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CREATIVE ENERGY – TES REGISTRATION OF EXTENSION TO SOUTH DOWNTOWN EXHIBIT A-5
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Mr. Rob Gorter
Director, Regulatory Affairs and Customer Relations
Creative Energy Vancouver Platforms Inc.
Suite 1 - 720 Beatty Street
Vancouver, BC V6B 2M1
rob@creative.energy; info@creative.energy

Re: Creative Energy Vancouver Platforms Inc. – Registration of Extension to South Downtown Heating Thermal Energy System – BCUC Information Request No. 1

Dear Mr. Gorter:

Further to your June 25, 2020 application of the above-noted matter, enclosed please find British Columbia Utilities Commission Information Request No. 1. Pursuant to the regulatory timetable established by Order G-267-20, please file your response on or before Thursday, November 26, 2020.

Sincerely,

Original signed by:

Marija Tresoglavic
Acting Commission Secretary

/cmv
Enclosure



Creative Energy Vancouver Platforms Inc.
Stream B Extension to South Downtown Heating Thermal Energy System

INFORMATION REQUEST NO. 1 TO CREATIVE ENERGY VANCOUVER PLATFORMS INC.

- 1.0 Reference: PROJECT DESCRIPTION**
Exhibit B-2, BCUC Staff Question 1.5; Exhibit B-3, Section 3.3.2, p. 5; CEVP Application for a Certificate of Public Convenience and Necessity for a Neighbourhood Energy System in the South Downtown area of Vancouver, Exhibit B-1, pp. 23–24, Exhibit B-2, IR 28.3, IR 28.4.1
TES Specifics

In response to British Columbia Utilities Commission (BCUC) Information Request (IR) 28.3 of Creative Energy Vancouver Platforms Inc.’s (CEVP) Application for a Certificate of Public Convenience and Necessity for a Neighbourhood Energy System in the South Downtown area of Vancouver (2019 South Downtown Heating TES CPCN) proceeding, CEVP stated the following regarding the annual peak (kW), annual demand (MWh) and system capacity (kW) for the South Downtown Heating TES:

Please refer to the table below. Capacity (kW) is 2 boilers x 1,688kW output per boiler = 3,376kW total plant capacity.

Building	Annual Peak (kW)			Annual Demand (MWh)			Capacity (kW)
	Space Heating	DHW	Total (Note 1)	Space Heating	DHW	Total	
Building 1	841	497	841	397	95	492	3,376
Building 2	1230	966	1,230	1,426	340	1,766	
Building 3	246	0	246	403	0	403	
Building 4	231	0	231	449	0	449	

Note 1: Total annual peak figures are the forecast coincident peak demands for each building, taking into account the diversity of peak demand for space heating and domestic hot water in Buildings 1 and 2 (Creative Energy service to Buildings 3 and 4 will be space heating only). The assumed coincident peak for each of Buildings 1 and 2 reflects entirely space heating load based on timing. As suggested by the response to IR 28.4.1, when the diversity between buildings is not considered (unrealistic), there is capacity to supply 600kW of domestic hot water load if it were to also occur at such a peak (unexpected).

Further in Exhibit B-2 of the 2019 South Downtown Heating TES CPCN, CEVP stated the following in response to BCUC IR 28.4.1:

In the unlikely event that the indicated coincident peak loads of each building also coincide (that is, not accounting for the diversity between buildings), total peak demand

would equal 2,548 kW. When thermal energy generation and transmission efficiencies are factored in (92%), the peak requirement from the boiler plant would be 2,770 kW, which is less than the total system generating capacity of 3,376 kW. *[Emphasis added]*

In Exhibit B-3 of this proceeding, CEVP’s Consolidated Information Filing, CEVP provides updated information regarding the TES extension to 889 Pacific Street, Vancouver (TES Extension). On page 5 of Exhibit B-3, CEVP states:

The following table illustrates the capacity of the boiler plant to serve the incremental peak demand of the extension under an 85 percent diversification factor. An assumed diversity factor of 85 percent results in excess capacity being available at the boiler plant, which is considered conservative based on the mix of commercial and residential floor area connected to the South Downtown network. Please also note for context that in an operating hot water district energy system, diversity occurs due to slightly different timing of peak demands between buildings, and variance in the transit time for the increased demand to propagate back to the plant through the piping network and controls system(s).

	Building Peak Design Demand (kW)	Demand at plant based on 85% diversity (kW)
Vancouver House B1	841	715
Vancouver House B2	1,230	1,046
Vancouver House B3	246	209
Vancouver House B4	231	196
889 Pacific	941	800
Total	3,489	2,966
Boiler (System) Capacity	3,336	3,336
Excess Capacity	-153	370

- 1.1 Please discuss, with rationale, whether the “demand at plant” amounts provided in the above table factor in the combined thermal energy generation and transmission efficiency, which was noted to be 92% in the 2019 South Downtown Heating TES CPCN.
 - 1.1.1 If not, please explain why not, including any assumptions made, and provide updated calculations for the peak requirement from the boiler plant.
- 1.2 Please explain what diversification factor, if any, was used in the 2019 South Downtown Heating TES CPCN.
 - 1.2.1 If none was used, please explain why not.
- 1.3 Please explain how CEVP determined that application of an 85 percent diversification to determine the peak demand at its boiler plant is reasonable and acceptable in this scenario.
 - 1.3.1 Please explain why a similar diversification factor was not considered in the 2019 South Downtown Heating TES CPCN.
 - 1.3.2 Please provide any benchmarks or data to support the application of an 85 percent diversification factor, including identifying any heating TES with a similar commercial and residential mix that uses a similar diversification factor.
 - 1.3.3 Please identify whether any peer review was completed to validate the selection of the 85 percent diversification factor.
 - 1.3.3.1 If yes, please provide a copy of the peer review report.
 - 1.3.3.2 If not, please explain why not.

On page 5 of Exhibit B-3, CEVP states that the “forecast annual energy consumption equals approximately 2,400 MWh.”

- 1.4 Please discuss, with rationale, whether the 85 percent diversification factor has any impact on the forecast annual energy consumption.

On page 5 of Exhibit B-3, CEVP states:

The total peak design capacity and billing determinants of the system extension is corrected to 941kW. That is, the capacity of the system extension is economically sized to meet the overall demand for space heating only given the diversity of use between space heating and domestic hot water and the required need to serve a system peak for space heating due to weather, independent of hot water demand (which also has storage). *[Emphasis added]*

- 1.5 Please discuss the 85 percent diversification factor in the context of the diversification already applied between the space heating and hot water systems. Please explain why CEVP considers the two applied together to be reasonable.

On Page 5 of Exhibit B-3, CEVP states:

In the unlikely event that system diversity is less than expected, Creative Energy has a number of options to reduce or manage peak demand. The starting point would be to tune the controls system to spread out the peaks. This can be achieved by adjusting the setbacks at each building so that the ‘warming up’ of the buildings in the mornings occurs at slightly different time, and the domestic hot water tanks temperatures can be lifted on a predictive fashion immediately before the morning demand spike. Equally, the primary hot water temperatures (in the buried piping) can be increased in the hour before peak demand.

- 1.6 Given the diversity assumed between space heating and domestic hot water, as discussed in the preamble to the previous IR, please explain, with rationale, how the options noted above that pertain to adjustments on the hot water system will reduce or assist in managing the peak demand.
- 1.7 Please discuss whether CEVP or the South Downtown Heating TES customers would be responsible for adjusting the setbacks at each building.
 - 1.7.1 If CEVP, please identify the relevant sections of the Customer Service Agreements (CSAs) (or any other agreement), which allows CEVP to adjust the setbacks at each building.
 - 1.7.2 Please explain, with rationale, whether this setback adjustment could impact South Downtown Heating TES customers energy consumption and variable energy costs.
- 1.8 Please explain, with rationale, whether increasing the primary hot water temperatures could impact South Downtown Heating TES system efficiency and CEVP’s South Downtown Heating TES fuel costs.
- 1.9 Please explain, with rationale, whether the above options would result in any service impacts for South Downtown Heating TES customers.

Attachment 2 of Exhibit B-3 consists of a Design Review Memo by Kerr Wood Leidal Associates Ltd. Consulting Engineers (KWL) (KWL Design Review Memo).

- 1.10 Please discuss, with rationale, whether the options listed above, specifically the option related to adjustments to the hot water system, has any impact on KWL’s review and/or recommendations, which are documented in the KWL Design Review Memo.

On page 1 of the KWL Design Review Memo, KWL states:

Kerr Wood Leidal Associates Ltd. (KWL) has completed a draft building review of the mechanical design for the new development at 1380 Hornby Street to check compatibility with Creative Energy’s Neighbourhood Energy System (NES). [*Emphasis added*]

- 1.11 Please confirm, or explain otherwise, that 1380 Hornby Street is the same building as 889 Pacific Street.

Also on page 5 of Exhibit B-3, CEVP states:

The temporary boiler plant is designed to accommodate the installation of two additional boilers, but for the reasons discussed we have judged that additional investment in capacity is unnecessary at this time.

- 1.12 Please identify, at a high level, the lead time and cost of an additional boiler.

BCUC staff question 1.5 in Exhibit A-3 asked CEVP to confirm that the preamble from the 2019 South Downtown Heating TES CPCN proceeding accurately represents the annual peak demand (kW), annual demand (MWh) and system capacity (kW) for the South Downtown Heating TES before the proposed TES Extension. In response to BCUC staff question 1.5, CEVP states:

Annual peak and capacity figures are confirmed. Total forecast energy sales (MWh) before the proposed TES Extension are 4,028 MWh, as per the Updated Table 15 in the CPCN Application proceeding, and as referenced on page 12 of the Order C-1-19. The total of the building specific references to energy demand in the table above does not correspond and may have been reported in error; however, there is no impact on the planned extension nor to the financial and rate impact information provided in the System Extension Form in support. The fixed charge billing determinants are the design peak kW of the system. [*Emphasis added*]

- 1.13 Please complete the following table with correct values for all buildings.

Building	Annual Peak (kW)			Annual Peak (kW, with 85% Diversity Factor)			Annual Demand (MWh)			Capacity (kW)
	Space Heating	DHW	Total	Space Heating	DHW	Total	Space Heating	DHW	Total	
Vancouver House Building 1										
Vancouver House Building 2										
Vancouver House Building 3										

Building	Annual Peak (kW)			Annual Peak (kW, with 85% Diversity Factor)			Annual Demand (MWh)			Capacity (kW)
	Space Heating	DHW	Total	Space Heating	DHW	Total	Space Heating	DHW	Total	
Vancouver House Building 4										
889 Pacific Street										
TOTAL:										

**2.0 Reference: PROJECT COST ESTIMATE AND FORECAST RATE IMPACT
Exhibit B-1, p. 3; Exhibit B-2, BCUC Staff Questions 2.3, 2.4; Exhibit B-3, p. 17
Cost Estimate**

In Exhibit B-1, the Stream B TES Extension Form, CEVP provides the following cost estimate information for the TES Extension:

Cost Estimate		
Estimated Capital Cost of the TES extension (AACE Class 3 minimum)	Category	\$000s
	Equipment	65
(Applicant may add additional line items as appropriate)	Materials	105
	Engineering / Design	95
	Construction	505
	Legal	5
	Project Management	80
Contingency included.	Total	855

On page 7 of Exhibit B-3, CEVP states the following regarding the updated forecast capital and development costs of the TES Extension:

1. The costs reported in the attestation form were developed as a Class 3 estimate prior to construction of the Extension;
2. The updated capital and development cost of the Extension now reflects actual costs based on work completed to date and the additional forecast internal management and external regulatory costs based on the current process established under Order G-267-20;

Further of page 5 of Exhibit B-3, CEVP states:

The updated forecast capital and development costs of the system are provided in the following table.

Category	\$000s
Engineering	86
Equipment	65
Material	155
Construction	610
Financing	-
CPCN/Legal	30
Internal Management	111
Contingency (5%)	53
Total	1,110

2.1 In a format similar to the table provided below, please provide a detailed breakdown reconciling the initial forecast of \$855,000 to the New Capital and Development Costs forecasted at \$1,110,000. Please identify which costs are actual and which costs are forecasted.

Category	Initial Cost Estimate, as provided in Exhibit B-1	New Capital and Development Costs, as provided in Exhibit B-3	
		Actual	Forecast
<u>Engineering</u>			
Item 1			
Item 2			
<u>Equipment</u>			
Item 1			
Item 2			
<u>Materials</u>			
Item 1			
Item 2			
<u>Construction</u>			
Item 1			
Item 2			
<u>CPCN/Legal</u>			
Item 1			
Item 2			
<u>Internal Management</u>			
Item 1			
Item 2			
<u>Contingency</u>			
Item 1			
Item 2			

Total	\$855,000	\$1,110,000
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- 2.2 Please explain all cost differences between the initial estimate, provided in Exhibit B-1, and the new capital and development costs, provided in Exhibit B-3.
- 2.2.1 Please confirm, or explain otherwise, that all remaining forecasted amounts as provided in the new capital and development costs were developed as a Class 3 estimate.
- 2.2.1.1 Please provide the capital cost variances for the expected accuracy range of a Class 3 estimate.
- 2.2.1.2 Please provide the impact of these variances on indicative rates (\$/kW).

In Exhibit B-2, in response to BCUC Staff Question 2.4, CEVP states:

Interest during construction/allowance for funds used during construction has not been included in the estimate above. Corporate overhead has been included in the Project Management line item.

- 2.3 Please explain where corporate overhead is included in the updated cost estimate provided in Exhibit B-3.
- 2.4 Please explain whether interest during construction or allowance for funds used during construction will be charged during the project.
- 2.4.1 If so, please provide the amount and breakdown of how the amount is calculated.

**3.0 Reference: PROJECT COST ESTIMATE AND FORECAST RATE IMPACT
Exhibit B-1, p. 3; CEVP Application for Heating Rates for the Heating TES and Cooling Rates for the DCS at the Vancouver House Development, Exhibit B-9, IR 1.1 Rate Application**

Page 3 of the Stream B TES Extension Form in Exhibit B-1 states:

An updated rates application for the extension will be filed in 2021.

In CEVP's Application for Heating Rates for the Heating TES and Cooling Rates for the DCS at the Vancouver House Development (Vancouver House Heating and Cooling Rates Application), Panel IR 1.1 requested the date in 2021 that CEVP expects to file its updated rates application for the TES Extension. In response to Panel IR 1.1,¹ CEVP states:

For clarity, Creative Energy does not intend to file an updated rates application in 2021 in respect of the extension to 889 Pacific Street. The discussion referenced in the preamble above was not entirely clear by not stating the conclusion on that point. If it may assist for clarity for the purpose of this response and for IRs in this series that follow:

- The second paragraph referenced above was intended to acknowledge the initial isolated context in the Stream B Extension form, which set out that an updated rates application will be filed prior to the planned in-service date of the extension in 2021, given a notable consideration of the expected beneficial rate

¹ Exhibit B-9 of the Vancouver House Heating and Cooling Rates Application

impact to existing customers; and

- The third paragraph referenced above describes in sequence that we now consider that the matter of the timing and necessity of an updated rates application can be properly considered at a later date in view also of the need for a rates application to be filed to support a rate setting period beginning 2024 (i.e. recognizing the expected impact on rates also of the relocation of the boiler plant or a change in the source of thermal energy by that time). This point is the thesis supporting our view that this Application for rates for the period 2020-2023 is unencumbered by the planned system extension.

We consider it advisable to address the future rate impacts of both the system extension and the relocation of the temporary boiler plant (or change in the source of thermal energy) in a single future rates application, which will promote regulatory efficiency. This approach is supported by the proposed levelized rate design and the accompanying rate smoothing deferral account (the RDDA), which will account for the timing difference in the recovery of the cost of service of the heating TES over the entire contract term. We note also that this approach was suggested in consultation with Commission staff in advance of filing this Application. [*Emphasis added*]

3.1 Please confirm, or explain otherwise, that an updated rates application including the TES Extension will not be filed in 2021.

3.1.1 If confirmed, please confirm, or explain otherwise, that ratepayers at 889 Pacific Street will be charged the same rates that are approved in the Vancouver House Heating and Cooling Rates Application until 2024, when a new rates application will be filed.

3.1.1.1 If confirmed, please explain how these rates will be just and reasonable for all ratepayers since the indicative impact of the extension on overall rates shows a reduction of approximately 9 percent.

**4.0 Reference: PROJECT COST ESTIMATE AND FORECAST RATE IMPACT
Exhibit B-1, p. 2; Exhibit B-2, BCUC Staff Question 3.4.1; Exhibit B-3, p. 8
Indicative Rates**

On page 2 of the Stream B TES Extension Form in Exhibit B-1, CEVP provides the following rate impact information:

No Extension				
	2020	2021	2022	2023
Total Annual Fixed and Operating Costs (\$)	388,178	428,382	436,950	445,689
Total Capacity (kW)	2,548	2,548	2,548	2,548
Annual Fixed Rate (\$/kW)	\$152.35	\$168.12	\$171.49	\$174.92
With Extension				
	2020	2021	2022	2023
Total Annual Fixed and Operating Costs (\$)			528,547	539,118
Total Capacity (kW)			3,898	3,898
Annual Fixed Rate (\$/kW)			\$135.59	\$138.31
Rate Change (%)			-20.9%	-20.9%

On page 8 of the Consolidated Information Filing in Exhibit B-3, CEVP states and provides the following financial information:

The indicative forecast annual rate impact of the Extension beginning in the first full year of service (2022) would be a reduction in overall rates of approximately 9 percent.

No Extension				
	2020	2021	2022	2023
Maintenance	37,539	39,107	39,890	40,687
Operator Cost	25,506	26,010	26,530	27,061
Insurance	9,565	9,965	10,164	10,367
Municipal Access Fee	5,316	7,694	7,994	8,306
Financing Fees	6,101	6,145	5,929	5,713
Lease Payments	-	-	-	-
Regulatory Costs	20,005	-	-	-
Administration	67,132	68,458	69,827	71,224
Depreciation	116,202	125,296	125,296	125,296
Income Tax	44,921	53,457	57,009	60,408
Interest	89,658	92,176	88,934	85,692
Return on equity	136,646	141,301	136,242	131,183
Total Fixed Costs	558,590	569,610	567,815	565,938
Total Fixed Charge Revenue Recovered	315,836	475,048	484,549	494,240
Capacity Billing Determinants	2,230	2,548	2,548	2,548
Fixed Charge Rate - \$/kW	\$141.63	\$186.44	\$190.17	\$193.97

With Extension				
	2020	2021	2022	2023
Maintenance			51,669	52,702
Operator Cost			26,530	27,061
Insurance			13,165	13,429
Municipal Access Fee			10,100	10,494
Financing Fees			7,814	7,534
Lease Payments			-	-
Regulatory Costs			-	-
Administration			69,827	71,224
Depreciation			162,296	162,296
Income Tax			72,776	77,067
Interest			117,213	113,014
Return on equity			179,622	173,069
Total Fixed Costs			711,013	707,889
Total Fixed Charge Revenue Recovered			604,257	616,342
Capacity Billing Determinants			3,489	3,489
Fixed Charge Rate - \$/kW			\$173.19	\$176.65

4.1 Please explain the determinants that resulted in the overall rate reduction changing from 20.9 percent to 9 percent.

**5.0 Reference: PROJECT COST ESTIMATE AND FORECAST RATE IMPACT
Exhibit B-1, p. 3;
Variable Costs - Fuel Charges**

On page 3 of the Stream B TES Extension Form in Exhibit B-1, CEVP states:

Variable fuel costs for electricity and natural gas are flow-through charges of the BC Hydro and FortisBC invoices for fuel use and are allocated to each customer based on actual energy consumption. These costs are independent of the extension.

5.1 Please explain, with rationale, whether CEVP anticipates there to be any impact to its system efficiencies resulting from the TES Extension.

5.2 Please explain, with rationale, whether CEVP anticipates the TES Extension will have an impact

on the variable rates for its South Downtown Heating TES customers.