

Staff Briefing Papers

Meeting Date	March 10, 2022	Agenda Item **1
Company	CenterPoint Energy and Xcel Energy	
Docket No.	E,G999/CI-12-1344, E,G999/M-19-505 E,G002,008/M-21-761	
	In the Matter of a Joint Petition for Approval of the Process to Release Whole Building Data to Facilitate Local Residential Rental Ordinance Compliance	
Issues	Should the Commission approve Xcel Energy and CenterPoint Energy's Joint Petition detailing a method for providing the monthly energy use information of small rental properties?	
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Relevant Documents

Date

Initial Filing, Joint Petition, CenterPoint Energy and Xcel Energy	October 29, 2021
<i>Attachment A: Methodology</i>	
<i>Attachment B: Letter of Support from City of Minneapolis</i>	October 28, 2021
Comment, Department of Commerce, Division of Energy Resources	December 8, 2021
Comment, Fresh Energy	December 8, 2021
Comment, Office of the Attorney General, Residential Utilities Div.	December 8, 2021
<i>Exhibit 1: Information Requests 001 - 003 to City of Minneapolis</i>	December 1, 2021
Comment, Citizens Utility Board of Minnesota	December 8, 2021
Reply Comment, City of Minneapolis	January 19, 2022
Reply Comment, Fresh Energy	January 19, 2022
Letter, Office of the Attorney General, Residential Utilities Div.	January 19, 2022
Reply Comment, CenterPoint Energy and Xcel Energy	January 19, 2022

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

Table of Contents

I.	Statement of the Issues.....	2
II.	Background	2
III.	Staff Summary of Issue Underlying the Utilities’ Petition.....	5
IV.	CenterPoint Energy and Xcel Energy Joint Petition	6
	A. Chosen Method: Confidence Intervals	6
	B. Explaining the Confidence Interval Method	7
	C. Data Management	8
	D. Letter of Support, City of Minneapolis, Initial Filing Attachment B	9
V.	Parties’ Comments	10
	A. Method	10
	B. Authority	10
	C. Data Access and Compliance Filings	11
	D. Protections for Customer Identity and CEUD	12
	E. Making Confidence Intervals Publicly Available	13
	F. Expanding Jurisdictional Use of the Proposed Method	13
VI.	Staff Analysis	14
	A. Party Agreement	14
	B. Commission Authority.....	14
	C. Method	15
	D. Party Disagreement: Does the Proposed Method Adequately Protect Customers?	16
	E. Using Confidence Intervals to Share CEUD Beyond the City of Minneapolis	17
VII.	Decision Options	18
	Appendix A. Proposed Calculations for Sample Mean Confidence Interval.....	20

I. Statement of the Issues

1. Should the Commission approve Xcel Energy and CenterPoint Energy's (the Utilities') Joint Petition detailing a method for providing the monthly energy use information of small rental properties?
 - a. Does the Utilities' proposed confidence interval method fulfill the City of Minneapolis' ordinance requiring disclosure of monthly energy use data while protecting utility customers' identity and energy data as required by the Commission's Open Data Access Standards¹? If not, what other method might be appropriate?
 - b. If using the Utilities' proposed confidence interval method, does the method adequately protect consumer privacy? If not, how might the method be modified to offer greater privacy protections?
 - c. Is the proposed data management process sufficient?² If not, what information is needed?

II. Background

In January 2015, the City of Minneapolis (City), Xcel Energy, and CenterPoint Energy (the Utilities) formed the Clean Energy Partnership to realize local climate and energy goals. These partners have created tools that balance sharing energy use information and protecting customer privacy.

On January 19, 2017, the Commission issued an Order, in part, detailing workgroup findings concerning the appropriate uses of Customer Energy Use Data (CEUD). Findings sought to balance customer privacy and access to customer energy data, including use of data to achieve goals in energy efficiency, conservation, and economic competitiveness.³ The Order, in part, served to:

- Define CEUD as “data collected from the utility customer meters that reflects the quantity, quality, or timing of customers' natural gas or electric usage or electricity production;”⁴

¹ Open Data Access Standards for gas and electric rate-regulated utilities were adopted by the Commission with specific provisions for the sharing of aggregated or anonymized customer energy use data (CEUD) in Docket No. E,G-999/M-19-505 in the November 20, 2020 ORDER ADOPTING OPEN DATA ACCESS STANDARDS AND ESTABLISHING FURTHER PROCEEDINGS.

² Initial petition, Xcel Energy and CenterPoint Energy (Oct 20, 2021) Docket No. E,G002,008/M-21-761, p11.

³ Docket No. E,G-999/CI-12-1344, Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment, issued January 19, 2017.

⁴ Docket No. E,G-999/CI-12-1344, Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment, issued January 19, 2017, Order Point 1.

- Balance privacy and data access by requiring utilities “refrain” from disclosing CEUD without customer consent unless, “the utility has adequately protected the customer’s anonymity;”⁵
- Require utilities to file their data aggregation and release policies; and
- Require utilities track requests received for CEUD.

On June 9, 2017, the Commission issued its Order approving a model customer consent form. Utilities were instructed to put that form, or a Commission-approved alternative form on their websites.⁶ Individual utilities also filed their unique data aggregation and release policies; CenterPoint Energy and Xcel Energy complied.⁷

On February 15, 2019, the Minneapolis City Council passed the [Commercial and Multifamily Residential Building Rating and Disclosure Ordinance](#). The Ordinance⁸ requires all Minneapolis residential rental property owners to disclose a measure of energy use, for rentals of any size, to prospective renters. Owners of residential rentals larger than 50,000ft² must provide **building** benchmarking information, via an approved benchmarking tool, including energy use intensity as well as the building’s energy performance score, compared to similar buildings. For smaller properties, less than 50,000ft², the Ordinance requires owners to disclose⁹ the monthly average energy use information of **individual tenants** for the previous 24 months, then **aggregate** those data to the **building level** (staff bolded emphasis added).¹⁰

⁵ Docket No. E,G-999/CI-12-1344, Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment, p2 bullet point #2.

⁶ Order filed in Docket No. E,G-999/CI-12-1344, Approving Customer Energy Use Date Consent Form, issued June 9, 2017. A model consent form was included as an attachment to the Order. On July 28, 2017 CenterPoint Energy (CPE) submitted an alternative consent form. The Commission approved CPE’s alternative form by Order filed in Docket No. E,G-999/CI-12-1344, Approving Consent Forms and Modifying Approval Process, issued October 26, 2017. The Order also allowed for the Executive Secretary to approve minor changes to consent forms via Notice. On November 16, 2017 Xcel Energy filed an alternative consent form and their form was approved via Notice on February 13, 2018.

⁷ Compliance Filings, CenterPoint Energy made February 17, 2017 and updated July 20, 2018. Xcel Energy made February 10, 2017. All filed into Docket No. E,G-999/CI-12-1344.

⁸ Current language amended by [Ordinance No. 2019-007](#)

⁹ Minneapolis Ordinance 47.190. (f) *Time of rent disclosure*. “Owners of Class 5, 6, 7, 8, and 9 [less than 50,000ft²] rental properties shall disclose building energy use information to residential tenants at time of application if an application is provided. If no application is provided, energy use information shall be posted in the rental property in keeping with [section 244.2000\(a\)](#). The property owner or the owner’s representative shall provide energy disclosure information provided to them by the electricity and natural gas utilities which have franchise agreements with the City of Minneapolis in a format prescribed by the City of Minneapolis.”

¹⁰ “[Monthly Energy Use Information](#) means the average amount of electrical and natural gas energy paid for by a rental building tenant each month, either directly or through a rental utility billing system or similar arrangement, and the cost of that energy, as provided by the electrical and natural gas utilities...*Time of Rent Disclosure* (2) Owners of Class 9 properties shall disclose monthly average energy use information regarding units in the covered property over the previous twenty-four (24) months on September first, 2021, and thereafter ([Mpls. Ordinance 47.190](#)).”

On November 20, 2020, the Commission's Order approved uniform Open Data Access Standards (Standards) which set statewide rules for third-party access¹¹ to aggregated or anonymized CEUD provided by utilities with more than 50,000 customers. The Standards state, in part:

III. Third Party Access to Customer Energy Use Data and Customer Privacy Protection

A. A utility must prepare and make available aggregated and/or anonymized CEUD upon the written or electronic request of any qualifying third party... Such sets must consist of the past 24 months of historical CEUD.

B. CEUD provided may include aggregated and anonymized sets of customer energy use data.

(1) Aggregated CEUD

(i) Aggregation standard: An aggregated customer energy use data set may include CEUD from no fewer than 4 customers. A single customer's energy use must not constitute more than 50 percent of total energy consumption for the requested data set.

(ii) CEUD data sets containing 3 or fewer customers or with a single customer's energy use constituting more than 50 percent of total energy consumption may be provided upon the written consent of (1) all customers included in the requested data set, in cases of 3 or fewer customers, and/or (2) any customer constituting more than 50 percent of total energy consumption for the requested data set.

(2) Anonymized CEUD

(i) Anonymization standard: Anonymized data sets may include CEUD from no fewer than 15 customers. A single customer's energy use must not constitute more than 15 percent of total energy consumption for the data set.¹²

On October 29, 2021, the Utilities filed the instant, Joint Petition.

On December 8, 2021, initial comments were filed by the Department of Commerce, Division of Energy Resources (Department); Office of the Attorney General, Residential Utilities Division (OAG); Fresh Energy; and the Citizen's Utility Board of Minnesota (CUB).¹³

¹¹ Order issued November 20, 2020 in Docket No. E,G-999/M-19-505 on, at page 6, "Utilities will be required to provide building-level and public-purpose data aggregation without charge to building owners/managers, local units of government, and non-profit organizations that use that data for public interest energy research... By allowing only the entities listed above to access whole-building aggregated CEUD for benchmarking purposes at this time, stakeholders will be able to test out the effectiveness of these Standards at little risk to customer privacy."

¹² Order filed in docket E,G-999/M-19-505 on November 20, 2020; Attachment to Order on p2.

¹³ CUB and the City previously discussed fulfillment of the ordinance in the context of CUB's Petition for Open Data Access Standards (Docket No. E,G-999/M-19-505).

By January 19, 2022, the City, Fresh Energy, OAG, and the Utilities filed reply comments.

III. Staff Summary of Issue Underlying the Utilities' Petition

The City's Ordinance interacts with the Commission's Open Data Access Standards¹⁴ when CEUD is to be disclosed for rental properties less than 50,000ft² and with one to three units. The City's Ordinance requires disclosure of Monthly Energy Use Information to be collected for all tenants and then aggregated for all units at the property. As noted above, the Commission's Open Data Access Standards require CEUD to be anonymized and contain data from no fewer than 15 customers and/or aggregated by four or more customers. When data from three or fewer customers are sought, data can be provided with customers' written consent.¹⁵

Therefore, to comply with the Ordinance, properties less than 50,000ft² and with one to three units, each tenant would need to provide written consent. However, the Utilities contend that obtaining consent would be burdensome.¹⁶ Note, until a data provision method is approved by the Commission, Ordinance compliance is not required for one-to-four-unit rental properties.¹⁷

Helping to show the reach of the underlying issue, the City's response to the OAG's information requests¹⁸ show the number of 1-3 unit rental properties as well as properties less than 50,000ft², which would be impacted by the instant petition (Table 1).

Table 1. Minneapolis Rental Units with Active Rental Licenses¹⁹

Building Category	Number of Properties	Number of Units	Share of Total Properties	Share of Total Units
Single Unit Rental	7,367	7,768	38.2%	8.5%
2-Unit Rental	7,944	13,647	41.2%	15.0%
3-Unit Rental	583	1,700	3.0%	1.9%
4-Unit Rental	1,065	4,436	5.5%	4.9%
Apartment Building (5 or More Units and less than 50,000 square feet)	2,030	31,426	10.5%	34.5%
Apartment Building (50,000 square feet or greater)	315	31,998	1.6%	35.2%
Total	22,482	90,975	-	-

¹⁴ Established by Order issued November 20, 2020 in Docket No. E,G-999/M-19-505

¹⁵ Adopted Standards in Order filed Nov 20, 2020 in docket E,G-999/M-19-505; see III. B. (1)

¹⁶ Initial petition, p3.

¹⁷ Initial petition, Attachment B p1.

¹⁸ On December 1, 2021 the OAG sent three information requests to the City. In addition to Table 1, the City confirmed that prior to adopting its Ordinance, the City considered the Commission's January 19, 2017 Order regarding CEUD in Docket No. E,G999/CI-12-1344, as well as engaged in stakeholder meetings for which it provided meeting videos, presentations, and transcripts.

¹⁹ OAG initial, Exhibit 1 p3. Information updated since filing of initial petition, collected November 29, 2021. Note, rental condominium units (3,055 rental licenses) and buildings with less than two years of occupancy (123 rental licenses) are exempt from compliance with the Ordinance and are excluded from Table 1.

IV. CenterPoint Energy and Xcel Energy Joint Petition

The Utilities' joint petition detailed an alternative data sharing and anonymization method. The proposed method is intended to facilitate compliance with the City's [Ordinance](#)²⁰ by sufficiently anonymizing building energy use data such that written consent from individual customers is unnecessary.²¹ The Utilities proposed to use confidence intervals (CI) to show energy use as a range, in dollars.

A. Chosen Method: Confidence Intervals

The Utilities proposed to create sample mean confidence intervals for 24 months of CEUD at residential rental properties. Where *average* energy usage as a monthly bill amount would be reported as a single dollar value, confidence intervals report energy usage as a range. That range is expected, with 95% confidence, to contain the actual mean dollar amount billed to that property. The endpoints of the ranges will be unique to each property, created from each property's data but rounded to the nearest whole dollar, to not reveal the absolute actual lowest or highest energy bill amounts (see Fig. 1).²² Confidence intervals can:

- Show the variation in monthly energy use that characterizes energy use in Minnesota. In contrast, an average would show only a single number. This also allows comparison across properties that may have the same average energy bill across a year but show differences in monthly variation.
- Account for differences of sample size as not all customers, due to billing cycles, will have 24 bills from which to draw data in the 24 months for which data are collected.

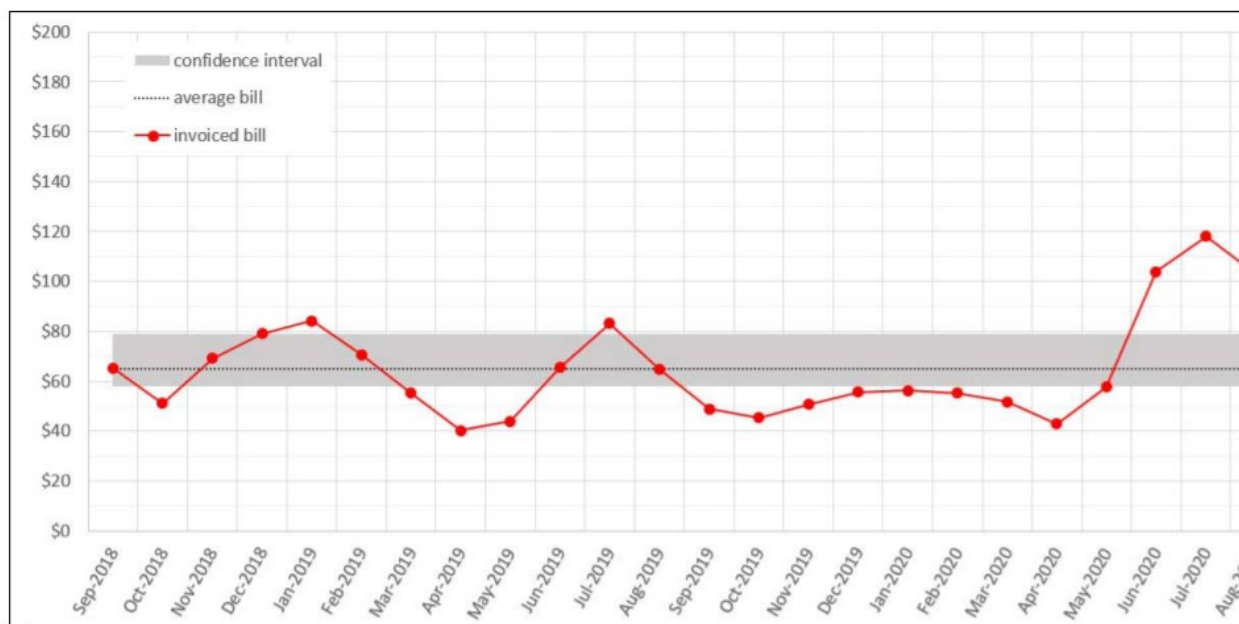
Figure 1. Statistically Meaningful View of Average and Monthly Variation in Energy Use²³

²⁰ Mpls. Ordinance 47.190 Commercial and multifamily residential building rating and disclosure. [CHAPTER 47. - ENERGY AND AIR POLLUTION | Code of Ordinances | Minneapolis, MN | Municode Library](#)

²¹ The Utilities argued that seeking consent from all customers living in 1-3 unit properties, as currently required, would pose an undue burden. See Initial petition, p9.

²² Initial petition, methodology discussed p9-10.

²³ Initial petition, "Statistically Meaningful" was term used on p10, Figure 1 p11.



B. Explaining the Confidence Interval Method

The Utilities' Initial Petition (see Appendix A) provided three definitions, formulas, the Utilities will use to calculate confidence intervals for rental property buildings. When the property is only a single unit, the Utilities expect that multiple tenants will have resided at the property within the 24 months for which billing data will be obtained and / or the use of the CI method will sufficiently obscure actual, average energy use. For each building comprised of units one to four,²⁴ the definitions are written such that: j denotes an individual unit and U is the maximum number of units; lowercase i is months and M_j is months that bills were received for that unit.

$$n = \sum_{j=1}^U \sum_{i=1}^{M_j} 1$$

$$\bar{x} = \frac{\sum_{j=1}^U \sum_{i=1}^{M_j} x_{ji}}{n}$$

The Utilities' Definition 1:

The top formula is applied to every unit in the building. It calculates the sample size which is the monthly data for all units. Sample size is calculated by taking number of units in the building multiplied by the number of bills they received. The second formula calculates the sample mean. This is done by pooling all bills and dividing them by the number of bills for all units for the 24-month sample; in this way it would not be possible to differentiate single customers. Thus, "pooling" the bills for all units in a property is one way data are anonymized.

²⁴ The definition intends to be applicable to rental properties with *up to* four units while the Commission's Open Data Access Standards included in the Commission's Order issued November 20, 2020 in Docket No. E,G-999/M-19-505 at B. (1) (ii), requires customer consent to share "CEUD data sets containing 3 or fewer customers or with a single customer's energy use constituting more than 50 percent of total energy consumption". The Commission may wish to inquire about this discrepancy as calculating additional confidence intervals would take Utility time and funds which may be charged to ratepayers.

The Utilities' Definition Two calculates the variance. Variance is the amount an individual bill differs from the sample mean. Variance is an intermediate step to create the CI.

The Utilities' Definition 3:

$$x_{LCL} = \text{floor} \left(\bar{x} - t_{(n-1)}(\alpha_L) * \sqrt{\frac{S^2}{n}}, \text{PRECISION} \right)$$

$$x_{UCL} = \text{ceiling} \left(\bar{x} + t_{(n-1)}(\alpha_U) * \sqrt{\frac{S^2}{n}}, \text{PRECISION} \right)$$

The final step is for Utilities to create the CI using Definition 3. A confidence interval is a pair of upper and lower endpoints on either side of the sample mean and the associated probability, here approximately 95%, that a mean of a sample drawn at random from the units' energy bills will fall within the endpoints. The *floor* and *ceiling*

functions round each endpoint to the nearest whole dollar value. As the endpoints are rounded, the CI is *close to* but not exactly 95%; thus, the Utilities further obscure actual energy use. Initially, the Utilities stated that they would, "propose to disclose to local governments a 95% confidence interval around the parameter of average monthly energy use;" however, the adjustment of the endpoints mean that (using PRECISION command) actual CI will be close to but not 95%.²⁵ Obscuring the actual width of the CI adds another layer of data privacy.

The alpha (α) is the level of significance used to set the upper and lower endpoints of the CI. The alpha lower does not equal alpha upper endpoint; in this way, the Utilities shift left or right the "window" through which they show the distribution of energy bills. Shifting the window is necessary because if data take a perfect t-distribution as assumed by the Utilities, the sample mean would fall in the exact middle and thus, average energy use would be easily discernible. Customer privacy is further protected as Utilities will not share publicly the number of bills, sample size or mean, variance, alphas, or PRECISION command used for endpoint rounding.

Finally, the CI method is used under the assumption that the monthly utility bills will take the shape of a t-distribution; meaning that if the underlying population actually has a t-distribution, the sample taken will have a 95% chance of landing within the CI. Staff has not seen sufficient CEUD to know if this assumption is warranted and Commissioners may wish Utilities to affirm.

C. Data Management

The City will send Utilities a list of properties for which CEUD are needed. For all properties served by the Utilities AND which cannot be aggregated and anonymized without customer consent, per the Commission's Open Data Access Standards, the Utilities will conduct confidence interval analyses. The Utilities will send completed analyses back to the City to allow for compliance with the Ordinance (see Table 2). The Utilities will not share un-rounded upper and lower confidence interval data, intermediate calculations, or source CUED. The City will then share property specific CEUD with building owners or prospective renters via a direct link. Customer consent will be required for properties the Utilities are unable to match to the City's rental license list.

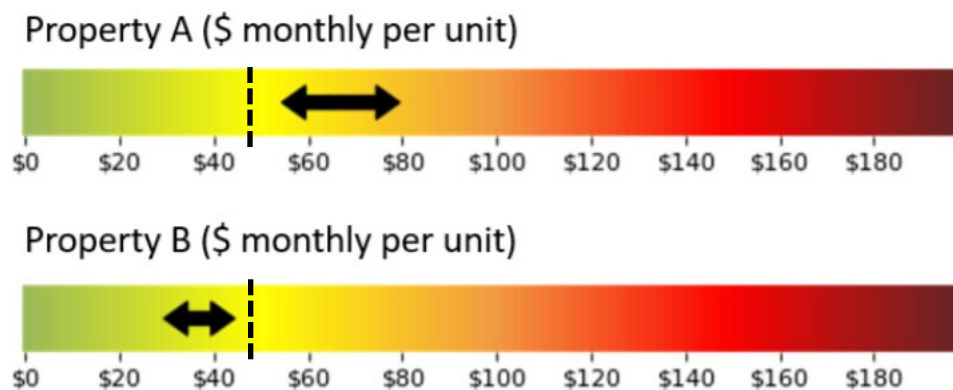
²⁵ Initial petition, quoted text p3. Adjustment of endpoints explained on pages 9-10 and in Attachment A.

Table 2. Mockup of Data Released by Utility to City

	Property Address	Gas Cost Confidence Intervals	
1	1 Main Street, Minneapolis MN 55406	\$27.00	\$39.00
2	2 Main Street, Minneapolis MN 55406	\$34.00	\$47.00
3	3 Main Street, Minneapolis MN 55406	\$34.00	\$49.00
4	4 Main Street, Minneapolis MN 55406	\$38.00	\$52.00
5	5 Main Street, Minneapolis MN 55406	\$42.00	\$60.00
6	6 Main Street, Minneapolis MN 55406	\$58.00	\$83.00

D. Letter of Support, City of Minneapolis, Initial Filing Attachment B

The City commented in support of the joint petition and explained the data sharing process. For the data sharing process, the Utilities will provide the City with upper and lower values for the confidence intervals associated with each property for which the utility has meter data. The City will “normalize” the values to allow for comparisons across properties. Normalizing may be accomplished showing energy use by building size including factors like building square footage, number of bedrooms, and number of residential units. Data may be available in an interactive web tool. While the final form of data has not been determined, a possible depiction may resemble Fig. 2 and additionally, could show City Median energy usage:

Figure 2. Use of Confidence Intervals for Property Comparison²⁶

When sharing energy data, the City will also provide resources that:

- Increase public comprehension, including using a more accessible term than confidence interval and “displaying data in a way not easily misinterpreted as a range of possible energy costs (such as the highest and lowest expected monthly bill).”²⁷
- Remind renters that the data are not a guarantee of future energy costs and will depend on individual energy use behaviors.

²⁶ Initial filing, Attachment B p3. Staff added dotted line to the City’s depiction, mirroring figure presented by City on p2 of Attachment B. The dotted line represents the average energy bill of Minneapolis residents.

²⁷ Initial filing, Attachment B p3.

- Encourage further conversation about energy bill payment and energy amenities.

V. Parties' Comments

A. Method

The Department was generally supportive of the proposed method and noted that it had, “for years advocated for a statistically-based methodology of data release that attempts to balance privacy and access, but without success. The fact that the proposed methodology uses confidence intervals at all is, in and of itself, notable within Minnesota’s data privacy sphere.”²⁸ CUB, Fresh Energy, and the OAG explained their understanding of what prospective renters will gain from confidence intervals- the variability and range of expected costs for monthly bills. This understanding vis a vis what the Utilities’ confidence intervals *will* show is taken up in Staff analyses. Table 3 summarizes participant positions which are described further below.

Table. 3 Evaluation of the Utilities’ Petition and Confidence Interval Method

Participant	Approve Petition?	Fulfill City’s Ordinance?	Protect Customer Privacy?	Data Management Strategy	Burdensome to Obtain Customer Consent?	Alternative Suggested?
Department	Yes, but modify*	Yes	Insufficient expertise to be sure method prevents reidentification. Noted two types of ID protection.	Sufficient, but use secure platform	Yes	No
OAG	Yes, but modify*	No comment.	Partly. Address will not disclose identity but need stronger CEUD protections.	No digital portal without password protection.	No comment.	Modify. Increase to 97% or 99% Confidence Interval; prohibit in some cases.
Fresh Energy	Yes	Yes	Yes	Sufficient. Support creation of a digital portal.	No comment.	No
CUB	Yes	Yes	No comment.	No comment.	Yes	No
City	Yes	Yes	Yes. CEUD-derived data not the same as CEUD itself.	Support creation of a digital portal.	No comment.	No

*Modifications: Department: use secure platform, share data and method with Dept., require compliance filing; OAG: enhanced CEUD protection and do not share confidence intervals online without password protection.

B. Authority

The Department recognized the broader issue, as summarized by Staff in Section III, that, “the Commission and the City each have policies concerning the release of CEUD that, while not

²⁸ Department of Commerce comments, filed December 8, 2021 into Docket No. E,G002,008/M-21-761, p3.

directly at odds, are not exactly complementary.”²⁹ To this extent, the Department highlighted the permission that the Commission gave itself to modify privacy standards:

Open Data Access Standard III.B.(4), The Commission may set alternative aggregation or anonymization standards upon the petition of any party, as long as those new standards do not restrict public access to energy data deemed in the public interest nor allow for the identification of individual customers within a data set.

However, regarding authority at the intersection of Commission standard and City policy, the Department cautioned against Commission encroachment, “[t]he Department is unwilling to assert that the Commission’s jurisdiction over CEUD should trump the City’s legitimate policies that further conservation and energy usage. As such, the Department would hazard that unless there is a compelling and urgent public policy reason to not permit such a proposal, the Commission should refrain from encroaching on the City’s interest in setting its own ordinances and policies.”³⁰

C. Data Access and Compliance Filings

The Department made four additional recommendations:

- 1) Parties in the instant docket should leverage existing work done to match property addresses to utility billing information, like work done in the Conservation Improvement Program (CIP). The Department noted, “Provided it saves ratepayers time and money, it may be possible for parties in the instant proceeding to piggyback on, outsource to, contract with, or otherwise utilize these existing resources to perform its property matching work.”³¹

Reply. The Utilities’ reply comments suggested a similar process is already in use such that any leveraging of the CIP program’s efforts would be unnecessary.

- 2) The Department noted that practice has been to allow the Department and the Commission access to sensitive or proprietary information. Thus, in this case, both agencies must be able to review specific data, equations, and procedures as needed. The Department supports the Utilities keeping such information from the City for purposes of data anonymization, the Department cannot support approval of the Joint Petition without access to data and procedures.

Reply. The Utilities’ reply comment stated that they will gladly make accessible any data the Department and the Commission need for their review. The City also agreed with the Department’s modification. See **Decision Option 3**.

²⁹ Department of Commerce comments, filed December 8, 2021 into Docket No. E,G002,008/M-21-761, p4

³⁰ Department of Commerce comments, filed December 8, 2021 into Docket No. E,G002,008/M-21-761, p4.

³¹ Department of Commerce comments, filed December 8, 2021 into Docket No. E,G002,008/M-21-761, p5.

- 3) While the data management strategy does not appear to transfer sensitive information like Personally Identifiable Information or CEUD between the Utilities and the City, the Utilities should clarify that a secure online platform would be used if such data are transferred. At present, the Utilities will only share confidence intervals with the City.

Reply. In reply comments, the Utilities stated that using a secure platform would be unnecessary as the use of confidence intervals protects CEUD. More, customer addresses are already public knowledge.

- 4) Compliance filings providing an update on the program be included with annual data privacy docket compliance filings.

Reply. In reply comments, the Utilities agreed to file an update in their annual data privacy compliance report (Docket Nos. E,G999/M-19-505 and E,G999/CI-12-1344). The City also agreed with this modification. See **Decision Option 4.**

D. Protections for Customer Identity and CEUD

The OAG evaluated the confidence interval method and implications for customer privacy. The OAG noted that property addresses, a piece of Personally Identifiable Information (PII), will be revealed in fulfillment of the City's Ordinance. However, ability for third parties to use an address to discover a customer's identity is a problem independent of the Ordinance or this Petition.³² In contrast, concerning another type of customer information, CEUD, the OAG recommended additional protections:

- 1) Increase the confidence that the actual energy usage average will be found within the provided confidence interval.

Reply. To the OAG's suggestion to modify the chosen confidence interval, the Utilities replied, "because the Utilities round the end point of the confidence intervals, using a 97% or 99% confidence interval will reflect a minimal change (\$1-\$2) in the historical energy cost use of that whole building. The Utilities believe the proposed 95% confidence interval generally represents the correct balance between providing meaningful information and protecting customer privacy."³³ However, when calculating the confidence intervals, the Utilities will first review the entire dataset of customer properties and begin by using a 95% confidence interval and will widen the interval width to the 97% or 99% suggested by the OAG if needed to adequately protect CEUD. To widen the confidence interval, see **Decision Option 5.**

- 2) Prevent utilities from sharing CEUD for single-unit rental properties.

³² OAG initial comments filed December 8, 2021 into Docket No. E,G002,008/M-21-761, p10

³³ Utility (CPE and Xcel) reply comments filed January 19, 2022 into Docket No. E,G002,008/M-21-761, p3

Reply. In Replies, the Utilities contended that the confidence interval method adequately protects CEUD and more, that as the confidence interval includes 24 months of energy use data, will often include the energy used by more than one tenant. See **Decision Option 6.**

- 3) Prevent disclosure of CEUD in three-four unit rental properties where a single tenant is responsible for more than 50% of the energy usage.

Reply. In Replies, the Utilities argued that the confidence interval adequately protected privacy. The City agreed. However, the Utilities stated that if needed, consent could be obtained from these customers, by their landlord or building owner, before their confidence interval would be released. To take action, see **Decision Option 7.**

E. Making Confidence Intervals Publicly Available

Most of the OAG’s concerns centered on Data Management and Sharing. The OAG argued that making confidence interval data public, like by putting it onto a website, could negatively impact privacy. Anyone could access CEUD, including “potentially fraudulent third-party solicitors.”³⁴ The OAG recommended a website not be used unless it was password-protected (See **Decision Options 8 and 9**). Several parties responded to this issue.

Fresh Energy and the City, unlike the OAG, supported creation of a digital portal for public access to energy data. Both parties noted that in Dockets No 12-344 and 19-505, the Commission determined that security risks did not outweigh the need for energy data, even, the parties argued, when data were “from data intervals much more granular than what the utilities are proposing [now].”³⁵ Also, Fresh Energy’s reply comments contended that there are no real-world examples of misuse of energy data. Instead, Fresh Energy, supported by CUB, highlighted scenarios in which public access to energy data would be beneficial. For example, sharing data online may make it easier for renters to compare energy use across properties, facilitate pairing renters with efficiency programs, and even incentivize landlords to improve their properties’ energy efficiency.

F. Expanding Jurisdictional Use of the Proposed Method

The OAG recommended denying use of the confidence interval method beyond the City of Minneapolis. Instead, the OAG advocated for evaluation on a case-by-case basis. The OAG argued that a blanket approval of this method would deprive other jurisdictions of making decisions about their constituents’ energy data and more, that the record has not been developed to answer questions about the applicability of this method in contexts outside the City’s Time of Rent Disclosure Ordinance. However, anticipating the OAG’s recommendations to circumscribe use of the confidence interval method to Minneapolis and that the method, “not

³⁴ OAG initial p13

³⁵ Fresh Energy initial comments filed into Docket No. E,G002,008/M-21-761 on December 8, 2021, quoted text p2. City of Minneapolis reply comments filed into Docket No. E,G002,008/M-21-761 on January 19, 2022, see p4-5.

be added as an approved whole building use case option for CEUD”, the Utilities voiced support for their proposed method and declared their intention to file a petition to use the method in other areas within their service territories.³⁶ Fresh Energy also recommended that if approved, the method be considered more broadly in Docket No. 19-505.³⁷ See **Decision Options 1 and 2.**

VI. Staff Analysis

A. Party Agreement

The Utilities, CenterPoint Energy and Xcel Energy, in collaboration with the City of Minneapolis, proposed to use confidence intervals to share customer energy use data for one-to-three-unit residential rental properties, to fulfill the City’s Time of Rent Disclosure Ordinance. Parties either did not comment or agreed that the proposed method fulfills the City’s Ordinance and that in the absence of the proposed method, it would be burdensome for utilities to obtain customer consent to provide CEUD in most scenarios (see Table 3). The Utilities also agreed to provide the Department with raw data and equations upon request as well as provide short summaries of the program in their annual data compliance filings in Docket No. 19-505. Finally, the Department asked for clarification that a secure online platform would be used *in the event* sensitive information was transferred, though transferring such information was not anticipated in the Utilities’ petition. Should the Commission desire this clarification, it could be provided verbally during the agenda meeting.

B. Commission Authority

Before presenting issues on which parties disagreed, Staff explores the Commission’s authority regarding those persons who are at the intersection of utility customer and Minneapolis resident. First, the Commission exercised its jurisdiction over CEUD when it issued its 2013 Order establishing a workgroup to explore customer privacy and data sharing.³⁸ Second, Commission authority over service provision and associated policies is outlined in Minn. Stat. § 216B.05, subd. 2, below. This statute, “directs utilities to publicly declare their practices if the Commission finds those practices to be relevant to the provision of regulated utility service.”³⁹

Every public utility shall file ... all rules that, in the judgment of the commission, in any manner affect the service or product, or the rates charged or to be charged for any service or product, as well as any contracts, agreements, or arrangements relating to the service or product or the rates to be charged for any service or product to which the schedule is applicable as the commission may by general or special order direct;

³⁶ Utilities’ reply comments filed January 19, 2022 into Docket No. E,G002,008/M-21-761, p6.

³⁷ Fresh Energy initial comments filed into Docket No. E,G002,008/M-21-761 on December 8, 2021, p2.

³⁸ Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment issued January 19, 2017 filed into Docket No. E,G-999/CI-12-1344, p4.

³⁹ Docket No. E,G-999/CI-12-1344, Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment, issued January 19, 2017, p3.

provided that contracts and agreements for electric service must be filed as required by [other statutes].

Lastly, Commission jurisdiction is described in Minn. Stat. § 216B.09, subd. 1,

The commission ... may ascertain and fix just and reasonable standards, classifications, rules, or practices to be observed and followed by any or all public utilities with respect to the service to be furnished.

C. Method

Staff more closely examines the confidence interval (CI) method, as parties' comments did not interrogate the method itself nor did parties suggest alternative methods beyond the OAG request to increase from 95% to a 97% or 99% confidence interval (discussed below). As mentioned above, a benefit of the CI method is that a range of monthly bill amounts is better able to depict the strong monthly variation in Minnesota data, i.e., a place with great yearly variation in weather and thus, monthly bill amounts.⁴⁰ The confidence interval creates a range of values from two full years-worth of bill data, and therefore, two years-worth of the variability that characterizes energy use in Minnesota.

The data used in the Utilities' method will be a 24-month "sample" of the entire history of billing data available for a property; however, as mentioned, for an individual customer 24 months may not always produce 24 bills, because of staggered billing schedules. In this respect, the CI method is better equipped to account for staggered billing schedules because the formula used in the CI method (see below for interpretation) incorporates number of bills. In contrast, if you took a rudimentary average of the 24 months prior to today, by summing all bills and divided that number by 24 to find the average, the calculation may not be as accurate because a customer could have actually had 23 or 25 bills during the previous 24 months.

The Utilities' petition includes an illustration of the CI methodology (Fig. 1).⁴¹ Staff understands that a prospective renter would only be shown the gray bar, or something similar created by the City, to visualize the confidence interval produced by the Utilities. Notice that when 23 invoiced bills (in red) are overlaid on the gray bar, only seven of those bills fall within the bounds of the gray bar; 12 invoiced bills were less than what is shown in the gray bar while four were higher. CUB, Fresh Energy, and the OAG explained their understanding that the confidence intervals would show prospective renters the variability and range of expected costs for monthly bills. Upon inspecting Figure 1, this is not the case. Such a gap in understanding underscores the importance of data education for prospective renters. As stated in the initial petition, such education may include "displaying data in a way not easily misinterpreted as a range of possible energy costs (such as the highest and lowest expected monthly bill)."⁴²

⁴⁰ Note, Staff is unsure how situations in which a current renter subscribes to Averaged Monthly Payments will be disclosed to prospective renters as there would be no variance in monthly bills. Further, how situations where a renter receives bill credits for something like distributed generation would be disclosed.

⁴¹ Initial petition, Figure 1, p11. Reproduced in this briefing paper, Figure 1.

⁴² Initial filing, Attachment B p3.

Prospective renters will need to be made aware that some bills might be higher but also, some could be lower.⁴³ Additionally, such a situation lends itself well to explain to a prospective renter that a utility's average monthly payment program would produce bills that would be within the confidence interval provided and thus, provide greater certainty as to the amount to be expected in each month's bill.

Regarding changing the confidence interval, as suggested by the OAG in **Decision Option 5**, the Utilities stated that they will begin by using a 95% confidence interval and will widen the interval if needed to adequately protect CEUD. Using a 97% or 99% confidence interval would provide greater certainty that actual mean energy use is contained within the "grey bar" (Fig. 1) shown to prospective renters. Functionally, the "grey bar" shown to customers would become wider and result in greater anonymity for CEUD.⁴⁴ However, as shown in the Utilities' replies, changing the level of confidence used only slightly modifies the size of the "grey bar" shown. Commissioners may wish to confirm with the OAG the anticipated benefits to CEUD security with a relatively small widening of the confidence interval disclosed to prospective renters.

D. Party Disagreement: Does the Proposed Method Adequately Protect Customers?

The Commission opened Docket No. 12-1344 to, in part, contemplate the balance between customer privacy and disclosing data to advance energy goals.⁴⁵ Public comment periods and two workgroup meetings preceded foundational determinations about customer data: the distinction between PII and CEUD as well as the definition of CEUD.⁴⁶ With those definitions, the Commission also acknowledged potential dangers to customers if CEUD were to be obtained by malicious third-party solicitors. Ultimately, the Commission concluded that utilities should refrain from releasing CEUD unless data had been adequately anonymized.⁴⁷

Concerns voiced in early discussions of privacy persist today. Party comments considered in the Commission's 2013 and 2017 Orders⁴⁸ warned that CEUD could be used to design scams or even perpetrate in-person crimes; these warnings were repeated by the OAG in the current record. The Commission's Open Data Access Standards were designed to reduce risk of such malicious actions using energy usage data. The present petition is a new method by which to

⁴³ The initial petition, Attch. B p3, did note that data education would include "displaying data in a way not easily misinterpreted as a range of possible energy costs (such as the highest and lowest expected monthly bill)."

⁴⁴ The Utilities' reply comments p3-5

⁴⁵ Order Establishing Procedures for Further Comment and for Working Group issued June 17, 2013; Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment issued January 19, 2017 both filed into Docket No. E,G-999/CI- 12-1344.

⁴⁶ Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment issued January 19, 2017 filed into Docket No. E,G-999/CI-12-1344.

⁴⁷ Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment issued January 19, 2017, Docket No. E,G-999/CI-12-1344, ordering para. 2.

⁴⁸ Order Establishing Procedures for Further Comment and for Working Group issued June 17, 2013; Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment issued January 19, 2017 both filed into Docket No. E,G-999/CI-12-1344.

anonymize utility customer data so data can be shared with third parties. Thus, the broad question before the Commission is, “Does the Utilities’ proposed confidence interval method adequately anonymize CEUD?”⁴⁹ If the CI method adequately anonymizes CEUD, then two areas of party disagreement could be settled. The Commission would not need to limit situations in which CEUD can be disclosed (single unit and when 50% of use is from one tenant) nor prevent digital publication of confidence intervals.

The record offers mixed support for the ability of the CI method to adequately anonymize data (Table 3). While the Department was “generally supportive” of the proposed method, it maintained a neutral position, stating, “As noted elsewhere in the Data Privacy Dockets, the Department does not have the expertise required to determine whether the proposed methodology would adequately prevent reidentification.”⁵⁰ Fresh Energy, however, asserted that the CI method can safely provide energy data.⁵¹ The City and Utilities agreed that the method protects customer data. More, the City posited that CI data, which are derived from CEUD, are not the same as CEUD itself, “especially if the derived data is separated from CEUD by statistical firewalls that protect against reverse engineering.”⁵²

Considering the OAG’s suggested modifications (**Decision Options 6-9**), it would seem the OAG does not believe the CI method adequately protects customers. However, in replies the OAG deferred to the City of Minneapolis as the City has “determined that the benefits of releasing data on average energy usage to prospective renters outweighed those [privacy] concerns.” Thus, it appears the OAG believes the CI method will meet the unique needs articulated by the City but should not be expected to meet the needs of any other jurisdiction (see Section E).

E. Using Confidence Intervals to Share CEUD Beyond the City of Minneapolis

The Utilities’ joint petition stated that, “[u]nder the proposed process, **local government agencies** with time of rent ordinances may request whole building energy use data that will be provided to building owners or prospective tenants.”⁵³ This suggests that the proposed process and CI method could be applied in jurisdictions other than the City of Minneapolis. More, Fresh Energy supported broad application of the process to release data, stating, “If this methodology is approved and proves successful, Fresh Energy would recommend it be considered more broadly as part of the 19-505 Docket.”⁵⁴ However, the OAG strongly cautioned against such widespread application. In reply comments they argued that the proposed process was designed to comply with the City’s Ordinance only and more, the record was developed to consider application to only the City. Staff agrees that evaluation of the CI method and its

⁴⁹ This is a matter over which the Commission has jurisdiction, see Order issued November 20, 2020 into docket No. E,G-999/M-19-505 Approved Standards III. B. (4)

⁵⁰ Department of Commerce comments, filed December 8, 2021 into Docket No. E,G002,008/M-21-761, p3.

⁵¹ Fresh Energy initial comments filed into Docket No. E,G002,008/M-21-761 on December 8, 2021, p2.

⁵² City of Minneapolis reply comments submitted January 19, 2022 into Docket No. E,G002,008/M-21-761, p4

⁵³ Initial petition, p6. Staff emphasis added in bold.

⁵⁴ Fresh Energy initial comments filed into Docket No. E,G002,008/M-21-761 on December 8, 2021, p2.

ability to appropriately protect CEUD should be undertaken in the present context, the City's ordinance, before application in other use cases and in other municipalities.

Therefore, Staff suggests moving slowly. Cautious movement has been the practice for establishing privacy standards in Dockets No. 19-505 and 12-1344. Indeed, the Commission has acknowledged such in its 2017 privacy order, "The evolving state of technology involving data collection and analysis, as well as the evolving state of privacy law, prompt the Commission to adopt a cautious approach."⁵⁵ To move slowly, the Commission can use **Decision Option 2** to restrict the scope of application of the methodology described in the Utilities' petition. The Commission is seeking additional record development on similar issues in the Open Data Access Standards in an open comment period through April 2022.⁵⁶

VII. Decision Options

1. Approve Joint Petition as filed such that the Commission finds the proposed approach for whole buildings up to four units reasonably protects a customer's energy usage data and allows the Utilities to release confidence intervals to local governments as a result of local residential rental property ordinances, without first obtaining customer consent (The Utilities, Fresh Energy, CUB).
2. Approve the Joint Petition such that the Commission allow CenterPoint Energy and Xcel Energy to release confidence intervals to the City of Minneapolis, concerning persons living in Minneapolis only, as a result of local residential rental property ordinances, without first obtaining customer consent (Staff).

[AND]

with the following modifications:

Data Access and Compliance Filings

3. Require CenterPoint Energy and Xcel Energy to provide the Commission and Department access to any raw data and equations upon request (Department, City)

⁵⁵ Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment issued January 19, 2017 filed into Docket No. E,G-999/CI-12-1344, p7.

⁵⁶ Notice of Comment (Feb. 11, 2022), Docket No. E,G-999/M-19-505 and No. E,G-999/CI-12-1344 consistent with the Commission's Nov. 20, 2020 Order, order point 4. "a. Whether the aggregation screens should be segmented into two (or more) distinct aggregation screens, with different threshold levels and requirements, ranging from building-level to community level, including consideration of multi-unit single owner rental properties and of the unique roles of building owners/managers and of local governments; b. Refinement of specific provisions of the contract requirements for anonymized data access; c. Establishment of uniform customer access forms; d. Identification of opportunities to appropriately streamline the data access process to reduce the total cost of aggregating and releasing data; e. Ascertain the appropriate threshold for limiting application of the Standards to commercial/industrial natural gas and electric customers; and f. Aggregated CEUD for communities and other local units of government."

4. Require CenterPoint Energy and Xcel Energy to provide short summaries of the program in their annual data compliance filings in Data Privacy Docket No. 19-505 (Department, City).

Protections for Customer Identity and CEUD

5. Direct CenterPoint Energy and Xcel Energy to and request that the City explore whether the Utilities could still meaningfully comply with Ordinance implementation while further protecting customers' privacy interests by disclosing to the City a 97% or 99% confidence interval instead of the proposed 95% confidence interval. (OAG)
6. Prevent CenterPoint Energy and Xcel Energy from disclosing confidence intervals for single-unit rental properties. (OAG)
7. Prevent CenterPoint Energy and Xcel Energy from disclosing confidence intervals for three-to-four-unit rental properties where a single tenant is responsible for more than fifty percent of the electric or natural gas usage. (OAG)

Making Confidence Intervals Publicly Available

8. Prohibit CenterPoint Energy and Xcel Energy from disclosing confidence interval information to the City unless the municipality agrees to use that information within the confines of the as-written Ordinance, i.e., by providing the information directly to prospective tenants or posting a physical copy in two-to-four-unit rental properties. (OAG)

[OR]

9. Require that any website used to share confidence interval data a with prospective tenants be accessible only by unique passwords and usernames provided to prospective renters. (OAG)

Appendix A. Proposed Calculations for Sample Mean Confidence Interval

For each property having $U \in [1, 4]$ subunits and M_j calendar months of proportioned CEUD, the energy cost for the j th unit for the i th month is denoted as x_{ji} . Proportioning is necessary to establish analysis of exactly 24 calendar months of data. Generally, billing cycles are not aligned with calendar months. To compute calendar month averages it is first necessary to linearly proportion billing data to the calendar.

The average energy cost will be estimated as the sample mean of monthly data for all units as shown in Definition 1.

<i>Definition 1 : sample size (n) and sample mean (\bar{x}) calculations</i>	$n = \sum_{j=1}^U \sum_{i=1}^{M_j} 1$ $\bar{x} = \frac{\sum_{j=1}^U \sum_{i=1}^{M_j} x_{ji}}{n}$
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Property level monthly variance will be estimated as the pooled variance as shown in Definition 2.

<i>Definition 2 : pooled variance (s^2_{pooled}) calculation</i>	$s^2 = \frac{\sum_{j=1}^U (M_j - 1) \sum_{i=1}^{M_j} (x_{ji} - \bar{x})^2}{\sum_{j=1}^U (M_j - 1)}$
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Sample mean confidence intervals will be estimated using standard formulae as shown in Definitions 3. The reportable lower and upper confidence limits will be rounded to whole numbers (for example, \$10 as opposed to \$10.3989) by applying *floor* and *ceiling* functions to the calculated limits, respectively. Each utility will report the two confidence limits to the City for sharing with property owners. The utilities will not provide the city with parameters ($\alpha_L, \alpha_U, PRECISION$), intermediate calculation results (n, \bar{x}, s^2), or the source CEUD so as to ensure that actual CEUD is protected. The reported interval is guaranteed to contain the sample mean, but without revealing its value.

<i>Definition 3 : Lower (x_{LCL}) and upper (x_{UCL}) confidence limit calculations</i>	$x_{LCL} = \text{floor} \left(\bar{x} - t_{(n-1)}(\alpha_L) * \sqrt{\frac{s^2}{n}}, PRECISION \right)$ $x_{UCL} = \text{ceiling} \left(\bar{x} + t_{(n-1)}(\alpha_U) * \sqrt{\frac{s^2}{n}}, PRECISION \right)$
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In Definition 3 $t_{n-1}(\alpha)$ represents the critical value of a *t-Distribution* having $n - 1$ degrees of freedom at an α level of significance.¹ Asymmetric sample mean confidence intervals will be created using different levels of significance for the lower and upper confidence limits, specifically $\alpha_L \neq \alpha_U$. To establish comparable results the same three calculation parameters ($\alpha_L, \alpha_U, PRECISION$) will be used for all properties.