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**VIA EMAIL**
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July 25, 2012

**FORTISBC ALTERNATIVE ENERGY SERVICES**
**PCI MARINE GATEWAY TES CPCN EXHIBIT A-6**

Ms. Diane Roy
Director, Regulatory Affairs - Gas
FortisBC Alterative Energy Services Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Dear Ms. Roy:

Re: FortisBC Alternative Energy Inc.
Project N. 3698677/Order G-74-12
Application for a Certificate of Public Convenience and Necessity for
the Approval for the PCI Marine Gateway Thermal Energy Project and Approval
of Rates for Thermal Energy Service to PCI Developments Inc.

Further to Commission Order G-94-12, which established a Revised Regulatory Timetable with respect to the above noted Application, please provide a response to the enclosed Commission Information Request No. 2 by Wednesday, August 8, 2012.

Yours truly,

Erica Hamilton

/elm
Enclosure
cc: Registered Interveners

**FortisBC Alternative Energy Services Inc. (FAES)**
**Application for a Certificate of Public Convenience and Necessity**
**for the Approval for the PCI Marine Gateway Thermal Energy Project**
**and Approval of Rates for Thermal Energy Service to PCI Developments Inc.**

**1.0 Reference: Project Description**
**Exhibit B-1, Application, Section 4.6.2, p. 37;**
**Corix 2010 CPCN UniverCity, Exhibit B-1, p. 47**

In the recent UniverCity proceeding, Corix stated that: "The distribution piping system will be installed mostly in SFU right of ways and Corix is currently working with SFU on this arrangement."

In Section 4.6 of the Application dealing with Contracts, along with the sections on the Infrastructure and Service Agreements, FAES included Section 4.6.2 STATUTORY RIGHT OF WAY:

" • registers the Energy System on development land."

1.1 Please confirm that this means that no separate agreement was required for securing rights of way, as the energy system assets are confined to the specific PCI Marine Gateway property development. If not, please clarify the meaning of this section.

**2.0 Reference: GHG Emissions Savings of Closed Loop System Versus BAU**
**Exhibit B-4, BCUC 1.7.2**

FAES provided the table below in response to BCUC 1.7.2.

| | BAU | | | PCI (closed loop) | | |
|---|---|---|---|---|---|---|
| | GJ | MWh | $CO_2$ | GJ | MWh | $CO_2$ |
| Bldg Boiler Natural Gas | 27,770 | 7,714 | 1,416 | 10,213 | 2,837 | 521 |
| Building Electric Resistance | 7,798 | 2,166 | 48 | 6,926 | 1,924 | 42 |
| Building Heat Pump/Chiller Elec. | 1,692 | 470 | 10 | | | |
| DESS Heat Pump Electricity | | | | 2,444 | 679 | 15 |
| Building Pumping Electricity | 1,034 | 287 | 6 | 1,332 | 370 | 8 |
| ***total*** | | | ***1,481*** | | | ***586*** |
| GHG reduction (BAU – PCI) | | | 894 | $CO_2$ = | 60.4% | |
| Conversion factors | | Natural Gas | 183.6 | $tCO_2$/GWh | | |
| | | Electricity | 22 | $tCO_2$/GWh | | |

2.1 In the table above, for the PCI (closed loop) option, please confirm that the values entered for the "Building Electric Resistance" energy input should have instead been entered for the "Building Heat Pump/Chiller Elec." energy input. If not, please explain why electric resistance energy input is used in the PCI Closed Loop System.

**3.0 Reference: Load Analysis and Energy Demand Forecast**
**Exhibit B-1, Section 3.2, p. 10; Exhibit B-4, BCUC 1.8.1**

On page 10 of the Application, FAES states that "The PCI Marine Gateway Project encompasses approximately 81,000 $m^2$ of developed floor area, as per the development permit application of September 2011. …The total residential floor area is 30,783 $m^2$. Commercial-Retail Units including theatres are located on the lower levels of the three towers, covering 46,877 $m^2$.

… Details of the design are included in the schematic in Appendix I and the energy data are included in the DEC TECH Memo #3 in Appendix H dated March 12, 2012. The annual energy figures were based on the specific size and design of the three building structures and type of use among the residential, office and retail structures."

In BCUC 1.8.1, FAES provided revised floor area information as follows:

| Use | Floor Area [$m^2$] | % of total floor area |
|---|---|---|
| Residential | 30,432 | 41% |
| Commercial-Retail Units | 21,306 | 29% |
| Office | 22,485 | 30% |
| **Total** | **74,222** | **100%** |

3.1 Please explain which circumstances prompted the significant changes in total developed floor area, CRU floor area and Office floor area between the date of the development permit application in September 2011 and the date this Application was submitted to the BCUC in May 2012.

3.1.1 Please provide a similar breakdown of floor area ($m^2$) by use for each of the three buildings in the PCI Development.

3.2 Please confirm that the DEC TECH Memo #3, which was completed on March 21, 2012, is based on total developed floor area of 81,000 $m^2$, as per the development permit application of September 2011, that included 30,783 $m^2$ of residential floor and 46,877 $m^2$ of CRU floor.

3.2.1 If so, and given that the annual energy figures contained in Memo #3 were based on the specific size and design of the three building structures and type of use among residential, office and retail structures, please revise the data contained in Table 3-1: Forecast Annual Energy Load; Table 3-2: Forecast Peak Energy Load (Heating); Table 3-3: Forecast Peak Energy Load (Cooling); Table 3-9: Summary of Energy Sourcing; and Table 3-10: GHG Emissions, using the revised floor area information contained in BCUC 1.8.1.

3.2.2 Alternatively, if the DEC TECH Memo #3's energy analysis is based on the floor area data (total and by use) as provided by FAES in BCUC 1.8.1, please indicate where this information can be verified in the Application material or how it can be verified from the material provided in the Application.

In BCUC 1.8.2, FAES was asked to provide the Energy Use Intensity (EUI) factors by building archetype used to forecast the annual thermal energy load for the Marine Gateway Project. In response, FAES states that: "The table below is generated from the output of simulation programs based on the most recent energy modelling completed by DEC and its consultants, (which includes the modified glazing area, glazing type, etc.) divided by the floor space as submitted for the development permit." The table is copied below for ease of reference.

| | Space Heat | Space Cooling | DHW |
|---|---|---|---|
| | kWh/m² | kWh/m² | kWh/m² |
| Residential | 74.1 | 2.4 | 33.8 |
| Commercial-Retail Units | 209.8 | 49.6 | 9.4 |
| Office | 17.3 | 29.3 | 8.9 |

3.3 From the table above, please confirm that the total EUI by use can be summarized as in the table below. If not, please explain why not.

| | Thermal Energy ($kWh/m^2$) |
|---|---|
| Residential | 110.3 |
| Commercial-Retail Units | 268.8 |
| Office | 55.5 |

3.4 Please explain the wide range of EUI by use and what causes the CRU EUI to be significantly higher than the other two.

In BCUC 1.26.1, FAES states "Although FAES is confident in the demand forecast included in the PCI cost of service analysis, the actual demand may vary from the current forecast as the development matures."

3.5 On what basis can FAES affirm that it is confident in the demand forecast included in the PCI cost of service analysis?

3.6 Does FAES agree that long-term system maintenance and operation, building performance and occupants' behaviour are factors that can significantly impact the actual energy use compared to the forecast energy use? If so, by how much could these factors impact the actual energy use? If not, why not?

3.7 Did FAES perform a sensitivity analysis of a higher/lower annual energy use due to these multiple energy use uncertainties on the size of the system, the total costs (capital and O&M costs), the energy rate and the GHG emission savings? If so, please provide the results of such analysis.

3.7.1 If not, please provide a sensitivity analysis of an annual thermal energy use that would be 10 percent higher than forecasted or 10 percent lower.

3.8 Please discuss the potential consequences if the total actual annual energy use turns out to be significantly higher or lower than forecasted. What steps would FAES take to remedy each situation?

3.8.1 In particular, if the total actual energy use is significantly higher than forecast, how would the City of Vancouver's rezoning conditions of meeting at least 70 percent of the thermal energy requirements with the geo-exchange system and reducing GHG emissions by at least 50 percent still be met?

**4.0 Reference: Refrigeration Cooling Energy**
**Exhibit B-4, BCUC 1.14.1**

FAES states that "The difference between the tables arises because FAES does not treat refrigeration cooling energy generated heat rejected from the refrigeration units as billable thermal energy. This is further explained on pages 10 to 11 in 4th Study (Tech Memo) dated March 21, 2012 ("Study #4") attached in Appendix H of the Application."

On page 10 of the Tech Memo dated March 21, 2012 (Appendix H of the Application), it is noted: "It is understood that Fortis would not collect revenue on the refrigeration cooling energy."

4.1 Please clarify what is meant exactly by "refrigeration cooling energy generated heat rejected from the refrigeration units" and why FAES does not treat it as billable thermal energy.

**5.0 Reference: System Design and Specification**
**Exhibit B-6, CEC IR 1.15.1**

"Heating and cooling losses are minimized through sufficient insulation around pipes and quality of workmanship. ASHRAE Standard 90.1-1977 specifies the minimum required insulation for the expected operating temperatures. Quality workmanship is achieved through the selection of trained contractors in the field" (Exhibit B-6, p. 28)

5.1 Please confirm that FAES will specify the minimum required insulation thickness for the operating temperatures. Please also provide the insulation thickness that the ASHRAE Standard specifies for the ambient, chilled and hot water loops based on their operating temperatures.

**6.0 Reference: Operating and Maintenance Costs**
**Exhibit B-4, BCUC 1.18.5**

"FAES will develop a verification and testing program for thermal meters based on consultation with meter manufacturers and practices adopted by other utilities delivering thermal energy"

6.1 Has FAES included costs for a meter verification and testing program in its forecast O&M schedules? If so, please indicate where and what amounts.

**7.0 Reference: Rate Design**
**Exhibit B-4, BCUC 1.19.3**

In FAES's response, point #2, FAES indicates that "For example, customers that do not require only heating should have lower load factors than customers that require heating and cooling. Lower load factors generally produce higher rates, however, in this instance, the existence of the heating load, at times when other customers require cooling, provides a benefit in terms of efficiency translating into both lower capital and operating costs for cooling customers than would otherwise be the case."

7.1 Did FAES mean to say "customers that require only heating should have lower load factors than customers that require heating and cooling" instead of "customers that do not require only heating should have lower load factors than customers that require heating and cooling"?

7.1.1 If so, did FAES mean to explain that residential customers should have lower load factors than office or CRU customers because they require only heating and because of that, residential customers should face higher rates?

7.1.2 Does it follow that having an integrated energy system results in lower rates for heating-only customers (i.e., residential customers) because they benefit from the renewable waste heat energy source generated by the refrigerated coolers?

7.2 In FAES' response, point #2, FAES provides an example of how the system provides benefits to cooling customers. What are examples of benefits, if any, that accrue to non-cooling customers (i.e., residential customers)?

**8.0 Reference: Development Costs**
**Exhibit B-4, BCUC 1.23.2**

8.1 Please provide a further breakdown of the internal development costs of $212,691 and the external development costs of $479,495.

**9.0 Reference: Cost of Service and Rate Design**
**Exhibit B-4, BCUC IR 1.26.1-2, pp. 56-57**

"FAES/FEI did not consider any other rate model for the Marine Gateway Project as we believe the annually reviewed cost of service rate is appropriate."

9.1 Has FAES discussed any alternative rate models with the customer and/or the developer?

9.1.1 If not, why not?

9.2 Where else in North America is traditional "cost of service rate-based methodology" used for thermal energy systems of this scale and type? Please provide examples, including the installed capacity in MW of the relevant systems.

9.3 What industries or types of business have rate-base?

9.4 Is FEU/FAES aware of any other thermal projects of this nature which have a regulatory asset base, outside of BC? If so, please provide examples and accompanying descriptions of the systems.

9.5 In the absence of tariff regulation in other North American jurisdictions, what rate-setting mechanisms are used for developments of a similar scale and nature?

**10.0 Reference: Cost of Service and Rate Design**
**Exhibit B-4, BCUC IR 1.26.1-2, pp. 56-57; Exhibit A2-1; Paul Joskow, Vertical Integration and Long-Term Contracts: The Case of Coal-Burning Electric Generating Plants, Journal of Law, Economics and Organization Vol 1 No. 1, pp. 60-64, Fall 1985; classwebs.spea.indiana.edu/kenricha/Oxford/Archives/Courses%202010/Governance%202010/Articles/Joskow%20-%20Vertical%20Integration.pdf;**
**Exhibit A2-2, OECD-IEA, 2004, Improving District Heating Policy in Transition Economies, p. 122 ; www.iea.org/textbase/nppdf/free/archives/cold.pdf**

In response to IR 26.1, FAES cites the flow through of cost of service changes and annual demand changes as the two main benefits for selecting the annually reviewed cost of service rate over a formula-based rate which is fixed for a longer period of time.

> "Both approaches have merit, however, FAES has moved toward the annual rate review process for the following reasons:
>
> 1. Flow through of Cost of Service Changes
>
> An annual setting of rates accounts for changes in the cost of service that may be uncontrollable or difficult to forecast, particularly changes in commodity costs, while a fixed rate may not have such flexibility. As fluctuations in commodity costs are uncontrollable and can be significant, it is important to have the ability to reset rates to reflect revised market conditions. In the case of PCI, the variable thermal energy rate reflects the cost of delivery as well as commodity costs, and as such FAES considered the annual rate review process to be an appropriate mechanism to pass on cost changes in this regard. Further, changes in the Commission approved ROE, tax rates, and accounting policies may occur from time to time and can be included, in a timely manner, in an annual rate review process, as compared to a fixed rate which might not flow through changes of this nature.
>
> 2. Flow through of Annual Demand Changes
>
> An annual rate review accounts for changes in annual demand or throughput, while a fixed rate may not. Generally, fixed or levelized rates work well in circumstances where there is a minimum take or pay arrangement or where the annual demand is well established. Although FAES is confident in the demand forecast included in the PCI cost of service analysis, the actual demand may vary from the current forecast as the development matures. As such, FAES considered the annual rate setting process to be an appropriate mechanism to pass on impacts to the thermal energy rate for changes in demand over time."

While economic regulation of district energy systems was common in Eastern Europe, there has been a shift towards simplifying "heat tariff regulation":

> "In Estonia, for instance, many companies are introducing index-based formulas for tariff calculation that allow heat tariffs to be adjusted to fuel price fluctuations and other changes in variable costs. …

> Well-designed pricing formulas should be attractive for both district heating companies and regulators because they are simpler to manage. An index based tariff is negotiated and approved only once and set for a relatively long period. The price may be adjusted under specified conditions such as relevant external changes (to fuel costs or inflation, for example) over agreed periods of time." (IEA, p. 122)

A journal article by Joskow discusses some ways of structuring contracts for "transaction-specific sunk investments", of which the PCI-Marine-Gateway TES is a good example:

> "Establishing a pricing formula to govern compensation arrangements for contracts lasting many years that provide incentives to both the buyer and the seller to perform as promised without leading to serious inefficiencies itself is not an easy task. Dealing with the kinds of ex post performance problems addressed in the transactions cost literature and providing mechanisms for smooth adjustments in obligations as various contingencies arise is complicated by the uncertainty governing future costs and market conditions that are inherent in this relationship. Input prices are likely to change over time, technological developments may reduce the current and expected future costs of mining from similar reserves, labor agreements may change work rules and increase or decrease productivity, new government regulations may increase mining costs, unanticipated mining problems may emerge, new property and severance taxes may be applied, and so on. General changes in supply and demand are likely to lead to changes in the value of the coal at the mine-mouth operation both from the buyer's perspective and the seller's perspective.
>
> The compensation arrangements should reflect two interrelated objectives. First, they should be structured to eliminate the incentives either party has to behave opportunistically. Second, the pricing provisions should be structured in such a way that efficient demand and supply decisions are made by both the buyer and the seller. It would, for example, be undesirable if a pricing formula gave one or both parties the incentive to reach their purchase and supply promises if this would increase the social costs of supplying coal or producing electricity. Let us examine four different methods for establishing prices over time.[1]
>
> ….
>
> 4. Indexed contracts: The fourth and final type of contract that I consider is an indexed contract. This is a natural alternative to a fixed price contract.
>
> Rather than try to set a fixed price that rolls in revenues for anticipated future changes in input prices, costs of government regulations, changes in union work rules, and so on, we can set a base price that is adjusted over time as input prices rise. For example, the base price can be broken down into components (labor, materials and supplies, depreciation, profit, property taxes) and then each component escalated according to an appropriate input price and productivity index. This type of contract seems to deal with some of the undesirable properties of both the fixed price and cost plus contracts.
>
> Prices now rise over time as input prices rise and productivity opportunities change, and we do not have to front-load cash flow. Prices rise as the supplier's input prices rise and production opportunities change but are independent of the actual production decisions made by the supplier. <u>If the supplier can increase productivity more than provided for by the index, his actual</u>

[1] The discussion of fixed price, market price and cost plus profit contracts have not been included here.

costs will rise by less than the indexed price. If his costs rise-because of bad mining practices, for example-his net revenues are reduced as a result.

This type of contract provides incentives for the supplier to minimize costs (given coal quantity and quality). Furthermore, the increases in input prices, technological change, and so forth will have similar effects on the costs of proximate alternative suppliers as well. Although this type of pricing provision cannot guarantee that contract prices will move in lockstep with the prices that might be charged by competing suppliers over time, it does account for several important causes of changing supply prices. An indexed contract therefore appears to dominate either a fixed price or cost plus contract." [emphasis added]

10.1 An index-based formula for tariffs appears to offer the ability to address uncontrollable or external cost of service changes, such as changing commodity prices which FAES mentions in IR 26.2. Has FAES/FEI considered this or other methods as alternative ways of addressing concerns about changes in input costs? If not, why not?

10.1.1 Please compare the advantages and disadvantages of these two methods, (and any others if necessary) of reducing input price risk in long-term contracts, including a discussion of the incentives created for the operator to improve productivity and minimize costs.

10.2 A two part tariff consisting of both a fixed and a variable component would provide an alternative mechanism of mitigating the risk of annual demand changes, and yet FAES has opted for a 100 percent variable tariff. Please compare the advantages and disadvantages of these two methods of dealing with the risk of annual demand changes, namely a two-part fixed/variable tariff, and the cost of service rate. Include a discussion of the incentives created for both operator and customer.

**11.0 Reference: Cost of Service and Rate Design**
***Utilities Commission Act*, Section 60**
**Exhibit A2-2, OECD-IEA, 2004, Improving District Heating Policy in Transition Economies, pp. 109, 132, http://www.iea.org/textbase/nppdf/free/archives/cold.pdf**

Section 60 (1)(b)(iii) of the *Utilities Commission Act* requires that in setting a rate, the Commission must have due regard to the setting of a rate that encourages public utilities to increase efficiency, reduce costs and enhance performance.

According to an International Energy Agency (IEA) publication on district heating practices in OECD countries, a well-designed heat tariff should ideally have the following characteristics

- "Cover the full current costs of the heat supply company.
- Include replacement costs and return on investment, taking into account the need for adequate capacity.
- Allow sound operation and management of the district heating system.
- Be competitive with prices for other heat sources.
- Give the district heating company incentives to reduce costs.
- Give heat suppliers and customers incentives to save energy.
- Be transparent and easily understandable: customers should clearly see from the tariff what they are responsible for and how they can influence the heat bill.
- Last but not least, protect the consumer from unjustifiably high prices." [emphasis added]

11.1 What measures are FAES/FEI including in their proposed rate to ensure that the correct incentives are in place to reduce the costs of providing thermal energy to their PCI Marine-Gateway customers, and generally promote efficient operations?

**12.0 Reference: Cost of Service and Rate Design**
**Exhibit B-4, BCUC IR 1.26.1-2, pp. 56-57**
**Exhibit A2-3, District Heating and Cooling in the United States, National Research Council, pp. 2, 86, www.nap.edu/catalog/263.html ;**
**Exhibit A2-2, OECD-IEA, 2004, Improving District Heating Policy in Transition Economies, p. 250, http://www.iea.org/textbase/nppdf/free/archives/cold.pdf**

According to a US National Research Council report written in 1985, regulation was a significant factor inhibiting the growth and development of investor-owned district heating utilities in the US. The paper concluded on page 86 that:

> "The economic regulation of electric utilities, which follows from the concept of a publicly granted and regulated monopoly, is inappropriately applied to district heating and cooling systems. Urban systems require large initial investments, particularly during a project's early stages, when revenues are small or lacking. Where economic regulation by state utility commissions limits the return on investment and controls the ability to roll investment costs into rates, the incentive to urban systems is removed for the private sector.
>
> Currently, most successful systems in the United States are operating without these regulations or taxation because they are tax-exempt, not-for-profit, municipal, or institutional installations. Likewise, costly and lengthy regulation and permit procedures are disincentives to entrepreneurial systems because they increase the uncertainty, cost, and complexity of development. Real or perceived regulatory risks unfavorably affect cost and financing.
>
> - Economic regulation of district heating and cooling systems by state or local authorities should be eliminated. District heating and cooling systems should be allowed to operate in the same open market that now exists for competing fuels and energy systems."

According to a more recent 2004 paper by the IEA:

> "Some older district heating systems in the U.S., such as the system serving New York City, are regulated by state public utility commissions. Tariffs are not regulated in newer district energy systems."

Page 132 of the same document discusses the general impact of tariff regulation on prices:

"Countries have taken two approaches to heat source competition: competition with regulated prices and competition with unregulated prices (a third policy option, zoning, allows localities to exclude customer-level competition, though zoning proponents argue that there is de facto competition in the energy planning process used to define the zones). Prices in countries that do not have tariff regulation are generally lower than in those that do, possibly because of how tariff regulation reduces flexibility and creates an administrative burden, both of which can add to costs."

The IEA paper states on page 110 that:

> "Poorly designed tariff regulation that does not provide incentives for cost reduction may result in unnecessarily high tariffs for consumers. … Where competition cannot be introduced, the role of regulation should be to mimic the effect of a competitive market by creating effective incentives for cost reduction. Not all approaches to tariff regulation can achieve this. …
>
> …
>
> **Recommendation**
>
> Given the numerous disadvantages of cost-plus regulation, regulators should consider using other approaches, for example price caps or benchmarking. Incentive regulation should be robust and predictable to ensure that the operator has sufficient motivation to improve efficiency and that it can keep the benefits of its efforts for a relatively long period. Substitution-based tariffs can be effective when the energy market is balanced."

12.1 Please discuss how the traditional annual cost of service revenue requirements rate setting mechanism encourages improved efficiency and cost-reduction.

12.2 Should the BCUC consider the application of other rate-setting methodologies or types of regulation, such as price caps, long-term contracts or benchmarking, to encourage thermal operators to improve efficiency and lower costs, and to ensure that the development of the district heat industry is not impaired? If not, why not?

12.3 On what basis has FAES/FEI decided that cost of service regulation is the most appropriate way of regulating thermal energy?

**13.0 Reference: 100 Percent Variable Rate**
**Exhibit B-4, BCUC 1.31.1**

In BCUC 1.31.1, FAES provides three primary reasons to design a 100 percent variable rate, among which are the following two: 1) a 100 percent variable rate enables customers to easily identify their effective costs of thermal energy; 2) it provides a conservation incentive for customers to limit their energy consumptions.

13.1 Please explain the disadvantages of choosing an energy rate that is 100 percent variable.

13.2 If actual energy use were to fluctuate substantially from year to year, what would FAES do to prevent customers from facing highly volatile energy rates?

13.3 Given that for residential and office spaces, and in the case of the smaller CRU tenants, the customers will be: 1) the Strata Corporation, 2) the management company that will manage the rental residential units, 3) the management company that will manage the office complex, and 4) the management company that will manage the smaller CRU tenants, would FAES agree that the benefits outlined above are less obvious and direct than in the situation where the actual owners or renters of residential, office or CRU units would be billed directly for their respective energy consumption (e.g., in the case of residential owners, their energy bills will amount to only a fraction of a higher condo fee)?

13.4 What is the ratio of fixed versus variable costs for each year of the 20-year period and on a net present value basis? Please provide the calculations and also define what is included in fixed and variable costs.

13.5 Why has FAES not considered using a rate design that would have a fixed and a variable component aimed to respectively recover the Project's fixed and variable costs, as in the cases of Dockside Green, Corix UniverCity and River District? Please also list the pros and cons of a rate design including both fixed and variable components.

**14.0 Reference: Transfer Pricing Policy**
**Exhibit B-4, BCUC 1.32.1**

14.1 Has FAES/FEI received an external audit opinion on its transfer pricing policy?

14.2 If yes, please file the latest audit report, whether internal or external, on FAES/ FEI's transfer pricing policy.

**15.0 Reference: Negative Salvage**
**Exhibit B-4, BCUC 1.34.1, 1.34.2**

15.1 How does FAES/FEI plan to deal with future negative salvage costs associated with the Delta School District and Tsawwassen Springs projects?

15.2 How does FAES plan to account for and report on the collection of negative salvage value for the PCI Marine Gateway project?

15.3 How will FAES treat the collection of negative salvage amounts at the end of the contract term if the customer buys out his/her portion of the remaining rate base?

15.4 How will FAES treat the collection of negative salvage amounts if the customer renews the contract at the end of the contract term?

**16.0 Reference: Project Deferral Account**
**Exhibit B-4, BCUC 1.35.4.1**

"The Project Deferral Account will be a stand-alone deferral account within FAES pending the outcome of the AES inquiry."

16.1 Why has FAES chosen to name this deferral account the "Project" Deferral Account instead of the "PCI Marine Gateway Deferral Account"?

16.2 Does FAES' choice to use the generic term "project" deferral account suggest that FAES is intending to allocate costs from other/future TES projects to this deferral account?

16.2.1 If so, how will FAES be able to distinguish between the costs associated with each customer/project within this deferral account should this be required in the future?

16.3 How would FAES treat variances accrued due to the rate smoothing mechanism if the Commission were to order FAES to file separate rates for each customer type?

16.3.1 How would FAES distinguish between variances accrued from each customer type?

**17.0 Reference: Overhead Recovery**
**Exhibit B-4, BCUC 1.35.5**

"Accordingly, for this Project FAES has forecast the overhead recovery at a higher level than the Delta School District Project, and arrived at 33 percent of total O&M as a reasonable estimation for this amount." [Emphasis added]

17.1 Please explain in more specific detail how the 33 percent for overhead recovery was calculated.

**18.0 Reference: TESDA**
**Exhibit B-4, BCUC 1.37.1**

18.1 Please confirm that the total overhead estimation of $51,000 for PCI is a "place-holder" in the PCI cost of service to account for the recovery of the TESDA.

**19.0 Reference: Exhibit B-4, BCUC 1.39.2, Attachment 39.2**

19.1 Please provide the live excel workbook version of Attachment 39.2, which includes all of the most recent updates/amendments.

**20.0 Reference: Capital Structure and Return on Equity**
**Exhibit B-4, BCUC 1.41.1**

20.1 Given the content and nature of the TESDA and the fact that FEI can defer the development costs of abandoned projects, does FAES/FEI agree that its TES/AES business risk is reduced?

20.1.1 If not, why not?

**21.0 Reference: Capital Structure and Return on Equity**
**Exhibit B-4, BCUC 1.41.2**

21.1 Please provide FAES' assessment of the risk level for risk factor #3 in the table (Customer Base) and provide FAES' rationale for this risk level assessment.

21.1.1 Please explain why FAES does not believe that the risk level is "low" given that the residential units are already sold out and that there are already "significant commitments from major tenants such as Cineplex and Loblaws, which represent over 50 percent of the available commercial square footage" (BCUC 1.21.1).

**22.0 Reference: Electricity Benchmark**
**Exhibit B-4, BCUC 1.43.4**

The table provided by FAES in response to BCUC 1.43.4 is copied below for ease of reference.

| | BCH Fiscal Year | F2013 ($/kWh) | F2014 ($/kWh) | F2015 ($/kWh) | F2016 ($/kWh) | F2017 ($/kWh) | F2018 ($/kWh) |
|---|---|---|---|---|---|---|---|
| a | BCH Electricity Forecast (50% Step 1 Residential & 50% Step 2) *= (line a * Assumptions on BCH Rate Escalation line b)* | $0.089 | $0.090 | $0.096 | $0.102 | $0.108 | n/a |
| b | BCH Rate Escalation *Based on Order G-77-12 (until F2014). After F2015, assumed overall increase of 6% (rate + DARR)* | 7.1% (rate + DARR overall increase) | Increase of 1.44 % (DARR remains at 5%) | Assumed overall rate increase of 6% (combination of rate + DARR) | Assumed overall increase of 6% (combination of rate + DARR) | Assumed overall increase of 6% (combination of rate + DARR) | |
| c | 10% Premium (line a * 0.10) *as per Commission Order G-2-12* | $0.009 | $0.009 | $0.010 | $0.010 | $0.011 | |
| d | Energy Rate for Marine Gateway (line a + line c) | $0.098 | $0.100 | $0.106 | $0.112 | $0.119 | |
| | *Table 6-7 in Application* | *$ 0.099* | *$ 0.104* | *$ 0.109* | *$ 0.115* | *$ 0.120* | |
| | *Variances* | *0.9%* | *4.3%* | *3.2%* | *2.8%* | *1.2%* | |

In BCUC 1.43.3, FAES confirmed that the Year 2012 in Table 6-7 in the Application referred to rates as of April 1, 2012, which corresponds with BC Hydro's fiscal year 2013 (F2013).

22.1 Since Year 2012 in Table 6-7 of the Application refers to BC Hydro rates in F2013, does it follow that Years 2013 to 2017 in Table 6-7 of the Application refer respectively to BC Hydro rates in F2014 to F2018?

22.1.1 If so, please explain why the last column of the above table has not been filled out, as it would correspond to the Year 2017 in Table 6-7 of the Application, i.e., the third year of the smoothing mechanism.

22.2 In the table above, for the years F2015 and beyond, when FAES assumes an overall rate increase of six percent for the combination of rate and DARR, please indicate separately what is FAES's implied assumption regarding the rate increase.

22.3 From the table above and calculations therein, it appears that FAES has applied annual rate increases to the previous year's tariff, including the DARR. Please confirm whether this is the case.

The following is an excerpt of BC Hydro's Electric Tariff Schedule 1901 regarding the Deferral Account Rate Rider.

**SCHEDULE 1901 – DEFERRAL ACCOUNT RATE RIDER**

Applicability: The Deferral Account Rate Rider applies to the charges payable under all of the other Rate Schedules in this Tariff except for Rate Schedules 3011, 3012, 3013, 3014, 3015 and 3016 and Tariff Supplements No. 7, 8, 39 and 77.

Rate: A charge of 5% of the amounts otherwise payable under the applicable Rate Schedule, but before taxes and levies.

22.4 Given that the rate rider does not form part of the residential electric tariff but is added on top of the other residential bill components, does FAES agree that annual rate increases should in fact only be applied to the tariff components, excluding the DARR, and then add the five percent rate rider in order to calculate a benchmark electricity rate for the purposes of this Application?

22.5 The methodology described in the previous question has been used to derive the bolded figures in the table below from information provided by FAES in the table in BCUC 1.43.4. Please indicate whether FAES agrees with it or not. If not, please provide a corrected version and explain the changes.

22.5.1 In particular, please confirm whether it was FAES's intention to assume BC Hydro's residential electric tariff would go up by forecasted annual rate increases of 6.31 percent, 6.75 percent and 6.03 percent for F2015, F2016 and F2017 respectively. If so, please provide FAES's rationale for using these assumptions. If not, please correct the table below using revised forecast rate increase. In either case, please provide a complete table including the year F2018.

| | **BCH Fiscal Year** | **F2013 ($/kWh)** | **F2014 ($/kWh)** | **F2015 ($/kWh)** | **F2016 ($/kWh)** | **F2017 ($/kWh)** | **F2018 (S/kWh)** |
|---|---|---|---|---|---|---|---|
| a | BCH Electric Tariff Forecast<br>(50% Step 1 and 50% Step 2)<br>(line a * BCH Rate Escalation line b) | $0.085 | **$0.086** | **$0.091** | **$0.097** | **$0.103** | **Missing** |
| b | BCH Rate Escalation Based on Order G-77-12 until F2014 | - | **1.44%** | **6.31%** | **6.75%** | **6.03%** | **Missing** |
| c | Rate Rider @ 5% for all years | $0.04 | **$0.04** | **$0.05** | **$0.005** | **$0.005** | **Missing** |
| d | Rate forecast including DARR (line a + line c) | $0.089 | $0.090 | $0.096 | $0.102 | $0.108 | Missing |
| e | 10% premium (line d * 0.10) | $0.009 | $0.009 | $0.010 | $0.010 | $0.011 | Missing |
| f | Energy Rate for Marine Gateway (line d + line e) | $0.098 | $0.099 | $0.106 | $0.112 | $0.119 | Missing |
| g | Table 6-7 in Application | $0.093 | $0.099 | $0.104 | $0.109 | $0.115 | $0.120 |
| h | Variances | -5.1% | 0.0% | -1.9% | -2.7% | -3.4% | Missing |

22.6 In the above table, line g has been properly copied from Table 6-7 in the Application and the variances recalculated. Does FAES agree with the corrections? If not, please explain why not.

FAES states in BCUC 1.43.4 that "It is important to note that FAES has set the rate for the first three years in order to provide rate predictability and stability as the service begins. Accordingly, while the rates generally follow the calculations below, this does not mean that electricity is the comparable BAU for this service, or that the rates should adjust precisely with electricity rates in those years. <u>These calculations provide a reasonable level of rates for the first three years that will provide the rate stability and predictability that is desired, at rates that a reasonably comparable to other thermal energy rates recently approved such as the River District</u>." [Emphasis added]

22.7 Please update Table 6-8: Thermal Energy Rates of the Application (and the corresponding Rate Design Schedule 12 in Appendix T, as well as any other affected Schedules).

22.7.1 In particular, please indicate clearly what FAES's updated proposals are for: 1) the first three years under the Rate Smoothing Mechanism; 2) all remaining years; and 3) the 20-year levelized thermal energy rate.

22.7.2 How do FAES's updated rate proposals compare with those contained in the Application (e.g., higher, lower, the same)?

**23.0 Reference: Energy Rate**
**Exhibit B-1, Appendix H, Project Requirements, p. 2**

On page 2 of Appendix H of the Application (TECH Memo #3), it is noted that "FEI has identified several project requirements that must be met. <u>The first requirement is that the energy rate charged by FEI to the DESS clients is equal to the tier 2 BC Hydro electricity rate.</u> To achieve this goal the estimated capital costs of the DESS project must align with the predicted delivered energy (revenue) while meeting internal FEI returns." [Emphasis added]

23.1 Please elaborate on this FAES/FEI requirement that the energy rate charged by FAES/FEI to customers is equal to the tier two BC Hydro electricity rate. What is the rationale for this requirement and is this requirement still in place?

23.2 Regarding the annual energy rates proposed in the Application, was this requirement met? Please provide the supporting material.

23.3 If this requirement is still valid, please demonstrate that the revised energy rates now proposed for the Marine Gateway Project meet it.

**24.0 Reference: BC Energy Objectives**
**Exhibit B-4, BCUC 1.49.2**

BCUC 1.49.2 asked FAES to describe the extent to which the Marine Gateway Project also supports BC Energy Objective (j), among others, which reads as "to reduce waste by encouraging the use of waste heat, biogas and biomass".

In response, FAES stated: "The proposed closed-loop geo-exchange system for this Project utilizes clean and renewable resources because it both extracts or injects energy in the form of heat from or into the earth as a source of heating and cooling. This is not biogas or biomass, <u>nor is it waste heat recovery in the conventional sense</u>, however the principle implicit in energy objective (i) of making efficient use of available energy sources is present in the energy solution for the Marine Gateway Project." (Emphasis added)

In BCSEA 1.2.3, FAES states "… with the availability of heat recovery energy (from cooling load)" and in BCSEA 1.2.6, FAES states "The Marine Gateway is designed based upon a large amount of heat recaptured from waste heat from refrigerated cases in a food store as well as from an in-building cooling system".

24.1 Please explain why the use of waste heat from refrigeration energy and from the in-building cooling system is not "waste heat recovery in the conventional sense."

24.1.1 In particular, why would the use of waste heat from refrigeration energy and from the in-building cooling system not help FAES in meeting BC Energy Objective (j) in regards to the use of waste heat?

**25.0 Reference: Monte Carlo Analysis**
**Exhibit B-4, BCUC 1.50.3**

In BCUC 1.50.3, FAES explains that a Thermal Energy Rate of $0.153/kWh means it is the 20-year levelized outcome in the 60 percentile, meaning that 60 percent of all the scenarios produced a 20-year levelized rate below $0.153/kWh.

25.1 Is it equivalent to saying that there is a 60 percent chance that the rate will be equal to or below $0.153/kWh?

In the Application on page 61, FAES states that "The Monte Carlo results indicate that rates are competitive in all scenarios when compared to other thermal energy systems recently approved by the BCUC." [Emphasis added]

25.2 How does FAES define the term "competitive"?

25.3 Does it mean to say that even the 100 percentile rate of $0.174/kWh (which means that all scenarios produced a 20-year levelized rate below $0.174/kWh) is competitive with: 1) Corix's 20-year levelized rate of $152/MWh; 2) River District's 20-year levelized rate of $148/MWh; and 3) Delta School District 37's 20-year levelized rate of $116/MWh? If not, please clarify what FAES meant by that.

**26.0 Reference: Maximum Consumption Limits**
**Exhibit B-5, BCOAPO 1.4.2**

In BCOAPO 1.4.2, FAES states "However, there remains a strong incentive to conserve energy overall due to the maximum consumption limits placed on the office tower."

26.1 Please indicate the maximum consumption limits placed on the office tower and why such limits have been imposed. Please provide the reference material in the Application.

26.2 Are those limits strictly limited to the office units? If so, why? If not, please indicate what maximum consumption limits are placed upon the residential customers (Strata and Rental) and the CRU units, and why.