

1 November 2021

Via E-filing

Mr. Patrick Wruck
Commission Secretary
BC Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Mr. Wruck:

**Re: British Columbia Utilities Commission (BCUC, Commission)
Creative Energy Vancouver Platforms Inc. (Creative Energy)
Application for Rates for the Core Steam system and Northeast False Creek (NEFC) service
areas: Part 1 – Rate Structure (Application)**

Creative Energy files for approval with the Commission this Application for Rates for the Core Steam system and Northeast False Creek (**NEFC**) service areas – Part 1 – Rate Structure (**Application**). A supporting Rate Structure Model is attached electronically.

We are filing this Application Part 1 – Rate Structure today as directed by Order G-240-21. This Application is presented as Part 1 – Rate Structure because Creative Energy proposes in this Part 1 to consolidate the cost of service and unify rates of Creative Energy's NEFC system service area with the cost of service and rates of Creative Energy's Core Steam system. A Part 2 – Revenue Requirements of the Application will be filed in mid-December 2021 in regards to forecast revenue requirements and rate-setting for the purpose of requesting interim and permanent approvals of rates for 2022.

We note that responses to the City of Vancouver's Request for Proposals (**RFP**) for low carbon thermal energy supply to the NEFC are due by November 18, 2021. We respectfully request that the Application and attached Rate Structure Model not be posted publicly to the BCUC website until after the City RFP closes on November 18, 2021. The Application and Rate Structure Model is of a commercially sensitive nature that would otherwise harm Creative Energy's competitive position if made publicly available during the intervening period while the City's RFP for low carbon thermal energy proceeds.

We intend to provide the Application Part 1 directly to our customers on November 19, 2021 for review and comment; that is, on that date for the same reasons as noted above. A review of any customer feedback will be included in the Application Part 2 together with a proposal for the setting of interim rates effective January 1, 2022.

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We note that with this filing of the Application Part 1, the Commission will have up to 3 months to consider the matter of rate design for the interim rates effective January 1, 2022, including for several weeks before Part 2 of the Application is filed in mid-December.

As we review in section 1.3 of the Application – Regulatory Process Considerations – with the filing of Part 2 of the Application in mid-December, Creative Energy will request the Commission to review both Parts 1 and 2 in one proceeding and to render one decision on all components. Thus, it might not be necessary for the Commission to establish regulatory proceeding steps prior to receiving Part 2 of the Application.

For further information, please contact the undersigned.

Sincerely,

A handwritten signature in black ink, appearing to be 'Rob Gorter', with a long horizontal stroke extending to the right.

Rob Gorter
Director, Regulatory Affairs and Customer Relations

Creative Energy Vancouver Platforms Inc.

Application for Rates for the Core Steam
System and Northeast False Creek
Service Areas

Part 1 – Rate Structure

November 1, 2021

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1 Introduction

1.1 Application Overview

Creative Energy Vancouver Platforms Inc. (**Creative Energy**) files for approval with the Commission this Application for Rates for the Core Steam system and Northeast False Creek (**NEFC**) service areas – Part 1 – Rate Structure (**Application**). This Application is presented as Part 1 Rate Structure because Creative Energy proposes in this Part 1 to consolidate the cost of service and unify rates of Creative Energy's Northeast False Creek (**NEFC**) system service area with the cost of service and rates of Creative Energy's Core Steam system. A Part 2 – Revenue Requirements of the Application will be filed in mid-December 2021 in regards to forecast revenue requirements and rate-setting for the purpose of requesting interim and permanent approvals of rates for 2022. Such process considerations are reviewed further below.

To implement the proposal to consolidate the cost of service of both systems and unify the rates for service, the Application requests approval to:

- Consolidate the fixed costs of the NEFC system with the Core Steam system revenue requirements on a go-forward basis, effective 2022;
- Allocate a portion of the fixed costs of the NEFC system as a System Contribution to be charged to the NEFC building customers and to reduce the amount of the NEFC system fixed costs allocated to the Core Steam system revenue requirements by an equivalent amount;
- Apply the Core Steam and Fuel Cost Tariff to connected NEFC building customers as would then be determined inclusive of the NEFC fixed costs as applicable to all Core Steam system building customers;
- Recover the existing net balance in the Revenue Deficiency Deferral Account (**RDDA**) to the end of 2021 plus the System Contribution separately and only from connected NEFC building customers through a System Contribution Charge per MWh of energy consumption; and
- Cancel the current NEFC tariff and the Variance Deferral Account.

The NEFC system receives thermal energy from the Core Steam system, circulates this energy in the form of hot water, and provides thermal energy to the connected buildings through energy transfer equipment at the customer building.

Under the application for approval of the Certificate of Public Convenience and Necessity (**CPCN**) for the NEFC system, the entire energy needs for the new system were to initially be met from the Core Steam plant. The plan was to subsequently transition the NEFC system into a largely functionally-separate system with its own heat resource(s). The NEFC System would remain connected to the Core Steam system, but only for backup and potentially peaking energy requirements. The initial rate design for the

NEFC system was thereby viewed and established as if the NEFC system is functionally separate from the Core (that is, on a standalone basis) and as a customer of the Core Steam system. We have provided a summary of the history of the NEFC system as an Appendix A to this Application.

The initially planned second phase to transition the NEFC system into a separate system has not occurred and will not occur. The implication is that the initial NEFC rate design is premised on a scenario that will not materialize. The NEFC system is and will continue to be an extension to the Core Steam system. All of the thermal energy requirements of customers connected to the NEFC system will continue to be supplied by the Core Steam plant and connected distribution network.

A comprehensive review of the NEFC cost allocation and rate design must necessarily therefore be framed as an extension to the Core Steam system – that is, an extension of the existing system to provide the same service (thermal energy) to additional buildings in accordance with the Commission’s long-standing Utility System Extension Test Guidelines (**SET Guidelines**).

The Application reviews the cost to serve NEFC customers, including the capital and operating costs of the system extension to them and the cost of producing the energy to serve, within an economic system extension test, which provides the foundation of the proposal to consolidate the cost of service of the Core and NEFC systems and unify the rates. Presently, the cost of the system extension to serve the NEFC is borne fully by NEFC customers while Core customers benefit in the form of additional revenues. An inherent subsidy exists where it ought not to, as established under the approach and principles of the Commission’s SET Guidelines.

The Application reviews in detail that there are significant customer, system, utility and related regulatory benefits to unify the rates. In accordance with the Commission’s SET Guidelines, the analysis sets out that a fair contribution to system costs by connected NEFC building customers is required, in addition to the forecast revenue from postage stamp Core Steam system rates that would recover the costs in connection with the extension of service to serve these customers.

This component of the comprehensive rate structure review is presented alongside a detailed assessment of the nature and impacts of continuing a standalone approach to rate redesign that would address issues with the status quo rate structure as raised in prior NEFC rates proceedings. The results and impacts of a standalone approach to NEFC rate design then offers a basis from which to compare the merits of the proposed rate structure in relation to commonly accepted rate design criteria.

The compelling benefits of the proposal to consolidate the cost of service and unify the rates of the Core and NEFC systems include:

- Fair and full recovery of all revenue requirement components on a forecast basis with no additional deferrals;

- Rates that are practical, intuitive and aligned to the nature of thermal energy service provided, promoting customer understanding and acceptance;
- Efficient, competitive and non-discriminatory pricing for current and future NEFC and Core Steam customer and nodal connections, with economies of scale that benefit all customers;
- Reduced complexity and burden in the structuring and review of future revenue requirement proceedings, rate-setting and rate redesign; and
- Stable and predictable recovery of the balance in the RDDA from connected NEFC buildings over the useful life of the NEFC assets.

1.2 Requested Approvals

Creative Energy is seeking Orders of the Commission granting the approvals described below pursuant to sections 58 to 60 of the Utilities Commission Act.

1. Approval of rates under a single rate schedule for the Core Steam system, to include the following components:
 - a. Thermal energy rates under the existing declining block tariff structure expressed in dollars per thousand pounds of steam (**\$/M#**), if the customer is connected to the steam distribution network and their thermal energy consumption is metered as such;
 - b. Thermal energy rates under the existing declining block tariff structure expressed in dollars per megawatt hours of thermal energy (**\$/MWh**), if the customer is connected to the hot water distribution network and their thermal energy consumption is metered as such;
2. Approval to set the rates to be established as per (1) on the basis of consolidating all fixed costs to serve the NEFC with the Core revenue requirements on a go-forward basis, effective 2022, less an amount established as per (3);
3. Approval to add to the RDDA a System Contribution reflecting the net present value of the incremental forecast cost to serve the NEFC building customers over the period 2022-2043 less the net present value of the incremental benefit to the Core Steam system of the extension to serve NEFC building over the same period;
4. Approval to establish a System Contribution Charge to recover the net balance in the RDDA as at the end of 2021 plus the System Contribution established as per (3), such charge to apply only to customers connected to the hot water distribution network in NEFC, both current and future, and amortized to remain in effect over the remaining useful life of the NEFC assets.
5. Approval to cancel the current NEFC tariff and the Variance Deferral Account.

A draft Commission Order and Core Steam System Tariff page will be provided in Part 2 of the Application.

1.3 Regulatory Process Considerations

The first order requested of the Commission is for the setting of rates effective January 1, 2022 on an interim and refundable basis pending final determinations and orders on rate design and revenue requirements. Part 2 – Revenue Requirements of the Application will be filed in mid-December 2021 and will provide the forecast revenue requirements necessary for the Commission to determine the appropriate level of rates to set effective January 1, 2022 on an interim basis.

With the filing of Part 2 of the Application in mid-December, Creative Energy will request the Commission to review both Parts 1 and 2 in one proceeding and to render one decision on all components. Creative Energy accordingly suggests that it might not be necessary for the Commission to establish regulatory proceeding steps prior to receiving Part 2 of the Application.

There will also be the matter of whether to set interim rates effective January 1, 2022 on the basis of the status quo rate designs – that is, the rate designs in place in 2021 for each of the Core Steam and NEFC systems – or on the basis of consolidated revenue requirements and unified rates as proposed in this Application Part 1.

We note that with this filing of Part 1 on November 1, 2021, the Commission will have up to 3 months to consider the matter of rate design for the interim rates effective January 1, 2022, including for several weeks before Part 2 of the Application is filed in mid-December.¹

Creative Energy at this time would intend in Part 2 of the Application to propose to set interim rates on the basis of its proposals in this Part 1 of the Application. We will include in Part 2 of the Application a review of specific considerations into accounting, customer billing and the benefits of our proposals as compared to the status quo that will inform the matter of setting interim rates for the Commission's review. We also intend to provide the Application Part 1 directly to our customers on November 19, 2021 for review and comment after the City of Vancouver Request for Proposals for low carbon thermal energy closes. We will review any customer feedback received, including into the matter of interim rates, in Part 2 of the Application.

¹ As for prior Creative Energy rate filings, our billing cycle is monthly and interim rates therefore would need to be approved by the end of the billing month; for example, an order approving rates effective January 1, 2022 can be issued by the Commission up to the end of January 2022 to support customer billing on that basis.

2 Background

2.1 CPCN Approval and the Extension of the Core System to Serve NEFC

2.1.1 The NEFC System and Plan for Service

By Order C-12-15, the Commission granted a CPCN to Creative Energy Vancouver Platforms Inc. for the construction of a Neighbourhood Energy System to serve new developments in Northeast False Creek (the **NEFC System**). Order C-12-15 denied approval of a Neighbourhood Energy Agreement (**NEA**) with the City of Vancouver (**City**), which was submitted concurrently for approval in relation to the service to be provided by the NEFC System over time.

The NEFC system as approved provides thermal energy to connected buildings through a hot water network, which includes two steam-to-hot water converter stations and Energy Transfer Stations within all connected buildings.

From the technical perspective, the NEFC system was built as an extension to the Core Steam system. All of the thermal energy requirements of customers connected to the NEFC system are supplied by the Core Steam plant and connected distribution network. Under the CPCN application and the application for approval of the NEA, the entire energy needs for the new NES were to initially be met from the Core Steam plant. The plan was to subsequently transition the NEFC system into a largely functionally-separate system with its own heat resource(s). The NEFC System would remain connected to the Core Steam system, but only for backup and potentially peaking energy requirements.

In anticipation of the end-state of that planned transition to a separate system, the initial rate design for the NEFC system was viewed and established as if the NEFC system is functionally separate from the Core (that is, on a standalone basis) and as a customer of the Core Steam system.

2.1.2 Rate Design Implications of the Core Steam System Extension to Serve the NEFC

The initially planned second phase to transition the NEFC system into a separate system has not occurred and will not occur for reasons elaborated in sections 2.2.2 and 3.1.1. This means that the NEFC system will remain an extension to the Core Steam system.

The implication therefore is that the initial NEFC rate design is premised on a scenario that will not materialize. A comprehensive review of the NEFC cost allocation and rate design must necessarily be framed as an extension to the Core Steam system in accordance with the Commission's long-standing Utility System Extension Test Guidelines (**SET Guidelines**).

That is, the cost to serve NEFC customers, including the cost of constructing and operating the system extension to them and the cost of producing the energy to serve them ought to be considered within an

economic system extension test framework to determine whether a customer contribution is required, in addition to forecast revenue from postage stamp Core Steam system rates, in connection with the extension of service to serve these customers.

2.2 Status Quo NEFC Rate Design

2.2.1 Rate Design

The rate design and rates for the NEFC service area were established by Order G-167-16 and the accompanying Commission Decision into Creative Energy' 2016-2017 Revenue Requirements Application (**RRA**) and Rate Design for NEFC Hot Water Service (the **Status Quo Design**, or **Status Quo**).

The approved rate design is comprised of the following components:

1. A fixed rate per square meter of floor space per month (**\$/m²/mo**);
2. A variable rate per megawatt hour (**\$/MWh**);
3. A Revenue Deficiency Deferral Account (**RDDA**); and
4. A Variance Deferral Account.

The RDDA was put in place to address the timing differences between the installation of the required infrastructure to serve the thermal energy demand of the NEFC and the forecast buildout of the NEFC service area over time. The purpose of the RDDA was ultimately to support a levelized rate structure to smooth rate increases over time recognizing that rates would not initially recover the approved cost of service (**COS**). Thus, forecast revenue shortfalls during initial years of service are approved to be added to the balance of the RDDA to be recovered through load growth and levelized rate increases over time.

Amounts that are approved to be added to the RDDA each year are equal to the variance between the approved cost of service and the approved revenues in each year, the latter of which are forecast based on the approved rates and load forecast. Thus, the RDDA does not capture revenue shortfalls based on differences between actual revenues received and approved forecasts. Variances in the latter respect were addressed separately through the approval of a Variance Deferral Account as described below.

A Variance Deferral Account was put in place to capture variances related to the following items, to be amortized over a one-year period and recovered through rates for thermal energy:

- Annual variances in revenues due to the difference between forecast versus actual customer load;

- Annual variances between forecast versus actual Steam Service rates and Fuel Costs charged to NEFC;
- Annual variances between forecast versus actual Distribution expenses;
- Annual variances between forecast versus actual Income Tax expense; and
- Initial year variances related to depreciation and return on rate base for initial rate-setting purposes.

Fixed versus Variable Cost Allocation

In the NEFC CPCN Decision the Commission defined fixed costs as costs that do not vary with actual load; that is, with energy consumption. In its Order G-167-16 Decision into the 2016-2017 RRA and Rate Design proceeding the Commission affirmed this perspective of cost causality when it concluded that since steam tariff and fuel costs vary with energy consumption, the ratio of fixed versus variable cost recovery should reflect that lower use by a customer reduces the steam requirements of the NEFC and that the rate design should reflect this.²

For initial rate-setting and recognizing that the ratio of fixed versus variable costs can and will vary over time, the Commission determined that a 40 percent fixed/60 percent variable cost recovery was appropriate. The Panel acknowledged that the percentage allocation may need to be reviewed and possibly varied as circumstances change.³

2.2.2 Issues

Load Forecast and Cost Recovery Uncertainty

In setting initial rates for service, the Commission accepted the forecast of NEFC System energy load and buildout that was filed and accepted by the Commission in the NEFC CPCN proceeding, as presented in the following table. The load forecast assumed full buildout in the NEFC by 2025, with a total connected floor area of 506,300 m² and total hot water demand of 48,100 MWh.

² Creative Energy agrees with the Commission's perspective and determination as to the nature of the fixed versus variable costs of the NEFC system, and as consistent with other recent utility rate designs in effect for Creative Energy affiliates. We acknowledge this departs from the views expressed by the staff responsible for the 2016-2017 Rate Design application that Core steam tariff and fuel costs are ultimately fixed costs regardless of the cost allocation methodology since the NEFC costs are based on projected volumes.

³ Order G-167-16 Decision, page 72.

Table 1 - Initial Forecast NEFC System Load and Buildout – CPCN Application

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Heat Demand – MWh	1,715	9,450	21,295	27,600	31,555	38,900	40,650	43,900	45,370	48,100	48,100	48,100
Floor Area	18,130	99,680	224,335	290,700	332,280	409,500	427,980	46,2300	477,700	506,300	506,300	506,300
Percent of Buildout	4%	20%	44%	57%	66%	81%	85%	91%	94%	100%	100%	100%

NEFC rates and approved revenues in 2017 were approved on the basis of this load forecast and the approved fixed versus variable allocation ratios, as reviewed above. An opening balance in the RDDA of \$373,900 was recorded. Rates and approved revenues were maintained on this basis through 2018 and another corresponding increase to the RDDA balance of \$373,900 was recorded. In its Order G-227-20 Decision into Creative Energy’s 2019-2020 RRA for the Core Steam System and NEFC System Service Areas, the Commission approved final rates for 2019 also maintained as approved for 2017 and 2018. A corresponding addition to the RDDA in the amount of \$373,900 was again approved, with other determinations accounted for through the mechanism of the Variance Deferral Account. Please refer to the summary presented in section 2.3.

The forecast load above has not materialized as expected. Rather, the City has extended its connection bylaw to include future development in the NEFC, which means that the City will now provide service to the future developments in NEFC.

This change in status added further load forecast uncertainty given that Creative Energy’s intent to serve the buildout of load in the NEFC is now subject to the City’s process to procure thermal energy supply.

The implication of these factors is that prior and current rates are too low to advance recovery of the existing RDDA and to ensure full recovery of the RDDA over the terms of contracted service in view of the delayed and uncertain load growth to be served.

Cost Allocation, Limited Data and Ad Hoc Rate Setting

In the 2019-2020 RRA Creative Energy set out its intent to file a NEFC rate design application to address the allocation and recovery of the costs to serve the NEFC over time, including the recovery of the accumulating RDDA balance, in view of the load forecast uncertainty and to address issues related to evidence that certain direct costs to serve current customers were being deferred for future recovery under the existing rate structure.

Creative Energy’s expectation was that upon confirmation of the City’s long-term plan for connecting new load in the NEFC and with a new rate design in place, Creative Energy could renew a plan for rates that would reflect a fair cost allocation and that would recover the RDDA over a reasonable time frame.

In its Order G-227-20 Decision, the Panel accepted that Creative Energy did not have sufficient information to determine the longer-term levelized rate increases needed to recover the RDDA over a reasonable time frame. The Panel stated that this indicates that the current levelized rate is not sufficient to recover capital costs incurred to build the system, including as required to serve current customers.

The Panel found that it is appropriate to maintain the existing rate structure until a comprehensive rate design application is filed by Creative Energy. The Panel accepted Creative Energy's methodology to forecast NEFC thermal energy load given the limited data inherent with a relatively new system. The Panel noted that Creative Energy will be able to continue to refine its load forecast as more data becomes available. An NEFC load forecast of 19,162MWh along with a total installed floor area of 162,481m² was established for the purpose of forecasting 2020 revenues and determining an addition to the balance of the RDDA.

In recognition of these factors and in the absence of a further basis on which to determine current rates within a longer-term plan for RDDA recovery, the Commission approved a 10 percent increase to NEFC rates for 2020. The Panel noted specifically that "[t]his level of increase will reduce the addition to the RDDA while keeping the rate below the level typically associated with rate shock."

Rates for 2020 were thus established on this basis and a further addition to the RDDA was approved in the amount of \$656,319.

The Commission described the 10 percent rate increase as an interim step with a concurrent direction for Creative Energy to file a comprehensive proposal for NEFC rate design in 2021.

Consistent with this context and consolidation of the factors reviewed in 2020 and given that a rate design application would be filed later in 2021, Creative Energy proposed, and the Commission approved, a further 10 percent increase in NEFC rates in 2021. An addition to the RDDA in 2021 in the amount of \$442,989 was approved on this basis.

The series of generally ad hoc 10 percent rate increases reasonably balanced customer bill impacts in view of the ongoing under-recovery of the cost of service, yet this approach to rate-setting at the same time underscored the concerns about the variable versus fixed cost allocations, an accumulating RDDA balance and that rate changes ought to be expected as an outcome of the planned rate design application.

The Need for a Comprehensive Rate Design Review

The Commission's rate-setting decisions and the direction to Creative Energy to complete a comprehensive rate design review reflects agreement that there remains uncertainty about load growth in the NEFC, that cost allocation and recovery under the existing NEFC rate design is sub-optimal, and that mitigation of excessive additions to the RDDA is prudent.

For example, the Commission directly acknowledged that the 2021 rate increase was considered to be advantageous as a bridge in the intervening period prior to a comprehensive and longer-term NEFC rate strategy to address necessary changes to the current rate design and deferral account mechanisms.

Creative Energy understands that the implication overall is that we are past due to put in place a long-term solution based on the circumstances we are in rather than based on speculation about the future.

2.3 Approved Cost of Service, Revenues and RDDA 2017-2021

The series of tables that follow below present a consolidated summary of the approved NEFC cost of service, rates, billing determinants, revenues and RDDA additions for the period 2017-2021. The total net RDDA balance to the end of 2021 is also presented with consideration of the approved Variance Deferral Account adjustments that were approved in compliance with the associated Commission decisions. The annual carrying cost on the net RDDA balance each year is set based on Creative Energy's Weighted Average Cost of Capital (**WACC**) of 6.34 percent as approved.

Table 2 - NEFC Approved Cost of Service 2017-2021

Approved Cost of Service	2017	2018	2019	2020	2021
Core Steam Fuel	313,800	313,800	313,800	1,061,666	968,739
Core Steam Tariff	222,900	222,900	222,900	536,051	571,651
O&M Expense	121,600	121,600	121,600	168,225	197,143
Municipal Taxes	10,100	10,100	10,100	21,039	23,143
Income Tax Expense	3,700	3,700	3,700	19,445	26,329
Depreciation Expense	180,300	180,300	180,300	216,000	210,400
Return on Rate Base	321,800	321,800	321,800	317,000	297,000
Amortization of Financing Fees Deferral	n/a	n/a	n/a	n/a	note ⁴
Total Cost of Service	1,174,200	1,174,200	1,174,200	2,339,425	2,294,405

⁴ As per Order G-104-21, an amount of \$37,757 was set aside for separate deferral account treatment pending a Commission Decision into the Core Steam System 2021 RRA.

Table 3 - NEFC Approved Cost of Service, Rate, Billing Determinants, Revenues and RDDA Additions 2017-2021

	2017	2018	2019	2020	2021
Approved Cost of Service	1,174,200	1,174,200	1,174,200	2,339,425	2,294,405
Approved Rates					
Variable (\$/MWh)	\$52.10	\$52.10	\$52.10	\$57.31	\$63.04
Fixed (\$/m2/month)	\$0.27	\$0.27	\$0.27	\$0.30	\$0.33
Approved Billing Determinants					
Heat demand (MWh)	9,162 ⁵	9,162	9,162	19,162	19,162
Installed Floor Area (m ²)	99,680	99,680	99,680	162,481	162,481
Approved Revenues	800,300	800,300	800,300	1,683,106	1,851,397
Approved Annual RDDA Addition	373,900	373,900	373,900	656,319	442,989

Table 4 - Variance Deferral and Net RDDA Additions 2017-2021

	2017	2018	2019	2020	2021
Approved RDDA addition per year	373,900	373,900	373,900	656,319	442,989
Approved Variance Deferrals					
Revenue	(47,753)	(245,891)	(647,445)	67,595	
Steam and Fuel	(45,639)	23,973	731,749	(71,169)	
Operating Costs	(12,039)	95,706	(26,941)	(8,471)	
Taxes	12,624	(32,441)	2,448	57,352	
Depreciation	(180,300)	-	-	-	
Return on Rate Base	(181,347)	-	-	-	
Total	(454,454)	(158,653)	59,811	45,307	-
Net RDDA	(80,554)	215,247	433,711	701,626	442,989
Cost of Capital	(2,554)	1,554	22,225	59,624	99,689
Total RDDA	(83,108)	216,801	455,936	761,250	542,678
Total RDDA (end of 2021)					1,893,557

⁵ The reported value of MWh differs from the amount reported in Table 1, but it is the imputed correct result for illustrative and evaluation purposes in respect of the rates, revenues and annual additions to the RDDA in 2017-2019 that were approved by the Commission and as reported in this table.

⁶ Final balances will be confirmed subject to external audit and Commission approval.

3 NEFC Thermal Energy System, Prospective Load Growth and Forecast Cost of Service

The purpose of this section is to present an update into the NEFC system characteristics, load forecast and projected NEFC cost of service, which together inform the basis and scenarios of the comprehensive rate structure assessment and of the proposal reviewed in sections 4 and 5, respectively.

3.1 Current System, Customer Characteristics and Load Forecast

Creative Energy has connected a total of four buildings in the NEFC, served by the Core Steam plant and two steam to hot water stations, with a total connected floor area of 162,481 m² and with a current updated forecast thermal energy heating demand of 19,566 MWh forecast in 2022.

Table 5 - NEFC System and Customer Characteristics

Steam to Hot Water Station		Building Customers					
Station	Capacity	Name	Type	Service start	Floor area m2	Peak Heat Demand kW	Energy MWh
PARQ	8,800 kW installed Space for 17,600 kW	PARQ	Commercial	2017	71,926	5,976	9,773
		One Pacific	Residential	2017	36,400	2,450	4,417
		ARC	Residential	2019	40,333	2,250	3,854
Aquilini	8,800 kW installed Space for 17,600 kW	ACS	Residential	2017	13,822	910	1,522
Total	17,600 kW installed Space for 35,200 kW				162,481	11,586	19,566

A total system forecast annual energy of 19,162 MWh was approved for the purpose of setting forecast approved revenues in 2020-2021. We update this forecast now to a total of 19,566 MWh with adjustments based on actual data and with particular respect to the ramp in ARC building heating load in relation to its occupancy.

- The initial forecast was established in part upon the partial occupancy of the ARC building in 2019; a forecast energy consumption for the ARC building in 2019 was set equal to 2,299 MWh. Actual 2019 ARC energy consumption was equal to 2,212 MWh.
- A forecast of the total energy consumption of the ARC building under building and system design was equal to 4,101 MWh. Actual energy consumption of the ARC building in 2020, reflecting more recent occupancy and demand, was equal to 3,854 MWh.
- We therefore consider it to be reasonable overall to update the forecast annual energy consumption to reflect higher load in 2020, noting that the effect of the pandemic on residential

energy consumption in 2020 appears muted as compared to commercial load due to residents largely staying home during 2020 in response to provincial health orders.

Please refer to the following table for further notes into the update to forecast NEFC heating load.

Table 6 - NEFC Updated Heating Load Forecast (MWh)

Building	Design	Approved	Actual		Update	Notes
			2019	2020	2022	
PARQ Casino	9,773	9,773	9,833	7,996	9,773	No update to the forecast as a discernable pandemic impact on commercial demand appears evident
One Pacific	5,365	5,365	4,417	4,558	4,417	Update to the forecast noting the direction of actuals in the non-pandemic year, 2019
ARC	4,101	2,299	2,212	3,854	3,854	Update to the forecast based on the direction of actuals based on full year occupancy
ACS	1,725	1,725	1,522	1,575	1,522	Update to the forecast based on the direction of actuals in the non-pandemic year, 2019
Total	20,964	19,162	17,984	17,982	19,566	

The updated thermal energy heating demand forecast and the billing determinants presented in Table 5 and Table 6 together represent the load forecast of record for NEFC rate-setting and evaluative purposes for the period beginning 2022. We provide below an update into prospective load growth in the NEFC, which would entail an incremental addition to the amounts shown in Table 5 subject to the outcome of the City's processes.

3.1.1 Prospective Load Scenario - Low Carbon Thermal Energy Supply to the City of Vancouver

The City's Neighbourhood Energy Utility (**City NEU**) supplies low-carbon thermal energy to buildings in the False Creek area via a hot-water distribution network to serve space heating and domestic hot water demand. As part of the City NEU expansion plan, the City is planning to establish a new thermal network to serve upcoming development in Northeast False Creek with low-carbon energy.

The City issued a Request for Proposals (**RFP**) on August 6, 2021, to seek a low carbon thermal energy supplier to meet the demand for development in NEFC, which would be scaled up over time as new load in the neighbourhood is connected to the NEU distribution network. The distribution network would represent the boundary of ownership between the City and the energy supplier, with the latter responsible for securing a location for energy generation and all elements of funding, permitting, designing, constructing, installing, operating, maintaining, and replacing the equipment required to supply energy into the City's distribution network.

The following table summarizes the forecast requirements for thermal energy demand and diversified peak loads required based on current development forecasts, as set out in the RFP. The City is seeking proposals that can bring on capacity as new loads are connected to the City NEU distribution network. The City acknowledges the uncertain nature of development timing, and it therefore cautions that the forecast information should not be interpreted as a defined energy delivery schedule.

Table 7 - City of Vancouver Forecast Energy Requirements

Year	Residential floor area m2	Commercial floor area m2	Total floor area m2	Diversified peak capacity kW	Annual Demand MWh
2025	77,000	16,700	93,700	3,300	7,000
2026	106,700	24,200	130,900	4,300	9,000
2027	152,700	44,100	196,800	6,600	13,800
2028	234,300	50,500	284,800	9,800	20,600
2029	251,900	63,700	315,600	10,800	22,700
2030	335,400	68,200	403,600	14,000	29,600
2031	369,200	77,300	446,500	15,500	32,800
2032	426,600	86,500	513,100	17,900	37,900
2033	452,300	97,500	549,800	19,200	40,500
2034 +	469,900	103,200	573,100	20,000	42,200

For rate structure evaluation and illustrative purposes, we present directional results in this Application of the economy of scale and indicative rate changes related to connecting the City load as set out above, albeit assuming conventional steam generation and rates for service.⁷

3.2 Forecast NEFC Cost of Service 2022-2043

To support the rate modelling and economic evaluation of the NEFC rate structure we have developed a forecast cost of the service for the period 2022-2043 (22 years), which is the approximate term over which the NEFC assets will be fully depreciated given the allocated annual depreciation of the assets as approved.

⁷ A Core Steam System Decarbonization Project CPCN is before the Commission and a response to the City RFP is pending at the time of the filing of this Application. The intent of presenting the directional results of potential future load growth is to illustrate the economy of scale and the effect the lower incremental fixed cost to connect new load in the NEFC independent of the underlying steam generation cost.

Additional detail in respect of each component follows below the table. Unless otherwise defined in the assumptions below or as set out in the supporting Rate Structure Model, we assume annual general inflation of 2 percent⁸.

Table 8 – Forecast NEFC Cost of Service 2022-2043

Period	Year 1	Year 5	Year 10	Year 15	Year 22
Component	2022	2026	2031	2036	2043
Total Core-related Variable Steam and Fuel	1,636,634	2,200,148	2,775,513	3,086,314	3,545,204
O&M Expense	201,086	217,662	240,316	265,329	304,779
Municipal Taxes	28,106	35,780	43,834	48,670	55,906
Income Tax Expense	48,838	39,663	28,195	16,727	672
Depreciation Expense	210,400	210,400	210,400	210,400	10,400
Return on Rate Base	283,922	230,585	163,915	97,244	3,906
Total NEFC-related Fixed Costs	772,351	\$734,090	686,660	638,370	575,663
Total	2,408,985	2,934,239	3,462,173	3,724,684	4,120,867

3.2.1 Core Steam Tariff and Fuel Charges

The NEFC system is presently accounted for as if it was a customer of the Core Steam system. Both systems are owned by the same person – Creative Energy Vancouver (**CEV**). The Core and NEFC are really treated as separate divisions of CEV with intercompany allocations and transfers.

Core Steam tariff costs are a function of the steam load used by the NEFC system in direct relation to the forecast thermal energy demand of the NEFC building customers. The annual forecast Core Steam cost of service incorporates the expected forecast impacts of the Expo-Beatty Redevelopment project over the 2022-2024 period and general inflation otherwise.

Core Steam fuel costs are a function of the steam load used by the NEFC system in direct relation to the

⁸ For the purpose of rates evaluation over the 2022-2043 period we assume annual inflation rate of 2 percent. This assumption accords with the Bank of Canada inflation control target, which can be referenced at the following link: <https://www.bankofcanada.ca/rates/indicators/key-variables/inflation-control-target/>.

forecast energy demand of the NEFC customers. The forecast of annual fuel costs incorporates the most recent approved FortisBC Rate 7 tariff inputs and an annual escalation factor of 3 percent for indicative purposes, as well as projected Federal carbon tax increase through 2030 plus annual general inflation thereafter.

3.2.2 NEFC Operation & Maintenance Expense

Operation and maintenance expense includes supervision and labour costs directly charged by Creative Energy's Distribution team to maintain and monitor the NEFC system. Operation and maintenance expense also include administrative and general costs that are allocated to the NEFC using the Commission-approved Massachusetts formula. Forecast annual operation and maintenance expense is modelled over the 2022-2043 analysis period using general inflation of 2 percent per year over the 2021 approved amount.

3.2.3 NEFC Municipal Fees and Income Taxes

Municipal taxes are calculated as total revenue multiplied by 1.25 percent in accordance with current City of Vancouver rates.

Income taxes are based on a rate of 27 percent in each year of the analysis period.

3.2.4 NEFC Depreciation Expense

Annual depreciation over the analysis period is set equal to a straight-line amount of \$210,400, which is the 2021 approved amount calculated upon the Plant-In-Service and the depreciation rates by asset category as reviewed in prior NEFC RRA proceedings.

There are no future capital additions necessary to serve the current connected buildings; the summary table presented above aligns with the current invested capital and the plant presently in service to serve existing NEFC load.

There would be incremental capital necessary to connect the NEFC load growth forecast by the City and presented above. These additions are modelled separately as a scenario to present the incremental and indicative beneficial rate impacts of load growth to all customers given the economy of scale of the overall connected system. Impacts are modelled in accordance with the following capital addition assumptions to serve the City load growth projections:

- \$250,000 (2023) to make the 50m connection from the existing Aquilini plant to the proposed City distribution system on Pacific Boulevard;
- \$400,000 (2023) to modify the Aquilini plant to connect the forecast City load;

- \$400,000 (2026) to increase the capacity at the Aquilini plant from 8,800 kW to 17,600 kW; and
- \$1,050,000 (2030) to make the connection between the PARQ plant and the City distribution network and to install an additional 8,800 kW of capacity.

3.2.5 NEFC Return on Rate Base

Return on rate base is forecast under a weighted average cost of capital of 6.34%, which assumes the approved capital structure of 42.5 percent equity and 57.5 percent debt and an approved return on equity of 9.5 percent in each year of the analysis period.

4 Comprehensive Review of the NEFC Cost of Service and Rate Structure

The NEFC system is a company-owned extension to the Core Steam system and it is treated as if it was a customer of the Core Steam system for cost allocation and rate design purposes. The NEFC system receives thermal energy from the Core Steam system, circulates this energy in the form of hot water, and provides thermal energy to the connected buildings through energy transfer equipment at each customer building.

For the reasons reviewed above, a necessary and foundational component of our comprehensive review of the NEFC rate design is to assess the cost to serve the NEFC building customers within the principles guiding economic system extensions. The approved NEFC cost of service is now well established and the forecast of costs and billing determinants is stable for evaluative and forecast purposes. With a solid foundation of the underlying system inputs and customer load characteristics it is timely and appropriate to review the benefits and costs of the system extension to the Core and NEFC within a consolidated economic framework. The foundational economic assessment is presented in section 4.1.

Section 4.2 serves to present the manner in which our comprehensive review of the NEFC rate structure has brought into focus that the status quo design underperforms in regard to rate design principles to match cost recovery with cost causation and to match the timing of cost recovery with the benefit of service received. This review necessarily builds upon the narrative established in the NEFC rate-setting proceedings to date to offer clarity into the nature and impacts of a standalone rate redesign that would address the noted issues with the status quo.

The results and impacts of the standalone approach to NEFC rate design then offers a basis from which to compare the merits of our proposed rate structure, as presented in section 5.

4.1 The Matter of the Extension of the Core Steam System to Connect the NEFC System

We present below an economic assessment of the extension of the Core Steam system to connect the NEFC system.

The purpose of the assessment is to ensure the fair allocation of system benefits and costs to existing (Core) and system extension (NEFC) customers in direct relation to the thermal energy service provided to the NEFC system as an extension of the Core Steam system, and upon which rates to the NEFC building customers can be structured.

4.1.1 System Extension Test Guidelines and Approach

In the normal course and aligned to the principles and conclusions set out in the BCUC's SET Guidelines, a new customer connection to the Core Steam system may be required to make a financial contribution to extend utility services if the net present value of the incremental cost of extending the service

exceeds the net present value of forecast incremental revenue over the planned or contracted period of service duration. Such contributions, when required, help to prevent the costs of new customer connections being subsidized. The objective is to correctly charge the extension customers, including a contribution to costs if necessary, with the result also that existing customers may be better-off with the addition of a new customer and at minimum no worse off.⁹

Key Relevant Principles

Further to the alignment of Creative Energy's approach to evaluating system extensions, we highlight the following tenets of the SET Guidelines:

- Evaluation of system extensions ought to be based on a discounted cash flow evaluation method that includes, to the extent feasible, all incremental costs and benefits associated with a particular system extension over a period long enough to consider the full impact of the extension;
- Generally, the costs of system extensions ought to be allocated to those customers who cause them, and the period of the analysis ought to consider the extent to which the costs of a system extension are allocated to those customers who cause them;
- Connection charges and contributions in aid are intimately linked to system extensions. If a system extension test indicates that a given system extension would create a shortfall of benefits relative to costs, that shortfall may be made up by a customer contribution, and where required may be recovered from new customers as a lump sum or as a surcharge on customer bills over time;
- To the extent that incremental costs are common to all new customers (both infill customers and customers attaching to new system extensions) these common costs would be most fairly allocated through a connection charge which applies to both categories of new customers; and
- When new customers are required to pay a contribution, they may desire some form of financing; for example, by the utility with repayment through surcharges on customer bills.

⁹ Creative Energy evaluates system extensions in accordance with the Commission's SET Guidelines, and it has done so previously without concern expressed by either its customers or the Commission. The Commission reviewed Creative Energy's approach in prior regulatory proceedings, such as in the matter of the Core Steam System 2019-2020 RRA and in the matter of an extension to the South Downtown Thermal Energy System, the decisions and determinations into which identified no concerns with our approach and evaluation of system extensions.

Expected Outcomes

In summary, therefore, it is well-understood within the application of the SET Guidelines that new customers ultimately pay for the costs of the system extensions they cause in either one of two ways:

1. Through existing utility rates for service only:
 - The case when the system extension test yields a positive result
 - That is, discounted incremental benefits (e.g., revenues) are greater than discounted incremental connection costs; or
2. Through existing utility rates for service plus a Customer Contribution or Charge:
 - The case when with the system extension test yields a negative result
 - That is, discounted incremental benefits (e.g., revenues) are less than discounted incremental connection costs
 - The additional charge reflects the difference between the present value the benefits and costs over the corresponding period such new customers are correctly charged and existing customers are no worse off.

4.1.2 Economic Evaluation of the Core System Extension to the NEFC

Basis

The incremental costs of the Core utility system extension to serve the connected NEFC customers are the fixed components of the NEFC cost of service reviewed in section 2 and section 3 – that is, the prior approved and remaining forecast amounts related to operations and maintenance, taxes, and the return of and on capital over the life of the assets.

Approximately 6 percent of Core steam generation serves the thermal energy demand of NEFC customers as measured at the two connected NEFC steam to hot water stations. This steam load represents a significant incremental benefit to all Core customers in the form of revenues directed to recovering the Core Steam system cost of service. However, due possibly to the initial construct upon which the NEFC rate design was conceived, there is no portion of the incremental cost of the NEFC extension recovered in Core steam rates.

It is the case presently that the NEFC cost of service reflects the entirety of the system extension costs without any offset in relation to the revenue benefit conferred to Core customers associated with the payment by NEFC customers for the steam generation to serve the thermal demand of the NEFC customers. There is no apparent sharing of the extension costs, which ought to be appropriate on a go-

forward, principled basis. The implication therefore is that absent any correction in the allocation of costs at this time, the NEFC steam load will unfairly cross-subsidize the rates of Core customers going forward.

To not account for this disparity now on a go-forward basis would be a marked departure from the principles supporting economic system extension tests and the expected outcomes of such, as reviewed in the section above. Simply put, while we seek to move to a point of fairness and achieve other benefits from restructuring NEFC rates, we are not starting from a point of fairness in the underlying cost allocation.

Benefit versus Cost of the Core System Extension to the NEFC

The results of a system extension test for the Core utility system extension to serve the NEFC are presented in the table that follows. The analysis is structured on a go-forward basis for the period 2022-2043 based upon the forecast of the Core and NEFC cost of service reviewed in section 3 and presented in the Rate Structure Model. A flat forecast demand for Core conventional steam load is assumed net of known customer additions and attrition. Results are presented on an equivalent average \$/MWh basis, both for simplicity and for ease of rate comparisons.¹⁰

We note the following in reference to the table below.

- We compute the effective higher forecast rates to Core customers that would result absent the additional NEFC steam plant load, all else equal.
 - That is, steam load billing determinants would be lower and Core rates would correspondingly be higher. As reviewed above, there are no avoided incremental costs to serve the NEFC to factor into this rate calculation.

¹⁰ We assume a conversion factor of 0.347 MWh/M#, which is estimated in relation to incoming feedwater temperature and the pressure at the point where the energy calculation is being. Standard saturated steam tables can then be used to look up the enthalpy of the water or steam and make appropriate conversions. Creative Energy's main distribution line is at 185psi and the corresponding enthalpy of the gaseous steam going to customers is 2,787.1kJ/kg. The fluid makeup water coming into the plant carries some energy, which at an average seasonal temperature of 9C is 38.4 kJ/kg. Thus, the net energy input to the water by Creative Energy's generation facility is (2,787.1-38.4 =) 2,748.7 kJ/kg or 0.0027487 GJ/kg. Note also that 1kg = 2.2 Lbs or 0.0022M#; thus, the enthalpy can be converted to (0.0027437GJ/kg)/(0.0022M#/kg) =1.2494 GJ/M#. Finally, 1 MWh = 3.6 GJ, so the enthalpy can be converted to 0.347 MWh/M# based on 185PSI steam and incoming water at 9C.

- Without any allocation of the NEFC fixed costs to the Core Steam system, the inherent subsidy to Core customers would persist on a go-forward basis.
 - The net present value (**NPV**) of the annual stream of this revenue benefit over the remaining estimated useful life of the NEFC assets is approximately \$8.8 million.
 - The amount is computed equal to Core steam load (not including the sales to the NEFC) multiplied by the difference between current forecast steam rates and the indicated higher average Core rate absent the benefit of additional NEFC steam plant load.
- On a go-forward basis and for the purpose of the system extension test, the incremental benefit of extending the Core system to serve the NEFC is equal to total forecast NEFC building customer load multiplied by the indicated higher Core rate absent the additional NEFC steam plant load.
 - The current forecast steam rates effectively include the benefit of NEFC load (i.e. are lower with NEFC load) so this effect needs to be factored out for the purpose of the extension test in order to isolate the incremental benefit of the addition of the NEFC load.
 - The NPV of the incremental revenue benefit to the Core Steam system of connecting the NEFC on a go-forward basis is approximately \$7.7 million.
- The NPV of the incremental cost of the extension to serve NEFC customers, necessarily computed over the remaining estimated useful life of the NEFC assets, is approximately \$8.1 million.
- A net forecast cost is associated with the evaluation of the extension to serve NEFC customers on a go-forward basis.
 - The NPV of the net forecast cost of the extension is ~\$400,000, which is the difference between the discounted streams of benefits and costs.

Table 9 – Core utility system extension to NEFC – Basis and Results for the period 2022-2043

System Extension Test	Period	Year 1	Year 5	Year 10	Year 15	Year 22
Basis	Unit	2022	2026	2031	2036	2043
Core Load without NEFC	MWh	383,707	366,012	366,012	366,012	366,012
NEFC Load at Customer building	MWh	19,566	19,566	19,566	19,566	19,566
Core Steam Rate w NEFC system Load	(\$/MWh)	24.02	29.61	32.69	36.09	41.46
Core Steam Rate w/o NEFC system load	(\$/MWh)	25.50	31.52	34.80	38.42	44.14
Difference	(\$/MWh)	1.48	1.91	2.11	2.33	2.68
Results on Go-forward Basis	NPV					
Subsidy to Core under status quo ¹¹ (\$)	8,777,083	567,807	699,832	772,714	853,188	980,130
Incremental Benefit of Extension (\$)	7,727,874	498,945	616,714	680,902	751,770	863,548
Incremental Cost of Extension (\$)	8,130,711	772,351	734,090	686,660	638,370	575,663
Net Benefit (Cost) of Extension (\$)	(402,837)	(273,406)	(117,377)	(5,758)	113,401	287,885

Implications

The implications of the results above are as follows.

1. NEFC rates are too high:

- Under the system extension approach and the principles of the SET Guidelines, charging all of the costs to the NEFC customers going forward and continuing to subsidize Core rates would not be appropriate
- The cost of the system extension is borne fully by NEFC customers– that is, an inherent subsidy exists where it ought not to

2. Core rates are not reflective of an appropriate cost allocation:

- The present value of the incremental revenue benefit of the additional NEFC steam load without any system extension cost sharing – the subsidy - is \$8.8 million

¹¹ Status quo in this case refers to the subsidy that would persist absent applying the results of a system extension test and unifying the Core and NEFC cost of service and rates.

3. NEFC building customers ought to contribute to system cost recovery going forward through amended Core rates, as would be appropriate in this case under the principles guiding the recovery of system extension costs.
 - It would be appropriate to allocate the fixed costs of the NEFC system to the Core Steam system less a **System Contribution** of ~\$400,000 to be recovered separately and only from connected NEFC building customers.

4.2 The Standalone Matter of the NEFC Rate Design

Under the status quo, significant amounts of Core steam and fuel input costs are not being recovered in current periods and are being deferred for future recovery. The intent of the levelized rate structure to smooth rate impacts and to match current and forecast load with the utilization of system capacity and deferred capital recovery has stalled.

Compounding this concern is that current rates are too low to advance recovery of the existing RDDA balance and to ensure full recovery of the RDDA from connected customers over the terms of service, with particular view to the delayed and uncertain load growth to be served by the NEFC steam to hot water plants.

On a standalone basis (that is, to continue treating the NEFC system as a standalone customer of the Core Steam system), the NEFC rate design could be redesigned to recover the RDDA balance and more fairly balance the recovery of the cost of service in alignment with the current and future forecast billing determinants that underly cost causation (the **Standalone Redesign**, or **Standalone**).

We review these matters in further detail below to assist a comparison to merits of our proposal as presented in section 5.

4.2.1 Variable Charge

Issue

Under the current variable charge there is a significant under-recovery of the costs to serve current customers in current periods. The current variable rate is forecast to recover only 78% of the total direct Core steam tariff and fuel costs to serve the NEFC in 2021.

As shown in the table below, on an indicative basis the under-recovery of the Core-related components of the NEFC cost of service, net of the applicable variance deferral for Core steam and Fuel costs, comprises nearly the entirety of the RDDA balance through 2021.

Table 10 – Indicative RDDA balance relating to Core component cost of service

	2017	2018	2019	2020	2021
Approved Core component cost of service	536,700	536,700	536,700	1,597,717	1,540,390
Approved variable revenues	477,337	477,337	477,337	1,098,174	1,207,972
Indicative RDDA related to Core component	59,363	59,363	59,363	499,543	332,418
Variance Deferral relating to Core Steam and Fuel	(45,639)	23,973	731,749	(71,169)	TBD
Net RDDA related to Core component	13,724	83,336	791,112	428,374	332,418
Cost of Capital	435	3,539	31,484	72,138	100,828
Total Net RDDA related to Core component	14,159	86,876	822,596	500,511	433,246
Total					1,857,388

Standalone Approach

Variable Core steam and fuel inputs are directly attributable to current period NEFC energy consumption. Recovery of these costs would be improved under a standalone solution as a direct flow-through for recovery from the customers that take such service and in proportion to their respective energy usage in MWh. The effect would be to avoid under-recovery of current period costs and the risk of significant RDDA balances accruing in future.

The key principles in support of this approach would be to match the recovery of the major costs that vary with energy consumption with the applicable MWh billing determinant of each building customer. The effect would also be to match the timing of cost incurrence with the period of recovery (i.e., matching of the cost of service with the benefit received).

Structuring the recovery of Core steam and fuel costs as a flow-through charge to the NEFC system would require that the existing Variance Deferral Account remain in place to ensure full and stable recovery of the Core steam and fuel costs over time if actual costs differ from forecast. Maintaining such an account would be consistent, for example, with the approved Fuel Cost Stabilization Account (**FCSA**) that supports the full pass through of FortisBC service costs to Core customers.

4.2.2 Fixed Charge

Issue

The fixed charge does not tie directly to the NEFC component cost of service items that do not vary with energy consumption; that is, the annual fixed costs related to forecast operations and maintenance,

taxes, and the return of and on capital.

While the fixed charge was structured to under-recover the fixed cost of service initially – in recognition that the NEFC system was designed with excess installed capacity to serve future loads – the rate is not tied to cost causation nor does it yet target recovery of the RDDA balance over a reasonable time frame.

Standalone Approach

Concurrent with the restructuring of variable cost recovery, under a Standalone approach the fixed charge would need to be set on a levelized forecast basis with smooth annual increases over the remaining useful life of the current NEFC assets to ensure recovery of the fixed costs of the NEFC system plus recovery of the existing RDDA balance.

This approach to fixed charge rate-setting under a Standalone design would mitigate the risk to RDDA accumulation and recovery by ensuring full cost recovery from the customers that are taking service, which also serves to properly neutralize the effect of load growth uncertainty. In other words, the levelized fixed charge would be set to ensure recovery of the full fixed cost of service over the contract term and useful asset life (including RDDA recovery) for the current connected buildings.

Consistent with this approach, the levelized fixed charge would then necessarily be reset (lowered) as new load connects to ensure fair, predictable, and stable recovery of the fixed cost of service going forward from all connected NEFC customers. In other words, the addition of any new connected buildings in the NEFC would allow rates to be reduced for all customers over the term that remains at the time new load connects given current system capacity.

The underlying principle of the change in structure would be to match cost recovery with cost causation to promote predictable, stable recovery of the entirety of system costs over time from current and future customers that are connected. Such a rate structure would be consistent with other approved Creative Energy fixed charges; example, as approved for the South Downtown TES and DCS.

Comment on RDDA Recovery under Standalone Approach

As reviewed above, under a Standalone approach to the NEFC rate design, the RDDA would necessarily be recovered from all customers through the levelized fixed charge over the remaining useful life of the NEFC assets¹², which charge would be reduced as new customers connect. That is, and conversely, by design under a Standalone approach the RDDA would not be recovered necessarily and only from the four existing customers.

¹² As measured/modelled over the period that the assets are fully depreciated.

To emphasize the underlying rate design issues, we have shown for indicative purposes that the majority of the RDDA balance could be seen to tie to the under-recovery of variable costs. For actual cost recovery purposes going forward, however, we would be concerned if the consideration of such rate design issues were retroactively parsed by extension to consideration of whether future cost recovery ought to apply only to the existing customers. In our view to do so would depart from accepted rate design principles and raise concerns, for example, about the equity between customers over time or that the cost allocation assumptions to support such recovery would then depart from the approval of the rate design as a whole, if not also from the assumptions that informed the approved rate design, such as the higher anticipated load growth at the time.

4.2.3 Billing determinants

Issue

The fixed charge recovers costs per square meter of floor space, which does not align with the key driver of fixed costs.

The current \$/m² charge effectively assumes that all building customers have the same demands on the utility on a per m² of floor area basis, which imposes an imbalance in the fair allocation of cost recovery between customers (for a given total fixed cost recovery) because different customer types consume energy differently and therefore impose different system design requirements that are more closely tied to the fixed cost to serve.

Generally, the cost to serve individual buildings of a given size will differ according to the energy efficiency of the building type and design. For example, capacity costs will vary in relation to customer type and use as between the efficiency of commercial versus residential spaces.

Standalone Approach

Concurrent with the restructuring of the fixed charge, a change in the billing determinants to recover the allocated fixed costs on a \$/kW of installed peak design capacity, from a \$/m² charge, would tie more closely to the cost drivers of system design and more fairly recover the total level of fixed costs as between customers based on their unique demands on the system.

The key underlying principle would be to establish fair, efficient, and stable rates and cost recovery. A billing determinant of installed peak design capacity would correct for an inherent subsidy in the costs recovered from the NEFC commercial use building rates, which results from the relatively higher capacity to serve the commercial building per unit floor area.

Another benefit would be to promote customer understanding and acceptance due to the well-understood drivers of the costs of thermal energy capacity and supply, which would also remove a barrier to connect new efficient load in the future also to the benefit of all customers.

A \$/kW billing determinant would be consistent with other approved Creative Energy fixed charge designs; example, for the South Downtown TES and DCS.

4.2.4 Standalone Approach to NEFC Rate Design – Rates and Impacts

The following table reviews the forecast one-time rate impacts of addressing the noted rate design issues reviewed above while continuing the Standalone approach.

The results are presented in comparison to the status quo rate design, wherein costs are recovered on a more ad hoc basis relative to cost causation and with no attendant regard to the principles of fair and stable cost recovery, and no consequent abatement to the accrual of the RDDA nor recovery of the balance.

Table 11 - Standalone approach to NEFC rate design - Rates and Impacts

		One-time Customers Impact 2022			Indicative Impact of Load Growth 2024 Stand-alone Redesign		
		Status Quo	Stand-alone	Difference	Existing	Existing + Growth	
		2022 ¹³	2022	%	2024	2024	%
Variable charge	\$/MWh	66.98	83.65	25%	99.80	93.07	(7%)
Fixed charge	\$/kW/mo.	4.74 (equivalent) ¹⁴	4.40	(7%)	4.58	2.38	(48%)
All-in	\$/MWh	100.66	114.92	14%	132.33	109.06	(18%)

The following table highlights the one-time forecast rate impact to the four current NEFC building customers under the standalone NEFC rate design and as between a change in the fixed charge billing determinants from floor space to peak design capacity.

¹³ The 2022 Status quo rates have been normalized for comparison of the 2022 rate design -related impacts by increasing the 2021 Status Quo variable and fixed rates (\$63.04 and \$0.33) by the underlying forecast cost increases between 2021 and 2022 in, respectively, the Core steam and fuel costs (by 6%) and the NEFC fixed costs (by 2%).

¹⁴ The fixed charge in 2022 under the Status Quo is equal to \$0.34/m²/ month, which is equal to the 2021 approved rate of \$0.33 escalated at 2%, as noted in the prior reference above. The equivalent \$/kW/mo. charge is shown for ease of comparison.

Table 12 – Indicative Customer impacts of a change in billing determinants under a standalone design

Indicative Rates and Impact	Status Quo - 2022	Standalone Design at Equivalent \$/m2 billing determinants - 2022			Standalone Design at Equivalent \$/kW billing determinants - 2022		
	All-in \$/MWh	All-in \$/MWh	Rate Impact	Share	All-in \$/MWh	Rate Impact	Share
PARQ Casino	96.83	111.36	15%	44%	115.94	20%	52%
One Pacific	100.41	114.68	14%	22%	112.94	12%	21%
ARC	109.43	123.06	12%	25%	114.48	5%	19%
Aquilini Centre South	103.82	117.84	14%	9%	115.22	11%	8%
All-in	100.66	114.92	14%	100%	114.92	14%	100%

Given the indicative rate impacts, correcting the rate design while continuing the Standalone approach may require consideration of possible transition mechanisms to mitigate the bill impacts over time.

5 Proposal – Unify the Core and NEFC Cost of Service and Rates

5.1 Proposal

The NEFC system is an extension of the Core Steam system, sharing the same generation resource and delivering the same product as the Core system, thermal energy, to its building customers. The accumulating RDDA balance and the results of the system extension test provide compelling evidence that the rate structure and rates of the NEFC system is implicated by a significant distortion in the fair allocation of costs that ought now be corrected on a go-forward basis.

Creative Energy therefore proposes to consolidate the Cost of Service of the Core Steam system and the NEFC system, which is to treat the Core Steam system and NEFC system as one system with an extension (which is what they are), make the actual NEFC buildings customers of the Core system, and charge unified rates aligned to the Commission’s SET Guidelines (**Unify Proposal**, or **Unify**).

The mechanism to enable the Unify Proposal is straightforward:

1. Consolidate the fixed costs of the NEFC system with the Core Steam system RRA on a go-forward basis;
2. Allocate the net cost of the extension – estimated at ~\$400,000 going forward – to NEFC building customers as a System Contribution by adding this amount to the RDDA, and reduce the amount of the NEFC system fixed costs allocated to the Core Steam system RRA by an equivalent amount.
3. Apply the Core Steam and Fuel Tariff to connected NEFC building customers inclusive of the NEFC fixed costs and as would then be applicable to all Core system building customers, including the buildings in the NEFC area served by the Core steam to hot water stations;
4. Recover both the net RDDA balance that exists to the end of 2021 plus the noted system contribution separately and only from connected NEFC building customers through a **System Contribution Charge** per MWh of energy consumption.
5. Cancel the current NEFC tariff and the Variance Deferral Account.¹⁵

We review the components, impacts and benefits of the Unify Proposal in further detail in the sections that follow, including in relation to commonly accepted rate design principles and considerations. A unified cost of service and rate structure will correct a distortion in the allocation and recovery of the costs of the extension of serve the NEFC and will deliver significant other benefits to current and future

¹⁵ The RDDA would be maintained to recover the current balance over time inclusive of the ongoing cost of capital, but there would be no future approved additions in relation to originating purpose.

customers, to the utility and system, and to the Commission also.

5.2 Rate Design

5.2.1 Core

The existing approved Core steam service rate structure for thermal energy service will be unchanged under the Unify Proposal. A declining block thermal energy rate structure is in effect to recover the approved revenue requirements of the Core Steam system, expressed in \$/M# of steam consumption per month. A single fuel charge rate is in effect to recover on a flow-through basis the costs of the bundled natural gas service provided by FEI under Rate 7.

- The rates under the declining block thermal energy rate structure will increase with the allocation of the NEFC fixed costs to the Core RRA under the proposed unification.
- The fuel charge rate already factors in NEFC load into rate-setting and will not change due the proposed unification.

5.2.2 NEFC

Upon consolidation of the NEFC fixed cost of service into Core steam revenue requirements and rates, NEFC buildings would be charged the Core Steam tariff and Fuel cost charge under the existing Core rate structure in place as for all Core customers.

Thermal energy consumption is measured in MWh at the NEFC building customer meter, not M#. Thus, the implementation of the proposed unification requires that, for customers connected to the hot water distribution network in NEFC:

- The approved rates for steam and fuel service be expressed in equivalent \$/MWh units; and
- The energy consumption thresholds under the declining block Core steam rate structure be expressed in equivalent MWh units.

For the latter implementation component, the existing approved energy consumption steam rate thresholds of 50M#, 150M# and 800M# per monthly billing cycle would be approximately equivalent to, respectively, thresholds of 17MWh, 52MWh and 278MWh per monthly billing cycle at a M# to MWh conversion factor of 0.347.

5.2.3 System Contribution Charge

The System Contribution Charge would be a levelized annual charge amortized over the remaining depreciated life of the NEFC assets and adjusted downward from time to time, to be approved by the

Commission, as new load connects to reflect the benefit of all buildings connected to the NEFC as designed.

Given the results of the system extension test and the allocation of the remaining and forecast fixed costs of the NEFC to the Core system going forward net of a required System Contribution, recovery of the prior balance in the RDDA must necessarily be recovered from connected NEFC building customers. To do otherwise under the circumstance would raise concerns about retroactive ratemaking. That is, the review of the system extension benefits and costs can only be forward looking and cannot implicate the prior approved rate design and impacts to the NEFC building customers.

A System Contribution Charge per MWh would thus be set on a forecast basis to recover the total of:

- The net amount of the RDDA as approved by the Commission to the end of 2021 (and net of final variance deferral account adjustments at the end of 2021); and
- A System Contribution, estimated in the amount of \$400,000 on a go-forward basis. The estimated level of a System Contribution is broadly indicative based on the SET Guidelines and results but may be refined in the Part 2 Application upon factoring 2022 test year revenue requirements into the Rate Structure Model.

As noted, the System Contribution Charge would be a levelized annual charge amortized over the remaining depreciated life of the NEFC assets and adjusted downward from time to time as new load connects. The addition of new load in the NEFC area would serve to reduce the charge, not the length of the amortization period, which will ensure fair cost recovery of the net RDDA balance from all connected NEFC building customers over the useful life of the NEFC assets.

Recovery of the RDDA and System Contribution through a System Contribution Charge would be simple, transparent and readily understood, particularly in view of the close alignment with the SET Guidelines and the significant rate benefits overall compared to recovery of the RDDA under the Standalone Approach all-told. It would complement the strong directional improvement in the fairness of the Unify Proposal for all customers concerned. It would avoid unnecessary complexity and precision. It would also properly avoid any retroactive consideration about the nature of the costs that have accrued to the RDDA and to what customers any specific cost recovery ought to apply if at all.

5.3 Indicative Impacts

The following tables presents a summary of the indicative impacts of the Unify Proposal in relation to both the Status Quo and Standalone redesign.

Table 13 – NEFC Building Customer – Summary of Indicative Rate Impacts

NEFC \$/MWh 2022	Status Quo	Standalone Redesign	Unify Core and NEFC
Variable charge 2022 (\$/MWh)	\$67 Ad hoc tie to cost causation and rate-setting	\$84 100% flow-through Core-component variable costs	\$72 Average Core rates for Steam
Fixed Charge 2022 (\$/kW/mo)	\$4.7 Ad hoc tie to cost causation and rate-setting	\$4.4 Levelized recovery of NEFC-component fixed costs	n/a NEFC fixed costs recovered in Core rates all Core customers
RDDA and System Contribution Recovery (\$/MWh)	Ad hoc abatement of future accrual; no targeted recovery of prior balance	Blended into levelized fixed charge recovery over useful asset life	\$9.4 System Contribution Charge
Total All-in rate (\$/MWh)	\$101	\$115 ~14% higher than Status Quo – one time	\$81.4 ~20% lower than Status Quo – ~30% lower than Standalone

In relation to the table above, the indicative effect of the projected NEFC load growth scenario would be to:

- Reduce the average Core rate by approximately 2% in 2024 (as compared to rates in 2024 without the addition of load), which benefit ramps up to an approximate 10% reduction to the average Core rate in 2033 due to the underlying economy of scale.
- Reduce the annual levelized System Contribution Charge to ~\$3.7/MWh from \$9.5/MWh, beginning in 2024, which would reflect a proper sharing of the amortization of the RDDA balance and System Contribution over the remaining useful life of the NEFC assets.

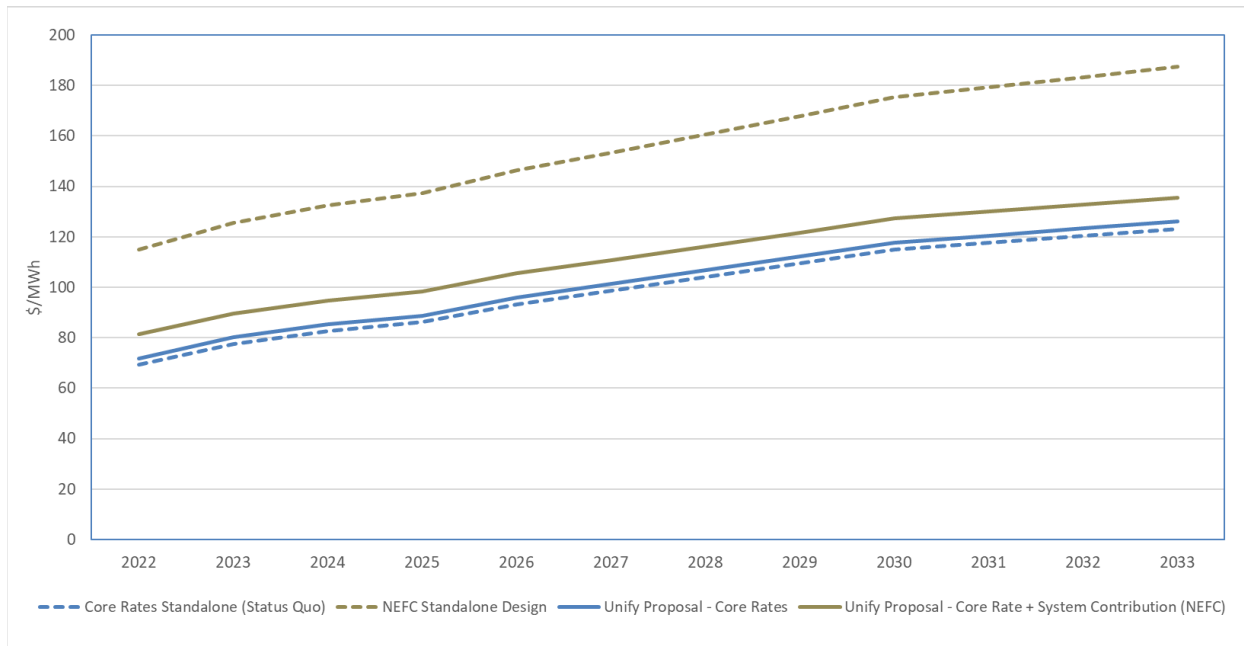
Table 14 – Existing Core Customer – Summary of Impacts

Core \$/MWh	Core Rates Status Quo	Unify	Impact to Existing Core
Average Core Rate (2022)	\$69.3	\$71.8	~3.6%
Levelized (2022-2043)	\$108.4	\$111.1	~2.6%
NEFC load growth scenario		\$110.4	~1.9%

The estimated one-time rate impact in 2022 assumes that the allocation of the NEFC fixed costs to the Core Steam system RRA each year is offset by the annualized amount of the System Contribution that is forecast to be recovered through the System Contribution Charge each year (an amount each year equal to approximately \$34,500). This aligns the offset with the annual recovery of the System Contribution and promotes rate stability, as opposed to accounting for the entire offset as a one-time reduction to the Core Steam system RRA in 2022.

The following figure illustrates the magnitude of the changes in the indicative rates as between the Unify Proposal, which removes the inherent cost allocation subsidy and moderately increases Core rates, and the Standalone approach, which does not.

Figure 1 – Indicative Rates of the Unify Proposal compared to Standalone Approach



Finally, the following table serves as a check of the results of the system extension test results presented in Table 9. The results highlight the indicative fairness of the cost allocation between the Core and NEFC on a go-forward basis as demonstrated by the equivalence between the discounted stream of benefits and costs to serve the connected NEFC buildings under the Unify Proposal.

Table 15 – Check of System Extension Results in relation to the Unify Proposal

	Period	Year 1	Year 5	Year 10	Year 15	Year 22
	NPV	2022	2026	2031	2036	2043
Forecast Core Incremental Benefit = Core rates under Proposal * NEFC Building load	7,726,245	510,538	620,922	679,446	744,268	847,192
Forecast Core Incremental Cost = NEFC Fixed Costs less Levelized Annual System Contribution	7,727,874	737,902	699,641	652,210	603,920	541,213

5.4 Rate Design Principles and Considerations

5.4.1 Bonbright Criteria Assessment

We present below a Bonbright criteria assessment of the Unify Proposal with noted comparison of its merits in relation to a redesign of NEFC rates within a continued Standalone approach. We note the following in relation to how the key attributes of the Unify Proposal are presented within the Bonbright criteria assessment and in relation to the alternative approaches.

- As reviewed prior in this Application and as further summarized below for completeness, the Status Quo NEFC rate design has significant drawbacks and it is not an option for future NEFC rate-setting.
- In contrast, a Standalone approach to redesign NEFC rates would confer benefits in relation to certain rate design principles in direct comparison to the Status Quo, such as presented in section 4.
- However, in view of the system extension analysis presented in section 4, the benefits of a Standalone Redesign are effectively narrow in scope for a given set of assumptions and must now also be considered more broadly in relation to merits of the Unify Proposal.

Table 16 - Bonbright Criteria Assessment of Unify Proposal versus Standalone NEFC Rate Structure

Bonbright Criteria	Status Quo	Standalone NEFC Rate Redesign	Unify Core and NEFC COS and Rates	Comment
Recovery of the Revenue Requirement	Poor	Fair	Good	<ul style="list-style-type: none"> • The Status Quo does not recover the full NEFC revenue requirements; significant RDDA balances would persist and rate-setting in relation to the revenue requirements would be ad hoc • The Standalone Redesign will fully recover the Core-related variable revenue requirement components, but recovery of the NEFC-related fixed revenue requirement components will remain subject to approved annual revenue deferrals • The Unify Proposal will fully recover all revenue requirement components on a forecast basis with no deferrals. RDDA recovery will be recovered separately through a System Contribution Charge to connected NEFC buildings
Fair apportionment of costs	Poor	Fair	Good	<ul style="list-style-type: none"> • For a given level of total cost recovery – assuming the total is correctly allocated – the Standalone Redesign would represent an improvement in the fair recovery of costs from customers in relation to fixed versus variable cost causation • The Unify Proposal is most fair given its close alignment to the long-standing principles of the SET Guidelines • Under the Unify Proposal all costs are fairly apportioned and recovered through the Core Steam and Fuel Tariff plus a System Contribution Charge to NEFC connected buildings • The moderate rate increase to the Core Steam system under the Unify Proposal effectively removes the inherent subsidy that would persist going forward under status quo cost allocation and Standalone approach

Bonbright Criteria	Status Quo	Standalone NEFC Rate Redesign	Unify Core and NEFC COS and Rates	Comment
Customer understanding and acceptance	Neutral	Poor	Good	<ul style="list-style-type: none"> • The status quo design is not objectively good with respect to customer understanding and acceptance; treating an extension to a utility system as customer of that system is counterintuitive and challenging to understand. The status quo is considered neutral in this assessment because it has been in place and applied to NEFC customer bills for 5 years. • The Standalone approach would result in significant and unfair rate impacts as compared to the proposed approach. Customer bill impact transition strategies would need to be pursued within existing deferral mechanisms • Due to the proper sharing of fixed costs and the principled, consistent approach to evaluating the economics of system extensions, the Unify Proposal is intuitive and will provide a significant and appropriate rate reduction to existing customers while providing an intuitive and efficient market signal to new customers. These factors promote customer understanding and acceptance.
Practical and cost-effective	Poor	Poor	Good	<ul style="list-style-type: none"> • Rate-setting under the status quo design is ad hoc and departs from accepted principles • The Unify Proposal leverages an existing approved Core rate structure that recovers the costs for the same thermal energy service provided making it practical and cost-effective to implement and apply to bills each month • In comparison to the Standalone design, the Unify Proposal significantly reduces the complexity and burden in the structuring and review of revenue requirement proceedings and rate-setting. The need for a variance deferral account is also eliminated • These benefits of practicality and efficiency will also be further enhanced under a single system approach within future Core rate design initiatives, such as the intent to review the declining block structure or to provide any low carbon rate offerings associated with the Core system thermal generation

Bonbright Criteria	Status Quo	Standalone NEFC Rate Redesign	Unify Core and NEFC COS and Rates	Comment
Avoid undue discrimination	Neutral	Poor	Good	<ul style="list-style-type: none"> The Unify Proposal treats all customers the same, both existing and new, under a fair and principled application of the Commission’s longstanding SET Guidelines, which have been in place for 25 years The economic framework applies the established precedent without discrimination and will thus serve also to avoid similar issues when future nodal extensions to serve new customers of the Core Steam system are considered
Efficient prices	Poor	Good	Good (NEFC) Not applicable (Core)	<ul style="list-style-type: none"> Rate-setting under the status quo design is ad hoc and departs from accepted principles, and is therefore inefficient and unpredictable Through a narrow lens, Standalone redesign will lead to more efficient pricing through the alignment of fixed versus variable charges with cost causation; but the market signal of the cost of new customer connections remains distorted. The Unify Proposal will ensure customer contributions are fully costed and recovered and will allow all customers to properly benefit from the underlying economies of scale in system expansion. Efficient and competitive market pricing for new connections is properly supported by the underlying economics and cost sharing (including through the System Contribution Charge) The Core Steam and Fuel Tariff recovers approved revenue requirements and fuel costs through variable charges and there are no proposed changes to the Core Steam system rate structure at this time. The benefit of unifying is not the Core rate design itself. The Core rate design will be reviewed separately for all customers properly taking service under it. See Practical and Cost-effective.
Rate stability	Poor	Fair	Good	<ul style="list-style-type: none"> Both the Standalone and Unify approach promote predictable and stable rate-setting The Unify approach unifies the NEFC customer loads with those of the Core which will add diversity and reduce the bill impacts of load variances
Revenue stability	Poor	Fair	Good	<ul style="list-style-type: none"> The flow-through of variable cost recovery enhances revenue stability under the standalone approach but the deferred revenue risk is not fully mitigated under levelized fixed charge design

5.4.2 Other Rate Setting Considerations

The following discussion addresses the rate design considerations specifically noted in the TES Regulatory Framework Guidelines (**Guidelines**).

Equitable Balance of Cost and Risk

The Unify Proposal balances cost and risk in that the costs of the extension to the NEFC are appropriately allocated to the Core system net of a System Contribution while the RDDA balance and System Contribution will be fully and fairly recovered only from connected NEFC building customers, including any prospective future load. The Variance Deferral Account is cancelled. The allocation of risks under the Core rates and rate design is maintained for all customers.

Least Deferral Mechanisms Possible

The Unify Proposal obviates the need for the Variance Deferral Account. The RDDA account is maintained only to facilitate the recovery of the prior balance and System Contribution over time inclusive of carrying costs, but there would be no future approved additions to the RDDA in relation to its originating purpose.

Restrict Ability of the Utility to Pass Controllable Costs onto Ratepayers

There are no variance deferral mechanisms introduced under the Unify Proposal, including in relation to operating costs that are within management control. Approved operating and maintenance costs formerly allocated to the NEFC will remain a shareholder risk upon the proportionate consolidation of these costs with the amounts allocated to the Core Steam system under Commission approved transfer pricing methodologies.

Use the Least Amount of Regulatory Oversight to Protect the Ratepayer

The Unify Proposal significantly reduces the complexity and regulatory burden in the structuring and review of revenue requirement proceedings and rate-setting.

Avoid Rate Shock

The Unify Proposal confers significant beneficial rate impacts to existing NEFC customers and moderately increases the rates to Core customers (including NEFC buildings) on a fair and principled basis.

Appendix A – History of the NEFC

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1 Policy Underpinning the NEFC hot water system

In and around 2011, the City of Vancouver developed and introduced the Greenest City Action Plan (**GCAP**) as part of an initiative to become the greenest city in the world by 2020. Part of the GCAP was the reduction of carbon pollution through the establishment of low carbon neighbourhood energy systems (**NES**) in densely developed areas of the City.¹

The City of Vancouver had conducted a preliminary feasibility study, which confirmed the viability of a low carbon NES in the NEFC area of the city. The study also noted that Central Heat Distribution Ltd. (**CHDL**) as an existing thermal energy utility adjacent to NEFC, would be a key partner in transitioning from the traditional steam heat service model to a low-carbon future.² A subsequent study of potential low-carbon heat sources and distribution recommended constructing a hot-water distribution system to serve all new customers in the neighbourhood, integrated with CHDL's existing system.³ Creative Energy Canada acquired CHDL in March 2014, renamed it Creative Energy Vancouver Platforms and entered into negotiations with the City of Vancouver for a neighbourhood energy agreement.⁴

2 Mandatory Connection Requirement

The proposed NES would be governed by a separate Neighbourhood Energy Agreement (the **Agreement**). The Agreement reflected the City of Vancouver's policy objectives for development in NEFC and Chinatown and established additional rights and responsibilities specific to NEFC and Chinatown that were not covered in Creative Energy's existing Municipal Access Agreement with the City of Vancouver. In exchange for commitments to construct a new hot water distribution network and to pursue long-term carbon reductions for the neighbourhood, the City of Vancouver established mandatory connection requirements in NEFC and Chinatown through a combination of rezoning conditions (for rezoning approved or anticipated prior to enactment of a bylaw) and a proposed connection bylaw (for all future rezoning). Mandatory connections would provide the security of loads and the economies of scale required to establish a new shared hot water system and one or more low carbon energy sources. Ultimately the shared system was expected to secure larger long-term carbon reductions at lower average cost than individual building systems.⁵

¹ Creative Energy Vancouver Platforms Inc. (Creative Energy) Application for a Certificate of Public Convenience and Necessity for a Low Carbon Neighbourhood Energy System (NES) for Northeast False Creek (NEFC) and Chinatown Neighbourhoods of Vancouver ([2015 Application](#)), p. 1.

² 2015 Application, p. 21.

³ 2015 Application, p. 21.

⁴ 2015 Application, p. 22.

⁵ 2015 Application,, p. 2.

3 The NES was to be developed in two phases

The proposed NES was planned to be developed in two phases. The 2015 Application covered Energy Supply Phase 1, which would involve all energy being provided from the existing Creative Energy steam plant under a proposed cost allocation methodology included in the application.⁶ Energy supply from the existing steam plant would avoid the need for any temporary or permanent gas boilers in the neighbourhood. It would also lower the costs of establishing the new system and would benefit existing Creative Energy customers through sharing of fixed plant costs and overheads.⁷

A second application (**Second CPCN**) was planned to be filed for approval of a low carbon energy source to meet the Agreement carbon performance requirements (Energy Supply Phase 2), anticipated to be in service by January 1, 2020, subject to further due diligence of options, actual rate of neighbourhood development, economic considerations and ultimate Commission approval.⁸ Under the terms of the Agreement, these carbon performance requirements may have been met through the addition of low-carbon energy sources upstream of the NES (e.g., a large fuel switch within Creative Energy's existing steam system) or through the addition of low carbon energy connected directly to the NES hot water network, at which point Creative Energy's existing steam system would only provide peaking and back-up to the NES.⁹

4 NEFC System as a Customer of the Core Steam System

Within the framework and two-phase development plan in which the NEFC system was conceived, the costs of the NEFC and the rate design were based on a view of the NEFC system as a customer of the Core Steam system.

The 2015 Application did not include final rates and provided that a rate application for the NES would be filed with the Commission prior to service commencement, expected in 2016. However, Creative Energy sought approval for key elements of the methodology for establishing revenue requirements, rate design and rates.¹⁰

The NES tariff would cover all incremental capital costs for the NES network, the two Steam-Hot Water converter stations, energy transfer stations at customer buildings, and all maintenance and overheads associated with this equipment. It would also include a cost allocation for energy purchased from the Core Steam system at the two converter stations. This cost allocation would reflect generation costs at

⁶ 2015 Application, p. 4.

⁷ 2015 Application, p. 3.

⁸ 2015 Application, p. 4.

⁹ 2015 Application, p. 4.

¹⁰ 2015 Application, p. 16.

the Beatty Street plant, as well as a portion of network costs and corporate overheads.¹¹ Creative Energy proposed a two-part tariff consisting of a fixed and a variable charge, reflecting the approximate share of fixed and variable costs in the NES revenue requirement.¹²

For residential/mixed use construction, Creative Energy proposed a Fixed Charge per m² of connected floor area. This was consistent with other thermal energy systems, was simple and reflected the relatively consistent expected peak demand for new residential construction. The Energy Charge would be consistent across all customer classes and would be adjusted annually to match the NES' actual variable costs, mainly the cost of energy from the core.¹³

As the project would include some infrastructure sized for expected future load growth, the revenue requirement per MWh would be relatively high during the very early years of the NES, and decline rapidly with load growth (before the effect of Energy Supply Phase 2). Creative Energy therefore requested a deferral account to smooth rates during Energy Supply Phase 1. Rates would be below the actual revenue requirement in initial years, and resulting shortfalls would accumulate in a Revenue Deficiency Deferral Account (**RDDA**).¹⁴

5 BCUC Decision

The BCUC granted the requested CPCN for the project as designed to be connected to the Core Steam system at two steam to hot water converter stations, but denied approval of the Agreement. In particular, the Panel considered that the wording of the agreement suggested that the Commission was approving the mandatory connection bylaw.¹⁵

Creative Energy also required Commission approval of a proposed NEFC Connection Agreement and Service Agreement (**Connection Agreement**) pursuant to sections 59-61 of the UCA. Creative Energy intended that the Connection Agreement contain the following key terms: (1) the process for developers to apply for connection (consistent with the proposed City of Vancouver bylaw); (2) design guidelines and a review process to ensure compatibility with the NES; (3) a rate tariff, set out in Schedule A to the Connection Agreement; and (4) provisions for statutory rights of way. The Connection Agreement arose pursuant to the CPCN approval, the Franchise Agreement approval, and the enactment of the City of Vancouver Connection Bylaw.¹⁶

¹¹ 2015 Application, p. 93.

¹² 2015 Application, p. 93.

¹³ 2015 Application, p. 93.

¹⁴ 2015 Application, p. 95.

¹⁵ [Order C-12-15 Decision of the BCUC issued December 8, 2015 \(Order C-12-15 Decision\)](#), p. 40.

¹⁶ Order C-12-15 Decision p. 54.

The Panel denied approval of the Connection Agreement on the basis that the Panel required more information from Creative Energy. Accordingly, Creative Energy could resubmit the Connection Agreement with its next rate application, however it was required to contain the following evidence:

- (a) A comparison of the statutory right of way provisions of tariffs of other similar utilities, with a view of supporting that this provision is in the public interest and meets the standards applicable in sections 59-61 of the UCA.
- (b) A fulsome analysis of an alternative to the requirement that developers could not apply for a building permit until Creative Energy had approved the developer's design.
- (c) A revised section 2.2 that indicated that the requirement to have exclusive end-use was a part of the City of Vancouver policy and bylaws, and that the developer was required to comply with such policy/bylaws.
- (d) Evidence that the design guidelines and review process was consistent with other similar utilities.
- (e) Evidence that the other terms and conditions of concern raised by the Urban Development Institute and others did not go further than necessary in order to provide like service by other utility operators.¹⁷

6 Restated and Amended Agreement

Creative Energy resubmitted the Agreement, restated and amended and renamed the NEFC NES Franchise Agreement with the following amendments:

- (a) Removal of the Carbon Reduction Rider;¹⁸
- (b) Removal of the Benchmark Energy Cost and the Cost Premium Cap;¹⁹
- (c) In response to the Commission's concerns that enactment of the mandatory connection bylaw was conditional upon Commission approval of the Agreement, Creative Energy removed the

¹⁷ Order C-12-15 Decision pp. 55-56.

¹⁸ [2016 Restated and Amended NEFC and Chinatown Neighbourhood Energy Agreement Application](#), letter, p. 2.

¹⁹ 2016 Restated and Amended NEFC and Chinatown Neighbourhood Energy Agreement Application, letter, p. 2.

relevant provisions from the Agreement and inserted them into a separate Bylaw Enactment Agreement (**BEA**);²⁰

(d) Creative Energy advised that they intended to seek a CPCN to extend service to Chinatown under the terms of the amended Agreement, if and when feasible, rather than relying on an Extension Policy as contemplated by the Commission in its Thermal Energy System Regulatory Guidelines;²¹

(e) Creative Energy would be submitting the Connection Agreement for approval at another time;²² and

(f) Extension of the Condition Date.²³

(the **Amended Agreement**)

7 BCUC Decision

The BCUC found that several of the amendments in the Amended Agreement did appropriately address the BCUC's previous determinations; however, with respect to the mandatory connection bylaw, the Panel found that moving the mandatory connection provisions from the prior Agreement into the BEA was more a matter of change in form rather than substance. Accordingly, the Panel found that the applied-for franchise was constituted by the rights, privileges and concessions set out in the combined set of documents: the Amended Agreement, the BEA and the mandatory connection bylaw. Consistent with the Prior Decision, the Panel did not find the applied-for franchise to be acceptable in the form submitted in that it still implied Commission approval of the provisions contained in the mandatory connection bylaw, as well as those provisions contained in the Amended Agreement.²⁴ Ultimately, the Panel did not approve the franchise.

Creative Energy applied for reconsideration and variance of that decision, and pursuant to Order G-151-16 the BCUC denied Creative Energy's reconsideration application.

²⁰ 2016 Restated and Amended NEFC and Chinatown Neighbourhood Energy Agreement Application, letter, p. 3.

²¹ 2016 Restated and Amended NEFC and Chinatown Neighbourhood Energy Agreement Application, letter, p. 3.

²² 2016 Restated and Amended NEFC and Chinatown Neighbourhood Energy Agreement Application, letter, p. 4.

²³ 2016 Restated and Amended NEFC and Chinatown Neighbourhood Energy Agreement Application, letter, p. 4.

²⁴ [Decision of the BCUC dated June 16](#), 2016, p. 11.

8 Subsequent Developments

As discussed in section 3 of this Part 1 Application, the City of Vancouver is planning to establish a new NEU thermal network to serve upcoming development in Northeast False Creek with low-carbon energy. The City issued a RFP on August 6, 2021, to seek a low carbon thermal energy supplier to meet the demand for development in NEFC, which would be scaled up over time as new load in the neighbourhood is connected to the NEU distribution network. The City would own and operate the distribution network, with an energy supplier responsible for securing a location for energy generation and all elements of funding, permitting, designing, constructing, installing, operating, maintaining, and replacing the equipment required to supply energy into the City's distribution network.