Minutes

Electricity Framework Review Project Team, Meeting #9

Date: Tuesday, January 21st, 2014
Time: 9:00 am to 4:00 pm
Place: ENMAX office, Calgary

In attendance:

Name	**Stakeholder group**
Ahmed Idriss	Capital Power
Anamika Mukherjee	CAPP
Don Wharton	TransAlta
Andre Chabot	Alberta Urban Municipalities Association
Kristi Anderson	Mewassin Community Council
Randy Dobko	Alberta Environment and Sustainable Resource Development
Rob Watson	Milner/Maxim Power
David Spink	Prairie Acid Rain Coalition
Tim Weiss	Pembina
Wayne Ungstad	Ponoka Fish and Game
Tom Marr-Laing	Pembina Institute
Al Schulz	CIAC
Jim Hackett	ATCO
Njoroge Ngure	TransCanada
Oliver Bussler	TransAlta
Daniel Johnston	Facilitator
Michelle Riopel	CASA

Guests:

Name	**Stakeholder group**
Peter Moore	Alberta Energy
Chris Devasahayam	Maxim Power
Colin Dumais	Enmax
Shannon Spilker	Enmax

Regrets:

Name	**Stakeholder group**
Srikanth Venogopal	TransCanada
Leonard Standing on the Road	Ponoka Fish and Game
Rod Crockford	ENCANA
Krista Brindle	Alberta Energy
Steven Flavel	Alberta Energy
David Lawlor	Enmax
Shaun McNamara	Milner Power Inc.
David James	Alberta Energy

Action items	Who	Due
1.10: Provide an update on discussions regarding contributing funding to the team.	Jim/Robyn	Update at next meeting
5.7: Ensure that a review of the implementation of recommendations is discussed.	Robyn	Meeting 10
5.9: Ensure that development of a PM Management System for existing units is discussed.	Robyn	Meeting 10
7.1: Follow-up with Allen Crowley (EDC) to provide a longer term graph for "AIES Energy Production Forecast".	Robyn	ASAP
7.2: Distribute Allen's presentation.	Robyn	ASAP
7.3: Distribute Ahmed's presentation.	Robyn	ASAP
8.1: Prepare wording around a smart grid recommendation as per discussions at meeting 8.	Kristi, Krista	Meeting 10
8.4: Obtain the registry data for distribution to the team.	Randy	ASAP
9.1: Champions will provide relevant background information on their respective options to Robyn.	David, Jim, Chris, Rob, Tim	ASAP
9.2: Prepare a framework for the next meeting for a structured triggers discussion.	Robyn	ASAP
9.3: Poll for dates for meeting #10.	Robyn	ASAP

The meeting convened at 9:20 am and adjourned at 4:00 PM. Quorum was achieved.

1. Introduction

The group did a round-table of introductions. The agenda and general intent for the meeting were reviewed.

The purpose of this meeting was to hear presentations on a range of options to address potential issues related to implementation of the federal GHG regulations together the CASA framework. The intent was to engage in interest-based negotiation, without prejudice, and seek consensus if possible.

Prior to hearing presentations, the group discussed the following:

- The meaning of "without prejudice": A concern was noted by a participant that while there was agreement that participation in discussion of options was without prejudice to the trigger issue, as discussion of options becomes more detailed, prejudice is in fact likely to arise. As a result, while the group confirmed their commitment to engage in a detailed discussion at this meeting to better understand each of the options but recognized the concern of the participant has not been addressed.
- Evaluation of options against the 6 outcomes: A concern was raised that the outcomes are not sufficiently specific to allow for a meaningful evaluation of the options against them. The group agreed at this meeting could include a preliminary evaluation of the options against the 6outcomes, with the understanding that such an evaluation would be informal, high level and directional only, without prejudice, and intended strictly to help narrow options (e.g. conclude that there are some options that need not be pursued further). It was acknowledged that in the event it becomes necessary to formally evaluate options, it may be necessary for the team to refine the criteria implicitly imbedded in the outcomes.
- The question of whether a review of the framework has been triggered: It was noted that although this meeting will not include a discussion of the triggers, this issue needs to be

addressed soon (i.e. at the next meeting). It was observed that this issue seems to only have two sides and may lead members to impasse. It was noted that it would be important to take great care that any discussion on whether a trigger had been met was undertaken in an interest based, and not positional, manner.

The group agreed to defer approval of minutes from meeting #8 to the next meeting.

2. Options Presentations

Champions selected in meeting #8 presented more detailed information on the options identified. As options were explored between meetings, some consolidation seemed logical. As such, the 'options' presented in meeting #9 are not identical to those from meeting #8.

The following options were presented and discussed:

1. Market mechanism enhancement:
   This option proposes to improve on the following limitations of the existing market mechanism for trading SO2/NOx credits:
   - Illiquid – few participants.
   - Incents participants not to transact with competitors short of SO2/NOx generators. This is a challenge for buyers.
   - Generators are incented to transact at different times based on end-of-life dates and credit position.
   - Capital investment not put into facilities with truncated operating life.
   - Uncertainty of cost of technology and future regulation because no transactions are being done. This makes people reluctant to sell credits because there is no reliable way of costing them out.

   The suggested alternative was an "Alberta Air Emissions Market Exchange" (AAEME), similar to a central bank, whose role would be to facilitate a long-term and short-term market for emissions credits. The following steps were outlined:
   1. Determine need: determine total long-term emissions shortfall, based on annual emissions targets of each emitter, and the long-term goal.
   2. Conduct RFP for x% of long-term SO2/NOx abatement technologies/sites. Would create a short-list of best proposals for emissions technology projects that would deliver was cost-effective and timely reductions.
   3. Annual auction for x% of total long-term SO2/NOx emissions requirements. Buyers would pay a monthly capacity credit for set amount over a period of time, and sellers would use the credits for financing projects from step 2. Credits would be temporal neutral, meaning for example that long-term and low rate credits could be swapped for short-term and high credit rates. This would encourage an older unit with pending shutdown and credits owed to them, to invest in longer-term technology.
   4. Set short-term price for SO2/NOx at (Blended average of long-term auction price)+(Administration fee).
   5. Administer short-term market at short-term price.

Group Discussion:

- The buyers would procure the RFPs, but the AAEME would issue them.
- This is different from a direct issuing of RFPs by buyers because it allows for anonymity in the market. A central exchange would draw buyers and sellers, increasing liquidity. This would not preclude bilateral trading, just provide more options. For example, at end of life it is difficult to put capital directly into technology; putting capital into a central exchange would increase your options.
- The AAEME would have to sense cumulative emissions over time and course correct, setting a new target each year. Adjustments would also be made in terms of short-listed technology.
- Currently the emissions requirement far exceeds the credits accrued. Over time credits will be used up, and there will have to consider a different approach to managing emissions. A concern was raised about the devaluation of credits due to oversupply, and who would take on the risk. The champions felt that while the risk would lie with the buyers and sellers, over time it would all balance out.
- This option may be similar to cap and trade, with the addition of technology.
- There may be an issue with generating credits at the front end, to be applied in the future. May create a moral hazard of bringing NOx and SO2 issues forward to the future.
- If a seller experienced a problem with the technology used to generate credits, it would be the sellers' responsibility to ensure the credits still existed.
- As the targets are provincially set, some felt that credit generation should also be location neutral within Alberta. Others felt that regionality may be of concern, especially for beyond 50 years. There was an expectation of shut-down in certain regions after that time. It was suggested that the exchange could be set up in which more value was given to credits in particular airsheds of concern.
- The original intent of credits was to give flexibility, not to ensure every unit would run to 50 years.
- There is a finite source of demand for SO2 credits. This option would serve its useful life in 20-30 years, and then be over.
- For cogeneration, there are limited options to generate credits, it is unclear who would be buyers and who would be sellers.
- The availability of and expense associated with abatement technologies is unclear.
- Treating NOx and SO2 the same may be problematic environmentally.
- To determine realistic prices, market research would need to be done in terms of technology available, and willingness of buyers and sellers.
- Hesitance to reveal willingness to pay in the current system could be overcome by an anonymous central exchange.
- Technology available for reducing SO2 is quite limited.
- There is scepticism that creating a central exchange would improve the credit trading climate.

2. Reasonably achievable control technology (RACT):
   This option was explored to help mitigate the fact that, with the federal GHG regulation defining end of useful life, at end of design life, the cost of BATEA can't be recovered. RACT is similar to BATEA, but unlike BATEA it applies to existing units. The potential benefit of this option is that it would allow the option of installing RACT to generate credits, allowing for cost recovery. It is not a stand-alone solution but could be an add-on to the existing Electricity Framework. The specifics of modifications to timing would be a critical point. Also, replacing BATEA with RACT alone would not generate equivalent emissions reductions. It is important to consider that the current framework

benefits individuals living near existing facilities, and any consideration of RACT as a replacement would have to take that into account. Currently, the federal government is considering a mid-life BLIER approach, which may be similar to RACT.

(Note: it was indicated later in the discussion that the federal government intends to re-engage on mid-life BLIERS sometime in the first quarter of 2014)

Group Discussion:

- PPAs were a major complication to the use of RACT in the past.
- It is uncertain how RACT would be set (ie. Regionally, by unit, by site, or provincially). Some technology may be inexpensive and easy to put in for any situation, however it may not achieve the needed emissions reductions. This would depend on the time available to recover costs, and whether a company is able to pay that amount in the time left before shut-down.
- In order for RACT to provide an equivalent environmental outcome, we would have to do what the federal government planned with BLIERs and ignore the PPA term.
- This scenario is challenged by the condition that PPAs are not affected in any substantive way according to our outcomes.
- This has many impacts on environmental outcomes and PPAs, and so may not be the most efficient use of capital. Other options may be more neutral.

3. Combined integrated approach:
   (Note: This presentation combined the following previously identified options: fleet vs. unit treatment; early shutdown; temporary shutdown; mass-based approach; and some of the market mechanism option.)

   This option proposes the following:
   - Allocate emissions permits to existing and end of life units based on previous year performance. For end of design life units, the emissions permit allocation would not be based on BATEA, but on percentage x baseline.
   - End of design life obligations must be met through actions such as: derating and reducing operation; installation of emissions control equipment (possibly RACT); combustion and efficiency optimization; supplementing fuel with natural gas; and retiring emissions credits.
   - Credits would be provided for units retiring early relative to the CASA framework because of the federal GHG regulations. Prior to end of design life, baseline would be applied, and after end of design life, the limit would be applied.
   - SO2 and NOx credits would be interchangeable. This recognizes the growth in NOx and declining SO2 emissions forecast.
   - This outcome achieves the 6 outcomes and practical considerations, although social outcome was not tested. With respect to environment, the outcomes are the same or similar if you focus on the difference between CASA and federal outcomes.
   - Request for support to establish a subgroup to refine this approach.
   - Time is critical. Two companies already have end of design life units.

Group Discussion:

- The emissions modeled in the presentation are cumulative.
- Members challenged the assertion that this option would achieve similar environmental outcomes. There was specific concern over timing of emissions reductions, and the validity of treating SOx and NOx interchangeably due to potential differences in the pollutant effects of these emissions.
- It was noted that the emissions reductions produced by the federal GHG regulation would depend heavily on the year it was modeled. In 2019 for example, the federal GHG regulation would account for no reductions.
- Members suggested that this may not be in the original spirit of credit generation, as the intent was to provide flexibility in shutdown date, not to allow increased emissions generation at end of life. The association of credit generation with the federal GHG reductions was problematic for some.
- It was also noted that certain members would not have agreed to the CASA framework had it been known that the lives of coal units would be cut short of reasonable time to recover costs.
- A question was raised on how long the system would continue to benefit from credits generated from an "early" shutdown.
- There was disagreement over how long a coal unit could potentially operate in Alberta if the there was no federal GHG regulation would incent coal units to run longer.
- The team decided to defer a discussion regarding the request to establish a subgroup.
- It is important to keep the market rules in mind, and any adjustments that would need to be made in pursuing this option.

4. Early imposed end of life credit:
   This option proposes to allow units with end of life dates truncated by the federal GHG regulations, to generate credits for the lost years of operation. These credits would be based on the BATEA targets for the lost years, and would be usable prior to the imposed end of life.

   Group Discussion:

   - A potential flaw of this option is the assumption that units would not operate past 50 years, under the CASA framework. This is not accurate, as the CASA framework allows units that have applied BATEA to operate for an indeterminate number of years. Therefore the number of operating years foregone under the federal regulation is difficult to know.
   - There was a difference in opinion on what constitutes a reasonable lifespan for a coal unit. Cost-recovery vs. additional value were debated.
   - In 2011, 36% of coal generation in the United States was from units older than 40 years. It was noted that operating life is considered differently in the States because there is a requirement for reductions to emissions to be made during the life of a unit (concept similar to mid-life BLIERs).

5. Renewable energy credit generation:
   The current framework allows for credit generation based on units performing better than their baseline. Also, if renewable energy technologies assist in reducing output from emitting sources, no value is attributed this reduction. This option proposes to allow for credit generation through new renewable energy projects, modeled after the SGER, Technical Guidance for Offset Protocol Developers. Renewable energy can be difficult to finance in Alberta's electricity market and an

additional bankable revenue stream could potentially facilitate the addition of electricity resources that will displace sources of air emissions. Existing units would comply with the framework through an intensity level, and would not be able to create offsets, as they do not produce incremental environmental benefits to what will occur in BAU. Any change must maintain the same (or better) reductions in emissions over the same time period as the current trajectory. No credits would be generated for imports.

Group Discussion:

- The way of generating offsets under SGER for GHGs could be copied to build a similar framework for NOx and SOx.
- It would not have to be confined to the electricity sector.
- The credit would be weighted between the theoretical build margin and the actual operating margin. The current system works on a grid average.
- A question was raised regarding the need to build support for renewable energy, considering that a lot of new renewable energy has come online recently.
- Renewables are credit worthy because they have a material impact on how the market works by impacting NOx and SOx. This is not reflected in credits in the current system.
- A concern was raised that this could create stacking of credits on credits that already exist, which could distort the market. Alternatively, the point was made that in the current system, carbon prices could be seen as distorting the market.
- The value of credits - would it evolve over time, and could they in theory decrease in value over time? This is the case in the current system, which is reviewed every 5 years.
- Only a few companies would need these offsets more than 2 or 3 years for SO2, which is not much incentive to the develop renewables. Most units have enough time to generate their own credits, and are not incented to do this.
- In terms of the “built-margin”, this option assumes that what would have been built in place of the renewables is known, and uses this to determine how much NOx and SOx would have been generated. It also assumes that it is possible to estimate the difference between these emissions and what is produced by renewables. In the case of wind however, this may not be predictable.
- This option would have significant impact on the deregulated market.
- A concern was raised that creating a renewable energy credit doesn't actually equate to an equal reduction in SO2 emissions. Because it's marginal, you aren't actually touching the core challenge of the framework of existing units and base-load emissions.

Following the presentations, a document was provided to the team outlining key considerations for evaluating the options from the perspective of the provincial government. The document informally describes regulatory, environmental, social, and market and supply considerations that the provincial government takes into account when making policy decisions.

3. General Comments on ‘Options’

The team expressed a need to take time to consider the information presented, and asked to have the presentations as well as any relevant background information provided (eg. Assumptions, spreadsheets used for models, etc).

Action 9.1: Champions will provide relevant background information on their respective options to Robyn.

Some members felt that, given the amount of work involved, it may be prudent to expedite the process of exploring options through establishment a sub-group. Other members felt that all discussions of options must involve the entire Project Team.

4. Trigger discussion

Members expressed varying perspectives on the trigger issue. Some indicated that their engagement in the discussion on options would be different depending on the outcome of the trigger discussion. Some indicated that to leave the framework unopened is not an option for them. Others indicated that to reopen the discussion was not an option for them unless the trigger issue was first addressed. It was also noted that the trigger issue could be further complicated by the fact that the triggers are not sufficiently specific/detailed.

It was generally felt that it was unlikely that the team would reach consensus on the trigger issue and the team requested the secretariat's advice on how to proceed.

Action 9.2: Robyn will prepare a framework for the next meeting for a structured triggers discussion.

5. Task Group Updates

Updates were provided from the following Task Groups:

<u>Human and Ecological Assessment Task Group:</u>

HEAT met in person on December 2nd, and held a conference call on January 20th. The next meeting is scheduled for February 6th.

- The task group is proceeding with the literature reviews as planned
    - The health literature review is being done in-kind by Alberta Health and is already underway.
    - The RFP for the ecological affects lit review will be finalized at the Feb 6 task group meeting.
- Concurrently with the literature reviews, the task group will assess the applicability of the screening process undertaken in 2003 that was used to develop the priority and List 2 substances. The outcome of this assessment will be discussed with the EFR project team before determining any further next steps.
- The task group feels that the additional task of assessing the applicability of the 2003 screening process is still within their assigned budget of $40,000.
- The task group is still planning to present a final report to the EFR project team by June 2014.

Control Technologies and Reduction Strategies Task Group:
CTRS last met on January 9th, and will reconvene in the latter half of February.

Plan for the Control Technologies Review and hiring a consultant:

- The group agreed to split the contract into two parts – Part A for gas-fired generation and Part B for coal-fired generation.
- The group will be finalizing the RFP for gas-fired generation at their next meeting.
- The group feels that we can't review control technologies for clean coal, because it isn't economically achievable (the EA part of BATEA).
- However, the team would still need to determine the rate at which credits are generated for existing units. The group discussed updating the technology review for supercritical coal.
- The group needs guidance from the team on how to proceed with coal-fired generation. This was not addressed during this EFR meeting.

Other task group work:

- The group is gathering information as input to their discussions on the definition of natural gas.
- The group is gathering more information as input to their discussions on whether to include diesel and reciprocating engines.
- Industry has indicated that they will have a continuous improvement report repaired by June 2014. The task group has provided input in terms of potential improvements and changes from the 2008 report.

Base Case Working Group:
BCWG met via video-conference with consultant on January 13:

- The consultant presented phase 1 of their work, which basically compared the assumptions used to develop the forecasts in 2003 and 2008, as well as the assumptions from their most recent Quarterly Forecast (Q4-2013), that will be used to develop the 2013 forecast.
- There are some outstanding pieces that will be completed by the consultant.
- The next meeting is on January 22 to finalize the RFP for Phase 2, which will be to develop the 2013 forecast and scenarios.

6. Next Steps

After reflection on the options discussed, including relevant background information to be provided by the champions of each option, the next meeting will focus primarily on next steps. CASA will provide framing for the trigger discussion, and the team will determine whether there is value in further pursuing the options.

The next meeting will include the following agenda items:

1. Trigger discussion in the context of today's conversation and the broader objective of reviewing the framework.
2. Detailed discussion of 6 outcomes. *Pending outcome of item #1.*
3. Discussion of options presented today. *Pending outcome of item #1.*
4. Progress on other elements of 5-year review.
5. Respond to request for guidance from CTRS.

Action Item 9.3: Robyn will poll for dates for meeting #10 ASAP.