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## Creative Energy Vancouver Platforms Inc.

### Application for a Certificate of Public Convenience and Necessity for the Core Steam System Decarbonization Project

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#### Decision and Order C-5-22

September 15, 2022

Before:

A. K. Fung, KC, Panel Chair  
C. M. Brewer, Commissioner  
A. Dennier, Commissioner  
E. B. Lockhart, Commissioner

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## COMMISSION ORDER C-5-22

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## Executive summary

On June 30, 2021, Creative Energy Vancouver Platforms Inc. (Creative Energy) applied to the British Columbia Utilities Commission (BCUC) for a Certificate of Public Convenience and Necessity (CPCN) for the Core Steam System Decarbonization Project (Project) pursuant to sections 45 and 46 of the *Utilities Commission Act* (UCA) (Application). The Project consists of the construction and operation of an electric steam boiler plant, an electric substation and related equipment. The Project also requires a new transmission line to be built and operated by British Columbia Hydro and Power Authority (BC Hydro) for connection to the Project.

Creative Energy owns and operates a steam production plant and a network of underground steam distribution piping which supplies thermal energy to approximately 200 buildings in Vancouver's downtown core. To date, Creative Energy has used natural gas fired boilers to generate the steam necessary to serve its customers. Due to recently implemented City of Vancouver by-laws and policies that limit the greenhouse gas (GHG) emissions from new buildings, without the addition a low carbon energy source, Creative Energy is not able to connect new building customers. Creative Energy anticipates that similar GHG emission reduction requirements will affect existing buildings in the future. To address the need for a low carbon energy resource, Creative Energy proposes to construct and operate an electric boiler plant and associated equipment.

The estimated cost of the Project is approximately \$37.5 million. This includes the cost of Creative Energy's contributions to the construction of the transmission line, as well as the BC Hydro Facility Study for the transmission line. Creative Energy seeks acceptance of the transmission line related costs pursuant to section 44.2 of the UCA.

Following review of the evidence and submissions in this proceeding, the BCUC finds that the public convenience and necessity require the granting of a CPCN for the Project. For the reasons outlined in the accompanying Decision and pursuant to sections 44.2, 45 and 46 of the UCA, the BCUC orders the following:

1. A CPCN for the Project is granted to Creative Energy;
2. The expenditure schedule for \$15.775 million for a new BC Hydro electric transmission line between BC Hydro's Murrin substation and Creative Energy's existing Beatty Plant is accepted; and
3. The expenditure schedule for \$1.54 million for a BC Hydro Facilities Study relating to the new BC Hydro transmission line is accepted.

The BCUC directs various reporting requirements relating to the Project, as set out in the Decision.

## 1.0 Introduction

### 1.1 Background

On June 30, 2021, Creative Energy Vancouver Platforms Inc. (Creative Energy) applied to the British Columbia Utilities Commission (BCUC) for a Certificate of Public Convenience and Necessity (CPCN) for the Core Steam System Decarbonization Project (Project or Decarbonization Project) pursuant to sections 45 and 46 of the *Utilities Commission Act* (UCA) (Application). The Project consists of the construction and operation of an electric steam boiler plant, an electric substation and related equipment. The total estimated cost of the Project is approximately \$37.5 million, which includes Creative Energy's contributions to a new transmission line to be built and operated by British Columbia Hydro and Power Authority (BC Hydro) for connection to the new Project facilities.

Creative Energy owns and operates a steam production plant (Beatty Plant) and a network of underground steam distribution piping (Core Steam System) which supplies thermal energy to approximately 200 buildings in Vancouver's downtown core.<sup>1</sup>

Following implementation of the Project, Creative Energy would have the ability to deliver low carbon generated steam to support its customers meeting current and future regulatory requirements that are aimed at reducing greenhouse gas (GHG) emissions from buildings. Creative Energy states it is obliged to provide this low carbon service to both retain existing customers and to be able to attract new ones. The Project components are proposed to be located within Creative Energy's existing Beatty Plant and are intended to supplement the steam generation provided by Creative Energy's existing natural gas fired boilers.<sup>2</sup>

Creative Energy has secured partial funding for the Project through the Government of Canada's Low Carbon Economy Fund (LCEF), which will contribute up to 25 percent of total eligible Project costs.<sup>3</sup> Further funding may be available through the Province of BC's Clean BC Facilities Electrification Fund (CFEF), which could fund up to 50 percent of the cost of the new BC Hydro transmission line.

### 1.2 Approvals Sought

Creative Energy seeks approval of a CPCN for the Project, pursuant to sections 45 and 46 of the UCA. It also requests, pursuant to section 44.2 of the UCA, acceptance of the following two expenditures:<sup>4</sup>

1. \$15.775 million for a new BC Hydro electric transmission line between BC Hydro's Murrin substation and Creative Energy's existing Beatty Plant; and
2. \$1.54 million for a BC Hydro Facilities Study relating to the new BC Hydro transmission line.<sup>5</sup>

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<sup>1</sup> Exhibit B-1-1, 4.

<sup>2</sup> Ibid., p. 1.

<sup>3</sup> Ibid., p. 2.

<sup>4</sup> Ibid., p. 13.

<sup>5</sup> Exhibit B-13, p. 1.

Creative Energy states that transmission line-related expenditures paid to BC Hydro will be added to rate base in the same way as all other Project costs.<sup>6</sup>

### **1.3 Regulatory Process**

On June 30, 2021, Creative Energy submitted its Application for the Project. Following a request from the BCUC, Creative Energy provided further information regarding the Project on August 27, 2021.

By Order G-258-21, the BCUC established a written public hearing process and a regulatory timetable for the review of the Application, which consisted of public notice, intervener registration and one round of information requests (IRs).

Eight parties registered as interveners in the proceeding:

- BC Sustainable Energy Association (BCSEA);
- Residential Consumers Intervener Association (RCIA);
- BC Hydro;
- FortisBC Alternative Energy Services Inc. (FAES);
- FortisBC Energy Inc. (FEI);
- Wall Financial Corporation (WFC), a customer of Creative Energy's Core Steam System;
- Commercial Energy Consumers Association of British Columbia (the CEC); and
- BC Old Age Pensioners' Organization et al. (BCOAPO).

By Orders G-358-21 and G-49-22, the BCUC established further regulatory timetables for the review of the Application to include a second round of IRs, one round of Panel IRs, Creative Energy and intervener written final arguments, and Creative Energy written reply argument.

Following the review of Creative Energy responses to Panel IRs, the BCUC amended the regulatory timetable by Order G-85-22. The cover letter accompanying Order G-85-22 listed some topics the BCUC considered would be helpful for parties to comment on in their respective final arguments.

After the submission of final arguments, the BCUC established a further regulatory process to review a refined net present value (NPV) model filed by Creative Energy in its final argument. Pursuant to Order G-128-22, the BCUC established a further regulatory timetable to include an additional round of IRs regarding the refined NPV model of the Project, as well as written submissions from interveners and Creative Energy regarding the refined NPV model of the Project.

Three interested parties registered in the proceeding: Cadillac Fairview, BC Ministry of Energy, Mines and Low Carbon Innovation (Ministry) and the City of Vancouver. The latter two submitted letters of comment during the proceeding in support of the Project.

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<sup>6</sup> Exhibit B-14, BCUC IR 40.1.

## 1.4 Legal and Regulatory Framework

A public utility may file an expenditure schedule with the BCUC containing a statement of capital expenditures the public utility has made or anticipates making during the period addressed by the schedule.<sup>7</sup> The BCUC may accept an expenditure schedule filed under section 44.2 of the UCA if the BCUC considers it is in the public interest. The BCUC may also accept or reject part of a schedule.

In determining if the two requested expenditure schedules in this Application are in the public interest, the BCUC must consider the following:

- (a) the applicability of British Columbia's energy objectives, as provided in section 2 of the *Clean Energy Act* (CEA),
- (b) the most recent long-term resource plan filed by the public utility under section 44.1, if any,
- (c) the extent to which the schedule is consistent with the applicable requirements under sections 6 and 19 of the CEA,
- (d) if the schedule includes expenditures on demand-side measures, whether the demand-side measures are cost-effective within the meaning prescribed by regulation, if any, and
- (e) the interests of persons in British Columbia who receive or may receive service from the public utility.<sup>8</sup>

The Panel notes that considerations (c) and (d) above are not relevant to this Decision. Sections 6 and 19 of the CEA apply only to BC Hydro or "prescribed utilities," and no demand-side expenditures are contained in the expenditure schedules. Creative Energy is not a prescribed utility under the CEA.

Section 45(1) of the UCA stipulates that a person must not begin the construction or operation of a public utility plant or system, or an extension of either, without first obtaining from the BCUC a certificate that public convenience and necessity require, or will require, the construction or operation of the plant or system proposed.

Section 46 of the UCA sets out the procedure on a CPCN application. Section 46(3) provides that the BCUC may issue or refuse to issue a CPCN or may issue a CPCN for the construction or operation of only a part of the proposed facility, line, plant, system or extension, and may attach terms and conditions to the CPCN.

The BCUC's CPCN Guidelines provide general guidance regarding the information that should be included in a CPCN application and the flexibility for an application to reflect the specific circumstances of the applicant, the size and nature of the Project and the issues raised by the application.<sup>9</sup>

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<sup>7</sup> Section 44.2(1)(b) of the UCA.

<sup>8</sup> Pursuant to section 44.2(5) of the UCA.

<sup>9</sup> [BCUC Order G-20-15, 2015 Certificate of Public Convenience and Necessity Application Guidelines](#).

## 1.5 Decision Framework

This Decision follows the general framework of the BCUC's CPCN Guidelines and addresses the following key issues arising from the Application:

- Whether Creative Energy has established a need for the Project;
- Whether the preferred Project alternative is reasonable;
- Whether the Project capital cost estimate is reasonable;
- Whether Creative Energy's consultation with stakeholders regarding the Project is adequate; and
- Whether the Project is consistent with the Province's applicable energy objectives and Creative Energy's long-term resource plan.

The Decision concludes by addressing other issues arising, specifically the design of Creative Energy's future low carbon steam rate and Creative Energy's future decarbonization efforts.

## 1.6 Previous BCUC Decisions

### Expo-Beatty Plants Redevelopment Project

As the Project components are proposed to be located within Creative Energy's Beatty Plant and are intended to supplement the steam generation provided by its existing natural gas fired boilers<sup>10</sup>, reference to its Expo-Beatty Plants Redevelopment Project is required by way of context. By Order C-1-20, the BCUC issued a CPCN to Creative Energy for the substantial renovation of its existing Beatty Plant and the construction of a new, smaller off-site steam generating plant within BC Place Stadium (Redevelopment Project). The Redevelopment Project, as applied for, included the purchase of new steam boilers, the retention of three existing boilers and the abatement and removal of Creative Energy's three oldest steam boilers.<sup>11</sup> The Redevelopment Project is to be completed by 2024.

Creative Energy is proposing an alternatively configured design of its boilers, which involves replacing all of its steam boilers with new equipment, all to be located on the Beatty Street property and incorporated into a large new building development.<sup>12</sup> The new building development itself is being led by the third-party developer of the Beatty Street property.

Since the filing of this Application, Creative Energy has submitted a filing regarding these proposed design changes, pursuant to Order C-1-20.<sup>13</sup> The BCUC has established a proceeding to review this filing, which at the time of this Decision, remains on-going. Creative Energy states, however, that the need for, the definition and the scheduled implementation of the Project are not encumbered by the consideration of this recently proposed alternative configuration for the Beatty Plant.<sup>14</sup>

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<sup>10</sup> Exhibit B-1-1, p. 4.

<sup>11</sup> Ibid., p. 5.

<sup>12</sup> Ibid.

<sup>13</sup> [https://docs.bcuc.com/Documents/Proceedings/2022/DOC\\_66661\\_B-1-Creative-Energy-Beatty-Expo-Redevelopment-Project-Final-Design.pdf](https://docs.bcuc.com/Documents/Proceedings/2022/DOC_66661_B-1-Creative-Energy-Beatty-Expo-Redevelopment-Project-Final-Design.pdf)

<sup>14</sup> Exhibit B-1-1, p. 6.



## 2021 Long-Term Resource Plan

Creative Energy filed its most recent Long-Term Resource Plan on January 13, 2021 (2021 LTRP). The objectives of the 2021 LTRP, as set out by Creative Energy, are to continue to pursue initiatives to add customers and extend the system to serve them, and to maintain existing customers.<sup>15</sup> The 2021 LTRP considers, among other things, the following key issues:<sup>16</sup>

- How Creative Energy will provide low-carbon and eventually zero-carbon building heat and hot water to current and new customers;
- How it will provide such decarbonized services in a cost-effective manner; and
- How it will manage the attrition of customers who choose to cease taking steam service, should Creative Energy fail to find a method to provide decarbonized services.

Upon review of the 2021 LTRP, by Decision and accompanied Order G-283-21, the BCUC found that the objectives, demand forecast, and demand-side management plan included in the 2021 LTRP are inadequate. Accordingly, the BCUC determined that the 2021 LTRP is not in the public interest, and rejected it.<sup>17</sup>

To facilitate the review of the next LTRP, the BCUC directed Creative Energy to file with the BCUC six-month status reports on its progress towards completing the next LTRP, starting on June 30, 2022 and to conduct a pre-filing workshop with BCUC staff and interveners by December 31, 2023.<sup>18</sup>

As an appendix to its 2021 LTRP, Creative Energy submitted for approval an expenditure schedule for the Decarbonization Project predevelopment expenditures, pursuant to section 44.2 of the UCA. By Order G-177-21, the BCUC accepted the Decarbonization Project predevelopment expenditures, totalling \$1.14 million, as they were found to be in the public interest. The BCUC directed Creative Energy to incorporate the following in its Decarbonization Project Application:<sup>19</sup>

- An analysis of potential emission reductions from the Project;
- The results of consultations with existing and potential customers; and
- Updates to the load forecasts resulting from customer consultation or other updated information.

## **2.0 Project Need and Justification**

This section describes the GHG emission reduction regulatory requirements set by the City of Vancouver and how they relate to the need for Creative Energy to develop a low carbon energy resource in response. This section then discusses the necessary scale of the low carbon energy resource, which Creative Energy states is based on meeting the criteria for government funding and other factors.<sup>20</sup>

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<sup>15</sup> Creative Energy, Exhibit B-1 - 2021 LTRP Application, p. 3.

<sup>16</sup> Creative Energy Vancouver Platforms Inc. 2021 Long Term Resource Plan, Decision and Order G-283-21, p. i.

<sup>17</sup> Ibid., p. ii.

<sup>18</sup> Ibid.

<sup>19</sup> Order G-177-21 dated June 7, 2021, p. 2.

<sup>20</sup> Exhibit B-1-1, p. 27.

## 2.1 Project Need

The need for the Project is predicated upon Creative Energy’s submission that, due to low-carbon policy imperatives, it must acquire a low carbon energy resource in order to attract new customers and to retain its existing customers.<sup>21</sup> In the absence of a low carbon energy resource, new building developments cannot receive service from Creative Energy’s existing natural gas fired boilers and at the same time meet the GHG emission reduction requirements for new buildings, as established by the City of Vancouver.<sup>22</sup> Similarly, the City of Vancouver is expected to set limits on the GHG emissions from existing buildings, including those connected to Creative Energy’s Core Steam System, in the future.<sup>23</sup>

In addition, with respect to the retention of existing customers, Creative Energy states that some customers have expressed interest in reducing GHG emissions from building operations – regardless of the limits that the City of Vancouver may impose.<sup>24</sup> Creative Energy includes in the Application letters of support for the Project from customers, which express their intention to seek low carbon energy from Creative Energy to meet their building heating demands.<sup>25</sup> The total sum of low carbon energy demand from these customers is 33,500 MWh per year.<sup>26</sup>

### 2.1.1 City of Vancouver – Regulatory Requirements

The City of Vancouver has established policy and passed by-law amendments to implement its Zero Emission Building Plan (ZEBP). The ZEBP sets GHG emission limits for new buildings in Vancouver.<sup>27</sup> Developers of new buildings in Vancouver can comply with the ZEBP GHG emission requirements through one of two pathways, 1) the Envelope Pathway, which involves improved building envelope and ventilation design to reduce heat loss, and 2) the Low Carbon Energy System (LCES) Pathway, which involves the supply of thermal energy from a low carbon energy resource.<sup>28</sup> Creative Energy states that in order to attract new building customers, it must consider the LCES policy and offer an energy service that supports a developer taking the LCES Pathway.<sup>29</sup>

The City of Vancouver, in a letter appended to the Application, confirms that Creative Energy’s core steam system will qualify as an LCES if it adds a permanent low carbon heat generating resource.<sup>30</sup> This confirmation is based on Creative Energy being able to provide low carbon thermal energy to new buildings at a GHG intensity low enough to enable those new buildings to meet their GHG emission reduction requirements established in City of Vancouver policies and in the Vancouver Building By-law (Building By-law).<sup>31</sup> These GHG emission reduction requirements are described below.

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<sup>21</sup> Exhibit B-1-1, p. 18.

<sup>22</sup> Ibid., p. 19.

<sup>23</sup> Ibid., p. 20.

<sup>24</sup> Ibid., p. 21.

<sup>25</sup> Ibid., p. 21.

<sup>26</sup> Exhibit B-2-1, p. 6.

<sup>27</sup> Exhibit B-1-1, Appendix F, p. 31.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid., Appendix B, p. 1.

<sup>31</sup> Ibid.; “2019 Vancouver Building By-law 12511...Vancouver’s City Council enacted the 2019 Vancouver Building By-law which will take effect on November 1, 2019...The Vancouver Building By-law regulates the design and construction of buildings, as well as the administrative provisions related to permitting, inspections, and the enforcement of these requirements.” (<https://vancouver.ca/your-government/vancouver-building-bylaw.aspx>)

The GHG emission reduction requirements vary based on the type of building. For example, under the City of Vancouver's regulatory requirements, a new residential building may need to achieve a target GHG emission of 5-6 kg CO<sub>2</sub>/m<sup>2</sup>/year, whereas a new office building may need to achieve a target GHG emission of 1-2 kg CO<sub>2</sub>/m<sup>2</sup>/year.<sup>32</sup> To meet these targets, a new residential or office building may require 60 to 70 percent or 90 to 100 percent of its annual thermal energy to come from a low carbon energy resource. Creative Energy will need to generate enough low carbon energy on an annual basis to meet the energy demands of new buildings which are developed under the LCES policy and which are connected to the Core Steam System.<sup>33</sup>

With respect to regulatory requirements applicable to existing buildings, Creative Energy expects the City of Vancouver to implement some form of decarbonizing plans in the near term which would align with the ZEBP targets of having zero emissions from all buildings in Vancouver by 2050.<sup>34</sup> The City of Vancouver clarified that initial carbon pollution limits are anticipated to be embedded into the Building By-law and are planned to apply to existing office and retail buildings larger than 9,000 m<sup>2</sup> by 2026.<sup>35</sup> The initial carbon pollution limit would be set at 25 kg CO<sub>2</sub>/m<sup>2</sup>/year, which Creative Energy states would result in approximately 10,412 MWh/year of low carbon energy demand from its current customers.<sup>36</sup>

To support its existing and potential new customers' efforts to comply with these regulatory requirements, Creative Energy proposes to electrify a portion of the base load generation of its steam distribution system. The Project proposes to install electric steam boilers to displace the use of Creative Energy's existing natural gas boilers.<sup>37</sup> The scale of Creative Energy's proposed low carbon energy resource is discussed in the next section.

## **2.2 What Scale of Low Carbon Energy Resource is Required?**

Creative Energy states that the necessary scale of a low carbon energy resource is defined by the following four factors:<sup>38</sup>

- Projected growth in low carbon heating demand;
- Qualification for government grant funding;
- Qualification for discounted BC Hydro electricity service; and
- Qualification as an LCES.

The following sections describe how each of these factors impact Creative Energy's sizing of its proposed low carbon energy resource. Qualification as an LCES has already been described in Section 2.1.1.

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<sup>32</sup> Exhibit B-5, BCUC IR 2.3.

<sup>33</sup> Ibid.

<sup>34</sup> Exhibit B-1-1, p. 20.

<sup>35</sup> Exhibit E-1, p. 1.

<sup>36</sup> Exhibit B-22, BCUC Panel IR 1.2.1.

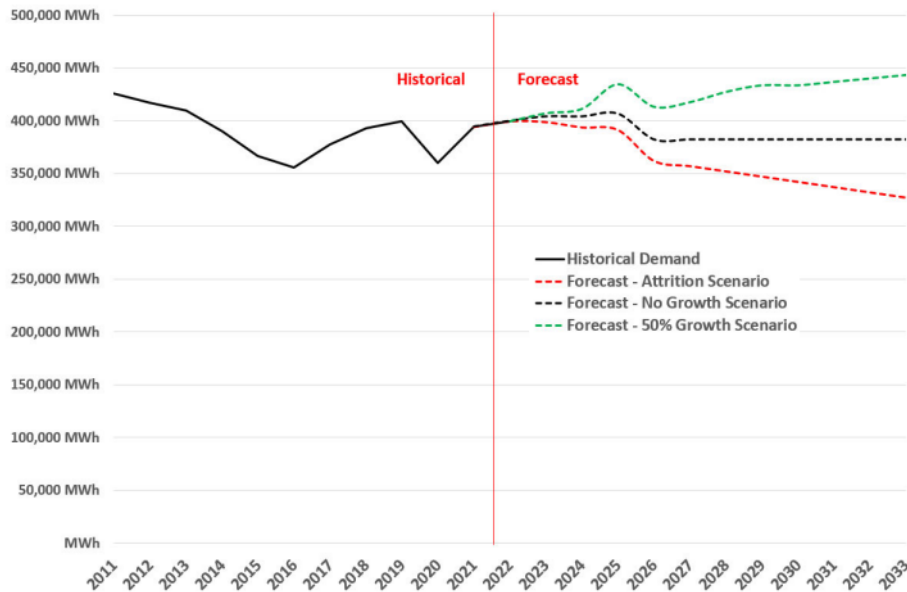
<sup>37</sup> Exhibit B-1-1, p. 1.

<sup>38</sup> Ibid., p. 27.

### 2.2.1 Projected Low Carbon Heating Demand and Other Load Scenarios

With respect to the projected growth or decline in overall heating demand, including demand in low carbon heating, Creative Energy presents three customer load scenarios: 1) Attrition; 2) No Growth or Baseline; and 3) 50 % Growth Scenario as shown in Figure 1 below:<sup>39</sup>

**Figure 1: Load Forecast Scenarios**



#### Attrition (Loss of Load)

The attrition scenario involves the permanent loss of load due to Creative Energy customers undertaking projects to switch all or part of their heating demand from reliance on the Core Steam System to an alternative with lower carbon intensity.<sup>40</sup> Creative Energy assumes the loss of 5,000 MWh/year under this attrition scenario. However, it states that this figure is indicative and that it has no specific basis for this forecasted decrease in load other than it represents the demand from one medium-sized customer building.<sup>41</sup>

Between 2016 and 2020, Creative Energy notes one customer disconnection as a result of a hotel closure, which represented the loss of 6,450 MWh of annual heating demand.<sup>42</sup> Over the same five-year timeframe, Creative Energy states that the total heat load lost to customer-led heat recovery initiatives was 5,121 MWh. However, Creative Energy states that the historical load loss trends do not explicitly inform the attrition scenario and that an accurate forecast of load attrition is not needed.<sup>43</sup>

Creative Energy further elaborates that historical attrition should not be taken as an indicator of future attrition, in part because of the recent implementation of ZEBP (2016) and LCES policy (2017), and the anticipated City of

<sup>39</sup> Exhibit B-1-1, Figure 1, p. 23.

<sup>40</sup> Ibid., p. 24.

<sup>41</sup> Ibid.

<sup>42</sup> Exhibit B-5, BCUC IR 4.1.

<sup>43</sup> Ibid., BCUC IR 4.2.

Vancouver policy changes with respect to GHG emissions from existing buildings.<sup>44</sup> Creative Energy asserts that the load attrition scenario is the likely outcome if it does not add low carbon steam generating capacity to its Core Steam System.<sup>45</sup>

Creative Energy's attrition scenario does not reflect any specific forecast of load loss due to demand side measures (DSM).<sup>46</sup> Since customers of Creative Energy can undertake DSM such as heat recovery initiatives without providing notification, Creative Energy states that it is not able to quantify load loss due to these DSM investments unless this information is obtained through informal communications with customer building personnel.<sup>47</sup> Approaches to promote energy conservation and efficiency are being developed by Creative Energy beginning in 2022, and will be coordinated with the City of Vancouver's regulatory requirements for building energy efficiency.<sup>48</sup> Creative Energy maintains that potential future DSM initiatives by customers do not change the need for the Project, as customer DSM investments do not change the GHG intensity of its Core Steam System.<sup>49</sup>

#### No Growth or Baseline

The baseline scenario is based on known incremental customer connections between 2021 and 2025 and the known loss of St. Paul's Hospital as a customer in 2026. The baseline scenario assumes no load growth or attrition thereafter.<sup>50</sup>

#### 50% Load Growth

The 50% load growth scenario represents the amount of new customer demand Creative Energy expects to attract following implementation of the Project. This scenario is based on Creative Energy connecting 50 percent of the total forecasted space heating and hot water demand growth within 500 feet of the existing Creative Energy steam distribution network.

Under this scenario, Creative Energy assumes that 2/3 of the forecast growth in new steam load in any year is served by the dispatch of electric boilers and the remaining 1/3 of new steam load is served by natural gas fueled generation.<sup>51</sup> This equates to 3,082 MWh of low carbon energy demand in 2024 from new Core Steam System customers, increasing to 21,185 MWh of low carbon energy demand by 2029.<sup>52</sup>

Creative Energy states that the current minimum customer demand for its natural gas boilers at any point in a given year is approximately 18 MW.<sup>53</sup> Creative Energy confirms that 18 MW therefore represents an upper limit of necessary low carbon energy capacity, as any greater capacity would be limited in its ability to displace baseload natural gas steam generation.<sup>54</sup> Creative Energy proposes to operate its low carbon energy resource in

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<sup>44</sup> Exhibit B-5, BCUC IR 4.2.1.

<sup>45</sup> Exhibit B-1-1, p. 24.

<sup>46</sup> Exhibit B-2-1, p. 5.

<sup>47</sup> Ibid.

<sup>48</sup> Exhibit B-9, CEC IR 17.2.

<sup>49</sup> Ibid.

<sup>50</sup> Exhibit B-1-1, p. 53.

<sup>51</sup> Ibid., p. 63.

<sup>52</sup> Exhibit B-5, BCUC IR 5.2.

<sup>53</sup> Exhibit B-10, RCIA IR 11.3.1.

<sup>54</sup> Exhibit B-14, BCUC IR 31.1; Exhibit B-1-1, p. 37.

a baseload configuration, with there likely being times during the year (e.g. summer months) when only the low carbon energy resource is required to meet all of Creative Energy’s heating demand.<sup>55</sup> A low carbon energy resource greater than 18 MW is not required, because there would not be sufficient demand to operate the resource in a full-time, baseload manner throughout the entire year.

#### City of Vancouver Request for Proposal (RFP)

Separate to the analysis of the above three load scenarios, Creative Energy notes that the City of Vancouver issued an RFP for low carbon energy supply for buildings in the Northeast False Creek area to be served in the future by the City of Vancouver’s Neighbourhood Energy Utility (NEU). This RFP closed in November 2021, and Creative Energy was selected as the “Lead Proponent” in June 2022.<sup>56</sup> The RFP contemplates that demand for low carbon energy from buildings to be served by the City of Vancouver’s NEU will increase over time, beginning with a demand of 7,000 MWh in 2024 and increasing to 32,800 MWh by 2030.<sup>57</sup> However, in the letter awarding Creative Energy as the “Lead Proponent,” the City of Vancouver states that next steps include potential changes to the low carbon energy supply load forecast and the need to “explore options to better align the proposed energy supply with the City’s needs and risk tolerance”.<sup>58</sup>

### **2.2.2 Federal and Provincial Government Grant Funding**

#### Government of Canada – Low Carbon Economy Fund

Creative Energy has secured funding from the Government of Canada through the Low Carbon Economy Fund (LCEF). The funding agreement states that the Government of Canada agrees to pay a contribution to Creative Energy of not more than 25 percent of the total eligible expenditures for the Project up to a maximum of \$9,217,121.<sup>59</sup> Creative Energy states that to receive the LCEF funding, the Project must achieve an emission reduction of 26,532 t GHG/year. This equates to approximately 85,000 MWh/year of electric boiler generation that must displace consumption of natural gas (otherwise known as the Fuel Switch).<sup>60</sup> The dispatch of 85,000 MWh/year of electric boiler capacity represents approximately 18 percent of Creative Energy’s annual steam demand.<sup>61</sup>

The LCEF funding agreement limits the total contribution if Creative Energy is awarded additional grants from other sources. Creative Energy has applied for funding through the CleanBC Facilities Electrification Fund (CFEF, as discussed below); if successful in securing the CFEF funding, Creative Energy anticipates the funding contribution from the LCEF will reduce to \$4,824,349 due to the “stacking limitation” conditions of the LCEF.<sup>62</sup>

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<sup>55</sup> Exhibit B-1-1, Appendix H, p. 3.

<sup>56</sup> Exhibit B-28, p. 2.

<sup>57</sup> Exhibit B-5, BCUC IR 5.2.

<sup>58</sup> Exhibit B-28, p. 2.

<sup>59</sup> Exhibit B-1-1, p. 49.

<sup>60</sup> Exhibit B-5, BCUC IR 5.3.

<sup>61</sup> Exhibit B-2-1, p. 6.

<sup>62</sup> Exhibit B-1-1, p. 50.

The LCEF only funds costs incurred between June 18, 2021 and March 31, 2024.<sup>63</sup>

Creative Energy provides the following table, summarizing the forecasted demand from low carbon energy and the minimum low carbon energy required to qualify for LCEF funding.<sup>64</sup> The final column shows the total low carbon energy produced each year, as a percentage of the total low carbon energy that the Project would be capable of producing, which is approximately 122,000 MWh.<sup>65</sup>

**Table 1: Low Carbon Energy Demand including Fuel Switch**

Year	Low Carbon Energy Minimum Production- (MWh)	Low Carbon Energy Demand (MWh)		Total (MWh)	Estimated Avoided Annual Carbon Tax*	Total Low Carbon Energy in relation to Project Sizing %
	Existing Customers	New Customers (50% Growth net of RFP)	City of Vancouver RFP			
2024	85,000	3,082	7,000	95,082	\$1,700,000	78%
2025	85,000	11,397	9,000	105,297	\$2,200,000	86%
2026	85,000	16,312	13,800	115,112	\$2,700,000	94%
2027	85,000	18,717	20,600	124,317	\$3,400,000	102%
2028	85,000	18,717	22,700	126,417	\$3,800,000	104%
2029	85,000	21,185	29,600	135,785	\$4,600,000	111%
2030	85,000	21,585	32,800	138,985	\$5,100,000	114%

\* Carbon tax increases as per current Federal forecast and Clean BC Roadmap to 2030 commitment.

#### Government of British Columbia – CleanBC Facilities Electrification Fund

On behalf of Creative Energy, BC Hydro has applied to the CFEF established by the Government of British Columbia for Project funding. The funding is available to BC Hydro customers with fuel switching projects that reduce GHG emissions, and if awarded, would cover up to 50 percent of the cost of the new BC Hydro transmission line.<sup>66</sup> The forecast grant amount is therefore \$8,462,500. If awarded, the CFEF and LCEF grants together would total \$13,286,849 in consideration of LCEF's stacking limitations noted above. As of the date of this Decision, the BCUC has not been notified if BC Hydro's CFEF application is successful.

In order to qualify for funding, the CFEF requires a BC Hydro owned transmission line interconnection, new electricity load of at least 5 MW and Project completion by Spring 2027.<sup>67</sup>

In its letter of comment filed with the BCUC in this proceeding, the Ministry states that the Project is eligible for the CFEF.<sup>68</sup> The Ministry supports the Project and believes that electrifying a central district energy system will have a substantive impact on the decarbonization of the buildings sector with no disruption to end users.<sup>69</sup>

<sup>63</sup> Ibid., p. 68.

<sup>64</sup> Exhibit B-5, BCUC IR 5.2.

<sup>65</sup> Exhibit B-1-1, p. 28.

<sup>66</sup> Exhibit B-1-1, p. 51.

<sup>67</sup> Ibid., p. 27.

<sup>68</sup> Exhibit D-2-1, p. 2.

<sup>69</sup> Ibid.

### 2.2.3 Discounted BC Hydro Electricity Service Rate

As the proposed low carbon energy solution is the installation of electric boilers, Creative Energy states that the electricity costs are a significant driver of the overall Project cost of service.<sup>70</sup> If the Project receives its electricity at transmission level voltage, and increases electrical energy consumption by at least 20,000 MWh/year, Creative Energy would qualify for a discounted electrical rate – RS 1895 Clean B.C. Industrial Electrification Rate.<sup>71</sup> The RS 1895 rate offers a 20 percent discount on BC Hydro conventional transmission rate (RS 1823) for the first five years of service. The discount reduces to 13 percent in year six, seven percent in year seven and then no discount is available for subsequent years of service.<sup>72</sup>

Creative Energy states that the minimum electric boiler capacity that would qualify for the RS 1895 transmission rate is approximately 2.3 MW.<sup>73</sup> The Ministry’s letter of comment confirms that Creative Energy may apply to access the discounted electricity rate.<sup>74</sup>

### 2.3 Proposed Project Justification

Creative Energy states that the four factors described in Section 2.2 above defined the necessary scale of the proposed Project. The criteria to qualify for the RS 1895 discounted transmission rate established a minimum necessary electric boiler capacity of 2.3 MW.<sup>75</sup> The minimum annual demand on Creative Energy’s steam system is approximately 18 MW, and sizing electric boilers above this capacity is not advisable because that would deteriorate the capacity factor at which the boilers can potentially be operated.<sup>76</sup>

As shown in the table below, Creative Energy states that the necessary electric boiler capacity to meet only the low carbon energy demand from existing customers, new customers and the City of Vancouver RFP is 10.3 MW by 2030.<sup>77</sup>

**Table 2: Necessary Electric Boiler Capacity to meet Low Carbon Energy Demand**

Year	MWh				MW
	Existing Customers (indicated support to date)	New Customers (50% Growth net of RFP)	City of Vancouver RFP	Total	Proportional Baseload Boiler Sizing
2024	33,500	3,082	7,000	43,582	5.1
2025	33,500	11,397	9,000	53,897	6.3
2026	33,500	16,312	13,800	63,612	7.5
2027	33,500	18,717	20,600	72,817	8.6
2028	33,500	18,717	22,700	74,917	8.8
2029	33,500	21,185	29,600	84,285	9.9
2030	33,500	21,585	32,800	87,885	10.3

<sup>70</sup> Exhibit B-1-1, p. 70.

<sup>71</sup> Ibid., p. 27.

<sup>72</sup> Ibid., Appendix M, p. 5.

<sup>73</sup> Exhibit B-10, RCIA IR 3.1.

<sup>74</sup> Exhibit D-2-1, p. 2.

<sup>75</sup> Exhibit B-14, BCUC IR 31.1.

<sup>76</sup> Ibid.

<sup>77</sup> Exhibit B-14, BCUC IR 31.3.



At a capacity of 10.3 MW, however, Creative Energy may no longer be eligible for the LCEF grant funding.<sup>78</sup> Therefore, Creative Energy proposes to install two 6.9 MW electric steam boilers, providing peak electrical load demand of 13.8 MW.<sup>79</sup> At this capacity, the Project would be able to produce approximately 122,000 MWh of low carbon energy annually.<sup>80</sup> Further details regarding the Project components are discussed in Section 5 below.

### *Positions of the Parties*

The CEC recognizes the climate change and government policy and regulatory drivers for the Project and compliments Creative Energy on marshalling all of this into the Project.<sup>81</sup>

BCOAPO submits that the policy imperatives support the need for some kind of decarbonization project, but has lingering concerns about the veracity of Creative Energy's load forecast scenarios.<sup>82</sup> With respect to the policy factors driving the Project, BCOAPO notes that the policy backdrop and considerations favouring this Project have not changed as a result of this proceeding. BCOAPO submits that the policy imperatives of decarbonization and the need to reduce GHG emissions will only further be prioritized at all levels of government moving forward. BCOAPO considers it reasonable to conclude that Creative Energy would face a lack of load growth and customer attrition should the Project not proceed.<sup>83</sup>

However, BCOAPO has lingering concerns with respect to the need and justification for the Project. BCOAPO notes that Creative Energy takes the position that the precise timing of new customer connections and load growth are not important questions for the purposes of this Application, and notes that the capacity sizing of the Project and minimum dispatch are not based on any specific demand forecast.<sup>84</sup>

At the same time, despite BCOAPO's lingering concerns regarding the 50% Growth Scenario and the uncertainties regarding the timing and magnitude of load growth for the Project, it submits that Creative Energy's load scenarios remain the best information on the record with which to consider the merits of the Application and whether the Project is in the public interest. Accordingly, despite concerns with what BCOAPO considers to be Creative Energy's "anecdotal" demand forecast, BCOAPO supports the need and justification for the Project.<sup>85</sup>

BCOAPO recommends that the BCUC direct Creative Energy to provide updates on its load scenarios or load forecasts for the Project as part of any regular semi-annual compliance reporting to the BCUC. BCOAPO also suggests that, in the event of any material change in the load scenario or load forecast, Creative Energy provide an update to the BCUC within 30 days.<sup>86</sup>

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<sup>78</sup> Exhibit B-14, BCUC IR 31.3.

<sup>79</sup> Exhibit B-1-1, p. 27.

<sup>80</sup> Ibid., p. 38.

<sup>81</sup> CEC Final Argument, p. 2, para 4.

<sup>82</sup> BCOAPO Final Argument, p. 2.

<sup>83</sup> Ibid., p. 4.

<sup>84</sup> Ibid.

<sup>85</sup> Ibid., pp. 4-5.

<sup>86</sup> Ibid., p. 5.

WFC submits that Creative Energy sized the Project in consideration of the requirements for government grants and BC Hydro's discounted electricity service, rather than optimizing the Project capacity to align with customer demand. This results in a Project design that does not prioritize the customer interest.<sup>87</sup> WFC further submits that Creative Energy is effectively speculating that once its low carbon service is built, other customers will join. WFC submits that Creative Energy is counting on its new service offering to be a more attractive option to new developments than competitive alternatives available to those new developments. The success of Creative Energy's speculation will determine the economic success of the Project. WFC submits that the BCUC should not allow Creative Energy to allocate all of this risk to its existing, captive customers, of which WFC is one.<sup>88</sup>

BCSEA submits that it is satisfied that the Project aligns with the policy priorities of the federal government, the BC government and the City of Vancouver to reduce GHG emissions from the heating of buildings.<sup>89</sup>

RCIA states that it does not have residual material concerns with the Project as applied for.<sup>90</sup> RCIA otherwise does not make any specific submissions on Project need.

In reply to WFC's submissions regarding Project sizing, Creative Energy submits that the consideration of government grants and BC Hydro's discounted electricity service provide enormous cost savings to Creative Energy and its customers:

The government grants are expected to reduce the capital cost of the project to Creative Energy (and its customers) by more than one third. Sizing the project to make it eligible for BC Hydro RS 1895 Transmission Service Rate for Clean BC Industrial Electrification – Fuel Switching will save Creative Energy (and its customers) an enormous amount of fuel costs for operating the project. If the project were sized smaller (or staged in smaller increments) such that it is not eligible for BC Hydro service under RS 1895, there would be significantly increased costs for electricity against the customer interest.<sup>91</sup>

Creative Energy notes that the CEC applauds the efforts made to secure government grants.

Further, Creative Energy disagrees with WFC that the capacity sizing of the Project is speculative – demand for low carbon energy in the service area of the Core Steam System is increasing as a result of regulatory requirements and customer preferences.<sup>92</sup>

### *Panel Determination*

The Panel finds that Creative Energy has established the need for the Project to offer low carbon energy to its current as well as future customers. In addition, the Panel finds that the Project is adequately sized for the need that is established. In the discussion that follows, the Panel reviews the evidence regarding the changing regulatory landscape and the evolving customer expectations that Creative Energy puts forward to support the need for the Project. Then we review Creative Energy's evidence regarding the impact of these changes on its

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<sup>87</sup> WFC Final Argument, p. 2, para 12.

<sup>88</sup> Ibid., p. 3, para 16.

<sup>89</sup> BCSEA Final Argument, p. 5, para 12.

<sup>90</sup> RCIA Final Argument, p. 5.

<sup>91</sup> Creative Energy Reply Argument, p. 7, para 20.

<sup>92</sup> Ibid., pp. 8-9, para 25.

current and prospective customers. Finally, we review the evidence regarding the sufficiency of the size of the Project.

#### Changing Regulatory Landscape and Current Customers' Expectations

It is clear to the Panel that all levels of government are introducing policies aimed at reducing GHG emissions. At the municipal level, the City of Vancouver ZEBP and the Building By-law has set limits on the GHG emissions from new buildings in Vancouver. The City of Vancouver regulatory requirements outline two ways for developers to comply with GHG emission limits, one of which relates to the option that Creative Energy is pursuing and involves the supply of thermal energy by a low carbon energy resource. In addition, both the provincial and federal governments have funding opportunities available for projects that reduce GHG emissions. These grants reflect government objectives supporting GHG emission reductions.

Creative Energy also demonstrates that the City of Vancouver is bringing in policies requiring existing buildings – not just new construction – to reduce their GHG emissions. Especially noteworthy, in our view, is that as soon as 2026, City of Vancouver by-laws may require existing Creative Energy customers to seek approximately 10,412 MWh/year of low carbon thermal energy.

In addition to government objectives, we are persuaded by the evidence that Creative Energy's customers are also motivated to reduce their GHG emissions. For example, Creative Energy submits that some of its customers either want to or in the future may need to switch to lower GHG emitting supplies of thermal energy. Creative Energy refers to letters of intent from customers, some of whom have expressed a desire for low carbon thermal energy. This 'soft' commitment from current customers represents approximately 33,500 MWh of low carbon thermal energy per year.

#### Impact of Regulatory Changes on Creative Energy's Current and Prospective Customers

Creative Energy states that in order to retain customers seeking low GHG-emitting supplies of energy in their buildings, it must adapt and offer low carbon thermal energy. It argues that if it fails to respond to this customer need, it risks the loss of load. It provides information regarding loss of heating load in the past five years, which amounts to 6,450 MWh lost load due to disconnection and 5,121 MWh lost load due to customer-led DSM initiatives.

Creative Energy submits that in future years it risks losing the equivalent of the load from a medium-sized building every year, approximately 5,000 MWh, if it is unable to offer a low carbon solution. Creative Energy concedes that this is its best estimate of a future scenario. In the absence of further evidence, we are unable to accept Creative Energy's quantification of the risk of load attrition. The Panel notes that this estimate does not reflect Creative Energy's actual recent experience. Creative Energy's evidence indicates that it lost approximately 11,500 MWh of load from 2016 to 2020, due to one customer disconnection and customer-led heat recovery initiatives. This reflects an average of less than 3,000 MWh per year. On the other hand, we do not consider past experience to be a good barometer for future experience on this matter, because the movement towards decarbonization is increasing in pace and therefore one would expect the pace of attrition of fossil fuel load to increase as well. Thus, while we do not accept Creative Energy's estimate of the size of its load attrition risk, and indeed Creative Energy cautions that it is at best a guess, we do accept that the risk of loss of load is real, whether due to attrition, customers' DSM initiatives, changing customer expectations or imminent City of Vancouver by-law changes.

Creative Energy states that in order to connect new customers to its system, it must be able to offer energy resources which permit new customer buildings to comply with the City of Vancouver’s low carbon energy policies and Vancouver’s Building By-law. In our view, there is strong evidence that these policies regarding the GHG intensity of thermal energy supplied to buildings in Vancouver require utilities such as Creative Energy to offer low carbon energy services and that the Building By-law has now made this mandatory rather than optional for new buildings.

### Sufficiency of the Low Carbon Resource

Having identified the need to provide a low carbon energy resource – to meet demand from customers and to comply with the City of Vancouver low carbon energy policies and the Building By-law requirements – we now set out our reasons for finding that the Project is appropriately sized to meet that need. We recognize that the four external factors outlined by Creative Energy have shaped and sized the Project, rather than the Project being designed for a particular size to meet an identified need. For this reason, we find it useful to review each of the four specific factors that Creative Energy describes as having shaped the specific design and scale of the Project.

#### 1. Projected Growth in Low Carbon Heating Demand

We accept Creative Energy’s general projection of a growth in low carbon heating demand. For example, its current customers have indicated a non-binding interest in switching to approximately 33,500 MWh/year of low carbon energy. The City of Vancouver may have policies in place within the next few years that would require Creative Energy customers to seek approximately 10,412 MWh of low carbon energy.

In addition to growth in demand arising from existing customers, Creative Energy projects that it will experience a growth in low carbon energy demand by adding new customers to its system. For example, Creative Energy approximately forecasts a combined 30,000 MWh of low carbon energy demand annually from new building customers and the City of Vancouver RFP by 2026. However, details regarding the low carbon energy supply to the City of Vancouver remain to be finalized and the Panel considers Creative Energy’s new customer demand forecast to be highly speculative at this point. None the less, the Panel accepts that the demand for low carbon energy from new buildings in Vancouver will continue to grow over time, as indicated in Table 2 above, and that the Project will allow Creative Energy to serve some of this demand. The Panel further notes that without the Project, Creative Energy is not able to connect any new customers.

With respect to Project sizing, the 122,000 MWh annual capacity of the proposed design exceeds Creative Energy’s forecasted demand for low carbon energy through 2030. As the Panel is not persuaded by Creative Energy’s speculative growth forecast, we similarly consider that the evidence regarding low carbon energy demand does not support the sizing of the Project as proposed. However, we recognize this is but one of four factors that Creative Energy has considered in sizing the Project. Indeed, Creative Energy acknowledges that the capacity sizing and minimum dispatch of the Project are not based on a specific forecast of existing or new customer demand for low carbon energy.<sup>93</sup>

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<sup>93</sup> Creative Energy Final Argument, p. 2.

## 2. Qualification for Government Grant Funding

This factor has a significant impact on the Project design, and led Creative Energy to design a bigger Project than it might otherwise require. Creative Energy will qualify for grants from both the provincial and federal governments if its Project meets certain temporal (project completed, or costs incurred, by a certain date) and load size characteristics (new load in the case of the provincial CFEF or displaced fossil fuel load in the case of the federal LCEF).

Creative Energy acknowledges that the Project is not predicated solely on meeting current or anticipated load. Rather, it is premised in part on satisfying the criteria to establish eligibility for funding available under these two grants. Creative Energy notes that, in order to qualify for the LCEF, its existing customers must make a Fuel Switch of approximately 85,000 MWh/year of electric boiler generation to displace the consumption of natural gas. Further, to qualify for the CFEF funding, it must supply new electricity load of at least 5 MW. The Panel finds that consideration of funding eligibility is a factor, albeit not determinative, in support of the size of the Project. We view that appropriately sizing the Project to qualify for available funding effectively reduces the overall cost of the Project, which is to the benefit of all customers.

## 3. Qualification for Discounted BC Hydro Electricity Service Rate

The cost of electricity is a significant driver of the overall Project cost of service, and if the Project is of a certain size in terms of electricity consumption, Creative Energy will qualify for the discounted RS 1895 Clean BC Industrial Electrification Rate. The Panel finds that this is a factor, albeit not determinative, in support of the proposed size of the Project. Similar to the qualification for government funding discussed above, the Panel finds that by sizing the Project to take advantage of the discounted BC Hydro Electricity Service Rate during the life of the Project, Creative Energy is appropriately leveraging the availability of this discount to reduce its cost of service to the benefit of its customers for the first seven years of service.

## 4. Qualification as an LCES

The City of Vancouver has confirmed that Creative Energy's Core Steam System will qualify as an LCES if it adds a permanent low carbon heat generating resource. Qualification as an LCES is a prerequisite for new building developments to receive service from Creative Energy under current City of Vancouver regulatory requirements. The Panel finds that Creative Energy requires a low carbon energy resource that qualifies as an LCES in order to attract new customers to its Core Steam System. In the absence of the development of a low carbon energy resource to attract new customers, Creative Energy's load forecast associated with its attrition scenario would see the total costs of the current steam system being borne by fewer and fewer customers over time. Although we do not consider Creative Energy's specific estimate of annual load loss to be sufficiently justified, we accept that the risk of load loss to some extent is real due to, for example, City of Vancouver regulatory requirements or customer expectations. We also accept that the addition of a low carbon energy resource will counter the risk of load loss – by allowing Creative Energy to provide low carbon energy sought by existing customers and by the addition of new customers seeking connection to a LCES.

### *Panel Discussion*

In summary, having reviewed above the four factors which underlie Creative Energy's rationale for designing the Project in a way that would seem to exceed what it might otherwise require in the coming years, we are nevertheless satisfied that the Project is appropriately sized. We reach this conclusion because of the need to meet the eligibility criteria of both the federal and provincial grants, as well as the discounted electricity rate available to Creative Energy, which reduces costs to Creative Energy's ratepayers.

As we have already noted above, there is strong evidence that current City policies regarding the GHG intensity of thermal energy supplied to buildings in Vancouver require utilities such as Creative Energy to offer low carbon thermal energy and that the City's Building By-law has now made this mandatory rather than optional for new buildings. Whether one accepts the risk of load attrition as real, or that there is an imminent need to develop a low carbon energy resource to connect new customers, we are persuaded by Creative Energy that the Project responds to the City's low-carbon policy imperative to reduce GHG emissions by transitioning away from complete reliance on the combustion of a carbon-intensive fuel source to produce thermal energy.

Furthermore, as Creative Energy states above, the combination of government grants and BC Hydro's discounted electricity service for which the Project is eligible provide significant cost savings to Creative Energy and its customers, which cannot be ignored.

The Panel notes that the CEC applauds the efforts made by Creative Energy to secure government grants to offset the capital costs of the Project. In addition, the Panel notes the provincial government's supportive statements regarding the Project: "electrifying a central district energy system will have a substantive impact on the decarbonization of the buildings sector" and "help to decarbonize our economy and accelerate the shift to clean technologies in the buildings sector".<sup>94</sup>

The Panel notes that the capacity of the Project in excess of the minimum dispatch requirements will be available to serve new customers connecting to the Core Steam system to receive low carbon energy. We accept that demand for low carbon energy in the service area is increasing due to regulatory requirements and customer preferences and that the Project will be eligible to serve that demand.

Further, the Panel is satisfied that Creative Energy has incorporated into this Application the information it was directed to provide by Order G-177-21.

### **3.0 Assessment of Alternatives**

The following sections summarize the evaluation of low carbon energy resource alternatives undertaken by Creative Energy, which includes a screening assessment used to identify feasible alternatives, the evaluation of feasible alternatives, and Creative Energy's determination of its preferred electric boiler alternative.

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<sup>94</sup> Exhibit D2-1, p. 2.

## 3.1 Screening Assessment

### 3.1.1 Low Carbon Technology Options

As part of its screening assessment, Creative Energy identified and assessed alternative low carbon technologies. Creative Energy identifies that it has been evaluating potential low carbon solutions since 2014, with efforts ramping up significantly in 2019 as the imperative to decarbonize some portion of its thermal energy supply crystallized.<sup>95</sup>

Creative Energy states that across the district heating sector, the majority of low carbon technologies involve some form of electric-powered heat pump technology, whereby a low-grade (i.e., ground, air, or wastewater) source of heat is harvested and upgraded into hot water. Creative Energy states that heat pumps cannot produce the temperatures needed to generate steam, and therefore considered heat pumps as not a feasible alternative.<sup>96</sup>

Creative Energy states that in order to produce steam, a high-intensity form of energy is needed. Creative Energy identifies that the options to produce steam are electrical, combustion of a hydrocarbon fuel, or radioactive decay (i.e., nuclear). Creative Energy further identifies that the low carbon technologies that are therefore feasible applications to serve the Project needs are limited to biomass combustion and electric boilers.<sup>97</sup>

During the proceeding, the BCUC inquired whether Creative Energy considered any other alternatives to the Project, such as a low carbon energy source supplying Creative Energy's existing hot water network in Northeast False Creek (NEFC) combined with strategic conversion of Creative Energy's existing steam distribution network to a hot water distribution network. A conversion to distributing thermal energy via hot water as opposed to steam is of interest when assessing options to decarbonize as Creative Energy states that there are very few low carbon technologies that are capable of producing the high temperatures required to generate steam.<sup>98</sup> Creative Energy explained that the option to install a low carbon technology which generates hot water rather than steam, such as sewer heat recovery, was not investigated further as it would only be sized for the existing NEFC load currently served by a hot water network, and furthermore, would not make any environmental contribution to the Core Steam System or Creative Energy customers currently served by steam.<sup>99</sup>

In 2017, Creative Energy produced a high-level cost estimate for the conversion to a hot water distribution pipe system. At that time, total costs were estimated to be approximately \$101 million. Creative Energy notes, however, that this estimate is far below the anticipated current cost of converting the Core Steam System to a hot water system.<sup>100</sup> Creative Energy continues to study the conversion to a hot water system and, if it finds a way to do such a project in an economical way, it states it will be pursued. Creative Energy is currently working on a screening study to evaluate the feasibility of distribution system efficiency improvements, including the conversion from steam to hot water.<sup>101</sup> In the meantime, Creative Energy states that the need for low carbon

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<sup>95</sup> Exhibit B-1-1, p. 74.

<sup>96</sup> Ibid., pp. 74-75.

<sup>97</sup> Ibid., p. 75.

<sup>98</sup> Exhibit B-5, BCUC IR 11.2.

<sup>99</sup> Ibid.

<sup>100</sup> Exhibit B-14, BCUC IR 34.2.

<sup>101</sup> Ibid., BCUC IR 34.1.



energy is emergent and cannot be delayed.<sup>102</sup> Creative Energy's future decarbonization efforts, including steam to hot water distribution network conversion, are discussed further in section 8.2 of this Decision.

### **3.1.2 Renewable Natural Gas**

Creative Energy also assessed the option of purchasing Renewable Natural Gas (RNG) from FEI to reduce the carbon intensity of Creative Energy's steam system. Creative Energy identifies that RNG as an alternative is relatively easy to evaluate since it involves substituting RNG for a portion of conventional gas purchased from FEI for the existing plant. Creative Energy states that there would be no change in plant efficiency, no other changes in operating costs for the existing plant (other than the incremental cost of RNG), and no additional capital costs.<sup>103</sup>

However, Creative Energy states that RNG is not an alternative to the Project. Creative Energy states that RNG does not qualify as a primary low carbon source for the purposes of certifying a district energy system as a LCES and has confirmed this with the City of Vancouver staff.<sup>104</sup>

Creative Energy states that although RNG is not a feasible basis for a permanent LCES, it could in theory be a basis for a temporary solution or for an optional service offering. Creative Energy states, however, that RNG presents other issues. Creative Energy questions whether sufficient supply is available over a sufficient period of time to support a low carbon steam service option. Creative Energy also identifies that it does not have a rate in place for an optional low carbon steam service based on RNG, and such a rate would need to be designed in consultation with interested customers and submitted for BCUC approval.<sup>105</sup> Creative Energy also identifies that it is ineligible to receive RNG under FEI's current Rate Schedule 7;<sup>106</sup> however, it provided an update during the proceeding that an RNG offering is now available under FEI Rate Schedule 7B. Creative Energy states that under the current pricing of FEI's Rate Schedule 7B, an RNG offering would be a higher cost than the Project.<sup>107</sup>

Creative Energy states that it will continue to engage with its customers, the City of Vancouver and FEI. If there is alignment between RNG supply availability and the demand for low carbon steam produced with RNG, the related service and rates will be pursued and submitted to the BCUC for approval.<sup>108</sup>

### **3.1.3 Plant Locations**

Creative Energy studied several possible alternative plant locations to determine whether there was a location, other than its Beatty Plant, that might offer greater flexibility, reduce costs or help to secure a form of low-grade heat that might not otherwise be available. Creative Energy states that the results of this assessment concluded that the best location for the Project was at the site of the Beatty Plant.<sup>109</sup>

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<sup>102</sup> Exhibit B-5, BCUC IR 11.2.

<sup>103</sup> Exhibit B-1-1, p. 81.

<sup>104</sup> Ibid.; Exhibit B-5, BCUC IR 10.6.

<sup>105</sup> Ibid., p. 82.

<sup>106</sup> Ibid.

<sup>107</sup> Exhibit B-17, RCIA 34.1.

<sup>108</sup> Exhibit B-1-1, p. 83.

<sup>109</sup> Ibid., p. 77.



### 3.1.4 Electric Service – Transmission vs. Distribution

Also, as part of its screening assessment, Creative Energy compared two electric service options under an electric boiler alternative: a BC Hydro distribution service option and a BC Hydro transmission service option. In this assessment, Creative Energy identified that the relatively high electricity costs of a distribution service are prohibitive as compared to the electricity costs of a transmission service and therefore a distribution service is not economically feasible as compared to the transmission service. As a result, Creative Energy states that the distribution service option is not preferred.<sup>110</sup>

## 3.2 Feasible Alternatives

Creative Energy's screening assessment established two feasible Project alternatives to meet the identified need to decarbonize its steam generation: a biomass plant and an electric boiler plant.<sup>111</sup>

Regarding the biomass plant, Creative Energy explains that a 5MW biomass plant is the largest that could fit in the space available and thus presents this size of plant in the evaluations that follow.<sup>112</sup>

Regarding the electric boiler plant, Creative Energy explains that at the time of comparing alternatives, Creative Energy and its consulting engineers, HH Angus & Associates Ltd. (HHA), were only aware of one technology for electric boilers, which was 'electrode' or 'anode' boilers. As such, Creative Energy presents this technology with a capacity of 20MW in the evaluations that follow.<sup>113</sup> Creative Energy identifies that during the engineering phase, it became aware of an alternate technology, 'resistive' boilers, that have been deployed quite extensively and offered a number of potential advantages. As a result, Creative Energy determined that using resistive boilers with a capacity of 13.8 MW was preferred – as mentioned in Section 2.3 above. Creative Energy clarifies, however, that there would be no material changes in the comparative evaluations that are summarized below if it had used 13.8 MW resistive boilers instead of 20 MW anode boilers.<sup>114</sup>

Creative Energy provides the following table comparing parameters associated with its two feasible alternatives:

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<sup>110</sup> Exhibit B-5, BCUC IR 7.8.

<sup>111</sup> Exhibit B-1-1, p. 78.

<sup>112</sup> Exhibit B-5, BCUC IR 9.4.

<sup>113</sup> Ibid., BCUC IR 9.1.

<sup>114</sup> Ibid., BCUC IR 9.2.

**Table 3: Feasible Alternatives Parameter Comparison<sup>115</sup>**

Parameter	5MW Biomass	20MW Electric Boilers
Output Capacity	5,000kW	19,800kW
Annual Production (% of current annual load)	41,000 (10%)	168,000MWh (42%)
Annual Carbon Reduction	8,700 tCO <sub>2</sub>	35,700 tCO <sub>2</sub>
Capital Cost	\$13.4M if designed for pellets; \$2680/kW \$19.2M if designed for woodchips \$3840/kW	\$27.1 M or \$1370/kW
Lifecycle Energy Cost	\$145/MWh	\$102/MWh
Traffic Impact on Neighbourhood	5 trucks per day of woodchips	None

Creative Energy provides life-cycle cost and levelized cost of energy for its two feasible alternatives as follows:

**Table 4: Life-cycle and Levelized Cost of Energy – 5MW Biomass<sup>116</sup>**

Project Internal Rate of Return	~6.34%
Capital Cost	\$19,194,433
Life Cycle Cost	\$190,347,206
Levelized Cost (\$/MWh)	~\$145

**Table 5: Life-cycle and Levelized Cost of Energy – 20MW Electric Boiler<sup>117</sup>**

Project Internal Rate of Return	~6.34%
Capital Cost	\$27,127,716
Life Cycle Cost	\$594,356,599
Levelized Cost (\$/MWh)	~\$102

Creative Energy confirms that the capital costs provided in Tables 4 and 5 above are Class 4 degree of accuracy as defined by AACE International.<sup>118</sup>

Creative Energy provides the following table comparing the benefits and risks associated with the two feasible alternatives:

<sup>115</sup> Exhibit B-1-1, p. 78, Table 20.

<sup>116</sup> Ibid., p. 80, Table 22.

<sup>117</sup> Ibid., Table 23.

<sup>118</sup> Exhibit B-5, BCUC IR 9.12.

**Table 6: Benefits and Risks of Feasible Alternatives<sup>119</sup>**

Technology	Benefits	Challenges/Risks
Biomass	<ul style="list-style-type: none"> <li>Resource availability appears plentiful</li> <li>Aligns with City's requirements to be certified as a Low Carbon Energy System</li> </ul>	<ul style="list-style-type: none"> <li>Air quality permit from Metro Vancouver difficult to achieve for a biomass boiler in a dense urban context as emissions restrictions tighten</li> <li>Public and customer support for biomass combustion not universally viewed as a carbon-neutral</li> <li>Uncertainty that carbon-neutral status of the fuel may not persist for the life of the project</li> <li>No ability to add further capacity due to fuel delivery limitations</li> <li>Fuel/ash handling/dust suppression on-site a safety concern</li> </ul>
Electric Boilers	<ul style="list-style-type: none"> <li>Relatively low capital cost on a \$/kW basis</li> <li>High efficiency</li> <li>No on-site emissions</li> <li>No traffic impact</li> <li>No noise/dust impact on development or neighbours</li> <li>Significantly more total capacity can fit in the site</li> <li>Expandable - additional capacity can be housed on site and is relatively low capital cost</li> <li>Aligns with City's requirements to be certified as a Low Carbon Energy System</li> </ul>	<ul style="list-style-type: none"> <li>High fuel costs relative to biomass</li> <li>Limited line to sight to proven operating anode boilers<sup>123</sup></li> </ul>

In addition to the benefits and challenges described above, Creative Energy identifies that based on the load data provided in the Application and in its response to IRs, the 5MW biomass alternative would meet demand until 2028 with no ability to further expand capacity and without qualifying for the LCEF grant. Creative Energy states that the 20MW electric boiler alternative would meet demand until the end of the 2040 forecast period.<sup>120</sup>

Creative Energy concludes that an electric boiler solution is superior to a biomass system as it has virtually no negative impact on neighbours and residents in or near downtown, while offering far more low-carbon energy at a lower lifecycle cost of energy.<sup>121</sup>

### *Positions of Parties*

The CEC supports this Project given all of the conditions that have come together to make it possible but does not at this time support electric boilers as a long-term solution and prefers an open mind be kept with respect to both the FEI initiatives for decarbonizing gas and other emerging technologies for reducing GHG emissions. The CEC considers that the evidence in this proceeding is clear that the Project is in a one-off unique situation and is not necessarily a long-term solution. The CEC makes certain recommendations with respect to a broader examination of potential alternative technologies, which the Panel reviews in Section 8.2.<sup>122</sup>

<sup>119</sup> Exhibit B-1-1, p. 79, Table 21.

<sup>120</sup> Exhibit B-5, BCUC IR 9.3.

<sup>121</sup> Exhibit B-1-1, p. 80.

<sup>122</sup> CEC Final Argument, p. 28.

However, the CEC agrees with Creative Energy that a small-scale biomass boiler would be a poorer solution for decarbonization than the electric boiler solution, the Beatty Plant location is appropriate and the choice of a transmission service over a distribution service is appropriate. The CEC recommends that the BCUC agree with the Creative Energy decisions on these subjects.<sup>123</sup> The CEC submits that it is interested in the potential conversion of the steam system to hot water but agrees with Creative Energy that this is not a viable alternative to the Project at this time. The CEC submits that Creative Energy has not adequately considered the role of RNG as part of the solution.<sup>124</sup>

BCOAPO submits that Creative Energy's conclusion that electric resistive boiler technology is the most appropriate course of action is reasonable. However, BCOAPO submits that how Creative Energy got to this conclusion is lacking clarity, and such clarity is necessary in applications such as this.<sup>125</sup>

While the process by which alternatives were evaluated is more concerning to BCOAPO than the ultimate outcome, it submits that the way in which utilities assess alternatives, draft applications and respond to IRs is of interest to ratepayers both in terms of regulatory efficiency and to ensure the public interest is served.<sup>126</sup> BCOAPO recommends that future Creative Energy CPCN applications include an evaluation summary matrix comparing all alternatives, similar to those prepared by other utilities, which will assist the BCUC and interveners in understanding and testing the alternatives assessment and the justification of the proposed preferred alternative.<sup>127</sup>

With respect to RNG, BCOAPO recommends that the BCUC direct Creative Energy to provide reporting on its continued assessment of an RNG option as part of any regular compliance reporting requirements for the Project, if approved. BCOAPO views RNG as a bridging option that could be valuable in the event of delays on the Project and could also be valuable to supplement the available low carbon energy in the event that the approved capacity of the Project is temporarily exceeded or if there are delays in future capacity additions to the Project.<sup>128</sup>

WFC submits that Creative Energy's analysis of the alternatives is far from robust and clearly insufficient to demonstrate that the Project is the superior option. WFC notes, for example, that Creative Energy did not explore RNG as an alternative in any meaningful way.<sup>129</sup>

BCSEA is satisfied that Creative Energy has appropriately explored a full range of feasible alternatives. BCSEA considers that the electric boiler approach is clearly the preferred technology and agrees with Creative Energy that RNG is not a feasible alternative to the Project.<sup>130</sup>

RCIA submits that Creative Energy has demonstrated that the proposed Project is economically and technically preferred compared to other evaluated low carbon alternatives. RCIA submits that "if Creative Energy's long-term plan for decarbonization of its service is to systematically electrify its entire steam generation process, it

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<sup>123</sup> Ibid., pp. 28- 39.

<sup>124</sup> Ibid., pp. 42-43.

<sup>125</sup> BCOAPO Final Argument, p. 5.

<sup>126</sup> Ibid., p. 7.

<sup>127</sup> Ibid.

<sup>128</sup> Ibid.

<sup>129</sup> WFC Final Argument, p. 4.

<sup>130</sup> BCSEA Final Argument, p. 6, para. 17

largely negates the benefit that the district heating system notionally offers, and RCIA does not see why customers should pay for a redundant utility when BC Hydro is already generating and distributing the primary energy source (i.e., electricity).”<sup>131</sup> RCIA also submits that Creative Energy should explore alternative economical steam generation technologies when contemplating future decarbonization projects, which the Panel discusses in Section 8.2 of this Decision.<sup>132</sup>

In reply, Creative Energy states that its identification and assessment of Project alternatives in the Application is appropriate and it demonstrates that the Project is preferred compared to all feasible alternatives. Creative Energy submits that opinions to the contrary are unfounded.<sup>133</sup>

With respect to RNG, Creative Energy submits that it has properly assessed whether RNG could be a feasible and economical alternative to the Project and has demonstrated that it is not a Project alternative. Creative Energy submits that it has also properly assessed that RNG might be part of the solution to the larger matter of helping customers to achieve their low carbon energy goals, for example as an optional service for customers who want to exceed their low carbon requirements under City of Vancouver by-laws and policies.

### *Panel Discussion*

The Panel is persuaded that Creative Energy has sufficiently considered the various alternatives to the Project, at least at a high level, based on the current constraints on and requirements of its system and technological limitations. Despite interveners’ views that Creative Energy’s analysis of alternatives is limited, largely because it focused on the status quo rather than more vigorously exploring alternatives such as RNG or steam to hot water conversion, we accept Creative Energy’s observation that these may not be viable alternatives at this time.

Creative Energy considered several alternatives and identified two that it thought to be feasible, the 5 MW biomass system and the 20 MW electric boiler system. It analysed and concluded that other alternatives were not feasible, including steam to hot water conversion, a plant location other than the Beatty Plant or distribution rather than transmission service.

During the proceeding, the Panel and interveners explored the degree to which Creative Energy examined various alternatives. In particular, some of the interveners challenged Creative Energy’s decision to dismiss RNG as a possible alternative to the Project. For example, the CEC and WFC argue that Creative Energy has not adequately considered RNG. However, the Panel agrees with Creative Energy regarding the unsuitability of RNG. For example, the City of Vancouver does not recognize RNG under its LCES policy, and therefore this would not permit new building customers to receive service from Creative Energy. Further, even if Creative Energy pursued RNG as an alternative for its current customers as an option to reduce their GHG emissions, we note that Creative Energy identified other potential issues with RNG, such as limited supply, although this issue was not tested in the proceeding.

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<sup>131</sup> RCIA Final Argument, p. 7.

<sup>132</sup> Ibid., pp. 6-7.

<sup>133</sup> Creative Energy Reply Argument, p. 5.

We accept that the biomass plant is not a practical alternative, in part because the small size (5MW) would meet demand only until 2028. Furthermore, we do not consider biomass to be a suitable bridging option, because of issues regarding air emissions permitting, dust control and public acceptance in an urban setting.

Creative Energy acknowledges there are other technically feasible options, for example, steam to hot water conversion coupled with a heat pump technology, but it also points out that this approach requires further study to assess its cost effectiveness. Furthermore, as already noted above, the Panel accepts Creative Energy's assessment that it is not a viable alternative at this time. Thus, while we may have preferred that Creative Energy had more fully developed alternatives for consideration such as RNG or steam to hot water conversion, interveners have not produced any evidence to rebut Creative Energy's assessment that these are not viable or economical alternatives to the Project at this time. Furthermore, two of the interveners support Creative Energy's assessment of feasible alternatives. Specifically, BCSEA is satisfied that Creative Energy has appropriately explored a full range of feasible alternatives. BCSEA considers that the electric boiler approach is clearly the preferred technology and agrees with Creative Energy that RNG is not a feasible alternative to the Project. Similarly, RCIA submits that Creative Energy has demonstrated that the proposed Project is economically and technically preferred compared to the evaluated low carbon alternatives.

As for the CEC's suggestion that the Panel direct Creative Energy to report on its research towards decarbonization, we consider this to be a matter more suitable for review and consideration in the context of Creative Energy's long term plans in conjunction with its next LTRP filing, which is pending. Accordingly, we decline to make such direction as part of this proceeding. However, the Panel comments on the potential linkage between Creative Energy's future decarbonization efforts and its next LTRP in Section 8.2 of this Decision.

Several interveners commented on the fact that the Project, to convert boilers from natural gas to electricity in a piecemeal fashion is not a scalable or long-term solution for Creative Energy. The Panel discusses these concerns within the context of Creative Energy's future decarbonization efforts in Section 8.2 of this Decision.

## **4.0 Project Costs and Indicative Rate Impacts**

### **4.1 Project Cost Estimate**

The estimated total capital cost of the Project is \$37,461,691, including Project development costs, the transmission line to be built and operated by BC Hydro but funded by Creative Energy, the electric boiler plant and the Beatty substation. Except for the transmission line cost estimate that is discussed in Section 4.1.1 below, Creative Energy submits that all costs are to a Class 3 level of accuracy and specifically, the electric boiler plant and Beatty substation's Class 3 cost estimate has been provided by Creative Energy's Project engineering and costing consultant, HHA.<sup>134</sup>

Table 7 below provides a detailed breakdown of the forecast Project capital cost as follows:

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<sup>134</sup> Exhibit B-1, pp. 31, 35, 46.

**Table 7: Total Project Capital Cost**<sup>135</sup>

Project Development	
Predevelopment	\$ 847,524
Contingency (10% of forecast costs)	\$ 25,432
Forecast CE Internal Staff time (24 months of 1 FTE)	\$ 200,000
Subtotal	\$ 1,072,956
Transmission Line	
Facilities Study	\$ 1,250,000
Equipment and Construction	\$ 10,450,000
Contingency (50%)	\$ 5,225,000
Forecast CE Internal Staff time (12 months of 1 FTE)	\$ 100,000
Subtotal	\$ 17,025,000
Electric Boiler Plant	
Soft Costs (including contractor mark-ups and permitting)	\$ 3,772,156
Equipment and Construction	\$ 12,573,854
Contingency (20% of hard costs)	\$ 2,514,771
Forecast CE Internal Staff time (4% of hard costs)	\$ 502,954
Subtotal	19,363,745
Total	\$ 37,461,691

#### 4.1.1 Transmission Line Cost Estimate Accuracy

Creative Energy states that BC Hydro undertook a System Impact Study (SIS) to identify the requirements for interconnecting the proposed electric steam boilers to the BC Hydro system. The SIS confirmed the technical feasibility of the interconnection and set-out a transmission line cost estimate of \$11,700,000 to a “conceptual level of accuracy” or a cost definition of +100 percent /-35 percent.<sup>136</sup> As the transmission line cost estimate had a higher degree of uncertainty than is typically expected for a CPCN application, Creative Energy explains that it adjusted for this lower level of precision by adding an additional 50 percent contingency to BC Hydro’s cost estimate, as shown in Table 7 above.<sup>137</sup> Creative Energy submits that the additional contingency brings the cost certainty of the transmission line “in line” with the accuracy of a Class 3 estimate, as it would have otherwise included a 20 percent contingency.<sup>138</sup>

As part of the next steps, Creative Energy explains that BC Hydro will undertake a facilities study (Facilities Study) which will confirm, among other things the preferred interconnection option and refine the transmission line cost estimate.<sup>139</sup> At present, the transmission line cost estimate noted above includes the forecast cost to Creative Energy of \$1.54 million for the Facilities Study.<sup>140</sup> Although a refined transmission line cost estimate is forthcoming, Creative Energy submits that the 50 percent contingency, as described above, combined with the expected grant for 50 percent of transmission line cost through the CFEF, adequately mitigates the cost

<sup>135</sup> Exhibit B-1-1, p. 46, Table 9.

<sup>136</sup> Exhibit B-1-1, pp. 35, 48.

<sup>137</sup> Ibid., p. 48.

<sup>138</sup> Exhibit B-14, BCUC IR 40.5, 40.6; Exhibit B-20, BCOAPO IR 10.1.

<sup>139</sup> Exhibit B-1-1, pp. 13–14.

<sup>140</sup> Exhibit B-13, p. 1. Table 7 includes the initial cost of the BC Hydro Facilities Study; the \$1.54 million cost of the study were finalized subsequent to Creative Energy’s filing of its Application.

uncertainty of this cost element.<sup>141</sup> Creative Energy states that any further contingency is unnecessary because it would be misrepresentative of the true expected cost of the Project.<sup>142</sup>

### *Positions of the Parties*

Intervenors did not comment on the estimated total capital cost of the Project, other than as it relates to the transmission line cost estimate.

The CEC does not agree that a 50 percent contingency for the BC Hydro transmission line equates to a Class 3 cost estimate but supports Creative Energy's assessment that the level of contingency which it applied is appropriate for the purpose of this Application.<sup>143</sup>

BCOAPO submits that it has concerns with the accuracy of the transmission line cost estimate and requests that Creative Energy provide additional clarity on this issue.<sup>144</sup> BCOAPO also recommends that the BCUC direct Creative Energy to file a Class 3 capital cost estimate with respect to the transmission line when that is available, and to file material change reports with the BCUC within 30 days of the date which the material change occurs.<sup>145</sup>

Creative Energy does not address BCOAPO's submissions in reply.

## **4.2 Indicative Rate Impact**

Creative Energy states that the indicative rate of the Project in any given year is equal to the total forecast indicative cost of service in each year divided by total forecast load to be served in that year.<sup>146</sup> The indicative rates are a "blended rate" since the capital and operating costs associated with the Project are shared equally by all Core Steam System customers. Similarly, cost savings from reduced carbon tax exposure are shared equally by all customers.<sup>147</sup> As discussed in Section 8.1 below, Creative Energy explains that no differentiation in rates for conventional versus low-carbon steam is considered because the specific details of that potential, future rate design are not known at this time.<sup>148</sup>

For the 10-year period from 2024 to 2033, the following key assumptions apply with respect to the Project's indicative rates:

- Forecast natural gas costs increase by 5 percent per year, before carbon tax increases, for the first 10 years of the Project operation, based on the historical 2016 to 2021 changes to the FEI rate class (Rate 7) of 8 percent;<sup>149</sup>

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<sup>141</sup> Exhibit B-1-1, p. 48.

<sup>142</sup> Exhibit B-20, BCOAPO IR 10.1.

<sup>143</sup> CEC Final Argument, p. 25.

<sup>144</sup> BCOAPO Final Argument, p. 12.

<sup>145</sup> Ibid., p. 13.

<sup>146</sup> Exhibit B-1-1, p. 53.

<sup>147</sup> Creative Energy Final Argument, p. 27, footnote 27.

<sup>148</sup> Exhibit B-1-1, p. 53; Exhibit B-22, BCUC Panel IR 3.6.

<sup>149</sup> Ibid., p. 54.



- Carbon taxes increase by \$15/year until the \$170/GHG tonne target is reached in 2029 in accordance with federal government plans. Creative Energy then assumes a two percent inflation in carbon tax in 2030 and beyond;
- Forecast transmission rates under BC Hydro’s RS 1895 are discounted by 20 percent for the first five years of Project operation. The discount rate reduces to 13 percent in year six and seven percent in year seven of operation, and then is no longer available in subsequent years of service. Assuming the Project is put into service in 2024, the transmission rate is no longer discounted beginning in 2031; and
- Separate from the discounts under RS 1895, Creative Energy assumes that the cost of electricity will escalate by two percent annually from 2024 to 2033.

In response to IRs, Creative Energy also extended the analysis period to cover the 30-year life of the Project from 2024 to 2053. Creative Energy cautions, however, against attributing additional weight to the results of the extended analysis period because electricity and natural gas fuel prices and future carbon taxes are significant inputs to the overall cost of service and rates. Due to the added uncertainty in these future inputs, Creative Energy states that it has lower confidence in the results of the extended analysis period.<sup>150</sup> The following assumptions were made with respect to the extended analysis period from 2033 to 2053:<sup>151</sup>

- Sales volumes remain static;
- Natural gas and electricity volumes remain static;
- Natural gas rates escalate at 3.0 percent per year; and
- Electricity rates escalate at 3.0 percent per year.

Based on all of the above-noted assumptions, Creative Energy provided Table 8 (reproduced below) showing the indicative rates of the Project for multiple Project outcomes, including different load forecasts and grant funding amounts, as compared to the specified “No Project” scenarios.

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<sup>150</sup> Exhibit B-5-1, BCUC IR 6.6.

<sup>151</sup> Ibid., BCUC IR 5.2.

**Table 8: Indicative Cost of Service Rates from 2024 to 2053  
Under Various “No Project” and Project Load Forecast and Grant Funding Scenarios<sup>152</sup>**

	Indicative Incremental Rate Impacts, \$/MWh	Load	Funding	Unit of Measure	Year 1	Year 5	Year 10	Year 20	Year 30
					2024	2028	2033	2043	2053
1	No Project - Attrition	Attrition	None	\$/MWh	77.16	103.99	130.15	164.41	208.16
2	Project - Base [50% Growth in Demand] (LCEF)	50% Growth	LCEF	\$/MWh	84.96	105.70	129.13	171.54	203.63
	(Compared to "No Project - Attrition" scenario)			% increment	10%	2%	-1%	4%	-2%
3	Project - Base [50% Growth in Demand] (LCEF + CFEF)	50% Growth	LCEF + CFEF	\$/MWh	84.10	104.58	128.09	170.70	203.03
	(Compared to "No Project - Attrition" scenario)			% increment	9%	1%	-2%	4%	-2%
4	i) No Project - Baseline Demand	Baseline (existing)	None	\$/MWh	76.47	101.31	124.31	157.29	199.48
	(Compared to "No Project - Attrition" scenario)			% increment	-1%	-3%	-4%	-4%	-4%
5	ii) Project - Baseline Demand (No grant funding)	Baseline (existing)	None	\$/MWh	87.35	112.85	136.69	180.36	210.81
	(Compared to "No Project - Attrition" scenario)			% increment	13%	9%	5%	10%	1%
	(Compared to "No Project - Baseline" scenario)			% increment	14%	11%	10%	15%	6%
6	iii) Project - 50% Growth Demand (No grant funding)	50% Growth	None	\$/MWh	86.80	108.11	131.36	173.37	204.92
	(Compared to "No Project - Attrition" scenario)			% increment	12%	4%	1%	5%	-2%
	(Compared to "No Project - Baseline" scenario)			% increment	14%	7%	6%	10%	3%
7	iv) Project - Baseline Demand (LCEF + CFEF grant funding)	Baseline (existing)	LCEF + CFEF	\$/MWh	84.60	108.90	132.99	177.32	208.66
	(Compared to "No Project - Attrition" scenario)			% increment	10%	5%	2%	8%	0%
	(Compared to "No Project - Baseline" scenario)			% increment	11%	7%	7%	13%	5%
8	v) Project - 50% Growth Demand (LCEF + CFEF grant funding)	50% Growth	LCEF + CFEF	\$/MWh	84.10	104.58	128.09	170.70	203.03
	(Compared to "No Project - Attrition" scenario)			% increment	9%	1%	-2%	4%	-2%
	(Compared to "No Project - Baseline" scenario)			% increment	10%	3%	3%	9%	2%
9	vi) Project - Baseline Demand (LCEF)	Baseline (existing)	LCEF	\$/MWh	85.47	110.15	134.16	178.29	209.34
	(Compared to "No Project - Attrition" scenario)			% increment	11%	6%	3%	8%	1%
	(Compared to "No Project - Baseline" scenario)			% increment	12%	9%	8%	13%	5%
10	vii) Project - 50% Growth Demand (LCEF grant funding)	50% Growth	LCEF	\$/MWh	84.96	105.70	129.13	171.54	203.63
	(Compared to "No Project - Attrition" scenario)			% increment	10%	2%	-1%	4%	-2%
	(Compared to "No Project - Baseline" scenario)			% increment	11%	4%	4%	9%	2%

Creative Energy observes that the forecast indicative rates under the “Project – 50% Growth in Demand and LCEF funding” scenario are lower than the No Project (attrition scenario) within 10 years, if not earlier.<sup>153</sup>

#### 4.2.1 Levelized Indicative Rates

In addition to the indicative rates, Creative Energy provided the levelized indicative rates for the “No Project” and Project outcomes as listed in Table 8 above, stating that these levelized annual values are a more appropriate comparator of rate scenarios than a simple average annual metric.<sup>154</sup> Creative Energy states that the levelized rate impact approach “normalizes” for different streams of costs and benefits of feasible project alternatives and in this Application, allows for a consistent and meaningful comparison of the Project versus the “No Project” scenarios.<sup>155</sup>

Creative Energy explains that the levelized annual rates equal the levelized annual cost of service over the 2024-2033 period divided by the levelized annual steam load over the same period, as it relates to the 10-year analysis period.<sup>156</sup> Table 9 below shows the levelized annual rate for the “No Project – Attrition Load” and “Project – 50% Growth in Demand and LCEF funding” scenarios:

<sup>152</sup> Table excerpt from Exhibit B-5-1, BCUC IR 6.6.

<sup>153</sup> Exhibit B-7, BCOAPO IR 5.7.

<sup>154</sup> Exhibit B-5-1, BCUC IR 6.2.

<sup>155</sup> Exhibit B-20, BCOAPO IR 11.2.

<sup>156</sup> Exhibit B-1-1, p. 64.

**Table 9: Levelized Annual Rates from 2024 to 2033<sup>157</sup>**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Levelized
<b>No Project</b>	<b>77.2</b>	<b>83.0</b>	<b>91.2</b>	<b>97.5</b>	<b>104.0</b>	<b>110.6</b>	<b>117.3</b>	<b>121.4</b>	<b>125.7</b>	<b>130.1</b>	<b>101.7</b>
<b>Project</b>	<b>85.0</b>	<b>90.4</b>	<b>97.2</b>	<b>101.7</b>	<b>105.7</b>	<b>111.5</b>	<b>117.9</b>	<b>122.4</b>	<b>125.6</b>	<b>129.1</b>	<b>106.3</b>
<b>%</b>	<b>10.1%</b>	<b>9.0%</b>	<b>6.6%</b>	<b>4.2%</b>	<b>1.6%</b>	<b>0.9%</b>	<b>0.4%</b>	<b>0.8%</b>	<b>-0.1%</b>	<b>-0.8%</b>	<b>4.5%</b>

The levelized annual rate impact of the Project is 4.5 percent as presented. Creative Energy states:

The 4.5% levelized impact can be thought of as a normalized one-time rate impact over the [10-year] period (like a horizontal line depicting a constant rate of \$101.7/MWh each year over the period and a parallel line that is 4.5% higher in each year (i.e., a constant rate of \$106.3/MWh).<sup>158</sup>

In Creative Energy’s view, the levelized annual rate shows that the Project can be implemented at a reasonable cost to ratepayers.<sup>159</sup>

When asked whether it would be appropriate to smooth customer rate increases in “the early years” of the Project (e.g. 10.1 percent in year 1 and 9.0 percent in year 2) and amortize them into rates later in the 10-year analysis period, Creative Energy stated that it was not apparent to them that such a transition or mitigation strategy would be necessary. Creative Energy noted that the forecast annual rate increases are similar or greater under the “No Project” scenario, and also stated, “[t]he evaluation of the need for any transition strategy to manage customer rate impacts is ultimately dependent on demand for low carbon energy and the specific cost allocation and rate design consideration to be brought forward in a future rate design application.”<sup>160</sup>

However, in light of the underlying uncertainty in various future assumptions, Creative Energy provided a sensitivity analysis of the levelized annual rates. Figure 2 below summarizing the results of Creative Energy’s analysis is reproduced below:

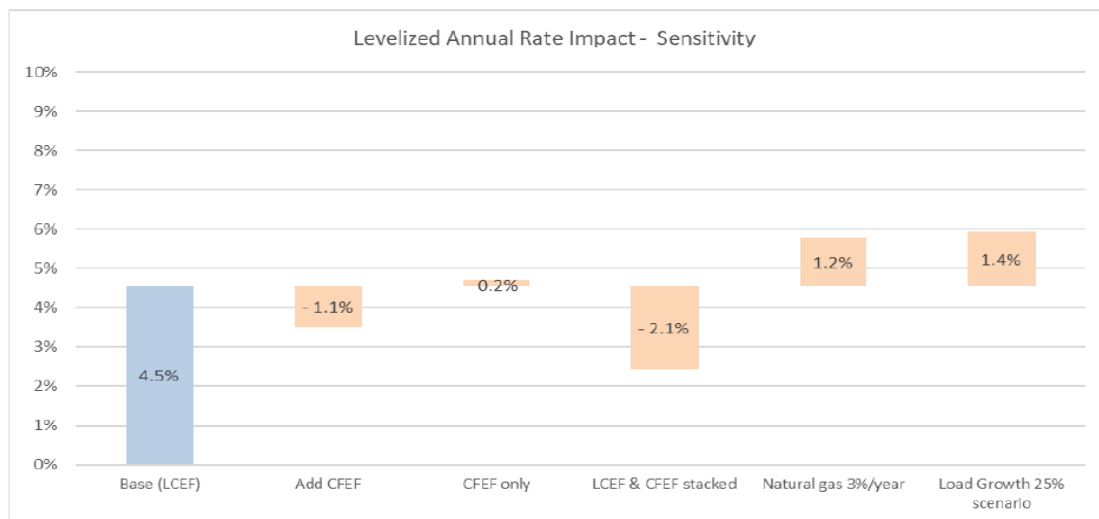
<sup>157</sup> Exhibit B-7, BCOAPO IR 5.5; Exhibit B-14, BCUC IR 43.4.

<sup>158</sup> Ibid., BCOAPO IR 5.5.

<sup>159</sup> Ibid., BCOAPO IR 5.7.

<sup>160</sup> Exhibit B-20, BCOAPO IR 11.4.

**Figure 2: Levelized Annual Rates from 2024 to 2033 – Sensitivity<sup>161</sup>**



Creative Energy notes that levelized annual rates as shown in Figure 2 above are each “plausible outcomes” based on the alternative assumptions noted in the figure. In addition, a lower transmission line cost which excludes the impacts of the additional 50 percent contingency to BC Hydro’s transmission line cost estimate (as discussed in Section 4.1.1 above), would lower the levelized rate impacts within the range of the “Add CFEF” outcome as the net dollar changes are each in the range of \$5 million.<sup>162</sup> Finally, assuming that BC Hydro rates increase by 3 percent or 5 percent annually after 2023, instead of 2 percent, Creative Energy calculates that the levelized annual rate impact of the Project increases to 5.5 percent and 7.3 percent, respectively.<sup>163</sup>

### *Positions of the Parties*

WFC submits that Creative Energy’s cost estimates present a “best-case” scenario, and are susceptible to significant variation, particularly as they relate to operating costs. WFC is concerned that, ultimately, the cost burden will fall to existing customers, unless the BCUC imposes risk mitigation measures, citing the sensitivity of the levelized annual rates to changes in the assumptions pertaining to BC Hydro’s electricity rates in particular.<sup>164</sup>

BCOAPO submits that it has significant concerns about the lack of rate transition or mitigation strategies in the Application. BCOAPO states that it is difficult or perhaps impossible to make sensible or concrete recommendations in this regard as the rate comparison information provided by Creative Energy is high level and there are no details or proposals setting out the rate design for the Project. As such, BCOAPO recommends that the Panel direct Creative Energy to consider a rate transition or mitigation strategy and to file such a proposal in conjunction with its rate design application expected in 2023.<sup>165</sup>

<sup>161</sup> Exhibit B-1-2, p. 4.

<sup>162</sup> Exhibit B-1-1, pp. 65–66.

<sup>163</sup> Exhibit B-20, BCOAPO IR 11.2; Exhibit B-8, WFC IR 6.1. The 7.3 percent is calculated as 4.5 percent plus 2.8 percent.

<sup>164</sup> WFC Final Argument, pp. 4–5.

<sup>165</sup> BCOAPO Final Argument, p. 14.

The CEC submits that it is concerned about the natural gas cost inflation assumption of 5 percent per year, stating that it is poorly supported. The CEC recommends that the BCUC apply an inflation assumption of 3 percent instead to avoid overstating the Project's potential.<sup>166</sup>

Creative Energy states that it does not intend to reply in detail to the submissions received that relate to the consideration of future applications, stating that doing so would be distracting to the scope of the Application and those subject matters will be for a future BCUC panel or panels to consider.<sup>167</sup>

#### **4.2.2 Net Present Value Analysis**

Creative Energy submits that the Project net present value (NPV) is zero,<sup>168</sup> explaining that its approach to the NPV analysis is simply to compute the net present value of the discounted cash flows of the capital expenditures and of the return of and on capital for the Project.<sup>169</sup> Under a presumed regulatory framework that allows for the recovery of prudently incurred costs on a forecast basis, Creative Energy states that the addition of any further cost items under a revenue requirements approach would have an "offsetting cashflow/revenue impact" and the NPV would still be expected to be zero.<sup>170</sup>

As such, Creative Energy considers that an NPV analysis of the Project cash flow is of limited use.<sup>171</sup> Creative Energy states that the Project NPV does not form any part of its justifications that the Project is in the public convenience and necessity.<sup>172</sup>

#### *Positions of the Parties*

Intervenors either did not comment on Creative Energy's NPV analysis or submitted that it does not affect their final arguments, as described in the other sections of this Decision.

#### *Panel Determination*

**The Panel accepts Creative Energy's total cost estimate of \$37,461,691. Creative Energy is directed to file the following:**

- a. a Class 3 capital cost estimate with respect to the construction of BC Hydro's transmission line as soon as it becomes available; and**
- b. material change reports within 30 days of the date upon which a material change occurs as set out in Appendix A to this Decision.**

Both the CEC and BCOAPO raise concerns about the estimates for the BC Hydro transmission line. The Panel agrees that accepting cost estimates without a Class 3 estimate, even with a 50 percent contingency, is out of the ordinary. While Class 3 estimates provide a high degree of accuracy in predicting costs, in the case of a less

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<sup>166</sup> CEC Final Argument, p. 29.

<sup>167</sup> Creative Energy Reply Argument, pp. 3–4.

<sup>168</sup> Creative Energy Final Argument, Appendix A, p. 8.

<sup>169</sup> Exhibit B-24, BCUC IR 45.9.

<sup>170</sup> Ibid., BCUC IR 45.3.2.

<sup>171</sup> Creative Energy Final Argument, Appendix A, p. 8.

<sup>172</sup> Exhibit B-24, BCUC IR 45.1.

precise estimate, a greater contingency is likely prudent. In this case, the use of a 50 percent contingency for the transmission line is, in our view, justified considering the preliminary nature of the cost estimate. As discussed in Section 2.3, in arriving at its decision, the Panel considers that the Project is aimed primarily at achieving GHG emission reductions, and there are government grant opportunities available to Creative Energy for pursuing electrification within a certain timeline.

The Panel is sensitive to the interveners' concerns about Creative Energy's calculation of indicative rate impacts and the potential burden of costs that could fall on existing customers. The Panel has accepted that although the risk of load attrition from failure to switch to low carbon energy may be less than Creative Energy assumes in its calculation of indicative rates, there is no real potential for load growth throughout the period in question. As a result, any loss of load would increase the burden on existing customers. Admittedly, there will be a need for a new rate design to address otherwise inevitable rate inequities that will arise between existing customers and new customers. BCOAPO's recommendation as it relates to a potential rate transition or mitigation strategy to be considered in a future rate design application is addressed in Section 8.1 of the decision.

## **5.0 Project Description**

### **5.1 Plant Basis of Design**

The Project as proposed includes the following components:

- Two new 6.9 MW electric boilers;
- One new substation and associated electrical equipment; and
- Associated equipment connecting the electric boilers to the existing Beatty Plant.

A new transmission line will provide the necessary electricity to operate the Project components. This transmission line will be owned and operated by BC Hydro, and will extend from BC Hydro's Murrin Substation to Creative Energy's Beatty Plant.<sup>173</sup>

#### Electric Resistive Boilers

Following an analysis of electric boiler technologies, Creative Energy selected to install electric resistive boilers as they would offer greater reliability and are not sensitive to water quality.<sup>174</sup> Resistive electric boilers consist of a heating element immersed within a vessel (not unlike a kettle).<sup>175</sup> Creative Energy has proposed to install two 6.9 MW electric boilers, each operating at 4.16 kV. This capacity is the largest resistive boiler unit available. As mentioned above, the annual steam production potential of this electric boiler configuration is 122,000 MWh.

The electric boilers will rely on the existing Beatty Plant for the necessary balance-of-plant equipment, such as water softeners, chemical treatment, condensate capture and de-aeration.<sup>176</sup> The electric boilers will deliver steam to the same main header as the existing natural gas boilers. The electric resistive boiler supplier with

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<sup>173</sup> Exhibit B-1-1, p. 30.

<sup>174</sup> Ibid., p. 31.

<sup>175</sup> Ibid.

<sup>176</sup> Ibid., p. 33.

whom Creative Energy has been consulting has deployed this specific electric boiler in approximately 50 industrial locations over the past decade.<sup>177</sup>

### Substation and Transmission Line

A new substation at the Beatty Plant will receive power from the new BC Hydro constructed transmission line. The substation will include the necessary transformer equipment to ensure proper voltage is delivered to meet the electric steam plant loads.

The transmission line extends from the nearby Murrin substation and includes four armoured cables buried in a concrete duct bank. BC Hydro's investigations indicate that approximately half the length of the transmission line can use existing duct banks.<sup>178</sup> Creative Energy states that BC Hydro has indicated that there is sufficient load in the downtown core of Vancouver to maintain transmission voltage supply of electricity long-term and that BC Hydro will be responsible for any costs associated with reconnection following the potential future relocation of the Murrin Substation.<sup>179</sup>

### Heat Recovery Equipment

Creative Energy states that the developer of the Beatty Street property expects the building will require year-round cooling and will use electric-powered chillers to provide the cooling.<sup>180</sup> The waste heat from the chillers has been made available for recovery by Creative Energy, to be used to pre-heat the makeup water required by the Beatty Plant boilers. Creative Energy expects to be able to recover approximately 3,500 MWh hours annually. In order to recover this waste heat resource, Creative Energy will need to install a heat exchanger.<sup>181</sup>

### Future Expansion

Creative Energy has instructed BC Hydro to ensure that the design of the transmission line can accommodate up to 27.6 MW of electric boiler capacity, should there be a need to expand in the future. Similarly, the substation and plant floor space have been designed to accommodate two additional 6.9 MW electric boilers.

## **5.2 Project Schedule**

Creative Energy provides the following schedule of critical milestones for the Project.<sup>182</sup>

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<sup>177</sup> Exhibit B-1-1, p. 33.

<sup>178</sup> Ibid., p. 36.

<sup>179</sup> Ibid.

<sup>180</sup> Ibid., p. 34.

<sup>181</sup> Ibid., p. 34.

<sup>182</sup> Ibid., p. 39.

**Table 10: Project Milestone Schedule**

Action	Date
Customer and Stakeholder Engagement	January – March 2021
Class 3 Design by HHA	May 2021
Regulatory Process and Approvals	July 2021 – March 2022
Confirmation of Facilities Electrification Fund grant	Aug 2021
BC Hydro Facilities Study	September 2021 – May 2022
Detailed Design of plant	Early to Mid 2022 (subject to CPCN approval)
Construction of Transmission Line	2022-2023
Construction of Electric Steam Plant	2022-2023
Start of Service	Quarter 1, 2024

Creative Energy states there is uncertainty regarding the in-service date of the BC Hydro transmission line, as that scope of work involves complex traffic management requirements and also risks delay due to unexpected underground existing utility conflicts.<sup>183</sup> Creative Energy anticipates it will incur the vast majority of other project costs well in advance of the LCEF grant funding eligibility deadline of March 31, 2024.<sup>184</sup>

### *Positions of the Parties*

The CEC applauds the efforts of Creative Energy to obtain the chiller heat from the Beatty Street property developer. The CEC further submits that while this is being included as part of the Project it should be noted that such free additional heat would be beneficial to all Creative Energy customers and should be allocated accordingly.<sup>185</sup>

BCSEA agrees that the risks associated with the boiler technology are low.<sup>186</sup>

### *Panel Discussion*

The Panel is satisfied the Project scope and selected electric boiler technology design and its location at the Beatty Plant, relying on the Beatty Plant for the balance-of plant equipment, are reasonable. The Panel is satisfied with the identified Project risks and agrees that the electric boiler technology that Creative Energy will rely on is well known and proven. The Panel is also satisfied with Creative Energy's selection of a transmission line service instead of a distribution line service for the electricity to supply the electrical boilers (see Sections 2.2.3 and 4.1.1 for discussions regarding the discounted electricity costs). The Panel recognizes that there is a schedule-related risk in relation to the grants potentially available to Creative Energy, and that Creative Energy is aware of the risk and is focused on ensuring that the Project meets the timelines and qualifies for the grants. The Panel urges Creative Energy to continue to work with BC Hydro to progress the design of the transmission line so that it can be brought to the same level of design readiness as the rest of the Project.

<sup>183</sup> Exhibit B-1-1, p. 68.

<sup>184</sup> Ibid.

<sup>185</sup> CEC Final Argument, p. 12.

<sup>186</sup> BCSEA Final Argument, p. 5.



## 6.0 Consultation and Engagement

Creative Energy has engaged and consulted regarding the Project with its existing customers and potential future customers, as well as community members in proximity to the Beatty Plant.

Creative Energy acknowledges that the Project is situated on the unceded territory of the Coast Salish peoples, including the territories of the Musqueam, Squamish and Tsleil-Waututh First Nations, and states that the Project will be installed on privately owned land and does not trigger the duty to consult First Nations.<sup>187</sup>

### 6.1 Customer Engagement

#### Existing Customers

Creative Energy states that it has sought engagement from all of its customers through direct letter correspondence and follow-up with each customer representative.<sup>188</sup> The customer engagement process occurred over a month (February–March 2021), and specifically included the following activities:

- Direct letters to all Creative Energy customers, inviting them to review an engagement guide, complete online feedback forms, send an email or participate in a customer engagement information session;
- Follow-up phone calls and emails to customers; and
- Emails to interveners in previous Creative Energy regulatory proceedings.

Response to the customer engagement process included 19 people attending the Project information sessions, receipt of 11 customer feedback forms and two customer emails.<sup>189</sup> Creative Energy states that certain key themes emerged from the customer engagement process, including interest in low-carbon energy, requests for additional information regarding differential low carbon rates, and interest in project timelines and other decarbonization initiatives Creative Energy may pursue.<sup>190</sup>

Creative Energy has received letters of intent to procure low carbon thermal energy from 12 different customers.<sup>191</sup>

#### Future Customers

Creative Energy states that it has begun to engage with potential future customer buildings which have been identified and included in the growth scenario load forecast. The outcome of these engagements to the date of filing the Application did not result in the need to update the load forecast, and Creative Energy anticipates that these discussions will progress following approval of the CPCN.<sup>192</sup>

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<sup>187</sup> Exhibit B-1-1, p. 84.

<sup>188</sup> Ibid.

<sup>189</sup> Ibid., p. 86.

<sup>190</sup> Ibid.

<sup>191</sup> Exhibit B-2-1, p. 6.

<sup>192</sup> Exhibit B-1-1, p. 87.

## 6.2 Public Consultation

During February and March of 2021, Creative Energy also consulted with the community in proximity to the Beatty Plant. Direct mail postcards were issued to over 2,700 neighbouring residences and businesses within a two-block radius of 720 Beatty Street, inviting community members to review information online and to attend a community information session.<sup>193</sup> In response, Creative Energy received two community feedback forms and one email regarding the Project. Five people attended the community information session.<sup>194</sup> Creative Energy states that community support was generally positive.<sup>195</sup>

The City of Vancouver and the Ministry have both indicated their general support for the Project as evidenced by their letters of comment.<sup>196</sup>

### *Positions of the Parties*

BCSEA submits that customer consultation regarding the Project and the dispatch regime has been adequate.<sup>197</sup>

The CEC does not find the customer support for the Project to be particularly impressive as outlined in the evidence. The CEC recommends that the BCUC encourage Creative Energy to substantially improve its customer engagement and consultation.<sup>198</sup>

BCOAPO submits that Creative Energy has missed an opportunity to further engage with customers to improve confidence in the load scenario, discuss the proposed dispatch and obtain feedback on possible rate design options.<sup>199</sup> From BCOAPO's perspective, it is preferable and normal for utilities to work much more directly with large customers in matters of load forecasting rather than the indirect customer survey approach taken in this Application.<sup>200</sup>

WFC submits that Creative does not have a large customer base, so it could have communicated directly with its customer base without significant effort instead of simply relying on a mail out notice.<sup>201</sup>

In reply, Creative Energy submits that adequate review of the information related to customer consultation and engagement in the Application demonstrates that consultation and engagement were indeed appropriate.<sup>202</sup> Specifically, Creative Energy submits that the consultation process was designed by a recognized industry leader, all customers and stakeholders were invited to participate, follow-up phone calls were made to 100 customers and reminder emails were sent to 190 customers.<sup>203</sup> Creative Energy further submits that these efforts to seek feedback from customers and other stakeholders were reasonable and sufficient.<sup>204</sup>

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<sup>193</sup> Exhibit B-1-1, p. 85.

<sup>194</sup> *Ibid.*, p. 86.

<sup>195</sup> *Ibid.*, p. 87.

<sup>196</sup> Exhibit B-1-1, Appendix B; Exhibit D-2-1.

<sup>197</sup> BCSEA Final Argument, p. 9, para 35.

<sup>198</sup> CEC Final Argument, pp. 45-46, para 204.

<sup>199</sup> BCOAPO Final Argument, p. 15.

<sup>200</sup> *Ibid.*, p. 16.

<sup>201</sup> WFC Final Argument, p. 6, para 27.

<sup>202</sup> Creative Energy Reply Argument, pp. 12-13, para 35.

<sup>203</sup> *Ibid.*

<sup>204</sup> *Ibid.*, p. 14, para 41.

### *Panel Discussion*

The Panel is satisfied that Creative Energy's public consultation on the Project has been adequate to date.

Creative Energy's consultation efforts included mail outs, phone calls to 100 customers and email reminders to 190 customers. The CEC points out that participation in the consultation process was low. While the Panel agrees that participation was low, it is satisfied that the customers were made aware of the Project, and were provided ample opportunity to obtain information and engage in consultations. The Panel considers that Creative Energy made adequate efforts to engage its customers and others, and Creative Energy cannot be faulted for the fact that they did not participate when given ample opportunity to do so.

Although the CEC and BCOAPO submit that Creative Energy's consultation and engagement could probably have been improved, neither offered any specific suggestions to Creative Energy for improvement in this regard. Instead, BCOAPO suggests that Creative Energy should work more directly with large customers. As consultation is an ongoing process with room for constant improvement, we encourage Creative Energy to reach out to its customers and to the interveners for assistance in exploring steps it could take to improve customer engagement. In any event, the Panel views that there is a distinction between public consultation on the Project and public consultation to support forecasting of low carbon energy demand. With respect to the latter, the Panel expects that Creative Energy will diligently consult with its current and potential customers as part of its forthcoming low carbon rate design application.

Regarding WFC's comments, we agree that direct communication with large customers would perhaps be most effective, but note that Creative Energy made numerous efforts to reach out to customers. On balance, we are satisfied with its efforts on this Project. We note that once notice was received, customers that were sufficiently interested responded. Nonetheless, we encourage Creative Energy to consult with its large customers on how best to engage them on future projects.

The Panel is of the view that this Project does not give rise to aboriginal and treaty consultation issues. While the Panel does not agree with the implicit assumption underlying Creative Energy's assertion that being situated on private land automatically excludes the requirement for Indigenous consultation, in this case the Project is within a heavily developed downtown core, and does not involve development of greenfield facilities. If the BC Hydro line requires Indigenous consultation, it will be incumbent on BC Hydro to fulfill the duty as delegated to it by the Crown. Up to the date of this Application, the Panel is satisfied that only general public consultation is required from Creative Energy, and that such standard has been met in this case.

## **7.0 Provincial Government Energy Objectives and the Long-Term Resource Plan**

Section 46(3.1) of the UCA provides that in deciding whether to issue a CPCN applied for by a public utility other than the authority<sup>205</sup>, the BCUC must consider:<sup>206</sup>

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<sup>205</sup> The authority is defined as BC Hydro in the UCA, Section 1(1).

<sup>206</sup> UCA, section 46(3.1).

- a) the applicable of British Columbia's energy objectives;
- b) the most recent long-term resource plan filed by the public utility under section 44.1, if any; and
- c) the extent to which the application for the certificate is consistent with the applicable requirements under sections 6 and 19 of the *Clean Energy Act*.<sup>207</sup>

### British Columbia's Energy Objectives

British Columbia's energy objectives are defined in section 2 of the CEA.<sup>208</sup> Creative Energy states that the Project supports the following objectives:<sup>209</sup>

- (g) to reduce BC greenhouse gas emissions;
- (h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia;
- (k) to encourage economic development and the creation and retention of jobs; and
- (o) to achieve British Columbia's energy objectives without the use of nuclear power.

### Long-Term Resource Plan

The most recent LTRP filed with the BCUC by Creative Energy was its 2021 LTRP, filed on January 13, 2021. In the 2021 LTRP, Creative Energy described its ongoing evaluation and development of the Project and sought acceptance, pursuant to section 44.2(1) of the UCA, of predevelopment expenditures to investigate the Project prior to a CPCN application filing.<sup>210</sup>

On June 7, 2021, the BCUC accepted the expenditure schedule and stated that Creative Energy had demonstrated that investigating the Project was in the public interest since it is necessary:<sup>211</sup>

- to support B.C.'s energy objectives;
- to address current and future regulatory requirements applicable to Creative Energy and its ratepayers; and
- to respond to ratepayer expectations for lower carbon energy.

While the expenditure schedule was accepted, the BCUC rejected the 2021 LTRP.<sup>212</sup> Included among many references to the Project in its decision, the BCUC stated:<sup>213</sup>

None of the demand forecast scenarios differentiate between the forecast of demand for Creative Energy's current steam energy service and demand for a possible low-carbon steam energy service. This omission makes it impossible to evaluate which portfolios of resources, possibly comprising facilities such as the Decarbonization Project, or the use of renewable

<sup>207</sup> Sections 6 and 19 of the CEA are not applicable to Creative Energy.

<sup>208</sup> CEA, section 2

<sup>209</sup> Exhibit B-1-1, p. 20.

<sup>210</sup> Creative Energy 2021LTRP, Appendix A.

<sup>211</sup> Order G-177-21, dated June 7, 2021, Appendix A, pp. 7-8.

<sup>212</sup> Decision and Order G-283-21, dated September 27, 2021, directive 1.

<sup>213</sup> Ibid., p. 17.

natural gas (RNG) or other alternatives, might best meet the demand for a low-carbon steam energy service.

### *Positions of the Parties*

In BCSEA's view, the Project is clearly aligned with the BC energy objectives, specifically the reduction of BC's GHG emissions, the promotion of low carbon fuel switching, the encouragement of economic development and jobs, and the avoidance of nuclear power. BCSEA states that the Project's alignment with BC's energy objectives is indicated concretely by the Project's eligibility for funding from the CFEF, the Project's eligibility for electricity supply under BC Hydro's Clean BC Industrial Electrification – Fuel Switching rate (RS 1895), and the strong letter of support from the Ministry. BCSEA submits that the alignment of the Project with BC's energy objectives supports issuance of a CPCN.<sup>214</sup>

BCSEA acknowledges that Creative Energy's 2021 LTRP was not accepted by the BCUC. However, BCSEA notes that the 2021 LTRP Panel accepted that investigation of an electric boiler project was necessary to respond to ratepayer expectations for lower carbon energy and that the investigations resulted in the proposed Project.<sup>215</sup>

The CEC, BCOAPO, RCIA and WFC provide no specific submissions with respect to the Project's alignment with BC's energy objectives or Creative Energy's 2021 LTRP.

### *Panel Determination*

The Panel finds that the Project is consistent with BC's energy objectives. The letter from the Ministry indicates that it considers that "electrifying a central district energy system will have a substantive impact on the decarbonization of the buildings sector with no disruption to end users." As BCSEA points out, the Project promotes fuel switching, and avoids nuclear power, and although it is somewhat less clear how the Project encourages economic development, it will enable new buildings in the downtown core to benefit from low carbon energy. The Panel further finds that the Project generally aligns with Creative Energy's 2021 LTRP, despite the BCUC's determination that acceptance of the LTRP was not in the public interest at that time.

## **8.0 Other Issues Arising**

### **8.1 Differential Low Carbon Rate Design**

Creative Energy did not include in its Application analysis regarding differential rates based on the percentage of low carbon energy supplied to its customers. Creative Energy states that if there is a strong desire among customers for such differential rates and low carbon mix program, it will engage with its customers and evaluate the merits of bringing a proposal forward to the BCUC.<sup>216</sup>

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<sup>214</sup> BCSEA Final Argument, p. 6.

<sup>215</sup> Ibid., p. 7.

<sup>216</sup> Exhibit B-1-1, p. 22.

In response to IRs, Creative Energy clarified that it did not mean to imply that it is waiting for customers to request differential rates before consulting on the matter.<sup>217</sup> Creative Energy anticipates that it will need to develop differential rates that, at a minimum, support customers that have LCES low carbon energy requirements, as well as the City of Vancouver for its RFP. These customers will require different allocations of low carbon energy, which would require a new BCUC-approved Creative Energy service providing for such allocations.<sup>218</sup>

### Differential Rate Design

Creative Energy provides insights into possible approaches to its design of future differential low carbon energy rates. For example, if a new customer is required to meet LCES requirements, the rate for such service may reflect the higher base cost of steam produced by electric boilers, but also would include a proportionate reduction in the amount of carbon tax paid.<sup>219</sup>

Creative Energy notes that future rate design will need to ensure that the benefits of low carbon energy, namely avoided carbon tax, remain properly shared. If existing customers desire an increased allocation of low carbon energy beyond the minimum operating requirements described in Section 2.2.2 (i.e. greater than 18 percent), Creative Energy states that consideration must be given to ‘early adopters’ subscribing to all of the low carbon energy available – leaving other customers to bear the full burden of the carbon tax and no low carbon energy for new customers.<sup>220</sup>

Creative Energy states that it has no objection to developing a rate option for existing customers who are not supportive of the Project. This differential rate would be for exclusively “high carbon steam.”<sup>221</sup> Creative Energy is not aware of any customers that would desire such a rate, and also note that appropriate tariff terms would need to be in place regarding entry and exit provisions to ensure fair Project cost allocation over time.<sup>222</sup>

Further in response to IRs, Creative Energy reiterates that it considers that the BCUC does not need to approve a low carbon rate before it issues the requested CPCN granting the right to proceed with the Project. The Application does not include an application for a low carbon rate because Creative Energy is of the view that construction can commence, with a CPCN, prior to detailed design, review and final determination on new rates.<sup>223</sup>

Ultimately, Creative Energy states a future rate design will review the differential allocation of costs and benefits of the project to different customers, for example, possibly on the basis of customer-specific unique percentages of low carbon energy.<sup>224</sup> Various factors will affect how rates are impacted; for example, whether the savings in carbon tax are allocated in accordance with the electric boiler output, or whether any existing customers would elect to otherwise receive what Creative Energy describes as high cost, high-carbon energy. Creative Energy states that the specifics of a proposed rate design will address any benefits that may flow to both classes of

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<sup>217</sup> Exhibit B-5, BCUC IR 26.2.

<sup>218</sup> Exhibit B-5, BCUC IR 5.3; Exhibit B-14, BCUC IR 43.3.

<sup>219</sup> Ibid., BCUC IR 5.3.

<sup>220</sup> Ibid., BCUC IR 5.3, 26.2.

<sup>221</sup> Exhibit B-14, BCUC IR 43.6.

<sup>222</sup> Ibid.

<sup>223</sup> Ibid., BCUC IR 43.1.

<sup>224</sup> Exhibit B-22, BCUC Panel IR 3.7.

customers, such as the dilution of fixed costs over a larger customer base or the allocation of shared resources between differentiated products.<sup>225</sup>

Differential Rates – Customer Consultation

The request for more information regarding different tiers of low carbon energy and the anticipated rate structure was one of the key themes which Creative Energy states emerged from its customer and community engagement regarding the Project.<sup>226</sup> The material shared during the customer and community engagements conducted prior to submitting the Application included the following table, which presents a variety of rates based on the percentage of low carbon energy supplied.<sup>227</sup>

**Table 11: Variety of Rates based on the Percentage of Low Carbon**

System	Carbon Intensity (kgCO <sub>2</sub> /MWh)	Estimated 2024 Rate (\$/MWh)
CREATIVE ENERGY		
Creative Energy Downtown Vancouver System (natural gas)	251	\$72
With Decarbonization Project at 18% Low Carbon	209	\$77-\$86
With Decarbonization Project at 68% Low Carbon*	94	\$85-\$94
With Decarbonization Project at 100% Low Carbon	15	\$93-\$103

Creative Energy states that the engagement materials provided indicative rates under a range of scenarios to support customers providing their feedback on an informed basis and that the ranges are directionally consistent with the indicative rates as presented in the Application.<sup>228</sup>

In response to IRs, Creative Energy states that it has already commenced preliminary internal review of low carbon energy rate design in anticipation of CPCN approval. Customer engagement and feedback into alternative options are expected to commence later in 2022, in anticipation of filing a rate design application in 2023 to support approved rates being put in place upon Project implementation in 2024. Engagement may include targeted workshops to review and seek customer and stakeholder feedback directly.<sup>229</sup>

*Positions of the Parties*

Creative Energy submits in its final arguments that it anticipates the costs of the minimum dispatch of electric boilers will be recovered from existing customers, either through differential rates for those customers that choose to take a low carbon service and/or to all customers.<sup>230</sup> Creative Energy further submits that a differential rate design could be structured to meet the low carbon energy needs of the following customers:<sup>231</sup>

<sup>225</sup> Ibid.

<sup>226</sup> Exhibit B-1-1, p. 86.

<sup>227</sup> Ibid., Appendix Q, Appendix B, p. 7.

<sup>228</sup> Exhibit B-5, BCUC IR 26.3, 26.4.

<sup>229</sup> Exhibit B-14, BCUC IR 43.5.

<sup>230</sup> Creative Energy Final Argument, pp. 26-27, para 61.

<sup>231</sup> Ibid.

- New customers subject to the LCES policy;
- Existing customers seeking to either meet future existing building GHG emission reduction mandates or seeking voluntary GHG emission reductions; and
- “Regular steam service” which would be lower carbon due to the 85,000 MWh fuel switch.

BCSEA agrees with Creative Energy that it is reasonable to expect that the costs of the minimum dispatch of electric boilers will be recovered from existing customers, either through differential rates for those customers that choose to take a low carbon service and/or to all customers.<sup>232</sup>

The CEC supports the approach of Creative Energy to engage in getting a differential rates application underway and specifically to establish the classes of customers and the different rate services Creative Energy will be offering. CEC further submits that the treatment of the existing customers to ensure that they have access to a full range of cost-effective options is essential for the fair treatment of customers going forward.<sup>233</sup>

WFC submits that the cost allocation to differentiated customer classes is a critical issue that affects the fate of the Project and the economic impact on customers. WFC further submits that this issue is important to resolve now, as part of this Application.<sup>234</sup>

RCIA and BCOAPO make no specific submissions regarding differential low carbon rates.

### *Panel Determination*

The Panel supports the need for Creative Energy to file a rate design application with the BCUC to specify how the costs of the Project and the operating costs to dispatch the electrical boilers will be recovered from its customers.

In its Application, Creative Energy did not include analysis regarding differential rates based on the percentage of low carbon energy supplied to its customers. This lack of analysis of differential rates was an issue raised by the interveners and the Panel shares the interveners’ concerns. The Panel expects Creative Energy will engage and consult with its customer base and interveners in this Application in the development of the rate design for low carbon energy. The rate design analysis should assess different customers’ needs such as existing customers that opt in to a 18 percent low carbon energy, new customers that require 60 to 70 percent of low carbon energy to meet the LCES requirements by the City of Vancouver, and customers that may opt out of any low carbon energy component to their service.

While the Panel supports the need for a rate design application, it rejects WFC’s submission that the cost allocation to differentiated customer classes needs to be resolved as part of this Application. The analysis of indicative rates discussed in Section 4.2 was sufficient to evaluate the Application on its merits and the determination of public interest is not dependent on a specific rate design which has yet to be finalized with input from affected stakeholders.

<sup>232</sup> BCSEA Final Argument, p. 8, para 28.

<sup>233</sup> CEC Final Argument, p. 3, para 8.

<sup>234</sup> WFC Final Argument, p. 7, para 31.



The Panel directs Creative Energy to file a rate design application that addresses different customer's needs (for example, existing customers that opt in to a specific amount of low carbon energy, new customers that require a greater amount of low carbon energy to meet the LCES requirements established by the City of Vancouver, and customers that may opt out of any low carbon energy component to their service) by June 30, 2023. As part of that application, Creative Energy is also directed to consider the appropriateness of implementing rate transition or mitigation mechanism(s) to address the impact of the proposed rate design on customers.

## 8.2 Future Decarbonization Efforts

In its most recent LTRP filed in 2021, Creative Energy states that it must move toward low carbon energy in order to serve new developments in its service area of downtown Vancouver and also to retain existing customers.<sup>235</sup> Creative Energy further states that an increasing challenge facing the utility is the carbon intensity of its steam generation operations, and not offering low carbon services.<sup>236</sup> The 2021 LTRP puts forward an action plan describing the resource planning activities that Creative Energy intends to pursue over the subsequent four years (Action Plan). The Action Plan includes the pursuit of the Project, which is the subject of this Decision, and the declared intent to continue to evaluate the use of RNG to support a low carbon service.<sup>237</sup> The Action Plan does not mention any other projects that Creative Energy is considering pursuing to further reduce the carbon intensity of its steam system, nor does Creative Energy discuss plans for any low carbon energy supply projects beyond the four year horizon of the Action Plan.

In this Application, Creative Energy states that to accommodate future growth in low-carbon demand on the core steam system, the substation and electric boiler plant spaces will be configured to accommodate an additional 18MVA transformer, and two more 6.9 MW electric boilers.<sup>238</sup> Further, BC Hydro has also been instructed to ensure that the new transmission line can deliver sufficient power such that the electric boiler plant can grow to a full 27.6MW, which requires a transmission feed rated for at least 30MW due to the electrical design requirements.<sup>239</sup> Creative Energy notes that future electric plant expansion would be subject to a future CPCN application.

The City of Vancouver states that reducing emissions from existing buildings is one of the most important yet challenging climate actions. The City of Vancouver states that, as part of its Climate Emergency Action Plan, it is currently bringing forward limits on the GHG emissions from existing large commercial and residential buildings, as discussed in Section 2.1.1 above. These limits would align with Metro Vancouver's Clean Air Plan to "develop regulatory requirements for existing large buildings to meet greenhouse gas emission performance targets, which would reach zero carbon emissions before 2050."<sup>240</sup>

Creative Energy states that, once implemented, the Project will allow it to offer a cost-effective low carbon energy service to its current and potential customer buildings – as compared to alternative thermal energy

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<sup>235</sup> Creative Energy 2021 LTRP, Exhibit B-1, p. 36.

<sup>236</sup> Ibid., p. 38.

<sup>237</sup> Ibid., p. 46.

<sup>238</sup> Exhibit B-1-1, p. 41.

<sup>239</sup> Ibid.

<sup>240</sup> Exhibit E-1, p. 1.

solutions with similar low carbon attributes.<sup>241</sup> Creative Energy provides the estimated cost and emissions of various low-carbon on-site heating solutions, as summarized in the table below.<sup>242</sup>

**Table 12: Energy Rates and Modelled GHGi for Benchmarked Heating Options**

	2024\$ Energy Rate Heating (\$/MWh)	Modelled GHGi (kgCO2/MWh)
<b>Creative Energy Reference</b>		
Conventional Heat	72	251
Low-Carbon Heat	98	15
Blended Heat (70/30)	90	91
<b>Stream A Benchmarks</b>		
Marine Gateway	172	42
SOLO	145	72
Seyllynn I	145	147
Sovereign	145	106
Gilmore Place	185	199
<b>Technology Benchmarks</b>		
Onsite Boilers (100% NG)	121	199
Onsite Boilers (100% RNG)	134	2
Electric Heating & NG DHW	119	83
Electric Heating & ASHP DHW	137	8
ASHP (Heating & DHW)	184	4
Air-Source VRF & NG DHW	160	79
Water-Source VRF & NG DHW	183	178

### *Positions of the Parties*

RCIA submits that it does not have residual material concerns regarding the Project. However, RCIA submits that it is concerned that Creative Energy's core business will become increasingly constrained as the City of Vancouver ramps up its low carbon initiatives over the longer term.<sup>243</sup> With respect to future decarbonization projects that may be required, RCIA recommends that Creative Energy explore alternative economical steam generation technologies, because RCIA considers electrifying Creative Energy's steam generation to be generally inefficient as compared to point of use heating using electricity.<sup>244</sup>

RCIA further notes that, in future applications, it intends to compare the costs of future Creative Energy expansion of its electric boiler capacity, against the alternative of using BC Hydro electricity to supply heat at point of use. RCIA submits that it is not in ratepayers' interest to allow Creative Energy to continue to expand its district heat system when there are demonstrable lower cost and more efficient alternatives that can be readily supplied by a competing electric utility.<sup>245</sup>

RCIA's position is that if Creative Energy's long-term plan for decarbonization of its service is to systematically electrify its entire steam generation process, it largely negates the benefit that the district heating system notionally offers, and RCIA does not see why customers should pay for a redundant utility when BC Hydro is already generating and distributing the primary low carbon energy source (i.e., hydro electricity).<sup>246</sup>

<sup>241</sup> Exhibit B-1-1, p. 71.

<sup>242</sup> Exhibit B-1-1, Appendix E, p. 2.

<sup>243</sup> RCIA Final Argument, p. 6.

<sup>244</sup> Ibid.

<sup>245</sup> Ibid.

<sup>246</sup> Ibid., p. 7.

The CEC submits that any future increase in electric boiler capacity should only be undertaken with the BCUC approval based on the conditions and information available when the application is submitted, because technological changes may make electric boilers a less attractive option at that time.<sup>247</sup>

### *Panel Discussion*

On balance, the Panel is persuaded that the Project is an appropriate short-term solution to decarbonize a portion of the existing Creative Energy thermal energy system to reduce GHG emissions to meet the City of Vancouver's policies and by-laws while leveraging available government funding. However, the Panel also agrees with RCIA's and the CEC's positions that Creative Energy's plans for future decarbonization need to examine other potential technologies that may provide better solutions for decarbonizing its entire thermal energy system. In particular, the Panel anticipates that Creative Energy will need to compare the viability of incremental direct electrification of its steam generating capacity to other options, which may include low carbon technologies which generate heat delivered through a hot water distribution network. Furthermore, without an accepted Long Term Resource Plan and in light of the uncertainty about potential rate design options, the Panel questions whether the piecemeal conversion of portions of Creative Energy's system to provide low carbon energy service is an optimal solution in the long term from the perspective of Creative Energy and its ratepayers.

The Panel recommends that, in Creative Energy's next LTRP Application, it should discuss its overall strategic plan to further reduce the GHG intensity of its supply of thermal energy, as may be necessitated by the City of Vancouver's low carbon energy policies and the Building By-law. This strategic plan is critical for ensuring that Creative Energy's short-term plans, including this Project, fit into the long-term view of the steps that the utility must take to meet the future challenges and opportunities in its ongoing efforts to decarbonize its system.

## **9.0 Overall Determinations**

### *Positions of the Parties*

Creative Energy submits that the Project as proposed supports the public interest and should be approved.<sup>248</sup> The Decarbonization Project will enable Creative Energy to provide a low carbon service to existing and new customers, permitting them to meet the applicable current and future GHG emission limits set by City of Vancouver by-law and policy.

Creative Energy identifies two low carbon technologies capable of generating the temperatures needed to produce steam as feasible, namely, biomass combustion and electric boilers. Creative Energy submits that the electric boiler solution is overwhelmingly preferred, as it is more cost effective, has virtually no impact on steam plant neighbours and offers the potential for future capacity expansion.<sup>249</sup>

Creative Energy submits that the proposed electric boiler capacity is appropriately sized to meet minimum capacity thresholds, maximize available grant funding and access discounted electricity service.<sup>250</sup> Reducing the

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<sup>247</sup> CEC Final Argument, p. 2, para 2.

<sup>248</sup> Creative Energy Final Argument, p. 29, para 65.

<sup>249</sup> Ibid., p. 18, para 41.

<sup>250</sup> Ibid., pp. 24-25, para 57.

electric boiler capacity, in response to potential uncertainty regarding the timing of low carbon energy demand growth, would not produce significant cost savings.<sup>251</sup>

Creative Energy submits that the Project aligns and supports the applicable BC energy objectives, and notes that the Ministry supports the Project.<sup>252</sup>

The CEC recognizes the climate change, government policy and regulatory drivers for the Project.<sup>253</sup> The CEC further agrees with Creative Energy's assessment of alternatives, the use of resistive electric boilers and the decision to receive electricity at transmission level voltage.<sup>254</sup> However, the CEC submits that, although it supports the Project as proposed in the current context, it does not support the use of electric boilers as a long-term solution to decarbonizing Creative Energy's steam service.<sup>255</sup> The CEC states that Creative Energy should remain current on emerging technologies to reduce GHG emissions, including the conversion of the steam distribution system to a hot water distribution system.<sup>256</sup>

BCOAPO submits that the current GHG reduction policy imperatives support the need for the Project, and therefore supports the approval of the CPCN.<sup>257</sup> Although BCOAPO is concerned about the veracity of the high-level load growth forecast presented in this Application, BCOAPO considers that it is reasonable to conclude that Creative Energy would face a lack of load growth and customer attrition should the Project not proceed.<sup>258</sup> BCOAPO recommends that the BCUC direct Creative Energy to provide updates on its load scenarios or load forecasts for the Project as part of any regular compliance reporting.<sup>259</sup>

WFC does not dispute the importance of efforts to reduce GHG emissions related to energy use. However, it submits that the Project as proposed exposes Creative Energy customers to unacceptable service and cost risks.<sup>260</sup>

BCSEA submits that it strongly supports the issuance of a CPCN to Creative Energy for the Project.<sup>261</sup>

Other than the concerns discussed in Section 8.2, RCIA does not have any concerns with the Project as proposed.<sup>262</sup>

### *Panel Determination*

The Panel finds that the Project is in the public interest. Creative Energy has established a need for the Project, primarily as a response to the City of Vancouver's GHG emission reduction requirements with which its existing and future customer buildings must comply. There are limited low carbon thermal energy generating

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<sup>251</sup> Ibid., pp. 25-26, para 59.

<sup>252</sup> Ibid., p. 20, para 46.

<sup>253</sup> CEC Final Argument, p. 2, para 4.

<sup>254</sup> Ibid., p. 6, paras 21-22.

<sup>255</sup> Ibid., para 24.

<sup>256</sup> Ibid., para 25.

<sup>257</sup> BCOAPO Final Argument, p. 2.

<sup>258</sup> Ibid., p. 4.

<sup>259</sup> Ibid., p. 5.

<sup>260</sup> WFC Final Argument, p. 2, para 8.

<sup>261</sup> BCSEA Final Argument, p.4, para 4.

<sup>262</sup> RCIA Final Argument, p. 5.

alternatives available to Creative Energy, so long as it continues to distribute thermal energy via steam. The Panel accepts that the proposed electric boiler design is an acceptable method to meet the established need for a low carbon energy resource. The Panel's approval of this Project, at this time, is based, at least in part, on the substantial government grant funding which has been secured by Creative Energy and which reduces the overall costs of the Project for ratepayers. The Panel finds that the estimated capital cost of the Project is reasonable.

Since the Panel finds the Project to be in the public interest, it similarly accepts the two expenditure schedules related to Creative Energy's required contribution to the costs to construct the new BC Hydro transmission line and the BC Hydro Facilities Study.

**Accordingly, the Panel:**

- **Grants to Creative Energy a CPCN for the Project pursuant to sections 45 and 46 of the UCA;**
- **Accepts the expenditure schedule for \$15.775 million for a new BC Hydro electric transmission line between BC Hydro's Murrin substation and Creative Energy's Beatty Plant, pursuant to section 44.2 of the UCA; and**
- **Accepts the expenditure schedule for \$1.54 million for the BC Hydro Facilities Study relating to the new BC Hydro transmission line, pursuant to section 44.2 of the UCA.**

**The Panel directs Creative Energy to provide ongoing reporting on the Project as set out in Appendix A to this Decision.**

**DATED** at the City of Vancouver, in the Province of British Columbia, this 15<sup>th</sup> day of September 2022.

*Original signed by:*

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A. K. Fung, KC  
Panel Chair / Commissioner

*Original signed by:*

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C. M. Brewer  
Commissioner

*Original signed by:*

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A. C. Dennier  
Commissioner

*Original signed by:*

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E. B. Lockhart  
Commissioner



**ORDER NUMBER**  
**C-5-22**

IN THE MATTER OF  
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

Creative Energy Vancouver Platforms Inc.  
Application for a Certificate of Public Convenience and Necessity  
for the Core Steam System Decarbonization Project

**BEFORE:**

A. K. Fung, KC, Panel Chair  
C. M. Brewer, Commissioner  
A. C. Dennier, Commissioner  
E. B. Lockhart, Commissioner

on September 15, 2022

**CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY**

**WHEREAS:**

- A. On June 30, 2021, Creative Energy Vancouver Platforms Inc. (Creative Energy) applied to the British Columbia Utilities Commission (BCUC) for a Certificate of Public Convenience and Necessity (CPCN) for the Core Steam System Decarbonization Project (Project) pursuant to sections 45 and 46 of the *Utilities Commission Act* (UCA) (Application);
- B. The Project consists of the construction and operation of an electric steam boiler plant, an electric substation and related equipment;
- C. Creative Energy also requests acceptance, pursuant to section 44.2 of the UCA, of the following anticipated expenditures:
  - 1. \$15.775 million for a new British Columbia Hydro and Power Authority (BC Hydro) electric transmission line between BC Hydro's Murrin substation and Creative Energy's Beatty Plant; and
  - 2. \$1.54 million for a BC Hydro Facilities Study relating to the new BC Hydro transmission line;
- D. By Orders G-258-21, G-293-21 and G-358-21, the BCUC established and amended the regulatory timetable for the review of the Application, which included two rounds of information requests (IRs) to Creative Energy from the BCUC and interveners, and submissions on further process;
- E. By Orders G-49-22 and G-85-22, the BCUC further established and amended the regulatory timetable to include one round of Panel IRs, Creative Energy and intervenor written final arguments, and Creative Energy's written reply argument;

- F. By Order G-128-22, the BCUC established a further regulatory timetable to review a refined net present value (NPV) model of the Project filed by Creative Energy in its written final argument. The timetable included an additional round of IRs regarding the refined NPV model, as well as written submissions from interveners and Creative Energy on same; and
- G. The BCUC has considered the Application, the evidence and submissions in this proceeding and determines that certain approvals are warranted.

**NOW THEREFORE** for the reasons set out in the Decision issued concurrently with this order and pursuant to sections 44.2, 45, and 46 of the UCA, the BCUC orders as follows:

- 1. Creative Energy is granted a CPCN for the Project.
- 2. Creative Energy's expenditure schedule of \$15.775 million for a new BC Hydro electric transmission line between BC Hydro's Murrin substation and Creative Energy's Beatty Plant is accepted.
- 3. Creative Energy's expenditure schedule of \$1.54 million for a BC Hydro Facilities Study relating to the new BC Hydro transmission line is accepted.
- 4. Creative Energy is directed to file Project reports as outlined in Appendix A to the Decision.
- 5. Creative Energy is directed to comply with all the directives outlined in the Decision issued concurrently with this order.

**DATED** at the City of Vancouver, in the Province of British Columbia, this 15<sup>th</sup> day of September 2022.

BY ORDER

*Original signed by:*

A. K. Fung, KC  
Commissioner

## Appendix A

Creative Energy Vancouver Platforms Inc.  
Application for a Certificate of Public Convenience and Necessity  
for Core Steam System Decarbonization Project

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**PROJECT REPORTING**

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The scope of Project reporting for the duration of the Project will comprise the following:

**1. Semi-annual Progress Reports**

Each report is required to detail:

- Actual costs incurred to date compared to the Project cost breakdown table estimate provided in Appendix K of the Application, highlighting variances with an explanation of significant variances;
- Updated forecast of costs, highlighting the reasons for significant changes in Project costs anticipated to be incurred; and
- The status of identified risks noted in section 8 of the Application, highlighting the status of identified risks, changes in and additions to risks, the options available to address the risks, the actions that Creative Energy is taking to deal with the risks and the likely impact on the Project's schedule and cost.

Creative Energy must file semi-annual progress reports within 30 days of the end of each semi-annual reporting period, with the first report covering the period ending December 31, 2022. Each report must provide the information set out above.

**2. Material Change Reports**

A material change (Material Change) is a change in Creative Energy's plan for the Project that would reasonably be expected to have a significant impact on the schedule, cost or scope, such that:

- There is a schedule delay of greater than six months compared to the schedule provided in Table 5 of the Application;
- The total Project cost exceeds 10 percent of the estimated Project cost provided in Appendix K of the Application; or
- There is a change to the Project scope detailed in sections 5.1 to 5.3 of the Application.

In the event of a Material Change, Creative Energy must file a Material Change report with the BCUC explaining the reasons for the Material Change, Creative Energy's consideration of the Project risk and the options available, and actions Creative Energy is taking to address the Material Change. Creative Energy must file the Material Change report as soon as practicable and in any event within 30 days of the date on which the Material Change occurs.



### 3. Final Report

A Final Report within three months of substantial completion or the in-service date of the Project, whichever is earlier. The report is to include:

- The final cost of the Project, including a breakdown of the final costs;
- A comparison of the final costs to the estimates provided in Appendix K of the Application; and
- An explanation and justification for any material cost variances that exceed 10 percent for any of the cost items provided in Appendix K of the Application.

Creative Energy Vancouver Platforms Inc.  
Application for a Certificate of Public Convenience and Necessity  
for Core Steam System Decarbonization Project

**GLOSSARY AND ACRONYMS**

ACRONYM / GLOSSARY	DESCRIPTION
Project	Core Steam System Decarbonization Project
AACE International	Association for the Advancement of Cost Engineering
2021 LTRP	Creative Energy's Long Term Resource Plan dated January 13, 2021
BC Hydro	British Columbia Hydro and Power Authority
BCOAPO	BC Old Age Pensioners' Organization et al.
BCSEA	BC Sustainable Energy Association
BCUC	British Columbia Utilities Commission
Beatty Plant	Steam Production Plant
CEA	<i>Clean Energy Act</i>
CEC	Commercial Energy Consumers Association of British Columbia
CFEF	Clean BC Facilities Electrification Fund
Core Steam System	Network of Underground Steam Distribution Piping
CPCN	Certificate of Public Convenience and Necessity
Application	Application for a Certificate of Public Convenience and Necessity for the Core Steam System Decarbonization Project
Creative Energy	Creative Energy Vancouver Platforms Inc.
DSM	Demand Side Measures
FAES	FortisBC Alternative Energy Services Inc.
FEI	FortisBC Energy Inc.
GHG	Greenhouse Gas
HHA	H. H. Angus Associates Ltd.
IRs	Information Requests

ACRONYM / GLOSSARY	DESCRIPTION
LCEF	Low Carbon Economy Fund
LCES	Low Carbon Energy System
LTRP	Long Term Resource Plan
Ministry	BC Ministry of Energy, Mines and Low Carbon Innovation
MW	Megawatt
MWh	Megawatt hour
NEFC	Northeast False Creek
NEU	Neighbourhood Energy Utility
NPV	Net Present Value
Project	Core Steam System Decarbonization Project
RCIA	Residential Consumers Intervener Association
Redevelopment Project	The substantial renovation of Creative Energy's existing Beatty Plant and the construction of a new, smaller off-site steam generating plant within BC Place Stadium
RFP	Request for Proposal
RNG	Renewable Natural Gas
RS	Rate Schedule
RS 1895	Transmission Service - Clean B.C. Industrial Electrification Rate – Fuel Switching
SIS	System Impact Study
UCA	<i>Utilities Commission Act</i>
WFC	Wall Financial Corporation
ZEBP	Zero Emission Building Plan

Creative Energy Vancouver Platforms Inc.  
Application for a Certificate of Public Convenience and Necessity  
for Core Steam System Decarbonization Project

**EXHIBIT LIST**

<b>Exhibit No.</b>	<b>Description</b>
<i>COMMISSION DOCUMENTS</i>	
A-1	Letter dated July 12, 2021 – Appointing the Panel for the review of Creative Energy’s Application for a CPCN for Core Steam System Decarbonization Project
A-2	Letter dated July 30, 2021 – BCUC request to Creative Energy for further information
A-3	Letter dated August 3, 2021 – Panel Amendment
A-4	Letter dated September 2, 2021 – BCUC Order G-258-21 establishing a regulatory timetable
A-5	Letter dated September 28, 2021 – BCUC request to Creative Energy for confirmation of Notice of Application directive
A-6	Letter dated October 7, 2021 – BCUC Information Request No. 1 to Creative Energy
A-7	<b>CONFIDENTIAL</b> – Letter dated October 7, 2021 – BCUC Confidential Information Request No. 1 to Creative Energy
A-8	Letter dated October 12, 2021 – BCUC Order G-293-21 amending the regulatory timetable
A-9	Letter dated November 10, 2021 – BCUC response to Creative Energy’s extension request to file responses to BCUC and Intervener Information Requests No. 1
A-10	Letter dated December 3, 2021 – BCUC request to Creative Energy for further information
A-11	Letter dated December 6, 2021 – BCUC Order G-358-21 establishing a further regulatory timetable
A-12	Letter dated January 14, 2022 – BCUC Information Request No. 2 to Creative Energy
A-13	<b>CONFIDENTIAL</b> – Letter dated January 14, 2022 – BCUC Confidential Information Request No. 2 to Creative Energy
A-14	Letter dated February 24, 2022 – BCUC Order G-49-22 establishing a further regulatory timetable
A-15	Letter dated February 24, 2022 – Panel Information Request No. 1 to Creative
A-16	Letter dated March 24, 2022 – BCUC Order G-85-22 amending the regulatory timetable

- A-17 Letter dated May 13, 2022 – BCUC Order G-128-22 establishing a further regulatory timetable
- A-18 Letter dated May 25, 2022 – BCUC Letter to Creative Energy requesting confirmation regarding potentially confidential information
- A-19 Letter dated June 1, 2022 – BCUC Information Request No. 3 to Creative Energy

#### APPLICANT DOCUMENTS

- B-1 Creative Energy Vancouver Platforms Inc. (Creative Energy) Certificate of Public Convenience and Necessity (CPCN) for the Core Steam System Decarbonization Project dated June 30, 2021
- B-1-1 **CONFIDENTIAL – PUBLIC** – Creative Energy Vancouver Platforms Inc. (Creative Energy) Unredacted Certificate of Public Convenience and Necessity (CPCN) for the Core Steam System Decarbonization Project dated November 24, 2021
- B-1-1-1 **CONFIDENTIAL** – Letter dated July 22, 2021 – Creative Energy submitting confidential Financial Model
- B-1-2 **CONFIDENTIAL – PUBLIC** – Letter dated November 24, 2021 – Creative Energy submitting unredacted Errata and Evidentiary Update
- B-1-2-1 **PUBLIC** – Letter dated July 22, 2021 – Creative Energy submitting redacted Errata and Evidentiary Update
- B-2 **CONFIDENTIAL** – Letter dated August 27, 2021 – Creative Energy submitting confidential response to provide further information
- B-2-1 **PUBLIC** - Letter dated August 27, 2021 – Creative Energy submitting redacted response to provide further information
- B-3 Letter dated September 30, 2021 – Creative Energy submitting confirmation of public notice
- B-4 Letter dated November 9, 2021 – Creative Energy submitting request to extend deadline to respond to Information Request No. 1
- B-5 Letter dated November 19, 2021 – Creative Energy submitting responses to BCUC Information Request No. 1
- B-5-1 Letter dated November 19, 2021 – Creative Energy submitting public responses to BCUC Confidential Information Request No. 1
- B-6 Letter dated November 19, 2021 – Creative Energy submitting responses to BCSEA Information Request No. 1

B-7	Letter dated November 19, 2021 – Creative Energy submitting responses to BCOAPO Information Request No. 1
B-8	Letter dated November 19, 2021 – Creative Energy submitting responses to WFC Information Request No. 1
B-9	Letter dated November 19, 2021 – Creative Energy submitting responses to CEC Information Request No. 1
B-9-1	Letter dated November 19, 2021 – Creative Energy submitting public responses to CEC Confidential Information Request No. 1
B-10	Letter dated November 19, 2021 – Creative Energy submitting responses to RCIA Information Request No. 1
B-11	Letter dated November 23, 2021 – Creative Energy submitting Order G-258-21 Directive 2 compliance
B-12	Letter dated December 17, 2021 – Creative Energy submitting response to BCUC request for further information
B-13	Letter dated December 20, 2021 – Creative Energy submitting Facilities Study Update
B-14	Letter dated February 4, 2022 – Creative Energy submitting responses to BCUC Information Request No. 2
B-15	Letter dated February 4, 2022 – Creative Energy submitting public responses to BCUC confidential Information Request No. 2
B-16	Letter dated February 4, 2022 – Creative Energy submitting responses to BCSEA Information Request No. 2
B-17	Letter dated February 4, 2022 – Creative Energy submitting responses to RCIA Information Request No. 2
B-18	Letter dated February 4, 2022 – Creative Energy submitting responses to FAES Information Request No. 2
B-19	Letter dated February 4, 2022 – Creative Energy submitting responses to CEC Information Request No. 2
B-20	Letter dated February 4, 2022 – Creative Energy submitting responses to BCOAPO Information Request No. 2
B-21	Letter dated February 10, 2022 – Creative Energy submitting response on further process
B-22	<b>PUBLIC</b> – Letter dated March 11, 2022 – Creative Energy responses to BCUC Panel Information Request No. 1

- B-22-1      **CONFIDENTIAL** – Letter dated March 11, 2022 – Creative Energy confidential responses to BCUC Panel Information Request No. 1
- B-23      Letter dated May 26, 2022 – Creative Energy submitting response regarding potentially confidential information
- B-24      Letter dated June 8, 2022 – Creative Energy responses to BCUC Information Request No. 3
- B-25      Letter dated June 8, 2022 – Creative Energy responses to CEC Information Request No. 3
- B-26      Letter dated June 8, 2022 – Creative Energy responses to BCOAPO Information Request No. 3
- B-27      Letter dated June 8, 2022 – Creative Energy responses to BCSEA Information Request No. 3
- B-28      Letter dated June 17, 2022 – Creative Energy submitting update into City of Vancouver’s Request for Proposal (RFP) for low carbon thermal energy

*INTERVENER DOCUMENTS*

- C1-1      **BC SUSTAINABLE ENERGY ASSOCIATION (BCSEA)** – Letter dated August 5, 2021 submitting request to intervene by William Andrews
- C1-2      Letter dated October 28, 2021 – BCSEA submitting Information Request No. 1 to Creative Energy
- C1-3      Letter dated January 14, 2022 – BCSEA submitting Information Request No. 2 to Creative Energy
- C1-4      Letter dated February 10, 2022 – BCSEA submitting response on further process
- C1-5      Letter dated June 1, 2022 – BCSEA submitting Information Request No. 3 to Creative Energy
- C2-1      **RESIDENTIAL CONSUMER INTERVENER ASSOCIATION (RCIA)** – Letter dated September 9, 2021 submitting request to intervener by Fredrik Ambrosson
- C2-2      Letter dated October 28, 2021 – RCIA submitting Information Request No. 1 to Creative Energy
- C2-3      Letter dated January 14, 2022 – RCIA submitting Information Request No. 2 to Creative Energy
- C2-4      Letter dated February 10, 2022 – RCIA submitting response on further process
- C2-5      Letter dated June 1, 2022 – RCIA not submitting Information Request on NPV Model

- C3-1 **BC HYDRO AND POWER AUTHORITY (BC HYDRO)** – Letter dated September 21, 2021 submitting request to intervene by Chris Sandve
- C3-2 Letter dated February 10, 2022 – BC Hydro submitting response on further process
- C4-1 **FORTISBC ALTERNATIVE ENERGY SERVICES INC. (FAES)** – Letter dated September 23, 2021 submitting request to intervene by Grant Bierlmeier
- C4-2 Letter dated January 14, 2022 – FAES submitting Information Request No. 1 to Creative Energy
- C5-1 **FORTISBC ENERGY INC. (FEI)** – Letter dated September 23, 2021 submitting request to intervene by Diane Roy
- C6-1 **WALL FINANCIAL CORPORATION (WFC)** – Letter dated October 7, 2021 submitting request to intervene by David Bursey
- C6-2 Letter dated October 28, 2021 – WFC submitting Information Request No. 1 to Creative Energy
- C6-3 Letter dated November 1, 2021 – WFC submitting Confidentiality Declaration and Undertaking
- C6-4 Letter dated November 9, 2021 – WFC submitting Confidentiality Declaration and Undertaking
- C7-1 **COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF BC (CEC)** – Letter dated October 16, 2021 submitting request to intervene by David Craig
- C7-2 Letter dated October 27, 2021 – CEC submitting Confidentiality Declaration and Undertakings
- C7-3 Letter dated October 28, 2021 – CEC submitting Information Request No. 1 to Creative Energy
- C7-4 **CONFIDENTIAL** - Letter dated October 28, 2021 – CEC submitting confidential Information Request No. 1 to Creative Energy
- C7-5 Letter dated January 14, 2022 – CEC submitting Information Request No. 2 to Creative Energy
- C7-6 Letter dated February 10, 2022 – CEC submitting response on further process
- C7-7 Letter dated June 1, 2022 – CEC submitting Information Request No. 3 to Creative Energy
- C8-1 **BRITISH COLUMBIA OLD AGE PENSIONERS' ORGANIZATION, ACTIVE SUPPORT AGAINST POVERTY, DISABILITY ALLIANCE BC, COUNCIL OF SENIOR CITIZENS' ORGANIZATIONS OF BC, TENANTS RESOURCE AND ADVISORY CENTRE, AND TOGETHER AGAINST POVERTY SOCIETY (BCOAPO)** – Letter dated October 26, 2021 submitting request to intervene by Leigha Worth



- C8-2 Letter dated October 28, 2021 – BCOAPO submitting Information Request No. 1 to Creative Energy
- C8-3 Letter dated November 5, 2021 – BCOAPO submitting Confidentiality Declaration and Undertakings
- C8-4 Letter dated January 14, 2022 – BCOAPO submitting Information Request No. 2 to Creative Energy
- C8-5 Letter dated February 10, 2022 – BCOAPO submitting response on further process
- C8-6 Letter dated June 1, 2022 – BCOAPO submitting Information Request No. 3 to Creative Energy

#### *INTERESTED PARTY DOCUMENTS*

- D-1 **Cadillac Fairview** – Submission dated October 6, 2021 Request for Interested Party Status by L. Tummonds
- D-2 **British Columbia Ministry of Energy, Mines and Low Carbon Innovation** – Submission dated October 7, 2021 Request for Interested Party Status by J. Buchanan and J. Davison
- D-2-1 Ministry – Letter of Comment dated November 4, 2021
- D-3 **City of Vancouver (CoV)** – Submission dated October 18, 2021 Request for Interested Party Status by Charling Li

#### *LETTERS OF COMMENT*

- E-1 **CITY OF VANCOUVER** – Letter of Comment dated January 26, 2022