



# Connecticut Department of Energy and Environmental Protection



# Amending Section 38 as a RACT Commitment: Why Now and What is DEEP Thinking?

8 October 2014  
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Connecticut Department of Energy and Environmental Protection



# Preorganizer

- Part 1. Goal and schedule
- Part 2. RACT basics
- Part 3. MWC NO<sub>x</sub> emissions limits
- Part 4. Addition of an ammonia limit(s)
- Part 5. Next steps and homework



# Goal/ Definition of Success

**By December 31, 2016, adopt a regulatory amendment to RCSA section 22a-174-38 that reduces the NOx emissions limits and is approvable by EPA as RACT under the 2008 ozone NAAQS.**

- In addition, the Department should consider adding an ammonia limit, with appropriate testing, monitoring and record keeping provisions, to RCSA section 22a-174-38.

## Results

- Better protection of human health and the environment.
- Clean Air Act requirement is satisfied.



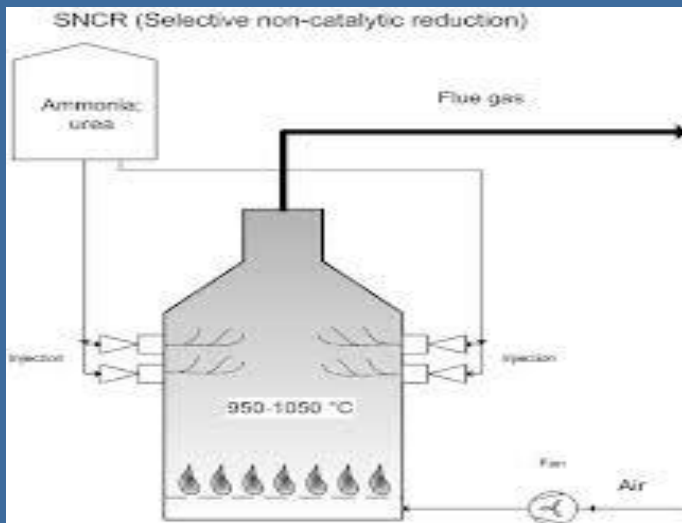
# Preliminary Regulatory Adoption Schedule

Action	Preferred Timing
Prepare draft amendment	Now through February 2015
Draft to Governor/OPM	March 2015
Publish notice of intent	June 2015
Public hearing	July 2015
To Attorney General	September 2015
Submit to LRRC	December 1, 2015
LRRC hearing	January 26, 2016
Second LRRC submission	March 1, 2016
Second LRRC hearing	March 22, 2016
Effective date	About April 1, 2016
Compliance date	January 1, 2017 (May 1, 2017?)



# Part 2

## RACT Basics



# What is RACT?

- Reasonably Available Control Technology
- An ozone nonattainment requirement.
  - Clean Air Act Sections 182(a)(2)(A); 182(b)(2) and (f); 184(b)
- RACT  $\equiv$  the lowest **emission limitation** that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.
- Over time, RACT changes as the cost of control methods decrease or as new controls are developed.



# Ozone National Ambient Air Quality Standard (NAAQS)

- 1997 Ozone NAAQS = 80 ppb
  - All of Connecticut is designated as moderate nonattainment. We are not in attainment.
    - EPA proposed to rescind the clean data determination of attainment for southwest CT. (79 FR 27830; May 15, 2014)
  - RACT plan was approved.
- 2008 Ozone NAAQS = 75 ppb
  - Marginal nonattainment.
- 2015 Ozone NAAQS = ? 60-70 ppb
  - Proposal is scheduled for release by EPA on December 1, 2014 and for final proposal in summer 2015.
  - EPA policy recommendation and CASAC recommendation is 60-70 ppb.
  - Connecticut will be designated nonattainment.

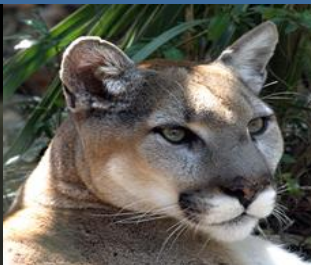
RACT SIP submitted July 2014  
Regulations must be in place January 1,  
2017





# More RACT Essentials

- Levels of control and emissions rates that are achieved in practice by existing sources are technologically and economically feasible.
- Requirements in place in other states are a benchmark for RACT.
- RACT applies to all major sources of NO<sub>x</sub>.



# RACT SIP Submitted July 2014

- MWCs recognized as a significant source of NO<sub>x</sub> emissions.
- NO<sub>x</sub> emissions limits of RCOSA section 22a-174-38 last revised in October 2000 as a 1-hour ozone NAAQS attainment measure.
- SNCR installed at all of the large MWC units.
- Other states have more stringent emissions limits, particularly for mass burn waterwall units.
- Technologically and economically feasible to reduce NO<sub>x</sub> emissions from MWCs.



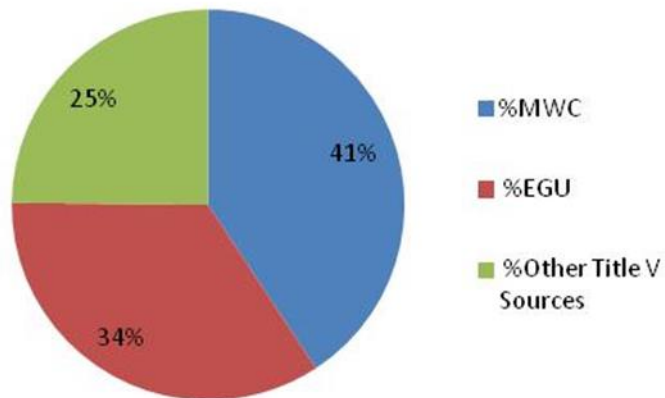
# Part 3

## Levels of the NOx Emissions Limitations

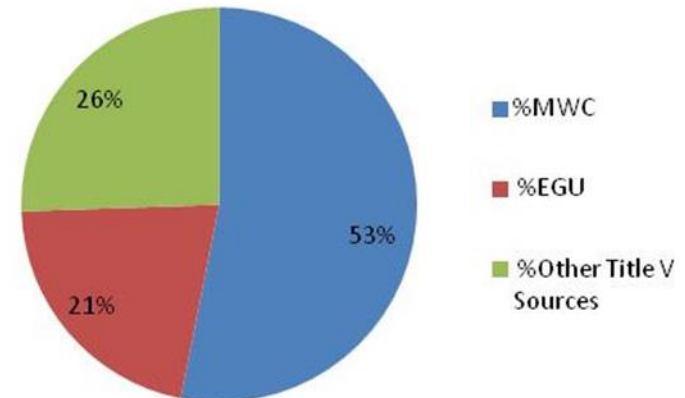


# MWCs Emit Substantial Amounts of NOx

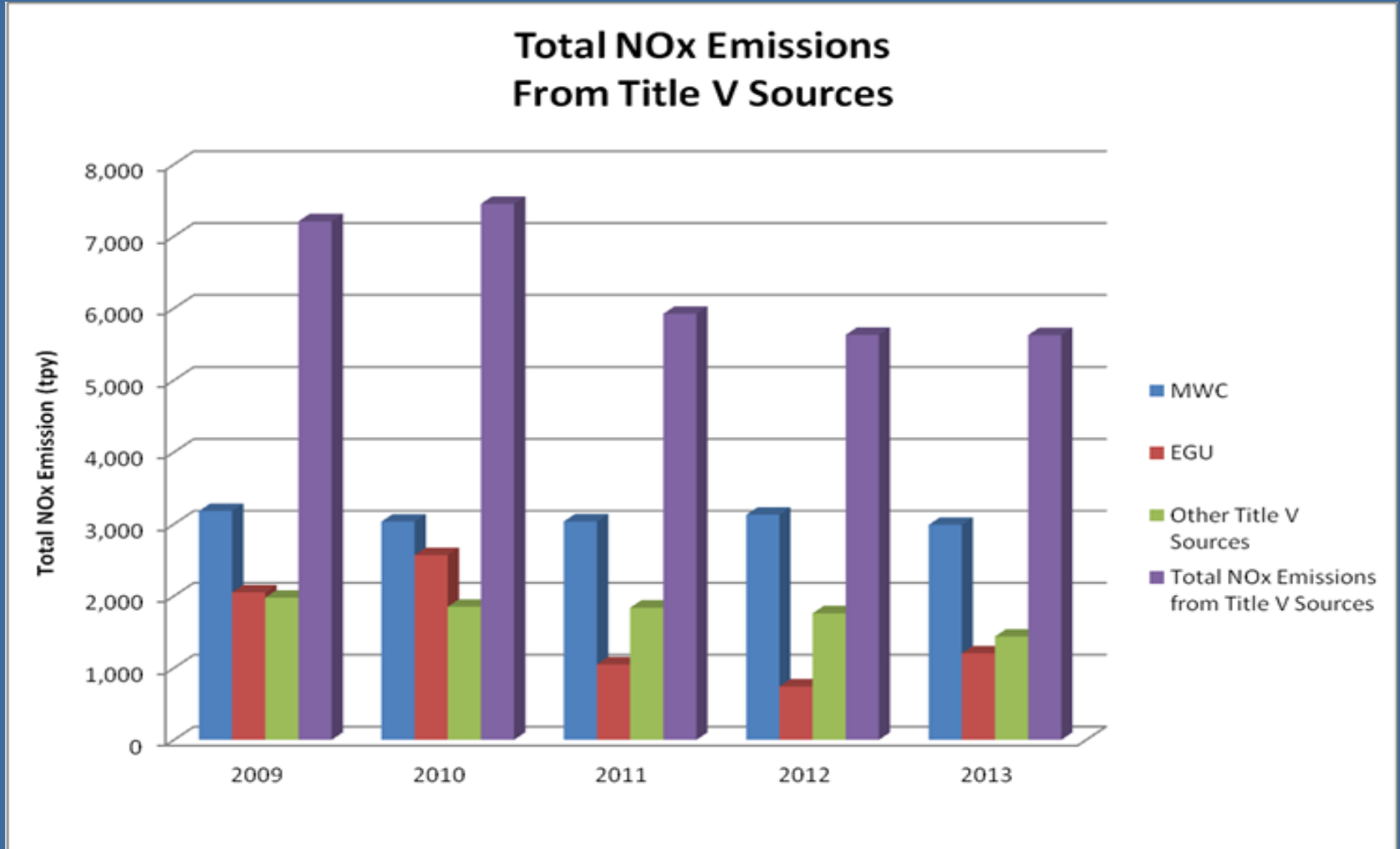
**%NOx Emissions from Title V Sources 2010**



**%NOx Emissions from Title V Sources 2013**



# MWCs Emit Substantial Amounts of NOx



# State and Federal MWC NOx Emissions Limits

(ppmvd @ 7% O<sub>2</sub>, 24-hour average)

Combustor type	40 CFR 60 Subpart Cb Large Municipal Waste Combustors	40 CFR 62 Subpart JJJ Small Municipal Waste Combustors	RCSA section 22a-174-38  (Levels of the limits have not changed since 2000.)	New Jersey Admin. Code 7:27-19.12	Massachusetts 310 CMR 7.08(2) (Proposed)
Mass burn waterwall constructed on or before December 31, 1985	205	No units in Connecticut	200	150	150
Mass burn waterwall constructed after December 31, 1985	205	No units in Connecticut	177	150	150
Refuse-derived fuel stoker	250	No units in Connecticut	146	n/a	146
Mass burn refractory	No limit	350	177	n/a	125 (See proposed 310 CMR 7.19)



# Current NOx Limits at Connecticut MWC Facilities

Facility	No. of units	Type	RCSA section 22a-174-38 NOx emission limit (24-hour daily arithmetic average, measured with CEM.)	Permitted NOx emission limit/ NOx controls (24-hour daily arithmetic average, measured with CEM. All units also have an annual NOx limit.)
Covanta Southeastern CT	2	Mass burn waterwall	177 ppmvd @ 7% O <sub>2</sub>	177 ppmvd @ 12% CO <sub>2</sub> SNCR
Wheelabrator Bridgeport	3	Mass burn waterwall	200 ppmvd corrected to 7% O <sub>2</sub>	200 ppmvd corrected to 7% O <sub>2</sub> SNCR
Covanta Bristol	2	Mass burn waterwall	200 ppmvd corrected to 7% O <sub>2</sub>	Unit 1: ≤ 120 ppmvd @ 7% O <sub>2</sub> Unit 2: ≤ 200 ppmvd @ 7% O <sub>2</sub> SNCR and Covanta LN™
Wheelabrator Lisbon	2	Mass burn waterwall	177 ppmvd @ 7% O <sub>2</sub>	168 ppmvd @ 7% O <sub>2</sub> SNCR
Mid-CT Resources Recovery Facility	3	Processed municipal waste	146 ppmvd @ 7% O <sub>2</sub>	146 ppmvd @ 7% O <sub>2</sub> SNCR
Covanta Wallingford	3	Mass burn refractory	177 ppmvd @ 7% O <sub>2</sub>	177 ppmvd @ 7% O <sub>2</sub> None



# NOx Controls for MWCs

- NOx controls for MWCs are limited
  - Low-NOx burners, fuel switching, load curtailment are not options
  - SNCR is the only generally available control option
    - All units except those at the Wallingford facility have installed SNCR.
    - Covanta's LN™ technology continuing to be evaluated.
    - SNCR optimization or replacement with an advanced design is available. Cost estimates prepared by the Institute of Clean Air Companies in 2007 = \$2,000-\$3,000/ton NOx reduced.





# Current Thinking on NOx Emissions Limits

- No change to the emissions limitations for processed municipal waste combustors and mass burn refractory combustors.
  - MADEP is not moving forward with the proposed 125 ppmvd limit for mass burn refractory units.
- Reduce the limits on mass burn waterwall units to a level of 150 ppmvd.



# Part 4

## Addition of an ammonia emission limit



# MWC Ammonia Limits in Other States

- MA : Taking comment on whether to include a presumptive ammonia limit. Some permits include a 10 ppmvd limit.
- NY and NJ do not appear to address ammonia in regulation. NJ permits have limits of 50 ppmvd@7%O<sub>2</sub>.
- ICAC March 12, 2007 control costs white paper included a 10 ppmvd ammonia limit in different NO<sub>x</sub> control scenarios.



# Why an Ammonia Limit Now?

- Ammonia is a hazardous air pollutant and an important contributor to fine particulate matter.
- To prevent an increase in ammonia slip from efforts to meet more stringent NOx emissions limits.
- Provide consistency in how different MWC facilities are permitted for ammonia.



# Current Thinking on Ammonia Limits

- All units should meet an ammonia limit of 10 ppmvd at 7% O<sub>2</sub>, 24-hour average.
  - Alternative: Facility- or unit-specific limit not to exceed 20 ppmvd, based on demonstration that such a limit is appropriate.
- Compliance should be demonstrated with continuous emissions monitoring (CEM).



# Part 5

## Next steps and homework



# Next Steps

- At your option, meet with you individually concerning how your facility (-ies) would comply with the current thinking on the amendment.
  - In October, if possible.
  - We will propose dates and times. Feel free to suggest alternatives.
- Prepare draft regulatory language and distribute for comment by November 26.
- Hold group meeting, if necessary, in December to discuss draft language.
- Distribute new draft in January.



# Possible Areas for Discussion at Individual Meetings

- Compliance timing. How much time is required to make necessary changes?
- Addition of an ammonia standard.
- Option of site-specific requirements for ammonia.
- Requiring CEM for ammonia.
- Site-specific cost and emissions control information.
- Does Section 38 require other corrections?
- Do we need to be aware of any issues or timing concerns resulting from the solid waste management transformation?





# Additional Information

- RACT web page  
[http://www.ct.gov/deep/cwp/view.asp?a=2684&q=546804&deepNav\\_GID=1619](http://www.ct.gov/deep/cwp/view.asp?a=2684&q=546804&deepNav_GID=1619)
- MASS DEP Proposed Amendments and Technical Support Document  
<http://www.mass.gov/eea/agencies/massdep/service/regulations/proposed-and-recently-promulgated-regulations.html#2>
- NJDEP Potential control measure analysis (includes ICAC analysis)  
[http://www.nj.gov/dep/baqp/rapt/wps/SCS009\\_fin2.pdf](http://www.nj.gov/dep/baqp/rapt/wps/SCS009_fin2.pdf)



# Reasons Why Kirk is Better than Picard



When Picard fought the Borg, he was assimilated. When Kirk fought the Borg, he blew up their home planet.

- Kirk's evil twin womanized and swilled brandy. Picard's evil twin liked to have his scalp massaged by Ron Perlman.
- Kirk fought the Greek god Apollo. And won.
- Kirk's nemesis was the genetically superior ruler of one-quarter of the Earth. Picard's nemesis liked to dress like Picard and occasionally caused inconvenience.
- Kirk does not play the flute.
- Picard's name is known and respected throughout Klingon space. Kirk's name is cursed and vilified.
- Everyone knows the phrase "Beam me up, Scotty!" Do you ever hear "Energize whenever you are ready, Mr. LaForge"?
- When Sisko met Picard, he hated him. When Sisko met Kirk, he got Kirk's autograph.

