

APPENDIX 2C

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APPENDIX 2C

ENERGY

1. INTERPRETATION

1.1 Definitions

In this Appendix, in addition to the definitions set out in Schedule 1 of this Agreement:

“Annual Energy Target” for an Energy Year means the amount determined pursuant to Section 4.2 of this Appendix, as adjusted pursuant to Section 4.3 of this Appendix;

“Average Unit Cost” for an Energy Year means the average cost to Project Co or the Authority, as the case may be, of each Gigajoule of Energy purchased by Project Co or the Authority for the Facility during that Energy Year, calculated in accordance with Section 5.1 of this Appendix;

“CaGBC Experienced Modellers List” means the most recent version of the Canada Green Building Council’s Experienced Modellers List (http://www.cagbc.org/AM/PDF/CaGBCs_Experienced_Modellers_List-EN.pdf);

“Cooling Degree Days” for a period means the figure obtained or calculated from the Weather Data for a Facility setting out the extent to which the average outdoor temperature during that period at the Site was greater than a mean temperature of 18 degrees Celsius;

“Core Hours” means, in respect of each Facility, 24 hours per day, 7 days per week unless otherwise expressly provided in the Clinical Specifications;

“Design and Construction Energy Target” means:

- (a) in respect of the Campbell River Facility, _____ ;
- (b) in respect of the Comox Valley Facility, _____ ;

“Energy” means energy used in a Facility and created by, or produced from, electricity, thermal sources, steam, gas, oil, coal and any other fossil-based fuel or biomass, including wood products;

“Energy Analysis Report” means the report referred to as the “Energy Analysis Report” in Section 6.1 of this Appendix;

“Energy Consumption” for a period means the Gigajoules of Energy consumed at each Facility during that period;

“Energy Gainshare” means the amount calculated in accordance with Section 5.2 of this Appendix;

“Energy Monitoring Model” means a spreadsheet based model designed to enable adjustment of energy consumption data to reflect changes in weather, occupancy patterns, and other variables affecting energy consumption as set out in Section 4.1 of this Appendix;

“Energy Painshare” means the amount calculated in accordance with Section 5.3 of this Appendix;

“Energy Year” means:

- (a) the 12 month period beginning on the day after the Monitoring Period;
- (b) each subsequent period of 12 months during the Term; and
- (c) the period of less than 12 months from the end of the previous Energy Year to the Termination Date;

“Environmental Credit” means any income, credit, right, benefit or advantage relating to environmental matters including type and level of emissions, means of production of Energy, input sources and compliance with any environmental laws, regulations, rules or orders;

“Facility Operation Variances” means any material variances between the actual occupancy and usage of the Facility and the assumptions for occupancy and usage set out in the Design and Construction Specifications, the Reviewed Drawings and Specifications and the Proposal Extracts (Design and Construction) regarding the occupancy and usage of the Facility;

“Gigajoule” or **“GJ”** means the international system of units of energy being 1,000,000,000 Joules;

“Greenhouse Gas” has the meaning given in the *Greenhouse Gas Reduction Targets Act* (British Columbia);

“Greenhouse Gas Emissions” for a period means the tCO₂e of Greenhouse Gas emitted from each Facility in respect of Targeted Energy Consumption during that period;

“Greenhouse Gas Emissions Target” means:

- (a) in respect of the Campbell River Facility, tCO₂e/year of Greenhouse Gas Emissions;
- (b) in respect of the Comox Valley Facility, tCO₂e/year of Greenhouse Gas Emissions;

“Heating Degree Days” for a period means the figure obtained or calculated from the Weather Monitoring Data for a Facility setting out the extent to which the average outdoor temperature during that period at the Site was less than a mean temperature of 18 degrees Celsius;

“Independent Energy Consultant” means one or more individuals engaged jointly by Project Co and the Authority to complete the adjustments to the energy target, described in Section 3.2 of this Appendix, and who are listed on the CaGBC Experienced Modellers List;

“Monitoring Period” means the period commencing on the Service Commencement Date and ending on the last day of the calendar month in which the second anniversary of the Service Commencement Date occurs;

“Non-Targeted Energy Consumption” means:

- (a) electrical energy consumed by the Facility excluding electricity consumed by Targeted Electrical Components; and

- (b) energy, if any, consumed for producing steam for sterilization;

“Site Weather Monitoring Station” means the weather monitoring stations operated by Environment Canada located at the:

- (a) Comox Valley Airport in respect of weather data relevant to the Comox Valley Facility; and
- (b) Campbell River Airport in respect of weather data relevant to the Campbell River Facility,

or, if data from either of those weather monitoring stations is unavailable, such other properly located and calibrated weather monitoring stations acceptable to each of Authority and Project Co, acting reasonably, or otherwise determined pursuant to Schedule 13 [Dispute Resolution Procedure];

“Targeted Electrical Components” means all:

- (a) hardwired lighting;
- (b) elevators; and
- (c) electrically operated HVAC systems and mechanical equipment, including pumps, fans, chillers, heat pumps, heating boilers, domestic hot water heaters, dehumidifiers, humidifiers and fan heaters;

“Targeted Energy Consumption” means Energy Consumption minus Non-Targeted Energy Consumption, such consumption to be calculated from the applicable BMS and metering systems;

“tCO₂e” means tonnes of carbon dioxide equivalent;

“Test Period” means the 12 month period commencing on the first day of the calendar month that is at least 6 months after the Service Commencement Date; and

“Weather Data” means the record by the Site Weather Monitoring Stations of daily temperature and the calculation of the extent to which the average outdoor temperature during that day was greater or less than a mean temperature of +18 degrees Celsius.

2. ENERGY SUPPLY AND CONSUMPTION

2.1 Energy Supply and Payment

The Authority will from time to time as required enter into contracts with Energy suppliers for the supply of Energy to the Facilities, and will be responsible for all payments related to such contracts. Without limiting Project Co’s obligations in Appendix 4F [Utility Management Services], Project Co will administer such contracts, including dealing with suppliers to resolve issues from time to time, and will provide such other reasonable assistance related to such contracts as may be requested by the Authority.

2.2 Energy Incentive Programs

Project Co will, in collaboration with the Authority, prepare and deliver to the Authority all the information required for the Authority to apply for the BC Hydro Power Smart New Construction Program (and any other applicable energy incentive programs) and take all reasonable steps to assist the Authority so that the Authority may obtain the maximum benefits (funding, incentives and cost savings) offered by BC Hydro, FortisBC or any other utility provider under such program(s). Without limitation, Project Co will:

- (a) meet with BC Hydro, the Authority's designated energy manager and FortisBC, if necessary, at an early stage of the design of the Facilities;
- (b) by August 15, 2014, prepare and deliver to the Authority, for the Authority to submit to BC Hydro, the proposal required by BC Hydro for the energy studies and energy simulation model described in Section 2.2(c) of this Appendix;
- (c) within 30 Business Days of the effective date of the BC Hydro study incentive agreement, carry out any required energy studies and prepare and deliver to the Authority and BC Hydro a building energy simulation model (developed in accordance ASHRAE Standard 90.1, 2007, Appendix G, or applicable codes at the time of application to BC Hydro) to establish baseline energy use for the purpose of measuring electrical and natural gas savings achieved through the program;
- (d) collaborate with BC Hydro, FortisBC and the Authority to identify potential improvements to the Design that will achieve greater energy efficiency;
- (e) revise the Facility Design as required to improve energy efficiency (to the extent possible without materially changing the Design and Construction Specifications or the intent of the Proposal Extracts (Design and Construction));
- (f) use all reasonable efforts to obtain for the Authority the maximum funding or incentives offered by BC Hydro, Fortis BC, or other utility provider and minimize the Authority's energy costs during the Operating Period; and
- (g) provide to the Authority all invoices and other documentation reasonably required by the Authority, including:
 - (1) equipment and contractor invoices associated with the installed energy saving measures;
 - (2) progress payment summary showing contractor's name, amount and date paid, occupancy permit; and
 - (3) commissioning documents associated with the energy saving measures to complete an incentive agreement with BC Hydro, Fortis BC or other utility provider and for the Authority to receive incentive funds within the time frame agreed to in the incentive agreement.

2.3 Recording and Monitoring of Weather Data and Energy Consumption

Project Co will collect Weather Data for each Facility from the Weather Monitoring Stations and will install equipment to record and monitor consumption of each type of Energy in each Facility which will:

- (a) be suitable and properly calibrated to enable the Authority to undertake real time:
 - (1) collection and monitoring of:
 - (A) Energy trends, including current and historic Energy consumption;
 - (B) consumption of all utilities, including domestic hot and cold water; and
 - (C) all applicable weather data from the Site Weather Monitoring Stations;
 - (2) analysis of the data collected, including:
 - (A) graphical comparisons to:
 - (B) historical (year over year) consumption;
 - (C) weather data; and
 - (D) utility bills;
 - (E) consumption against declared energy targets;
 - (3) provide early warning of malfunctions and deviations from norms;
 - (4) be provided in a “dashboard” format compatible with Pulse Energy Manager System or Schneider Electric Energy View Online; and
 - (5) be remotely accessible by the Authority through a web-based browser and portable devices such as smartphones;
- (b) secure all such properly recorded information so that it is not lost or degraded as a result of any equipment or service malfunctions, and will secure such information from any adjustment, modification or loss from any source.

2.4 Energy Consumption Certificate

Promptly after the end of each month following the Service Commencement Date, Project Co will deliver to the Authority a certificate showing for each Facility:

- (a) the Energy Consumption by energy source in Gigajoules and the Greenhouse Gas Emissions in tCO₂e for that month with respect to:
 - (1) total Energy Consumption;
 - (2) Targeted Energy Consumption; and

- (3) Non-Targeted Energy Consumption;
- (b) the peak electrical demand date and hour;
- (c) the Weather Data for that month, including the number of Heating Degree Days and Cooling Degree Days;
- (d) building occupancy; and
- (e) any other variable that affects the Energy Consumption relative to the energy model assumptions set out in Attachment 1 to this Appendix.

3. DESIGN AND CONSTRUCTION ENERGY GUARANTEES

3.1 Monitoring of Energy Consumption and Greenhouse Gas Emissions

During the Monitoring Period and the Test Period, Project Co and the Authority will monitor Energy Consumption and Greenhouse Gas Emissions in order to determine the Energy Consumption and the Greenhouse Gas Emissions for the Monitoring Period and the Test Period.

3.2 Adjustment to Energy Consumption

Within 2 years after Service Commencement, Project Co and the Authority will jointly engage an Independent Energy Consultant to determine whether and to what extent the Energy Consumption for the Test Period should be adjusted based on factors which, in the energy consultant's professional opinion, are applicable, including actual climate conditions, occupancy, equipment use and Authority controlled effects during the Test Period, and differ from the factors taken into account in the energy model assumptions set out in Attachment 1 to this Appendix. The cost of the Independent Energy Consultant will be shared evenly between Project Co and the Authority.

A more detailed methodology for this adjustment will be developed to the satisfaction of the Authority, Project Co and the Independent Energy Consultant and may use the Energy Monitoring Model and/or a spreadsheet based analysis.

3.3 Failure to Achieve Design and Construction Energy Target

If the Targeted Energy Consumption in the Test Period (as may be adjusted pursuant to Section 3.2 of this Appendix) for a Facility exceeds the Design and Construction Energy Target for that Facility, then Project Co will do one of the following:

- (a) modify the relevant Facility as required so that annual Targeted Energy Consumption does not exceed the Design and Construction Energy Target for that Facility, subject to compliance with the Design and Construction Specifications and the approval of such modifications by the Authority, not to be unreasonably withheld or delayed; or
- (b) pay to the Authority a lump sum amount that the Authority agrees, acting reasonably, represents the lesser of \$500,000 and the net present value of the cost to the Authority during the expected life of that Facility of the amount by which Targeted Energy Consumption will exceed the Design and Construction Energy Target for that Facility, on

the assumption that the excess in the Monitoring Period will continue for the balance of the expected life of that Facility, and if this Section 3.3(b) is applied the provisions of Schedule 9 [Compensation on Termination] will be amended as necessary to ensure that the Authority will not, as a consequence of the application of this Section 3.3(b), face any additional liability upon early termination of this Agreement.

3.4 Failure to Achieve Greenhouse Gas Emissions Target

If the Greenhouse Gas Emissions in the Test Period (as may be adjusted pursuant to Section 3.2 of this Appendix) for a Facility exceeds the Greenhouse Gas Emissions Target for that Facility, then Project Co will do one of the following:

- (a) modify the relevant Facility as required so that annual Greenhouse Gas Emissions does not exceed the Greenhouse Gas Emissions Target for that Facility, subject to compliance with the Design and Construction Specifications and the approval of such modifications by the Authority, not to be unreasonably withheld or delayed; or
- (b) pay to the Authority a lump sum amount that the Authority agrees, acting reasonably, represents the lesser of \$50,000 and the net present value of the cost to the Authority during the expected life of that Facility of the amount by which Greenhouse Gas Emissions will exceed the Greenhouse Gas Emissions Target for that Facility, on the assumption that the excess in the Monitoring Period will continue for the balance of the expected life of that Facility, and if this Section 3.4 is applied the provisions of Schedule 9 [Compensation on Termination] will be amended as necessary to ensure that the Authority will not, as a consequence of the application of this Section 3.4, face any additional liability upon early termination of this Agreement.

3.5 Consequences of Failure to Achieve Targets

The consequences to Project Co for not meeting the Design and Construction Energy Target or the Greenhouse Gas Emissions Target, each as may be adjusted pursuant to Section 3.2 of this Appendix, are limited to those set out in Sections 3.3 and 3.4 of this Appendix.

4. ANNUAL ENERGY TARGETS

4.1 Energy Monitoring Model

During the Monitoring Period, Project Co will engage an Independent Energy Consultant to prepare for the Authority's review and approval, not to be unreasonably withheld or delayed, a model (the "**Energy Monitoring Model**") for each Facility that is able from time to time to be updated to determine:

- (a) the expected annual Energy Consumption and Targeted Energy Consumption for the ensuing 5 year period for that Facility based on a pre-determined set of in-puts (including actual temperatures and consumption):
 - (1) for the first 5 year period after the Monitoring Period, the Monitoring Period; and
 - (2) for each subsequent 5 year period, the immediately preceding 5 year period; and

- (b) the effect on annual Targeted Energy Consumption for that Facility if the actual annual average temperatures are higher or lower than during the previous year.

4.2 Annual Energy Target

In respect of each Facility, the Annual Energy Target for the Energy Years after the Monitoring Period will be the expected annual Targeted Energy Consumption determined as follows:

- (a) for the first five years after the Monitoring Period, the expected annual Targeted Energy Consumption will be as determined by the Energy Monitoring Model at the end of the Monitoring Period;
- (b) at the end of each five Energy Year period after the Monitoring Period, Project Co will update and re-run the Energy Monitoring Model using the Weather Data and other applicable data that has been approved by the Authority from such five year period; and
- (c) for each of the five Energy Years after the Energy Monitoring Model is updated and re-run the expected annual Targeted Energy Consumption will be as determined by the updated and re-run Energy Monitoring Model, as adjusted pursuant to Section 4.3.

4.3 Adjustment to Annual Energy Target

If the temperature set out in the Weather Data for an Energy Year as measured by the Weather Monitoring Station for a Facility is different from the temperature used in the Energy Monitoring Model to set the Annual Energy Target for that Energy Year for that Facility or if there is a significant change to the Core Hours for that Facility, then the Annual Energy Target for that Energy Year for that Facility will be adjusted for such variances.

In addition, the parties will monitor compliance with the Energy Management Plan referred to in Section 4.6 of Schedule 4 [Services Protocols and Specifications] at each meeting of the Operating Period Joint Committee. If:

- (a) either Project Co or the Authority does not comply with the Energy Management Plan, then the Annual Energy Target for the relevant Facility will be adjusted by an appropriate amount to reflect the effect of non-compliance; and
- (b) the parties are unable to agree on the appropriate amount of such adjustment, Project Co will engage an independent energy consultant acceptable to Project Co and the Authority, acting reasonably, to determine, within 2 months after such engagement, whether and to what extent the Annual Energy Target for that Facility should be adjusted.

5. SHARING GAIN AND PAIN

5.1 Average Unit Cost

In respect of each Facility, the Average Unit Cost for an Energy Year will be the amount obtained by dividing:

- (a) all amounts paid or payable by Project Co or the Authority in respect of the supply of the Energy in that Energy Year for the Energy Consumption in that Facility; by
- (b) the Energy Consumption for that Energy Year in that Facility.

5.2 Energy Gainshare

The Energy Gainshare for an Energy Year will be the lesser of:

- (a) 50% of the product of:
 - (1) the amount, if any, by which the Targeted Energy Consumption in that Energy Year for a Facility is less than 97% of the Annual Energy Target for that Energy Year for that Facility; and
 - (2) the Average Unit Cost for that Energy Year; and
- (b) \$50,000.

5.3 Energy Painshare

The Energy Painshare for an Energy Year will be the lesser of:

- (a) 50% of the product of:
 - (1) the amount, if any, by which the Targeted Energy Consumption in that Energy Year for a Facility is greater than 103% of the Annual Energy Target for that Energy Year for that Facility; and
 - (2) the Average Unit Cost for that Energy Year; and
- (b) \$50,000.

5.4 Calculation and Invoicing

Project Co will submit to the Authority for each Energy Year Project Co's calculation of the Average Unit Cost and Energy Gainshare and Energy Painshare on a Facility by Facility basis as soon as practicable, and in any event within 20 Business Days after the receipt of the last invoice containing information on all Energy use during that Energy Year. Any unresolved dispute about such calculations will be resolved in accordance with the Dispute Resolution Procedure.

6. CONTENT AND FORMAT OF THE ENERGY ANALYSIS REPORT

6.1 Energy Analysis Report

The Energy Analysis Report will present findings of actual consumption for each separate Utility for the relevant Contract Year. The parties will agree upon the exact form of the Energy Analysis Report from time to time but as a minimum the Energy Analysis Report will include the following.

- (a) For each Payment Period (within 10 Business Days of the end of the Payment Period):

- (1) the Targeted Energy Consumption in Gigajoules and the Greenhouse Gas Emissions in tCO₂e for each type of Energy in that month;
 - (2) the Non-Targeted Energy Consumption in Gigajoules and the Greenhouse Gas Emissions in in tCO₂e for each type of Energy in that month;
 - (3) the consumption data for all other Utilities;
 - (4) Weather Data recorded for that month;
 - (5) Facility Operation Variances;
 - (6) any other variable that affects the Targeted Energy Consumption relative to the energy model assumptions; and
 - (7) all information and data which the Authority is required to report under the *Greenhouse Gas Reduction Targets Act* and related regulations in the format required under such act and regulation, including the Government of British Columbia's SMARTTool.
- (b) For each Contract Year (within 20 Business Days after the receipt of the last invoice containing information on all Energy use during that Contract Year):
- (1) all of the items reported for each Payment Period in Section 6.1(a), but for the Contract Year;
 - (2) the energy mix for the Contract Year;
 - (3) a calculation showing Energy Painshare or Energy Gainshare; and
 - (4) a revised Energy Monitoring Model showing the Annual Energy Target for the upcoming Contract Year.

7. ENVIRONMENTAL CREDITS

7.1 Entitlement to Environmental Credits

The Authority will be entitled to any and all Environmental Credits related to the Facilities and their operation and Project Co will use commercially reasonable efforts to assist the Authority in achieving the maximum Environmental Credits available.

On any future energy efficiency and conservation project where the Authority and Project Co collaborate, the Authority will apply for and be the beneficiary of all funding and cash incentives payable as a result of the project.

ATTACHMENT 1

ENERGY MODEL ASSUMPTIONS FOR DESIGN AND CONSTRUCTION ENERGY TARGET

Project Co used the following energy model assumptions to determine the Design and Construction Energy Target:

- (a) identify the energy consumption by fuel type, i.e., electricity, thermal (steam or hot water), natural gas, fuel oil, biomass, on-site renewable;
- (b) include a table of all assumptions and values utilized in modeling the Proposed building; and
- (c) modelling parameters for the Proposed case will be in accordance with ASHRAE/ENSA 90.1-2010 compliance rules and requirements.

General Assumptions

Service Hot Water	ASHRAE 90.1-2010
Process Steam for Sterilization	In accordance with Schedule 3 specifications. Operating schedule as per MNECB Performance Compliance for Buildings Table 4.3.2.C Operating Schedule H
Lighting	Use space-by-space method in accordance with ASHRAE 90-1-2010
Location Weather File (Comox Valley Facility & Campbell River Facility)	Canadian Weather for Energy Calculations (CWEC), Comox BC http://doe2.com/Download/Weather/CWEC/

Space Type Assumptions

Space Type	Design Occupancy	Operating Schedule	Equipment Power (Plug Load)
		As per MNECB Performance Compliance for Building Table 4.3.2.C	As per MNECB Performance Compliance for Building Table 4.3.2.B Or as otherwise specified
Patient Clinical Areas	As determined from Authority provided data or 5 m ² per person	Operating Schedule H	In accordance with Schedule 3
Nurses' Stations –	As determined from Authority provided data or 2.5 m ² per person	Operating Schedule H	In accordance with Schedule 3
Waiting Rooms, Reception, & Lounges	1.5 m ² per person	Note 1	In accordance with Schedule 3

Utility Rooms	0	Note 1	Storage / Warehouse: Active Storage, Fine
Electrical / Mechanical Rooms	0	Note 1	Service and Common: Mechanical / Electrical Rooms
Corridors	30 m ² per person	Note 1	Service and Common: Corridors
Meeting Rooms, Offices, & Admin. Areas	20 m ² per person	Operating Schedule A	In accordance with Schedule 3
Other Public Spaces, including Atria and Lobbies	10 m ² per person	Note 1	Assembly: Lobby
Laboratory spaces	20 m ² per person	Operating Schedule H	In accordance with Schedule 3
Small videoconference rooms	Based on intended use	Operating Schedule B	In accordance with Schedule 3
Retail Space	30 m ² per person	Operating Schedule C	Retail: Type D (General Merchandising)
Food Preparation Centre	20 m ² per person	Operating Schedule B	Food Service: Kitchen
Medical Device Reprocessing Department (MDRD)	20 m ² per person	Operating Schedule H	In accordance with Schedule 3
Cafeteria	10 m ² per person	Operating Schedule B	Food Service: Fast Food/ Cafeteria
Warehouse	10 m ² per person	Operating Schedule E	Storage / Warehouse: Active Storage, Fine

Note 1: Operating Schedule to be the same as the adjacent area in the most similar thermal zone.