Final Minutes

Clean Air Strategic Alliance

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Performance Measures Subcommittee Meeting #34

Date: Monday, December 18, 2006
Time: 8:30 am to 12 noon
Place: CASA Large Boardroom

In attendance:

Name	Organization
Bob Myrick	Alberta Environment
Mary Griffiths	Pembina Institute
Ted Stoner	Canadian Petroleum Products Institute (CPPI)
Donna Tingley	CASA
Marianne English	CASA

Action Items

Task	Who	When
29.4 Work through the calculation procedures for the indicators for performance measure #1	Marianne	for next subcommittee meeting
32.10 Review Bill Page's recommendations to determine if he suggested surveying anything.	Marianne	for next subcommittee meeting
32.12 Review the results from previous stakeholder surveys for recommendations on changes to the questionnaire.	Marianne	for next subcommittee meeting
32.17 Check the minutes and notes from previous subcommittee meetings for suggestions on recommendations we might wish to make to the board during our presentation to the board on the performance measures review.	Marianne	for next subcommittee meeting
33.9 Consult with stakeholders re the potential indicators, three measures of particulates and the question of absolute emissions versus emission intensities.	Mary, Bob, Ted	Before the March CASA Board meeting
33.12 Consult CASA stakeholders with respect to CASA organizing a meeting on the AQHI for Environment Canada.	the chair of the subcommittee	For the next subcommittee meeting
33.13 Consider if a question re CASA support to airsheds can be added to the stakeholder questionnaire.	All	At the next subcommittee meeting
33.14 Follow-up on the outstanding	Marianne	For the next

assessments. (*performance measure #3)*		subcommittee meeting
34.1 Have the minutes for the October 19 meeting posted on the CASA website.	Marianne	Asap
34.2 Review the CERI report to CASA on energy efficiency and conservation opportunities.	Marianne	Before next subcommittee meeting
34.3 Continue to pursue data on energy intensities.	Marianne	For the next subcommittee meeting
34.4 Telephone Mike Brown (from the EUB) and remind him that we really need the assessments of implementation of flaring and venting substantive recommendations.	Donna	Done
34.5 Revise the 2006 workplan.	Marianne	For next subcommittee meeting
34.6 Raise the matter of the subcommittee chair with the new Executive Director.	Donna	Done
34.7 Revise the summary table of the status of the emission trend calculations.	Marianne	For next subcommittee meeting
34.8 Revise the description of the methodology.	Marianne	For next subcommittee meeting
34.9 Revise the summary table of results from the emission trend calculations.	Marianne	For next subcommittee meeting
34.10 Prepare a draft of the subcommittee's report to the board.	Marianne	For next subcommittee meeting
34.11 Revise the summary table of results for the energy use indicators.	Marianne	For next subcommittee meeting
34.12 Provide notes to the subcommittee re advice on revising the stakeholder questionnaire.	Donna	Notes provided to Marianne
34.13 Prepare recommendations on revising the stakeholder questionnaire.	Marianne	For next subcommittee meeting
34.14 Prepare a draft workplan for 2007.	Marianne	For next subcommittee meeting

Donna chaired the meeting.

1. Administration

a. Review and revise agenda and meeting objectives

The meeting objectives and the draft agenda were reviewed and accepted.

b. Review and approve draft minutes from October 19, 2006

The draft minutes for the PMS meeting of October 19, 2006 were approved.

Action 34.1: Marianne to have the minutes for the October 19 meeting posted on the CASA website.

c. Review action items

Action Items

Task	Who	Status
29.4 Work through the calculation procedures for the indicators for performance measure #1	Marianne	Carry forward to next meeting
31.7 Contact the EUB, the CFO team and the F/V team re data on province wide H_2S emissions.	Marianne	Done
31.8 Check with the CFO team re data on TRS.	Marianne	Done
31.9 Check with the EUB re data on solution gas and coal bed methane.	Marianne	Done
31.11 Contact Richard Melick of AENV re greenhouse gas data.	Marianne	Done
32.5 Consult Ray Wong on how to handle the discontinuity with respect to years for which CAC emission inventories are available.	Bob and Marianne	Done
32.6 Develop a draft procedure for calculating emission trends.	Bob and Marianne	Done
32.10 Review Bill Page's recommendations to determine if he suggested surveying anything.	Marianne	Carry forward to next meeting
32.12 Review the results from previous stakeholder surveys for recommendations on changes to the questionnaire.	Marianne	Carry forward to next meeting
32.17 Check the minutes and notes from previous subcommittee meetings for suggestions on recommendations we might wish to make to the board during our presentation to the board on the performance	Marianne	Carry forward to next meeting

measures review.		
33.1 Correct the minutes from the September 15 meeting and have them posted on the CASA website.	Marianne	Done
33.2 Review the October version of the workplan in the light of the discussion of this meeting and revise it accordingly.	Marianne	Done
33.3 Develop a draft status report and forward it to subcommittee members for review.	Marianne	Done
33.4 Review draft status report and forward comments to Marianne.	All	Done
33.5 Finalize, and submit, the status report.	Marianne	Done
33.6 Obtain data for ozone precursors, total reduced sulfur, solution gas, and odour.	Marianne	Done
33.7 Expand data sets where possible, develop consistent emission categories, revise the trend graphs, and test for statistical significance of the trends.	Marianne, Bob, Richard	Done
33.8 Develop a recommendation as to how Alberta emission trends are to be prepared and tested.	Marianne, Bob, Richard	Done
33.9 Consult with stakeholders re the potential indicators, three measures of particulates and the question of absolute emissions versus emission intensities.	Mary, Bob, Ted	Carried forward to after next subcommittee meeting
33.10 Obtain the required data for the fuel sold indicators from Statistics Canada and prepare trend graphs for the indicators.	Marianne	Done
33.11 Obtain energy intensity and mix data and prepare trend graphs.	Marianne	Partially done
33.12 Consult CASA stakeholders with respect to CASA organizing a meeting on the AQHI for Environment Canada.	Donna	Carry forward to next meeting
33.13 Consider if a question re CASA support to airsheds can be added to the stakeholder questionnaire.	All	Carry forward to next meeting
33.14 Follow-up on the outstanding assessments. (*performance measure #3)*	Marianne	Carry forward to next meeting

With respect to item #31.9, data was obtained from EUB publications for solution gas but data for coal bed methane are only now being separated out and coal bed methane data may be available in the summer.

With respect to item # 33.11, data on the energy mix was obtained from Keith Denman (Alberta Environment) but no data has been found for energy intensity.

Action 34.2: Marianne to review the CERI report to CASA on energy efficiency and conservation opportunities.

Action 34.3: Marianne to continue to pursue data on energy intensities.

With respect to item #33.12, Donna will not have time to pursue this and leaves it to her successor to carry out.

With respect to item #33.14, we are still waiting for the assessments of implementation from the Flaring/Venting Project Team.

Action 34.4: Donna to telephone Mike Brown (from the EUB) and remind him that we really need the assessments.

d. Review workplan for 2006

The December version of the subcommittee's workplan for 2006 was reviewed. It was agreed that the next subcommittee meeting was to take place at the end of January and it was only after the January meeting that subcommittee members would consult their stakeholders on the new performance measures that the subcommittee has developed.

Action 34.5: Marianne to revise the workplan.

e. Discuss subcommittee chair

Because Donna is leaving CASA, a new chair for the subcommittee is required. Mary, Ted and Bob agreed that it is very difficult to both chair a meeting and to participate fully on behalf of ones sector. Thus it was agreed that the new executive director of CASA should be asked to chair the subcommittee.

Action 34.6: Donna to raise the matter with the new Executive Director.

2. New Performance Measures – Emission Reductions

a. Review status of emission trend calculations

Marianne provided to subcommittee members, and discussed, a table (see below) that summarizes the status of these calculations.

Substance of Concern	Data Source/ Comments	Status
H_2S	• Richard to prepare 2 databases from NPRI data • one database to contain all reports • second database to contain reports from consistently reporting	Done

	facilities only • databases to contain data for 2000 to 2005, inclusive	
NO_x (NO_2)	• CAC inventory • Marianne to check if NO included	Done
SO_x (SO_2)	• CAC inventory	Done
O_3	• O_3 is not emitted, need to look at O_3 precursors • O_3 precursors include NO, NO_2, VOCs, CO • in rural areas NO_y is important ***but NO_y is not emitted, the NO_y components are generally products of chemical reactions*** • NO_y includes NO, NO_2, PAN (peroxyacetyl nitrate), HNO_3, and NO_3 • the major O_3 precursors are already on the list of substances of concern	Done
TRS	• includes H_2S • Richard to find forestry TRS data • CFO to provide agricultural data	I have some forestry data; but CFO has no agriculture data
Solution gas	• what is solution gas? is it primarily methane? • ***www.eub.ca***, publication ST60B for data on flared and vented solution gas • we are interested in coal bed methane as well • EUB has action item for F/VPT to see if separate data are available for coalbed methane venting and flaring.	Done
Hg	• the same as H_2S	Done
PM	• CAC inventories • reported in terms of 3 size fractions: total particulates, less than or equal to 2.5 microns and less than or equal to 10 microns	Done
VOCs	• CAC inventories	Done
CO_2equiv.	• EC Greenhouse Gas Inventories provide ghg emissions for Alberta for years 1990 to 2003 inclusive • Alberta Environment to provide for years 2004 and 2005	Done
CO2equiv intensities	Alberta Environment has provided for years 1990 to 2003 inclusive and is to provide for years 2004 and 2005	Done
CH4	• EC Greenhouse Gas Inventories	Done
NH_3	• CAC inventories	Done
odour	• odour is primarily dependant on ambient concentrations and not emissions • the EUB has odour complaint statistics for the oil and gas industry • the CFO Project Team has odour complaint statistics for the agriculture industry	Have Data on Odour Complaints

pathogens/ bioaerosols	• No data available	No Data
indoor air quality substances	• No emissions indicator selected	No Indicator
CO	• CAC inventories	Done

The subcommittee decided that:

- ✓ the forestry data that we have obtained is only from some pulp and paper facilities and is not comprehensive enough for our purposes, so we will not proceed with TRS;
- ✓ solution gas is a catch all and contains other substances as well as methane;
- ✓ coal bed methane sometimes flared like solution gas but data is currently not available for coal bed methane flaring;
- ✓ coal bed methane data may be available sometime next year and we may reconsider coal bed methane then; but for now we will not proceed with it;
- ✓ odour complaints relate more to ambient concentrations than to emissions and so odour complaints should be included under the air quality performance measure as an extra indicator;
- ✓ no data appears to be available on pathogens/bioaerosols and these will be dropped from our list of substances of concern but could be revisited in a few years.
- ✓ no indicators have yet been selected by the indoor air quality project team and so this item is dropped from our substances of concern
- ✓ the information in this table should appear in an appendix of our report to the board to support our decision process;
- ✓ the sources of data need to be given
- ✓ solution gas is a catch all and contains other substances than methane.

Action 34.7: Marianne to revise the table.

b. Review proposed methodology for calculating emission trends

The subcommittee reviewed the description below of the methodology to be used in calculating trends for the new performance measures.

Methodology for Calculating Emission Trends

1. Data to be used includes CAC, NPRI and Greenhouse gas inventories. Auxiliary data (such as GDP, population, etc) can be obtained from Statistics Canada or the Alberta government.
2. The categories for which trend graphs are to be produced for mercury and hydrogen sulphide are “provincial total”, “fossil fuel power generation”, and “oil sands. Also for mercury and hydrogen sulphide, we will produce two emission trend graphs for each category for each substance, one using all reporting facilities and the other using only consistently reporting facilities.

3. For parameters for which we are using CAC data, graphs should be plotted for the categories “provincial total”, “oil sands”, “power generation”, “upstream oil and gas”, “transportation total”, “agriculture” and “other”. (Note: other means the difference between the provincial total and the total of the other specific categories.) Notes are to be added explaining major components of the different categories. As well, the categories used by CASA and Environment are to be the same.
4. Trend graphs are to start at 1990 where possible. For particulates and ammonia use split (or stacked) graphs, i.e. show one graph which includes the provincial total (with all the specified categories) and a 2nd graph with an expanded scale that shows only some of the specified categories;
5. Use the EXCEL linear regression capability for all the trend graphs to determine direction of trend, estimates of the magnitude, and the statistical significance of the trends**.** For substances of concern that are ratios, regressions are to be run for the ratio, for the numerator and for the denominator;
6. Because many of the trend graphs are obviously not linear, Bob, Richard to modify the program for the Daniel t test (Spearman Rho test) to take into account the variable data frequency of the CAC data ***(when they can)***;
7. Bob, Richard to run the Daniel t test for all trend graphs to determine statistical significance of trend ***(when they can);***
8. Bob, Richard to find/contract someone to program the Sen technique ***(when they can)***;
9. Bob, Richard to run the Sen technique for all the trend graphs as a check/comparison for the results from the linear regressions and Daniel t tests and to get a better estimate of the magnitude of the trend ***(when they can)***;
10. the Performance Measures Subcommittee and/or Alberta Environment to consider practical significance versus statistical significance ***(when they wish);***
11. Bob, Richard to test all trend lines for autocorrelation ***(when they wish).***

The subcommittee decided that:

- ✓ this description of methodology will not be part of the report to the board, rather it will become part of the Secretariat’s handbook for calculating performance measures indicators;
- ✓ this description needs to be the most comprehensive of all descriptions relating to the indicators; for instance, if notes are provided on any indicators within the body of the report to the board these notes should also appear in the description of the methodology;
- ✓ the “other” category should be explained;
- ✓ the “projections” provided for the CAC inventory data may be confusing and should not be shown in graphs and text going to the board but it should be made clear that the statistics are derived using actual data only;
- ✓ the fact that “statistically significant” means significant at the 5% level should be mentioned
- ✓ it should be mentioned that a linear regression is the most stringent significance test (of the ones contemplated in our analysis) and anything that is statistically significant with the linear regression will also be significant with the other tests we plan to apply;
- ✓ the results we will show the board in March are to be given as examples only, the real analysis will be done later in 2007, when additional data will be available, by Alberta Environment;

- ✓ these new indicators should be calculated every 3 years
- ✓ steps 10 and 11 should be deleted.

Action 34.8: Marianne to revise the description of the methodology.

c. Review results of emission trend calculations

The subcommittee reviewed the summary table below.

Substance of Concern	Category	Direction of Trend	Statistical Significance	Magnitude tonnes/year
NO_x (NO_2)	**Alberta Total**	**increasing**	**significant**	25,360
	Oil Sands	increasing	not significant	
	Power Generation	increasing	not significant	
	Upstream Oil+Gas	**increasing**	**significant**	24,034
	Transportation	**decreasing**	**significant**	- 1,806
	Other	increasing	not significant	
SO_x (SO_2)	Alberta Total	increasing	not significant	
	Oil Sands	decreasing	not significant	
	Power Generation	increasing	not significant	
	Upstream Oil+Gas	increasing	not significant	
	Transportation	decreasing	not significant	
	Other	increasing	not significant	
TPM	**Alberta Total**	**increasing**	**significant**	270,313
	Oil Sands	increasing	not significant	
	Power Generation	decreasing	not significant	
	Upstream Oil+Gas	**increasing**	**significant**	524
	Transportation	**decreasing**	**significant**	-336
	Agriculture	**increasing**	**significant**	3,970
	Other	**increasing**	**significant**	271,021
PM10	**Alberta Total**	**increasing**	**significant**	93,252
	Oil Sands	decreasing	not significant	
	Power Generation	**decreasing**	**significant**	-1,557
	Upstream Oil+Gas	**increasing**	**significant**	515
	Transportation	**decreasing**	**significant**	-332
	Agriculture	**increasing**	**significant**	2,739
	Other	**increasing**	**significant**	91,910
PM2.5	**Alberta Total**	**increasing**	**significant**	13,860
	Oil Sands	decreasing	not significant	
	Power Generation	**decreasing**	**significant**	-808
	Upstream Oil+Gas	**increasing**	**significant**	512
	Transportation	**decreasing**	**significant**	-296
	Agriculture	**increasing**	**significant**	425

	Other	**increasing**	**significant**	14,109
VOCs	Alberta Total	decreasing	not significant	
	Oil Sands	**increasing**	**significant**	3,783
	Power Generation	increasing	not significant	
	Upstream Oil+Gas	decreasing	not significant	
	Transportation	**decreasing**	**significant**	-3,782
	Agriculture	increasing	not significant	
	Other	decreasing	not significant	
NH_3	Alberta Total	increasing	not significant	
	Oil Sands	increasing	not significant	
	Power Generation	decreasing	not significant	
	Upstream Oil+Gas	decreasing	not significant	
	Transportation	**increasing**	**significant**	105
	Agriculture	increasing	not significant	
	Other	increasing	not significant	
CO	Alberta Total	increasing	not significant	
	Oil Sands	increasing	not significant	
	Power Generation	decreasing	not significant	
	Upstream Oil+Gas	**increasing**	**significant**	33,562
	Transportation	**decreasing**	**significant**	-41,873
	Other	increasing	not significant	
H_2S	All Reporting Alberta Total	decreasing	not significant	
	All Reporting Oil Sands	decreasing	not significant	
	All Reporting Upstream Oil+Gas	decreasing	not significant	
	All Reporting Other	increasing	not significant	
	Consistently Rep Alberta Total	decreasing	not significant	
	Consistently Rep Oil Sands	decreasing	not significant	
	Consistently Rep Upstream Oil+Gas	decreasing	not significant	
	Consistently Rep Other	decreasing	not significant	
Hg	**All reporting Alberta Total**	**increasing**	**significant**	49 Kg/year
	All reporting Oil Sands	decreasing	not significant	
	All reporting Power Generation	**increasing**	**significant**	40 Kg/year

	All reporting Other	increasing	not significant	
	Consistently Rep Alberta Total	**increasing**	**significant**	46 Kg/year
	Consistently Rep Oil Sands	increasing	not significant	
	Consistently Rep Power Generation	**increasing**	**significant**	40 Kg/year
	Consistently Rep Other	**increasing**	**significant**	5 Kg/year
TRS				waiting for data
Solution gas	Flared and Vented	**decreasing**	**significant**	-93 volume/year
	Flared	**decreasing**	**significant**	-89 volume/year
	Vented	**decreasing**	**significant**	-81 volume/year
CO_2equiv.	**Alberta Total**	**increasing**	**significant**	**4746 kt**
	Fossil Fuel Industries	**increasing**	**significant**	**1711 kt**
	Electricity + heat generation	**increasing**	**significant**	**877 kt**
	Transportation	**increasing**	**significant**	**921 kt**
	Agriculture	**increasing**	**significant**	**318 kt**
	Other	**increasing**	**significant**	**919 kt**
CO2equiv intensities	**Alberta GDP**	**increasing**	**significant**	**3954 (1997 million $)**
	Alberta GHG Intensity	**decreasing**	**significant**	**-0.026 kt CO2eq/(1997 million $)**
CH4	**Alberta Total**	**increasing**	**significant**	**732 tonnes**
	Fossil Fuel Industries	**increasing**	**significant**	**568 tonnes**
	Electricity and Heat Generation	**increasing**	**significant**	**1.39 tonnes**
	Transportation	increasing	not significant	
	Agriculture	**increasing**	**significant**	**184 tonnes**
	Other	decreasing	not significant	
odour				Have EUB and NRCB odour complaint data
pathogens/ bioaerosols				No data
indoor air quality substances				No indicator

The subcommittee decided that:

- this table should appear in an appendix to the report;
- the substances of concern should be numbered or otherwise organized;
- the column headed "statistically significant" should be called "statistically significant using linear regression";
- the column headed "magnitude" is confusing and should be changed to show % change from the base year;
- for trends that are not statistically significant, "-" should be put in the "direction of trend" and "magnitude" columns;
- wherever "significant" is used, it should be "statistically significant";
- the "notes" are useful and should be kept as notes to the table but any information that appears in these notes should also appear in the description of the methodology;
- substances of concern for which we have no results because we have no data should not be removed from the table but a note should be provided explaining that we have no data
- "odour" should be "odour complaints".

Action 34.9: Marianne to revise the table.

d. Select indicators

The subcommittee agreed to the following with respect to the indicators we will use in conjunction with the new emission reduction performance measure:

- any substances of concern for which we were unable to obtain sufficient data will not be selected as indicators but will be recommended for review the next time around;
- only PM2.5 will be used as an indicator for particulate matter because the results for TPM and PM10 are fairly similar to those for PM2.5;
- for H2S and Hg only the data for all reporting facilities will be used to calculate indicators.

e. Content of report to board

The subcommittee agreed on the following with respect to the report to the board:

- the report is to cover the charge to the subcommittee and how well the subcommittee completed its tasks;
- the results from the trend analyses that will be included in the report will be included as examples only to illustrate the process; calculation of all the indicators will take place in the latter half of 2007, when more data is available, as part of producing the 2007 performance measures report;
- Attachment F (summary of results from the regressions) is to go into the report as an appendix and is to be used in support of the subcommittee's decision process;
- the new performance measures we developed and the process we followed to identify indicators for these new performance measures;
- for each substance of concern for which we have data, a graph is to be provided as an example of the process;

- the graphs are to be in an appendix, the recommended indicators in the body of the report;
- with respect to slotting the new performance measures into the old set of performance measures, the old performance measure #1 (air quality) is to become performance measure # 1a. The new emission reduction performance measure is to be performance measure #1b. and the new energy use performance measure is to be performance measure #1c.

Action 34.10: Marianne to prepare a draft of the subcommittee's report to the board for the next subcommittee meeting.

Mary wishes it to be recorded that she believes emission intensities should not be shown in the subcommittee's report to the board. She is of the view that we should report only what is important to the air we breathe. Subcommittee members agreed, though, that they could live with reporting both absolute emissions and emission intensities.

3. New Performance Measures – Energy Use Indicators

a. Review draft indicators

Marianne summarized the table of results re potential indicators for the new energy use performance measure below.

Potential Indicator	Category	Direction of Trend	Statistical Significance	Magnitude per year
absolute fuel sold	**Gasoline Sales**	**increasing**	**significant**	95097 (1000 litres)
	Diesel Oil Sales	**increasing**	**significant**	**125649 (1000 litres)**
	Gasoline+Diesel Oil Sales	**increasing**	**significant**	**220746 (1000 litres)**
fuel sold per capita	**Alberta Population**	**increasing**	**significant**	**50366**
	Per Capita Fuel Sales	**increasing**	**significant**	**36 litres**
fuel sold per vehicle	**Vehicle Registrations**	**increasing**	**significant**	61590
	Per Vehicle Fuel Sales	increasing	not significant	
energy intensity	**still need to find this data**			
energy mix indicator	**R+A Generation**	**increasing**	**significant**	408 GWh
	Total Electricity Sales	increasing	not significant	
	% R+A of Total	**increasing**	**significant**	0.75 %

	% Increase since 2001	**increasing**	**significant**	0.76 %

The subcommittee decided that:

- their decisions with respect to the emission reduction indicators should be extrapolated to cover these energy use indicators;
- it should be indicated that the fuel sales refer to road transport vehicles;
- R + A should be written out;
- it should be indicated that "% Increase" is the CASA target;
- gasoline sales, diesel oil sales, Alberta population, vehicle registrations and total electricity sales need not be shown in this table because they are not potential indicators in themselves.

Action 34.11: Marianne to revise the table.

4. Review/Revise Stakeholder Questionnaire

This item was deferred to the next subcommittee meeting. However, Donna agreed to leave her advice on the questionnaire and Marianne agreed to prepare some recommendations for the next subcommittee meeting.

Action 34.12: Donna to provide notes to the subcommittee re her advice on revising the stakeholder questionnaire.

Action 34.13: Marianne to prepare recommendations on revising the stakeholder questionnaire for the next subcommittee meeting.

5. Status Reports

There was nothing to report with respect to this item.

6. Workplan for 2007

The subcommittee agreed to use the tasks/ process accomplished in 2004 when the last comprehensive performance measures calculation was conducted as a guide for the 2007 workplan.

Action 34.14: Marianne to prepare a draft workplan for 2007 for the next subcommittee meeting.

The subcommittee also discussed the performance of the subcommittee over the past year. All members felt very good about the close/good working relationship and the accomplishments of the subcommittee. The new emission reduction performance measure and its indicators was seen as a highlight of the subcommittee's accomplishments in 2006.

7. Next Meeting

The next meeting of the Performance Measures Subcommittee will be on Tuesday, January 30 from 9 am to 3 pm.