



Connecticut Department of Energy and Environmental Protection



Plotting a Course to *Section 22: The Next Generation*



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Stationary Source Control Group

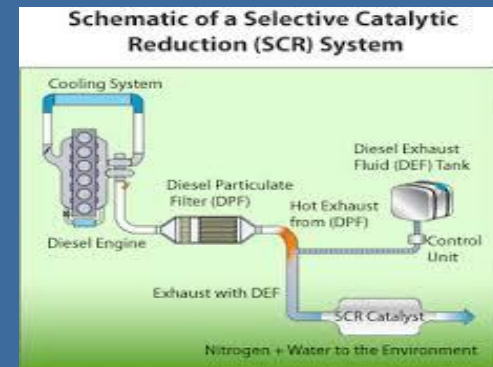
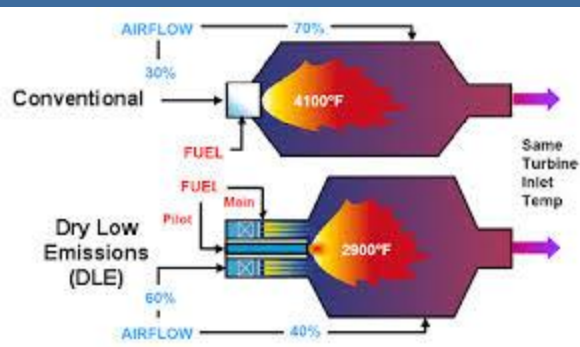
The Next Generation SIPRAC Subcommittee



Connecticut Department of Energy and Environmental Protection

Preorganizer

- Section 1. Goal and DEEP issues
- Section 2. Other state regulations
- Section 3. Our thoughts on Next Generation Section 22
- Section 4. Homework and next steps



Section 1. Goal and DEEP Issues



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Goal/ Definition of Success

- Develop Next Generation Section 22 to reduce NO_x emissions from fuel-burning sources to protect human health and the environment and allow EPA to approve the regulation as RACT for major sources of NO_x under the 2008 ozone NAAQS. In addition, the regulation should:
 - Include a second phase to satisfy RACT under the 2015 ozone NAAQS.
 - To the extent possible, address the considerations identified in this presentation (HEDD, maintaining CAIR reductions, etc.).
 - Be clear on its face.



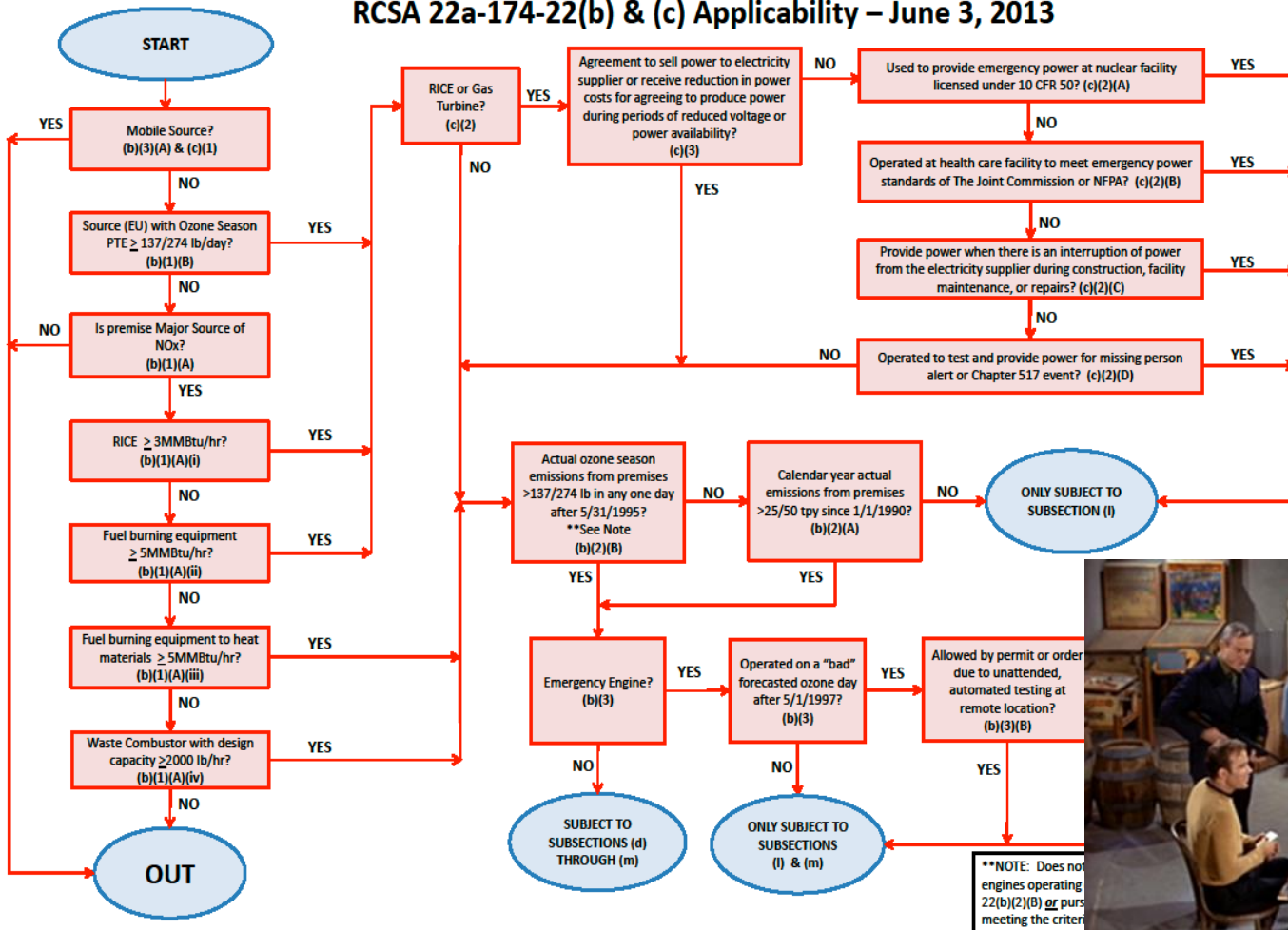
Review: EPA on RACT

- Reasonably Available Control Technology
- 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.
- 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.



Eliminate Need for This

RCSA 22a-174-22(b) & (c) Applicability – June 3, 2013



Preliminary Regulatory Adoption Schedule

Action	Preferred Timing	Worst Case Timing
Draft to Governor/OPM	May 2015	November 2015
Publish notice of intent	August 2015	March 2016
Public hearing	September 2015	April 2016
To Attorney General	December 2015	July 2016
Submit to LRRC	March 1, 2016	September 6, 2016
LRRC hearing	April 26, 2016	October 25, 2016
Second LRRC submission	None	November 1, 2016
Second LRRC hearing	None	November 22, 2016
Effective date	About May 2, 2016	About December 2, 2016



Many Issues to Be Resolved



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Next Generation Section 22 to Address More than RACT

Consideration	Origin	Importance
EPA RACT requirements/ guidelines	EPA guidance and Implementation Rule	High. Public health protection is the goal and the underlying reason for the federal requirements.
Plan for 2015 NAAQS RACT	DEEP	High. Strong desire to end the cycle of constant revision and provide certainty to regulated community for a time.
Elimination of trading program	DEEP	High. No longer provides environmental benefit to justify program administration. Note: May be willing to maintain some sort of multi-unit averaging if built into regulation.
Reduce High Electric Demand Day (HEDD) emissions	EPA, OTC, DEEP	High. A priority air quality policy.



More: Next Generation Section 22 More than RACT

Consideration	Origin	Importance
Forward Capacity Market	ISO-NE	High. Successful phase-in of requirements must take into account the FCM timing. Generators now committed through May 31, 2018.
Allow operation of emergency engines for certain purposes (emergency broadcasting, health care, nuclear facilities)	Various industry groups	High. Avoid bad consequences or senseless violations.
Transported air pollution	Upwind states	Medium. That we cannot attain through in-state reductions alone has no relevance to whether we must implement RACT, but the standards adopted in CT may set the standard for RACT in other (upwind) states. We also need clean hands to criticize upwind states.



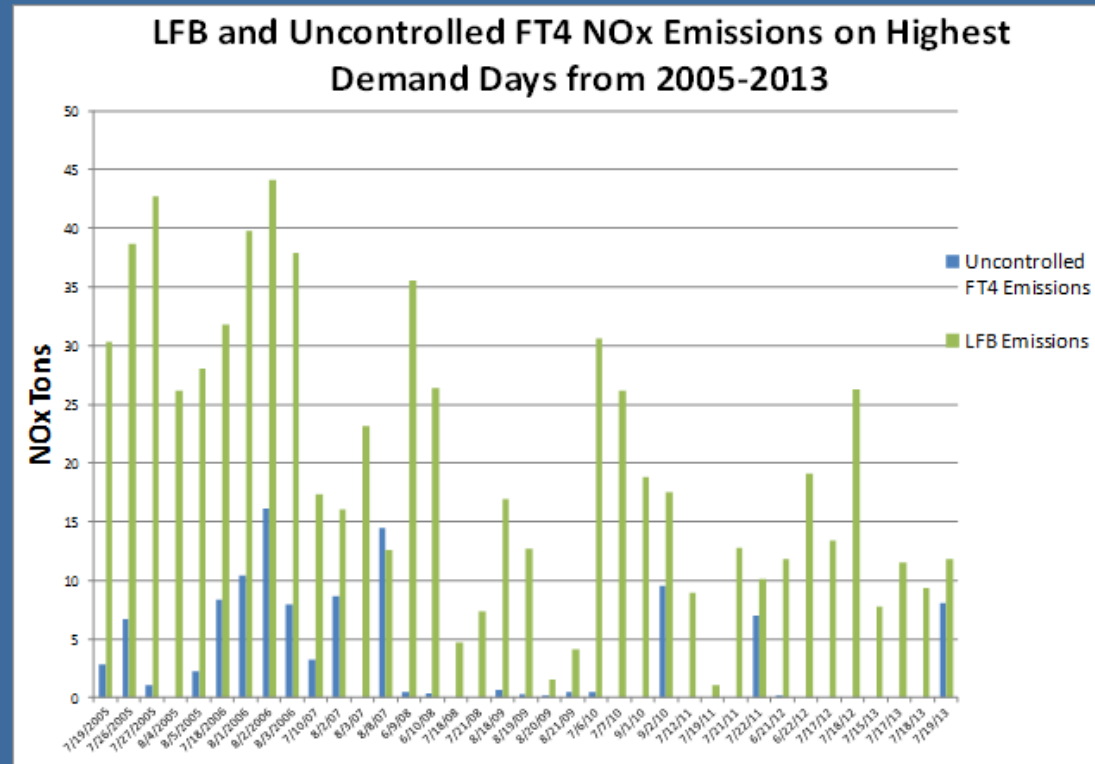
Still More: Next Generation Section 22 More than RACT

Consideration	Origin	Importance
OTC RACT Principles and recommendations	OTC states	Medium. Not binding but ensures regional cooperation and facilitates uniform requirements for entities operating in multiple states.
Maintain the reductions of CAIR through unit or facility emissions caps to ensure that NOx emissions remain restricted and regional haze goals are met.	EPA	Low. DEEP must address but not necessarily in Next Generation Section 22. Makes sense if caps are high compared to emissions under new RACT standards.



A Closer Look at HEDD

- In CT, HEDD emissions are a load-following boiler (LFB) problem.
- High demand days and ozone exceedance days do not necessarily correspond.
- Next Generation Section 22 may not need to separate out HEDD as a regulatory concern if the new emissions limits and averaging times will result in HEDD reductions.



A Closer Look at Maintaining CAIR Reductions

- Connecticut is not included in the Cross State Air Pollution Rule (CSAPR) but does limit ozone season NOx emissions under the Clean Air Interstate Rule (CAIR).
 - Reductions were necessary under our Regional Haze Plan.
- Created RCSA section 22a-174-22d, an in-state NOx trading program based on the budget of CAIR (2691 tons of NOx) and applicable to CAIR sources.
 - Proposed on November 2, 2011. Never completed.
- EPA recently informed us that they do not want to administer the trading program under Section 22d and suggested we adopt unit-specific caps to the CAIR sources to divvy up the annual state budget of 2691 tons.



A Closer Look at the End of Trading

- Trading under Classic Section 22 has always been a temporary measure.
 - First allowed in 1994 when emission limitations were made more stringent.
 - Program was intended as a transitional program to provide time for the non-compliant sources to be controlled, replaced or shut. 20 years is a long transition!
- Trading is administratively cumbersome for DEEP and for EPA.
- Intend to allow sufficient time for generators to plan to repower, add controls or shut in response to Next Generation Section 22.



Section 2. Other State Regulations



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Emissions Limits for Boilers

Fuel Type	OTC Recommended (lb/mmBtu) 24-hr average	Connecticut (lb/mmBtu) 24-hr average (CEMS) or average of 3 1-hr stack tests	New York (lb/mmBtu) 24-hr average (CEMS) or 1-hr average	Delaware (lb/mmBtu)
Coal	0.150	0.38; 0.15 (non-ozone season)	0.12	0.125 (rolling 24-hr average)
Residual oil	0.150	0.25; 0.15 (non-ozone season)	0.20	0.125 (rolling 24-hr average)
Distillate oil	0.125	0.20; 0.15 (non-ozone season)	0.08	0.25 (rolling 24-hr average)
Natural gas	0.125	0.20; 0.15 (non-ozone season)	0.05	0.20 (rolling 24-hr average)



Emissions Limits for Simple Cycle Turbines

Fuel Type	OTC Recommended (ppmvd@15%O₂) 24-hr average	Connecticut (ppmvd) 24-hr average (CEMS) or average of 3 1-hr stack tests	New Jersey (lb/MWh) 24-hr average in ozone season or 30-d average in non-ozone season (CEMS); or average of 3 1-hr stack tests	Delaware (ppm) 1-hour average
Gas	25	55; 0.15 lbs/MMBtu non-ozone season average	1.00	42
Oil	42	75; 0.15 lbs/MMBtu non-ozone season average	1.60	88



Emissions Limits for Lean Burn Engines

Fuel Type	Connecticut (grams/Bhp-hr) 24-hr average (CEMS) or average of 3 1- hr stack tests	New York (grams/Bhp-hr) 24-hr average (CEMS) or one- hour average	New Jersey (grams/Bhp-hr) 24-hr average in ozone season or 30-d average in non-ozone season (CEMS); or average of 3 1-hr stack tests	Pennsylvania (grams/Bhp-hr) 1 year average emission rate or maximum hourly permit rate if no CEMS
Oil-fired	8	2.3	2.3	2.3



Examples of Compliance Options in Other States

NY and NJ: Case-by-case RACT determinations (NJ calls them alternative and facility-specific emission limits (AELs/FSELs)) - consider economic/technical feasibility and are submitted to EPA as SIP revisions.

NY and NJ: Emissions averaging - both states allow averaging of multiple emissions sources , but NY allows system averaging of multiple sources at multiple facilities having different owners/operators within the same ozone nonattainment area.

NY and NJ: Seasonal fuel switching .

NOTE: NJ does not allow HEDD units to use emissions averaging, AELs, seasonal fuel switching or phased compliance after May 1, 2015.

NJ: Phased compliance – 3 situations: repowering; impracticability of full compliance by May 19, 2009; use of innovative control technology. Repowering and use of innovative control technology options are submitted to EPA as SIP revisions.

NJ: Compliance by other units allowed for HEDD boilers and turbines (electrical generating units capable of generating 15 MW or more; commenced operation prior to May 1, 2005 and operated \leq an average of 50% of the time during 2005-2007 ozone season).

- A list of HEDD units that are expected to be taken out of service by May 1, 2015 may be provided in lieu of complying with the maximum allowable NO_x emission rates.
- Reduction in usage of any HEDD unit in NJ, PA, DE or MD or a commitment to combust natural gas during HEDDs when it would be economically preferred to combust fuel oil.

Section 3. Our Thoughts on Next Generation Section 22

- Staff level thinking, outline only.
- We think this will go a long way to addressing our issues.
- We are interested in your reaction:
 - Can your units comply? If not, do you see a reasonable path to reach a state of compliance?
 - Are there other provisions from other state regulations you would like to see?
 - Do you recommend a different approach entirely?





Units and Emissions under Classic Section 22

- Inventory.**

Example: list of every ICI boiler in the inventory provides 6535 units, not all of which are subject to Section 22 (many < 5MMBtu capacity) and some of which are no longer operating (some data is old).

- Stack test data.** Preliminary results from some tests in years 2011-2014.

Boilers

Fuel	Average emission rate (lb/MMBtu)	Number of tests
Natural gas	0.100	30
Distillate oil	0.138	19

Combustion turbines

Fuel	Average emission rate (ppmvd @15% O2)	Number of tests
Natural gas	3.91	37
Distillate oil	5.14	25



Provisions Likely to be Retained from Classic Section 22

- Prohibition on operation of emergency engines on forecast ozone exceedance days for routine maintenance and testing.
- Retain current definition of “emergency” and name ISO-NE OP 4 Action 6.
- Exemptions for hospitals/health care facilities, nuclear facilities, emergency broadcasting.
- Non-ozone season (October through April) limit of 0.15 lb/mmBtu.
- 5-year testing requirement.



Other Provisions We Have in Mind

- Tune up provisions.
- Notification (one time) for all sources subject to the regulation. Notification made through EMIT.
- Two phases of emissions limits.



Next Generation Emissions Limits --Averaging Times

- Most significant consideration is that some sort of short-term (24-hour or less) averaging times are necessary, at least for HEDD units.
 - OTC Principles: The averaging time for a RACT-based emission limitation should be as short as practicable consistent with the ozone NAAQS and characteristic operation of the source category
- There is no established method to compare the stringency of emissions limits with differing levels and averaging times. Only the air emissions result is comparable.



Next Generation Emission Limits

- Phase 1 2017-2021 or so.
 - Retain 0.15 lb/MMBtu non ozone season limit.
 - 0.15 lb/MMBtu ozone season limit, 30-day average.
 - Begin phase-out of trading.
- Phase 2 2021/2022 and after.
 - No trading
 - Boilers (all fuels): 0.125 lbs/MMBtu
 - Turbines (oil- or gas-fired): 50 ppmvd
 - Engines (lean burn oil-fired): 2.3 g/bhp-hr
 - Averaging time: 24 hours (units with CEMs); average of 3 1-hour stack tests (no CEMs)

Limits apply to steady state operation.



Other Compliance Options We Might Consider

- Unit-specific requirements.
- Averaging (facility, across facilities of common ownership, among facilities with different ownership).
- For dual fuel units (gas/distillate oil) limit to gas only in the ozone season.



Section 4. Homework and Next Steps

- Meet with each of you individually - at your option - to discuss your concerns about new requirements.
- For discussion, if trading continues in phase 1 of the New Section 22 (2017-2021 or so), consider compliance with an 0.15 lb/mmBtu ozone season limit (30-day average), retaining the 0.15 lb/mmBtu non-ozone season limit.
- For discussion, consider meeting the following requirements for phase 2 (begins 2021-2022):
 - No trading
 - Boilers (all fuels): 0.125 lbs/MMBtu
 - Turbines (oil- or gas-fired): 50 ppmvd
 - Engines (lean burn oil-fired): 2.3 g/bhp-hr
 - Averaging time: 24 hours (units with CEMs); average of 3 1-hour stack tests (no CEMS)



More Next Steps

- Following initial individual meetings, group meetings on draft language for Next Generation Section 22 will be held.
- Focused review – even of drafts – necessary to meet goal on the timeline.
- Think about issues you want addressed and make us aware of them.



Why Kirk is Better than Picard

- Three words: flying leg kick.
- Kirk can out-logic any computer.
- When Data died, Picard had a funeral. When Spock died, Kirk reconstituted his body and forced his soul back into it.
- Picard is from France.
- Kirk collects antique guns. Picard collects antique matrioshka nesting dolls.
- When Picard has a problem, he talks to Guinan. When Kirk has a problem, he shoots it.
- When Sarek mind melded with Picard, Picard cried a lot. When Sarek mind melded with Kirk, Kirk decided to hijack the Enterprise and bring Spock back from the dead.
- Kirk's dress uniform does not look like a dress.



Resources

- DEEP RACT page:

http://www.ct.gov/deep/cwp/view.asp?a=2684&q=546804&deepNav_GID=1619

- OTC RACT Principles:

<http://www.otcair.org/upload/Documents/Formal%20Actions/Statement%20of%20RACT%20Principles.pdf>

- DE regulation 1112:

<http://regulations.delaware.gov/AdminCode/title7/1000/1100/1112.shtml#TopOfPage>

- DE regulation 1146 (EGUs):

<http://regulations.delaware.gov/AdminCode/title7/1000/1100/1146.shtml#TopOfPage>

- NY Subpart 227-2:

<http://www.dec.ny.gov/regs/4217.html>

- NJ regulation NJAC 7:27-19:

<http://www.state.nj.us/dep/aqm/rules27.html>

