

Pages 1 through 4 redacted for the following reasons:

Not Responsive
s.13, s.17

MINISTRY OF ENERGY AND MINES

BRIEFING NOTE FOR INFORMATION

- I PREPARED FOR:** Honourable Rich Coleman, Minister of Energy and Mines
- II ISSUE:** Meeting with Ms. Dawn Farrell, Chief Executive Officer (CEO), of TransAlta
Regarding Electricity Supply for Liquefied Natural Gas (LNG) Projects

III BACKGROUND:

TransAlta is an Alberta-based electric utility with \$3 billion in annual revenue and \$9 billion in assets. It has generation projects in Australia, Canada and the United States. TransAlta's generation portfolio includes approximately 10,000 megawatts (MW) of generating capacity from fossil fuel based generation (coal or natural gas), small hydro, wind and geothermal. TransAlta activity consists of 89 MW of small hydro projects operating in BC and it has other projects under development. Ms. Dawn Farrell has been with TransAlta since 2009, and became CEO early in 2012. She was formerly an Executive Vice President at BC Hydro from 2003 to 2009 in charge of generation.

IV DISCUSSION:

TransAlta is interested in how BC plans to meet the projected large incremental demand growth in the northwest to serve new LNG facilities, mines and related infrastructure. TransAlta will likely provide several suggestions:

s.13, s.17, s.21

s.13, s.17, s.21 There are three other major LNG proponents investigating the potential to site additional projects in the Kitimat and Prince Rupert area. This could lead to an additional 1,500 MW to 2,000 MW of new demand. The provincial government's LNG Strategy commits the Province and BC Hydro to continue to work the industry, First Nations and with clean-energy producers to develop clean, reliable, sustainable sources of supply for LNG Canada and subsequent projects.

s.13, s.17, s.21

s.13, s.17, s.21

Any move to relax BC's legislated carbon targets

Page 1 of 2

makes natural gas relatively more attractive than clean energy supply due to projected low cost natural gas supply for the next 15-20 years and the relatively low carbon tax in BC. Government recently indicated it may need to re-interpret its greenhouse gas reduction targets in a global context should more gas been required to supply power for LNG projects.

BC Hydro's draft Integrated Resource Plan will include some incremental gas-fired generation to meet LNG demand within the legislated 93 percent clean generation requirement. s.13, s.17, s.21

s.13, s.17, s.21

BC Hydro's generation procurement processes include a Standing Offer Program, where projects of up to 15MW may negotiate an electricity purchase agreement with BC Hydro at a fixed rate. s.13, s.17, s.21

s.13, s.17, s.21

V KEY MESSAGES:

- We are encouraged by the interest major LNG proponents are showing in BC. This will drive economic growth for years to come.
- The Provincial government, BC Hydro and proponents are working collaboratively to find power solutions that balance economic and climate priorities while mitigating rate impacts.
- We are willing to look at all options that will enable us to encourage economic development while maintaining our leadership position on climate change.
- BC values TransAlta's clean energy investments in the province.

PREPARED BY:
Scott Barillaro, Director
250-953-3747

REVIEWED BY:
Les MacLaren, ADM, EAED ✓
Steve Carr, DM ✓

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Friday, June 22, 2012 5:26 PM
To: Barillaro, Scott W MEM:EX; Cutler, Scott MEM:EX; Johnstone, Heather MEM:EX; Wieringa, Paul MEM:EX; Griffin, Derek MEM:EX
Subject: Sufficiently cheap mixes

s.13. s.21. 17



LNG and gas gen
scratch book.j...

Date: July 19, 2012
Cliff No.:

**MINISTRY OF ENERGY AND MINES
BRIEFING NOTE FOR INFORMATION**

I PREPARED FOR: Honourable Rich Coleman, Minister of Energy and Mines

II ISSUE: Energy Efficiency Options for Liquefied Natural Gas (LNG)

III BACKGROUND:

On June 21, 2012 the Premier announced that natural gas would be used to supply new LNG facilities in BC using, "... power generation that meets world-leading environmental standards on emissions".

Not Responsive

Not Responsive A key goal is to achieve a price of electricity supplied by BC Hydro (for electric motor based production of LNG) that is less than or equal to the price of generating LNG from natural gas directly (direct drive).

Energy efficiency and management standards can be applied to natural gas power plants to maximize the power production per unit of natural gas input. Furthermore, they will operate more efficiently if waste heat is used to supply other industrial loads such as co-located sawmills, pulp and paper through cogeneration of heat and power. Standards can also be applied to reduce the demand for electricity from LNG facilities. More broadly, energy efficiency measures outside of BC Hydro's influence may enable greenhouse gas emission reductions from at a lower cost than clean and renewable power supplies.

IV DISCUSSION:

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Not Responsive

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s.13, s.17

Not Responsive

s.13, s.17

V CONCLUSION:

s.13, s.17

s.13, s.17

Not

s.13, s.17

Not Responsive

s.13, s.17

DRAFTED BY:
Andrew Pape-Salmon
250-952-0819

APPROVED BY:
Daniel Green, Exec. Dir.
Les MacLaren, ADM
Steve Carr, DM__

Page 3 of 3

Briefing Note

- I. **Prepared for:** Honourable Rich Coleman, Minister of Energy and Mines (MEM)
- II. **Issue:** Current and Emerging Issues Related to BC Hydro's electricity supply
- III. **Overview:**

s.13. s.17

From 2007 through 2010, electricity policy favoured clean or renewable resources. The 2007 Energy Plan included 18 policy actions for the electricity sector, aimed primarily at keeping electricity sector emissions low, and pursuing economic development through the procurement of clean or renewable generation. While it allowed for fossil-fuel generation to contribute 10% of electricity generated in British Columbia, it called for carbon capture and storage or offset purchases to cover the resulting emissions. The 2007 Energy Plan also called for British Columbia to become self-sufficient in electricity. Shortly after the release of the 2007 Energy Plan, the Climate Action Plan laid the groundwork for a broader low-carbon policy focus, including targets to reduce carbon dioxide emissions in the province by one-third by 2020.

In 2010, the *Clean Energy Act (CEA)* implemented many of the policy actions from the 2007 Energy Plan, laying out a series of energy objectives for the province. As in the energy plan, a key aim of the *CEA* energy objectives was to develop renewable energy in British Columbia to keep GHG emissions low and enable economic development. In fact, the *CEA* was more ambitious than the 2007 Energy Plan in some respects, including an objective that 93%, rather than 90%, of British Columbia's electricity should come from renewable resources. The *CEA* also included objectives to reduce overall greenhouse gas emissions, including through fuel switching in BC and clean exports.

Another feature of the 2007 Energy Plan and the *CEA* was that both called for low or competitive rates for BC Hydro ratepayers. By late 2010, it became apparent that a combination of higher finance, amortization, and operating costs were going to lead to substantial rate increases. On March 1, 2011, BC Hydro applied to the British Columbia Utilities Commission (BCUC) for an approximately 30% rate increase over three years. Over the course of the following year, the Provincial Government and BC Hydro halved this increase. At the Provincial Government's direction, BC Hydro cut its costs and the Provincial government modified self-sufficiency requirements under the *CEA* to be based on average water conditions rather than critical water conditions and waived the insurance requirement. The provincial government continues to examine industrial ratepayer issues.

Not Responsive

IV. Discussion:

s.13, s.17, s.21

Page 13 redacted for the following reason:

s.13, s.17, s.21

s.13, s.17, s.21

VI. Recommendation:

s.13, s.17

Prepared by:

Jack Buchanan
June 11th, 2012

Pages 15 through 191 redacted for the following reasons:

Not Responsive

Not responsive

Not-responsive

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Tuesday, June 26, 2012 1:59 PM
To: Champion, Jennifer MEM:EX
Subject: FW: Offsets slides for tomorrow's deck

You and Scott were discussing this s.22
s.17, s.13, s.21

so here's some additional context around the offset opportunity.

From: Buchanan, Jack MEM:EX
Sent: Tuesday, June 26, 2012 1:53 PM
To: Lesiuk, Tim ENV:EX; Wieringa, Paul MEM:EX; Mack, James ENV:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX
Subject: RE: Offsets slides for tomorrow's deck

s.13, s.17, s.21

From: Lesiuk, Tim ENV:EX
Sent: Tuesday, June 26, 2012 1:43 PM
To: Wieringa, Paul MEM:EX; Mack, James ENV:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX
Subject: RE: Offsets slides for tomorrow's deck

I'll send you the formula. It needs to be resource specific as different generating resources have different T/MWh.

The formula is:

$[\text{TCO}_2\text{e/MWh (generating resource)}] * [\$/\text{Tonne CO}_2\text{e} (\$25 \text{ or } \$30 \text{ or } \$55)] = \$/\text{MWh}$

I would commonly use these emissions factors:

- Combined Cycle Gas Turbine: 360 T CO₂e/GWh (could be as low as 320)
- Single Cycle Gas Turbine: 450 to 500 T CO₂e/GWh (could be higher if peaking)
- Burrard Thermal: 700 T CO₂e/GWh
- Coal (Supercritical): 900 T CO₂e/GWh
- Coal (Conventional Alberta): 1500 to 2000 T CO₂e/GWh

You likely have specific numbers from the LNG proponents for their proposed self supply and from BCH for centralized generation.

s.13, s.17

Tim

From: Wieringa, Paul MEM:EX
Sent: Tuesday, June 26, 2012 1:29 PM
To: Mack, James ENV:EX; MacLaren, Les MEM:EX; Lesiuk, Tim ENV:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX
Subject: RE: Offsets slides for tomorrow's deck

Tim:
Could you provide the conversion to \$MWh of \$30/tonne and \$25/tonne for CO2?
Many thanks

Paul Wieringa

From: Mack, James ENV:EX
Sent: Tuesday, June 26, 2012 1:12 PM
To: MacLaren, Les MEM:EX; Lesiuk, Tim ENV:EX
Cc: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX
Subject: Re: Offsets slides for tomorrow's deck

They were specific on deputy call on this.

s.13. s.17

James Mack
Head - Climate Action Secretariat
Ministry of Environment, Government of British Columbia
James.mack@gov.bc.ca
Phone: 250-356-6243

From: MacLaren, Les MEM:EX
Sent: Tuesday, June 26, 2012 01:05 PM
To: Lesiuk, Tim ENV:EX
Cc: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
Subject: Re: Offsets slides for tomorrow's deck

Thanks Tim

s.13. s.17

Les MacLaren

Buchanan, Jack MEM:EX

From: Barillaro, Scott W MEM:EX
Sent: Thursday, June 28, 2012 2:40 PM
To: Buchanan, Jack MEM:EX; Dias, Oswald MEM:EX; Johnstone, Heather MEM:EX; Cutler, Scott MEM:EX
Subject: FW: Implications of LNG NG Generation on DSM

Hi all. I got this from Andrew earlier. This should be worked in to our materials, likely on the clean two-pager

W. Scott Barillaro, B.A, B.Mus, MPA

Director, Transmission and Industrial Electricity Policy
Electricity Policy
Ministry of Energy and Mines
4th Floor, 1810 Blanshard Street
Victoria, BC
V8T 4J1
(o) 250-952-0267

s.17

From: Pape-Salmon, Andrew MEM:EX
Sent: Thursday, June 28, 2012 12:48 PM
To: 'Hobson, Stephen'; 'Malfor, Jillian'
Cc: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Gosman, Nat MEM:EX; Champion, Jennifer MEM:EX; Waters, Cory MEM:EX; Yan, Jean MEM:EX
Subject: Implications of LNG NG Generation on DSM

Steve and Jillian, please comment on the factual accuracy of this overview below.

s.13, s.17

Thanks,

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

Assistant Deputy Minister
BC Ministry of Energy and Mines
250-952-0204

On 2012-06-26, at 1:02 PM, "Lesiuk, Tim ENV:EX" <Tim.Lesiuk@gov.bc.ca> wrote:

Hi Paul,

Here are the slides from PCT with the volume and price information. These are confidential and commercially sensitive so please keep the finer details within a close circle.

If you need help with the conversion to \$/MWh let me know. I have some experience in that area.

Will I be able to get the next version of the deck before it goes to Deputies? It makes it easier for us to brief Cairine.

Thanks,
Tim

From: Wieringa, Paul MEM:EX
Sent: Tuesday, June 26, 2012 12:47 PM
To: Lesiuk, Tim ENV:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
Subject: RE: Offsets slides for tomorrow's deck

Do you have the costing information slide?

Paul Wieringa

From: Lesiuk, Tim ENV:EX
Sent: Monday, June 25, 2012 11:00 PM
To: Wieringa, Paul MEM:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
Subject: Offsets slides for tomorrow's deck
Importance: High

Sorry these are coming in late.

Two slides on policy context and supply

Several background slides with detailed information in case you want to draw out other points.

I will have costing information tomorrow morning.

Tim

<PCT_LNG_Overview_2_may_2012.pptx>

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Tuesday, June 26, 2012 2:04 PM
To: Lesiuk, Tim ENV:EX; Wieringa, Paul MEM:EX; Mack, James ENV:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX
Subject: RE: Offsets slides for tomorrow's deck

s.17, s.13, s.21

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You likely have specific numbers from the LNG proponents for their proposed self supply and from BCH for centralized generation.

s.17, s.13

Tim

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Cc: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX
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s.13. s.17

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Ministry of Environment, Government of British Columbia
James.mack@gov.bc.ca
Phone: 250-356-6243

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Cc: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
Subject: Re: Offsets slides for tomorrow's deck

Thanks Tim

s.13. s.17

Les MacLaren
Assistant Deputy Minister
BC Ministry of Energy and Mines
250-952-0204

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Buchanan, Jack MEM:EX

From: Barillaro, Scott W MEM:EX
Sent: Monday, June 25, 2012 9:42 AM
To: Joyce, Tonja GCPE:EX
Cc: Wieringa, Paul MEM:EX; Beaupre, Darren GCPE:EX; Buchanan, Jack MEM:EX
Subject: Re: CBCV: Horgan: Natural gas isn't magically clean

The first question is, "Which pipeline". I went through the announcement and scrums. The only pipeline I saw mentioned was in MRC's scrum where he brought up the NETL and the merits of gas fired electricity in the horn river basin. Not Responsive

Not Responsive

s.13. s.17

WSB

On 2012-06-25, at 8:53 AM, "Buchanan, Jack MEM:EX" <Jack.Buchanan@gov.bc.ca> wrote:

I don't. Scott or Paul may.

From: Joyce, Tonja GCPE:EX
Sent: Monday, June 25, 2012 8:37 AM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX; Buchanan, Jack MEM:EX
Cc: Beaupre, Darren GCPE:EX
Subject: FW: CBCV: Horgan: Natural gas isn't magically clean
Importance: High

Do we have any numbers on the pipeline vs. Powerline?

Thanks

From: tno@gov.bc.ca [<mailto:tno@gov.bc.ca>]
Sent: Monday, June 25, 2012 7:58 AM
Subject: CBCV: Horgan: Natural gas isn't magically clean

CBCV (CBC Victoria)
CBC On the Island
25-Jun-2012 07:12

Copyright

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Thanks,
Tim

From: Wieringa, Paul MEM:EX
Sent: Tuesday, June 26, 2012 12:47 PM
To: Lesiuk, Tim ENV:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
Subject: RE: Offsets slides for tomorrow's deck

Do you have the costing information slide?

Paul Wieringa

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Sent: Monday, June 25, 2012 11:00 PM
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Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
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I will have costing information tomorrow morning.

Tim

<PCT_LNG_Overview_2_may_2012.pptx>

Buchanan, Jack MEM:EX

From: Bell, Warren [Warren.Bell@bchydro.com]
Sent: Sunday, June 24, 2012 11:07 PM
To: MacLaren, Les MEM:EX; Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

s.13, s.17

Warren

From: MacLaren, Les MEM:EX [mailto:Les.MacLaren@gov.bc.ca]
Sent: 2012, June 24 5:39 PM
To: Wieringa, Paul MEM:EX; Bell, Warren; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Many thanks for all this work in my absence. s.13, s.17

s.13, s.17 Here is my take from being part of the discussion.

s.17, s.13

TNO...

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Hope this helps. Will be monitoring off and on from Portland tomorrow. Paul, please try to get an early read from Steve on this at the ADM check-in tomorrow before we put a huge amount more work into the table.

Les

From: Wieringa, Paul MEM:EX
Sent: Sun, June 24, 2012 1:17 PM
To: Bell, Warren; Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Some comments in the document.

Not Responsive

From: Bell, Warren [Warren.Bell@bchydro.com]
Sent: June 23, 2012 5:40 PM

To: Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Thanks for compiling this Scott, and to the folks at MEM for the work identifying issues and options.

I've included a few comments in the attached. This is a good start, but in general I think we need to stay focussed on the objective. Not Responsive

Not Responsive

Cheers
Warren

-----Original Message-----

From: Barillaro, Scott W MEM:EX [mailto:Scott.Barillaro@gov.bc.ca]

Sent: 2012, June 23 2:13 PM

To: MacLaren, Les MEM:EX

Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX; Bell, Warren

Subject: Draft Policy/Regulatory Outline for Natural Gas Generation

Hi Les.

I believe you and Paul talked about the meeting we had with CAS and BCH yesterday. Electricity Branch staff spent the afternoon going through meeting notes and trying to identify the various policy angles we will need to look at in order to develop a regulation. Not Responsive

Not Responsive

s.13, s.17

The draft document captures everything we could put together from yesterday. It is only a starting point and I expect folks will have some major additions including policy questions the electricity team may have missed or didn't know. My suggestion would be to use this, or a variation of it, as a master list of questions, issue and ideas that we need to work on. We can then identify different pieces of work that focuses on specific areas in order to move forward. s.13

s.13

Everyone: Apologies for the delay on this. It took me longer to integrate everything than I thought.

It occurred to me that we need to manage the comment process somehow otherwise we'll have multiple

versions of the document floating around with a gazillion colours of tracked changes. Accordingly, please use the note function in word to provide comments. Just highlight the area and insert your comment in the text bubble. I will then copy and paste everyone's comments in to the appropriate sections the next version of the document and email it out. As always, I am not wedded to what is currently in the document. Input would be most welcome so go wild. It will lead to a better product in the end.

I am going to sign off for now. I will have a look at my email later on tonight with fresh eyes. I have carved out time tomorrow to compile comments. I can also make myself available for calls during the day before 4pm or after 8pm.^{s.22}

Thanks.

WSB

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-BCHydroDisclaimerID5.2.8.1541

Buchanan, Jack MEM:EX

From: Lesiuk, Tim ENV:EX
Sent: Sunday, June 24, 2012 9:38 PM
To: MacLaren, Les MEM:EX; Wieringa, Paul MEM:EX; Bell, Warren; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation
Attachments: 120623
_Outline_for_the_Clean_Energy_Supply_Portfolio_for_LNG_Development_wb[1].pw[1].tl[1].docx

My direct comments are included in the attached file with Warren and Paul's.

I have some thoughts on Les's slightly redefined and refocussed approach:

s.13, s.17

Advantages:

Not Responsive

Recommendations on Scott's approach:

s.13, s.17

As usual, not much from me,
Tim

From: MacLaren, Les MEM:EX
Sent: Sunday, June 24, 2012 5:38 PM

From: Bell, Warren [Warren.Bell@bchydro.com]

Sent: June 23, 2012 5:40 PM

To: Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX

Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX

Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Thanks for compiling this Scott, and to the folks at MEM for the work identifying issues and options.

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Not Responsive

Cheers

Warren

-----Original Message-----

From: Barillaro, Scott W MEM:EX [mailto:Scott.Barillaro@gov.bc.ca]

Sent: 2012, June 23 2:13 PM

To: MacLaren, Les MEM:EX

Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX; Bell, Warren

Subject: Draft Policy/Regulatory Outline for Natural Gas Generation

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Not Responsive

To: Wieringa, Paul MEM:EX; Bell, Warren; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Many thanks for all this work in my absence. s.13. 17

s.13. 17 Here is my take from being part of the discussion.

s.13. s.17

Hope this helps. Will be monitoring off and on from Portland tomorrow. Paul, please try to get an early read from Steve on this at the ADM check-in tomorrow before we put a huge amount more work into the table.

Les

From: Wieringa, Paul MEM:EX
Sent: Sun, June 24, 2012 1:17 PM
To: Bell, Warren; Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Some comments in the document.

Not Responsive

Not Responsive

The draft document captures everything we could put together from yesterday. It is only a starting point and I expect folks will have some major additions including policy questions the electricity team may have missed or didn't know. My suggestion would be to use this, or a variation of it, as a master list of questions, issue and ideas that we need to work on. We can then identify different pieces of work that focuses on specific areas in order to move forward. ^{s.13}

s.13

Everyone: Apologies for the delay on this. It took me longer to integrate everything than I thought.

It occurred to me that we need to manage the comment process somehow otherwise we'll have multiple versions of the document floating around with a gazillion colours of tracked changes. Accordingly, please use the note function in word to provide comments. Just highlight the area and insert your comment in the text bubble. I will then copy and paste everyone's comments in to the appropriate sections the next version of the document and email it out. As always, I am not wedded to what is currently in the document. Input would be most welcome so go wild. It will lead to a better product in the end.

I am going to sign off for now. I will have a look at my email later on tonight with fresh eyes. I have carved out time tomorrow to compile comments. I can also make myself available for calls during the day before 4pm or after 8pm. ^{s.22}

Thanks.

WSB

This email and its attachments is intended solely for the personal use of the individual or entity named above. Any use of this communication by an unintended recipient is strictly prohibited. If you have received this email in error, any publication, use, reproduction, disclosure or dissemination of its contents is strictly prohibited. Please immediately delete this message and its attachments from your computer and servers. We would also appreciate if you would contact us by a collect call or return email to notify us of this error. Thank you for your cooperation.

-BCHydroDisclaimerID5.2.8.1541

Buchanan, Jack MEM:EX

From: Mack, James ENV:EX
Sent: Sunday, June 24, 2012 7:01 PM
To: MacLaren, Les MEM:EX; Wieringa, Paul MEM:EX; 'Warren.Bell@bchydro.com'; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; 'Rohan.Soulsby@bchydro.com'; Lesiuk, Tim ENV:EX
Subject: Re: Draft Policy/Regulatory Outline for Natural Gas Generation

Not Responsive

James Mack
Head - Climate Action Secretariat
Ministry of Environment, Government of British Columbia
James.mack@gov.bc.ca
Phone: 250-356-6243

From: MacLaren, Les MEM:EX
Sent: Sunday, June 24, 2012 05:38 PM
To: Wieringa, Paul MEM:EX; Bell, Warren <Warren.Bell@bchydro.com>; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan <Rohan.Soulsby@bchydro.com>; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Many thanks for all this work in my absence. s.13, s.17

s.13, s.17 Here is my take from being part of the discussion.

s.13, s.17

Hope this helps. Will be monitoring off and on from Portland tomorrow. Paul, please try to get an early read from Steve on this at the ADM check-in tomorrow before we put a huge amount more work into the table.

Les

From: Wieringa, Paul MEM:EX
Sent: Sun, June 24, 2012 1:17 PM
To: Bell, Warren; Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Some comments in the document.

Not Responsive

From: Bell, Warren [Warren.Bell@bchydro.com]
Sent: June 23, 2012 5:40 PM
To: Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Thanks for compiling this Scott, and to the folks at MEM for the work identifying issues and options.

I've included a few comments in the attached. This is a good start, but in general I think we need to stay focussed on the objective – Not Responsive

Not Responsive

Not Responsive

Cheers
Warren

-----Original Message-----

From: Barillaro, Scott W MEM:EX [mailto:Scott.Barillaro@gov.bc.ca]

Sent: 2012, June 23 2:13 PM

To: MacLaren, Les MEM:EX

Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX; Bell, Warren

Subject: Draft Policy/Regulatory Outline for Natural Gas Generation

Hi Les.

I believe you and Paul talked about the meeting we had with CAS and BCH yesterday. Electricity Branch staff spent the afternoon going through meeting notes and trying to identify the various policy angles we will need to look at in order to develop a regulation.

Not Responsive

Not Responsive

s.13. s.17

The draft document captures everything we could put together from yesterday. It is only a starting point and I expect folks will have some major additions including policy questions the electricity team may have missed or didn't know. My suggestion would be to use this, or a variation of it, as a master list of questions, issue and ideas that we need to work on. We can then identify different pieces of work that focuses on specific areas in order to move forward.

s.13

s.13

Everyone: Apologies for the delay on this. It took me longer to integrate everything than I thought.

It occurred to me that we need to manage the comment process somehow otherwise we'll have multiple versions of the document floating around with a gazillion colours of tracked changes. Accordingly, please use the note function in word to provide comments. Just highlight the area and insert your comment in the text bubble. I will then copy and paste everyone's comments in to the appropriate sections the next version of the document and email it out. As always, I am not wedded to what is currently in the document. Input would be most welcome so go wild. It will lead to a better product in the end.

I am going to sign off for now. I will have a look at my email later on tonight with fresh eyes. I have carved out time tomorrow to compile comments. I can also make myself available for calls during the day before 4pm or after 8pm

s.22

Thanks.

WSB

This email and its attachments is intended solely for the personal use of the individual or entity named above. Any use of this communication by an unintended recipient is strictly prohibited. If you have received this email in error, any publication, use, reproduction, disclosure or dissemination of its contents is strictly prohibited. Please immediately delete this message and its attachments from your computer and servers. We would also appreciate if you would contact us by a collect call or return email to notify us of this error. Thank you for your cooperation.

-BCHydroDisclaimerID5.2.8.1541

Buchanan, Jack MEM:EX

From: Champion, Jennifer MEM:EX
Sent: Tuesday, June 26, 2012 5:33 PM
To: Wieringa, Paul MEM:EX; MacLaren, Les MEM:EX; Mack, James ENV:EX; Barillaro, Scott W MEM:EX; Bell, Warren
Cc: Lesiuk, Tim ENV:EX; Buchanan, Jack MEM:EX
Subject: RE: 120626 Natural Gas Generation for LNG-DRAFT-V4.pptx

Additional comments:

s.13. s.17

Jennifer.

Jennifer Champion

A/Chief Regulatory Advisor
Electricity and Alternative Energy Division
Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
Email: Jennifer.Champion@gov.bc.ca

From: Wieringa, Paul MEM:EX
Sent: Tuesday, June 26, 2012 4:27 PM
To: MacLaren, Les MEM:EX; Mack, James ENV:EX; Barillaro, Scott W MEM:EX; Bell, Warren
Cc: Lesiuk, Tim ENV:EX; Champion, Jennifer MEM:EX; Buchanan, Jack MEM:EX
Subject: 120626 Natural Gas Generation for LNG-DRAFT-V4.pptx

Steve provided us with some comments. Here is the next version. We are trying to finalize for this evening.

Not Respons ve

Buchanan, Jack MEM:EX

From: Champion, Jennifer MEM:EX
Sent: Tuesday, June 26, 2012 4:59 PM
To: Wieringa, Paul MEM:EX; MacLaren, Les MEM:EX; Mack, James ENV:EX; Barillaro, Scott W MEM:EX; 'Bell, Warren'
Cc: Lesiuk, Tim ENV:EX; Buchanan, Jack MEM:EX; 'Godsoe, Craig'
Subject: RE: 120626 Natural Gas Generation for LNG-DRAFT-V4.pptx

Paul,

I have discussed with Craig Godsoe the option in your last sentence below.

s.13, s.17

We need more time.

Jennifer.

Jennifer Champion

A/Chief Regulatory Advisor
Electricity and Alternative Energy Division
Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
Email: jennifer.champion@gov.bc.ca

From: Wieringa, Paul MEM:EX
Sent: Tuesday, June 26, 2012 4:27 PM
To: MacLaren, Les MEM:EX; Mack, James ENV:EX; Barillaro, Scott W MEM:EX; Bell, Warren
Cc: Lesiuk, Tim ENV:EX; Champion, Jennifer MEM:EX; Buchanan, Jack MEM:EX
Subject: 120626 Natural Gas Generation for LNG-DRAFT-V4.pptx

Steve provided us with some comments. Here is the next version. We are trying to finalize for this evening.

Not Responsive

Buchanan, Jack MEM:EX

From: Champion, Jennifer MEM:EX
Sent: Friday, June 29, 2012 12:26 PM
To: Dias, Oswald MEM:EX
Cc: Buchanan, Jack MEM:EX; Barillaro, Scott W MEM:EX; Bonnyman, Sue MEM:EX; Johnstone, Heather MEM:EX; Wieringa, Paul MEM:EX; Cutler, Scott MEM:EX
Subject: Re: Short draft notes on implications of policy options.

I think Os is right. s.22 so I can't check right now.

Thx Os.

Jennifer

Sent from my iPhone

On 2012-06-29, at 9:32 AM, "Dias, Oswald MEM:EX" <Oswald.Dias@gov.bc.ca> wrote:

s.13. s.17

>
> -----Original Message-----
> From: Champion, Jennifer MEM:EX
> Sent: Thursday, June 28, 2012 7:22 PM
> To: Buchanan, Jack MEM:EX; Barillaro, Scott W MEM:EX; Bonnyman, Sue MEM:EX; Johnstone, Heather MEM:EX; Wieringa, Paul MEM:EX; Dias, Oswald MEM:EX; Cutler, Scott MEM:EX
> Subject: RE: Short draft notes on implications of policy options.
>
> Good evening all,
>
> I've added a few suggestions for your consideration.
>
> I wish you all a great long weekend!
>
> Jennifer.
>
> -----
> From: Buchanan, Jack MEM:EX
> Sent: June 28, 2012 4:36 PM
> To: Champion, Jennifer MEM:EX
> Subject: FW: Short draft notes on implications of policy options.
>
>
> -----
> From: Buchanan, Jack MEM:EX
> Sent: June 28, 2012 3:20 PM
> To: 'Reimann, Randy'; 'Bell, Warren'; 'Godsoe, Craig'; Lesiuk, Tim ENV:EX; Mack, James ENV:EX; Johnstone, Heather MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX
> Subject: Short draft notes on implications of policy options.
>
> Here are the (very preliminary) rough drafts on LNG policy options in advance of this afternoon's call. Apologies for the delay.
>
>

Buchanan, Jack MEM:EX

From: Barillaro, Scott W MEM:EX
Sent: Tuesday, June 19, 2012 3:51 PM
To: Paradine, Dennis ENV:EX
Cc: Buchanan, Jack MEM:EX
Subject: RE: Nat Gas Electric vs. Gas Power

s.13, s.17

WSB

W. Scott Barillaro, B.A, B.Mus, MPA
Director, Transmission and Industrial Electricity Policy Electricity Policy Ministry of
Energy and Mines 4th Floor, 1810 Blanshard Street Victoria, BC V8T 4J1
(o) 250-952-0267

s.17

-----Original Message-----

From: Paradine, Dennis ENV:EX
Sent: Tuesday, June 19, 2012 3:49 PM
To: Barillaro, Scott W MEM:EX
Cc: Buchanan, Jack MEM:EX
Subject: RE: Nat Gas Electric vs. Gas Power

Scott and Jack - quick question - the grid electricity requirement is for liquefaction, correct? I thought that the LNG proponents were not going to be generating their own electricity - has this changed?

Thanks,
Dennis

-----Original Message-----

From: Barillaro, Scott W MEM:EX
Sent: Tuesday, June 19, 2012 3:41 PM
To: Buchanan, Jack MEM:EX; Paradine, Dennis ENV:EX; Mack, James ENV:EX; Lesiuk, Tim ENV:EX
Cc: White, Thomas ENV:EX
Subject: RE: Nat Gas Electric vs. Gas Power

Just a small anecdote to add to Jack's assessment. s.13, s.17

s.13, s.17

WSB

W. Scott Barillaro, B.A, B.Mus, MPA
Director, Transmission and Industrial Electricity Policy Electricity Policy Ministry of
Energy and Mines 4th Floor, 1810 Blanshard Street Victoria, BC V8T 4J1
(o) 250-952-0267

s.17

-----Original Message-----

From: Buchanan, Jack MEM:EX
Sent: Tuesday, June 19, 2012 3:30 PM
To: Paradine, Dennis ENV:EX; Mack, James ENV:EX; Lesiuk, Tim ENV:EX
Cc: White, Thomas ENV:EX; Barillaro, Scott W MEM:EX
Subject: RE: Nat Gas Electric vs. Gas Power

s.13, s.17, s.21

-----Original Message-----

From: Paradine, Dennis ENV:EX
Sent: Tuesday, June 19, 2012 3:05 PM
To: Mack, James ENV:EX; Lesiuk, Tim ENV:EX
Cc: White, Thomas ENV:EX; Buchanan, Jack MEM:EX; Barillaro, Scott W MEM:EX
Subject: RE: Nat Gas Electric vs. Gas Power

Not sure that this differs from our information.

s.13, s.17

Jack, Scott - your thoughts?

Dennis

-----Original Message-----

From: Mack, James ENV:EX
Sent: Tuesday, June 19, 2012 2:14 PM

To: Lesiuk, Tim ENV:EX
Cc: Paradine, Dennis ENV:EX; White, Thomas ENV:EX
Subject: Fw: Nat Gas Electric vs. Gas Power

s.13

Not sure what to make of that
James Mack
Head - Climate Action Secretariat
Ministry of Environment, Government of British Columbia James.mack@gov.bc.ca
Phone: 250-356-6243

----- Original Message -----

From: Ryan Charles Schmidt [mailto:RyanC_Schmidt@transalta.com]
Sent: Tuesday, June 19, 2012 01:58 PM
To: Mack, James ENV:EX
Cc: Dean Luciuk <Dean_Luciuk@transalta.com>
Subject: Nat Gas Electric vs. Gas Power

Hi James,

Thanks again for your time today. Attached for your consideration is a third-party study of the emissions benefits of nat gas fired electric drives vs. direct gas drives for LNG.

Feel free to call if you would like to chat.

Sincerely,
Ryan

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Wednesday, June 13, 2012 12:25 PM
To: Wieringa, Paul MEM:EX; Griffin, Derek MEM:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: Additional Input to Table
Attachments: Increasing Gas Generation - Options June 7 2012 Combined jb sc.docx

Scott Cutler and I worked through the table more. Cost impacts are coming along, but need a lot of QA.

We haven't really dealt with net zero in the table. We'll have to get that cleared up as part of this process.

s.13, s.17

I've merged a few different emails into the chain below so that all relevant comment is captured in this message.

s.13, s.17

WSB

On 2012-06-13, at 11:04 AM, "Buchanan, Jack MEM:EX" <Jack.Buchanan@gov.bc.ca> wrote:

s.13, s.17

From: Wieringa, Paul MEM:EX
Sent: Wednesday, June 13, 2012 12:04 PM
To: Griffin, Derek MEM:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Re: Additional Input to Table

I can only see part of this email on my bb. Some quick comments.

s.13. s.17

From: Griffin, Derek MEM:EX
Sent: Wednesday, June 13, 2012 11:05 AM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: Additional Input to Table

Thanks Scott.

Paul and others – I have a meeting with Les early this afternoon to discuss workload in general, and so my thoughts are to forward Scott's comments to Les prior to that meeting. But before I do that, please let me know if you have any additional thoughts on the table or Scott's comments.

Derek

From: Barillaro, Scott W MEM:EX
Sent: Wednesday, June 13, 2012 10:12 AM
To: Griffin, Derek MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Additional Input to Table

Hi Derek/Paul. My apologies for the late reply. I got my wires crossed with what we were supposed to do next. This is likely too much information for the table. I suggest you give it to Les verbally rather than burdening Jennifer with trying to cram it in the table. Alternatively, you can just forward the email.

I broke my comments down in to those that can apply generally and then have specific comments on options.

Pages 31 through 32 redacted for the following reasons:

s.13, s.17

s.13,17

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Wednesday, June 13, 2012 11:13 AM
To: Cutler, Scott MEM:EX
Subject: RE: Additional Input to Table

s.13, s.17

From: Cutler, Scott MEM:EX
Sent: Wednesday, June 13, 2012 11:08 AM
To: Buchanan, Jack MEM:EX
Subject: RE: Additional Input to Table

s.13, s.17

From: Buchanan, Jack MEM:EX
Sent: Wednesday, June 13, 2012 11:04 AM
To: Barillaro, Scott W MEM:EX; Griffin, Derek MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: Additional Input to Table

s.13, s.17

From: Barillaro, Scott W MEM:EX
Sent: Wednesday, June 13, 2012 10:12 AM
To: Griffin, Derek MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Additional Input to Table

Page 34 redacted for the following reason:

s.13, s.17

Hi Derek/Paul. My apologies for the late reply. I got my wires crossed with what we were supposed to do next. This is likely too much information for the table. I suggest you give it to Les verbally rather than burdening Jennifer with trying to cram it in the table. Alternatively, you can just forward the email.

I broke my comments down in to those that can apply generally and then have specific comments on options.

s.13, s.17

Page 36 redacted for the following reason:

s.13, 17

Buchanan, Jack MEM:EX

From: Wieringa, Paul MEM:EX
Sent: Wednesday, June 13, 2012 12:04 PM
To: Griffin, Derek MEM:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Re: Additional Input to Table

I can only see part of this email on my bb. Some quick comments.
s.13, s.17

From: Griffin, Derek MEM:EX
Sent: Wednesday, June 13, 2012 11:05 AM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: Additional Input to Table

Thanks Scott.

Paul and others – I have a meeting with Les early this afternoon to discuss workload in general, and so my thoughts are to forward Scott's comments to Les prior to that meeting. But before I do that, please let me know if you have any additional thoughts on the table or Scott's comments.

Derek

From: Barillaro, Scott W MEM:EX
Sent: Wednesday, June 13, 2012 10:12 AM
To: Griffin, Derek MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Additional Input to Table

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I broke my comments down in to those that can apply generally and then have specific comments on options.

Pages 38 through 41 redacted for the following reasons:

s.13, 17

s.13, s.17

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Tuesday, July 24, 2012 10:38 AM
To: Pape-Salmon, Andrew MEM:EX
Subject: RE: LNG Efficiency Presentation

Hi Andrew,

s.13. s.17

Jack

From: Pape-Salmon, Andrew MEM:EX
Sent: Friday, July 20, 2012 10:03 AM
To: Pape-Salmon, Andrew MEM:EX; Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Bonnyman, Sue MEM:EX; Kaye, Erik MEM:EX
Subject: RE: LNG Efficiency Presentation
Importance: High

Greetings all,

Please see my attached briefing note for your comment.

Regards,

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

From: Pape-Salmon, Andrew MEM:EX
Sent: Wednesday, July 18, 2012 6:07 PM
To: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX
Subject: Re: LNG Efficiency Presentation

A further thought I just had:
s.13, s.17

Andrew Pape-Salmon
Director, Energy Efficiency Branch
BC Ministry of Energy and Mines

From: Wieringa, Paul MEM:EX
Sent: Wednesday, July 18, 2012 05:00 PM
To: Pape-Salmon, Andrew MEM:EX; Barillaro, Scott W MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX
Subject: Re: LNG Efficiency Presentation

s.13

From: Pape-Salmon, Andrew MEM:EX
Sent: Wednesday, July 18, 2012 03:02 PM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX
Subject: FW: LNG Efficiency Presentation

Dan, Scott and Paul,

Here is some background on energy efficiency opportunities for LNG.

As I noted earlier today I would like to draft a briefing note for the new LNG team at the Ministry to promote a role for the Efficiency and Clean Energy Branch to provide direct input on the electricity negotiations with the LNG providers.

As a first step, I would prepare a one pager for Brian Hanson and team outlining the following:

s.13, s.17

s.13, s.17

With your approval, I will prepare a memo.

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 3:37 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: FW: LNG Efficiency Presentation

PS please do inform the negotiating team here on the potential^{s.22}

Thanks,
Nat

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 3:03 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: RE: LNG Efficiency Presentation

s.13, s.17

Here are my notes from my chat with Steve in March - sorry I thought I had forwarded earlier!

Cheers,
Nat

Steven Quon – Industrial Marketing LNG EE Potential March 15th, 2012

Page 45 redacted for the following reason:

s.13, s.17

s.13, s.17

From: Pape-Salmon, Andrew MEM:EX
Sent: Wednesday, July 4, 2012 2:29 PM
To: Gosman, Nat MEM:EX
Subject: RE: LNG Efficiency Presentation

s.13, s.17

If you are OK with this, I will run with it while^{s.22}
potential.

Thanks,

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

and aim to inform the negotiating team here on the

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 1:47 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: LNG Efficiency Presentation

Regards

Nat Gosman
Senior Policy Advisor
Industrial Energy Efficiency
BC Ministry of Energy and Mines
250-953-3391

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Monday, June 25, 2012 3:05 PM
To: Cutler, Scott MEM:EX; Barillaro, Scott W MEM:EX
Cc: Johnstone, Heather MEM:EX
Subject: RE: Leading standards for gas.

For context:

60% efficiency is pretty much the top of the line for CCGT technology as far as I know.

419 kg/MWh is 45% efficiency.

453 kg/MWh is about 41% efficiency. This is below the average US generation efficiency.

500 kg/MWh is about 38% efficiency, I'm not sure if that's within the range for SCGT but definitely not high for CCGT. This is slightly below the efficiency of China's overall gas generation fleet, Canada's overall gas generation fleet and below the global average fleet (although that includes CHP plants which can be higher efficiency than any pure utility generation plant).

There are a few issues that should be considered in more detail:

- s.13, s.17

-
-

From: Cutler, Scott MEM:EX
Sent: Monday, June 25, 2012 2:12 PM
To: Buchanan, Jack MEM:EX; Barillaro, Scott W MEM:EX
Cc: Johnstone, Heather MEM:EX
Subject: RE: Leading standards for gas.

Here are some electricity ghg thresholds from the US. I believe that all of these criteria fall below 60% efficiency. Perhaps Jack you could plug these into your efficiency calculator spreadsheet.

Existing regs for California, Oregon, New York, Washington, the most stringent being New York where CCGT is 419kg/mwh and 657kg/mwh for single cycle; the others are 500kg/mwh with no differentiation between combined or single cycle:

http://www.c2es.org/what_s_being_done/in_the_states/cap_and_offset_map.cfm

EPA proposed rule, as of March 2012, has a threshold of 1,000 pounds of CO2 per megawatt-hour (453 kg/mwh)
<http://epa.gov/carbonpollutionstandard/actions.html>

As for technology that is available that meets the criteria this is what they say:

- “New natural gas combined cycle (NGCC) power plant units should be able to meet the proposed standard without add-on controls. In fact, based on available data, EPA believes that nearly all (95%) of the NGCC units built recently (since 2005) would meet the standard.”

From: Buchanan, Jack MEM:EX
Sent: Monday, June 25, 2012 11:58 AM
To: Barillaro, Scott W MEM:EX
Cc: Cutler, Scott MEM:EX; Johnstone, Heather MEM:EX
Subject: Leading standards for gas.

Hi Scott,

I am pausing on the search for leading gas standards while Paul gets more clarification, but I wanted to give you an update in the meantime. I have not had any luck. What I've seen so far suggests that policy is not a driver for efficiency of gas in the jurisdictions with the most efficient gas generation except in that climate policy brings in new gas to replace coal and new gas is efficient.

- Australia is a dead end; lack of cooling water means that it actually generates at lower efficiency than most jurisdictions (http://unfccc.int/files/meetings/workshops/other_meetings/application/pdf/ausga1.pdf).
- An IEA report identifies Luxembourg, Portugal, and Turkey as having the most efficient gas generation (http://www.iea.org/papers/2008/En_Efficiency_Indicators.pdf) – near 55%.
 - None of these jurisdictions seem to have any targets for generation efficiency, but all three seem to or are verified to have substantial new gas capacity relative to legacy capacity.
 - [http://www05.abb.com/global/scot/scot316.nsf/veritydisplay/3abc548fff4d870ac12578dc002db3e9/\\$file/luxembourg.pdf](http://www05.abb.com/global/scot/scot316.nsf/veritydisplay/3abc548fff4d870ac12578dc002db3e9/$file/luxembourg.pdf)
 - <http://www.iea.org/textbase/nppdf/free/2009/portugal2009.pdf>
 - <http://www.iea.org/textbase/nppdf/free/2009/turkey2009.pdf>
 - The driver seems to be GHG policy leading to replacing coal with gas, which means new gas plants.
- The IEA also identifies Belgium, Italy, Spain, and the UK as having over 50% efficiency.
 - I haven't looked at any of these jurisdictions other than the UK yet, but the UK does not seem to have a policy promoting efficient gas.

Jack

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Wednesday, July 4, 2012 1:38 PM
To: Champion, Jennifer MEM:EX; MacLaren, Les MEM:EX
Cc: Fitzpatrick, Brigitte C MEM:EX
Subject: RE: LNG load relative to provincial load

I ran a couple of checks.

s.13. s.17. s.21

From: Champion, Jennifer MEM:EX
Sent: Wednesday, July 4, 2012 12:01 PM
To: MacLaren, Les MEM:EX
Cc: Fitzpatrick, Brigitte C MEM:EX; Buchanan, Jack MEM:EX
Subject: LNG load relative to provincial load

Hi Les,

s.13. s.17

Jack, if you would like to add to this, please chime in.

Jennifer.

Jennifer Champion

A/Chief Regulatory Advisor
Electricity and Alternative Energy Division
Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
Email: Jennifer.Champion@gov.bc.ca

From: Reimann, Randy [<mailto:Randy.Reimann@bchydro.com>]
Sent: Wednesday, July 4, 2012 11:41 AM
To: Champion, Jennifer MEM:EX
Cc: Buchanan, Jack MEM:EX
Subject: RE: my voicemail

Hi,

I presume you are not looking for a huge amount of precision – provincial load is about 66,000 GWh for 2012 inclusive of BC Hydro, Fortis plus Alcan/ Cominco.

That clearly goes up overtime, but I do not have the forward forecasts easily available. BC Hydro would increase by 6,500 GWh for normal load growth plus 15,000 GWh for the first 3 LNG plants.

Does that help?

From: Champion, Jennifer MEM:EX [<mailto:Jennifer.Champion@gov.bc.ca>]
Sent: 2012, July 03 4:25 PM
To: Reimann, Randy
Cc: Buchanan, Jack MEM:EX
Subject: my voicemail

Randy,

I just left you an inarticulate voicemail. Sorry. What I'm trying to find out is:

What is LNG load as a fraction/percentage of total electric load in British Columbia? (note that I'm not looking for LNG load relative to total load served by BC Hydro).

Jack, if you have some stats that might help, please let me know.

Thanks very much,

Jennifer.

Jennifer Champion
A/Chief Regulatory Advisor
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Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Thursday, July 5, 2012 9:50 AM
To: Champion, Jennifer MEM:EX; MacLaren, Les MEM:EX
Cc: Fitzpatrick, Brigitte C MEM:EX
Subject: RE: LNG load relative to provincial load

s.13. s.17

From: Champion, Jennifer MEM:EX
Sent: Wednesday, July 4, 2012 12:01 PM
To: MacLaren, Les MEM:EX
Cc: Fitzpatrick, Brigitte C MEM:EX; Buchanan, Jack MEM:EX
Subject: LNG load relative to provincial load

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s.13. s.17

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Jennifer.

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To: Reimann, Randy
Cc: Buchanan, Jack MEM:EX
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Buchanan, Jack MEM:EX

From: Reimann, Randy [Randy.Reimann@bchydro.com]
Sent: Wednesday, July 4, 2012 5:15 PM
To: Buchanan, Jack MEM:EX
Cc: Champion, Jennifer MEM:EX
Subject: RE: my voicemail

My gang tells me the 15,000 is about right - assumptions on load and load factor are moving around a lot.

R.

-----Original Message-----

From: Buchanan, Jack MEM:EX [mailto:Jack.Buchanan@gov.bc.ca]
Sent: 2012, July 04 2:04 PM
To: Reimann, Randy
Cc: Champion, Jennifer MEM:EX
Subject: RE: my voicemail

Hi Randy,

s.13, s.17, s.21

I'm relieved to see that my approach on backing out generation is roughly sensible within my simplifying assumptions.

Thanks,

Jack

-----Original Message-----

From: Reimann, Randy [mailto:Randy.Reimann@bchydro.com]
Sent: Wednesday, July 4, 2012 1:49 PM
To: Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: my voicemail

Hi Jack,

I think I see where you were going - I think you are on the right track.

Assuming we generate all the energy to meet our load (versus net export, for eg), we can assume 7% of our load requirements can come from non-clean.

So for 70,000 GWh load, total headroom is 7% or 4,900 GWh and after existing 3,500 GWh of non-clean we have a headroom of 1,400 GWh (that includes Initial LNG).

My comment below was merely to say that I understood Jennifer to be looking for BC load versus BCH load.

Cheers,

Randy.

-----Original Message-----

From: Buchanan, Jack MEM:EX [mailto:Jack.Buchanan@gov.bc.ca]
Sent: 2012, July 04 1:12 PM
To: Reimann, Randy; Champion, Jennifer MEM:EX
Subject: RE: my voicemail

Hi Randy,

I think I might have been unclear on what I did, but I'd like to get a sanity check on it.

s.13, s.17

Jack

-----Original Message-----

From: Reimann, Randy [mailto:Randy.Reimann@bchydro.com]
Sent: Wednesday, July 4, 2012 11:50 AM
To: Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: my voicemail

Our headroom projections were for BCH load only.

-----Original Message-----

From: Buchanan, Jack MEM:EX [mailto:Jack.Buchanan@gov.bc.ca]
Sent: 2012, July 04 11:47 AM
To: Reimann, Randy; Champion, Jennifer MEM:EX
Subject: RE: my voicemail

I backed my numbers out of BC Hydro's headroom projections -- whatever went into those, with Kitimat LNG and Douglas Channel broken out, I think that's what Jennifer needs?

From: Reimann, Randy [Randy.Reimann@bchydro.com]
Sent: July 4, 2012 11:40 AM
To: Champion, Jennifer MEM:EX
Cc: Buchanan, Jack MEM:EX
Subject: RE: my voicemail

Hi,

I presume you are not looking for a huge amount of precision - provincial load is about 66,000 GWh for 2012 inclusive of BC Hydro, Fortis plus Alcan/ Cominco.

That clearly goes up overtime, but I do not have the forward forecasts easily available. BC Hydro would increase by 6,500 GWh for normal load growth plus 15,000 GWh for the first 3 LNG plants.

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Sent: 2012, July 03 4:25 PM
To: Reimann, Randy
Cc: Buchanan, Jack MEM:EX
Subject: my voicemail

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Jack, if you have some stats that might help, please let me know.

Thanks very much,

Jennifer.

Jennifer Champion
A/Chief Regulatory Advisor
Electricity and Alternative Energy Division Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
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-BCHydroDisclaimerID5.2.8.1541

Buchanan, Jack MEM:EX

From: MacLaren, Les MEM:EX
Sent: Monday, July 23, 2012 3:43 PM
To: Beaupre, Darren GCPE:EX; Hansen, Brian MEM:EX
Cc: Bonnyman, Sue MEM:EX; Woolley, Paul GCPE:EX; Anderson, Maryann GCPE:EX; McLaren, Graeme MEM:EX; Joyce, Tonja GCPE:EX; Piccinino, Ines MEM:EX; Buchanan, Jack MEM:EX; Dias, Oswald MEM:EX
Subject: RE: GCPE REVIEW REQ: Issue Note + QA - I NG Clean Energy Act
Attachments: Not Responsive

Hi Darren:

Tracked comments from us and BCH. Two As for Ines to look at (royalties and reserves). I understand that Brian was going to send you updated economic numbers separately.

Les

From: Beaupre, Darren GCPE:EX
Sent: Monday, July 23, 2012 1:01 PM
To: MacLaren, Les MEM:EX; Hansen, Brian MEM:EX
Cc: Bonnyman, Sue MEM:EX; Woolley, Paul GCPE:EX; Anderson, Maryann GCPE:EX; McLaren, Graeme MEM:EX; Joyce, Tonja GCPE:EX
Subject: RE: GCPE REVIEW REQ:Not Responsive
Importance: High

Les/Brian -

We are getting the ask to move these up the chain ASAP to support the IB. Need approval. Appreciate your attentiveness. Thanks.

Darren Beaupre

Government Communications and Public Engagement (GCPE)
Ministry of Energy and Mines
Ph: 250-356-5892
E-mail: darren.beaupre@gov.bc.ca

From: MacLaren, Les MEM:EX
Sent: Monday, July 23, 2012 6:07 AM
To: Joyce, Tonja GCPE:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Beaupre, Darren GCPE:EX; Woolley, Paul GCPE:EX
Subject: RE: GCPE REVIEW REQ:Not Responsive

Can I please get the latest version of these materials for review. I understood from Sue's e-mail on Friday that EAED was planning to make a number of edits, and would like to work from the most up to date versions.

Thanks

Les

From: Joyce, Tonja GCPE:EX
Sent: Sunday, July 22, 2012 3:06 PM

To: Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; MacLaren, Les MEM:EX; Beaupre, Darren GCPE:EX; Woolley, Paul GCPE:EX
Subject: Re: GCPE REVIEW REQ: Not Responsive

We will say that - sounds fair.^{5.22}

Thanks again.

From: Barillaro, Scott W MEM:EX
Sent: Sunday, July 22, 2012 03:00 PM
To: Joyce, Tonja GCPE:EX
Cc: Bonnyman, Sue MEM:EX; MacLaren, Les MEM:EX; Beaupre, Darren GCPE:EX; Woolley, Paul GCPE:EX
Subject: Re: GCPE REVIEW REQ: Not Responsive

We will need to confirm. Snovit in Norway takes utility supply for back up purposes. It would depend on what resource mix they use to generate electricity. We can say we will have the cleanest energy supply (i.e., lowest carbon due to renewable content). We're pretty safe there.

WSB

On 2012-07-22, at 1:57 PM, "Joyce, Tonja GCPE:EX" <Tonia.Joyce@gov.bc.ca> wrote:

Hi,

Can one of you please confirm that we will have the first LNG export plant powered by clean energy? I remember that Scott mentioned one plant in Norway I think, but it may not be for export. We would like to get the final update done today.

Thanks,

Tonja

From: Joyce, Tonja GCPE:EX
Sent: Sunday, July 22, 2012 01:54 PM
To: Murphy, Bernadette GCPE:EX; Beaupre, Darren GCPE:EX; Woolley, Paul GCPE:EX
Cc: Ash, Christine GCPE:EX; Johnston, Karen GCPE:EX
Subject: Re: GCPE REVIEW REQ: Not Responsive

Thanks - we will make the changes and send the updated package Monday morning if that is not too late. Or I can make them later this afternoon. Let me know if you need it today.

Thanks,

Tonja

From: Murphy, Bernadette GCPE:EX
Sent: Sunday, July 22, 2012 12:45 PM
To: Beaupre, Darren GCPE:EX; Woolley, Paul GCPE:EX
Cc: Ash, Christine GCPE:EX; Joyce, Tonja GCPE:EX; Johnston, Karen GCPE:EX
Subject: Re: GCPE REVIEW REQ: Not Responsive

Hi-

Below are changes from our end. (Sorry - would have made these for you and sent back but am having

huge computer issues today.)

Once changes are made consider them approved from our end.

Also - would you please send us updated package so that we may provide to MTL. Many thanks.

Not Responsive

From: Beaupre, Darren GCPE:EX
Sent: Friday, July 20, 2012 03:33 PM
To: Johnston, Karen GCPE:EX; Murphy, Bernadette GCPE:EX; Mulholland, Lauren GCPE:EX
Cc: Ash, Christine GCPE:EX; Joyce, Tonia GCPE:EX; Woolley, Paul GCPE:EX
Subject: FW: GCPE REVIEW REQ: Not Responsive

Attached for ENV input - Not Responsive
with MEM staff now for review.

These are

I have also attached our current IB for reference, which remains subject to an addition we are told our DM will make.

Current plan is web post only on Tuesday.

Thanks.

Darren Beaupre
Government Communications and Public Engagement (GCPE)
Ministry of Energy and Mines
Ph: 250-356-5892
E-mail: darren.beaupre@gov.bc.ca

Buchanan, Jack MEM:EX

From: Green, Dan L MEM:EX
Sent: Wednesday, July 18, 2012 3:24 PM
To: Pape-Salmon, Andrew MEM:EX
Cc: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX; Buchanan, Jack MEM:EX; Cutler, Scott MEM:EX; Gosman, Nat MEM:EX
Subject: RE: LNG Efficiency Presentation

I think you should pursue this Andrew...inclusion of any supporting analysis that can begin to quantify the opportunity (or the cost) would, I believe, also be beneficial at this stage for Brian and his team.

Dan

From: Pape-Salmon, Andrew MEM:EX
Sent: Wednesday, July 18, 2012 3:02 PM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX
Subject: FW: LNG Efficiency Presentation

Dan, Scott and Paul,

Here is some background on energy efficiency opportunities for LNG.

As I noted earlier today I would like to draft a briefing note for the new LNG team at the Ministry to promote a role for the Efficiency and Clean Energy Branch to provide direct input on the electricity negotiations with the LNG providers.

As a first step, I would prepare a one pager for Brian Hanson and team outlining the following:

s.13, s.17

With your approval, I will prepare a memo.

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 3:37 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: FW: LNG Efficiency Presentation

PS please do inform the negotiating team here on the potentials.²²

Thanks,
Nat

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 3:03 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: RE: LNG Efficiency Presentation

s.13, s.17

Cheers,
Nat

Steven Quon – Industrial Marketing LNG EE Potential March 15th, 2012

s.13, s.17

Page 62 redacted for the following reason:

s.13, s.17

s.13, s.17

From: Pape-Salmon, Andrew MEM:EX
Sent: Wednesday, July 4, 2012 2:29 PM
To: Gosman, Nat MEM:EX
Subject: RE: LNG Efficiency Presentation

s.13, s.17

If you are OK with this, I will run with it ^{s.22}
potential.

and aim to inform the negotiating team here on the

Thanks,

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Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 1:47 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: LNG Efficiency Presentation

Regards

Nat Gosman
Senior Policy Advisor
Industrial Energy Efficiency
BC Ministry of Energy and Mines
250-953-3391

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Here are my notes from my chat with Steve in March - sorry I thought I had forwarded earlier!

Cheers,
Nat

Steven Quon – Industrial Marketing LNG EE Potential March 15th, 2012

s.13, s.17

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s.13, s.17

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Darren Beaupre
Government Communications and Public Engagement (GCPE)
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Sent: Sunday, July 22, 2012 3:06 PM

To: Barillaro, Scott W MEM:EX
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To: Beaupre, Darren GCPE:EX; Woolley, Paul GCPE:EX
Cc: Ash, Christine GCPE:EX; Joyce, Tonja GCPE:EX; Johnston, Karen GCPE:EX
Subject: Re: GCPE REVIEW REQ: ^{Not Responsive}

Hi-

Below are changes from our end. (Sorry - would have made these for you and sent back but am having

huge computer issues today.)

Once changes are made consider them approved from our end.

Also - would you please send us updated package so that we may provide to MTL. Many thanks.

Not Responsive

From: Beaupre, Darren GCPE:EX
Sent: Friday, July 20, 2012 03:33 PM
To: Johnston, Karen GCPE:EX; Murphy, Bernadette GCPE:EX; Mulholland, Lauren GCPE:EX
Cc: Ash, Christine GCPE:EX; Joyce, Tonja GCPE:EX; Woolley, Paul GCPE:EX
Subject: FW: GCPE REVIEW REQ: Not Responsive

Attached for ENV input —Not Responsive
with MEM staff now for review.

These are

I have also attached our current IB for reference, which remains subject to an addition we are told our DM will make.

Current plan is web post only on Tuesday.

Thanks.

Darren Beaupre
Government Communications and Public Engagement (GCPE)
Ministry of Energy and Mines
Ph: 250-356-5892
E-mail: darren.beaupre@gov.bc.ca

Buchanan, Jack MEM:EX

From: Reimann, Randy [Randy.Reimann@bchydro.com]
Sent: Wednesday, July 4, 2012 5:15 PM
To: Buchanan, Jack MEM:EX
Cc: Champion, Jennifer MEM:EX
Subject: RE: my voicemail

My gang tells me the 15,000 is about right - assumptions on load and load factor are moving around a lot.

R.

-----Original Message-----

From: Buchanan, Jack MEM:EX [mailto:Jack.Buchanan@gov.bc.ca]
Sent: 2012, July 04 2:04 PM
To: Reimann, Randy
Cc: Champion, Jennifer MEM:EX
Subject: RE: my voicemail

Hi Randy,

s.13, s.17, s.21

I'm relieved to see that my approach on backing out generation is roughly sensible within my simplifying assumptions.

Thanks,

Jack

-----Original Message-----

From: Reimann, Randy [mailto:Randy.Reimann@bchydro.com]
Sent: Wednesday, July 4, 2012 1:49 PM
To: Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: my voicemail

Hi Jack,

I think I see where you were going - I think you are on the right track.

s.13, s.17

My comment below was merely to say that I understood Jennifer to be looking for BC load versus BCH load.

Cheers,

Randy.

-----Original Message-----

From: Buchanan, Jack MEM:EX [mailto:Jack.Buchanan@gov.bc.ca]
Sent: 2012, July 04 1:12 PM
To: Reimann, Randy; Champion, Jennifer MEM:EX
Subject: RE: my voicemail

Hi Randy,

I think I might have been unclear on what I did, but I'd like to get a sanity check on it.

s.13. s.17

Jack

-----Original Message-----

From: Reimann, Randy [mailto:Randy.Reimann@bchydro.com]
Sent: Wednesday, July 4, 2012 11:50 AM
To: Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: my voicemail

Our headroom projections were for BCH load only.

-----Original Message-----

From: Buchanan, Jack MEM:EX [mailto:Jack.Buchanan@gov.bc.ca]
Sent: 2012, July 04 11:47 AM
To: Reimann, Randy; Champion, Jennifer MEM:EX
Subject: RE: my voicemail

I backed my numbers out of BC Hydro's headroom projections -- whatever went into those, with Kitimat LNG and Douglas Channel broken out, I think that's what Jennifer needs?

From: Reimann, Randy [Randy.Reimann@bchydro.com]
Sent: July 4, 2012 11:40 AM
To: Champion, Jennifer MEM:EX
Cc: Buchanan, Jack MEM:EX
Subject: RE: my voicemail

Hi,

s.13. s.17

From: Champion, Jennifer MEM:EX [<mailto:Jennifer.Champion@gov.bc.ca>]
Sent: 2012, July 03 4:25 PM
To: Reimann, Randy
Cc: Buchanan, Jack MEM:EX
Subject: my voicemail

Randy,

I just left you an inarticulate voicemail. Sorry. What I'm trying to find out is:

What is LNG load as a fraction/percentage of total electric load in British Columbia? (note that I'm not looking for LNG load relative to total load served by BC Hydro).

Jack, if you have some stats that might help, please let me know.

Thanks very much,

Jennifer.

Jennifer Champion
A/Chief Regulatory Advisor
Electricity and Alternative Energy Division
Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
Email: Jennifer.Champion@gov.bc.ca

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Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Wednesday, July 4, 2012 1:38 PM
To: Champion, Jennifer MEM:EX; MacLaren, Les MEM:EX
Cc: Fitzpatrick, Brigitte C MEM:EX
Subject: RE: LNG load relative to provincial load

I ran a couple of checks.

s.13. s.17

From: Champion, Jennifer MEM:EX
Sent: Wednesday, July 4, 2012 12:01 PM
To: MacLaren, Les MEM:EX
Cc: Fitzpatrick, Brigitte C MEM:EX; Buchanan, Jack MEM:EX
Subject: LNG load relative to provincial load

Hi Les,

s.13. s.17

Jack, if you would like to add to this, please chime in.

Jennifer.

Jennifer Champion

A/Chief Regulatory Advisor
Electricity and Alternative Energy Division
Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
Email: jennifer.champion@gov.bc.ca

From: Reimann, Randy [<mailto:Randy.Reimann@bchydro.com>]
Sent: Wednesday, July 4, 2012 11:41 AM
To: Champion, Jennifer MEM:EX
Cc: Buchanan, Jack MEM:EX
Subject: RE: my voicemail

Hi,

I presume you are not looking for a huge amount of precision – provincial load is about 66,000 GWh for 2012 inclusive of BC Hydro, Fortis plus Alcan/ Cominco.

That clearly goes up overtime, but I do not have the forward forecasts easily available. BC Hydro would increase by 6,500 GWh for normal load growth plus 15,000 GWh for the first 3 LNG plants.

Does that help?

From: Champion, Jennifer MEM:EX [<mailto:Jennifer.Champion@gov.bc.ca>]
Sent: 2012, July 03 4:25 PM
To: Reimann, Randy
Cc: Buchanan, Jack MEM:EX
Subject: my voicemail

Randy,

I just left you an inarticulate voicemail. Sorry. What I'm trying to find out is:

What is LNG load as a fraction/percentage of total electric load in British Columbia? (note that I'm not looking for LNG load relative to total load served by BC Hydro).

Jack, if you have some stats that might help, please let me know.

Thanks very much,

Jennifer.

Jennifer Champion
A/Chief Regulatory Advisor
Electricity and Alternative Energy Division
Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
Email: Jennifer.Champion@gov.bc.ca

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Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Monday, June 25, 2012 3:05 PM
To: Cutler, Scott MEM:EX; Barillaro, Scott W MEM:EX
Cc: Johnstone, Heather MEM:EX
Subject: RE: Leading standards for gas.

For context:

60% efficiency is pretty much the top of the line for CCGT technology as far as I know.

419 kg/MWh is 45% efficiency.

453 kg/MWh is about 41% efficiency. This is below the average US generation efficiency.

500 kg/MWh is about 38% efficiency, I'm not sure if that's within the range for SCGT but definitely not high for CCGT. This is slightly below the efficiency of China's overall gas generation fleet, Canada's overall gas generation fleet and below the global average fleet (although that includes CHP plants which can be higher efficiency than any pure utility generation plant).

There are a few issues that should be considered in more detail:

s.13. s.17

From: Cutler, Scott MEM:EX
Sent: Monday, June 25, 2012 2:12 PM
To: Buchanan, Jack MEM:EX; Barillaro, Scott W MEM:EX
Cc: Johnstone, Heather MEM:EX
Subject: RE: Leading standards for gas.

Here are some electricity ghg thresholds from the US. I believe that all of these criteria fall below 60% efficiency. Perhaps Jack you could plug these into your efficiency calculator spreadsheet.

Existing regs for California, Oregon, New York, Washington, the most stringent being New York where CCGT is 419kg/mwh and 657kg/mwh for single cycle; the others are 500kg/mwh with no differentiation between combined or single cycle:

http://www.c2es.org/what_s_being_done/in_the_states/cap_and_offset_map.cfm

EPA proposed rule, as of March 2012, has a threshold of 1,000 pounds of CO2 per megawatt-hour (453 kg/mwh)

<http://epa.gov/carbonpollutionstandard/actions.html>

As for technology that is available that meets the criteria this is what they say:

- “New natural gas combined cycle (NGCC) power plant units should be able to meet the proposed standard without add-on controls. In fact, based on available data, EPA believes that nearly all (95%) of the NGCC units built recently (since 2005) would meet the standard.”

From: Buchanan, Jack MEM:EX
Sent: Monday, June 25, 2012 11:58 AM
To: Barillaro, Scott W MEM:EX
Cc: Cutler, Scott MEM:EX; Johnstone, Heather MEM:EX
Subject: Leading standards for gas.

Hi Scott,

I am pausing on the search for leading gas standards while Paul gets more clarification, but I wanted to give you an update in the meantime. I have not had any luck. What I've seen so far suggests that policy is not a driver for efficiency of gas in the jurisdictions with the most efficient gas generation except in that climate policy brings in new gas to replace coal and new gas is efficient.

- Australia is a dead end; lack of cooling water means that it actually generates at lower efficiency than most jurisdictions (http://unfccc.int/files/meetings/workshops/other_meetings/application/pdf/ausga1.pdf).
- An IEA report identifies Luxembourg, Portugal, and Turkey as having the most efficient gas generation (http://www.iea.org/papers/2008/En_Efficiency_Indicators.pdf) – near 55%.
 - None of these jurisdictions seem to have any targets for generation efficiency, but all three seem to or are verified to have substantial new gas capacity relative to legacy capacity.
 - [http://www05.abb.com/global/scot/scot316.nsf/veritydisplay/3abc548fff4d870ac12578dc002db3e9/\\$file/luxembourg.pdf](http://www05.abb.com/global/scot/scot316.nsf/veritydisplay/3abc548fff4d870ac12578dc002db3e9/$file/luxembourg.pdf)
 - <http://www.iea.org/textbase/nppdf/free/2009/portugal2009.pdf>
 - <http://www.iea.org/textbase/nppdf/free/2009/turkey2009.pdf>
 - The driver seems to be GHG policy leading to replacing coal with gas, which means new gas plants.
- The IEA also identifies Belgium, Italy, Spain, and the UK as having over 50% efficiency.
 - I haven't looked at any of these jurisdictions other than the UK yet, but the UK does not seem to have a policy promoting efficient gas.

Jack

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Tuesday, July 24, 2012 10:38 AM
To: Pape-Salmon, Andrew MEM:EX
Subject: RE: LNG Efficiency Presentation

Hi Andrew,

I don't have that much to say about this BN. It might be worth getting Env to help attach some emissions to the efficiency impacts? I think using combined cycle gas as the margin would be appropriate, and the percentage figures might benefit from that context.

s.13. s.17

Jack

From: Pape-Salmon, Andrew MEM:EX
Sent: Friday, July 20, 2012 10:03 AM
To: Pape-Salmon, Andrew MEM:EX; Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Bonnyman, Sue MEM:EX; Kaye, Erik MEM:EX
Subject: RE: LNG Efficiency Presentation
Importance: High

Greetings all,

Please see my attached briefing note for your comment.

Regards,

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

From: Pape-Salmon, Andrew MEM:EX
Sent: Wednesday, July 18, 2012 6:07 PM
To: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX
Subject: Re: LNG Efficiency Presentation

A further thought I just had:
s.13, s.17

Andrew Pape-Salmon
Director, Energy Efficiency Branch
BC Ministry of Energy and Mines

From: Wieringa, Paul MEM:EX
Sent: Wednesday, July 18, 2012 05:00 PM
To: Pape-Salmon, Andrew MEM:EX; Barillaro, Scott W MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX
Subject: Re: LNG Efficiency Presentation

s.13

From: Pape-Salmon, Andrew MEM:EX
Sent: Wednesday, July 18, 2012 03:02 PM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX; Green, Dan L MEM:EX
Cc: Gosman, Nat MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX
Subject: FW: LNG Efficiency Presentation

Dan, Scott and Paul,

Here is some background on energy efficiency opportunities for LNG.

As I noted earlier today I would like to draft a briefing note for the new LNG team at the Ministry to promote a role for the Efficiency and Clean Energy Branch to provide direct input on the electricity negotiations with the LNG providers.

As a first step, I would prepare a one pager for Brian Hanson and team outlining the following:

s.13, s.17

With your approval, I will prepare a memo.

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 3:37 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: FW: LNG Efficiency Presentation

PS please do inform the negotiating team here on the potential^{s.22}

Thanks,
Nat

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 3:03 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: RE: LNG Efficiency Presentation

Here are my notes from my chat with Steve in March – sorry I thought I had forwarded earlier!

Cheers,
Nat

Steven Quon – Industrial Marketing LNG EE Potential March 15th, 2012

Page 81 redacted for the following reason:

s.13, s.17

From: Pape-Salmon, Andrew MEM:EX
Sent: Wednesday, July 4, 2012 2:29 PM
To: Gosman, Nat MEM:EX
Subject: RE: LNG Efficiency Presentation

s.13, s.17

If you are OK with this, I will run with it while you^{s.22}
potential.

Thanks,

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

and aim to inform the negotiating team here on the

From: Gosman, Nat MEM:EX
Sent: Wednesday, July 4, 2012 1:47 PM
To: Pape-Salmon, Andrew MEM:EX
Subject: LNG Efficiency Presentation

Regards

Nat Gosman
Senior Policy Advisor
Industrial Energy Efficiency
BC Ministry of Energy and Mines
250-953-3391

Buchanan, Jack MEM:EX

From: Wieringa, Paul MEM:EX
Sent: Wednesday, June 13, 2012 12:04 PM
To: Griffin, Derek MEM:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Re: Additional Input to Table

I can only see part of this email on my bb. Some quick comments.
s.13. s.17

From: Griffin, Derek MEM:EX
Sent: Wednesday, June 13, 2012 11:05 AM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: Additional Input to Table

Thanks Scott.

Paul and others – I have a meeting with Les early this afternoon to discuss workload in general, and so my thoughts are to forward Scott's comments to Les prior to that meeting. But before I do that, please let me know if you have any additional thoughts on the table or Scott's comments.

Derek

From: Barillaro, Scott W MEM:EX
Sent: Wednesday, June 13, 2012 10:12 AM
To: Griffin, Derek MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Additional Input to Table

Hi Derek/Paul. My apologies for the late reply. I got my wires crossed with what we were supposed to do next. This is likely too much information for the table. I suggest you give it to Les verbally rather than burdening Jennifer with trying to cram it in the table. Alternatively, you can just forward the email.

I broke my comments down in to those that can apply generally and then have specific comments on options.

Pages 85 through 87 redacted for the following reasons:

s.13, s.17

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Wednesday, June 13, 2012 11:13 AM
To: Cutler, Scott MEM:EX
Subject: RE: Additional Input to Table

s.13, s.17

From: Cutler, Scott MEM:EX
Sent: Wednesday, June 13, 2012 11:08 AM
To: Buchanan, Jack MEM:EX
Subject: RE: Additional Input to Table

s.13, s.17

From: Buchanan, Jack MEM:EX
Sent: Wednesday, June 13, 2012 11:04 AM
To: Barillaro, Scott W MEM:EX; Griffin, Derek MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: Additional Input to Table

s.13, s.17

From: Barillaro, Scott W MEM:EX
Sent: Wednesday, June 13, 2012 10:12 AM
To: Griffin, Derek MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Additional Input to Table

Hi Derek/Paul. My apologies for the late reply. I got my wires crossed with what we were supposed to do next. This is likely too much information for the table. I suggest you give it to Les verbally rather than burdening Jennifer with trying to cram it in the table. Alternatively, you can just forward the email.

I broke my comments down in to those that can apply generally and then have specific comments on options.

s.13, s.17

Pages 90 through 91 redacted for the following reasons:

S.13, 17
s.13, s.17

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Wednesday, June 13, 2012 12:25 PM
To: Wieringa, Paul MEM:EX; Griffin, Derek MEM:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: Additional Input to Table
Attachments: Increasing Gas Generation - Options June 7 2012 Combined jb sc.docx

Scott Cutler and I worked through the table more. Cost impacts are coming along, but need a lot of QA.

s.13, s.17

I've merged a few different emails into the chain below so that all relevant comment is captured in this message.

s.13, s.17

WSB

On 2012-06-13, at 11:04 AM, "Buchanan, Jack MEM:EX" <Jack.Buchanan@gov.bc.ca> wrote:

s.13, s.17

From: Wieringa, Paul MEM:EX
Sent: Wednesday, June 13, 2012 12:04 PM
To: Griffin, Derek MEM:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Re: Additional Input to Table

I can only see part of this email on my bb. Some quick comments.
s.13. s.17

From: Griffin, Derek MEM:EX
Sent: Wednesday, June 13, 2012 11:05 AM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: RE: Additional Input to Table

Thanks Scott.

Paul and others – I have a meeting with Les early this afternoon to discuss workload in general, and so my thoughts are to forward Scott's comments to Les prior to that meeting. But before I do that, please let me know if you have any additional thoughts on the table or Scott's comments.

Derek

From: Barillaro, Scott W MEM:EX
Sent: Wednesday, June 13, 2012 10:12 AM
To: Griffin, Derek MEM:EX; Wieringa, Paul MEM:EX
Cc: Bonnyman, Sue MEM:EX; Cutler, Scott MEM:EX; Buchanan, Jack MEM:EX; Johnstone, Heather MEM:EX; Champion, Jennifer MEM:EX
Subject: Additional Input to Table

Hi Derek/Paul. My apologies for the late reply. I got my wires crossed with what we were supposed to do next. This is likely too much information for the table. I suggest you give it to Les verbally rather than burdening Jennifer with trying to cram it in the table. Alternatively, you can just forward the email.

I broke my comments down in to those that can apply generally and then have specific comments on options.

Pages 94 through 96 redacted for the following reasons:

S.13, 17

s.13, s.17

Buchanan, Jack MEM:EX

From: Barillaro, Scott W MEM:EX
Sent: Tuesday, June 19, 2012 3:51 PM
To: Paradine, Dennis ENV:EX
Cc: Buchanan, Jack MEM:EX
Subject: RE: Nat Gas Electric vs. Gas Power

s.13, s.17

WSB

W. Scott Barillaro, B.A, B.Mus, MPA
Director, Transmission and Industrial Electricity Policy Electricity Policy Ministry of
Energy and Mines 4th Floor, 1810 Blanshard Street Victoria, BC V8T 4J1
(o) 250-952-0267

s.17

-----Original Message-----

From: Paradine, Dennis ENV:EX
Sent: Tuesday, June 19, 2012 3:49 PM
To: Barillaro, Scott W MEM:EX
Cc: Buchanan, Jack MEM:EX
Subject: RE: Nat Gas Electric vs. Gas Power

Scott and Jack - quick question - the grid electricity requirement is for liquefaction, correct? I thought that the LNG proponents were not going to be generating their own electricity - has this changed?

Thanks,
Dennis

-----Original Message-----

From: Barillaro, Scott W MEM:EX
Sent: Tuesday, June 19, 2012 3:41 PM
To: Buchanan, Jack MEM:EX; Paradine, Dennis ENV:EX; Mack, James ENV:EX; Lesiuk, Tim ENV:EX
Cc: White, Thomas ENV:EX
Subject: RE: Nat Gas Electric vs. Gas Power

s.13, s.17

WSB

W. Scott Barillaro, B.A, B.Mus, MPA
Director, Transmission and Industrial Electricity Policy Electricity Policy Ministry of
Energy and Mines 4th Floor, 1810 Blanshard Street Victoria, BC V8T 4J1
(o) 250-952-0267

s.17

-----Original Message-----

From: Buchanan, Jack MEM:EX
Sent: Tuesday, June 19, 2012 3:
To: Paradine, Dennis ENV:EX; Ma
Cc: White, Thomas ENV:EX; Baril
Subject: RE: Nat Gas Electric \

Tim ENV:EX

s.13. s.17

-----Original Message-----

From: Paradine, Dennis ENV:EX
Sent: Tuesday, June 19, 2012 3:05 PM
To: Mack, James ENV:EX; Lesiuk, Tim ENV:EX
Cc: White, Thomas ENV:EX; Buchanan, Jack MEM:EX; Barillaro, Scott W MEM:EX
Subject: RE: Nat Gas Electric vs. Gas Power

Not sure that this differs from our information.

s.13. s.17

Jack, Scott - your thoughts?

Dennis

-----Original Message-----

From: Mack, James ENV:EX
Sent: Tuesday, June 19, 2012 2:14 PM

To: Lesiuk, Tim ENV:EX
Cc: Paradine, Dennis ENV:EX; White, Thomas ENV:EX
Subject: Fw: Nat Gas Electric vs. Gas Power

s.13

Not sure what to make of that
James Mack
Head - Climate Action Secretariat
Ministry of Environment, Government of British Columbia James.mack@gov.bc.ca
Phone: 250-356-6243

----- Original Message -----

From: Ryan Charles Schmidt [mailto:RyanC_Schmidt@transalta.com]
Sent: Tuesday, June 19, 2012 01:58 PM
To: Mack, James ENV:EX
Cc: Dean Luciuk <Dean_Luciuk@transalta.com>
Subject: Nat Gas Electric vs. Gas Power

Hi James,

Thanks again for your time today. Attached for your consideration is a third-party study of the emissions benefits of nat gas fired electric drives vs. direct gas drives for LNG.

Feel free to call if you would like to chat.

Sincerely,
Ryan

Buchanan, Jack MEM:EX

From: Champion, Jennifer MEM:EX
Sent: Friday, June 29, 2012 12:26 PM
To: Dias, Oswald MEM:EX
Cc: Buchanan, Jack MEM:EX; Barillaro, Scott W MEM:EX; Bonnyman, Sue MEM:EX; Johnstone, Heather MEM:EX; Wieringa, Paul MEM:EX; Cutler, Scott MEM:EX
Subject: Re: Short draft notes on implications of policy options.

I think Os is right.^{s.22} so I can't check right now.

Thx Os.

Jennifer

Sent from my iPhone

On 2012-06-29, at 9:32 AM, "Dias, Oswald MEM:EX" <Oswald.Dias@gov.bc.ca> wrote:

s.13. s.17

>
> -----Original Message-----
> From: Champion, Jennifer MEM:EX
> Sent: Thursday, June 28, 2012 7:22 PM
> To: Buchanan, Jack MEM:EX; Barillaro, Scott W MEM:EX; Bonnyman, Sue MEM:EX; Johnstone, Heather MEM:EX; Wieringa, Paul MEM:EX; Dias, Oswald MEM:EX; Cutler, Scott MEM:EX
> Subject: RE: Short draft notes on implications of policy options.
>
> Good evening all,
>
> I've added a few suggestions for your consideration.
>
> I wish you all a great long weekend!
>
> Jennifer.
>
> _____
> From: Buchanan, Jack MEM:EX
> Sent: June 28, 2012 4:36 PM
> To: Champion, Jennifer MEM:EX
> Subject: FW: Short draft notes on implications of policy options.
>
>
> _____
> From: Buchanan, Jack MEM:EX
> Sent: June 28, 2012 3:20 PM
> To: 'Reimann, Randy'; 'Bell, Warren'; 'Godsoe, Craig'; Lesiuk, Tim ENV:EX; Mack, James ENV:EX; Johnstone, Heather MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX
> Subject: Short draft notes on implications of policy options.
>
> Here are the (very preliminary) rough drafts on LNG policy options in advance of this afternoon's call. Apologies for the delay.
>
>

Buchanan, Jack MEM:EX

From: Champion, Jennifer MEM:EX
Sent: Tuesday, June 26, 2012 4:59 PM
To: Wieringa, Paul MEM:EX; MacLaren, Les MEM:EX; Mack, James ENV:EX; Barillaro, Scott W MEM:EX; 'Bell, Warren'
Cc: Lesiuk, Tim ENV:EX; Buchanan, Jack MEM:EX; 'Godsoe, Craig'
Subject: RE: 120626 Natural Gas Generation for LNG-DRAFT-V4.pptx

Paul,

I have discussed with Craig Godsoe the option in your last sentence below.

s.13. s.17

We need more time.

Jennifer.

Jennifer Champion

A/Chief Regulatory Advisor
Electricity and Alternative Energy Division
Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
Email: Jennifer.Champion@gov.bc.ca

From: Wieringa, Paul MEM:EX
Sent: Tuesday, June 26, 2012 4:27 PM
To: MacLaren, Les MEM:EX; Mack, James ENV:EX; Barillaro, Scott W MEM:EX; Bell, Warren
Cc: Lesiuk, Tim ENV:EX; Champion, Jennifer MEM:EX; Buchanan, Jack MEM:EX
Subject: 120626 Natural Gas Generation for LNG-DRAFT-V4.pptx

Steve provided us with some comments. Here is the next version. We are trying to finalize for this evening.

Not Responsive

Buchanan, Jack MEM:EX

From: Champion, Jennifer MEM:EX
Sent: Tuesday, June 26, 2012 5:33 PM
To: Wieringa, Paul MEM:EX; MacLaren, Les MEM:EX; Mack, James ENV:EX; Barillaro, Scott W MEM:EX; Bell, Warren
Cc: Lesiuk, Tim ENV:EX; Buchanan, Jack MEM:EX
Subject: RE: 120626 Natural Gas Generation for LNG-DRAFT-V4.pptx

Additional comments:

s.13, s.17

Jennifer.

Jennifer Champion

A/Chief Regulatory Advisor
Electricity and Alternative Energy Division
Ministry of Energy and Mines
Telephone: (250)356-1853
Fax: (250)952-0258
Email: jennifer.champion@gov.bc.ca

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Sent: Tuesday, June 26, 2012 4:27 PM
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Cc: Lesiuk, Tim ENV:EX; Champion, Jennifer MEM:EX; Buchanan, Jack MEM:EX
Subject: 120626 Natural Gas Generation for LNG-DRAFT-V4.pptx

Steve provided us with some comments. Here is the next version. We are trying to finalize for this evening.

Not Responsive

Buchanan, Jack MEM:EX

From: Mack, James ENV:EX
Sent: Sunday, June 24, 2012 7:01 PM
To: MacLaren, Les MEM:EX; Wieringa, Paul MEM:EX; 'Warren.Bell@bchydro.com'; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; 'Rohan.Soulsby@bchydro.com'; Lesiuk, Tim ENV:EX
Subject: Re: Draft Policy/Regulatory Outline for Natural Gas Generation

Not Responsive

James Mack
Head - Climate Action Secretariat
Ministry of Environment, Government of British Columbia
James.mack@gov.bc.ca
Phone: 250-356-6243

From: MacLaren, Les MEM:EX
Sent: Sunday, June 24, 2012 05:38 PM
To: Wieringa, Paul MEM:EX; Bell, Warren <Warren.Bell@bchydro.com>; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan <Rohan.Soulsby@bchydro.com>; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Many thanks for all this work in my absence. I agree with Warren's comments that much of this is outside what we need for a reg. Here is my take from being part of the discussion.

s.13. s.17

Hope this helps. Will be monitoring off and on from Portland tomorrow. Paul, please try to get an early read from Steve on this at the ADM check-in tomorrow before we put a huge amount more work into the table.

Les

From: Wieringa, Paul MEM:EX
Sent: Sun, June 24, 2012 1:17 PM
To: Bell, Warren; Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Some comments in the document.

Not Responsive

From: Bell, Warren [Warren.Bell@bchydro.com]
Sent: June 23, 2012 5:40 PM
To: Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Thanks for compiling this Scott, and to the folks at MEM for the work identifying issues and options.

I've included a few comments in the attached. This is a good start, but in general I think we need to stay focussed on the objective - Not Responsive

Not Responsive

Cheers
Warren

-----Original Message-----

From: Barillaro, Scott W MEM:EX [mailto:Scott.Barillaro@gov.bc.ca]

Sent: 2012, June 23 2:13 PM

To: MacLaren, Les MEM:EX

Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX; Bell, Warren

Subject: Draft Policy/Regulatory Outline for Natural Gas Generation

Hi Les.

I believe you and Paul talked about the meeting we had with CAS and BCH yesterday. Electricity Branch staff spent the afternoon going through meeting notes and trying to identify the various policy angles we will need to look at in order to develop a regulation.

Not Responsive

s.14, s.17

The draft document captures everything we could put together from yesterday. It is only a starting point and I expect folks will have some major additions including policy questions the electricity team may have missed or didn't know. My suggestion would be to use this, or a variation of it, as a master list of questions, issue and ideas that we need to work on. We can then identify different pieces of work that focuses on specific areas in order to move forward. s.13

s.13

Everyone: Apologies for the delay on this. It took me longer to integrate everything than I thought.

It occurred to me that we need to manage the comment process somehow otherwise we'll have multiple versions of the document floating around with a gazillion colours of tracked changes. Accordingly, please use the note function in word to provide comments. Just highlight the area and insert your comment in the text bubble. I will then copy and paste everyone's comments in to the appropriate sections the next version of the document and email it out. As always, I am not wedded to what is currently in the document. Input would be most welcome so go wild. It will lead to a better product in the end.

I am going to sign off for now. I will have a look at my email later on tonight with fresh eyes. I have carved out time tomorrow to compile comments. I can also make myself available for calls during the day before 4pm or after 8pm. s.22

Thanks.

WSB

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-BCHydroDisclaimerID5.2.8.1541

Buchanan, Jack MEM:EX

From: Lesiuk, Tim ENV:EX
Sent: Sunday, June 24, 2012 9:38 PM
To: MacLaren, Les MEM:EX; Wieringa, Paul MEM:EX; Bell, Warren; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation
Attachments: 120623
_Outline for the _Clean_Energy_Supply_Portfolio for _LNG_Development_wb[1]_pw[1]_tl[1].docx

My direct comments are included in the attached file with Warren and Paul's.

I have some thoughts on Les's slightly redefined and refocussed approach:

s.13, s.17

Advantages:

Not Responsive

Recommendations on Scott's approach:

s.13, s.17

As usual, not much from me,
Tim

From: MacLaren, Les MEM:EX
Sent: Sunday, June 24, 2012 5:38 PM

To: Wieringa, Paul MEM:EX; Bell, Warren; Barillaro, Scott W MEM:EX

Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX

Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Many thanks for all this work in my absence. s.13. s.17

s.13. s.17

Here is my take from being part of the discussion.

s.13. s.17

Les

From: Wieringa, Paul MEM:EX

Sent: Sun, June 24, 2012 1:17 PM

To: Bell, Warren; Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX

Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX

Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Some comments in the document.

Not Responsive

From: Bell, Warren [Warren.Bell@bchydro.com]
Sent: June 23, 2012 5:40 PM
To: Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Thanks for compiling this Scott, and to the folks at MEM for the work identifying issues and options.

I've included a few comments in the attached. This is a good start, but in general I think we need to stay focussed on the objective

Not Responsive
Not Responsive

Cheers
Warren

-----Original Message-----

From: Barillaro, Scott W MEM:EX [mailto:Scott.Barillaro@gov.bc.ca]
Sent: 2012, June 23 2:13 PM
To: MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX; Bell, Warren
Subject: Draft Policy/Regulatory Outline for Natural Gas Generation

Hi Les.

I believe you and Paul talked about the meeting we had with CAS and BCH yesterday. Electricity Branch staff spent the afternoon going through meeting notes and trying to identify the various policy angles we will need to look at in order to develop a regulation.

Not Responsive

s.13, s.17

1

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Thanks.

WSB

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-BCHydroDisclaimerID5.2.8.1541

Buchanan, Jack MEM:EX

From: Bell, Warren [Warren.Bell@bchydro.com]
Sent: Sunday, June 24, 2012 11:07 PM
To: MacLaren, Les MEM:EX; Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

s.13. s.17

Warren

From: MacLaren, Les MEM:EX [mailto:Les.MacLaren@gov.bc.ca]
Sent: 2012, June 24 5:39 PM
To: Wieringa, Paul MEM:EX; Bell, Warren; Barillaro, Scott W MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

Many thanks for all this work in my absence. ^{s.13}

s.13

Here is my take from being part of the discussion.

s.13. s.17

Hope this helps. Will be monitoring off and on from Portland tomorrow. Paul, please try to get an early read from Steve on this at the ADM check in tomorrow before we put a huge amount more work into the table.

Les

From: Wieringa, Paul MEM:EX
Sent: Sun, June 24, 2012 1:17 PM
To: Bell, Warren; Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
Subject: RE: Draft Policy/Regulatory Outline for Natural Gas Generation

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From: Bell, Warren [Warren.Bell@bchydro.com]
Sent: June 23, 2012 5:40 PM

To: Barillaro, Scott W MEM:EX; MacLaren, Les MEM:EX
Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX
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Not Responsive

Cheers
Warren

-----Original Message-----

From: Barillaro, Scott W MEM:EX [mailto:Scott.Barillaro@gov.bc.ca]

Sent: 2012, June 23 2:13 PM

To: MacLaren, Les MEM:EX

Cc: Bonnyman, Sue MEM:EX; Buchanan, Jack MEM:EX; Champion, Jennifer MEM:EX; Cutler, Scott MEM:EX; Dias, Oswald MEM:EX; Fitzpatrick, Brigitte C MEM:EX; Griffin, Derek MEM:EX; Johnstone, Heather MEM:EX; Soulsby, Rohan; Wieringa, Paul MEM:EX; Lesiuk, Tim ENV:EX; Mack, James ENV:EX; Bell, Warren

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Not Responsive

s.13, s.17

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Thanks.

WSB

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-BCHydroDisclaimerID5.2.8.1541

Buchanan, Jack MEM:EX

From: Barillaro, Scott W MEM:EX
Sent: Monday, June 25, 2012 9:42 AM
To: Joyce, Tonja GCPE:EX
Cc: Wieringa, Paul MEM:EX; Beaupre, Darren GCPE:EX; Buchanan, Jack MEM:EX
Subject: Re: CBCV: Horgan: Natural gas isn't magically clean

The first question is, "Which pipeline". I went through the announcement and scrums. The only pipeline I saw mentioned was in MRC's scrum where he brought up the NETL and the merits of gas fired electricity in the horn river basin. ^{Not Responsive}

Not Responsive

s.13. s.17

WSB

On 2012-06-25, at 8:53 AM, "Buchanan, Jack MEM:EX" <Jack.Buchanan@gov.bc.ca> wrote:

I don't. Scott or Paul may.

From: Joyce, Tonja GCPE:EX
Sent: Monday, June 25, 2012 8:37 AM
To: Barillaro, Scott W MEM:EX; Wieringa, Paul MEM:EX; Buchanan, Jack MEM:EX
Cc: Beaupre, Darren GCPE:EX
Subject: FW: CBCV: Horgan: Natural gas isn't magically clean
Importance: High

Do we have any numbers on the pipeline vs. Powerline?

Thanks

From: tno@gov.bc.ca [<mailto:tno@gov.bc.ca>]
Sent: Monday, June 25, 2012 7:58 AM
Subject: CBCV: Horgan: Natural gas isn't magically clean

CBCV (CBC Victoria)
CBC On the Island
25-Jun-2012 07:12

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TNO...

This e-mail is a service provided by Today's News Online and is only intended for the original addressee. All content is the copyrighted property of a third party creator of the material. Copying, retransmitting, redistributing, selling, licensing, or emailing the material to any third party or any employee of the Province who is not authorized to access the material is prohibited.

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Tuesday, June 26, 2012 2:04 PM
To: Lesiuk, Tim ENV:EX; Wieringa, Paul MEM:EX; Mack, James ENV:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX
Subject: RE: Offsets slides for tomorrow's deck

s.13. s.16

From: Lesiuk, Tim ENV:EX
Sent: Tuesday, June 26, 2012 1:43 PM
To: Wieringa, Paul MEM:EX; Mack, James ENV:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX
Subject: RE: Offsets slides for tomorrow's deck

I'll send you the formula. It needs to be resource specific as different generating resources have different T/MWh.

The formula is:

$[\text{TCO}_2\text{e/MWh (generating resource)}] * [\$ / \text{Tonne CO}_2\text{e} (\$25 \text{ or } \$30 \text{ or } \$55)] = \$/\text{MWh}$

I would commonly use these emissions factors:

- Combined Cycle Gas Turbine: 360 T CO₂e/GWh (could be as low as 320)
- Single Cycle Gas Turbine: 450 to 500 T CO₂e/GWh (could be higher if peaking)
- Burrard Thermal: 700 T CO₂e/GWh
- Coal (Supercritical): 900 T CO₂e/GWh
- Coal (Conventional Alberta): 1500 to 2000 T CO₂e/GWh

You likely have specific numbers from the LNG proponents for their proposed self supply and from BCH for centralized generation.

s.13. s.17

Tim

From: Wieringa, Paul MEM:EX
Sent: Tuesday, June 26, 2012 1:29 PM
To: Mack, James ENV:EX; MacLaren, Les MEM:EX; Lesiuk, Tim ENV:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX
Subject: RE: Offsets slides for tomorrow's deck

Tim:

Could you provide the conversion to \$MWh of \$30/tonne and \$25/tonne for CO₂?

Many thanks

Paul Wieringa

From: Mack, James ENV:EX
Sent: Tuesday, June 26, 2012 1:12 PM
To: MacLaren, Les MEM:EX; Lesiuk, Tim ENV:EX
Cc: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX
Subject: Re: Offsets slides for tomorrow's deck

They were specific on deputy call on this.

s.13, s.17

James Mack
Head - Climate Action Secretariat
Ministry of Environment, Government of British Columbia
James.mack@gov.bc.ca
Phone: 250-356-6243

From: MacLaren, Les MEM:EX
Sent: Tuesday, June 26, 2012 01:05 PM
To: Lesiuk, Tim ENV:EX
Cc: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
Subject: Re: Offsets slides for tomorrow's deck

Thanks Tim

s.13, s.17

Les MacLaren
Assistant Deputy Minister
BC Ministry of Energy and Mines
250-952-0204

On 2012-06-26, at 1:02 PM, "Lesiuk, Tim ENV:EX" <Tim.Lesiuk@gov.bc.ca> wrote:

Hi Paul,

Here are the slides from PCT with the volume and price information. These are confidential and commercially sensitive so please keep the finer details within a close circle.

If you need help with the conversion to \$/MWh let me know. I have some experience in that area.

Will I be able to get the next version of the deck before it goes to Deputies? It makes it easier for us to brief Cairine.

Thanks,
Tim

From: Wieringa, Paul MEM:EX
Sent: Tuesday, June 26, 2012 12:47 PM
To: Lesiuk, Tim ENV:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
Subject: RE: Offsets slides for tomorrow's deck

Do you have the costing information slide?

Paul Wieringa

From: Lesiuk, Tim ENV:EX
Sent: Monday, June 25, 2012 11:00 PM
To: Wieringa, Paul MEM:EX; MacLaren, Les MEM:EX
Cc: Barillaro, Scott W MEM:EX; Buchanan, Jack MEM:EX; Mack, James ENV:EX
Subject: Offsets slides for tomorrow's deck
Importance: High

Sorry these are coming in late.

Two slides on policy context and supply

Several background slides with detailed information in case you want to draw out other points.

I will have costing information tomorrow morning.

Tim

<PCT_LNG_Overview_2_may_2012.pptx>

Buchanan, Jack MEM:EX

From: Barillaro, Scott W MEM:EX
Sent: Thursday, June 28, 2012 2:40 PM
To: Buchanan, Jack MEM:EX; Dias, Oswald MEM:EX; Johnstone, Heather MEM:EX; Cutler, Scott MEM:EX
Subject: FW: Implications of LNG NG Generation on DSM

Hi all. I got this from Andrew earlier. This should be worked in to our materials, likely on the clean two-pager

W. Scott Barillaro, B.A, B.Mus, MPA

Director, Transmission and Industrial Electricity Policy
Electricity Policy
Ministry of Energy and Mines
4th Floor, 1810 Blanshard Street
Victoria, BC
V8T 4J1
(o) 250-952-0267
s.17

From: Pape-Salmon, Andrew MEM:EX
Sent: Thursday, June 28, 2012 12:48 PM
To: 'Hobson, Stephen'; 'Mallory, Jillian'
Cc: Wieringa, Paul MEM:EX; Barillaro, Scott W MEM:EX; Gosman, Nat MEM:EX; Champion, Jennifer MEM:EX; Waters, Cory MEM:EX; Yan, Jean MEM:EX
Subject: Implications of LNG NG Generation on DSM

Steve and Jillian, please comment on the factual accuracy of this overview below.

s.13. s.17

Thanks,

Andrew Pape-Salmon, P.Eng., MRM
Director - Energy Efficiency Branch
BC Ministry of Energy and Mines
Tel: 250-952-0819

Buchanan, Jack MEM:EX

From: Buchanan, Jack MEM:EX
Sent: Friday, June 22, 2012 5:26 PM
To: Barillaro, Scott W MEM:EX; Cutler, Scott MEM:EX; Johnstone, Heather MEM:EX; Wieringa, Paul MEM:EX; Griffin, Derek MEM:EX
Subject: Sufficiently cheap mixes

s.13, s.17, s.21



LNG and gas gen
scratch book j...