

City of Portland: Building Energy Data Validation

Final Report



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City of Portland: Commercial Building Energy Data Validation

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Executive Summary

In April 2015, Portland City Council approved the Commercial Building Energy Performance Reporting Ordinance requiring commercial buildings owners to benchmark and report their building's energy performance metrics to the City annually. Commercial buildings 50,000 square feet or larger had to submit their first energy performance report—covering calendar year 2015—in April 2016.

As part of a Cities LEAP award received from the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy, the City retained Research Into Action and Energy 350 (the Research Into Action team) to validate building owners' Portfolio Manager inputs provided for the City's first energy performance reporting cycle (calendar year 2015). The Research Into Action team was also tasked with identifying buildings we recommend the City exclude from future energy analysis because their Portfolio Manager inputs were invalid or missing. We accomplished these tasks by surveying a sample of 53 building owners/designees about the approaches they used to estimate their Portfolio Manager inputs, the challenges they encountered, and their use of the City's tools. In addition to enabling us to assess the validity of the Portfolio Manager data, the surveys helped us identify ways the City may be able to better support future rounds of energy performance reporting and thereby improve the accuracy of future reports.

Key Findings

The Research Into Action team's key findings from this research are listed below. The key findings are numbered for easy reference: the numbering is not a ranking or prioritization of the findings.

1. **Respondents appreciated and used all three of the City's support tools.** Almost all respondents (87%) consulted the *How-To Guide* at least once, 55% contacted the Help Desk, and 49% attended a workshop. Respondents gave positive feedback on the support they received from the City.
2. **Almost one-third of the respondents encountered challenges when estimating the gross floor area (GFA).** These challenges related to use-type definitions, particularly uncertainty about whether a building qualifies as mixed-use property, and about when to count covered walkways and attached parking garages in the GFA. Owners of buildings with tenants had a more challenging time estimating GFA than did building owners without tenants. Building owners commonly used the total square footage of their properties from architectural drawings to estimate GFA.
3. **Most respondents entered their electric and natural gas usage data (58% and 61%, respectively) manually by reviewing their utility bills.** Most respondents found obtaining energy data from their utilities and entering energy usage data into Portfolio Manager relatively straight-forward. A minority of building owners with separately-metered tenants had difficulty obtaining and/or completing the waivers the utilities required to release the tenants' usage data to them.
4. **In almost all cases, building owners included separately-metered tenants' energy usage data in their reporting.** Eleven of the twelve buildings with separately-metered electric tenants reported the tenants' energy usage; all seven of the buildings with tenants on separately-metered natural gas service reported the tenants' gas usage.
5. **Respondents had minimal difficulty estimating weekly operating hours, the number of workers on the main shift, and the number of computers at the building.** The respondents accounted for businesses' hours of operation and the type of business when estimating these inputs. Some used

information from their buildings' Human Resources, Security, or Information Technology departments.

6. **Several respondents expressed concern about the demands placed on them by the City's Ordinance.** Some respondents found the process time-consuming and/or confusing. In a few cases, respondents said they needed to hire a third party to ensure their submissions were done correctly.

Conclusions and Recommendations

Conclusion 1: Building owners made extensive use of, and appreciated, the City's support tools, and survey respondents valued having multiple forms of support. Nearly all respondents referred to the *How-To Guide*, and having a live person to speak with at the Help Desk provided extra support for those who needed it.

Recommendation 1: Maintain and enhance the City's support tools. (See suggestions for enhancements in Recommendations 2a through 2c).

Conclusion 2: Many building owners/designees do not understand and/or are confused by some of the Portfolio Manager inputs. Confusing GFA-related inputs include mixed-use space definitions, parking, and covered walkways. In addition, estimating the number of workers on the main shift and the number of computers in a building can be confusing for some building owners. Some owners do not understand how Portfolio Manager combines building characteristics with utility data to generate energy performance metrics. As the number of buildings required to report increases, the diversity of the building spaces will grow, leading to an even greater need for clarification on GFA-related inputs.

Recommendation 2a: The City can augment its support tools to provide greater clarity on these Portfolio Manager topics/inputs. For the GFA inputs, the City should provide a clear definition of covered walkways and a clearer explanation of how building owners should handle parking garages. The City could include examples based on building space configurations described in this report, and perhaps other anecdotal examples, to demonstrate the correct approaches to estimating GFA in these situations.

To help building owners accurately report the number of main shift workers and the number of computers, the City should enhance its support tools to include advice on how to approach occupants' HR or IT departments to request accurate employee and computer counts. The City should also add guidance, supported by examples, for counting main shift workers in buildings with a mix of part-time and full-time employees.

Recommendation 2b: For inputs that are confusing to building owners, and that are reported the same way by buildings reporting to the City and buildings seeking ENERGY STAR certification, the City can supplement its support tools by referring building owners to the abundance of FAQs and "help" documents in the Portfolio Manager library.

Recommendation 2c: Add or enhance explanations in program support materials about how Portfolio Manager ties together building characteristics and energy consumption data to generate building-specific energy performance metrics.

Conclusion 3: Uploading or inputting energy usage data into Portfolio Manager is generally straightforward for most building owners, and the majority opted to input their energy usage data manually.

However, one respondent who reported on multiple buildings and used both electric utilities' data uploading processes, found the Pacific Power process more cumbersome than PGE's process.

Recommendation 3a: Compare the PGE and Pacific Power uploading procedures to identify possible improvements. If appropriate, coordinate with Pacific Power on simplifying their process.

Recommendation 3b: Further promote the option of entering energy usage data via the tools provided by the utilities. This could ease the annual data entry burden, especially for buildings with multiple meters.

Conclusion 4: Electric and gas utilities sometimes provide energy usage data aggregated across multiple meters, despite customer requests for meter-specific information (e.g., so building owners can separately input their tenants' energy use).

Recommendation 4: The City should coordinate with the electric and gas utilities to help them understand the City's energy performance reporting process, including commercial customers' need for meter-specific monthly energy usage information.

Conclusion 5: Some building owners reported they do not have the in-house resources needed to accurately report their building's energy performance to the City. These owners are frustrated about having to pay outside organizations to complete the required reporting. Increasing numbers of building owners may find themselves in this position as the number of buildings required to report increases.

Recommendation 5: The enhancements to the City support tools suggested in Recommendations 2a, 2b, and 2c, may provide the additional guidance some building owners need to enable them to complete the reporting on their own. In addition, the City should highlight the existence of its Help Desk in multiple places on its website, in the *How-To Guide*, and during the workshops. The City should also consider holding special "bring us your challenge" workshops (or having a "bring us your challenge" section of the standard workshops).

Conclusion 6: Based on their survey responses, all building owners/designees who had used Portfolio Manager in the past appear to have reported GFA to the City in accordance with the City's rules. Nonetheless, there are several subtle but important differences between using Portfolio Manager for reporting energy performance to the City and using Portfolio Manager for ENERGY STAR certification. Building owners who are not aware of these differences could mistakenly adhere to ENERGY STAR certification rules when entering data into Portfolio Manager for their City reports, thereby inadvertently generating reports that do not conform to the City's reporting requirements. For example, ENERGY STAR certification reporting allows owners to exclude a non-eligible Property Use (that is, a use that is not eligible to receive an ENERGY STAR score) from the GFA when the use accounts for less than 10% of the GFA, but the City's reporting does not.¹

Recommendation 6a: The City should also prepare a table showing the differences between its reporting requirements and the ENERGY STAR certification reporting requirements.

¹ See: <https://portfoliomanager.zendesk.com/hc/en-us/articles/211028438-What-can-I-exclude-from-my-property->.

Recommendation 6b: We recommend that the City’s *How-To Guide* provide more specific instructions for users who are modifying their data inputs for the City from inputs they used for ENERGY STAR certification (that could include the table described in Recommendation 6a). More specifically, the *Guide* encourages users who are “already benchmarking” to skip to “Step 4, Add Additional Property Information.” Step 4 instructs users to “enter City of Portland Building ID,” and “enter property notes, including: a building narrative and Portfolio Manager verification.” However, Step 4 does not instruct users to include both energy consumed and property data for spaces that were excluded from their earlier ENERGY STAR benchmarking data entries. Such an instruction is important to ensure consistency across all buildings reporting to the City.

1. Introduction

In April 2015, Portland City Council approved the Commercial Building Energy Performance Reporting Ordinance requiring commercial buildings owners to benchmark and report their building's energy performance metrics to the City annually. Commercial buildings 50,000 square feet or larger had to submit their first energy performance report—covering calendar year 2015—in April 2016. Commercial buildings 20,000 to 50,000 square feet must submit their first energy performance report—covering calendar year 2016—in April 2017.

The City's policy covers buildings that are primarily used as offices, retail spaces, grocery stores, hotels, health care and higher education. The policy explicitly excludes residential properties, nursing homes, places of worship, parking structures, K-12 schools, industrial facilities, and warehouses from the reporting requirement.

The policy directs building owners (or their designees) to use the U.S. Environmental Protection Agency's free, web-based ENERGY STAR® Portfolio Manager benchmarking tool track to report their buildings' energy use intensity (EUI), ENERGY STAR score, and greenhouse gas emissions. Building owners enter information about their properties' primary use, other uses, and gross floor area (GFA). They also enter building use details such as operating hours, number of workers, number of computers, and the portions of the building that are heated and cooled. Portfolio Manager allows users to enter temporary values for some parameters (as a placeholder); the tool also provides default values for some parameters. Finally, building owners enter electric and (if applicable) natural gas usage data for one calendar year. Portland commercial building owners can obtain their energy use data from their electric and gas utilities for importing into Portfolio Manager, or they can manually enter the energy use data themselves.

Some building owners/designees reporting to the City have never used Portfolio Manager before, while others have used it in the past for ENERGY STAR certification or other benchmarking purposes. The City provides its *Energy Reporting How-To Guide*, Portfolio Manager workshops, and a help desk to direct and support building owners through the energy performance reporting process. While the City's energy performance reporting and the ENERGY STAR certification process both rely on Portfolio Manager, there are differences between the two systems' rules. Thus, the City's support tools are beneficial to first-time and experienced Portfolio Manager users alike.

As part of a Cities LEAP award received from the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy, the City retained Research Into Action and Energy 350 (the Research Into Action team) to validate building owners' Portfolio Manager inputs provided for the City's first energy performance reporting cycle (calendar year 2015). The Research Into Action team was also tasked with identifying buildings we recommend the City exclude from future energy analysis because their Portfolio Manager inputs were invalid or missing. We accomplished these tasks by surveying a sample of building owners/designees about the approaches they used to estimate their Portfolio Manager inputs, the challenges they encountered, and their use of the City's tools. In addition to enabling us to assess the validity of the Portfolio Manager data, the surveys helped us identify ways the City may be able to better support future rounds of energy performance reporting and thereby improve the accuracy of future reports.

The Research Into Action team organized the remainder of the report as follows:

- › Section 2 describes our survey development and sampling methodology.
- › Section 3 presents an overview of Portland’s commercial buildings and of buildings in the survey sample.
- › Section 4 discusses respondents’ use of the support tools the City provides to assist building representatives with the reporting process. This section also includes some concerns expressed by a minority of respondents about the City’s ordinance.
- › Section 5 reviews the approach respondents took to estimate their Gross Floor Area (GFA) and the challenges they encountered. We also present findings about whether the respondents included or excluded specific building spaces—such as parking garages and tenant spaces-- in their GFA estimations.
- › Section 6 reviews how respondents entered their utility data into Portfolio Manager, how they determined the number of meters for their buildings, and whether they included tenants with separate meters in their energy consumption reporting.
- › Section 7 discusses the approaches respondents took to estimate other “Property Use Detail” inputs. This section also reports on the why some respondents submitted energy reports with default and temporary values.
- › Section 8 lists buildings we identified as incorrectly or incompletely entering information into Portfolio Manager, which we recommend be excluded from additional analyses of the 2015 energy performance data.
- › Section 9 presents our conclusions and recommendations from this research.

2. Methodology

2.1. Survey Development

In March 2017, the Research Into Action team conducted telephone surveys with individuals who submitted 2015 commercial building energy performance data to the City of Portland. Through the surveys, we sought to determine the approaches these “building representatives” used to estimate the inputs for Portfolio Manager, the challenges representatives encountered while developing these inputs, and whether building representatives made use of the City-provided tools intended to support them in their reporting.

More specifically, the surveys covered the approaches respondents took, and the challenges they faced, in estimating or entering these inputs:

- › Gross floor area (GFA), including (when relevant) parking garage GFA
- › Operating hours
- › Number of workers on the main shift
- › Number of computers in the building
- › Portion of the building that is heated; portion of the building that is cooled
- › Twelve months of actual electric and natural gas consumption data, including (when relevant) parking garage energy consumption

Because we surmised that past Portfolio Manager users might not be aware of the differences between the information required by the City and the information required for ENERGY STAR certification, we also included questions addressing areas where the two sets of reporting requirements differ—for example, in reporting information for first-floor tenants.

As described in the next section, the team was striving to complete surveys for a total of 50 buildings, and we ended up completing surveys for a total of 53 buildings. Although our primary goal was to gather information about a single building from each respondent, we sought to obtain as much insight as possible from each survey. Therefore, after determining their willingness, we asked the respondents who had submitted energy performance data for multiple buildings whether they took different approaches, or encountered different challenges, when reporting for their other buildings. Sixteen of the 53 respondents had reported energy performance data for multiple buildings, and 12 of these agreed to answer the additional questions. We note in the sections below when the findings include information about additional buildings.

The surveys lasted between five and 30 minutes. The survey instrument is provided in **Error! Reference source not found.**

2.2. Sampling

The City of Portland received 2015 energy performance data for 340 commercial buildings. During the course of its initial data analysis for the City, Portland State University (PSU) removed 13 buildings that were erroneously included in the initial data set. These included dummy buildings used solely as examples, and buildings that were not required to report data to the City in 2016 either because of their size (<50,000 square feet) or their property type (i.e., the type was excluded from the City’s policy). Research Into Action received data for the remaining 327 buildings and, at the City’s, request removed an additional 15 buildings that were duplicates or marked as “institutions.”²

Our final sample frame included 312 buildings. Using purposive sampling guided by instructions from the City,³ we divided the sample frame into three strata based on each building’s ENERGY STAR status, as shown in Table 2-1.

Table 2-1: Commercial Building Sampling Frame

Stratum	Definition	N in Sample	Targeted Completes	Actual Completes	Confidence/Precision
A	Buildings that received ENERGY STAR certification in 2014 or later	27	9	9	85/20
B	ENERGY STAR Score-eligible buildings that have not been certified since 2014	186	30	33	85/12
C	Buildings that are not eligible for an ENERGY STAR Score	99	11	11	80/20
Total		312	50	53	

We adopted these strata to accommodate the following conditions:

- › **Stratum A—buildings that received ENERGY STAR certification in 2014 or later:** Portfolio Manager inputs for these buildings were verified prior to this project, as part of the ENERGY STAR certification process. Since the verification happened relatively recently (in 2014 or later), the team agreed it would be a redundant exercise, and an unnecessary burden, to ask Stratum A buildings to verify their Portfolio Manager inputs again in early 2017. Thus, we used a shorter battery of questions for Stratum A respondents and aimed to complete only nine of the total 50 surveys for Stratum A. (Note, however, that verification for ENERGY STAR certification does not necessarily represent compliance with City policy).
- › **Stratum B—ENERGY STAR score-eligible buildings that have not been certified since 2014:** Because Portfolio Manager requires the greatest number of data inputs for ENERGY STAR Score-eligible buildings, and because inputs for Stratum B buildings had not previously (or recently) been verified, we had the greatest number of data input questions for representatives from

² These institutions were college campuses that had worked very closely with City staff to comply with the energy reporting policy; City staff were directly involved with data Portfolio Manager entry for these institutions.

³ The City’s Project Manager specified the targeted number of completes for each stratum.

these buildings. Further, because Stratum B buildings were the primary focus of this research, the Research Into Action team strove to complete 30 surveys for Stratum B buildings. Three building owners returned our phone messages after we reached the 30-building goal, so we ended up completing surveys with 33 Stratum B building owners/designees.

- › **Stratum C—buildings that are not eligible for an ENERGY STAR score:** During the data entry process, Portfolio Manager determined that these buildings were not ENERGY STAR Score-eligible (e.g., due to their primary use type). As a result, Portfolio Manager did not require as much information from Stratum C representatives as it did from representatives with buildings in the other strata. The Research Into Action team, in turn, therefore had a shorter battery of questions for Stratum C respondents. Our goal was to complete 11 surveys with Stratum C representatives.

Within each stratum, our aim was to select a random sample of buildings to participate in the survey. To ensure the responses would not be biased, we needed each respondent to answer questions about just one building.⁴ We noted, however, that there was not a one-to-one correspondence between buildings and building representatives. Forty-seven building representatives had reported data to the City for more than one building and, once we removed “no longer at this job” replies to our introductory email, we had a total of 145 unique building representatives in the sample frame. The distribution of unique building respondents by stratum/strata combination is shown in Table 2-2.

Table 2-2: Unique Building Respondents by Stratum or Strata Combination

A Only	B Only	C Only	A&B	A&C	B&C	A&B&C	Total
8	69	46	4	2	15	1	145

Reviewing the sample frame, we recognized we could easily fall short of the stratum-specific targets in Table 2-1. We may not have reached nine Stratum A completes if we randomly selected a building to discuss with individuals who reported on multiple buildings (even if we got an unexpectedly got 100% of the “A only” respondents to complete the survey, we would still need at least one completed survey from a respondent reporting on multiple buildings). We also recognized that meeting the Stratum B target would be next most challenging, and meeting the Stratum C target would be the most likely. To help ensure we met our targets for all strata, we adopted the following protocol:

- › Ask representatives who reported on an A building--no matter what other buildings they also reported on—about an A building.
- › Ask representatives who did not report on any A buildings, but did report on at least one B building, about a B building.
- › Ask representatives who reported data for multiple buildings in one stratum about a randomly selected building from that stratum.

⁴ If, for example, a respondent were to answer the survey for three separate buildings, their responses about buildings two and three could be biased by their earlier responses about building one.

3. Portland’s Commercial Buildings

3.1. Property Use Types within the Sample

Table 3-1 shows number and percentage of survey respondents by building type in comparison to the number and percentage of buildings in the data set PSU used in an earlier statistical analysis. While we present this information for illustrative purposes only since we determine whether the survey sample is statistically representative of the overall data set PSU used,⁵ offices comprise roughly half all buildings in both the sample and the PSU data set.

Table 3-1: Survey Respondents and Portfolio Manager Reporters by Primary Property Use

Property Type	Number of Survey Respondents	Percent of Survey Respondents	All Reporting Buildings: Total Number of Buildings and Campuses*	All Reporting Buildings: Percent of Buildings and Campuses*
Office	31	58%	134	48%
Hotel	7	13%	31	11%
College/University	2	4%	17	6%
Supermarket/Grocery Store	2	4%	20	7%
Hospital (General Medical & Surgical)	1	2%	3	1%
Retail Store	1	2%	8	3%
Medical Office	0	0%	11	4%
Wholesale Club/Supercenter	2	4%		
Automobile Dealership	1	2%	} Other = 50	} Other = 18%
Convention Center	1	2%		
Enclosed Mall	1	2%		
Fitness Center/Health Club/Gym	1	2%		
Prison/Incarceration	1	2%		
Stadium (Open)	1	2%		
Vocational School	1	2%		
Total	53	100%	279+	

⁵ These reasons include: the small sample size, differences in the protocols the Research Into Action team and the PSU team used to eliminate records from our respective analyses (based on the type of analyses each team was conducting), and PSU’s aggregation of several building types into the “other” category.

* Source: Bureau of Planning and Sustainability. *City of Portland 2015 Building Energy Performance Reporting Results*. September 2016.

†The Research Into Action team interpolated the number of buildings in the data set based on the reported percentages of each building type. However, the sum of the buildings by property type does not equal the total number of reported buildings, because some institutional campuses include multiple buildings and property types.

Table 3-2 shows the GFA of the 53 buildings in the final survey sample. Close to half (49%) were properties with less than 100,000 square feet.

Table 3-2: Gross Floor Area of Surveyed Properties (n = 53)

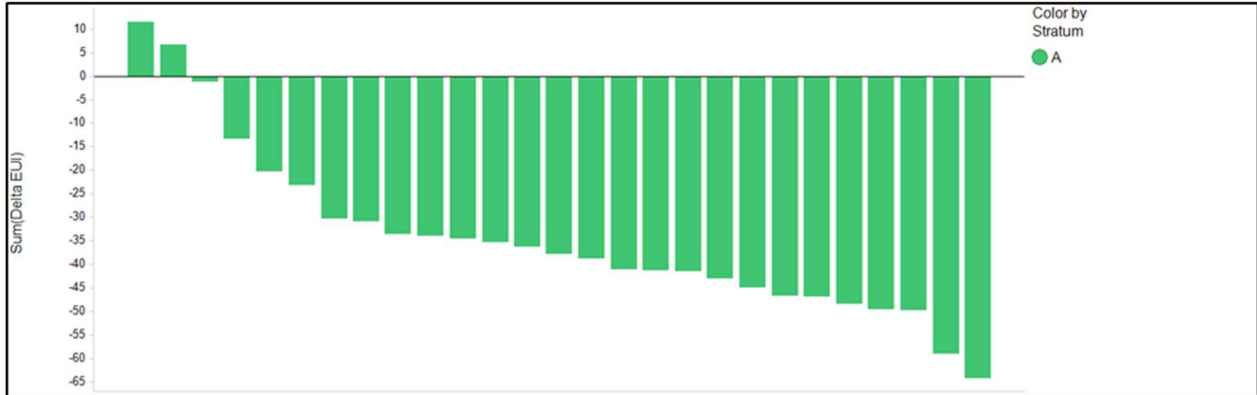
Self-Reported Property GFA (square feet)	Frequency	Percent
Less than 100,000	26	49%
100,000 to less than 200,000	13	25%
200,000 to less than 300,000	4	8%
300,000 to less than 400,000	7	13%
400,000 or more	3	6%
Total	53	100%

3.2. Performance of Sampled Buildings Relative to National Averages

The City of Portland, Oregon has a long history of progressive sustainability outreach and a wealth of support for building owners to improve the energy efficiency of their properties. Due to programs offered by Energy Trust of Oregon and the Northwest Energy Efficiency Alliance, and to the Oregon Department of Energy’s Business Energy Tax Credit (BETC)—all of which have been widely acknowledged nationally for their successes—the City’s building stock is generally more energy efficient than the national median stock.

To see how the buildings in the survey sample compare to the national averages, the team compared the EUI (in kBtu/square feet) for each building in the sample to the national average EUI for buildings of the same type using ENERGY STAR’s database. The results are shown in Figure 3-1, Figure 3-2, and Figure 3-3, for Stratum A, B, and C buildings, respectively. A positive value in these figures shows a building that is less efficient (has a higher EUI, so uses more energy per square foot) than the national median; a negative value shows a building that is more efficient than national median. As shown in most of the Stratum A, ENERGY STAR certified buildings in are more efficient than the national medians of the same property types.

Figure 3-1. Site EUI of Stratum A Buildings Compared to National Median EUI



In general, only buildings in the upper quartile of their building-type category are eligible for ENERGY STAR certification. Despite this general rule, ENERGY STAR scores and ENERGY STAR national median values can be misinterpreted if the user is not aware of the guidelines used in inputting data. For example, the way in which parking garage or data center loads are entered into Portfolio Manager can influence their ENERGY STAR score or the national median values for those building types.

As another example, the subtle differences between the way data is entered into Portfolio Manager for an ENERGY STAR certification and the way it is entered for City of Portland reporting mean that ENERGY STAR results for the two methods may not always be comparable. We suggest readers bear this in mind as they review the graphics in this section.

Note that from the perspective of validating data reported to the City, building owners should enter their property use details so that they are in compliance with the City’s reporting requirements, even if the property use details are different from those they may enter into Portfolio Manager for ENERGY STAR certification. However, doing so can result in complication and, potentially, confusion from the building owner perspective, since building owners must understand and remember the differences between the two methods. While compiling a comprehensive list of all of the differences is beyond the scope of this study, a summary some of the allowable exclusions from ENERGY STAR certification reporting is available here: <https://portfoliomanager.zendesk.com/hc/en-us/articles/211028438-What-can-I-exclude-from-my-property->.

Figure 3-2. Site EUI of Stratum B Buildings Compared to National Median EUI

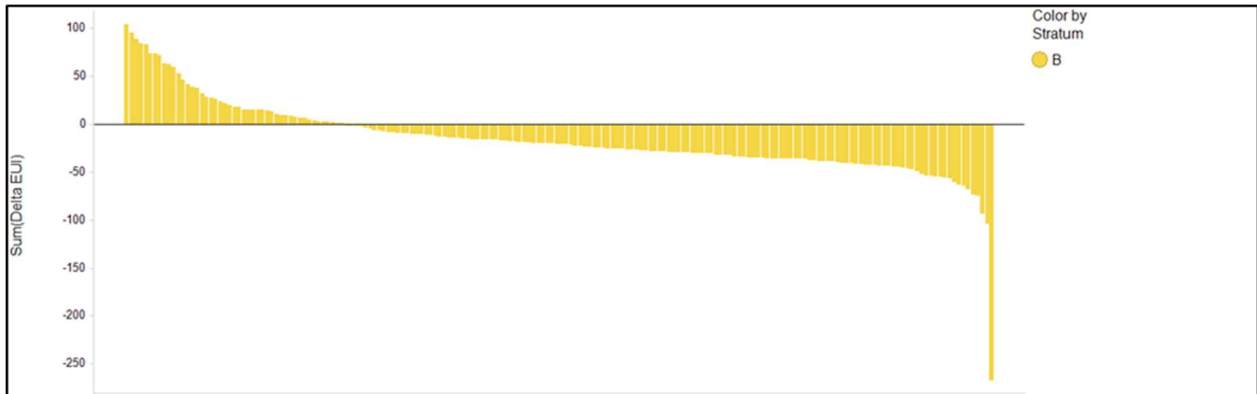
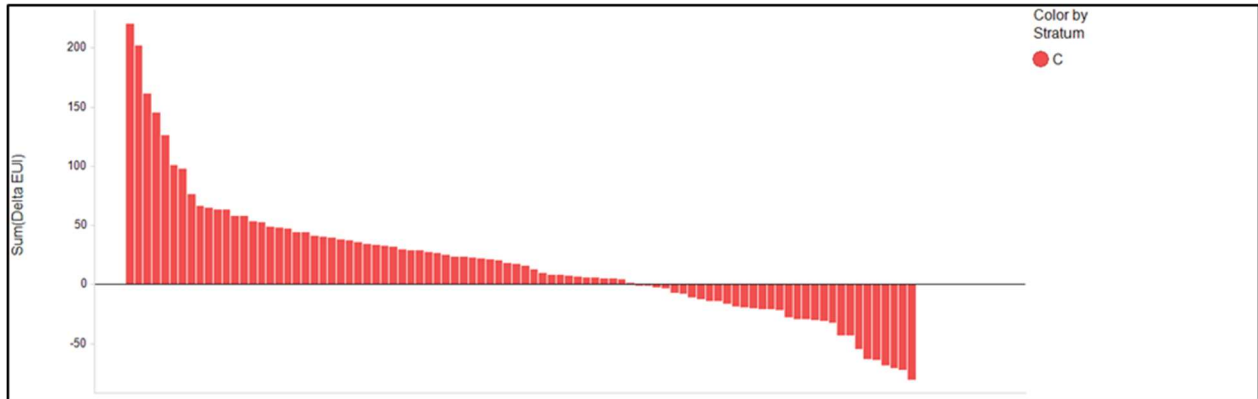
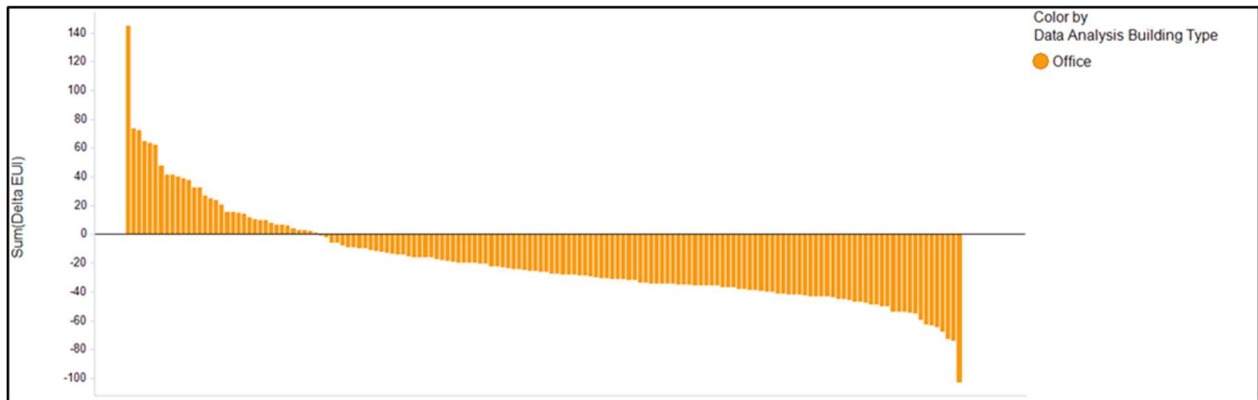


Figure 3-3. Site EUI of Stratum C Buildings Compared to National Median EUI



We provide similar graphics by building type in Figure 3-4 (offices), Figure 3-5 (all building types except offices and “other”), and Figure 3-6 (“other” buildings), across strata, below. Most of the underperforming buildings are “other” building types: two of the seemingly worst performers are community centers with aquatic centers. Because the national median EUIs for “other” buildings are not necessarily pertinent to community centers with aquatics, the community centers in the sample may actually perform better than shown in Figure 3-5 if they were they compared to averages for the same type of buildings nationally. As another example, the seemingly best-performing property, Hotel Rose, is compared to an erroneously high national median EUI specifically for that property.⁶

Figure 3-4. Site EUI of Offices Compared to National Median EUI



⁶ We were unable to determine how the value was calculated by Portfolio Manager. We suggest a review of all Portfolio Manager data inputs for this property, including property use details, to gain insight into the Hotel Rose comparison.

Figure 3-5. Site EUI of Buildings other than Offices and “Other” types Compared to National Median EUI

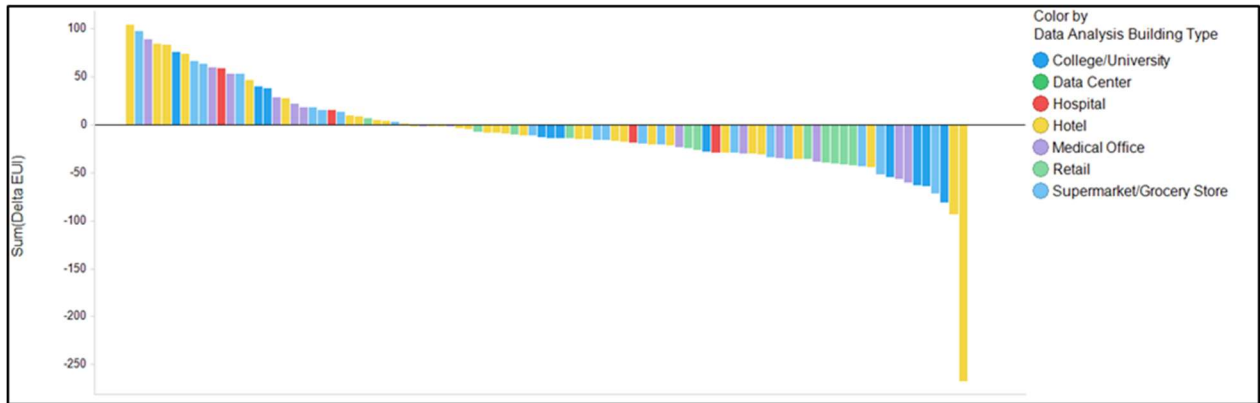
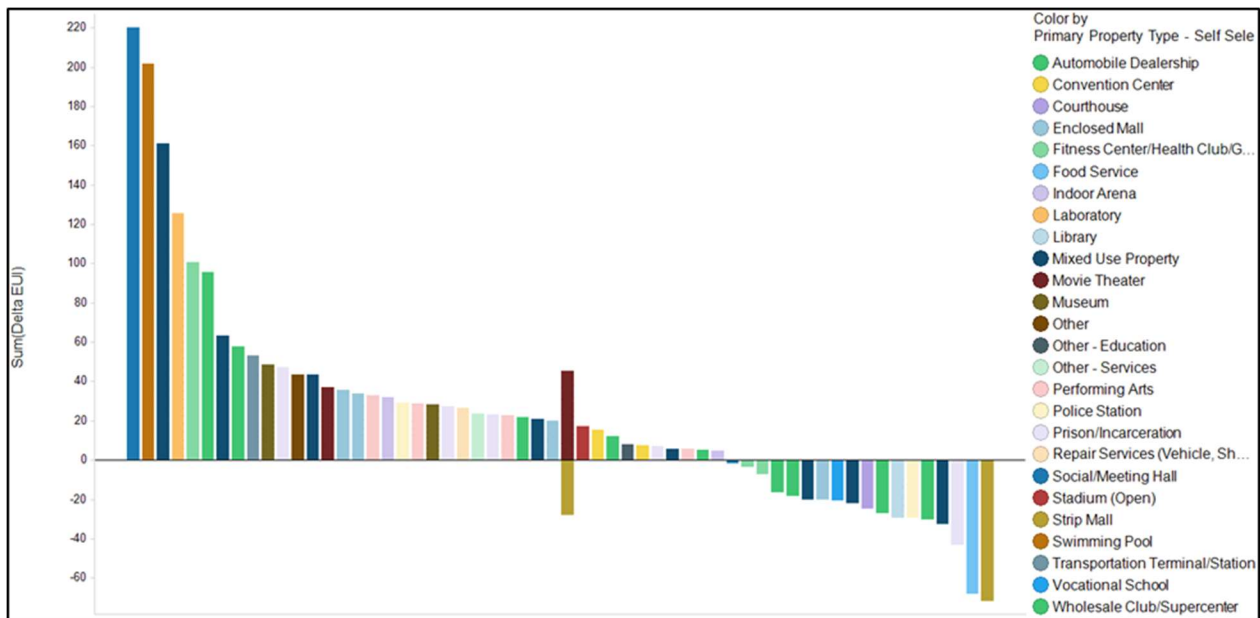


Figure 3-6. Site EUI of “Other” Buildings Compared to National Median EUI



4. Portland’s Support Tools and Policy

Chapter 4 discusses the respondents’ use of the support tools the City provides to assist building owners with the energy performance reporting process. The chapter also covers the concerns expressed by a few respondents about the City’s Energy Performance Reporting Policy.

4.1. Use of Support Tools

The building respondents with whom we spoke made use of, and appreciated, the City’s policy compliance tools: the *How-To Guide*, Help Desk, and hands-on workshop. All but three of the 53 respondents (94%) reported using at least one of these support tools, and many used multiple tools (Figure 4-1). Of the three tools, respondents most frequently (46 of 53, or 87%) used the *How-To Guide* (Table 4-1). Several explained they used the guide multiple times to ensure they were complying with the City’s reporting requirements and to increase the likelihood they were entering information accurately.

Figure 4-1. Respondents’ Use of the City’s Support Tools (n = 53)

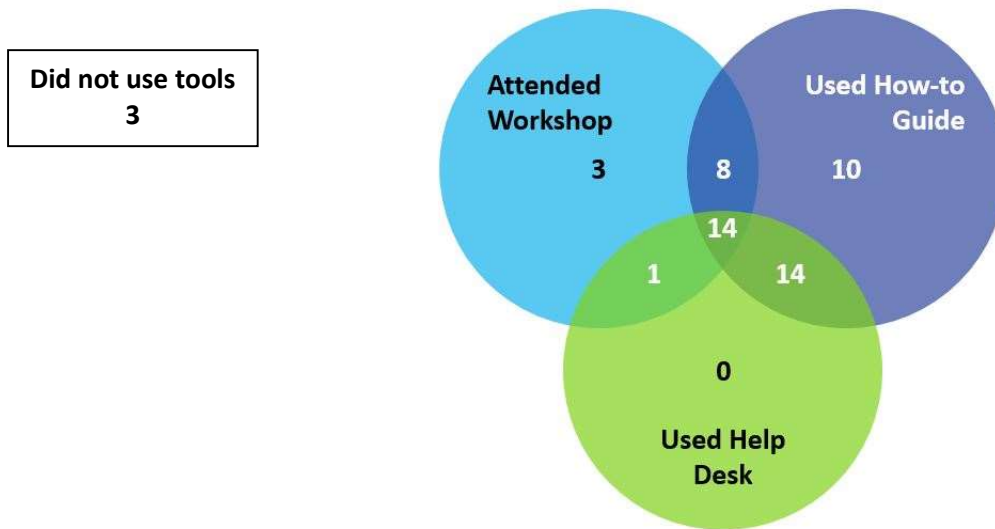


Table 4-1: Respondents’ Use of the City’s Support Tools, by Tool (n = 50; multiple responses permitted)

Support Tool	Number of Respondents Who Used Tool	Percent Who Used Tool
How-To Guide	46	87%
Help Desk	29	55%
Hands-on Workshop	27	51%

Respondents spoke very positively about the assistance they received from the Help Desk. Representative comments about the Help Desk included:

- › “They were quick to answer questions and answer phone calls. I appreciate how customer friendly they are.”
- › “After going on the *How-To Guide*, it was easier to talk with someone and get it explained.”

Respondents most commonly contacted the Help Desk when they had basic questions about how to use Portfolio Manager—for example, how to set up and input information into the software. Two respondents elaborated that they got in touch with the Help Desk when the *How-To Guide* did not answer their questions.

Four respondents reported they contacted the Help Desk about issues related to their building identification numbers. Another four respondents explained that they successfully entered information into Portfolio Manager, but contacted the Help Desk because they found the next steps of creating and submitting their reports to the City confusing or challenging. Two of these four mentioned a problem with a web link that rendered submitting their reports difficult.

Respondents who attended the hands-on workshops, where the trainer walked participants through the data entry process, found them useful. Some respondents reported attending multiple workshops. One such respondent stated, “The classes regarding the Portfolio Manager were very good. I actually went back this year to get a refresher.”

Two respondents we spoke with these suggestions for further resources the City could provide:

- › A simplified *How-To Guide* limited to bullet points
- › Examples of utility bills, with highlights showing where to retrieve the information to input into Portfolio Manager

Research Into Action found no relationship between the respondents’ prior use of Portfolio Manager and their reported use of the City’s policy compliance support tools. Respondents familiar with Portfolio Manager made use of the City’s support tools at a similar rate to those who had not used Portfolio Manager prior to reporting their building’s 2015 energy performance data.

4.2. Need for Third-Party Assistance

Several respondents expressed concern about the demands of the Commercial Building Energy Performance Reporting Ordinance. Seven mentioned that either the process was time consuming (3), that they would have liked to have had someone assigned to help them (2), or to have the utilities send billing data directly to the City (2).

Three other respondents stated that the reporting requirements were onerous and necessitated their use of a third party to ensure the reporting was done accurately. For example, one building owner said he attempted to do the reporting for his grocery store himself, but found the use types and space definitions sufficiently complicated that he hired a third party to complete the reporting for him. This respondent stated, “The City said it doesn't cost anything, but it's so complicated, I had to pay someone to do it so that it gets done right.” Another mentioned that he used a third party to assess his building

and calculate the exact inputs required for the GFA because it would have been a hardship for him to do these tasks himself. The third respondent noted that as more buildings are required to report, there may be greater numbers of small business owners who will not be able to handle the reporting themselves. She said that the data required is “technical” and that it was a challenge for her to complete the reporting information, even with help from her colleagues. Specifically, she explained she was confused about how to report mixed-use versus office space when first floor tenants are present, and about the distinctions between occupied and vacant space. She said that she hopes she can continue to comply with the ordinance by using in-house resources and felt strongly that small businesses “shouldn’t have to pay for a third party” to comply with required reporting.

Note that all of the comments we discuss in this section came from unsolicited feedback. Other respondents we spoke with may have held similar—or vastly different—opinions, but chose not to provide their opinions during our phone conversations. Since we did not ask the respondents about these topics, we do not know the extent to which these concerns are representative of the concerns of all commercial building owners/designees reporting energy performance data.

5. Gross Floor Area

GFA is a key Portfolio Manager input that nearly 30% of respondents (10 of 34) reported difficulty in estimating.⁷ Chapter 5 reviews the approaches respondents took to estimating their GFAs and the challenges they encountered in doing so. The chapter also discusses how respondents handled attached parking garages and tenant spaces in their GFA estimations, and presents findings related to their inclusion or exclusion of other specific types of building spaces in the GFA.

ENERGY STAR Portfolio Manager defines GFA as:

“The Gross Floor Area is the total floor area, as measured from the principal exterior surfaces of the enclosing fixed walls. It is the sum of all the building’s property uses reported on the application, and it should represent the whole building.”⁸

In the Research Into Action team’s professional opinion, this definition omits some important details pertaining to mixed use properties with spaces that are not ENERGY STAR eligible, and pertaining to buildings with parking garages. Both situations may require exclusions from GFA for ENERGY STAR certification reporting (but not City of Portland reporting) depending on how they are metered by the utilities and the percentage of floor area occupied by the non-eligible space.

In working with owners to certify their buildings, we often find that owners’ interpretations of GFA differ from the actual Portfolio Manager definition; in these instances, we provide guidance to building owners to bring their GFA estimations into alignment with the Portfolio Manager definition. Because GFA is a critical Portfolio Manager input, affecting both the reported EUI and the ENERGY STAR score, we recommend that building owners/designees work diligently to accurately estimate GFA in accordance with the definition above. We also recommend that buildings with erroneous GFAs be excluded from further analysis.

5.1. GFA Estimation Approaches

The majority of respondents referenced plans or drawings to arrive at the GFA for their buildings (Table 5-1). Most specified using architectural drawings, blue prints, floor plans, or the tax record. Three respondents estimated their GFA by calculating the square footage of the base floor and then multiplying that by the number of floors. Two of those three mentioned adding other space to that total (a lobby in one case, and a garage in the other).

⁷ The 34 includes 33 respondents from the B stratum and one from the A stratum. The A stratum contact was someone reporting for multiple buildings and reported the GFA challenge when answering the supplemental questions at the end of the survey.

⁸ See: https://www.energystar.gov/sites/default/files/tools/LicensedProfGuide_Aug2016_final2_508.pdf

Table 5-1: Approach for Estimating Gross Floor Area (n = 53)

Approach	Number of Respondents	Percent of Respondents
Information from an as-built drawing or engineering plan	35	66%
A commissioned study (e.g., an architectural review)	5	9%
Base floor area times number of floors	3	6%
Information from property manager’s building database*	3	6%
A value previously entered into Portfolio Manager	1	2%
Used a “rough estimation”	1	2%
Used total square feet (unspecified source)	1	2%
Don’t Know	4	8%
Total	53	100%

* Responses to this question indicated that some corporations with multiple locations maintain databases with building information about each of their sites.

When asked how they estimated the gross floor area for their building, 16 respondents who used an as-built drawing or plan said they had taken the “total square footage” from those plans. Thus, it appears that these respondents equated GFA with the building total square footage. Representative statements included the following:

- › “I used the total square footage based on the architectural floor plan.”
- › “We have a blue print from when the building was built; I took the total square feet off there.”
- › “We know the square footage of the building from numerous remodels.”
- › “I used the total square footage of conditioned space from blueprints and tax rolls.”

Two respondents mentioned that their lack of architectural drawings made it more difficult to estimate their GFA (see Section 5.5 for more on challenges).

5.2. Inclusion of Attached Parking Garages

The City’s How-To Guide instructs building owners to include the parking garage in the building’s GFA if “a single meter covers both parking and other defined uses within the building.” If, however, the parking area is separately metered, then the parking area should not be included in the building’s GFA (and its energy usage should not be included in the building’s energy consumption data). To assess whether building owners correctly applied these instructions to their Portfolio Manager reporting, we asked the five respondents in the B and C strata who said they had an attached parking garage, and who did not report energy usage for their parking garage in their 2015 submissions, whether they included their attached parking garage space in their GFA. We found:

- › Three of the five reported they had included the parking garage in the building’s GFA. Since all of these respondents also said the garage was on the building’s main meter, all handled their parking garages correctly in their energy performance reporting.
- › Two said they had not included the garage in the building’s GFA. One of these respondents said their parking garage was separately metered (so reported correctly), and the other was not sure if the garage was separately metered.

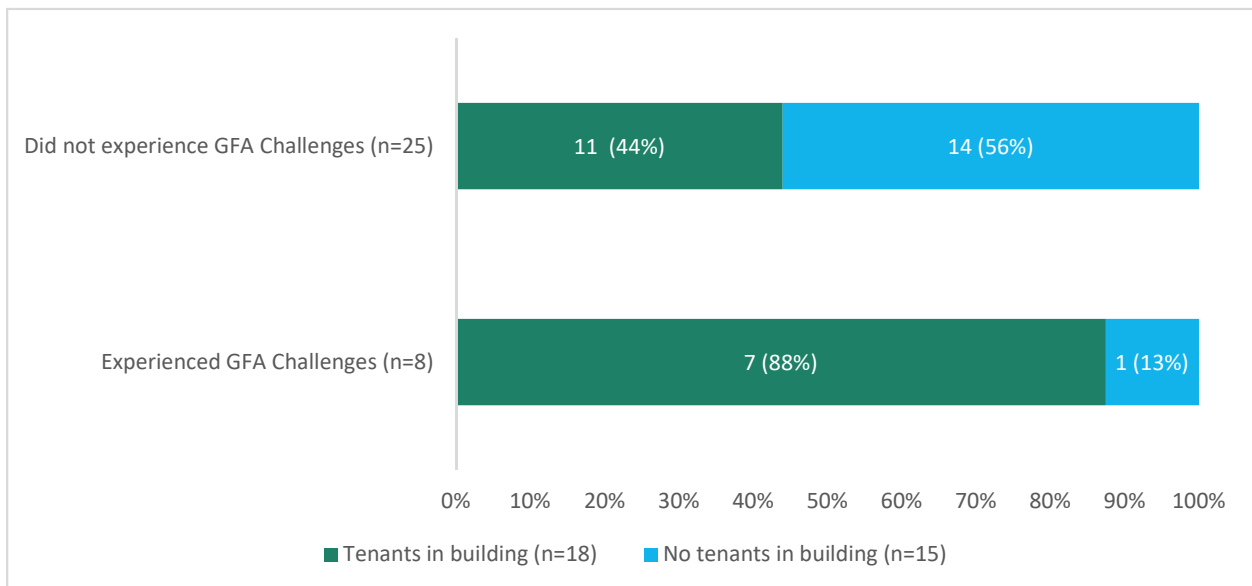
The respondent who was uncertain whether their garage was separately metered likely did not understand the connection between garage’s energy meter and whether the garage should be included in the building’s GFA. Another respondent’s comment also supported the need for guidance regarding parking garages. This respondent said, “Parking is the most tricky [sic] part. It’s confusing reading the instructions for the parking lot area. There’s partially open, enclosed, partially closed.”

5.3. Inclusion of Tenant Spaces

Twenty-nine respondents reported having tenants or more than one organization housed in their buildings. All 29 said they included all of their tenant spaces in the GFA.

Respondents with tenant spaces in their buildings were more likely to report challenges estimating GFA than respondents without tenants. However, this is not statistically significant given the small numbers of respondents in these groups (Figure 5-1).

Figure 5-1: Relationship between Presence of Tenants and GFA Challenges (n = 33)*



* We asked only stratum B respondents whether they experienced challenges estimating the GFA.

5.4. Inclusion of Other Building Spaces

Respondents generally followed the City’s instruction about building spaces to include and exclude from the GFA. Respondents were most confused by covered walkways, with several stating they were not sure what counted as a covered walkway, as reflected by the responses shown in Table 5-2. One asked the surveyor if an interior hallway counted as a covered walkway. Another, who submitted building data for a hotel, was unsure whether to count the covered walkway in front of the building where guests unload their luggage as a covered walkway.

Table 5-2: Building Spaces Included or Excluded in GFA

Building Space	Present in Building	Respondent Included Space in GFA	Should Be Included in GFA	Number Incorrectly Reporting Space	Percent Incorrectly Reporting Space
Covered walkways	5	3	No	3	60%
Stairwells	26	25	Yes	1	4%
Finished basement	8	8	Yes	0	0%
Crawl space	4	0	No	0	0%
Space vacant for all year	11	11	Yes	0	0%
Space vacant for part of the year	10	10	Yes	0	0%

Two of the three respondents who included covered walkways explained they were uncertain about how to provide accurate GFA estimates given their particular circumstances. In the context of discussing covered walkways, these respondents’ general confusion about GFA came through in these comments:

- › “The architectural drawings did not match what the City had. I’m not sure which one is right. I went by what I found in the facilities maps and floor plans. I’m not sure if it’s correct.”⁹
- › “It was confusing reading the instructions for the parking lot area and figuring out what is storage versus office. I had to look at leases to try to factor in what the City requires.”

These statements illuminate respondents’ struggle to fully understand the City’s requirements and match their building data to the City’s required reporting details. We note that neither the online Portfolio Manager glossary nor the 2016 *How-To Guide* provide a definition for covered walkways.

5.5. Other GFA-Related Challenges

In addition to the challenges described above, respondents also had difficulty understanding building use-type and space-type definitions and when to include different building spaces in the GFA. Eight of 34

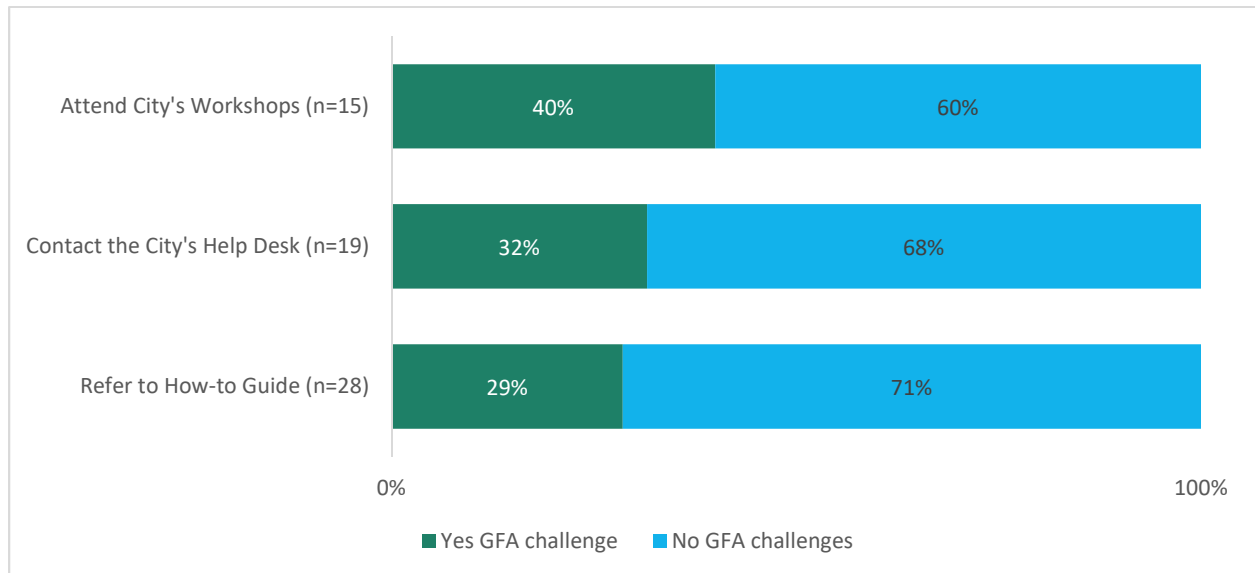
⁹ This is also the contact who erroneously excluded stairwells from the GFA.

respondents (24%) were unclear about the conditions that qualify a building as mixed-use. Representative comments demonstrating respondents’ confusion about different building spaces include:

- › “A problem I’ve had is when there’s an office building with retail on the first floor. I’m not sure if [it’s] mixed use or just office. Sometimes the system doesn’t take mixed use.”
- › “The only thing that was hard was estimating the different types of space. I knew whole building square footage, but deciding how much is this use type and how much is that use type was time consuming. It was very strict, you had to keep it within this parameter. I had to use guesstimates.”
- › “The challenges are all the different classifications: retail, office, parking. Some buildings have all of them. Some components like warehouse aren’t required to be reported on. There’s percent thresholds for some. You just have to be familiar with the requirements and break down the property use types to sort it all out. That’s the challenge.”
- › “We deal with square feet all the time to determine what to charge tenants. If the GFA has a very specific definition I’m unaware of, then maybe it was wrong. But determining square feet was easy.”

Respondents who found estimating GFA challenging were slightly more likely to attend a workshop than those who did not find estimating GFA challenging (Figure 5-2). Respondents who did not have difficulty estimating GFA were more likely to refer to the *How-To Guide*.

Figure 5-2: Use of Support Tools by Respondents Who Were/Not Challenged Reporting GFA (n = 33; multiple responses permitted)*



* We asked whether the respondent experienced any challenges estimating the GFA to buildings in the B stratum, of which there were 33. The numbers on the left indicate the number of B stratum respondents that reported using each support tool.

6. Energy Usage Data

After setting up a Portfolio Manager account and property information, building representatives provide their electric and, if applicable, natural gas consumption data for a one-year period (in this case, calendar year 2015). Chapter 6 presents our findings about how respondents entered their utility data, how they determined the number of meters for the building, and whether respondents included tenants with separate meters in their energy usage data reporting.

6.1. Electric Data

Portland General Electric (PGE) served 58% of the respondents we spoke with and Pacific Power served 40% of them (Table 6-1). One respondent was not sure which utility served her building; we were also unable to determine which utility serves the building since it is located near the border of the two utilities' service territories.

Table 6-1: Electric Utility (n = 53)

Utility	Number of Respondents	Percentage of Respondents
Portland General Electric	31	58%
Pacific Power	21	40%
Don't Know	1	2%
Total	53	100%

6.1.1. Approaches

Most of the respondents entered their electric data into Portfolio Manager manually by referencing their utility bills (58%, Table 6-2). Many others uploaded a spreadsheet containing their monthly electric data from their electric utility (17% and 9% from PGE and Pacific Power, respectively) or from a separately maintained document (11%).

Table 6-2: Approach for Entering Electric Utility Data (n = 53)

Approach	Number of Respondents	Percent of Respondents
Entered data manually	31	58%
Uploaded spreadsheet from PGE	9	17%
Uploaded non-utility spreadsheet	6	11%
Used Pacific Power's automated data exchange	5	9%
Don't know	2	4%
Total	53	100%

A slightly higher percentage of Pacific Power customers uploaded their data manually (67%) compared to PGE customers (55%), though this difference is not statistically significant (Table 6-3).

Most respondents reported no challenges to entering their electric data (45 of 53). In open-ended answers, two respondents who used PGE spreadsheets said that PGE should improve their process to allow for easier automatic uploads of data. In one case, the respondent recommended PGE have a process to upload data that was “more automated like Pacific Power’s” process. The other respondent, a third party who enters data into Portfolio Manager on behalf of building owners around the country, said he wished PGE offered a portal to “hook up databases” to allow for an easier automatic upload.

On the other hand, one Pacific Power customer reported the Pacific Power upload tool did not work for them so they had to enter their data manually. Another respondent, who had submitted data for multiple buildings, compared his experience inputting Pacific Power data to his experience inputting PGE data. He said that with Pacific Power there were “lots of different steps and many forms. It was not as straightforward as PGE. PGE did all the work compared to Pacific Power.”

Table 6-3: Approach for Entering Electric Data by Electric Service Provider (n = 52)*

Utility	Entered Manually	Percent	Uploaded Spreadsheet	Percent	Don't Know	Percent	Total
Portland General Electric	17	55%	12	39%	2	7%	101%
Pacific Power	14	67%	7	33%	0	0%	100%

*The respondent who did not know her electric service provider is excluded from the table.

The majority of respondents (77%) determined the number of electric meters in their building by checking the information on their utility bills (Table 6-4). Fewer people determined the number of electric meters in their building by contacting their electric utility (8%), using a database containing building information (6%), or visually checking the meters (2%). Two people (4%) used a combination of visually matching meters to electric bill data.

Table 6-4: Approach for Determining the Number of Electric Meters (n = 53)

Approach	Number of Respondents	Percent of Respondents
Reviewed utility bills	41	77%
Verified with electric utility	4	8%
Used information from building database	3	6%
Visual inspection matched with utility bill information	2	4%
Visually identified meters serving the building	1	2%
Meters were already established in Portfolio Manager by someone else	1	2%
Don't Know	1	2%
Total	53	100%

Of the 29 buildings with tenants, 12 (41%) had tenants with a separate meter. Eleven of the 12 said that their energy performance reporting to the City included the separately metered tenants. The one respondent who said she did not include all of the tenants' electric data is the respondent who did not know which electric utility serves her building. The database indicates that the building's first floor tenants include two restaurants, a deli, a gift shop, a hair salon, and an eye care clinic.¹⁰

6.1.2. Challenges

Very few respondents encountered challenges in obtaining or inputting electric utility data. Of the 29 respondents with tenants, only four encountered challenges obtaining tenant data. Two of the four explained that after requesting tenant data from PGE they received aggregated data that was not separated by tenant/meter. The third respondent explained that a tenant had moved out of their building and that contacting them to get their signature on the electric usage data release form proved difficult. The fourth respondent expressed frustration interfacing with his utility company: the utility told him he needed waivers in order to obtain tenant data which he said led to "a lot of back and forth and miscommunication with the utility."

Three of the respondents with tenants who had no problems obtaining tenant data explained why the process was easy for them. Two of these said that all the building's utility bills were in one place, so they were easy to obtain. Another said "We're fortunate to have good relationships with our tenants. I had to remind one person to get us their electric data, but it was not a problem."

6.2. Natural Gas Data

Ten of the 53 respondents we spoke with did not report natural gas usage in their 2015 energy performance data submitted to the City, although six of these ten reported in the survey that their building does have natural gas service. Therefore, a total of 49 buildings in the survey sample have natural gas.¹¹ The six buildings missing natural gas usage data in their 2015 energy performance reporting and are listed in Section 8 as buildings we suggest excluding from further analysis. Another three confirmed that they did not have natural gas service and one was unsure.

6.2.1. Approaches

As shown in Table 6-5, almost two-thirds of NW Natural customers uploaded their natural gas data manually by referencing their bills (61%) and roughly a quarter uploaded a spreadsheet from NW Natural (24%).

¹⁰ This contact reportedly included all tenant spaces when reporting the GFA.

¹¹ That is, only 4 of the 53 buildings do not appear to have natural gas service, and 49 do: 53-10+6 = 49.

Table 6-5: Approach for Entering Natural Gas Data (n = 49)

Approach	Number of Respondents	Percent of Respondents
Entered data manually	30	61%
Uploaded spreadsheet from NW Natural	12	24%
Uploaded non-utility spreadsheet	4	8%
Combination of manual from bills and spreadsheet upload	1	2%
Don't know	2	4%
Total	49	100%

Of the 49 customers of NW Natural we spoke with, seven reported they had tenants with separately-metered natural gas service; two were unsure. All seven of the respondents with tenants on separate gas meters reported the gas usage of the tenants when reporting their 2015 energy performance data to the City.

Most natural gas customers determined the number of gas meters by reviewing their utility bills (Table 6-6). Three respondents reported natural gas meter(s) had already been established in Portfolio Manager by someone else. Two contacts verified the number of meters with NW Natural, and another two respondents said they visually matched meters on the building with the meters on their natural gas bills.

Table 6-6: Approach for Determining the Number of Gas Meters (n = 49)

Approach	Number of Respondents	Percent of Respondents
Reviewed utility bills	41	84%
Meters were already established in Portfolio Manager by someone else	3	6%
Verified with natural gas utility	2	4%
Visual inspection matched with utility bill information	2	4%
Don't Know	1	2%
Total	49	100%

6.2.2. Challenges

Most respondents said they had no difficulty determining the number of gas meters in their buildings or uploading their natural gas data. Three respondents said they would have liked the uploading process

could be more automated. One said he wished the “automation process was clearer” while another commented that “the gas company cannot upload data as easily as the electric utility does.”

Two respondents explained that their specific circumstances made obtaining gas usage data from NW Natural somewhat challenging. The first said it was “tricky” when they had a credit on their gas bill, since they did not receive gas usage data for that month, and therefore had to contact NW Natural to obtain that information. The other said their account number had changed and it took a while to get updated and corrected information from NW Natural.

Of the 49 buildings with natural gas, seven had tenants with separately-metered gas service. Of those seven, only two reported challenges obtaining their tenants’ natural gas data. One building owner said it was “difficult to get tenants to sign the paperwork” releasing their energy usage data to him. Once he obtained the necessary approval, he said that NW Natural provided him aggregated energy usage data for the whole building instead of usage data broken out by tenant or meter, which was what he needed. The other said it was difficult to get his tenants to sign waivers so that their data could be released to him.

Finally, one respondent had trouble distinguishing the natural gas meters serving her building from the meters serving an adjoining building. She said,

- › “It was not clear as to which meters were theirs or for the adjoining building. We had to work with NW Natural to get the service address for all the meters. However, most of the meters have a different address than the building.”

7. Other Property Use Detail Inputs

Portfolio Manager requires the user to input the weekly operating hours, number of workers on the main shift, and the number of computers in the building for the following building use types: office, hotel, retail store, medical office, bank branch, courthouse, wholesale club/supercenter, and supermarket/grocery. Twenty-five buildings in stratum B were primarily used in one of these ways. Chapter 7 discusses the approaches respondents took to estimate these inputs, the challenges they described in estimating these inputs. The chapter also provides explanations for the few instances when respondents submitted their reports with default or temporary values.

We note that in the Licensed Professional (LP) guide,¹² EPA does not obligate the LP to manually count each use detail, but to verify the correctness of the value reported. The LP may verify this information by asking credible parties who have a detailed knowledge of the building and/or cross-checking information with available reports from departments within the organization.

The Research Into Action team did not have access to the actual values reported by building owners, and analyses to assess the validity of the user interpretations made below was beyond the scope of this study. The discussions in this section are therefore intended only as feedback to the City. Except in cases where building owners reported using default and/or temporary values, we recommend *against* using this feedback to justify excluding buildings from further analysis. Finally, we note that the property use details do *not* affect the EUI, but *do* affect the reported ENERGY STAR score.

7.1. Operating Hours

Users must input weekly operating hours for each property use entered. The rules for determining weekly operation hours vary based on the property use type. The Research Into Action team has found that these definitions are easy to follow for users who are aware of the rules. However, in our experience serving as a LP, we have observed that users often incorrectly enter property-use specific weekly operating hours when they do not read the instructions. We believe that, because the instructions for this field appear to be simple, users often pass them over. We have found that the ENERGY STAR score *is* sensitive to the weekly operating hours input; however, the operating hours input does not affect a building's reported EUI.

Almost half (44%) of the 25 respondents used the business hours of operation as their buildings' operating hours, and one-fifth based their buildings' operating hours on when the majority of building occupants were in the building (

¹² See: https://www.energystar.gov/sites/default/files/tools/LicensedProfGuide_Aug2016_final2_508.pdf.

Table 7-1). Most of the others talked with their tenants or facilities manager to better understand the tenants' hours of operation and when people were in the building.

Table 7-1: Approach for estimating weekly operating hours (n = 25)

Approach	Number of Respondents	Percent of Respondents
Used the business hours of operation	11	44%
Used the hours when the majority of building occupants are in the building	5	20%
Talked with tenants or facilities manager	4	16%
Used building database information	2	8%
Used the number of hours the HVAC equipment is programmed to operate	1	4%
Don't Know	2	8%
Total	25	100%

Few people reported difficulty estimating their building’s weekly operating hours. The four respondents who reported some degree of uncertainty had tenants or buildings with mixed use types. For example, one respondent’s building had a café that was open longer than most other tenants’ spaces. She said she was not sure about the number of weekly operating hours she should report; she ultimately used the hours when most people are in the building and “aimed high rather than low” in her estimation. Another respondent said he made assumptions about when tenants started and ended working and used “majority rules” as a guideline. Finally, one respondent said that while most people are at the building eight hours a day, some occupants arrive early or stay late; the respondents reported she “rounded up” to account for the early arrivers and late departers.

7.2. Number of Workers on Main Shift

For some property uses, building owners/designees must input the number of workers on the main shift. The LP guide states:

*“Workers on Main Shift” **only** includes the number of employees present during the main shift. It does **not** include visitors, clients, everyone who came into the building over the course of 24 hours, or the total number of workers across multiple shifts.”*

About half of the respondents added together the number of employees from each business or department in their building to estimate the number of workers at the property during the main shift (Table 7-2). About one-third used information from the building’s security system, human resources (HR) department, or information technology (IT) department to arrive at the number of employees on the main shift. One respondent, for example, said she asked the HR department for the information because they “had an accurate number of who is there full time and part time.” Another said their estimate was a “swing in the dark” and had the property manager help her estimate the number based on the number of tenants in the building and how many work in each space.

Table 7-2: Approach for estimating number of workers on main shift (n = 25)

Approach	Number of Respondents	Percent of Respondents
Added together the total number of employees from each of the building’s businesses or departments	12	48%
Used information from the building’s security system or similar database source	9	36%
Don’t Know	4	16%
Total	25	100%

Most respondents did not have difficulty estimating the number of workers on the main shift. The few who did attributed their challenges to the presence of multiple tenants in the building. Due to having many tenants of different sizes, four respondents told us that the number they entered in Portfolio Manager was an estimate rather than an exact count. When describing their challenges, they said, “there is no way to know for sure” and that “it is hard to estimate because the number is always changing.” Two respondents mentioned their estimates were guided by an industry standard of one person per 100 square feet, although one of those respondents also noted that that standard varies by use type.

7.3. Number of Computers

For some property use types, building owners/designees must input the number of computers to Portfolio Manager. The LP guide provides this further explanation:

*“Number of Computers **only** includes desktop computers, laptops, and servers. It does **not** include monitors, tablets, smartboards, fax machines or ATMs.”*

About equal numbers of respondents estimated the number of computers in the building based on the number of employees (40%) or based on counts they obtained from other sources (38%; Table 7-3). Those that based computer counts on the number of employees said they accounted for the size of the businesses, and the number of computers they expected for each business type. For example, one building had therapist offices and law offices. This respondent developed his whole-building estimate based on his assumption that the therapist offices were likely to have fewer computers per square foot than the law offices.

In other cases, respondents entered more precise numbers after requesting computer counts from each department or business in the building (7 of 25) or from the IT or HR department (5 of 25). These respondents reasoned that the IT or HR department was likely to have the most up-to-date figures on the number of active computers at a business.

Table 7-3: Approach for estimating the number of computers (n = 25)

Approach	Number of Respondents	Percent of Respondents
Based it on the number of employees	10	40%
Requested a count from each of the building’s businesses or departments and added them together	7	28%
Requested a count from the IT or HR department	5	20%
Don't Know	3	12%
Total	25	100%

Five of the 25 respondents reported some challenges in estimating the number of computers. The respondent mentioned above who considered the business types in her building said the building has more than 40 tenants and she was not going to “go bother every tenant” in order to get an exact count. Along similar lines, another respondent with many tenants said that “it’s hard to get an exact number without spending a lot of time.” A third respondent noted that many employees at her building have laptops and it was hard to estimate the number of computers because not every employee brings their laptop to work each day.

7.4. Portion Heated and Cooled

Almost all respondents found it easy to estimate the portions of the building that are heated and cooled, given Portfolio Manager’s options of none, less than 50%, and 50% or more. The majority (28 of 33; 85%) said that well over 50% of their building was heated (typically 90% or 100%), so it was easy to know to select the “50% or more” category. Three respondents reportedly looked at the floor plan or database of their building to obtain this information. Two respondents reported estimating, one of whom said they “talked with the representative at the City and made their best guess.” The other said a portion of their building was a warehouse “so it was hard to know which part is heated due to the layout.”

All 33 respondents said they applied the same approach they had used for estimating the heated portions to estimating the cooled portions of their buildings; none reported challenges estimating the cooled portion.

7.5. Temporary and Default Values

The City requires building owners to replace default and temporary values before submitting their reports: final submissions that include default and/or temporary values do not comply with the City’s reporting requirements. Fifteen of the 313 records in our sample contained default values, and only two contained temporary values. We spoke with two respondents whose report included default values (but neither who had temporary values), and asked them if they remembered leaving any default value boxes checked. Both remembered seeing the flagged box, and said the “default” information they ended up reporting was accurate. One respondent explained that the default value seemed reasonable, so he left that number in (and the box flagged). The other said he updated the Portfolio Manager input but neglected to uncheck the default box.

8. Buildings to Exclude from Future Analysis

Table 8-1 lists the buildings we identified as incorrectly entering information into Portfolio Manager based on the survey responses and therefore recommend be excluded from future analysis. Table 8-1 also shows the reasons for these recommendations.

Table 8-1: Buildings to Exclude from Future Analysis

Portland Building ID Number	Building Name	Building Address	Reason for Exclusion
campus-16	OR-AMCP-10-10123 SE Market Street	10123 SE Market Street, 97216	Did not include stairwells in GFA; included covered walkways in GFA
1N1E27DC-6600-B1	BESC	501 N Dixon, 97227	Excluded attached parking garage from GFA, no energy usage was reported for the garage, and respondent didn't know if the garage was separately metered
1N2E08-300-B39	Port of Portland Headquarter building	7200 N.E. Airport Way, 97218	Included a default value that "seemed reasonable."
1S1E03CB-800-B1	200 Market Building	200 SW Market Street, 97201	Did not enter tenant electric usage data and reported several problems with natural gas data; left default value box checked
1S2E09BB-5100-B1	Fubonn Shopping Center	2850 SE 82nd Ave, 97266	Used a "rough estimation" for the GFA
1N1E34BC-7800-B1	Arlene & Harold Schnitzer Center for Art and Design	511 NW Broadway, 97209	Missing natural gas data
1N1E34CA-100-B1	Region 1 Headquarters, Flanders	123 NW Flanders, 97209	Missing natural gas data
1N1E34CD-7800-B1	Spalding Building	319 SW Washington Street, 97204	Missing natural gas data
1N2E24DA-500-B1	Willamette Carpenters Training Center	4222 NE 158th Ave, 97230	Missing natural gas data
1S1E03BA-2100-B1	One World Trade Center	121 SW Salmon #1350, 97204	Missing natural gas data
1S2E16BC-4400-B1	Main	5240 SE 82nd Ave, 97266	Missing natural gas data

9. Conclusions and Recommendations

The Research Into Action team reached the conclusions shown below based on the findings we presented in Sections 3 through 8 of this report.

Conclusion 1: Building owners made extensive use of, and appreciated, the City's support tools, and survey respondents valued having multiple forms of support. Nearly all respondents referred to the *How-To Guide*, and having a live person to speak with at the Help Desk provided extra support for those who needed it.

Recommendation 1: Maintain and enhance the City's support tools. (See suggestions for enhancements in Recommendations 2a through 2c).

Conclusion 2: Many building owners/designees do not understand and/or are confused by some of the Portfolio Manager inputs. Confusing GFA-related inputs include mixed-use space definitions, parking, and covered walkways. In addition, estimating the number of workers on the main shift and the number of computers in a building can be confusing for some building owners. Some owners do not understand how Portfolio Manager combines building characteristics with utility data to generate energy performance metrics. As the number of buildings required to report increases, the diversity of the building spaces will grow, leading to an even greater need for clarification on GFA-related inputs.

Recommendation 2a: The City can augment its support tools to provide greater clarity on these Portfolio Manager topics/inputs. For the GFA inputs, the City should provide a clear definition of covered walkways and a clearer explanation of how building owners should handle parking garages. The City could include examples based on building space configurations described in this report, and perhaps other anecdotal examples, to demonstrate the correct approaches to estimating GFA in these situations.

To help building owners accurately report the number of main shift workers and the number of computers, the City should enhance its support tools to include advice on how to approach occupants' HR or IT departments to request accurate employee and computer counts. The City should also add guidance, supported by examples, for counting main shift workers in buildings with a mix of part-time and full-time employees.

Recommendation 2b: For inputs that are confusing to building owners, and that are reported the same way by buildings reporting to the City and buildings seeking ENERGY STAR certification, the City can supplement its support tools by referring building owners to the abundance of FAQs and "help" documents in the Portfolio Manager library.

Recommendation 2c: Add or enhance explanations in program support materials about how Portfolio Manager ties together building characteristics and energy consumption data to generate building-specific energy performance metrics.

Conclusion 3: Uploading or inputting energy usage data into Portfolio Manager is generally straightforward for most building owners, and the majority opted to input their energy usage data manually. However, one respondent who reported on multiple buildings and used both electric utilities' data uploading processes, found the Pacific Power process more cumbersome than PGE's process.

Recommendation 3a: Compare the PGE and Pacific Power uploading procedures to identify possible improvements. If appropriate, coordinate with Pacific Power on simplifying their process.

Recommendation 3b: Further promote the option of entering energy usage data via the tools provided by the utilities. This could ease the annual data entry burden, especially for buildings with multiple meters.

Conclusion 4: Electric and gas utilities sometimes provide energy usage data aggregated across multiple meters, despite customer requests for meter-specific information (e.g., so building owners can separately input their tenants' energy use).

Recommendation 4: The City should coordinate with the electric and gas utilities to help them understand the City's energy performance reporting process, including commercial customers' need for meter-specific monthly energy usage information.

Conclusion 5: Some building owners reported they do not have the in-house resources needed to accurately report their building's energy performance to the City. These owners are frustrated about having to pay outside organizations to complete the required reporting. Increasing numbers of building owners may find themselves in this position as the number of buildings required to report increases.

Recommendation 5: The enhancements to the City support tools suggested in Recommendations 2a, 2b, and 2c, may provide the additional guidance some building owners need to enable them to complete the reporting on their own. In addition, the City should highlight the existence of its Help Desk in multiple places on its website, in the *How-To Guide*, and during the workshops. The City should also consider holding special "bring us your challenge" workshops (or having a "bring us your challenge" section of the standard workshops).

Conclusion 6: Based on their survey responses, all building owners/designees who had used Portfolio Manager in the past appear to have reported GFA to the City in accordance with the City's rules. Nonetheless, there are several subtle but important differences between using Portfolio Manager for reporting energy performance to the City and using Portfolio Manager for ENERGY STAR certification. Building owners who are not aware of these differences could mistakenly adhere to ENERGY STAR certification rules when entering data into Portfolio Manager for their City reports, thereby inadvertently generating reports that do not conform to the City's reporting requirements. For example, ENERGY STAR certification reporting allows owners to exclude a non-eligible Property Use (that is, a use that is not eligible to receive an ENERGY STAR score) from the GFA when the use accounts for less than 10% of the GFA,¹³ but the City's reporting does not.

Recommendation 6a: The City should also prepare a table showing the differences between its reporting requirements and the ENERGY STAR certification reporting requirements.

Recommendation 6b: We recommend that the City's *How-To Guide* provide more specific instructions for users who are modifying their data inputs for the City from inputs they used for ENERGY STAR certification (that could include the table described in Recommendation 6a). More specifically, the *Guide* encourages users who are "already benchmarking" to skip to "Step 4, Add

¹³ See: <https://portfoliomanager.zendesk.com/hc/en-us/articles/211028438-What-can-I-exclude-from-my-property->.

Additional Property Information.” Step 4 instructs users to “enter City of Portland Building ID,” and “enter property notes, including: a building narrative and Portfolio Manager verification.” However, Step 4 does not instruct users to include both energy consumed and property data for spaces that were excluded from their earlier ENERGY STAR benchmarking data entries. Such an instruction is important to ensure consistency across all buildings reporting to the City.

Appendix A. Building Energy Data Validation Survey

A.1. Introduction

If someone answers phone:

Hi. My name is _____ calling on behalf of the City of Portland from Research Into Action. You may have seen an email last week from Josh Weissert about the City's Commercial Building Energy Performance Reporting and your feedback about the reporting process. We have you listed as the person who was responsible for entering data for **[Property Name]** at **[Address1]** into the ENERGY STAR Portfolio Manager tool. Are you still the best person to talk to about your building's experience with the Portfolio Manager tool?

[If contact is still the most appropriate person] I have some questions I'd like to ask to learn about the process you took and challenges you may have encountered. The information you provide will help the City understand how to improve its processes for the future. It will *not* be used to assess your building's compliance with the program.

[STRATA A AND C ONLY] My questions will take 5 to 10 minutes.

[STRATUM B ONLY] My questions will take 10 to 15 minutes.

Is now a good time to talk? *[If not]* When would be a convenient time for you?

[If needed] The City of Portland adopted the Commercial Building Energy Performance Reporting Ordinance to benchmark, measure, and help progress the City in meeting its climate goals for existing buildings. Starting in 2015, the ordinance requires commercial buildings of 50,000 square feet or greater to use the U.S. Environmental Protection Agency's ENERGY STAR Portfolio Manager to track and report their energy performance to the City.

[If needed] Our discussion will have no bearing on your building's compliance with the City's Commercial Building Energy Performance Reporting.

[If contact is not still the most appropriate person] Who do you suggest I talk to instead? What is their email address and phone number?

If voicemail:

Hi. My name is _____ and I'm calling on behalf of the City of Portland from Research Into Action. You may have seen an email last week from Josh Weissert about the City's Commercial Building Energy Performance Reporting for **[Property Name]**. I have some questions I'd like to ask to learn more about the process you took and challenges you may have encountered. They'll take 10 to 15 minutes. I'd appreciate a call back to let me know if you are the best person to speak to about your building's experience with the ENERGY STAR Portfolio Manager tool, or if there's someone else who might be more familiar with that. I can be reached at 503-943-21(25/33). Thank you very much.

[If needed] If you want to confirm our role in this effort, you can contact Vinh Mason at the City of Portland. His email is Vinh.Mason@portlandoregon.gov

[If needed] We are partnering with Josh Weissert at Energy 350 for this effort.

A.2. Building Information [ASK ALL]

First, I'd like to ask a few questions about your building's characteristics.

Q1. I understand that your building's primary use is as a **[Primary Property Type – Self Selected]**. Is that correct?

1. Yes
2. No

Q2. [IF Q1 = NO] What is your building's primary use?

1. [Record verbatim] _____

Q3. Are there any other organizations in your building? Such organizations might include first floor tenants, such as retail stores, restaurants, or other businesses.

1. Yes
2. No

Q4. And is there a parking garage attached to your building?

1. Yes
2. No
3. Don't know

[ASK STRATA B & C ONLY]

Q5. [IF Q4 = YES] Does the parking garage that is attached to your building have a separate utility meter from the building's main utility meter?

1. Yes
2. No
3. Don't know

A.3. Portfolio Manager Inputs

[READ TO ALL] Now I'd like to ask you about how you collected and entered data into the ENERGY STAR Portfolio Manager tool.

[ASK ALL]

Q6. How did you estimate the gross floor area, or GFA, for the building(s)?

1. A value that had previously been entered into Portfolio Manager
2. Information from an as-built drawing or engineering plan

3. Sum of the leasable area
4. A commissioned study, such as an architectural review
5. Another approach [SPECIFY: _____]

[ASK ALL]

Q7. [IF Q3 = YES] Your application lists **[Property GFA – EPA Calculated (Buildings and Parking) (ft²)]** square feet for the gross floor area of this building, Does this value include all of the tenant spaces within the building?

1. Yes, all of them
2. Yes, some of them [EXPLAIN WHY NOT ALL: _____]
3. No
4. Don't remember
5. Don't know

[ASK STRATA B & C ONLY]

Q8. [IF Q4 = YES and “**Property GFA – EPA Calculated (Parking) (ft²)**” = 0 or “**Not Available**”] Does the **[Property GFA – EPA Calculated (Buildings and Parking) (ft²)]** square feet include the parking garage floor area reported for the building?

1. Yes, all of it
2. Yes, some of it [EXPLAIN WHY NOT ALL: _____]
3. No
4. Don't remember
5. Don't know

[ASK STRATUM B ONLY]

Q9. I'm going to read a list of building spaces. Please tell me whether your building has each of these types of building spaces and, if it does, whether you included them in the GFA you reported to Portfolio Manager.

Space Type	Exists in Building? (Y/N/DK)	Included in GFA? (Y/N/NA/DK)
Finished basement	1.	2.
Stairwells	3.	4.
Covered walkways	5.	6.
Crawlspace	7.	8.
Space that was vacant for the entire year	9.	10.
Space that was vacant for part of the year	11.	12.

[ASK STRATUM B ONLY]

Q10. What challenges, if any, did you encounter when estimating the GFA for the **[Property Name]**?

1. [Record verbatim] _____

[ASK STRATUM B ONLY]

Q11. [IF **Primary Property Type – Self Selected** = OFFICE, RETAIL STORE, MEDICAL OFFICE, BANK BRANCH, COURTHOUSE WHOLESAL CLUB/SUPERCENTER, OR SUPERMARKET/GROCERY] How did you estimate the weekly operating hours you entered into Portfolio Manager? [*Do not read options*]

1. Used the hours when the majority of building occupants are in the building
2. Used the number of hours the HVAC equipment is programmed to operate
3. Used the business hours of operation
4. Other [SPECIFY: _____]

[ASK STRATUM B ONLY]

Q12. [IF **Primary Property Type – Self Selected** = OFFICE, RETAIL STORE, MEDICAL OFFICE, BANK BRANCH, COURTHOUSE, WHOLESAL CLUB/SUPERCENTER, OR SUPERMARKET/GROCERY] What challenges, if any, did you encounter when estimating the weekly operating hours for the **[Property Name]**?

1. [Record verbatim] _____

[ASK STRATUM B ONLY]

Q13. [IF **Primary Property Type – Self Selected** = OFFICE, HOTEL, RETAIL STORE, MEDICAL OFFICE, BANK BRANCH, COURTHOUSE, WHOLESAL CLUB/SUPERCENTER, OR SUPERMARKET/GROCERY] How did you estimate the number of workers on the main shift you entered into Portfolio Manager? [*Do not read options*]

1. Added together the total number of employees from each of the building's businesses or departments
2. Used information from the building's security system or similar database source
3. Other [SPECIFY: _____]

[ASK STRATUM B ONLY]

Q14. [IF **Primary Property Type – Self Selected** = OFFICE, HOTEL, RETAIL STORE, MEDICAL OFFICE, BANK BRANCH, COURTHOUSE, WHOLESAL CLUB/SUPERCENTER, OR SUPERMARKET/GROCERY] What challenges, if any, did you encounter when estimating the number of workers on the main shift at the **[Property Name]**?

1. [Record verbatim] _____

[ASK STRATUM B ONLY]

Q15. [IF **Primary Property Type – Self Selected** = OFFICE, HOTEL, RETAIL STORE, MEDICAL OFFICE, BANK BRANCH, COURTHOUSE, WHOLESAL CLUB/SUPERCENTER, OR SUPERMARKET/GROCERY] How did you estimate the number of computers you entered into Portfolio Manager? [*Do not read options*]

1. Based it on the number of employees
2. Requested a computer count from each of the building's businesses or departments and added them together
3. Manually counted the computers in each of the building's businesses or departments
4. Other [SPECIFY: _____]

[ASK STRATUM B ONLY]

Q16. [IF **Primary Property Type – Self Selected** = OFFICE, HOTEL, RETAIL STORE, MEDICAL OFFICE, BANK BRANCH, COURTHOUSE, WHOLESale CLUB/SUPERCENTER, OR SUPERMARKET/GROCERY] What challenges, if any did you encounter when estimating the number of computers at **[Property Name]**?

1. [Record verbatim] _____

[ASK STRATUM B ONLY]

Q17. When entering information about the portion of your building that is heated, Portfolio Manager has three choices: none, less than 50%, and 50% or greater. How did you estimate the percent of your building that is heated so you knew which option to select?

1. [Record verbatim] _____

[ASK STRATUM B ONLY]

Q18. Did you use the same approach to estimate the percent of your building that can be cooled?

1. Yes
2. No

[ASK STRATUM B ONLY]

Q19. [IF Q18 = NO] When entering information about the portion of your building that is cooled, Portfolio Manager has three choices: none, less than 50%, and 50% or greater. How did you estimate the percent of your building that is cooled so you knew which option to select?

1. [Record verbatim] _____

[ASK STRATUM B ONLY]

Q20. What challenges, if any, did you encounter when estimating the portion of the building that can be heated or the portion that can be cooled?

1. [Record verbatim] _____

[ASK STRATUM B AND C ONLY]

Q21. [IF **Temporary Values** = YES] Portfolio Manager lets you flag some values as “temporary” to remind you about information you may want to go back to and change later. Do you remember keeping any temporary values when you submitted your Portfolio Manager report?

1. Yes
2. No

[ASK STRATUM B AND C ONLY]

Q22. [IF Q21 = YES] Why did you keep the temporary values?

1. [Record verbatim] _____

[ASK STRATUM B AND C ONLY]

Q23. [IF **Default Values** = YES] Portfolio Manager provides default values for several variables, such as the number of workers, number of computers, and hours per day guests are onsite. Do you recall keeping any of the default values when you submitted your Portfolio Manager report?

1. Yes
2. No

[ASK STRATUM B AND C ONLY]

Q24. [IF Q23 = YES] Why did you keep the default values?

1. [Record verbatim] _____

A.4. Energy Usage Data

[READ TO ALL] These next few questions are about entering your energy usage data into Portfolio Manager. As you may remember, Portfolio Manager asks you to set up a meter in the tool for each energy meter in your building.

[ASK ALL]

Q25. Which electric utility serves **[Property Name]**?

1. PGE
2. Pacific Power
3. Other [Record verbatim] _____

[ASK ALL]

Q26. And, how did you enter your building's electric utility data into Portfolio Manager? Did you...

1. Enter the data manually
2. [IF Q25 = "PGE"] Upload a spreadsheet you received from PGE
3. [IF Q25 = "Pacific Power"] Select the Pacific Power Resource Advisor automated data exchange
4. Other [Record verbatim] _____

[ASK ALL]

Q27. How did you determine the number of *electric* meters in your building?

1. Verified with electric utility
2. Reviewed utility bills
3. Visually identified meters serving the building
4. Meters were already established in Portfolio Manager by someone else
5. Other [Record verbatim] _____

[ASK ALL]

Q28. [IF Q3 = YES] Are there any tenants in your building that have separate electric utility meters? Again, these could include first floor tenants such as retail, restaurants, or others.

1. Yes
2. No
3. Don't know

[ASK ALL]

Q29. [IF Q28 = YES] Did you report electric use in Portfolio Manager for the entire building, including separately metered tenants on the building's first-floor? [*Do not read options*]

1. Yes
2. No
3. Other [SPECIFY: _____]

[ASK ALL]

Q30. [IF Q28 = YES] What challenges, if any, did you experience in obtaining electric usage data for the building's first-floor or other tenants? [*Probes: Did you encounter any resistance? Did you use the City of Portland's tenant data request letter?*]

1. [Record verbatim] _____

[ASK ALL]

Q31. What challenges, if any, did you experience in obtaining your building's overall electric usage data or in importing the building's overall electric usage into Portfolio Manager? [*Probe separately for challenges in obtaining data and in importing data.*]

1. [Record verbatim] _____

[SAY TO ALL] Next I have a few questions about natural gas data.

[ASK ALL]

Q32. [IF **Natural Gas Use (therms)** = "Not Available" OR BLANK] Does your building have any natural gas meters? This includes meters for first floor tenants such as retail, restaurants, or others.

1. Yes
2. No [SKIP TO Q39]
3. Don't know [SKIP TO Q39]

[ASK ALL]

Q33. How did you enter your building's natural gas utility data into Portfolio Manager? Did you...

1. Enter the data manually
2. Upload a spreadsheet you received from NW Natural
3. Other [Record verbatim] _____

[ASK ALL]

Q34. How did you determine the number of natural gas meters in your building?

1. Verified with natural gas utility
2. Reviewed utility bills

3. Visually identified meters serving the building
4. Meters were already established in Portfolio Manager by someone else
5. Other [Record verbatim] _____

[ASK ALL]

Q35. Are there any tenants in your building that have separate natural gas utility meters? These could include first floor tenants such as retail, restaurants, or others.

1. Yes
2. No
3. Don't know

[ASK ALL]

Q36. [IF Q35 = YES] Did you report natural gas use in Portfolio Manager for the entire building, including separately metered tenants on the building's first-floor? [*Do not read options*]

1. Yes
2. No
3. Other [SPECIFY: _____]

[ASK ALL]

Q37. [IF Q35 = YES] What challenges, if any, did you experience in obtaining natural gas usage data for the building's first-floor or other tenants? [*Probes: Did you encounter any resistance? Did you use the City of Portland's tenant data request letter?*]

1. [Record verbatim] _____

[ASK ALL]

Q38. What challenges, if any, did you experience in obtaining your building's overall natural gas usage data or in importing the building's overall electric usage into Portfolio Manager? [*Probe separately for challenges in obtaining data and in importing data.*]

1. [Record verbatim] _____

A.5. Use of the City's Support Tools

[ASK STRATA B AND C ONLY]

Q39. Had you ever used Portfolio Manager before you used it to report your building's 2015 information to the City's Building Energy Performance program?

1. Yes
2. No

[READ TO ALL]

We're almost done. The City of Portland offers some tools and resources to help folks with the Portfolio Manager process. You may have used them to determine if you were required to report information

about your building to the City, or to provide guidance when you were collecting your information to enter into Portfolio Manager. I'm going to ask about your use of such resources.

[ASK ALL]

Q40. First, did you attend any of the City's ENERGY STAR Portfolio Manager workshops? These were 4-hour workshops, held in a computer lab in downtown Portland. *[If needed: The workshops were hosted by PGE hosted, sponsored by Energy Trust of Oregon, and facilitated by Vinh Mason from the City of Portland.]*

1. Yes
2. No
3. Don't know

[ASK ALL]

Q41. Did you refer to the City of Portland's "Energy Reporting How-To Guide?" This was guide that provided step-by-step instructions for setting up your account, setting up your property, and entering your energy meter data into Portfolio Manager.

1. Yes
2. No
3. Don't know

[ASK ALL]

Q42. And, did you contact the City of Portland's Help Desk by phone or via email?

1. Yes
2. No

A.6. Wrap Up [ASK ALL]

I have just a few more questions.

Q43. Is there any support or guidance from the City or another organization that would have helped you to enter complete and accurate information into Portfolio Manager?

1. *[Record verbatim]* _____

Q44. Is there anything you will do differently when you report your building's 2016 information in Portfolio Manager?

1. *[Record verbatim]* _____

Q45. Those are all the questions I have for you. Is there anything else you think is important for me to know about your experience reporting your building's energy data to the City of Portland?

1. *[Record verbatim]* _____

A.7. For Respondents Who Reported on Multiple Buildings [ASK ALL]

[CONTINUE IF RESPONDENT REPORTED ON >1 BUILDING, ELSE THANK AND TERMINATE]

Q46. Thank you so much for all of this information about **[PropertyName]**. I noticed that you handled energy reporting for multiple commercial buildings in Portland. Do you have just a couple more minutes to talk at a higher level about that/those additional building/buildings?

1. Yes
2. No [*Thank and terminate*]

Q47. What, if anything, did you do differently to estimate the gross floor area for that/those other building/buildings? Why did you take a different approach? [*Probe for differences in overall approach, as well as for differences in whether respondent in/excluded tenant spaces, parking, or other types of spaces in the GFA.*] [*Record verbatim*] _____

Q48. Did you encounter any different challenges when you estimated the GFA for that/those other building/buildings? [*Probe for challenges estimating GFA for tenant spaces, parking, or other types of spaces.*] [*Record verbatim*] _____

Q49. And what, if anything, did you do differently when you entered the utility data for that/those other building/buildings? Why? [*Note that approach to entering electric data could be different if buildings are served by different electric utilities.*] [*Record verbatim*] _____

Q50. Did you encounter any different challenges when you entered utility data for that/those other building/buildings? [*Probe for challenges in determining the number of electric and/or gas meters and in obtaining data from the utilities.*] [*Record verbatim*] _____

[READ TO ALL]

Thank you for your time. If you already submitted your 2016 report and would like to make changes, please contact the Energy Reporting Help Desk at 503-823-7070 or email energyreporting@portlandoregon.gov.