CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

AIR RESOURCES

CEHSP E01.06 – Stack Opacity Limits

Revision 14: 09/09/2016 Effective Date: 09/09/2016

CONTENTS

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO EMISSIONS OF SMOKE FROM ***AIR CONTAMINATION SOURCES***. The purpose of this procedure is to ensure that all Con Edison ***facilities*** comply with requirements for emissions of smoke at Con Edison facilities and field locations.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to all ***process*** emission sources and stationary ***combustion installations*** at Con Edison facilities or field locations.

3.0 INTRODUCTION

Opacity or smoke from process emission sources and stationary combustion installations at Con Edison facilities is restricted by the New York State Department of Environmental Conservation (NYSDEC). Various local government agencies, including the New York City Department of Environmental Protection (NYCDEP) and the Westchester County Department of Health (WCDOH) also limit opacity. Certain larger stationary combustion installations (primarily boilers with a maximum total heat input greater than 250 million Btu/hr) must be equipped with continuous emission monitoring systems (CEMS) that monitor and record opacity. In many cases, air permits issued to facilities also may require regular visual checks of opacity.

4.0 COMPLIANCE REQUIREMENTS

This CEHSP presents the standards and compliance requirements for emission opacity from process and combustion sources. .

4.1 OPACITY LIMITS

Opacity from Con Edison operations is prohibited as follows depending on location:

Statewide (NYSDEC)

- **Combustion Installations:** Average opacity greater than 20% for 6-minute block period in any continuous 60-minute period. One 6-minute average per hour of up to 27% opacity may be excluded. [1] R

- **Process Sources:** Average opacity of 20% or greater for 6 consecutive minutes. [2] R

Con Edison signed an Order of Consent with NYSDEC on September 16, 1997, which included detailed opacity reporting and an opacity reduction program. Under the consent order, six-minute opacity exceedances were subject to stipulated penalties for events not attributable to equipment malfunctions and boiler start-up or shutdowns. This consent order has since expired, however we still comply with the requirements of the opacity reduction program. Quarterly 45-Day Opacity Reduction Reports are filed with NYSDEC. [3] R

New York City (NYCDEP)

- **Combustion Installations:** (1) Opacities equal to or greater than 40% (No. 2 on the Ringlemann Chart) for any time period; or (2) Opacities equal to or greater than 20% (No. 1 on the Ringlemann Chart) but less than 40% (No. 2 on the Ringlemann Chart), for more than 2 consecutive minutes in any 60-minute period.

- **Process Sources:** Same as combustion sources. [4] R

Westchester County (WCDOH)

- **Combustion Installations:** (1) 20% or greater opacity for any time period; (2) 20% or greater opacity for a continuous period of 5 seconds for any diesel engine. [5] R

- **Process Sources:** 20% or greater opacity. [6] R

The opacity of an air contaminant, if based on visible observation, must be determined at the point of emission except if that point is not readily observable. Con Edison process emission sources such as grit blast and paint spray booths are equipped with appropriate control devices (filters, bag houses) to prevent exceeding the permissible opacity limits. [7] P

Under certain circumstances, emissions that exceed the permissible opacity limit may be excused for various reasons, including startup, shutdown, necessary scheduled equipment maintenance, or emergencies if Con Edison demonstrates that the emissions were not preventable. However, the scope of this exemption differs among the various agencies that regulate opacity. Direct questions about whether a particular opacity exceedance may be excused to Con Edison's Environment, Health and Safety (EH&S) Department. [8] R

4.2 MONITORING REQUIREMENTS

Certain larger stationary combustion installations (in particular, boilers with a maximum total heat input greater than 250 million Btu/hr) must be equipped with CEMS to monitor opacity. The CEMS instruments must satisfy the criteria in 40 Code of Federal Regulations (CFR) Part 60, Appendix B or be approved by NYSDEC. [9] R The Land 4500 Opacity Monitor and the SICK OMD 41 Opacity Monitor at Ravenswood A-House are installed as part of the CEMS to monitor opacity. See CEHSP E01.08, *Continuous Emission Monitoring Systems (CEMS)* for additional information about CEMS, including a list of Con Edison facilities equipped with CEMS.

Audible and visual alarms are required for each detector in the boiler control room to indicate an emission equal to or greater than an opacity of 20%.

Westchester County requires that any fuel burning equipment with a heat input capacity of 1 million Btu/hr or more which has repeatedly on more than one occasion emitted smoke exceeding permissible smoke limits, as determined by the WCDOH, to be equipped with an acceptable opacity monitor which will automatically cause an audible alarm device and a visible flashing red light to be activated when opacity reaches 20%. [10] R

Where installed, stack and furnace television monitors must be monitored frequently. At the first indication of malfunction, it is recommended that the necessary repairs or adjustments be made as soon as possible.

For any ***opacity monitor outage***, the operator will utilize the boiler stack monitoring equipment (e.g., boiler combustion controls, furnace TV cameras, stack TV cameras) to continuously monitor stack emissions. If any visible emissions are observed, a Method 9 certified observer will be called in to take readings. If a reportable opacity emission occurs, the operator will fax to the NYCDEP and the shift supervisor will call the EH&S Control Desk to report as required. [11] R

Con Edison must notify NYCDEP of any extended opacity monitor outage in excess of 6 hours. This notification must include a repair and resumption schedule for the ***opacity monitoring equipment***. If facility personnel believe that an opacity monitor outage will approach the 6-hour limit, then they must contact the EH&S Control Desk to inform them of the outage. The EH&S Control Desk SOAAx on duty will then create an incident report categorized as “Opacity Abnormal Occurrence” in Con Edison’s Environmental Management Information System (EMIS). The EMIS report will include a description of the issue, an estimated time of repair and the time of the initial NYCDEP fax was sent. When the monitor is returned to service after repairs are complete, the facility must send a second fax to the NYCDEP notifying them that the opacity equipment is operational. The facility must then contact the EH&S Control Desk again so that the SOAAx on duty can update and close the EMIS Report.

Certain Con Edison facilities with Title V or state facility air permits issued by the NYSDEC may be required to conduct regular visibility checks of air contamination sources that are not equipped with CEMS. This process typically entails informal daily observations to identify visible emissions and a Method 9 analysis (based upon a 6-minute mean) of the affected emission point(s) if visible emissions are observed. Facility or site managers responsible for compliance must consult their air permits for specific information about the visibility monitoring provisions applicable to their operations. [12] R

4.3 RECORDKEEPING AND REPORTING REQUIREMENTS

NYSDEC Quarterly Reporting Requirements for Facilities Equipped with CEMS

For boilers requiring CEMS, Con Edison must determine the average rate of fuel burned daily and the gross heating value and ash content of each fuel at least once a week. This determination is established through sampling and analysis of delivered fuel oil. Con Edison must also measure the average electrical output and the minimum and maximum hourly generation rate for its fossil-fueled electric and cogeneration boilers. [13] R

Con Edison facilities that utilize CEMS to demonstrate compliance with opacity limits must maintain a file of all measurements and operating data for a period of no less than five years. [14] R

For facilities that operate CEMS, Con Edison must submit a written quarterly report of excess emissions to NYSDEC, including the nature and cause of the excess emissions, and corrective action. Excess emissions are all 6-minute block periods during which the average opacity of emissions exceeds 20%. One 6-minute average per hour of up to 27% opacity may be excluded. [15] R

An opacity monitor downtime report must also be submitted to NYSDEC each quarter, including date, time and duration of downtime, nature and cause of monitor downtime and corrective action. [16] R

The quarterly reports are compiled and submitted to NYSDEC by EH&S, Environmental and Chemical Management Section.

NYCDEP Reporting Requirements for Facilities Equipped with CEMS

NYCDEP requires that any exceedance of its opacity limitations be reported immediately. When an opacity exceedance reportable to NYCDEP is detected at the control room, the shift supervisor or control room operator must notify the NYCDEP, by fax, within 30 minutes of discovery of the excess emission. The control room must enter this information on the opacity survey form and then contact the EH&S Control Desk to enter the incident into EMIS.

Example:

1. Opacity meter exceeds 40% for 20 seconds at station.
2. Annunciator alarms in control room.
3. Boiler operator acknowledges opacity alarm and determines cause of opacity event.
4. The shift supervisor or control room operator must provide fax notification to the NYCDEP of the event within 30 minutes. The faxed notification form and the fax transmission verification must be attached to the opacity survey form for filing.
5. ***Control room personnel*** enter opacity incident on the opacity survey form and prepare a fax to the NYCDEP.

   The fax to the NYCDEP contains the following information:

   - Station
   - Stack No. /Boiler No.
   - Date and Time of the incident

- Stop Time of incident
- Duration
- Maximum Opacity
- Incident Description
- Action Taken
- Operator(s) on Duty
- Time Notification Form Faxed to NYCDEP

6. An auto generated exceedance report email with the subject line of "Opacity Alert" with an attachment entitled "Notification of an Opacity Incident to the New York City Department of Environmental Protection" is generated and sent to the distribution list for the applicable station/unit along with the EH&S Control Desk as soon as a reportable opacity incident occurs. The email attachment will have the location, date, start time, stop time, duration and max/average opacity along with other information. This information should be used by the EH&S Control Desk to create a draft EMIS Report (the additional details will be provided shortly by the Station Shift Supervisor or employee who reports the incident to the EH&S Control Desk).

7. The shift supervisor or control room operator contacts the EH&S Control Desk once they have faxed the opacity notification form to the NYCDEP. The EH&S Control Desk SOAAx on duty will enter the opacity incident into EMIS.

8. The following fields in EMIS must be filled in as indicated:

Type:

Enter either "Opacity Regulatory Exceedance", "Opacity Administrative Erroneous Indication" or "Opacity Abnormal Occurrence" based on which applies after speaking with the Station Shift Supervisor/Operator.

Title:

Enter basic title describing the incident, i.e. "74th Street HP Boiler Opacity Exceedance"

Permit Incident:

A permit incident is an opacity incident which has one or more NYSDEC Reportable 6-minute opacity exceedances associated with it as defined in each stations respective NYSDEC Title V Air Permit. Specifically, this is an opacity equal to or greater than 20 percent (six minute block period average) except for one continuous six-minute period per hour of not more than 27 percent opacity The default for this field will always be "No" as there is no way to immediately determine this. The EH&S Air Resources Section runs a weekly report remotely through the Continuous Emission Monitoring Systems (CEMS) to determine if any opacity incidents meet the NYSDEC 6-minute opacity criteria. If it is determined a 6-minute opacity did occur, the EH&S Control Desk will be updated subsequently and can change the field to "Yes". Note: These events are captured in a quarterly report which the EH&S Air Resources Section generates and submits to the NYSDEC. There are no additional short term reporting requirements associated with an NYSDEC 6-minute opacity.

Finder:

Enter the employee who first identified the opacity (usually the station control board operator).

First Reported By:

Enter the employee who reported the incident to the EH&S Control Desk (this will usually be the station Shift Supervisor)

Site:

Choose the station where the opacity occurred in the dropdown menu (74th Street, 60th Street 59th Street, Ravenswood, East River).

Facility:

Choose the specific unit where the opacity occurred at the station in the dropdown menu (ex. HPs or PBs and auxiliaries for 74th Street, Unit 10, SSS Boiler 119 for East River, etc.)

Start Time/End Time:

Enter the exact start time and end time specified on the NYCDEP auto-email (ex. 13:30:20 start time, 13:32:10 end time)

Duration:

Duration is automatically calculated in seconds based on the start time and end time entered.

Initial Observation:

Enter a write-up of the initial observation per conversation with the Shift Supervisor or employee who reported the incident with as many details as possible. (ex. SSS Boiler 117 was burning #6 Fuel Oil due to extreme cold weather conditions. Opacity excursion to 67% occurred during oil burning. Operator tripped boiler once he determined that he could not correct opacity issue.)

Substance:

Choose “Opacity Max” in the dropdown menu.

Amount:

Enter the percentage value of the max opacity as detailed in the NYCDEP auto-exceedance email (i.e. 42, 58, etc.)

UOM:

Choose “Percent” in the dropdown menu.

Medium:

Choose “Air” in the dropdown menu.

Root Cause:

Choose the dropdown choice which represents the root cause of the event per the Shift Supervisor/Incident Reporter (i.e. Equipment Failure, Boiler Trip, Personnel Error (Action), Outside Event, Ash Sweeping, Abnormal Occurrence, Inadequate Procedure, Fouled Boiler, Other). If the Shift Supervisor or employee reporting the incident is unsure initially of the opacity root cause, choose “Other”.

Equipment:

Choose the dropdown choice which represents the equipment involved in the opacity

event per the Shift Supervisor/Incident Reporter (i.e. Combustion Control, Burner Operation, Atomization Steam, Fan Operation, Fuel System, Boiler Tube Leak, Ignition System, Combustion Air System or Other). If the Shift Supervisor or employee reporting the incident is unsure initially which equipment the opacity is related to, choose "Other".

Mode of Operation:

Choose the dropdown choice which represents the mode of operation during the opacity event per the Shift Supervisor/Incident Reporter (i.e. Startup, Raising Load, Steady Load Reducing Load, Shutdown, Offline)

Fuel:

Choose the fuel combusted at the time of the event in the dropdown (i.e., #6 Fuel Oil, Gas, Kerosene or #6 Fuel Oil and Gas)

Follow Up Items/ Corrective Actions Status:

Enter both the immediate corrective actions performed and any follow up items identified at the time of the event as described per the Shift Supervisor or employee reporting the incident. Enter the date and time fax was sent to NYCDEP. [19] R/P

Status:

Choose either "Closed" or "Pending". All opacities will initially be categorized as "Pending" with "Root Cause Analysis Pending" chosen in the dropdown menu. When subsequent updates are provided by the station, the status may be changed to "Closed" or "Pending/ Root Cause Analysis Completed, Corrective Action(s) Pending" depending on the information provided.

Other Reporting/Recordkeeping Requirements

Facilities required to conduct regular visual observations generally must record their results in a logbook. The logbook must include the date and time of day of the observation, observer's name, identity of emission point, weather conditions, and whether plume was observed. The logbook also must describe weather conditions on days when inclement weather prevents observations. Facility or site managers responsible for compliance must consult their air permits for specific information about the reporting/recordkeeping provisions applicable to their operations. [17] R/P

Updating an Incident in the EMIS Module

The station system engineer conducts a comprehensive investigation and root cause analysis for each reportable opacity incident with input from their respective stations' Operations, Technical and EH&S groups. The station system engineers subsequently send out a monthly root cause analysis spreadsheet for each station including updates for every opacity which occurred during the prior month. The cells in this root cause analysis spreadsheet correspond directly to the EMIS module categories. The station system engineers forward these updates to the EH&S Control Desk. The EH&S Control Desk updates each EMIS with the corresponding root cause analysis information. Once EMIS is updated with the findings of the root cause analysis and all corrective actions identified have been completed, the EMIS status should be changed to "Closed".

4.4 MONTHLY AUDITS

For boilers requiring CEMS, Con Edison conducts monthly audits of the previous month's opacity survey forms, opacity monitor recorder charts, fax notification forms, fax verification forms and EMIS opacity incident reports. The audit reviews completeness, timeliness and accuracy of the recording and reporting of all opacity indications. The monthly opacity audit report becomes part of the Quarterly 45-Day Opacity Reduction Report. [18] R

4.5 TRAINING REQUIREMENTS

Control Room Personnel must complete a course of instruction, as approved by NYCDEP, in air pollution control within 6 months of employment prior to being permitted to operate or supervise the operation of a combustion installation that uses residual fuel oil. This requirement may be satisfied by the Air Pollution Certification course (FOP0207) offered at The Learning Center. Upon successful completion of the course, a Certificate of Instruction will be issued by NYCDEP. [19] R

4.6 UNUSUAL EVENTS

When a significant unusual event occurs that may cause undue public concern, it is recommended that Con Edison's Central Information Group (CIG) be contacted for informational purposes. [20] P

5.0 DEFINITIONS

Air Contamination Source or Emission Source: Any emissions unit apparatus, contrivance, or machine capable of causing emission to the outdoor atmosphere, including any exhaust system, air cleaning device, or emission point. Examples of emission sources at Con Edison facilities include boilers, gas turbines, diesel engines, paint spray booths, soldering ovens, and storage tanks.

Combustion Installation: An installation, consisting of one or more furnaces, devices, engines, or turbines, burning fossil fuel with air or oxygen and air contaminant emissions resulting from:

- Combustion of the fuel.
- Additives or impurities in the fuel.
- Material introduced to alter the air contaminant emissions.

Control Room Personnel: Persons responsible for operation of a combustion installation, including control room operators and shift supervisors.

Facility: Any piece of property owned or leased by Con Edison.

Method 9 Observer: Method 9 is the applicable methodology for the determination of the opacity of emissions from stationary sources pursuant to 40 CFR Part 60.11 (b) (Compliance with Opacity Standards) and for qualifying observers for visually determining opacity of emissions. This methodology is used as an alternative to monitor opacity for units without CEMS or units with existing CEMS which are not functioning.

Opacity: The degree to which emissions other than water reduce the transmission of light and block the view of an object in the background.

Opacity Abnormal Occurrence: When a significant abnormal opacity related event occurs such as opacity monitor outages and/or a malfunction or component failure of any item referenced under opacity monitor equipment, the EH&S Control Desk should be contacted for informational purposes and an EMIS will be created. If facility personnel believe that an opacity monitor outage will approach the 6-hour limit, then they must contact the EH&S Control Desk. The EH&S Control Desk will subsequently create an "Opacity Abnormal Occurrence" EMIS based on the details provided by the station Shift Supervisor or employee reporting the event. This EMIS must include an estimated time of repair. The Station Operations personnel report each of any extended opacity monitor outage in excess of 6 hours to NYCDEP via fax. When the monitor is returned to service after repairs are complete, the facility must send a fax to the NYCDEP notifying them that the opacity equipment is operational in addition to contacting the EH&S Control Desk with the details so they may update the EMIS incident report. The responsibility of the EH&S Control Desk is only to record the fax time in the "follow up items/corrective action" field per conversation with the Shift Supervisor or employee reporting the incident to the EH&S Control Desk and subsequently update the EMIS when contacted again by Station Operations and notified that the monitor has been repaired and the equipment is operational.

Opacity Administrative Erroneous Indication: "Opacity Administrative Erroneous Indication" is the EMIS category for an incident which initially generates an auto-exceedance email report and appears to meet the criteria for an "Opacity Regulatory Exceedance" as outlined in this procedure. In the case of an "Opacity Administrative Erroneous Indication", however, it is either determined at the time of the event or subsequently determined per investigation that the opacity indication was false and not combustion or equipment related. A variety of issues can lead to an erroneous indication including, but not limited to: electrical malfunction of an opacity monitor, calibration of an opacity monitor, wind/rain event causing water to pool on the opacity monitor lens, steam intrusion into a smoke stack. In the EMIS for an "Opacity Administrative Erroneous Indication" it should clearly explain what was observed which led the station to conclude the incident was not an actual opacity and how they verified it.

Opacity Monitoring Equipment: Includes the stack-mounted transceiver and reflector, together with the opacity control box and programmable logic controller located in the CEMS enclosure,

Opacity Monitor Outage: Includes a malfunction or component failure of any item referenced under opacity monitor equipment.

Opacity Regulatory Exceedance: "Opacity Regulatory Exceedances" are opacities which meet the criteria outlined by the NYCDEP and per the New York City Administrative Code Subchapter 6 § 24-142 (Emission of Air Contaminants). An "Opacity Regulatory Exceedance" is any opacity **equal to or greater than 40% for any time period; or opacities equal to or greater than 20% but less than 40% for more than two consecutive minutes. The duration of two minutes and greater than 20% opacity is a rolling time window.**

Process: Any industrial, commercial, agricultural, or other activity, operation, manufacture, or treatment in which chemical, biological, and/or physical properties of the material or materials are changed, or in which the material(s) is conveyed or stored without changing the material(s) (where such conveyance or storage system is equipped with a vent(s) and is non-mobile), and

which emits air contaminants to the outdoor atmosphere. Processes do not include open fires, operation of combustion installations, and incineration of refuse other than by-products or wastes from processes.

6.0 REFERENCES

OPACITY LIMITS

[1] 6 NYCRR 227-1.3 (opacity limit for combustion installations).

[2] 6 NYCRR 212.6 (opacity limit for general process sources); 6 NYCRR 228.4 (opacity limit for paint spray booths and ovens).

[3] Order on Consent between Con Edison and NYSDEC, dated Sept. 16, 1997 (EXPIRED). NYSDEC Title V Permits Opacity Reduction Program (Quarterly 45-Day Opacity Reduction Reports).

[4] N.Y.C. Administrative Code 24-142 (opacity limit for all sources).

[5] Westchester County San. Code 873.1315 (opacity limit for combustion installations); 873.1317 (emissions from diesel engines).

[6] Westchester County San. Code 873.1311 (opacity limit for process sources).

[7] N.Y.C. Administrative Code 24-142 (emissions of air contaminant).

[8] 6 NYCRR 201-1.4 (unavoidable noncompliance and violations); 6 NYCRR 201-1.5 (emergency defense); Westchester County San. Code 873.1315 (excusing non-preventable opacity exceedances associated with startup and emergencies at combustion installations);

4.2 MONITORING REQUIREMENTS

[9] 6 NYCRR 227-1.4(a) (CEMS requirements for combustion installations, excluding gas turbines, with a total maximum heat input capacity exceeding 250 mm/Btu per hour).

[10] Westchester County San. Code 873.1316 (alarm requirements [11] Con Edison has developed these procedures for opacity monitor outages as a matter of policy.

[11] N.Y.C. Administrative Code 24-152(a) (malfunctions, breakdowns, and removal from service; emergency action plan).

[12] NYSDEC's Title V and state facility air permit program requires DEC to establish opacity monitoring requirements for air contamination sources not subject to specific monitoring rules. These monitoring requirements, if any, can be found in the facility's NYSDEC-issued air permit.

4.3 RECORDKEEPING AND REPORTING REQUIREMENTS

[13] 6 NYCRR 225-1.7(c) (emissions and fuel monitoring).

[14] 6 NYCRR 225-1.7(d) (emissions and fuel monitoring); 6 NYCRR 225-1.8(a) (reports, sampling and analysis)

[15] 6 NYCRR 227-1.4(b) (CEMS quarterly reporting requirement).

[16] N.Y.C. Administrative Code 24-152(b); 24-152 (malfunctions, breakdowns, and removal from service; emergency action plan). NOTE: Con Edison has developed the detailed procedures in the CEHSP to ensure compliance with NYCDEP requirement for immediate reporting of opacity exceedances.

[17] NYSDEC's Title V and state facility air permit program requires DEC to establish opacity monitoring requirements for air contamination sources not subject to specific monitoring rules. These monitoring requirements, which typically include a record keeping component, can be found in the facility's NYSDEC-issued air permit.

4.4 MONTHLY AUDITS

[18] NYSDEC Title V Permits Opacity Reduction Program (opacity reporting compliance audits).

4.5 TRAINING REQUIREMENTS

[19] N.Y.C. Administrative Code 24-161 (use of fuel burning equipment using residual oil and use of refuse burning equipment; operation and supervision by trained person).

4.6 UNUSUAL EVENTS

[20] Con Edison requires CIG notification of unusual opacity-related events as a matter of policy.

REVISION HISTORY

Revision Date	Revision #	Summary of Change	Author
10/15/2013	13	Periodic completed with the following minor changes: 1. Referenced the Dust and Opacity Monitor (SICK OMD 41) at Ravenswood A-House as a CEMS to monitor stack opacity in Section 4.2 2. Changed the length in which Con Edison facilities that utilize CEMS must maintain a file of all its measurements and operating data for a period from 3 to 5 years.	Arnaud, A. Ng, S.
09/09/2016	14	1. Changed various sections to reflect new opacity EMIS and reporting process whereby the EH&S Control Desk in now responsible for entering and updating all opacity related EMIS reports. 2. References to Rockland County Department of Health (RCDOH) have been removed. Effective July 28, 2012, the Rockland County Bureau of Air Pollution was eliminated and as such the county will no longer be issuing, reviewing or renewing permits or regulating opacity. And as such, citation of the RCDOH sanitation codes has been removed from the reference section. No RCDOH air regulatory limits or requirements for activities, sources or facilities. However, state regulatory requirements are still required and should be complied with accordingly. 3. Updated Section 4.1 to reflect expiration of Opacity Consent Order.	Blute, M.