The Comprehensive Air Management System (CAMS): Linking Federal/Provincial Policy with Local Action Through Sustainable Mobility

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Ontario Regional Adaptation Collaborative: The Gateway
Calgary 2007 ACT Canada TDM Summit

Plenary on Climate Change: Quick Recap
Emissions pathways to give 67% chance of limiting global warming to 2ºC
By 2090, Winter Temperatures in Most of Canada Could Rise 5-15°C or More

Winters 2080-2100

Environment Canada
Federal and Provincial Initiatives

- 20% reduction from 2005 by 2020
- 60% below 2005 by 2050
- No evidence to suggest that 2020 target can be reached (NRTEE)
- No long term plan in place

- 15% reduction from 1990 by 2020
- 80% below 1990 by 2050
- May not reach 2020 target (ECO)
- No long term plan in place
International and Domestic

Not a whole lot happening…
Not a whole lot anticipated…
Outcome for TDM?

Tidly Didly at the Margins
Air Quality?

Whole new hockey game!
Joint Letter to CCME

October 11, 2010

Honorable [Name], P.C., M.P.

Minister of the Environment

26th Floor, 12 Wellington Street
Ottawa, ON K1A 0B9

Dear Minister, Minister:

We are writing to you as health, industrial and environmental organizations that are strongly committed to enhancing air quality in Canada. We urge you and your fellow ministers to support the CAMS proposal in the October 27th meeting of the Canadian Council of Ministers of the Environment (CCME) and to endorse the work needed to complete its development and implementation.

Our organizations actively participated in the highly successful, collaborative process that brought together federal and provincial governments and industry, environmental and health stakeholders to develop the CAMS proposal. We all support CAMS as a framework for air quality management in Canada. Of course, each of our organizations has additional perspectives, as expressed in previous communications to you, which should be considered complimentary to this letter.

Given the pressures that Canada faces across the country with air quality, health care costs, and commitments to sustainable development, Canadian and national government commitment and leadership to seize the opportunity that CAMS presents to improve the way our country manages air quality.

CAMS is comprehensive in its approach, covering all regions of the country and all sources of air pollution, including industrial, transportation, agriculture, residential, transboundary, and other sources. The architecture of the proposed system builds on the existing regulatory and concepts of different levels of government.

- the federal government setting (1) standards and regulations for industrial emissions at a level necessary to meet national and (2) national emission regulations that would build and improve on the existing voluntary Canadian Emission Standards for vehicles and heavy trucks;
- the provinces and territories maintaining their traditional role in air pollution regulation and expanding this through a robust system of air quality management, under which more-detailed regulations would be applied in industrial and other sectors, and where it is required to reduce their contributions to provincial or regional air quality;
- the industries and other stakeholders meeting their contributions to provincial or regional air quality;
- the provinces and other stakeholders meeting their contributions to provincial or regional air quality.

The architecture of the proposed system also offers a new and innovative approach. The federal and industrial maximum standards would be enforced by the provinces and territories through their existing and other regulatory systems. The federal government would provide regulatory structure that would allow for the development of a national and regional air quality management system.

CAPI’s position paper, the CAPI report, and the support from a broad coalition of industries and environmental organizations underscores the need for the development of this proposal.

We urge you to consider this proposal and endorse the work needed to complete its development and implementation.

Sincerely,

[Signatures]

CAMS would also help Canadians in reducing transboundary air pollution within Canada and, in particular, internationally. With a credible, legally regulated system for managing our own pollution sources, Canada would be better positioned to negotiate with the United States on measures to reduce cross-border air pollution.

As the CAMS proposal moves through a collaborative, multi-stakeholder process, it has broad support from national health and environmental organizations, and major industrial associations. We hope that the federal government will endorse the work needed to complete its development and implementation.

A decision by Canada’s Environment Ministers to support the adoption of the CAMS proposal will send an important message to all Canadians that our governments are committed to significant improvements in the air we breathe. As stakeholders, we also hope you will support continuing our effective contribution as you move to finalize and implement this valuable framework for air quality management in Canada.

This letter is being sent to all federal, provincial, and territorial ministers of environment.

[Signatures]
CCME Endorsement

- Ministers move forward with new approach on air quality
- http://www.ccme.ca/about/communiques/index.html?item=391
St-John’s NL – October 20, 2010 – Federal, provincial and territorial Environment Ministers are moving forward with a new collaborative air management approach to better protect human health and the environment.

“Air pollution has a huge impact on the environment, human health and the economy,” said the Hon. Charlene Johnson, Newfoundland and Labrador’s Minister of Environment and Conservation, and CCME president.

A study released by the Canadian Medical Association in 2008 calculated that the costs of illness caused by air pollution exceeded $8 billion annually in Canada. Air pollution also has adverse effects on aquatic and terrestrial ecosystems, reduces agricultural and forestry production and damages building surfaces.

“This new management approach is comprehensive, and will improve air quality in Canada. This initiative builds upon existing federal, provincial and territorial actions to manage air quality,” said Minister Johnson. “Setting clear standards will ensure closer links between strong economic development and a sustainable, healthy environment.”
The proposed new air quality management system would include more ambitious Canadian air quality standards and consistent industrial emissions standards across the country. The nature of provincial and territorial participation in the system will be subject to individual jurisdictional approval. It would establish regionally coordinated airsheds and air zones within individual provinces and territories. Under the new system, Canadians would have ready access to information about air quality through new public reporting, modeling and monitoring mechanisms. This system would facilitate discussions with the United States on air pollution that crosses the Canada-US border.
Ministers have established milestones for progress and initiated work on the first steps of the new system. They committed to a collaborative process and will continue to engage stakeholders. The Ministers directed officials to develop the major elements of the system in 2011. Implementation will begin in 2013. The system is based on a proposed model developed by a committee of experts from governments, non-government organizations and industry. Ministers acknowledged the excellent work of the multi-stakeholder committee over the last two years and thanked all participants.
• Turning the Corner proposal released - commitment to regulate reductions in smog pollution by 50% by 2015 (April 2007)
• Letter to Prime Minister from NGOs/Industry demanding multistakeholder process (Aug. 2007)
• David Suzuki Foundation, Pollution Probe, Sierra Club Canada, Toxics Watch Alberta reps appointed by RCEN caucus and CAN to participate in process (Nov. 2007)
• Forest Products Association of Canada, Mining Association of Canada, Canadian Cement Association, and the Canadian Chemical Producers Association
Consultations Continued…

• Multistakeholder consultations with Feds (Nov. 2007, Feb. 2008)
• Separation of GHGs and CACs – Climate Change and Air Quality
• Canadian Cancer Society, Canadian Lung Association reps appointed (Nov. 2007)
• Canadian Petroleum Producers Association and the Canadian Electricity Association (Nov. 2007)
• NGOs/ Industry present rough alternative proposal to MSG - March 2008
• Tripartite group: Federal and Provincial, NGOs (Health and Environment), and Industry) formed in summer 2008 to refine alternative proposals (30,000 ft level)

• Delivery by September 10th, 2008
• Feds step away due to election call on Sept 8th 2008
• Feb 2009 – provinces / industry / NGOs agreed on CAMS
• June 2009 – Feds become re-engaged (Canada-U.S. Air Quality Agreement, PM Annex)
• Creation of 4 Working Groups
  • Co-chair of AZMRA
  • Member of NAAQS
• Imposed December 2009 deadline
• Sept 2009 – CCME Ministers endorse CAMS direction, given until end of March 2010 to complete CAMS proposal
• April 2010 – CAMS Framework Completed and Delivered
• October 20th, 2010 – CCME Endorses CAMS with accelerated timelines
• Implementation by 2012
• Implications for Sustainable Mobility?
Why Reject “Turning The Corner”?

- Status Quo Unacceptable
- “TTC” Impractical
- Alternative Framework Best Option
Why Embrace and Support CAMS?

• Status Quo Unacceptable
• “TTC” Impractical
• Alternative Framework Best Option
• Opportunities for Sustainable Mobility
Air Quality in Canada
How Bad Is It?

Not Bad… But Bad Enough!
Is Air Quality Getting Better?

Yes and No.
Air pollution is a problem in many parts of Canada that has significant impacts on human health.

Emissions of air pollutants come from many different sources: industrial, areal, mobile and transboundary.
Emissions Sources of Air Pollutants

Figure 1: Emissions sources of air pollutants leading to ground-level ozone and PM$_{2.5}$, 2007

Relative proportion per emission source

- Oil and gas industry
- Other industries
- Transportation (road, rail, air, marine)
- Off-road vehicles
- Fuel for electricity and heating
- Home firewood burning
- Incineration and miscellaneous
- Paints and solvents
- Agriculture (livestock and fertilizer)
Transboundary Air Pollution in Ontario

June 2005
### Key Findings

- **On high ozone concentration days** (when 8-hr running average above CWS of 65 ppb), setting Ontario emissions to zero would have reduced ambient ozone concentrations by 9 percent in the GTA.

- **Largest contribution due to Ontario’s emissions are downwind of the Golden Horseshoe Area.**

- **For PM, when levels exceed CWS level of 30 µg/m³** Ontario contribution is highest in the GTA at 49 percent.

- **What about during non-smog events?**

<table>
<thead>
<tr>
<th></th>
<th>ON</th>
<th>Tr</th>
<th>Tot</th>
<th>O%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>2,130</td>
<td>2,751</td>
<td>4,881</td>
<td>44</td>
</tr>
<tr>
<td>HA</td>
<td>6,541</td>
<td>11,939</td>
<td>18,480</td>
<td>35</td>
</tr>
<tr>
<td>ERV</td>
<td>7,950</td>
<td>13,925</td>
<td>21,875</td>
<td>36</td>
</tr>
<tr>
<td>MI</td>
<td>2.1 Mil</td>
<td>2.7 Mil</td>
<td>4.8 Mil</td>
<td>44</td>
</tr>
</tbody>
</table>

PM: Premature Deaths; HA: Hospital Admissions; ERV: Emergency Room Visits; MI: Minor Illnesses

ON: Ontario; Tr: Transboundary; Tot: Total; O%: Ontario Proportion
Spatial and Temporal Dimensions

Toronto: NO2 Land Use Regression Surface

- Concentration (µg/m³)
- Monitor Locations
- NO2 (ppb)
  - 7 - 15
  - 16 - 21
  - 22 - 27
  - 28 - 34
  - 35 - 45
  - 46 - 93
mortality
hospital admissions
emergency room visits
physician office visits
reduced physical activity
medication use
respiratory symptoms
impaired lung function
subclinical (subtle) effects

proportion of population affected

severity of effect
• Ozone \((O_3)\) causes inflammation of respiratory tract and lungs, seriously aggravating asthma and COPD

• Fine Particulate Matter (PM) causes inflammation of lung tissues, increased incidence of heart attack, stroke and hospitalization for children with asthma

• Governments want to be seen to be doing something…. on air quality
Health Effects

- OMA (2005) study
  - estimated 5,829 premature deaths annually
  - 16,807 hospital admissions
  - 59,696 emergency room visits
  - 29,292,100 minor illness days

  - 9,500 premature deaths across Ontario

- Health Canada & Environment Canada (2005) study
  - 5,800 in 8 Canadian cities

- CMA (2009) estimates 21,000 premature deaths across Canada

- Toronto Public Health (2004) study
  - 1,700 premature deaths and 6,000 hospital admissions annually
Figure 3: Projected health impacts under constant air pollution levels

Projected health impacts under constant air pollution levels (Data from the Canadian Medical Association)

~152,000 Emergency room visits

~39,000 Chronic Premature Deaths

~18,000 Hospital admissions

~4,900 Acute Premature Deaths

2008 - 2031

Note: The projections above are based on the assumption that air pollution levels will remain the same over time, but vulnerability will increase because of population aging.
Projections for 2080

Number of Ozone exceedences to increase by 15%
Episodes could lengthen by up to 30 hours
658 more premature deaths, 4.6% increase in health costs
Heat waves in Canadian cities will become more frequent

Number of hot days above 30°C

Background ambient levels of O₃ could increase by 40 ppm. Emission increase by 20% by 2050 and 32% by 2080. The annual total number of poor O₃ days would increase 4-11 and 10-20 respectively. Air pollution mortality will increase by 20-25% and 30-40% by 2050 and 2080. Number of heat-related deaths will double and triple.
Figure 2: Ozone concentrations along the Canada-U.S. border (three-year average of the fourth-highest daily maximum 8-hour average), 2004–2006
The CWS and related provisions for ozone are:

A CWS of 65 ppb, 8-hour averaging time, by 2010

Achievement to be based on the 4th highest measurement annually, averaged over 3 consecutive years.

Specific provisions related to transboundary flow of ozone: for Ontario
a 45% reduction in NOx and VOC emissions from 1990 levels by 2010 or earlier
At least 40% of Canadians lived in communities with ozone levels above the CWS.
**Trends in Ozone**

![Graph showing ozone levels and trends across different regions.]
Upward Trend in Average National Seasonal Average Concentrations for Ozone 1990-2003
Regional Seasonal Average Concentrations for Ozone 1990-2003
Downward Trend in Peaks

Figure 2.4
Range of Ozone One-Hour Maximum Concentrations in Ontario
(1980 - 2008)

Note: Based on data from 23 ambient ozone sites operated over 27 years. Ontario 1h AAQC = 80 ppb.
Ozone Exceedences Across Ontario

Figure 2.7
Ozone Levels at Designated CWS Sites Across Ontario
Based on the CWS for Ozone (2004 - 2006)

Note: Displayed sites are based on requirements for Canada-wide Standard (CWS) reporting commencing in 2010. Toronto reporting is based on Toronto Downtown, Toronto North, Toronto East and Toronto West sites. The CWS for ozone (65 ppb) is based on the 4th highest 8-hour running average over 3 consecutive years (2004 - 2006). The values displayed for Chatham and Oshawa are based on 2-year averages (2005 - 2006).
The CWS and related provisions for PM are:

A CWS for PM2.5 of 30 μg/m3, 24 hour averaging time, by year 2010

Achievement to be based on the 98th percentile ambient measurement annually, averaged over 3 consecutive years.
At least 30% of Canadians lived in communities with PM$_{2.5}$ levels above the CWS.
Are emissions of Criteria Air Contaminants decreasing? And will this lead to improved air quality and reduced health risks?

Yes and No

Four main criteria air contaminants:
- Sulphur Dioxides (SO2)
- Nitrogen Oxides (NOX)
- Volatile Organic Compounds (VOCs)
- Particulate Matter (PM)
### National Emissions 1990-2015

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO$_2$</td>
<td>-37</td>
</tr>
<tr>
<td>NO$_x$</td>
<td>-7</td>
</tr>
<tr>
<td>VOCs</td>
<td>-8</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>-16</td>
</tr>
</tbody>
</table>


Trends and Projections of National Anthropogenic Emissions of NO\textsubscript{X} by Sector 1990-2015 (excludes open sources)


Trends and Projections in Anthropogenic Emissions of Primary PM$_{2.5}$ by Sector 1990-2005 (excludes open sources)

# Proposed TLC Framework

<table>
<thead>
<tr>
<th>Ambient AQ Concentration levels</th>
<th>Current Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,633,607 tonnes</td>
<td>CARF 50% Reduction by 2015</td>
</tr>
</tbody>
</table>

5-15% improvement

Not tied to CWS or NAAQSs; only tied to NAAQOs for airshed based emissions trading

Sectoral benchmarking
Facility based regulations
**Air pollutant emission targets**

**Targets**

**NATIONAL CAPS for 2012 to 2015**

(\% reduction from 2006 emissions)

- NO\textsubscript{x} – 600 kt Cap (~40\%)
- SO\textsubscript{x} – 840 kt Cap (~55\%)
- VOCs – 360 kt Cap (~45\%)
- PM – 160 kt Cap (~20\%)

+ **SECTOR SPECIFIC CAPS** for 2012 to 2015

ALL TO BE VALIDATED BY JUNE 2007, INCLUDING THE DATE OF COMING INTO FORCE

**2006 Industrial Air Emissions**

- Nitrogen Oxides (NO\textsubscript{x})
- Sulphur Oxides (SO\textsubscript{x})
- Volatile Organic Compounds (VOC)
- Particulate Matter (PM)

**2015 Projected Industrial Air Emissions with proposed targets**

- Nitrogen Oxides (NO\textsubscript{x})
- Sulphur Oxides (SO\textsubscript{x})
- Volatile Organic Compounds (VOC)
- Particulate Matter (PM)
## Emission Reduction Targets

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>2006 (tonnes)</th>
<th>2015 (tonnes)</th>
<th>% Change</th>
<th>National Caps</th>
<th>% Change (Caps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOx</td>
<td>1,882,010</td>
<td>836,085</td>
<td>-56%</td>
<td>840 kt</td>
<td>-55%</td>
</tr>
<tr>
<td>NOx</td>
<td>934,564</td>
<td>531,059</td>
<td>-43%</td>
<td>600 kt</td>
<td>-40%</td>
</tr>
<tr>
<td>VOCs</td>
<td>636,696</td>
<td>330,339</td>
<td>-48%</td>
<td>360 kt</td>
<td>-45%</td>
</tr>
<tr>
<td>PM</td>
<td>180,337</td>
<td>115,439</td>
<td>-36%</td>
<td>160 kt</td>
<td>-20%</td>
</tr>
<tr>
<td>Totals</td>
<td>3,633,607</td>
<td>1,812,922</td>
<td>-50%</td>
<td>1,960 kt</td>
<td>-50%</td>
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</table>
### Projected Health Benefits

<table>
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<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Deaths</td>
<td>1,200</td>
</tr>
<tr>
<td>Chronic Bronchitis Cases</td>
<td>920</td>
</tr>
<tr>
<td>Hospital Admissions and Emergency Visits</td>
<td>1,260</td>
</tr>
<tr>
<td>Child Acute Bronchitis Episodes</td>
<td>5,600</td>
</tr>
<tr>
<td>Asthma Days</td>
<td>170,000</td>
</tr>
<tr>
<td>Restricted Activity Days</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Minor Restricted Activity Days</td>
<td>210,000</td>
</tr>
<tr>
<td>Minor Symptom Days</td>
<td>3,400,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$6,400</strong></td>
</tr>
</tbody>
</table>

- Estimated health impacts indicate that benefits will occur across a range of health conditions sensitive to air quality.
- These benefits include an estimated 1,200 fewer premature deaths per year as a result of the air pollution reductions foreseen under regulations.
- Avoided deaths also account for the lion’s share of the $6.4 billion in monetized benefits of regulating clean air, with an expected annual value of $6 billion by 2015.
## Initial Concerns

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<thead>
<tr>
<th>Ambient AQ Concentration levels</th>
<th>Current Emissions</th>
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<tr>
<td>5-15% improvement</td>
<td>CARF 50% Reduction by 2015</td>
</tr>
</tbody>
</table>

**Disconnect**

- No connection to CWS O₃ and PM
- Ambient air quality levels varies geographically, influenced by sectoral emissions and energy mix, mobile sources, natural and open sources, and transboundary sources

**CWS**

- Sectoral benchmarking questioned; not all LFE covered; non-point sources not adequately addressed
- Duplication of Provincial responsibilities; facility level regulation unmanageable at the Federal level
Emission Reduction Targets by Pollutant for Key Sectors 2006-2015

- Reduction greater than sectoral average
- Reduction equal to or less than sectoral average
- Increase in emissions

Wide variation in emission reductions by sector and by pollutant
<table>
<thead>
<tr>
<th>Sector</th>
<th>2006</th>
<th>2015</th>
<th>% Change</th>
</tr>
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<tbody>
<tr>
<td>Alumina</td>
<td>6,084</td>
<td>2,950</td>
<td>-52%</td>
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<tr>
<td>Aluminum</td>
<td>62,022</td>
<td>62,000</td>
<td>0%</td>
</tr>
<tr>
<td>Smelters</td>
<td>667,822</td>
<td>220,000</td>
<td>-67%</td>
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<tr>
<td>Cement</td>
<td>40,564</td>
<td>21,451</td>
<td>-45%</td>
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<tr>
<td>Chemicals</td>
<td>25,360</td>
<td>25,300</td>
<td>0%</td>
</tr>
<tr>
<td>Electricity</td>
<td>518,000</td>
<td>206,000</td>
<td>-60%</td>
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<tr>
<td>Pulp and Paper</td>
<td>61,500</td>
<td>41,700</td>
<td>-32%</td>
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<tr>
<td>Iron and Steel</td>
<td>29,137</td>
<td>5,827</td>
<td>-80%</td>
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<tr>
<td>Iron Ore Pelletizing</td>
<td>16,431</td>
<td>4,100</td>
<td>-75%</td>
</tr>
<tr>
<td>Lime</td>
<td>3,439</td>
<td>2,757</td>
<td>-20%</td>
</tr>
<tr>
<td>Upstream Oil &amp; Gas</td>
<td>195,000</td>
<td>145,000</td>
<td>-25%</td>
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<tr>
<td>Oil Sands</td>
<td>158,000</td>
<td>70,000</td>
<td>-55%</td>
</tr>
<tr>
<td>Petroleum Refining</td>
<td>98,651</td>
<td>29,000</td>
<td>-70%</td>
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</table>
## NO\textsubscript{X} Emission Reduction Targets

<table>
<thead>
<tr>
<th>Sector</th>
<th>2006</th>
<th>2015</th>
<th>% Change</th>
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<tbody>
<tr>
<td>Cement</td>
<td>46,188</td>
<td>26,266</td>
<td>-44%</td>
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<tr>
<td>Chemicals</td>
<td>27,895</td>
<td>24,503</td>
<td>-12%</td>
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<tr>
<td>Electricity</td>
<td>258,000</td>
<td>105,000</td>
<td>-59%</td>
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<tr>
<td>Iron and Steel</td>
<td>11,946</td>
<td>4,181</td>
<td>-65%</td>
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<td>Iron Ore Pelletizing</td>
<td>8,903</td>
<td>6,200</td>
<td>-30%</td>
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<td>Lime</td>
<td>3,587</td>
<td>3,309</td>
<td>-8%</td>
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<td>424,000</td>
<td>235,000</td>
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<td>Oil Sands</td>
<td>76,000</td>
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<td>31,045</td>
<td>18,100</td>
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<tr>
<td>Pipelines</td>
<td>47,000</td>
<td>28,500</td>
<td>-40%</td>
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### VOCs Emission Reduction Targets

<table>
<thead>
<tr>
<th>Sector</th>
<th>2006</th>
<th>2015</th>
<th>% Change</th>
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<tbody>
<tr>
<td>Chemicals</td>
<td>14,281</td>
<td>14,280</td>
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<td>Wood Products</td>
<td>48,547</td>
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<td>Iron &amp; Steel</td>
<td>1,868</td>
<td>560</td>
<td>-70%</td>
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<tr>
<td>Upstream Oil &amp; Gas</td>
<td>495,000</td>
<td>160,999</td>
<td>-65%</td>
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<tr>
<td>Oil Sands</td>
<td>63,000</td>
<td>100,000</td>
<td>+60%</td>
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<tr>
<td>Petroleum Refining</td>
<td>14,000</td>
<td>14,000</td>
<td>0%</td>
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## PM Emission Reduction Targets

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<th>2015</th>
<th>% Change</th>
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<tbody>
<tr>
<td>Alumina</td>
<td>454</td>
<td>256</td>
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<td>Aluminum</td>
<td>9,698</td>
<td>9,365</td>
<td>-3%</td>
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<td>BM Smelters</td>
<td>7,222</td>
<td>3,600</td>
<td>-50%</td>
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<tr>
<td>Cement</td>
<td>4,732</td>
<td>865</td>
<td>-82%</td>
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<tr>
<td>Electricity</td>
<td>33,000</td>
<td>15,000</td>
<td>-55%</td>
</tr>
<tr>
<td>Pulp and Paper</td>
<td>28,900</td>
<td>23,000</td>
<td>-20%</td>
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<tr>
<td>Wood Products</td>
<td>75,950</td>
<td>57,000</td>
<td>-25%</td>
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<tr>
<td>Iron and Steel</td>
<td>8,611</td>
<td>2,583</td>
<td>-70%</td>
</tr>
<tr>
<td>Iron Ore Pelletizing</td>
<td>9,956</td>
<td>3,500</td>
<td>-65%</td>
</tr>
<tr>
<td>Lime</td>
<td>1,814</td>
<td>270</td>
<td>-85%</td>
</tr>
</tbody>
</table>
Other Concerns

• Federal duplication of Provincial responsibility - impractical
• Focusing solely on industrial emissions insufficient
• Unlikely to deliver promised improvements in air quality and associated health risk reduction
Can we attain sufficiently lower ambient air quality levels by focusing solely on industrial sources?

- Transboundary
- Areal
- Mobile
Summary – CAMS

• Objective
  – Protection of human health and the environment

• Approach
  – Comprehensive – addressing all sources of air pollution
  – Focus on ambient air quality – keeping clean areas clean, continuous improvement
  – Collaborative, with ongoing stakeholder involvement
  – Strong transparency and public accountability

• Main Components
  – National Ambient Air Quality Standards
  – Base-level Industrial Emission Requirements (BLIERS)
  – Air Zone Management System
A Comprehensive Air Management System

Air Pollutant Sources
- Stationary, point-sources
- Mobile, non-point-sources including transportation and transboundary

Management Approach
- Desired outcomes set through CAAQS
- Canadian standards for base-level environmental performance by key industrial sectors
- Air zone management (within provinces and territories)
- Regional airshed management

Engagement
- Federal government
- Provincial and territorial governments
- Other governments
- Stakeholders
National Ambient Air Quality Standards (NAAQS)

- Protect human health by reducing population exposure
- Build on, but more stringent than current voluntary Canada Wide Standards (CWS)
- Initially for ozone ($O_3$) and fine particulate matter (PM$_{2.5}$)
  - 8-hour ozone standard: in range of 60-62.5 ppb
  - 24-hour PM$_{2.5}$: in range of 28-29 µ/m$^3$
  - New annual PM$_{2.5}$ standard to be established
- Standards for other harmful air pollutants to be added later (e.g. smog pre-cursors: SO$_2$ and NOx)
- Key targets for air quality management, intended to drive whole system
- To be reviewed and strengthened over time
[Ozone] > 65 ppb (current CWS)

53%
[Ozone] > 60 ppb
$[\text{PM}_{2.5}] > 30 \mu\text{g/m}^3$ (current CWS)

39%
\[ [\text{PM}_{2.5}] > 28 \, \mu g/m^3 \]
10% Improvement in Risk Exposure
Base Level Industrial Emissions Requirements (BLIERS)

• Standards covering all new and existing industrial facilities
• Good level of environmental performance, based on standards in “leading jurisdictions in areas of attainment”
• Apply regardless of location or air quality
• Determined on equipment, process or sector basis
• Tougher standards (e.g. BAT) may be required where air quality is under pressure from industrial sources
• Several options for implementation under consideration:
  • Federal regulations under Canadian Environmental Protection Act (CEPA) with equivalency agreements
  • Provincial regulation with federal regulatory or pollution prevention plan backstop
Base Level Industrial Emissions Requirements (BLIERS)

• Developed base-level industrial performance requirements for 13 key industrial sectors/equipment
• Most contentious of the working groups
• Lightning rod for CAMS
• More work required
Air Management Zones and Regional Airsheds

• Air Management Zones established within provinces and territories, covering all of Canada
• Active management where air quality under pressure
• Multi-stakeholder teams and management plans established wherever required to protect air quality
• Regional Airsheds set up to co-ordinate efforts where inter-jurisdictional or transboundary problems
• System of air quality levels and action triggers within zones: green, yellow, red, black
• Increasing stringency and co-ordination of action where air quality deteriorating
• Action triggers intended to operationalize principles of continuous improvement and keeping clean areas clean
Regional Airshed Delineation Concept
## Trigger System

<table>
<thead>
<tr>
<th>Trigger</th>
<th>Description of Air Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td><strong>Low pressure on air quality</strong></td>
</tr>
<tr>
<td></td>
<td>Air quality below the “yellow zone” threshold (background levels with a buffer).</td>
</tr>
<tr>
<td>Yellow</td>
<td><strong>Under pressure</strong></td>
</tr>
<tr>
<td></td>
<td>Ambient levels of pollutants exceed an established threshold.</td>
</tr>
<tr>
<td>Red</td>
<td><strong>NAAQS Encroachment</strong></td>
</tr>
<tr>
<td></td>
<td>Moving closer to the NAAQSs, beyond a defined trigger level.</td>
</tr>
<tr>
<td>Black</td>
<td><strong>Non attainment</strong></td>
</tr>
<tr>
<td></td>
<td>Where ambient air pollution in an air zone is above the NAAQSs level (determined by levels at one or a cluster of monitoring stations in the same local area).</td>
</tr>
<tr>
<td>Level</td>
<td>Description of air quality</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Green</td>
<td>Low pressure on air quality&lt;br&gt;Good air quality in relatively undeveloped or pristine areas.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Under pressure&lt;br&gt;Air quality somewhat degraded as a result of industrial development, transportation, or residential, transboundary or other factors.</td>
</tr>
<tr>
<td>Red</td>
<td>CAAQS encroachment&lt;br&gt;Air quality significantly degraded; ambient pollution levels approaching CAAQS.</td>
</tr>
<tr>
<td>Black</td>
<td>Non-attainment&lt;br&gt;Ambient air pollution in air zone is above the CAAQS level (as determined by levels at one or a cluster of monitoring stations in the same local area).</td>
</tr>
</tbody>
</table>
Table 4: Air quality levels and management recommendations

<table>
<thead>
<tr>
<th>Level and description</th>
<th>Air zone management recommendations</th>
</tr>
</thead>
</table>
| GREEN: Low pressure on air quality | • Basic air quality surveillance, potentially via remote sensing or modelling in northern or inaccessible areas.  
• Periodic reporting to the public on the state of air quality, and public education.  
• If development pressures arise, planning and actions based on principles of Keeping Clean Areas Clean and Continuous Improvement. |
| YELLOW: Air quality under pressure | • Active air quality management.  
• Development of action plan to reduce air quality deterioration, including actions to be undertaken on relevant sources and to estimate impacts on air quality.  
• Air quality monitoring that is sufficient to assess/identify relevant air quality issues.  
• Inventory and mapping of major emissions sources; modelling of emissions patterns, where required.  
• Involvement of various levels of government as needed.  
• Stakeholder involvement in air management efforts, potentially through establishment of multi-stakeholder air zone management team.  
• Public education and engagement.  
• Development of sustainable economic and urban development policies that ensure air quality does not degrade. |
| RED: CAAQS encroachment | Development and implementation of a rigorous action plan that:  
| | • identifies the key sources contributing to the exceedance of the CAAQS;  
| | • sets out the full range of actions to be undertaken by appropriate governments and relevant stakeholders to reduce the pollutants of concern in the air zone;  
| | • provides milestones and timelines to meet targets;  
| | • provides greater accountability through periodic progress assessments;  
| | • uses mapping and modelling to demonstrate how actions will result in improved air quality.  
| | Increased air quality monitoring as appropriate to assess/identify relevant air quality issues.  
| | Expansion of emissions inventory as needed to include all sources.  
| | Public notification, education and engagement regarding deteriorating air quality; and planning for improvements.  
| | Implement action to reduce emissions.  
| | More direct role for province/territory (e.g., approving action plans); greater federal government involvement where there are transboundary air issues or sources under federal jurisdiction.  
| | Increased collaboration among the three levels of government in planning and management actions as appropriate.  
| | Involvement of other jurisdictions in regional airshed, to coordinate actions to improve air quality where needed.  
| | Development of sustainable economic and urban development policies that ensure improvements in air quality. |
**Black: Non-attainment**

- Implement rigorous actions to reduce emissions.
- Development and implementation of an action plan that:
  - includes short-term to long-term actions (regulatory action wherever required) to achieve air quality improvements in order to bring air quality below the CAAQS;
  - establishes milestones and timelines for actions by each level of government and relevant stakeholder;
  - provides for regular progress assessment and public reporting to ensure transparency and accountability;
  - uses detailed modelling to show how planned actions will result in improved air quality.
- Stronger provincial and federal involvement in air quality management, including:
  - direct role by province or territory in coordinating and approving planning and actions;
  - collaboration between governments, with each utilizing authority to reduce emissions in areas of jurisdiction.
- Stepped-up air quality monitoring that is sufficient to assess the relevant air issues.
- In-depth assessment of contributions from all sources to CAAQS exceedance, using modelling where needed.
- Public notification, education and engagement regarding CAAQS exceedance; and stepped-up air zone management to meet CAAQS.
- Development of sustainable economic and urban development policies that ensure improvements in air quality.
- Stepped-up coordination of actions at the regional airshed level where needed to address transboundary contributions to exceedance.
### Table 5: Some potential actions to improve air quality

<table>
<thead>
<tr>
<th>Source or area of action</th>
<th>Potential actions</th>
</tr>
</thead>
</table>
| Transboundary            | • Engagement in negotiations with provincial and international jurisdictions to reduce emissions.  
                          | • Engagement in legal action against jurisdictions that are the source of air pollutants. |
| Transportation sources   | • Federal regulations on fuel efficiency and vehicle emissions/engine emissions.  
                          | • Increased regulation of transportation sources, including aviation, rail and marine.  
                          | • Public transit expansion; traffic and idling restrictions.  
                          | • Government action/incentives to phase out older cars.  
                          | • Incentives for purchasing efficient or electric vehicles.  
                          | • Discounted or free public transit on smog days.  
                          | • Organization of carpooling, commuter challenges. |
| Municipal planning | Reviews of land use planning and implementation of smart growth policies.  
|                   | Restrictions on urban expansion.  
|                   | Municipal bylaws for permitting of outdoor burning during certain seasons or locations.  
|                   | Municipal bylaws to ban wood-burning appliances and outdoor burning except appliances approved by the United States Environmental Protection Agency (U.S. EPA) or Canadian Standards Association.  
| Miscellaneous     | Develop codes of practice.  
|                   | Support for research to study poorly defined or poorly monitored emissions. |
# APPENDIX D: OPTIONS FOR REGULATORY AUTHORITY FOR AIR QUALITY MANAGEMENT

(Please note: this is not an exhaustive listing)

<table>
<thead>
<tr>
<th>Federal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• New vehicles, engines and fuels standards applicable to on-road and</td>
<td>• National emissions performance standards, objectives and product standards for</td>
</tr>
<tr>
<td>off-road equipment (including rail and marine sources)</td>
<td>commercial and industrial sources</td>
</tr>
<tr>
<td>• Canadian ambient air quality objectives</td>
<td>• Action to reduce international transboundary pollution</td>
</tr>
<tr>
<td>• Action to reduce international transboundary pollution</td>
<td>• Co-operate with other jurisdictions on actions to implement air quality improvement</td>
</tr>
<tr>
<td>• Co-operate with other jurisdictions on actions to implement air</td>
<td>• Managing emissions from sources under the Federal House (federal and Aboriginal</td>
</tr>
<tr>
<td>quality improvement measures</td>
<td>land)</td>
</tr>
<tr>
<td>• Managing emissions from sources under the Federal House (federal</td>
<td>• Federal environmental impact assessments</td>
</tr>
<tr>
<td>and Aboriginal land)</td>
<td>• Setting the National Building Code</td>
</tr>
<tr>
<td>Provincial/Territorial</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>---</td>
</tr>
<tr>
<td>Woodstove emission regulations</td>
<td></td>
</tr>
<tr>
<td>Open-burning regulations</td>
<td></td>
</tr>
<tr>
<td>Vehicle and fuel quality regulations, e.g., gasoline vapour control, cleaner gasoline, motor vehicle emission control</td>
<td></td>
</tr>
<tr>
<td>Roads, engineering and traffic control</td>
<td></td>
</tr>
<tr>
<td>Construction specifications</td>
<td></td>
</tr>
<tr>
<td>Emissions performance standards/objectives for industry</td>
<td></td>
</tr>
<tr>
<td>Permitting emission sources: industrial, institutional</td>
<td></td>
</tr>
<tr>
<td>Building codes</td>
<td></td>
</tr>
<tr>
<td>Cooperate with other jurisdictions on actions to implement air quality improvement measures</td>
<td></td>
</tr>
<tr>
<td>Provincial/territorial environmental impact assessments</td>
<td></td>
</tr>
<tr>
<td>Regional transit planning</td>
<td></td>
</tr>
<tr>
<td>Possible health authority powers to influence emission sources</td>
<td></td>
</tr>
<tr>
<td>Provincial/territorial ambient air standards/objectives</td>
<td></td>
</tr>
<tr>
<td>Establishing air zones</td>
<td></td>
</tr>
<tr>
<td>Establishment of air management plans</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Municipal/County/</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reducing vehicle idling, all idle-under-5-activities, within</td>
<td></td>
</tr>
</tbody>
</table>
| Municipal/County/Regional | Bylaws to restrict certain air pollutant-releasing activities within their regions, e.g., backyard burning, residential wood combustion, vehicle idling, burn barrels, odour-generating activities  
|                          | Zoning and community planning  
|                          | Transportation planning  
|                          | Transit and transportation management programs  
|                          | Regional growth strategies  
|                          | Sustainability plans  
|                          | Municipal building permitting  
|                          | Agricultural burning |
Governance and Assurance

- Proposed National Air Quality Accord under CCME Council of Ministers
  - Establishing system and FPT roles
- Air Quality Advisory Council
  - Reporting on implementation and air quality
  - Recommending necessary changes to system
- Government~Stakeholder Collaboration
  - NGOs, industry, other stakeholders involved throughout system, including Air Quality Advisory Council
- Monitoring and Reporting
  - Expansion of ambient air and emissions monitoring
  - Strict reporting requirements, including to public
CAMS Implications and Opportunities

- New system will revolutionize air quality management in Canada
- Regulated national standards and comprehensive management will bring significant improvements in air quality
- More effective air management within Canada will help achieve progress in reducing transboundary pollution
- Important benefits for health of Canadians, especially those with respiratory illness, cardiovascular disease and other chronic conditions
- Challenges and opportunities for addressing mobile sources, such as through sustainable mobility, as CAMS rolled out
Table 1: Most important environmental issues facing Canada today (numbers represent percentages)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Global warming / climate change</td>
<td>23</td>
<td>28</td>
<td>18</td>
<td>31</td>
<td>30</td>
<td>24</td>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td>Air pollution</td>
<td>20</td>
<td>14</td>
<td>18</td>
<td>10</td>
<td>12</td>
<td>21</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td>Water pollution / drinking water</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>12</td>
<td>10</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Pollution—general</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: This table shows the top four environmental issues identified as top-of-mind as a percentage of those polled. Other issues registered concern levels that were equal to or less than Pollution—general.

Table 1. Capacity of Selected Policy Options to Reduce Vehicle Use

<table>
<thead>
<tr>
<th>Policy Option</th>
<th>Description</th>
<th>Reduction in Total Vehicle Use (%)&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation Planning</td>
<td>Adoption of options that consider all direct and indirect costs and benefits</td>
<td>10 - 20</td>
</tr>
<tr>
<td>Mobility Management Programs</td>
<td>Local Transportation Demand Management (TDM) programs that support and encourage use of alternative modes</td>
<td>4 - 8</td>
</tr>
<tr>
<td>Commute Trip Reduction</td>
<td>Programs by employers to promote alternative commuting options</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Fuel Taxes – Tax Shifting</td>
<td>Increases fuel taxes and other vehicle taxes</td>
<td>5 - 15</td>
</tr>
<tr>
<td>Parking Management</td>
<td>More efficient use of parking facilities</td>
<td>2 - 8</td>
</tr>
<tr>
<td>Parking Pricing</td>
<td>Direct charges for using for parking facilities, with rates that may vary by location</td>
<td>3 - 10</td>
</tr>
<tr>
<td>Transit and Rideshare Improvements</td>
<td>Enhances public transit and car-sharing services</td>
<td>2 - 12</td>
</tr>
<tr>
<td>Smart Growth Policies</td>
<td>More accessible, multi-modal land use development patterns</td>
<td>3 - 15</td>
</tr>
</tbody>
</table>

(a) Refers to expected reduction as a % of total vehicle travel in the community


IMPLICATIONS FOR IMPROVED AIR QUALITY?
The Way Forward

- Modeling of measures’ impacts on improved air quality
- National vision and strategy on Sustainable Mobility
- National Commuter Challenge?
- Road Pricing and other measures
Thank You
Merci

qchiotti@rogers.com