

Proposed Statement of Work
Assess Candidate NO_x Control Options for Stationary Point Sources in the LADCO Region
5/25/2021

Period of Performance: June 1, 2021 – September 30, 2021

Summary of Work to be Performed:

The purpose of this work is to assist LADCO to identify and evaluate nitrogen oxides (NO_x) emissions control options for Electric Generating Units (EGU) and other industrial (non-EGU) point sources in the LADCO region. Previously, Ramboll compiled a control strategy analysis which included compilation of a list of potential control measures (including for the stationary sources), screening analysis, and detailed analysis of several control strategies. Per LADCO's request, the previous detailed analysis did not include stationary sources. The overall goal of this effort is to identify and analyze stationary source emission control strategies for lowering ground-level ozone concentrations in counties that are designated nonattainment for the 2015 ozone National Ambient Air Quality Standard (NAAQS).

The work will be conducted in four Tasks as outlined below.

Task 1: Development of a Master List of NO_x Controls for Stationary Sources

Under this task, Ramboll will create a master list of potential control measures for NO_x emitting units in the LADCO region. Ramboll will draw on the screening analysis (point source controls P-1 through P-91) and a review of other technical resources, such as the NO_x Reasonably Available Control Technology (RACT) Summary spreadsheet prepared by LADCO, to develop a master list of control measures for stationary sources. Ramboll will review the master list against most recent stationary source inventory to ensure that source categories with substantial NO_x emissions in the LADCO region of interest are covered. Ramboll will make reasonable efforts to identify and compile potential control options for any missing source categories, within the resources available for this task. Ramboll will not include a source category if there are no sources in the region in that category that are above the minimum source emission level of 10 tons per year (tpy).

Deliverables

Ramboll will provide a draft master list of NO_x control measures for EGU and non-EGU source categories (format: Excel workbook). Ramboll will solicit review and comment from LADCO and member states and finalize the master list with their agreement.

Task 2: Identification of Control Measure(s) for Each Source Category with Three Levels of Stringency

In this task, Ramboll will identify control measure(s) for each source category in the LADCO region from the master list to represent three levels of stringency:

- A high stringency NOx control scenario
- A moderate stringency NOx control scenario
- A low stringency NOx control scenario

The control measures representing these three levels of stringency will be recommended based on control efficiency ranking and engineering judgement. Ramboll will identify control measures for each source category (based on emissions by source classification code [SCC]) in the LADCO region and scenario, then solicit review and comment from LADCO and member states and finalize the list with their agreement.

Deliverables

For each level of stringency, Ramboll will provide a draft of recommended NOx control measure(s) for each source category in Excel workbook along with description of sources, assumptions, and cost effectiveness. Ramboll will solicit review and comment from LADCO and member states and finalize the list with their agreement.

Task 3: Evaluation of Cost Effectiveness, Total Cost and Potential Emissions Reductions of Control Measure Scenarios

Once the control measures are selected, Ramboll will evaluate the selected control measures to estimate cost associated with implementing these control measures, as well as calculate the cost-effectiveness of these control measures based on the potential emissions reductions and cost data. For this purpose, Ramboll will use control efficiency and cost estimates from EPA's CoST Control Measure Database¹ for controls obtained from the EPA Menu of Control Measures. If the selected control measure is not from the EPA database, Ramboll will do literature review to research capital, installation, and operation/maintenance cost of the control. A subject matter expert at Ramboll will review control efficiency and cost effectiveness estimates to ensure that these estimates are consistent with the most recent regulator/scientific analyses.

Ramboll will estimate total cost and total potential emission reductions associated with each of the three stringency scenarios using a stationary source inventory provided by LADCO. We will evaluate the following emissions levels for each ozone nonattainment area and statewide for those member states that opted in:

- Sources with a potential to emit (PTE) greater than 100 tpy of NOx²
- Sources with a PTE greater than 50 tpy of NOx
- Sources with a PTE greater than 25 tpy of NOx

¹ <https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-analysis-modelstools-air-pollution>

² In consultation with LADCO and state agencies, methodologies for applying PTE levels will be selected and major sources will be defined.

- Sources with a PTE greater than 10 tpy of NOx

In collaboration with LADCO and state members, Ramboll will determine which inventory to use as the baseline in this task and will select an approach to identify which major stationary sources are included in this analysis, as well as methodology that will be applied for each PTE level. One option would be the approach adopted by San Diego³ where they evaluated all sources with actual emissions within 50% (50 tpy) of the 100 tons threshold for NOx. We will make reasonable assumptions, evaluate them to ensure they are appropriate for the LADCO states and obtain concurrence on the recommended assumptions before proceeding.

For the portion of the Chicago 2008 ozone NAAQS nonattainment area (NAA) in Indiana (Lake and Porter counties), Ramboll will identify the emissions reduction potential (tons/year) of NOx RACT, which only includes sources that emit, or have a potential to emit, 50 tpy of NOx, and at the level of stringency that satisfies RACT requirements for ozone NAAs classified as “serious”.

Ramboll will also assess the current NOx control programs in each state to establish baseline control scenarios for the geographic areas of interest. It should be noted that baseline control scenarios may differ between state nonattainment and attainment areas. We will work with LADCO to determine current state control programs. Ramboll will identify the surplus emissions reductions that could be achieved relative to the baseline(s). The geographical scope of this analyses includes 1) all LADCO state 2008 and 2015 ozone nonattainment areas (NAA) broken down by nonattainment area and 2) for MI, OH, and WI, counties outside of the NAAs.

Deliverables

Ramboll will provide a list of LADCO state point sources, current control programs, total cost and total potential emission reductions associated with each of the three stringency scenarios (format: Excel workbook) and a PowerPoint presentation summarizing our assumptions and results.

Task 4: Development of a Control Measure White Paper and SMOKE Control Packets

Ramboll will provide a white paper to document results of this analysis which will include a listing of major stationary source categories (i.e. applicable SCC), surplus reductions, uncontrolled and controlled emission rates, control efficiency, absolute emissions reduction, cost effectiveness (\$/ton), implementation feasibility, public acceptance, timeframe, responsible agency, and assessment methods. In this analysis, we will include no more than 10 sources category/control measure combinations for each scenario, which will result in a total of 30 source/control combinations. Ramboll will also develop SMOKE control packets for each

³ https://www.sdapcd.org/content/dam/sdc/apcd/PDF/Air%20Quality%20Planning/2016_RACT_Draft.pdf and [https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/Air%20Quality%20Planning/Att%20B%20\(RACT\).pdf](https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/Air%20Quality%20Planning/Att%20B%20(RACT).pdf)

control scenario (i.e., for each of 4 PTE and 3 stringency levels for a total of 12 emissions control scenarios). The control packets will have percent reduction by county, SCC, facility or Unit ID (if applicable).

Deliverables

Ramboll will provide a draft white paper, control packets in a format required by SMOKE and a draft of stand-alone technical support document (TSD). The TSD will describe the source of data used for the control packets, the methods used to develop the control packets, and a tabular summary of the emissions changes by county and SCC that result from applying the control scenarios. Ramboll will solicit review and comment from LADCO and member states and finalize the master list with their agreement.

The task structure and schedule for assessing NOx control options for stationary sources are shown in the Table 1 below. A project schedule has been developed based on assumption that the project needs to be completed within 120 days after the contract is fully signed. The study will be continuously documented with PowerPoint presentations and other documents that will be presented to the LADCO director and designated representative(s) from member agencies each month in a Webinar and bi-weekly progress updates.

Table 1. Schedule for assessing NOx control options for stationary sources in the LADCO region.

Task/Deliverables	Schedule
Kick-Off Conference Call	Within 1 week of project inception
Task 1 Development of a master list of NOx controls for stationary point sources	
Draft master list of NOx control measures ¹	2 weeks (June 29)
LADCO review	1 week (July 7)
Finalize the master list of NOx control measures	0.5 week (July 9)
Task 2: Identification of control measure(s) for each source category with three levels of stringency	
A draft of recommended NOx control measure for each source category ¹	2 weeks (July 23)
LADCO review	1 week (July 30)
Finalize recommended NOx control measure for each source category and stringency level	0.5 week (August 4)
Task 3: Evaluation of cost effectiveness, total cost, and total potential emissions reduction	
Draft list of LADCO state point sources, current control programs, total cost and total potential emission reductions associated with each of the three stringency scenarios. ¹	Week of August 2 for a call with states to discuss inventory and PTE 3 weeks (August 25)
LADCO review	1 week (September 1)
Finalize list of LADCO state point sources, current control programs, total cost and total potential emission reductions associated with each of the three stringency scenarios.	1 week (September 9)
Task 4: Development of control measure white paper and SMOKE control packets	
Draft white paper, SMOKE control packets and TSD ¹	2.5 weeks (September 28)
LADCO review	1 week (October 5)
Finalize white paper, SMOKE control packets and TSD	0.5 week (October 8)

¹ A webinar will be held to review draft deliverables with LADCO and member agencies subsequent to provision of draft deliverables for each task.