

Department of Environmental Protection Annual Report on Benchmarking

October 2016

Section 18A-42 of the Montgomery County Code requires the Department of Environmental Protection (DEP) to submit an annual report to the County Executive and County Council on activities related to the County's Benchmarking Law. Since building energy use accounts for approximately two-thirds of the County's greenhouse gas (GHG) emissions, benchmarking is an important program to help the County achieve its goal of reducing GHG emissions 80 percent by the year 2050.

Status

Implementation of the Benchmarking Law is on-track and progressing smoothly. DEP was well prepared for the first compliance season by establishing technical support and data management processes and developing outreach materials.

The Department of General Services (DGS) successfully benchmarked County buildings subject to the law for the second year in a row, disclosing the resulting calendar year 2015 data to DEP by the June 1, 2016 deadline. Summary statistics for the County buildings are provided towards the end of this report, and detailed building-level information is available for download from DEP's website here: bit.ly/CY15MoCoCountyBuildingData. DEP is working closely with CountyStat to present benchmarking data of the County buildings, as well as the Group 1 and Group 2 buildings, using the dataMontgomery platform by FY 2018 in accordance with the schedule established by CountyStat.

Private buildings subject to the law are divided into two groups. Group 1 buildings (250,000 square feet or greater) reported their calendar year 2015 benchmarking data by June 1, 2016 and will report energy use in subsequent years each June 1st. Group 2 buildings (50,000 square feet or greater) will report their calendar year 2016 benchmarking data by June 1, 2017 and annually thereafter each June 1st. Aggregated summary statistics on Group 1 buildings are available at the end of this report. Detailed building-level data on private buildings is published after the second year of reporting.

Generally, DEP has found private building owners to be receptive of and responsive to the Benchmarking Law requirements. Many have expressed understanding of the law's intent, and satisfaction with the County's technical assistance and available resources. DEP looks forward to providing the same high level of support to the County's Group 2 building owners as their first deadline approaches June 2017.

Compliance Assistance Programming – Education and Outreach

- As of **September 2016**, DEP has had **2,565 unique views of the Benchmarking Law website in the last 12 months, and 4,346 unique views since the website’s launch in August 2014**. See the webpage here: bit.ly/depbenchmarking. DEP has also developed a comprehensive offering of outreach resources that are available for download from the website, including the recently updated Official Guide for Benchmarking in Montgomery County, available here: bit.ly/BBGuide2016.
- As of **September 2016**, DEP has **nearly 1,100 subscribers to its monthly Energy Benchmarking News email newsletter**. The newsletter, along with DEP’s Facebook and Twitter social media platforms and a dynamic Google Group forum with more than 100 members, have proven to be effective ways to keep building owners and other stakeholders abreast of Benchmarking Law deadlines, news, and available resources.
- In **October 2015**, DEP and Montgomery College’s Workforce Development and Continuing Education hosted its **second Benchmarking Ambassadors training with more than 20 attendees**. The first training was held in April 2015. See a list of all trained Ambassadors here: bit.ly/MoCoAmb. The Ambassadors received training on ENERGY STAR Portfolio Manager® and a primer on the County’s benchmarking requirements, and are well-equipped to assist building owners in compliance with the Law.
- In **November 2015**, DEP and EPA’s ENERGY STAR program presented to **25 participants during an interactive benchmarking-focused webinar for building owners**, co-hosted by a County-based energy service organization and a local property management company.
- In **January 2016**, DEP sent over **300 letters during a direct-mail outreach campaign to notify Group 1 building owners and property managers about the Benchmarking Law**. DEP prepared letters for each Group 1 building address and included DEP’s benchmarking brochure (bit.ly/AboutBB2016), a step-by-step checklist for compliance (bit.ly/MCStep2016), and a selected case study that profiles a County building owner’s best practices and lessons learned about the benchmarking process (see all of the profiles here: bit.ly/BBprofiles). DEP is gearing up for a larger direct-mail outreach campaign for Group 2 buildings in January 2017.
- In **April 2016**, USGBC-National Capital Region Montgomery County Branch hosted the **3rd Annual Montgomery County Energy Summit with over 200 attendees**. DEP partnered with USGBC and EPA’s ENERGY STAR program to offer a Benchmarking Jam during the Energy Summit. This workshop connected a handful of the County’s congregations, nonprofits, and affordable housing communities to DEP’s Benchmarking Ambassador network—an important first step towards developing DEP’s future pro-bono benchmarking program.

- **In August 2016, DEP sent nearly 40 Notice of Failure to Comply letters to Group 1 building owners who did not comply with the law by June 1, 2016.** In many cases, the building owner was simply unaware of the law and is working to come into compliance. Other cases stem from outdated or incorrect building information from the property tax records or CoStar (e.g., actual square footage puts the property in the Group 2 category, land zoned for commercial use has not yet been developed) which will be corrected in DEP's next iteration of the Private Buildings Inventory.
- **Each month, DEP continues to offer in-person office hours** for building owners, property managers, tenants, and other interested parties to learn about the Benchmarking Law and ask specific questions about their properties. DEP anticipates holding these regular office hours through December 2017.

Partnerships

DEP's outreach efforts would not be possible without the ongoing and proactive support of several instrumental partners. In addition to sharing information with their networks and membership, they continue to provide valuable information to DEP in developing the County's programming:

- U.S. Department of Energy (DOE) and Lawrence Berkeley National Laboratory, in conjunction with the Standard Energy Efficiency Data (SEED) Platform Collaborative network¹
- Apartment and Office Building Association (AOBA)
- Utilities and energy providers, namely Pepco, Baltimore Gas and Electric, Washington Gas, and Potomac Energy, as well as the energy efficiency programs of each of these utilities
- U.S. Environmental Protection Agency's ENERGY STAR Program
- Building owners and managers representing significant building infrastructure in the County
- Energy service providers, providing benchmarking and other energy efficiency services and products in the County
- Chambers of Commerce, including the Montgomery County Chamber of Commerce and the local chambers
- National technical assistance and research organizations such as the Institute for Market Transformation, Consortium of Building Energy Innovations, Natural Resource Defense Council, and peer jurisdictions with similar benchmarking and transparency laws.

¹ In February 2016, Montgomery County announced its partnership with DOE on the SEED Collaborative, which will enhance the County's building energy benchmarking data management. Learn more here: bit.ly/MoCoSEEDAnnouncement

Private Covered Buildings Inventory

In January 2016, DEP developed a Private Covered Buildings Inventory to raise awareness about the Benchmarking Law and assist building owners with identifying buildings covered under the Law. The data for this inventory are sourced from current Maryland tax assessment records and the CoStar commercial building database. DEP will continue to update this inventory regularly.

While each building owner must determine whether their building is covered under the Law, this inventory serves as DEP’s preliminary tool to track and determine compliance rates. Due to a variety of factors, the building data supplied by state tax assessment records and CoStar are imperfect and/or outdated. Thus, at this early stage of Benchmarking Law compliance, DEP’s identification of noncompliant building owners and estimation of compliance rates are also imperfect. As DEP begins to receive actual building data in the coming years, compliance rates are expected to become more accurate.

Verification Requirement

Montgomery County and the city of Chicago are the only two jurisdictions with benchmarking and transparency laws that require verification. Verification ensures that building and energy data entered into Portfolio Manager are correct and that building owners are making energy conservation decisions based on accurate information. To comply with the verification requirement, building owners can have their data reviewed by a Recognized Data Verifier—a professional who holds one of 23 acceptable credentials recognized by the DEP Director—or have ENERGY STAR Certification for at least 6 months of the year being verified.

Table 1: Summary of Group 1 Building Verification Credentials

Verification Credential	Number of Group 1 Buildings Verified
Certified Energy Manager (CEM)	32
Professional Engineer (PE)	18
LEED AP O+M	10
ENERGY STAR Certification	8
Systems Maintenance Technician (SMT)	4
Certified Property Manager (CPM)	3
Certified Energy Auditor (CEA)	2
Real Property Administrator (RPA)	2
Certified Commissioning Professional (CCP)	1
Certified Facility Manager (CFM)	1
Systems Maintenance Administrator (SMA)	1
Total Group 1 Buildings Verified	82

DEP and Montgomery College’s Workforce Development and Continuing Education have explored developing a workforce development course offering to help building owners meet the verification requirement of the Benchmarking Law. From an informal survey of building owners, many Group 1 buildings have the verification expertise in-house or available by an energy services contract. DEP is exploring offering a course for the Group 2 building owners if there is sufficient demand.

For further quality assurance purposes, DEP’s Commercial Energy Program Manager, lead on the County’s benchmarking program, has also earned LEED AP O+M Certification, one of the credentials recognized by the DEP Director for data verification.

Energy Summary Statistics of County Buildings

By the June 1, 2016 deadline, DGS benchmarked and disclosed data for the 14 applicable Montgomery County Government buildings 50,000 square feet or greater for the second year.² The County buildings are located in Aspen Hill, Bethesda, Gaithersburg, Germantown, Rockville, and Silver Spring and have the following Portfolio Manager use types: office, library, courthouse, performing arts, social/meeting hall, and other-public service.

Summary statistics for the County buildings appear in Table 2 below, and detailed building-level information is available for download from DEP’s website here: bit.ly/CY15MoCoCountyBuildingData.

Table 2: Summary of Calendar Year 2015 Data for the Montgomery County Buildings

Data Point	County Building Data Summary
Number of Buildings Reported	14
Total Square Footage	1,969,959
Total Electricity Use (kWh)	44,206,864
Total Natural Gas Use (therms)	909,985
Total Fuel Oil #2 Use (kBtu)	3,144,744
Total Site Energy Use (kBtu)	244,977,067
Total Source Energy Use (kBtu)	572,342,849
Total GHG Emissions (MTCO _{2e})	25,317
Average Site EUI (kBtu/ft ²)	124.4
Average Source EUI (kBtu/ft ²)	290.5
Average ENERGY STAR Score	45

² County has 15 public buildings applicable under the law, however a waiver has been applied to the Grey Courthouse due to low occupancy during CY 2015 (less than 50%). The Broome Center was reported in last year’s report but has since been converted into warehouse space, thus is now exempt from the Benchmarking Law.

Per the Benchmarking Law [Section 18A-42(a)(3)(A) of the County Code], this annual report also includes the ENERGY STAR scores of the County buildings that are benchmarked, as well as site and source energy use intensity (EUI). An ENERGY STAR score is a 1 – 100 rating serves as a screening tool that helps assess how a building is performing, with a score of 50 being the median for each building type. Site EUI is the energy used in a building per square foot per year, which expresses a building’s energy efficiency in terms of its regular operation. Source EUI, however, represents the total amount of raw fuel required to operate the building per square foot per year, including all energy transmission, delivery, and production losses. EPA has determined that source energy is the most equitable unit for evaluation.

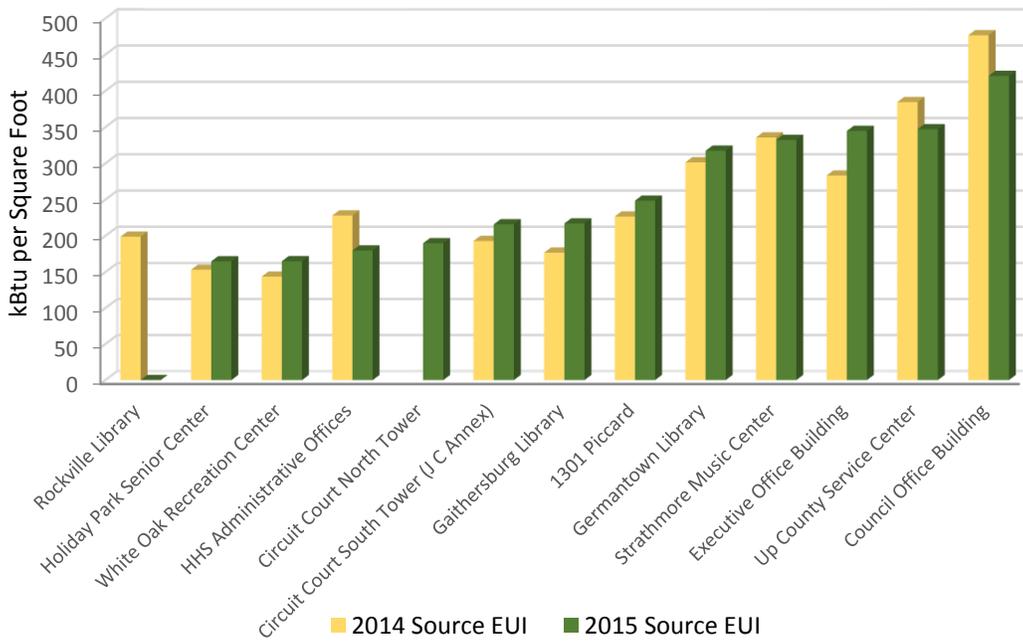
Table 3: County Building Energy Use Intensity and ENERGY STAR Scores for Calendar Year 2015 (in ascending order by source EUI)

County Building	Site EUI	Source EUI	ENERGY STAR Score	Notes
Holiday Park Senior Center	81.9	165.0	N/A	Use type cannot earn an ENERGY STAR score.
White Oak Recreation Center	52.6	165.1	N/A	Use type cannot earn an ENERGY STAR score.
HHS Administrative Offices	73.3	179.9	94	Facility recently upgraded via a \$4.1 million energy performance contract.
Montgomery County Circuit Court North Tower	60.5	189.9	75	Facility utility metering partially overlaps with EOB. Some utility data estimated.
Montgomery County Circuit Court South Tower	104.5	216.0	61	
Gaithersburg Library	93.0	217.2	N/A	Use type cannot earn an ENERGY STAR score.
1301 Piccard	104.7	248.6	51	Facility scheduled for upgrade via energy performance contract in FY17.
Germantown Library	125.1	317.5	N/A	Use type cannot earn an ENERGY STAR score.
Strathmore Music Center	173.3	332.4	N/A	Facility is currently undergoing a comprehensive energy efficient lighting retrofit. Use type cannot earn an ENERGY STAR score.

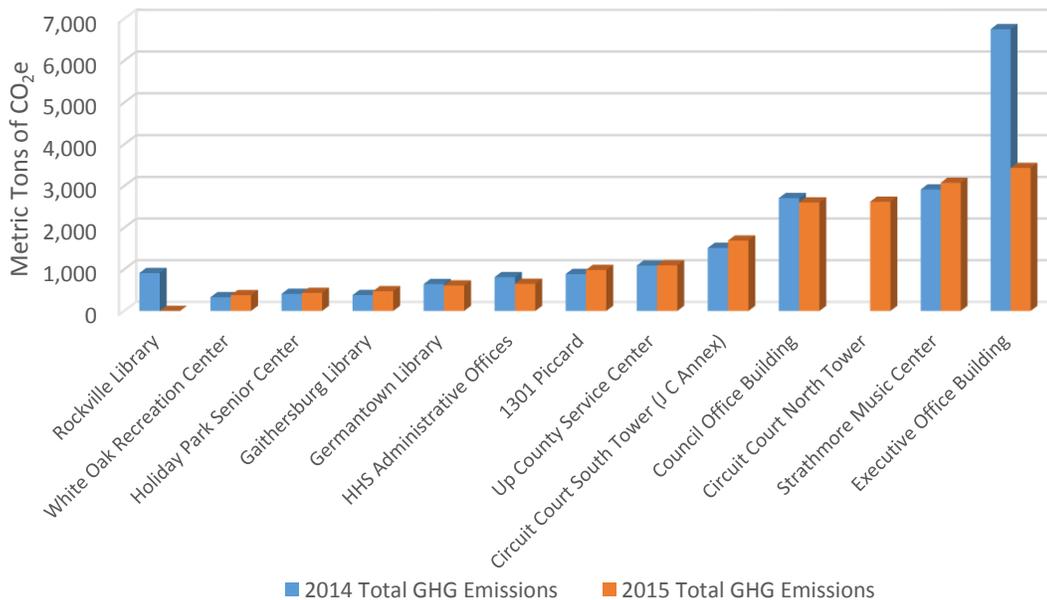
County Building	Site EUI	Source EUI	ENERGY STAR Score	Notes
Executive Office Building (EOB)	109.8	344.8	33	Facility utility metering partially overlaps with Montgomery County Circuit Court North Tower. 11 th floor LED lighting project scheduled for FY17.
Up County Service Center	149.2	347.2	18	Facility scheduled for upgrade via energy performance contract in FY18.
Council Office Building (COB)	161.3	420.8	14	Facility is scheduled for renovation via energy performance contract in FY19.
Public Safety Headquarters	206.7	424.9	12	Facility is under evaluation and significant investments in energy-efficient equipment are expected in FY17 through FY18.
Rockville Library	N/A	N/A	N/A	County is resolving issues with utility metering and billing accuracy with Pepco. Use type cannot earn an ENERGY STAR score.

Please note that not all building use types are eligible to earn the ENERGY STAR label. Many factors can impact ENERGY STAR scores including building operations, occupant behavior, and data quality. DGS has acknowledged some metering and billing issues that may impact data quality, and thus, the County's ENERGY STAR scores.

Source EUI of County Buildings (kBtu/ft²)
 Calendar Year 2014 Compared to Calendar Year 2015



GHG Emissions of County Buildings (MTCO₂e)
 Calendar Year 2014 Compared to Calendar Year 2015



Note on the Charts: Starting CY 2015, DGS refined the data for the Executive Office Building to a more granular building level. Previously, the Executive Office Building and Circuit Court North Tower were reported as one property but are now reported as separate buildings.

DGS has implemented, coordinated by its Office of Energy and Sustainability, comprehensive strategies to manage energy in County Government facilities. Initiatives include:

Data and Energy Management:

- Implementing cutting-edge energy data management software to capture utility information and display data on a dashboard, allowing County staff to identify anomalies and take action. This software also facilitates the transfer of utility data to EPA's benchmarking tool, Portfolio Manager, expanding the number of public facilities benchmarked.
- Hiring an Energy Program Manager and Energy Technician position to monitor energy use, identify energy saving opportunities, and implement action plans to reduce consumption.

High Performance Green Building Design:

- Achieving a Silver or Gold rating for 13 facilities under the U.S. Green Building Council's LEED rating system. This includes the recently constructed Gaithersburg Library, White Oak Community Recreation Center, and Maryland District Court (South/North) Tower.

Energy Performance Contracting:

- Leveraging energy performance contracting to upgrade County facilities and guarantee savings. Under an Energy Performance Contract, the County completed a retrofit on the Health and Human Services Administrative Building at 401 Hungerford Drive, reducing energy consumption 27 percent and resulting in an ENERGY STAR score of 94. Fifteen buildings, including three covered by the Benchmarking Law, are scheduled for similar retrofits FY16 to FY18.
- Implementing targeted lighting and other energy conservation retrofits on other facilities including a recent upgrade to the Brookville Maintenance Depot and the Strathmore Music hall. These upgrades are expected to reduce electrical consumption by at least 15 percent.

Renewables and Clean Energy:

- Implementing over 11 megawatts (MW) of solar in its facilities by the end of FY18, currently DGS has completed 10 facilities with another three scheduled by the end of FY18.
- Purchasing clean energy for 100 percent of its building electricity consumption and additional greenhouse gas credits to offset emissions from building natural gas and fuel oil use.
- Completed installation the County's first combined heat and power system (CHP) in June 2016, efficiently converting natural gas to heat and electricity for its Pre-Release Center. The gas-powered 65 kW CHP system will generate electricity, and the heat recovered from the micro turbine exhaust will be used to produce hot water that is distributed for space- and water-heating at the 171-bed facility.

DGS will continue to share lessons learned from these initiatives with other government agencies and the private sector. The County will continue to fulfill its obligations under the Benchmarking Law and expand efforts to implement energy-saving initiatives across County facilities.

Energy Summary Statistics of Private Group 1 Buildings

During the first compliance period of the Benchmarking Law, DEP anticipated that 110 buildings would be benchmarked based on the January 2016 version of the Private Covered Building Inventory. However, DEP’s actual inventory of Group 1 buildings continues to adapt and expand over time as additional building owners report benchmarking data; as of September 2016, the total Group 1 building inventory is approximately 119, when accounting for exemptions and waivers.

Private building owners benchmarked and disclosed 82 buildings that fall into the Group 1 category based on square footage. During the compliance period, 16 buildings qualified for exemptions and 9 buildings were granted waivers, per the conditions specified in the legislation. Group 1 buildings that submitted a complete benchmarking report or completed an exemption or waiver form have been deemed compliant. As of September 2016, DEP is continuing to work with building owners that submitted incomplete benchmarking data reports, as well as the building owners who received Notice of Failure to Comply letters and need to come into compliance.

Table 4: Group 1 Building Reporting Summary

Building Category	Number of Buildings
Group 1 Buildings on Covered Building Inventory	119
Group 1 Buildings that Reported CY 2015 Data	52
Group 1 Buildings that Applied for Exemptions	16
Group 1 Buildings that Applied for Waivers	9
Group 1 Buildings that Submitted Incomplete Reports	9
Group 1 Buildings that Have Not Complied ³	33
Compliance Rate of Covered Group 1 Buildings	65%

In addition to the Group 1 buildings’ benchmarking data, DEP also received benchmarking reports for buildings not covered by the Law that are 250,000 square feet and greater properties. These properties include some large Montgomery County Public Schools, as well as buildings located in jurisdictions that have not

³ Group 1 Buildings that have not yet complied are based on DEP’s original Private Covered Building Inventory. Due to the inaccuracies that DEP has found thus far in tax records and CoStar, this figure may be modified in the future due to: buildings that do not need to comply in the Group 1 category due to erroneous square footage, buildings that may qualify for an exemption or waiver, or buildings that are not yet constructed but land is zoned for commercial use.

opted-in to the Benchmarking Law. The benchmarking data for these buildings, as well as the covered Group 1 buildings, are aggregated and summarized in Table 5 below.

Table 5: Aggregated Summary of Calendar Year 2015 Data for Buildings 250,000 Square Feet and Greater that Reported Data to DEP

Data Point	CY 2015 Building Data Summary
Number of Buildings Reported and Verified	82
Total Square Footage	43,125,336
Total Electricity Use (kWh)	635,078,885
Total Natural Gas Use (therms)	8,469,268
Total Other Energy Use (kBtu) ⁴	16,988,500
Total Site Energy Use (kBtu)	3,036,366,983
Total Source Energy Use (kBtu)	7,715,865,894
Total GHG Emissions (MTCO _{2e})	343,488
Average Site EUI (kBtu/ft ²)	70.4
Average Source EUI (kBtu/ft ²)	178.9
Average ENERGY STAR Score	71

Note that a handful of building owners reported calendar year 2015 data for approximately 20 Group 2 buildings one year earlier than required, as well as 15 buildings not covered under the law (e.g., below the 50,000 square feet threshold, located in a jurisdiction that does not currently opt-in to the law). Data for these buildings are not included in Table 5 above but will be reported in next year's Annual Report. DEP thanks those building owners for benchmarking and reporting their building energy data by the June 1, 2016 deadline voluntarily.

Montgomery County Public Schools' Benchmarking Efforts

Montgomery County Public Schools (MCPS) manages 204 schools that provide education services for more than 155,000 students. Since 2012, MCPS has been benchmarking their inventory of schools in EPA's ENERGY STAR Portfolio Manager tool to manage energy performance and reduce utility expenditures. MCPS manages their own Board of Education building inventory at the state level separate from the County's Department of General Services buildings, thus they are not subject to the County's Benchmarking Law County building disclosure requirements.

In 2016, MCPS voluntarily reported calendar year 2015 benchmarking data for 25 high school buildings that are greater than 250,000 square feet to DEP; these data are summarized in Table 5 above along with our Group 1 building data set. By October 2017, the MCPS high school buildings' calendar year 2016 benchmarking data will be included in our publicly disclosed Group 1 building data set for

⁴ Other Energy Use includes fuel oil, diesel, kerosene, propane, district steam, district hot water use, and district chilled water use.

individual buildings. Further, next year, MCPS plans to report benchmarking data for all other schools that fall into the Group 2 building category under the Benchmarking Law. In the future, MCPS plans to explore ENERGY STAR certification for its top-performing schools.