



IMPROVING EMISSION INVENTORIES FOR EFFECTIVE AIR-QUALITY MANAGEMENT ACROSS NORTH AMERICA — A NARSTO Assessment

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NARSTO

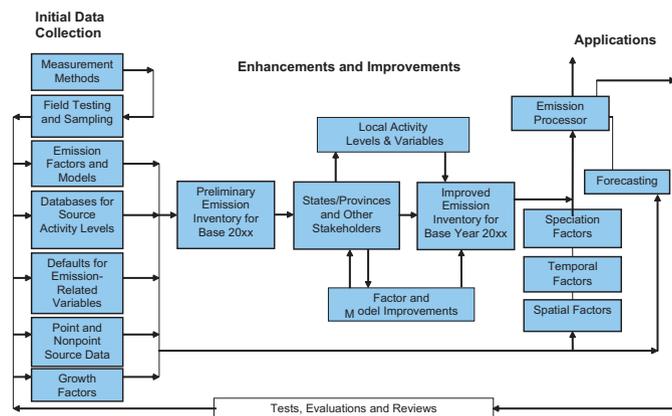
- A multi-stakeholder, public-private partnership of government, private sector, & academia across Canada, Mexico, & U.S.
- NARSTO's activities provide input for science-based decision-making and determination of workable, efficient, and effective strategies for reducing air pollution

BACKGROUND

NARSTO's PM Assessment, Ozone Assessment, and Emission Inventory Workshop indicated a need for an Emission Inventory Assessment

- Emission inventories are critical elements in air quality management activities
- A quantum leap is needed in tools and techniques
- The NARSTO community can help bring about the needed improvement

EMISSION INVENTORY PROCESS



IMPLEMENTATION OF RECOMMENDATIONS

- **Finding:** Emission inventory programs need significant additional resources across all stakeholders over an extended period of time to enhance tools and techniques and expertise to meet needs and expectations
- **Recommendation:** Increase resource allocations for emission inventories in the range from double to an order of magnitude of current investments; develop detailed plans and cost estimates to implement the recommendations
- **Funding for emission inventories is a small part (<<1%) of air pollution control costs:**
- **Current Emission Inventory Funding**
 - U.S. \$25M
 - Mexico \$0.6M
 - Canada \$6M

Action Plan for Canada

- Improve the emission inventory for PM2.5 and its precursors
 - Improve speciation profiles for PM and VOCs
 - Improve point source emission estimates
 - Improve the timeliness for the dissemination of the national emissions inventory trends and projections
 - Engage appropriate stakeholder groups to develop a national strategy to implement recommendations
- Additional Cost: ~\$6M**

Action Plan for Mexico

- Complete the National Emission Inventory.
 - Develop and fulfill requirements at the national level to enable emission inventory updates on a three-year cycle.
 - Build emission inventory development capacity among state environmental agencies.
 - Improve programs to conduct direct emission measurements by identifying sources needed to develop Mexico-specific emission factors and by developing vehicle fleet characterization data for mobile sources.
 - Develop and implement a national data system
- Additional Cost: ~\$7M**

Action Plan for U.S.

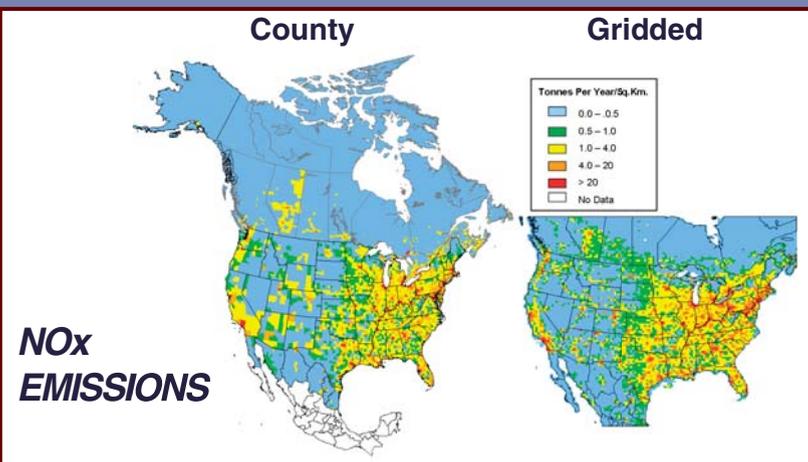
- Enhance the emission inventories and associated tools for PM2.5 and its precursors
 - Establish emission inventory reporting requirements for hazardous air pollutants and integrate data into the NEI
 - Improve the capacity of state, local, and tribal agencies to develop inventories to meet regulatory requirements
 - Engage appropriate stakeholder groups to develop action plans to implement the full range of recommendations
 - Increase support of research to develop and improve emission inventories
- Additional Cost: ~\$35M**

NARSTO EMISSION INVENTORY ASSESSMENT

- **Report Outline**
 1. Introduction, background and objectives
 2. Vision for emission inventory programs
 3. Current status of North American emission inventories
 4. Tools for developing emission inventories
 5. Strengths, weaknesses, and lessons learned
 6. Evolving technology and methods
 7. Top-down assessments of emission inventories
 8. Uncertainty and sensitivity analysis
 9. Recommendations and conclusions
- **Objectives**
 - To promote efficient and effective use of current inventories
 - To set the stage for improving future emission inventories
 - To establish a roadmap for the future
- **Audience**
 - Decision makers
 - Users of emission inventories
 - Developers of emission inventories
- **Vision**
 - The ultimate emission inventory is one that includes all significant emissions from all sources, time periods, and areas with quantified uncertainties and timely accessibility
- **Goal**
 - The overall goal is to make inventories complete, accurate, timely, transparent, and affordable
- **Emission inventories are critical elements for**
 - Control Strategy Development
 - Cap and Trade Programs
 - Air Quality Forecasting
 - Field Studies
 - Risk Assessments
 - Economic Incentive Programs
 - New Source Review
 - Global Climate and International Transport
 - Accountability and Assessment
 - Compliance Assurance
 - Conformity
- **Importance of inventories and impact of uncertainty is increasing for future air quality issues**

KEY FINDINGS AND RECOMMENDATIONS

1. Address Priority Emission Inventory Needs (Most important recommendation)
 - Fine particles and their precursors
 - Toxic and hazardous air pollutants
 - Onroad motor vehicles
 - Agricultural sources, especially ammonia
 - Biogenic sources
 - Petrochemical and other industrial facilities
 - Off road mobile sources
 - Open biomass burning
 - Residential wood combustion
 - Paved and unpaved road dust
2. Improve Emission Inventory Speciation Estimates
3. Improve Existing and Develop New Emission Inventory Tools
4. Quantify and Report Uncertainty
5. Increase Emission Inventory Compatibility and Comparability
6. Improve User Accessibility
7. Improve Timeliness
8. Assess and Improve Emission Projections



DISCLAIMER

Although this material has been reviewed and approved for presentation, any views expressed by the authors do not necessarily reflect the views of the U.S. Environmental Protection Agency, Environment Canada, National Institute of Ecology-SEMARNAT, or NARSTO member organizations

SUMMARY

- Accurate emission inventories are the foundation of cost-effective air quality management
- Uncertainties in emission inventories must be addressed to avoid the potentially severe consequences of inaccurate information
- NARSTO Emission Inventory Assessment shows how progress can be made to improve emission inventories in the future for enhanced quality, timeliness, and cost
- Significant investment by government agencies and the private sector is needed
- For more information and a copy of the final report, reference: <http://www.cgenv.com/narsto>