

Implementation of Recommendations made in the Emissions Management Framework for the Alberta Electricity Sector, November 2003

Introduction

In 2003, the Clean Air Strategic Alliance (CASA) Electricity Project Team developed the Emissions Management Framework for the Alberta Electricity Sector that included 71 recommendations. The framework was approved by the CASA board in November 2003 and the Government of Alberta subsequently accepted all the recommendations.

Alberta Environment (AENV), with the assistance of Alberta Energy and Alberta Health and Wellness, took the lead in implementing the majority of the recommendations contained in the report. Two full time staff positions, contract dollars and a portion of the time of number of additional staff were dedicated to this work, which was substantially complete within two years. Currently, one full-time staff position is committed to administering emissions trading, as well as a group of staff who manage monitoring and approvals. Stakeholders had many opportunities to confirm that implementation met the intent of the recommendations in the Framework. The products delivered include two new regulations (Emissions Trading Regulation, Mercury Regulation), approvals clauses, a standards document, and a document outlining the protocol for implementing the recommendations on “hot spots”.

The implementation process was guided by a cross-ministry steering committee which met quarterly and provided advice and assistance to the process. The work itself was done largely through working groups of government staff that focused on mercury control, emissions trading, hot spots, emission standards, and approval clauses. These groups gathered the required technical, policy, and legal expertise needed. They analyzed the recommendations and determined the best way to implement them, generated and edited documents, and briefed senior management and politicians. Some of the work was done through contract writers and regulatory drafters.

Throughout the implementation process, stakeholders were kept informed of the work and had opportunities to give advice on the work being done. Stakeholders who were part of the original CASA Electricity Project Team met quarterly to receive updates and give advice on the work being done. This group was particularly helpful in clarifying the intent of the recommendations and providing an ongoing motivation to ensure that the process was completed in a timely manner.

In general, the Non-Government Organizations (NGOs) and industry stakeholders feel that the 2003 Framework recommendations have been implemented satisfactorily. There are a few areas where industry and NGOs feel recommendations could have been better implemented, as highlighted in this document,. NGOs and industry recognize the substantive work that was done by the Alberta Government in implementing the 2003 Framework recommendations and appreciate this effort.

Recommendations to the Electricity Framework Review Project Team

These recommendations are given as advice to the project team and may or may not be included in the project team's final report which will be forwarded to CASA Board of Directors for their approval.

Draft Recommendation 1

The Implementation group recommends that in 2013, the next 5-year review team should complete a detailed evaluation of the implementation of Recommendations 8 and 9 of the 2003 Framework, regarding the Emissions Trading System.

Draft Recommendation 2

The Implementation group recommends that Alberta Environment ensures that monitoring, reporting, and compliance data is made available to the public in an easily accessible manner.

Draft Recommendation 3

The Implementation group recommends that the CASA Board review the status of implementation of the recommendations made by the Renewables and Alternatives project team and the Electrical Efficiency and Conservation project team.

1. Context for the Framework

~ Recommendations 1 – 5

- Alberta Environment has implemented these recommendations through its approvals process.

2. Management Approach for NO_x and SO₂

~ Recommendations 6 – 12, 37 – 41

The *Alberta Air Emission Standards for Electricity Generation* (AAESEG) became effective January 1, 2006 and sets out the minimum emission requirements that thermal electric power plants are required to achieve, in addition to any other limits specified in the plant's Environmental Protection and Enhancement Act (EPEA) approval. AAESEG covers nitrogen oxides, sulphur dioxide, and primary particulate matter. For further information see [*Air Emission Standards for Electricity Generation*](#).

The Emissions Trading System recommendations (8, 9) are intended to provide incentives and rewards for better than required or expected performance, encourage early shutdown of older units, and encourage implementation of new emissions controls at existing units. AENV has implemented these recommendations through the Emissions Trading Regulation and electronic data submission of monitoring information.

Since the Emissions Trading System has only been active for 2 years, it may be too early to assess whether it is achieving the desired objective. While no emissions trades have yet occurred,

there is also no registry mechanism in place to support emissions trades when they occur. The NGOs feel that this is a concern and a registry should be put in place as soon as possible.

In addition, Recommendation 9 included the possibility of expanding the Emissions Trading System to other industries and also to consider a cap and trade system for the electricity sector. Therefore, this recommendation should not be considered implemented, as the multi-stakeholder committee should continue to advise on any adjustments that may be needed to achieve the original intent of the recommendation.

Regarding Recommendation 12, the overall installed capacity of reciprocating engines for power generation is decreasing. Therefore, it was felt that reciprocating engines could continue to be addressed on an approval basis and compared to the BATEA level of the day.

Recommendation 1

The Implementation group recommends that

the next 5-year review team should complete a detailed evaluation of the implementation of Recommendations 8 and 9, regarding the Emissions Trading System.

3. Management Approach for Mercury

~ Recommendations 13 – 18, 43, 44

The purpose of these recommendations was to reduce mercury emissions from coal fired power plants. These recommendations were also used to inform the Canadian Council of Ministers of the Environment (CCME) process for standards and monitoring protocol for mercury. The mercury control technology in the 2003 EPT report was based on carbon injection and fabric filters. To achieve these AENV introduced:

- Mercury Regulation, which was developed through consultation and input from a multi-stakeholder advisory group.
- The mercury control program, which is being implemented through Regulation 34/2006, found in the Alberta Gazette of March 15, 2006. It requires the operators of coal-fired power plants to submit plans for mercury reduction to Alberta Environment by March 31, 2007. All operators have submitted their plans. These plans must capture at least 70% of the mercury in the coal, and will be subject to ongoing review and refinement, with the goal of capturing at least 80% by 2013.
- The mercury monitoring protocol, completed in 2007. Alberta will use the CCME monitoring protocol to ensure the CCME requirements will be met.

Although the NGOs feel that the mercury recommendations have been implemented, they have one concern with the final implementation of the regulations. Specifically, the original 2003 Framework anticipated that the application of mercury control technology would include activated carbon and compact bag houses, and that the expected emissions reduction from the installation of this technology would be 80%. However, the final mercury regulation released by Alberta Environment establishes a minimum design mercury capture performance requirement of 70% for existing coal-fired power plants. Emitters are also required to submit plans for an optimization program geared at achieving an 80% capture by January 1 2013.

The NGOs feel that the final regulation would have fulfilled the intent of the 2003 recommendations if it had required all facilities be designed to achieve a minimum of 80% mercury capture. NGOs would also like to express concern at the absence from the mercury regulation of any specific requirements for new units and expect that this will be dealt with in the five-year review.

Recommendation 2

The Implementation group recommends that
for future 5-year reviews, the project team ensures that they develop recommendations related only to emissions standards and do not prescribe specific technologies.

4. Management Approach for Primary Particulate Matter

~ Recommendations 19 – 22, 42, 45

The purpose of these recommendations was to develop management approaches for Primary Particulate Matter (PM). The recommendations were addressed by AENV in the following policies that were implemented in the approval process:

- Air Emissions Standards for Electricity Generation
- Electronic data submission of monitoring information being implemented.

In 2003, it was anticipated that the application of mercury control technology would include activated carbon and compact bag houses (COHPAC), which was expected to have the co-benefit of significantly reducing particulate matter emissions. The initial challenges with the development of COHPAC technology were not overcome and it was found that advanced sorbent technology allows a higher mercury capture rate with existing particulate control technology (electrostatic precipitators). The use of enhanced activated carbon sorbents and electrostatic precipitators, in conjunction with existing electrostatic precipitators became the preferred technology for mercury removal and, therefore, the expected co-benefits of mercury control for PM will not be realized.

The framework anticipated potential issues with achieving the co-benefits of mercury control, and Recommendation 22 indicates that if mercury control does not provide the co-reduction of PM, then the 2008 framework review should develop a primary particulate matter management system for existing units. The team has developed a terms of reference to guide the work of the task group that will develop a PM management system.

5. Greenhouse Gases

~ Recommendations 23 – 28, 46, 47

In July 2007 Alberta facilities emitting more than 100,000 tonnes of greenhouse gases a year were required to reduce their emissions intensity by 12 per cent under the *Climate Change and Emissions Management Act*. Facilities are able to make their reductions through improvements to their operations; by purchasing Alberta-based credits; or by contributing to the Climate Change and Emissions Management Fund. Moreover; there has been emphasis on clean fuel technologies, energy efficiency and conservation and renewable. Alberta is committed to

alignment with evolving federal policy and being in line with the rest of North America as an integrated carbon market advances.

The federal government is continuing to develop the domestic framework for industrial greenhouse gas emissions and intends to put the regulatory framework into law in the near future. The government remains committed to reducing Canada's total greenhouse gas emissions by 20 percent from 2006 levels by 2020, and has already made significant progress in introducing measures to reduce greenhouse gas emissions. In addition, the federal government has set an objective that 90 per cent of Canada's electricity needs be provided by non-emitting sources, such as hydro, nuclear, clean coal or wind power by 2020. To further this goal, the government will continue to provide support for biofuels, wind and other energy alternatives.

The NGOs are concerned with the implementation of greenhouse gas management in Alberta and expect the opportunity to bring their issues forward. Specifically, Recommendation 25 in the 2003 Framework recommends that "the Alberta government continue to apply its Natural Gas Combined Cycle (NGCC) offset policy." However this policy, which requires that new coal plants reduce their emissions by around 50%, has been superseded by the new greenhouse gas policy that requires new facilities to reduce emissions by 2% per year starting in their fourth year of operation. This is a significant departure from the 2003 Framework recommendation and represents a weakening of the recommended greenhouse gas management policy for new coal-fired power plants.

The Government of Alberta feels that, although the treatment of new coal plants could be seen as a less stringent than the 2003 recommendations, in the early stages of the provincial GHG regulatory framework, the broader coverage of a provincial system serves to more fully support the intentions of the recommendations - GHG reductions. All major sources in the sector, new and existing, as well as other large sources in the province are covered in the provincial system.

6. Five-Year Review

~ Recommendations 29 – 31, 34, 35, 70, 71

At the request of Alberta Environment, CASA established a project team in 2007 to lead the first five-year multi-stakeholder review of the Framework. The purpose of the review is to keep the Framework current and foster continuous improvement of environmental performance in the electricity sector. Tasks completed during the review included:

- Development of emissions standards for facilities approved after January 1, 2001.
- A review of the Best Available Technology Economically Achievable (BATEA).
- Completion of an emission forecast, for projected generation to 2030.
- A review of recent literature related to the health and environmental effects of emissions from electricity generation.
- Public consultations, including community meetings and opportunities to provide written feedback.

The NGOs and industry have commended Alberta Environment on their work in implementing the majority of the 2003 Framework recommendations. In addition, it was felt that the completion of a detailed review of the best available technology economically achievable (BATEA) and emissions limits imposed in other jurisdictions was a valuable project. This work

has facilitated the process of setting new BATEA limits in a transparent and scientifically-sound manner.

7. Identifying and Addressing Hotspots

~ Recommendations 32 – 33

A group was formed to provide advice on a draft of the Hot Spots Protocol document. Their input proved valuable in keeping the focus of the document on the important issues that were addressed by the recommendations.

In November 2005, Alberta Environment developed the document *Guide for Responding to Potential “Hot Spots” Resulting from Air Emissions from the Thermal Electric Power Generation Sector*. This guide outlines both the internal and external processes for identifying and managing potential hot spots caused or potentially caused by air emissions from thermal electrical generation facilities. The guide specifies key stakeholders and agencies, including Alberta Health and Wellness, Alberta Sustainable Resource Development, the (Alberta) Energy and Utilities Board (now called the Alberta Utilities Commission), regional health authorities, local airshed zones, local municipalities, environmental non-government organizations, stakeholder groups, and federal departments. For further information, see [Guide for Responding To Potential “Hot Spots” Resulting From Air Emissions From The Thermal Electric Power Generation Sector](#).

The *Guide for Responding to Potential “Hot Spots” Resulting from Air Emissions from the Thermal Electric Power Generation Sector* is considered thorough and appropriate but has not yet been tested as no “hot spot” has been identified. Therefore, it is difficult to assess the Guide’s effectiveness at this time.

8. Public Availability of Monitoring, Reporting, and Compliance Data

~ Recommendations 36 – 47 (discussed under sections 2, 3, and 4 regarding priority substances)

The NGOs feel that this data is not easily accessible to the public. The NGOs have requested that these recommendations be fully implemented as soon as possible.

Recommendation 3

The Implementation group recommends that

Alberta Environment ensures that monitoring, reporting, and compliance data is made available to the public in an easily accessible manner.

9. Enhancing Transparency, Accountability and Public Participation

~ Recommendations 48 – 54

In implementing the recommendations in the 2003 *Emissions Management Framework for the Alberta Electricity Sector*, the Alberta government worked closely with stakeholders and provided a number of opportunities for the general public to learn about the framework and provide comment on the implementation of the recommendations. In addition to meetings with

implementation and/or advisory groups, the following opportunities for public information and input were provided:

- Meeting with Wabamun community members (Dec 14, 2004)
- Overall Implementation meetings held in Stony Plain (March 19, 2005), and Calgary (April 16, 2005)
- Meeting on Emissions Trading in Calgary (June 20, 2005),
- Mercury meeting held in Edmonton (June 22, 2005)
- Baseline workshops for industry, held in Edmonton (March 13, 2006) and Calgary (March 14, 2006)

Public Involvement in Developing any Emissions Trading System

The Emission Trading Regulation is under the *Environmental Protection and Enhancement Act (EPEA)*. Alberta Environment has established a public registry to track the creation, transfer, and retirement of credits. Companies and individuals can buy and sell credits privately and the registry records the transfer of credits between companies and individuals. Clauses are inserted into approvals, authorizing the use of credits to meet the new emissions limits in Alberta.

The framework provides industry with the flexibility to meet new standards for nitrogen oxides and sulphur dioxide emissions, and encourages early emissions reductions and early shutdown of older units. For further information, see [An A To Z Guide To Emissions Trading](#).

Emissions Trading Technical Advisory Group

This group consisted of a small group of stakeholders and government staff, as well as people with expertise in market design and emissions trading systems. This group worked diligently over a number of months to complete their task, which was to examine the possible expansion of the emissions trading system and its conversion to a cap and trade system. The overall system was designed in conjunction with this stakeholder advisory group.

10. Renewable and Alternative Energy

~ Recommendations 55 – 64

Net Metering and Net Billing

On February 1, 2008, the Government of Alberta enacted the *Micro-Generation Regulation* allowing Albertans to connect to the grid and operate their own micro-generation facilities. This innovative policy will allow Albertans to generate their own environmentally friendly electricity and receive credit for any power they don't use and send into the electricity grid. Advancements in small generation technologies have given consumers practical options to generate their own environmentally friendly electricity. These options include generation from solar panels, small-scale hydro, wind, biomass, micro-cogeneration and fuel cells. The Alberta Utilities Commission (AUC) is overseeing the implementation of the regulation, and has developed processes to simplify approvals and interconnection between customers and service providers.

Renewable and Alternative Energy Project Team

Following the recommendations made in the Electricity Project Team's 2003 report, CASA's Renewable and Alternative Energy (RnA) Project Team worked to identify mechanisms to

increase Alberta's supply of renewable and alternative electrical energy. The team focused on exploring and developing potential options for a renewable and alternative electrical energy policy framework. In the end, members decided it would be more appropriate for the Government of Alberta to develop such a framework, and the team agreed to forward the results of its thinking and discussions to the Government for consideration. The team released their report, *Recommendations for a Renewable and Alternative Electrical Energy Framework for Alberta*, in March 2007.

Alberta Energy led the development of a Provincial Energy Strategy that was announced on December 11, 2008. Recommendations from the RnA Project Team were considered in the development of the Strategy.

The recommendations of the 2003 Framework were addressed by the work RnA project team. However, the successful implementation of these recommendations relies on the successful implementation of the RnA team's recommendations.

11. Energy Efficiency and Conservation

~ Recommendations 65 – 68

Electrical Efficiency and Conservation Project Team

The Electrical Efficiency and Conservation (EEC) Project Team was formed in January 2004 to achieve its goal of implementing the efficiency and conservation recommendations found in the Electricity Project Team's report, with the aim of increasing electrical efficiency and expanding conservation efforts within Alberta. A significant item within these recommendations was to develop an energy efficiency target for the province. The team was also asked to identify the resources required to implement the various programs recommended to meet the provincial target.

The members of the team agreed that an overarching energy efficiency framework was needed within government in order to make progress on the team's tasks. Five (5) recommendations were developed to establish an effective and much needed energy conservation and efficiency framework for Alberta. The team released their report, *The Need for an Overarching Energy Conservation and Efficiency Framework in Alberta*, in November 2006.

Alberta Energy led the development of a Provincial Energy Strategy that was announced on December 11, 2008. Recommendations from the EEC Project Team were considered in the development of the Strategy.

The NGOs feel that Recommendations 67 and 68 need further work and should be referred to the appropriate implementing agency. The implementation of the remainder of the recommendations relies on the successful implementation of the EEC team's recommendations.

Recommendation 4

The Implementation group recommends that

the CASA Board review the status of implementation of the recommendations made by the Renewables and Alternatives project team and the Energy Efficiency and Conservation project team.

12. Information Gathering

~ Recommendations 69

The materials developed throughout the course of the CASA Electricity Project Team are on file with Alberta Environment, in both electronic and hard copies.