



Connecticut Department of Energy and Environmental Protection



Emissions Limitations/Compliance Options of New Section 22a-174-22 of the RCSA

SIPRAC New Section 22 Workgroup (i.e., SIPRAC Section 22-TNG Workgroup)

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Connecticut Department of Energy and Environmental Protection

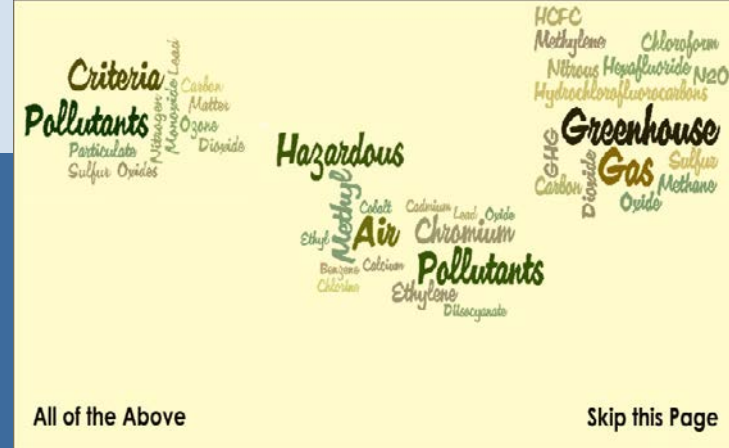
Overview

- From last month
 - Very few comments received outside of the February 23 meeting on draft testing/monitoring language.
- Today
 - Emissions Limitations/Compliance Options/Case-by-Case RACT
 - Draft regulatory language
 - Averaging/40% reduction order examples
- April 29, 1-3 PM, Gina McCarthy Auditorium
 - Exemptions, tune-ups, record keeping



Key Themes

- RACT (not BACT, not LAER, not MACT)
- Adequate timing
- Flexibility in compliance



Emissions Limits -- Approach

- The proposed RCSA Section 22a-174-22 rule revision would include two phases to provide adequate compliance time (dates adjusted to provide consistency with Forward Capacity Auction dates):
 - Phase 1 would be from June 1, 2018 through May 31, 2022.
 - Phase 2 would start June 1, 2022
 - Compliance options (subsection (g)) and some case-by-case RACT determinations (subsection (h)) end on May 31, 2030.
- Phase 1 serves as a “bridge” for boilers serving electric generating units (EGUs) and turbines, with the same/similar emission limits as those in Phase 2, but with longer averaging times (ozone season vs. 24-hr).
- Phase 2 includes emissions limits with 24-hr averaging times that are similar or identical to recent NY/ NJ limits.



Emissions Limits- Boilers Serving EGUs

Current limits (24-hr average) + non-ozone season limit	Natural gas-fired (lb/MMBtu)	Residual oil-fired (lb/MMBtu)	Distillate oil-fired (lb/MMBtu)	Coal-fired (lb/MMBtu)
Cyclone furnace	0.43	0.43	0.43	0.43
Other boiler	0.20	0.25	0.20	0.38
Non-ozone season limit (7 month average) (CAIR sources only)	0.15	0.15	0.15	0.15
Phase 1 limits (June 1, 2018-May 31, 2022) = Current limits (24-hr average) + Non-ozone season limit + Ozone season limit				
Ozone season limit (5 month average) (CAIR sources only) (new requirement)	0.10	0.20	0.10	0.15
Cyclone furnace (24-hr average)	0.43	0.43	0.43	0.43
Other boiler (24-hr average)	0.20	0.25	0.20	0.38
Non-ozone season limit (7 month average) (CAIR sources only)	0.15	0.15	0.15	0.15
Phase 2 limits (June 1, 2022 and after) = Phase 2 limits (24-hr average) + Non-ozone season limit				
Phase 2 limits (24-hr average) (CAIR sources only) (new requirement)	0.10	0.20	0.10	0.15
Non-ozone season limit (7 month average) (CAIR sources only)	0.15	0.15	0.15	0.15



Emissions Limits- Simple Cycle Turbines

Current limits (24-hr average) + non-ozone season limit	Natural gas-fired	Distillate oil-fired
Turbine engines with maximum rated capacity \geq 100 MMBtu/hr	55 ppmvd	75 ppmvd
Turbine engine with maximum rated capacity < 100 MMBtu/hr	0.90 lb/MMBtu	0.90 lb/MMBtu
Non-ozone season limit (7 month average) (CAIR sources only)	0.15 lb/MMBtu	0.15 lb/MMBtu
Phase 1 limits (June 1, 2018-May 31, 2022) = Current limits (24-hr average) + Non-ozone season limit + Ozone season limit		
Turbine engines with maximum rated capacity \geq 100 MMBtu/hr	55 ppmvd	75 ppmvd
Turbine engine with maximum rated capacity < 100 MMBtu/hr	0.90 lb/MMBtu	0.90 lb/MMBtu
Ozone season limit (5 month average) (CAIR sources only) (new requirement)	50 ppmvd or 0.18 lb/MMBtu	50 ppmvd or 0.19 lb/MMBtu
Non-ozone season limit (7 month average) (CAIR sources only)	0.15 lb/MMBtu or install water injection designed to meet ozone season limit	0.15 lb/MMBtu or install water injection designed to meet ozone season limit
Phase 2 limits (June 1, 2022 and after) = Phase 2 limits (24-hr average) + Non-ozone season limit		
Phase 2 limits (24-hr average) (all turbines) (new requirement)	40 ppmvd	50 ppmvd
Non-ozone season limit (7 month average) (CAIR sources only)	0.15 lb/MMBtu or install water injection designed to meet 24 – hr average	0.15 lb/MMBtu or install water injection designed to meet 24-hr average



Emissions Limits- Combined Cycle Turbines

Current limits (24-hr average) + non-ozone season limit	Natural gas-fired	Distillate oil-fired
Turbine engines with maximum rated capacity \geq 100 MMBtu/hr	55 ppmvd	75 ppmvd
Turbine engine with maximum rated capacity < 100 MMBtu/hr	0.90 lb/MMBtu	0.90 lb/MMBtu
Non-ozone season limit (7 month average) (CAIR sources only)	0.15 lb/MMBtu	0.15 lb/MMBtu
Phase 1 limits (June 1, 2018-May 31, 2022) = Current limits (24-hr average) + Non-ozone season limit + Ozone season limit		
Turbine engines with maximum rated capacity \geq 100 MMBtu/hr	55 ppmvd	75 ppmvd
Turbine engine with maximum rated capacity < 100 MMBtu/hr	0.90 lb/MMBtu	0.90 lb/MMBtu
Ozone season limit (5 month average) (CAIR sources only) (new requirement)	50 ppmvd	50 ppmvd
Non-ozone season limit (7 month average) (CAIR sources only)	0.15 lb/MMBtu	0.15 lb/MMBtu
Phase 2 limits (June 1, 2022 and after) = Phase 2 limits (24-hr average) + Non-ozone season limit		
Phase 2 limits (24-hr average) (all turbines) (new requirement)	25 ppmvd	42 ppmvd
Non-ozone season limit (7 month average) (CAIR sources only)	0.15 lb/MMBtu	0.15 lb/MMBtu



Emissions Limits – ICI Boilers

Current limits (24-hr average)	Natural gas-fired (lb/MMBtu)	Residual oil-fired (lb/MMBtu)	Distillate oil-fired (lb/MMBtu)
All boilers > 5 MMBtu/hr	0.20	0.25	0.20
Phase 1 limits (24-hr average) (June 1, 2018 through May 31, 2022)			
Boilers < 25 MMBtu/hr (new requirement)	Annual tune up	Annual tune up	Annual tune up
All boilers \geq 25 MMBtu/hr	0.20	0.25	0.20
Phase 2 limits (24-hr average) (June 1, 2022 and after)			
Boilers < 25 MMBtu/hr (new requirement)	Annual tune up	Annual tune up	Annual tune up
Boilers 25 MMBtu/hr up to 100 MMBtu/hr (new requirement)	0.05	0.20	0.10
Boilers 100 MMBtu/hr or greater (new requirement)	0.10	0.20	0.15



Emissions Limits – Reciprocating Engines

Current and Phase 1 (June 1, 2018 through May 31, 2022) limits (24-hr average)	Natural gas-fired (g/hp-hr)	Distillate-oil-fired (g/hp-hr)	Landfill gas or digester gas, alone or fired with natural gas (g/hp-hr)
All reciprocating engines	2.5	8	No limit
Phase 2 limits (24-hr average) (June 1, 2022 and after)			
Rich burn reciprocating engines (new requirement)	1.5	1.5	2.0
Lean burn reciprocating engines (new requirement)	1.5	2.3	2.0



Options for Emissions Units that Exceed Applicable Emissions Limits

- Comply via one of the identified compliance options (subsection (g)).
- If the emissions rates are not technically or economically feasible and none of the compliance options are reasonable, request a case-by-case RACT emissions limitation (subsection (h)).
- Cease operations by a specified date (subsection (f)).



Compliance Options (subsection (g))

(Availability for specific emission unit types differs. See the draft regulatory language.)

- Caps on mass emissions or operating hours.
- Install or optimize control apparatus on the unit in question or another unit at the facility.
- Commit to combust only natural gas in a unit that is permitted to combust either natural gas or fuel oil.
- Reduce the emission rate by 40% from a baseline rate.
- Average emissions with over complying emission units at the facility or at a different facility (under common ownership) located in the same ozone nonattainment area. Averaging can be over a daily or monthly period.
- Limit unit operations to OP4, Action 6 events.
- Commit to modify, replace or retire unit in question or another unit at the facility.
- For simple cycle turbines, install water injection to meet the non-ozone season limit.
- Use existing, banked DERs to comply (Phase 1 only).
- A combination of the above .



Established in Orders or Permits

- Compliance options (subsection (g))
 - Established in a permit or order.
 - Will be submitted to EPA for approval.
 - Will expire by June 1, 2030.



Case-by-Case RACT

- Subsection (h)
 - Requires a demonstration that none of the compliance options may be reasonably implemented.
 - Requires a demonstration that no control technology is both technically and economically feasible.
 - Will be submitted to EPA for approval.
 - May expire by June 1, 2030.



Trading and Averaging Orders

- Trading and averaging orders will include provisions based on EPA's [Economic Incentive Program \(EIP\) guidance](#)
 - 10% environmental benefit (retirement of DERs)
 - 5% design margin
- Previously issued 40% reduction and averaging orders are available for reference.



Draft Language for Discussion Purposes

- Draft emissions limitations/compliance options language has not yet been internally vetted, but the enforcement side is aware that we are having this discussion with you.

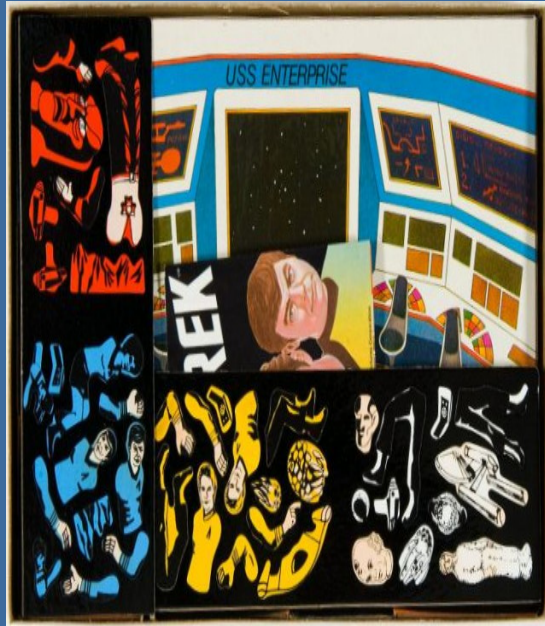


Next Steps

- Please provide comments on emissions limitations and compliance options by **COB on April 24** to:
Merrily Gere at merrily.gere@ct.gov or 860-424-3416 or
Wendy Jacobs at wendy.jacobs@ct.gov or 860-424-3457
- Next meeting – Exemptions, tune ups and record keeping
April 29, 2015 from 1-3 PM in the
Gina McCarthy Auditorium



The colorforms, cookies and dogs cast their votes...



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