1990 emissions* (minimum)

- December 2015 - EOEEA Clean Energy and Climate Plan (CECP) Update lists policies that “will reduce emissions to at least 25% below the 1990 level by 2020.”

* Throughout this presentation, quantities of greenhouse gas (GHG) emissions are expressed as a percent of 1990 emissions, consistent with the approach used in the CECP Update



Draft Reductions from New and Existing MassDEP Regulations

MassDEP Regulation	New or Draft Amendment?	Section 3(d)?	Estimated Reductions 2013 – 2020*
Transportation Sector Regulations			3.2 - 4.1%
Vehicle GHG Standards	N/A (Existing)	No	
Requirements for Transportation	Amend	Yes	
State Vehicle Fleet	New	Yes	
Electricity Sector Regulations			4.0%
Clean Energy Standard for Retail Sellers	New	No	
Generator Emissions Caps	New	Yes	
Methane Leaks from Gas Distribution System	New	Yes	0.05%
Gas Insulated Switchgear	Amend	Yes	0.01%
Total			7.3% - 8.2%

* Electricity and transportation reductions are aggregated in this table to avoid double counting across policies.



Electricity Sector Reductions

Source of Reductions	Estimated Reductions 2013 – 2020*
Coal Fired Power Plan Retirements (Net of gas generation increase compensating for Brayton, Salem, Mt. Tom, Pilgrim shutdowns)	- 0.2%
Renewable Portfolio Standard (RPS)	0.7%
All Cost Effective Energy Efficiency + Appliance Standards (Net of projected 2020 electric vehicle load)	2.2%
New Clean Electricity (Estimate reflects DOER supply assessment of surplus in-region RE)	1.3%
Total	4.0%

* Assumes that natural gas generation compensates for other changes in load and generation. New MassDEP regulations would establish an emissions cap that reflects aggregate changes in emissions resulting from the policies listed above.



Possible Reductions from Power Plants in MA

- MassDEP is considering proposing a cap on GHG emissions from electricity generators to ensure that reductions occur in Massachusetts
- Figures below illustrate how the cap stringency might be determined

Electricity Sector Change	Reductions in Massachusetts
Reduced Stack Emissions from Coal-Fired Power Plants	4.0%
Net Gas Generation Changes from Electric Sector Policies (Includes retirements, RPS, EE, and new clean energy)	~ 0%
Total	4.0%



Draft Power Plant Emission Caps Regulation Overview

- Consider a regulation to cap GHG emissions from power plants located in Massachusetts
- Purpose: limit and reduce GHG emissions from power plants consistent with GWSA requirements
- Establish an aggregate cap = sum of existing facility caps and aggregate new facility cap

Draft Power Plant Emission Caps Regulation Overview

- The regulation could be structured to:
 - Beginning in 2018, establish a declining emissions cap for each power plant in Massachusetts, including new power plants; allow for the creation and use of over compliance credits
 - Set caps so that aggregate GHG emissions from regulated power plants decline by 2020 to a level consistent with the electric sector strategies in the 2020 CECP Update
- The regulation could also:
 - Continue to reduce caps by 2.5% of the 2018 cap each year from 2020 – 2050, yielding reductions consistent with the GWSA 2050 limit



Draft Power Plant Emission Caps Regulation

Option for Setting Facility Caps

- Base applicability on EPA's GHG reporting program
- Establishing caps on existing power plants by:
 - Calculating each facility's average emissions over the past three years (2013-2015)
 - Reducing caps proportionally to achieve emissions targets
 - Assigning caps of zero to coal-fired power plants
- Address new power plants by:
 - Creating an aggregate new facility cap sized to accommodate new facilities
 - Setting individual new facility caps after three years based on actual operations
 - Apportioning any remainder to existing facilities, or apportioning among new facilities as needed to enforce the aggregate cap



Setting Annual Declining Caps

Electricity Sector Change	As a % of 1990 Emissions	In Million Metric Tons CO ₂ equivalent
2013 Emissions		12.48
Estimated Reductions (2013 – 2020)	4.0%	3.82
2020 Emissions		8.66

Year	Aggregate New Source Cap (MMt)	Total of Existing Facility Caps (MMt)	Aggregate Cap (MMt)
2018	1.000	8.12	9.12
2019	0.975	7.92	8.89
2020	0.950	7.71	8.66

* 2018 facility caps for existing facilities would be approximately 5% less than average 2013 - 2015 emissions, after adjusting for reductions from coal plant retirements and potential new facility caps.



Draft Power Plant Emission Caps Regulation Option for Over-Compliance Credits

- Includes over-compliance credit provisions that:
 - Allow facilities with emissions below caps to create credits
 - Allow facilities to retain credits for future use, or allow their use by other facilities
 - Allow facilities that exceed caps to comply using credits
 - Include program review and credit adjustment as needed
- Set caps consistent with other electricity policies to ensure the aggregate cap is achievable (i.e., RPS, energy efficiency)



Draft Power Plant Emission Caps Regulation

Key Questions

- Is the draft's process for determining facility-specific caps for new and existing facilities reasonable?
- Include a cap for any new facilities, or require new facilities to use credits created by existing facilities?
- Does the over-compliance credit mechanism provide sufficient operational flexibility for facilities? Does this mechanism ensure sufficient emissions reductions?
- Base compliance on all GHG emissions reported to EPA, or limit to carbon dioxide emissions?



Information posted at:

<http://www.mass.gov/eea/agencies/massdep/air/climate/section3d-comments.html>

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