



REQUEST FOR PROPOSAL

Evaluating Ozone Precursor Emissions Reductions in the Great Lakes Region

The Lake Michigan Air Directors Consortium (LADCO) is seeking contractor assistance to identify and evaluate nitrogen oxides (NO_x) and volatile organic compound (VOC) emissions reduction potential for anthropogenic sources in the LADCO region. The goal of this project is to identify strategies for lowering ground-level ozone concentrations in counties that are designated nonattainment for the 2015 ozone National Ambient Air Quality Standard (NAAQS).

Proposals must be received no later than 5 p.m. Central on April 17, 2020. An electronic PDF copy of the proposal is required and should be sent to:

Zac Adelman
Executive Director
Lake Michigan Air Directors Consortium
adelman@ladco.org

No late proposals will be accepted, and the offer shall remain effective for a period of 60 days from the date of the mailing.

Your response to this Request for Proposal (RFP) should include a complete technical proposal that describes your approach for accomplishing the activities outlined below in the Scope of Work. The technical proposal should include a draft work plan that clearly describes your technical activities, schedule, and deliverables. The technical proposal should include a summary of your capabilities and your experience in the field of work. Include a complete cost proposal with a detailed breakdown of projected expenditures by task, including person hours and other direct charges. LADCO does not anticipate there being any travel expenses for this project.

Please limit the proposal to 20 pages (single-spaced, 12-point font).

In addition, your response should include an appendix with supplemental information, such as references, resumes, and descriptions of recent relevant work. The supplemental information has no page limit.

All contracts will be issued by LADCO and managed by LADCO's Executive Director. It is anticipated that LADCO will award a fixed price contract as a result of this solicitation. LADCO

may consider awarding another type of contract, provided that its use is consistent with the objectives and interests of the Consortium.

Funds available for this contract are federal funds from the U.S. Environmental Protection Agency (EPA) and contractors must meet requirements associated with the use of federal funds (2CFR 200).

All information and data produced and delivered under this contract will be in the public domain. While LADCO does not anticipate restricting the publication or presentation of results obtained from this study, LADCO reserves the right to review all presentations and manuscripts derived from this study.

LADCO will make positive efforts to utilize small, minority business enterprises (MBE), women's business enterprises (WBE), and disadvantaged business enterprises (DBE), whenever possible.

Details of the LADCO procurement process, including draft contract terms, are available in the [LADCO Procurement Policy Manual](#).

All inquiries regarding this RFP should be directed to Zac Adelman (adelman@ladco.org) no later than 5 p.m. Central on April 6, 2020. LADCO will post responses to all received inquiries to the [LADCO website RFPs page](#) by April 8, 2020.

We expect to award the project and enter a contract with the winning bidder by May 1, 2020.

If your organization would like to be included on the interested bidders list for this and subsequent work, then please send an email to the LADCO Executive Director with your email address and contact information.

Scope of Work

Introduction

Ozone concentrations at monitors in rural and urban areas in the LADCO region¹ have consistently violated the National Ambient Air Quality Standards (NAAQS) for ozone over the last 40 years. Emissions of the ozone precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOC), have decreased since the 1990s, with contributions from anthropogenic sources of these precursors in the LADCO region falling by more than 40% from 2002 to 2014¹. While these reductions have helped to decrease monitored ozone concentrations, the ambient ozone has not declined at nearly the same rate as the ozone precursor emissions. In addition, the US EPA lowered the ozone NAAQS in 2015 to 70 ppb. As a result, EPA designated several areas in the LADCO region as nonattainment for the 2015 ozone NAAQS (Figure 1).

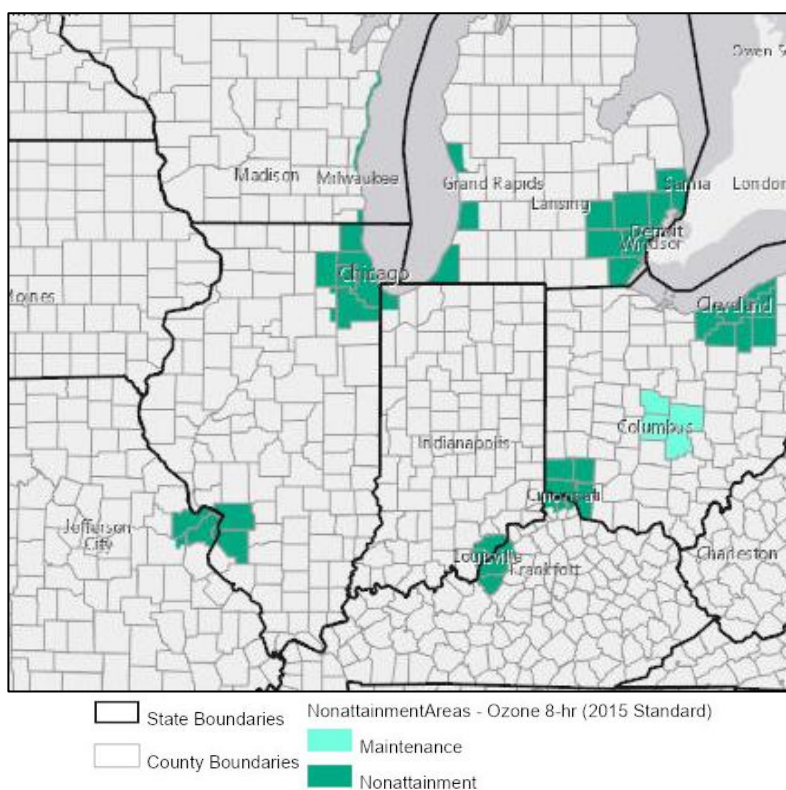


Figure 1. LADCO region 2015 ozone NAAQS nonattainment and maintenance areas (Credit: US EPA)

¹ The LADCO region includes the states of IL, IN, MI, MN, OH, and WI

According to the US EPA National Emissions Inventory (NEI), anthropogenic NO_x and VOC emissions declined across the LADCO region by 35% and 18%, respectively, between 2010 and 2017². Table 1 shows that for NO_x, the emissions changes were driven primarily by reductions in stationary source electricity production and mobile sources. The VOC reductions came primarily from declining mobile source and petroleum storage and transport emissions. Table 1 also shows that despite the emissions reductions in some inventory sectors, there are sectors that both continued to be large regional sources of ozone precursors in the 2017 NEI, and that have significant reduction potential. Off-highway mobile is the second largest regional source of NO_x emissions (493,404 TPY), but only declined 16% from 2010 to 2017. Solvent utilization (590,411 TPY) is the largest source of anthropogenic VOC emissions in the region and only declined 2% from 2010 to 2017.

While the NEI data reported in Table 1 represent the best estimate of anthropogenic emissions, the NEI may misrepresent or omit the emissions from some sources. Remote sensing research that uses satellite data to reconcile bottom up inventories with top-down observations of primary air pollutants indicates that there are significant uncertainties in the NEI³. It is unclear from these studies if the discrepancy in the NEI is with the magnitude of the emissions inventory, or with how these data are distributed in space and time for use in regional air quality modeling applications.

In recognition of uncertainties in the NEI, a study of potential emissions control options should consider that there may be controllable emissions sources that would be missed if the NEI were the only estimate of emissions considered in the analysis. For example, the EPA Office of Compliance and Enforcement has reported a prevalence of long-haul trucks that are using emissions control system defeat devices. LADCO suspects that the excess emissions from these sources may be resulting in significant controllable NO_x emissions. These emissions are not included in the NEI, but could be a target of emissions reductions if they could be reasonably estimated.

² <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

³ e.g., Jiang et al., Unexpected slowdown of US pollutant emission reduction in the past decade, PNAS, May 2018, 115 (20) 5099-5104; DOI: 10.1073/pnas.1801191115

Table 1. LADCO Region NOx and VOC Emissions Summary from the NEI Trends Report

Tier 1 Inventory Category	NOx			VOC		
	2017 NEI (tons/yr)	2017-2010 (tons)	% diff	2017 NEI (tons/yr)	2017-2010 (tons)	% diff
CHEMICAL & ALLIED PRODUCT MFG	2,906	-183	-6%	15,780	37	0%
FUEL COMB. ELEC. UTIL.	212,844	-343,817	-62%	7,757	-1,085	-12%
FUEL COMB. INDUSTRIAL	190,912	-36,509	-16%	10,641	-1,059	-9%
FUEL COMB. OTHER	154,611	5,385	4%	133,804	-12,456	-9%
HIGHWAY VEHICLES	567,023	-478,277	-46%	305,551	-216,750	-41%
METALS PROCESSING	47,358	1,081	2%	11,330	-2,929	-21%
MISCELLANEOUS	343	-1,291	-79%	24,044	21,427	819%
OFF-HIGHWAY	493,404	-93,058	-16%	404,624	-109,273	-21%
OTHER INDUSTRIAL	47,669	-9,221	-16%	42,396	-2,817	-6%
PETROLEUM & RELATED INDUSTRIES	32,433	6,231	24%	90,626	30,525	51%
SOLVENT UTILIZATION	134	-119	-47%	590,411	-13,439	-2%
STORAGE & TRANSPORT	240	11	5%	87,721	-80,562	-48%
WASTE DISPOSAL	18,539	1,037	6%	30,665	9,565	45%
Total	1,768,416	-948,732	-35%	1,755,351	-378,815	-18%

Objectives

The objective of this project is to identify and evaluate candidate emissions controls for reducing NO_x and VOC emissions in the LADCO region. The contractor shall identify NO_x and VOC emissions control measures that are feasibly applicable to sources in the LADCO region. The measures should be evaluated on the basis of emissions mass reduction and cost effectiveness. All inventory sectors should be investigated, with particular attention paid to undercontrolled sources of NO_x and VOC.

The results of the analysis should be a priority list of potential emissions reduction options, in terms of costs/ton and total NO_x or VOC emissions mass, for all anthropogenic sources of NO_x and VOC in the 2016v1 U.S. emission inventory (or newer inventory as specified by LADCO).

Technical Tasks

Under this contract, the contractor shall perform the following technical tasks, with the results of these tasks to be thoroughly discussed and interpreted in a project final report (Task 4). LADCO will evaluate the technical and cost proposals for each individual task. We may contract for some or all of the tasks, based on the merits of the proposal and available funding. For the purposes of the proposal, the contractor shall provide separate statements of work and cost estimates for each task.

Task 1. Summarize existing NO_x and VOC control programs for emissions sources in the LADCO region by inventory sector

The contractor shall collect and report the list of federal and state emissions control programs that are currently impacting, or are expected to impact in the next five years, NO_x and VOC emissions in the LADCO states. The analysis shall consider emissions control programs that are applicable to mobile (onroad and offroad), stationary point, and nonpoint anthropogenic sources of NO_x and VOC emissions. The results will identify the control program, whether it is state or federal, the impacted sources, and the expected emissions reductions and costs in each of the LADCO states.

For mobile and stationary sources the spatial scope of this analysis shall include all of the states in the LADCO region. For nonpoint sources, the spatial scope shall include only the counties in each of the 2015 ozone NAAQS nonattainment and maintenance areas in the LADCO region.

The results of the analysis will include a document listing the existing NO_x and VOC control programs in the LADCO states, a presentation to the LADCO states summarizing this task, and a chapter in the project final report documenting this task. The results shall include the applicable SCCs and, where appropriate, EIS facility and process identifiers.

Task 1 Deliverables:

1. Powerpoint presentation summarizing the existing NOx and VOC control programs in the LADCO region.
2. Spreadsheet or document listing the on-the-books and on-the-way NOx and VOC emissions control programs for sources in the LADCO region.
3. Final report chapter on NOx and VOC emissions control program currently impacting, or expected to impact, emissions sources in the LADCO region.

Task 2. Identify NOx and VOC emissions control options for NEI sources in the LADCO region

The contractor shall identify NOx and VOC control options for electricity generating unit (EGU) and non-EGU, industrial point sources in the LADCO region. The analysis should focus on major emissions processes or classifications (e.g., natural gas turbines or petroleum liquids storage) in the NEI, rather than on individual emissions units. Potential stationary source NOx control options shall be presented for sources in all of the LADCO states. The focus of stationary source VOC controls will be on sources within the LADCO region 2015 ozone NAAQS nonattainment and maintenance areas.

For certain key stationary source categories, such as cement kilns, LADCO will work with the contractor to identify existing control programs and technologies that are already implemented in the region and the existence of which may not be readily apparent through an analysis of public databases.

The contractor shall identify NOx and VOC control options for onroad and offroad mobile sources in the LADCO region. The analysis should focus on major emissions processes or classifications (e.g., onroad heavy duty diesel trucks or nonroad lawn and garden equipment) in the NEI. Potential onroad mobile source NOx control options shall be presented for sources in all of the LADCO states. The focus of the offroad mobile source NOx control options, and the VOC control options for all mobile sources, shall be on county-level emissions within the LADCO region 2015 ozone NAAQS nonattainment and maintenance areas. Further, this report should be broken into controls implementable by state and local entities and those that require federal action.

The contractor shall identify NOx and VOC control options for nonpoint sources in the LADCO region. The analysis should focus on major emissions processes or classifications (e.g., commercial solvents or residential fuel combustion) in the NEI. As with the on-the-books

control analysis in Task 1, the spatial scope of this analysis shall be on county-level emissions within the LADCO region 2015 ozone NAAQS nonattainment and maintenance areas.

The analysis of the emissions control options for the different inventory sectors shall identify the cost effectiveness (cost/ton emissions reduced) and emissions reduction potential (tons/year) for emissions control programs that will have the largest impact on sources in the LADCO region.

The contractor shall develop a draft list of candidate emissions control options for point, mobile, and nonpoint sources of NO_x and VOC for review by LADCO before conducting a detailed analysis of these options. LADCO will work with the contractor to develop the final list of control options for further analysis.

The results of the analysis will include Sparse Matrix Operator Kernel Emissions ([SMOKE](#)) model control packets⁴, a presentation to the LADCO states, and a chapter in the project final report that documents this task. The results shall include the applicable SCCs and, where appropriate, EIS facility and process identifiers.

Task 2 Deliverables:

1. Draft list of NO_x and VOC control options.
2. Powerpoint presentation of the NO_x and VOC control options for sources in the LADCO region
3. SMOKE control packets for applying controls by county (FIPS) code, SCC, and if applicable facility or unit ID.
4. Final report chapters on stationary source, mobile source, and nonpoint source NO_x and VOC emissions control options.

Task 3. Identify NO_x and VOC emissions control options for sources that may not be accurately represented in the NEI

In this task the contractor shall investigate whether there are emissions control strategies that may not be identified, or for which the impacts are underestimated, by only basing the analysis on NEI data. The contractor shall attempt to answer the question: “Are there sources of NO_x or VOC emissions that are either missing or misrepresented in the NEI that could be reduced by an emissions control program?”

⁴ https://www.cmascenter.org/smoke/documentation/4.7/html/ch08s06.html#tbl_input_gcctl_control

Examples of emissions sources that could be considered in this analysis include:

- Onroad heavy duty diesel vehicle (HDDV) emissions control system defeat devices
- Onroad HDDV workday idling
- Last-mile freight delivery
- Commercial and consumer volatile organic compounds and volatile consumer products
- Intermodal freight operations, including on-road workday idling of HDDV, off-road freight handling equipment, and on-rail support equipment
- Municipal methane distribution systems

LADCO recognizes that this task will be difficult to estimate given the ambiguities in the scope. In this task, we are seeking creative proposals to identify potential inventory enhancements and emissions control options for sources that are known to exist, but that are not well-characterized in the existing emissions inventories.

Task 3 Deliverables:

1. Final report chapter on priorities for identifying NO_x and VOC emissions sources that are not accurately represented in the NEI, and potential NO_x and VOC emissions controls options for these sources.

Task 4. Project administration and final report

At the beginning of the project, the contractor shall develop a draft workplan describing the approach they plan to take to address Tasks 1 through 3, including a project timeline and schedule of deliverables. They shall share this workplan with LADCO for comment. The contractor shall produce a final workplan that addresses any comments from LADCO.

During the project, the contractor shall have regularly (at least monthly) scheduled calls with LADCO to discuss the progress of the work. The contractor shall take and circulate notes and action items from these calls with LADCO.

At the end of the project, the contractor shall develop a draft final report to LADCO that documents the data sources and methods used in the analyses, and compares the emissions control options for each pollutant by both cost effectiveness and total emissions reductions. The contractor shall provide a draft final report outline to LADCO for comment. The contractor shall provide a final report outline based on the comments received from LADCO. The final report shall include chapters corresponding to Tasks 1 through 3 that summarize the existing and potential NO_x and VOC control options by inventory sector for each of the 2015

ozone NAAQS nonattainment and maintenance areas in the LADCO region. A “Recommendations” chapter shall combine the results from Tasks 2 and 3 to identify the top NOx and VOC emissions control options for each LADCO nonattainment and maintenance area, and in total across the region, by cost effectiveness and by total emissions mass reductions. At a minimum this final report shall have a table of control options with relative emission reductions by state, NAA county, SCC, and pollutant.

The final report shall also summarize the contractor’s analysis of control potential of missing or misrepresented emissions sources from Task 4.

The contractor shall share the draft final report with LADCO for comment. The contractor shall produce a final report that addresses the comments received from LADCO on the draft report.

Task 4 Deliverables:

1. Draft workplan
2. Final workplan
3. Monthly conference calls, notes, and action items
4. Draft outline of report
5. Final outline of report
6. Draft report
7. Final report

Proposal Requirements

Proposals should include the following elements:

1. Project statement - summarize the project from the perspective of the bidder
2. Technical proposal - detail the approach by task used to accomplish the objectives and requirements of the project
3. Project Timeline - detail the schedule of deliverables by task
4. Cost proposal - description of the projected expenditures by task, including person hours and other direct charges
5. Bidder qualifications - description of the qualifications should include years of experience, number of staff, and a narrative highlighting the bidders capabilities
6. MBE/WBE statement - statement of whether the bidder is a registered minority or woman-owned business
7. Appendix - references, resumes, and descriptions of recent relevant work

Please limit proposal elements 1-6 to 20 pages; there is no page limit for element 7.

Level of Effort and Project Timeline

The project should be completed by September 30, 2020. Additional funding and time considered necessary to conduct a more complete analysis should be included as options to the primary work effort.

Evaluation Criteria

The following criteria will be used in evaluating the responses to this RFP. A review panel will score each of the five factors below from 1 (worst) to 5 (best). The proposal with the highest weighted score will be selected for funding.

1. Project statement: 10%
2. Technical proposal: 45%
3. Cost proposal: 20%
4. Bidder qualifications: 20%
5. MBE/WBE statement: 5%