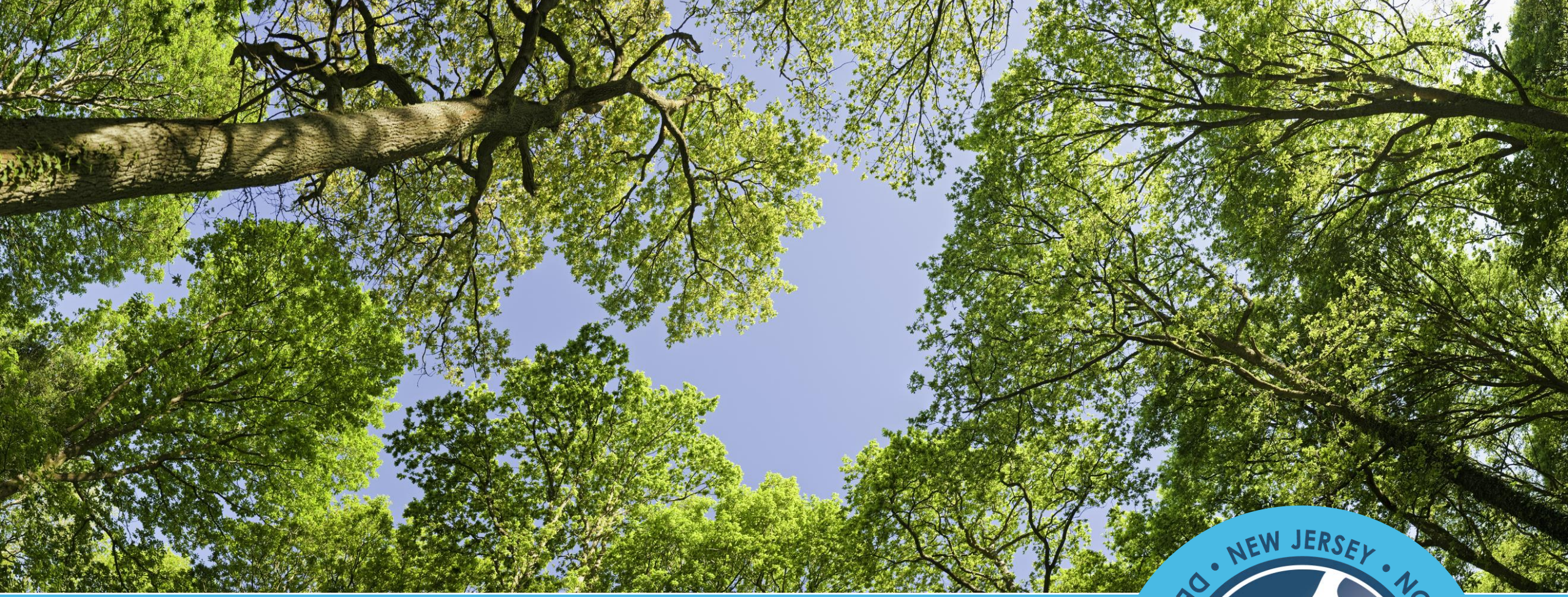


Clean Energy Compliance Options for EGUs

May 18, 2023 Stakeholder Meeting with Utilities, Business, and Industry

Robert Kettig, Assistant Director | Kenneth Ratzman, Assistant Director
Air, Energy, and Materials Sustainability

Please also note this meeting is for informational purposes only. The concepts and ideas presented and discussed do not reflect any final decision making.

As a courtesy to all, please make sure your microphone is muted at this time.

Agenda

01

Background and introduction of the rulemaking concept and potential applicability

02

Run-through of discussion points

- Clean energy compliance options
- Emissions calculations and methodology

03

Discussion*

*If you would like to speak, please raise your hand and unmute your microphone at the appropriate time.

04

Next Steps

The Control and Prohibition of Carbon Dioxide Emissions Rule (published 1/3/23)

The rule is expected to reduce CO_2 emissions from fossil fuel-fired electric generating units through the application of output-based emission limits.

The Control and Prohibition of Carbon Dioxide Emissions Rule (published 1/3/23)

Applies to new or existing EGU that

- combusts at least 51 percent fossil fuel, alone or in combination with any other fuel, annually;
- supplies at least 10 percent of its annual gross electric output to the grid; and
- has a nameplate capacity equal to or greater than 25 MWe.

A new EGU with a nameplate capacity less than 25 MWe that meets the other two thresholds will be covered by the rules if the unit is located at a facility that has more than one EGU, and the aggregate capacity of those units is equal to or greater than 25 MWe.

The Control and Prohibition of Carbon Dioxide Emissions Rule (published 1/3/23)

Compliance deadline for existing EGUs	Emission limit
June 1, 2024	1,700 lb CO_2/MWh gross energy output
June 1, 2027	1,300 lb CO_2/MWh gross energy output
June 1, 2035	1,000 lb CO_2/MWh gross energy output

The Control and Prohibition of Carbon Dioxide Emissions Rule (published 1/3/23)

An owner or operator may request an extension of the compliance date if:

- BPU issues an order determining that the unit is needed to maintain reliable grid operations; or
- The EGU is designated as an RMR unit; or
- PJM or NYISO has requested that the EGU remain operational to maintain reliable grid operations

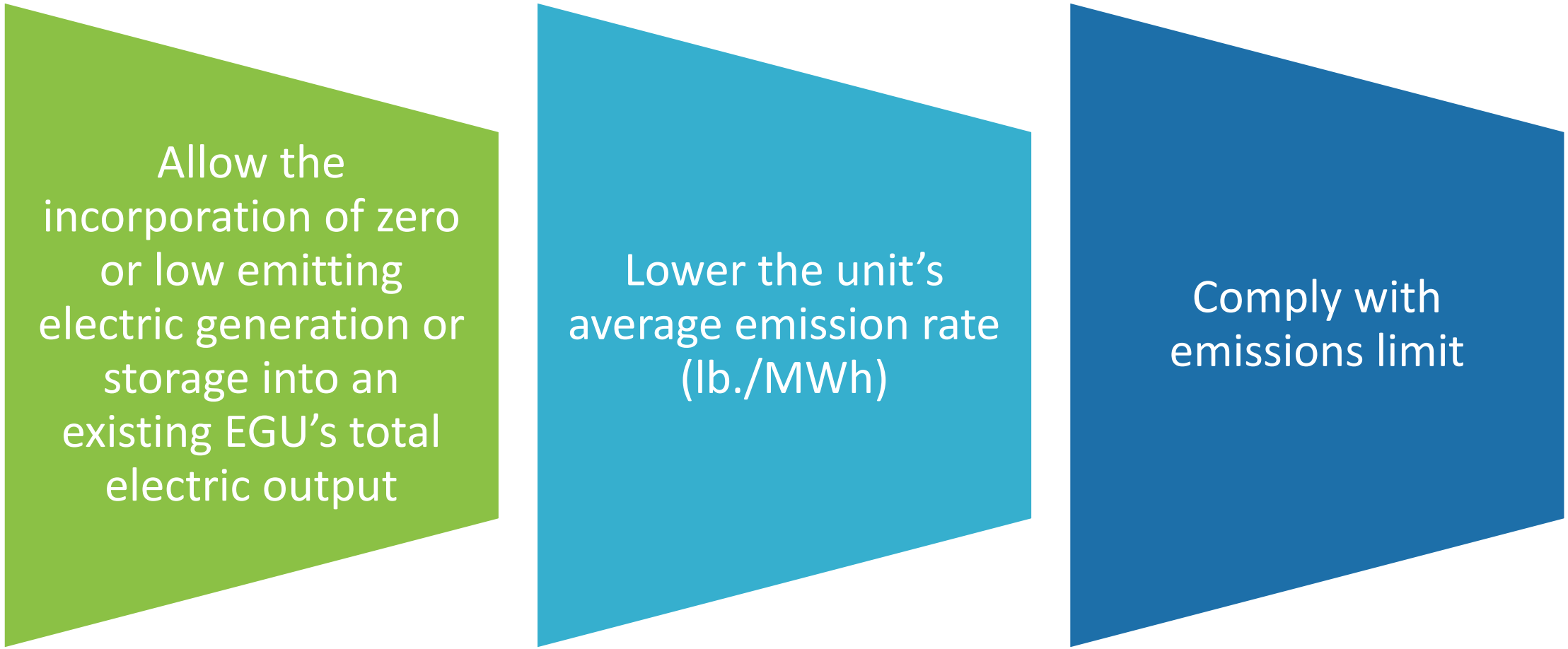
Rulemaking concept:

Clean Energy Compliance Options for Existing EGUs

Disclaimer: The information provided is for discussion purposes only and does not reflect final decision-making.

Why is the Department considering rulemaking to allow clean energy compliance options for existing EGUs?

- Comments received
- Reliability
- Leakage
- Investment and deployment of clean energy



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Potential clean energy technologies

- Grid Supply Solar
- Behind The Meter Solar
- RNG/Hydrogen
- Battery Storage
- Fuel Cells
- Other?

Control and Prohibition of CO_2 Emissions Rule

Applicability of potential clean energy options?	Compliance deadline for existing EGUs	Emission limit	# EGUs with emission rates that exceed the limit based on 2021 data
	June 1, 2024	1,700 lb CO_2/MWh gross energy output	9
✓	June 1, 2027	1,300 lb CO_2/MWh gross energy output	12
✓	June 1, 2035	1,000 lb CO_2/MWh gross energy output	32

EGUs that emit between 1,300 lb/MWh and 1,700 lb/Mwh (based on 2021 data)

Facility Name	Unit ID	Operating Time (hours)	CO_2 Emission Rate (lb/MWh)
Sherman Avenue Energy Center	1	186	1,606
Forked River Power	2001	143	1,599
Linden Generating Station	8	119	1,563
Forked River Power	3001	157	1,560
Linden Generating Station	7	118	1,501
Linden Generating Station	6	107	1,388
Linden Generating Station	5	124	1,360
Gilbert Generating Station	9	131	1,337
Kearny Generating Station	132	448	1,335
Kearney Generating Station	133	618	1,312
Kearny Generating Station	131	521	1,306
Kearny Generating Station	134	635	1,301

Discussion points: clean energy compliance options

Grid supply solar*	Behind the meter solar*	Energy storage*	RNG	Hydrogen	Fuel cells	Other?

Pros and cons of each technology?

Is technology economically feasible?

Environmental impacts?

Lifespan of the technology (does it degrade/lose efficiency over time)?

Locational considerations?

Monitoring, recordkeeping, reporting challenges?

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Discussion points:

Emissions calculations and methodology

- What emissions averaging methodology(ies) should the Department use?
- Are there other approaches besides averaging?
- How should peak versus non-peak emission rates be measured for energy storage?

Compliance hypothetical using solar

The CO_2 limit for an EGU operating after June 1, 2027 is **1,300 lb/MW-hour.**

An EGU with an average output of 100 MW is operating 500 hours per year, with a CO_2 emission rate of **1,400 lb/MW-hour**.

The annual CO_2 emissions would be:

100 MW x 1,400 lb/MW-hr x 500 hours per year =

70,000,000 lb CO_2 per year

Compliance hypothetical using solar (continued)

If the EGU has a qualifying solar capacity of **3.0 MW** operating with a **20% capacity factor**, the resulting CO_2 emission rate would be:

70,000,000 lb per year/((100 MW x 500 hours per year) + (0.2 x 3.0 MW x 8,760 hours per year))=

1,270 lb/MW-hr

The EGU would be in compliance with the CO_2 emission limit of **1,300 lb/MW-hr**.

Discussion

- General
- Clean energy options
- Locational considerations
- Emissions calculations and methodology
- Other?

Next steps

- If you are interested in providing written comments, please send to **njclimate@dep.nj.gov** by May 31, 2023.

Thank you for attending

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