



June 30, 2020

Metropolitan Government Clerk's Office  
Metropolitan Courthouse  
1 Public Square, Suite 205  
Nashville, TN 37201

Dear Honorable Members of the Metropolitan Government of Nashville & Davidson County Council:

In accordance with Section 16.60.110 of the Metropolitan Code, the Department of General Services is herewith providing an annual report for calendar year 2019 describing the environmental performance and operation of the 21 LEED® (i.e., "high performance") buildings that the department manages.

The annual report requirements for LEED® buildings include:

1. The LEED® building's energy and water use compared to a non-LEED® building of similar size and use within the area of the metropolitan government;
2. The LEED® building's estimated energy and water cost savings compared to a non-LEED® building of similar size and use within the area of the metropolitan government.

The high performance buildings that are presented in this annual report are those for which a minimum of one year of energy data is available and include the following:

High Performance Building	Opening Date	LEED® level
Fire Station #3	October 2012	LEED® Gold
Fire Station #11	January 2014	LEED® Gold
Fire Station #19	December 2015	LEED® Platinum
Fire Station #20	October 2015	LEED® Silver
Fire Station #21	November 2013	LEED® Silver
Fire Station #30	June 2013	LEED® Silver
Fire Station #31	September 2012	LEED® Gold
Fire Station #33	April 2013	LEED® Silver
Fire Station #35	September 2011	LEED® Silver
Midtown Hills Police Precinct	August 2014	LEED® Gold
West Police Precinct	December 2011	LEED® Gold
Madison Police Precinct/Crime Lab	January 2014	LEED® Silver
Howard Office Building	December 2010	LEED® Silver
Lindsley Hall	April 2010	LEED® Silver
MAC - Douglass Head Start School	February 2014	LEED® Silver
Highland Heights School	August 2014	LEED® Silver

Bellevue Library	January 2015	LEED® Gold
Southeast Davidson Regional Community Center	October 2014	LEED® Gold
Lentz Health Center	July 2014	LEED® Silver
Ford Ice Center	September 2014	LEED® Gold
Metro Police HQ and Family Safety Center	January 2019	LEED® Gold

The Energy Utilization Index (EUI) of each LEED® building was calculated and compared to similar size and use non-LEED® buildings as well as national benchmarks. The EUI is expressed as energy consumed in one year (measured in thousands of British thermal units or kBtu) divided by the total square footage of the building. A building's EUI varies due to factors such as age, use, controls, envelope efficiency, climate, etc. Generally, a low EUI signifies good energy performance, but certain property types will always have a higher EUI than others. For example, Police Precincts that operate 24/7 will have a higher EUI than office buildings.

The EUI of each Metro LEED® building was also compared to a national benchmark for that type of building. National benchmark EUI data was obtained from the U.S. Department of Energy's 2012 Commercial Building Energy Consumption Survey (CBECS). CBECS is a national sample survey of U.S. commercial buildings which does not take into account varying climate, but does provide an average EUI by building type for all buildings surveyed.

In summary, for the 21 high performance buildings reviewed in this report, Metro General Services in 2019 avoided energy costs of more than \$589,000 compared to the non-LEED® comparable buildings.

Of the 19 facilities where non-LEED® comparable buildings with water consumption readings were available, the high performance buildings saved a total of more than 11,224,000 gallons of water.

Please feel free to contact me with any questions.

Sincerely,



Nancy Whittemore

Director, Department of General Services

# Metro Department of General Services' Summary Report

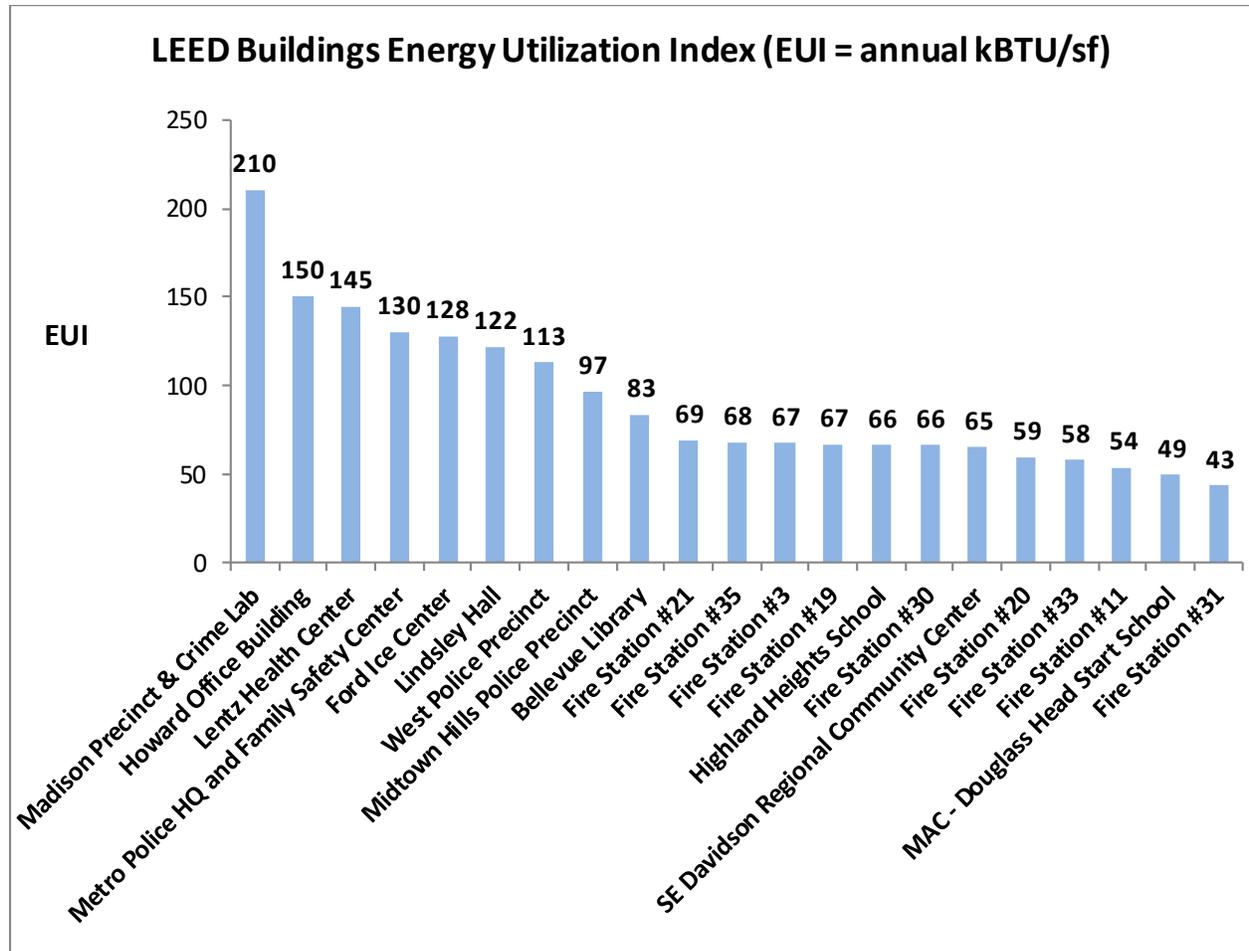
For calendar year 2019, Metro spent \$2,488,985 on energy (\$2,159,520 for electricity, \$329,465 for natural gas) and \$213,112 on water for the 21 LEED® buildings with a total area of 1,038,601 square feet. The utility consumption and cost per building are as follows:

High Performance Building	Building Sq. Ft.*	Electricity (kWh)	Electricity cost	Gas (therms)	Gas cost	Water (gallons)	Water cost
Fire Station #3	17,469	286,022	\$28,834.07	2,015	\$2,350.00	203,470	\$4,434.86
Fire Station #11	15,587	200,215	\$23,708.33	1,522	\$1,920.95	126,421	\$3,993.51
Fire Station #19	20,142	305,994	\$28,718.74	2,979	\$3,255.74	190,753	\$5,577.81
Fire Station #20	13,573	179,720	\$21,693.98	1,902	\$2,283.08	80,790	\$2,441.04
Fire Station #21	19,116	278,613	\$28,752.01	3,659	\$3,946.92	198,234	\$5,029.90
Fire Station #30	14,435	217,446	\$24,691.08	2,130	\$2,474.80	135,397	\$4,889.67
Fire Station #31	17,311	188,615	\$22,525.57	1,045	\$1,489.13	93,880	\$1,104.52
Fire Station #33	15,533	200,174	\$23,535.75	2,134	\$2,535.19	80,790	\$3,097.32
Fire Station #35	11,586	139,120	\$15,800.07	3,107	\$3,379.60	155,595	\$5,047.20
Midtown Hills Police Precinct	21,846	605,000	\$60,154.12	481	\$976.22	178,657	\$6,089.96
West Police Precinct	25,698	835,600	\$76,206.28	499	\$988.76	90,514	\$6,548.83
Howard Office Building	130,221	2,826,988	\$271,867.61	99,114	\$31,635.57	4,829,968	\$43,097.64
Lindsley Hall	34,198	455,707	\$46,171.24	26,029	\$8,307.98	1,268,422	\$11,318.09
MAC- Douglass Head Start School	26,625	335,280	\$42,543.59	1,659	\$2,090.94	424,145	\$7,432.92
Highland Heights School	92,459	1,658,400	\$167,004.34	4,600	\$4,819.44	508,675	\$11,242.13
Bellevue Library	24,912	601,080	\$59,087.10	262	\$810.85	1,813,746	\$12,017.92
SE Davidson Regional Community Center	80,600	1,315,200	\$128,056.02	7,542	\$7,576.84	2,163,741	\$18,575.88
Lentz Health Center	114,293	2,545,800	\$251,090.90	78,650	\$70,918.32	1,543,229	\$19,783.38
Ford Ice Center	92,108	2,741,700	\$260,735.06	24,318	\$22,500.93	2,472,679	\$21,228.13
Madison Precinct & Crime Lab	84,420	3,480,600	\$326,794.05	58,886	\$53,904.00	618,638	\$3,320.61
Metro Police HQ and Family Safety Center	166,469	3,008,045	\$251,549.75	113,938	\$101,299.51	2,960,038	\$16,840.77

\* General Services conducted a second poly-line process to generate sq. ft. values for individual rooms and offices resulting in slight changes in the values for the overall building sq. ft compared to previous year reports. The changes had minimal impact on EUI calculations.

Building names are used as listed in the Department of General Services Building Operations Service Manual. Names may not always reflect the use of the building, such as SE Davidson Regional Community Center which consists of a community center and a library.

The following chart shows the energy performance of the LEED® buildings. A building’s Energy Utilization Index, or EUI, varies according to factors such as age, use, controls, envelope efficiency, etc.



This report will compare the EUI of these LEED® buildings to local benchmarks as well as national benchmarks. Local comparison buildings were chosen according to the following requirements:

- Of similar size as the comparable LEED® building,
- Serve a similar function as the comparable LEED® building,
- Geographically located within Davidson County, and
- Cannot be a LEED® or high performance building.

National benchmark data was obtained from the Department of Energy's 2012 Commercial Building Energy Consumption Survey (CBECS). CBECS is a national sample survey of U.S. commercial buildings and provides the gross energy utilization index for the sum of major fuels for different building types.

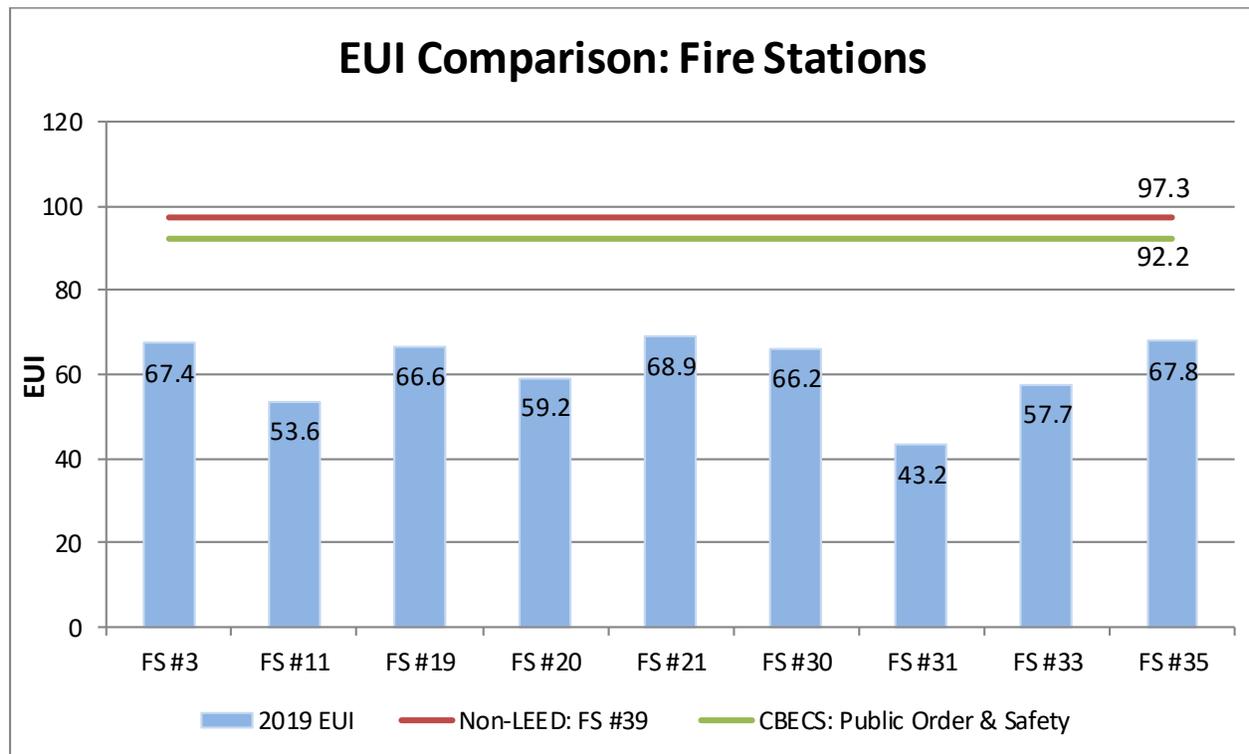
The following comments pertain to the energy cost comparisons done for each group of buildings:

- Commercial electricity bills include both electricity usage charges and electricity demand charges. Best practice is to calculate *energy cost per square foot* by excluding the electricity demand charges. Energy costs for this calculation thus consist of the sum of electricity usage charges and natural gas charges.
- For the CBECS benchmark, the mean square footage per building is shown as a comparison. The energy cost for the CBECS benchmark is derived from the sum of the major fuel expenditures in millions of dollars, divided by the total floor space in millions of square feet for the sample group of buildings. This is not meant to be an accurate reflection of energy cost but a reference point.
- The annual savings were calculated by comparing the BTUs for the LEED® building and the comparison building (for the same square footage), and multiplying the difference by the average cost per BTU. The annual savings are thus dependent on the EUI of the buildings and do not necessarily correlate to the energy cost per square foot.

## Fire Stations

### Energy Consumption

Energy consumption for the nine LEED® Fire Stations is compared in the graph below to the non-LEED® Fire Station #39 as well as to the national CBECS benchmark for a similar type building. As the graph shows, General Services’ LEED® fire stations performed better than both the comparable non-LEED® building and the national benchmark.



Energy costs for the nine LEED® Fire Stations are compared in the following table to the non-LEED® Fire Station #39 as well as to the national CBECS benchmark for a similar type building (Public Order & Safety).

	Building sf	Energy Cost/sf	EUI	Annual savings compared to non-LEED® FS #39	Annual savings compared to national benchmark
FS #3	17,469	\$1.62	67.4	\$13,813.46	\$11,474.39
FS #11	15,587	\$1.50	53.6	\$20,881.48	\$18,463.75
FS #19	20,142	\$1.40	66.6	\$16,435.22	\$13,722.64
FS #20	13,573	\$1.64	59.2	\$15,418.92	\$13,371.03
FS #21	19,116	\$1.54	68.9	\$13,476.94	\$11,076.61
FS #30	14,435	\$1.74	66.2	\$12,772.04	\$10,695.97
FS #31	17,311	\$1.27	43.2	\$30,033.42	\$27,223.88
FS #33	15,533	\$1.53	57.7	\$17,865.78	\$15,581.86
FS #35	11,586	\$1.52	67.8	\$8,337.94	\$6,907.51
Non-LEED®: FS #39	9,595	\$1.73	97.3		
CBECS: Public Order & Safety	17,200	\$1.92	92.2		
<b>Total</b>				<b>\$149,035.19</b>	<b>\$128,517.63</b>

### Water Consumption

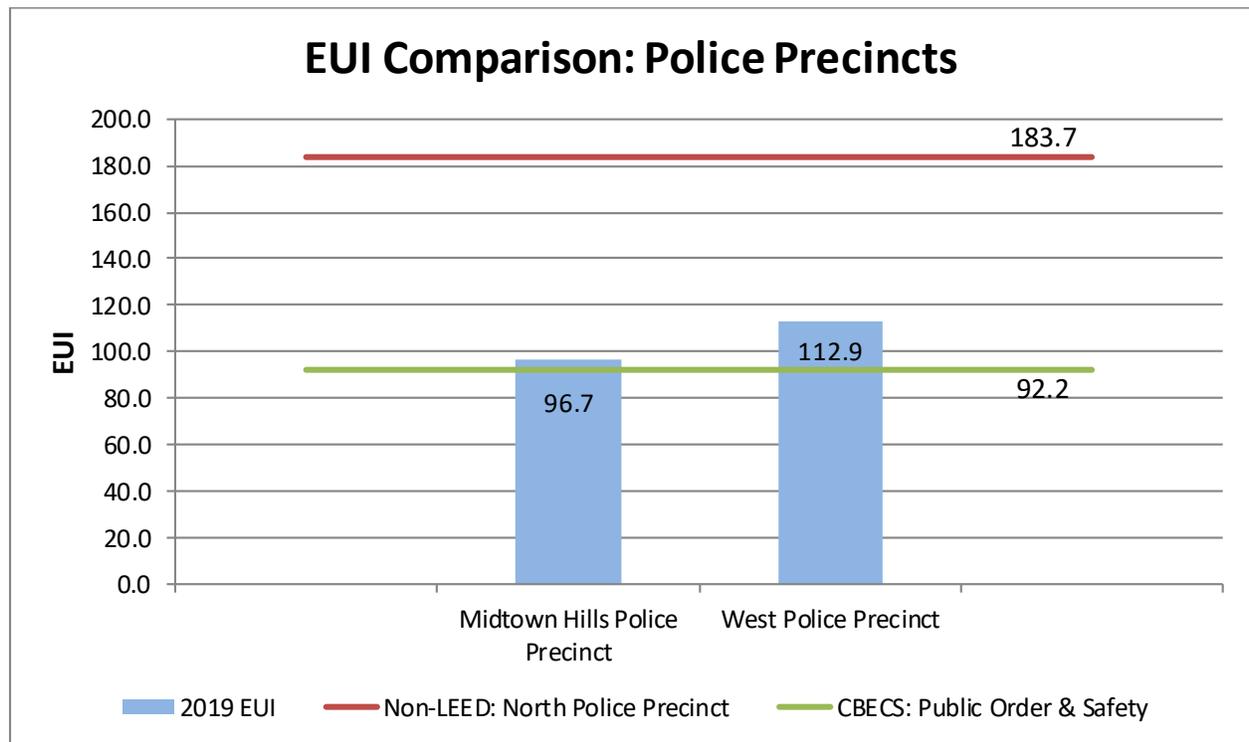
Water consumption and comparisons to the non-LEED® Fire Station #39 are shown in the table below. The water intensity (gallons used/square feet) is compared, as well as the water usage after accounting for the different sizes in buildings. For instance, if Fire Station #39 was the same size as Fire Station #31, Fire Station #31 would use 74,809 gallons less water than Fire Station #39 during calendar year 2019.

	Building sf	Water Consumption (gallons)	Water usage/sf	Water savings compared to FS #39 (gallons)
Fire Station #3	17,469	203,470	11.6	-33,240
Fire Station #11	15,587	126,421	8.1	25,469
Fire Station #19	20,142	190,753	9.5	5,524
Fire Station #20	13,573	80,790	6.0	51,475
Fire Station #21	19,116	198,234	10.4	-11,955
Fire Station #30	14,435	135,397	9.4	5,267
Fire Station #31	17,311	93,880	5.4	74,809
Fire Station #33	15,533	80,790	5.2	70,574
Fire Station #35	11,586	155,595	13.4	-42,693
Non-LEED® comparable: FS #39	9,595	93,500	9.7	
<b>Total</b>				<b>145,231</b>

## Police Precincts

### Energy Consumption

Energy consumption for the two police precincts is compared in the graph below to the non-LEED® North Police Precinct as well as to the national CBECS benchmark for a similar type building (Public Order and Safety). Madison Police Precinct & Crime Lab is compared separately due to the unique operations of the crime lab.



Energy costs for the two police precincts are compared in the table below to the non-LEED® North Police Precinct as well as to the national CBECS benchmark for a similar type building (Public Order & Safety).

	Building sf	Energy Cost/sf	EUI	Annual savings compared to non-LEED® North PP	Annual savings compared to national benchmark
Midtown Hills Police Precinct	21,846	\$2.04	96.7	\$55,027.72	-\$2,840.65
West Police Precinct	25,698	\$2.15	112.9	\$48,446.84	-\$14,146.24
Non-LEED®: North PP	21,378	\$2.68	183.7		
CBECS: Public Order & Safety	17,200	\$1.92	92.2		
<b>Total</b>				<b>\$103,474.56</b>	<b>-\$16,986.89</b>

- For West Police Precinct, the square footage for the parking garage was not included in the building square footage, but the electricity consumption for the lighting in the parking garage is included in the energy metrics since it is not separately metered.

### *Water Consumption*

Water consumption comparisons to the non-LEED® North Police Precinct are shown in the table below.

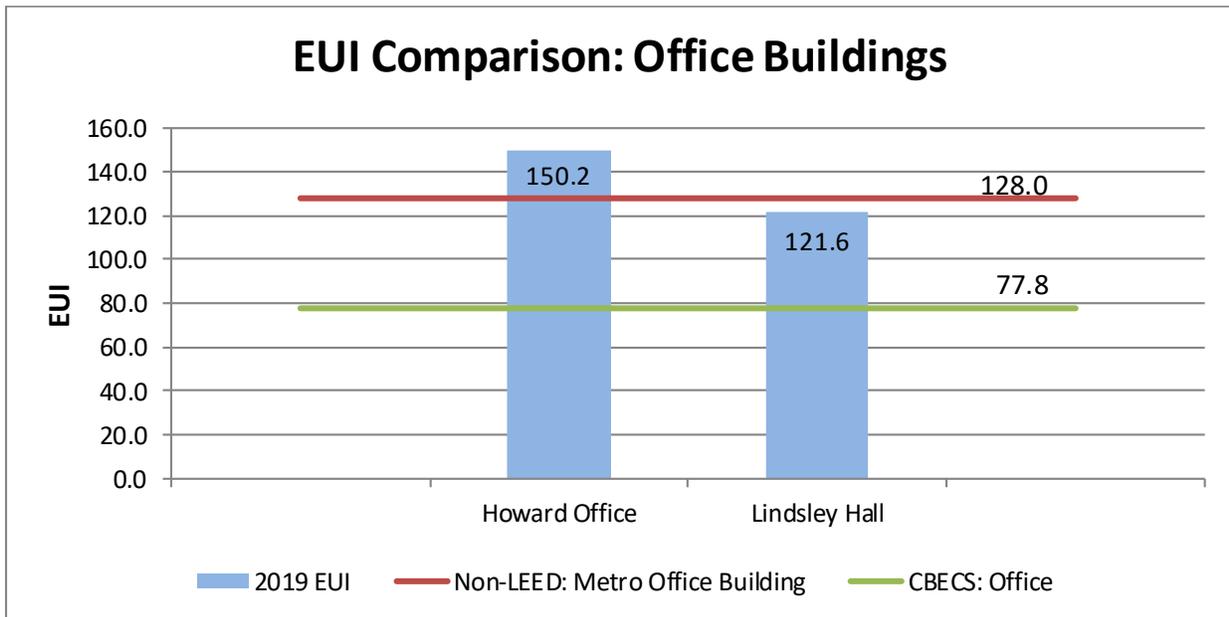
	<b>Building sf</b>	<b>Water Consumption (gallons)</b>	<b>Water usage/sf</b>	<b>Water savings compared to North PP (gallons)</b>
Midtown Hills Police Precinct	21,846	178,657	8.2	35,368
West Police Precinct	25,698	90,514	3.5	161,249
Non-LEED®: North PP	21,378	209,440	9.8	
<b>Total</b>				<b>196,617</b>

- The water used by the Edgehill Community Garden is separately metered and was not included in Midtown Hills water usage.

## Office Buildings

### Energy Consumption

Energy consumption for the two office buildings is compared in the graph below to the non-LEED® Metro Office Building as well as to the national CBECs benchmark for a similar type building.



- Electricity usage of the data centers at Howard Office Building was not included in the calculations.
- The cooling tower electricity is part of the Howard Building but it contributes to Lindsley Hall and Metro Office Building too. The total energy of the cooling tower was divided by square footage per building.

Energy costs for the two office buildings are compared in the following table to the non-LEED® Metro Office Building as well as to the national CBECS benchmark for a similar type building (Office).

	Building sf	Energy Cost/sf	EUI	Annual savings compared to non-LEED® Metro Office Building	Annual savings compared to national benchmark
Howard Office Building	130,221	\$1.55	150.2	-\$44,834.58	-\$146,278.56
Lindsley Hall	34,198	\$1.32	121.6	\$2,876.46	-\$19,617.14
Non-LEED®: Metro Office Building	68,383	\$1.19	128.0		
CBECS: Office	15,800	\$1.93	77.8		
<b>Total</b>				<b>-\$41,958.12</b>	<b>-\$165,895.71</b>

### *Water Consumption*

Water consumption at the two office buildings and comparisons to the non-LEED® Metro Office building are shown in the table below.

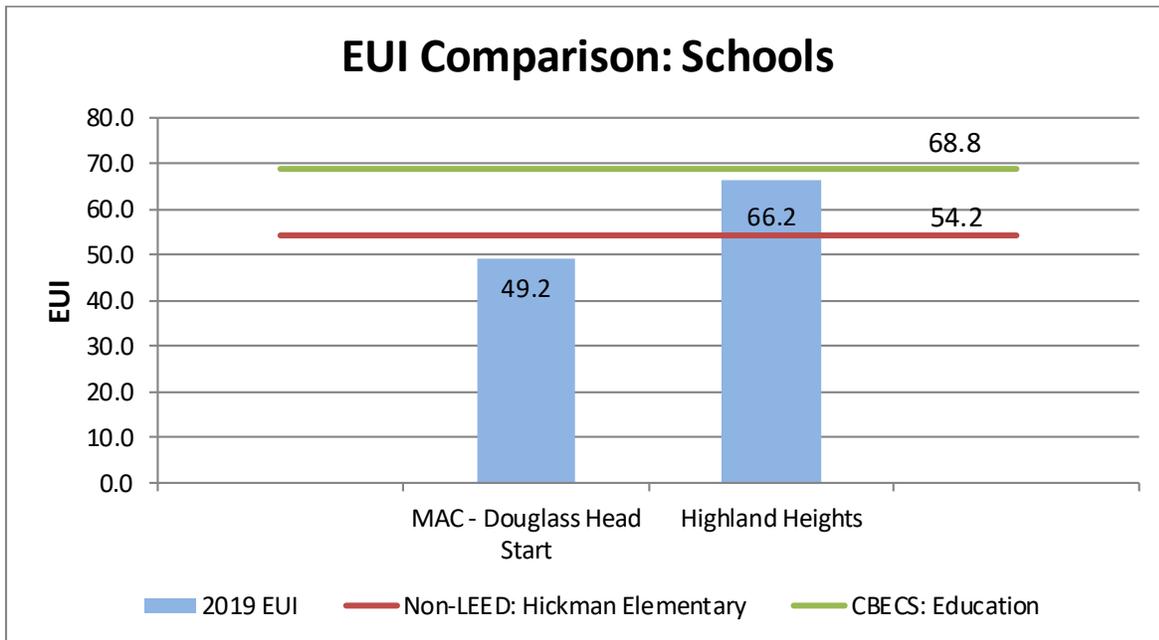
	Building sf	Water Consumption (gallons)
Howard Office	130,221	4,829,638
Lindsley Hall	34,198	1,268,336
Non-LEED®: Metro Office Building	68,383	2,536,190

- The water meters on the Richard H. Fulton Campus are not marked properly and it is not evident which meter is serving which building. Because it is unclear how much water each building is actually consuming, for this analysis water usage is appropriated to each building solely according to square footage. Therefore, this report does not compare the water usage for Lindsley and Howard with the water usage for Metro Office Building.
- At the Richard H. Fulton Campus, a Central Energy Plant provides hot and chilled water to the buildings on campus in order to provide heating and cooling. The cooling tower, boiler plant, chillers and Arctic chillers all draw from the campus water supply. None of these uses are sub-metered and all are closed looped, only adding water when necessary.
- The rule of thumb for a cooling tower is that the rate of evaporation is approximately 1% of the circulation flow for each 10°F of rise between the outlet and inlet across the tower. Industry professionals say that means approximately 100 gallons per minute can evaporate in the summertime from the cooling tower.

## Schools

### Energy Consumption

Energy consumption for the two schools is compared in the graph below to the non-LEED® Hickman Elementary as well as to the national CBECS benchmark for a similar type building.



Energy costs for the two schools are compared in the following table to the non-LEED® Hickman Elementary, as well as to the national CBECS benchmark for a similar type building (Education).

	Building sf	Energy Cost /sf	EUI	Annual savings compared to non-LEED® Hickman Elementary	Annual savings compared to national benchmark
MAC - Douglass Head Start	26,625	\$1.17	49.2	\$4,563.28	\$17,784.79
Highland Heights	92,459	\$1.14	66.2	-\$31,022.88	\$6,816.22
Non-LEED®: Hickman Elementary	71,466	\$1.03	54.2		
CBECS: Education	31,500	\$1.37	68.8		
<b>Total</b>				<b>-\$26,459.61</b>	<b>\$24,601.02</b>

### *Water Consumption*

Water consumption at the two schools and comparisons to the non-LEED® Hickman Elementary building are shown in the table below.

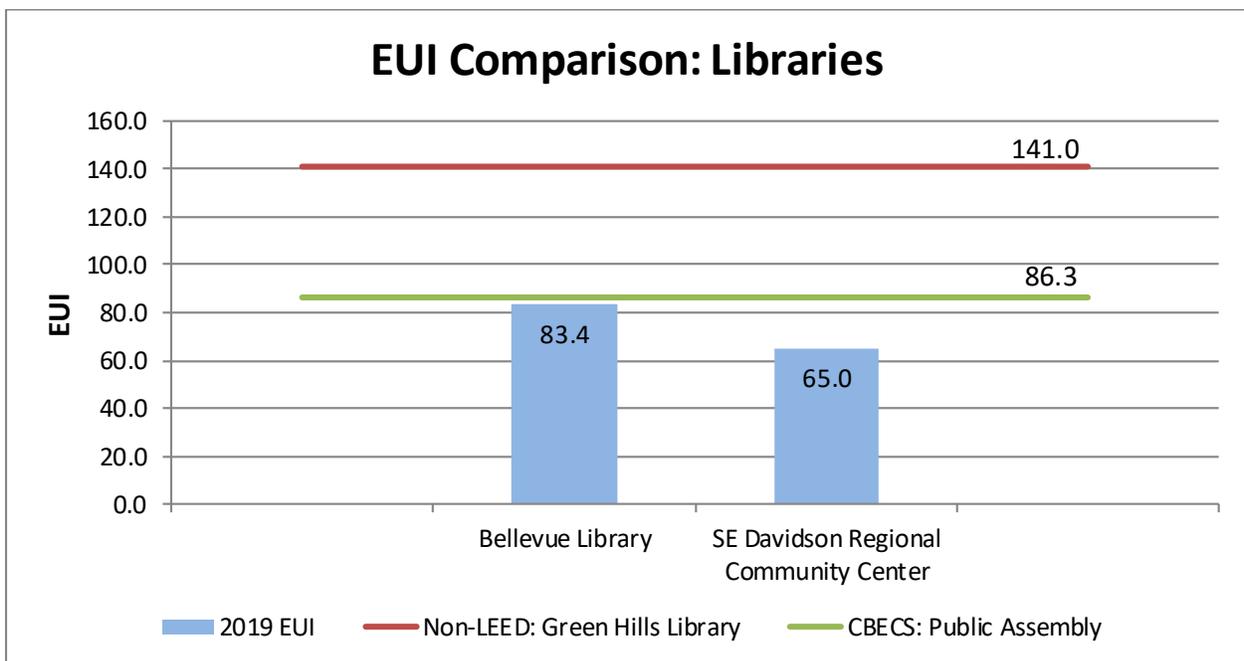
	<b>Building sf</b>	<b>Water Consumption (gallons)</b>	<b>Water usage/sf</b>	<b>Water savings compared to Hickman (gallons)</b>
MAC - Douglass Head Start	26,625	424,145	15.9	-42,895
Highland Heights	92,459	508,675	5.5	815,265
Non-LEED®: Hickman Elementary	71,466	1,023,335	14.3	
<b>Total</b>				<b>772,370</b>

## Libraries

### Energy Consumption

Energy consumption for the two libraries is compared in the graph below to the non-LEED® Green Hills Library as well as to the national CBECS benchmark for a similar type building.

The Southeast Davidson Regional Community Center houses a community center as well as a library. For this report, the building is compared to a non-LEED® library.



Energy costs for the two libraries are compared in the table below to the non-LEED® Green Hills Library as well as to the national CBECS benchmark for a similar type building (Public Assembly).

	Building sf	Energy Cost /sf	EUI	Annual savings compared to non-LEED® Green Hills Library	Annual savings compared to national benchmark
Bellevue Library	24,912	\$1.76	83.4	\$41,366.91	\$2,099.97
SE Davidson Regional Community Center	80,600	\$1.11	65.0	\$158,350.93	\$44,354.38
Non-LEED®: Green Hills Library	25,540	\$2.00	141.0		
CBECS: Public Assembly	15,800	\$1.84	86.3		
<b>Total</b>				<b>\$199,717.84</b>	<b>\$46,454.34</b>

### *Water Consumption*

Water consumption at the two library buildings and comparisons to the non-LEED® Green Hills library are shown in the table below.

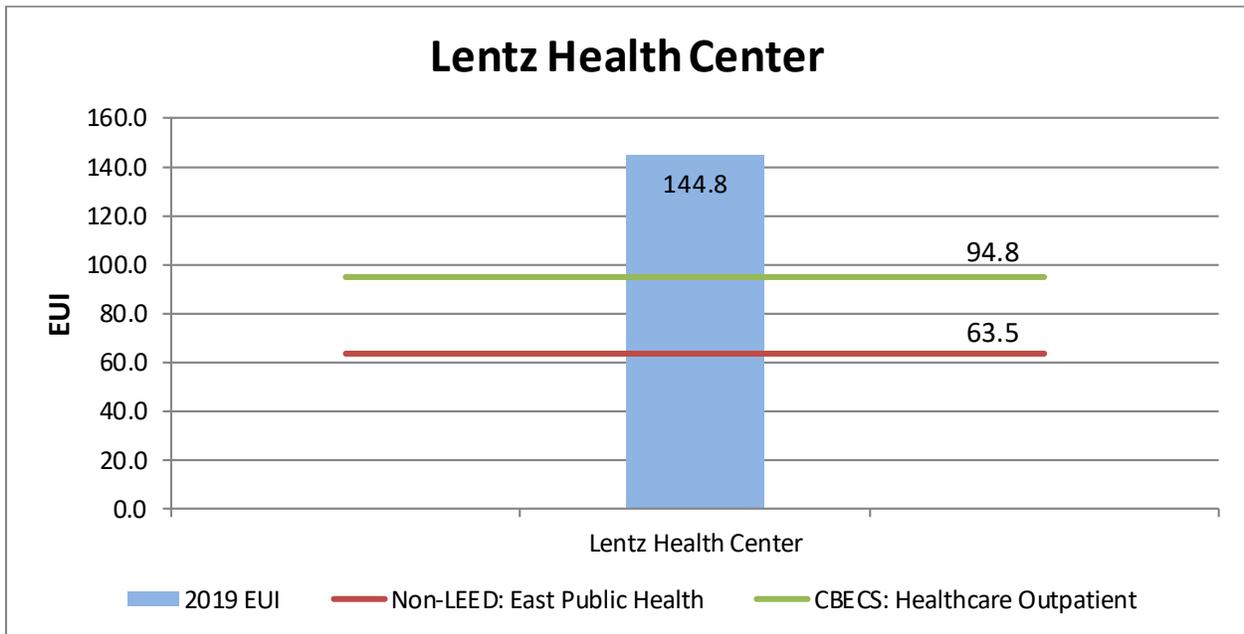
	<b>Building sf</b>	<b>Water Consumption (gallons)</b>	<b>Water usage/sf</b>	<b>Water savings compared to Green Hills (gallons)</b>
Bellevue Library	24,912	1,813,746	72.8	-1,625,142
SE Davidson Regional Community Center	80,600	2,163,741	26.8	-1,553,536
Non-LEED®: Green Hills Library	25,540	193,358	7.6	
<b>Total</b>				<b>-3,178,678</b>

- The water meter at SE Davidson Regional Community Center is combined with Ford Ice Center. The water usage was split between the two buildings according to square footage. This is not accurate, since water use intensity differs between a community center/library and an ice rink. Without sub-metering, it is difficult to draw an accurate picture of water consumption between the buildings.
- Bellevue Library had very high water usage during the summer of 2019. General Services investigated but could not find a leak. Maintenance placed a lock on the irrigation panel, located on the exterior of the building, so that schedules could not be changed.

## Lentz Health Center

### Energy Consumption

Energy consumption for Lentz is compared in the graph below to the non-LEED® East Public Health as well as to the national CBECS benchmark for a similar type building.



Lentz has a high energy usage for operations, since there are multiple clinics within the building, special coolers to keep vaccines, and specialized air handling equipment to accommodate tuberculosis areas. It is difficult to find a comparable public service building in Davidson County of similar size.

The energy cost for Lentz is compared in the table below to the non-LEED® East Public Health as well as to the national CBECS benchmark for a similar type building (Healthcare Outpatient).

	Building sf	Energy Cost /sf	EUI	Annual savings compared to non-LEED® East Public Health	Annual savings compared to national benchmark
Lentz Health Center	114,293	\$1.93	144.8	-\$180,904.55	-\$111,211.96
Non-LEED®: East Public Health	13,800	\$1.74	63.5		
CBECS: Healthcare Outpatient	12,100	\$2.08	94.8		

### *Water Consumption*

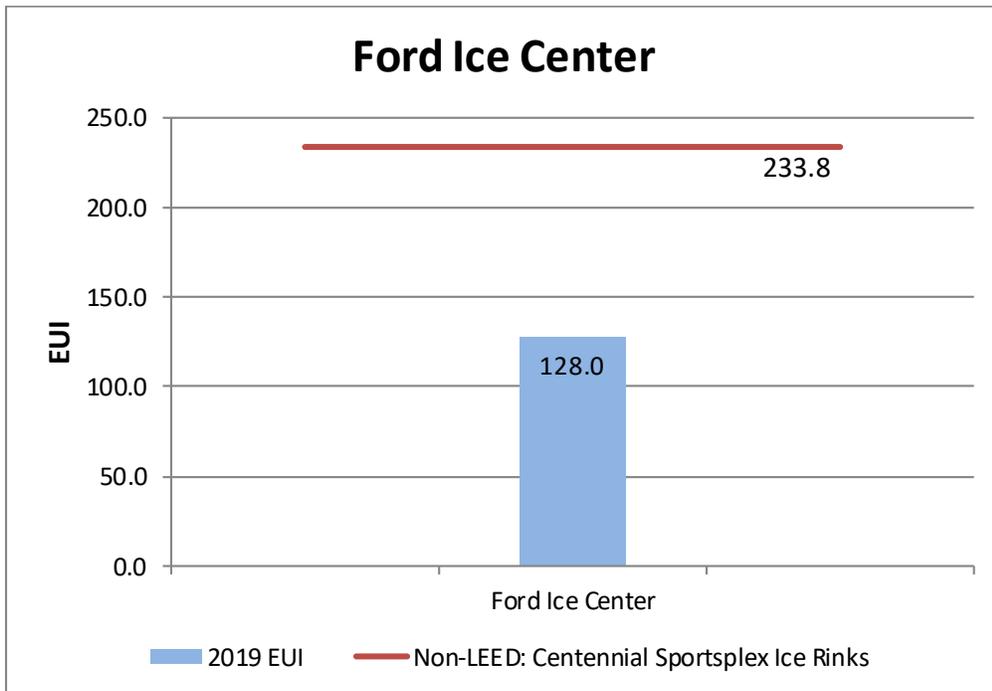
Water consumption at Lentz and a comparison to the non-LEED® East Public Health water usage are shown in the table below.

	<b>Building sf</b>	<b>Water Consumption (gallons)</b>	<b>Water usage/sf</b>	<b>Water savings compared to East Public Health (gallons)</b>
Lentz Health Center	114,293	1,543,229	13.5	3,449,950
Non-LEED®: East Public Health	13,800	602,888	43.7	
<b>Total</b>				<b>3,449,950</b>

## Ford Ice Center

### Energy Consumption

Energy consumption for the Ford Ice Center is compared in the graph below to the non-LEED® Centennial Sportsplex (ice rinks only). There is no national CBECS benchmark for a similar type building.



The energy cost for Ford Ice Center is compared in the table below to the non-LEED® Centennial Sportsplex (ice rinks only).

	Building sf	Energy Cost /sf	EUI	Annual savings compared to non-LEED® Centennial Sportsplex
Ford Ice Center	92,108	\$1.97	128.0	\$234,161.12
Non-LEED®: Centennial Sportsplex	61,000	\$2.20	233.8	

### *Water Consumption*

Water consumption at the Ford Ice Center and a comparison to the non-LEED® Centennial Sportsplex water usage (estimated to only reflect the ice rink usage) are shown in the table below.

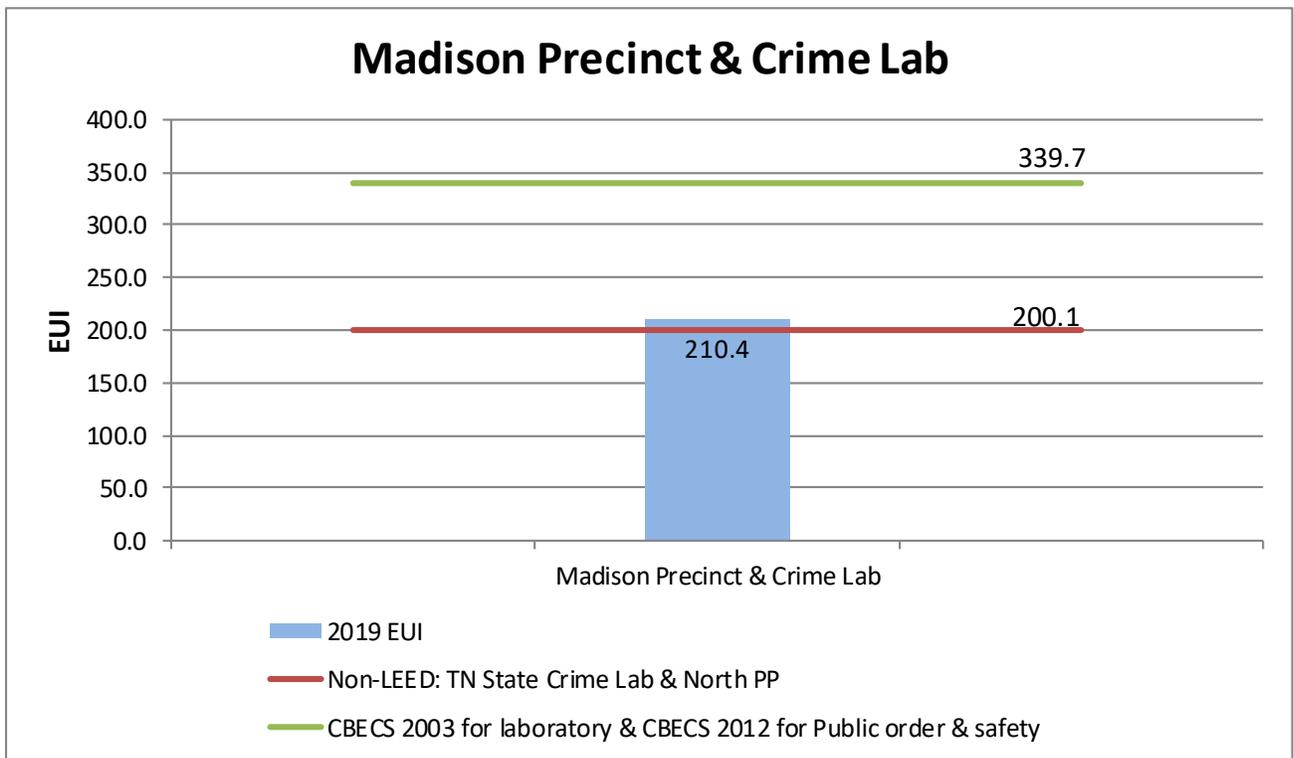
	<b>Building sf</b>	<b>Water Consumption (gallons)</b>	<b>Water usage/sf</b>	<b>Water savings compared to Centennial (gallons)</b>
Ford Ice Center	92,108	2,472,679	26.8	9,356,109
Non-LEED®: Centennial Sportsplex	61,000	7,833,804	128.4	
<b>Total</b>				<b>9,356,109</b>

- The water meter at SE Davidson Regional Community Center is combined with Ford Ice Center. The water usage was split between the two buildings according to square footage. This is not accurate, since water use intensity differs between a community center/library and an ice rink. Without the needed sub-metering, it is difficult to draw an accurate picture of water consumption between the buildings.

## Madison Precinct & Crime Lab

### Energy Consumption

Energy consumption for Madison Precinct & Crime Lab is compared in the graph below to the non-LEED® TN State Crime Lab & North Police Precinct as well as to the national CBECS benchmark for a similar type building. The Madison building consists of a police station (first floor) and a crime lab (second floor). For the non-LEED® comparison, the data from North Police Precinct was combined with the data from the TN State Crime Lab in Nashville. The national benchmark was calculated by combining the EUI for Public Order & Safety with the EUI for a laboratory space.



The energy cost for Madison Precinct & Crime Lab is compared in the following table to the non-LEED® TN State Crime Lab in Nashville & North Police Precinct composite building as well as to the national CBECS benchmark for a similar type building (Laboratory combined with Public Order & Safety). Note that Madison Precinct has a community meeting room.

	Building sf	Energy Cost /sf	EUI	Annual savings compared to non-LEED® North PP & TN State Crime Lab	Annual savings compared to national benchmark
Madison Precinct & Crime Lab	84,420	\$3.00	210.4	-\$18,627.37	\$233,881.84
Non-LEED®: TN State Crime Lab in Nashville & North PP	164,000&21,378	\$2.05	200.1		
CBECS: Laboratory & Public Order & Safety			339.7		

- The CBECS tables do not contain the mean square footage or energy cost data for a Laboratory, thus no average building square footage or energy cost per square foot can be provided in the table for a national benchmark building but the projected cost savings are based on the EUI in the table.

### *Water Consumption*

Water consumption at the Madison Precinct & Crime Lab was compared to the combination building of the non-LEED® TN State Crime Lab in Nashville and North Police Precinct in the table below. The water usage of North Police Precinct was adjusted to be from the same square footage as the first floor of Madison, and the water usage of the TN State Crime Lab was adjusted to be from the same square footage as the second floor of Madison.

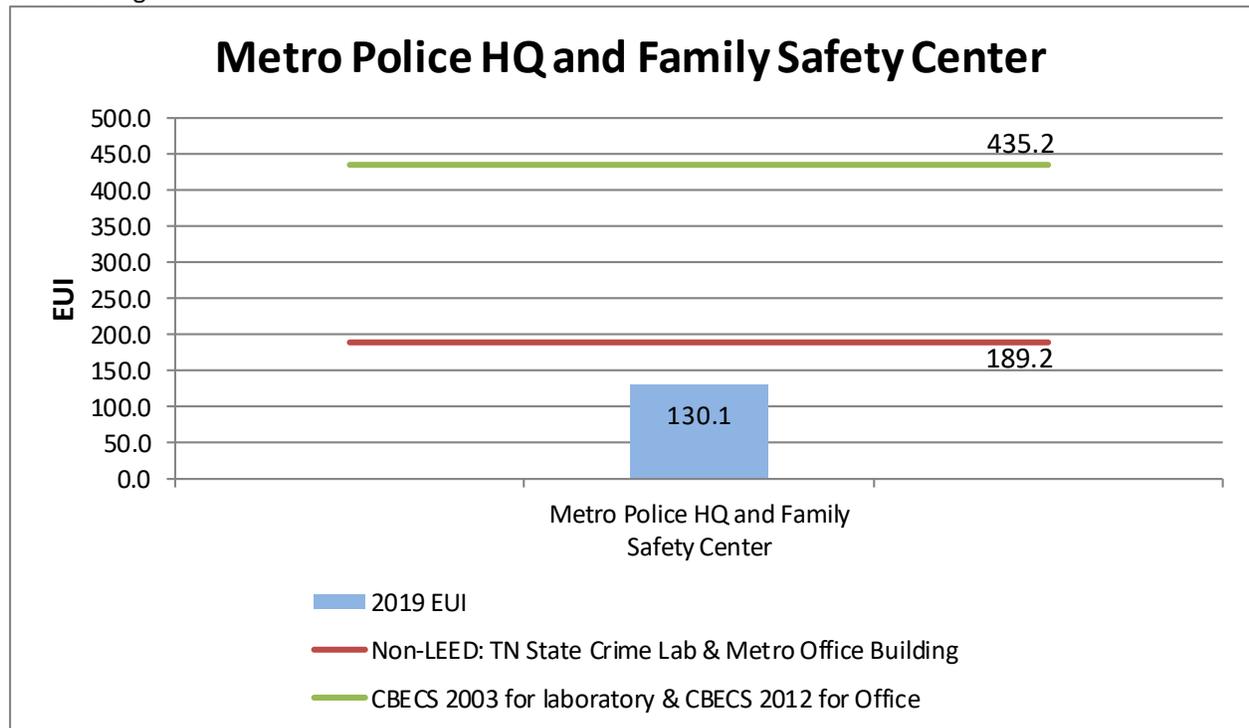
	Building sf	Water Consumption (gallons)	Water usage/sf	Water savings compared to TN State Crime Lab in Nashville & North PP (gallons)
Madison Precinct & Crime Lab	84,420	618,638	7.3	253,533
Non-LEED®: TN State Crime Lab in Nashville	164,000	1,786,500	10.9	
Non-LEED®: North PP	21,378	209,440	9.8	
<b>Total</b>				<b>253,533</b>

## Metro Police HQ and Family Safety Center

### Energy Consumption

Energy consumption for the newly constructed Metro Police HQ and Family Safety Center is compared in the graph below to the non-LEED® TN State Crime Lab & Metro Office Building as well as to the national CBECS benchmark for a similar type building. The Metro building consists of a police station (that functions similar to the TN State Crime Lab with a high volume of servers, equipment, and large mechanical systems) and a Family Safety Center that functions like an office building. For the non-LEED® comparison, the data from TN State Crime Lab in Nashville was combined with the data from Metro Office Building. The national benchmark was calculated by combining the EUI for a laboratory space with the EUI for an office.

There is shell space in both the Police HQ and Family Safety Center that was not included in the square footage used. In addition to shell space, there is an unoccupied dedicated server room inside of the Police HQ. Due to the size of these areas, their sq. ft. values have been removed to get a more accurate measurement of energy intensity. When these spaces become occupied, the square footage will be added to the building total.



The energy cost for Metro Police HQ and Family Safety Center is compared in the following table to the non-LEED® TN State Crime Lab in Nashville & Metro Office Building composite building as well as to the national CBECS benchmark for a similar type building (Laboratory combined with Office).

	Building sf	Energy Cost /sf	EUI	Annual savings compared to non-LEED® North PP & TN State Crime Lab	Annual savings compared to national benchmark
Metro Police HQ and Family Safety Center	166,469	\$1.53	130.1	\$170,626.69	\$881,234.62
Non-LEED®: TN State Crime Lab in Nashville & Metro Office Building	164,000&68,383	\$1.32	189.2		
CBECS: Laboratory & Office			435.2		

- The CBECS tables do not contain the mean square footage or energy cost data for a Laboratory, thus no average building square footage or energy cost per square foot can be provided in the table for a national benchmark building but the projected cost savings are based on the EUI in the table.

### *Water Consumption*

Water consumption at the Metro Police HQ and Family Safety Center was compared to the combination building of the non-LEED® TN State Crime Lab in Nashville and Metro Office Building in the table below. The water usage of the TN State Crime Lab was adjusted to be from the same square footage as the Metro Police HQ building, and the water usage of Metro Office Building was adjusted to be from the same square footage as the Family Safety Center.

	Building sf	Water Consumption (gallons)	Water usage/sf	Water savings compared to TN State Crime Lab in Nashville & North PP (gallons)
Metro Police HQ and Family Safety Center	166,469	2,960,038	17.8	229,838
Non-LEED®: TN State Crime Lab in Nashville	164,000	1,786,500	10.9	
Non-LEED®: Metro Office Building	68,383	2,536,190	37.1	
<b>Total</b>				<b>229,838</b>

## Solar Production

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The rooftop solar panels on eight Department of General Services' buildings produced 536,355 kWh during 2019, resulting in rebates of \$64,117. Fire Station #19 and Metro Police HQ & Family Safety Center use the solar energy behind the meter, thus the generated electricity is used on site and results in lower electricity bills. 13.6% of the electricity consumed by Fire Station #19 was generated by the solar panels, and 12.9% of the electricity consumed by Metro Police HQ & Family Safety Center. The value of this electricity is shown in the following table.

<b>Rooftop solar facility</b>	<b>Size of Array (kW)</b>	<b>2019 Production (kWh)</b>	<b>Solar Generation Revenue</b>
Howard Office Building	29.89	36,061	\$8,054.69
Fire Station #3	8.64	11,132	\$2,484.48
Fire Station #11	10.50	11,162	\$2,156.91
Fire Station #19	33.80	41,514	\$4,507.83
Fire Station #21	7.92	5,491	\$1,061.36
Fire Station #30	18.00	24,280	\$4,468.37
Fire Station #31	8.64	8,395	\$1,874.29
Fire Station #33	7.92	10,475	\$2,274.73
Metro Police HQ and Family Safety Center	302.4	387,845	\$37,234.68
<b>Total</b>	<b>427.71</b>	<b>536,355</b>	<b>\$64,117.34</b>

- General Services receives incentives on top of the retail electricity rate for all installations except Fire Station #19 and Metro Police HQ & Family Safety Center, which uses the solar energy behind the meter. Thus Howard Office Building received more solar revenue than Fire Station #19, even though it produced less kWh.

# Appendix 1: Square Footage of Buildings

This list includes the Department of General Services LEED® facilities and their non-LEED® comparisons:

<b>High Performance Building</b>	<b>Square Footage</b>
<b>Fire Stations</b>	
Fire Station #3	17,469
Fire Station #11	15,587
Fire Station #19	20,142
Fire Station #20	13,573
Fire Station #21	19,116
Fire Station #30	14,435
Fire Station #31	17,311
Fire Station #33	15,533
Fire Station #35	11,586
Non-LEED®: Fire Station #39	9,595
<b>Police Precincts</b>	
Midtown Hills Police Precinct	21,846
West Police Precinct	25,698
Non-LEED®: North Police Precinct	21,378
<b>Office Buildings</b>	
Lindsley Hall	34,198
Howard Office	130,221
Non-LEED®: Metro Office Building	68,383
<b>Schools</b>	
MAC - Douglass Head Start School	26,625
Highland Heights School	92,459
Non-LEED®: Hickman Elementary	71,466
<b>Libraries</b>	
Bellevue Library	24,912
Southeast Davidson Regional Community Center	80,600
Non-LEED®: Green Hills Library	25,540
<b>Lentz Health Center</b>	
Lentz Health Center	114,293
Non-LEED®: East Public Health	13,800
<b>Ford Ice Center</b>	
Ford Ice Center	92,108
Non-LEED®: Centennial Sportsplex (ice rink only)	61,000

<b>Madison Precinct &amp; Crime Lab</b>	
Madison Precinct & Crime Lab	84,420
Non-LEED®: TN State Crime Lab/North Police Precinct	164,000/21,378
<b>Metro Police HQ and Family Safety Center</b>	
Metro Police HQ and Family Safety Center	166,469
Non-LEED®: TN State Crime Lab/Metro Office Building	164,000/68,383