Proposed Amended Rule 1135

Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Public Workshop

July 31, 2024

Join Zoom Webinar Meeting: https://scaqmd.zoom.us/j/94648515982

Webinar ID: 946 4851 5982

Teleconference Dial-In: 1-669-900-6833

Agenda

- Background
- Preliminary Draft Rule Language
- Impact Assessments
- Next Steps

Background

Rule 1135 Regulatory Background

Rule 1135 was adopted in 1989 and addresses NOx emissions from electricity generating facilities

Most recently, amendments on January 7, 2022, revised requirements for Santa Catalina Island

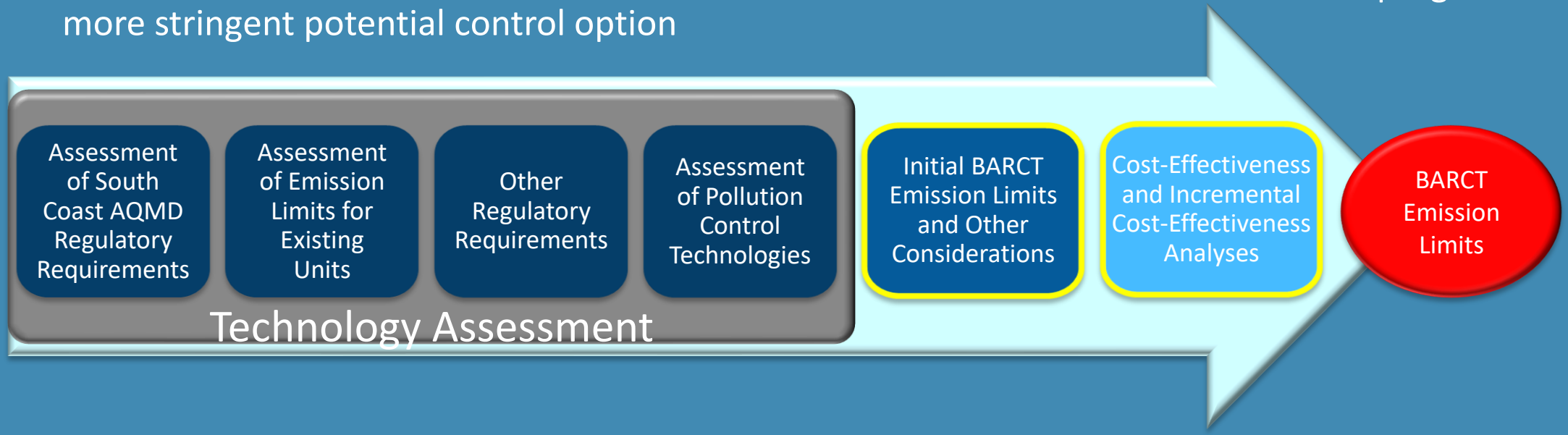
- Limits annual NOx emissions by a certain date from electricity generating facility to:

2024	2025	2026
50 tons per year	45 tons per year	13 tons per year

- Adopted resolution to conduct a revised Best Available Retrofit Control Technology (BARCT) assessment for electric generating units on Santa Catalina Island

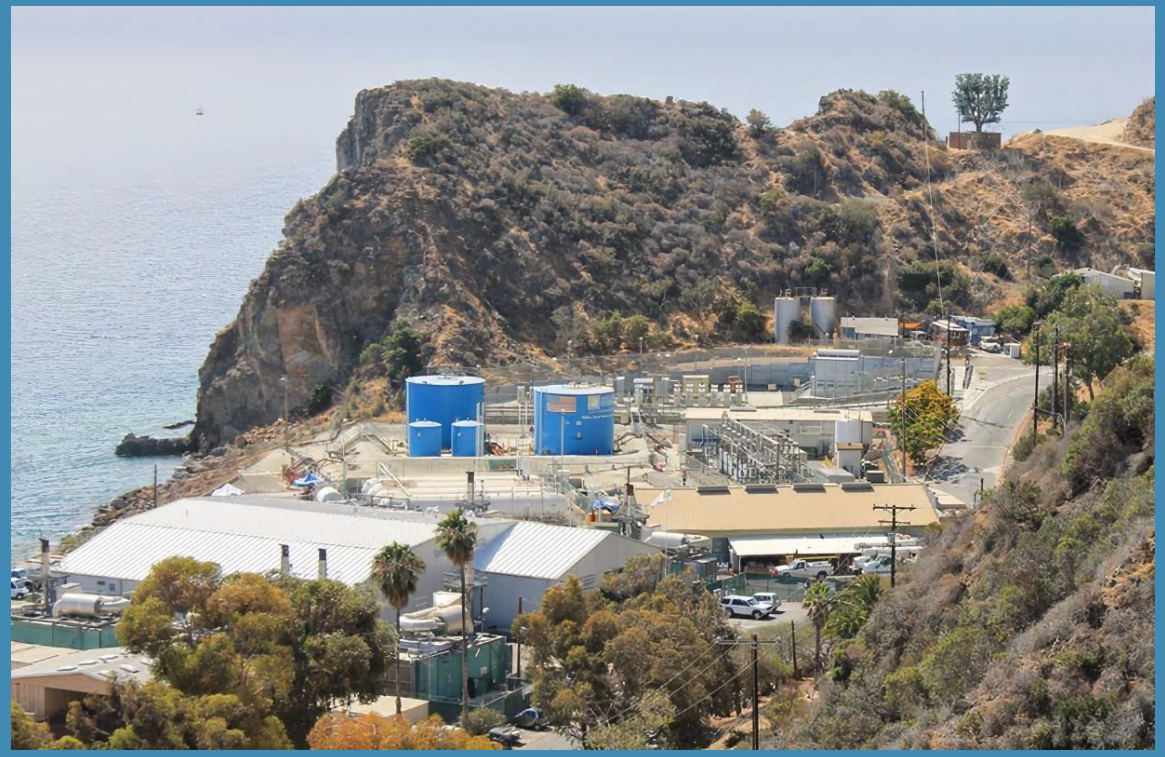
BARCT Assessment

- South Coast AQMD conducted a BARCT assessment to determine if near-zero-emission (NZE) and zero-emission (ZE) technologies can replace all or some of the existing diesel engines on Santa Catalina Island
- Health and Safety Code Section 40406 defines BARCT as "…an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source."
- BARCT levels must adhere to Health and Safety Code Section 40920.6
  - Cost-effectiveness and incremental cost-effectiveness must be determined for each progressively more stringent potential control option

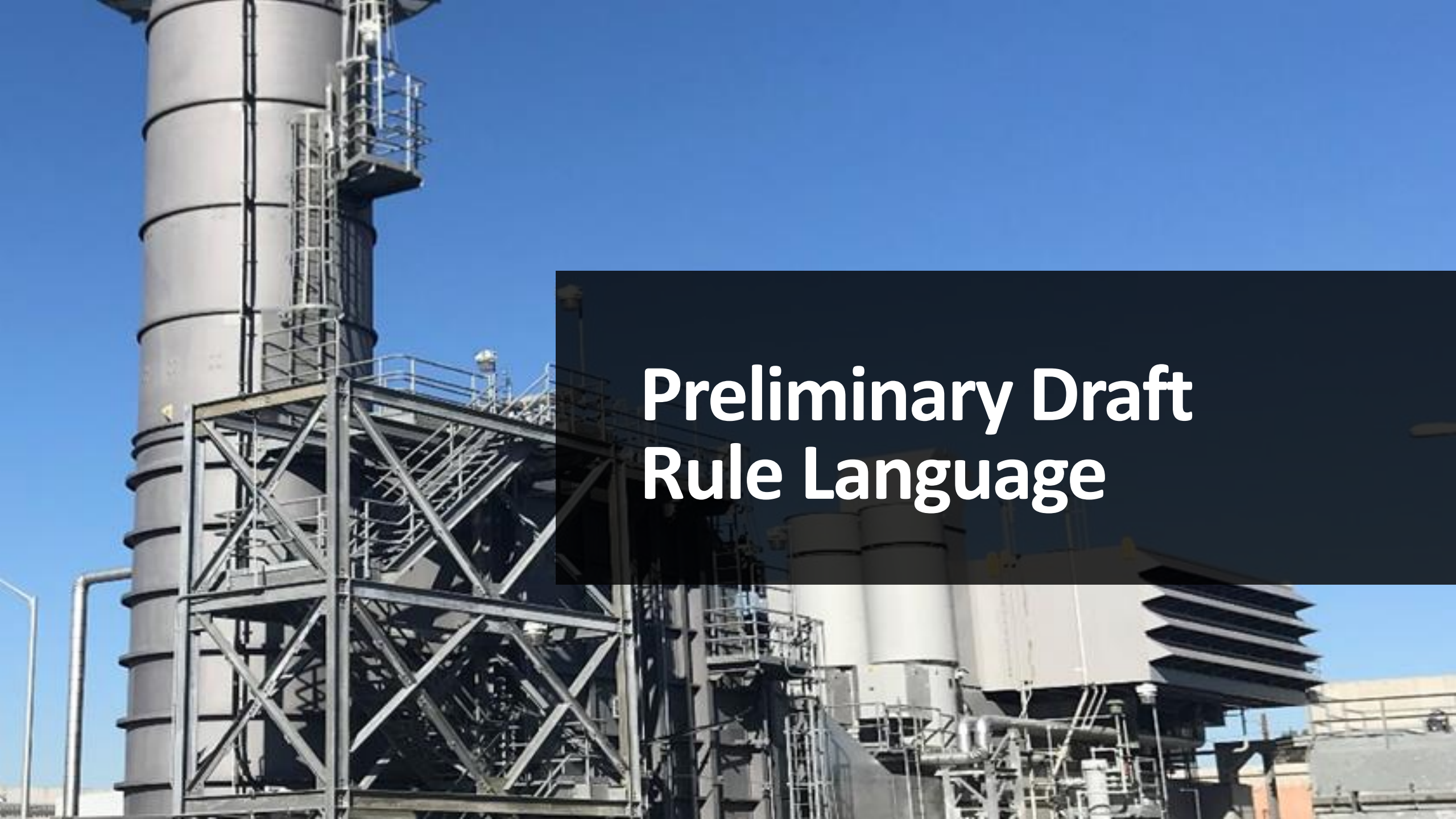


Technological Feasibility Challenges on Santa Catalina Island

- Challenges for the deployment of ZE and/or NZE technologies on Santa Catalina Island include:
  - Fuel must be barged
    - Only one barge is known to be available
  - Existing facility footprint is small
    - Acquiring additional land is challenging
  - 30-day fuel storage as backup when barge is unable to deliver fuel
- South Coast AQMD performed analyses which determined the fuel usage, barge trips, and space required for each repower scenario



- The proposed BARCT NOx emission limit of 1.8 tpy, based on a repower scenario of 30% ZE, 65% NZE, and 5% Tier 4 final diesel engines, was determined to be technologically feasible
- SCE did not agree that the proposed final BARCT NOx emission limit was technologically feasible
- PAR 1135 will incorporate a final NOx limit of 6 tpy with a feasibility analysis



Preliminary Draft Rule Language

Definitions
Subdivision (c)

Key definitions in PAR 1135 include:

ELECTRIC GENERATING UNIT

- Modified definition to include any equipment that generates electric power located on Santa Catalina Island, except for emergency engines and registered portable engines

SANTA CATALINA ISLAND NEAR-ZERO EMISSION (NZE) ELECTRIC GENERATING UNIT

- Any electric generating unit located on Santa Catalina Island that produces NOx emissions greater than 0.01 lb/MW-hr but less than or equal to 0.07 lb/MW-hr (demonstrated by permit condition or other equivalent method)

SANTA CATALINA ISLAND ZERO-EMISSION (ZE) ELECTRIC GENERATING UNIT

- Any electric generating unit located on Santa Catalina Island that produces NOx emissions less than 0.01 lb/MW-hr (demonstrated by permit condition or other equivalent method)

Prohibitions on Santa Catalina Island Subparagraphs (d)(2)(A), (d)(2)(B), and (d)(2)(C)

Current rule language

- Prohibition deadline of January 1, 2024 to install new diesel internal combustion engines

Proposed rule language

- Staff updated the prohibition deadline to January 1, 2028
  - Aligns with compliance deadline for 30 tons per year (tpy) NOx limit
- Prohibition to install equipment that does not meet the definition of a Santa Catalina Island NZE electric generating unit or a Santa Catalina Island ZE electric generating unit after January 1, 2028
- Prohibition to install more than three new diesel internal combustion engines with a maximum cumulative rating of 5.5 MW

Requirement to Install NZE and/or ZE Units on Santa Catalina Island Subparagraph (d)(2)(D)

Background

- NZE and/or ZE units will need to provide approximately 75% of the power at Pebbly Beach Generating Station to meet the final proposed NOx limit of 6 tpy
- SCE expressed that three Tier 4 final diesel engines are necessary to provide redundancy during maintenance and unplanned outages
- Similarly, backup unit(s) for NZE and/or ZE technology are necessary to provide sufficient power during maintenance and unplanned outages to meet the final proposed NOx limit and minimize the use of diesel engines

Proposed rule language

- Staff is proposing a requirement to install NZE and/or ZE electric generating units by January 1, 2030 with a cumulative rating of 1.8 MW or higher
  - Minimum cumulative rating does not include the highest rated NZE and/or ZE unit, solar photovoltaic cells, or batteries

Emission Limits on Santa Catalina Island Subparagraph (d)(2)(E)

Current rule language

- Interim limits:
  - 50 tpy NOx by January 1, 2024
  - 45 tpy NOx by January 1, 2025
- NOx mass emission limit 13 tpy on and after January 1, 2026

Proposed rule language

- Updated emission limits and compliance dates based on new direction

Table 2: Proposed Emission Limits for Electric Generating Units Located on Santa Catalina Island

Compliance Date	NOx (tpy)
January 1, 2027	45
January 1, 2028	30
January 1, 2030	13
January 1, 2035	6

Remove Legacy Diesel Engines from Service Subparagraph (d)(2)(F) and Feasibility Analysis Paragraph (d)(3)

Remove Legacy Diesel Engines from Service

- Remove all prime power diesel internal combustion engines with a construction date earlier than Date of Adoption from service by January 1, 2030
- Compliance deadline aligns with the implementation date of the 13 tpy NOx limit
- If compliance deadline is extended, then removal of legacy diesel engines required six months after extended implementation date

Feasibility Analysis

- Analysis will be conducted by January 1, 2028 for the 13 tpy NOx limit and by January 1, 2033 for the 6 tpy NOx limit
- Feasibility analysis will review grid stability, construction plans, land acquisition contracts, permit applications, etc. to determine if timeline is achievable
- If the feasibility analysis shows that timeline is not feasible, then time extension can be requested for up to three years

Time Extension for Electricity Generating Facility on Santa Catalina Island: Paragraph (d)(5)

Current rule language

- Allows a request for a time extension of up to three years to meet the final BARCT emission limit for the electricity generating facility on Santa Catalina Island
- Specifies the information needed in the time extension request and the criteria for approval or disapproval

Proposed rule language

- Time extension can be requested to meet the 13 tpy and 6 tpy NOx limits
  - Extension for each NOx limit can be up to three years
- Any request for a time extension will be made available for public review no less than 30 days prior to approval
- Criteria for approval limited to circumstances beyond control of owner or operator

Monitoring, Recordkeeping, and Reporting (MRR) Paragraphs (e)(3) to (e)(6)

Proposed rule language

- Included monitoring and recordkeeping requirements for Santa Catalina Island NZE electric generating units without continuous emission monitoring systems
  - Added emission calculation method to multiply total annual MW-hrs of NZE units rated ≤ 0.5 MW by an emission factor of 0.07 lb/MW-hrs
  - Required non-resettable device to continuously record MW-hrs for each NZE unit rated ≤ 0.5 MW
- Maintain records of all data onsite for a minimum of five years and make available to the Executive Officer upon request

Impact Assessments

Impacted Facility and Equipment

PAR 1135 affects one electricity generating facility located on Santa Catalina Island

- The electricity generating facility located on Santa Catalina Island currently owns/operates the following electric generating units:
  - Six diesel internal combustion engines
  - 23 propane microturbines

PAR 1135 Affected Equipment

Equipment Type	Rating (MW)	Construction Year	NOx Emissions*
Diesel Engine Unit 7	1	1958	97 ppmv (15% O_2, dry)
Diesel Engine Unit 8	1.5	1964	97 ppmv (15% O_2, dry)
Diesel Engine Unit 10	1.125	1968	140 ppmv (15% O_2, dry)
Diesel Engine Unit 12	1.5	1976	82 ppmv (15% O_2, dry)
Diesel Engine Unit 14	1.4	1985	103 ppmv (15% O_2, dry)
Diesel Engine Unit 15	2.8	1995	51 ppmv (15% O_2, dry)
Microturbines (23 units)	1.49	2011	0.07 lb/MW-hr

*NOx emissions for diesel engines calculated by using the uncontrolled NOx emissions and control efficiency specified in Southern California Edison's Best Available Control Technology and Alternative Analysis for Pebbly Beach Generating Station (Version 00; Revised April 30, 2021) and NOx emissions for microturbines reflect the emission standard in the California Air Resources Board Distributed Generation Certification Regulation

Emission Reductions

Emission Reductions on Santa Catalina Island

- The final 6 tpy NOx limit results in 65.3 tpy NOx emission reductions
- PAR 1135 incorporates a final NOx limit of 6 tpy by January 1, 2035
- The feasibility analyses will evaluate both the 13 tpy and 6 tpy NOx limits
- Assuming the feasibility analyses conclude that the 13 tpy and 6 tpy NOx limits are achievable by the proposed implementation dates, there will still be approximately 172 tons of NOx emission reductions foregone between 2024 to 2029 when comparing PAR 1135 to current Rule 1135

	NOx (tons/year)
Santa Catalina Island Baseline NOx Emissions[1]	71.3
NOx Emission Reductions	65.3
Final NOx Emission Limit for Electric Generating Units on Santa Catalina Island	6

[1] Baseline NOx emissions determined by an average of Annual Emission Report data from 2017, 2019, and 2021 from prime diesel engines

Cost-Effectiveness Analysis

Cost-effectiveness is measured in terms of the cost in dollars per ton of air pollutant reduced

- Health and Safety Code Section 40920.6 requires cost-effectiveness analyses when establishing BARCT requirements
  - Staff still conducted cost-effectiveness analyses even though the 6 tpy final NOx limit does not represent BARCT
- Cost estimates were provided by SCE and technology vendors
- Cost-effectiveness =

$$\frac{(Annualized\ Capital\ Cost + Annual\ O\&M) - Existing\ Annual\ O\&M}{Estimated\ Annual\ Emissions\ Reductions}$$

- The 2022 Air Quality Management Plan (AQMP) established a cost-effectiveness threshold of $325,000/ton NOx reduced, adjusted for inflation ($388,500 in 2023 dollars)
- The proposed 6 tpy final NOx limit has a cost-effectiveness of $32,000/ton NOx reduced

	Final NOx Limit of 6 tpy
Net Annual Costs (includes annualized capital and O&M costs)	$2,076,000
NOx Emission Reductions (Tons/Year)	65.3
Cost-Effectiveness ($/Ton of NOx Reduced)	$32,000

Incremental Cost-Effectiveness Analysis

Incremental cost-effectiveness is the difference in costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option

- Incremental cost-effectiveness = $\frac{Calt-Cproposed}{Ealt-Eproposed}$
- Staff assumed a combination of 30% ZE, 50% NZE, and 20% Tier 4 final diesel engines as the repower scenario for the 6 tpy final NOx limit for the purposes of the cost-effectiveness analysis
- Staff compared the repower scenario assumed for the 6 tpy final NOx limit to the next most stringent repower scenario (95% NZE and 5% Tier 4 final diesel engines)
- The proposed final 6 tpy NOx limit was determined to be incrementally cost-effective at $250,000 (less than $388,500/ton NOx reduced)

Socioeconomic Assessment and California Environmental Quality Act (CEQA)

Socioeconomic Impact Assessment

- A socioeconomic impact assessment will be conducted and released for public review and comment at least 30 days prior to the South Coast AQMD Governing Board Hearing for PAR 1135, which is anticipated to be heard on October 4, 2024 (subject to change)

CEQA

- Staff is preparing a Draft Subsequent Environmental Assessment (SEA), which tiers off the previously certified Final Mitigated SEA for the November 2018 Amendments to Rule 1135
- Draft SEA will be released for public review and comment

Next Steps

Ongoing meetings with stakeholders

Stationary Source Committee Meeting scheduled for August 16, 2024

Set Hearing scheduled for September 6, 2024

Public Hearing scheduled for October 4, 2024

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PAR 1135 Proposed Rules Web Page

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