

# **Energy Benchmark Results District of Columbia Public Buildings FY 2009**

Office of Policy and Sustainability  
District Department of the Environment

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## Energy Benchmark Results

### District of Columbia Public Buildings: FY 2009

A major portion of energy use in the District of Columbia is tied to the operations of buildings. The District's [Inventory of Greenhouse Gas Emissions](#) found that buildings are responsible for 75% of the greenhouse gas emissions within the District of Columbia. Further, energy utility costs such as purchases of electricity and natural gas account for a significant part of buildings' operating budgets. Understanding and managing buildings energy use is key to managing their environmental impact and to reducing building operations budgets.

The District is taking a proactive approach to reducing energy use and its related consumption of fossil fuels in public and private buildings. The [Green Building Act of 2006 \(GBA\)](#) and the [Clean and Affordable Energy Act of 2008 \(CAEA\)](#) establish legislative requirements for buildings' environmental performance. As mandated by the GBA and the CAEA, the District is benchmarking energy use in public buildings 10,000 square feet (sq ft) in size or larger starting with Fiscal Year 2009 (FY 2009: Oct. 1, 2008 – Sept. 30, 2009). The benchmarking tool selected for District benchmarking is ENERGY STAR Portfolio Manager (Portfolio Manager).

#### District Use of ENERGY STAR Portfolio Manager

The [ENERGY STAR Portfolio Manager](#) software tool was created by the U.S. Environmental Protection Agency (EPA) to help building owners track and manage energy use in their buildings. Portfolio Manager is the national industry standard for benchmarking energy performance in commercial buildings, and also has applications for building types such as schools and libraries in the public sector.

Building owners can benchmark the energy performance of their buildings by entering utility information (typically electricity and natural gas usage) and building characteristics such as size, hours of operation and occupancy into the Portfolio Manager software tool. Portfolio Manager calculates a key benchmark figure: energy use intensity per square foot (EUI) in kBTU<sup>\*</sup>/sq ft, for a building over a select period of time. Arriving at an EUI makes it possible to compare its energy use to previous periods, to other buildings within a portfolio, and to similar buildings nationwide (energy use intensity data is weather-normalized). The average EUI for libraries nationwide, for example, is 246 kBTU/sq ft, very close to the District's average EUI of 250 kBTU/sq ft for its library buildings. The EUI measure takes into account only a building's size and energy use, and a limited number of other physical characteristics. The number of occupants and hours of operation are not taken into account. The District, like EPA, uses "source" energy use information for comparison, which accounts for the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, and production losses, thereby enabling a complete assessment of energy efficiency in a building.

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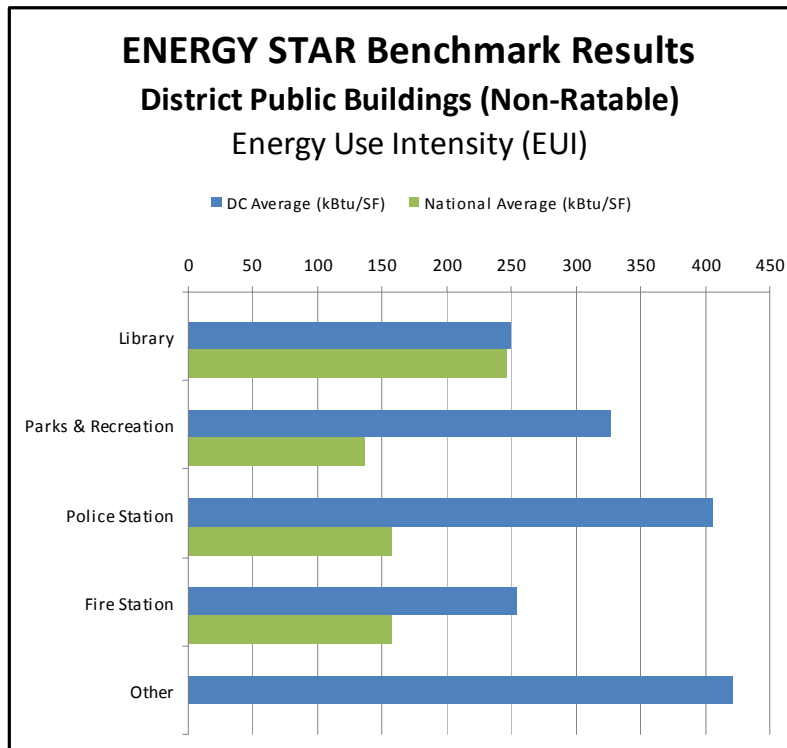
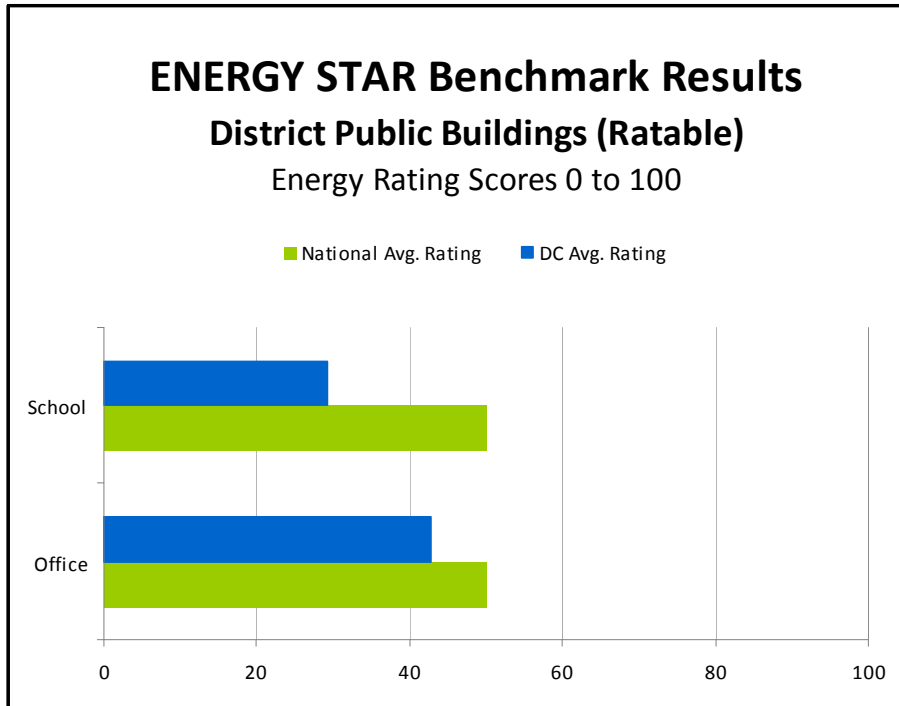
\* kBTU/sf represents 1,000 British thermal units per square foot, and is a standard conversion measure for various types of energy such as electricity and natural gas that may need to be compared or considered together.

National EUI averages are established by the US Department of Energy's Energy Information Administration Commercial Building Energy Consumption Survey (CBECS). EPA also has established an energy rating score for a number of building types such as office buildings, schools, and warehouses, on a 0 to 100 scale. These "ratable" buildings have a larger sample of buildings to be compared against nationally, and the rating takes into account more detailed building information including the number of occupants and operating hours. The energy rating score offers a more finely tuned result that takes into account how a building is used. An energy rating score of 50 designates a building that performs at exactly the national average for its type, with 50% of buildings performing better and 50% performing more poorly for energy use. Building owners whose buildings earn an energy rating score of 75 or above can earn the ENERGY STAR label, indicating that they are in the top 25<sup>th</sup> percentile for energy performance nationwide. The Reeves Center complex, for example, has an energy rating score of 65, placing it well above the national average for office buildings but not efficient enough in its energy use to earn an ENERGY STAR label.

Local municipal buildings such as those in the District portfolio are quite different from the large, newer commercial buildings typically benchmarked with Portfolio Manager. A community center, for example, may include multiple uses such as gathering spaces, computer labs, training rooms, and kitchens with or without refrigerators. It may, like a school, combine an array of after-school activities ranging from library operations to boys and girls clubs. Such complex and rich uses in buildings made the Portfolio Manager benchmark process more lengthy and cumbersome, but District staff was able to arrive at reasonable results for most buildings. Some municipal buildings, such as the DC Armory, police training centers, fueling stations, fleet maintenance facilities and the DC Jail do not have categories or national averages under Portfolio Manager. These were incorporated into a "Warehouses and Other" category which includes EUI numbers but no comparisons. Benchmark results will be followed up with building condition assessments and energy audits to reach more comprehensive results for energy efficiency.

### **FY 2009 Public Buildings Benchmark Results**

The District launched the annual benchmarking of its public buildings with FY 2009 following an FY 2008 pilot phase. In all 194 public buildings were benchmarked. Benchmark results for FY 2009 show that overall, public buildings in the District of Columbia perform below average compared to similar buildings nationwide. Libraries and office buildings perform at just below the national average, while District police stations use 2.5 times more energy than their counterparts nationwide. The District's recreation buildings and community centers also use approximately 2.5 times more energy than similar facilities nationwide. District fire stations use about 60% more energy than average. Data from the District's schools remains incomplete. However, initial benchmark results show a public schools building portfolio that is in the 29<sup>th</sup> percentile among schools nationwide for energy performance.



As seen in the two graphs above, FY 2009 benchmarking of District buildings reports energy performance using an energy rating score of 0 to 100 for office buildings and schools, and the less precise but useful EUI measure for “non-ratable” buildings including libraries, parks and

recreation facilities, fire stations, police stations, and “other” various building types. FY 2009 benchmarking results of public buildings highlight many opportunities for energy improvement as well as the need for more accurate data and performance tracking of buildings overall. Some District public buildings, especially schools and parks and recreation facilities, do not have readily available information about building characteristics, operating schedules, and occupancy. Building-specific utility meter information is not always available. District staff is working to update and refine buildings information for FY 2010 benchmarking.

### **FY 2009 Public Buildings Benchmark Results by Building Type**

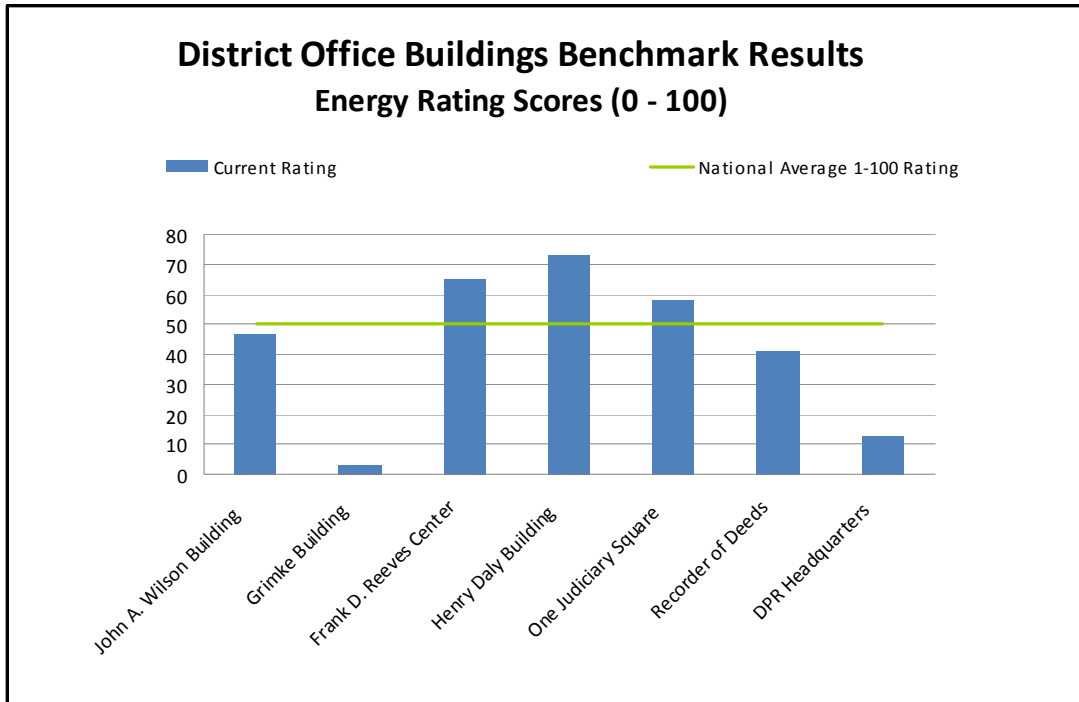
The FY 2009 public buildings benchmark process provided comprehensive benchmark information for a variety of building types within the District’s portfolio. This section provides benchmark information on the following building types:

- District Office Buildings
- District Police Stations
- District Fire Stations
- District Libraries
- District Parks and Recreation Buildings
- District Public Schools
- District Warehouses and Other Facilities

In accordance with GBA and CAEA requirements, the District Department of the Environment requested energy benchmark data from the University of the District of Columbia, the Walter E. Convention Center, and DC Water. Additionally, the Washington Metropolitan Area Transit Authority (WMATA) voluntarily benchmarked three of its facilities located in the District of Columbia. Results from this query will follow.

#### **Office Buildings**

The District has seven government office buildings that are 10,000 square feet or larger and for which consistent data was available for FY 2009. Portfolio Manager provides an energy rating score of 0 to 100 for benchmarked office buildings, making it possible to compare a building’s energy performance to that of others around the country based on building characteristics as well as use. A rating score of 50 indicates a building that performs at the national average. Average energy use intensity (EUI) per square foot is also available.



FY 2009 benchmark results show that District of Columbia government office buildings perform, on average, in the 43rd percentile of similar office buildings nationwide, falling just below the national average (the average EUI for District office buildings is 298 kBtu/sq ft). (See Source Table 1 in the Appendix for detailed office buildings benchmark data.)

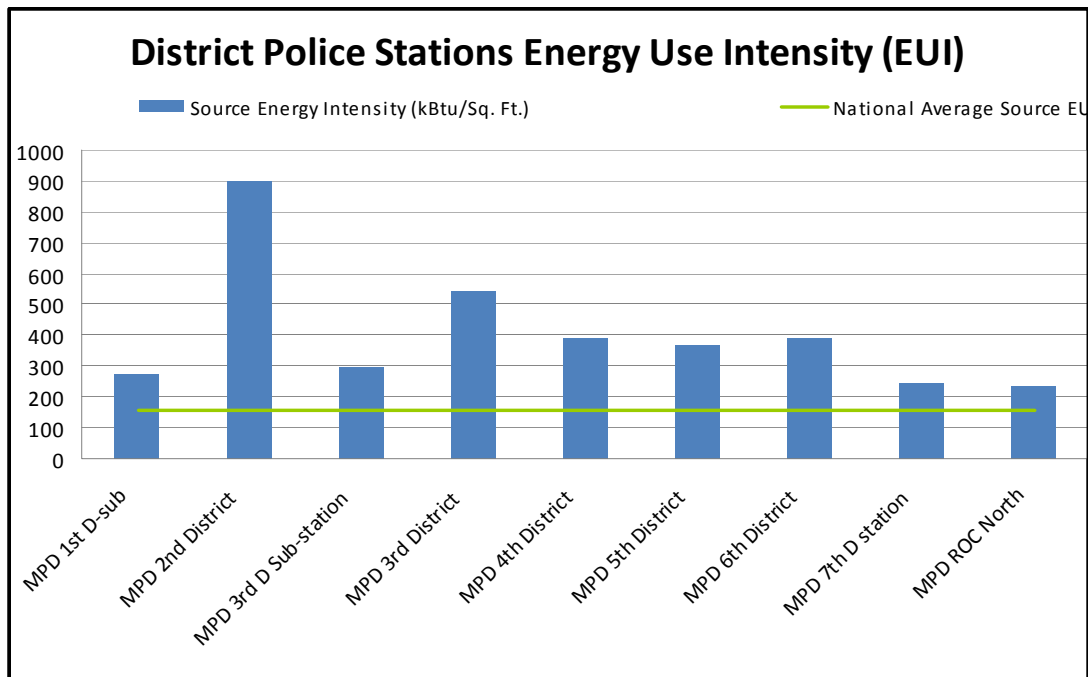
The Henry Daly building achieved the highest percentile rating of 73. However, this score is likely based on non-functioning systems rather than high efficiency. One Judiciary Square, the District's largest administrative complex, performs at just above the national average with an energy rating score of 58. The Wilson building energy rating score of 47 places it just below the national average for office buildings of its type. The Reeves building energy rating score of 65 shows energy performance that is well above the national average. The Grimke building and the Department of Parks & Recreation headquarters building have the lowest scores among District office buildings, with energy rating scores of 3 and 13, respectively. The Grimke building is a repurposed school, and its base structure is probably not optimal for office functions, making it less energy efficient. Without the Grimke building, the average energy rating score for District office buildings is 50 – just at the national average.

The District's Department of Real Estate Services (DRES) has been conducting building condition assessments of office buildings since 2009, and will conduct energy audits of all public buildings through FY 2011 using federal stimulus dollars. These activities will help identify problem areas within buildings, showing where improvements and retrofits can boost energy efficiency. In addition, federal stimulus funds are being used to support the installation of energy efficiency measures at One Judiciary Square.

### Police Stations

Nine police buildings were benchmarked for FY 2009 using Portfolio Manager. Energy rating scores of 0 to 100 are not available for police stations, but Portfolio Manager provides Energy

Use Intensity (EUI) data that captures average energy use intensity per square foot in kBtu/sq ft. The EUI can be compared to a national average based on building type, size, and a limited number of other physical building characteristics. Benchmarking results for FY 2009 indicate extremely high energy use intensity in District police stations. The average EUI in police stations nationwide is 157 kBtu/sq ft, while the average in District police stations is 406 kBtu/sq ft – more than 2.5 times the national average. (See Source Table 2 in the Appendix for detailed police stations benchmark data.)



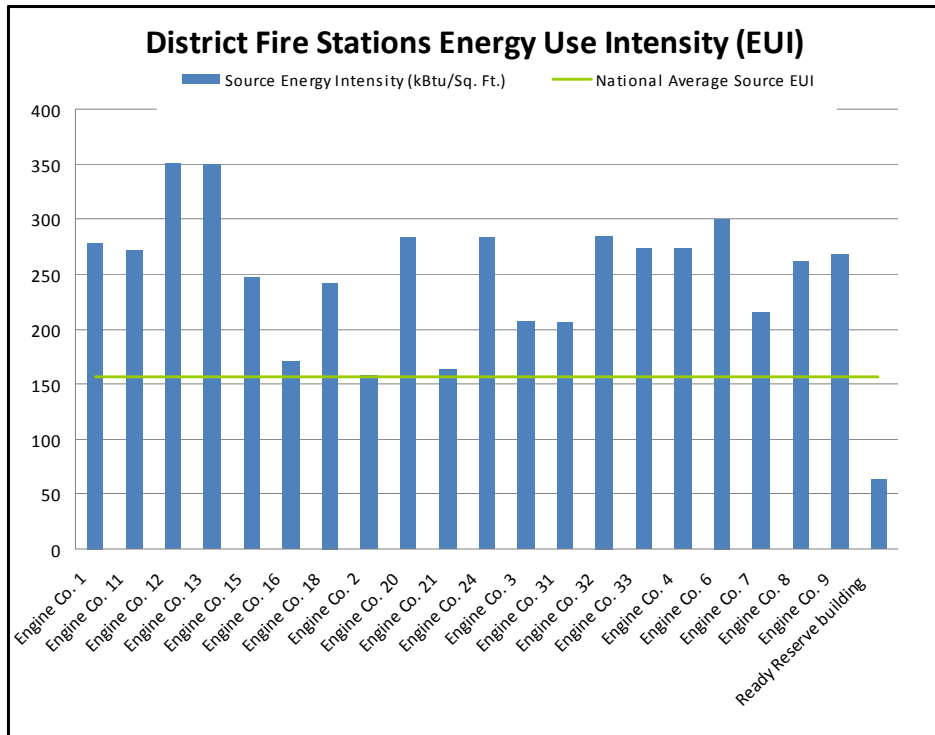
The Metropolitan Police Department (MPD) 2<sup>nd</sup> District headquarters showed the highest energy use at 900 kBtu/ sq ft – almost six times the national average. This facility is an older facility with inefficient lighting systems and no motion detection systems in the offices or meeting rooms. Heating, ventilation, and air conditioning (HVAC) systems are not maintained and work poorly. The MPD 7<sup>th</sup> District Station and MPD Regional Operations Command (ROC), North (now known as Patrol Services Security Bureau (PSSB)), use energy at closest to the national average, at just under 250 kBtu/sq ft.

Like many District buildings, police stations have gone through several generations of use and alterations, and many basic improvements and updates have been deferred. (Police stations in the District may also have a different or more high-intensity use than stations in other parts of the country.) In FY 2011 the District will conduct energy audits to help identify problem areas and opportunities for improvement. Police stations are a high priority target group for energy and building retrofits pending funding availability.

**Fire Stations**

Twenty fire stations and the FEMS Ready Reserve building were benchmarked for FY 2009 using Portfolio Manager. Energy rating scores of 0 to 100 are not available for fire stations, but Portfolio Manager provides Energy Use Intensity (EUI) data that captures average energy use

intensity per square foot in kBtu/sq ft. The EUI can be compared to a national average based on building type, size, and a limited number of physical building characteristics.



FY 2009 benchmark results for fire stations show high energy use intensity. The average EUI for District fire stations is 254 kBtu/sq ft, 60% above the national average of 157 kBtu/sq ft. Engine Company numbers 12 and 13 show the highest energy use at 351 and 349 kBtu/sq ft respectively. Engine Company 2 showed the lowest energy use intensity with an EUI of 158 kBtu/sq ft or almost exactly at the national average. Just behind in energy performance were Engine Company numbers 21 and 16, with energy use of 164 and 171 kBtu/sq ft, respectively. (See Source Table 3 in the Appendix for detailed fire stations benchmark data.)

Like many District buildings, fire stations have gone through several generations of use and alterations, and many basic improvements and updates have been deferred. The average age of fire stations in the District is 60 years old, with some being over 100 years old.

FEMS has initiated a “Buff, Scrub and Green” program to make fire stations more energy efficient. This program includes replacement of light fixtures, installation of motion sensors and installation of new, energy efficient windows and doors. In FY 2011 the District Department of Real Estate Services will conduct energy audits to help further identify problem areas and opportunities for improvement. Major station renovations and new construction projects will incorporate rigorous energy performance standards and USGBC LEED design standards.

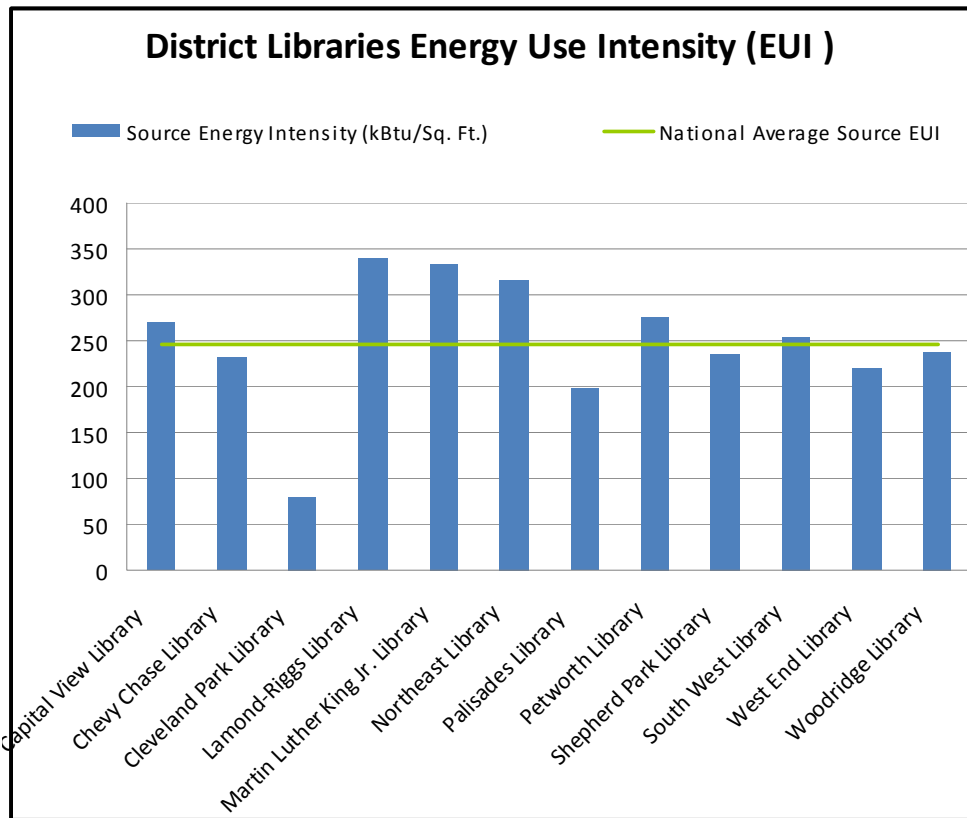
**Libraries**

Twelve libraries were benchmarked for FY 2009 using Portfolio Manager. Energy rating scores of 0 to 100 are not available for libraries, but Portfolio Manager provides Energy Use Intensity (EUI) data that captures average energy use intensity per square foot in kBtu/sq ft. The EUI



can be compared to a national average based on building type, size, and a limited number of other physical building characteristics.

Benchmarking results for FY 2009 show that the District's libraries perform at about the national average. The EUI average for libraries nationwide is 246 kBtu/sq ft. The average EUI for District libraries is 250 kBtu/sq ft. Cleveland Park Library shows the lowest EUI at 81 kBtu/sq ft. The highest EUIs are shown at Lamond-Riggs and Martin Luther King Jr. libraries, at 341 kBtu/sq ft and 334 kBtu/sq ft, respectively. Martin Luther King Jr. Library is the single highest user of energy among District libraries, accounting for about 75% of the District libraries' energy budget for FY 2009. At 400,000 square feet it is also the largest library facility in the District of Columbia. District staff plans to review energy data for Cleveland Park Library, as the library's building type and operating hours would not suggest such a low EUI.



(See Source Table 4 in the Appendix for detailed libraries benchmark data.)

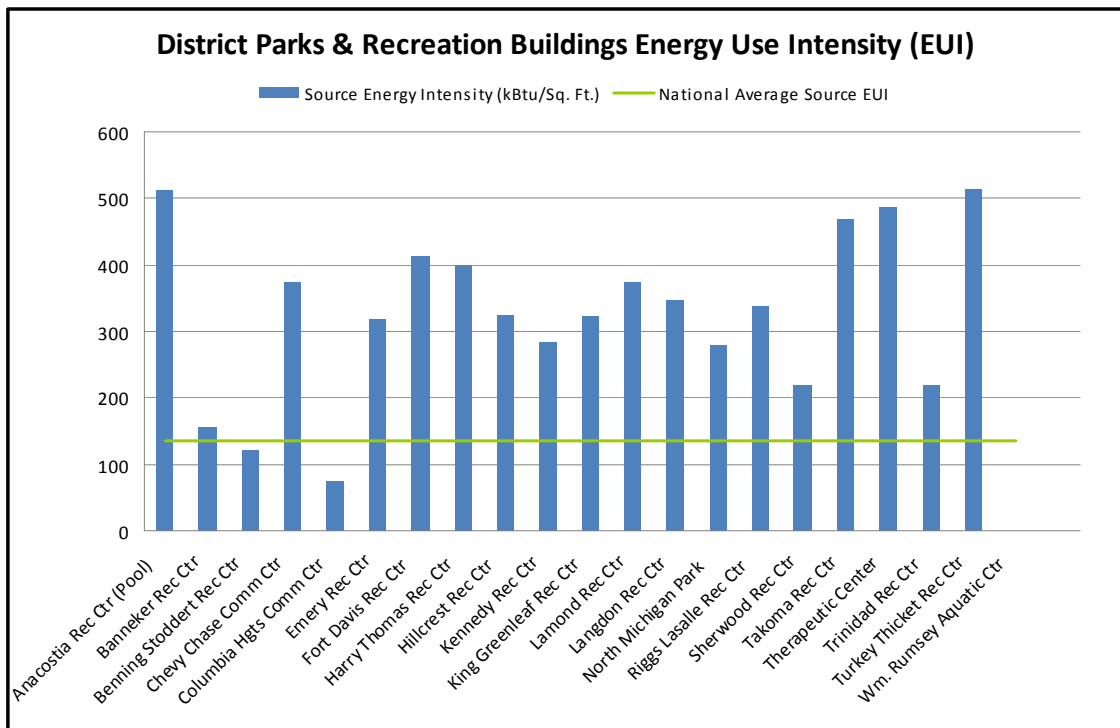
In FY 2011, the District will conduct energy audits to help identify problem areas and opportunities for improvement in existing libraries. A significant portion of the District's library portfolio is undergoing major renovation and new construction projects are also underway. These projects will reflect new, more rigorous energy performance standards.

### Parks and Recreation Buildings

Twenty-one parks and recreation buildings were benchmarked for FY 2009 using Portfolio Manager. Energy rating scores of 0 to 100 are not available for parks and recreation buildings, but Portfolio Manager provides Energy Use Intensity (EUI) data that captures average energy

use intensity per square foot in kBtu/sq ft. The EUI can be compared to a national average based on building type, size, and a limited number of other physical building characteristics.

Benchmarking results for FY 2009 show that the District's parks and recreation buildings use about 2.5 times more energy than similar facilities nationwide. The EUI average for parks and recreation facilities nationwide is 136 kBtu/sq ft. The average EUI for District facilities is 341 kBtu/sq ft. The Anacostia Recreation Center, with an EUI of 511 kBtu/sq ft; the Turkey Thicket Recreation Center, with an EUI of 514 kBtu/sq ft; the Therapeutic Center with an EUI of 487 kBtu/sq ft; and the Takoma Recreation Center with an EUI of 470 kBtu/sq ft are the highest energy users among the facilities benchmarked in FY 2009. The Columbia Heights Community Center has the lowest EUI of 74 kBtu/sq ft, followed by the Benning Stoddert Recreation Center with an EUI of 121 kBtu/sq ft and the Banneker Recreation Center with an EUI of 157 kBtu/sq ft. These good results reflect recent renovations with energy efficiency improvements in those buildings. (See Source Table 5 in the Appendix for detailed parks and recreation buildings benchmark data.)



Like many District buildings, parks and recreation facilities as well as community centers are often repurposed buildings and have gone through several generations of use and alterations. Many basic improvements and updates have been deferred. In FY2011 the District will conduct energy audits to help identify problem areas and opportunities for improvement.

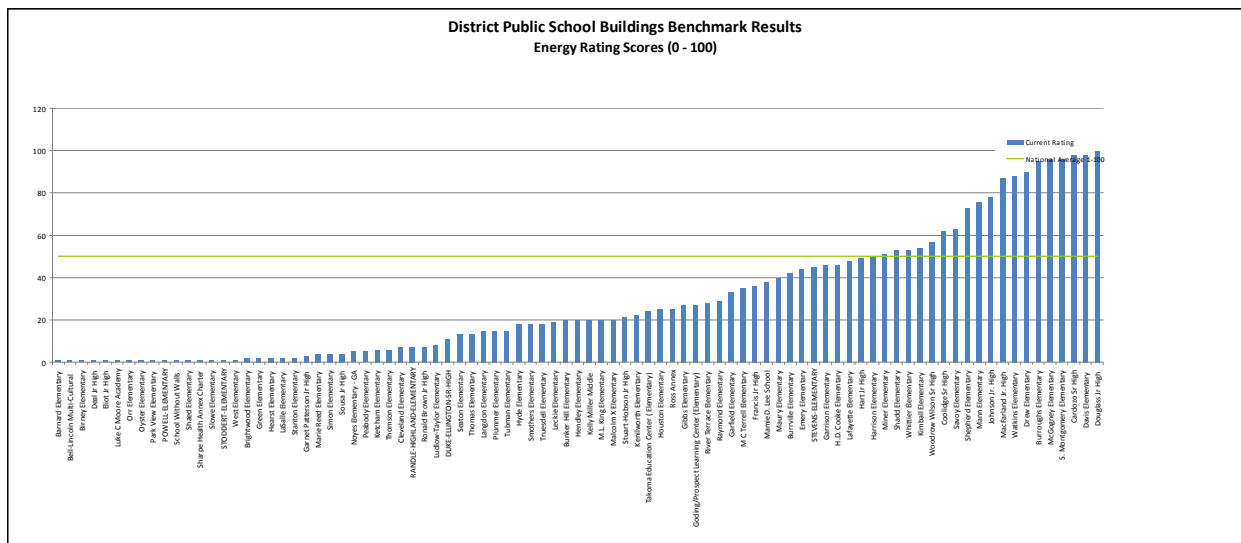
### DC Public Schools

DC Public Schools (DCPS) comprise the largest portion of the District's public buildings stock, with 125 schools currently in the DCPS portfolio. They are also the District's most challenging buildings group, both in terms of buildings quality and energy information. The Office of Public

Education Facilities Modernization (OPEFM) is leading a major improvements and construction effort to improve the public schools building stock. For FY 2009, 106 school buildings had sufficient energy utility data and building information for benchmarking.

Portfolio Manager provides a rating score of 0 to 100 for benchmarked school buildings, making it possible to compare a school building’s energy performance to that of others across the country based on building characteristics as well as use. A rating score of 50 indicates a building that performs at the national average. Average energy use intensity (EUI) per square foot is also available. (See Source Table 6 in the Appendix for detailed schools benchmark data.)

Overall, the District public schools building portfolio ranked in the 29<sup>th</sup> percentile of schools in the U.S., indicating low performance for energy. (The average EUI for District school buildings is 207 kBtu/sq ft.) Benchmark results show a large number of extremely high and extremely low scores (0 to 5 and 95 to 100), indicating likely problems with data accuracy. District staff estimates that about 50% of the benchmark results for schools merits further examination. Nevertheless, the overall measure of DCPS buildings’ energy performance is reasonable, pointing to both the need and an opportunity for improvement. Energy use in schools accounted for \$30 million of the District’s \$79 million facilities energy budget in FY 2009.



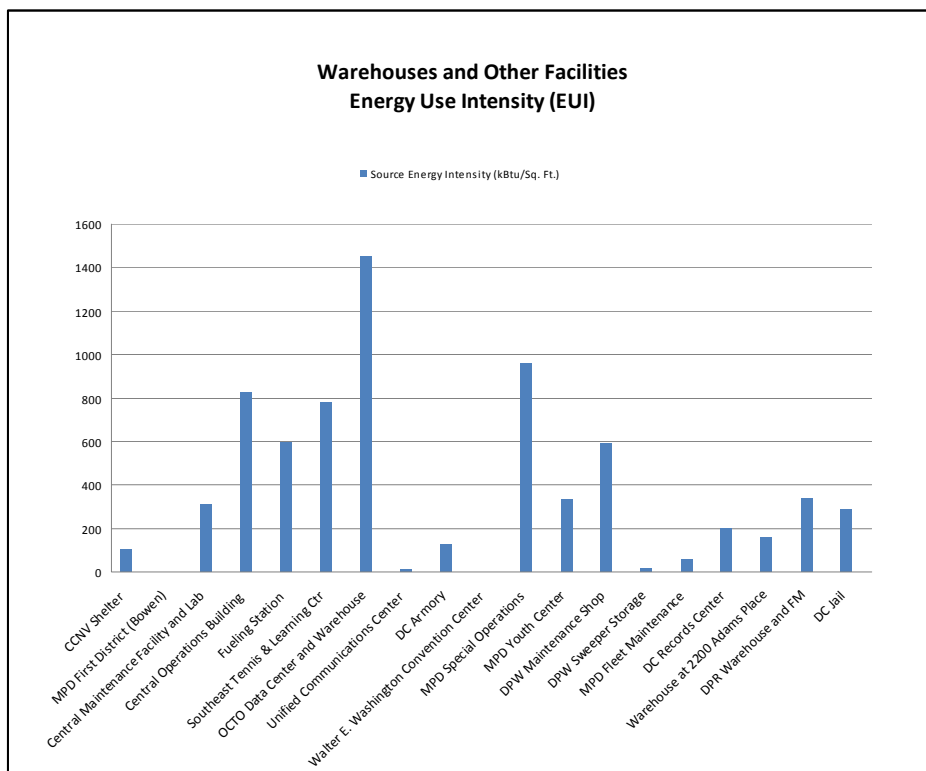
OPEFM and agencies including DRES, DDOE, and DCPS are working to improve the overall quality of District public school buildings. OPEFM new construction and major renovation projects (modernizations) are designed and built to meet LEED for Schools certification standards. Less major renovations incorporate improvements for energy efficiency. The District is investing more than \$11 million in federal stimulus funds to retrofit schools with energy and water conservation improvements.

**Warehouses and Other Facilities**

A significant portion of the District’s public buildings do not fall under typical ratable Portfolio Manager building categories. These types of buildings include warehouses, shelters, data

centers, repurposed schools, fueling stations, maintenance shops, laboratories, corrections facilities, the DC Armory, and police and fire training centers. Often these facilities have unique, multiple, and unconventional uses that meet community needs but are not easily categorized. National average comparisons are generally not available.

The “Warehouses and Other Facilities” group captures benchmark results for 18 of these buildings. Square footage for buildings in this grouping varies greatly, from the MPD Special Operations building at 10,530 sq ft to 449,295 sq ft at the DC Jail. Energy use intensity is equally varied, from 15 kBtu/sq ft at the Unified Communications Center and 17 kBtu/sq ft at a Bryant Street Department of Public Works facility to 962 kBtu/sq ft at the MPD Special Operations building (this facility was in the District’s portfolio for these FY 2009 report, but has recently been disposed of) and 1,454 kBtu/sq ft at the OCTO Warehouse and Data Center. (See Source Table 7 in the Appendix for detailed warehouse and other facilities benchmark data.)



Many of the buildings in this group have gone through several generations of use and alterations, and basic improvements have been deferred. In FY 2011, the District will conduct energy audits to help identify problem areas and opportunities for improving performance.

### Affiliated Public Agencies Benchmark Results

#### University of the District of Columbia

The University of the District of Columbia did not submit energy use data to DDOE for FY 2009.

**Convention Center**

The Walter E. Convention Center did not submit energy use data to DDOE for FY 2009.

**DC Water**

DC Water, formerly known as the DC Water and Sewer Authority (DC WASA), manages a series of diverse facilities including the Blue Plains Advanced Wastewater Treatment Plant and water pumping, sewer pumping, and storm water pumping facilities across the District. Two DC Water facilities were benchmarked for FY 2009: the Central Maintenance Facility and the Central Operations Facility. ENERGY STAR rating scores are not available for such multi-use buildings—which in this case include a combination of maintenance facilities, workshops, laboratories, a data center, and office space—but energy benchmarking using Portfolio Manager shows a source EUI of 830 kBtu/sq ft for the Central Operations Facility and a source EUI of 311 kBtu/sq ft for the Central Maintenance Facility. DC Water will undertake a detail analysis of the electrical services being provided from the Central Operations Facility to insure delineation of energy usage for process operations verses offices services and to improve energy efficiency, especially at the energy-intensive Central Operations Facility. Once a benchmarking protocol is developed for advanced wastewater treatment plants larger than 150 million gallons per day by EPA, it will be possible to benchmark Blue Plains Advanced Wastewater Treatment Plant, a 370 million gallon-per-day plant, against similar facilities across the country.

DC Water is completing a comprehensive energy audit of all its major facilities and processes. The results of this audit will help guide DC Water in project investment and operations to continue improvements in energy efficiency. DC Water has improved the efficiency of its Blue Plains Advanced Wastewater Treatment Plant nitrification mixing process and aeration injection system saving more than 50 million kilowatt hours annually. As a part of its biosolids management program, DC Water will be constructing a Combined Heat and Power Plant that will operate primarily on biogas. It is estimated that more than 71 million kilowatts hours of energy will be generated annually when fully operational. A planned replacement of HVAC equipment and enhanced controls for the Central Operations Facility will yield additional energy savings. As upgrades to DC Water sewer and water pumping stations and piping systems continue to be implemented, energy efficiency is being realized.

(See Source Table 8 in the Appendix for detailed DC Water benchmark data.)

**WMATA Volunteer Benchmark Data**

The Washington Metropolitan Area Transit Authority (WMATA) voluntarily benchmarked three facilities located within the District of Columbia. These include the Stone Straw building, the Jackson Graham building, and the Marlon Francisco Morales building—all office buildings. Portfolio Manager energy rating scores of 0 to 100 are available for these facilities, with a score of 50 indicating average performance among buildings of its type. The Stone Straw building showed an energy performance score of 31, Jackson Graham a score of 1—an extremely low performance score due possibly to an energy-intensive data center in the building—and the Marlon Francisco Morales building, completed a few years ago as a LEED Silver project—showed an energy rating score of 92, indicating excellent energy performance in the top ten percent of office buildings nationwide.

## Opportunities for Energy Improvement

Benchmark results for FY 2009—the first year that comprehensive energy benchmarking was undertaken by the District—show that overall, public buildings in the District of Columbia perform below average compared to similar buildings nationwide. This suggests many opportunities for saving energy through improvements. With an annual energy budget of \$79 million for District buildings, even modest energy performance improvements can lead to significant budget savings.

Energy performance can be improved in buildings through:

- Improvements to the core building and its systems
- Facilities management that supports energy efficiency
- Energy-wise behavior by building occupants

While transforming a large and varied set of buildings such as those owned by the District into an energy-efficient, high-performance building portfolio is a long-term project, building improvements are based on a handful of common-sense steps:

- Collect accurate energy performance information based on reliable building data
- Identify specific building problem areas through building condition assessments, submetering, energy audits, and permanent building monitoring systems
- Assess and evaluate improvements costs based on performance and financial benefits over time
- Invest in strategic buildings improvements that produce best energy savings results for money invested
- Track building performance over time

For facilities that have already undergone building condition assessment, the District is undertaking low-cost improvements that have a track record of improving energy performance:

- Weatherization of buildings including insulation and sealing of air leaks
- Replacement of inefficient lighting with efficient new lighting
- De-lighting where lighting is redundant
- Installation of motion sensors
- Education of facilities staff and building occupants on common-sense energy conservation, with incentives for individual and agency actions

In FY 2011, the District will conduct approximately 260 energy audits in public buildings to identify problem areas and opportunities for improvement. Over \$1.8 million in federal stimulus dollars is being deployed for this purpose. The One Judiciary Square complex will be benefiting from \$7.5 million in federal stimulus funds for a building monitoring system and energy efficiency measures. The District is working in cooperation with Pepco to install smart meters throughout the District public buildings system.

## Data Tracking Issues in Public Buildings

Many District public buildings, especially schools and parks and recreation facilities, do not have readily available information for building characteristics, operating hours, and number of

occupants. This is especially true for older facilities that have gone through several generations of occupancy, without a central repository of building information. Some District buildings have broken meters or meters for which a building's space use of energy is hard to determine. Portfolio Manager provides default values when certain space characteristics are not available, and these were used for some buildings in FY 2009 benchmarking. District staff is working to update and refine building information for FY 2010 benchmarking.

Some buildings in the District's portfolio appear to be efficient on paper, but upon closer examination reveal outdated, non-functioning lighting and HVAC systems, thus resulting in illusory energy efficiency. Energy audits will help to identify buildings for which this may be the case.

**Appendix: Source Data Tables for FY 2009 Benchmark Graphs**

SOURCE TABLE 1

**Office Buildings**

<b>District Office Facility</b>	<b>FY 2009 Energy Rating Score</b>	<b>Weather Normalized, Source Energy Use Intensity (EUI) (kBtu/sq ft)</b>	<b>Total Floor Space (sq ft)</b>	<b>Total GHG Emissions (MtCO<sub>2</sub>e)</b>	<b>Site Electric Use (kWh)</b>	<b>Site Natural Gas Use (therms)</b>	<b>Energy Cost US \$ (per sq ft)</b>
<b>John A. Wilson Building</b>	47	278	278,150	3,525	6,785,653	na	\$3.14
<b>Grimke Building</b>	3	490	46,100	1,042	1,779,450	22,038	\$3.70
<b>Frank D. Reeves Center</b>	65	229	512,000	5,135	9,882,248	na	\$2.32
<b>Henry Daly Building</b>	73	212	576,544	5,561	10,700,096	na	\$3.57
<b>One Judiciary Square</b>	58	277	850,000	10,813	20,811,203	na	\$3.09
<b>Recorder of Deeds</b>	41	222	46,530	471	905,930	na	\$1.86
<b>DPR Headquarters</b>	13	376	13,600	232	377,188	6,721	\$4.21



## SOURCE TABLE 2

**Police Stations**

<b>District Police Facility</b>	<b>Weather Normalized, Source Energy Use Intensity (EUI) (kBtu/sq ft)</b>	<b>Total Floor Space (sq ft.)</b>	<b>Total GHG Emissions (MtCO<sub>2</sub>e)</b>	<b>Site Electric Use (kWh)</b>	<b>Site Natural Gas Use (therms)</b>	<b>Energy Cost US \$ (per sq ft)</b>
<b>MPD 1st District Sub Station</b>	273	10,017	131	198,880	5,168	\$3.67
<b>MPD 2nd District Station</b>	900	36,852	1,520	2,759,502	16,199	\$4.62
<b>MPD 3rd District Sub Station</b>	297	13,793	194	238,400	13,228	\$3.76
<b>MPD 3rd District Station</b>	544	38,852	972	1,708,800	15,713	\$3.90
<b>MPD 4th District Station</b>	393	45,013	817	1,386,300	18,132	\$4.27
<b>MPD 5th District Station</b>	370	36,888	635	1,045,920	16,360	\$4.00
<b>MPD 6th District Station</b>	391	37,935	692	1,035,040	28,828	\$4.52
<b>MPD 7th District Station</b>	248	43,190	492	868,050	7,705	\$2.69
<b>MPD ROC North</b>	237	41,300	476	597,300	31,042	\$3.18

## SOURCE TABLE 3

**Fire Stations**

<b>District Fire Station</b>	<b>Weather Normalized, Source Energy Use Intensity (EUI) (kBtu/sq ft)</b>	<b>Total Floor Space (sq ft)</b>	<b>Total GHG Emissions (MtCO<sub>2</sub>e)</b>	<b>Site Electric Use (kWh)</b>	<b>Site Natural Gas Use (therms)</b>	<b>Energy Cost US \$ (per sq ft)</b>
Engine Co. 1	279	15,788	203	255,440	13,275	\$3.17
Engine Co. 11	272	14,000	179	244,800	9,656	\$3.54
Engine Co. 12	351	14,330	230	439,360	258	\$3.10
Engine Co. 13	349	11,150	187	211,560	14,421	\$4.98
Engine Co. 15	248	12,720	149	188,440	9,558	\$2.88
Engine Co. 16	171	25,032	210	287,700	11,417	\$2.44
Engine Co. 18	242	10,100	120	147,660	8,068	\$4.31
Engine Co. 2	158	35,000	268	384,120	12,857	\$2.19
Engine Co. 20	284	13,472	181	229,760	11,505	\$3.41
Engine Co. 21	164	12,800	100	120,240	6,918	\$2.22
Engine Co. 24	284	17,638	227	319,520	11,423	\$3.57
Engine Co. 3	207	12,431	118	153,864	7,073	\$2.39
Engine Co. 31	206	11,720	113	157,731	5,873	\$2.09
Engine Co. 32	285	10,300	138	191,000	7,232	\$3.52
Engine Co. 33	273	15,000	193	258,320	10,981	\$2.99
Engine Co. 4	273	19,000	243	345,600	11,858	\$2.91
Engine Co. 6	300	17,280	246	306,240	16,240	\$3.57
Engine Co. 7	216	60,000	613	745,680	42,305	\$3.06
Engine Co. 8	261	10,080	124	169,620	6,651	\$3.17
Engine Co. 9	268	10,476	132	175,680	7,678	\$3.38
Ready Reserve Building	63	16,442	50	42,580	5,246	\$0.94

SOURCE TABLE 4

**Libraries**

<b>District Library Facility</b>	<b>Weather Normalized, Source Energy Use Intensity (EUI) (kBtu/sq ft)</b>	<b>Total Floor Space (sq ft)</b>	<b>Total GHG Emissions (MtCO<sub>2</sub>e)</b>	<b>Site Electric Use (kWh)</b>	<b>Site Natural Gas Use (therms)</b>	<b>Energy Cost US \$ (per sq ft)</b>
<b>Capital View Library</b>	269	21,000	258	301,320	19,109	\$3.00
<b>Chevy Chase Library</b>	232	24,618	272	380,280	14,032	\$2.86
<b>Cleveland Park Library</b>	81	21,318	77	72,802	7,361	\$1.99
<b>Lamond-Riggs Library</b>	341	17,927	276	338,400	18,858	\$2.89
<b>Martin Luther King Jr. Library</b>	334	400,000	6,098	11,736,752	0	\$3.20
<b>Northeast Library</b>	316	13,900	206	292,160	10,119	\$3.08
<b>Palisades Library</b>	198	20,110	188	244,800	11,371	\$2.60
<b>Petworth Library</b>	276	19,304	250	347,040	13,052	\$2.89
<b>Shepherd Park Library</b>	236	19,000	207	345,120	5,191	\$2.53
<b>South West Library</b>	255	21,600	259	351,240	14,362	\$2.71
<b>West End Library</b>	220	20,700	211	338,960	6,522	\$2.72
<b>Woodridge Library</b>	238	20,812	248	268,480	20,244	\$3.20

## SOURCE TABLE 5

**Parks and Recreation Buildings**

<b>District Parks and Recreation Facility</b>	<b>Weather Normalized, Source Energy Use Intensity (EUI) (kBtu/sq ft)</b>	<b>Total Floor Space (sq ft)</b>	<b>Total GHG Emissions (MtCO<sub>2</sub>e)</b>	<b>Site Electric Use (kWh)</b>	<b>Site Natural Gas Use (therms)</b>	<b>Energy Cost US \$ (per sq ft)</b>
Anacostia Rec Ctr	511	11,643	273	385,691	13,651	\$7.67
Banneker Rec Ctr	157	12,400	93	108,599	6,933	\$1.99
Benning Stoddert Rec Ctr	121	12,180	65	1,423	12,102	\$1.77
Chevy Chase Comm Ctr	374	13,947	234	246,092	20,006	\$4.95
Columbia Hgts Comm Ctr	74	47,395	156	22,726	27,066	\$0.81
Emery Rec Ctr	318	20,230	291	316,103	23,870	\$3.88
Fort Davis Rec Ctr	413	13,555	255	490,855	na	\$3.74
Harry Thomas Rec Ctr	398	10,000	183	350,450	na	\$3.00
Hillcrest Rec Ctr	325	21,003	288	552,511	na	\$3.65
Kennedy Rec Ctr	284	17,500	226	333,481	9,947	\$3.33
King Greenleaf Rec Ctr	323	28,890	425	754,527	6,156	\$3.58
Lamond Rec Ctr	374	14,738	250	421,208	5,866	\$3.12
Langdon Rec Ctr	348	22,206	353	560,791	11,529	\$3.88
North Michigan Park	281	15,224	193	249,605	11,866	\$3.44
Riggs Lasalle Rec Ctr	338	15,000	229	326,427	11,234	\$3.82
Sherwood Rec Ctr	220	22,000	290	354,408	7,776	\$2.55
Takoma Rec Ctr	470	43,900	944	1,124,766	67,576	\$5.89
Therapeutic Ctr	487	28,861	657	963,426	29,366	\$4.96
Trinidad Rec Ctr	218	20,600	204	309,770	8,045	\$2.83
Turkey Thicket Rec Ctr	514	30,000	702	1,351,835	na	\$5.23
Wm. Rumsey Aquatic Ctr	na	19,600	na	na	na	\$6.18

## SOURCE TABLE 6

**DC Public Schools**

District School Facility	FY 2009 Energy Rating Score	Weather Normalized, Source Energy Use Intensity (EUI) (kBtu/sq ft)	Total Floor Space (sq ft)	Total GHG Emissions (MtCO2e)	Site Electric Use (kWh)	Site Natural Gas Use (therms)	Energy Cost US \$ (per sq ft)
Dunbar Senior High	na	na	343,400	na	na	na	\$2.48
Eastern Senior High	na	na	288,800	na	na	na	\$1.61
Eaton Elementary	na	na	49,100	na	na	na	\$2.38
Ferebee-Hope Elementary	na	na	193,800	na	na	na	\$3.12
Fletcher-Johnson Elementary	na	na	302,000	na	na	na	\$2.88
Hamilton Junior High	na	na	180,700	na	na	na	\$1.94
Hine Junior High	na	na	131,300	na	na	na	na
Janney Elementary	na	na	43,400	na	na	na	\$2.31
Jefferson Junior High	na	na	109,000	na	na	na	\$2.84
Key Elementary	na	na	17,400	na	na	na	\$6.44
Lewis Elementary	na	na	49,500	na	na	na	\$1.72
Moten Elementary	na	na	99,700	na	na	na	\$0.76
Shaw Junior High	na	na	230,400	na	na	na	\$2.05
Turner Elementary	na	na	77,500	na	na	na	\$1.08
Tyler Elementary	na	na	69,600	na	na	na	\$2.14
Wilkinson Elementary	na	na	144,900	na	na	na	\$2.75
Winston Education Center	na	na	137,700	na	na	na	\$2.22
Barnard Elementary	1	290	72,500	958	1,844,177	na	\$2.19
Bell-Lincoln Multi-Cultural	1	306	325,217	4,607	6,043,094	275,796	\$3.75
Birney Elementary	1	188	86,800	783	749,828	73,979	\$2.45
Deal Junior High	1	380	143,700	2,497	4,686,656	11,563	\$2.68
Eliot Junior High	1	240	155,100	1,688	1,682,145	153,087	\$2.73
Luke C Moore Academy	1	686	27,482	872	1,295,954	37,306	\$7.40
Orr Elementary	1	396	75,900	1,369	2,197,704	42,713	\$2.36
Oyster Elementary	1	459	47,984	1,029	1,147,262	81,408	\$6.01
Park View Elementary	1	214	82,200	849	766,668	84,623	\$2.75
Powell Elementary	1	244	38,500	451	426,867	43,154	\$2.76
School Without Walls	1	280	35,680	455	875,620	0	\$3.53
Shaed Elementary	1	302	67,200	940	1,538,354	26,442	\$2.52
Sharpe Health Annex Charter	1	989	17,413	776	921,465	55,801	\$10.47
Slowe Elementary	1	208	54,500	514	476,141	50,011	\$2.25

<b>Stoddert Elementary</b>	1	228	17,400	172	183,112	14,450	\$3.05
<b>West Elementary</b>	1	384	69,600	1,213	1,864,646	45,955	\$3.58
<b>Brightwood Elementary</b>	2	354	78,036	1,250	1,910,828	48,412	\$3.91
<b>Green Elementary</b>	2	209	77,700	767	957,647	50,689	\$1.80
<b>Hearst Elementary</b>	2	263	17,400	206	234,114	15,908	\$2.70
<b>LaSalle Elementary</b>	2	124	63,000	371	440,512	26,705	\$1.60
<b>Stanton Elementary</b>	2	215	83,800	823	597,377	96,278	\$2.57
<b>Garnet Patterson Junior High</b>	3	285	82,700	1,066	1,447,646	58,924	\$2.31
<b>Marie Reed Elementary</b>	4	233	162,700	1,731	3,331,214	63.4	\$2.62
<b>Simon Elementary</b>	4	224	66,200	719	610,791	75,438	\$2.75
<b>Sousa Junior High</b>	4	230	160,000	1,670	2,210,646	97,954	\$2.48
<b>Noyes Elementary - GA</b>	5	345	51,500	805	1,134,971	40,524	\$3.39
<b>Peabody Elementary</b>	5	221	37,800	378	271,120	44,473	\$2.72
<b>Ketcham Elementary</b>	6	254	88,300	1,028	576,531	136,853	\$3.18
<b>Thomson Elementary</b>	6	287	67,000	882	1,600,600	9,394	\$2.27
<b>Cleveland Elementary</b>	7	365	37,100	616.71	1,171,034	1,554	\$4.05
<b>Randle-Highland Elementary</b>	7	244	75,500	839	1,378,684	23,070	\$2.74
<b>Ronald Brown Junior High</b>	7	237	156,000	1,703	1,630,543	160,841	\$3.07
<b>Ludlow-Taylor Elementary</b>	8	265	66,900	803	963,617	57,256	\$2.49
<b>Duke Ellington Senior High</b>	11	147	167,500	1,123	2,055,223	10,314	\$2.18
<b>Seaton Elementary</b>	13	260	65,000	771	1,083,726	39,009	\$2.01
<b>Thomas Elementary</b>	13	141	87,600	599	718,510	42,331	\$1.94
<b>Langdon Elementary</b>	15	199	101,400	913	953,636	78,387	\$2.43
<b>Plummer Elementary</b>	15	162	69,400	547	397,479	63,917	\$2.18
<b>Tubman Elementary</b>	15	249	66,600	751	809,069	62,048	\$2.69
<b>Hyde Elementary</b>	18	240	20,000	217	280,499	13,374	\$2.68
<b>Smothers Elementary</b>	18	174	43,000	358	375,360	30,612	\$2.06
<b>Truesdell Elementary</b>	18	228	69,600	719	724,517	64,430	\$2.80
<b>Leckie Elementary</b>	19	218	65,000	647	788,709	44,412	\$2.46
<b>Bunker Hill Elementary</b>	20	155	69,400	491	851,350	9,120	\$3.25
<b>Hendley Elementary</b>	20	134	73,200	466	546,596	34,155	\$1.73
<b>Kelly Miller Middle</b>	20	229	115,000	1,238	1,837,682	53,229	\$2.96
<b>M.L. King Elementary</b>	20	201	65,500	595	565,309	56,682	\$2.15
<b>Malcolm X Elementary</b>	20	172	110,800	918	1,179,656	57,420	\$2.25
<b>Stuart-Hobson Junior High</b>	21	197	105,900	946	675,757	111,808	\$2.53
<b>Kenilworth Elementary</b>	22	162	57,100	419	332,537	46,341	\$1.88
<b>Takoma Education Center (Elementary)</b>	24	126	119,000	712	1,369,533	0	\$1.37
<b>Houston Elementary</b>	25	142	59,900	405	487,297	28,455	\$1.76
<b>Ross Annex</b>	25	179	22,400	181	196,193	14,828	\$2.26
<b>Gibbs Elementary</b>	27	124	64,800	369	552,987	15,300	\$1.30

<b>Goding/Prospect Learning Center (Elementary)</b>	27	143	59,200	399	533,003	22,885	\$1.86
<b>River Terrace Elementary</b>	28	144	62,800	422	334,251	46,618	\$1.99
<b>Raymond Elementary</b>	29	189	73,600	627	852,852	34,592	\$1.86
<b>Garfield Elementary</b>	33	129	58,908	365	348,484	34,484	\$1.80
<b>M C Terrell Elementary</b>	35	177	112,000	921	1,336,667	42,611	\$2.23
<b>Francis Junior High</b>	36	194	95,100	825	770,903	79,853	\$2.23
<b>Mamie D. Lee School</b>	38	180	65,000	549	632,083	41,470	\$2.40
<b>Maury Elementary</b>	40	202	46,800	427	339,494	47,170	\$2.56
<b>Burrville Elementary</b>	42	145	95,000	629	1,183,680	2,533	\$1.76
<b>Emery Elementary</b>	44	197	63,800	574	1,104,101	0	\$1.41
<b>Steven Elementary</b>	45	76	39,500	140	210,021	5,747	\$1.05
<b>Garrison Elementary</b>	46	199	60,200	540	637,230	39,264	\$1.77
<b>H.D. Cooke Elementary</b>	46	142	86,000	556	1,069,200	0	\$1.18
<b>Lafayette Elementary</b>	48	97	113,600	515	990,965	0	\$1.15
<b>Hart Junior High</b>	49	132	210,700	1,327	1,369,556	115,754	\$1.65
<b>Harrison Elementary</b>	50	104	48,900	293	246,377	330	\$1.18
<b>Miner Elementary</b>	51	186	76,900	650	974,325	26,994	\$2.15
<b>Shadd Elementary</b>	53	117	72,100	386	336,223	39,654	\$1.41
<b>Whittier Elementary</b>	53	184	66,600	554	469,125	58,401	\$2.32
<b>Kimball Elementary</b>	54	148	83,400	559	417,103	64,319	\$1.99
<b>Woodrow Wilson Senior High</b>	57	160	271,300	1,879	1,768,488	180,374	\$1.92
<b>Coolidge Senior High</b>	62	123	271,300	1,515	2,735,059	17,563	\$2.08
<b>Savoy Elementary</b>	63	115	99,975	525	637,453	36,466	\$1.42
<b>Shepherd Elementary</b>	73	112	79,700	400	455,332	30,763	\$1.37
<b>Mann Elementary</b>	76	101	43,806	199	276,741	10,413	\$1.24
<b>Johnson Junior High</b>	78	105	182,500	878	1,670,937	1,861	\$0.82
<b>MacFarland Junior High</b>	87	90	110,000	454	816,537	5,610	\$0.81
<b>Watkins Elementary</b>	88	91	69,300	286	551,568	0	\$0.95
<b>Drew Elementary</b>	90	91	72,800	302	531,929	4,825	\$1.89
<b>Burroughs Elementary</b>	95	95	63,900	256	411,443	8,010	\$3.09
<b>McGogney Elementary</b>	96	49	67,600	152	291,947	0	\$0.50
<b>S. Montgomery Elementary</b>	96	73	73,700	244	470,231	0	\$0.37
<b>Cardozo Senior High</b>	98	75	355,400	1,206	2,041,522	27,226	\$2.60
<b>Davis Elementary</b>	98	77	71,100	250	419,631	6,073	\$2.08
<b>Douglass Junior High</b>	100	5	137,700	33	0	6,205	\$0.61

## SOURCE TABLE 7

**Warehouses and Other Facilities**

District Warehouse or "Other" Facility	Weather Normalized, Source Energy Use Intensity (EUI) (kBtu/sq ft)	Total Floor Space (sq ft)	Total GHG Emissions (MtCO <sub>2</sub> e)	Site Electric Use (kWh)	Site Natural Gas Use (therms)	Energy Cost US \$ (per sq ft)
CCNV Shelter	104	350,000	1,742	3,126,002	22,160	\$1.25
MPD First District Headquarters (former Bowen Elementary)	na	70,800	na	na	na	\$2.86
Central Maintenance Facility and Lab	311	209,979	2,986	5,037,690	69,192	na
Central Operations Building	830	72,960	2,761	5,314,600	na	na
Fueling Station	593	78,550	2,579	1,734,436	267,386	\$8.85
Southeast Tennis & Learning Center	778	15,000	628	377,132	71,319	\$10.88
OCTO Warehouse and Data Center	1,454	29,961	1,986	3,821,652	na	\$15.96
Unified Communications Center	15	138,000	94	180,840	na	\$0.19
DC Armory	128	588,000	3,539	4,674,170	208,630	\$1.51
MPD Special Operations	962	10,530	465	841,800	5,100	\$8.59
MPD Youth Center	335	10,762	170	224,280	10,052	\$4.53
DPW Maintenance Shop	591	78,550	2,254	1,791,280	248,710	\$8.53
DPW Sweeper Equipment Storage Center	17	64,998	50	96,840	na	\$0.21
MPD Fleet Maintenance Facility	59	144,000	397	611,840	14,755	\$0.58
DC Records Center	205	21,875	208	325,333	7,385	\$2.25
Warehouse at 2200 Adams Place, NE	160	178,015	1,324	1,984,920	54,919	\$1.71
DPR Warehouse and FM Operations	340	16,290	251	354,040	12,599	\$4.05
DC Jail	287	449,295	5,872	11,300,781	na	\$3.02



SOURCE TABLE 8

**DC Water**

<b>DC Water Facility</b>	<b>Weather Normalized, Source Energy Use Intensity (EUI) (kBtu/sq ft*)</b>	<b>Total Floor Space (sq ft)</b>	<b>Total GHG Emissions (MtCO<sub>2</sub>e)</b>	<b>Site Electric Use (kWh)</b>	<b>Site Natural Gas Use (therms)</b>	<b>Energy Cost US \$ (per sq ft)</b>
<b>Central Maintenance Facility and Lab</b>	311	209,979	2,986	5,037,690	69,192	na
<b>Central Operations Building</b>	830	72,960	2,761	5,314,600	na	na