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Office of Consumer Services
Docket No. 26-2666-01
Exhibit OCS 1.1D
Witness: Jennifer Ntiamoah

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OCS Request:

3.1 **Thermal Tariff No Mark-up** Please refer to Section 3 and Section 3(a) of the Thermal Tariff (Corix Exhibit 1.0, p.7–8). The current tariff language does not separately name the Capacity Charge and the Energy Charge as two distinct components subject to the no mark-up rule. At the June 11, 2026, hearing, witness Hockley confirmed that Corix intends zero mark-up on both the energy charge and the capacity charge.

a) Does Corix intend to file revised tariff language explicitly naming both the Capacity Charge and the Energy Charge as subject to the no mark-up rule?

Corix Response:

Yes, Corix intends to file revised tariff language with its rebuttal testimony. This revised tariff language will include provisions explicitly naming both the Capacity Charge and the Energy Charge as subject to the no mark-up rule and, potentially, other updates as may be proposed by the OCS. As indicated at the June 11, 2026 hearing, Corix is interested in collaborating with other parties to this proceeding to resolve remaining disputes or concerns about the tariff language and invites discussions between the parties to reach consensus on the terms and conditions of service.

OCS Request:

- 3.2 **End-User Complaint** Please refer to Section 3 of the Thermal Tariff (Corix Exhibit 1.0, pp.7–8). Section 3 currently limits the grounds on which an end-user may lodge a complaint to two matters only: (1) fair allocation of thermal energy costs, and (2) no mark-up on those costs. At the June 11, 2026 hearing, witness Hockley testified that Corix intends that end-users can bring complaints concerning issues in addition to these two grounds, and agreed the language needs to be clearer and more explicit.

For each of the following scenarios, please describe the specific process for each end-user complaint:

- (a) a service outage, regardless of cause or location, that affects an end-user's unit;
- (b) cessation of service caused by the building owner's failure to pay Corix;
- (c) inadequate heating or cooling;
- (d) a medical or health condition requiring uninterrupted thermal energy service;
- (e) a billing error on the end-user's individual allocation statement;
- (f) submetering costs being passed to the end-user in violation of Section 7(a) of the tariff;
and
- (g) a mark-up applied by the building owner to either the Capacity Charge or the Energy Charge component of the end-user's allocation.

Corix Response:

- (a) a service outage, regardless of cause or location, that affects an end-user's unit;**

End-users will be notified in their information packages of a 24/7 phone number for reporting outages. When they call this number, they will be put through to a call operator that will take down the details of their complaint and their contact information. A Corix utility operator will immediately review the utility operation via our Supervisory Control and Data Acquisition (SCADA) system to confirm if it is a utility issue or a building issue.

If the utility is operating normally and it is a building side issue, the operator will contact the end-user and advise them to speak to the building manager/representative.

If it is a utility issue, the operator will notify the end-user that the issue will be investigated and remedied and that continuous updates will be provided to the building owner/representative going forward. The building owner/representative would then keep end-users apprised as they have the most direct and efficient communication method for reaching all affected end-users.

(b) cessation of service caused by the building owner's failure to pay Corix;

As per Corix's response to the DPU's second set of data requests in DPU 2.10 (a), "Following non-payment on a delinquent Customer account, Corix's procedure includes several steps and measures to work directly with our Customer to resolve the issue before cessation of service occurs."

The procedure is as follows:

1. At 30 Days Overdue - Corix will commence weekly collections calls and payment reminder emails to Customer.
2. At 60 Days Overdue - Offer a payment plan agreement to the Customer. Continue collections calls and payment reminder emails.
3. At 90 Days Overdue –
 - i. Perform internal risk assessment which considers financial risk to the utility and other Customers and public health and safety.
 - ii. Issue a formal demand letter to the Customer possibly including a warning of potential repercussions such as curtailment and/or cessation of service.
 - iii. Continue collections calls and payment reminder emails.
 - iv. Adjust bad debt forecast.
4. Enforce collection/security under contractual and/or statutory rights (e.g. lien, collection agency)
5. Arbitration or other applicable dispute resolution
6. Litigation (if arbiter decision is non-binding)
7. Provide written notice of cessation of service to the Customer.
 - i. Corix intends to update the tariff to include the requirement for Customers to notify end-users within 48 hours of receiving written notice from Corix.
 - ii. Corix to post notices on the premises in a conspicuous place and post notice on our website withing 48 hours of issuing the written notice to the Customer.
8. Service would be restored if:
 - i. The Customer paid the outstanding arrears in full;
 - ii. The Commission ordered Corix to restore service; or

- iii. There was a change to the risk assessment (e.g., approaching winter conditions increasing the risk to the health and safety of the public.).

The written notice period in the proposed tariff is currently 10 business days. Corix recognizes the OCS' concern regarding medical or health condition requiring uninterrupted thermal energy service and intends to update the tariff to include the following process:

- The Customer may, at any time, provide a written declaration, in a form acceptable to Corix, to indicate a building has an end-user(s) with a medical or health condition requiring uninterrupted thermal energy service.
- For buildings where this declaration has been made, the notice period for cessation of service due to the Customer's failure to pay is extended to 30 calendar days. The written notice period for buildings without this declaration would remain at 10 business days. Corix intends to update the tariff to reflect 14 calendar days so both notice periods use calendar days.

If an end-user is complaining about cessation of service, Corix would inform them of the steps taken prior to cessation of service and the three conditions that would trigger service to be restored (noted above).

Corix notes that end-users would also have remedies independent of Corix, such as obtaining a heating or cooling source for their unit, legal action against their landlord Customer, or finding alternate accommodation.

(c) inadequate heating or cooling;

The process for a complaint of inadequate heating or cooling would be handled the same way as a service outage (see above response to OCS 3.2 (a)).

In the rare instance that the issue persists and an investigation finds the contractual temperatures requested by the Customer are not adequate, Corix would work with the Customer and their mechanical engineer to determine the correct temperature requirements for the building and the financial impact, if any, associated with providing the adjusted temperature requested by the Customer. If there is a financial impact, (e.g., capital required to increase the capacity of the installed infrastructure serving the building), the impact must be borne by the Customer to ensure there is no negative impact to other Customers or to the utility.

(d) medical or health condition requiring uninterrupted thermal energy service

As per the proposed Tariff Section 20 Liability, "The Utility will endeavour to provide a regular and uninterrupted supply of Thermal Energy, but it does not guarantee a constant supply of Thermal Energy or the maintenance of unvaried temperatures."

Thermal energy service may need to be interrupted for necessary maintenance, there may be unplanned outages, and Section 15 Refusal to Provide Energy Services and Discontinuance of Energy Services outlines other scenarios for an interruption to service, including failure to pay by the Customer.

Corix would recommend the end-user submit the medical and health condition information to the Customer. The Customer can then submit a declaration to Corix indicating the building has an end-user with a medical or health condition requiring uninterrupted thermal energy service. Corix would inform the end-user that this declaration does not guarantee uninterrupted thermal energy service, rather it extends the advance notice period for the following:

- planned service outage notice to the Customer extended from 7 calendar days to 14 calendar days. Corix intends to update the tariff to include the requirement for Customers to notify end-users within 24 hours of receiving notice of a planned service outage from Corix; and
- written notice to the Customer of cessation of service due to failure to pay by the Customer extended from 10 business days (to be updated in the tariff to 14 calendar days) to 30 calendar days. As noted in response to OCS 3.2 (b) Corix intends to update the tariff to include the requirement for Customers to notify end-users within 48 hours of receiving written notice from Corix.

(e) a billing error on the end-user's individual allocation statement;

Corix would advise the end-user to contact the building owner responsible for the allocation and billing to the end-user and remind them of their right to submit a complaint to the DPU.

(f) submetering costs being passed to the end-user in violation of Section 7(a) of the tariff;

Corix would refer the end-user to the DPU to initiate an informal review. Corix would support and cooperate with the DPU and if necessary, PSC's investigation of the end-user complaint, including but not limited to directing the Customer to their obligations in the tariff. Corix would leave the assessment to the respective regulatory body or adjudicator.

(g) a mark-up applied by the building owner to either the Capacity Charge or the Energy Charge component of the end-user's allocation.

As per Corix's response to the DPU's second set of data requests in DPU 2.9 (c), "Corix will provide a relevant excerpt from the utility's Customer bill, in order to allow the End User (and DPU / PSC, if applicable) to confirm the suspected markup." If a markup has been found, Corix would refer the end-user to the DPU to initiate an informal review. Corix would support and cooperate with the DPU and, if necessary, PSC's investigation of the end-user complaint.

OCS Request:

- 3.3 **Fair Allocation** Please refer to section 3 (a)(ii) of the Thermal Tariff (Corix Exhibit 1.0, pp. 8), which permits allocation of the Energy Charge by floor area where all end-user tenants are ‘of a similar type’. The tariff is silent on whether this condition accounts for tenants who have independent thermostat control over their own unit and therefore their own thermal energy consumption. Does Corix have any data, study or analysis showing that floor area accurately reflects actual energy consumption where tenants have independent temperature control?

Corix Response:

Corix does not have any data, study or analysis showing that floor area accurately reflects actual energy consumption where tenants have independent temperature control. Corix has visibility at the utility meter located at the Energy Transfer Station (ETS) but not visibility at the end-user apartment level. It must be kept in mind that the total allocated energy charges for all units in a building cannot be greater than the total of the source utility energy charge. If there were any difference between an allocation and a sub-metered measured result it would mean that one user would be allocated more while another offsetting user would be allocated less. This matter is a zero-sum difference. As with any allocation there would be minor differences between the allocation and if sub-meters were installed. The issue is whether the allocation is fair and leads to a fair result.

Some context to the matter of end-user allocation may be helpful. In Application, Attachment 1, Appendix A, Schedule 19 – Estimated End-User Bill Impact shows for 2026 the estimated Capacity Charge amount at \$2,014 and Energy Charge amount at \$682 for a total \$2,696 for thermal service (heating and cooling). The portion of the total bill related to Capacity is 75% and the portion related to the Energy Charge is 25%. This segmentation/splitting of the variable Energy Charge of \$682 is an issue of choosing an appropriate allocation methodology or implementing actual measurements. If there were a 5% difference between an allocated amount and a measured amount the annual possible difference would be \$34.10. This potential \$34 annual difference (positive or negative) is the quantum of the matter regarding precision versus accuracy for the Energy Charge costs.

Corix considers that a fair allocation does not mean there needs to be a precise allocation given the context of how thermal energy benefits all users of the system. There are tradeoffs between accuracy and system benefits that accrue to the customers and end-users. In Corix Exhibit 7.0 in the direct testimony of Johan Grueso-Baron on page 18 lines 311-326 it explains that Corix uses a demand diversification factor of 70%. What this means is that the diversified peak capacity of the system is lower than if each building had its own HVAC equipment. This is a savings of infrastructure that reduces

overall costs of the system that leads to lower total overall costs for heating and cooling thermal service.

The most precise way to allocate thermal energy consumption is through sub-metering, however the cost to install, maintain and administer sub-meters is often cost-prohibitive. Also, when considering the variable consumption component of the bill is smaller than the fixed component, the cost-benefit analysis is usually negative. If sub-meters were installed and the consumption were metered by unit, an allocation methodology would still be required for the fixed component of the bill because regardless of whether an end-user consumed any energy during a service period, they should receive an allocation of the fixed component of the Customer's bill.

In the absence of sub-metering that would provide data on individual use and account for independent thermostat control, there are limited data points available for use in an allocation methodology. The data points can be static or dynamic, with static data points being more objective. There are proxy metrics such as the number of occupants in a unit or run time of in-suite equipment, however definitions for these metrics can be subjective between building owners and the data is dynamic so the updating and collecting of the required data each billing period can be cumbersome. Spatial volume is a proxy metric that uses static data, however there is a one-time upfront cost associated with calculation of the forecast volume (typically performed by the third-party) of the units and common areas. Allocation by floor area (static data point), is the simplest, objective, most cost-effective, and fair method that introduces the least amount of administrative burden. It can be used for both residential and commercial customers and it is easily replicated across all buildings.

As with any allocation methodology, it can be refined to take into account any differences among the users. If an identifiable group (e.g. commercial) uses double consumption of another group (e.g. residential), then the methodology can be refined to take that into account. If there are no material differences between two groups, then no refinement would be necessary. As with any refinement it is a matter of precision versus simplicity. A more precise method may cost more to implement, or it is more subjective based on certain assumptions. The choice of a refined allocation of actual measurement needs to consider the additional costs, the time spent, simplicity, understandability, objectiveness, and the relative benefits and costs.

In certain instances, when building composition includes more than one customer type, the utility can add an additional meter at the design stage of the building. For example, if a building is 60% residential and 40% commercial, the utility can install a meter on the commercial portion and determine the Capacity Charge as it makes up a large portion of the building. The Capacity Charge and Energy Charge for the residential and commercial customer groups can be billed separately by the utility. The two invoices can then be further allocated by the Customer to the end-user using floor area.

OCS Request:

- 3.4 **End-User Complaint** Please refer to Section 30 of the Thermal Tariff (Corix Exhibit 1.0, pp.22–23). Section 30 provides Customers (building owners) with a three-step escalation path; complaint to the Utility, DPU informal review, and PSC formal review - with service protection throughout. The parallel provision for end-users provides only for lodging a complaint with the Utility, with no further escalation path stated. At the June 11, 2026 hearing, witness Hockley agreed this was an oversight that needs to be corrected.
- (a) Does Corix intend to file revised Section 30 language giving end-users the same three-step escalation path available to Customers, along with equivalent service protection during the complaint process?
 - (b) Please explain the escalation path for end-users and where will the process be explained to end users?

Corix Response:

- (a) Does Corix intend to file revised Section 30 language giving end-users the same three-step escalation path available to Customers, along with equivalent service protection during the complaint process?**

Yes, Corix intends to file revised tariff language with its rebuttal testimony. This revised tariff language will include provisions to give end-users the same three-step escalation path available to Customers, along with equivalent service protection during the complaint process and, potentially, other updates as may be proposed by the OCS. As indicated at the June 11, 2026 hearing, Corix is interested in collaborating with other parties to this proceeding to resolve remaining disputes or concerns about the tariff language and invites discussions between the parties to reach consensus on the terms and conditions of service.

- (b) Please explain the escalation path for end-users and where will the process be explained to end users?**

The escalation path for end-users is the same as the escalation path for Customers.

Step 1. End-users can submit complaints to the building owner that can then forward the complaint to Corix, if necessary, or the end-user can submit a complaint directly to Corix. Complaints can be made regarding any topic, regardless of cause or

location. For any allocation, billing or sub-metering complaints, Corix would refer the complainant directly to the DPU.

Step 2. As per R746-200-8 - Informal Review, end-users can submit complaints directly to the DPU for an informal review if they feel the utility has not sufficiently resolved their complaint.

Step 3. As per R746-200-9 - Formal Agency Proceedings Based Upon Complaint Review, “The Commission, upon its own motion or upon the petition of any person, may initiate formal or investigative proceedings upon matters arising out of informal complaints.”

The process will be explained to end-users in the information package provided to them by the Customer at the time of move-in. As noted in response to OCS 3.6(b) below, Corix intends to revise the tariff to include the requirement for the Customer to provide the information package to the end-user at the time of move-in and any time Corix provides an updated version.

OCS Request:

- 3.5 **Disconnection** Please refer to Section 15 of the Thermal Tariff (Corix Exhibit 1.0, pp.17–18). Section 15 governs discontinuance of service in relation to the Customer (building owner) and contains no provision specifically addressing the rights or protections of end-users (tenants) in a discontinuance scenario. At the June 11, 2026 hearing, witness Hockley confirmed that Corix already follows an internal multi-step process before any cessation of service but acknowledged this process is not written into the tariff for UCDEU.
- (a) Please provide a complete written copy of the cessation of service process including all steps, criteria, and timelines.
 - (b) Does Corix intend to file revised tariff language for UCDEU that formalizes this procedure and establishes explicit protections for end-users?

Corix Response:

- (a) **Please provide a complete written copy of the cessation of service process including all steps, criteria, and timelines.**

Please refer to response OCS 3.2 (b) above.

- (b) **Does Corix intend to file revised tariff language for UCDEU that formalizes this procedure and establishes explicit protections for end-users?**

Yes, Corix intends to file revised tariff language with its rebuttal testimony. This revised tariff language will include provisions to formalize the procedure for discontinuance of service referenced in OCS data request 3.5 and establishes explicit protections for end-users and, potentially, other updates as may be proposed by the OCS. As indicated at the June 11, 2026 hearing, Corix is interested in collaborating with other parties to this proceeding to resolve remaining disputes or concerns about the tariff language and invites discussions between the parties to reach consensus on the terms and conditions of service.

OCS Request:

3.6 **End-User Disclosure** Please refer to the Thermal Tariff (Corix Exhibit 1.0). The tariff contains no provision requiring Corix or its Customers to proactively provide any information to end-users about the thermal energy service, the applicable rates, the cost allocation methodology, their rights under the tariff, or how to contact Corix directly. At the June 11, 2026, hearing, reference was made to an information packet that Corix intends to provide to end-users .

(a) What will this information packet contain?

(b) When and how will this information packet be provided to end-users?

Corix Response:

(a) What will this information packet contain?

The information packet will contain the following:

- About Corix
- About District Energy
- About Utah City District Energy Utility
 - Services provided
 - Regulation and the role of the regulator
 - Rate design and structure
 - How Billing Works
- About the Tariff
 - Where to find the tariff and a recommendation for the end-user to read and understand the tariff.
 - Key Sections of the Tariff
 - Section 3 No mark-up on Thermal Energy Costs
 - Section 3 (a) Fair Allocation of Thermal Energy Costs
 - Section 7 Sub-meters for Cost Allocation
 - Section 15 Refusal to Provide Energy Services and Discontinuance of Energy Services
 - Section 30 Dispute Resolution (include DPU and Commission contact information and websites)
- Service Outages
 - Notice for planned service outages
 - Remediation of unplanned service outages
- Contact Information for Corix Customer Support + website/subpage

(b) When and how will this information packet be provided to end-users?

A digital copy will be provided to the Customer which will be provided to end-users at the time of move-in, along with other move-in information. Corix intends to revise the tariff to include the requirement for the Customer to provide the information package to the end-user at the time of move-in and any time Corix provides an updated version.

OCS Request:

- 4.1 **Sub-metering Cost Data** - Direct Testimony of Hang Hockley, Corix Exhibit 8.0, p.5, lines 109-112 (“ Installation of sub-meters by the Utility to directly bill end-users in individual units is cost-prohibitive for several reasons, including upfront purchase and installation costs, as well as on-going administration, data collection and analysis, maintenance and replacement costs.”); Corix response to OCS Data Request 3.3 (“ the cost to install, maintain and administer sub-meters is often cost-prohibitive” and “the cost-benefit analysis is usually negative”).

Corix’s Direct Testimony and its response to OCS Data Request 3.3 both assert that submetering is cost-prohibitive and that the cost-benefit analysis is “usually negative”, but neither identifies the specific cost figures, data or analysis underlying those statements.

Please respond to the following:

- a. Please provide all data, studies, cost estimates, analyses or other documentation supporting Corix’s statement that sub-metering cost is prohibitive?
- b. Please provide all data, studies, or analyses supporting Corix’s statement that “the cost-benefit is usually negative” for sub-metering, including any calculations or assumptions.

Corix Response:

- a. Please provide all data, studies, cost estimates, analyses or other documentation supporting Corix’s statement that sub-metering cost is prohibitive?**

In response to OCS data request 4.1(b), Corix has prepared an analysis regarding the costs and benefits of sub-metering. Please see the response below and the corresponding OCS 4.1 Attachment 1.

Other than what has been supplied in response to OCS 4.1(b), Corix does not have any other data, studies, cost estimates, analyses or other documentation regarding the cost prohibitive statement.

As shown in response to OCS 4.1(b) the cost of sub-meters significantly outweighs the benefits of sub-metering apartment suite units. The net unfavorable costs of sub-metering would be borne by the customer/developer who in turn would likely pass on the costs of sub-metering to the end-user tenants. In the long term this would mean

higher costs to end-users, which impacts housing affordability and the overall costs of renting and living in an apartment.

Corix has stated that installation of sub-meters is cost prohibitive because the costs of sub-metering are materially more than any benefits that can be realized. If sub-metering were implemented in Utah, end-user tenants would face higher overall housing costs, undermining housing affordability.

b. Please provide all data, studies, or analyses supporting Corix’s statement that “the cost-benefit is usually negative” for sub-metering, including any calculations or assumptions.

Corix provides OCS 4.1(b) Attachment 1, which contains the analysis that supports the statement “the cost-benefit is usually negative” for sub-metering. The assumptions used in the analysis are set forth in the attachment.

The analysis summary results are shown in the table below for two scenarios, one that assumes 10% annual energy savings if sub-meters are used and another scenario assuming 15% annual energy savings.

Summary Results

Cost-Benefit Analysis of Sub-metering

Estimated annual energy savings %	10%	15%	
Estimated annual energy savings \$	\$68.20	\$102.30	
Annual Grand Total Costs of Sub-metering	\$580.85	\$580.85	
Annual Net Cost Deficit Due to Sub-metering	(\$512.65)	(\$478.55)	
Factor of Total Costs to Total Savings	8.5 times	5.7 times	Cost-Benefit Ratio (Unfavorable if >1, Favorable if <1)

As the above table shows, assuming 10% energy savings from the use of sub-meters results in an estimated annual net cost of sub-metering of \$512.65 with an unfavorable cost-benefit ratio of 8.5. Assuming the deployment of sub-meters results in energy savings of 15%, the estimated annual net cost of sub-metering is \$478.55 with an unfavorable cost-benefit ratio of 5.7.

The Pacific Northwest National Laboratory (PNNL) in its March 2015 report “Metering Best Practices: A Guide to Achieving Utility Resource Efficiency, Release 3.0” stated the following in Section 3.6 Metering Savings Potential:

“The use of energy and water data has been shown to result in changes to operations and maintenance practices, and the identification of projects that improve the energy efficiency of building equipment and systems. By implementing these changes, buildings have shown efficiency improvements of 10-20%. Table 3-4 presents metering-related savings ranges based on different uses for metered data. Typically only success stories are published, thus the published metering savings ranges may not be representative of the typical result. Savings for a specific building will vary based on the current health of the building’s systems and the ability to successfully implement, measure, and sustain a positive change. If no action is taken as a result of the metered data analysis, then no lasting energy reduction would be expected.”¹

Corix considers a range of 10% to 15% thermal energy consumption savings from sub-metering to be a reasonable assumption. This energy savings is consistent with the PNNL report results cited above.

The high cost of deploying sub-meters in each apartment suite unit would only be justified if we assume that doing so would result in energy savings of materially over 85%.² The analysis in the table above uses much more realistic cost savings estimates, and shows there is a net societal cost of sub-metering in the amount of roughly \$500 per apartment unit per year. This high cost of sub-metering (all or a portion) would ultimately be passed on by the landlord to the end-user tenant that would impact housing affordability.

Part of the reason that the cost of sub-metering exceeds the expected savings is that three separate meters are required to adequately measure the services provided by Corix. One meter is needed to measure heating load, another for cooling, and a third for hot water. The combined energy savings would need to exceed the cost of all three meters. In addition, sub-metering measures energy usage, which only impacts the energy charge rate component of a customer’s bill. The energy charge makes up approximately 25.3%³ of the total monthly thermal bill. The remainder is made up of the capacity charge. When the efficiency cost savings that may be available from the deployment of sub-meters is considered alongside the annual net cost deficit associated with sub-metering, the cost-benefit is overwhelmingly negative.

¹ Pacific Northwest National Laboratory, “Metering Best Practices: A Guide to Achieving Utility Resource Efficiency, Release 3.0”, Section 3.6 Metering Savings Potential, p. 3.10. Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830.
https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-23892.pdf

² 85% = \$580.85 / \$682.00. Cost of sub-meters / Apartment unit energy charge. OCS 4.1(b) Attachment 1 line 27 / line 29.

³ 25.3% = \$682 / \$2,696. Amount for Energy Charge (\$) / Total for Thermal Charges - Annual (\$). Line 10 / Line 11. Application, Attachment 1, Appendix A, Schedule 19, column 2026. The annual bill and the average monthly bill would have the same proportion between energy charges to total thermal charges.

26-2666-01 | Corix
August 17, 2026
OCS Data Request #4

**Corix Response to OCS Fourth Set of Data Requests
Summary of Response Attachments**

<u>DR Item</u>	<u>Attachment Details</u>	<u>File Type</u>	<u>Contents</u>
OCS 4.1(b)	Attachment 1	.xlsx	Cost-Benefit Analysis of Sub-metering

OCS 4.1(b) Attachment 1
Corix Response to OCS 4.1(b)
Cost-Benefit Analysis of Sub-metering
Estimated Sub-metering Costs for a Residential Apartment Suite Unit

	Non-unit	Unit High Level	
	Total Costs	Cost Estimate	
1 <u>Meter Component</u>			
2 Meter Hardware		\$700	Diehl Sharky 775 or Kamstrup Multi-Cal 403 with PT500 Temperature Sensor Set
3 Installation & Labor		\$125	Installation, 30mins per meter install
4 Commissioning/Testing / Inspections		\$40	Testing meter read status and connectivity
5 Communications Module		\$125	LoRaWAN (Long Range Wide Area Network) module, part of AMI (Advanced Metering Infrastructure)
6 Total Meter Cost per Unit		\$990	Total capital cost of a meter for a low volume residential thermal meter for an apartment unit
7			
8 Total Meters Required (hot water, space heating, space cooling)		3	Meters required for each apartment unit. 1 for Space Heating, 1 for Space Cooling, 1 for Domestic Hot Water
9			
10 Total Meters Capital Cost		\$2,970	line 6 x line 8
11			
12 Estimated residential units in a typical building	125		
13 LoRaWAN Gateway / Collector with network connection and firewall hardware	\$5,500	\$44	Cost per building / Cost per unit
14 IT/OT Support labour and install cost	\$2,000	\$16	Cost per building. 2 days of time / Cost per unit
15			
16 Total Capitalized Cost per Unit		\$3,030	lines 10 to 14
17			
18 Meter Life in years		12	Low-volume residential apartment grade meter estimated life
19			
20 Annual Depreciation		\$252.50	line 16 / line 18
21 Levelized cost of equipment @ 4.5% (half of 9% WACC)		\$136.35	Estimated levelized annual cost based on declining net book value (line 16 x 4.5%)
22			
23 Units Served by Customer Service Labor Resource for Sub-metering	1,250		Estimated number of buildings x units in a building; 10 x 125
24 Additional Customer Service Costs due to Sub-metering	\$60,000	\$48.00	Total incremental labor for utility / Additional annual customer service cost per apartment unit
25			
26 Annual Cost of Billing per customer		\$144.00	\$12 per month based on apartment unit sub-metering costs observed from a third-party provider
27 Annual Grand Total Costs of Sub-metering		\$580.85	lines 20 to 26
28			
29 Annual Residential Apartment Annual Energy Charge		\$682.00	Application, Attachment 1, Appendix A, Schedule 19, line 10, column 2026
30			
31 Estimated percentage annual energy savings arising from sub-meter		10%	Estimate
32 Estimated annual energy savings, if sub-meter installed		\$68.20	Estimated Energy Savings (line 29 x line 31)
33 Annual Grand Total Costs of Sub-metering		\$580.85	line 27
34 Annual Net Cost Deficit Due to Sub-metering (line 32 - line 33)		(\$512.65)	Negative means a net loss (annually)
35 Factor of Total Costs to Total Savings (line 33 / line 32)		8.5 times	Cost-Benefit Ratio (Unfavorable if >1, Favorable if <1)