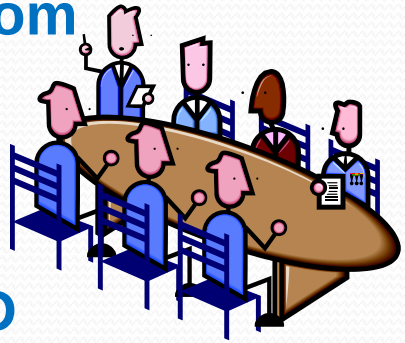
Proposed Updates to BACT Guidelines

BACT Scientific Review Committee
October 3, 2018

Proposed Updates to BACT Guidelines

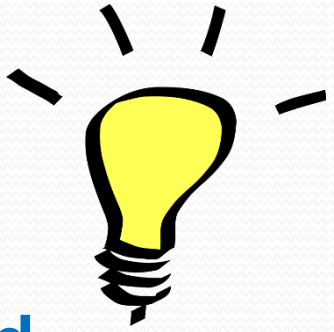
- BACT Guidelines updated and approved at February 2, 2018 Board meeting & follow up from 4/24/18 BACT SRC meeting
- Overview, Parts A, B, C and D to be updated
- Reviewed BACT determinations from SCAQMD and other Air Districts
- Gathered cost data and conducted site visits
- Maintain consistency with recent changes to SCAQMD rules, State and Federal requirements
- Make BACT webpage interactive and User Friendly



Proposed Updates to Overview

- **Referencing Engineering & Permitting Policy preventing circumvention of BACT requirement for emission increases ≥ 1 lb/day.**
- **Cumulative emission increases that equal or exceed 1 lb/day (nonattainment air pollutant, O_3 depleting compound or ammonia) within a 5-year period will be subject to BACT.**

Proposed Updates to Part A – Policy and Procedures for Major Polluting Facilities



- **SCAQMD Air Quality-Related Energy Policy established on September 2011**
- **Policy no. 7 of 10 requires new/repowered in-Basin fossil-fueled power plant to incorporate LAER/BACT considering energy efficiency.**
- **Include in BACT Guidelines by reference**

  http://www.aqmd.gov/nav/about/policies/aqmd-air-quality-related-energy-policy

Proposed Updates to Part C– Policy and Procedures for Minor Polluting Facilities

- SCAQMD Air Quality-Related Energy Policy established on September 2011
- Included in BACT Guidelines by reference
- Updated maximum cost-effectiveness values on Table 5 (M&S Index 2nd quarter 2018)

Proposed deletions of outdated Part B Sections I & II LAER Determinations

- Aluminum melting
- Boiler
- Oven
- Dryer, Tenter Frame
- Gas Turbine
- Heater
- I.C. Engine (Landfill, Digester Gas, Emergency, Non-Emergency & Portable
- Lithographic Printer
- Spray Booth

Major Source LAER/BACT – SECTION B

Year 2000 Separated out Major/Minor	No Cost Effectiveness Analysis	Achieved in Practice > 6 months	Case Specific data Included	TECHNOLOGY NEUTRAL

Minor Source BACT – SECTION D

Non Title V Facilities	Year 1995 Cost Analysis H&S Code 40440.11	Achieved in Practice > 12 months	Case Specific data Not Included	TECHNOLOGY NEUTRAL

New Proposed Part B, Section I, SCAQMD LAER/BACT Determination

External Floating Roof Storage Tank

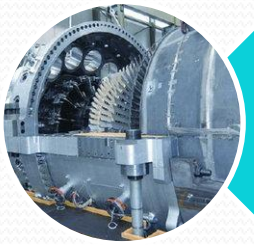
- Installation of Dome
- 14,000 BBL, 79,000 BBL, 165,252 BBL and 615,000 BBL
- No Test Requirement
- Reduces Wind Induced Emissions

New Proposed Part B, Section I, SCAQMD LAER/BACT Determination

Soil Vapor Extraction

- Achieved in practice Thermal Oxidation 30ppm NOx
- Applies to burner only emission
- Gasoline Storage facility
- Source Test with emission limit compliance

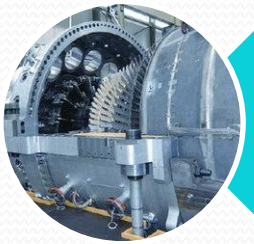
Proposed Part B, Section I, SCAQMD LAER/BACT Determination Update



Gas Turbine
Combined Cycle

- 2 ppm NOx/ 2 ppm CO/ 2 ppm VOC/ 5 ppm NH_3
- Water Injection, SCR – NH3 injection, OxyCat
- Averaging Time – 1 hour
- No Duct Burner
- Excludes start-up & shutdown
- CEMS & Source Test verified

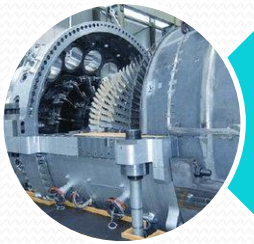
Proposed Part B, Section I, SCAQMD LAER/BACT Determination Update



Gas Turbine
Simple Cycle

- 2.5 ppm NOx, 2 ppm VOC, 4 ppm CO, 5 ppm NH_3
- Water injection, SCR-NH3 injection, OxyCat
- 891.7 mmBTU/hr
- Averaging Time – 1 hour
- Excludes start-up & shutdown
- CEMS & Source Test verified

Proposed Part B, Section I, SCAQMD LAER/BACT Determination Update

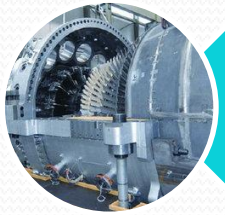


Gas Turbine

Landfill Gas

- 12.5 ppm NOx, 10.5 ppm VOC, 21.5 ppm CO
- 100% Landfill Gas
- No SCR – Ultra Lean Pre-mix combustion
- Averaging Time – not listed
- Excludes start-up & shutdown
- CEMS & Source Test verified

Proposed Part B, Section I, SCAQMD LAER/BACT Determination Update

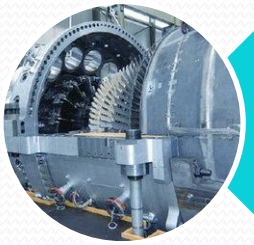


Gas Turbine

Digester Gas

- 18.8 ppm NOx, 25 ppm VOC, 60 ppm CO, 10 ppm NH3
- Combined Cycle with SCR – NH3, OxiCat
- 60% Digester gas/ 40% Natural gas mixture
- Averaging Time – 1 hour
- Excludes start-up & shutdown
- CEMS & Source Test verified

Proposed Part B, Section I, SCAQMD LAER/BACT Determination Update



Gas Turbine
Produced Gas

- 5 ppm NOx, 2 ppm VOC, 6 ppm CO, 5 ppm NH3
- Simple Cycle with SCR – NH3, OxiCat
- Produced Gas/Natural Gas mixture
- Averaging Time – 1 hour
- Excludes start-up & shutdown
- CEMS & Source Test verified

Proposed Part B, Section I, SCAQMD LAER/BACT Determination Update

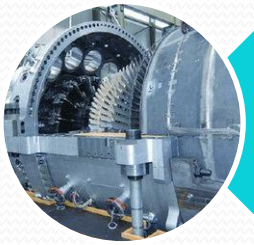
I.C. Engine Portable

- Tier 4 emission standards compliant
- 123.4 BHP

I.C. Engine Emergency Fire Pump

- Tier 3 emission standards compliant
- 183 BHP

New Proposed Part B, Section II, Other LAER/BACT Determination



Gas Turbine
Combined Cycle

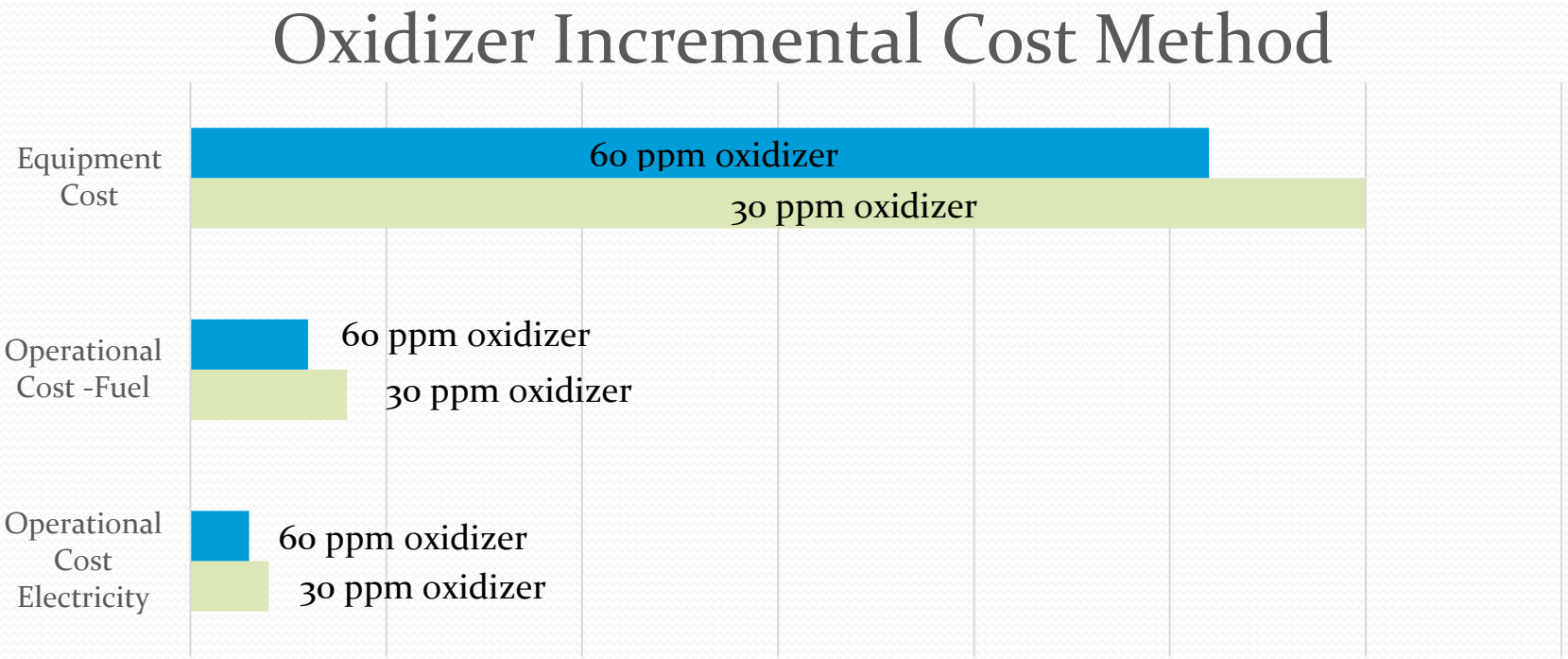
- Virginia State APCB
- 2ppm NOx 1 hr. avg. / 1.5ppm CO 1 hr. avg. w/o duct burner
- Three natural gas-fired gas turbines generators (3,227MM Btu/hr ea) with duct-fired HRSG (500MM Btu/hr) providing steam to common steam turbine generator
- Source Test & CEMS data with emission limit compliance

New Proposed Part D, Minor Source, BACT Determinations

Thermal Oxidizer – various applications

- Cat Ox / RTO / Direct Fired Afterburner
- 30ppm NOx @ 3% O2 limit for burner only
- Since 2014 - Over 30 Achieved in practice with source tests & emission limit compliance
- Excludes Tank Degassing/SVE/Vapor Incinerators
- Worked with Facilities/Oxidizer Manufacturers/Burner Manufacturers
- Completed 2 Cost Studies – Both Cost Effective - will be posted

Incremental Cost Effectiveness Analysis



New Proposed Part D, Minor Source, BACT Determinations

Fryer – Deep Fat

Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Fryer – Deep Fat

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**Inorganic**
< 2 MM Btu/hr	Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	Natural Gas (1990)	Natural Gas (1990)		Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	
≥ 2 MM Btu/hr	Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) (10-20-2000)	Natural Gas (1990)	Natural Gas (1990)		Integrated Afterburner/Oil Heater (≥ 0.3 Sec. Retention Time at ≥ 1400 °F), and Electrostatic Precipitator or High Efficiency Mist Eliminator (10-20-2000)	

New Proposed Part D, Minor Source, BACT Determinations

Fryer – Deep Fat

- Add sub-categories to avoid confusion
- Non-Integrated Direct Oil Heater (60ppm NOx) compliance with Rule 1147
- Non-Integrated (steam, thermal fluid heater, and other burner exhaust gases) 60ppm NOx compliance with R1147
- Integrated afterburner & oil heater (30ppm NOx) cost effectiveness - Only 4 AIP, Single Manufacturer
- Cost effectiveness in progress

New Proposed Part D, Minor Source, BACT Determination

Flare

- Keep existing NOx limit of 0.06 lb/MM Btu and add applicable Rule 1118.1 compliance
- Adding Oil & Gas Operations category with applicable Rule 1118.1 compliance

New Proposed Part D, Minor Source, BACT Determination

Composting

- Adding new subcategory of Greenwaste Composting
- Compliance with Rule 1133.3 for VOC and NH_3 emissions

New Proposed Part D, Minor Source, BACT Determination

Boiler

- ≥20 MM Btu/hr and <75 MM Btu/hr, (Group 2)
- Compliance with Rule 1146 for NOx (5ppm)
- Natural gas or Propane Fired

Proposed Part D, Minor Source, BACT Determination Update correction

Process Heater

Non-Refinery

- Subcategory: Natural Gas or Propane Fired ≥20 MM Btu/hr
- Correction of Rule 1146.1 applicability in NOx column

Proposed Part D, Minor Source, BACT Determination Update correction

Printing (Graphic Arts)

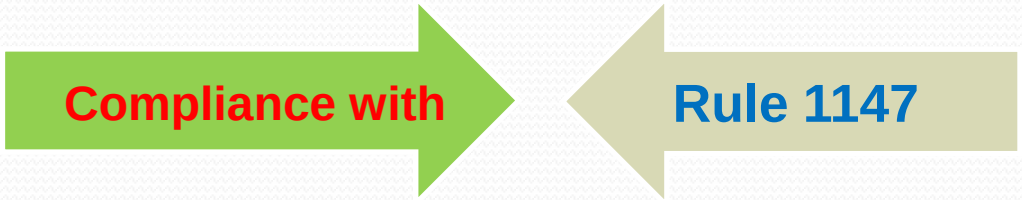
- Subcategory: Lithographic or Offset, Heatset - include venting to afterburner in PM10 column which was previously deleted in error
- Subcategory: Lithographic or Offset, Non-Heatset- Correction to “Same As Above” for Non-Heatset should refer to Low VOC Fountain Solution not venting to afterburner

Proposed Part D, Minor Source, BACT Determination Update correction

Spray Booth

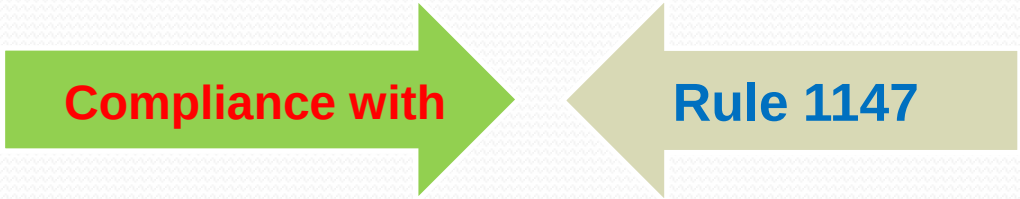
- Subcategory: Automotive, Down-Draft Type
- Correction of lbs/month to be consistent with permitted limits; NSR <4 tons/year not requiring offsets
- <660 corrected to <667 lbs/month

New Proposed Part D, Minor Source, BACT Determination Update



- Aluminum melting Furnace (60ppm NOx)
- Brass Melting Furnace (60ppm NOx)
- Burnoff Furnace (30ppm/60ppm NOx)
- Calciner (30ppm/60ppm NOx)
- Coffee Roasting (30ppmNOx)
- Crematory (60ppm NOx)
- Dryer-Kiln (30ppm/60ppm NOx)

New Proposed Part D, Minor Source, BACT Determination Update



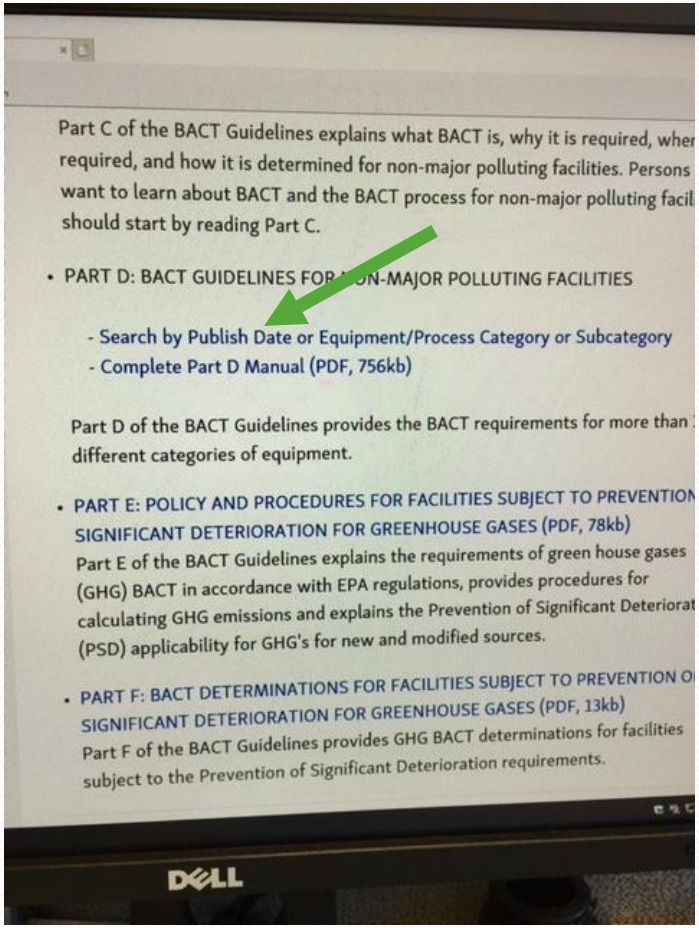
- Dryer or Oven tenter frame/carpet (30ppm/60ppm NOx)
- Fish Reduction cooker/dryer (30ppm NOx)
- Fryer-Deep Fat, Non-Integrated (60ppm NOx)
- Lead Melting Furnace (60ppm NOx)
- Soil Vapor Extraction (Remediation), thermal oxidation (60ppm NOx)
- Zinc Melting Furnace (60ppmNOx)

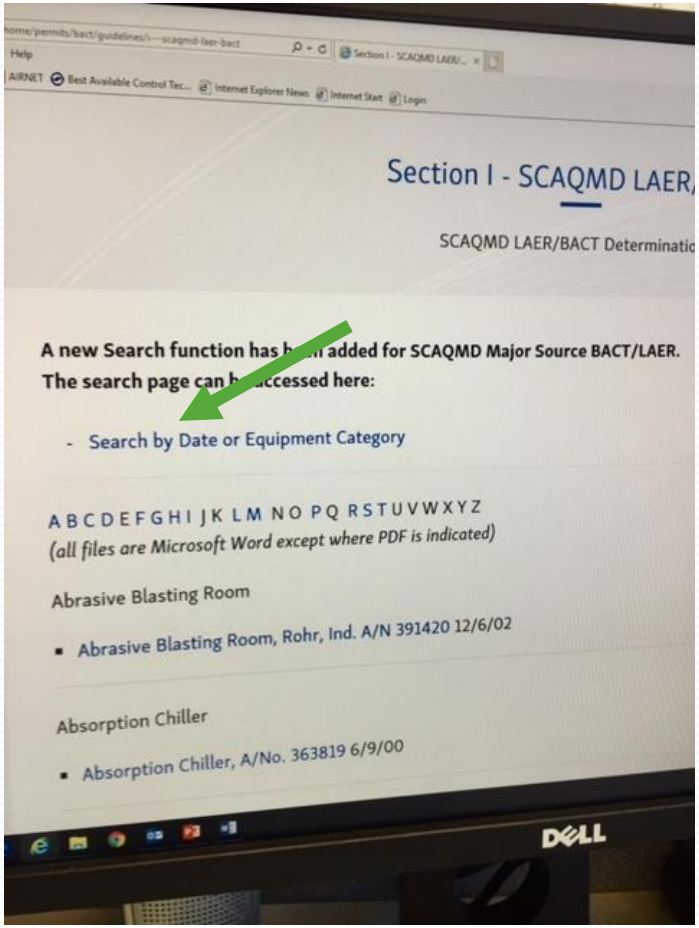
Proposed Update/Clarification to BACT SRC Charter

- Reporting to Stationary Source Committee
- Once proposed amendments to the BACT Guidelines have been presented at a public BACT SRC meeting initiating a 30-day comment period followed by a final public BACT SRC meeting.

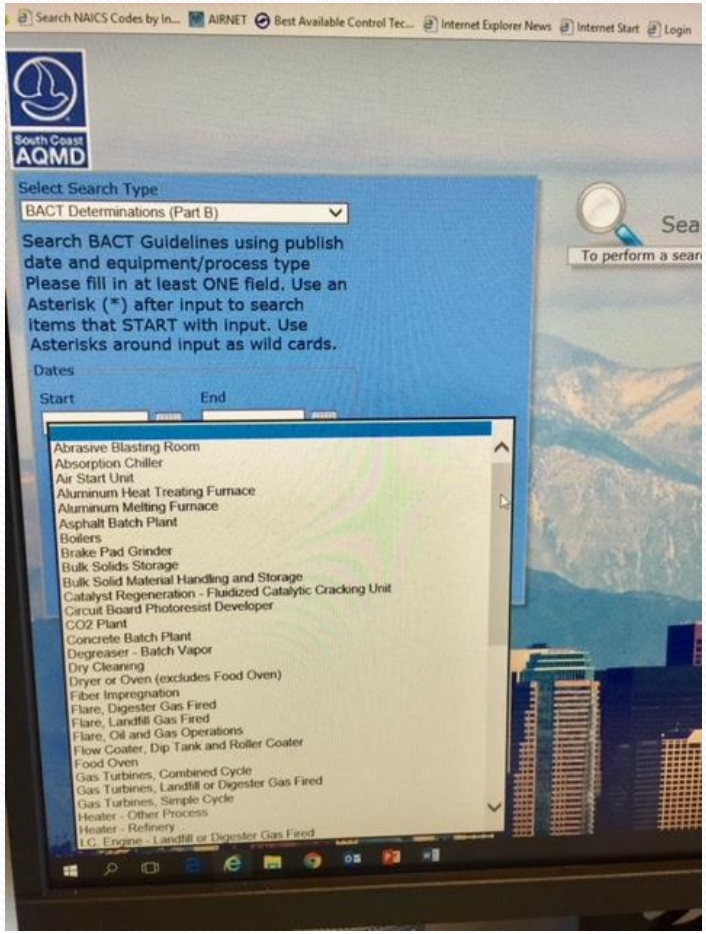
Making BACT Guidelines User Friendly

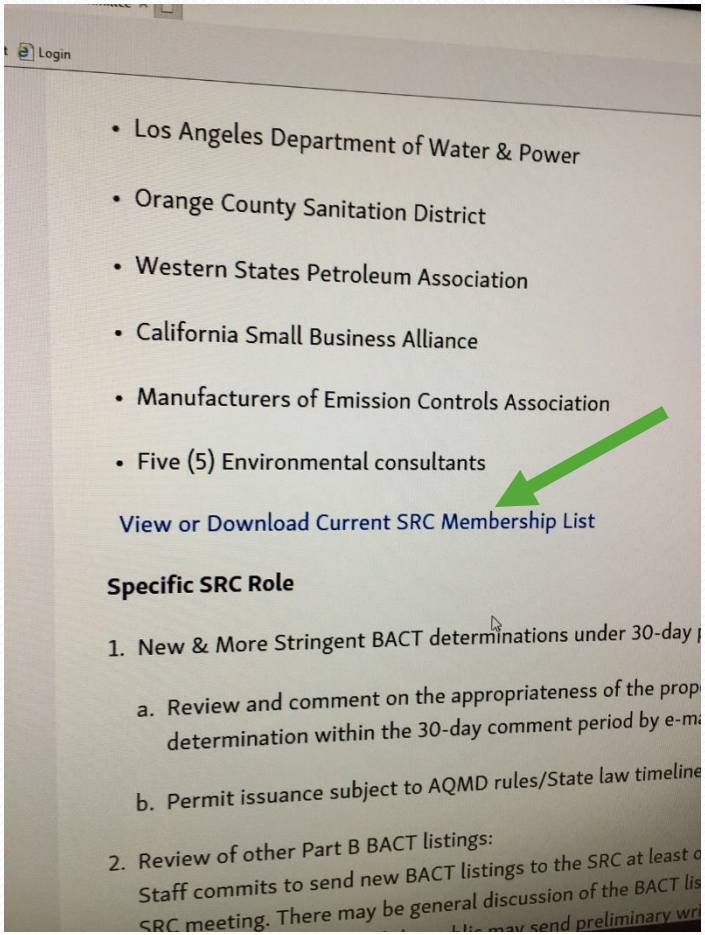
Equipment Category Search





Equipment Category
BACT SRC Membership List





Next Steps

- 30-Day Comment Period
- Schedule follow up BACT SRC meeting
- Continue developing proposed BACT updates
- Site visits