NOx RECLAIM WORKING GROUP MEETING

SEPTEMBER 13, 2018
SCAQMD
DIAMOND BAR, CA

Agenda

- Upcoming Rule Meetings
- BARCT Cost Effectiveness Analyses for Landing Rules
- Landing Rule Updates
  - PAR 1146 Series/PR 1100
  - PR 1118.1
  - PR 1109.1
  - PAR 1134
  - PAR 1135
  - PAR 1110.2
- Proposed Amendments to Rules 2001/2002
- New Source Review Update
- BARCT – Retrofit vs. Replacement

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UPCOMING RULE MEETINGS

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Upcoming Rule Meetings

Proposed Amended Rules 1146, 1146.1, 1146.2 and Proposed Rule 1100	Proposed Rule 1109.1	Proposed Rule 1118.1	Proposed Amended Rule 1110.2
• Public Workshop Sept. 20, 2018	• Working Group Meeting #5 Late October	• Public Workshop Oct. 17, 2018	• Working Group Meeting #2 Sept./Oct. 2018

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Upcoming Rule Meetings

Proposed Amended Rule 1135	Proposed Amended Rule 1134	PARs 2001/2002
• Public Hearing November 2, 2018	• Working Group Meeting #5 Late Sept. 2018	• Stationary Source Committee Meeting Sept. 21, 2018

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BARCT COST EFFECTIVENESS

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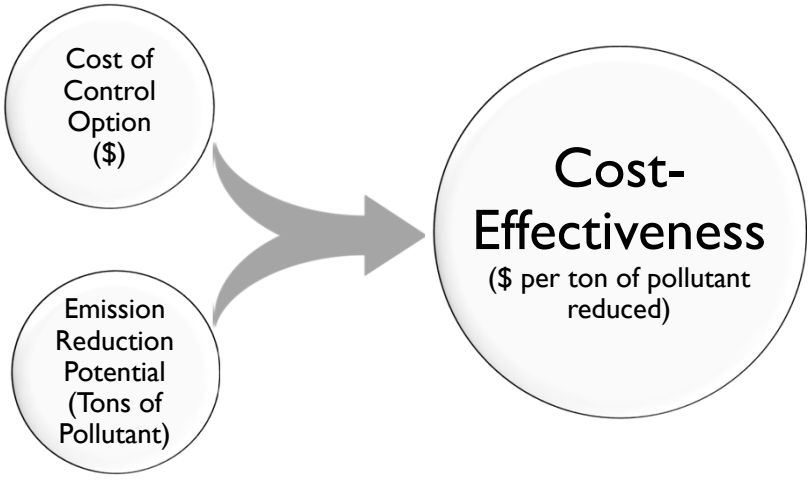
Cost-Effectiveness



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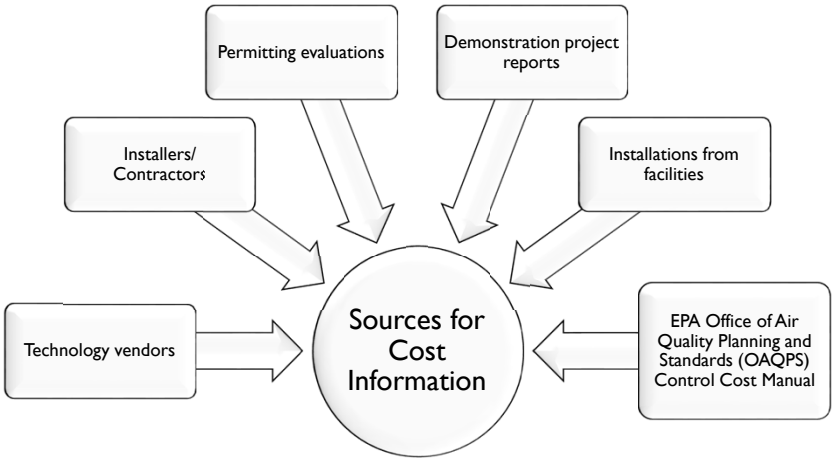
Obtaining Cost Information



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Two Main Components of Cost

Total Installed Costs (TIC)

- Engineering and design
- Project management, labor
- Capital costs (e.g., equipment, pollution controls, catalyst, monitors, ductwork, etc.)
- Freight, taxes
- Contingencies or other site-specific considerations (e.g., space limitations, structural materials, and installation)
- Permitting and source testing

Annual Costs

- Consumables as a result of operation (e.g., periodic catalyst replacements, sorbent usage, reducing agent usage, water usage, etc.)
- Power consumption
- Maintenance costs

Cost of Control Option ($)

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Cost-effectiveness Calculation – Discounted Cash Flow Method (DCF)

Cost of Control Option ($) = Total Installed Cost + [Annual Cost × Present Worth Factor]

Present Worth Factor

- Assumes an interest rate over the equipment life
- Equipment life can vary
- Present worth factor assuming 4% interest rate over an equipment life of 25 years is 15.622

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Cost-Effectiveness for NOx Emission Limits

- Can be looked at in different ways:
  - Different end-points
    - Cost-effectiveness of NOx limit of 3 ppm
    - Cost-effectiveness of NOx limit of 2 ppm
  - Different start-points (baselines)
    - Cost-effectiveness with a starting NOx level of 30 ppm to a NOx limit of 3 ppm
    - Cost-effectiveness with a starting NOx level of 5 ppm to a NOx limit of 3 ppm

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Cost-Effectiveness for NOx Emission Limits (*continued*)

- Outliers
  - Low-use units will typically have higher cost effectiveness due to lower baseline and the small amount of emission reductions
  - Can be used to establish specific provisions for these types of units within NOx rules

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Cost-Effectiveness for NOx Emission Limits (*continued*)

- Cost effectiveness can vary due to differing NOx controls
  - Important to analyze when technology changes at varying potential BARCT levels (e.g., Low-NOx burners to SCR)
- Analyze cost-effectiveness at the different levels to confirm technology is cost-effective
- There are instances where an emission level may be technically feasible, but may not be cost-effective

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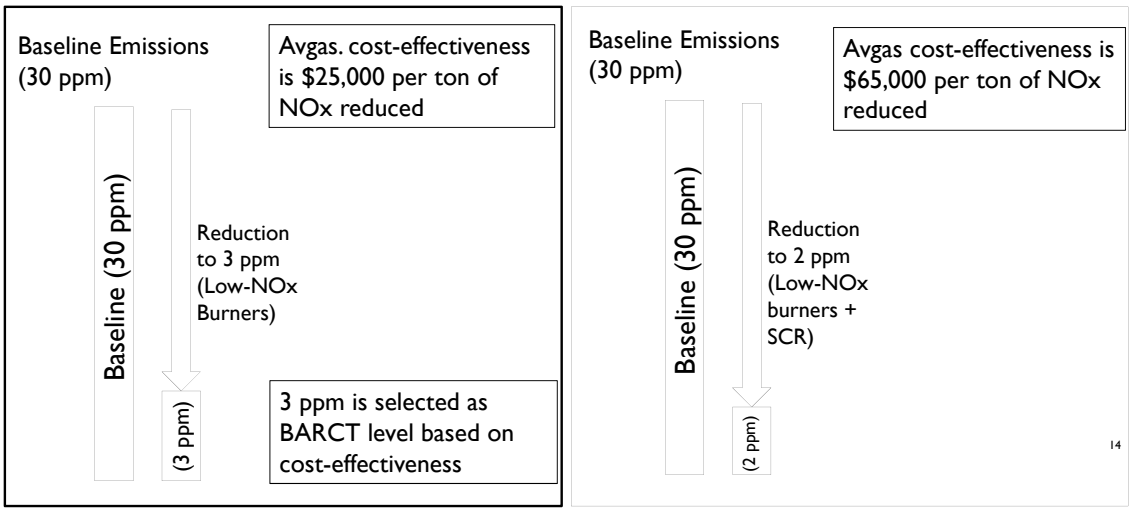
Example of Cost-Effectiveness for NOx Emission Limits – Different BARCT Levels



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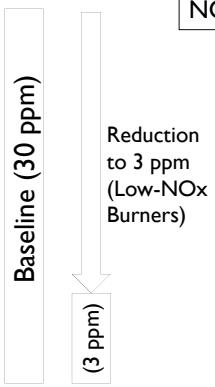
Example of Cost-Effectiveness for NOx Emission Limits – Different Baseline

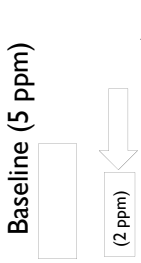
Baseline Emissions (30 ppm) Avgas

Avgas cost-effectiveness is $25,000 per ton of NOx reduced



Baseline Emissions (5 ppm)

Avgas cost-effectiveness is $85,000 per ton of NOx reduced



May include provision that has a different BARCT requirement for units <5 ppm

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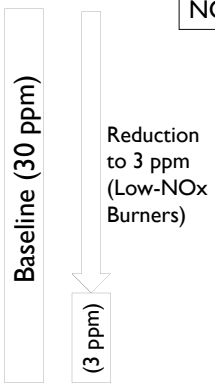
Example of Cost-Effectiveness for NOx Emission Limits – Different Usage

Baseline Emissions (30 ppm) Avgas Use

Avgas cost-effectiveness is $15,000 per ton of NOx reduced



Baseline Emissions (30 ppm) Low Use

Avgas cost-effectiveness is $75,000 per ton of NOx reduced

May include provision that has a different BARCT requirement for low use units

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Health and Safety Code Section 40920.6 Requirements – Incremental Cost Effectiveness

- Calculate the cost-effectiveness of other potential control option(s)
- Where there are multiple control options that would achieve the emission reduction objective of the proposed amendments to a BARCT rule, calculate the incremental cost-effectiveness for the potential control options

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Health and Safety Code Section 40920.6 Requirements – Incremental Cost Effectiveness (*continued*)

- Incremental cost effectiveness is defined in the H&S as:
  - The difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option
  - Where:
    - $C_{proposed}$ is the present worth value of the proposed control option;
    - $E_{proposed}$ are the emission reductions of the proposed control option;
    - C_{alt} is the present worth value of the alternative control option; and
    - E_{alt} are the emission reductions of the alternative control option
  - Incremental cost effectiveness = $(C_{alt} – C_{proposed}) / (E_{alt} – E_{proposed})$

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RECENT ACTIVITY FOR LANDING RULES

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PAR 1146 Series and PR 1100 - Summary

- Landing rules for boilers, steam generators, and process heaters
- Stakeholders commented on BARCT analysis at May 2018 Set Hearing
  - Board delayed Set Hearing
- Staff re-assessed the BARCT analysis
- Two working group meetings were held in August 2018
- Preliminary draft rule language released on August 28, 2018

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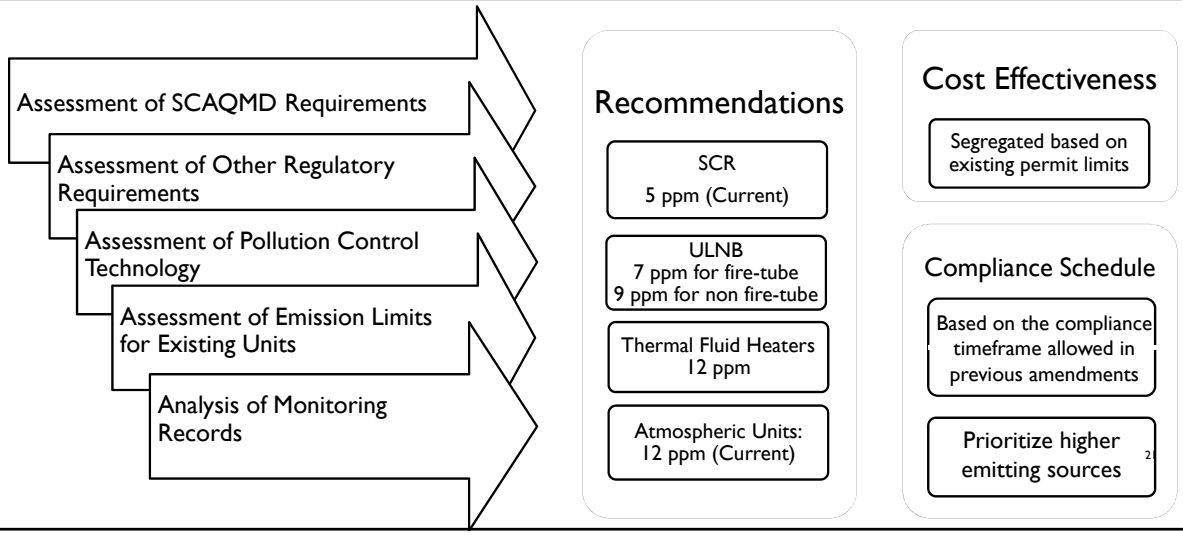
PAR 1146 Series and PR 1100 – BARCT Assessment



PAR 1146 Series and PR 1100 – BARCT Assessment Summary for Natural Gas Fired Units

Unit Description	**Recommended NOx Emission Limits and Compliance Dates**			
Rule 1146	**Units >5 ppm**	**Units ≤5 ppm**	**Compliance Date >5 ppm**	**Compliance Date ≤5 ppm**
≥75 MMBtu/hr (Rule 1146 Group I)	5 ppm via SCR (same as existing limit)	In compliance with rule limit	75% by Jan 2021 25% by Jan 2022 Replacement by Jan 2023	No action needed
Rule 1146 and 1146.1	**Units >12 ppm**	**Units ≤12 ppm**	**Compliance Date >12 ppm**	**Compliance Date ≤12 ppm**
≥20 to <75 MMBtu/hr (Rule 1146 Group II)	5 ppm via SCR	Fire-tube: 7 ppm via ULNB Non fire-tube: 9 ppm via ULNB	Same as above	Burner replacement or 15 years from date of rule amendment (for both RECLAIM and non-RECLAIM)
≥5 to <20 MMBtu/hr (Rule 1146 Group III)	Fire-tube: 7 ppm via ULNB Non fire-tube: 9 ppm via ULNB	Fire-tube: 7 ppm via ULNB Non fire-tube: 9 ppm via ULNB		
>2 to <5 MMBtu/hr (Rule 1146.1)				
Atmospheric Units ≤10 MMBtu/hr	12 ppm via ULNB (same as existing limit)	In compliance with rule limit		No action needed
Thermal Fluid Heaters	**Units >20 ppm**	**Units ≤20 ppm**	**Compliance Date >20 ppm**	**Compliance Date ≤20 ppm**
All Sizes	12 ppm via ULNB	12 ppm via ULNB	Jan 2022	Burner replacement or 15 years from date of rule amendment (for both RECLAIM and non-RECLAIM)

PAR 1146 Series and PR 1100 – Ongoing Assessment

- Digester and landfill gas fired units
  - SCAQMD Existing Rule 1146 and 1146.1 emission limit is 15 ppm for digester gas, and 25 ppm for landfill gas
    - Units were required to comply by January 1, 2015
    - Emission limits established based on source test results pre-2008
    - <20 units utilize landfill and digester gas as primary fuel
  - New information received from San Joaquin Valley APCD and Sacramento AQMD demonstrating feasibility for 9-12 ppm retrofits
  - Seeking input from stakeholders on technical feasibility and cost

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PAR 1146 Series and PR 1100 – Rule Development Schedule

Public Workshop	September 20, 2018
Comments Due	October 4, 2018
Next Working Group Meeting	Mid-October 2018
Stationary Source Committee	October 19, 2018
Set Hearing	November 2, 2018
Public Hearing	December 7, 2018

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PR1118.1 – Summary

- Preliminary draft rule language released August 23, 2018
  - Comments due by September 11, 2018
- Working Group Meeting #8 scheduled for September 5, 2018 - cancelled due to power outage
  - Rescheduled for September 11, 2018
- Preliminary draft staff report and rule language to be distributed by September 21, 2018
- Public Workshop – October 17, 2018
- Set Hearing – November 7, 2018
- Public Hearing – December 7, 2018

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PR1109.1 – Summary & Rule Development Schedule

- Survey questionnaires completed by all stakeholders
  - Staff compiling and analyzing data
- Working Group Meeting #4 held September 12, 2018
  - Pollution control technologies assessed
  - BARCT 4-step technology assessment
- Staff will continue BARCT assessment
  - Propose source specific limits
  - Assess cost effectiveness
- Next Working Group Meeting late October
- Continue stakeholder meetings and site visits

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PAR 1134 – Summary & Rule Development Schedule

- Fourth Working Group Meeting held August 10, 2018 and discussed:
  - Preliminary rule language
  - Concepts for monitoring, reporting, and recordkeeping
- Fifth Working Group Meeting tentatively scheduled for late September
- Public Hearing scheduled for 2019

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PAR 1135 – Summary & Rule Development Schedule

- BARCT analysis complete
  - 2016 inventory is 2.5 tons per day
  - Expected NOx reductions of 0.9 tons per day upon implementation
- Public Workshop held August 2, 2018
- Stationary Source Committee meeting held August 17, 2018
- Key Issue: Working with stakeholder on flexibility and longer implementation period to replace engines or use other non-diesel technology on Catalina Island
- Public Hearing scheduled for November 2, 2018

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PAR 1110.2 – Summary

- Working Group Meeting No. 1 held June 28, 2018
  - Background on RECLAIM transition
  - Applicability of PAR 1110.2
  - BARCT overview
  - Review of affected universe
- Next Working Group Meeting
  - Continuing evaluation of existing engines
  - Review of other jurisdictions' regulatory limits
  - Initiate technology assessment
  - Scheduling site visits with the affected facilities
  - Survey questionnaire to be distributed to facilities for equipment and pollution control information

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PAR 1110.2 – Rule Development Schedule

- On-going Working Group Meetings 3rd/4th Quarter 2018
- Public Workshop 4th Quarter 2018
- Public Hearing 1st Quarter 2019

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PROPOSED AMENDMENTS TO RULES 2001 AND 2002

Background

- January 5, 2018 amendments established criteria for facilities to be eligible to exit RECLAIM
- 37 facilities were identified as ready to exit and were issued initial determination notifications that required them to submit equipment information to be reviewed
- Some elements pertaining to the transition have not been resolved yet, such as New Source Review and permitting
- Stakeholders had concerns about transitioning out of RECLAIM before transition elements were addressed
- Some stakeholders would like their facilities to exit before transition elements are resolved

Need for Proposed Amendments

PAR 2001

- Stakeholders expressed that they want the ability to exit despite the timeframe for new source review (NSR)
  - Opt-out provisions create a pathway for facilities to exit before NSR is amended, under certain conditions
  - This pathway to exit is optional and only for those facilities that are eligible and want to exit before an initial determination notification is issued

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Need for Proposed Amendments

PAR 2002

- Stakeholders have also raised concerns regarding transitioning facilities before key issues are resolved, such as New Source Review and permitting, and have requested an option to remain in RECLAIM
  - The option to remain offers assurance to facilities that they will not be exited from RECLAIM prematurely until all elements of the transition are resolved
  - Facilities would continue to use RECLAIM NSR for permitting

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Summary of Proposed Amendments

PAR 2001

- Provides facilities with an option to exit RECLAIM if they meet certain criteria
- Establishes criteria for facilities to be eligible to opt-out

PAR 2002

- Revises criteria for facilities to be identified as ready to exit
- Provides an option for facilities to remain in RECLAIM for a limited time after being identified as ready to exit
- Includes a temporary provision that does not allow exited facilities to access the internal bank for emissions increases
- Removes rule language pertaining to reporting infinite year block NOx RTC (IYB) prices

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PAR 2001 – Opt-Out Provisions

- Criteria to opt-out:
  - All NOx emitting equipment is subject to a NOx regulating rule that is amended after date of amendment of Rule 2001 (set for October 5, 2018)
  - Equipment subject to Rule 1470 and other equipment exempt from permitting per Rule 219 are excluded from this requirement, with the exception of:
    - Equipment defined in Rule 1146.2; and
    - Nitric acid equipment described in Rule 219

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Process to Opt-Out

Facilities that received an initial determination notification **before** October 5, 2018

⇩

Must submit a request to opt-out but do not resubmit equipment information. If criteria is met, will be issued a final determination notification.

Facilities that have not received an initial determination notification and meet the criteria to exit

⇩

Must submit request to opt-out with specified equipment information. If criteria is met, will be issued an initial determination notification.

⇩

Receive final determination pursuant to Rule 2002

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PAR 2002 - Revised Criteria to Exit

- Reflects the criteria in PAR 2001 for being eligible to opt-out
  - Revised criteria ensures certainty for RECLAIM facilities that all equipment will have adopted or amended NOx rules upon exit addressing emission limits, implementation schedule, and monitoring, reporting, and recordkeeping requirements
- Facilities that have already received initial determination notifications would have to meet the revised criteria to exit
  - If a facility meets the revised criteria for exiting and still wants to exit, it would have to submit a request to opt-out of RECLAIM
  - Facilities may also submit a request to remain in RECLAIM

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PAR 2002 - Revised Criteria to Exit (*continued*)

- Facilities would not be involuntarily forced to exit before NSR issues are resolved
- If a facility met the previous criteria to exit, but does not meet the revised criteria, it will be notified that it will remain in RECLAIM

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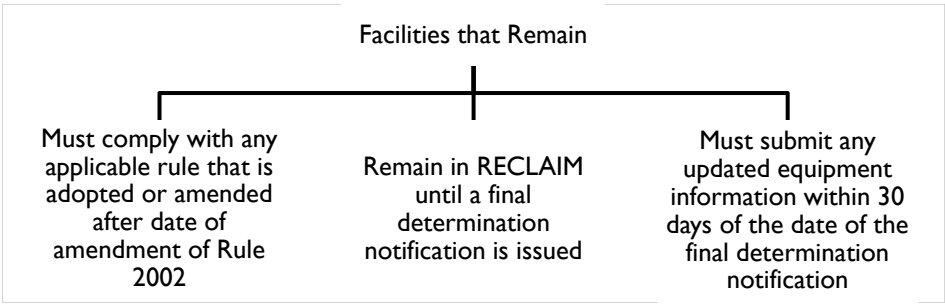
PAR 2002 – Option to Remain in RECLAIM

Provides facilities with an option to remain in RECLAIM until NSR and permitting matters are resolved to address stakeholders' concerns



Facilities will still be subject to implementation schedules of adopted/amended non-RECLAIM rules while still in RECLAIM

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Process to Remain in RECLAIM

Facility submits a request to remain in RECLAIM and required information to the Executive Officer after receiving an initial determination notification

The Executive Officer would notify the facility that the facility will remain in RECLAIM

Executive Officer issues a final determination notification with the date that the facility will exit RECLAIM

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Process to Remain in RECLAIM

Facilities that received an initial determination notification **before** October 5, 2018

Must submit request to remain in RECLAIM within 45 days from the date of amendment of Rule 2001

Facilities that receive an initial determination notification **after** October 5, 2018

Must submit request to remain in RECLAIM within 45 days from of receiving an initial determination notification

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PAR 2002 – Temporary NSR Provision

- Potential NSR Issues from Exiting RECLAIM facilities:
  - Permit moratorium – Rule 1315 contains cumulative net emissions increase thresholds
  - Potential impacts from exiting RECLAIM facilities were not analyzed for Rule 1315 CEQA thresholds
    - Will be the subject for future Regulation XIII amendments

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PAR 2002 – Temporary NSR Provision

- Former RECLAIM facilities would temporarily not be allowed to access the internal bank for emissions increases
  - Allows for facilities to exit before NSR issues are resolved
  - Facilities that exit have the ability to offset any emissions increases by obtaining emissions reduction credits (ERCs) in the open market
  - Facilities also have the ability to remain in RECLAIM to offset any emissions increases through the use of RTCs (Rule 2005)
  - Must still meet BARCT as designated in Rule 1100 or other non-RECLAIM NOx rules

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PAR 2001/2002 Public Comments

- Comments letters received:
  - LADWP
  - Burbank Water and Power
- Public comments were made at the September 7, 2018 Set Hearing
  - Southern California Air Quality Alliance
  - California Council for Environmental and Economic Balance (CCEEB)
  - Western States Petroleum Association (WSPA)

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PAR 2001/2002 Public Comments *(continued)*

- Key Comments
  - Resolve NSR before moving forward with PARs 2001/2002 and BARCT rules
  - RECLAIM facilities want certainty when they exit
  - Lack of programmatic CEQA analysis
- Responses
  - PARs 2001 and 2002 present options in response to stakeholder requests
  - A RECLAIM facility can remain in RECLAIM while NSR issues are resolved

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PAR 2001/2002 Public Comments *(continued)*

- Responses (continued):
  - BARCT rulemaking needs to continue and the provisions to exit are needed to provide assurance for facilities once NSR issues are resolved
    - BARCT rules can be implemented while facilities are still in RECLAIM on a temporary basis
  - Programmatic CEQA impacts were analyzed for the 2016 AQMP Program Environmental Impact Report
    - Explained in response letter to Biz Fed on April 25, 2018

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Rule 2001/2002 Development Schedule

September 21, 2018	October 5, 2018
Stationary Source Committee Meeting	Public Hearing

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UPDATE ON NEW SOURCE REVIEW

New Source Review (NSR) update

- Received stakeholder comments regarding concerns with exiting RECLAIM prior to resolving NSR transition issues
- Continuing discussions with EPA regarding RECLAIM NSR transition
  - Ensure post-RECLAIM PTE does not exceed the RECLAIM PTE right before program sunsets
  - Ensure SIP commitments
- Will schedule a separate stakeholder NSR meeting to delve into pending issues and progress
  - Potential use of a new internal bank (PR 1315.1)
  - Baseline emissions for future modifications (PR 1306.1)

BARCT – RETROFIT VS. REPLACEMENT

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BARCT Scope of Definition

- Issue:
  - Does Best Available Retrofit Control Technology exclude equipment replacement?
- Statutory Definition: §40406
  - "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"
  - does not preclude replacement
- SCAQMD Not Proposing to Require Replacement
  - Diesel engine standard can be met by add-on controls or replacement

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American Coatings Supreme Court Case

- Undisputed that BARCT applies to paint, which isn't "retrofit" (add-on controls)
- Definition more important than name (can be BARCT if "achievable" even though not "available")

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Dictionary Definition

- "retrofit" includes "to replace existing parts, equipment, etc. with updated parts or systems"
- http://www.dictionary.com/browse/retrofit
- Not limited to "a part" of the whole

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SCAQMD Can Go Beyond BARCT

- §§39002, 41508 “additional, stricter standards than those set forth by law”
- §40918 BARCT requirement “intended to establish minimum requirements…” and “nothing in this act is intended to limit or otherwise discourage ... rules ... which exceed those requirements.” (Stats. 1992, ch. 945, §18)

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Commenter’s Citations

- Carl Moyer Program / Port Program
- “retrofit” defined as modifications to engine and fuel system
- “repower” means replacing an engine §44275(a)(18) & (19)
- Definitions limited to “this chapter”

- Conclusion: retrofit is broader than replace, but doesn’t exclude it

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Policy Implications of Commenters Citations

- Severely polluted districts could not require pollution reductions that are affordable and meet definition of BARCT
  - Sources continue to emit at high levels despite reasonableness of control
  - Example: SCE Catalina Island Engines: 3 > 50 years old, 1 > 40, 1 > 30, 1 > 20
    - 0.05% of electricity; 10% of emissions

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Contacts

General RECLAIM Questions
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Proposed Amended Rule 1134
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Proposed Amended Rule 1110.2
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