CREATIVENERGY

26 November 2020

Via E-filing

Ms. Marija Tresoglavic
Acting Commission Secretary
BC Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Ms. Tresoglavic:

Re: British Columbia Utilities Commission (BCUC, Commission)
Creative Energy Vancouver Platforms Inc. (Creative Energy)
Registration of Extension to South Downtown Heating Thermal Energy System (TES)

Creative Energy writes to provide its response to BCUC Information Request (**IR**) No. 1 into the above noted matter, in accordance with Order G-267-20.

For further information, please contact the undersigned.

Yours sincerely,

Rob Gorter
Director, Regulatory Affairs and Customer Relations

Enclosure.

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CREATIVE ENERGY RESPONSE TO BCUC IR NO. 1

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. <u>When thermal energy generation and transmission efficiencies are factored in (92%)</u>, 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.

RESPONSE:

The data in the referenced table do not account for efficiency of either transmission or generation. For clarity, the generation efficiency is not relevant to the discussion of spare capacity, as the rated boiler capacities are for the thermal output of the boilers, which takes into account generation efficiency. The table would have been more clear had it included the 3% thermal losses involved in transmission as a separate column, to distinguish from diversity effects.

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.

RESPONSE:

Please refer to the response to BCUC IR 1.1 and to the table below.

	Building Peak Demand (kW)	Transmission Losses based on 3% loss (kW)	Demand at Plant based on 85% diversity and 3% losses (kW)
Total	**3,489**	**105**	**3,071**
Boiler (system) Capacity	**3,336**		**3,336**
Excess Capacity	**-153**		**265**

1.2 Please explain what diversification factor, if any, was used in the 2019 South Downtown Heating TES CPCN.

RESPONSE:

As discussed in the response to BCUC IR 1.5, no system diversity calculations were used in the November 2018 Application for a CPCN for the South Downtown NES. There was some discussion of the diversity between heating and hot water, but the greater of the two is being used for the purposes of determining each building's design peak.

At that time, as the combined building peak demands of the 4 customers was well below the boiler system capacity, diversity was not an important factor for the purpose of the CPCN Application.

As reported in the CPCN Application, it was known at the time that there is an additional site adjacent to the Vancouver House Development that was at the time slated for redevelopment, and the containerized boiler plant may have sufficient capacity to serve this development. Further, the containerized boiler plant was designed such that an additional two boilers could be connected to provide additional or backup capacity.

1.2.1 If none was used, please explain why not.

RESPONSE:

Please refer to the response to BCUC IR 1.2.

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.

RESPONSE:

There are a number of inputs to this determination, but the primary reference is from the recommendations of the American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE), the foremost technical society in the fields of heating, ventilation, air conditioning, and refrigeration. In the ASHRAE Handbook, "HVAC Systems and Equipment", it is recommended to assume a 70% diversity factor.

For this application, Creative Energy uses 85 percent as a conservative assumption.

1.3.1 Please explain why a similar diversification factor was not considered in the 2019 South Downtown Heating TES CPCN.

RESPONSE:

Please refer to the response to BCUC IR 1.2.

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.

RESPONSE:

Please refer to the response to IR 1.3. Further, no empirical benchmarks are available for reference;

however, the design engineer, KWL, did confirm that a diversity factor of 85% or greater (i.e. a lower factor in percentage terms) is realistic for this situation.

1.3.3 Please identify whether any peer review was completed to validate the selection of the 85 percent diversification factor.

RESPONSE:

This was not completed. The assumption was considered to be quite conservative, so a Peer Review would not be a prudent expense.

1.3.3.1 If yes, please provide a copy of the peer review report.

RESPONSE:

Please refer to the response to BCUC IR 1.3.3.

1.3.3.2 If not, please explain why not.

RESPONSE:

Please refer to the response to BCUC IR 1.3.3.

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.

RESPONSE:

It does not – diversity only applies to peak demand (kW) at the plant, not energy (kWh).

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 <u>given the diversity of use between space heating and domestic hot water</u> 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.

RESPONSE:

The diversity is applied between the customers and used to forecast the peak demand at the plant. The peak demand is estimated for each building based on the design capacity agreed-upon with the developer for heating and hot water. The higher of the peak heating demand and peak hot water

demand is selected as the building's peak demand, and the diversity factor applied in the calculation of the expected peak demand at the plant.

In the 2018 CPCN Application, there was some discussion about the diversification between space heating and domestic hot water within the buildings, but no discussion of diversity between buildings.

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.

RESPONSE:

Responding to this question is difficult, as the solution would involve precise modeling of load characteristics from 5 different building, which may only occur for a few minutes each day. This level of system modeling is not reasonable for a district energy system designed on forecast hourly models.

In keeping with the preamble, implementation of measures to reduce domestic hot water peak demand would not likely have a material impact on the peak demand for that building, as we do expect that the dominant factor in the actual system peaks will be the space heating for all the buildings. However, it may be possible that in one or more buildings, the space heating peaks have been over-forecast to a greater degree than the domestic hot water peaks, and the result is that mitigating domestic hot water peaks would have an impact on system 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.

RESPONSE:

Creative Energy has control over the supply temperatures, and would be able to adjust the setbacks. This would of course be done in consultation with the TES customers.

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.

RESPONSE:

The CSA does not specify any particular setback or operation of the TES. Creative Energy controls the operation of the TES and sets parameters such as setbacks. Section 22 of the CSA provides Creative Energy with the right of free access to all components of the TES on the Customer's lands for all relevant purposes as may be required.

1.7.2 Please explain, with rationale, whether this setback adjustment could impact South Downtown Heating TES customers energy consumption and variable energy costs.

RESPONSE:

This would be expected to have no material impact over the course of any year. The rationale is that as the peaks are very short in duration (less than an hour), the setbacks would only be adjusted by, perhaps, 30 minutes for one building. The corresponding 'overnight cooldown' could equally be advanced to ensure that the efficiency benefits of the overnight setbacks can be preserved.

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.

RESPONSE:

This would have no material impact. The primary consequence of increasing the system temperature would be increased thermal losses in the distribution system. Increasing the temperature of the circulating water by, say, 10C, for one hour in the handful of peak cold days each year would result in an inconsequential increase in fuel needs over the course of a year. In any case, a small increase in flow-through fuel costs, if any, to all customers would be more than offset by the fixed charge reduction as a result of adding the fifth customer.

1.9 Please explain, with rationale, whether the above options would result in any service impacts for South Downtown Heating TES customers.

RESPONSE:

None of the measures above would have any negative consequences on service levels of South Downtown Heating TES customers. The generation will still be well within design operating parameters.

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.

RESPONSE:

These items have no impact on the items discussed in the KWL review. The KWL memo presumes that the heating system will be operated within the design parameters of the system. None of the measures discussed contemplate operations outside those parameters.

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 <u>1380 Hornby Street</u> 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.

RESPONSE:

Confirmed. The building is at the corner of Hornby Street and 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.

RESPONSE:

A high-level estimate is $370,000 with 16 weeks lead time, based on:

- **one 1670 KW Viessmann CA3 gas fired boiler (similar to existing boilers in TEC);**
- **Additional 20' container with boiler and piping system fabricated off site and delivered to site. Creative Energy has allowed space for the additional container adjacent to the existing temporary boiler plant;**
- **Pipe headers Tie-in to existing TEC;**
- **electrical and controls integration;**
- **Concrete pad for the new container;**
- **Required excavation and civil works;**
- **Site Traffic management;**
- **Engineering; and**
- **CE management.**

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. <u>The total of the building specific references to energy demand in the table above does not correspond and may have been reported in error</u>; 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										
Vancouver House Building 4										
889 Pacific Street										
TOTAL:										

RESPONSE:

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	841	497	1338	715	422	1137	397	95	967	3366
Vancouver House Building 2	1230	966	2196	1046	821	1867	1426	340	1587	
Vancouver House Building 3	246	0	246	209	0	209	403	0	178	
Vancouver House Building 4	231	0	231	196	0	196	449	0	167	
889 Pacific Street	941	800	1741	800	680	1480	1506	914	1258	
TOTAL:	**3489**	**2263**	**5752**	**2966**	**1924**	**4889**	**4181**	**1349**	**4156**	

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) (Applicant may add additional line items as appropriate) **Contingency included.**	Category	$000s
	Equipment	**65**
	Materials	**105**
	Engineering / Design	**95**
	Construction	**505**
	Legal	**5**
	Project Management	**80**
	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
Engineering			
Item 1			
Item 2			
Equipment			
Item 1			
Item 2			
Materials			
Item 1			
Item 2			
Construction			
Item 1			
Item 2			
CPCN/Legal			
Item 1			
Item 2			
Internal Management			
Item 1			
Item 2			
Contingency			
Item 1			
Item 2			
Total	$855,000		$1,110,000

RESPONSE:

Please refer to the following table with summary level detail of the within category budget items as between ETS and DPS.

Category	Initial Cost Estimate, as provided in Exhibit B-1	New Capital and Development Costs, as provided in Exhibit B-3		Variance Initial Cost Estimate vs New Capital and Development Costs
		Actual	Forecast	
Engineering	88,800	75,000	86,000	(2,800)
ETS	32,000	27,000	32,000	Negotiated lower cost
DPS	56,800	48,000	54,000	
Equipment	60,800	60,000	65,000	4,200
ETS	60,800	60,000	65,000	Costs higher then original quote on major equipment due to COVID impact (e.g. on exchange rates)
DPS	-	-	-	
Materials	98,000	120,000	155,000	57,000
ETS	38,000	40,000	60,000	Materials costs vary in relation to equipment and construction costs, plus higher than forecast backfill requirements and costs for trench filling
DPS	60,000	80,000	95,000	
Construction	472,000	466,000	610,000	138,000
ETS	118,000	93,000	150,000	Higher than forecast labour costs due to labour market effects
DPS	354,000	373,000	460,000	DPS complete – forecast based on estimate of remaining invoices, and City costs (road restoration, permitting)
CPCN/Legal	4,700	-	30,000	25,300
BCUC	n/a	n/a	10,000	CPCN regulatory process not included in original forecast of third-party costs
Legal	4,700	-	20,000	
Internal Management	74,800	50,000	111,000	36,200
ETS	19,000	9,000	19,000	CPCN regulatory process not included in original forecast of internal management time
DPS	53,000	34,000	53,000	
Predevelopment /Legal	2,800	2,000	2,000	
CPCN	n/a	5,000	37,000	
Contingency	55,900		53,000	
	7% applicable to each category		5% applicable to each category	Contingency is lower due to partial completion of project
Total	855,000	771,000	1,110,000	

2.2 Pease 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.

RESPONSE:

We have added a column to the table in the response to BCUC IR 2.1 showing the variance between the Initial Cost Estimate and the New Capital and Development costs. Please note the updated total forecast cost estimate in Exhibit B-3 is still within the expected accuracy range of the Initial Cost Estimate as provided in Exhibit B-1, even as including the additional regulatory costs due to the requirement to obtain a CPCN and this proceeding. The expected accuracy range of the Initial Cost Estimate was -10% to +30% (Class 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.

RESPONSE:

All remaining forecasted amounts as provided in the updated forecast of 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.

RESPONSE:

Please refer to the responses to BCUC IRs 2.2, 2.2.1 and 2.2.1.2.

2.2.1.2 Please provide the impact of these variances on indicative rates ($/kW).

RESPONSE:

The following table reports the indicative impact on rates of a +30%/-10% variance in the total incremental remaining forecast capital costs reported in the table above in the response to BCUC IR 2.1; that is, the amount of $225,000 not including contingency.

For clarity, the rates in the first row of the table below are as provided in the Consolidated Information Filing at Exhibit B-3 based on the updated costs of $1,110,000. The rates in the two rows that follow in sequence are based on $1,110,000 plus 30% of $225,000 and less 10% of $225,000, which are the total amounts of $1,177,500 and $1,087,500, respectively.

	31-Dec-22	31-Dec-23
Fixed Charge Rate - $/kW	$173.19	$176.65
Fixed Charge Rate - $/kW +30% on Remaining Capital	$175.10	$178.60
Fixed Charge Rate - $/kW -10% on Remaining capital	$172.47	$175.92

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.

RESPONSE:

Corporate Overhead is included in the line item 'Internal Management'.

2.4 Please explain whether interest during construction or allowance for funds used during construction will be charged during the project.

RESPONSE:

Interest during construction or allowance for funds using during construction was not charged during the extension project. For greater clarity, the value of this figure is zero in the model and the project budget.

2.4.1 If so, please provide the amount and breakdown of how the amount is calculated.

RESPONSE:

Not applicable. Please see the response to BCUC IR 2.4.

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, <u>Creative Energy does not intend to file an updated rates application in 2021 in respect of the extension to 889 Pacific Street</u>. 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 impact to existing customers; and
>
> - The third paragraph referenced above describes in sequence that we now

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

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.

RESPONSE:

We confirm our view as it is emphasized above that it is a prudent approach 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. The regulatory timetables for this proceeding and for the proceeding to set rates for the South Downtown TES and Cooling DCS suggest that decisions on each of the applications will be issued in mid-2021. On that basis, Creative Energy does not plan to file another rates application for the South Downtown TES in 2021.

For greater certainty, Creative Energy is not opposed to a further rate adjustment for the South Downtown TES when the extension comes into service, assuming the Commission grants the CPCN required for that to happen, if there is a cost-effective way to implement such rate adjustment in terms of time and resources required and regulatory efficiency overall.

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.

RESPONSE:

Confirmed for the Heating TES only as the Extension is not connecting to the Cooling DCS.

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.

RESPONSE:

The rates charged to all customers of the South Downtown TES would be those rates determined by the Commission to be just, reasonable and sufficient for the service provided, and that are therefore on file with the Commission and must be observed. The rates would be the only lawful rates that can be charged, notwithstanding the change in circumstances in relation to the addition of another

customer, assuming the Commission grants the CPCN required for that to happen.

While our proposed approach to rate setting offers benefits of regulatory efficiency and rate stability, as noted in the response to BCUC IR 3.1 Creative Energy is not opposed to a further rate adjustment for the South Downtown TES when the extension comes into service, assuming the Commission grants the CPCN required for that to happen, if there is a cost-effective way to implement such rate adjustment in terms of time and resources required and regulatory efficiency overall.

In consideration of both fairness and regulatory efficiency, Creative Energy also notes that as a general approach in rate regulation, a utility system extension to serve a new customer does not typically prompt an immediate rate filing in each case. Economic extensions can proceed absent a rate change and any resulting rate impact can be reflected in the utility's next rate filing in the normal course.

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.

RESPONSE:

The change in the estimated rate reduction (that is, the indicative rates as modelled with the extension are higher than the indicative rates reported in the TES Extension Registration Form) is the net effect of:

1. **The update to actual and forecast costs provided with the Consolidated Information Filing at (Exhibit B-3, dated October 30, 2020) since the timing of the filing of the TES Extension Registration Form (Exhibit B-1, dated June 25, 2020); and**

2. **The lower peak design capacity billing determinants of the system extension, as corrected to 941kW from 1,350kW as explained in section 3.3.2 of the Consolidated Information Filing.**

The effect of these changes on rates is shown by comparing the information reported in the table above with the corresponding table provided in the TES Extension Registration Form, extracted below:

	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**

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.

RESPONSE:

As per the note included in the TES Extension Registration Form (Exhibit B-1), the variable fuel costs for electricity and natural gas are independent of the extension. These costs are allocated to each customer based on actual energy consumption.

CEVP does not anticipate any impact to its system efficiency. The two drivers of system efficiency are the combustion efficiency of the boilers and the thermal losses in the plant and distribution system:

- **The combustion efficiency of condensing hot water boilers is not expected to be materially affected by the TES Extension. The efficiency is a primarily a function of the supply and return temperatures, which are not expected to change as a result of the TES extension.**

- **The thermal losses are essentially a constant over a given length of pipe. For the TES extension, additional pipe is being installed which amounts to 40% of the phase 1 piping, which is in relative proportion to the 43% increase in forecast annual energy. As these proportions are similar, no increase or decrease in system efficiency is expected to occur.**

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.

RESPONSE:

As referred to in the preamble and in the response to BCUC IR 5.1, the fuel charges to the individual building customers are a flow-through of actual fuel costs based on individual building metered energy consumption. Thus, the fuel charges to each building, including to the Extension, will be independent of each other; that is, there will be no impact of the Extension on the fuel charges to any other building customer served by the Heating TES.

Further, as explained in the response to IR 5.1, no material change to system efficiency is expected, which also supports the expectation that the TES Extension will not impact variable charges.