



# NO<sub>x</sub> RECLAIM WORKING GROUP MEETING

FEBRUARY 8, 2018

SCAQMD

DIAMOND BAR, CA

# Agenda

- Initial Determination Notifications
- Rule Updates
  - PAR 1135
  - PAR 1146 Series/PR 1100
  - PR 1109.1
  - Other Rules
- Overview of BARCT Analysis
- Updates on Discussions with EPA Regarding NSR
- RECLAIM Transition Plan
- Contacts

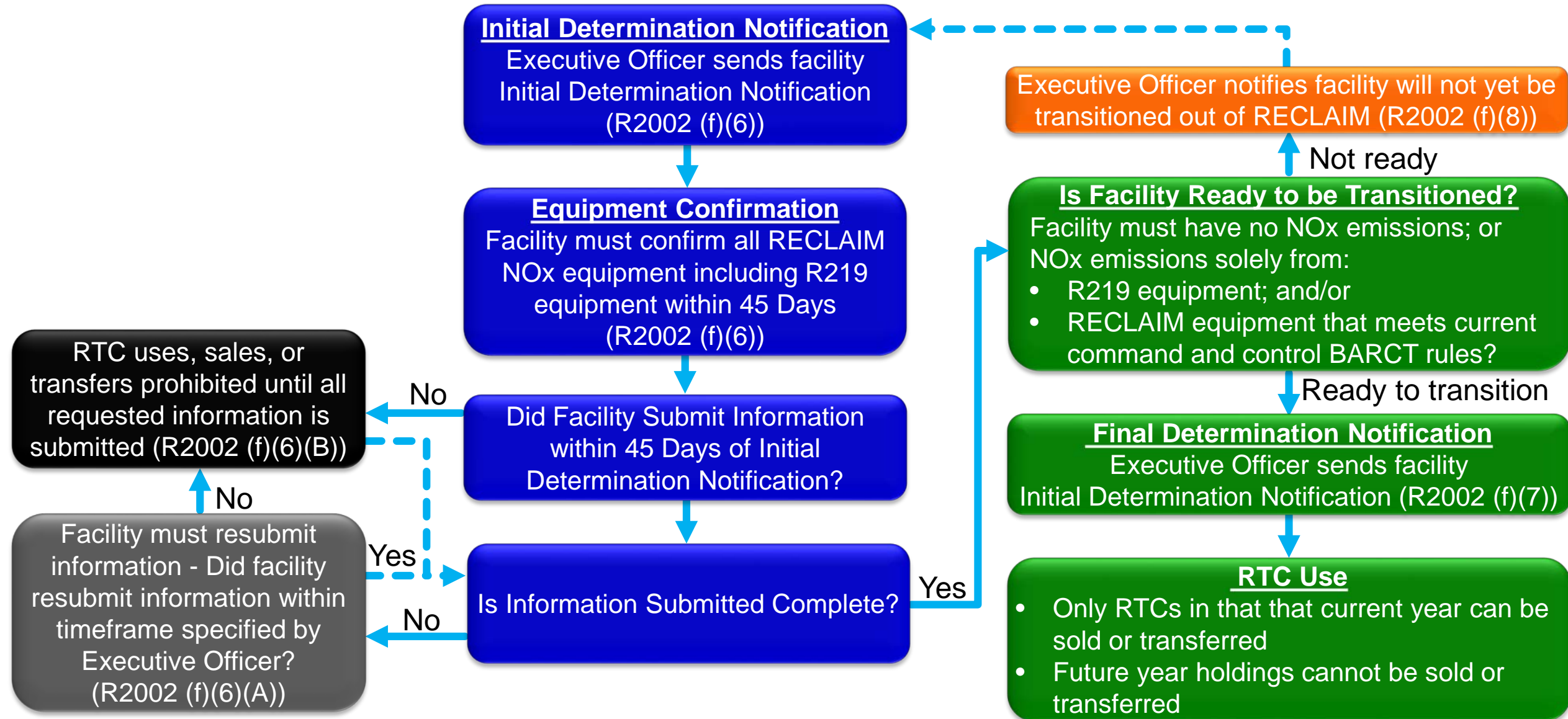
# Update on Initial Determination Notifications

- First set of Initial Determination Notifications sent Feb. 2, 2018
  - Sent to 37 facilities by certified mail
- Consistent with Rule 2002, a facility is ready to transition if the facility has no NOx emissions or NOx emissions are solely from the combination of:
  - Rule 219 equipment<sup>1</sup>, various location permits, or unpermitted equipment; and/or
  - RECLAIM equipment meets current command-and-control BARCT rules<sup>2</sup>

<sup>1</sup> Unless the equipment would be subject to a command-and-control rule that it cannot reasonably comply with

<sup>2</sup> Includes any applicable BARCT command-and-control rule regardless if the equipment is currently meeting the BARCT emission limit

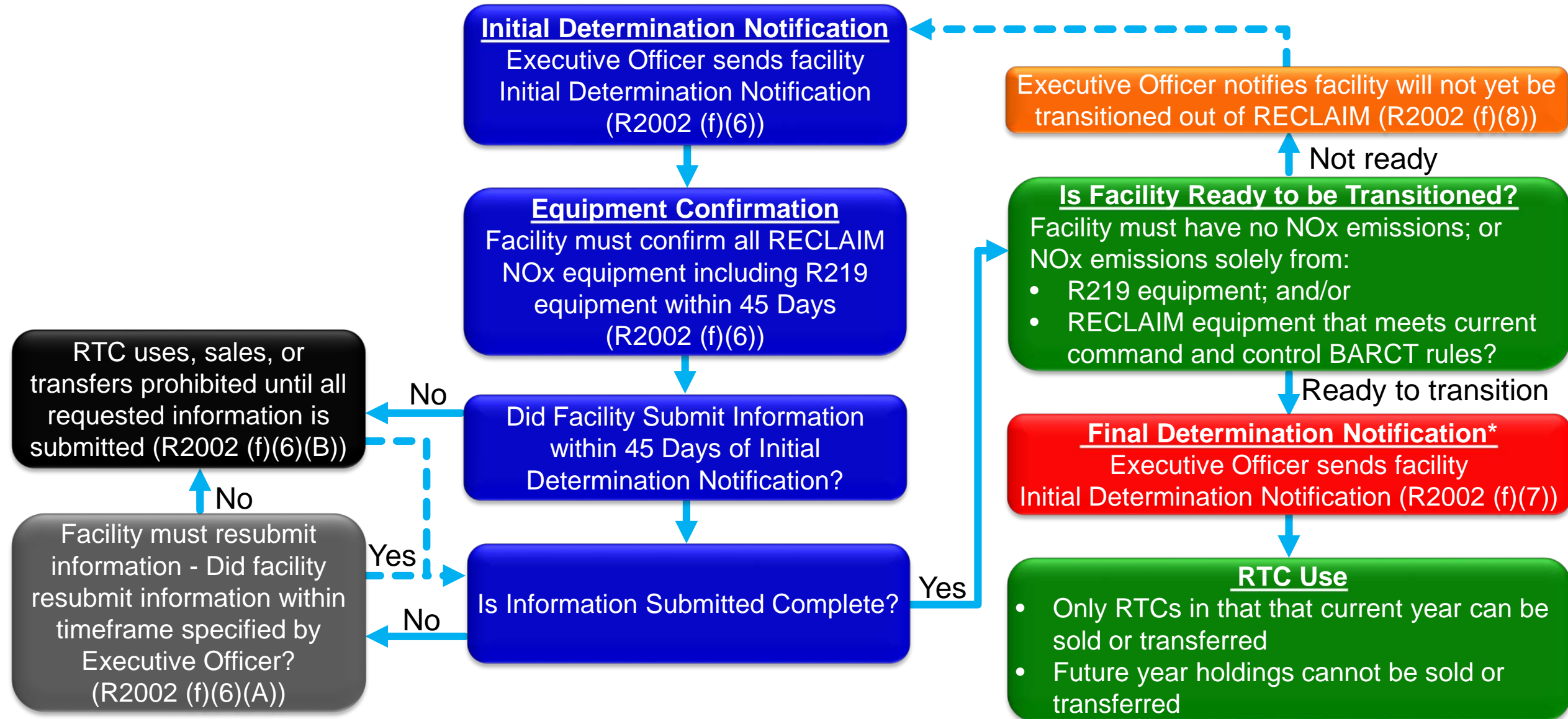
# Overview of Transition Approach



# Issuance of Final Determination Notifications

- Staff is initiating the process to begin transitioning the first group of NO<sub>x</sub> RECLAIM facilities to a command-and-control regulatory approach
- Process to confirm RECLAIM and Rule 219 equipment will proceed
- Until NSR issues can be resolved, only facilities with a potential to emit < 4 tons/year will receive Final Determinations and will be transitioned
  - Facilities with a PTE of < 4 tons/year will have access to the SCAQMD's Internal Bank of ERCs for any NSR projects
- Title V MRR needs further evaluation

# Overview of Transition Approach\*



\* Final Determination Notifications for facilities  $\geq 4$  tons/year will be held until Regulation XIII New Source Review provisions are resolved.

# Update on Rulemaking

- Provide a general summary of rule-specific Working Group Meetings
- Please refer to SCAQMD's Proposed Rule portion of the website for presentations – more details provided in presentations
- Objective is to keep RECLAIM Working Group members informed
- Staff will be revising Proposed Regulation XX portion of website to include a schedule of all upcoming RECLAIM and rule-specific RECLAIM related Working Group Meetings and Public Workshops

# Upcoming Working Group Meetings and Public Workshops

## RECLAIM Working Group Meetings

- Working Group Meeting  
Feb. 8, 2018  
10 AM
- Working Group Meeting  
Mar. 8, 2018  
10 AM
- Working Group Meeting  
Apr. 12, 2018  
10 AM

## Proposed Amended Rules 1146, 1146.1, 1146.2 and Proposed Rule 1100

- Public Workshop:  
Feb. 14, 2018  
10 AM
- Third Working Group Meeting:  
Feb. 21, 2018  
1 PM

## Proposed Rule 1109.1

- Working Group Meeting  
Feb. 21, 2018



# Upcoming Working Group Meetings and Public Workshops

## Proposed Rule 1118.1

- Fourth Working Group Meeting  
Mar. 1, 2018  
9 AM

## Proposed Amended Rule 1135

- Second Working Group Meeting  
To be announced

## Proposed Amended Rule 1134

- First Working Group Meeting  
Feb. 22 2018  
10 AM



# UPDATE ON PROPOSED RULES AND PROPOSED AMENDED RULES



# Proposed Amended Rule 1146 Series Update

- Rule 1146 series rules – the first set of landing rules to be amended

| Rule               | Applicability   | Size                           |
|--------------------|---|--------------------------------|
| <b>Rule 1146</b>   | Boilers, steam generators, and process heaters                | ≥ 5 million Btu per hour       |
| <b>Rule 1146.1</b> | Boilers, steam generators, and process heaters                | >2 and <5 million Btu per hour |
| <b>Rule 1146.2</b> | Natural gas-fired water heaters, boilers, and process heaters | ≤ 2 million Btu per hour       |

- Key amendments

- Remove RECLAIM exemptions
- Maintain existing NOx concentration limits in all three rules
- Exempt RECLAIM facilities from compliance dates in existing rules
- Reference Proposed Rule 1100 for implementation schedule for Rules 1146 and 1146.1
- Only new equipment needs to meet Rule 1146.2 NOx concentration limits – will revisit NOx concentration limits in Rule 1146.2 later (post transition)

# Proposed Rule 1146 Series Monitoring, Reporting, and Recordkeeping

- In general, Major Sources will continue to implement RECLAIM MRR
- Good consistency between RECLAIM and Rule 1146 and 1146.1 MRR – minor changes
  - Rule 1146 and 1146.1 tune up provisions more frequent than RECLAIM for process units between 2 and 10 MM Btu/hour and units  $\leq$  2 MM Btu/hr, if permitted
  - Reporting requirements under Rule 1146 series less frequent – no Quarterly Certification of Emissions Report would be required

# Proposed Amended Rule 1146 Series Implementation Schedule – Proposed Rule 1100

- Implementation schedule would apply to all Rule 1146 and 1146.1 applicable devices
- Facilities in RECLAIM with Rule 1146 and/or Rule 1146.1 equipment would be subject to implementation dates (PR 1100) and NOx concentration limits (PAR 1146 series) with the exception of:
  - Refineries that covered under Proposed Rule 1109.1
  - Electricity generating facilities covered under Proposed Amended Rule 1135
- Proposed implementation schedule:
  - 75% of units by heat input for Rule 1146 and 1146.1 units (excluding BARCT-compliant equipment) by Jan. 1, 2021;
  - 100% of units by heat input by Jan 1, 2022
- Submit a complete permit application by August 1, 2018 (leaving 29 months for permit approval, installation & source testing – Received comments that additional time needed

# PAR 1135 – Electricity Generating Facilities (EGFs)

- First working group meeting January 24, 2018
- Background information on Rule 2009
- Presented equipment at RECLAIM EGFs
  - For each equipment category, summarized number, size, and NO<sub>x</sub> concentration
  - Identified outliers
- Stakeholders raised concerns about the 2015 non-EGF boiler BARCT NO<sub>x</sub> level of 2 ppm @ 3% O<sub>2</sub>
- Staff is scheduling individual meetings with EGFs

# PR 1109.1 – Refinery Equipment

- First PR 1109.1 Working Group will be February 21st
- Areas of discussion include the following:
  - Possible universe of facilities (e.g., may include smaller independent refineries and/or support services)
  - Possible universe of equipment
  - Considerations for establishing BARCT
  - Other regulatory approaches (e.g., averaging based on level of usage and operating time)



# Overview of BARCT Analysis





# Overview of BARCT Analysis

- WSPA provided comments on the how SCAQMD staff will be conducting BARCT analyses, commenting that:
  - RECLAIM concentration levels may not be achievable under “command-and-control”
  - BARCT levels may not be cost-effective, need to look at various levels of control
  - Timetable for transition could affect what is achievable and whether cost-effective
  - BARCT should be defined for each class and category of equipment
- Staff is presenting the overall approach for establishing BARCT

# BARCT

- Is defined in the California Health and Safety Code Section 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.”
- BARCT is reassessed periodically and is updated as technology advances

# Health and Safety Code Section 40920.6

- Establishes requirements prior to adopting rules or regulations regarding retrofit control technologies
- Prior to adopting, SCAQMD must:
  - Identify one or more potential control options which achieves the emission reduction objectives for the regulation
  - Review the information developed to assess the cost-effectiveness of the potential control option
    - Cost-effectiveness is the cost, in dollars, of the potential control option divided by emission reduction potential, in tons (For example: \$ per ton of NO<sub>x</sub> reduced)
  - Calculate the incremental cost-effectiveness for the potential control options identified in paragraph
    - The incremental cost-effectiveness is 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

## Health and Safety Code Section 40920.6 *(Continued)*

- Consider, and review in a public meeting the:
  - Effectiveness of the proposed control option in meeting the requirements of this chapter and the requirements adopted by the state board pursuant to subdivision (b) of Section 39610
  - Cost-effectiveness of each potential control option; and
  - Incremental cost-effectiveness
- Make findings at the public hearing at which the regulation is adopted stating the reasons for the district's adoption of the proposed control option or options (Included in the adoption resolution)

## Health and Safety Code Section 40920.6 *(Continued)*

- A district may establish its own best available retrofit control technology requirement provided the following are met:
  - Requirement meets the state definition of BARCT (discussed in earlier slide Health and Safety Code Section 40406)
  - Rules and regulations include a process to approve alternative methods of complying with emission control requirements that provide equivalent emission reductions, emissions monitoring, or recordkeeping
  - Requirement is consistent with state law, and federal law, including, but not limited to, the applicable state implementation plan

# BARCT – Primary Considerations

Applicability

Feasibility

Cost  
Effectiveness



# Guiding Principles for Establishing BARCT Levels for RECLAIM Equipment

- Consistent with state law, BARCT levels will take into account:
  - Environmental impacts;
  - Energy impacts; and
  - Economic impacts
- Must adhere to Health and Safety Code Section 40920.6, which establishes requirements prior to adopting rules or regulations regarding retrofit control technologies
- If an applicable command control source-specific rule establishes a NO<sub>x</sub> concentration limit that represents BARCT, that NO<sub>x</sub> concentration limit will be used
  - Example: Rule 1146 and 1146.1 NO<sub>x</sub> concentration limits

# Guiding Principles for Establishing BARCT Levels for RECLAIM Equipment *(Continued)*

- Staff will conduct a BARCT review if:
  - An applicable command-and-control source-specific rule has a NO<sub>x</sub> concentration limit that is not representative of BARCT;
  - The 2015 RECLAIM amendment NO<sub>x</sub> concentration levels are in need of reassessment;
  - A BARCT level has not been established for a specific equipment source category
- BARCT review will follow a methodical process (next slides)
- BARCT review will be established during the rule development process – allows for public participation
  - Details specific to the source category will be discussed – equipment life, application of the BARCT limit, etc.
- BARCT is an iterative process, and will be updated as new information becomes available

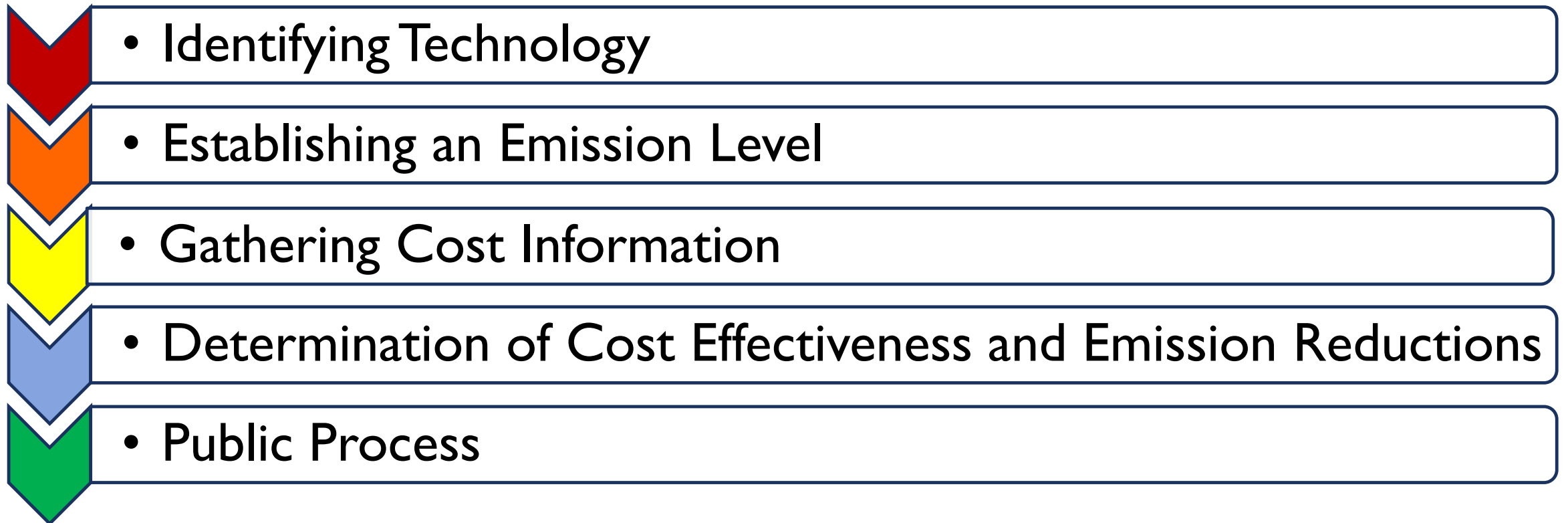


# Guiding Principles for Establishing BARCT Levels for RECLAIM Equipment *(Continued)*

- In addition to the overall cost-effectiveness, additional considerations for:
  - Outliers
  - Stranded assets
  - Incremental cost-effectiveness
  - Accounting for recent installations – implementation of previous requirements – BARCT or BACT

# BARCT - Process

- An iterative process for each rulemaking requiring a BARCT analysis





## • Identifying Technology

- Technology is identified by way of:
  - Vendor contact with SCAQMD staff
    - Installation Lists
  - Control technology conferences
  - Technology Advancement Office demonstration projects
  - BACT Assessments
  - AQMP control measure evaluations
  - Installations at other air districts or other regions worldwide
  - Rules from other air districts



# • Establishing an Emission Level

- An emission level can be established based on:
  - Achieved in practice installations – source tests
  - Equipment vendor guarantees/quotations
- For each equipment source category, the emission levels can vary based on:
  - Equipment size
  - Fuel type
  - Application - for example, high heat versus low heat furnace
  - Other considerations can be identified during rulemaking
- BARCT emission limits can be technology forcing
  - Demonstration projects
  - Technology transfer
  - Generally will include a Technology Assessment for technology forcing emission limits
  - Sufficient time is needed for technology forcing BARCT emission limits



## • Gathering Cost Information

- Cost information can be obtained from:
  - Technology vendors
  - Installers/contractors
  - Permitting evaluations
  - Demonstration project reports
  - Achieved in practice installations from facilities
  - EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual



- Gathering Cost Information (*Continued*)

- Design parameters from facility equipment are obtained from District records or from information obtained from facilities
  - Some information may be considered business confidential
  - Evaluated by vendors to assess the feasibility of a proposed emission level or an alternate emission level
  - Parameters are specific to the type of equipment
    - Rating/Size
    - Fuel, heating value
    - Stack parameters (e.g., flow rate, temperature, moisture content, oxygen content, pollutant concentration) from source tests or CEMS data



## • Gathering Cost Information (*Continued*)

- Two main components for costs
  - Total Installed Costs (TIC)
  - Annual Costs (AC)
- Total Installed Costs include, but are not limited to:
  - Engineering and design
  - Project management, labor, and supervision
  - Equipment costs (e.g., pollution control equipment, catalyst initial charge, controls, monitors, ductwork, etc.)
  - Freight, taxes
  - Contingencies can be based on the scope of work or other site-specific considerations (e.g., space limitations that may require additional structural materials and installation)
    - Applied as a cost multiplier



- Gathering Cost Information (*Continued*)

- Annual Costs include, but are not limited to:
  - Consumables as a result of operation (e.g., periodic catalyst replacements, sorbent usage, reducing agent usage, water usage, etc.)
  - Power consumption
  - Periodic maintenance costs





- Determination of Cost-Effectiveness and Emission Reductions

- Prior to adopting rules or regulations to meet BARCT staff conducts a cost-effectiveness calculation
- Cost-effectiveness is calculated by using Present Worth Value (PWV) with the Discounted Cash Flow method
- Present Worth Value =  
$$\text{Total Installed Costs (TIC)} + [\text{Annual Costs (AC)} \times \text{Present Worth Factor}]$$
- For example, the Present Worth Factor assumes a 4% interest rate over an equipment life of 25 years (15.622)
- To calculate the cost-effectiveness, the Present Worth Value (PWV) is divided by the projected emission reductions over the life of the equipment
- Assuming an equipment life of 25 years (Equipment life can vary):  
$$\text{Cost-effectiveness (\$ per ton)} = \text{PWV} / \text{Emission Reductions over 25 years}$$



- Determination of Cost Effectiveness and Emission Reductions

- The range of cost-effectiveness can vary, depending on the control technology available to achieve the same emission level
- In general, equipment with lower emission reductions have a higher cost effectiveness
- Cost-effectiveness can be calculated per device and for a general industry category as an average or a range
  - Some units will be more cost-effective than others
  - Command-and-control rules take into account all applicable sources and may make exceptions for certain unique situations meeting certain specific criteria



- Determination of Cost Effectiveness and Emission Reductions

- Ancillary costs of construction

- These costs are included in the total installed costs, but only if they pertain directly to the pollution control project
- The costs for other projects that are conducted concurrently, such as upgrades to other pieces of equipment nearby and not directly affecting the emission source, must be subtracted from the total installed costs



## • Public Process

- Cost assumptions are discussed through the Working Group to solicit comments
- Cost-effectiveness and incremental cost-effectiveness, if applicable, are:
  - Discussed and presented during the rule Working Group Meetings
  - Presented at the Public Workshop
  - Included in the Draft Staff Report
  - Included in the Board Letter for the adoption hearing
- Socioeconomic analysis uses cost data to estimate socioeconomic impacts from the proposed rule and its proposed controls

# Update on New Source Review

- Staff is continuing to work with EPA regarding the use of the SCAQMD internal bank along with general RTC accounting as RECLAIM facilities transition to command-and-control
- EPA has requested details regarding the source of ERCs in the SCAQMD internal bank
- Subsequent meetings/conference calls with EPA will be scheduled

# RECLAIM Transition Plan

- Purpose is to summarize the transition of the RECLAIM program to command-and-control
- Embodies much of the discussion topics presented at the RECLAIM Working Group
- Dynamic process – staff will be periodically updating the Transition Plan
- As transition process progresses:
  - Additional topics will be added to the Transition Plan
  - Information will be updated as issues are resolved
- 1<sup>st</sup> Draft of Transition Plan expected next week

# Key Topics in 1<sup>st</sup> Draft of Transition Plan

- Transition Process
- Transition Approaches
  - Source-Specific Rules
  - Industry Specific Rules
  - Compliance Plans
- Best Available Retrofit Control Technology (BARCT Determination)
- New Source Review
- Monitoring, Reporting, and Recordkeeping
- Permitting
- Public process

# Contacts

## General RECLAIM Questions

- Gary Quinn, P.E.  
Program Supervisor  
909-396-3121  
gquinn@aqmd.gov
- Kevin Orellana  
Program Supervisor  
909-396-3492  
korellana@aqmd.gov

## Proposed Amended Rules 1146, 1146.1, 1146.2 and Proposed Rule 1100

- Gary Quinn, P.E.  
Program Supervisor  
909-396-3121  
gquinn@aqmd.gov
- Kalam Cheung  
Air Quality Specialist  
909-396-3281  
kcheung@aqmd.gov

## Proposed Rule 1109.1

- Heather Farr  
Program Supervisor  
909-396-3672  
hfarr@aqmd.gov
- Jong Hoon Lee  
Air Quality Specialist  
909-396-3903  
jhlee@aqmd.gov



# Contacts

## Proposed Rule 1118.1

- Heather Farr  
Program Supervisor  
909-396-3672  
hfarr@aqmd.gov
- Steve Tsumura  
Air Quality Specialist  
909-396-2549  
stsumura@aqmd.gov

## Proposed Amended Rule 1135

- Michael Morris  
Program Supervisor  
909-396-3282  
mmorris@aqmd.gov
- Uyen-Uyen Vo  
Air Quality Specialist  
909-396-2238  
uvo@aqmd.gov

## Proposed Amended Rule 1134

- Michael Morris  
Program Supervisor  
909-396-3282  
mmorris@aqmd.gov
- Uyen-Uyen Vo  
Air Quality Specialist  
909-396-2238  
uvo@aqmd.gov