Executive Order 01.01.2019.08
Energy Savings Goals for State Government

# Annual Report

For activities covering the period covering July 2020 - June 2021


Maryland
DEPARTMENT OF GENERAL SERVICES

Prepared by the Department of General Services
Office of Energy & Sustainability
August 2021

# Table of Contents

# BACKGROUND

On June 25, 2019, Governor Hogan issued Executive Order 01.01.2019.08, *Energy Savings Goals for State Government*, which created a new energy savings initiative and goal for State-owned buildings. The "Maryland Leads by Example" initiative, to be developed and managed by the Department of General Services (DGS) and the Maryland Energy Administration (MEA), has a goal to reduce the energy consumption of State-owned buildings 10% by the year 2029, compared to a fiscal year 2018 baseline. The Executive Order (EO) provides State government an opportunity to display both fiscal and environmental responsibility to the rest of Maryland by making government buildings more energy efficient, thereby reducing costs and environmental impacts.

The EO requires DGS, at the end of each fiscal year, to submit an Annual Report to the Governor on the State's progress towards meeting the goal. This second Annual Report covers activities undertaken in fiscal year 2021. The time-period covered by this report includes a significant one-year reduction in utility use and cost due to the extensive use of telework in response to the COVID-19 pandemic. The Annual Report also provides an opportunity for the Top 20 Agencies/campuses that consume 90% of the energy used in State-owned buildings to contribute narrative reports on their energy reduction strategies and their energy-related savings due to COVID.

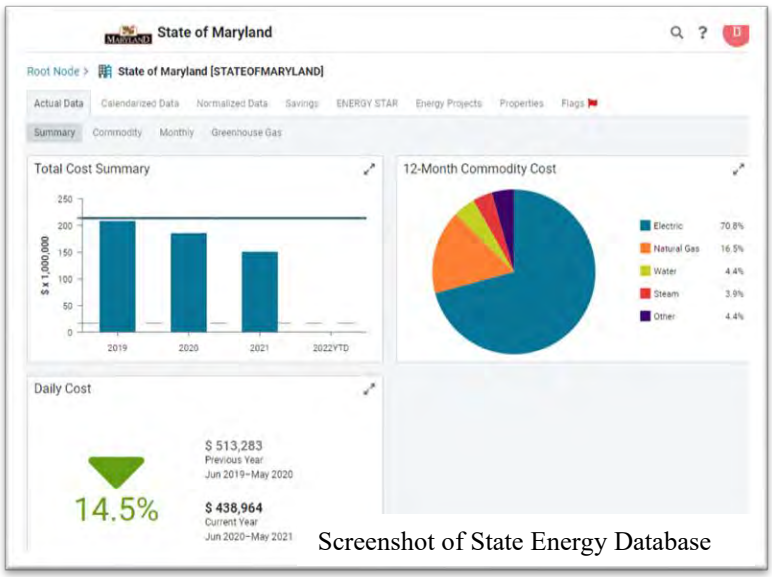
DGS has several specific tasks outlined in the EO that, along with other energy-saving activities, will be reported in this and subsequent Annual Reports. The tasks include:

- Annually, analyze the entire inventory of State-owned buildings to identify and prioritize the least energy efficient buildings in the State.
- Annually, perform energy audits on the buildings identified, and present the audit report with recommendations to the buildings' owner(s).
- Measure post-installation energy use for one year following the installation of the measures identified in the audit reports.
- Report to the governor annually.

This report was compiled by the DGS Office of Energy and Sustainability (OES) and relies heavily on data from the State Energy Database. OES takes the lead role in coordinating with agencies and tracking progress towards meeting the ten percent savings goal. OES operates the State Energy Database, manages the State's Energy Performance Contracting (EPC) program, Chairs the statewide Green Purchasing Committee, partners with the University System to annually purchase over $150 million of electricity and natural gas used by state agencies, and is active in initiating energy saving projects throughout the State. OES also functions as the go-to resource for client agencies for all energy-related matters.

## SUMMARY OF STATEWIDE BUILDING ENERGY USE

Tracking the energy use of Maryland State government buildings is made possible through the Maryland State Energy Database https://app.energycap.com/app/dashboards/user/2211, which is the most comprehensive database of State government energy use in the country. Begun in 2008, the database has grown to include 15,400 utility accounts with 1.9 million invoices paid through 120 State agency accounts payable offices. In more recent years, DGS staff has updated the database with information on buildings to include their size, build date and primary use, and the database is currently being configured to accept building level submetered data. The constant updating, maintenance and improvements in the database make the current Statewide energy savings goal possible. We cannot manage what we cannot measure.



Screenshot of State Energy Database

This report includes energy usage data from more than 7,000 State-owned buildings across forty-one State agencies and University campuses. This report covers FY21 activities that occurred since the last Annual Report, but due to the time lag between receiving and processing utility bills, the energy data is from FY20.

Maryland State-owned buildings range in age from the 1670s to the present, with an average age of about 50 years. Much of the heating and cooling equipment in these buildings is ten to twenty years beyond its useful life expectancy. Fortunately, however, older buildings with old equipment provide a great opportunity to increase efficiency to save on utility bills and reduce environmental impact. Newer heating and cooling equipment, as well as lighting, is much more efficient than older units, and the financial paybacks are often attractive.

The goal to reduce the energy use of approximately 97 million square feet of State-owned buildings owned by dozens of agencies and university campuses requires prioritizing a list of candidates to work with. Through polling the database, DGS discovered that in FY2018 twenty State agencies and university campuses consumed 91.37% of the State's energy in owned buildings. These agencies and campuses became DGS' primary partners in working towards the 10% savings goal.

The baseline year of the EO is FY 2018, and the baseline data below is based on energy use and existing buildings as of FY18. The following non-building energy consuming entities were excluded from the report:

- Traffic lights, streetlights, transportation, and other structures that do not meet the definitions of "Independently Metered Buildings" or "Campuses" established above

- Buildings that are not owned by the State as of FY2018
- Buildings that were demolished prior to FY2018
- New construction after FY2018

Entire State Government Energy Usage and Cost in State-Owned Buildings:

| | Utility Cost ($) | Energy Usage (MMBtu) | Floor Area (SqFt) | Change in Floor Area | EUI (kBtu per SqFt) | Change in EUI |
|---|---|---|---|---|---|---|
| FY18 | $190,706,502 | 9,647,924 | 97,027,989 | - | 99.4 | - |
| FY19 | $183,563,083 | 9,483,598 | 96,950,753 | -0.08% | 97.8 | -1.62% |
| **FY20** | **$163,577,394** | **8,856,570** | **96,212,225** | **-0.84%** | **92.1** | **-7.42%** |

Top 20 Agencies using 91.26% of the energy in the State:

| | Energy Usage (MMBtu) | Floor Area (SqFt) | Change in Floor Area | EUI (kBtu per SqFt) | Change in EUI |
|---|---|---|---|---|---|
| FY18 | 8,818,539 | 87,224,958 | - | 101.1 | - |
| FY19 | 8,661,965 | 87,148,082 | -0.09% | 99.4 | -1.69% |
| **FY20** | **8,082,292** | **86,579,360** | **-0.74%** | **93.4** | **-7.67%** |

Rest of the State:

| | Energy Usage (MMBtu) | Floor Area (SqFt) | Change in Floor Area | EUI (kBtu per SqFt) | Change in EUI |
|---|---|---|---|---|---|
| FY18 | 829,385 | 9,803,031 | - | 84.6 | - |
| FY19 | 821,633 | 9,802,671 | 0% | 83.8 | -0.93% |
| **FY20** | **774,279** | **9,632,865** | **-1.74%** | **80.4** | **-5.00%** |

## COVID19 IMPACT ON ENERGY AND ENVIRONMENT

On March 5th, 2020, Governor Hogan issued the State's first COVID-related state of emergency, and on March 13th, DBM imposed a period of mandatory telework across state agencies for all non-essential state employees who could perform their duties from home. University campuses soon followed by sending students and staff off-campus. The energy-related impact of telework was immediate as staff turned off lights and computers and left their offices, and students left their dorms and classrooms.

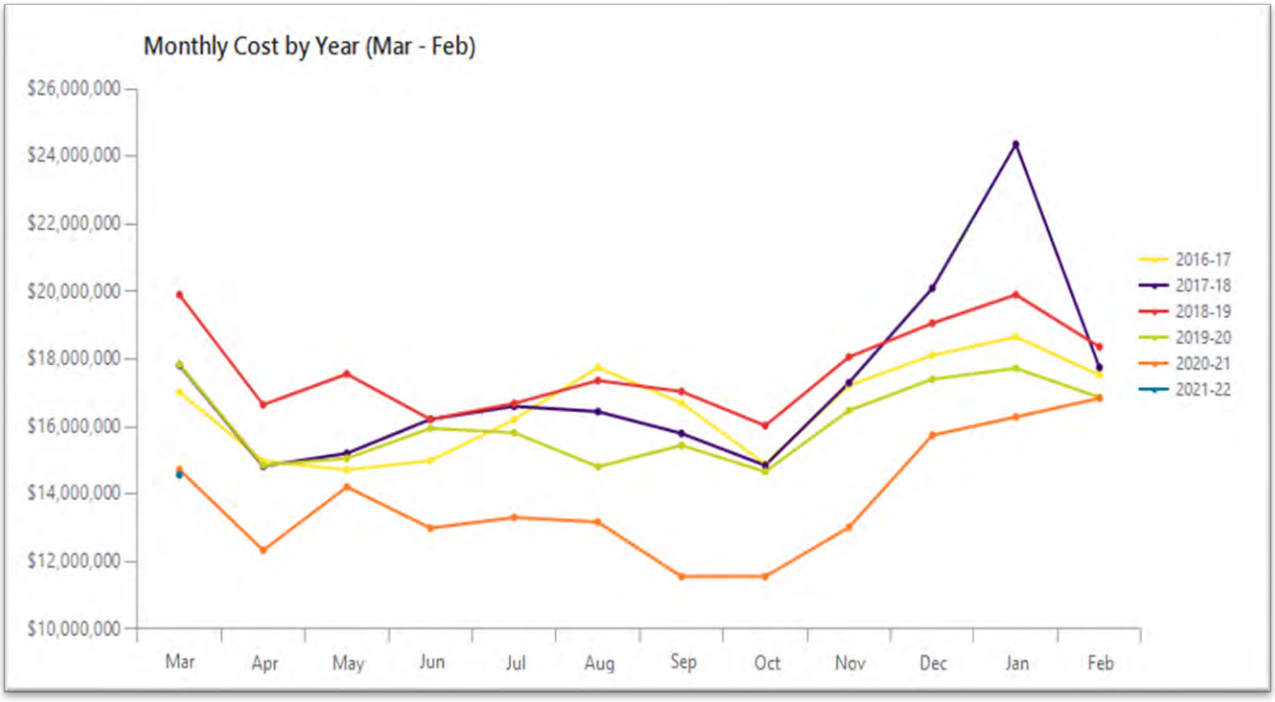
The pandemic brought changes to all aspects of our lives, including how we consume energy, where we consume it, and the amount we consume. The following section provides a detailed analysis of the effect of telework and other COVID-related policies on Maryland State government's use of energy and other utilities during the first year of the pandemic. Our COVID19 analysis is not restricted to the energy use of State-owned buildings, as defined in the

Executive Order, but instead looks at all utility use and cost for all purposes throughout State government.

We found that there was a significant reduction in energy and other utility use for the first full 12 months of COVID19 (see below). The reduction was due to both a mandatory telework policy for State employees that left buildings mostly empty, and the closure of university campuses. Further, the State's gained experience with widespread mandated telework brought what may be permanent changes to the way the State operates its buildings. Potential reliance on sustained telework policies and planned "hotel" office space allocations may impact energy use in future years.

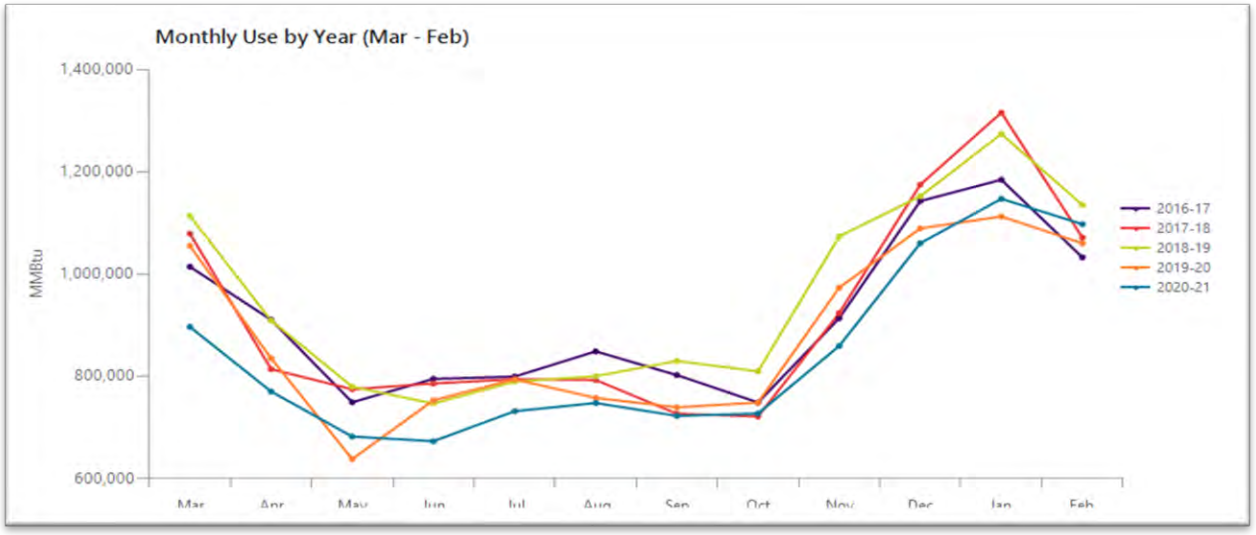
Chart 1 displays all utility expenses (including water and sewer) for the March through February periods from March 2016 to February 2021. The bottom orange line on the graph is March 2020 through February 2021. Taking into account the change in cost per unit of electricity and natural gas between 2019 and 2021, the real reduction in utility expenses during the March 2020 to February 2021 period, compared to the March 2019 to February 2020 period, was approximately **$30,373,653**.

Chart 1 (weather normalized data)




Energy reduction (electric, natural gas, fuel oil, propane and steam in MMBTUs) for the March through February periods from March 2016 to February 2021 is displayed in Chart 2 below. There was an 8% reduction in energy use during the March 2020 to February 2021 period compared to the average energy use of the previous four years. The associated reduction in GHG emissions was 79,754 tons of CO2, or the equivalent of removing 17,345 cars from the road for one year.

Chart 2 (weather normalized data)




Although most employees were teleworking, State buildings remained open during the pandemic year. Heating, cooling, and building ventilation remained active, whereas office equipment and lighting went mostly unused. We found that the impact of telework on energy use varied between different energy sources, with electricity use declining more than 15% during the March 2020 through February 2021 period, whereas natural gas use increased by 2% over the same period. The large reduction in electricity use was primarily due to the drastic reduction of lighting and plug loads such as computers and other office equipment, and the increased consumption of natural gas use was likely due to building managers increasing building ventilation to combat the spread of COVID. As more outside air was brought in, more heat was needed, causing natural gas consumption to rise. Anecdotal evidence from some of the university campus energy managers confirms this assumption. (See box).

**TOWSON UNIVERSITY**

As the university made the decision to keep buildings open, there were also modifications made to ventilation systems to address COVID concerns. These were primarily adjustments to automation systems increasing outside-air intake and thereby increasing ventilation related energy consumption in many buildings.

Steve Kolb
Energy Manager
Towson University

As State employees filter back to their offices, and significantly, as university campuses reopen, we expect to see an increase in energy use post-pandemic. With building occupancy rates going up, increased energy use is inevitable, and the increase in ventilation will remain for the foreseeable future. However, we are anticipating that the energy penalty associated with bringing more outside air into our buildings will be partially offset by a more liberal telework policy. On balance, we expect to find that

energy use for FY22 to be on a par or slightly lower than FY21, but energy use for FY23 may begin to approach pre-pandemic levels.

Looking beyond the influence of mandatory telework on reducing the State's utility budget, the policy had a positive environmental impact as well due to reduced employee commuting. According to the latest American Community Survey, Maryland is first in the nation in terms of longest commuting times with an average of 32.5 minutes[1], and an average commute distance of 16 miles round trip[2]. Data collected by DGS Real Estate division shows that 22,574 Maryland State employees teleworked either all or part time during 2020, which avoided approximately 90,296,000 miles driven and a reduction of 40,212 tons of CO2.

## STRATEGIES FOR ACHIEVING ENERGY REDUCTIONS IN STATE OPERATIONS

OES is pursuing a three-pronged approach to achieve the energy savings goal of the EO; 1) energy audits, 2) EPCs and other energy projects, and 3) agency engagement. OES is working closely with Maryland utilities on all efficiency projects to take advantage of their technical resources and rebate opportunities. OES is also coordinating with DGS Facilities Engineering division on replacement HVAC systems to ensure that DGS and DGS' client agencies are installing efficient, cost-effective systems that not only meet the goals of the EO but meet the State's GHG reduction efforts as well.

### Energy Audits

The auditing program is described in detail in Sections 3&4 below.

### Energy Performance Contracting (EPC) Program

EPCs are large projects dedicated to reducing the energy costs of a facility, in which the savings, guaranteed by the company performing the work, covers the cost of the project. OES drafts and issues the master contract for the EPC program, advises and assists agencies with individual projects, and coordinates with the State Treasury Office on financing. There are currently 26 active EPCs, with a total contract value of more than $265 million, annual guaranteed savings of nearly $25 million, and annual GHG reductions of 111,000 tons of CO-2.

In the 2020 session of the General Assembly, DGS introduced a bill that was subsequently passed by the legislature to increase the reliability and value of future EPC projects. Each EPC going forward will require DGS' review and approval before going to the Board of Public Works and will require DGS to review each annual Measurement and Verification Report to assure that the annual guaranteed savings have been met.

[1] https://www.roads.maryland.gov/OPPEN/Traffic_Volume_Trends1.pdf
[2] https://www.streetlightdata.com/wp-content/uploads/2018/03/Commutes-Across-America_180201.pdf

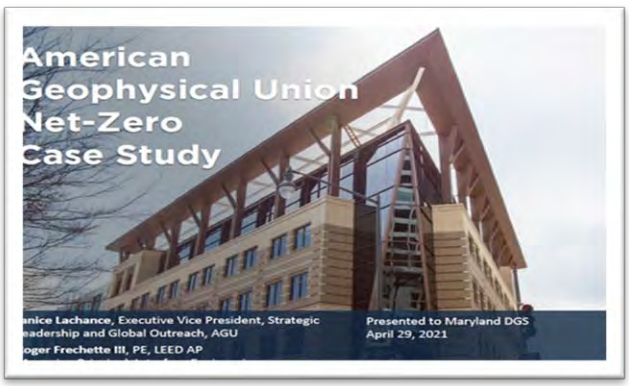
Where EPCs are viable projects, they will become a major source of savings and will play a significant role in achieving the goal of the EO. However, EPCs typically require up to two years of design and development before energy saving measures are installed, and another year before those savings are accounted for and attributed. Therefore, significant savings from new EPC projects will only begin to show up during the fourth or fifth year of the EO.

Within the past year OES has entered early-stage EPC discussions with DPSC, MTA and MDH. In order to effectively manage these projects, OES recently entered into a task order agreement with an engineering consulting firm, and due to that arrangement, we expect to move all three projects to Phase I in early 2022. The DPSC project at the MCI-Hagerstown facility has the potential to be one of the largest projects undertaken in the EPC program and should deliver significant cost, environmental and energy savings. The MDH EPC will be an agency-wide project that will include five State Hospital facilities. The MTA project has significant challenges due to the nature of the expected energy conservation measures, which will include energy savings from regenerative braking and track heating on the subway system. OES is working with MTA to overcome these challenges and expects to start this project in 2022.

In early 2021 OES issued an RFP to solicit measurement and verification (M&V) firms to provide third-party review the annual M&V reports submitted by energy service companies (ESCO) under contract with the State. The annual M&V reports for review are created by ESCOs to track the energy use at several EPC projects to assure that the annual savings guarantee is intact. The firm chosen through the RFP will bring professional third-party M&V review to the EPC program and will provide the State with a high level of confidence that promised savings are being met. We expect the firm to be under contract by fall 2021. The firm will also be available to assist OES in developing energy baselines for all EPC projects.

## Agency Engagement

The Executive Order recognizes that the tasks outlined for DGS will not on their own achieve the 10% savings goal, and the EO states that "*All units of State government shall, in support of their core missions, implement projects and initiatives to conserve energy and reduce consumption*". In light of this, and in an effort to collaborate and coordinate on energy savings activities throughout State government, OES initiated quarterly meetings of the Working Group on Reducing Energy use in State Operations. The Working Group, Chaired by DGS OES, includes representatives of the 20 agencies and university campuses that consume 92% of the energy used in State operations.



The Working Group continued to meet virtually during the pandemic and met three times since the last Annual Report to share information on each entity's response to COVID, to inform each other about ongoing and future energy projects, and to educate the members on new technologies and opportunities in the energy field. One or two private sector firms were invited to each meeting to give presentations on energy efficiency opportunities, utility rebates, and emerging technologies. Attendance at the virtual meetings was excellent, with between fifty to sixty participants at each.

Members of the Working Group, their baseline energy use in FY18, and building area include:

| Rank | Agency | Floor Area (SqFt) | FY18 Energy Use (MMBtu) | % of State Total MMBtu |
|---|---|---|---|---|
| 1 | University of Maryland College Park (UMCP) | 14,767,416 | 1,798,702 | 18.64% |
| 2 | Public Safety & Correctional Srvcs, Dept of (DPSCS) | 15,374,567 | 1,385,819 | 14.36% |
| 3 | University of Maryland Baltimore (UMB) | 5,950,069 | 904,967 | 9.38% |
| 4 | University of Maryland Baltimore County (UMBC) | 4,467,954 | 580,472 | 6.02% |
| 5 | General Services, Dept of (DGS) | 6,498,791 | 575,501 | 5.97% |
| 6 | Maryland Aviation Administration (MDOT-MAA) | 2,920,577 | 567,330 | 5.88% |
| 7 | Towson University (TU) | 6,036,906 | 463,915 | 4.81% |
| 8 | Health, Maryland Dept of (MDH) | 3,208,181 | 382,122 | 3.96% |
| 9 | Morgan State University (MSU) | 3,396,043 | 342,866 | 3.55% |
| 10 | Maryland Transit Administration (MDOT-MTA) | 1,562,344 | 340,403 | 3.53% |
| 11 | Frostburg State University (FSU) | 1,547,381 | 207,429 | 2.15% |
| 12 | Salisbury University (SU) | 2,217,621 | 182,154 | 1.89% |
| 13 | Stadium Authority, MD | 4,274,000 | 168,040 | 1.74% |
| 14 | University of Maryland Eastern Shore (UMES) | 1,093,365 | 154,368 | 1.60% |
| 15 | Bowie State University (BSU) | 1,332,563 | 153,917 | 1.60% |
| 16 | State Highway Administration (MDOT-SHA) | 2,276,739 | 139,194 | 1.44% |
| 17 | Maryland Port Administration (MDOT-MPA) | 6,513,833 | 134,714 | 1.40% |
| 18 | Coppin State University (CSU) | 1,096,489 | 125,809 | 1.30% |
| 19 | Maryland Transportation Authority (MDTA) | 1,082,817 | 113,602 | 1.18% |
| 20 | Military Dept | 1,607,302 | 97,215 | 1.01% |

## Maryland Green Registry Award

Due to an initiative developed by DGS, the Governor's Office and MDE, two Maryland Green Registry awards were created to recognize Executive Branch state agencies for their energy-saving accomplishments. This year's State Agency Energy Award, given to an agency

Green Roof at Maryland Department of Health Laboratories Administration

that exhibited an agency-wide commitment to reducing its energy use, went to MDH for their continued commitment to undertaking EPCs to reduce their energy and environmental footprint. The State Building Energy Award, given to a building-level project that showed innovation and deep energy savings, went to DGS for a retro-commissioning project at the Rockville District Court. The awards were announced by the Lt. Governor on a YouTube video: https://www.youtube.com/watch?v=IUVp5t0tDvU

## PROGRESS ON DGS ENERGY-SAVING INITIATIVES

### 1. Determine FY 18 Baseline

In order to accurately measure progress towards the 10% energy reduction goal, an energy use baseline was established. Over several months in 2019 and 2020, the data team at OES requested and received utility bill data from agencies, which was analyzed using the State Energy Database to determine the FY18 baseline and confirm its completeness. The database is the most comprehensive resource of State facility energy use and cost in the nation and is continually improved through gathering and uploading agency supplied data. Since the database also includes data attributes of the facilities themselves, such as building size, age and primary use, it enables the State to establish an agency specific, and statewide baseline of usage, and to track and report on progress for each project.

The OES manages a longstanding and ongoing comprehensive data collection campaign to collect from agencies any missing utility bills and any missing building data attributes, including building size (gross square footage), building age, primary use and energy meters serving each facility. For the EO, the data team collaborated with agencies to identify the portion of their portfolio that falls under the scope of the Executive Order (i.e., state-owned buildings) to confirm that their energy use is accurately attributed. Energy use associated with leased facilities, and from non-buildings (for example, mass transit, traffic lighting, highway lighting, signage, etc.) are excluded from the baseline and the goal of the Executive Order, but energy reductions and current projects on non-buildings will be reported by select individual agencies in the Annual Report. A more detailed description of data reporting methodology is included in Appendix 1.

### 2. Identify Savings Opportunities

Energy professionals at OES have developed several strategies to identify buildings to retrofit. Initially, in an effort to reduce the State's costs, OES is working with BGE, SMECO, PEPCO and Delmarva utilities to identify groups of buildings that are qualified for various rebate programs. Each group of buildings will have projects addressed through the audit, procurement and implementation phases depending on the type of rebate available, and the associated utility guidelines. Concurrently, OES will use the database to identify and prioritize buildings to be audited that lie outside of standard utility rebate programs, which will include the master-metered campuses.

Some of the buildings audited under the Executive Order will be good candidates for an Energy Performance Contract (EPC), but many will not. There are several agencies that

own buildings, but do not spend enough annually on energy to be feasible for an EPC. Some examples include:

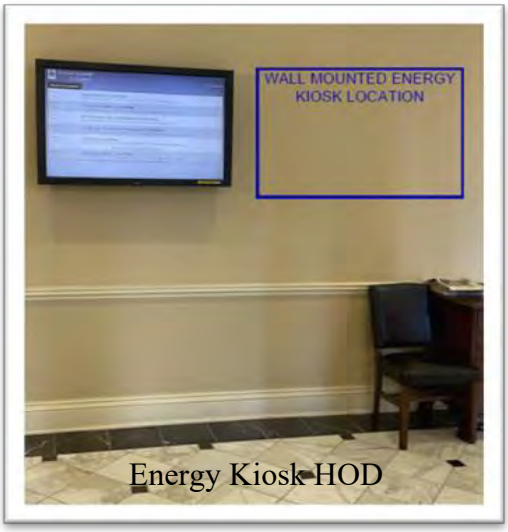
| Agency | Owned Buildings (square feet) | FY19 Spend in Owned Buildings ($) |
|---|---|---|
| **MD Public Television** | 140,497 | $761,450 |
| **Veterans Affairs** | 358,048 | $1,002,510 |
| **Food Center Authority** | 63,600 | $7,744 |
| **Dept. of Planning** | 103,285 | $175,234 |

Other agencies, such as DNR (FY19 energy spend $1,607,222) have widespread facilities that offer good one-off opportunities but are poor candidates for an EPC. There are also several agencies that are currently under an EPC that began years ago, that have new savings opportunities due to improved lighting and other technological advancements in efficiency that have become available over the last 5-10 years. Non-EPC projects will be addressed in the manner described in Section 4 below.

### 3. Sub-metering

Over three quarters of the buildings in the State portfolio are on master-metered campuses, in which only one, or a few, central meters record the energy use of the entire campus. On these campuses, the energy use of each individual building is unknown. However, submetering at the building level would provide a window to energy use that DGS could use to identify poor performers, be alerted to increases in energy use, track energy savings of individual projects, and inform the "right sizing" of HVAC replacements. Recognizing the potential benefits of metering, in 2020 DGS initiated a building-level submetering program that will harvest data from currently un-metered buildings and send that data to the State Energy Database.

During 2019 and 2020, OES solicited submeter installation firms, developed a Meter Plan for the Annapolis Capitol Complex, entered into an MOU with MEA to access federal grant funds, and in early 2021 moved forward with installing building-level submeters at the entire Annapolis Capitol Complex. All data from the submeters, which includes meters for steam, chilled water, city water and electricity will be automatically uploaded to the State Energy Database and will be accessible via wall-mounted video monitors at the Miller Senate and the House of Delegates and a free-standing kiosk at the State House. The project will be complete in early 2022 and will help OES identify energy-savings opportunities in Annapolis.



Energy Kiosk HOD

## 4. Perform Energy Audits

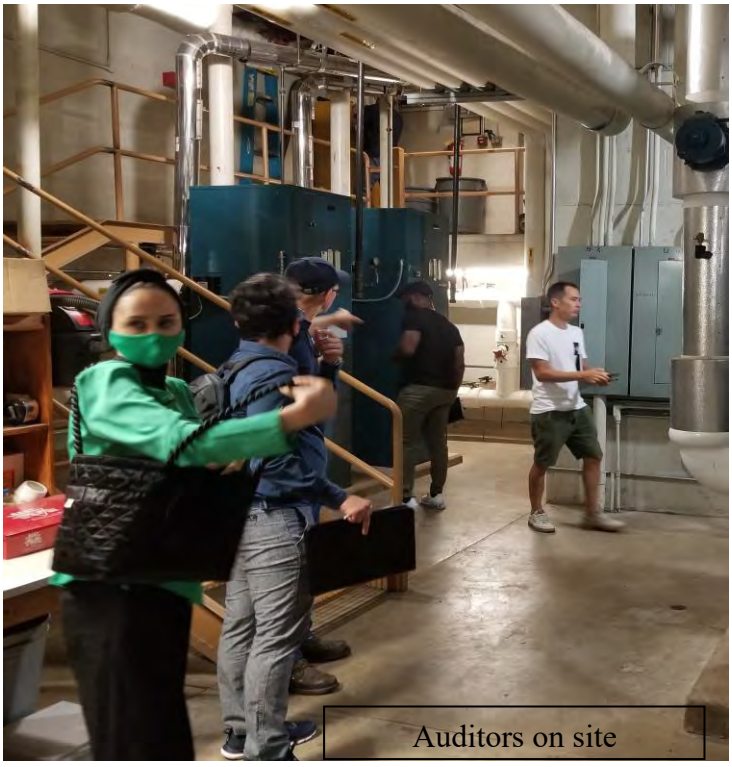
The EO requires DGS to conduct energy audits on at least 2 million square feet of State-owned buildings annually. In March 2020, DGS signed an MOU with Small and Smart Thermal Systems Laboratory (S2TS) at the University of Maryland, College Park to perform audits on State-owned buildings throughout the state. S2TS is comprised of a team of graduate mechanical engineering students, with oversight from faculty and professional engineers, who have experience performing energy audits at the College Park campus. OES has a full-time energy auditor on staff to oversee the effort. DGS feels that this arrangement provides not only cost-effective energy auditing services, but also provides valuable on-the-job training for recent graduates of the University of Maryland.

Per the EO, energy audits have concentrated on finding low-cost measures for increasing energy efficiency that will result in energy cost savings within five to ten years that meet or exceed the costs of the measures themselves. The auditors have been instructed to evaluate all measures at each site assigned to them and to blend the savings of the suite of measures to achieve an overall five to ten-year payback period per project.

Building site visits were restricted throughout early 2020 due to the pandemic, but the auditors were able to begin their onsite visits in June. Throughout the year, the auditors completed audits of 1,704,305 square feet, and partially completed audits of another 1,027,592 square feet. OES is reviewing the audit reports to develop scopes of work for efficiency projects. DGS entered into a 2nd MOU with UMD in July 2021.

The auditors primarily examined DGS-owned buildings during the term of the initial MOU but have expanded to other agencies including Maryland School for the Deaf and Military Department in round two. A summary of the first year of audits:

- A total of 1.727 million $ft^2$ of space was audited and energy models built for 15 locations/buildings.
- The energy saving measures identified amount to annual savings of ~$641K.
- Projected savings for individual buildings ranged from ~8% to more than 41%.
- Average saving for the 15 buildings is ~20%.
- Corresponding annual CO2 savings is ~3M lbs./year.



Auditors on site

AUDIT OVERVIEW – YEAR 1

| Building Information | | Rankings | | Cost Savings | | | | Total Baseline Utility Costs | Total $CO_2$ Emission Reductions |
|---|---|---|---|---|---|---|---|---|---|
| Building Name | Floor Area | EUI | EnergyStar Score | Electricity | Lighting Maintenance cost saving** | Natural Gas/ Fuel Oil/ Propane | Total | | |
| | (sq.ft.) | (kBTU/ sq.ft.) | (1-100) | ($/yr.) | ($/yr.) | ($/yr.) | ($/yr.) | ($/yr.) | (lbs./yr.) |
| Goldstein (Treasury)* | 111,064 | - | - | $28,616 | $13,603 | - | **$42,219** | - | - |
| Tawes State Office (DNR)* | 273,300 | - | - | $69,043 | $32,488 | - | **$101,531** | - | - |
| Leonardtown (MSC) | 75,347 | 128.8 | 23 | $38,700 | $10,763 | ($5,803) | **$43,660** | $194,591 | 234,187 |
| Rockville (MSC) | 167,000 | 137.2 | 32 | $48,300 | $13,254 | ($2,770) | **$58,784** | $589,130 | 321,907 |
| Towson (MSC) | 60,000 | 88.64 | 42 | $9,380 | $4,408 | ($1,893) | **$11,895** | $100,789 | 46,796 |
| Borgerding (MSC) | 64,050 | 80.32 | 46 | $9,341 | $3,169 | $2,079 | **$14,589** | $122,533 | 102,690 |
| OCME, Baltimore | 110,842 | 173.67 | 50 | $27,100 | $11,891 | ($1,020) | **$37,971** | $458,312 | 186,808 |
| Hagerstown (MSC) | 27,500 | 64.02 | 53 | $9,500 | $1,128 | $3,453 | **$14,081** | $37,126 | 109,690 |
| Bel Air (MSC) | 140,000 | 76.94 | 54 | $24,230 | $5,339 | $14,332 | **$43,901** | $262,605 | 343,857 |
| Hyattsville (MSC) | 83,000 | 80.3 | 54 | $33,671 | $6,232 | $2,139 | **$42,042** | $138,751 | 271,616 |
| Hargrove (MSC) | 84,730 | 80 | 56 | $22,300 | $5,489 | $878 | **$28,667** | $138,769 | 173,644 |
| Prince Frederick (MSC) | 74,210 | 60.1 | 61 | $43,400 | $10,246 | $1,260 | **$54,906** | $132,944 | 338,823 |
| Glen Burnie (MSC) | 97,104 | 69.2 | 65 | $30,200 | $12,267 | ($2,675) | **$39,792** | $170,047 | 190,336 |
| Elkton (MSC) | 135,207 | 52.1 | 88 | $15,150 | $5,395 | $2,053 | **$22,598** | $165,205 | 134,865 |
| Salisbury (MSC) | 224,000 | 43.9 | 91 | $59,760 | $20,680 | $4,364 | **$84,804** | $211,253 | 488,663 |
| **Total/Average** | **1,727,354** | **87.32** | **55** | **$468,691** | **$156,352** | **$16,397** | **$641,440** | **$2,722,055** | **2,943,882** |

## 5. Opportunities Identified in the Audit Reports

OES is analyzing the results of the first year of audits to develop scopes of work for one or more energy-saving projects at the facilities audited. Concurrently, OES is working with DBM, MEA and the utilities to identify funding. Lastly, OES is in the final stages of a procurement to prequalify energy contracting firms on an IQC to have them available to address the measures identified in the audits.

In July 2021 DGS issued a solicitation on eMMA for an Indefinite Quantity Contract (IQC) to prequalify energy contractors. To take advantage of utility rebates, a minimum requirement of the contractors participating on the IQC is that they are approved utility partners. The contractors will compete against each other for each project in their assigned area of the state. We expect the contractors to be under contract and available for work in the fall of 2021.

The primary means of financing projects identified through the audits will be through agency funds, utility rebates, and/or MEA loans.

### 6. LED Lighting Project

DGS is currently installing over 10,000 state of the art LED light fixtures and controls in several buildings throughout the Annapolis Capitol Complex. There are two distinct lighting projects, the first project is through the current DGS EPC, and the second is funded by a loan from MEA. The scope of each project was extended to include additional buildings using utility rebate funds totaling nearly $600,000, which will allow us to install an additional 2,500 fixtures. Total annual project savings are expected to be 2,281 MWH of electricity, avoidance of $193,902 in annual operating expenses, and yearly avoidance of 981 metric tons of CO2. The project will be complete by early 2022.

### 7. Retro-commissioning

In December 2020, DGS completed a retro-commissioning pilot at the Rockville MSC. Retro-commissioning involves an in-depth evaluation of opportunities to improve the efficiency of an existing building's HVAC equipment and systems. In this case, the building's automated controls were updated, and associated systems were returned to their original operating parameters. The result of the project is that between January and April 2021, the natural gas use of the building, normalized for weather variations, was reduced by 70% over the average use during the same months of the previous four years. We are estimating the payback from the project to be less than 24 months. OES has identified two other DGS-owned properties to continue the pilot project and work will begin on them in fall 2021. OES will track the energy use of the buildings for the year following the retro-commissioning, and assuming good results, will develop a retro-commissioning program to roll out to other agencies.

### 8. Green Purchasing Specifications

As Chair of the Green Purchasing Committee, DGS is responsible for creating "green specifications" for a range of products that are purchased by the State. Over the past year, DGS has created purchasing specifications for lighting, HVAC and plumbing fixtures that specify an increase in efficiency of each product purchased. The increases in efficiency bring the purchases of these items in line with the requirements of the High-Performance Building Program and other energy and environmental goals and programs.

The green specifications have been included as an appendix to the DGS Procedure Manual and have been socialized to DGS construction and maintenance divisions, the architectural and engineering firms under contract to DGS, and the Office of State Procurement. As the specifications are drafted, they are sent to DGS professional staff for internal review and to outside technical consulting firms to determine market availability. We expect that as these specifications are incorporated into future task orders and contract documents, they will result in significant cost, environmental and energy savings for both new construction and facility maintenance and renewal projects.

### 9. Smart Motor Pilot

In 2019, DGS became aware of a new type of electric motor whose manufacturer claimed was significantly more efficient than existing motors. Since motors can account for 38% of electricity used in commercial buildings, DGS began to investigate the efficiency claims. OES reviewed reports from independent sources, including two reports from the National Renewable Energy Lab, and another from the federal GSA, and concluded that the efficiency claims were at least partially true.

Recognizing that a large savings opportunity was available, DGS hired an independent consultant electrical engineer to analyze a list of existing motors on State buildings for potential replacement with smart motor technology. The consultant reviewed the existing motors and created a rubric, that includes variables such as motor size and run times, to select motors for replacement. DGS is using the results of the study to develop green purchasing specifications that will address the replacement of existing motors at the end of their useful lives. The result will be that when certain motors are replaced, depending on the variables in the study, they will be replaced with the more efficient smart motors. The specifications will be in place by early 2022.

**SMART MOTORS**

A "smart" motor is a high-rotor-pole switched reluctance motor with a programmable variable-speed drive and software that provides real-time cloud-based monitoring and control. The smart motor does not rely on rare-earth materials and has no rotor windings, magnets, or overlapping coils, making it simpler, more robust, and less expensive to manufacture. Also, since no electrical current is induced in the rotor, there is no electrical arcing across the motor bearings, and thus premature bearing failure is eliminated. A built-in microprocessor and sensors that measure speed, torque, and temperature allow for precise control and continuous monitoring for signs of degradation or faults.

### 10. Integration with DGS Construction Divisions

OES has been working with DGS Capital and Facilities Maintenance divisions over the past year to integrate "green" building practices into building design and renovations. OES drafted a "Green Building Standards" document and presented its contents on a webinar with several of the capital and maintenance division project managers. Following that presentation, OES held a webinar for project managers on "HVAC Sizing Considerations" to overcome a common problem when designing new and replacement HVAC systems. In order to make green building an ongoing and permanent part of DGS' decision-making process, OES drafted an addendum to the DGS Procedure Manual that incorporates energy efficient and sustainable design into common practices.

## PROGRESS ON MEA's TASKS OUTLINED IN THE EXECUTIVE ORDER

The Maryland Energy Administration helps fund the activities of DGS OES, and, per the Executive Order, works with the Department of Information Technology (DoIT) and the Department of Budget and Management (DBM) to design and staff other cost-effective initiatives.

MEA's submission for the second Annual Report: The COVID pandemic of 2020 has disrupted the occupancy patterns of most State facilities, with concurrent impacts on energy conservation opportunities. Intensified telecommuting and flexible work scheduling for State employees are still developing at present. For those reasons, the consequences for facility energy consumption are yet to be determined. Pre-COVID aspirations to support the Executive Order identified several areas of interest: (1) development of agency crosscutting initiatives, starting with an update of the energy-related portions of the DGS Policies and Procedures Handbook; (2) employee engagement, to include work-place energy awareness training videos; and (3) project finance for energy-efficiency related capital improvements. These are still promising concepts, but their pursuit is pending other facility and personnel management choices yet to be made. At present, the first two initiatives are on hold, pending more clarity regarding facilities' future space utilization.

Project finance for energy-related capital improvements remains available to all State agencies. Agencies' occupancy patterns may be in flux, but the obligation to condition workspaces continues almost unabated. Investment in energy performance upgrades is particularly attractive when (1) reduced occupancy minimizes staff inconvenience during project installation and/or (2) existing HVAC, lighting, and other equipment is near the end of its useful life and is due for replacement. In either case, investments in energy efficiency improvements reduce utility bill expenses for years to come, thus relieving taxpayer burdens.

State agencies' first stop for project finance opportunities should be MEA's Jane E. Lawton Conservation Loan Program. State agencies may apply to this program each fiscal year for zero-interest loans to finance energy-efficiency upgrades on a first-come, first-served basis. The latest (FY22) appropriation, which became effective July 1, 2021, provides $2,175,000 in total for all applications. This is an increase over the FY21 level, intended to accelerate economic recovery from COVID-related impacts with resources related to energy performance. Typical projects are some combination of lighting, HVAC, building automation controls, water heating, and building shell improvements. Agencies are also encouraged to use Lawton Loans to finance incremental expansion of the scope of work provided by an energy performance contract.

Details and the application for the Jane E. Lawton Conservation Loan Program are found here: https://energy.maryland.gov/govt/Pages/janeelawton.aspx. Contact program manager Christopher Russell at chris.russell@maryland.gov, (443) 908-1767.

**Past activity illustrates future potential.** Fourteen recent loans issued between FY15 and FY20 illustrate the variety of participating State agencies and the energy-saving results they have achieved. Four of these loans were issued to expand the scope of work for energy performance contracts. The remainder of the loans covered costs, net of utility rebates, for design/build projects. This table provides performance highlights for the State agency leaders for efficiency investment, followed by individual project profiles:

**MARYLAND STATE AGENCIES**
*Statistical Leaders in*
*Energy Efficiency Investment, FY2015 – FY2020*

| | TOTAL PROJECT COSTS | TOTAL ANNUAL UTILITY REBATES | TOTAL ANNUAL UTIL. BILL SAVINGS 1/ 2/ | TOTAL ANNUAL O&M SAVINGS 3/ | TOTAL ANNUAL COMBINED SAVINGS | SIMPLE PAYBACK (YRS) |
|---|---|---|---|---|---|---|
| **Maryland Department of Health (2 projects, 3 loans)** | $10,043,612 | $185,551 | $911,587 | $681,967 | $1,593,554 | 6.2 |
| **Dept of Public Safety & Correctional Services** | $13,500,000 | $490,000 | $1,345,026 | $152,332 | $1,497,358 | 8.7 |
| University of Maryland (4 projects, 4 loans) | $1,576,718 | $139,044 | $271,772 | $54,500 | $326,272 | 4.4 |
| **Maryland DGS** | $1,112,400 | $347,619 | $250,000 | $0 | $250,000 | 3.1 |
| **MD Dept of Motor Vehicles** | $1,922,470 | $451,849 | $244,156 | $0 | $244,156 | 6.0 |
| UM Center for Environmental Sciences (2 projects, 2 loans) | $145,725 | $14,000 | $40,604 | $0 | $40,604 | 3.2 |
| Canal Place Planning & Development Center | $67,481 | $0 | $18,999 | $3,717 | $22,716 | 3.0 |
| Department of Natural Resources | $22,000 | $9,105 | $7,471 | $0 | $7,471 | 1.7 |
| TOTAL, FY15 - FY20: | $28,390,406 | $1,637,168 | $3,089,615 | $892,516 | $3,982,131 | 6.7 |

NOTES:
Projects utilizing energy performance contracts are in **bold typeface**.
1/ Savings are calculated on utility rates and facility occupancy patterns prevailing at the time of project initiation.
2/ Understated to the extent that savings from reduced electric capacity charges are present, but not consistently reported and not included in this summary.
3/ "O&M" = operations and maintenance. Understated to the extent that such savings are not consistently reported. Note that "Total Annual Combined Savings" are consequently understated, while "Simple Payback" calculations are actually better (shorter time) than shown for the same reason.

## ACTIVITY REPORTS FROM THE TOP 20 ENERGY USERS

The sections below include detailed information submitted by the top 20 energy-using agencies and university campuses in the State, all of whom are members of the Working Group on Reducing Energy use in State Operations. Below the heading for each agency is a snapshot of energy usage and data compliance compiled by data analysts at OES. All energy usage data is reported by each agency to the State Energy Database.

The Executive Order recognizes that data compliance is critical to accurate reporting for each agency and states that, "*Each unit of State government shall, each month, or upon request, provide DGS with access to available data about its facility and copies of the unit's utility bills*". Therefore, DGS is also reporting on the data compliance of each Agency, in terms of the number of utility bills still missing from the State Energy Database and the estimated value of those bills, based on historical trends.

The Energy Data and Compliance Snapshot is followed by a self-report of energy efficiency activities, submitted by the agency or university campus. **Where there is no report, none was submitted to DGS.**

## I. University of Maryland College Park (UMCP)

### Agency Energy Usage Snapshot:

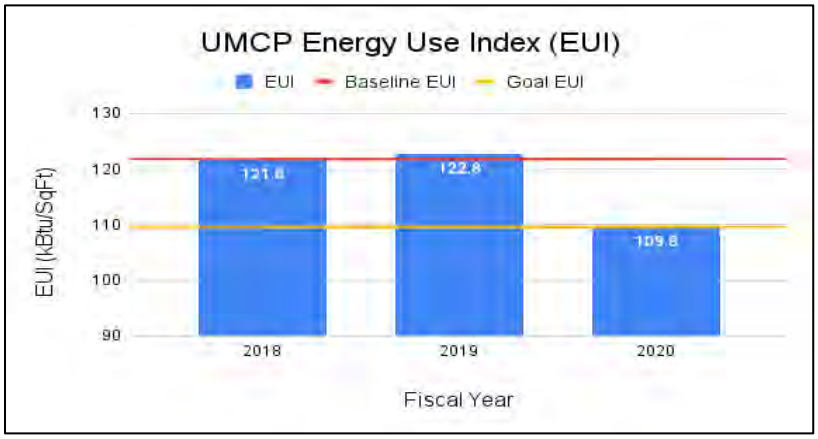
| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | Change in usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 14,767,416* | 1,798,702* | | 18.64% | 121.8* |
| **FY19** | 14,767,416* | 1,814,048* | 0.8%* | 19.13% | 122.8* |
| **FY20** | 14,767,416 | 1,621,326 | -9.9% | 18.31% | 109.8 |

*Updated from FY18-19 Annual Report.

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 96.17% | 117 | $62,924 |
| **FY19** | 96.17% | 161 | $183,427 |
| **FY20** | 96.17% | 54 | $34,399 |

### Change in Energy Use Index (EUI):




### Agency report:

The University of Maryland, College Park is the state's flagship university and one of the nation's preeminent public research universities. A global leader in research, entrepreneurship and

innovation, the university is home to more than 40,700 students, 14,000 faculty and staff, and 388,000 alumni all dedicated to the pursuit of Fearless Ideas. Located just outside Washington, D.C., we discover and share new knowledge every day through our renowned research enterprise and programs in academics, the arts and athletics. And we are committed to social entrepreneurship as the nation's first "Do Good" campus.

The University of Maryland became a charter signatory of the American College and University Presidents Climate Commitment in 2007 and put itself on the path of greater environmental stewardship and sustainability. Since that time, the university adopted a Strategic Plan in 2008, a Climate Action Plan in 2009, a Facilities Master Plan in 2011, a Sustainable Water Use and Watershed Report in 2014, and several other guiding documents that together paint a vivid picture of a SustainableUMD.

UMD is proud to participate in the EPA's Green Power Partnership. Since 2014 UMD has consistently placed on the EPA's list of Top 30 Colleges and Universities list of largest green power users. For the first time in 2014, UMD also placed in EPA's National Top 100 list with a ranking of #80. For the latest reporting period of April 2021, UMD is ranked #7 among colleges and universities and #70 on the National Top 100 list. UMD is ranked #1 within the Big 10 Conference (lastest EPA conference ranking was academic year 2018-19 with 2019-2020 and 2020-2021 rankings suspended due to the pandemic).

In 2020, the university reached its aggressive and lead-by-example goal of 100% purchased electricity from renewable sources. In April 2021, the University of Maryland announced it was redoubling its efforts to fight climate change and committed to carbon neutrality by 2025 through a mix of infrastructure improvement, electric vehicle purchases and targeted investments in sustainability. We are in the process of updating our Climate Action Plan to outline strategies that will help us achieve this accelerated timeline for carbon neutrality. Some of these strategies include: 1) a public-private partnership called the NextGen Energy Program which will kick off a plan next year to replace, renew and modernize UMD's aging energy system which provides heating, cooling and electric services to campus; 2) a plan to make the university fleet produce zero emissions by replacing approximately 1,000 gas powered light-duty trucks and vehicles with electric models as they wear out; and 3) to expand outreach to our campus community to stay engaged and informed of our progress through the creation of SustainableUMDProgressHub, a data driven website that allow users to learn all about the sustainability related activities that are completed, in progress, and planned for at UMD.
In collaboration with and agreement from DGS, UMD is basing its report utilizing site energy data, not its utility bills. The reason for this methodology is due to the large Combined Heat and Power (CHP) plant at UMD. As it reached its 20-year equipment life span, the CHP has been unreliable in the past few years and fluctuations in operating hours year over year has a very significant impact on total MMBtus, which is the metric for this report. Utilizing utility bills does not account for the inherent efficiency of a CHP plant which, when operating at capacity, provides approximately half of the campus electricity consumption and all of its steam for heating needs. Reporting the gas MMBtus associated with the CHP would be the equivalent of a source energy resource which is then co-mingled with other site energy resources such as grid purchased electricity. It would not be comparable to what other state agencies are reporting since they do not have any distributed generation capabilities. It also would not be representative of the

energy efficiency improvements that UMD has implemented over the years as the campus physical footprint continues to grow with the addition of new buildings to meet programmatic needs. Because of its extensive building sub-meter network, UMD is able to provide the site energy use data, which is comparable to what other state agencies are reporting. Using this methodology, UMD has reduced its energy consumption by nearly 10% in FY20 over FY18 baseline.

The 10% reduction in FY20 against baseline FY18 can only be partially attributed to the pandemic shutdown that began at the university in mid-March 2020. The shutdown only affected 3.5 months of the FY20 reporting year. The reduction can be largely attributed to intentional energy efficiency improvements that were implemented beginning in FY19 with savings beginning to be realized in FY20. These efforts include construction of an energy performance contract affecting eight high EUI buildings, a pilot project of automated scheduling of large spaces such as lecture halls that would significantly reduce HVAC demand during unoccupied/unscheduled periods, and ongoing lighting upgrade projects.

For Covid-19 pandemic related energy impacts, additional analysis of calendar year 2020 energy consumption compared to calendar year 2019 consumption resulted in approximately 15% overall reduction on our College Park campus. While the campus was at near zero occupancy from mid-March 2020 through June 2020, limited faculty and staff began returning on July 1, 2020, with a steady increase in occupancy since then. Even though there was lower than usual occupancy, our building systems were never shut down completely, but placed in unoccupied mode when applicable. Building systems continued to operate to maintain space conditions in support of critical research, animal care, and protection of physical assets. Some buildings did not have systems or controls in place to condition only occupied spaces meaning entire building systems may be operating to maintain specific conditions in a small portion of the building that was being occupied. In response to the Covid-19 pandemic, increased ventilation was provided by central air handling system even under low occupancy. Ventilation and space conditioning systems schedules were extended to flush building contaminants, both in the morning before arrivals and at the end of the day after departures. Among end uses, electric consumption reduction was by far the greatest. With reduced occupancy, this had greatest impact on plug loads such as desktop computers, printers, coffee makers, cell phone and laptop charging, personal space heaters, fans and of course, burn hours for lighting affecting both faculty/staff as well as student spaces.

As the University of Maryland prepares to welcome students back to campus for the 2021-2022 academic year, we plan to continue our efforts to increase energy efficiency and reduce campus energy consumption through the strategies outlined above.

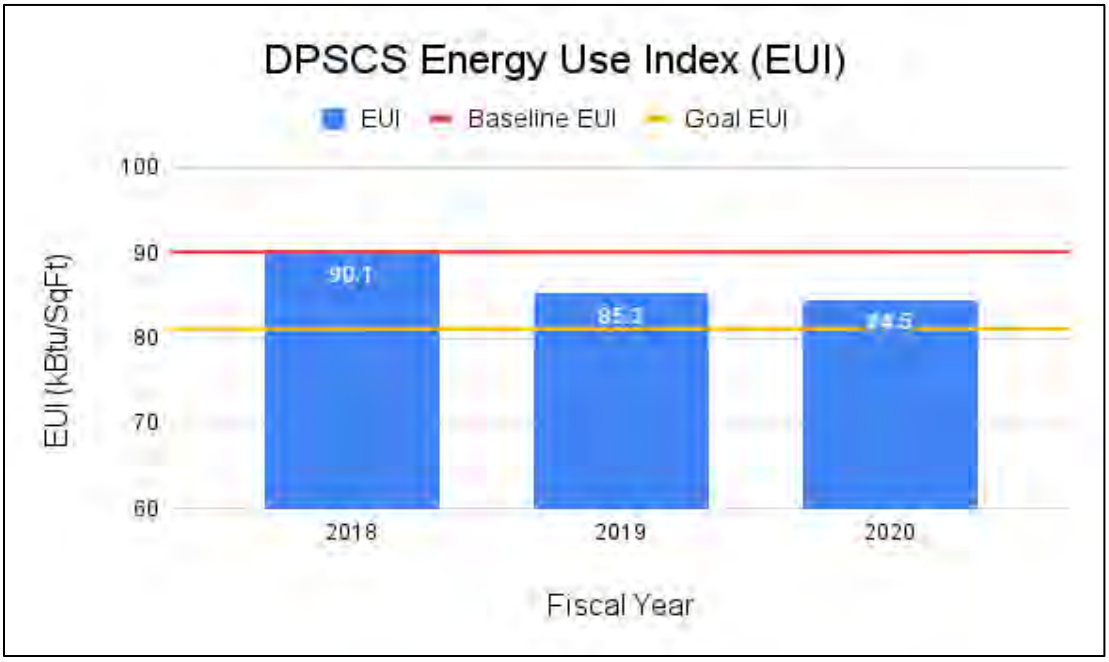
## II. Department of Public Safety & Correctional Services (DPSCS)

### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 15,374,567 | 1,385,819 | | 14.43% | 90.1 |
| **FY19** | 15,297,691 | 1,304,948 | -5.8% | 13.91% | 85.3 |
| **FY20** | 15,115,101 | 1,277,692 | -6.2% | 14.43% | 84.5 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 80.19% | 12 | $135,492 |
| **FY19** | 80.19% | 9 | $652 |
| **FY20** | 80.19% | 88 | $258,065 |




### Agency report:

**No report submitted.**

## III. University of Maryland Baltimore (UMB)

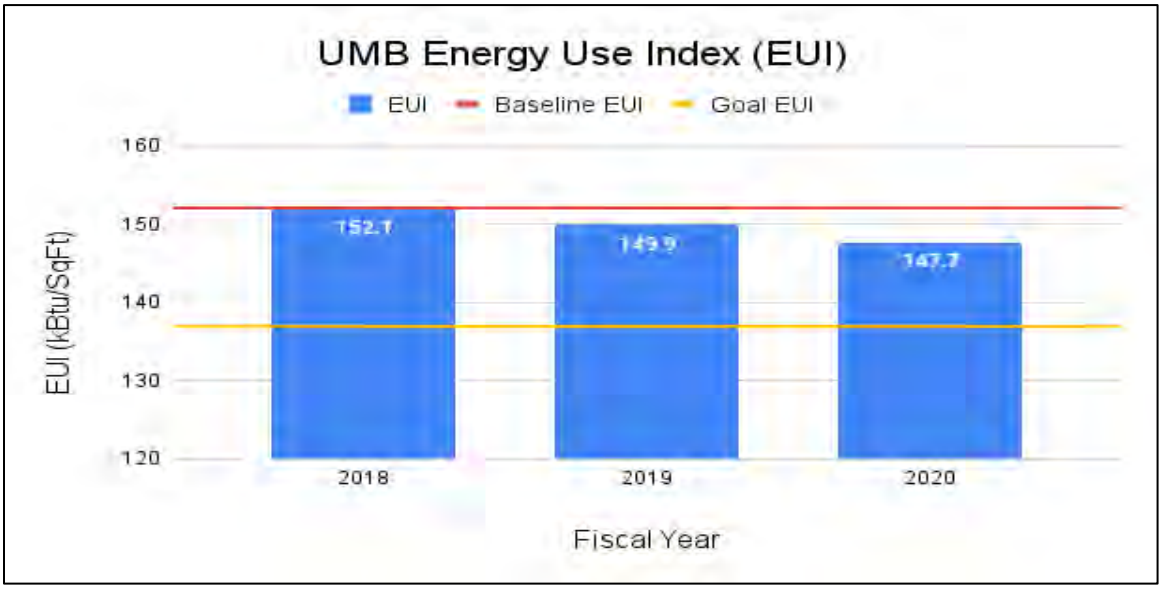
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 5,950,069 | 904,967 | | 9.42% | 152.1 |
| **FY19** | 5,950,069 | 891,677 | -1.5% | 9.51% | 149.9 |
| **FY20** | 5,950,069 | 879,027 | -2.9% | 9.93% | 147.7 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 0 | $0 |
| **FY19** | 100% | 0 | $0 |
| **FY20** | 100% | 6 | $3,242.19 |

### Change in Energy Use Index (EUI):



## Agency Report:

The University of Maryland at Baltimore brought on-line a new 429,900 Gsf Health Sciences Research Facility (aka "HSF3") in 2018. Its impact on the campus energy portfolio has been significant (overall campus EUI increased +3.4% in 2018 to 221,871 Btu/Gsf). Over the years to come, we will improve HSF3's EUI through optimization strategies that will match building energy services with actual building loads/demands.

In 2021 and over the near term UMB will continue to focus on the following energy measures:

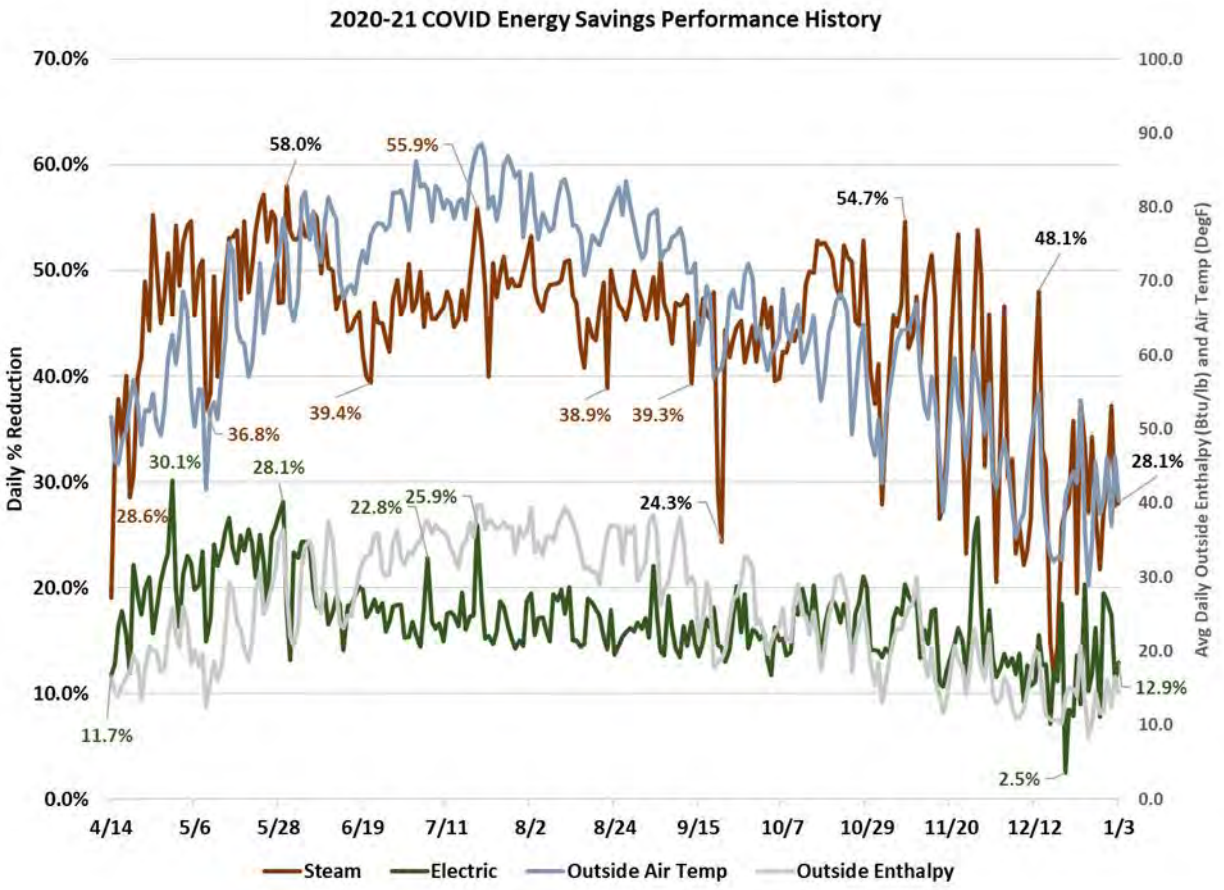
1. Continue upgrading T8 Fluorescent Lighting with T8 LED tube and LED fixture replacements.
2. Continue converting all building energy systems (fresh air, fume hood exhaust air, domestic water, hydronic heating, etc) from constant volume to variable volume/on-demand via VFD upgrades of motor starters and BAS setpoint resets.
3. Improve building envelope via window and roof replacements.
4. Improve Air Handler efficiencies via cooling coil steam cleaning.
5. Optimize campus chilled water loops via BAS demand flow modeling.
6. Complete upgrade of 4MW Natural Gas-fired Peaking Plant to Peak Shave and curtail grid demand charges.

UMB 2020 COVID Energy Reduction Effort:

On 4/14/20, UMB Facilities and Operations took advantage of the COVID-related campus quarantine measures to optimize the Building Automation Systems' (BAS) default setpoints for operating building Air Handling Units and Hydronic Heating Systems. Some of the measures taken are listed below:

1. Campus leadership solicited help from research community to volunteer unused lab spaces (which were put in unoccupied mode 24/7)
2. Reduce air changes via lower AHU static setpoints
3. Raise AHU supply air setpoints and chilled water setpoints by 2-3 DegF
4. Lower reheat water loop setpoints to around 100DegF (from 130DegF)
5. Some Research Buildings were running 24/7 prior to COVID due to comfort complaints. Put all Research Buildings on 30% setback during weeknights and weekends
6. Put unoccupied buildings in Unoccupied mode 24/7 with minimal air refresh cycles
7. Run admin buildings with minimal occupancy 9am – 1pm to wring out moisture and return to unoccupied for remainder of business day

Significant energy savings were realized due to the changes made, and because the changes were unnoticed by essential employees who continued to work on campus, many are still in effect today. Inserted below is a chart showing the percent reduction of daily electric and steam volumes through nine months in 2020 versus comparable weather days pre-COVID19. The daily kWh electric volumes were 10-20% lower and steam Clb volumes were 30-50% lower versus comparable days in 2019. The best seasons to realize the most savings were hot days in the late spring and summer. This effort continues into 2021 with comparable daily savings volumes.




## IV. University of Maryland Baltimore County (UMBC)

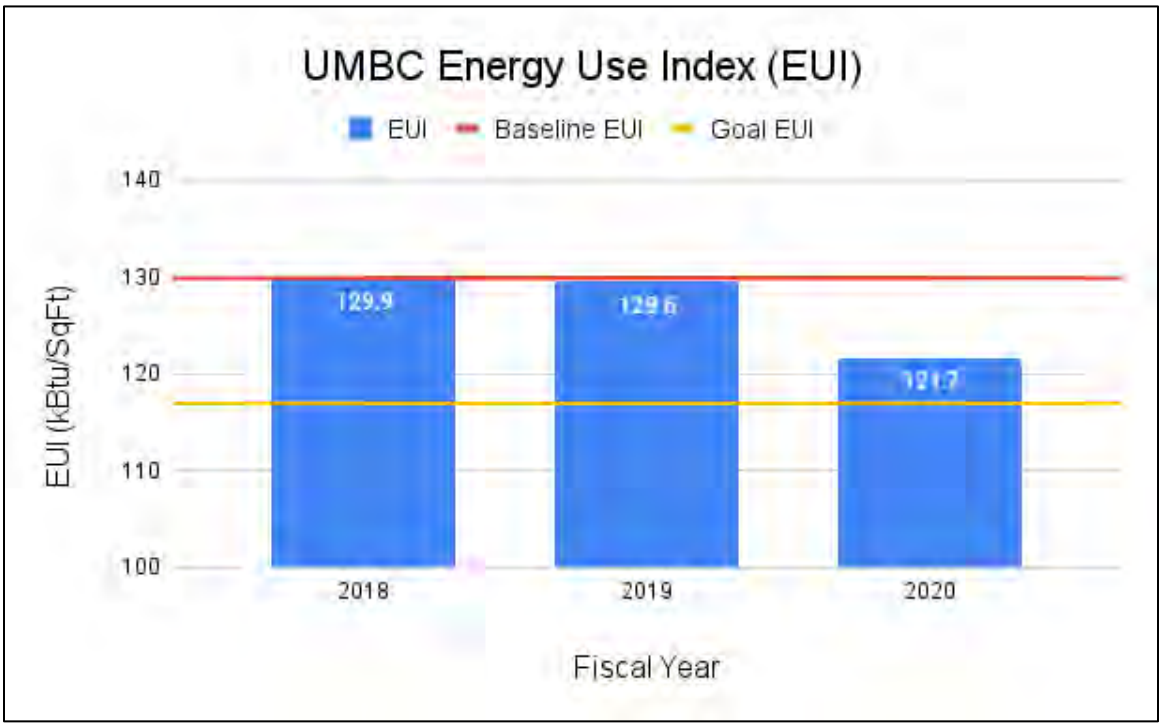
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBtu | EUI (kBtu/SqFt) |
| FY18 (baseline) | 4,467,954 | 580,472 | | 6.04% | 129.9 |
| FY19 | 4,467,954 | 579,017 | -0.3% | 6.17% | 129.6 |
| FY20 | 4,467,954 | 543,597 | -6.3% | 6.14% | 121.7 |

## Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| FY18 | 100% | 0 | $0.00 |
| FY19 | 100% | 0 | $0.00 |
| FY20 | 100% | 0 | $0.00 |

## Change in Energy Use Index (EUI):




## Agency report:

Prior to the FY18 baseline, UMBC had already implemented a vast array of energy conservation initiatives, resulting in the EUI baseline being significantly lower than it would have been. To see details on UMBC's previous energy conservation initiatives, please refer to the initial Annual Report, which covered the period through June 2020 (the end of FY19).

Although FY21 is now complete, EUI data for FY21 is not yet available. This report includes the EUI data through FY20 as well as insights into the unusual circumstances, operational activities, and conservation initiatives affecting energy usage through FY21.

## UMBC Sites

UMBC has three sites that are included in the Executive Order: UMBC Campus, BW Tech South, and Columbus Center. Excluded from the Executive Order are leased properties and buildings added after 6/30/2018 (the end of FY18).

The Executive Order (EO) is primarily interested in tracking EUI for each State agency as a whole. However, to make the energy data more actionable, EUI is being monitored separately for UMBC Campus, BW Tech South, and Columbus Center. Combined, these three sites comprise the Agency Total for UMBC.

**UMBC Campus** is a research university, located at 1000 Hilltop Circle, Baltimore, MD 21250. For purposes of the EO, UMBC Campus consists of 73 buildings totaling **4,033,191 SqFt**. These numbers exclude two inactive buildings that currently have no utility services. Also excluded are two buildings added after FY18, listed below. UMBC Campus uses electricity, natural gas, and fuel oil.

- UMBC Event Center (effective date 7/1/2018; 178,517 SqFt)
- Interdisciplinary Life Sciences Building (effective date 7/1/2019; 133,267 SqFt)

**BW Tech South** is a research park and technology incubator, located at 1450 South Rolling Road, Baltimore, MD 21227. The complex is primarily used by tenants for R&D operations. BW Tech South consists of six buildings totaling **170,826 SqFt**. BW Tech South uses electricity and natural gas.

**Columbus Cente**r is an office building, located at 701 E Pratt Street, Baltimore, MD 21202. The building is primarily occupied by USM's Institute of Marine & Environmental Technology. Columbus Center is a single building totaling **263,937 SqFt**. Columbus Center uses electricity, purchased steam, and natural gas.

**Agency Total** is all three of the above sites combined. For purposes of the EO, there are 80 buildings totaling **4,467,954 SqFt**.

## Summary of Energy Usage and EUI by Fiscal Year

For calculating EUI, the various energy commodities are converted into common units of MMBtu. For each site, EUI is calculated by dividing the total energy consumed by its building(s) in a year by the total gross floor area of its building(s).

Energy Usage (MMBtu)

| | FY18 Baseline | FY19 | FY20 | FY21 | FY22 | FY23 | FY24 | FY25 | FY25 | FY27 | FY28 | FY29 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UMBC Campus | 495,725 | 494,345 | 454,678 | | | | | | | | | |
| BW Tech South | 26,422 | 27,784 | 26,877 | | | | | | | | | |
| Columbus Center | 58,325 | 56,214 | 62,042 | | | | | | | | | |
| **Agency Total** | **580,472** | **578,343** | **543,597** | | | | | | | | | |

EUI (kBtu/SqFt)

| | FY18 Baseline | FY19 | FY20 | FY21 | FY22 | FY23 | FY24 | FY25 | FY25 | FY27 | FY28 | FY29 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UMBC Campus | 122.9 | 122.6 | 112.7 | | | | | | | | | |
| BW Tech South | 154.7 | 162.6 | 157.3 | | | | | | | | | |
| Columbus Center | 221.0 | 213.0 | 235.1 | | | | | | | | | |
| **Agency Total** | **129.9** | **129.4** | **121.7** | | | | | | | | | |

## Factors Affecting Energy Usage in FY20 and FY21 (July 2019 – June 2021)

The COVID-19 "shutdown" started in mid-March 2020 and, in varying degrees, has continued into the summer of 2021. Depending upon the purpose of the space (research, office, classroom, student housing, etc.), some areas saw a significant reduction in energy usage due to less occupants and unoccupied mode setbacks. The greatest savings were realized in reduced electricity usage, especially for UMBC Campus.

Initially, the hope was to capitalize on the COVID-19 shutdown to significantly reduce energy usage by locking non-critical buildings into unoccupied mode, and cycle AHUs on only if space temperatures got below 55 or above 85. The setback criteria were soon relaxed to cycle AHUs on only if space temperatures got below 60 or above 80.

As data from CDC indicated that COVID-19 transmission could be reduced by being outdoors, safety concerns pushed energy conservation aside. In buildings and areas with the possibility of occupancy, even if minimal or sporadic, AHUs were returned to normal operation.

There are still some energy savings from reduced occupancy (less lights on, less equipment plugged in, etc.), but not to the level that could have been achieved via a total shutdown.

There are ongoing discussions about increasing the intake of outside air, creating more airflow, and increasing the air changes her hour. Some of these enhanced health-safety measures may not be possible because the increased loads would exceed the design limits of the existing HVAC equipment. **One thing is certain; all these enhanced health-safety measures would increase energy usage.**

## Future Plans for Energy Conservation

Since many big energy projects—those with the best payback—have already been implemented, the future challenge becomes identifying and implementing additional large-scale energy projects as future technological advances provide even greater efficiencies. Funding such projects will also be challenging, especially after the COVID-19 crisis has hurt the economy and the State's budget.

UMBC is focusing on no-cost/low-cost initiatives. Many of the initiatives will be enhancements of ongoing energy conservation efforts, such as the following:

- HVAC Equipment Scheduling – Setup and maintain HVAC equipment schedules in BAS to better match the actual occupancy of each building, lecture halls, AHU zones, etc. Setup and maintain HVAC equipment schedules in BAS for campus holidays and shutdowns. Set vacant rooms in resident halls and vacant apartment units to unoccupied mode during winter/spring/summer breaks.
- Set Point Standards – Space temperature set points to be no higher than 70 for heating mode and no lower than 76 for cooling mode. Reheat valves to remain closed until space is below heating set point.
- Setback for Unoccupied Mode – AHUs off unless space gets below 60 or above 80.
- Improved Preventive Maintenance for HVAC Equipment – Include a renewed focus on energy efficiency, such as changing filters and cleaning coils to improve fan efficiency and heat transfer; water treatment to improve pump efficiency and distribution capacity; finding/fixing leaks; and finding/fixing valves, dampers, and terminal units that are wasting energy. Proactive versus reactive. Integrate energy conservation into O&M culture so the "extra work" becomes routine.
- See Something, Do Something – Improve work order process for campus community to report energy waste, such as building/room too warm when it's cold outside, building/room too cold when it's hot outside, exterior lights on during the day, and too many interior lights on at night.
- Lighting – Upgrade to LED lighting when cost-effective to do so. Utilize new stickers to remind people to turn off the lights.
- Green Office Program – Rollout to more offices and departments. Implement a periodic verification and recertification.
- Office of Sustainability – Leverage the Office of Sustainability (established in FY20) to get greater buy-in and cooperation from all parts of the campus community (admin, faculty, researchers, staff, students, and residents) and compliance support from campus leadership. Provide user-friendly resources to promote sustainability and energy conservation.

## V. Department of General Services

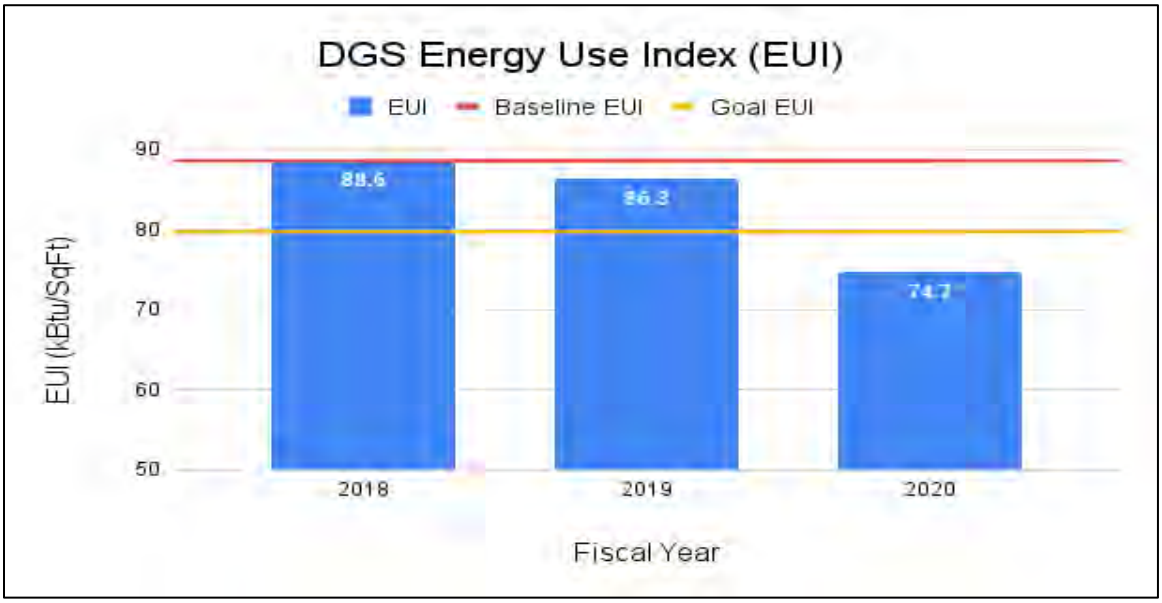
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | Change in usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| FY18 (baseline) | 6,498,791 | 575,501 | | 5.99% | 88.6 |
| FY19 | 6,498,791 | 560,793 | -2.5% | 5.98% | 86.3 |
| FY20 | 6,498,791 | 485,168 | -15.7% | 5.48% | 74.7 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| FY18 | 100% | 7 | $15,167 |
| FY19 | 100% | 16 | $36,029 |
| FY20 | 100% | 0 | $0 |

### Change in Energy Use Index (EUI):




### Agency report:

Please see the write-up on pages 10 through 18.

## VI. Maryland Aviation Administration (MDOT-MAA)

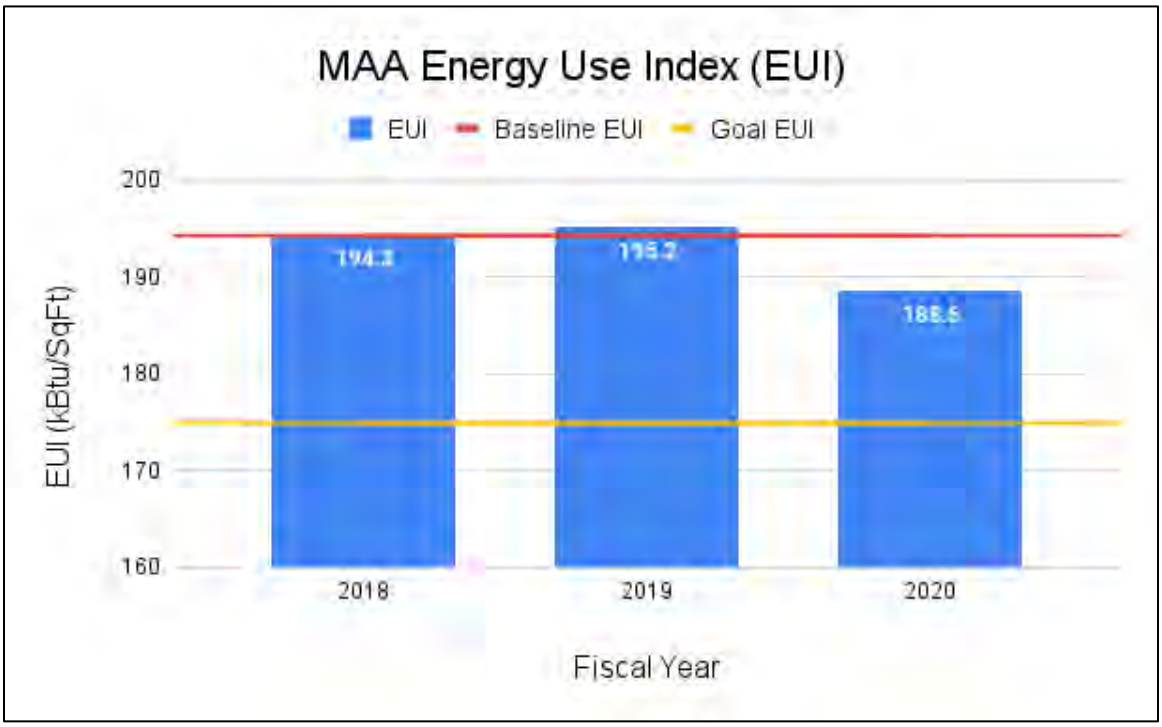
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 2,920,577 | 567,330 | | 5.91% | 194.3 |
| **FY19** | 2,920,577 | 570,231 | +0.5% | 6.08% | 195.2 |
| **FY20** | 2,920,577 | 550,780 | -2.9% | 6.22% | 188.6 |

## Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 0 | $0 |
| **FY19** | 100% | 28 | $19,582.02 |
| **FY20** | 100% | 6 | $8,759.56 |

## Change in Energy Use Index (EUI):




## Agency report:

The COVID pandemic resulted in periods of a 90% decrease in passengers at BWI airport, however the airport remained in full service for the year. The energy use decreased approximately 5% compared to the prior year. With decreased passenger use of the terminal, reduction of outdoor air intake was considered. Due to fire protection code requirements for positive pressure at the jet bridge doors the reduction of air intake was not possible. Energy reduction actives focused on reducing use by lights. This was accomplished through two approaches 1) improving the operation of the control system that turns the lights off during the day and 2) aggressively implementing the BGE rebate program for small accounts to convert to LEDs. The airport has over 30 small accounts for buildings and parking lots. Conversion of the lights in10 of these accounts was initiated. This program represents over $700,000 of investment that net of the rebate, results in energy savings providing less than 2-year payback.

## VII. Towson University

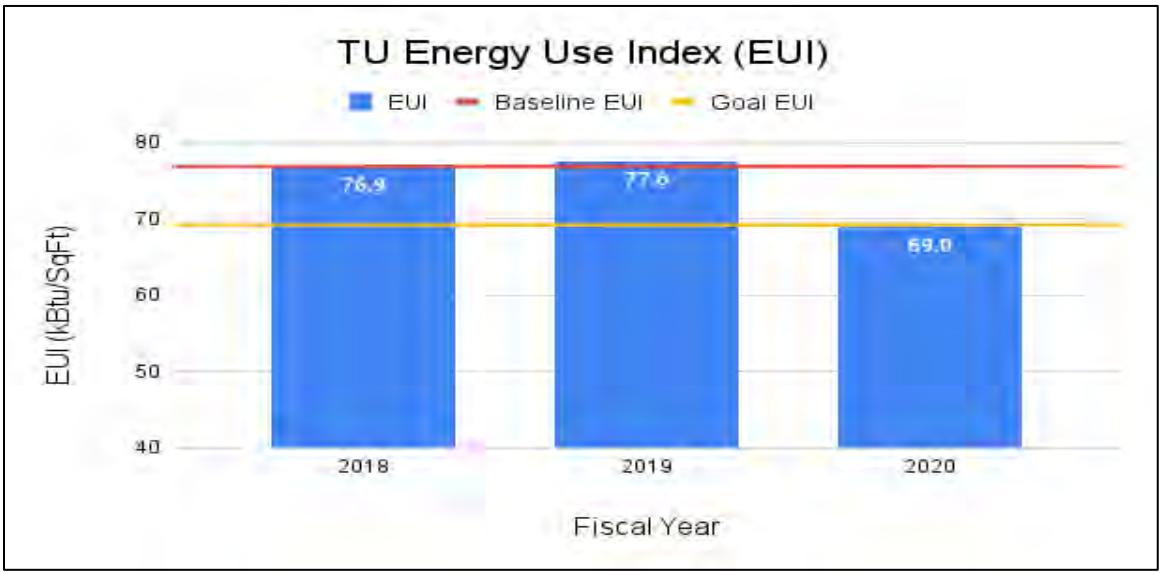
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 6,036,906 | 463,915 | | 4.83% | 76.9 |
| **FY19** | 6,036,906 | 468,144 | +0.9% | 4.99% | 77.6 |
| **FY20** | 6,036,906 | 416,416 | -10.3% | 4.70% | 69.0 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 0 | $0 |
| **FY19** | 100% | 0 | $0 |
| **FY20** | 100% | 0 | $0 |

### Change in Energy Use Index (EUI):




### Agency report:

Towson University became a signatory of the American Colleges and Universities Presidents' Climate Commitment (ACUPCC) in 2007. By signing the ACUPCC, TU pledged to reduce Greenhouse Gas Emissions 20% by 2020 and 50% by 2030 with a goal of carbon neutrality by

2050. This signing was a major milestone for TU; it was during this time that the University took the first steps on implementing greenhouse gas reduction measures with a strong focus on energy efficiency.

In 2017 TU reached its Department of Energy Better Buildings Challenge Goal of 20% Energy Reduction (EUI) three years early (baseline year 2010 with target year 2020). By 2019 TU reached 22% energy reduction from a baseline year of 2010. 2019 also saw the signing of Governor Hogan's Executive Order 01.01.2019.08 requiring all State institutions reduce energy consumption by an additional 10% by 2029 from a baseline year of 2018.

In 2020, however, everything changed and TU, like many other institutions, experienced an unprecedented chain of events as the university saw the onset of COVID19. In mid-March the university virtually shut down overnight and moved all teaching and non-essential operations off campus. For the remainder of the year, TU operated in a hybrid mode while keeping all buildings open and keeping most systems operating. As the university made the decision to keep buildings open, there were also modifications made to ventilation systems to address COVID concerns. These were primarily adjustments to automation systems increasing outside-air intake and thereby increasing ventilation related energy consumption in many buildings.

In addition to activities being moved to hybrid/remote, university budgets were also immediately frozen, and most energy projects were postponed or cancelled. This was the case for end of FY2020 and most of FY2021 until 3Q and 4Q FY2021 when budgets began to slowly loosen, and some spending was able to resume. Even with most budgets being reduced, there were several initiatives that were executed during COVID to reduce energy. As a result, for the year FY2021, TU saw an approximate 10% reduction in energy consumption over the previous year.

Examples of energy savings initiatives/reductions during FY2021 (COVID):

- Majority of buildings saw immediate drastic reduction in lighting and plug loads due to very low occupancy.
- Modifications to temperature set-points and building schedules were put in place which had a positive impact on energy consumption.
- Conducted continuous commissioning (Monitoring Based Commissioning) in multiple buildings throughout the year, adjusting the water temperature, tuning process set-points and optimizing controls in chiller plants, boiler operations, etc.
- Implemented multiple LED lighting upgrade projects in several academic and administration buildings.
- Completed the New Construction Commissioning of a 300,000 sq.ft. Science Complex.
- Continued the expansion of a university-wide metering network by installing smart-meters in several buildings to aid in collecting consumption data and assist in prioritizing energy reduction efforts.

The above list of energy accomplishments are examples of Towson University's commitment to reducing energy consumption and greenhouse gases across campus even during this past very challenging year. TU will continue to lead in this effort and will continue to take additional steps

to meet the Governors new Executive Order to reduce energy consumption an additional 10% by 2028.

## VIII. Maryland Dept of Health (MDH)

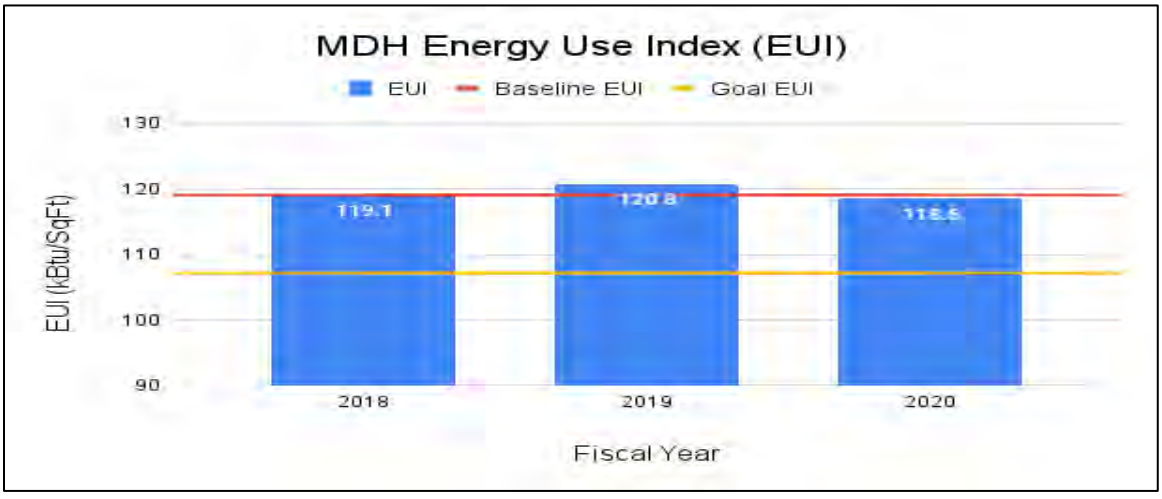
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 3,208,181 | 382,122 | | 3.98% | 119.1 |
| **FY19** | 3,208,181 | 387,688 | +1.5% | 4.13% | 120.8 |
| **FY20** | 3,208,181 | 380,601 | -0.4% | 4.30% | 118.6 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 2 | $7,100 |
| **FY19** | 100% | 31 | $28,309 |
| **FY20** | 100% | 0 | $0.00 |

### Change in Energy Use Index (EUI):




### Agency report:

The Maryland Department of Health ('MDH" "Department") is a cabinet level agency of Maryland State Government that is responsible for the promotion and improvement of the health of all Maryland residents. The Department's mission is to work together with the community to

promote and improve the health and safety of all Marylanders through disease prevention, access to care, quality management, and community engagement. As a public health agency, the goal of MDH is to improve the health status of every Maryland resident and to ensure access to quality health care.

MDH operates eleven health care facilities in various locations throughout the State. MDH also provides services to the State through operation of the Maryland Forensic Medical Center (Office of the Chief Medical Examiner) and the Maryland Public Health Laboratory. With a total of approximately 3.5 million square feet of space at MDH's eleven operating facilities, as well as additional locations such as the Maryland Forensic Medical Center, the Maryland Public Health Laboratory, and MDH leased facilities, energy consumption is a significant operating expense for the Department.

MDH completed construction of two additional EPC projects after the FY 2018 baseline, that are currently in the measurement and verification stage. These projects include a stand-alone project at the Thomas B. Finan Center, and a combined EPC project benefiting the Clifton T. Perkins Hospital Center and the Holly Center. Both projects included installation of natural gas distribution and conversion of heating from fuel oil to natural gas, as well as other energy saving measures. Both projects will significantly reduce energy consumption beyond the FY 2018 baseline.

MDH's EPCs have resulted in 316,754 MMBTU in annual energy use reduction, and a reduction of 20,806 tons in annual carbon dioxide emissions. Due primarily to MDH's commitment to the EPC program, the Department was recently awarded the 2021 Maryland Green Registry State Agency Energy Award for the work completed to reduce energy usage and conserve resources.

The Department of Health is currently engaged with DGS to explore additional energy conservation projects at RICA Baltimore, John L. Gildner RICA, Eastern Shore Hospital Center, and the Office of the Chief Medical Examiner. MDH is also actively engaged with the DGS Office of Real Estate to implement energy saving measures in leased locations as well as part of the initiation of new leases and lease renewals.

The Department is adding electric vehicles to the Department's fleet annually and recently completed installation of an EV charging station at Eastern Shore Hospital Center in Cambridge, MD.

Energy conservation will continue to be a priority for MDH. The Department maintains an active agency energy management team within the Office of Facilities Management and Development. Through implementation of additional Energy Performance Contract projects, energy focused DGS funded Facility Renewal projects, and through conservation measures managed at the facility level, MDH will continue to contribute to Governor Hogan's and the State of Maryland's goals for energy conservation.

## IX. Morgan State University (MSU)

### Agency Energy Usage Snapshot:

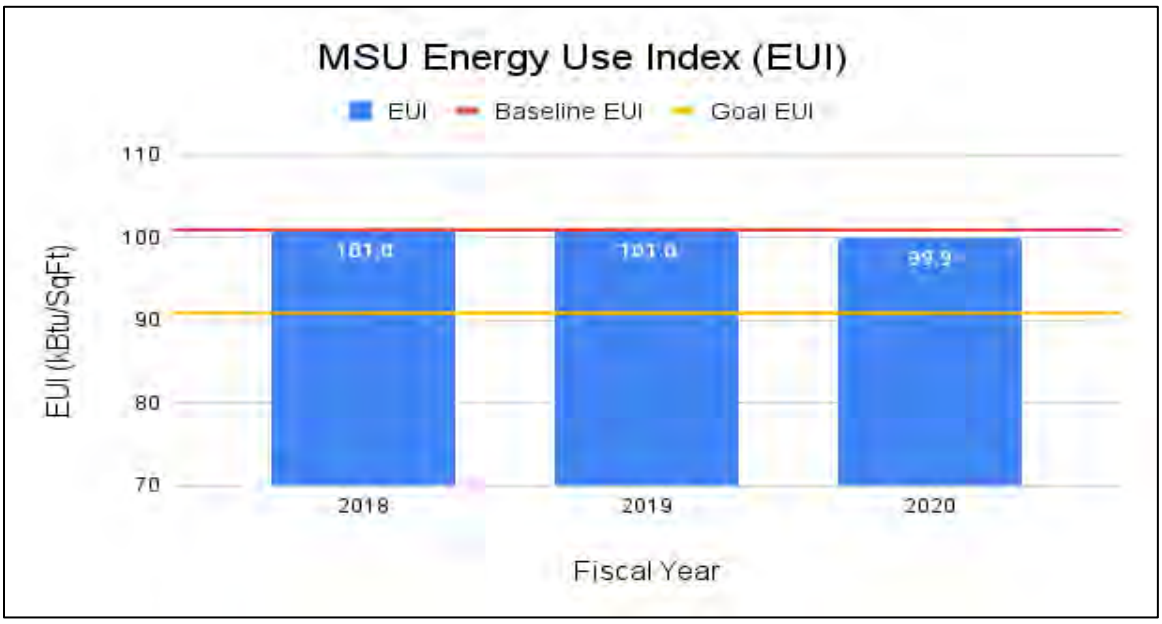
| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 3,396,043* | 342,866 | | 3.57% | 101.0* |
| **FY19** | 3,396,043* | 342,913 | +0.01%* | 3.66% | 101.0* |
| **FY20** | 3,396,043 | 339,205 | -1.1% | 3.83% | 99.9 |

* Updated from FY18-19 Annual Report

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 0 | $0.00 |
| **FY19** | 100% | 0 | $0.00 |
| **FY20** | 100% | 0 | $0.00 |

### Change in Energy Use Index (EUI):



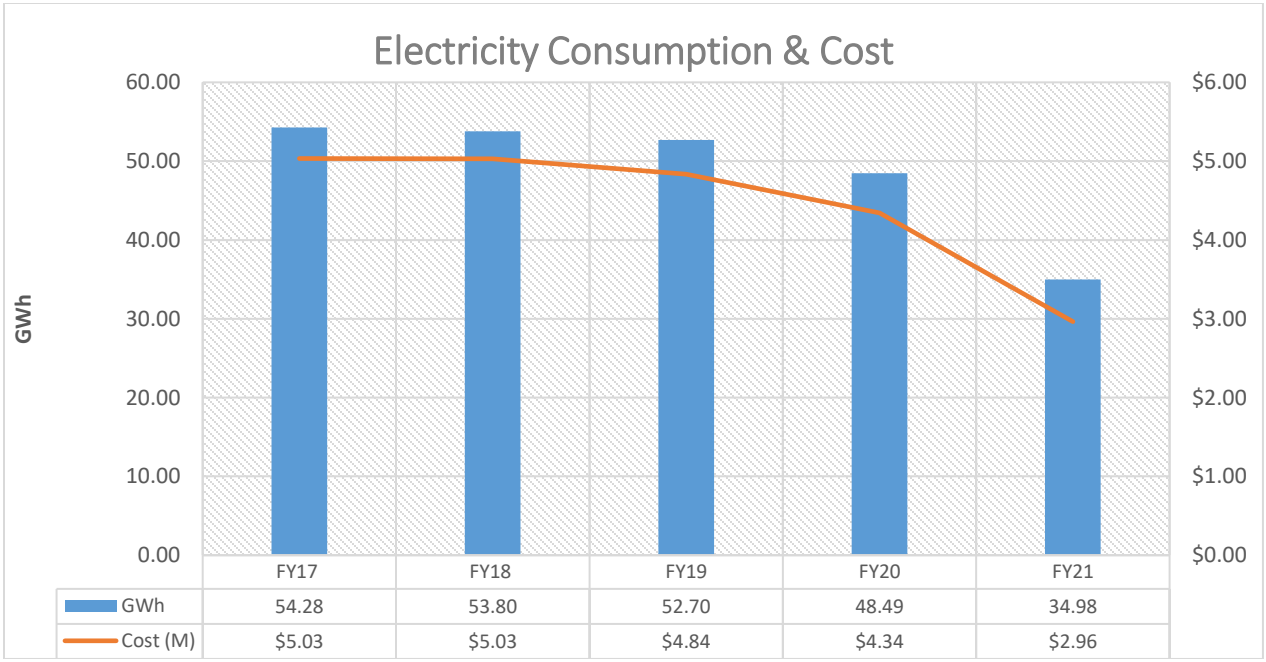
## Agency report:

Morgan State University is committed to actively participate in accomplishing the Governor's mandate of reducing the State's energy consumption by 10% - by fiscal year 2029 - utilizing the baseline of fiscal year 2018. That said, the University has partnered with Maryland Clean Energy Center (MCEC) to assess its facilities and develop a Master Strategic Energy & Sustainability Plan (MSESP). The main goal of the plan is to comprehensively transform Morgan's energy portfolio and improve its efficiency. The emphasis of the plan, which is already in motion, include the following initiatives:

- Maintain sustainability and carbon neutrality of a growing campus.
- Perform an energy audit to identify potential EPC projects.
- Upgrade, expand, and integrate the existing Building Automation Systems (BASs).
- Maximize energy conservation by being more efficient.
- Ensure a safe, comfortable and healthy environment for all occupants by the implementation of a comprehensive Indoor Air Quality (IAQ) improvement program.
- Reduce the deferred maintenance backlog by using energy savings dollars to help with the funding.

Morgan State University has been using its existing BASs to consistently conserve energy through the years. The following charts summarize our consumptions and savings from fiscal year 2017 to current.

Graph #1



Graph #2

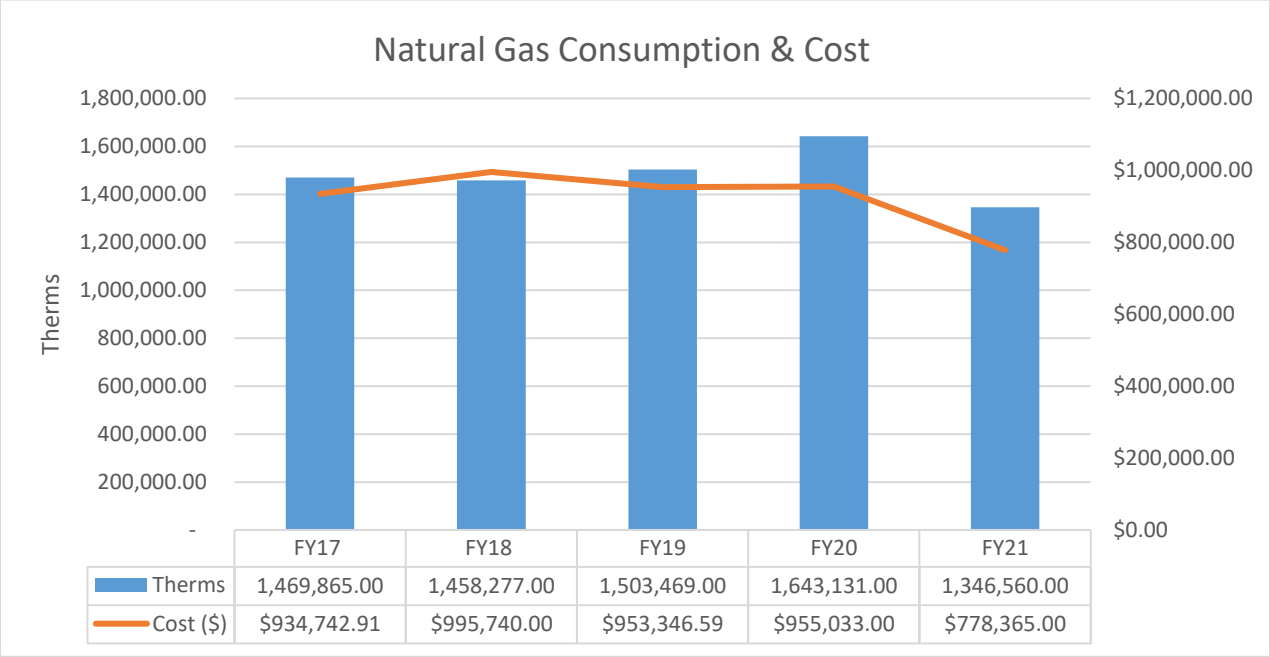



Table #1

| Summary of percent (%) reduction | | | |
|---|---|---|---|
| **Fiscal Year** | Therms | kWh | Comments |
| **FY18** | Base | Base | |
| **FY19** | 2.0% | -3.1% | Natural gas Consumption has increased |
| **FY20** | 9.9% | -12.7% | Natural gas Consumption continues to increase |
| **FY21** | | | |

Table #2

| Agency | FY20 SqFt | FY20 MMBTU | FY18 EUI | FY19 EUI | FY20 EUI | FY19 % Change |
|---|---|---|---|---|---|---|
| **MSU** | 3,396,043 | 339,205 | 101 | 101 | 99.9 | 0.00 |
| | | | | | | |

As can be seen from **graph #1**above, the University's electricity consumption continues to go down, but the steep decline in FY20 is mainly due to COVID 19 shutdowns when most of the buildings were minimally occupied and HVAC equipment only operated to maintain safe conditions in the buildings.

On the other hand, as shown on **graph#2**, Natural gas consumption continues to increase. This is mainly due to increasing heating loads, malfunctioning steam devices, and thermal losses in the steam distribution infrastructure. Fortunately, the University has funded the replacement of defective steam straps which should improve our efficiency in future years. So far, the steam traps (28) of the steam distribution manholes have been replaced. The remaining traps of the entire distribution system are scheduled for replacement during FY22.

In addition to replacing the steam traps, the University has a short term and a long term plan to further improve the efficiency of its heating systems. The scope of work is detailed in Table #3 below:

Table #3

**Morgan State University Utility Master Plan 2021**

HEATING EQUIPMENT LIST Study 2021
CENTRAL PLANT

| Building Name | Sub System Type | Quantity | Unit | Equipment Installation Year | Estimated Equip. Life (YRs)*** | Remaining Life (YRs) | Replacement Year | Replacement Priority (I, H, M, L, N) |
|---|---|---|---|---|---|---|---|---|
| Heating Plant | Boiler | 1 | 1 | 2004 | 25 | 8 | 2029 | High |
| Heating Plant | Boiler | 1 | 2 | 2004 | 25 | 8 | 2029 | High |
| Heating Plant | Boiler | 1 | 3 | 2004 | 25 | 8 | 2029 | High |
| Heating Plant | Boiler | 1 | 4 | 2004 | 25 | 8 | 2029 | High |
| Heating Plant | Deaerator Tank* | 1 | 1 | 2007 | 20 | 6 | 2027 | High |
| Heating Plant | Surge Tank** | 1 | 1 | 2004 | 25 | 8 | 2029 | High |
| Heating Plant | Chemical Feed Tanks | 1 | 1 | 2004 | 15 | -2 | 2021 | Immediate |
| Heating Plant | Water Softener | 1 | 1 | 2004 | 15 | -2 | 2021 | Immediate |
| Heating Plant | Water Softener | 1 | 2 | 2004 | 15 | -2 | 2021 | Immediate |
| Heating Plant | Water Softener | 1 | 3 | 2004 | 15 | -2 | 2021 | Immediate |
| Heating Plant | Feed water Pump | 1 | 1 | 2019 | 15 | 13 | 2034 | Medium |
| Heating Plant | Feed water Pump | 1 | 2 | 2019 | 15 | 13 | 2034 | Medium |
| Heating Plant | Condensate Pump | 1 | 1 | 2004 | 15 | -2 | 2021 | Immediate |
| Heating Plant | Condensate Pump | 1 | 2 | 2004 | 15 | -2 | 2021 | Immediate |
| Heating Plant | Blowdown Separator and Heat Recovery | 1 | 1 | 2004 | 5 | -12 | 2021 | Immediate |
| Heating Plant | Steam Meter | 1 | 1 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Steam Meter | 1 | 2 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Steam Meter | 1 | 3 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Steam Meter | 1 | 4 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Natural Gas Meter | 1 | 1 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Natural Gas Meter | 1 | 2 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Natural Gas Meter | 1 | 3 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Natural Gas Meter | 1 | 4 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Master Controller | 1 | 1 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | Quench Tank | 1 | 1 | 2004 | 20 | 3 | 2024 | Immediate |
| Heating Plant | No. 2 Fuel Oil Pump | 1 | 1 | 2004 | 15 | -2 | 2021 | Immediate |
| Heating Plant | No. 2 Fuel Oil Pump | 1 | 2 | 2004 | 15 | -2 | 2021 | Immediate |

* Deaerator expected life is estimated based on optimal operating conditions. Water quality and other external conditions can reduce the expected equipment life.

** Surge tank accepts condensate return and makeup water.

*** Estimated equipment life based on ASHRAE median service life data, manufacturer input, and our past experience

| | |
|---|---|
| Immediate | 1 - 5 Year Replacement |
| High | 6 - 10 Year Replacement |
| Medium | 11 - 15 Year Replacement |
| Low | 16 - 20 Year Replacement |
| No Priority | 21+ Year Replacement |

**Morgan State University Utility Master Plan 2021**

HEATING EQUIPMENT LIST
STEAM MANHOLES

Study 2021

| Manhole # | Sub System Type | Quantity | Unit | Estimated Manhole Size (Cu Ft) | Equipment Installation Year | Estimated Equip. Life** | Remaining Life (Yrs) | Replacement Year* | Replacement Priority (I, H, M, L, N) |
|---|---|---|---|---|---|---|---|---|---|
| Manhole #1 | Steam Manholes | 1 | EA | 576 | 2010 | 20 | 9 | 2030 | High |
| Manhole #1A | Steam Manholes | 1 | EA | 786 | 2010 | 20 | 9 | 2030 | High |
| Manhole #2 | Steam Manholes | 1 | EA | 768 | 2010 | 20 | 9 | 2030 | High |
| Manhole #2A | Steam Manholes | 1 | EA | 768 | 2010 | 20 | 9 | 2030 | High |
| Manhole #3 | Steam Manholes | 1 | EA | 576 | 2010 | 20 | 9 | 2030 | High |
| Manhole #4 | Steam Manholes | 1 | EA | 576 | 2010 | 20 | 9 | 2030 | High |
| Manhole #4A | Steam Manholes | 1 | EA | 327 | 2010 | 20 | 9 | 2030 | High |
| Manhole #5 | Steam Manholes | 1 | EA | 454 | 2010 | 20 | 9 | 2030 | High |
| Manhole #6 | Steam Manholes | 1 | EA | 576 | 2010 | 20 | 9 | 2030 | High |
| Manhole #7 | Steam Manholes | 1 | EA | 348 | 2010 | 20 | 9 | 2030 | High |
| Manhole #8 | Steam Manholes | 1 | EA | 900 | 2010 | 20 | 9 | 2030 | High |
| Manhole #9 | Steam Manholes | 1 | EA | 768 | 2010 | 20 | 9 | 2030 | High |
| Manhole #10 | Steam Manholes | 1 | EA | 768 | 2010 | 20 | 9 | 2030 | High |
| Manhole #11A | Steam Manholes | 1 | EA | 768 | 2007 | 20 | 6 | 2027 | High |
| Manhole #12 | Steam Manholes | 1 | EA | 768 | 2010 | 20 | 9 | 2030 | High |
| Manhole #13 | Steam Manholes | 1 | EA | 576 | 2010 | 20 | 9 | 2030 | High |
| Manhole #14 | Steam Manholes | 1 | EA | 768 | 2006 | 20 | 5 | 2026 | High |
| Manhole #15 | Steam Manholes | 1 | EA | 576 | 2010 | 20 | 9 | 2030 | High |
| Manhole #16 | Steam Manholes | 1 | EA | 768 | 2010 | 20 | 9 | 2030 | High |
| Tunnels | Steam Manholes | 1 | EA | - | 2010 | 50 | 39 | 2060 | None |

* Steam manhole priority is not based solely on age. Other conditions are included in determining the replacement priority, such as leaks and previous repairs.

** Estimated equipment life based on ASHRAE median service life data, manufacturer input, and our past experience. Assumes proper installation and new Class A piping systems.

| | |
|---|---|
| Immediate | 1 - 5 Year Replacement |
| High | 6 - 10 Year Replacement |
| Medium | 11 - 15 Year Replacement |
| Low | 16 - 20 Year Replacement |
| No Priority | 21+ Year Replacement |

**Morgan State University Utility Master Plan 2021**

HEATING EQUIPMENT LIST
PRV STATIONS

Study 2021

| Building Name | Sub System Type | Quantity | Unit | Equipment Installation Year* | Estimated Equip. Life** | Remaining Life (Calc) | Replacement Year | Replacement Priority (I, H, M, L, N) |
|---|---|---|---|---|---|---|---|---|
| Baldwin Hall | Building PRV Stations | 1 | Ea. | 1943 | 50 | -28 | 2021 | Immediate |
| Central Heating Plant | Building PRV Stations | 1 | Ea. | 2005 | 50 | 34 | 2055 | None |
| Health Center | Building PRV Stations | 1 | Ea. | 1955 | 50 | -16 | 2021 | Immediate |
| Hill Field House | Building PRV Stations | 1 | Ea. | 1998 | 50 | 27 | 2048 | None |
| Hurt Gymnasium | Building PRV Stations | 1 | Ea. | 1991 | 50 | 20 | 2041 | None |
| Richardson Library | Building PRV Stations | 1 | Ea. | 2007 | 50 | 36 | 2057 | None |
| Student Center | Building PRV Stations | 1 | Ea. | 2007 | 50 | 36 | 2057 | None |
| Tyler Hall | Building PRV Stations | 1 | Ea. | 2004 | 50 | 33 | 2054 | None |
| Banneker Hall | Building PRV Stations | 1 | Ea. | 2009 | 50 | 38 | 2059 | None |
| Calloway Hall | Building PRV Stations | 3 | Ea. | 1953 | 50 | -18 | 2021 | Immediate |
| Carter Grant Wilson Building | Building PRV Stations | 1 | Ea. | 1963 | 50 | -8 | 2021 | Immediate |
| CBIES | Building PRV Stations | 1 | Ea. | 2010 | 50 | 39 | 2060 | None |
| Communication Building | Building PRV Stations | 1 | Ea. | 2006 | 50 | 35 | 2056 | None |
| Dixon Building | Building PRV Stations | 1 | Ea. | 2004 | 50 | 33 | 2054 | None |
| Holmes Hall | Building PRV Stations | 1 | Ea. | 1952 | 50 | -19 | 2021 | Immediate |
| Martin Jenkins Building | Building PRV Stations | 1 | Ea. | 1974 | 50 | 3 | 2024 | Immediate |
| McKeldin Center | Building PRV Stations | 1 | Ea. | 1974 | 50 | 3 | 2024 | Immediate |
| McMechen Hall | Building PRV Stations | 1 | Ea. | 1972 | 50 | 1 | 2022 | Immediate |
| Spencer Hall | Building PRV Stations | 1 | Ea. | 1962 | 50 | -9 | 2021 | Immediate |
| Truth Hall | Building PRV Stations | 1 | Ea. | 1947 | 50 | -24 | 2021 | Immediate |
| Tubman Hall | Building PRV Stations | 1 | Ea. | 1952 | 50 | -19 | 2021 | Immediate |

* When PRV installation year was unavailable, the PRV installation year based on associated piping system installation year.

**PRV expected life based on industry standards.

| | |
|---|---|
| Immediate | 1- 5 Year Replacement |
| High | 6 - 10 Year Replacement |
| Medium | 11 - 15 Year Replacement |
| Low | 16 - 20 Year Replacement |
| No Priority | 21+ Year Replacement |

**Morgan State University Utility Master Plan 2021**

HEATING EQUIPMENT LIST — Study 2021

Building Condensate Receivers

| Building Name | Sub System Type | Quantity | Unit | Equipment Installation Year* | Estimated Equip. Life** | Remaining Life (Calc) | Replacement Year | Replacement Priority (I, H, M, L, N) |
|---|---|---|---|---|---|---|---|---|
| Baldwin Hall | Condensate Collection Pumps | 1 | Ea. | 1943 | 20 | -58 | 2021 | Immediate |
| Central Heating Plant | Condensate Collection Pumps | 0 | Ea. | 2005 | 20 | 4 | 2025 | Immediate |
| Health Center | Condensate Collection Pumps | 1 | Ea. | 1955 | 20 | -46 | 2021 | Immediate |
| Hill Field House | Condensate Collection Pumps | 1 | Ea. | 1998 | 20 | -3 | 2021 | Immediate |
| Hurt Gymnasium | Condensate Collection Pumps | 1 | Ea. | 1991 | 20 | -10 | 2021 | Immediate |
| Richardson Library | Condensate Collection Pumps | 1 | Ea. | 2007 | 20 | 6 | 2027 | High |
| Student Center | Condensate Collection Pumps | 1 | Ea. | 2007 | 20 | 6 | 2027 | High |
| Tyler Hall | Condensate Collection Pumps | 1 | Ea. | 2004 | 20 | 3 | 2024 | Immediate |
| Banneker Hall | Condensate Collection Pumps | 1 | Ea. | 2009 | 20 | 8 | 2029 | High |
| Calloway Hall | Condensate Collection Pumps | 2 | Ea. | 1953 | 20 | -48 | 2021 | Immediate |
| Carter Grant Wilson Building | Condensate Collection Pumps | 1 | Ea. | 1963 | 20 | -38 | 2021 | Immediate |
| CBIES | Condensate Collection Pumps | 1 | Ea. | 2010 | 20 | 9 | 2030 | High |
| Communication Building | Condensate Collection Pumps | 1 | Ea. | 2006 | 20 | 5 | 2026 | High |
| Dixon Building | Condensate Collection Pumps | 1 | Ea. | 2004 | 20 | 3 | 2024 | Immediate |
| Holmes Hall | Condensate Collection Pumps | 1 | Ea. | 1952 | 20 | -49 | 2021 | Immediate |
| Martin Jenkins Building | Condensate Collection Pumps | 1 | Ea. | 1974 | 20 | -27 | 2021 | Immediate |
| McKeldin Center | Condensate Collection Pumps | 1 | Ea. | 1974 | 20 | -27 | 2021 | Immediate |
| McMechen Hall | Condensate Collection Pumps | 1 | Ea. | 1972 | 20 | -29 | 2021 | Immediate |
| Spencer Hall | Condensate Collection Pumps | 1 | Ea. | 1962 | 20 | -39 | 2021 | Immediate |
| Truth Hall | Condensate Collection Pumps | 1 | Ea. | 1947 | 20 | -54 | 2021 | Immediate |
| Tubman Hall | Condensate Collection Pumps | 1 | Ea. | 1952 | 20 | -49 | 2021 | Immediate |

* When condensate pump installation year was unavailable, the condensate pump installation year based on associated piping system installation year.

** Condensate pump expected life based on industry standards.

| | |
|---|---|
| Immediate | 1- 5 Year Replacement |
| High | 6 - 10 Year Replacement |
| Medium | 11 - 15 Year Replacement |
| Low | 16 - 20 Year Replacement |
| No Priority | 21+ Year Replacement |

**Morgan State University Utility Master Plan 2021**

HEATING EQUIPMENT LIST — Study 2021

HEAT EXCHANGERS

| Building Name | Sub System Type | Quantity | Unit | Equipment Installation Year* | Estimated Equip. Life** | Remaining Life (Calc) | Replacement Year | Replacement Priority (I, H, M, L, N) |
|---|---|---|---|---|---|---|---|---|
| Baldwin Hall | Building Heat Exchangers | 1 | Ea. | 1943 | 50 | -28 | 2021 | Immediate |
| Central Heating Plant | Building Heat Exchangers | 0 | Ea. | 2005 | 50 | 34 | 2055 | None |
| Health Center | Building Heat Exchangers | 1 | Ea. | 1955 | 50 | -16 | 2021 | Immediate |
| Hill Field House | Building Heat Exchangers | 1 | Ea. | 1998 | 50 | 27 | 2048 | None |
| Hurt Gymnasium | Building Heat Exchangers | 1 | Ea. | 1991 | 50 | 20 | 2041 | Low |
| Richardson Library | Building Heat Exchangers | 2 | Ea. | 2007 | 50 | 36 | 2057 | None |
| Student Center | Building Heat Exchangers | 2 | Ea. | 2007 | 50 | 36 | 2057 | None |
| Tyler Hall | Building Heat Exchangers | 2 | Ea. | 2004 | 50 | 33 | 2054 | None |
| Banneker Hall | Building Heat Exchangers | 2 | Ea. | 2009 | 50 | 38 | 2059 | None |
| Calloway Hall | Building Heat Exchangers | 2 | Ea. | 1953 | 50 | -18 | 2021 | Immediate |
| Carter Grant Wilson Building | Building Heat Exchangers | 1 | Ea. | 1963 | 50 | -8 | 2021 | Immediate |
| CBIES | Building Heat Exchangers | 1 | Ea. | 2010 | 50 | 39 | 2060 | None |
| Communication Building | Building Heat Exchangers | 2 | Ea. | 2006 | 50 | 35 | 2056 | None |
| Dixon Building | Building Heat Exchangers | 1 | Ea. | 2004 | 50 | 33 | 2054 | None |
| Holmes Hall | Building Heat Exchangers | 2 | Ea. | 1952 | 50 | -19 | 2021 | Immediate |
| Martin Jenkins Building | Building Heat Exchangers | 1 | Ea. | 1974 | 50 | 3 | 2024 | Immediate |
| McKeldin Center | Building Heat Exchangers | 1 | Ea. | 1974 | 50 | 3 | 2024 | Immediate |
| McMechen Hall | Building Heat Exchangers | 1 | Ea. | 1972 | 50 | 1 | 2022 | Immediate |
| Spencer Hall | Building Heat Exchangers | 2 | Ea. | 1962 | 50 | -9 | 2021 | Immediate |
| Truth Hall | Building Heat Exchangers | 1 | Ea. | 1947 | 50 | -24 | 2021 | Immediate |
| Tubman Hall | Building Heat Exchangers | 1 | Ea. | 1952 | 50 | -19 | 2021 | Immediate |

* When heat exchanger installation year was unavailable, the condensate pump installation year based on associated piping system installation year.

** Heat exchanger expected life based on industry standards.

| | |
|---|---|
| Immediate | 1- 5 Year Replacement |
| High | 6 - 10 Year Replacement |
| Medium | 11 - 15 Year Replacement |
| Low | 16 - 20 Year Replacement |
| No Priority | 21+ Year Replacement |

Campus Wide ECMs for FY2022

In addition to its heating improvements, the University is considering the following list of campus wide Energy Conservation Measures for inclusion in the first EPC project of its MCEC / Siemens' partnership.

*1)* Exterior site-lighting upgrades: *LED upgrades for site and building mounted lights (468).*

*2)* Field lighting upgrades*: LED upgrades of Hughes Stadium (140) & Practice field (32).*

*3)* Interior lighting upgrades: *LED upgrades of Banneker (703), Central Heating Plant (TBD), Morgan Commons Chiller Plant (TBD), and Hurt Gymnasium (TBD).*

*4)* Water conservation measures: *Toilet, urinal, faucet, and shower-head low flow upgrades.*

*5)* Building envelope improvements: *Door weatherstripping, roof-edge sealing.*

*6)* Demand flow for chilled water system: *Morgan Commons Chiller Plant controls optimization.*

*7)* Connection to Morgan Commons Chiller Plant: *Extend chilled water piping from plant to Hill Field House, remove old chiller.*

*8)* HVAC system upgrade: *Hurt Gymnasium HVAC equipment replacement, convert building from 2 pipe to 4 pipe system, and add cooling to unconditioned spaces*.

*9)* BAS controls upgrade: *Replace obsolete controls with modern Siemens DDC controls.*

*10)* Clean and seal HVAC duct: *Clean air duct system and seal to minimize air leakage.*

*11)* Plumbing system replacement: *Hurt Gymnasium comprehensive plumbing infracture upgrade including fixtures and pipe.*

*12)* Electrical system replacement: *Hurt Gymnasium comprehensive electrical infrastructure upgrade including main and distribution panels, conductors, breakers, etc.*

*13)* Building upgrades: *Locker room shower arrangements upgrades - removal of Fitness Room lockers and showers to increase academic space.*

*14)* Upgrade fire protection system: *Upgrade the fire protection of Hurt Gymnasium to include sprinklers.*

*15)* Roof Replacement: *New Roof on Hurt Gymnasium with increased insulation.*

*16)* Replace Steam Pressure Reducing Valves (PRVs): *Replace 21 steam PRVs in distribution buildings.*

Morgan State University, therefore, is well positioned to curtail its energy consumption and contribute significantly to the State of Maryland energy conservation vision. A 10% reduction in energy consumption by 2029 is certainly achievable. In the past, attempts to grow our energy conservation program have been muted because of inadequate funding. Fortunately, that hurdle has been addressed, and, among other goals, the University is now on its way in becoming one of the top energy efficient agencies of the State of Maryland.

## X. Maryland Transit Administration (MDOT-MTA)

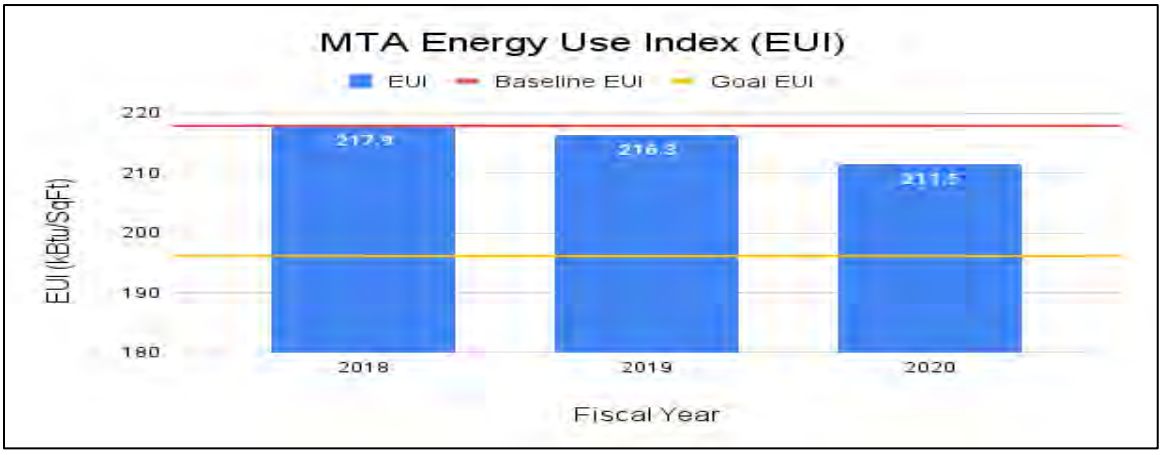
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 1,562,344 | 340,403 | | 3.54% | 217.9 |
| **FY19** | 1,562,344 | 337,921 | -0.7% | 3.60% | 216.3 |
| **FY20** | 1,562,344 | 330,463 | -2.9% | 3.73% | 211.5 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 16 | $86,663 |
| **FY19** | 100% | 4 | $18,927 |
| **FY20** | 100% | 7 | $26,551 |

### Change in Energy Use Index (EUI):



## Agency report:

Maryland Department of Transportation – Maryland Transit Administration (MDOT-MTA) or MTA strives for energy efficiency and sustainability. Exceeding prior State of Maryland mandated energy reduction goals, MTA has completed several energy conservation projects. These energy reduction projects have contributed towards establishing a lower EUI for MTA. MTA's past energy conservation projects are briefly discussed below. MTA also plans to develop new energy conservation projects and measures to exceed State of Maryland's 2019 mandate of 10% energy consumption by 2029.

I. Energy Performance Contract (2010-2012)

MTA signed an Energy Performance Contract (EPC) in November 2010. The following Energy Conservation Measures (ECMs) were part of the EPC.

- ECM-1: Energy-Efficient Lighting
- ECM-2: Occupancy Sensors
- ECM-3: Daylight Harvesting
- ECM-4: Photovoltaic System

All these four ECMs were implemented by June 2012. Close to 15,000 inefficient metal halide, high pressure sodium, and low efficiency fluorescent light fixtures were replaced with energy efficient light fixtures. Occupancy sensors were installed and day light harvesting methodology implemented to maximize energy savings. Besides lighting upgrades a 500-kW roof mounted Solar PV was installed at MTA's North West Bus Division building.

II. Energy Performance Contract (2017-2019)

The original EPC was amended to implement additional energy efficiency projects. Following were the additional projects.

- LED lighting upgrades
- Wayside Energy Storage System

As part of LED lighting upgrades, high intensity discharge (HID), metal halide, mercury vapor, high pressure sodium, and fluorescent lighting systems were upgraded with new high efficiency light emitting diode (LED) lighting systems.

A Wayside Energy Storage system was also installed at MTA's West Cold Spring metro station as part of this energy upgrade. The Wayside Energy Storage System (ESS) is designed to capture regenerative braking energy from braking trains entering the station and return this energy to the system as trains accelerate away from the station. These systems allow for a reduction in energy consumption which reduces operating costs and in addition provides ancillary benefits such as energy resiliency and support to the electric grid. In addition to representing a major opportunity for improving the efficiency and sustainability of public transportation systems, the ESS is an ideal solution to provide voltage support, reduce peak power demand from rectifiers, and

increase traction capacity of the substation. This ESS installation is first of its kind in State of Maryland.

Figure. Wayside Energy Storage System (ESS) Illustration:

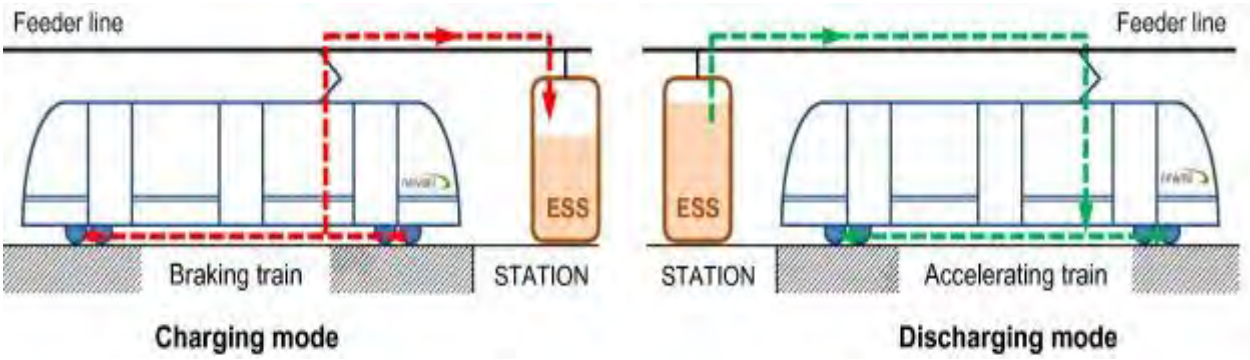



Figure. ESS at MTA West Cold Spring Metro station:

## III. Summary of Energy Savings

Annual energy savings from EPC (2010-2012) projects are around 16,000 MMBTU. The annual energy savings from implementation of LED lighting and Wayside Energy Storage system projects equal 10,000 MMBTU. Total annual savings from these energy reduction projects are close to 26,000 MMBTU. The most recent EPC was completed in 2019 so these additional 10,000 MMBTU savings will help MTA meet 10% energy reduction goal when compared with FY2018 baseline.

MTA has reduced its energy use by 142,000 MMBTU over last ten years by completing energy efficiency projects and implementing energy conservation measures. These energy savings have resulted in Green House Gas Emissions reduction by 29,000 Metric tons.

IV. Present and Upcoming Energy reduction efforts

MTA is taking initiatives and implementing measures to reduce energy and be more sustainable. Some of the on-going and upcoming initiatives are discussed here.

MTA recently installed a Bus Wash Water Reclamation system at North West Bus facility. This Bus Wash system saves around $8 million gallons of water and will pay back within 3 years. The project won 2020 Maryland Quality Initiative award in 'Green/Sustainability/Environmental' category. Other similar systems will be installed or upgraded across MTA. Efforts are underway to implement an agency wide sub-metering program. Submetering traction power and station power will help us understand our energy usage in a better way. Submetering will help us identify energy waste so new energy efficiency efforts can be implemented.

MTA is working with DGS to develop a new Energy Performance Contract (EPC). The potential projects in this new EPC will be LED lighting, Wayside Energy Storage Systems, Infrared heating, Track and Switch heaters upgrades, and building automation system upgrades. MTA recently completed an inventory of rail heaters across the system and calculated total energy use. A sample of rail heaters will be sub-metered to establish a baseline for this Energy Conservation Measure (ECM).

Through implementation of previous and upcoming energy reduction projects MTA is on track to reduce 10% energy as required by State of Maryland's June 2019 Executive Order.

## XI. Frostburg State University (FSU)

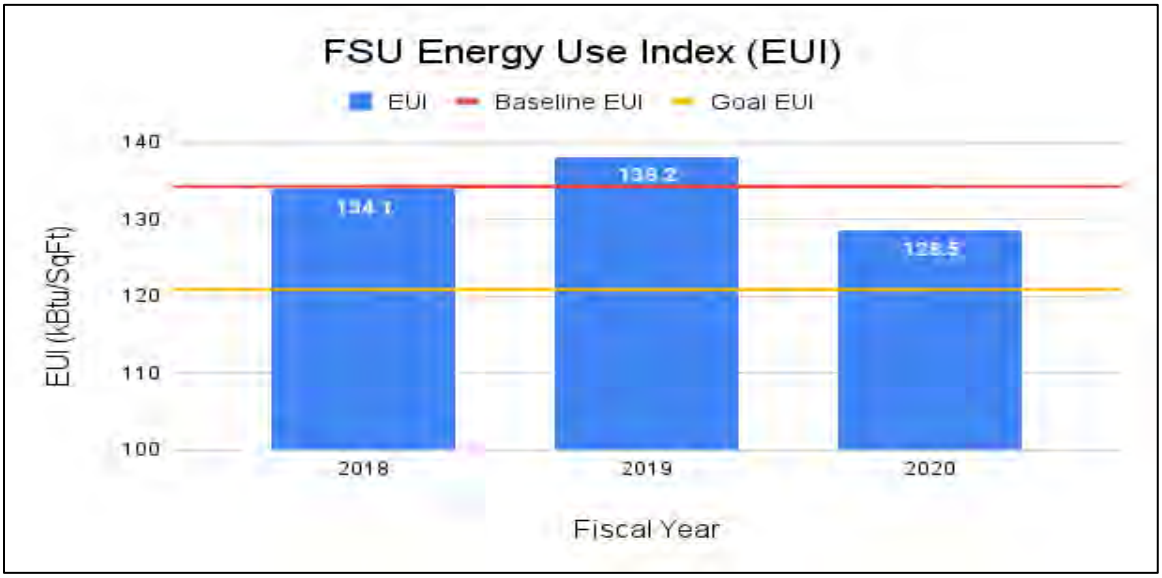
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 1,547,381 | 207,429 | | 2.16% | 134.1 |
| **FY19** | 1,547,381 | 213,837 | +3.1% | 2.28% | 138.2 |
| **FY20** | 1,547,381 | 198,794 | -4.2% | 2.24% | 128.5 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 59 | $5,065 |
| **FY19** | 100% | 14 | $9,225 |
| **FY20** | 100% | 65 | $82,932 |

## Change in Energy Use Index (EUI):




## Agency report:

**FY21 Energy Saving Initiative Projects**

1. Guild Hall Boiler Tube Replacement – This made the boiler more efficient and safer. Cost = $21,937.
2. Dunkle Hall Boiler Tube Replacement – This made the boiler more efficient and safer. Cost = $18,332.
3. Lane Center Hot Water Pump VFD Replacement – Replaced a non-functioning VFD. This made the pump more energy efficient. Cost = $10,048
4. Gira Air Handling Unit VFD Replacement - Replaced a non-functioning VFD. This made the pump more energy efficient. Cost = $9482
5. PE Center Air Handling Units VFD Controls – We added controls to two units. This made the units much more energy efficient because they are now managed by our energy management system. Cost = $61,924
6. Compton Chiller Renovation – The renovation made this unit more reliable and energy efficient. Cost = $49,044
7. Stangle AC Replacement – The replacement was with a more efficient Air Conditioning Unit. Cost = $23,820.
8. Compton Greenhouse AC Repairs – The repairs made the unit run more efficiently. Cost = $12,997.
9. Fuller LED Lighting – All the existing lights were replaced with LED lighting, thus saving electric. Potomac Edison incentives were used to fund a portion of this project. Cost = $591

10. Library LED Lighting - All the existing lights were replaced with LED lighting, thus saving electric. Potomac Edison incentives were used to fund a portion of this project. Cost = $59,201
11. Cumberland Hall Roof Replacement – This was a total replacement of the roof including adding more insulation, thus improving the energy efficiency of the building. Cost = $639,585
12. Fine Arts Air Handler Replacements – Two units were replaced with energy efficient models and are now also controlled by our energy management system. Cost = $165,956
13. Guild Reheat Coil Installation – By adding the reheat coil to the system it works much more efficiently. Cost = $11,785
14. Guild Hall Air Handling Unit Rebuild – The air handling unit number 7 was rebuilt and now runs more efficiently. Cost = $33,287.00
15. PE Center LED Lighting - All the interior lights were replaced with LED lighting, thus saving electric. Potomac Edison incentives were used to fund a portion of this project. Cost = $12,675

**Total for FY21 = $1,121,664**

## XII. Salisbury University

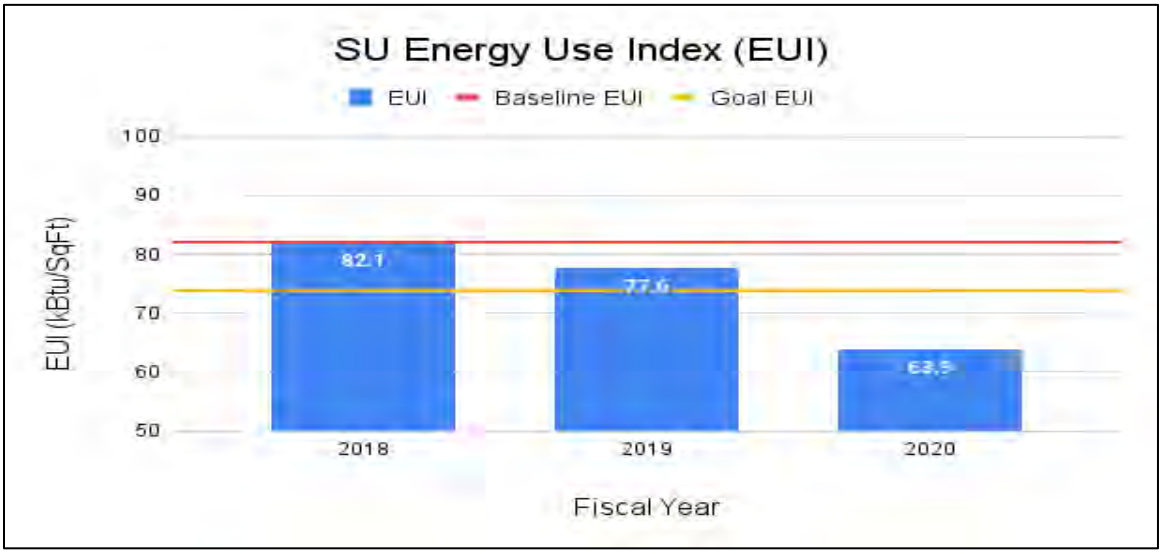
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 2,217,621 | 182,154 | | 1.90% | 82.1 |
| **FY19** | 2,217,621 | 172,156 | -5.5% | 1.84% | 77.6 |
| **FY20** | 2,217,621 | 141,792 | -22.1% | 1.60% | 63.9 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 6 | $1,314 |
| **FY19** | 100% | 10 | $1,978 |
| **FY20** | 100% | 0 | $0 |

## Change in Energy Use Index (EUI):




## Agency report:

Salisbury University understands the importance and value of the responsible use of energy and has been fortunate enough to continue to implement energy conservation and efficiency measures during the COVID-19 Pandemic. We have certainly seen reductions in energy use directly related to the lower than normal occupancy of our campus but we have also implemented several steps to create longer lasting energy savings.

We have found success with a strategy of requiring energy efficient newly constructed and renovated buildings, continuing a comprehensive preventive maintenance program, being proactive in the replacement of aging equipment with high efficiency systems while also exploring new technologies and opportunities. Below are examples of actions taken to support the Governor's Executive Order.

### Salisbury University activities supporting the Executive Order during 2020-2021

Mechanical Renovation/Equipment Replacement and Right Sizing of Equipment

Over the past year, Salisbury University has upgraded aging equipment such as the HVAC system for the Holloway Hall Copy Center and Phone Room complex. The mechanical system for Maggs Natatorium was completely replaced, increasing both efficiency and performance. Additionally, the oversized Chesapeake Hall Exhaust System and the Dogwood Village air conditioning units were replaced with systems better matched to the building requirements.

Introduction of New Equipment to Increase Operational Performance and Efficiency

As part of a two-step project, the heating load of Holloway Hall was removed from the Fulton Hall boiler plant with the addition of two high efficiency condensing boilers to Holloway Hall. This will allow for removal of two very oversized steam boilers at Fulton

Hall that will be replaced by two high efficiency condensing boilers sized to match the heating load.

Control Strategies

Operating during the COVID-19 pandemic presented many challenges as well as many opportunities. Current operations were evaluated and strategies adjusted to provide the required ventilation for our campus buildings while operating in an efficient manner. Some strategies included supply air and static pressure set point adjustments, the use of set-point resets and adjustments to differential pressure set points.

Participant in Delmarva Power Energy Efficiency Incentive Program

Salisbury University completed lighting upgrades in multiple campus buildings. Some locations include the Campus Book Store, Maggs Natatorium, various campus Residence Halls as well as the Wayne Street Parking Garage.

Campus Wide Facility Audit

Salisbury University worked with a consultant and conducted a campus wide facility audit. The goal of the audit was to identify buildings that present opportunities for enhanced performance and potential energy savings.

## Salisbury University Continuing and Future activities supporting the Executive Order

Delmarva Power Energy Efficiency Incentive Program

Salisbury University will continue to participate in Energy Efficiency Programs taking advantage of not only the incentive payments but the realized energy savings. Examples of such projects are relamping of the Information Technology Building and continuing to pursue the upgrading of the Outdoor Tennis Court lighting with an LED system.

Construction of an On-Campus Photovoltaic Array

In an effort to continue to reduce our carbon footprint, Salisbury University through the Green Fund program, plans to construct a 102 kW roof mounted solar array at Henson Science Hall. Due to attention being refocused on campus preparedness in dealing with COVID-19, this project has been delayed but is still part of our future plans

Campus wide Facility Audit

Salisbury University recently completed a Campus Wide Facility Audit and will now evaluate those results and determine a path forward based on these findings.

Mechanical Renovations/Equipment Replacements

The most immediate planned equipment change-outs involve the removal of aging and oversized boiler systems. These systems will be replaced with properly sized high efficiency condensing boilers.

## XIII. Maryland Stadium Authority

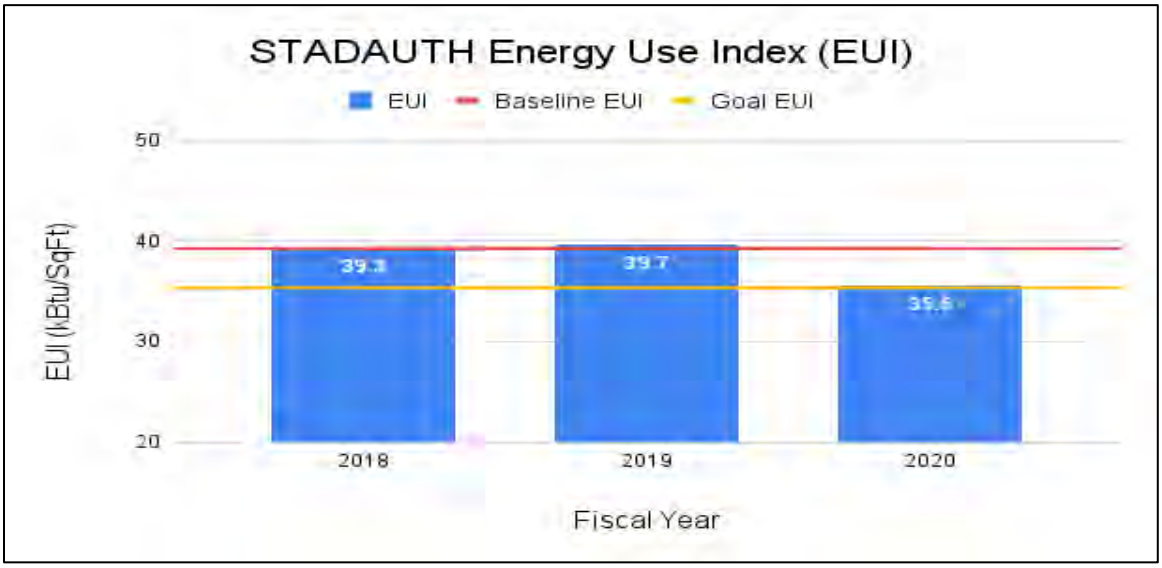
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 4,274,000 | 168,040 | | 1.75% | 39.3 |
| **FY19** | 4,274,000 | 169,545 | +0.9% | 1.81% | 39.7 |
| **FY20** | 4,274,000 | 152,337 | -9.3% | 1.72% | 35.6 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 0 | $0 |
| **FY19** | 100% | 0 | $0 |
| **FY20** | 100% | 0 | $0 |

### Change in Energy Use Index (EUI):




### Agency report:

The Pandemic put constraints on projects, game attendance, tenant occupancies, and our workforce with the exception of the modernization of all the existing HVAC equipment in the

Warehouse which is still ongoing and expected to complete in approximately 6 months. It is still too early to evaluate the efficiencies.

With Pandemic restrictions we have gone back to the basics looking for new benchmarks to create and reviewing those in place. We are reviewing the hybrid models of our tenants to determine if costs saving adjustments can be made to address real time occupancy.

Our Operations administrative staff took on a daunting challenge working with BithEnergy and DGS to correct an array of errors and missing data to make our EnergyCap portfolio accurate and current.

## XIV. University of Maryland Eastern Shore (UMES)

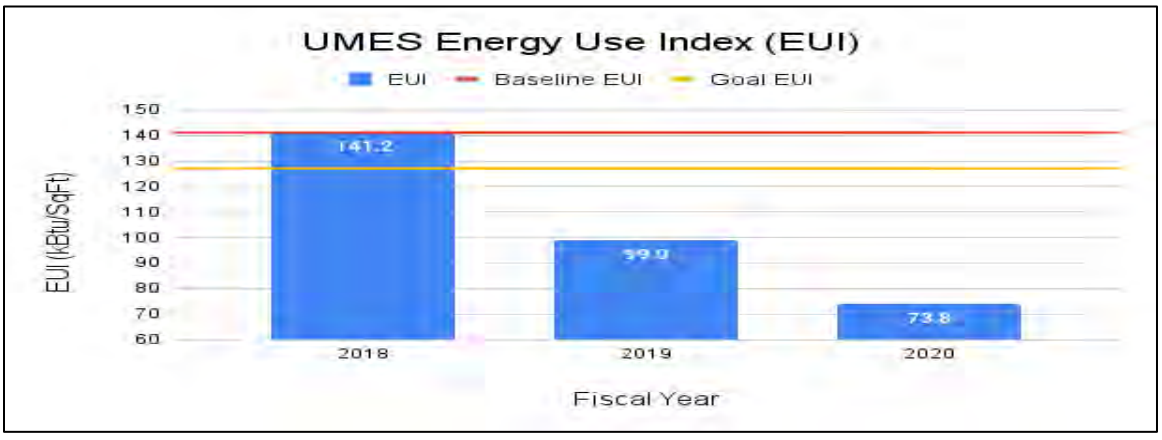
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 1,093,365 | 154,368 | | 1.61% | 141.2 |
| **FY19** | 1,093,365 | 108,220 | -29.9% | 1.15% | 99.0 |
| **FY20** | 1,092,704 | 80,688 | -47.7% | 0.91% | 73.8 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 94% | 2 | $422 |
| **FY19** | 94% | 4 | $130 |
| **FY20** | 97% | 1 | $9 |

### Change in Energy Use Index (EUI):



## Agency report:

This report captures the energy savings measures embarked upon in the Fiscal Year 2021. UMES Energy savings goals have been boosted by Governor Hogan's Executive Order 01.01.2019.08, titled "Energy Savings Goals for State Government," establishing a new energy savings initiative for all State-owned buildings.

Efforts on campus to meet the energy savings targets have been yielding positive results. However, the emergence of the COVID-19 pandemic has required us to somewhat adjust our energy savings approach. The end result was that most buildings were set in an unoccupied mode, allowing a greater savings but at the potential risk of staff safety.

**The following is a brief summary of the UMES-related energy savings projects that have been successfully completed to date, per the Governor's Executive Order. Additional details are provided where needed.**

1. **Conversion of all fuel oil to natural gas.**

UMES is currently engaged in an effort to move away from traditional fuel sources in favor of the more energy-efficient natural gas fuel source. Natural gas also emits less air pollutants and carbon dioxide (CO2), which is an additional positive outcome from this work.

The natural gas conversion project has been divided into two phases: (1) The Natural Gas Distribution Pipeline; and (2) he conversion of mechanical equipment (boilers and water heaters) to accommodate the new natural gas fuel source (see next point for more details).
This two-in-one project was originally targeted for completion by August 2021, however due to unavoidable delays resulting from the COVID-19 pandemic, the project is expected be completed by October 2021. Collectively, this two-phase project will help reduce the institutional $CO_2$ emission by approximately 55%.

2. **Conversion of mechanical boilers and domestic hot water to accommodate the transition to natural gas.**

As discussed in the previous point, the boiler and hot water conversion project works is designed to dovetail with the campus-wide natural gas conversion. The mechanical conversion includes the retrofit and upgrade of the steam plant's boilers to energy-efficient boilers. All standalone boilers in buildings that do not derive their heating source from the steam plant are being retrofit or replaced where necessary to energy-efficient boiler. This project has been the focus of UMES in the last fiscal year, and we are assigning all available staffing to ensure that the system is ready and operational for the upcoming winter season.

3. **Completed the installation of two 200-ton chillers at William P. Hytche Athletic Center that will improve energy efficiency.**

4. **Completion of the campus-wide front-end Building Automation System (Metasys Upgrade).**

5. **Retrofitting of all campus parking lights to LEDs. This project has helped bis savings on the electric usage.**

6. **Replacement of the residential packaged terminal air conditioner (PTAC) units with improved and energy efficient heat pumps. This is estimated to save about $60,000 in labor and energy consumption over the next two years.**

7. **Tapped into Empower Maryland incentives program which helped with the tune-up of all the UMES residential apartments. The program has saved the UMES about $80, 000.**

   Although, UMES was originally projected to have all exterior lighting retrofitted to LED by the end of Fiscal Year 2021. This includes lighting of parking lots, roadways, pathways, pedestrian walkways, and exterior building lights. Despite our target timeline for completion, the pandemic slowed down this process. That said, a considerable amount of the exterior lighting has been retrofitted to LEDs thus far. Specifically, all UMES roadway lighting has been fully retrofitted to LEDs, and 85% of the parking lots have been retrofitted. The areas that remain are the wall-pack exteriors of campus buildings.

**Additional Energy Savings Measures Achieved**

As a result of the remote-work policies (i.e. work from home) necessitated by the pandemic, UMES adjusted all buildings automation schedules to reflect very low occupancy. Thus, a considerable amount of energy savings was realized. Moreover, the newly upgraded Building Automation Systems was utilized to provide remote access to HVAC systems across campus.

In addition to aforementioned projects, UMES has embraced a number of key energy curtailment strategies that are reducing overall campus energy usage, including:

- Adjusting scheduling of custodial working hours in order to extend unoccupied hours in all buildings.
- Installation of lighting control sensors in 90% of all buildings.
- Gradually replacing all CFL bulbs to LEDs across campus.
- Participation in the PJM Demand Response program.
- Lowered heating settings on thermostats from 72F to 69F in order to achieve 3% savings on heating.
- Increased the summertime setting of un-occupied spaces from the occupied set-point of 74F to 80F.
- Utilized heating and cooling setbacks two (2) hours before the end of the day. Setback temperatures are now 80 degrees in the summer and 65 degrees in the winter.

## XV. Bowie State University (BSU)

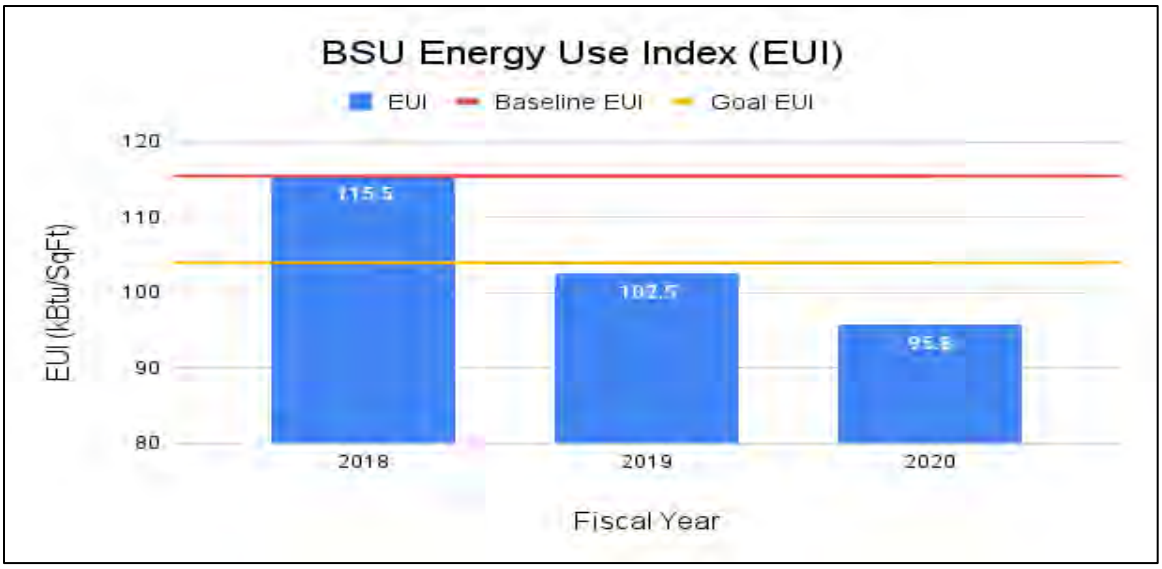
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 1,332,563 | 153,917 | | 1.60% | 115.5 |
| **FY19** | 1,332,563 | 136,643 | -11.2% | 1.46% | 102.5 |
| **FY20** | 1,332,563 | 127,641 | -17.1% | 1.44% | 95.8 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 9 | $12,082 |
| **FY19** | 100% | 0 | $0 |
| **FY20** | 100% | 0 | $0 |

### Change in Energy Use Index (EUI):




### Agency report:

Bowie State University places a high priority on energy efficiency and on implementing energy conservation strategies. Since 2013, all new construction on campus has been completed to a LEED gold or platinum standard with the newest building (Entrepreneurship, Living & Learning

Community) projected to be LEED Silver or Gold. The Student Center achieved LEED Gold and the Center for Natural Sciences Mathematics and Nursing achieved a LEED Platinum certification.

The following are examples of energy saving activities completed on campus:

- The University is in the 7th year of an Energy Performance Contract resulting in a cost avoidance over $3 million during the first five years of the project.
- The University has embarked on a boiler replacement program.
- 90% of the exterior lighting on campus has been converted to LEDs.
- Continued upgrades and conversion of interior lighting to LEDs.
- The University has installed seven photovoltaic/solar arrays on campus with a total generating capacity of 2.2MW or between 15-20% of our energy needs
- Renovation of aging mechanical systems campus wide.

Other related commitments include the following:

- The University is a signatory to the American College and University President's Climate Commitment (2009); the White House Act on Climate Change (2015); the Second Nature Climate Commitment (2016); and the 2021 Second Nature letter to the Biden Administration urging the White House to support a strong 2030 U.S. climate target of adopting a target of at least 50% reduction in carbon emissions by 2030.
- The University has implemented a reduced parking fee structure for faculty, staff and students driving energy efficient vehicles.
- The University has an established sustainability committee consisting of faculty, staff and students called C4, committed to enhancing sustainability awareness as a way of life for all campus members.
- The C4 created a new, customized online climate action pledge where campus constituents can choose a minimum of 8 out of 21 pledge items committing to be environmentally responsible.

Bowie State recently completed a new Climate Action Plan entitled 'BSU Climate Action Plan 2020' with the 5 goals of:

1. Continue management of solid waste through reduction of paper usage; reduction of food waste & addressing food insecurity; and increased recycling and/or reusing
2. Increase energy efficiency and conservation
3. Foster sustainable behavior through curriculum and training, community engagement, awareness activities and communication enhancement
4. Reduce carbon footprint from transportation related emissions
5. Continue sustainable environmental and landscaping actions

For the FY 2021 year, BSU expects to see a considerable reduction in energy consumption from that of 2020. Many of the energy savings are a result of measures related to the covid-19 pandemic. For the 3.5 months remaining at the end of the fiscal year, the University required telework options for most non-essential employees, virtual learning for students, and the closing of most residential buildings. The capacity on campus was greatly reduced and as a result, the University experienced:

- reduced heating or cooling in our buildings
- less power used in offices, classrooms, and other spaces
- less water usage in restrooms
- reduced electrical charging usage for campus and personal vehicles

In addition, the University oversaw the installation of UV-C lighting equipment into the ventilation systems of buildings across the campus to add an additional resource in our efforts to reduce the spread of harmful viruses in the campus environment. Academic, administrative, auxiliary, and residence hall buildings were included in the project.

Bowie State University continues to remain proactive in the monitoring of, and replacement of high efficiency systems. Over the past 1-2 years, the University has successfully completed several cooling tower, chiller and boiler replacements with the goal of increasing energy efficiency and building performance. This also helps to fulfill Goal #2 of the BSU Climate Action Plan.

We will also continue to partner with our suppliers such as BGE and the BGE Rewards program which provide significant rebates for energy efficient projects.

## XVI. State Highway Administration (MDOT-SHA)

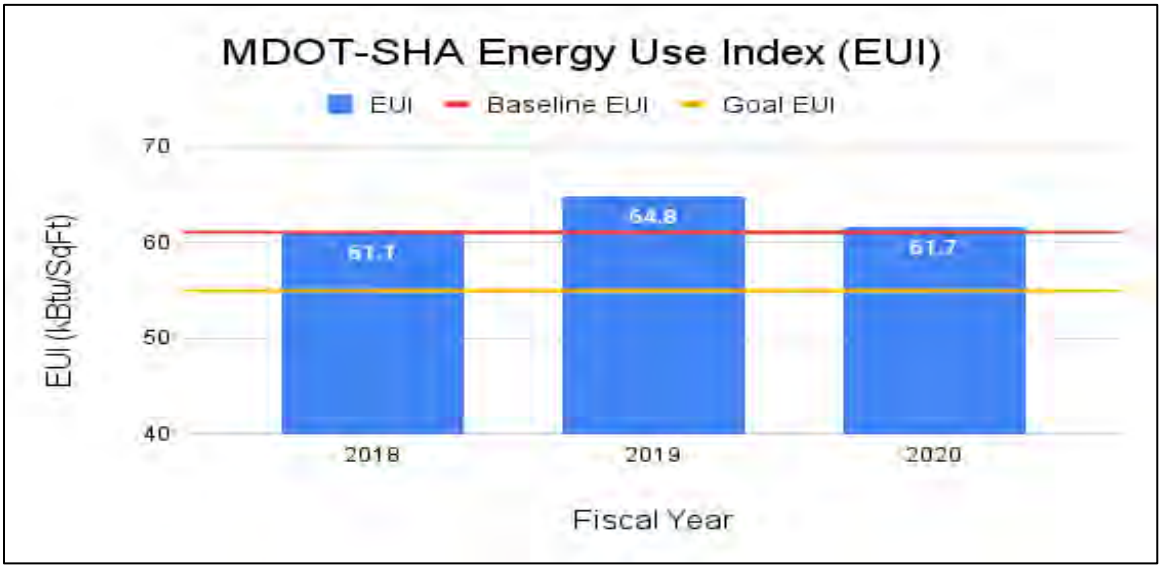
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 2,276,739 | 139,194 | | 1.45% | 61.1 |
| **FY19** | 2,276,739 | 147,567 | +6.0% | 1.57% | 64.8 |
| **FY20** | 2,276,739 | 140,434 | +1.0% | 1.59% | 61.7 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 103 | $75,155 |
| **FY19** | 100% | 97 | $73,090 |
| **FY20** | 100% | 145 | $69,613 |

## Change in Energy Use Index (EUI):




## Agency report:

MDOT -State Highway Administration has many energy users beyond buildings. Facilities are 41.5% of the energy usage (27.6% of total electric usage) for the agency for FY 2018, 43.1% (27.52%) in FY 20. Total Heating Degree Days decreased 11% in FY20 compared to FY 18. Total Cooling Degree Days increased 1.2% in FY 20 compared to FY 18. This is the best indicator of weather impacts on the building energy usage available.

4 months of the fiscal year March 2020 through June 2020 would have some COVID effect. On one hand at SHA Headquarters locations such as 707/211, Hanover Complex and the seven district offices occupancy was down with personnel operating remotely. However, there was also an effort to increase ventilation for any personnel remaining by extending operating schedules beyond their normal set points to increase ventilation per CDC guidance. These 2 issues would have opposite effect on energy usage and could potentially neutralize each other.

MDOT-SHA maintenance shops remained operational during the March through June 2020 time frame though occupancy was impacted by pandemic induced schedule changes. Maintenance shop staff was placed on an alternating week schedule, one on / one off, through the end of FY20, which cut occupancy approximately in half for those months. At the same time, occupancy at satellite shops increased to allow for social distancing.

The conclusion based on the above data is that the savings in energy between FY20 and FY18 is mainly due to the decrease in total degree days with potentially a small boost from the low occupancy during the COVID months.

Due to current fiscal restraints the only recently completed HVAC replacement projects were a new chiller for the Headquarters building at 707 N. Calvert St that was brought on-line in August 2020 (FY 21) and the HVAC replacement at the 211 E. Madison St building that is still in the

seasonal commissioning phase as of June 2021 (FY 21/22). No new HVAC replacement projects can be constructed until FY 23. Expectation for FY 21 would be some small decrease based on the more efficient chiller, the more efficient equipment installed during the 211 HVAC Replacement project and potentially some savings from the reduced COVID occupancy.

MDOT-SHA is also working on re and retro commissioning for approximately 7 facilities with 4 more pending. This effort is primarily to allow continued operation of these systems many of which have exceeded or are about to exceed their expected service life or that are experiencing frequent complaints and downed equipment. These efforts are mainly geared towards restoring function and ensuring proper ventilation rates and operation. They were not intended to identify and incorporate potential energy savings. Proper operation could potentially improve energy usage but could also increase it depending on what was functioning incorrectly.

Facilities are a relatively small portion of the overall SHA usage and cannot provide enough contribution by any small projects left to achieve (after the large energy performance contract documented in last years report), to greatly reduce energy consumption. Additionally, we continue to have many unfunded needs for our facilities that absorb any available capital funds and to bypass those funds into strictly energy reduction projects would not be practical or feasible. However, energy use is considered in all facility projects as they are designed. When new facilities are constructed or undergoing major upgrades they are designed to meet or exceed the latest building energy code.

HVAC systems gain efficiency each time they are replaced. We are still catching up on replacing systems that have run beyond their normal average service life. During roof replacements insulation is added to the extent possible that doesn't affect the building structure (parapet and weight issues). Some doors and windows have been replaced due to problems with leakage, or in the case of doors failure due to salt corrosion. Each time a replacement occurs, more energy efficient replacements are installed.

Due to lack of funding for all needs and insufficient paybacks to cover the cost of replacements, windows are not being targeted for capital replacement projects unless they are causing water infiltration. However, individual locations have been replacing a few windows as needed to improve performance and comfort each year and most overhead garage doors have been replaced over the last 8-10 years.

Obviously, these small ongoing improvements will result in energy savings, but not in significant numbers. There is another issue that needs to be addressed and that is keeping the improvements previously constructed properly operational. This is especially needed for the facility lighting control systems. Unfortunately, there are a lack of resources available to identify issues with these systems and to work to get them addressed and corrected. Verification of the site lighting would be best done at night and existing resources are already stretched too thin to allow for this extensive overtime.

In addition to this effort, work was already on-going to convert all traffic signals to LED. This effort is at 95% complete and was held up and continues to be held up by insufficient funding. Savings for this portion of the effort are difficult to calculate as changes to signal quantities have

not been tracked. Signal quantities generally have increased with safety improvements such as additional signaled turn lanes and additional intersections being signalized. An intersection with 8 signals with incandescent lights would have theoretically used 25.92 kwh/day and if these signals were converted to LED they would theoretically use 8.06 kwh/day. Of course, any actual usage and savings varies greatly from intersection to intersection.

MDOT-SHA continues to take action to limit or reduce energy usage. All new signals and highway/roadway lighting are constructed with LED lighting. SHA is currently converting all existing highway lighting to LED; as they are replaced due to accident or adjacent roadways undergoing major construction. Some of this lighting may be unmetered and savings will need to be addressed on a case by case basis. This is the largest untapped pool of savings and will result in the biggest impact to further use reduction.

MDOT-SHA has begun work on several projects expected to have positive energy, financial and environmental impacts for the coming years.

I. The 450 ton 2 stage centrifugal chiller at our headquarters building is currently being replaced with a new 350 ton magnetic bearing centrifugal chiller. The existing chiller was rated at .615 kw/ton when newly installed and the new chiller is rated at .590 kw/ton. This impact should show up in FY 21.

II. As mentioned above, MDOT SHA has untapped savings potential in its highway lighting infrastructure. It's estimated that MDOT SHA has upgraded approximately 80% of its highway lighting fixtures to LED (roughly 24,000 of an approximate 30,000 fixtures); however, energy cost savings have not been fully realized due to the prevalence of unmetered lighting. MDOT SHA is actively working with BGE to obtain GIS-based account information for its highway lighting inventory within BGE's jurisdiction. This has been a lengthy process due to BGE's internal discussions of appropriate information sharing through non-disclosure agreements. Progress is being made and similar efforts will have to commence with other utility companies to execute energy cost savings.

    There may also be cost savings potential in the highway lighting infrastructure itself, via ballast replacement, control panel upgrades, and other non-fixture-related upgrades. Lighting reduction is another potential energy-reduction measure. MDOT SHA is currently evaluating the potential of entering into an Energy Savings Performance Contract (ESPC) or Energy as a Service (EaaS) Contract whereby a concessionaire would perform a capital investment and/or maintain the highway lighting infrastructure for energy savings and improved performance. To grasp energy savings potential, MDOT SHA first needs a complete geospatial lighting inventory, which it does not currently have. MDOT SHA is currently determining whether to perform inventory collection in-house or via contract mechanism.

III. Another area that could use resources to identify locations where lighting is on when it should not be and to work to address repairs to photocells. This lighting is

generally designed to fail on for safety. These savings in operating hours could be more beneficial than conversion of the lighting from a return on investment viewpoint. However, there is no current data on the extent of photocell failures nor resources to collect such data to provide a reasonable calculation to determine the return on investment or potential savings.

## XVII. Maryland Port Administration (MDOT-MPA)

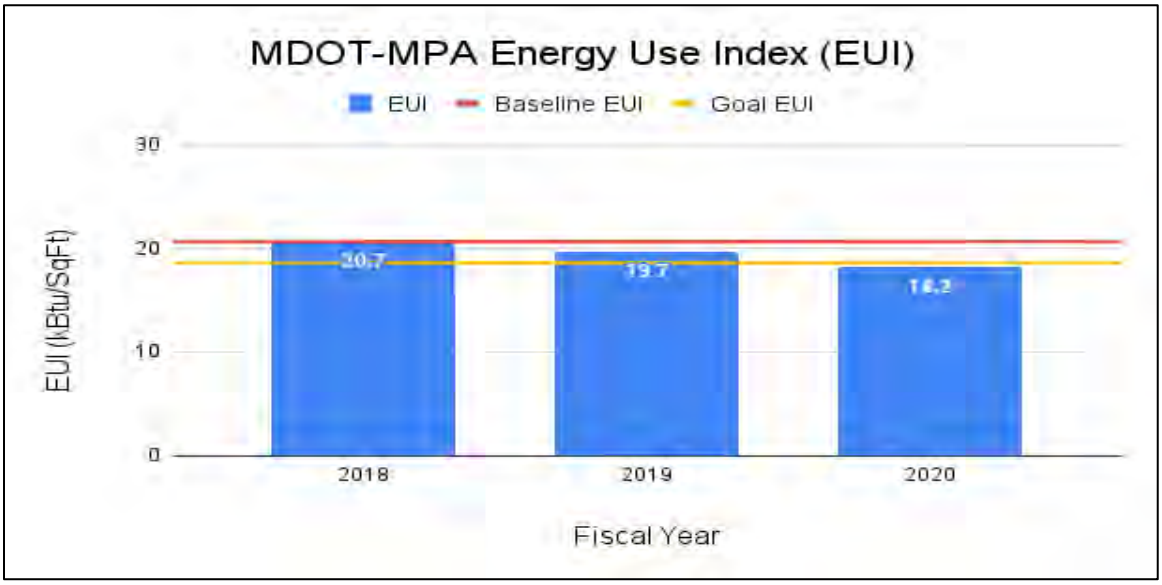
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 6,513,833 | 134,714 | | 1.40% | 20.7 |
| **FY19** | 6,513,833 | 128,266 | -4.8% | 1.37% | 19.7 |
| **FY20** | 6,131,389 | 111,882 | -11.8% | 1.26% | 18.2 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 57% | 0 | $0 |
| **FY19** | 57% | 15 | $15,324 |
| **FY20** | 93% | 0 | $0 |

### Change in Energy Use Index (EUI):



Note that due to a lack of complete data, the above numbers reflect the entire agency's energy usage and square footage, which may include leased facilities and non-building energy usage.

## Agency report:

Maryland Department of Transportation– Maryland Port Administration (MDOT-MPA) facilities consist of a diverse array of energy consumers; office buildings, shops, cargo buildings, area and roadway lighting are a few. MDOT-MPA's environmental stewardship has been a leader amongst the Port of Baltimore and MDOT-MPA understands the value of energy efficient and sustainable facilities. MDOT-MPA's initiatives to meet past and current regulations and efficient sustainable facilities are described herein.

MDOT-MPA is actively pursuing energy efficiency projects to make MPA-owned facilities more energy efficient. MDOT- MPA Engineering, Facilities Maintenance and Environmental departments have begun several energy reduction projects and studies that are expected to have positive energy, financial and environmental impacts for the coming years.

1. Current Initiatives:

   i) MDOT-MPA recently completed two Marine Terminal High Mast Lighting (HML) Studies at Dundalk, and South locust Point / Maryland Cruise Marine Terminals. This study was established to drive adoption of LED technology in a marine cargo environment at higher mounting elevations while providing an affordable, and reliable illumination source for an efficient and safe work area. These studies provide critical information regarding the existing illumination conditions and applicability of LED technology and recommendations. These studies analyzed the reliability and efficiency of LED luminaires at 100' and 150' mounting heights at the state-owned marine terminals and advances their strategic plan for reducing energy consumption from port operations and security.

   ii) MDOT-MPA has begun the installation of energy efficient LED lighting technology in selected areas. LED luminaires are replacing less efficient high intensity discharge (HID) and halogen lighting sources. The LED technology provides a reduction in energy and produces a better illumination efficacy while providing a safer and more secure work environment. These projects include:

      (1) MDOT-MPA has completed LED lighting conversions in one cargo shed on the Dundalk Marine Terminal and has begun eight more that are expected to be completed this year.
      (2) Maryland Cruise Terminal: Recently, MDOT-MPA has begun the installation of LED luminaires on eight high mast light poles, exterior flood lighting and 18 parking lot pole lights.
      (3) Connector Bridge between Dundalk and Seagirt Marine Terminals: MDOT-MPA has completed LED luminaire installation on 16 street lighting poles.
      (4) Point Breeze property: MDOT-MPA completed the installation of 15 pole mounted LED area flood luminaires.
      (5) Dundalk Marine Terminal (DMT) Lot 91: MDOT-MPA completed the installation of eight pole mounted LED perimeter and area flood luminaires.

(6) Recently, MDOT-MPA has begun the installation of 125 LED luminaires on eight high mast light poles on Dundalk Marine Terminal. An additional eight poles will be fitted with LED luminaires during a high mast light pole refurbishment project currently under contract.

iii) MDOT-MPA has recently performed an engineering analysis of the World Trade Center's 44-year-old air handlers. This project provides critical information on conditions, reliability, and efficiency. It was determined to renovate the air handlers to extend their useful life another 20 years and improve operations and energy efficiency. MDOT-MPA has begun the installation of various recommendations, such as air duct sealing and air distribution duct repairs while engineering designs are being produced to renovate air handlers and distribution modifications.

iv) MDOT-MPA has recently performed a Solar Microgrid Resiliency Feasibility Study for DMT, Building 91C. MDOT MPA was one of 14 winners of the Maryland Energy Administration's (MEA) "2020 Resilient Maryland Grant," part of MEA's Resilient Maryland Program established to drive adoption of microgrids and other distributed energy generation systems that provide cleaner, affordable, and reliable power to key entities across the State of Maryland. This project provides critical information regarding the applicability of microgrids and use of renewable energy resources at the state-owned facilities and advances their strategic plan for reducing greenhouse gas emissions from port operations.

2. Future Plans:

MDOT-MPA plans to work with BGE to convert contracted street and security lighting to LED technology; continue HMLP illumination conversions to LED; application of LED lighting in state-owned office buildings on the marine terminals and the World Trade Center, Baltimore. MDOT-MPA is confident that the Executive Order goal of 10% energy reduction by 2029 can be achieved through the implementation of current and future efforts. MPA's goals for all projects is to improve the safety, security and comfort of the workplace while reducing the budget, modernizing & upgrading energy consuming infrastructure and improving the Port's Environmental footprint.

## XVIII. Coppin State University (CSU)

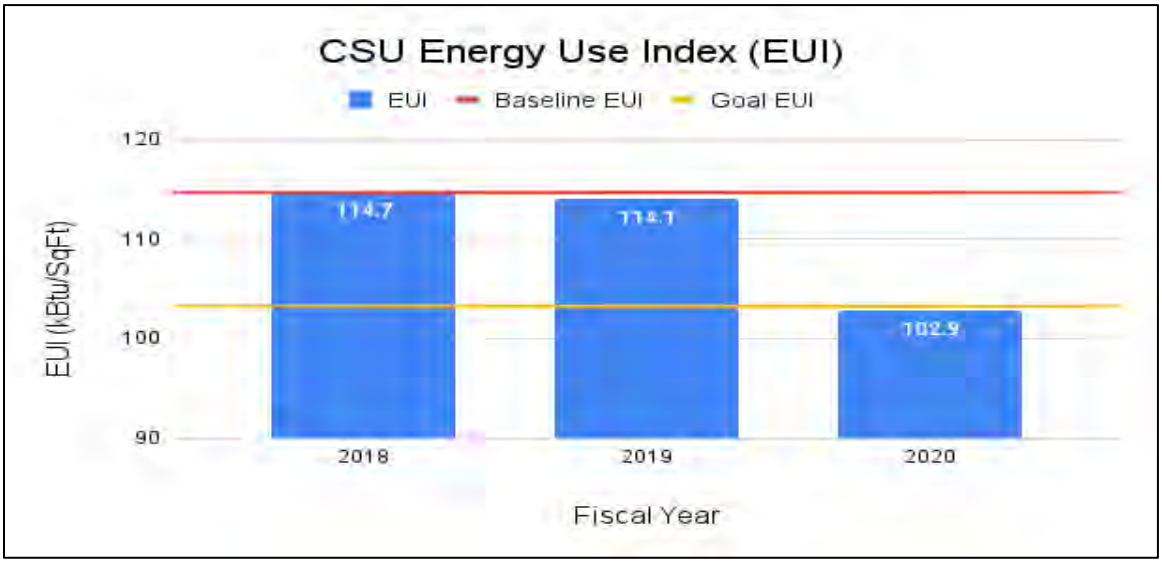
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 1,096,489 | 125,809 | | 1.31% | 114.7 |
| **FY19** | 1,096,489 | 125,123 | -0.5% | 1.33% | 114.1 |
| **FY20** | 1,096,489 | 112,784 | -10.3% | 1.27% | 102.9 |

## Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 0 | $0 |
| **FY19** | 100% | 0 | $0 |
| **FY20** | 100% | 1 | $23,465 |

## Change in Energy Use Index (EUI):




## Agency report:

**ENERGY SAVINGS GOALS FOR STATE GOVERNMENT**

On January 30, 2020, the World Health Organization declared the 2019 coronavirus disease (COVID-19) to be a public health emergency of international concerns. Coppin State University (CSU) reacted very quickly and effectively to this pandemic.

CSU initiated the following changes to reduce the potential of airborne transmission of COVID-19:

**Indoor Air and Coronavirus (COVID-19)**

1. Upgrade all building's HVAC filters from a *MERV-8 filter to a MERV-13 filter with a replacement frequency of monthly versus quarterly.

   **NOTE:** Industry standard for MERV-13 filter replacement is 60-90 days.

2. Manually operate the air dampers for each building's HVAC system to increase fresh air intake of up to 75% depending on the outdoor temperature and humidity levels.

3. Operate all HVAC systems in normal mode instead of setback mode during the shutdown period.

4. Replaced two obsolete 100-ton McQuay chillers and controls with 2 new 110-ton Daikin/ McQuay air cooled scroll units for the dining hall. These units were significantly more energy efficient than the old units and they supported our COVID-19 mitigation strategy of improving ventilation in the building.

**We are currently evaluating the following changes to our HVAC systems to improve protection against COVID-19:**

1. Installation of professional grade HEPA H13 portable filtration units in all classrooms in the following buildings:
    - Grace Hill Jacobs
    - Health & Human Services
    - Parlett Moore Library
    - Science and Technology Center

2. Installation of Disinfectant UV-C lighting systems in all Air Handling Units (AHU)

    - The UV-C lights will be retrofitted on existing AHU's and mounted downstream of cooling coils to mitigate viruses in the airstream and on the surface of the coil. Ninety-nine percent UV Kill Package is based upon 12-35 Lamp Watts/sq ft per unit.

3. Installation of new Energy Management System (EMS) control strategies for pandemic modes of operation. Upon completion this system will:

    - Increased Outdoor Ventilation Mode: Increase outdoor ventilation rates to defined level during occupancy

    - Flush Mode: Increase ventilation rate during unoccupancy

    - Thermal Flush mode: Increase humidity, temperature, and ventilation prior to occupancy

    - Cross-Contamination shutdown: Shutdown equipment (I.E. Heat recovery wheels) with a potential to provide contaminated air in the supply.

## XIX. Maryland Transportation Authority (MDOT-MDTA)

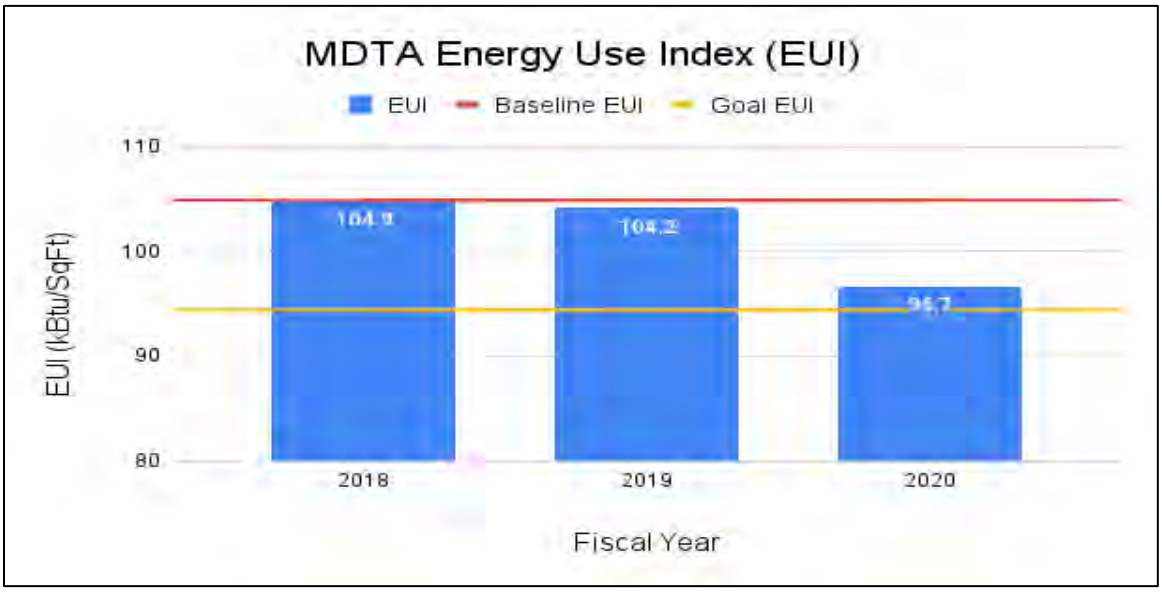
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| FY18 (baseline) | 1,082,817 | 113,602 | | 1.18% | 104.9 |
| FY19 | 1,082,817 | 112,840 | -0.7% | 1.20% | 104.2 |
| FY20 | 1,079,790 | 104,379 | -7.8% | 1.18% | 96.7 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| FY18 | 100% | 20 | $4,127 |
| FY19 | 100% | 20 | $12,646 |
| FY20 | 100% | 28 | $13,173 |

### Change in Energy Use Index (EUI):




### Agency report:

- Plans are underway to upgrade the existing High Pressure Sodium (HPS) Underpass Lighting with LED along I-95 from the ramps to South Hanover Street to Latrobe

Park and near the MDTA FMT facility and along I-395 and MLK Boulevard from Oriole Park to Stockholm Street. Additionally, the project will replace the existing HPS Low Level Roadway Lighting with LED along I-95 from the ramps to South Hanover Street. The projected energy savings is in the area of forty (40) percent in energy costs and usage per year.

- ZERO EMISSION VEHICLE WORKGROUP: the MDTA is participating in a workgroup for Zero Emissions Vehicles (ZEV). In accordance with the State's Greenhouse Gas Reduction Act (GGRA, 2009), Maryland Agencies were asked to develop a plan to reduce greenhouse gas (GHG) emissions. In 2016, the GGRA was reauthorized with a goal of reducing GHG 40% by 2030. MDOT is attempting to achieve this reduction through the implementation of the use of alternative fuel vehicle in its fleets, where feasible. As part of this workgroup, the MDTA is taking appropriate actions, both in policy and in purchasing, to ensure that our fleet vehicles will help MDOT achieve this goal,

- ELECTRIC CHARGING STATIONS: MDOT has partnered with Baltimore Gas and Electric (BGE) for the installation and overall maintenance of electric vehicle charging stations in Maryland to expand the infrastructure available to customers traveling throughout the State. The goal is to provide a robust network of charging stations that may, in turn, encourage citizens to purchase these types of vehicles. MDTA currently has charging stations at its Fort McHenry Tunnel (FMT), Baltimore Harbor Tunnel (BHT), and both Travel Plaza facilities, which are located along Interstate 95. MDTA has identified one (1) additional location for this installation. It is anticipated that charging stations will be installed at MDTA's William Preston Lane, Jr. Memorial Bridge (WPL) during FY22,

- STATE OFFICE TEMPERATURE STANDARD: the current State of Maryland office temperature standard is established at 72/73 degrees Fahrenheit. It is recommended to explore changing the temperature value by at least two (2) degrees to 74/75. This recommended change will decrease energy use and increase savings. It should have little -if any- negative affect on the working comfort of our employees.

## XX. Military Department

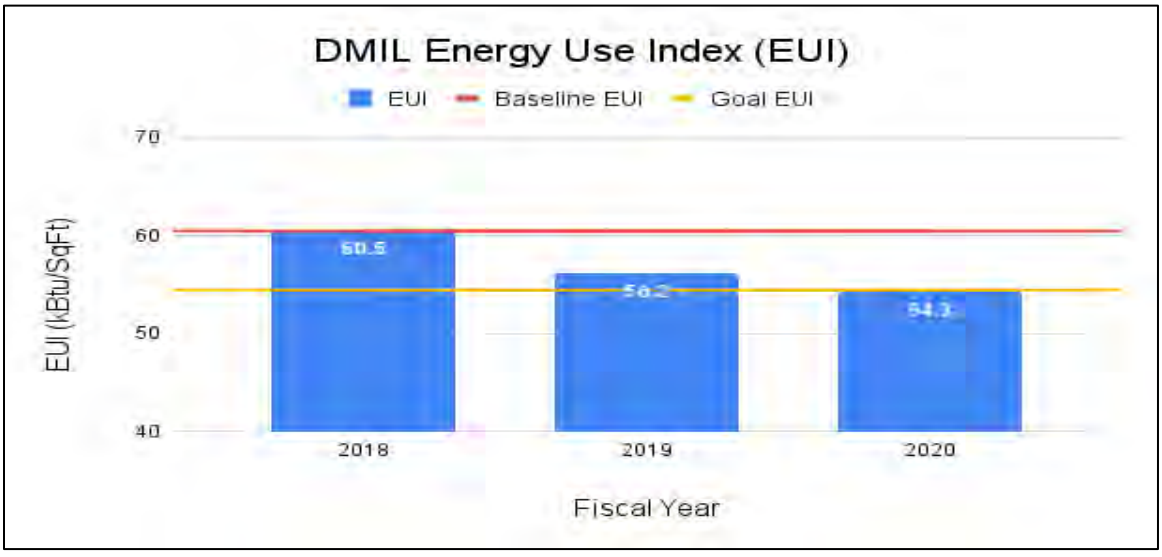
### Agency Energy Usage Snapshot:

| ENERGY USAGE | | | | | |
|---|---|---|---|---|---|
| | Square Feet of Buildings | MMBTU | % Change in Energy Usage | % of State Total MMBTU | EUI (kBtu/SqFt) |
| **FY18 (baseline)** | 1,607,302 | 97,215 | | 1.01% | 60.5 |
| **FY19** | 1,607,302 | 90,388 | -7.0% | 0.96% | 56.2 |
| **FY20** | 1,607,302 | 87,284 | -10.2% | 0.99% | 54.3 |

### Missing bill and data report:

| DATA COMPLIANCE | | | |
|---|---|---|---|
| | % Floor Area Reported to DGS | Number of Missing Bills | Est $ Value of Missing Bills |
| **FY18** | 100% | 10 | $9,872 |
| **FY19** | 100% | 6 | $2,956 |
| **FY20** | 100% | 0 | $0 |

### Change in Energy Use Index (EUI):




### Agency report:

DMIL continues to be actively involved in energy conservation through equipment and system upgrades. As with the rest of the civilized world, this past year was incredibly difficult for energy work. Our best efforts to fight the COVID-19 virus with the Pandemic put most of our field work on hold, as we teleworked most of the year.

We continued our project, installing electric, gas, and water submeters. Upon completion, we will monitor single building usage as opposed to the previous use of estimates based on square footage. The Pandemic greatly restricted and periodically stopped installation progress as health concerns slowed site access.

Three- (3) of our sites have streetlights maintained by BGE. They are in: Glen Arm with 10; Havre de Grace with 26; and Parkville with 4. We have coordinated with them to upgrade each to LED from its existing technology (metal halide, high pressure sodium, etc.). Site visits were made to verify existence of the unit, its wattage, and the site condition. All wattages will reduce the existing range from 150 watts to 450 watts; the LED replacements range from 71 watts to 126 watts. Calculated savings will be 11,100 kW, with total annual savings of 53,100 kWh. Materials have been ordered and the work is scheduled for August 2021 at all three- (3) sites. Similarly, streetlights on other sites were replaced with LEDs by our in-house Facilities Sustainment Team (FST). This included six- (6) units at Ruhl Readiness Center, 22 at Olney Readiness Center, and 12 at Cheltenham Readiness Center. For these sites, we expect to realize a calculated total annual savings of over 40,000 kWh. Also, FST uses LEDs to replace all random lights that were reported bad or out. Unfortunately, the information needed to calculate savings was not kept by FST.

Additionally, at Olney Readiness Center, we completed the installation of a new Building Management System (BMS) for its HVAC system. Savings have been immediate, partially resulting from the new operating schedules for the equipment and from modulation of the existing equipment using new sensors. At the time of this report, we do not have a full year of electrical usage to compare to 2020; however, comparing the months shows clear reductions in usage.

On the construction side, we have reached Substantial Completion of our newest facility, Freedom Readiness Center, in Sykesville. It was constructed to meet LEED standards. Measures taken to ensure energy efficiency include the use of energy efficient motors, variable frequency drives, tankless water heaters, and condensing boilers. Of course, interior and exterior lights are LED, utilizing photocells, dimming, and vacancy controls. Due to our military affiliation, the buildings were constructed to meet higher standards of energy efficiency as required by the Department of Defense. We anticipate its numbers will further decrease our overall EUI, which improved from 56.2 kBtu/sq.ft. in FY19 to 54.3 kBtu/sq.ft. in FY20. These EUI figures are based on a State Energy Database snapshot provided by DGS.

Lastly, a handful of roof replacements were completed in 2020. Of course, the energy savings are harder to calculate and show. However, given the improved building envelope at each site, greater comfort will result.

For FY21, our goal was to continue researching and making plans for new work plus implement as many small projects as we could. However, we thought the Pandemic would stop much sooner. We will continue our efforts to prioritize energy projects based on our DGS audit results and our internal site visits. Combined effort with FST will help this action. Despite our greatly reduced site visits, mandated teleworking, and increased virtual meetings, we are still

encouraged to work towards meeting the energy savings goals of the Governor's Executive Order continuing into FY22.

# APPENDICES

## Appendix 1: Data Methodology

The Executive Order pertains to "State-owned buildings" and therefore a detailed scope of reporting is necessary to ensure that all required data points are included in our reporting. Because most of the State's buildings (nearly 80%) are on shared utility meters and do not have building-level submeters, it was necessary to establish a methodology for reporting on building-level data when we have it and at the broader campus of complex level if we do not. For the purposes of reporting, there are two distinct reporting groups that are outlined and defined further below: *Independently Metered Buildings*; and *Campuses*.

All data utilized in this report comes from the Statewide Utility Database, also known as the State Energy Database, a centralized resource of all State facilities and energy usage and cost that is maintained by the Department of General Services. The database tracks energy cost and consumption for all State agencies, including electricity, natural gas, fuel oil, steam, chilled water, water and sewer commodities. Over 1.8 Million State-paid utility invoices are included in the database.

### SCOPE OF REPORTING

| | Reporting Group | Reporting Level | Examples |
|---|---|---|---|
|  | Independently Metered Buildings | Building level usage;<br>Building level EUI | Courthouses<br>Stand-alone office buildings<br>Stand-alone warehouses |
|  | Campuses | Campus-level usage;<br>Campus-level EUI | University campuses<br>Hospital campuses<br>Office complexes |

### DEFINITIONS

**Independently Metered Building:** *A State-owned permanent built structure enclosed with exterior walls and a roof, that: (1) consumes energy, (2) has its own energy utility meter, and (3) does not share energy utility meters with any other building.*

Data per each Independently Metered Building:

| | |
|---|---|
| Includes MMBTU for | • Building<br>• Any attached parking lot or structure (only if on same utility meter as building)<br>• Any attached outdoor lighting (only if on same utility meter as |

| | |
|---|---|
| | building) |
| Includes SQFT for | • Building GSF<br>• Any attached structure (only if on same utility meter as building) |

**Campus:** *A group of two or more State-owned buildings that consume energy and share at least one energy utility meter.*

Data per each Campus:

| | |
|---|---|
| Includes MMBTU for | • Everything that consumes energy on that campus including:<br>• Buildings<br>• Outdoor lighting<br>• Parking lots and structures |
| Includes SQFT for | • Buildings<br>• Parking structures |

*Energy Utility Meters include: electric, natural gas, steam, chilled water, and fuel oil.*

## REPORTING METRICS

The primary reporting metric used in this report is **weather normalized EUI**, or Energy Use Intensity, which is energy usage per area in kBtu per square foot per year. All FY18 and FY19 total energy usage (reporting in MMBtu) is also weather normalized. The data is weather normalized to a baseline year of FY2018 using a common setpoint of 59°F.

With the exception of UMD, all energy used to power State buildings as reported in utility bills was converted to MMBtus from site-based energy. The large Combined Heat and Power (CHP) plant at the College Park campus made comparing their energy use against that of all other agencies a case of apples and oranges. Therefore, UMD and DGS agreed to report the electricity and steam produced by the plant as site-based energy, which facilitated a fair comparison between UMD's energy use, and the energy use of other units of State government.

## EXCLUSIONS FROM EO REPORTING

Building data attributes such as area (in gross square feet) are reported by the agencies for inclusion in the database. Agencies that do not own buildings were excluded in this report.

The following energy consuming entities were excluded from the report:

- Traffic lights, streetlights, and other structures that do not meet the definitions of "Independently Metered Buildings" or "Campuses" established above
- Buildings that are not owned by the State as of FY2018
- Buildings that were demolished prior to FY2018
- New construction after FY2018

## Appendix 2: Energy Usage for All State Agencies, FY18 & FY19

Summary energy usage by all agencies, ranked by baseline year usage (FY18).

| Rank | Agency | FY18 Sqft | FY18 Usage (MMBtu) | FY18 EUI (kBtu / Sqft) | FY20 Usage (MMBtu) | FY20 EUI (kBtu / Sqft) | % Change in Energy Usage |
|---|---|---|---|---|---|---|---|
| 1 | University of Maryland College Park (UMCP)* | 14,767,416 | 1,798,702 | 121.8 | 1,621,326 | 109.8 | -9.9% |
| 2 | Public Safety & Correctional Srvcs, Dept of (DPSCS) | 15,374,567 | 1,385,819 | 90.1 | 1,227,692 | 84.5 | -7.8% |
| 3 | University of Maryland Baltimore (UMB) | 5,950,069 | 904,967 | 152.1 | 879,027 | 147.7 | -2.9% |
| 4 | University of Maryland Baltimore County (UMBC) | 4,467,954 | 580,472 | 129.9 | 543,597 | 121.7 | -6.4% |
| 5 | General Services, Dept of (DGS) | 6,498,791 | 575,501 | 88.6 | 485,168 | 74.7 | -15.7% |
| 6 | Maryland Aviation Administration (MDOT-MAA) | 2,920,577 | 567,330 | 194.3 | 550,780 | 188.6 | -2.9% |
| 7 | Towson University (TU) | 6,036,906 | 463,915 | 76.9 | 416,416 | 69.0 | -10.2% |
| 8 | Health, Maryland Dept of (MDH) | 3,208,181 | 382,122 | 119.1 | 380,601 | 118.6 | -0.4% |
| 9 | Morgan State University (MSU) | 3,396,043 | 342,866 | 101.0 | 339,205 | 99.9 | -1.1% |
| 10 | Maryland Transit Administration (MDOT-MTA) | 1,562,344 | 340,403 | 217.9 | 330,463 | 211.5 | -2.9% |
| 11 | Frostburg State University (FSU) | 1,547,381 | 207,429 | 134.1 | 198,794 | 128.5 | -4.2% |
| 12 | Salisbury University (SU) | 2,217,621 | 182,154 | 82.1 | 141,792 | 63.9 | -22.2% |
| 13 | Stadium Authority, MD (STADAUTH) | 4,274,000 | 168,040 | 39.3 | 152,337 | 35.6 | -9.3% |
| 14 | University of Maryland Eastern Shore (UMES) | 1,093,365 | 154,368 | 141.2 | 80,688 | 73.8 | -47.7% |
| 15 | Bowie State University (BSU) | 1,332,563 | 153,917 | 115.5 | 127,641 | 95.8 | -17.1% |
| 16 | State Highway Administration (MDOT-SHA) | 2,276,739 | 139,194 | 61.1 | 140,434 | 61.7 | 0.9% |
| 17 | Maryland Port Administration (MDOT-MPA)*** | 6,513,833 | 134,714 | 20.7 | 111,882 | 18.2 | -16.9% |
| 18 | Coppin State University (CSU) | 1,096,489 | 125,809 | 114.7 | 112,784 | 102.9 | -10.4% |
| 19 | Maryland Transportation Authority (MDTA) | 1,082,817 | 113,602 | 104.9 | 104,379 | 96.7 | -8.1% |
| 20 | Military Dept (DMIL) | 1,607,302 | 97,215 | 60.5 | 87,284 | 54.3 | -10.2% |
| 21 | Juvenile Services, Dept of (DJS) | 1,028,758 | 93,953 | 91.3 | 86,382 | 84.0 | -8.1% |
| 22 | Police, Dept of MD State (DMSP) | 600,622 | 87,359 | 145.4 | 87,703 | 146.0 | 0.4% |
| 23 | University of Maryland Global Campus (UMGC) | 1,005,624 | 82,637 | 82.2 | 69,877 | 69.5 | -15.4% |
| 24 | Baltimore City Community College (BCCC) | 736,165 | 77,446 | 105.2 | 71,322 | 125.7 | -7.9% |
| 25 | Motor Vehicle Administration (MDOT-MVA) | 355,031 | 69,399 | 195.5 | 53,362 | 150.3 | -23.1% |
| 26 | Saint Mary's College of MD (SMCM) | 928,924 | 67,808 | 73.0 | 55,678 | 59.9 | -17.9% |
| 27 | University of Baltimore (UB) | 885,521 | 58,403 | 66.0 | 59,213 | 66.9 | 1.4% |
| 28 | University of Maryland Center for Environmental Science (UMCES) | 349,510 | 58,298 | 166.8 | 49,344 | 141.2 | -15.4% |
| 29 | Natural Resources, Dept of (DNR)*** | 1,173,946 | 52,957 | 45.1 | 57,829 | 49.3 | 9.2% |
| 30 | Veterans Affairs, MD Dept of (MDVA) | 358,048 | 36,401 | 101.7 | 34,411 | 96.1 | -5.5% |
| 31 | University of MD Shady Grove (UMSG) | 507,256 | 34,273 | 67.6 | 30,677 | 60.5 | -10.5% |
| 32 | Maryland Public Television (MPT) | 140,497 | 30,953 | 220.3 | 27,902 | 198.6 | -9.9% |

| Rank | Agency | FY18 Sqft | FY18 Usage (MMBtu) | FY18 EUI (kBtu / Sqft) | FY20 Usage (MMBtu) | FY20 EUI (kBtu / Sqft) | |
|---|---|---|---|---|---|---|---|
| **33** | Deaf, MD Schools for the | 617,035 | 26,869 | 43.6 | 36,644 | 59.4 | 36.4% |
| **34** | Agriculture, MD Dept of (MDOA) | 181,227 | 16,679 | 92.0 | 15,148 | 83.6 | -9.2% |
| **35** | Human Resources, Dept of (DHR) | 347,934 | 16,122 | 46.3 | 15,136 | 43.5 | -6.1% |
| **36** | Planning, Dept of (MDP) | 99,717 | 5,888 | 59.1 | 6,193 | 63.0 | 5.2% |
| **37** | Environmental Service, MD (MES) | 69,913 | 5,374 | 76.9 | 7,552 | 108.0 | 40.5% |
| **38** | Labor, Licensing and Regulation, Dept of (DLLR) | 316,591 | 5,908 | 18.7 | 7,462 | 23.6 | 26.3% |
| **39** | Canal Place Preservation & Dev Authority (CPPDA) | 29,994 | 1,839 | 61.3 | 1,663 | 55.4 | -9.6% |
| **40** | Environment, MD Dept of the (MDE) | 7,118 | 490 | 68.8 | 344 | 48.3 | -29.9% |
| **41** | Food Center Authority, MD (MFCA) | 63,600 | 329 | 5.2 | 436 | 6.9 | 32.6% |
| | TOTAL/AVERAGE | 97,027,989 | 9,647,924 | 97.5 | 8,857,498 | 90.2 | -8.2% |

*Notes:*

*UMCP data is based on self-reported data from the agency.

**MPA data represents the entire Department's energy usage and square footage. Due to limited confirmed data, DGS was not able to confirm state owned buildings within the scope and proper meter assignments needed for reporting. Therefore, data is summed up for the entire agency, inclusive of non-buildings and leased facilities that would fall outside of the reporting scope.

***DNR data represents the entire Department's energy usage and square footage. Due to limited confirmed data, DGS was not able to confirm state owned buildings within the scope and proper meter assignments needed for reporting. Therefore, data is summed up for the entire agency, inclusive of non-buildings and leased facilities that would fall outside of the reporting scope.

## Appendix 3: Top 20 Agencies – Independently Metered Buildings

The below table shows building-level energy usage and EUI for the top 20 energy using agencies for the baseline year of FY2018. Buildings included are those with building-level utility company meters.

| Agency | Building Name (Independently Metered only) | Floor Area (Sqft.) | Building Primary Use | Year Built | FY18 Usage (MMBTU) | FY18 EUI (kBTU/ Sqft.) | FY20 Usage (MMBTU) | FY20 EUI (kBTU /Sqft.) | % Change in Usage from FY18 to FY20 |
|---|---|---|---|---|---|---|---|---|---|
| **BSU** | Goodloe Alumni House | 3,815 | College/University | 1916 | 255 | 66.8 | 122 | 32 | -52.05% |
| **DGS** | Hilton Height Community Center - 530 N Hilton | 8,750 | Office | 1948 | 425 | 48.5 | 366 | 41.8 | -13.83% |
| **DGS** | Annapolis Post Office | 22,994 | Office | 2017 | 839 | 36.5 | 657 | 28.6 | -21.70% |
| **DGS** | Hilton Height Community Center - 510 N Hilton | 22,900 | Other - Entertainment/Public Assembly | 1948 | 1,383 | 60.4 | 1,182 | 51.6 | -14.52% |
| **DGS** | Hagerstown - J. Louis Boublitz DC/MSC | 27,240 | Courthouse | 2000 | 1,430 | 52.5 | 2,105 | 77.3 | 47.23% |
| **DGS** | Denton - John Hargreaves DC/MSC | 31,798 | Courthouse | 1998 | 1,788 | 56.2 | 1,942 | 61.1 | 8.60% |
| **DGS** | Essex/Rosedale DC/MSC | 22,975 | Courthouse | 1982 | 2,100 | 91.4 | 2,051 | 89.3 | -2.34% |
| **DGS** | Arbutus/Catonsville DC/MSC | 32,657 | Courthouse | 1982 | 2,179 | 66.7 | 2,314 | 70.9 | 6.19% |
| **DGS** | Centreville - Carter Hickman DC/MSC | 37,783 | Courthouse | 1982 | 2,772 | 73.4 | 2,389 | 63.2 | -13.82% |
| **DGS** | OPD - 201 St. Paul Street | 32,000 | Office | 1900 | 2,783 | 87.0 | 2,374 | 74.2 | -14.69% |
| **DGS** | Prince Frederick - Louis L. Goldstein DC/MSC | 73,000 | Courthouse | 1991 | 3,669 | 50.3 | 3,726 | 51.0 | 1.54% |
| **DGS** | Westminster DC/MSC | 43,000 | Courthouse | 2002 | 4,125 | 95.9 | 5,107 | 118.8 | 23.79% |
| **DGS** | Towson DC | 52,000 | Courthouse | 1994 | 5,069 | 97.5 | 4,526 | 87.0 | -10.71% |
| **DGS** | Ellicott City DC/MSC | 75,300 | Courthouse | 1982 | 5,309 | 70.5 | 5,555 | 73.8 | 4.64% |
| **DGS** | Hyattsville DC/MSC | 82,000 | Courthouse | 1994 | 5,362 | 65.4 | 6,057 | 73.9 | 12.95% |
| **DGS** | Wabash - Borgerding DC/MSC | 52,824 | Courthouse | 1986 | 5,409 | 102.4 | 5,074 | 96.1 | -6.19% |
| **DGS** | Leonardtown - Joseph P. Carter DC/MSC | 77,920 | Courthouse | 1994 | 5,661 | 72.7 | 4,961 | 63.7 | -12.36% |
| **DGS** | Jessup State Complex | 126,800 | Office | 1970 | 6,011 | 47.4 | 5,650 | 44.6 | -6.01% |
| **DGS** | 2100 Guilford - Parole & Probation | 82,953 | Prison/Incarceration | 1924 | 6,012 | 72.5 | 2,770 | 33.4 | -53.92% |
| **DGS** | South Baltimore - Hargrove DC/MSC | 84,730 | Courthouse | 2003 | 6,721 | 79.3 | 7,388 | 87.2 | 9.92% |
| **DGS** | Elkton DC/MSC | 126,700 | Courthouse | 1983 | 6,725 | 53.1 | 6,958 | 54.9 | 3.46% |
| **DGS** | Glen Burnie - George M. Taylor DC/MSC | 97,104 | Courthouse | 1982 | 6,948 | 71.6 | 6,938 | 71.4 | -0.14% |
| **DGS** | Silver Spring - L. Leonard Ruben DC | 79,596 | Courthouse | 2004 | 7,273 | 91.4 | 7,061 | 88.7 | -2.92% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **DGS** | Shillman Building | 160,000 | Courthouse | 1972 | 9,564 | 59.8 | 9,284 | 58.0 | -2.93% |
| **DGS** | Salisbury - Paul Martin DC/MSC | 224,343 | Courthouse | 1990 | 10,182 | 45.4 | 13,211 | 58.9 | 29.75% |
| **DGS** | Bel Air - Mary Risteau DC/MSC | 140,000 | Courthouse | 1983 | 11,604 | 82.9 | 10,764 | 76.9 | -7.24% |
| **DGS** | Peoples Resource Center - 100 Community Place | 155,900 | Office | 1991 | 12,237 | 78.5 | 9,553 | 61.3 | -21.93% |
| **DGS** | Civic Plaza - 200 W BALTIMORE St | 217,700 | Office | 1911 | 15,600 | 71.7 | 16,340 | 75.1 | 4.75% |
| **DGS** | Rockville DC/MSC | 167,000 | Courthouse | 2011 | 26,234 | 157.1 | 15,493 | 92.8 | -40.94% |
| **DGS** | WilliamDonaldSchaefer-6 St. Paul | 305,400 | Office | 1986 | 33,508 | 109.7 | 20,853 | 68.3 | -37.77% |
| **DMIL-ARMY** | 209 S STORAGE SHED | 975 | Storage | 1976 | 2 | 2.2 | 3 | 3.1 | 40.45% |
| **DMIL-ARMY** | EDWARDS BUILDING | 25,704 | Office | 1903 | 3 | 0.1 | 0 | 0.0 | -100.00% |
| **DMIL-ARMY** | P-1 ALLEGHENY PUMP | 64 | Water Supply Facility | 1988 | 9 | 147.6 | 8 | 125.0 | -15.34% |
| **DMIL-ARMY** | W-1 PUMP HOUSE | 80 | Pump House | 1988 | 15 | 192.1 | 21 | 262.5 | 36.62% |
| **DMIL-ARMY** | 2-Bay Maintenance Shop | 6,657 | Storage | 1971 | 18 | 2.7 | 12 | 1.8 | -33.28% |
| **DMIL-ARMY** | RANGERS HOUSE | 1,600 | Office | 1988 | 27 | 16.7 | 26 | 16.3 | -2.80% |
| **DMIL-ARMY** | TABLERS LODGE | 820 | Office - Lodging/Residential | 1988 | 36 | 44.4 | 17 | 20.7 | -53.26% |
| **DMIL-ARMY** | STRAUSS LODGE A-1 | 2,112 | Office - Lodging/Residential | 1988 | 39 | 18.5 | 32 | 15.2 | -17.99% |
| **DMIL-ARMY** | WHITE OAK FMS | 2,873 | Storage | 1972 | 44 | 15.2 | 55 | 19.1 | 26.27% |
| **DMIL-ARMY** | TABLER'S STORAGE SHED | 120 | Storage | 1988 | 44 | 370.1 | 44 | 366.7 | -0.93% |
| **DMIL-ARMY** | 113- GATEHOUSE BUILDING | 64 | Other | 1990 | 63 | 980.9 | 65 | 1,015.6 | 3.54% |
| **DMIL-ARMY** | W-3 WHSE BUILDING | 6,156 | Warehouse - Unrefrigerated | 1924 | 64 | 10.4 | 67 | 10.9 | 4.64% |
| **DMIL-ARMY** | MAINTENANCE SHOP | 1,800 | Storage | 1988 | 79 | 43.7 | 57 | 31.7 | -27.57% |
| **DMIL-ARMY** | BLD. 402 WELL PUMP | 180 | Pump House | 1975 | 85 | 474.5 | 61 | 338.9 | -28.57% |
| **DMIL-ARMY** | W-2 WHSE BUILDING | 7,680 | Warehouse - Unrefrigerated | 1924 | 91 | 11.8 | 129 | 16.8 | 42.31% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **DMIL-ARMY** | O-1A BUILDING | 366 | Office | 1939 | 123 | 336.8 | 81 | 221.3 | -34.29% |
| **DMIL-ARMY** | 201- BEECHAM BUILDING | 5,095 | Hospital | 1999 | 130 | 25.5 | 84 | 16.5 | -35.35% |
| **DMIL-ARMY** | P1- MAINT BUILDING | 1,008 | Shop | 1991 | 207 | 205.5 | 419 | 415.7 | 102.25% |
| **DMIL-ARMY** | SEC 16 - EST 2000 | 512 | Office | 1975 | 211 | 412.6 | 196 | 382.8 | -7.21% |
| **DMIL-ARMY** | S-3 MAINT BUILDING | 2,356 | Repair Services | 1924 | 257 | 109.2 | 209 | 88.7 | -18.77% |
| **DMIL-ARMY** | Pikesville Armory | 96,755 | Office | 1903 | 283 | 2.9 | 98 | 1.0 | -65.38% |
| **DMIL-ARMY** | Catonsville Armory | 29,127 | Office | 1957 | 338 | 11.6 | 386 | 13.3 | 14.21% |
| **DMIL-ARMY** | DUNDALK OLD FMS | 3,739 | Shop | 1960 | 356 | 95.3 | 263 | 70.3 | -26.16% |
| **DMIL-ARMY** | DUNDALK NEW FMS | 19,230 | Shop | 2008 | 535 | 27.8 | 539 | 28.0 | 0.80% |
| **DMIL-ARMY** | S-5 MAINT BUILDING | 2,337 | Repair Services | 1924 | 537 | 230.0 | 570 | 243.9 | 6.07% |
| **DMIL-ARMY** | NCO Building | 12,320 | Other - Recreation | 1903 | 595 | 48.3 | 547 | 44.4 | -8.14% |
| **DMIL-ARMY** | ELKTON ARMORY | 20,453 | Office | 2014 | 615 | 30.1 | 168 | 8.2 | -72.70% |
| **DMIL-ARMY** | USP&FO Warehouse | 1,440 | Warehouse - Unrefrigerated | 2007 | 638 | 443.0 | 862 | 598.6 | 35.13% |
| **DMIL-ARMY** | GLEN BURNIE ARMORY | 23,179 | Office | 1950 | 662 | 28.6 | 728 | 31.4 | 9.95% |
| **DMIL-ARMY** | O-1ADM- BUILDING | 2,400 | Office | 1939 | 681 | 283.6 | 128 | 53.3 | -81.19% |
| **DMIL-ARMY** | W-8 WHSE BUILDING | 9,600 | Warehouse - Unrefrigerated | 1924 | 742 | 77.3 | 532 | 55.4 | -28.31% |
| **DMIL-ARMY** | QUEEN ANNE ARMORY | 17,642 | Office | 1977 | 781 | 44.3 | 1,071 | 60.7 | 37.16% |
| **DMIL-ARMY** | M1 BUILDING | 9,600 | Other - Lodging/Residential | 1988 | 801 | 83.4 | 894 | 93.1 | 11.60% |
| **DMIL-ARMY** | SALISBURY FMS | 11,432 | Shop | 2004 | 836 | 73.1 | 822 | 71.9 | -1.64% |
| **DMIL-ARMY** | S-2 MAINT BUILDING | 19,844 | Shop | 1924 | 985 | 49.7 | 1,087 | 54.8 | 10.31% |
| **DMIL-ARMY** | HAGERSTOWN ARMORY | 30,306 | Office | 1978 | 998 | 32.9 | 1,027 | 33.9 | 2.91% |
| **DMIL-ARMY** | LAPLATA ARMORY | 23,230 | Office | 2016 | 1,087 | 46.8 | 1,032 | 44.4 | -5.03% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **DMIL-ARMY** | FREDERICK ARMORY | 18,630 | Office | 1978 | 1,240 | 66.5 | 842 | 45.2 | -32.09% |
| **DMIL-ARMY** | SALISBURY ARMORY | 33,070 | Office | 1959 | 1,460 | 44.1 | 1,489 | 45.0 | 1.99% |
| **DMIL-ARMY** | WESTMINSTER ARMORY | 17,229 | Office | 1980 | 1,527 | 88.6 | 1,341 | 77.8 | -12.17% |
| **DMIL-ARMY** | O-2 ADMIN BUILDING | 16,108 | Office | 1948 | 1,562 | 97.0 | 1,392 | 86.4 | -10.91% |
| **DMIL-ARMY** | ELLICOTT CITY ARMORY | 19,356 | Office | 1953 | 1,672 | 86.4 | 1,288 | 66.5 | -22.96% |
| **DMIL-ARMY** | ANNAPOLIS ARMORY | 41,473 | Office | 1959 | 1,700 | 41.0 | 1,872 | 45.1 | 10.14% |
| **DMIL-ARMY** | WHITE OAK ARMORY | 27,078 | Office | 1972 | 1,736 | 64.1 | 1,425 | 52.6 | -17.91% |
| **DMIL-ARMY** | A-1 ARMORY | 38,007 | Office | 1924 | 1,935 | 50.9 | 96 | 2.5 | -95.04% |
| **DMIL-ARMY** | CADE ARMORY | 35,369 | Office | 1960 | 2,023 | 57.2 | 2,007 | 56.7 | -0.78% |
| **DMIL-ARMY** | GUNPOWDER-PURNELL ARMORY | 31,969 | Office | 1975 | 2,201 | 68.9 | 3,320 | 103.9 | 50.82% |
| **DMIL-ARMY** | CUMBERLAND ARMORY | 26,332 | Office | 1960 | 2,355 | 89.4 | 2,100 | 79.8 | -10.83% |
| **DMIL-ARMY** | PARKVILLE ARMORY | 39,279 | Office | 1964 | 2,358 | 60.0 | 3,081 | 78.4 | 30.64% |
| **DMIL-ARMY** | Dundalk Armory | 31,022 | Fitness Center/Health Club/Gym | 1960 | 3,271 | 105.4 | 3,847 | 124.0 | 17.62% |
| **DMIL-ARMY** | RUHL ARMORY-TOWSON | 71,699 | Office | 1980 | 3,909 | 54.5 | 3,195 | 44.6 | -18.26% |
| **DMIL-ARMY** | 114- ARMORY BUILDING | 63,481 | Office | 1990 | 7,839 | 123.5 | 8,082 | 127.3 | 3.10% |
| **DMIL-ARMY** | FIFTH REGIMENT ARMORY | 322,434 | Office | 1901 | 19,418 | 60.2 | 13,710 | 42.5 | -29.39% |
| **FSU** | Intramural Field Restroom | 720 | Restroom | 2012 | 8 | 11.7 | 7 | 10.2 | -12.80% |
| **FSU** | WFWM RADIO STATION | 100 | Office | 2015 | 76 | 764.6 | 91.29 | 912.9 | 19.39% |
| **FSU** | 20 BRADDOCK | 1,913 | Office | 1955 | 125 | 65.1 | 114 | 59.4 | -8.85% |
| **FSU** | MIDLOTHIAN ROAD | 27,520 | Irrigation | 2012 | 1,041 | 37.8 | 1,068 | 38.8 | 2.61% |
| **MAA** | 801 WILSON-POINT RD | 28,404 | Hangar | 1980 | 30 | 1.1 | 30 | 1.1 | 0.00% |
| **MAA** | 801 WILSON-POINT RD | 68,803 | Hangar | 1980 | 35 | 0.5 | 36 | 0.5 | 2.80% |
| **MAA** | Building 120 | 2,185 | Office | 1980 | 74 | 34.0 | 98 | 44.9 | 32.01% |
| **MAA** | 3000 Mathison Way | 60,000 | Office | 1990 | 79 | 1.3 | 83 | 1.4 | 4.40% |
| **MAA** | Building 117 | 8,844 | Storage | 1980 | 202 | 22.8 | 159 | 18.0 | -21.17% |
| **MAA** | Building 137 | 3,880 | Shop | 1980 | 207 | 53.3 | 196 | 50.5 | -5.14% |
| **MAA** | R 7023 Elm Rd Bldg 123, | 1,500 | Shop | 1980 | 225 | 150.2 | 284 | 189.3 | 26.06% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Bay A | | | | | | | | |
| **MAA** | Building 113 | 28,400 | Storage | 1980 | 236 | 8.3 | 276 | 9.7 | 16.93% |
| **MAA** | Building 158 | 5,100 | Maintenance Shop | 1980 | 358 | 70.1 | 891 | 174.7 | 149.23% |
| **MAA** | Building 119 | 3,840 | Storage | 1980 | 394 | 102.7 | 366 | 95.3 | -7.21% |
| **MAA** | 701 Wilson Point Rd Hangar | 12,345 | Hangar | 2000 | 933 | 75.6 | 934 | 75.7 | 0.09% |
| **MAA** | Building 121 | 8,200 | Shop | 1980 | 996 | 121.5 | 1164 | 142.0 | 16.83% |
| **MAA** | 701 WILSON-POINT RD | 9,181 | Hangar | 1980 | 1,049 | 114.3 | 693 | 75.5 | -33.97% |
| **MAA** | 701 Wilson-Point Road - Hangar 6 | 61,100 | Hangar | 1980 | 1,150 | 18.8 | 57 | 0.9 | -95.04% |
| **MAA** | 601 WILSON-POINT RD | 74,200 | Hangar | 1980 | 1,342 | 18.1 | 2,019 | 27.2 | 50.43% |
| **MAA** | 7057 Elm Rd Bldg 112 | 45,000 | Office | 1980 | 1,454 | 32.3 | 756 | 16.8 | -47.99% |
| **MAA** | 701 Wilson-Point Road - Hangar 4 | 61,800 | Hangar | 1980 | 1,568 | 25.4 | 1,347 | 21.8 | -14.07% |
| **MAA** | Building 155 | 9,504 | Office | 1980 | 2,555 | 268.8 | 2,552 | 268.5 | -0.10% |
| **MAA** | Building 105 | 35,000 | Firestation | 1980 | 3,773 | 107.8 | 3,351 | 95.7 | -11.19% |
| **MAA** | 601 WILSON-POINT RD | 19,800 | Hangar | 1980 | 4,057 | 204.9 | 2,583 | 130.5 | -36.33% |
| **MAA** | Building 107 | 28,000 | Storage | 1980 | 4,874 | 174.1 | 5,268 | 188.1 | 8.08% |
| **MAA** | MAC Building 172 | 172,000 | Office | 1980 | 9,527 | 55.4 | 9,635 | 56.0 | 1.13% |
| **MAA** | 701 WILSON-POINT RD (Central) | 12,900 | Hangar | 1980 | 12,586 | 975.7 | 11,636 | 902.0 | -7.55% |
| **MAA** | Building 116 FMX Shop | 10,200 | Shop | 1995 | 17,979 | 1762.6 | 7,591 | 744.2 | -57.78% |
| **MAA** | 100 Building - BWI Airport | 2,129,891 | Hangar | 1947 | 501,342 | 235.4 | 495,714 | 232.7 | -1.12% |
| **MDH** | Garage | 1,400 | Repair Services | 1996 | 143 | 102.2 | 159 | 113.6 | 11.14% |
| **MDH** | Employee Dorms | 12,092 | Residential Care Facility | 1958 | 969 | 80.2 | 968 | 80.1 | -0.15% |
| **MDH** | Gym | 8,305 | Gym/Stadium | 1986 | 1,200 | 144.5 | 1,126 | 135.6 | -6.17% |
| **MDH** | Office of Chief Medical Examiner | 120,000 | Laboratory | 2010 | 17,153 | 142.9 | 20,045 | 167.0 | 16.86% |
| **MDH** | MDH Eastern Shore Hospital Center | 108,000 | Residential Care Facility | 2001 | 22,896 | 212.0 | 22,624 | 209.5 | -1.19% |
| **MDTA** | Western Shore Storage Building | 2,240 | Storage | 1905 | 22 | 9.6 | 16 | 7.1 | -25.95% |
| **MDTA** | 9665 Orland Park Road (Maint. Bldg 1) | 3,292 | Office | 1940 | 166 | 50.5 | 143 | 43.4 | -14.01% |
| **MDTA** | Maintenance Building 2 | 5,234 | Office | 2019 | 308 | 58.8 | 454 | 86.7 | 47.50% |
| **MDTA** | 7677 LILLIAN HOLT DRIVE | 14,406 | Office | - | 313 | 21.7 | 335 | 23.3 | 7.00% |
| **MDTA** | OPS Building (2340) | 5,736 | Office | 1905 | 345 | 60.1 | 323 | 56.3 | -6.34% |
| **MDTA** | Eastern Shore Storage | 1,920 | Storage | 1905 | 472 | 245.8 | 524 | 272.9 | 11.02% |

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|---|---|---|---|---|---|---|---|---|---|
| | Building | | | | | | | | |
| **MDTA** | 2330 BROENING HWY | 14,015 | Office | 1905 | 795 | 56.7 | 2,040 | 145.6 | 156.70% |
| **MDTA** | Police & Automotive Building | 38,860 | Mixed Use Property | 1905 | 2,017 | 51.9 | 1,908 | 49.1 | -5.38% |
| **MDTA** | Headquarters Building (2310) | 62,141 | Office | 1905 | 4,016 | 64.6 | 3,360 | 54.1 | -16.33% |
| **MDTA** | 303 AUTHORITY DR | 25,800 | Office | - | 6,020 | 233.3 | 4,342 | 168.3 | -27.87% |
| **MDTA** | Administration Building (1200 Frankfurst Ave) | 32,253 | Office | 1956 | 8,641 | 267.9 | 9,781 | 303.3 | 13.19% |
| **MDTA** | 1700 FRANKFURST AVENUE | 7,149 | Office | - | 15,255 | 2133.9 | 17,313 | 2421.7 | 13.49% |
| **MSU** | 1140 E COLD-SPRING LA | 10,269 | Storage | 1950 | 26 | 2.5 | 28 | 2.7 | 9.84% |
| **MSU** | 2412 President's Residence | 4,270 | Residence | 1963 | 193 | 45.2 | 272 | 63.7 | 40.89% |
| **MSU** | Lillie Carroll Jackson Museum | 5,600 | Museum | 1900 | 306 | 54.7 | 326 | 58.2 | 6.30% |
| **MSU** | Morgan Christian Center | 3,883 | Office | 1942 | 379 | 97.7 | 278 | 71.6 | -26.74% |
| **MSU** | Thurgood Marshall D | 6,591 | Dormitory/Residence Hall | 1986 | 422 | 64.1 | 386 | 58.6 | -8.71% |
| **MSU** | Thurgood Marshall B | 19,774 | Dormitory/Residence Hall | 1986 | 941 | 47.6 | 799 | 40.4 | -15.03% |
| **MSU** | Thurgood Marshall C | 19,774 | Dormitory/Residence Hall | 1986 | 966 | 48.9 | 836 | 42.3 | -13.46% |
| **MSU** | Thurgood Marshall A | 19,774 | Dormitory/Residence Hall | 1986 | 985 | 49.8 | 839 | 42.4 | -14.79% |
| **MSU** | Estuarine Center (off site) | 28,000 | Office | 1995 | 1,164 | 41.6 | 1,394 | 53.1 | 19.74% |
| **MSU** | 4530 Portage Ave | 40,856 | Office | 1983 | 1,490 | 36.5 | 1,932 | 54.3 | 29.66% |
| **MSU** | Turners Armory and Motor Pool | 42,626 | Office | 1951 | 1,726 | 40.5 | 2,041 | 55.6 | 18.26% |
| **MSU** | Business School | 138,000 | Office | 2016 | 18,403 | 133.4 | 11,167 | 56.8 | -39.32% |
| **MSU** | Behavioral & Social Science Center (BSSC) | 140,000 | Office | 1980 | 24,248 | 173.2 | 22,277 | 58.1 | -8.13% |
| **MSU** | 1140 E COLD-SPRING LA | 10,629 | Storage | 1950 | 25.5 | 2.5 | 28 | 2.7 | 9.80% |
| **MSU** | 1130 E COLD-SPRING LA | 6,629 | Storage | 1950 | 1.3 | 0.2 | 2 | 0.2 | 53.85% |
| **MTA** | Laurel Station | 800 | Transportation Terminal/Station | 1984 | 296 | 370.2 | 234 | 60.6 | -20.98% |
| **MTA** | Bush Bus Division | 25,000 | Storage | - | 594 | 23.8 | 525 | 61.8 | -11.61% |
| **MTA** | Light Rail Stations Cherry Hill | 40,000 | Storage | 1960 | 751 | 18.8 | 728 | 63.0 | -3.11% |
| **MTA** | Light Rail Stations Cherry | 10,000 | - | - | 960 | 96.0 | 901 | 64.3 | -6.15% |

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|---|---|---|---|---|---|---|---|---|---|
| | Hill | | | | | | | | |
| **MTA** | Eastern Bus Division Trans Bldg | 13,913 | Shop | 1950 | 979 | 70.4 | 963 | 65.5 | -1.66% |
| **MTA** | MTA Police Mt. Hope DR | 90,000 | Police Station | 2011 | 3,112 | 34.6 | 3,080 | 66.8 | -1.01% |
| **MTA** | Procurement | 34,506 | Office | 2000 | 3,150 | 91.3 | 3,454 | 68.0 | 9.67% |
| **MTA** | Kirk Bus Division | 46,239 | Shop | 2016 | 11,562 | 250 | 15,884 | 69.3 | 37.38% |
| **MTA** | METRO Maintenance Old Court | 40,000 | Shop | 1979 | 5,569 | 139.2 | 4,314 | 70.5 | -22.53% |
| **MTA** | Cromwell Light Rail Maintenance | 56,279 | Shop | 2000 | 8,342 | 148.2 | 8,204 | 71.7 | -1.66% |
| **MTA** | MARC Maintenance Facilities Martins | 55,000 | Maintenance Shop | 2006 | 9,772 | 177.7 | 7,393 | 73.0 | -24.35% |
| **MTA** | Light Rail Maintenance North Ave | 107,000 | Shop | 1991 | 14,807 | 138.4 | 13,753 | 74.2 | -7.11% |
| **MTA** | Northwest Bus Division | 264,905 | Shop | 1974 | 17,426 | 65.8 | 16,435 | 75.5 | -5.69% |
| **MTA** | 5801 WABASH AVE | 130,000 | Shop | 1981 | 26,020 | 200.2 | 27,569 | 76.7 | 5.95% |
| **MTA** | Bush Bus Division | 348,702 | Shop | 1903 | 58,402 | 167.5 | 62,315 | 78.0 | 6.70% |
| **MTA** | Metro Stations Johns Hopkins | 300,000 | Transportation Terminal/Station | 1992 | 178,662 | 595.5 | 164,709 | 79.2 | -7.81% |
| **SHA** | Shop - Salisbury Old District Office | 1,789 | Shop | 1984 | 125 | 69.8 | 116 | 64.8 | -7.06% |
| **SHA** | Vehicle Calibration Building | 7,381 | Office | - | 573 | 77.6 | 934 | 126.5 | 63.13% |
| **SHA** | Highway Communications Division | 5,485 | Shop | - | 671 | 122.3 | 753 | 137.3 | 12.26% |
| **SHA** | Shop - Denton | 34,648 | Shop | 1984 | 696 | 20.1 | 729 | 21.0 | 4.78% |
| **SHA** | Shop - Snow Hill | 35,375 | Shop | 1958 | 699 | 19.8 | 417 | 11.8 | -40.35% |
| **SHA** | Shop - Cambridge | 63,988 | Shop | 1963 | 752 | 11.8 | 878 | 13.7 | 16.76% |
| **SHA** | Shop - Leonardtown | 45,891 | Shop | 1975 | 1,051 | 22.9 | 952 | 20.7 | -9.43% |
| **SHA** | Shop - Princess Anne | 36,074 | Shop | 1960 | 1,191 | 33.0 | 782 | 21.7 | -34.32% |
| **SHA** | District Office/Shop - Chestertown | 54,302 | Office | - | 1,224 | 22.5 | 2,572 | 47.4 | 110.14% |
| **SHA** | Shop - Prince Frederick | 32,077 | Shop | 1968 | 1,251 | 39.0 | 1,627 | 50.7 | 30.02% |
| **SHA** | Shop - Easton | 31,100 | Shop | 1952 | 1,290 | 41.5 | 2,193 | 70.5 | 70.05% |
| **SHA** | District Office - LaVale | 18,406 | Office | - | 1,569 | 85.3 | 830 | 45.1 | -47.11% |
| **SHA** | Shop - Centerville | 44,192 | Shop | 1963 | 1,598 | 36.2 | 1,341 | 30.3 | -16.07% |
| **SHA** | Shop - Gaithersburg | 48,273 | Shop | 1994 | 1,736 | 36.0 | 2,680 | 55.5 | 54.37% |
| **SHA** | Shop - Dayton | 48,527 | Shop | 2003 | 1,907 | 39.3 | 1,755 | 36.2 | -7.98% |
| **SHA** | Shop - Laurel | 42,987 | Shop | 1987 | 2,085 | 48.5 | 3,266 | 76.0 | 56.67% |

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|---|---|---|---|---|---|---|---|---|---|
| **SHA** | Shop - Lavale | 48,582 | Shop | - | 2,190 | 45.1 | 1,101 | 22.7 | -49.73% |
| **SHA** | Shop - Fairlands | 45,323 | Shop | 1998 | 2,260 | 49.9 | 3,023 | 66.7 | 33.78% |
| **SHA** | Shop - Hagerstown | 53,639 | Shop | 1986 | 2,276 | 42.4 | 1,372 | 25.6 | -39.72% |
| **SHA** | District Office-PG | 41,967 | Office | - | 2,425 | 57.8 | 3,755 | 89.5 | 54.87% |
| **SHA** | Shop - Upper Marlboro | 52,763 | Shop | 1998 | 2,559 | 48.5 | 3,261 | 61.8 | 27.44% |
| **SHA** | Shop - Churchville | 45,103 | Shop | 2000 | 2,628 | 58.3 | 1,908 | 42.3 | -27.39% |
| **SHA** | Shop - Elkton | 50,890 | Shop | 1987 | 2,799 | 55.0 | 2,745 | 53.9 | -1.95% |
| **SHA** | Shop - Glen Burnie | 52,430 | Shop | 1979 | 2,805 | 53.5 | 3,240 | 61.8 | 15.52% |
| **SHA** | 211 Building | 51,312 | Office | 1963 | 2,845 | 55.4 | 1,646 | 32.1 | -42.14% |
| **SHA** | Shop - Golden Ring | 36,230 | Shop | 1988 | 2,949 | 81.4 | 2,561 | 70.7 | -13.15% |
| **SHA** | Shop - Owings Mills | 49,498 | Shop | 1985 | 3,122 | 63.1 | 2,036 | 41.1 | -34.78% |
| **SHA** | Building 1 OOTS 2 & 3 | 134,954 | Office | - | 3,137 | 23.2 | 2,650 | 19.6 | -15.53% |
| **SHA** | Shop - Hereford | 45,754 | Shop | 1988 | 3,340 | 73.0 | 4,174 | 91.2 | 24.98% |
| **SHA** | District Office - Frederick | 67,621 | Office | - | 3,379 | 50.0 | 2,999 | 44.4 | -11.24% |
| **SHA** | Shop - LaPlata | 48,146 | Shop | 1985 | 3,407 | 70.8 | 2,888 | 60.0 | -15.23% |
| **SHA** | Shop - Westminster | 47,372 | Shop | 1986 | 4,003 | 84.5 | 4,561 | 96.3 | 13.95% |
| **SHA** | District Office - Salisbury | 52,568 | Office | - | 4,586 | 87.2 | 3,501 | 66.6 | -23.66% |
| **SHA** | District Office - Warren Road | 19,003 | Office | - | 4,611 | 242.6 | 4,440 | 233.6 | -3.70% |
| **SHA** | Building 1 SOC & OOM | 51,998 | Office | - | 4,761 | 91.6 | 4,055 | 78.0 | -14.84% |
| **SHA** | Shop - Keysers Ridge | 94,061 | Shop | 1983 | 4,890 | 52.0 | 4,934 | 52.5 | 0.91% |
| **SHA** | District office/shop - Annapolis | 47,777 | Office | - | 5,557 | 116.3 | 5,053 | 105.8 | -9.07% |
| **SHA** | Building 4 & Vehicle Calibration | 105,798 | Office | - | 10,169 | 96.1 | 8,951 | 84.6 | -11.97% |
| **SHA** | Building 4 | 98,417 | Office | - | 10,983 | 111.6 | 14,227 | 144.6 | 29.54% |
| **SHA** | Buildings 1-3 | 185,893 | Office | - | 14,066 | 75.7 | 12,564 | 67.6 | -10.68% |
| **SHA** | 707 Building | 199,145 | Office | - | 15,033 | 75.5 | 16,963 | 85.2 | 12.84% |
| **SU** | 1206 A Camden Ave. C-3 | 625 | Office | 1950 | 19 | 30.7 | 23 | 36.8 | 20.55% |
| **SU** | 1100 Camden Ave. Center for Conflict Resolution | 2,917 | Office | 1934 | 33 | 11.4 | 28 | 9.6 | -15.66% |
| **SU** | 305 College Ave. Environmental Studies | 2,000 | Office | 1947 | 37 | 18.6 | 47 | 23.5 | 26.51% |
| **SU** | 1214 Camden Ave. University Analysis House | 3,085 | Office | 1937 | 41 | 13.3 | 33 | 10.7 | -19.45% |
| **SU** | 1504 S. Salisbury Blvd | 3,000 | Storage | 1970 | 47 | 15.8 | 3 | 1.0 | -93.19% |
| **SU** | 1106 Camden Ave. International Faculty | 2,368 | Office | 1940 | 48 | 20.4 | 38 | 16.0 | -20.97% |

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|---|---|---|---|---|---|---|---|---|---|
| | House | | | | | | | | |
| **SU** | Tower Shelter | 212 | Antenna/Communication | 2014 | 49 | 229.5 | 50 | 235.8 | 3.16% |
| **SU** | 303 College Ave. Student Arts | 2,457 | Office | 1942 | 52 | 21.0 | 55 | 22.4 | 6.03% |
| **SU** | 1013 Camden Ave. Philosophy House | 3,340 | Office | 1928 | 54 | 16.3 | 63 | 18.9 | 14.87% |
| **SU** | 1206 Camden Ave. C-2 | 2,620 | Office | 1950 | 61 | 23.1 | 61 | 23.3 | 1.39% |
| **SU** | 215 Milford St. M-2 | 10,900 | Storage | 1980 | 69 | 6.4 | 217 | 19.9 | 212.63% |
| **SU** | 103 Power St. Grounds Storage | 3,675 | Storage | 1999 | 74 | 20.2 | 28 | 7.6 | -62.51% |
| **SU** | Nanticoke River Center | 7,082 | Other - Education | 2006 | 76 | 10.8 | 67 | 9.5 | -11.99% |
| **SU** | 406 Loblolly Lane Carriage House | 1,409 | Residence | 1930 | 91 | 64.3 | 69 | 49.0 | -23.86% |
| **SU** | 1108 Camden Ave. C-1 | 2,432 | Office | 1940 | 95 | 39.0 | 96 | 39.5 | 1.23% |
| **SU** | DOGWOOD VILLAGE K | 1,792 | Dormitory/Residence Hall | 1985 | 102 | 56.9 | 72 | 40.2 | -29.51% |
| **SU** | ATHLETIC TEAM BUILDING-SOCCER | 2,573 | Other | 2012 | 104 | 40.6 | 90 | 35.0 | -14.23% |
| **SU** | DOGWOOD VILLAGE L | 1,792 | Dormitory/Residence Hall | 1985 | 105 | 58.5 | 72 | 40.2 | -31.38% |
| **SU** | DOGWOOD VILLAGE O | 1,792 | Dormitory/Residence Hall | 1985 | 106 | 59.1 | 87 | 48.5 | -17.53% |
| **SU** | DOGWOOD VILLAGE M | 1,792 | Dormitory/Residence Hall | 1985 | 112 | 62.8 | 82 | 45.8 | -26.89% |
| **SU** | 1220 S. Division D-1 | 1,535 | Office | 1950 | 113 | 73.4 | 87 | 56.7 | -22.85% |
| **SU** | DOGWOOD VILLAGE N | 1,792 | Dormitory/Residence Hall | 1985 | 115 | 64.0 | 78 | 43.5 | -31.79% |
| **SU** | 1212 Camden Ave. Camden House | 2,680 | Office | 1940 | 120 | 44.8 | 113 | 42.2 | -5.98% |
| **SU** | DOGWOOD VILLAGE H | 1,792 | Dormitory/Residence Hall | 1985 | 124 | 69.2 | 84 | 46.9 | -32.16% |
| **SU** | DOGWOOD VILLAGE B | 1,792 | Dormitory/Residence Hall | 1985 | 124 | 69.2 | 88 | 49.1 | -29.24% |
| **SU** | 1308 Camden Ave. Foundation Center | 5,468 | Office | 1925 | 125 | 22.9 | 131 | 24.0 | 4.53% |
| **SU** | DOGWOOD VILLAGE F | 1,792 | Dormitory/Residence Hall | 1985 | 129 | 71.9 | 67 | 37.4 | -47.71% |
| **SU** | DOGWOOD VILLAGE C | 1,792 | Dormitory/Residence Hall | 1985 | 131 | 73.1 | 93 | 51.9 | -28.97% |
| **SU** | DOGWOOD VILLAGE G | 1,792 | Dormitory/Residence Hall | 1985 | 131 | 73.3 | 75 | 41.9 | -42.57% |
| **SU** | 1015 CAMDEN AVE, SALISBURY | 2,559 | Office | 1943 | 145 | 56.8 | 151 | 59.0 | 4.04% |

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|---|---|---|---|---|---|---|---|---|---|
| **SU** | DOGWOOD VILLAGE E | 1,792 | Dormitory/Residence Hall | 1985 | 147 | 82.1 | 73 | 40.7 | -50.44% |
| **SU** | DOGWOOD VILLAGE D | 1,792 | Dormitory/Residence Hall | 1985 | 148 | 82.4 | 74 | 41.3 | -49.96% |
| **SU** | DOGWOOD VILLAGE J | 1,792 | Dormitory/Residence Hall | 1985 | 150 | 83.7 | 68 | 37.9 | -54.95% |
| **SU** | 1122 Camden Ave. Honors House | 3,946 | Office | 1956 | 154 | 38.9 | 128 | 32.4 | -16.54% |
| **SU** | DOGWOOD VILLAGE A | 1,792 | Dormitory/Residence Hall | 1985 | 154 | 85.7 | 100 | 55.8 | -34.82% |
| **SU** | 106 Pine Bluff P-1 | 5,832 | College/University | 1950 | 244 | 41.8 | 192 | 32.9 | -21.15% |
| **SU** | DOGWOOD VILLAGE SUPPORT BUILDING | 1,792 | Dormitory/Residence Hall | 1985 | 252 | 140.5 | 216 | 120.5 | -14.21% |
| **SU** | 1200 Camden Ave. Admissions House | 7,700 | Office | 1930 | 319 | 41.5 | 281 | 36.5 | -11.88% |
| **SU** | Outdoor Tennis Center | 2,578 | Outdoor Recreation | 2016 | 336 | 130.5 | 215 | 83.4 | -36.24% |
| **SU** | 1204 Camden Ave. Scarborough Hall | 8,400 | Office | 2001 | 383 | 45.6 | 341 | 40.6 | -10.95% |
| **SU** | 1120 Camden Ave Alumni House | 7,818 | Office | 1996 | 388 | 49.7 | 299 | 38.2 | -22.91% |
| **SU** | 205 Milford St. Indoor Tennis Center | 20,000 | Other - Recreation | 1975 | 469 | 23.4 | 279 | 14.0 | -40.59% |
| **SU** | 119 Bateman St Support Services | 15,200 | Warehouse - Unrefrigerated | 1960 | 531 | 34.9 | 593 | 39.0 | 11.80% |
| **SU** | 125 Bateman Street IT Building | 14,477 | Office | 1950 | 666 | 46.0 | 510 | 35.2 | -23.39% |
| **SU** | 201 Milford St. University Fitness | 15,034 | Fitness Center/Health Club/Gym | 1978 | 701 | 46.6 | 521 | 34.7 | -25.74% |
| **SU** | 1221 Wayne St. Green House & Grounds Office | 5,768 | Other | 1994 | 1,012 | 175.5 | 1,080 | 187.2 | 6.68% |
| **SU** | East Campus Complex | 30,695 | College/University | 1989 | 1,386 | 45.1 | 1,326 | 43.2 | -4.30% |
| **SU** | 1123 S Division Street - Maint Bldg | 36,000 | Other - Services | 2006 | 1,823 | 50.6 | 1,588 | 44.1 | -12.89% |
| **SU** | Sea Gull Stadium | 28,000 | Stadium (Open) | 2016 | 2,121 | 75.7 | 1,991 | 71.1 | -6.12% |
| **SU** | 1306 S. Salis. Blvd (Sea Gull Squ.) | 232,000 | Dormitory/Residence Hall | 2011 | 8,652 | 37.3 | 6,783 | 29.2 | -21.60% |
| **TU** | AUBURN HOUSE-AH | 11,600 | - | 1900 | 756 | 65.2 | 716 | 61.7 | -5.35% |
| **TU** | CHILD CARE CENTER - CC | 11,800 | Pre-School/Daycare | 2007 | 1,362 | 115.4 | 1,096 | 92.9 | -19.51% |
| **TU** | 7400 York Road - Y2 | 41,200 | Office | 2009 | 2,080 | 50.5 | 1,911 | 46.4 | -8.11% |
| **TU** | BARTON-BA | 73,696 | Dormitory/Reside | 2011 | 4,387 | 59.5 | 4,085 | 55.4 | -6.88% |

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|---|---|---|---|---|---|---|---|---|---|
| | | | nce Hall | | | | | | |
| **TU** | FREDERICK DOUGLASS HOUSE | 85,540 | Dormitory/Residence Hall | 2011 | 4,912 | 57.4 | 4,564 | 53.4 | -7.09% |
| **TU** | CARROLLHALL-CH | 170,504 | Dormitory/Residence Hall | 2016 | 7,850 | 46.0 | 7,566 | 44.4 | -3.61% |
| **TU** | MARSHALLHALL | 156,594 | Dormitory | 2001 | 8,232 | 52.6 | 7,414 | 47.3 | -9.94% |
| **TU** | ADMINISTRATION BLDG (7720)-AD | 119,467 | Office | 1957 | 10,224 | 85.6 | 8,242 | 69.0 | -19.39% |
| **TU** | BURKSHIRE - TU MARRIOT- TM | 311,209 | Dormitory/Residence Hall | 1989 | 19,552 | 62.8 | 13,280 | 42.7 | -32.08% |
| **UMB** | INFO BLDG 100 N. GREENE ST | 32,683 | Office | 1895 | 0 | 0.0 | 0 | 0.0 | -2.15% |
| **UMB** | 300 RUSSELL ST, 600 WASH BLVD PS | 4,132 | Office | 1900 | 11 | 2.7 | 7 | 1.6 | -41.10% |
| **UMB** | 719-721 W. PRATT ST. | 5,000 | Office | | 17 | 3.4 | 24 | 4.8 | 41.35% |
| **UMB** | 601 W. Lexington | 8,835 | Office | 2000 | 41 | 4.7 | 24 | 2.7 | -42.22% |
| **UMB** | 300 RUSSELL ST 600 WASH BLVD 2ND FL | 4,132 | Office | 1900 | 72 | 17.3 | 62 | 15.1 | -12.96% |
| **UMB** | 300 RUSSELL ST 600 WASH BLVD 1ST FL | 4,132 | Office | 1900 | 97 | 23.5 | 96 | 23.2 | -1.58% |
| **UMB** | 300 RUSSELL ST 600 WASH BLVD 3RD FL | 4,132 | Office | 1900 | 103 | 24.9 | 111 | 26.9 | 8.03% |
| **UMB** | School of Social Work Administration Office | 3,779 | Office | 2000 | 809 | 214.0 | 668 | 176.9 | -17.35% |
| **UMB** | Pine Street Station - 212 N Pine St | 9,028 | Police Station | 1877 | 1,044 | 115.7 | 1,080 | 119.6 | 3.41% |
| **UMB** | Maryland Bar Center (MBC) | 30,572 | Administration | 1930 | 2,833 | 92.7 | 2,568 | 84.0 | -9.37% |
| **UMB** | General Research Building | 38,147 | Laboratory | 1967 | 9,517 | 249.5 | 9,367 | 245.5 | -1.58% |
| **UMB** | Walterhoffer | 14,700 | Vacant | 2000 | 13 | 0.9 | 11 | 0.8 | -9.48% |
| **UMBC** | Guard Station | 50 | Other | 2000 | 20 | 394.2 | 13 | 264.0 | -33.03% |
| **UMBC** | Radio Tower & 4 Ancillary Bldgs | 1,300 | Antenna/Communication | 2017 | 27 | 20.5 | 25 | 18.9 | -7.54% |
| **UMBC** | HazMat Storage | 300 | Storage | 2009 | 60 | 200.5 | 58 | 192.7 | -3.91% |
| **UMBC** | Plasma Spray Bldg | 2,467 | Laboratory | 1980 | 120 | 48.8 | 80 | 32.3 | -33.91% |
| **UMBC** | Army ROTC | 4,245 | College/University | 1986 | 140 | 33.0 | 128 | 30.1 | -8.84% |
| **UMBC** | Naval ROTC | 4,632 | College/University | 1963 | 156 | 33.6 | 160 | 34.6 | 2.84% |
| **UMBC** | Tech 2 Bldg | 4,256 | Office | 1992 | 286 | 67.3 | 270 | 63.3 | -5.93% |
| **UMBC** | Alumni House | 7,615 | Office | 1970 | 360 | 47.3 | 348 | 45.7 | -3.53% |
| **UMBC** | Professional Studies Bldg | 8,216 | Adult Education | 1980 | 614 | 74.8 | 709 | 86.3 | 15.33% |

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| **UMBC** | Clean Energy Technology Incubator (CETI) | 22,767 | Laboratory | 1980 | 2,668 | 117.2 | 3,664 | 160.9 | 37.34% |
| **UMBC** | Chiller Plant | 3,129 | Energy/Power Station | 1980 | 4,125 | 1318.2 | 4,574 | 1461.9 | 10.90% |
| **UMBC** | Technology Research Center (TRC) | 77,029 | Laboratory | 1958 | 12,490 | 162.1 | 12,125 | 157.4 | -2.92% |
| **UMBC** | Technology Center | 134,197 | Laboratory | 1980 | 18,875 | 140.6 | 17,821 | 132.8 | -5.58% |
| **UMBC** | Columbus Center | 263,937 | Office | 1995 | 58,326 | 221.0 | 58,435 | 221.4 | 0.19% |
| **UMCP** | 007-Pocomoke Building | 30,046 | Police Station | 1946 | 3,581 | 119.2 | 3,163 | 105.3 | -11.67% |
| **UMCP** | 164-University House | 15,133 | College/University | 2012 | 559 | 36.9 | 583 | 38.5 | 4.29% |
| **UMCP** | 170-Alpha Delta Pi Sorority (4535 College Ave) | 10,459 | College/University | 1959 | 1,472 | 140.7 | 940 | 89.9 | -36.14% |
| **UMCP** | 171-Phi Sigma Sigma Sorority (4531 College Ave) | 10,445 | College/University | 1960 | 1,009 | 96.6 | 972 | 93.1 | -3.67% |
| **UMCP** | 172-Alpha Chi Omega Sorority (4525 College Ave) | 11,712 | College/University | 1960 | 1,691 | 144.4 | 1,136 | 97.0 | -32.82% |
| **UMCP** | 173-Delta Phi Epsilon Sorority (4514 Knox Rd) | 10,273 | College/University | 1964 | 1,264 | 123.0 | 1,114 | 108.4 | -11.87% |
| **UMCP** | 174-Sigma Delta Tau Sorority (4516 Knox Rd) | 10,372 | College/University | 1963 | 1,409 | 135.8 | 1,393 | 134.3 | -1.14% |
| **UMCP** | 175-Delta Gamma Sorority (4518 Knox Rd) | 11,662 | College/University | 1963 | 1,387 | 118.9 | 1,327 | 113.8 | -4.33% |
| **UMCP** | 176-Alpha Phi Sorority (7402 Princeton Ave) | 11,833 | College/University | 1964 | 1,286 | 108.7 | 1,089 | 92.0 | -15.32% |
| **UMCP** | 199-MFRI Office/Classroom Building | 45,973 | College/University | 1955 | 16,535 | 359.7 | 6,848 | 149.0 | -58.58% |
| **UMCP** | 221-Astronomical Observatory | 1,643 | Other - Technology/Science | 1964 | 149 | 90.7 | 156 | 94.9 | 4.70% |
| **UMCP** | 309-Indoor Practice Facility | 20,963 | Fitness Center/Health Club/Gym | 2001 | 139 | 6.6 | 297 | 14.2 | 113.67% |
| **UMCP** | 395-Turfgrass Research Facility (Paint Branch) | 4,500 | Laboratory | 1999 | 696 | 154.7 | 698 | 155.1 | 0.29% |
| **UMCP** | 795-Avrum Gudelsky Veterinary Center | 85,716 | College/University | 1989 | 29,210 | 340.8 | 29,552 | 344.8 | 1.17% |
| **UMCP** | 800-4-H Headquarters | 6,155 | College/University | 1989 | 702 | 114.1 | 614 | 99.8 | -12.54% |

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|---|---|---|---|---|---|---|---|---|---|
| **UMCP** | 803-Adelphi Road Office Annex (8701 Adelphi Rd) | 4,818 | Office | 1956 | 17 | 3.5 | 15 | 3.1 | -11.76% |
| **UMCP** | 804-Cooperative Exten. Svc Annex (Riverdale) | 35,293 | Office | - | 2,389 | 67.7 | 1,797 | 50.9 | -24.78% |
| **UMCP** | 805-Patapsco Building | 53,964 | Unknown | 1969 | 5,973 | 110.7 | 1,714 | 31.8 | -71.30% |
| **UMCP** | 806-Technology Ventures Building | 52,816 | College/University | 1960 | 4,953 | 93.8 | 4,536 | 85.9 | -8.42% |
| **UMCP** | 809-Litton 3 (5000 51st Avenue) | 9,763 | Police Services | 1984 | 2,320 | 237.6 | 804 | 82.4 | -65.34% |
| **UMCP** | 810-Severn Building | 310,865 | College/University | 1998 | 46,497 | 149.6 | 45,105 | 145.1 | -2.99% |
| **UMCP** | 812-Seneca Building | 40,770 | College/University | 1991 | 4,670 | 114.5 | 3,891 | 95.4 | -16.68% |
| **UMCP** | 821-MFRI Structural Firefighting Building (LaPlata) | 9,801 | Fire Station/College/University | 2001 | 1,094 | 111.6 | 765 | 78.1 | -30.07% |
| **UMCP** | 826-MFRI Office/Classroom Building (Lower E. Shore) | 6,888 | College/University | 1994 | 297 | 43.1 | 202 | 29.3 | -31.99% |
| **UMCP** | 827-MFRI Structural Firefighting Bldg (Lower E. Shore) | 2,329 | Fire Station/College/University | 1995 | 122 | 52.4 | 107 | 45.9 | -12.30% |
| **UMCP** | 832-MFRI (Northeast) | 9,801 | Unknown | 2011 | 714 | 72.8 | 780 | 79.6 | 9.24% |
| **UMCP** | 842-MFRI Office/Classroom Building (W. Md) | 5,736 | College/University | 1994 | 251 | 43.8 | 368 | 64.2 | 46.61% |
| **UMCP** | 846-MFRI Structural Firefighting Bldg (Upper E. Shore) | 2,329 | Fire Station/College/University | 2002 | 597 | 256.3 | 508 | 218.1 | -14.91% |
| **UMCP** | CNS (Journalism) | 1,003 | College/University | - | 28 | 27.9 | 32 | 31.9 | 14.29% |
| **UMCP** | IBBR 1A | 34,928 | College/University | 1989 | 13,928 | 398.8 | 9,949 | 284.8 | -28.57% |
| **UMCP** | IBBR 1B | 43,683 | College/University | 1997 | 11,375 | 260.4 | 8,078 | 184.9 | -28.98% |
| **UMCP** | IBBR 2 | 138,812 | College/University | 2006 | 58,471 | 421.2 | 55,548 | 400.2 | -5.00% |
| **UMCP** | LEAF House | 4,500 | Other-Technology/Science | 2007 | 30 | 6.7 | 20 | 4.4 | -33.33% |
| **UMES** | 1 TOM NICHOLS RD 11850, TOM NICHOLS ROAD | 940 | College/University | 1961 | 13 | 14.0 | 13 | 13.8 | -4.35% |
| **UMES** | 2 IRRIGATION PUMP, BACKBONE ROAD | 2,200 | College/University | 2004 | 15 | 6.9 | 12 | 5.5 | -20.47% |

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|---|---|---|---|---|---|---|---|---|---|
| **UMES** | HAWKS LANDING 1322, WILLIAM P HYTCHE | 1,006 | Other - Lodging/Residential | 2001 | 23 | 23.2 | 27 | 26.8 | 17.13% |
| **UMES** | HAWKS LANDING 1522, WILLAIM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 24 | 23.6 | 24 | 23.9 | -1.18% |
| **UMES** | HAWKS LANDING 1414, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 28 | 27.4 | 30 | 29.8 | 9.66% |
| **UMES** | HAWKS LANDING 1132, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 28 | 27.4 | 28 | 27.8 | 0.71% |
| **UMES** | HAWKS LANDING 1411, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 28 | 28.0 | 22 | 21.9 | -22.82% |
| **UMES** | HAWKS LANDING 1433, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 29 | 28.6 | 25 | 24.9 | -12.92% |
| **UMES** | HAWKS LANDING 1223, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 30 | 30.1 | 39 | 38.8 | 29.92% |
| **UMES** | HAWKS LANDING 1131, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 30 | 30.2 | 25 | 24.9 | -16.61% |
| **UMES** | HAWKS LANDING 1423, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 31 | 30.5 | 18 | 17.9 | -43.03% |
| **UMES** | HAWKS LANDING 1231, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 31 | 31.0 | 29 | 28.8 | -8.19% |
| **UMES** | HAWKS LANDING 1112, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 32 | 31.9 | 37 | 36.8 | 16.02% |
| **UMES** | HAWKS LANDING 1121, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 33 | 32.4 | 22 | 21.9 | -32.12% |
| **UMES** | HAWKS LANDING 1211, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 33 | 32.8 | 38 | 37.8 | 16.63% |
| **UMES** | HAWKS LANDING 1421, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 33 | 32.9 | 22 | 21.9 | -33.06% |
| **UMES** | HAWKS LANDING 1432, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 33 | 33.1 | 23 | 22.9 | -31.43% |
| **UMES** | HAWKS LANDING 1224, | 1,006 | Other - | 2001 | 33 | 33.2 | 32 | 31.8 | -4.49% |

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|---|---|---|---|---|---|---|---|---|---|
| | WILLIAM P HYCHE | | Lodging/Residential | | | | | | |
| **UMES** | HAWKS LANDING 1531, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 35 | 34.6 | 28 | 27.8 | -19.92% |
| **UMES** | HAWKS LANDING 1424, WILLIAM HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 35 | 34.8 | 23 | 22.9 | -34.32% |
| **UMES** | HAWKS LANDING 1412, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 35 | 34.8 | 22 | 21.9 | -37.12% |
| **UMES** | HAWKS LANDING 1313, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 36 | 35.4 | 33 | 32.8 | -6.40% |
| **UMES** | HAWKS LANDING 1434, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 36 | 35.9 | 29 | 28.8 | -18.67% |
| **UMES** | HAWKS LANDING 1324, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 36 | 36.2 | 25 | 24.9 | -30.20% |
| **UMES** | HAWKS LANDING 1323, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 37 | 36.5 | 31 | 30.8 | -15.87% |
| **UMES** | HAWKS LANDING 1222, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 38 | 37.7 | 49 | 48.7 | 29.79% |
| **UMES** | HAWKS LANDING 1431, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 38 | 37.8 | 30 | 29.8 | -21.75% |
| **UMES** | HAWKS LANDING 1532, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 38 | 38.1 | 31 | 30.8 | -18.21% |
| **UMES** | HAWKS LANDING 1233, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 41 | 40.3 | 32 | 31.8 | -20.89% |
| **UMES** | HAWKS LANDING 1331, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 42 | 41.4 | 31 | 30.8 | -25.01% |
| **UMES** | HAWKS LANDING 1334, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 42 | 42.0 | 26 | 25.8 | -38.71% |
| **UMES** | HAWKS LANDING 1333, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 42 | 42.2 | 31 | 30.8 | -25.90% |
| **UMES** | HAWKS LANDING 1422, WILLIAM P HYCHE | 1,006 | Other - Lodging/Resident | 2001 | 42 | 42.2 | 23 | 22.9 | -46.30% |

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| | BLVD | | ial | | | | | | |
| **UMES** | HAWKS LANDING 1332, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 43 | 42.3 | 28 | 27.8 | -34.75% |
| **UMES** | HAWKS LANDING 1321, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 43 | 43.1 | 27 | 26.8 | -38.36% |
| **UMES** | HAWKS LANDING 1511, WILLIAM P HYTCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 43 | 43.1 | 50 | 49.7 | 14.38% |
| **UMES** | HAWKS LANDING 1512, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 45 | 44.3 | 38 | 37.8 | -14.86% |
| **UMES** | HAWKS LANDING 1232, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 45 | 45.2 | 27 | 26.8 | -41.14% |
| **UMES** | HAWKS LANDING 1234, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 46 | 45.3 | 26 | 25.8 | -43.13% |
| **UMES** | HAWKS LANDING 1221, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 47 | 46.4 | 34 | 33.8 | -26.17% |
| **UMES** | HAWKS LANDING 1122, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 49 | 49.0 | 28 | 27.8 | -42.50% |
| **UMES** | HAWKS LANDING 1312, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 51 | 50.9 | 28 | 27.8 | -45.06% |
| **UMES** | HAWKS LANDING 1212, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 54 | 54.1 | 24 | 23.9 | -56.38% |
| **UMES** | HAWKS LANDING 1413, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 59 | 58.7 | 44 | 43.7 | -25.43% |
| **UMES** | 2 TOM NICHOLS ROAD 11850, TOM NICHOLS ROAD | 14,033 | College/University | 1961 | 90 | 6.4 | 28 | 2.0 | -68.86% |
| **UMES** | HAWKS LANDING 1000, WILLIAM P HYCHE | 1,006 | Other - Lodging/Residential | 2001 | 134 | 132.9 | 135 | 134.2 | 1.22% |
| **UMES** | HAWKS LANDING 1314, WILLIAM P HYCHE BLVD | 1,006 | Other - Lodging/Residential | 2001 | 207 | 206.1 | 172 | 171.0 | -17.07% |
| **UMES** | Coastal Ecology | 11,000 | College/University | 2005 | 1,000 | 90.9 | 767 | 69.7 | -23.26% |