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Lloyd EcoDistrict ENERGY STAR Portfolio Manager 2014 Data Summary



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EXECUTIVE SUMMARY

GBS is working with the Lloyd EcoDistrict (EcoDistrict) to assist in the implementation of its Lloyd EcoDistrict Energy Action Plan. A primary focus in this effort has been the use of the EcoDistrict's ENERGY STAR Portfolio Manager program to gather building data and better understand and quantify progress toward the EcoDistrict's established target of no net energy use increase between 2010 and 2035. Portfolio Manager is a free and easy tool for benchmarking and tracking energy and water usage in buildings. ENERGY STAR certification is achieved when a project's ENERGY STAR score is 75 or greater.

This memo summarizes the current status of Portfolio Manager participation in the Lloyd District, reviews key findings that were revealed in the data, and identifies the next steps in continuing to expand the scope of data analysis within the Lloyd EcoDistrict. This view into the performance of buildings within the Lloyd District provides a critical opportunity to evaluate advancement toward the EcoDistrict's short- and long-term energy goals. To achieve the no net increase target existing buildings are projected to reduce energy use by 33% over the 25-year period.

Outcomes of the ENERGY STAR Portfolio Manager 2014 data analysis include the following:

Portfolio Manager Participants

- Twenty-two property owners have shared their Portfolio Manager accounts or energy data with the EcoDistrict, accounting for 5,837,220 square feet, representing 10.3% of all properties (213 properties) and 50.6% of the total building area (11,529,831 sf) in the district. Office uses account for the majority of buildings in Portfolio Manager.

2014 Energy Use

- 2014 energy data was analyzed for 17 of the 22 shared properties. Three properties did not have data for all of 2014 and two properties were excluded from the analysis due to high vacancy rates. The 17 properties consumed a total of 390,860 mmBtu in 2014, with 67.6% (264,202 mmBtu) for electricity and the remaining 32.4% (126,658 mmBtu) for natural gas. 2014 energy use for these buildings accounts for 40.1% of the Lloyd EcoDistrict Energy Action Plan total energy budget (975,000 mmBtu).
- Eleven of the 17 buildings (64.7%) with 2014 data were office buildings. These buildings used 39.7% (155,273 mmBtu) of the Portfolio Manager 2014 total energy.

- The 2014 Energy Use Intensity (EUI) was calculated for all 17 buildings with 2014 data. EUI is a measure of energy use (kBtu) per square foot. Overall, the buildings in the Lloyd District are performing well. The majority of projects fell within the 50-75 EUI range and the median EUI was 62. Median EUI has stayed relatively constant over the last three years.
- A 2014 ENERGY STAR score has been calculated for eleven buildings. Of these, 8 buildings scored 75 or above. ENERGY STAR Certification can be achieved for projects scoring 75 or greater.

Energy Use Trends

- Overall energy use for the 17 buildings analyzed for 2014 data has decreased steadily over the past three years. Since 2012 total energy use in these buildings has decreased from 434,590 mmBtu to 390,860 mmBtu, a reduction of 10.1%. Savings have been observed in both electricity and natural gas usage.
- Generally, EUI for office buildings in the Lloyd District have steadily decreased since 2010. The median EUI for office buildings in 2014 was 57, substantially lower than the 63 registered for all buildings in 2014. Three buildings have seen significant reductions in EUI in the last two years and should be highlighted as success stories within the district.

Conclusions/Next Steps

- Continue to expand the participation in ENERGY STAR Portfolio Manager within the Lloyd District. GBS will continue working with the EcoDistrict to implement a plan for expanding Portfolio Manager participation. Devising a process for incorporating retail building owners and tenants (as relevant) into the energy management/tracking effort will be key.
- Establish target EUI's by market sector. These EUI targets should be informed by current performance and regional and national trends. The EUI targets should also incorporate the Lloyd District Energy Action Plan energy use goals.
- Provide a summary of energy performance for all building owners using Portfolio Manager to provide them summaries of their energy performance and potential strategies for improvement. Properties that are underperforming should be prioritized.
- Celebrate the successes to-date! There is much to celebrate and the progress made to-date should be applauded and distributed within the district and beyond.

Introduction

Since early in 2014, GBS has been working with the Lloyd EcoDistrict (EcoDistrict) to assist in the implementation of its Lloyd EcoDistrict Energy Action Plan through data gathering, evaluation, and outreach within the district. A critical piece of this effort has been the continued advancement of the EcoDistrict's ENERGY STAR Portfolio Manager program, focused on expanding the number of building owners utilizing Portfolio Manager, ensuring EcoDistrict access to this data, and utilizing the data to analyze trends and progress toward the achievement of the EcoDistrict's established energy use target of no net increase between 2010 and 2035.

Created by the Environmental Protection Agency (EPA), Portfolio Manager is a free and easy tool for benchmarking and tracking energy and water usage in buildings. It allows building owners to set energy and water efficiency goals, track energy and water usage on a monthly and/or annual basis, compare that performance to similar buildings in the United States, translate energy savings into greenhouse gas reductions, and receive recognition for their efforts through certification. ENERGY STAR certification is achieved when a project's ENERGY STAR score is 75 or greater.

ENERGY STAR Portfolio Manager represents the primary mechanism currently available to the EcoDistrict for tracking energy usage within the Lloyd District. As such, the periodic review of energy use data for buildings within the Lloyd District provides an extremely valuable perspective on progress being made both at the building-specific and district-wide levels. This view into the performance of buildings within the Lloyd District provides a critical opportunity to evaluate advancement toward the EcoDistrict's short- and long-term energy goals. Given the EcoDistrict's energy target of no net increase by 2035 (based on 2010 energy use), it is imperative to gather and analyze energy performance regularly. To achieve the no net increase target existing buildings are projected to reduce energy use by 33% over the 25-year period, according to the Lloyd EcoDistrict Energy Action Plan.

The analysis, and this resulting summary memo, is just the first step in the process of establishing a methodology for best utilizing Portfolio Manager data to quantify trends of individual buildings and at the district level, as well as comparing those trends to the energy use targets contained in the Lloyd EcoDistrict Energy Action Plan. This memo summarizes the current status of Portfolio Manager participation in the Lloyd District, reviews key findings that were revealed in the data, and identifies the next steps in continuing to expand the scope of data analysis within the Lloyd EcoDistrict to understand at a more granular level how EcoDistrict members are progressing in terms of energy efficiency and their contribution to the achievement of the overall EcoDistrict targets.

ENERGY STAR Portfolio Manager Participants

Currently 21 property owners that are utilizing Portfolio Manager to track energy and water use have agreed to share their Portfolio Manager accounts with the EcoDistrict. One additional property owner, Metro, plans to transition to Portfolio Manager in 2015 but agreed to share its energy data for 2012, 2013, and 2014. Metro data has been incorporated into the analysis below.

Therefore a total of 22 properties are tracking energy use on an on-going basis and providing it to the EcoDistrict. These 22 properties account for 5,837,220 square feet. The properties make up 10.3% of the all properties in the district (total of 213 properties) while accounting for 50.6% of the total building area (11,529,831 sf). As would be expected, office buildings make up the largest percentage of properties in Portfolio Manager. With 14 properties, office uses account for 63.6% of all buildings and 48% of total building area. Figure 1 provides a breakdown of the Lloyd EcoDistrict building types in Portfolio Manager, based on project area.

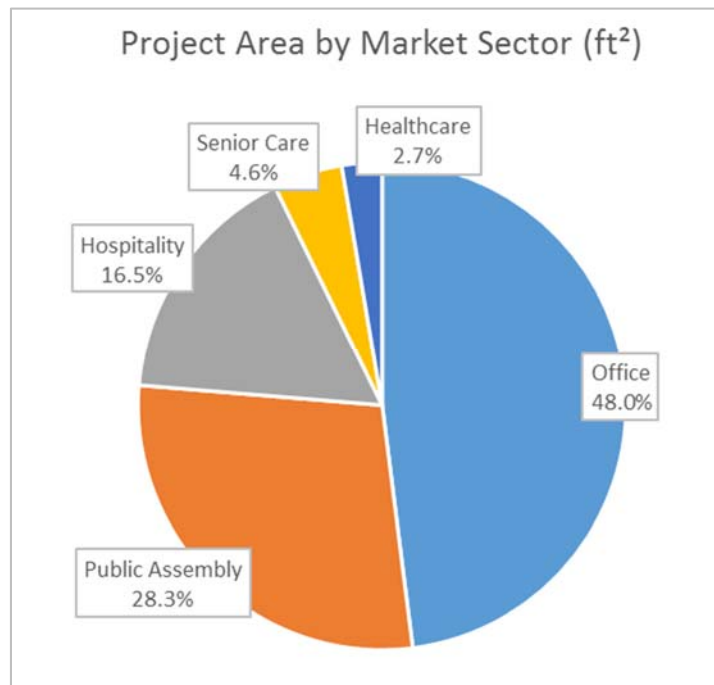


Figure 1. ESPM use by market sector.

There are a handful of sizeable properties still to be added to Portfolio Manager but the majority of the remaining properties are smaller retail properties and multi-family residential uses. An approach tailored to the needs of these unique land uses will be needed to understand their energy and water use patterns.

The amount of historical data in Portfolio Manager varies by project. Of the 22 properties, 14 facilities managers have been entering data since 2010, another seven have been tracking energy performance since 2012, and one additional participant is beginning the process of tracking this year. This variability presents a challenge to fully understanding historical trends going back to the baseline year (2010) but GBS has evaluated trends over the last five years whenever possible. These trends are informative but generally limited to office and public assembly uses. Over time, as Portfolio Manager users continue to enter data for their buildings, the strength of these findings across all land uses in the Lloyd District will be increased.

ENERGY STAR Portfolio Manager Data Analysis

GBS conducted an extensive review of the energy use data currently available in Portfolio Manager (and separately provided by Metro) to determine 2014 estimates and to the extent possible identify historical trends for all buildings. These estimates and historical trends were evaluated in the context of the Lloyd EcoDistrict Energy Action Plan to determine, wherever possible, progress toward those energy reduction goals. As participants continue to be added to Portfolio Manager (or other mechanisms for energy reporting are identified) and the amount and accuracy of data increases, the conclusions to be drawn will be more robust. However, valuable information can be drawn from the existing data set, as demonstrated below.

2014 Energy Use

After a broad outreach effort to encourage Portfolio Manager users to update their data for 2014, a total of 19 of the 22 properties with data provided up-to-date data for all of 2014. Two properties with 2014 data were excluded from the analysis due to high vacancy rates in the buildings. Therefore energy data for 17 buildings was included in the analysis.

As demonstrated in Figure 2, the 17 properties consumed a total of 390,860 mmBtu (an mmBtu is equal to 1,000 kBtu's). Of this total, 67.6% (264,202 mmBtu) of this energy use was electric and the remaining 32.4% (126,658 mmBtu) was natural gas.

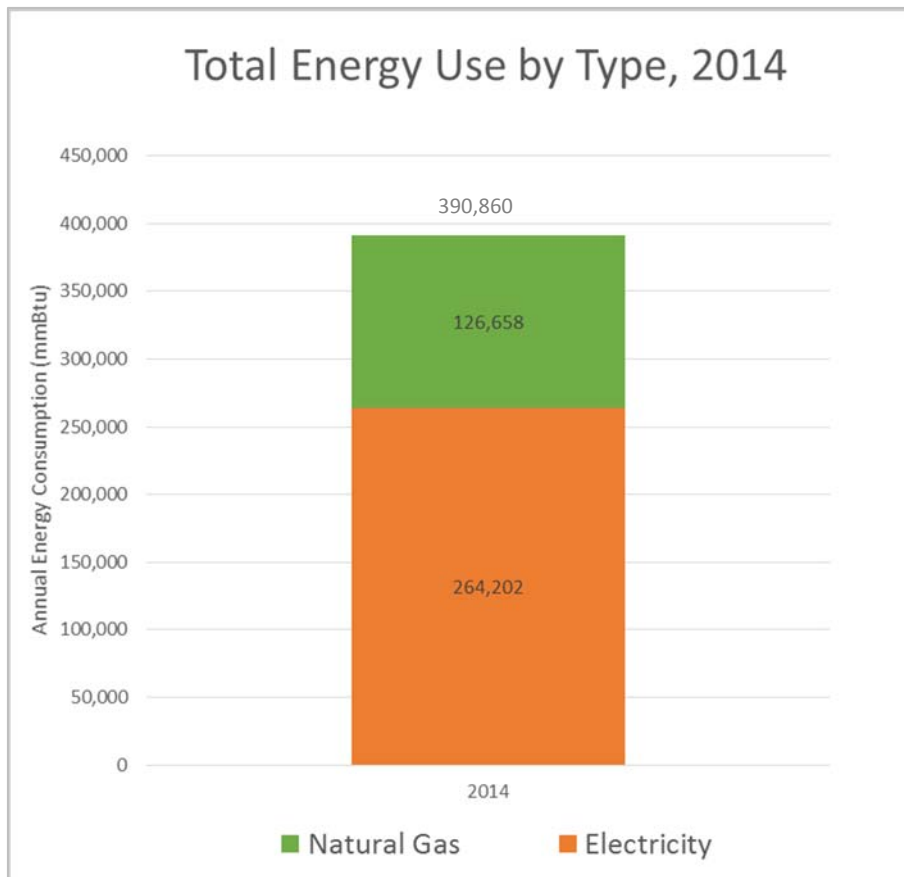


Figure 2. Total energy by source, 2014.

The Lloyd EcoDistrict Energy Action Plan established a goal of maintaining energy use at 2010 levels over the 25-year Plan horizon. The total energy use within the district (i.e., energy budget) in 2010 was estimated at approximately 975,000 mmBtu. Therefore the 2014 energy use of the 17 buildings in Portfolio Manager accounts for 40.1% of the Lloyd EcoDistrict total energy budget.

In addition to the total 2014 energy use estimate, energy use was evaluated by market sector to better understand the distribution of energy use within the Lloyd District. As shown in Figure 3, office uses represented the largest demand within the Lloyd District. Office uses account of 11 of the 17 buildings (64.7%) with 2014 data. Office buildings used only 39.7% (155,273 mmBtu) of the 2014 total energy. Though office buildings use the most aggregate energy, their energy demand is substantially less than their percentage of the whole, based on numbers of buildings. The remaining seven buildings are

Entertainment/Assembly (2 buildings), Healthcare/Senior Care (2 buildings), and Hospitality (3 buildings) and utilize 22.7%, 18.8%, and 18.7% of 2014 energy use, respectively.

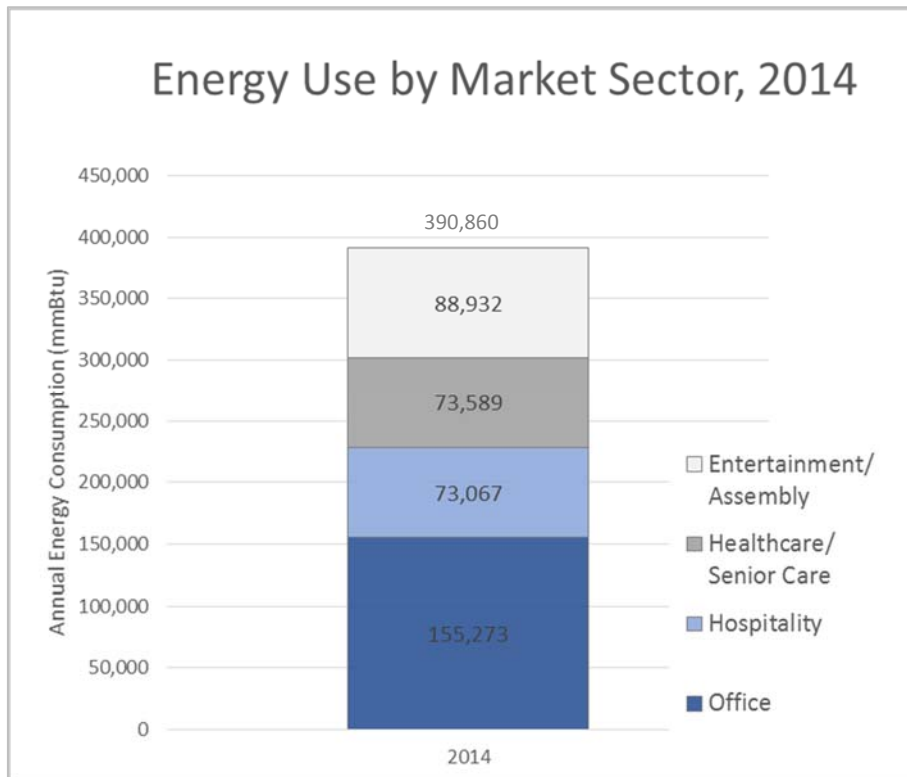


Figure 3. Total energy use by market sector, 2014.

Although total energy use by source type is useful, a more valuable measure of building performance is the Energy Use Intensity (EUI), which expresses energy use based on the size of a building rather than in raw energy use. EUI is a measure of energy use (kBtu) per square foot. This allows for the comparison of energy performance across different building types and sizes and provides a more comprehensive description of building performance.

GBS calculated the 2014 EUI for all 17 buildings with 2014 data in Portfolio Manager to better understand their comparative performance and to identify potential areas of improvement. Figure 4 provides the EUI distribution of those projects. To maintain confidentiality all of the projects have been assigned a “Building” designation. Additionally, one project’s EUI has been removed due to the individual nature of the land use and unique energy requirements.

Overall, the buildings in the Lloyd District are performing well. As is demonstrated in Figure 4, one building registered a low EUI in 2014 (below 40) and four buildings have substantial room for improvement (EUI above 70), but the majority of projects fall within the 50-75 EUI range. The median EUI across all of the buildings in Figure 4 is 62. For these buildings, median EUI has consistently stayed around 60 over the last 3 years, with most buildings' performance remaining stable and some decreasing substantially (see below).

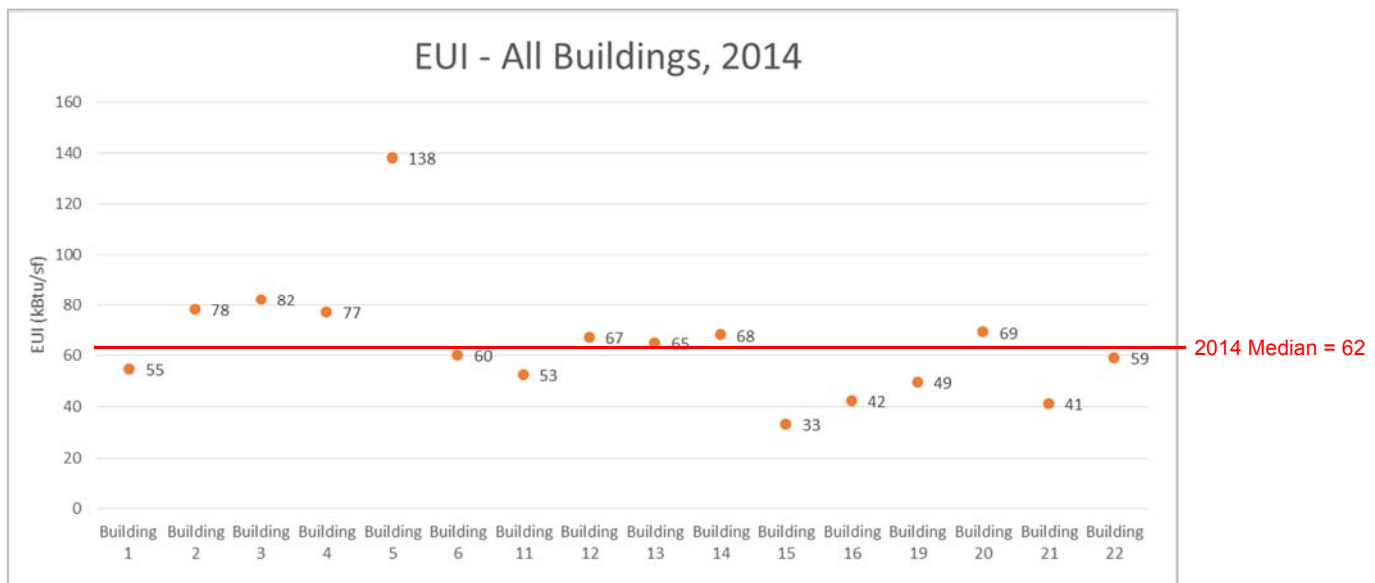


Figure 4. EUI for all buildings (one removed for confidentiality), 2014.

Initially, efforts should be made to reach out to those building owners with EUI's greater than 70 to determine what factors may be contributing to their relatively high EUI. Building 5, with its EUI of 138, should be a priority target for reducing energy use moving forward, as it is significantly underperforming when compared to its market sector (hospitality) peers. Additional efforts should be made to understand the energy uses of buildings 2, 3, and 4 to determine what energy efficiency strategies might reduce their energy use moving forward.

A smaller number of Lloyd EcoDistrict projects in Portfolio Manager have a calculated ENERGY STAR score. An ENERGY STAR score has been calculated for 11 of the 17 buildings (see Figure 5). Eight of the 11 buildings scored above 75 for 2014. As stated above, a project can be ENERGY STAR Certified if its ENERGY STAR score is 75 or greater. These buildings are poised for to be ENERGY STAR-certified and the EcoDistrict should work to assist in and celebrate this effort.

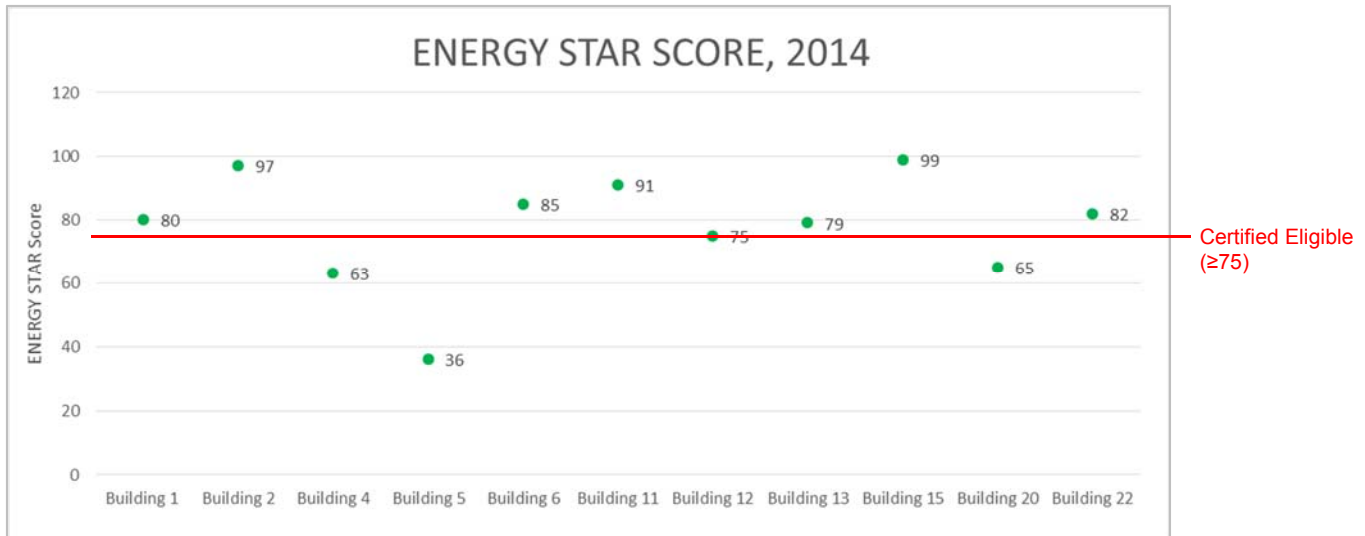


Figure 5. EUI for all buildings (one removed for confidentiality), 2014.

Similar to the EUI values depicted in Figure 4 Building 5 is significantly underperforming its peers, with an ENERGY STAR score of 36. Buildings 4 and 20 are close to the certification threshold and energy efficiency measures to allow them to reach the 75 point threshold should be investigated.

Energy Use Trends

In addition to current building energy use, an analysis of historic trends within the Lloyd District was conducted. As stated above, data availability for past years varies across the buildings in Portfolio Manager. All project teams in Portfolio Manager have been entering data since 2012. Two-thirds of the project teams have been entering data since 2010. As a result of this variability the analysis of trends had to generally be more targeted than the information compiled for 2014. However, whenever possible, data from multiple years was used to determine as much as possible about recent progress.

All 17 buildings included in the 2014 energy use analysis contained data back for least two previous years (to 2012). As a result, it was possible to identify overall energy use trends for this cohort of buildings. As demonstrated in Figure 6 overall energy use for these 17 buildings has steadily decreased over the past three years. Since 2012 total energy use has decreased from 434,590 mmBtu to 390,860 mmBtu, a reduction of 10.1%. Savings have been observed in both electricity and natural gas usage. Over that span, electricity usage has decreased 11.1% while natural gas usage has gone down by 7.8%. These types of savings are critical to the achievement of the 33% reduction in energy targeted for existing buildings in the Lloyd EcoDistrict Energy Action Plan. These results show significant progress toward that goal.

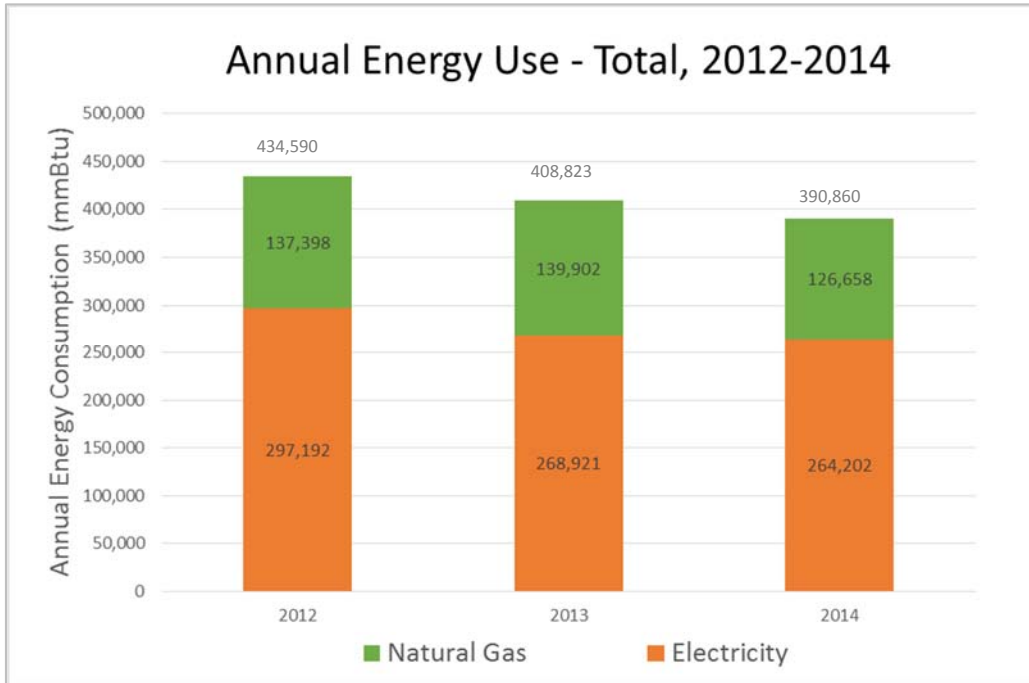


Figure 6. Total energy by source, 2012-2014.

As stated above, EUI is a more valuable metric for determining building energy performance because it incorporates building area into the energy use estimate and allows for a comparison of performance across buildings of various sizes. To better understand office building performance within the Lloyd District, GBS calculated the EUI for all office buildings within the district for all years where data was available. This analysis more specifically depicts energy use trends over time within this market sector. Figure 7 depicts the EUI of Lloyd District office buildings for the past five years.

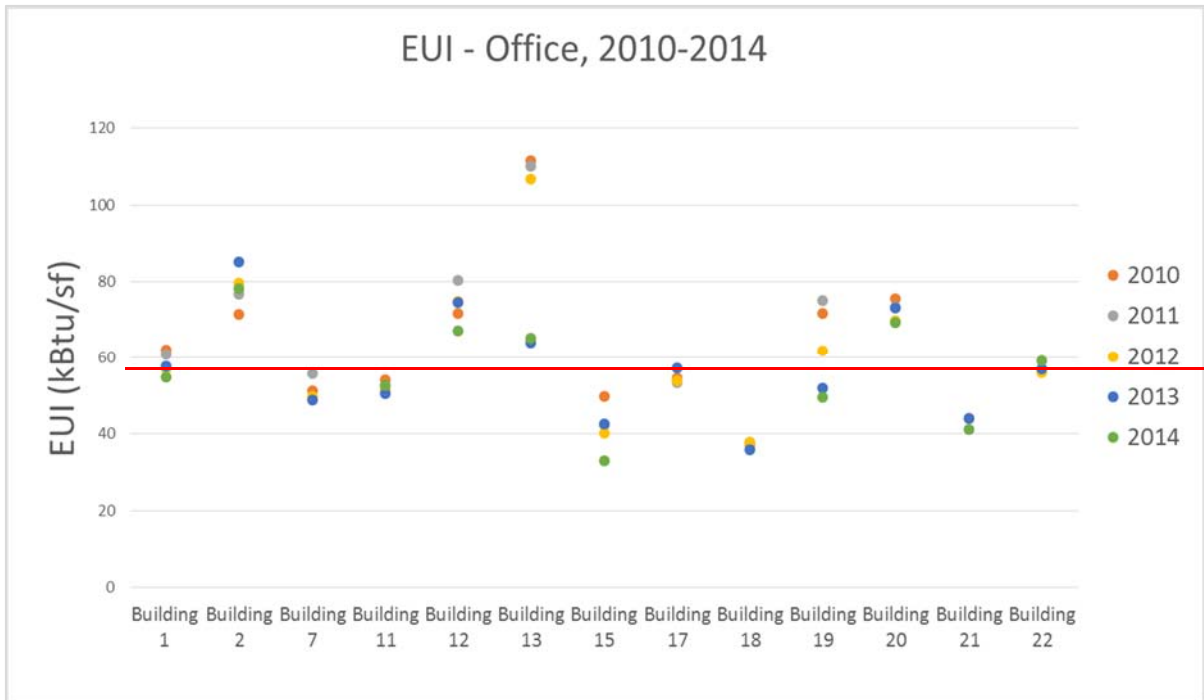


Figure 7. EUI for office uses, 2010-2014.

Overall, EUI for office buildings in the Lloyd District have steadily decreased since 2010. With the exception of a few properties, EUI in 2014 was consistently lower than in previous years. The median EUI for office buildings in 2014 was 57, substantially lower than the 63 registered for all buildings in 2014 (see Figure 4). There are a few buildings – Building 12, Building 13 and Building 19 – that have seen significant reductions in EUI in the last two years. These projects could be used as success stories and provide valuable lessons learned to other office building owners. Overall, the office sector is performing well but future efforts might be targeted to Buildings 2, 12, and 20 to determine what could be done to reduce their energy usage moving forward.

Conclusions/Next Steps

Overall, the data reviewed above demonstrates significant progress on energy use reduction within the Lloyd EcoDistrict. Total energy use by buildings within the district has decreased substantially since 2012, reducing both overall electricity and natural gas usage. The median EUI for all buildings with complete 2014 data is 62, a commendable achievement for the Lloyd District and its building owners. Within the office market sector, significant reductions in energy use have been observed and the EUI of almost all office

buildings in Portfolio Manager have decreased steadily from-year to-year. The median EUI for office uses in 2014 was 57. Again, a significant success for office owners in the district.

Still, there is much to do to improve the ability of the EcoDistrict to evaluate building performance, including:

- Continue to expand the participation in ENERGY STAR Portfolio Manager within the Lloyd District. The largest percentage of Portfolio Manager participants in the district are office uses. This makes sense due to the sizable number of office buildings within the district. However, a significant challenge facing the EcoDistrict is the expansion of Portfolio Manager use by non-office building owners. Specifically, devising an approach to incorporate retail building owners and tenants (as relevant) into the energy management/tracking effort will be key. The value proposition for retail tenants will have to be clearly defined to provide incentive for those stakeholders to participate. Additionally, a plan to obtain building data for multi-family residential uses will also be needed in the future.

GBS will continue working with the EcoDistrict to implement a plan for expanding participation in Portfolio Manager. At this point most “first tier” building data is being entering into Portfolio Manager. GBS has identified “second tier” and “third tier” buildings and will continue to reach out to these building owners to increase their participation.

- Establish target EUI's by market sector. As demonstrated above, there is substantial data available within the district to establish a target EUI for office uses. This EUI target would be informed by current performance and regional and national EUI trends. Determining similar target EUI's for other land uses within the district will likely require additional investigation and research to establish realistic targets. The EPA analyzes performance for all buildings in Portfolio Manager and calculates mean EUI values. This document could serve as a starting point for establishing EUI targets. Ultimately, the EUI targets should be based on the Lloyd District Energy Action Plan energy use goals, allowing the EcoDistrict to reach them in the context of additional growth within the district.
- Provide a summary of energy performance for all building owners using Portfolio Manager to provide them with summaries of their energy (and water, eventually) performance and potential strategies for improvement. As a part of this effort, target properties that are underperforming can

be identified and the owners can be contacted directly about how they might better understand their energy use and steps to take to reduce that usage over time. From the analysis above, a few properties were identified as needing attention. These buildings may serve as the starting point for a more robust outreach to Lloyd District building owners.

- Celebrate the successes to-date! There is much to celebrate in the review of building data and the progress made to-date should be applauded. Buildings that have shown significant energy use reductions should be highlighted by the EcoDistrict and lessons learned passed on to others within the district.
- As more data is available to the EcoDistrict, continue to check-in on progress toward energy (and eventually water) use reduction by EcoDistrict members. Conducting a review of current status on an annual basis with a more targeted check-in at the 6 month interval would be valuable.