

# PEACE RIVER REGIONAL DISTRICT ELECTORAL AREA DIRECTORS COMMITTEE MEETING

## A G E N D A

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for the meeting to be held on Thursday, October 15, 2015 in the  
Regional District Office Boardroom, 1981 Alaska Avenue, Dawson Creek, BC  
commencing immediately following the Rural Budgets Administration Committee meeting.

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1. Call to Order: Director Goodings to Chair the meeting
2. Director's Notice of New Business:
3. Adoption of Agenda:
4. Adoption of Minutes:  
M-1 Electoral Area Directors' Committee Minutes of September 10, 2015.
5. Business Arising from the Minutes:
6. Delegations:
7. Correspondence:
8. Reports:  
R-1 Discussion regarding Community Planning - Prespatou.  
R-2 October 8, 2015 - Chris Cvik, Chief Administrative Officer - Building Bylaw Non-binding Referendum on Building Inspection Service
9. New Business:  
NB-1 October 14, 2015 - Gwen Johansson - BC Hydro Rate Design Hearings
10. Communications:
11. Diary:
12. Adjournment:



**PEACE RIVER REGIONAL DISTRICT  
ELECTORAL AREA DIRECTORS' COMMITTEE  
MEETING MINUTES**

**M-1**

DATE: September 10, 2015

PLACE: Regional District Office Boardroom, Dawson Creek, BC

PRESENT:

Directors: Karen Goodings, Director, Electoral Area 'B' and Meeting Chair  
Brad Sperling, Director, Electoral Area 'C'  
Leonard Hiebert, Director, Electoral Area 'D'  
Dan Rose, Director, Electoral Area 'E'

Staff: Chris Cvik, Chief Administrative Officer  
Bruce Simard, General Manager of Development Services  
Trish Morgan, General Manager of Community Services and Electoral Areas  
Kim Frech, Chief Financial Officer  
Jeff Rahn, General Manager of Environmental Services  
Kari Bondaroff, Invasive Plant Program Manager (for a portion of the meeting)  
Jo-Anne Frank, Corporate Officer (for a portion of the meeting)  
Barb Coburn, Recording Secretary

Guests: Agricultural Advisory Committee Members:  
Rod Kronlachner, Arras, BC  
Tim Collins, Fort St. John  
Judy Madden, Dawson Creek, BC  
Jill Copes, Cecil Lake, BC  
Lori Vickers, Dawson Creek, BC  
Greg Neave, Fort St. John, BC  
Talon Gauthier, Dawson Creek, BC  
Julie Robinson, Fort St. John, BC

Call to Order Chair Goodings called the meeting to order at 10 a.m.

VARY THE AGENDA: MOVED by Director Sperling, SECONDED by Director Rose,  
That the agenda be varied to deal with D-1 at this time.

CARRIED.

DELEGATIONS:

D-1  
Frank Leonard, ALC  
The Chair introduced Mr. Frank Leonard, Chair and CEO of the Agricultural Land Commission. Mr. Leonard provided a brief outline of this background and his expectations for the Commission under his leadership. He expressed concern regarding the amount of work that the Commission is facing and the lack of personnel needed to accomplish his mandate. He further advised that more than half of the 500 plus applications received annually originate from the Peace River Regional District. He encouraged the Regional District to lobby for more funding for the Commission to aide in the hiring new staff members that could perhaps be located in the Peace region to assist with processing applications. It was suggested that a planner and a compliance and enforcement officer would be of great value in this region.

The new regulations are available on the Provincial website but the commission's interpretation of the regulations are not expected to be posted to the Agricultural Land Commission's webpage until mid-October. Chair Goodings provided feedback that making application online or by email only would be difficult for many people in our region and encouraged Mr. Leonard to reconsider whether paper applications could still be accepted.

**October 15, 2015**

DELEGATION (continued):

D-1 (continued)  
Frank Leonard, ALC

Mr. Leonard is looking forward to the challenges he faces in his new position and collaborating with the Regional District to process applications in a timely manner. Chair Goodings thanked Mr. Leonard for his attendance at the meeting and also expressed that she too is pleased to be working with Mr. Leonard.

Recess

The meeting recessed at 10:55 a.m.

Reconvene

The meeting reconvened at 11:09 a.m.

ADOPTION OF AGENDA:

September 10, 2015  
Agenda

MOVED by Director Hiebert SECONDED by Director Sperling,  
That the Electoral Area Directors' Committee agenda for the September 10, 2015 meeting, including items of New Business, be adopted:  
Call to Order: Director Goodings to Chair the meeting  
Director's Notice of New Business:  
Adoption of Agenda:  
Adoption of Minutes:  
M-1 Electoral Area Directors' Committee Meeting Minutes of August 13, 2015.  
Business Arising from the Minutes:  
Delegations:  
10 a.m. D-1 Frank Leonard, Chair and CEO, Agricultural Land Commission  
Correspondence:  
C-1 August 25, 2015 - Selina Robinson, MLA Opposition Spokesperson for Local Government - Invitation to Meet during UBCM.  
C-2 August 31, 2015 - BC Rural Network Enews - BC Rural Network eNews Annual Meeting.  
C-3 August 31, 2015 - Joe Breti, Alternate Director - Electoral Area 'D' - Compensation for Alternate Directors to Attend Meetings.  
Reports  
R-1 Discussion regarding Electoral Area Directors' Committee meeting dates (Terms of Reference attached).  
R-2 September 1, 2015 - Kim Frech, Chief Financial Officer - Invasive Plant - Ministry and Other Agency Funding Background.  
R-3 August 26, 2015 - Bruce Simard, General Manager of Development Services - Agricultural Advisory Committee Terms of Reference. (Referred from Regional Board)  
R-4 August 27, 2015 - Fran Haughian, Manager of Communications - Communications and Public Engagement Plans for Referenda. (Referred from Regional Board)  
R-5 Chris Cvik, Chief Administrative Officer - General Discussion - Effects of Rural Post Office Closures.  
New Business:  
NB-1 August 26, 2015 - Finance Committee - Select Standing Committee on Finance and Government Services - Annual Budget Consultation.  
NB-2 Lighting at temporary bin locations  
NB-3 Referral Process of Oil and Gas Commission Applications  
Communications:  
Diary:  
Adjournment:

CARRIED.

ADOPTION OF MINUTES:

M-1  
EADC meeting minutes of  
August 13, 2015

MOVED by Director Rose, SECONDED by Director Hiebert,  
That the Electoral Area Directors' Committee Meeting minutes of August 13, 2015 be adopted.  
CARRIED.

CORRESPONDENCE:

C-2  
BC Rural Networks

MOVED by Director Hiebert, SECONDED by Director Sperling,  
That the Electoral Area Directors' Committee recommends to the Regional Board that staff research the feasibility of an electoral area directors becoming a member of the BC Rural Networks.

CARRIED.

C-3  
Joe Breti Request for  
Remuneration

MOVED by Director Sperling, SECONDED by Director Rose,  
That the Electoral Area Directors' Committee recommends to the Regional Board that a letter be forwarded to Mr. Joe Breti, Electoral Area 'D' Alternate Director to advise him that the policy for remuneration for Alternate Directors to attend meetings will remain as is.

CARRIED.

REPORTS:

R-3  
Agricultural Land  
Commission Terms of  
Reference

MOVED by Director Hiebert, SECONDED by Director Rose,  
That the Electoral Area Directors' Committee recommends to the Regional Board that, prior to the Regional Board adopting the Terms of Reference for the Agricultural Advisory Committee, the draft terms be referred to the Agricultural Advisory Committee, incorporating the following amendments:  
1.1 strike the words 'via Electoral Area Directors' Committee' to read "To provide advice to the Regional Board on matters relating to, or influencing agriculture in the region";  
1.2 remove the second bullet that states "regulatory bylaws pertaining to agriculture";  
3.1 that 3.1 be replaced with the original wording, to read "The Committee is advisory and all recommendations will be forwarded to the Regional Board for consideration"; and  
3.7 amend the wording to reflect that meetings are to be held alternately in Dawson Creek and Fort St. John to read: "Meetings shall be open and will be held alternately between the main office in Dawson Creek and the branch office in Fort St. John of the Peace River Regional District, unless otherwise arranged."

CARRIED.

Recess

The meeting recessed at 12:34 p.m. noon for lunch

Reconvene

The meeting reconvened at 1 p.m.

REPORTS (continued):

R-4  
Communications and  
Public Engagement Plans  
for Referendums

MOVED by Director Hiebert, SECONDED by Director Sperling,  
That the Electoral Area Directors' Committee recommends to the Regional Board that staff review the "Elections and Voting Procedures By-law No. 1825, 2008" for future voting opportunities, with a view to making changes to the mail voting criteria by amending the minimum distance a resident travels from 90 km to 50 km to read:

"persons who reside further than 50 kilometers away from their nearest voting place, as measured by road distance, are entitled to register and to vote by mail".

CARRIED.

MOVED by Director Sperling, SECONDED by Director Rose,  
That the Electoral Area Directors' Committee recommends to the Regional Board that the Communications and Engagement Plan for the proposed Electoral Area B, C, and D Water Function Referendum be approved.

CARRIED.

REPORTS (continued):

R-4 (continued)  
Communications and  
Public Engagement Plans  
for Referendums

MOVED by Director Rose, SECONDED by Director Sperling,  
That the Electoral Area Directors' Committee recommends to the Regional Board that the  
Communications and Engagement Plan for the proposed Electoral Area B, and C Sewer  
Function Referendum be approved.

CARRIED.

MOVED by Director Sperling, SECONDED by Director Hiebert,  
That the Electoral Area Directors' Committee recommends to the Regional Board that staff be  
approved to proceed with the preparation of a brochure to inform the electorate regarding the  
upcoming referendums, taking into account the recommended changes provided by the  
Electoral Area Directors.

CARRIED.

NEW BUSINESS:

NB-1  
Select Standing Committee  
on Finance and  
Government Services -  
Annual Budget  
Consultation

MOVED by Director Hiebert, SECONDED by Director Sperling,  
That the Electoral Area Directors' Committee recommends to the Regional Board that the Chair  
or her designate be authorized to attend the Select Standing Committee on Finance and  
Government Service's "Budget 2015 Consultations Community Public Hearings" to take place  
on Wednesday, September 30, 2015 in Dawson Creek and October 7, 2015 in Fort St. John (via  
Skype or conference call) to advocate for increased funding to the Agricultural Land Commission  
to facilitate the employment of more planners and compliance and enforcement officers to be  
located in the Peace region.

CARRIED.

ADJOURNMENT:

The Chair adjourned the meeting at 2:35 p.m.

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Karen Goodings, Chair

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Barb Coburn, Recording Secretary



# Peace River Regional District REPORT

R-2

To: EADC

Date: October 8, 2015

From: Chris Cvik, CAO

**Subject: Building Bylaw – Non Binding Referendum on Building Inspection Service**

## **RECOMMENDATION(S):**

1. That EADC receives the attached draft report for review and discussion.

## **BACKGROUND/RATIONALE:**

Administration will be bringing a report to the Board in November on Building Inspection. As Building Inspection Service provided by the PRRD applies to the Electoral Areas, the draft report is being brought to EADC for review and discussion before being forwarded to the Board for consideration.

## **OPTIONS:**

1. That EADC receives the attached draft report for review and discussion.
1. That EADC provides further direction on the attached report.

## **STRATEGIC PLAN RELEVANCE:**

## **FINANCIAL CONSIDERATION(S):**

## **OTHER CONSIDERATION(S):**

October 15, 2015

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Staff Initials:

Dept. Head:

CAO:

Page 1 of 1



# Peace River Regional District REPORT

R-2

To: Chair and Directors

Date: October 2, 2015

From: Chris Cvik, CAO

**Subject: Building Bylaw – Non Binding Referendum on Building Inspection Service**

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## RECOMMENDATIONS:

1. That the Board approves the draft process that would be used to determine public opinion on Building Inspection Services.

## BACKGROUND/RATIONALE:

During the November 27, 2014, PRRD Board Meeting, the following resolution was passed:

### Building Bylaw No. 2131, 2014

RD/14/11/07 (27) That "Building Bylaw No. 2131, 2014" be read three times this 27th day of November, 2014.

- RD/14/11/08 (27)
- 1) That "Building Bylaw No. 2131, 2014" be adopted this 27th day of November, 2014; and
  - 2) That the Regional Board direct that a press release be issued regarding the adoption of "Building Bylaw No. 2131, 2014"; and
  - 3) That the Regional Board approve an information campaign (for 30 days) to update the public about the status of building inspection, with a budget up to \$7,500; and
  - 4) That a referendum be held in each Electoral Area to seek the public's opinion on whether or not the Peace River Regional District should continue with "Building Bylaw No. 2131, 2014", with a view to commencing the referendum process on November 15, 2015, with the referendum to be completed by April 15, 2016.

Staff Initials:

Dept. Head:

CAO:

Page 1 of 4

**October 15, 2015**

## DISCUSSION:

The purpose of the non-binding referendum is to seek public input on whether the PRRD should be regulating building inspection.

### Suggested Referendum Process:

Conduct a non-binding referendum across each one of the four Electoral Areas through a mail-in process. The mail-in ballot process would be held over a six week period in early 2016. The ballots will be the same for each Electoral Area. The only difference is that each Electoral Area will receive a different colour ballot to allow the results to be compiled separately for each Electoral Area.

A package would be sent to each property in Electoral Areas B, C, D, and E that receives a tax notice through B.C. Assessment. Duplicate owners would only receive one ballot for all their properties combined. The package would include an informational brochure, a self-addressed return stamped envelope, and a ballot that requires the selection from ONE of the following options:

1. Are you in favour of retaining the existing Building Bylaw 2131, 2014 that includes mandatory and voluntary Building Inspection areas? Y\_\_\_ N\_\_\_
2. Are you in favour of discontinuing the existing Building Bylaw 2131, 2014 that would result in the rural Electoral Areas not having any Building Inspection service? Y\_\_\_ N\_\_\_
3. Are you in favour of adjusting Building Bylaw 2131, 2014 to make Building Inspection voluntary across all of the rural Electoral Areas? Y\_\_\_ N\_\_\_
4. Are you in favour of adjusting Building Bylaw 2131, 2014 to making Building Inspection mandatory across all of the rural Electoral Areas? Y\_\_\_ N\_\_\_

**NOTE:** It is important to understand the referendum is non-binding as the Building Bylaw is a regulatory bylaw for which there is no authority to hold a binding referendum. Any outcome of the non-binding referendum would need to come back to the Board for further direction.

Under the proposed process, there would not be any Community Meetings. The reason for this is because the Regional District is not looking to create a new service or function. Residents are being asked if they would like to maintain the current 'status quo' option of a mandatory and voluntary building inspection service, or eliminate it.



**OPTIONS:**

1. That the Board approves the draft process that would be used to determine public opinion on Building Inspection Services.
2. That the Board does not approve the draft process that would be used to determine public opinion on Building Inspection Services and provides further direction to Administration.
3. That the Board rescind resolution #4 from the November 27, 2014, PRRD Board Meeting to hold a non-binding referendum, and direct Administration to establish a committee including residents from the community to review the current Building Bylaw and bring forward any recommendations to the Board for further consideration.

**STRATEGIC PLAN RELEVANCE:** Carry forward item from 2014.

**COMMUNICATIONS:** N/A

**FINANCIAL CONSIDERATION(S):**

The cost of the mail-out would be included in the 2016 budget. There is approximately \$7,000 in the current budget for Building Bylaw communications that is available for any communication required in 2015.

**OTHER CONSIDERATION(S):**

Building inspection is a Public Service that benefits property owners, their neighbors and their neighborhoods. Without the service, real estate and land use management becomes a minefield of uncertainty and 'Buyer Beware'. In 2013, Administration provided a report to the Board on the implications of not having a Building Bylaw Service. These impacts still exist and include:

Positive Impacts:

1. From a Risk Management perspective, the potential liability to the PRRD for negligent building inspection would cease as the PRRD would no longer provide Building Inspection and Permitting services. (To date the PRRD has been involved in only one legal suit and has never been found liable for poor building inspections. Experience shows this risk is rather low).
2. Property owners would not be taxed for the service. (2015 rate of \$0.004/\$1,000 assessment).
3. Building permit fees would not be required for undertaking construction.
4. Builders not required to obtain inspections for construction.

**Negative Impacts:**

1. School Site Acquisition Charges (SSAC) - Severely hamper the ability of the PRRD to collect the SSAC on behalf of school districts (where applicable). The SSAC allows for school districts to collect funds to purchase land for new schools, which is a recognized need, and can delay or prevent school construction.
2. Rural Fire Protection: Depending on where you live in the rural area, discontinuing building inspection could negatively impact rural fire protection service to current and future home due to safety concerns over fire fighters entering buildings that may not be built to code.
3. Development Cost Charges (DCCs) for Charlie Lake Sewer – Collection of a DCC is triggered by application for a building permit. Without a building permit the ability to collect DCCs is severely hampered and could lead to underfunding of the Charlie Lake Sewer Service and new development not contributing its share to necessary upgrades.
4. Zoning Compliance – Compliance with zoning requirements is part of the initial assessment in the building permit process. Without this, the risk that buildings will be constructed and used contrary to zoning regulations and community preferences increases dramatically. This can result in higher frequency and costs for enforcement, and high levels of community dissatisfaction.
5. Assessment Base – Building permit information is provided to BC Assessment. This information helps ensure that new buildings are captured in the assessment process and taxed accordingly so that people do not pay more than their share of taxes, which is the effect when new assessment is not included. (i.e. As the assessment base grows quickly, a full and accurate accounting of that assessment will reduce taxes when government expenses are managed to increase slower than the assessment base).
6. Greater Real Estate Risk – Without the building permit inspection process real estate risk may tend to rise as uncertainty about safety and code compliance increases. This can result in lost sales, more difficulty securing mortgages and generally reduced confidence in the value of construction. This situation of uncertainty also tends to amplify as construction costs increase. The building inspection process provides an industry recognized and affordable third party audit to reduce this risk of uncertainty, and promote safety and confidence in the real estate sector.
7. Develop Permits (DPs) – DP's allow the PRRD to impose supplementary requirements for specific purposes, to achieve desired community goals, such as: lakeshore development guidelines to enhance environmental quality; screening and buffering between residential and non-residential uses; and general appearance enhancements for highly visible community areas. The primary trigger for activating these requirements is the building permit. Without a building permit, the community goals of the DP are not implemented and cannot be retroactively enforced.

## WHAT IS BEING PROPOSED

You are being asked your opinion on whether or not the Peace River Regional District (PRRD) should continue to offer a building permit and inspection service such as currently provided in Building Bylaw No. 2131, 2014.

## WHERE CAN I GET A COMPLETE COPY OF BYLAW 2131, 2014?

A complete copy is available on the Engage! Page of the PRRD website at: <http://prrd.bc.ca>

## WHY AM I RECEIVING THIS?

Last year in November, 2014, the Board of PRRD approved the following resolution:

*"That a referendum be held in each Electoral Area to seek the public's opinion on whether or not the Peace River Regional District should continue with "Building Bylaw No. 2131, 2014", with a view to commencing the referendum process on November 15, 2015, with the referendum to be completed by April 15, 2016."*

## WHAT IS INCLUDED IN BUILDING BYLAW 2131, 2014?

Building Bylaw 2131, 2014, includes the administration of the BC Building Code by the PRRD through a permitting and inspection process for the construction, alteration, repair and demolition of buildings in all of Electoral Area C and small portions of Electoral Areas B, D, and E.

## HOW LONG HAS THE BUILDING BYLAW BEEN IN PLACE?

In 1969, the Province of BC issued supplementary letters patent giving the Peace River Regional District authority to have a building inspection service. The Regional District began regulating building inspection in 1973. Since that time, there has continued to be a building inspection regulatory bylaw in place with the regulations and boundaries changing from time to time to respond to the issues of the day.

The current Bylaw 2131, 2014, was adopted in November 2014, repealed and replaced Bylaw 1996, 2011, and returned the mandatory and voluntary areas of Bylaw No. 1189, 1998. Bylaw 1996, 2011 was repealed in response to public opposition that the bylaw was enacted without proper public input.

## WHAT IS THE DIFFERENCE BETWEEN THE MANDATORY AND VOLUNTARY AREAS IN THE CURRENT BYLAW 2131, 2014?

Persons who undertake construction in the mandatory area are required to obtain a building permit. Persons who undertake construction outside of the mandatory area may apply for and obtain a building permit, but are not required to do so.

We would include a map that shows the mandatory and voluntary areas. This would be a high level map similar to the style and size of the one included in the water/sewer brochures.

## HOW MUCH DO I CURRENTLY PAY FOR BUILDING INSPECTION SERVICES?

Based on 2015 Assessment, the residential rate for Building Inspection Services is \$0.004 per \$1,000 taxable assessment on land and improvements. The residential rate was \$0.009 per \$1,000 in 2014. In 2015, \$62,979 was collected in property tax for Building Inspection Services

Residential Value Of Land and Improvements	Amount of Annual Property Tax
\$300,000	\$1.20
\$500,000	\$2.00
\$750,000	\$3.00
\$1,000,000	\$4.00

## HOW MUCH DO USERS PAY FOR BUILDING INSPECTION SERVICES?

The amount that users pay through building permit and other fees (i.e., demolition permits) varies from year to year based on development activity, but has been in excess of 50% of the total tax and fees collected.

	Property Tax Collected	Building Permit and Other Fees Collected	Total Tax & Fees Collected	Percentage of Revenue Collected from User Fees
2015 Budget	\$62,979	\$75,000	\$137,979	54%
2014 Actual	\$150,786	\$117,769	\$200,786	59%
2013 Actual	\$40,174	\$190,766	\$230,940	83%
2012 Actual	\$104,967	\$171,770	\$276,737	62%

## WHAT IS THE REFERENDUM QUESTION THAT I AM BEING ASKED TO VOTE ON?

The referendum ballot which is located on the back page of this brochure asks you to select ONE of the following options:

- Are you in favor of retaining the existing Building Bylaw 2131, 2014 that includes mandatory and voluntary Building Inspection areas? OR
- Are you in favor of discontinuing the existing Building Bylaw 2131, 2014 that would result in the rural Electoral Areas not having any Building Inspection service? OR
- Are you in favor of adjusting Building Bylaw 2131, 2014 to make Building Inspection voluntary across all of the rural Electoral Areas? OR
- Are you in favor of adjusting Building Bylaw 2131, 2014 to making Building Inspection mandatory across all of the rural Electoral Areas?

## WHAT ARE THE IMPACTS OF THE VARIOUS OPTIONS?

1. Building Bylaw 2131, 2014, is retained in each Electoral Area.  
Maintaining the status quo means the regional district would continue to have a mandatory and voluntary Building Inspection and Permitting area that is currently in place.
2. Building Bylaw 2131, 2014, is discontinued in each Electoral Area.  
Discontinuing the Building Bylaw would result in the rural Electoral Areas not having any Building Inspection and Permitting service. Based on the 2015 budget and assessment figures, the residential tax savings would be about \$2.00 per year on a property with \$500,000 of assessment.
3. Building Bylaw 2131, 2014, is voluntary across all of the rural Electoral Areas.  
Building Inspection and Permitting would be provided in the Electoral Areas, but only at the request of the home builder or developer.
4. Building Bylaw 2131, 2014, is mandatory across all of the rural Electoral Areas.  
Building Inspection and Permitting would be required across all Electoral Areas.

## WHAT ARE THE EFFECTS OF DISCONTINUING BUILDING BYLAW 2131, 2014, IN THE REGIONAL DISTRICT'S RURAL AREAS?

### Positive Impacts:

1. From a Risk Management perspective, the potential liability to the PRRD for negligent building inspection would cease as the PRRD would no longer provide Building Inspection and Permitting services. (To date the PRRD has been involved in only one legal suit and has never been found liable for poor building inspections. Experience shows this risk is rather low)
2. Property owners would not be taxed for the service. (2015 rate of \$0.004/\$1,000 assessment)

3. Building permit fees would not be required for undertaking construction.
4. Builders would not be required to obtain inspections for construction.

## Negative Impacts:

1. School Site Acquisition Charges (SSAC) - Severely hamper the ability of the PRRD to collect the SSAC on behalf of school districts (where applicable). The SSAC allows for school districts to collect funds to purchase land for new schools, which is a recognized need, and can delay or prevent school construction.
2. Rural Fire Protection: Depending on where you live in the rural area, discontinuing building inspection could negatively impact rural fire protection service to current and future home due to safety concerns over fire fighters entering buildings that may not be built to code.
3. Development Cost Charges (DCCs) for Charlie Lake Sewer – Collection of a DCC is triggered by application for a building permit. Without a building permit the ability to collect DCCs is severely hampered and could lead to underfunding of the Charlie Lake Sewer Service and new development not contributing its share to necessary upgrades.
4. Zoning Compliance – Compliance with zoning requirements is part of the initial assessment in the building permit process. Without this, the risk that buildings will be constructed and used contrary to zoning regulations and community preferences increases dramatically. This can result in higher frequency and costs for enforcement, and high levels of community dissatisfaction.
5. Assessment Base – Building permit information is provided to BC Assessment. This information helps ensure that new buildings are captured in the assessment process and taxed accordingly so that people do not pay more than their share of taxes, which is the effect when new assessment is not included. (i.e. As the assessment base grows quickly, a full and accurate accounting of that assessment will reduce taxes when gov't expenses are managed to increase slower than the assessment base)
6. Greater Real Estate Risk – Without the building permit inspection process real estate risk may tend to rise as uncertainty about safety and code compliance increases. This can result in lost sales, more difficulty securing mortgages and generally reduced confidence in the value of construction. This situation of uncertainty also tends to amplify as construction costs increase. The building inspection process provides an industry recognized and affordable third party audit to reduce this risk of uncertainty, and promote safety and confidence in the real estate sector.
7. Develop Permits (DPs) – DP's allow the PRRD to impose supplementary requirements for specific purposes, to achieve desired community goals, such as: lakeshore development guidelines to enhance environmental quality; screening and buffering between residential and non-residential uses; and general appearance enhancements for highly visible community areas. The primary trigger for activating these requirements is the building permit. Without a building permit, the community goals of the DP are not implemented and cannot be retroactively enforced.

## WHAT HAPPENS AS A RESULT OF THE VOTE?

The Building Bylaw is a regulatory bylaw for which there is no authority to hold a binding referendum. As a result, any outcome is non-binding. The results will go before the PRRD Board for further direction. Based on the results of the referendum, the Board will make the determination whether or not to maintain the current 'status quo', modify or discontinue the service.

## WHO CAN VOTE?

All property classes in Electoral Areas B, C, D, and E that receive a tax notice through B.C. Assessment are eligible to vote. This includes the following classes: Class 1 - Residential; Class 2 – Utilities; Class 3 – Major Industry; Class 4 – Light Industry; Class 5 – Business; Class 6 – Recreation and Non-profit; and Class 7 – Farms.

## HOW DO I VOTE?

A ballot is included in the informational brochure mailed out to every property class that receives a tax notice with duplicate owners only receiving one ballot for all their properties combined. The Completed ballots are to be returned to the PRRD using the self-addressed stamped envelope included with the ballot.

Include the ballot page with the referendum question.

## WHERE CAN I FIND ADDITIONAL INFORMATION?

Please visit the Peace River Regional District website Engage! Section at [www.prrd.bc.ca/engage](http://www.prrd.bc.ca/engage) or call the main office telephone number at 250-784-3200.

Updated: May 22, 2015

## ELECTORAL AREA DIRECTORS' COMMITTEE

### DIARY ITEMS

<u>Item</u>	<u>Status</u>	<u>Notes</u>	<u>Diarized</u>
1. Farmer's Advocacy Office	on-going	provide the agenda and meeting notes of the Farmer's Advocacy meetings on a quarterly basis	May 21, 2015



**From:** Karen Goodings <kgooding@pris.bc.ca>  
**Sent:** Wednesday, October 14, 2015 9:30 PM  
**To:** Chris Cvik  
**Subject:** FW: Rate design hearings  
**Attachments:** McCulloughReport Site C Economics May 2015.pdf; Untitled attachment 00028.htm

I don't think I sent this through earlier.

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**From:** Gwen Johansson [mailto:gjohan@pris.ca]  
**Sent:** October-12-15 9:04 PM  
**To:** Roger Bryenton  
**Cc:** apeacock; PVEA Coordinator; Rob Botterell; George A M Smith; Karen Goodings  
**Subject:** Re: Rate design hearings

Hi Roger,  
Good to meet you via the Internet.

I am attaching the report done by Robert McCullough of McCullough Research in which he examines the assumptions of BC Hydro when considering new generation sources. His 20 page curriculum vitae is included at the end of the report so i will not elaborate here, other than to say he is a very well-respected energy economist in North America. If you don't have the report, you might find it useful.

I talked to him earlier today and he felt it would be a good idea for people to file a statement of interest with the BCUC for the Rate Design hearing. One advantage of registering is we get the all the information, including that which is confidential material. And if we decide to file evidence, we can, but if we find it too onerous, there is no cost or penalty for intervening and then not filing evidence as far as I know. I also think that if we choose to submit a final argument, we can do that without having filed evidence. I'm going to talk to Sarah Khan at the Public Interest Advocacy Centre tomorrow to confirm those last two, as she's been doing that stuff for a long time.

Hudson's Hope would be intervening because we need to be aware of the impact of the rate design on our residents and businesses. Our interest would be to protect the interests of our residential and commercial rate-payers. The Peace River Regional District has also registered as an intervenor, I believe.

In the past, efforts were made by the BCUC to design rates so that there was no or little subsidies across customer classes. Last Friday I talked to the retired executive director of the big industrial customers and he said that he was convinced the industrial rate would not go up significantly because if it did, some large customers that are teetering on the edge of profitability would be pushed over the edge. He believes that any effort to have each customer class "pay its own way" will go by the boards. He also thinks this Rate Design Hearing is basically to anoint what the industrial customers have already agreed upon. He assumes they have been in negotiation for sometime. But he's going to register, he said.

We had a 9% increase April 1, 2014, and a 6% increase in 2015. We have increases of 4%, 3.5% and 3% scheduled for April 1 of 2016, 2017 and 2018. That's a 28% increase (compounded) over 5 years. At the same time that was announced by Minister Bennett, he said there would also be increases in the 5 years subsequent to 2018. That puts us to the timeframe for bringing Site C on-line, which is when the rate-payers will begin paying off the 8.8+ billion dollar cost of Site C. We would seek to know how rates will be designed to keep industry viable but to pay off the existing and future debt load for BC Hydro. Somebody is going to have to shoulder that debt and if the industrial customers are unable to shoulder their share of that load, then who will?

**October 15, 2015**

I'm glad that several people/groups are going to register to intervene. If it turns out that several have a common interest, and we get a chance to look at the approach each is taking, perhaps we will be able to collaborate and present something of a common front. Maybe it's just a pipe dream, but if no-one challenges unfairness, then ever greater unfairness becomes the norm.

MAY 25, 2015



# Site C Business Case Assumptions Review

ROBERT MCCULLOUGH

PRINCIPAL  
MCCULLOUGH RESEARCH

October 15, 2015

ROBERT F. McCULLOUGH, JR.  
PRINCIPAL

May 25, 2015

Mr. Ken Boon

President, Peace Valley Landowners Association  
SS #2, Site 12, Comp 19  
Fort St. John, BC V1J4M7

Dear Mr. Boon:

Please find attached our review of the pivotal assumptions behind the voluminous economic studies developed in the course of the Site C selection. Please note that we have not made a suggestion for the future energy plans of British Columbia. Instead, we did something that should have been done several years ago by comparing the pivotal assumptions that can “place a thumb on the scale” in the ultimate choice.

In the course of our review we have found evidence from the U.S. Bonneville Power Administration that suggests that British Columbia Hydro’s choice of a discount rate may have differed from their usual practice. Since this is the single most important assumption in any cost benefit study, a careful review of BC Hydro’s decision to use this discount rate is in order.

Yours,



Robert McCullough

ROBERT F. McCULLOUGH, JR.  
PRINCIPAL

On December 16, 2014, the Government of British Columbia announced its decision to approve the Site C dam. For industry participants, it was a surprising conclusion that a relatively high-cost hydroelectric project was reported to be two-thirds the cost of the alternatives. Considering actual costs in the industry across North America, the decision implied a heavy “finger on the scale” in favor of Site C.

	Site C (2014)	IPPs (Industry Consultations)	IPP5 (IRP)
Starting Cost	\$58 - \$61 / MWh	\$85 / MWh	\$96 / MWh
Additional Factors	Adds \$6	Adds \$25	Adds \$34
Final Cost	\$64 - \$67 / MWh	\$110 / MWh - \$130 / MWh <sup>1</sup>	

A month later, on January 16, 2015, Les MacLaren, the Assistant Deputy Minister of the Electricity and Alternative Energy Division of the Office of the Ministry of Energy and Mines issued a report entitled “Site C Clean Energy Project Due Diligence Review.”<sup>2</sup> In a few pages the report summarized the justification of Site C, a major hydroelectric project on the Peace River.

The research in defense of this controversial project is comprised of hundreds, if not thousands, of documents totaling thousands of pages. Assistant Deputy Minister MacLaren summarized the analysis in a single table:

<sup>1</sup> Site C Final Investment Decision Technical Briefing, December 16, 2014, page 19.

<sup>2</sup> Site C Clean Energy Project Due Diligence Review, Les MacLaren, January 26, 2015.

## Comparing Unit Energy Costs of Site C and IPPs

Unit Energy Cost (UEC) at Point of Interconnection:	Site C	IPPs <i>BCH 2013 IRP</i>	IPPs <i>CEBC 2014</i>
<b>Rates Plan UEC at Point of Interconnection</b>	<b>\$58-61/MW.h</b>	<b>\$96/MW.h</b>	<b>\$85/MW.h</b>
Sunk Costs	Subtracts \$4		
Line Losses	Adds \$6	Adds \$10	Adds \$10
Area Transmission	\$0	Adds \$6	Adds \$6
Cost of Firm Transmission	Adds \$6	Adds \$2	Adds \$2
Foregone exports	Not Applicable	Adds \$9	Adds \$5
Firm Energy Adjustment (seasonal)	Subtracts \$2	Subtracts \$2	Subtracts \$2
EA, permitting, FN and community benefit costs	Included	Adds \$5	Included
Cost of Capacity Backup	Not applicable	Adds \$5	Adds \$5
<b>Unit Energy Cost Delivered to Lower Mainland:</b>	<b>\$64-67/MW.h</b>	<b>\$130/MW.h</b>	<b>\$110/MW.h</b>

How did the decision to build Site C come down to the comparison of just two numbers – \$58 to \$61/MWh for Site C – to the surprisingly large value of \$96/MWh for the alternatives?<sup>4</sup>

Decisions elsewhere in the U.S. and Canada have tended to rely on renewables – like wind, solar, and geothermal – for energy and natural gas for capacity. Hydro-Quebec, for example, recently announced resumed operations at Becancour, a 500 MW natural gas facility, to provide complementary capacity in support of its extensive wind development.<sup>5</sup> While the purpose of this report is to focus on assumptions and does not attempt to reproduce the full integrated resource plan, it is logical to assume that correcting the assumptions might well bring the plan back into conformity with similar plans elsewhere.

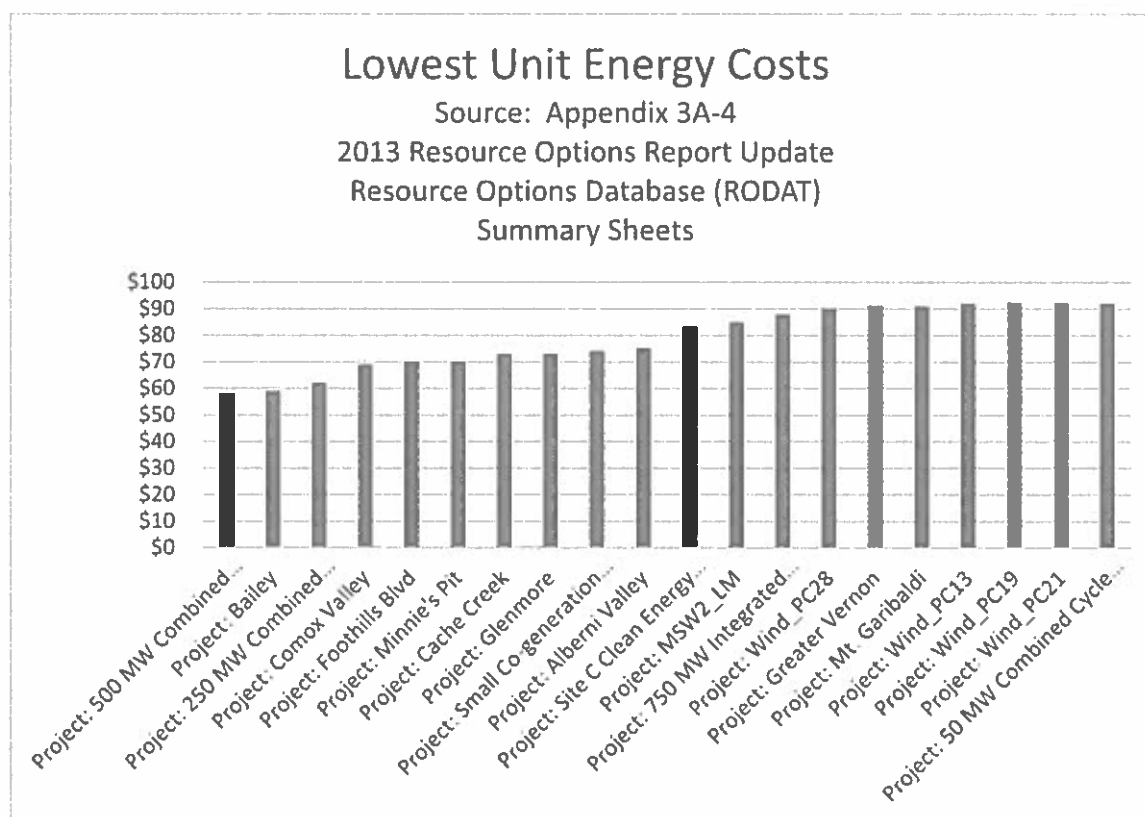
<sup>3</sup> Ibid., page 8.

<sup>4</sup> All dollar amounts in this report are 2013 Canadian dollars.

<sup>5</sup> Use of Bécancour generating station during peak hours: Hydro-Québec Distribution reaches agreements with TransCanada and Gaz Métro, Hydro-Quebec, May 8, 2015.

Site C Business Case Assumptions Review  
 May 25, 2015  
 Page 3

The 2013 Integrated Resource Plan (IRP) identified hundreds of different options and calculated a levelized per-megawatthour cost for each one. The twenty most cost-effective are:



The levelized real cost per megawatthour is called the “Unit Energy Cost” or UEC. Site C and a 500 MW combined cycle natural gas unit are indicated in red.<sup>6</sup>

The lowest cost resources are of a variety of types:

<sup>6</sup> The Site C costs reported in BC Hydro’s publicity reflect a different issue. The 2013 Integrated Resource Plan reflects cost. Lower numbers, reported later, reflect rate design.

Plant types for 20 lowest cost RODAT options	
Name	Fuel
250 MW Combined	natural gas
50 MW Combined Cycle	natural gas
500 MW Combined	natural gas
750 MW Integrated	coal gasification
Alberni Valley	landfill biogas
Bailey	landfill biogas
Cache Creek	landfill biogas
Comox Valley	landfill biogas
Foothills Blvd	landfill biogas
Glenmore	landfill biogas
Greater Vernon	landfill biogas
Minnie's Pit	landfill biogas
MSW2_LM	mass burn incineration
Mt. Garibaldi	geothermal
Site C	hydro
Small Co-generation	combined heat and power
Wind_PC_21	wind
Wind_PC13	wind
Wind_PC19	wind
Wind_PC28	wind

The UEC for Site C is \$83/MWh. This differs markedly from the value given by Assistant Deputy Minister MacLaren. The difference is that MacLaren was referencing a decision by the government of British Columbia to charge less than cost for a number of years. The actual cost, however, is a real cost and will be paid by taxpayers and ratepayers. The following chart shows the rate adjustment:



### Impact on Ratepayers – Site C

Site C Cost to Ratepayers (before changes)	\$83 / MWh
Under the 10 Year Plan, the amount of net income that BC Hydro is required to earn each year will now be tied to inflation and will no longer increase when new assets like Site C are added to the system.	- \$26 / MWh
The 10 Year Plan also reduced water rental charges for BC Hydro.	- \$1 / MWh
The capital cost estimate for Site C has been updated from \$7.9 billion to \$8.335 billion.	+ \$2.25 / MWh
Government has established a project reserve of an additional \$440 million to account for events outside of BC Hydro's control that could occur over an eight-year construction period, such as higher than forecast inflation or interest rates. The reserve will be managed by the provincial Treasury Board.	+ \$2.50 / MWh (if fully utilized)
Updated Site C Cost to Ratepayers	\$58 - \$61 / MWh

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Thus, British Columbia will still pay \$83/MWh, but will recover the cost more slowly and from a different set of its inhabitants. For example, the elimination of water rental means less money for British Columbia's general revenues and, eventually, higher taxes for taxpayers.

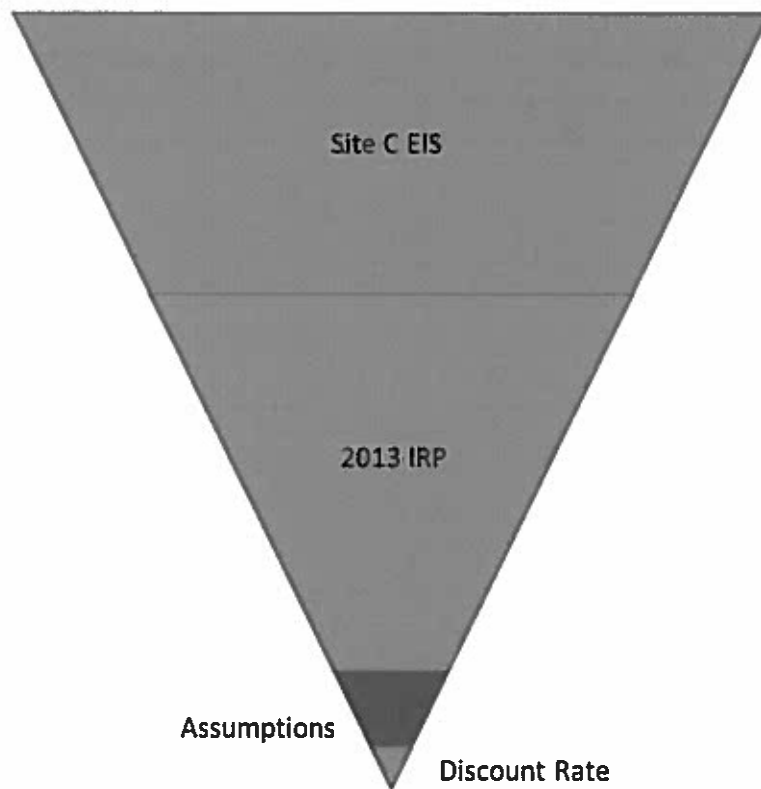
Ironically, the towering edifice of studies is built on a few significant assumptions made largely without justification. Each assumption is controversial. Some differ dramatically from estimates accepted throughout the industry; others are simply arbitrary.

The results of the assumptions are equally arbitrary, since changing the pivotal assumptions shifts the entire analysis. Assumptions concerning the cost of capital and the discount rate, the cost of alternatives, and the cost of fuel effectively determine the result regardless of the scale of the analysis that follows after these assumptions are made:

<sup>7</sup> Site C Final Investment Decision Technical Briefing, December 16, 2014, page 16.

Site C Business Case Assumptions Review  
May 25, 2015  
Page 6

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The discount rate lies at the heart of any cost benefit study. In fact, the selection of a discount rate can drastically change the results of the rest of the analysis, overwhelming any other single assumption. The graphic above illustrates the critical importance of the discount rate to the entire edifice that balances upon this one critical assumption. The discussion of this critical component of the analysis in the 2013 IRP can only be described as sketchy and inadequate. The entire presentation on the discount rate is limited to one paragraph:

#### 4.4.3.3 Discount Rate

Discount rates reflect the market demand for, or opportunity cost of, the capital associated with projects of similar risk. This IRP used 5 per cent and 7 per cent discount rates to calculate levelized resource unit costs (UECs and UCCs) for BC Hydro and IPP resources respectively. The updated discount rates reflect the change in BC Hydro's WACC and the updated assumption of IPP's WACC. In the long-term planning context, the discount rate methodology is consistent with the WACC used to calculate cost streams of installed resources.<sup>8,9</sup>

BC Hydro commissioned a review of its methodology on September 23, 2014.<sup>10</sup> The review of the discount rate methodology was equally brief:

BC Hydro utilizes two different values for weighted average cost of capital in its Integrated Resource Plan. The Company recommends a 5% real WACC for its own investments and 7% for IPPs and other third party developers; the 2% differential (and a sensitivity that reduces the differential to 1%) is set out in the Site C hydro project environmental assessment documentation and the IRP. The BC Hydro rate of 5% is reasonable, as BC Hydro's borrowing is guaranteed by the government, and the Company may also borrow directly from the Province. The British Columbia Utilities Commission recognizes this, stating that "With respect to the cost of capital, BC Hydro projects will

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<sup>8</sup> 2013 Integrated Resource Plan, British Columbia Hydro, page 4-63.

<sup>9</sup> Utility planning documents often use idiosyncratic acronyms. UEC stands for Unit Energy Cost. UCC stands for Unit Capacity Cost. IRP stands for Integrated Resource Plan. WACC stands for the Weighted Average Cost of Capital.

<sup>10</sup> Review of BC Hydro's Alternatives Assessment Methodology, Rachel Wilson et al., Synapse Energy Economics, September 23, 2014.

clearly have an advantage as a result of...access to the Province's high credit rating."

Utilities similar to BC Hydro appear to be using comparable values for WACC. In its Needs For and Alternatives To Business Case submission, for example, Manitoba Hydro conducted its resource analysis using a WACC of 5.05% in its base case.<sup>11</sup>

The kindest thing to be said about the proposed discount rates is that they are not wrong. Unfortunately, they are also not right. Synapse points to a similar number used by Manitoba Hydro. Synapse could easily reference much higher numbers for hydro projects used by Hydro-Quebec and the Bonneville Power Administration.<sup>12,13</sup> Indeed, Bonneville makes an interesting statement in its own discount rate derivation:

Recently, the Ibbotson data was complimented [sic] by a more intensive study performed by BPA Finance staff in which public utilities across North America were surveyed about their discount theory and practice. A few of the utilities that participated were Western Area Power Administration (WAPA), **BC Hydro**, BC Transmission, Tennessee Valley Authority (TVA), New York Power Authority (NYPA), and Sacramento Municipal Utility District (SMUD).

BPA's current rates of 12% for Hydro capital investments and 9% for non-replacement Transmission capital investments are **reasonable in light of the**

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<sup>11</sup> Ibid., page 2.

<sup>12</sup> Présentation augmentation capacité La Grande, Hydro-Quebec, October 2013, workpapers.

<sup>13</sup> Capital Investment Review, Bonneville Power Administration, April 8, 2014, page 4.

**benchmarking study** and the benchmarking reinforced BPA's existing practice of using a risk adjusted discount rate.<sup>14</sup> (emphasis supplied)

Bonneville Power Administration has cited BC Hydro in defense of adopting a 12% discount rate for hydroelectric projects. Tennessee Valley Authority uses discount rates between 6% and 12% based on various factors.<sup>15</sup> The clear implication is that BC Hydro's choice of a discount rate might be opportunistically chosen to benefit the selection of Site C in the Integrated Resource Plan, but a different, higher value has been used internally.

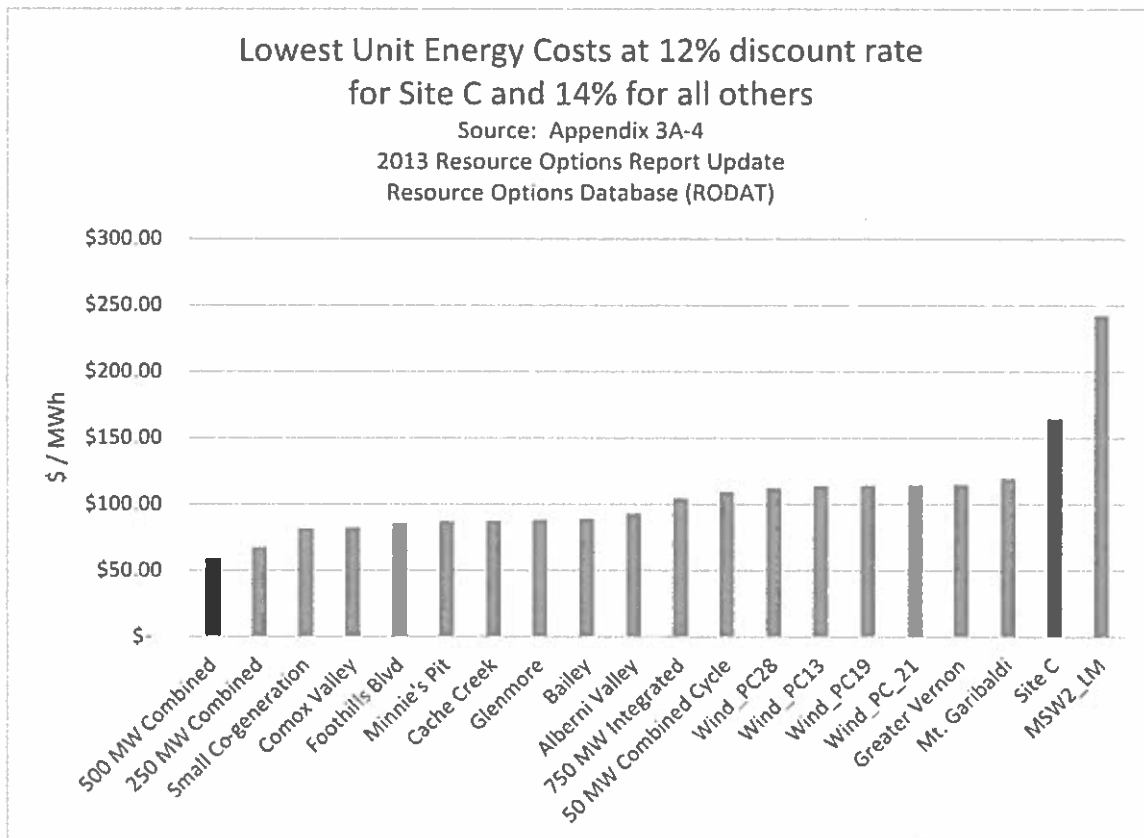
While discount rates often sound academic to those who have not been schooled in energy economics, their impact on decision-making is immense. The situation revolves around the timing of investments. Hydroelectric projects require substantial capital investments. Their operating costs are very low. This means that they are relatively unaffected by discount rate assumptions. Thermal plants – especially those fueled by natural gas – have relatively low capital costs, but also relatively high operating costs. Their economic viability is greatly affected by the choice of a discount rate.

When we take the table of the twenty lowest UECs and use a discount rate of 12% for Site C, while leaving in a 200 basis point higher discount rate for other resources, the order changes dramatically as capital intensive resources are shifted to the right in the chart and those whose major cost is fuel are shifted left.

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<sup>14</sup> Ibid., page 4.

<sup>15</sup> ENERGY VISION 2020, April 9, 2009, Tennessee Valley Authority, page T8.35.



A follow-up question is why the discount rates used by major utilities are so high for hydroelectric facilities like Site C. If you ask a major utility, you are likely to receive a response similar to BPA:

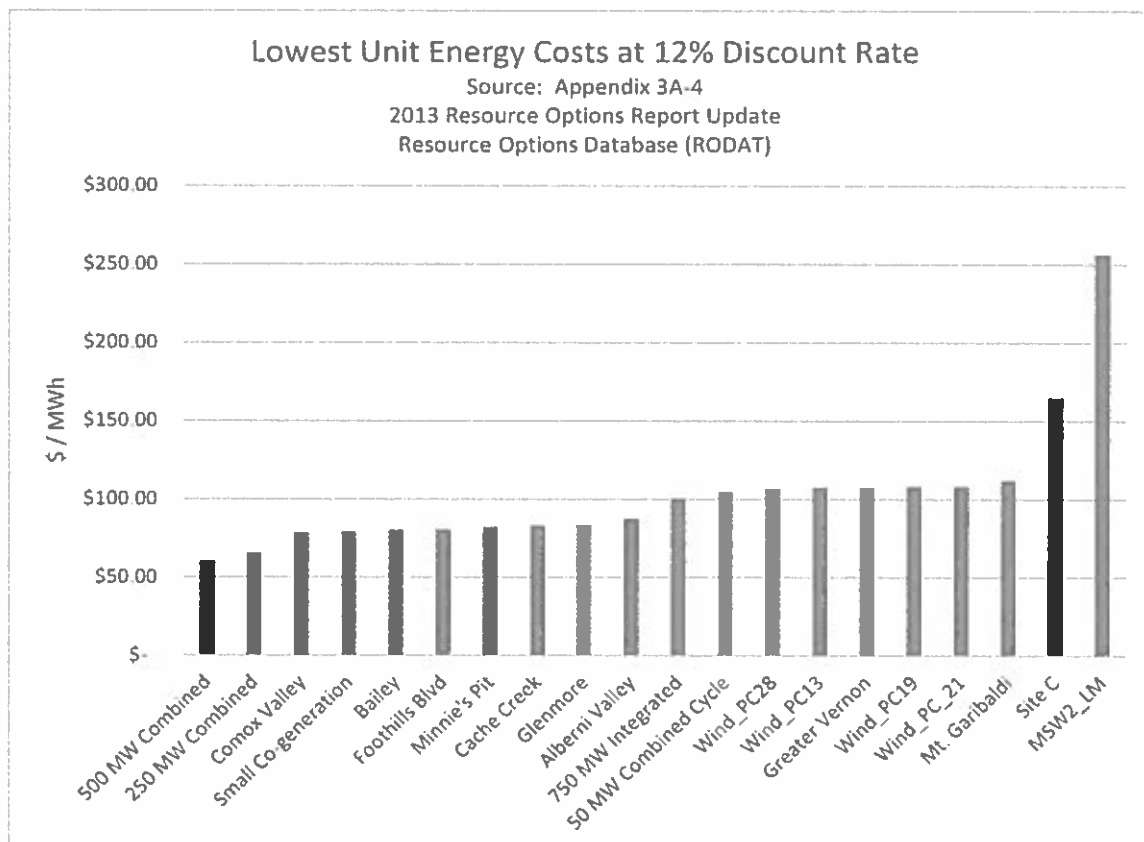
**Risk Premium** – This is the measure of the riskiness of the investment. Common elements of risk specific to BPA would be project construction risk, uncertain water and weather risk, and stranded cost risk. Neglecting to consider project risk could lead BPA to select poor investments and put an undue burden on ratepayers.<sup>16</sup>

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<sup>16</sup> Ibid., page 3.

When I asked the identical question in negotiations with Hydro-Quebec last year, they replied that the high discount rate represented a substantial dedication of capital to produce a product in a market with dramatic price changes and high volatility.

BC Hydro has assumed that an additional 200 basis point should be added to the discount rate for projects built by independent power producers. This is an interesting hypothesis, although it seems somewhat arbitrary. The least expensive UEC in the chart above is a 500 MW combined cycle gas unit. The units are common choices for utilities. Depending on the utility, they are either purchased from third parties or built by the utility. In recent years, utilities have been building their own resources, so no such additional risk premium is necessary. Eliminating the 200 basis point penalty for non-Site C projects produces the following chart:



Site C Business Case Assumptions Review  
May 25, 2015  
Page 12

Some utilities like Hydro-Quebec even use lower discount rates for wind – even if there is an outside developer. For example, Hydro-Quebec’s wind tariff specifies a discount rate of 3.5%.<sup>17</sup>

While the discount rate is the pivotal assumption in an analysis of this sort, a variety of other assumptions should be considered as well.

The U.S. Energy Information Administration (EIA) is an excellent source for basic data. A table frequently relied upon in the electric industry is EIA’s summary of the cost of central station generating facilities:

AEO2015

Table 8.2. Cost and performance characteristics of new central station electricity generating technologies

Technology	Online Year <sup>1</sup>	Size (MW)	Lead time (years)	Base Overnight Cost in 2014 (2013 \$/kW)	Contingency Factors			Total Overnight Cost in 2014 <sup>2</sup> (2013 \$/kW)	Variable O&M <sup>3</sup> (2013 \$/mWh)	Fixed O&M (2013 \$/kW/yr.)	Heatrate <sup>4</sup> in 2014 (Btu/kWh)	nth-of-a-kind Heatrate (Btu/kWh)
					Project Contingency Factor <sup>5</sup>	Technological Optimism Factor <sup>6</sup>						
Scrubbed Coal New	2018	1300	4	2,726	1.07	1.00		2,917	4.47	31.16	8,800	8,740
Coal Gasification Integrated Comb Cycle (IGCC)	2018	1200	4	3,483	1.07	1.00		3,727	7.22	31.37	8,700	7,450
IGCC with Carbon sequestration	2018	520	4	5,891	1.07	1.03		6,492	8.44	72.80	10,700	8,307
Conv Gas/Oil Comb Cycle	2017	620	3	869	1.05	1.00		912	3.60	13.16	7,050	6,800
Adv Gas/Oil Comb Cycle (CC)	2017	400	3	942	1.08	1.00		1,017	3.27	15.36	6,430	6,333
Adv CC with Carbon sequestration	2017	340	3	1,845	1.08	1.04		2,072	6.78	31.77	7,525	7,493
Conv Comb Turbine <sup>8</sup>	2016	85	2	922	1.05	1.00		968	15.44	7.34	10,783	10,450
Adv Comb Turbine	2016	210	2	639	1.05	1.00		671	10.37	7.04	9,750	8,550
Fuel Cells	2017	10	3	6,042	1.05	1.10		6,978	42.97	0.00	9,500	6,960
Adv Nuclear	2022	2234	6	4,646	1.10	1.05		5,366	2.14	93.23	10,479	10,479
Distributed Generation - Base	2017	2	3	1,407	1.05	1.00		1,477	7.75	17.44	9,015	8,900
Distributed Generation - Peak	2016	1	2	1,689	1.05	1.00		1,774	7.75	17.44	10,015	9,880
Biomass	2018	50	4	3,399	1.07	1.01		3,659	5.26	105.58	13,500	13,500
Geothermal <sup>19</sup>	2018	50	4	2,331	1.05	1.00		2,448	0.00	112.85	9,516	9,516
Municipal Solid Waste Conventional	2017	50	3	7,730	1.07	1.00		8,271	8.74	392.60	14,878	18,000
Hydropower <sup>3</sup>	2018	500	4	2,410	1.10	1.00		2,651	5.76	15.15	9,516	9,516
Wind	2017	100	3	1,850	1.07	1.00		1,980	0.00	39.53	9,516	9,516
Wind Offshore	2018	400	4	4,476	1.10	1.25		6,154	0.00	73.96	9,516	9,516
Solar Thermal <sup>7</sup>	2017	100	3	3,787	1.07	1.00		4,052	0.00	67.23	9,516	9,516
Photovoltaic <sup>2,10</sup>	2016	150	2	3,123	1.05	1.00		3,279	0.00	24.68	9,516	9,516

<sup>17</sup> Terms of Reference for the Siting of Wind Farms on Farmland and in Woodlands, Hydro-Quebec, November 17, 2013.

<sup>18</sup> Energy Information Agency. Annual Energy Outlook 2015. [http://www.eia.gov/forecasts/aeo/assumptions/pdf/table\\_8.2.pdf](http://www.eia.gov/forecasts/aeo/assumptions/pdf/table_8.2.pdf)



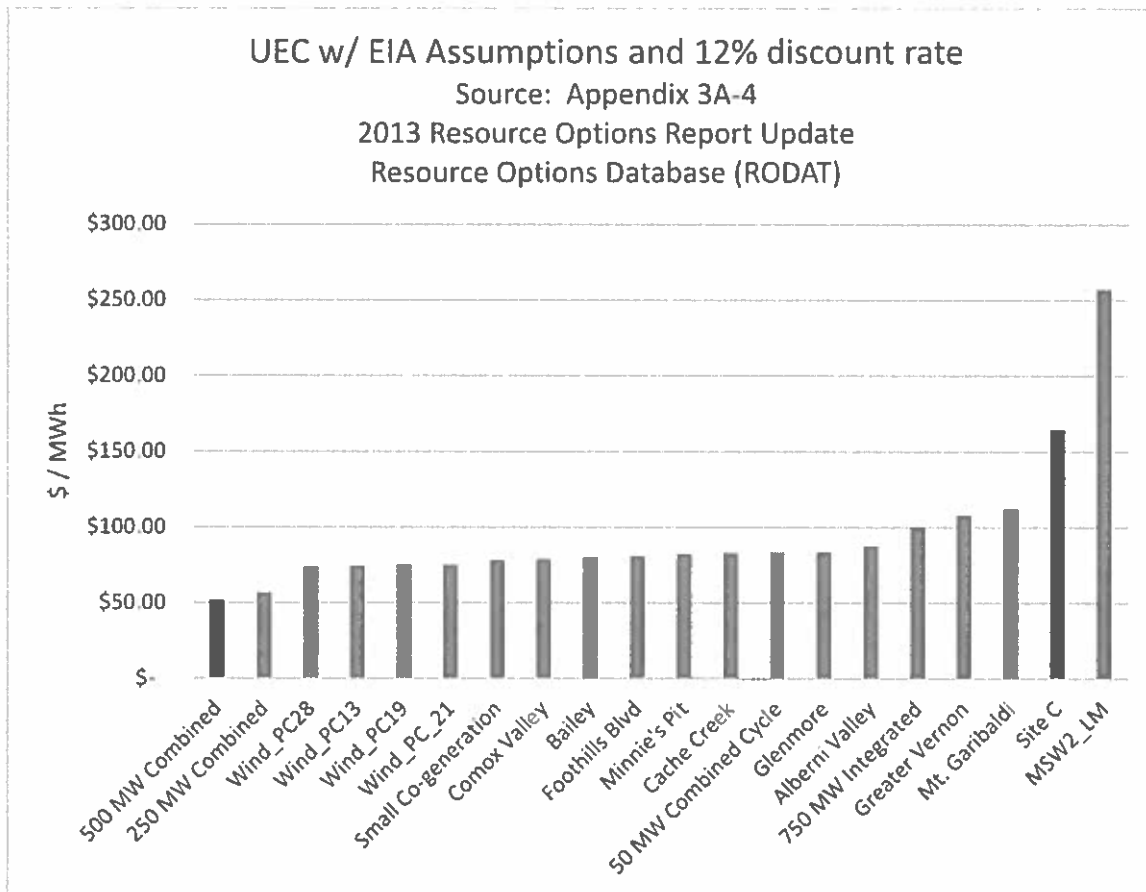
In general, the EIA is quite a bit more optimistic on plant costs than BC Hydro's Resource Operations Database (RODAT).<sup>19</sup> For example, a conventional combined cycle gas unit is \$869/kW (U.S.) versus the RODAT's \$1,137/kW.<sup>20</sup> The standard unit is also significantly more efficient. The EIA has a heat rate of 7,050 btu/kWh versus the RODAT's 7,362 btu/kWh.

BC Hydro's pessimism on plant costs is not restricted to thermal units. Wind farm equipment is usually highly standardized. Major manufacturers sell thousands of virtually identical wind turbines throughout North America. The EIA data indicates that wind turbines will cost \$1,850/kW for a 100 MW utility scale project. This is consistent with industry experience. The RODAT's three cheapest wind projects – PC13, PC19, and PC21 – are \$2,857/kW (U.S.). Since the underlying equipment is most likely the same, the only explanation would be that wind farms in British Columbia are extremely more remote than those in Washington State and that transportation costs are almost \$1,000/kW more. Since these projects are in the Peace River area, this seems unlikely. Correcting the RODAT data using EIA plant assumptions shows the following rankings for the twenty cheapest alternatives:

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<sup>19</sup> RODAT's assumptions concerning the 750 MW Integrated Gasification Combined Cycle option are far more optimistic than the EIA's and do not match industry experience. Substantial doubt exists that this is a viable option under any foreseeable set of assumptions. It has been kept in the chart for comparison purposes only – using RODAT's low capital cost estimate.

<sup>20</sup> The 2013 BC Hydro assumes a long term exchange rate of .9693 U.S. dollars to the Canadian dollar at page 4-63. This value has been used in adjusting RODAT with U.S. financial values.

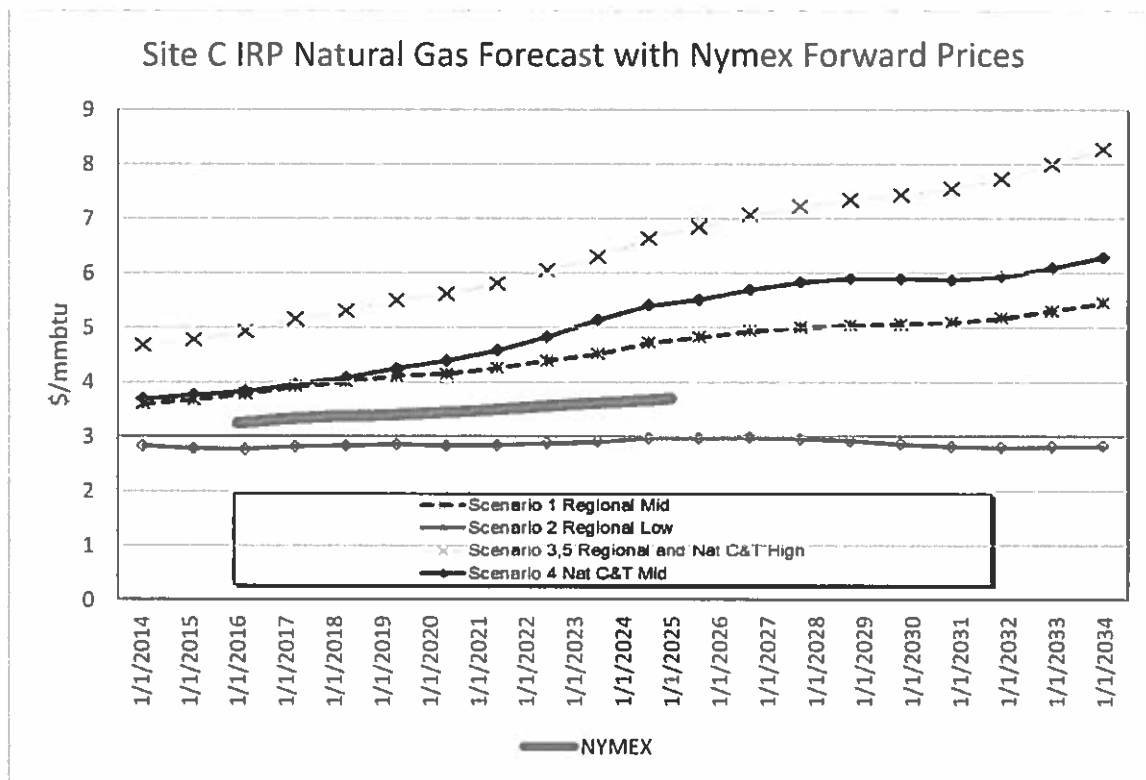


Again, Site C continues to look like an increasingly expensive choice compared to wind, natural gas, and other alternatives.

Yet another issue is fuel costs. Our ability to forecast fossil fuels is limited. Over the last decade we have gone from a widespread perception that oil and gas were reaching “peak” levels. This Malthusian view has fallen victim to technological change. In reality, production is up and prices have fallen. Recently the highly respected bond rating firm, Moody’s, has predicted that world natural gas prices have fallen so low that LNG export terminals in Canada and the U.S. are increasingly unlikely.<sup>21</sup>

<sup>21</sup> Global supply glut threatens British Columbia's LNG projects, Brent Jang, Globe and Mail, April 7, 2015.

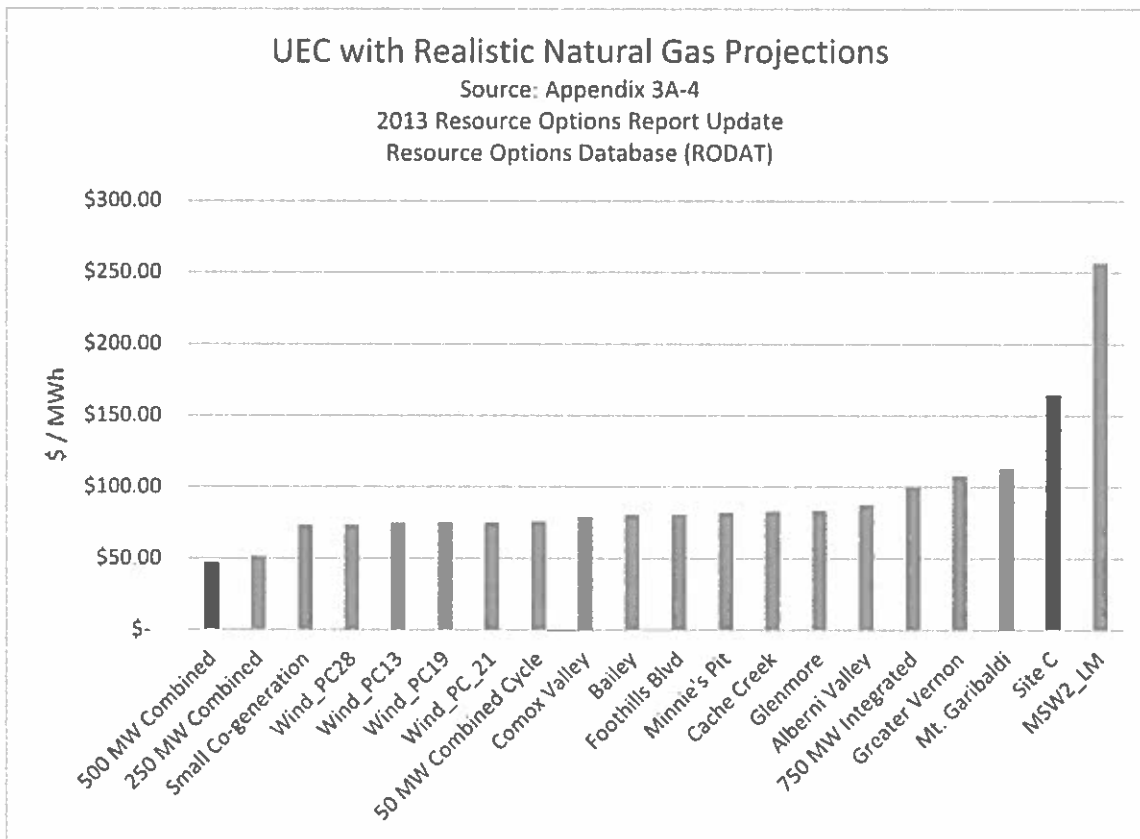
While the change in technology has confounded forecasters, it is still logical to compare the forecast to real markets. Natural gas has robust forward markets on a variety of exchanges. The following chart compares the forecasts in the 2013 Integrated Resource Plan with today's NYMEX forward prices:



The thick blue line represents current quotes on the NYMEX. Scenario 1 represents the natural gas price BC Hydro has modelled in the RODAT. The actual price is considerably lower and is available for purchase through 2025.<sup>22</sup>

This adjustment should also be made to the RODAT data. The cumulative set of adjustments is telling:

<sup>22</sup> NYMEX prices have been adjusted to Canadian dollars using the assumption contained in the 2013 Integrated Resource Plan. Real price escalation after 2025 is assumed to continue at the 2020 to 2025 rate.



In summary, adopting realistic changes from standard and well respected sources makes an enormous difference. Using BC Hydro's assumptions, the difference in cost between the least expensive option and Site C is minimized. Using industry standard assumptions, Site C is more than three times as costly as the least expensive option. In fact, Site C fares poorly when compared to cogeneration, wind, landfill, and coal gasification.

Type of Plant	Average \$/MWh
Natural gas	\$ 58.04
Combined Heat & Power	\$ 73.33
Wind	\$ 74.36
Landfill biogas	\$ 85.50
Coal gasification	\$ 99.97
Geothermal	\$ 112.30
Hydro	\$ 164.35
Mass Burn incineration	\$ 256.85

While the cost and choice of options deserve further analysis, the simple conclusion is that Site C is more expensive – dramatically so – than the renewable/natural gas portfolios elsewhere in the U.S. and Canada. Our analysis indicates that the Site C portfolio may well be twice as costly as the renewable/natural gas portfolio adopted elsewhere.

**Robert McCullough – Curriculum Vitae***Principal**McCullough Research, 3816 S.E. Woodstock Place, Portland, OR 97202 USA***Professional Experience**

- |              |   |
|--------------|---|
| 1985-present | Principal, McCullough Research: provide strategic planning assistance, litigation support, and planning for a variety of customers in energy, regulation, and primary metals  |
| 1996-present | Adjunct Professor, Economics, Portland State University   |
| 1990-1991    | Director of Special Projects and Assistant to the Chairman of the Board, Portland General Corporation: conducted special assignments for the Chairman in the areas of power supply, regulation, and strategic planning  |
| 1988-1990    | Vice President in Portland General Corporation's bulk power marketing utility subsidiary, Portland General Exchange: primary negotiator on the purchase of 550 MW transmission and capacity package from Bonneville Power Administration; primary negotiator of PGX/M, PGC's joint venture to establish a bulk power marketing entity in the Midwest; negotiated power contracts for both supply and sales; coordinated research function   |
| 1987-1988    | Manager of Financial Analysis, Portland General Corporation: responsible for M&A analysis, restructuring planning, and research support for the financial function; reported directly to the CEO on the establishment of Portland General Exchange; team member of PGC's acquisitions task force; coordinated PGC's strategic planning process; transferred to the officer's merit program as a critical corporate manager  |
| 1981-1987    | Manager of Regulatory Finance, Portland General Electric: responsible for a broad range of regulatory and planning areas, including preparation and presentation of PGE's financial testimony in rate cases in 1980, 1981, 1982, 1983, 1985, and 1987 before the Oregon Public Utilities Commission; responsible for preparation and presentation of PGE's wholesale rate case with Bonneville Power Administration in 1980, 1981, 1982, 1983, 1985, and 1987; coordinated activities at BPA and FERC on wholesale matters for the InterCompany Pool (the association of investor-owned utilities in the Pacific Northwest) since 1983; |

created BPA's innovative aluminum tariffs (adopted by BPA in 1986); led PGC activities, reporting directly to the CEO and CFO on a number of special activities, including litigation and negotiations concerning WPPSS, the Northwest Regional Planning Council, various electoral initiatives, and the development of specific tariffs for major industrial customers; member of the Washington Governor's Task Force on the Vancouver Smelter (1987) and the Washington Governor's Task Force on WPPSS Refinancing (1985); member of the Oregon Governor's Work Group On Extra-Regional Sales (1983); member of the Advisory Committee to the Northwest Regional Planning Council (1981)

1979-1980

Economist, Rates and Revenues Department, Portland General Electric: responsible for financial and economic testimony in the 1980 general case; coordinated testimony in support of the creation of the DRPA (Domestic and Rural Power Authority) and was a witness in opposition to the creation of the Columbia Public Utility District in state court; member of the Scientific and Advisory Committee to the Northwest Regional Power Planning Council

### **Economic Consulting**

2014-2015

Market analysis of the NYISO for the New York State Assembly

2014

Advisor to the Grand Council of the Cree on uranium mining in Quebec

2014

Support for the investigation of Barclays Bank

2013

Advisor to Environmental Defense Fund on gasoline and oil issues in California

2013

Advisor to Energy Foundation on Ohio competitive issues

2013

Export market review in the Maritime Link proceeding

2013

Retained to do a business case analysis of the Columbia Generating Station by the Physicians for Social Responsibility

2011

Consultant to Citizens Action Coalition of Indiana on Indiana Gasification LLC project

2010-present

Analysis and expert witness testimony for Block Island Intervenors concerning Deepwater offshore wind project

2010	Analysis for Eastern Environmental Law Center of 25 closed cycle plants in New York State
2010	Advisor on BPA transmission line right of way issues
2009-2010	Advisor to Gamesa USA on a marketing plan to promote a wind farm in the Pacific Northwest
2009-2010	Expert witness in City of Alexandria vs. Cleco
2009-present	Expert witness in City of Beaumont v. Entergy
2008-2009	Consultant to AARP Connecticut and Texas chapters on the need for a state power authority (Connecticut) and balancing energy services (Texas)
2008-present	Advisor to the American Public Power Association on administered markets
2008	Expert witness on trading and derivative issues in Barrick Gold litigation
2008-present	Advisor to Jackson family in Pelton/Round Butte dispute
2006-present	Advisor to the Illinois Attorney General on electric restructuring issues
2006-present	Expert witness for Lloyd's of London in SECLP insurance litigation
2006-2007	Advisor to the City of Portland in the investigation of Portland General Electric
2005-2006	Expert witness for Antara Resources in Enron litigation
2005-2006	Advisor to Utility Choice Electric
2005-2007	Expert witness for Federated Rural Electric Insurance Company and TIG Insurance in Cowlitz insurance litigation
2005-2007	Advisor to Gray's Harbor PUD on market manipulation
2005-2007	Advisor to the Montana Attorney General on market manipulation
2004-2005	Expert witness for Factory Mutual in Northwest Aluminum litigation



2004	Advisor to the Oregon Department of Justice on market manipulation
2003-2006	Expert witness for Texas Commercial Energy
2003-2004	Advisor to The Energy Authority
2002-2005	Advisor to the U.S. Department of Justice on market manipulation issues
2002-2004	Expert witness for Alcan in Powerex arbitration
2002-2003	Expert witness for Overton Power in IdaCorp Energy litigation
2002-2003	Expert witness for Stanislaus Food Products
2002	Advisor to VHA Pennsylvania on power purchasing
2002	Expert witness for Sierra Pacific in Enron litigation
2002-2004	Advisor to U.S. Department of Justice
2002-2007	Expert witness for Snohomish PUD in Enron litigation
2002-1010	Expert witness for Snohomish in Morgan Stanley investigation
2001-2005	Advisor to Nordstrom
2001-2005	Advisor to Steelscape Steel on power issues in Washington and California
2001-2008	Advisor to VHA Southwest on power purchasing
2001-present	Expert witness for City of Seattle, Seattle City Light and City of Tacoma in FERC's EL01-10 refund proceeding
2001	Advisor to California Steel on power purchasing
2001	Advisor to the California Attorney General on market manipulations in the Western Systems Coordinating Council power markets
2000-present	Expert witness for Wah Chang in PacifiCorp litigation

2000-2001	Expert witness for Southern California Edison in Bonneville Power Administration litigation
2000-2001	Advisor to Blue Heron Paper on West Coast price spikes
2000	Expert witness for Georgia Pacific and Bellingham Cold Storage in the Washington Utilities and Transportation Commission's proceeding on power costs
1999	Expert report for the Center Helios on Freedom of Information in Québec
1999-2002	Advisor to Bayou Steel on alternative energy resources
1999-2000	Expert witness for the Large Customer Group in PacifiCorp's general rate case
1999-2000	Expert witness for Tacoma Utilities in WAPA litigation
1999-2000	Advisor for Nucor Steel and Geneva Steel on PacifiCorp's power costs
1999-2000	Advisor to Abitibi-Consolidated on energy supply issues
1999	Advisor to GTE regarding Internet access in competitive telecommunication markets
1999	Advisor to Logansport Municipal Utilities
1998-2001	Advisor to Edmonton Power on utility plant divestiture in Alberta
1998-2001	Energy advisor for Boise Cascade
1998-2000	Advisor to California Steel on power purchasing
1998-2000	Advisor to Nucor Steel on power purchasing and transmission negotiations
1998-2000	Advisor to Cominco Metals on the sale of hydroelectric dams in British Columbia
1998-2000	Advisor to the Betsiamites on the purchase of hydroelectric dams in Québec
1998-1999	Advisor to the Illinois Chamber of Commerce concerning the affiliate electric and gas program

1998	Intervention in Québec's first regulatory proceeding on behalf of the Grand Council of the Cree
1998	Market forecasts for Montana Power's restructuring proceeding
1997-1999	Advisor to the Columbia River Intertribal Fish Commission on Columbia fish and wildlife issues
1997-1998	Advisor to Port of Morrow regarding power marketing with respect to existing gas turbine plant
1997-1998	Expert witness for Tenaska in BPA litigation
1997	Advisor to Kansai Electric on restructuring in the electric power industry (with emphasis on the California markets)
1997-2004	Expert witness for Alcan in BC Hydro litigation
1996-1997	Bulk power purchasing for the Association of Bay Area Cities
1996-1997	Advisor to Texas Utilities on industrial issues
1996-1997	Expert witness for March Point Cogeneration in Puget Sound Power and Light litigation
1996	Advisor to Longview Fibre on contract issues
1995-present	Bulk power supplier for several Pacific Northwest industrials
1995-1997	Advisor to Tacoma Utilities on contract issues
1995-1999	Advisor to Seattle City Light on industrial contract issues
1995-1996	Expert witness for Tacoma Utilities in WAPA litigation
1994-1995	Advisor to Idaho Power on Southwest Intertie Project marketing
1993-2001	Northwest representative for Edmonton Power
1993-1997	Expert witness for MagCorp in PacifiCorp litigation
1992-1995	Advisor to Citizens Energy Corporation
1992-1994	Negotiator on proposed Bonneville Power Administration aluminum contracts

1992	Bulk power marketing advisor to Public Service of Indiana
1997-2003	Advisor to the Manitoba Cree on energy issues in Manitoba, Minnesota and Québec; Advisor to the Grand Council of the Cree on hydroelectric development
1991-2000	Strategic advisor to the Chairman of the Board, Portland General Corporation
1991-1993	Chairman of the Investor Owned Utilities' (ICP) committee on BPA financial reform
1991-1992	Financial advisor on the Trojan owners' negotiation team
1991	Advisor to Shasta Dam PUD on the California Oregon Transmission Project and related issues
1990-1991	Advised the Chairman of the Illinois Commerce Commission on issues pertaining to the 1990 General Commonwealth Rate Proceeding; prepared an extensive analysis of the bulk power marketing prospects for Commonwealth in ECAR and MAIN
1988	Facilitated the settlement of Commonwealth Edison's 1987 general rate case and restructuring proposal for the Illinois Commerce Commission; reported directly to the Executive Director of the Commission; responsibilities included financial advice to the Commission and negotiations with Commonwealth and interveners
1987-1988	Created the variable aluminum tariff for Big Rivers Electric Corporation: responsibilities included testimony before the Kentucky Public Service Commission and negotiations with BREC's customers (the innovative variable tariff was adopted by the Commission in August 1987); supported negotiations with the REA in support of BREC's bailout debt restructuring
1981-1989	Consulting projects including: financial advice for the Oregon AFL-CIO; statistical analysis of equal opportunity for Oregon Bank; cost of capital for the James River dioxin review; and economic analysis of qualifying facilities for Washington Hydro Associates
1980-1986	Taught classes in senior and graduate forecasting, micro-economics, and energy at Portland State University

**Education**

Unfinished Ph.D.	Economics, Cornell University; Teaching Assistant in micro- and macro-economics
M.A.	Economics, Portland State University, 1975; Research Assistant
B.A.	Economics, Reed College, 1972; undergraduate thesis, "Eurodollar Credit Creation"

Areas of specialization include micro-economics, statistics, and finance

**Papers and Publications**

December 2014	"Nuclear Winter", <i>Electricity Policy</i>
July 2013	"Mid-Columbia Spot Markets and the Renewable Portfolio Standard", <i>Public Utilities Fortnightly</i>
April 14, 2013	"Selling Low and Buying High", <i>The Oregonian</i>
December 2012	"Are Electric Vehicles Actually Cost-Effective?", <i>Electricity Policy</i>
November 30, 2012	"Portland's Energy Credits: The trouble with buying 'green'", <i>The Oregonian</i>
July 2009	"Fingerprinting the Invisible Hand", <i>Public Utilities Fortnightly</i>
February 2008	Co-author, "The High Cost of Restructuring", <i>Public Utilities Fortnightly</i>
March 27, 2006	Co-author, "A Decisive Time for LNG", <i>The Daily Astorian</i>
February 9, 2006	"Opening the Books", <i>The Oregonian</i>
August 2005	"Squeezing Scarcity from Abundance", <i>Public Utilities Fortnightly</i>
April 1, 2002	"The California Crisis: One Year Later", <i>Public Utilities Fortnightly</i>
March 13, 2002	"A Sudden Squall", <i>The Seattle Times</i>
March 1, 2002	"What the ISO Data Says About the Energy Crisis", <i>Energy User News</i>

February 1, 2001	"What Oregon Should Know About the ISO", <i>Public Utilities Fortnightly</i>
January 1, 2001	"Price Spike Tsunami: How Market Power Soaked California", <i>Public Utilities Fortnightly</i>
March 1999	"Winners & Losers in California", <i>Public Utilities Fortnightly</i>
July 15, 1998	"Are Customers Necessary?", <i>Public Utilities Fortnightly</i>
March 15, 1998	"Can Electricity Markets Work Without Capacity Prices?", <i>Public Utilities Fortnightly</i>
February 1998	"Coping With Interruptibility", <i>Energy Buyer</i>
January 1998	"Pondering the Power Exchange", <i>Energy Buyer</i>
December 1997	"Getting There Is Half the Cost: How Much Is Transmission Service?", <i>Energy Buyer</i>
November 1997	"Is Capacity Dead?", <i>Energy Buyer</i>
October 1997	"Pacific Northwest: An Overview", <i>Energy Buyer</i>
August 1997	"A Primer on Price Volatility", <i>Energy Buyer</i>
June 1997	"A Revisionist's History of the Future", <i>Energy Buyer</i>
Winter 1996	"What Are We Waiting for?" <i>Megawatt Markets</i>
October 21, 1996	"Trading on the Index: Spot Markets and Price Spreads in the Western Interconnection", <i>Public Utilities Fortnightly</i>

#### **McCullough Research Reports**

January 2, 2015	"Data and Methodological Errors in the Portland Commercial Street Fee"
December 15, 2014	Report to the Bureau d'audiences publiques sur l'environnement (BAPE), "Uranium Mining in Quebec: Four Conclusions"
December 11, 2013	"Economic Analysis of the Columbia Generating Station"
February 21, 2013	"McCullough Research Rebuttal to Western States Petroleum Association"

November 15, 2012	"May and October 2012 Gasoline Price Spikes on the West Coast"
June 5, 2012	"Analysis of West Coast Gasoline Prices"
October 3, 2011	"Lowering Florida's Electricity Prices"
July 14, 2011	"2011 ERCOT Blackouts and Emergencies"
March 1, 2010	"Translation" of the September 29, 2008 NY Risk Consultant's Hydraulics Report to Manitoba Hydro CEO Bob Brennan
December 2, 2009	"Review of the ICF Report on Manitoba Hydro Export Sales"
June 5, 2009	"New York State Electricity Plants' Profitability Results"
May 5, 2009	"Transparency in ERCOT: A No-cost Strategy to Reduce Electricity Prices in Texas"
April 7, 2009	"A Forensic Analysis of Pickens' Peak: Speculation, Fundamentals or Market Structure"
March 30, 2009	"New Yorkers Lost \$2.2 Billion Because of NYISO Practices"
March 3, 2009	"The New York Independent System Operator's Market-Clearing Price Auction is Too Expensive for New York"
February 24, 2009	"The Need for a Connecticut Power Authority"
January 7, 2009	"Review of the ERCOT December 18, 2008 Nodal Cost Benefit Study"
August 6, 2008	"Seeking the Causes of the July 3rd Spike in World Oil Prices" (updated September 16, 2008)
April 7, 2008	"Kaye Scholer's Redacted 'Analysis of Possible Complaints Relating to Maryland's SOS Auctions'"
February 1, 2008	"Some Observations on Societe Generale's Risk Controls"
June 26, 2007	"Looking for the 'Voom': A Rebuttal to Dr. Hogan's 'Acting in Time: Regulating Wholesale Electricity Markets'"

September 26, 2006	"Did Amaranth Advisors, LLC Attempt to Corner the March 2007 NYMEX at Henry Hub?"
May 18, 2006	"Developing a Power Purchase/Fuel Supply Portfolio: Energy Strategies for Cities and Other Public Agencies"
April 12, 2005	"When Oil Prices Rise, Using More Ethanol Helps Save Money at the Gas Pump"
April 12, 2005	"When Farmers Outperform Sheiks: Why Adding Ethanol to the U.S. Fuel Mix Makes Sense in a \$50-Plus/Barrel Oil Market"
April 12, 2005	"Enron's Per Se Anti-Trust Activities in New York"
February 15, 2005	"Employment Impacts of Shifting BPA to Market Pricing"
June 28, 2004	"Reading Enron's Scheme Accounting Materials"
June 5, 2004	"ERCOT BES Event"
August 14, 2003	"Fat Boy Report"
May 16, 2003	"CERA Decision Brief"
January 16, 2003	"California Electricity Price Spikes"
November 29, 2002	"C66 and Artificial Congestion Transmission in January 2001"
August 17, 2002	"Three Days of Crisis at the California ISO"
July 9, 2002	"Market Efficiencies"
June 26, 2002	"Senate Fact Sheet"
June 5, 2002	"Congestion Manipulation"
May 5, 2002	"Enron's Workout Plan"
March 31, 2002	"A History of LJM2"
February 2, 2002	"Understanding LJM"
January 22, 2002	"Understanding Whitewing"



**Testimony and Comment**

December 15, 2014	Testimony before the Bureau d'audiences publiques sur l'environnement (BAPE) in Quebec, "Uranium Mining in Quebec: Four Conclusions"
November 15, 2012	Testimony before the California State Senate Select Committee on Bay Area Transportation on West Coast gasoline price spikes in 2012
July 20, 2010	Testimony before the Rhode Island Public Utility Commission on the Deepwater offshore wind project
April 7, 2009	Testimony before the U.S. Senate Committee on Energy and Natural Resources on "Pickens' Peak"
March 5, 2009	Testimony before the New York Assembly Committee on Corporations, Authorities and Commissions, and the Assembly Committee on Energy, "New York Independent System Operators Market Clearing Price Auction is Too Expensive for New York"
February 24, 2009	Testimony before the Energy and Technology Committee, Connecticut General Assembly, "An Act Establishing a Public Power Authority" on behalf of AARP
September 16, 2008	Testimony before the U.S. Senate Committee on Energy and Natural Resources, "Depending On 19th Century Regulatory Institutions to Handle 21st Century Markets"
January 7, 2008	Supplemental Comment ("The Missing Benchmark in Electricity Deregulation") before the Federal Energy Regulatory Commission on behalf of American Public Power Association, Docket Nos. RM07-19-000 and AD07-7-000
August 7-8, 2007	Testimony before the Oregon Public Utility Commission on behalf of Wah Chang, Salem, Oregon, Docket No. UM 1002
February 23 and 26, 2007	Testimony before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No. EL03-180
October 2, 2006	Direct Testimony before the Régie de l'énergie, Gouvernement du Québec on behalf of the Grand Council of the Cree

August 22, 2006	Rebuttal Expert Report on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No. H-01-3624
June 1, 2006	Expert Report on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No. H-01-3624
May 8, 2006	Testimony before the U.S. Senate Democratic Policy Committee, "Regulation and Forward Markets: Lessons from Enron and the Western Market Crisis of 2000-2001"
December 15, 2005	Direct Testimony before the Public Utility Commission of the State of Oregon on behalf of Wah Chang, Wah Chang v. PacifiCorp in Docket UM 1002
December 14, 2005	Deposition before the United States District Court Western District of Washington at Tacoma on behalf of Federated Rural Electric Insurance Exchange and TIG Insurance Company, Federated Rural Electric Insurance Exchange and TIG Insurance Company v. Public Utility District No. 1 of Cowlitz County, No. 04-5052RBL
December 4, 2005	Expert Report on behalf of Utility Choice Electric in Civil Action No. 4:05-CV-00573
July 27, 2005	Expert Report before the United States District Court Western District of Washington at Tacoma on behalf of Federated Rural Electric Insurance Exchange and TIG Insurance Company, Federated Rural Electric Insurance Exchange and TIG Insurance Company v. Public Utility District No. 1 of Cowlitz County, Docket No. CV04-5052RBL
May 6, 2005	Rebuttal Testimony before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No.EL03-180, et al.
May 1, 2005	Rebuttal Expert Report on behalf of Factory Mutual, Factory Mutual v. Northwest Aluminum
March 24-25, 2005	Deposition by Enron Power Marketing, Inc. before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No.EL03-180, et al.
February 14, 2005	Expert Report on behalf of Factory Mutual, Factory Mutual v. Northwest Aluminum

January 27, 2005	Supplemental Testimony before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No. EL03-180, et al.
April 14, 2004	Deposition by Enron Power Marketing, Inc. and Enron Energy Services before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No.EL03-180, et al.
April 10, 2004	Rebuttal Testimony on behalf of the Office of City and County Attorneys, San Francisco, California, City and County Attorneys, San Francisco, California v. Turlock Irrigation District, Non-Binding Arbitration
February 24, 2004	Direct Testimony before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No.EL03-180, et al.
March 20, 2003	Rebuttal Testimony before the Federal Energy Regulatory Commission on behalf of the City of Seattle, Washington, Docket No. EL01-10, et al.
March 11-13, 2003	Deposition by IdaCorp Energy L.P. before the District Court of the Fourth Judicial District of the State of Idaho on behalf of Overton Power District No. 5, State of Nevada, IdaCorp Energy L.P. v. Overton Power District No. 5, Case No. OC 0107870D
March 3, 2003	Expert Report before the District Court of the Fourth Judicial District of the State of Idaho on behalf of Overton Power District No. 5, State of Nevada, IdaCorp Energy L.P. v. Overton Power District No. 5, Case No. OC 0107870D
February 27, 2003	Direct Testimony before the Federal Energy Regulatory Commission on behalf of the City of Tacoma, Washington and the Port of Seattle, Washington, Docket No. EL01-10-005
October 7, 2002	Rebuttal Testimony before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No. EL02-26, et al.
October 2002	Expert Report before the Circuit Court of the State of Oregon for the County of Multnomah on behalf of Alcan, Inc., Alcan, Inc. v. Powerex Corp., Case No. 50 198 T161 02

September 27, 2002	Deposition by Morgan Stanley Capital Group, Inc. before the Federal Energy Regulatory Commission on behalf of Nevada Power Company and Sierra Pacific Power Company, Docket No. EL02-26, et al.
August 8-9, 2002	Deposition by Morgan Stanley Capital Group, Inc. before the Federal Energy Regulatory Commission on behalf of Nevada Power Company and Sierra Pacific Power Company, Docket No. EL02-26, et al.
August 8, 2002	Deposition by Morgan Stanley Capital Group, Inc. before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No. EL02-26, et al.
June 28, 2002	Direct Testimony before the Federal Energy Regulatory Commission on behalf of the City of Tacoma, Washington, Docket No. EL02-26, et al.
June 25, 2002	Direct Testimony before the Federal Energy Regulatory Commission on behalf of Public Utility District No. 1 of Snohomish County, Washington, Docket No. EL02-26, et al.
June 25, 2002	Direct Testimony before the Federal Energy Regulatory Commission on behalf of Nevada Power Company and Sierra Pacific Power Company, Docket No. EL02-26, et al.
May 6, 2002	Rebuttal Testimony before the Public Service Commission of Utah on behalf of Magnesium Corporation of America in the Matter of the Petition of Magnesium Corporation of America to Require PacifiCorp to Purchase Power from MagCorp and to Establish Avoided Cost Rates, Docket No. 02-035-02
April 11, 2002	Testimony before the U.S. Senate Committee on Commerce, Science and Transportation, Washington DC
February 13, 2002	Testimony before the U.S. House of Representatives Subcommittee on Energy and Air Quality, Washington DC
January 29, 2002	Testimony before the U.S. Senate Committee on Energy and Natural Resources, Washington DC
August 30, 2001	Rebuttal Testimony before the Federal Energy Regulatory Commission on behalf of Seattle City Light, Docket No. EL01-10

August 16, 2001	Direct Testimony before the Federal Energy Regulatory Commission on behalf of Seattle City Light, Docket No. EL01-10
June 12, 2001	Rebuttal Testimony before the Public Utility Commission of the State of Oregon on behalf of Wah Chang, Wah Chang v. PacifiCorp in Docket UM 1002
April 17, 2001	Before the Public Utility Commission of the State of Oregon, Direct Testimony on behalf of Wah Chang, Wah Chang v. PacifiCorp in Docket UM 1002
March 17, 2000	Rebuttal Testimony before the Public Service Commission of Utah on behalf of the Large Customer Group in the Matter of the Application of PacifiCorp for Approval of Its Proposed Electric Rate Schedules and Electric Service Regulations, Docket No. 99-035-10
February 1, 2000	Direct Testimony before the Public Service Commission of Utah on behalf of the Large Customer Group in the Matter of the Application of PacifiCorp for Approval of Its Proposed Electric Rate Schedules and Electric Service Regulations, Docket No. 99-035-10

**Presentations**

May 6, 2014	"Economic Analysis of the Columbia Generating Station", Energy Northwest, Boise, Idaho
April 30, 2014	"Economic Analysis of the Columbia Generating Station", Portland State University, Portland, Oregon
April 22, 2014	"Economic Analysis of the Columbia Generating Station", Clark County, Vancouver, Washington
January 9, 2014	"Economic Analysis of the Columbia Generating Station", Northwest Power & Conservation Council, Portland, Oregon
January 1, 2014	"Economic Analysis of the Columbia Generating Station", Bonneville Power Administration, Portland, Oregon
December 2, 2013	"Economic Analysis of the Columbia Generating Station", Skamania, Carson, Washington

December 1, 2013	"Peak Peddling: Has Portland Bicycling Reached the Top of the Logistic Curve?" Oregon Transportation Research and Education Consortium, Portland, Oregon
July 12, 2013	"Economic Analysis of the Columbia Generating Station", Tacoma, Washington
June 21, 2013	"Economic Analysis of the Columbia Generating Station", Seattle City Light, Seattle, Washington
January 29, 2013	"J.D. Ross (Who)", Portland Rotary Club, Portland, Oregon.
January 13, 2011	"Estimating the Consumer's Burden from Administered Markets", American Public Power Association conference, Washington, DC
October 15, 2009	"The Mysterious New York Market", EPIS, Tucson, Arizona
October 14, 2009	"Do ISO Bidding Processes Result in Just and Reasonable Rates?", legal seminar, American Public Power Association, Savannah, Georgia
June 22, 2009	"Pickens' Peak Redux: Fundamentals, Speculation, or Market Structure", International Association for Energy Economics
June 5, 2009	"Transparency in ERCOT: A No-cost Strategy to Reduce Electricity Prices in Texas", Presentation at Texas Legislature
May 8, 2009	"Pickens' Peak", Economics Department, Portland State University
April 7, 2009	"Pickens' Peak: Speculators, Fundamentals, or Market Structure", 2009 EIA energy conference, Washington, DC
February 4, 2009	"Why We Need a Connecticut Power Authority", presentation to the Energy and Technology Committee, Connecticut General Assembly
October 28, 2008	"The Impact of a Volatile Economy on Energy Markets", NAESCO annual meeting, Santa Monica, California
April 1, 2008	"Connecticut Energy Policy: Critical Times...Critical Decisions", House Energy and Technology Committee, the Connecticut General Assembly
May 23, 2007	"Past Efforts and Future Prospects for Electricity Industry Restructuring: Why Is Competition So Expensive?", Portland State University

February 26, 2007	"Trust, But Verify", Take Back the Power Conference, National Press Club, Washington, DC
May 18, 2006	"Developing a Power Purchase/Fuel Supply Portfolio"
February 12, 2005	"Northwest Job Impacts of BPA Market Rates"
January 5, 2005	"Why Has the Enron Crisis Taken So Long To Solve?", Public Power Council, Portland, Oregon
September 20, 2004	"Project Stanley and the Texas Market", Gulf Coast Energy Association, Austin, Texas
September 9, 2004	"Back to the New Market Basics", EPIS, White Salmon, Washington
June 8, 2004	"Caveat Emptor", ELCON West Coast Meeting, Oakland, California
June 9, 2004	"Enron Discovery in EL03-137/180"
March 31, 2004	"Governance and Performance", Public Power Council, Portland, Oregon
January 23, 2004	"Resource Choice", Law Seminars International, Seattle, Washington
January 17, 2003	"California Energy Price Spikes: The Factual Evidence", Law Seminars International Seattle, Washington
January 16, 2003	"The Purloined Agenda: Pursuing Competition in an Era of Secrecy, Guile, and Incompetence"
September 17, 2002	"Three Crisis Days", California Senate Select Committee, Sacramento, California
June 10, 2002	"Enron Schemes", California Senate Select Committee Sacramento, California
May 2, 2002	"One Hundred Years of Solitude"
March 21, 2002	"Enron's International Ventures", Oregon Bar International Law Committee, Portland, Oregon
March 19, 2002	"Coordinating West Coast Power Markets", GasMart, Reno, Nevada



March 19, 2002	"Sauron's Ring", GasMart, Reno, Nevada
January 25, 2002	"Deconstructing Enron's Collapse: Buying and Selling Electricity on The West Coast", Seattle, Washington
January 18, 2002	"Deconstructing Enron's Collapse", Economics Seminar, Portland State University
November 12, 2001	"Artifice or Reality", EPIS Energy Forecast Symposium, Skamania, Washington
October 24, 2001	"The Case of the Missing Crisis" Kennewick Rotary Club, Kennewick, Washington
August 18, 2001	"Preparing for the Next Decade"
June 26, 2001	"Examining the Outlook on Deregulation"
June 25, 2001	Presentation, Energy Purchasing Institute for International Research (IIR), Dallas, Texas
June 6, 2001	"New Horizons: Solutions for the 21st Century", Federal Energy Management-U.S. Department of Energy, Kansas City, Kansas
May 24, 2001	"Five Years"
May 10, 2001	"A Year in Purgatory", Utah Industrial Customers Symposium-Utah Association of Energy Users, Salt Lake City, Utah
May 1, 2001	"What to Expect in the Western Power Markets this Summer", Western Power Market Seminar, Denver, Colorado
April 23, 2001	"Emerging Markets for Natural Gas", West Coast Gas Conference, Portland, Oregon
April 18, 2001	"Demystifying the Influence of Regulatory Mandates on the Energy Economy" Marcus Evans Seminar, Denver, Colorado
April 4, 2001	"Perfect Storm", Regulatory Accounting Conference, Las Vegas, Nevada
March 21, 2001	"After the Storm 2001", Public Utility Seminar, Reno, Nevada



February 21, 2001	"Future Imperfect", Pacific Northwest Steel Association, Portland, Oregon
February 12, 2001	"Power Prices in 2000 through 2005", Northwest Agricultural Chillers, Bellingham, Washington
February 6, 2001	Presentation, Boise Cascade Management, Boise, Idaho
January 19, 2001	"Wholesale Pricing and Location of New Generation Buying and Selling Power in the Pacific Northwest", Seattle, Washington
October 26, 2000	"Tsunami: Market Prices since May 22nd", International Association of Refrigerated Warehouses, Los Vegas, California
October 11, 2000	"Tsunami: Market Prices since May 22nd", Price Spikes Symposium, Portland, Oregon
August 14, 2000	"Anatomy of a Corrupted Market", Oregon Public Utility Commission and Oregon State Energy Office, Salem, Oregon
June 30, 2000	"Northwest Market Power", Governor Locke of Washington, Seattle, Washington
June 10, 2000	"Northwest Market Power", Oregon Public Utility Commission and Oregon State Energy Office, Salem, Oregon
June 5, 2000	"Northwest Market Power", Georgia Pacific Management
May 10, 2000	"Magnesium Corporation Developments", Utah Public Utilities Commission
May 5, 2000	"Northwest Power Developments", Georgia Pacific Management
January 12, 2000	"Northwest Reliability Issues", Oregon Public Utility Commission

**Volunteer Positions**

2013-Present	Eastmoreland Neighborhood Association, President
2013-Present	Southeast Uplift, Chair

**October 15, 2015**

**ROBERT McCULLOUGH**  
*Principal*

**McCullough Research**  
Page 20 of 20

**From:** kgooding <kgooding@pris.ca>  
**Sent:** Wednesday, October 14, 2015 7:50 AM  
**To:** Chris Cvik  
**Subject:** Fwd: NMPS Powerline

**Importance:** High

More info on the rate hearings

Sent from my Samsung device

----- Original message -----

**From:** Gwen Johansson <gjohan@pris.ca>  
**Date:** 10-14-2015 12:24 AM (GMT-07:00)  
**To:** commission.secretary@bcuc.com  
**Cc:** Gwen Johansson <mayor@hudsonshope.ca>, Chris Cvik <Chris.Cvik@prrd.bc.ca>, Karen Goodings <kgooding@pris.bc.ca>  
**Subject:** NMPS Powerline

Ms Hamilton:

My name is Gwen Johansson. I am the mayor of the District of Hudson's Hope. I am writing this at midnight because I have just received information about a BCUC hearing that affects our community but about which I have very little information.

I have just now learned that an application relating to a power line in our region has been received by the BC Utilities Commission. The application relates to a transmission line proposed to be built from the WAC Bennett Dam / GM Shrum Generating Station north toward Pink Mountain, referred to as the North Montney Power Supply (NMPS) project.

We learned of the proposed line last summer via an email from the Ministry of Energy asking for input into a proposal to exempt the NPMS project and another powerline, the Peace Region Electricity Supply (PRES) project from scrutiny by the BCUC. The District of Hudson's Hope as well as the Peace River Regional District responded to the Ministry of Energy. Both local governments indicated that they felt the lines should not be exempted. We attempted to get more information but it was hard to come by, even through Freedom of Information requests. Then suddenly at 11:30 pm on a Tuesday evening, I find that an application has been filed with the BCUC, although not to scrutinize the need for, cost of, or alternatives to the powerline, but simply to see how the costs should be shared between BC Hydro and ATCO who evidently is the corporation which will be building the powerline. Hudson's Hope would like the opportunity to participate in this hearing, even though it is much less than the hearing we envisioned.

Apparently the deadline for registering for this hearing was last Friday. I write to request that, given that this line would originate within our municipality, and that we have no received any notification of this application to the BCUC, and that we had made unsuccessful attempts to get more information about this project, that you allow Hudson's Hope to register as an intervenor despite the deadline. I would request the same consideration

**October 15, 2015**

be given to the Peace River Regional District, should they ask to participate.

**Handout** NB-1

At the moment I do not have enough information to summarize the nature of our intervention. However, Hudson's Hope is always interested in what goes on within our municipality. We may wish to comment on the proposed cost-sharing formula. We may wish to inquire about the cost of servicing some rural residents in that area. At the moment, I do not have sufficient information to speculate.

Thank you for considering my request.

I have copied this email to my mayor's email address. Please respond to that address. I have also copied Chris Cvik, Peace River Regional District administrator, and Karen Goodings, Director for Electoral Area "B," in whose jurisdiction most of the line would be built.

Gwen Johansson, Mayor  
District of Hudson's Hope

**October 15, 2015**

**From:** Karen Goodings <kgooding@pris.bc.ca>  
**Sent:** Tuesday, October 13, 2015 1:17 PM  
**To:** Chris Cvik  
**Subject:** FW: Rate design hearings

fyi

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**From:** apeacock [mailto:apeacock@telus.net]  
**Sent:** October-13-15 11:26 AM  
**To:** Roger Bryenton  
**Cc:** Gwen Johansson; PVEA Coordinator; Rob Botterell; George A M Smith; Karen Goodings  
**Subject:** Re: Rate design hearings

Hi Roger,

I just read your draft submission and like your enthusiasm and knowledge. I do wonder if you need more emphasis on what you think is the suitable rate design to accomplish the optimal demand side management goals, rather than so much emphasis on generation sources. I am just concerned that this is a rate design hearing and they may tolerate some variation but may want to see more of what your vision is for rate design. I am intending to simply register the PVEA interest but I won't be submitting anything more at this point. I am impressed that you are intervening as I agree with Gwen, we need as many people/groups as possible to indicate interest.

Thanks Roger,  
Adrienne

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**From:** "Roger Bryenton" <[roger.bryenton@earthlink.net](mailto:roger.bryenton@earthlink.net)>  
**To:** "Gwen Johansson" <[glohan@pris.ca](mailto:glohan@pris.ca)>  
**Cc:** "apeacock" <[apeacock@telus.net](mailto:apeacock@telus.net)>, "PVEA Coordinator" <[pveacoordinator@gmail.com](mailto:pveacoordinator@gmail.com)>, "Rob Botterell" <[botterell@lidstone.info](mailto:botterell@lidstone.info)>, "George A M Smith" <[georgesmith@telus.net](mailto:georgesmith@telus.net)>, "Karen Goodings" <[kgooding@pris.bc.ca](mailto:kgooding@pris.bc.ca)>  
**Sent:** Monday, 12 October, 2015 11:28:41 PM  
**Subject:** Re: Rate design hearings

Hello Gwen - unfortunately Robert did not include the 5 conservation options (as far as I see) If you look at the paper I attached you can see conservation is by far the best option Half the cost twice the energy twice the jobs! And we still have a valley! End of story!

I think the key is to get BCUC to direct BCH to produce long-term figures for 20 to 30 years for both revenue and costs Already we are \$600 million short and do not have any big \$ involved for Site C so we face 9% and 6% increases

cheers  
Roger

On 10/12/2015 9:04 PM, Gwen Johansson wrote:

October 15, 2015

Hi Roger,  
Good to meet you via the Internet.

**Handout**

**NB-1**

I am attaching the report done by Robert McCullough of McCullough Research in which he examines the assumptions of BC Hydro when considering new generation sources. His 20 page curriculum vitae is included at the end of the report so i will not elaborate here, other than to say he is a very well-respected energy economist in North America. If you don't have the report, you might find it useful.

I talked to him earlier today and he felt it would be a good idea for people to file a statement of interest with the BCUC for the Rate Design hearing. One advantage of registering is we get the all the information, including that which is confidential material. And if we decide to file evidence, we can, but if we find it too onerous, there is no cost or penalty for intervening and then not filing evidence as far as I know. I also think that if we choose to submit a final argument, we can do that without having filed evidence. I'm going to talk to Sarah Khan at the Public Interest Advocacy Centre tomorrow to confirm those last two, as she's been doing that stuff for a long time.

Hudson's Hope would be intervening because we need to be aware of the impact of the rate design on our residents and businesses. Our interest would be to protect the interests of our residential and commercial rate-payers. The Peace River Regional District has also registered as an intervenor, I believe.

In the past, efforts were made by the BCUC to design rates so that there was no or little subsidies across customer classes. Last Friday I talked to the retired executive director of the big industrial customers and he said that he was convinced the industrial rate would not go up significantly because if it did, some large customers that are teetering on the edge of profitability would be pushed over the edge. He believes that any effort to have each customer class "pay its own way" will go by the boards. He also thinks this Rate Design Hearing is basically to anoint what the industrial customers have already agreed upon. He assumes they have been in negotiation for sometime. But he's going to register, he said.

We had a 9% increase April 1, 2014, and a 6% increase in 2015. We have increases of 4%, 3.5% and 3% scheduled for April 1 of 2016, 2017 and 2018. That's a 28% increase (compounded) over 5 years. At the same time that was announced by Minister Bennett, he said there would also be increases in the 5 years subsequent to 2018. That puts us to the timeframe for bringing Site C on-line, which is when the rate-payers will begin paying off the 8.8+ billion dollar cost of Site C. We would seek to know how rates will be designed to keep industry viable but to pay off the existing and future debt load for BC Hydro. Somebody is going to have to shoulder that debt and if the industrial customers are unable to shoulder their share of that load, then who will?

I'm glad that several people/groups are going to register to intervene. If it turns out that several have a common interest, and we get a chance to look at the approach each is taking, perhaps we will be able to collaborate and present something of a common front. Maybe it's just a pipe dream, but if no-one challenges unfairness, then ever greater unfairness becomes the norm.

**October 15, 2015**

On 2015-10-12, at 8:04 AM, Roger Bryenton wrote:

**Handout**

**NB-1**

Hello Gwen - yes please. Whatever we can do to help! Did you take a look at either the note or the draft intervention and do you have comments or thoughts, please? I will have a further draft later today.

Thank you

Roger Bryenton

310 918-9131

On 10/12/2015 1:12 AM, Gwen Johansson wrote:

Your letter looks good to me, Adrienne. Thanks for doing it. I know how busy you are!

I'd like to put Roger in touch with some of the others who are looking at the economics of Site C such as Dan Potts (former executive director of the Major Power Customers), Eric Andersen, (economist) Martin Cavin, etc.

Roger, is it ok to pass on your information?

Thanks, Gwen

On 2015-10-11, at 4:39 PM, apeacock wrote:

I've attached a possible letter to send to the BCUC on Tuesday, if everyone agrees this is a good idea. I will clarify on Tuesday whether we can register as an intervenor and then change our minds about the level of participation, but I do buy your argument, Gwen, that we should keep our options open if at all possible. Reading the BCUC online info there doesn't seem to be any penalty for making the intervenor request and then not participating further.

I've also attached Roger Bryenton's paper on Site C and jobs, etc. for your info. He has registered as an intervenor, and he has looked at several issues that he may address.

I do feel out of my depth on this one but it may be an important process.

Happy Thanksgiving,

Adrienne

<Roger 2015 Site C Dam and Powerplant  
Review - Costs and Jobs (1).doc><Rate  
Design application Oct 2015.doc>

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No virus found in this message.

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Version: 2013.0.3532 / Virus Database: 4365/10802 -

Release Date: 10/12/15

**October 15, 2015**

**From:** Karen Goodings <kgooding@pris.bc.ca>  
**Sent:** Tuesday, October 13, 2015 1:10 PM  
**To:** Chris Cvik  
**Subject:** FW: Rate design hearings

fyi

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**From:** Roger Bryenton [mailto:roger.bryenton@earthlink.net]  
**Sent:** October-12-15 11:29 PM  
**To:** Gwen Johansson  
**Cc:** apeacock; PVEA Coordinator; Rob Botterell; George A M Smith; Karen Goodings  
**Subject:** Re: Rate design hearings

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October 15, 2015



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October 15, 2015



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<Roger 2015 Site C Dam and Powerplant Review - Costs and Jobs (1).doc><Rate Design application Oct 2015.doc>

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Version: 2013.0.3532 / Virus Database: 4365/10802 - Release Date: 10/12/15

**October 15, 2015**