

**Frederick County Government
Comprehensive Energy Plan
FY 2020 Report of Accomplishments and FY 2021 Mid-Year Progress
April 2021**

The 2021 Comprehensive Energy Plan includes a process to document progress and evaluate action taken. The plan was developed primarily in 2019. However, there was a delay in completion due to the coronavirus pandemic and personnel changes in 2020. Despite requested approval in 2021, the plan dates remain the same and action has already begun to implement the plan.

This document includes the year-end report on accomplishments in FY 2020 and the mid-year FY 2021 progress report. Updates, when they exist, are listed beneath the goal. While all of the goals are listed for reference in the charts, updates do not exist for every goal as work on some goals is planned to begin in future years.

Division of Public Works								
	Action	Category	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Buildings	Fleet
1.1	Building Automation Systems (BAS) ¹	Operational	X	X	X	X	X	
1.2	Retro-commissioning ²	Design					X	
1.3	Control Systems Technician ²	Operational					X	
1.4	Asset Management Software	Operational	X				X	
1.5	Maintenance Standard review	Design	X	X	X	X	X	
1.6	Envision rating system	Design		X			X	
1.7	Maintain Portfolio Manager ³	Operational	X	X	X	X	X	
1.8	Facility Energy Audits ⁴	Operational	X	X	X	X	X	
2.1	Research benefits of telework & webinars	Operational			X			X
2.2	Compare vehicle size with needs	Operational			X	X		X
2.3	Develop fuel comparison FY 17 to FY 19	Operational			X			X
2.4	Research utilization of biodiesel fuel	Operational				X		X
2.5	Develop replacement program with alternative fuel vehicles (AFVs)	Operational				X		X
2.6	Develop repurposed vehicle comparison	Operational				X		

Footnotes:

1	Funding is set aside on a yearly basis to add BAS on a per building basis
2	Funding will need to be identified to schedule
3	OSER to utilize database maintained by DPW
4	Funding for the related Potomac Edison and Washington Gas programs has been re-authorized beyond December 31, 2020. The goal is planned assuming the programs offered are similar to those offered before December 31, 2020.

A. Buildings

- 1.1. Continue to standardize Building Automation Systems (BAS) as open architecture in 30 North Market Street, Westview Fire Station, Thurmont Library, and the Public Safety Training Facility.

The Office of Facility Maintenance (OFM) has been standardizing the BAS in County facilities with the goal of attaining one generic system in all occupied buildings. A networked automated Heating, Ventilation, and Air Conditioning (HVAC) control system provides OFM staff the ability to detect and address anomalies before they become problems, remotely monitor and adjust building temperature, and receive problem alerts, which is particularly important after power outages and storm events. OFM technicians are also able to change temperature settings to accommodate after-hours events and enhance occupant comfort without visiting the facility, which saves staff time and labor costs.

Presently there are a variety of BAS systems installed in County facilities. Some have proprietary software and hardware that require a manufacturer's vendor to service equipment and supply parts. OFM staff are unable to adjust programming points and replace or repair equipment. With non-proprietary and open architecture systems (where hardware and software specifications are public information), on the other hand, OFM is able to change set points and troubleshoot systems without calling a brand-specific contractor. The ability to utilize multiple vendors engenders cost savings because of more competitive rates

Standardization is being pursued with funding from the Maintenance Systemic Capital Improvements Program project account. Beginning in FY 2019, \$150,000 is being budgeted annually for this effort. The four buildings designated in the Action Item are projected to be complete within four years.

FY 2020

The BAS upgrades have been completed in the four buildings listed above. An additional four buildings have been added. They include Animal Control, the Animal Health Lab, the Health Department and the Emmitsburg Community Center. An estimated \$145,000 partial BAS upgrade at Citizens Care and Rehabilitation Center was funded as part of the Division of Public Works' COVID-19 response. The remainder of the replacement may be warranted for an additional \$610,000, post COVID-19 concerns.

FY 2021

The BAS upgrades have been completed for Animal Control, the Animal Health Lab, and Citizens Care and Rehabilitation Center (partial installation). The Health Department, Emmitsburg Community Center, and Winchester Hall are under contract to be retrofitted with EASI controls. The remainder of Citizens Care and Rehabilitation Center will be reassessed when it is safe to allow contractors in patient rooms. Proposals have been requested to retrofit the Brunswick Library, the Adult Detention Center, and the Urbana Library. The Scott Key Center, Highway Operations, Senior Center, and cell tower sites are planned for future retrofits.

- 1.2. Retro-commissioning pilot project at 331 Montevue Lane

Commissioning (typically of HVAC) is the process of ensuring that commercial HVAC systems work as intended. Retro-commissioning applies to the HVAC system in an *existing* building. Similar to the commissioning in new construction, retro-commissioning involves a third-party

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consultant who evaluates, tests, and modifies an HVAC system to ensure proper air balance, temperature set points, and efficiency in its daily operations.

The Office of Highway Operations/Fleet facility at 331 Montevue Lane has a history of heating and cooling complaints. OFM has undertaken numerous adjustments and system changes over the years, making this building an ideal candidate for retro-commissioning.

FY 2021

Funding for the pilot project will be provided from maintenance systemic funds. The retro-commissioning is scheduled to begin November 2021.

1.3. Establish in-house Control Systems Technician(s) position – Time frame dependent upon funding

The addition of a Control Systems Technician(s) to OFM will provide immediate support of the County's BAS system for hardware, software, and graphical applications. As OFM develops and enhances its institutional knowledge, these positions will reduce the County's dependence on contracted services.

FY 2020

These positions are planned to be requested as part of future fiscal year appeals.

FY 2021

To date, these positions have not been funded

1.4 Implement asset management software that communicates with Portfolio Manager

An integrated asset management system will provide an extensive database of County infrastructure that will enable staff to streamline preventative maintenance, track and control costs, and schedule/budget life-cycle replacement/upgrade of key building systems and equipment. Staff is currently exploring software packages and the procurement process.

FY 2020

Frederick County recently executed a contract with Cartegraph and is expected to begin to implement asset management in FY 2021.

1.5 Review maintenance standards with an emphasis on energy conservation

OFM, in conjunction with the Office of Project Management, developed a list of standards for new construction and major renovation projects that require an engineered design. This list standardizes various building systems for all County facilities maintained by OFM. The standards are organized per the American Institute of Architects (AIA) standard specifications for building construction.

Many of the standards emanate from "lessons learned" and have been documented to ensure consistency in project management and minimize change orders. Others have been developed to facilitate infrastructure expansion, such as the requirement for a spare conduit that can accommodate future electrical and data needs.

- Building envelope - exterior skin of building, to include walls, windows, and doors;
- Roofing;
- Added insulation during roof replacements;

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- Electrical - energy management systems, additional light-emitting diode (LED) lighting implementation;
- HVAC Seasonal Energy Efficiency Ratio (SEER) standards - SEER is an efficacy rating for HVAC systems (the more efficient the system, the higher the SEER rating)
- Future infrastructure needs relating to alternative fuel vehicles.

FY 2020

As the maintenance standards are reviewed and updated annually, this Action Item is expected to begin updating in October 2020.

FY 2021

As part of the annual building standards review, OSER shared with DPW the “Achieving Zero Energy: Advanced Energy Design Guide for Small to Medium Office Buildings” from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). The Office of Project Management explored these energy design guidelines with one of its indefinite quantities (IDQ) consultants. The consensus of the discussion was that energy design guidelines are beneficial, but cost savings may not be recognized for many years. It was noted that State guidelines are moving away from the use of fossil fuels for energy consumption in facilities. The consultants will continue to design to energy saving guidelines, but will stop short of full implementation and confirmation via rating systems. The Maintenance Standards were updated and finalized on February 8, 2021. The updated maintenance standards are available in [Attachment A](#).

- 1.6 Utilize American Society of Civil Engineer’s (ASCE) Envision rating system for comparison to Leadership in Energy and Environmental Design (LEED) certification on an upcoming Capital Improvements Program project

Envision is a rating system and best practice resource for sustainable building developed by the ASCE. This rating system was developed after the United States Green Building Council (USGBC) developed the LEED rating system. The Brunswick Library achieved a LEED Silver rating. As the Middletown Library (design FY 2021) will be built (construction anticipated FY 2023) per the same requirements as the Brunswick Library, a comparison (potentially FY 2025) of the two rating systems will be investigated.

FY 2020

Envision has been dropped from the scope of services for the Middletown Library. The A/E stated that Envision is utilized for site design, not building design, so a true comparison with LEED cannot be made. An alternative rating system, Green Globes, was also investigated. Green Globes would increase the design cost by approximately \$40,000 for certification. Middletown Library will be designed to generally meet LEED Silver requirements; however, Frederick County will not pursue certification due to cost. Item 1.6 will be closed for future updates.

- 1.7 Provide Energy Star data via Portfolio Manager to the Office of Sustainability and Environmental Resources (OSER)

The Environmental Protection Agency created Energy Star Portfolio Manager as an online tool to measure and track the energy and water consumption of buildings. OFM has been entering data into this data base since 2006. This information can be used to compare energy usage with like buildings throughout the country. OSER and OFM will prioritize energy-related projects utilizing

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the information provided by OFM. OSER will also use this information in applying for grants from state and federal agencies.

FY 2021

OSER provided OFM with FY 2019 energy usage for County buildings and ranked the results using different factors such as percentage change from the FY 2012 baseline, total energy use, and energy use intensity. In addition to addressing the CEP goal, this also addresses an item on the Division of Public Works' Plan of Action for FY 2021 for the Livable Frederick Master Plan. OFM and OSER will be meeting during the remainder of FY 2021 to discuss how to use the data to prioritize energy-related projects. OSER and OFM will also explore using this prioritization process to help identify grant opportunities in the future.

In addition, OSER and OFM have met to review standard operating procedures for data entry into Portfolio Manager. There are some questions about the importance of tracking all data (e.g. street light energy usage) and the collection of additional data (e.g. building occupancy over time). These issues are still under discussion.

1.8 Facility Energy Audits

The Potomac Edison EmPower Maryland Small Business Direct Install (SBDI) programs offers energy audits to look at potential energy savings. Washington Gas offers incentive programs, too. DPW will engage Willdan and Washington Gas contractors, as appropriate, to perform audits for facilities.

LED Lighting Upgrades

FY 2020:

- C. Burr Artz Maryland Room
- 340 Montevue- Elections
- Animal Control Exterior
- Public Safety Training Facility Annex—Interior office space, restroom lights, and engine bay lights
- Scott Key Center—exterior pole, canopy, and wall pack lights

FY 2021

- Animal Health Lab all interior Lighting
- Emmitsburg Community Center Gymnasium Lighting
- Emmitsburg Community Center Exterior Lighting

Equipment Upgrades

FY 2020

- C. Burr Artz Maryland Room—replaced existing HVAC equipment
- Public Safety Training Center—Annex—replaced existing HVAC equipment
- Thurmont Yard—replaced existing HVAC equipment
- Adult Detention Center (natural gas water heater)
- Law Enforcement Center (natural gas HVAC)

FY 2021

- Emmitsburg Community Center HVAC replacement (in progress)

FY 2021 solar canopy award:

In addition to the goals above, on March 1, 2021, the Maryland Energy Administration (MEA) approved a grant award to Frederick County in the Department of Public Works' requested amount of up to \$45,000. The MEA authorized DPW to proceed with the design and installation of a 75kW solar canopy that is projected to power roughly 18% of the Bourne Building's yearly electricity usage. In addition, four Level 2 commercial charging stations will be installed to supplement the two existing EV chargers already present on-site. The grant will defray ten percent of the project's estimated \$450,000 design and construction costs, and County systemic monies will fund remaining costs. DPW anticipates design commencement summer 2021; construction, spring 2022; and project completion by the end of 2022.

B. Fleet

2.5 Develop a program to identify and replace appropriate vehicles with alternative fuel vehicles (AFVs), complete in FY 2023

The purpose of this goal is to develop a formal process to identify appropriate replacement vehicles, taking into account environmental and sustainability attributes. This initiative is a work-in-progress. At present, the feasibility of incorporating AFVs into the fleet and work process is evaluated before every vehicle purchase.

Alternative fuel vehicles (AFVs) were part of the initial energy conservation plan, and replacing conventional fuel vehicles with AFVs remains a goal; however, the additional cost of AFVs was a limiting factor during the fleet recovery effort. The purchase cost of most AFVs remains higher than conventional vehicles. Incorporating AFVs into the fleet must be accomplished deliberately, selecting the appropriate vehicle to perform the requisite function. Other considerations of paramount importance are the availability of fuels and infrastructure for fuel dispensation, including compressed natural gas, propane, and electric vehicle recharging; AFV infrastructure costs; and user convenience.

Fleet will continue to research light-duty all electric trucks and vans that are available and will be available in the near future. This will include evaluating the all-electric vehicle to a comparable internal combustion engine (ICE) vehicle based on purchase cost, life-cycle cost and capabilities to determine the best opportunities for the County.

Chargers:

FY 2020

DPW has applied for the installation of charging stations at The Urbana Regional Library, through FirstEnergy's pilot program. The Town of Middletown partnered with Potomac Edison to install one charging station and is working with Potomac Edison to install a second. The Town of Emmitsburg utilized Electric Vehicle Institute to install two charging stations at no cost.

FY 2021

Upon further exploration, the charging stations at The Urbana Regional Library, through FirstEnergy's pilot program, will not be able to be installed because the land needed is not County-

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owned. First Energy requested Frederick County's assistance in identifying additional sites for charging stations. Frederick County recommended Othello Park, Old National Park, Myersville Library, and Thurmont Library.

Electric Vehicles

FY2020

While a request to dedicate \$200,000 annually to purchase alternative fuel vehicles was approved conceptually in early 2020, the funding was not included in the FY 2021 budget.

FY 2021

A white paper was approved by the County Executive for Fleet Services to place a pre-order for one all electric pickup truck and SUV in November 2020. There are nine manufacturers in the process of developing and building electric vehicles. The nine manufacturers are:

- Rivian R1T/R2T;
- Nikola Badger;
- Lordstown Endurance;
- Tesla Cybertruck;
- GMC Hummer EV;
- Bollinger B1/B2;
- Atlys XT;
- Chevrolet Silverado EV;
- Ford F150 Electric

Six of nine manufacturers are offering the option to pre-order the vehicle before production starts. Preordering enables the County to obtain the vehicles shortly after production commences. The Chevrolet Silverado and Ford F150 are in the early stages of development. At this time, both manufacturers are not offering a pre-order option. Shortly after the White paper was approved, Nikola announced that the Badger truck will no longer be built since GM is only agreeing to supply the fuel cell. The remaining brands and models of light-duty electric trucks and SUV's will be researched by Fleet Services before determining which vehicles to preorder. The six manufacturers are estimating a build date of late 2021 or early 2022.

Two vehicles, the Lordstown Endurance Truck and Bollinger B1 SUV, were pre-ordered on March 8, 2021.

2.6 Develop repurposed vehicle energy usage comparison and annual mileage, including financial benefits; complete in FY 2023.

The repurposing of law enforcement vehicles into administrative sedans began FY 2014. To date, there are 37 cars in the repurposing program. The benefit of this program is more economic than environmental. Removing a law enforcement vehicle from emergency response at 125,000 miles and converting it to a less stressful administrative function enables Fleet Services to extend the car's useful life and reduces the expense of purchasing administrative vehicles.

A comparison will be conducted focusing in these areas: cost of savings by repurposing the vehicle instead of purchasing new, maintenance costs of the repurposed vehicle versus the replacement vehicle and the miles per gallon of the repurposed vehicle with the class of vehicle it was to replace.

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FY 2021

Staff plans to redefine the comparison and narrow down the scope, so that it will provide data related to alternative fuel vehicles of interest. This effort will begin in early FY 2022.

C. Division of Water and Sewer Utilities

	Action	Category	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Water	Wastewater
3.1	LED Lighting Fixture and Control Upgrades ¹	Design, Upgrade	X	X	X	X	X	X
3.2	Variable Frequency Drive (VFD) Upgrades ²	Design, Upgrade					X	X
3.3	Energy Efficient Motor Upgrades ²	Design, Upgrade					X	X
3.4	Pump Efficiency Upgrades ²	Design, Upgrade					X	X
3.5	Ultraviolet (UV) Disinfection Efficiency Upgrades ²	Design, Upgrade					X	X
3.6	Aeration System Upgrades ²	Design, Upgrade						X
3.7	Biosolids Anaerobic Digestion - Biogas Generation	Design, Upgrade						X
3.8	Water Conservation ³	Outreach, Operational					X	X
3.9	Inflow & Infiltration Reductions ³	Operational, Upgrade						X
3.10	Leak Detection Programs ³	Operational					X	
3.11	Operational Efficiencies ⁴	Operational					X	X
3.12	Capacity System Charge Monitoring ⁴	Operational					X	X
3.13	EPA Energy Star Tools, Portfolio Manager - UBM	Operational			X	X	X	X
3.14	Facility Energy Audits ¹	Operational	X	X	X	X	X	X

Footnotes:

¹ In December 2020, indications are that funding for the related Potomac Edison program has been authorized beyond December 31, 2020.

² Actions that typically only occur when operation, maintenance, construction or renovation/renewal projects are identified (or present an opportunity) and appropriate funds are budgeted or available.

³ Measures to reduce water consumption, wastewater and water loss, which lead to reductions in energy use and result in savings by treating lower quantities of wastewater or delivering lower quantities of water.

⁴ Shifts energy usage away from peak demand times, which saves money and reduces peak loads.

3.1. LED Lighting Fixture and Control Upgrades

Lighting upgrades accomplished through Potomac Edison EmPower Maryland Small Business Direct Install (SBDI) programs. The program covers up to 70% of program costs with Potomac Edison’s current vendor, Willdan, performing energy audits and installation of upgraded fixtures. Current focus is on upgrade of current lighting fixtures to energy efficient LED fixtures and motion activated sensors.

FY2020

Upgrades were completed at the following facilities:

- Urbana High Zone Booster Pump Station (estimated annual savings: 7,525 kWh)
- New Design Water Treatment Plant replacement of 121 high bay metal halide light fixtures in the Filter Building, High Service Pump Building and Chemical Building (estimated annual savings: 104,272 kWh)

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FY2021

The pandemic and social distancing guidelines limited the number and scope of upgrade projects completed during FY2021.

- Ballenger-McKinney WWTP Membrane Bioreactor Building (estimated annual savings: 51,825 kWh)

3.9. Inflow & Infiltration Reductions

Water, other than sanitary flow, that enters the sewage collection system is categorized as Inflow or Infiltration (I&I). The additional flow that this creates must be pumped and treated. While difficult to quantify, efforts to reduce I&I can result in energy savings.

FY2020

A sewer main rehabilitation project was completed in the following area:

- Clover Hill I subdivision.
 - 6,745 LF of sewer main lined and grouted
 - 7 Manholes rehabilitated

FY2021

A sewer main rehabilitation project was completed in the following areas

- Crestview Estates subdivision.
 - 3070 LF of sewer main lined
 - 10 Manholes rehabilitated or replaced

3.10 Leak Detection Programs

As with water conservation programs, leak detection programs reduce the amount of water (lost) that needs to be treated and distributed, resulting in energy savings.

FY2020

Leak Detection Survey Summary:

- 187 miles of water main surveyed
- 11 leaks identified and fixed
- Water loss estimated to be 73 gallons per minute or 38,368,800 gallons per year

FY2021

Leak Detection Survey Summary:

- Scheduled for April 2021

D. Division of Solid Waste and Recycling

	Action	Category	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)
4.1	LED Lighting Fixture and Control Upgrades ¹	Design, Upgrade	X	X		
4.2	Facility Energy Audits ¹	Operational	X	X		
Footnotes:						
¹ In December 2020, indications are that funding for the related Potomac Edison program has been authorized beyond December 31, 2020; however, the details are unknown. The goal is planned should funding be reauthorized via the current program.						

4.1 LED Lighting Fixture and Control Upgrades

Lighting upgrades accomplished through Potomac Edison EmPower Maryland Small Business Direct Install (SBDI) programs. The program covers up to 70% of program costs with Potomac Edison’s current vendor, Willdan, performing energy audits and installation of upgraded fixtures. Current focus is on upgrade of current lighting fixtures to energy efficient LED fixtures and motion activated sensors.

FY2020

Upgrades were completed at the following facilities:

- Reich’s Ford Landfill: Administration Building, Transfer Station, and Old Shop/Recycling Center (estimated annual savings: 169,952 kWh)

FY 2021

DSWR is monitoring the light upgrades and the Reich’s Ford solar array. All cost-effective lighting upgrades have been completed.

E. Data as a Management Tool

5.1 Analyze data SOPs, report and make recommendations

Data is critical to evaluating the County’s progress towards increasing energy efficiency. As noted above, data collection is complicated. OSER staff will review current data collection operating procedures and make recommendations on a data reporting process as well as an effective and efficient management tool to guide further action.

FY 2020

OSER staff reviewed the data collection procedures for facility energy use. There are no recommendations to change procedures at this time. Fleet data collection procedures are still in need of review, especially to assess readiness for a fleet study. A fleet study would help in the development of a vehicle electrification plan. Given the retirement of the fleet director in June

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2020, it is recommended that the new fleet director be involved in developing procedures for fleet data collection.

FY 2021

OSER staff has been in communication with the new Fleet Director. Discussions will be ongoing regarding data collection.

In addition, OSER and OFM have met to review standard operating procedures for data entry into Portfolio Manager. There are some questions about the importance of tracking all data (e.g. street light energy usage) and the collection of additional data (e.g. building occupancy over time). These issues are still under discussion.

5.2 Update Maryland Smart Energy Community (MSEC) goals—energy efficiency; renewable energy, petroleum

The original MSEC goals were set over five years ago. The Maryland Energy Administration (MEA) recommends reviewing the goals every five years and setting new goals if appropriate. Given the issues noted above with pooling all data in a sector for a baseline, the County may want to consider setting different goals for different areas. For example, for buildings, using a subset of buildings (e.g. office buildings, fire stations, libraries, etc.) and then establishing an intensity goal like kWh/square foot. For fleet, the County could consider focusing on a class of vehicles, such as passenger vehicles.

FY 2020

OSER staff updated the data reports to include actual facility electric energy usage for FY 2019. OSER staff discussed updating MSEC goals with the MEA MSEC program manager. It is not a requirement that the goals be updated to apply for grant funding. OSER asked DPW and TransIT if there was interest in pursuing MSEC grant funding for current projects. No projects were identified for FY 2020 funding. It is recommended that goal revisions be considered as part of a climate action plan.

FY 2021

OSER asked DPW and TransIT if there was interest in pursuing MSEC grant funding for current projects. No projects were identified for FY 2021 funding but discussions continued to try to identify projects in a timely manner so that grant award schedules and scheduled projects could be better aligned. .

5.3 Analyze Energy Star data to provide feedback on facilities to DPW

The Environmental Protection Agency created Energy Star Portfolio Manager as an online tool to measure and track the energy and water consumption of buildings. OFM has been entering data into this data base since 2006. This information can be used to compare energy usage with like buildings throughout the country. OSER and OFM will work together to utilize the information supplied to prioritize energy-related projects and to apply for grants to help to implement those projects.

FY 2020

OSER staff performed an initial review of facilities based on FY 2019 data and reviewed projects included in the FY 2021 – 2026 Capital Improvement Program. Ideally, projects related to energy-efficiency will be coordinated with projects already planned. More discussion about this with DPW is anticipated in FY 2021.

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FY 2021

OSER provided OFM with FY 2019 energy usage for County buildings and ranked the results using different factors such as percentage change from the FY 12 baseline, total energy use, and energy use intensity. In addition to addressing the CEP goal, this also addresses an item on the Division of Public Works' Plan of Action for FY 21 for the Livable Frederick Master Plan. OFM and OSER will be meeting during the remainder of FY 21 to discuss how to use the data to prioritize energy-related projects. OSER and OFM will also explore using this prioritization process to help identify grant opportunities in the future.

5.4 Research best practices in tracking energy usage

Many other entities are tracking energy usage. OSER staff will research best practices to help make recommendations the County can use.

FY 2020

OSER staff spoke with energy management representatives from other organizations, such as Howard County Government. The research of best practices is ongoing.

5.5 Research other resources that may be helpful in improving County facility energy efficiency and analyze related data to explore cost-effectiveness

FY 2021

As part of the annual building standards review, OSER shared with DPW the "Achieving Zero Energy: Advanced Energy Design Guide for Small to Medium Office Buildings" from ASHRAE. See update for Item 1.5. .

BUILDING STANDARDS CHECKLIST
FEBRUARY 2021

Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
1	GENERAL REQUIREMENTS						
a	Adhere to the most current IBC codes, including compliance with ADA standards for new construction and renovation. Add separate plan sheets, with details and profiles as required, to demonstrate ADA compliance, particularly with respect to building access and restrooms.						
b	Structures, building systems and their components, and interior finishes shall be designed/selected utilizing a holistic framework and balancing aesthetics and functionality. As examples, maintenance and custodial requirements must be considered in the selection of materials and finishes; safe equipment access is paramount and must meet or exceed all OSHA, MOSH, and manufacturer's requirements. Interior access to concealed items shall be taken into consider for future maintenance.						
c	Contractor shall be responsible for all utility payments (water, sewer, electric and gas) until Use & Occupancy permit is received.						
d	Contractor shall provide emergency service 24/7, with a four-hour response time, during warranty period, after the building has been accepted by the County. Contractor must have answering service or means to accept notification 24/7/365 during warranty period.						
e	Consultant will provide fire evacuation plans as required by County Risk Management in hard copy, pdf, and CAD formats; plans will be posted by Building Managers and/or Facility Maintenance staff.						
f	County will ensure that a Phase 2 Hazardous Material Survey is completed for every building before construction begins. This survey shall include, but not be limited to, asbestos, lead paint, lead in the water, light ballast with PCB, and mercury switches, radon, air quality. If warranted, a Vapor Intrusion Test will be conducted.						

BUILDING STANDARDS CHECKLIST
FEBRUARY 2021

Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
g	Contractor will provide an electronic (CAD <i>and</i> pdf formats) and two paper copies of as-built drawings and an electronic and two paper copies of O&M manuals: One copy will be retained at Pine Avenue; the other, on site, at a location agreeable to the Office of Project Management, Office of Facility Maintenance, and the Building Manager. Warranties will be provided in a separate section of the O&M manual. The Office of Project Management will ensure that electronic copies of the as-built drawings and O&M manuals are maintained on the R drive. In order to ensure delivery of the as-builts and O&M manuals, a dollar value in the Schedule of Values will be assigned by the Project Manager.						
h	Contractor shall be required to provide safety data sheets for all products left on site at project completion.						
i	"Or equals" submitted for review and approval in accordance with the project specifications must undergo review approval by the Architect/Engineer, Project Management and Maintenance staff before approval of the substitution is issued. Warranty implications of the "or equal" should be carefully evaluated, particularly on roofing projects. All "or equal" submittals must be compatible with other system components and meet all warranty requirements in order to be approved.						
j	Sound attenuation (e.g., insulation batts, door sweeps) in conference and bathrooms is mandatory. Designer shall be provided with plan details to ensure adequacy of proposed attenuation.						
k	Before undertaking renovation projects, video sewer lines to locate cleanouts and determine whether lining or replacing is necessary; after construction, re-video.						

BUILDING STANDARDS CHECKLIST
FEBRUARY 2021

Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
1	Limit the installation of electric rooms and switch gear below finished grade. If installation below finished grade is unavoidable, enter the building just below finished grade before turning down towards equipment. Install link seal in the annular space of the penetration. Create a low point in the conduit trench and employ a manhole or junction box for drainage in order to mitigate ground water towards the building.						
2	SITE CONSTRUCTION						
a	Consultant will utilize pavement section details provided by County staff. For renovation projects, County will evaluate existing paving conditions and determine whether to mill/overlay or demo/install new paving. SHA specs will be used for compaction requirements.						
b	Dumpster pads must be sized to appropriately (minimum 12'x24') accommodate trash and recycle containers. If adding pad to existing facility parking lot, paving will be saw cut to accept new pad. Provide minimal slope in the pad to permit drainage. County's preference, with AHJ approval, is to shelter dumpsters with landscaping rather than fencing and gates. (See Attachment 1 for pad layout.)						
c	Specify manhole covers applicable to the service. When SHA specs are used for storm structures with manholes, specify blank lids for storm drain only.						
d	Consultant is responsible for identifying site utilities (e.g., gas, water, electric, fiber optic, phone, sewer) by test pitting or otherwise physically locating before commencing design to ensure no construction implications. Location and depth of utilities will be shown in profiles for reference.						
e	When designing site lighting, coordinate with County IIT staff and Office of Facility Maintenance electricians to determine number of spare conduits that should be supplied for future use. When determining locations and number of security cameras, coordinate with County IIT and/or Security for specific locations.						

BUILDING STANDARDS CHECKLIST
FEBRUARY 2021

Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
f	Specifications must indicate the following: Certifications and as-builts are required for storm drain and pond construction and all below-grade utilities; Contractor must submit all as-built information through the Consultant, who will submit to the AHJ for approval. Approved as-builts (CAD, pdf, and paper format) will be provided to the County's Project Manager.						
g	Pavement marking for ADA and traffic control: AHJ requires thermoplastic markings in the right-of-way. Use waterborne paint for all other markings.						
h	For exterior signage mounting at parking lots and sidewalks, use Breakaway Tubular steel posts per SHA Standard MD 802.04. (See Attachment 2.)						
i	Concrete pavers are to be specified <i>only</i> where required by the AHJ. Sidewalks shall be concrete, designed to appropriate width, and conform to ADA requirements. (Stamped concrete is acceptable.) If sidewalk adjoins concrete slab at a doorway, the sidewalk shall be doweled to the slab. Recommend dowel length of 8" into existing concrete and extend 16" into new concrete. Dowels will be on 12" centers. Evaluate whether installation of heated entrance walkway is appropriate. For detectable warning pads in sidewalks, specify style embedded into concrete, not glue-on.						
j	Consultant's plans shall include emergency generator pad design. Two spare conduits (for future alarm wiring and building automation system) must be provided in the duct bank.						
k	Underground fuel tanks are not permitted.						
l	Venting is mandatory for all oil/grit separators. Consultant must verify vent locations and design to meet the local plumbing code. If structure is located within paving section, provide traffic-bearing lid. Lid will be sized appropriately to permit access into the tank for service.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
m	Fencing: Vinyl-coated fence fabric shall be provided on all chain link fence; fence shall be erected at least one foot inside verified property lines; if a gate is required for vehicular access, provide a three-foot-wide man gate adjacent to the traffic gate; installation of mow strip is project-specific. Consider card reader access for all gates. Consider future maintenance before specifying vinyl fence. When installing vinyl fence, verify adequacy of post supports.						
n	Horizontal and vertical control points must be shown on plans and be within site limits. Geometry tables will be provided for new construction; for renovations, a table will be provided upon site-specific request by Owner.						
o	HVAC equipment pads shall be located adjacent to the building but avoid blocking fenestration. Pads will be sized to permit minimum 30" clearance around equipment to facilitate service, or as required by the manufacturer. Pad will be raised a minimum of 6" above finished grade to promote equipment cleanliness and reduce damage by mowers. Provide maximum 2% slope for drainage away from facility. Specify that equipment will be shimmed as required for level mount on pad. A light broom finish is required on equipment pads.						
p	A light broom finish must be specified for pavilion and all other concrete slabs. Provide control joints every eight to ten feet for concrete slabs. Joint spacing for pavilions to be determined in field: Ideally it is aligned with roof support posts.						
3	CONCRETE						
a	Concrete sidewalks and curbs shall be pinned at appropriate locations/distances to prevent frost heave.						
b	Expansion joints between curbs, buildings, foyers, stoops, and walks will be filled with rubber caulk, flowable-fill type materials. All joint sealing shall occur when temperatures are between 45 and 70 degrees Fahrenheit. Contractor shall return and repair failed joints as required under the warranty.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
c	All concrete will have expansion joint materials as recommended by the Consultant. Any and all conduits, fire hydrants, and items that are set in concrete will have expansion joint materials around units, including but not limited to mechanical, electrical, and fire-service type equipment. Include support posts for pavilions.						
d	All freestanding slabs for equipment, tanks, and emergency generators will have slab edges turned down to appropriate depth to prevent frost heave. Slab will be sized and reinforced per the specified equipment.						
4	MASONRY						
a	Masonry construction is preferred where feasible.						
b	Install mortar nets in all exterior masonry walls.						
c	All masonry units, including mortar and grout surfaces, will need to be fully sealed to avoid efflorescence.						
d	All exterior masonry walls shall have wall cavity vents for moisture control systems installed and spaced per manufacturer's recommendations.						
5	METALS						
a	Flashing shall be minimum 20 ga. aluminum. Seamless gutters are preferred.						
b	Interior and exterior brass and copper handrails are prohibited. Specify high-strength non-welded aluminum railings and handrails.						
c	Metal siding shall be held 24 inches (minimum) from ground contact.						
6	WOOD AND PLASTICS						
a	Avoid the use of vinyl siding. If Office of Facility Maintenance approves its use, heavy-gauge vinyl must be specified.						
b	Consider LP Smart Siding as an alternative to cement fiberboard siding (Hardie Plank). If Hardie Plank is specified, installation must be by a certified installer and include a two-year workmanship warranty.						
7	THERMAL AND MOISTURE PROTECTION						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
a	For roofing projects, the following applies: A written manufacturer's warranty on materials must be provided to the Owner; a two-year (minimum) workmanship warranty is required.						
b	For metal roofs, provide manufacturer-approved snow rails and ice clips that are fixed to the high-rib. Must screw <i>and</i> glue to provide optimal adherence.						
c	Provide OSHA-approved roof access from the building interior. Provide means to prohibit access by building occupants.						
d	All roofs shall have anchor points as designed by the A/E Consultant.						
e	Specify Caddy Pyramid 50 from ERICO for support pipe loads up to 50 lbs., installed per manufacturer's requirements.						
f	Roof drain must be located within three feet of RTU condensate pipe outlet.						
g	For renovation projects, consider conducting a thermal efficiency inspection to aid in the evaluation of existing insulation, fenestration, and HVAC equipment. Include windows, doors, and existing insulation in ceiling areas. Evaluate whether application of spray foam insulation is warranted.						
8	DOORS AND WINDOWS						
a	Skylights are prohibited.						
b	All components must be per current Frederick County Government Door Hardware Specifications. BEST door hardware preferred.						
c	For renovation projects, hardware and door finishes will match existing colors as feasible.						
d	Door and room numbering plan must be provided with every renovation project, regardless of its size, and reviewed and approved by Office of Project Management and Office of Facility Maintenance personnel.						
e	Contractor shall install Knox Box specified by the Fire Marshall at location(s) directed by the Fire Marshall.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
f	Building address numbers must comply with requirements of the Fire Marshall, achieve adequate contrast, and be shown on the exterior elevation plans.						
g	Recommend windows that tilt inside for easier cleaning where applicable.						
9	FINISHES						
a	All carpet shall be per Frederick County carpet specifications (Mohawk Group, Lees Commercial Broadloom/Remix Faculty IV), to include manufacturer's warranty. Use of a chair pad shall <i>not</i> be a condition of warranty.						
b	Provide Office of Facility Maintenance with one box carpet stock for each carpet color used in a facility 2,000 s.f. or smaller; facilities over 2,000 s.f. require four boxes carpet stock for each carpet color.						
c	VCT will not be considered.						
d	All drywall shall be installed to minimize wicking, with a one-quarter inch gap between the floor and the drywall.						
e	Apply grout sealer to all ceramic tile grout joints, in accordance with manufacturer's written instructions.						
f	All old flooring and adhesive shall be removed to the substrate before any type of new flooring is installed.						
g	Base cove shall be minimum 1/8" thickness. Use full rolls to minimize joints. Outside corners must be pre-formed.						
h	Window treatments (curtains, blinds or drapes) MUST BE MANUALLY-OPERATED.						
i	Contractor shall provide one gallon of each paint finish color for attic stock. Contractor will provide a project Paint Finish List indicating color, type, texture, manufacturer's name, and identification numbers.						
j	For above-ceiling mechanical equipment, access sufficient to facilitate equipment repair, routine maintenance, and removal must be provided.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
k	Solid surface countertops with molded undermount sinks are required in restrooms; in kitchens or break rooms, <i>stainless undermount must be specified.</i>						
l	To avoid expansion and contraction issues, employ uniform exterior finishes. Maintenance requirements of exterior finishes must be evaluated.						
10	SPECIALTIES						
a	Specify American Flagpole, brushed aluminum.						
b	All flag poles will be provided with lighting to permit 24/7 display, per MD Flag Protocol (www.sos.state.md.us/services/FlagProtocol). Downward-shining lighting must be designed to illuminate flagpole. No lighting may be mounted on structures. In-ground lighting is not permitted.						
c	All flag poles, if located within a sidewalk, shall have expansion joint materials in place and all joints sealed with flowable fill.						
d	A secure storage area, office, and shop area will be provided for maintenance staff in all buildings as follows: Buildings of 50,000 s.f. or larger require a 200 s.f. office, a 200 s.f. shop area, and a 200 s.f. storage area (600 s.f. total) on the same floor. Buildings less than 50,000 s.f. require a dedicated maintenance storage area (separate room or caged area) sized at 60 s.f. plus 1.25 s.f. per 400 s.f. over 5,000 s.f. of gross building size.						
e	Provide ADA-compliant signage and numbers throughout building.						
f	Contractor will provide all fire extinguishers in non-locking cabinets.						
g	Placement of fire alarm horns and strobes must be in ceilings, unless otherwise approved by Project Manager, and shall be in accordance with NFPA.						
h	All hose reels for air or fluid shall be manufactured by Hannay Reels.						
i	No deviations from Frederick County Government Door Hardware Specifications are permitted without the approval of the Chief, Office of Facility Maintenance.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
11	EQUIPMENT						
a	Contractor must adhere to manufacturer's recommended equipment start-up procedures.						
b	Selection of kitchen or break room equipment shall be approved by Office of Facility Maintenance during design.						
c	Garbage disposals are prohibited.						
d	No water heaters or water storage devices may be located above the ceiling or located in the Custodial closets.						
e	Bi-fuel generators are to be specified.						
f	Fuel tanks shall be designed in accordance with 40 CFR 112.						
g	Generators require a one-year warranty, which will become effective upon factory start-up, and a preventive maintenance contract with the manufacturer's representative. The Office of Facility Maintenance must be furnished all reports at the end of the warranty.						
h	All generators must have a monitoring system that meets or exceeds NFPA 110 requirements; is compatible with the Building Automation System; provides status of faults and fuel tank readings; calls out to designated phone numbers.						
i	For generators, specifications should indicate these preferred manufacturers: Kohler, Katolight, Caterpillar.						
j	Only electric fireplaces will be permitted in new construction.						
k	Specification of electric hand dryers is facility-dependent and must be approved by the Office of Facility Maintenance and the Office of Custodial Services.						
l	Contractor is responsible for properly maintaining equipment upon its delivery to the site, regardless of whether it has been placed in service. Evaluate whether an extended manufacturer's warranty is appropriate for major equipment items and components.						
12	FURNISHINGS						
a	Shoe and mud scrapers shall be provided as appropriate and with input from Custodial Services.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
b	The provision of dishwashers in County buildings is function-dependent and the Office of Facility Maintenance will determine whether it is appropriate to install a dishwasher and which dishwasher is to be installed. Dishwashers must comply with State Health Department requirements. Booster heaters are required in commercial applications.						
c	To ensure ADA compliance, care must be taken in selecting the location for a baby changing station.						
d	Coat hooks in offices and restrooms shall be installed on walls, not doors.						
13	SPECIAL CONSTRUCTION						
a	A sprinkler head cabinet shall be installed with each sprinkler system.						
b	For easier ceiling tile removal, sprinkler piping shall be flex heads located in the center of the tile.						
c	"Essential facilities," as defined by the Division of Emergency Management and IIT, require lightning and grounding protection.						
d	Stair towers to be equipped with emergency lighting backed up by generator or battery and fully functional during a power outage. Lighting shall also be equipped with motion detectors. Include electrical outlets on landings, as applicable, for Custodial Services.						
14	CONVEYING SYSTEMS						
a	During design of renovation projects, Property Management will obtain an evaluation of elevator and provide report to Consultant.						
b	Existing elevators shall be protected from damage during construction.						
c	Contractor must provide preventive maintenance and monthly inspections on elevators during the warranty period and furnish Property Management with preventive maintenance logs, inspection reports, and warranty documentation at the conclusion of the warranty period.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
d	One set of protective pads are required per elevator: Provide new protective canvas pads with sponge fill material, sewn with edge piping, with brass grommets spaced to match hook spacing. Cover side and rear wall of elevator and front return except at the cut-out for the control panel. Cab protection used during construction shall <i>not</i> be permitted to fulfill this requirement.						
e	Contractor may only use one elevator during construction. Cab protection during construction shall include a floor covering. Should the elevator be overloaded and damaged during construction, the contractor will be required to replace all elevator components at no cost to the County.						
f	For new construction, design safe roof access (staircase and roof hoist) to facilitate equipment maintenance/repair/replacement. For renovations, consider installation of staircase to roof and roof hoist for equipment maintenance.						
g	Elevator access to all floors must be provided in a multi-story building.						
15	MECHANICAL/PLUMBING SYSTEMS						
a	Provide open architecture HVAC controls.						
b	Prefer Mitsubishi VRF systems. With introduction of Hyper-Heating R2-Series, performance issues arising from below-zero temperatures will be mitigated.						
c	Equipment warranty will commence upon factory start-up.						
d	All HVAC systems shall be installed per current ICC standards and comply with ASHRAE 90.1 and local codes.						
e	All HVAC systems will have a fully ducted metal supply. The return system may be ducted or plenum. Duct liner or interior insulation is not permitted, except if required for sound attenuation within ten feet of mechanical equipment AND approval is obtained from the Chief, Office of Facility Maintenance.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
f	All duct systems shall be professionally cleaned and sanitized at the end of the project, after completion of the punch list, by a company specializing in duct cleaning. Documentation must be provided evidencing that the duct system meets NADCA Standards for cleanliness.						
g	Flex duct shall not be used to change air flow direction or in place of elbows. Flex duct is limited to a ten-foot maximum length and must be supported every four feet.						
h	All diffusers for supply and return are to have a six-inch deep (min.) collar for attaching flex duct.						
i	All control wiring concealed in a wall must be contained in 3/4" conduit and boxes. All wire must be copper and meet system manufacturer's requirements for American wire gauge.						
j	If a chiller is installed, it must be rotary-screw. Sound absorption insulation is required.						
k	Cooling towers are to be avoided; however, if incorporated in design all cooling tower drains shall be connected to the sanitary sewer system; condensate shall drain to the storm drain system. Chemical treatment distribution shall be coordinated with Office of Facility Maintenance and County's Chemical Treatment Contractor.						
l	If a mechanical unit is installed in an attic or above the ceiling, install a primary condensate drain and auxiliary drain pan with a separate drain line and an overflow safety switch wired to the system's control voltage. All units shall have separate drain lines.						
m	All condensate drains shall have a drain trap and a cleanout for each trap.						
n	All chilled water, hot water and cooling tower water pumps will have redundant stand-by pumps and controls for a true lead/lag operation.						
o	All systems requiring a condensate pump shall be equipped with a safety overflow switch and shall be connected to the control system.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
p	Boiler and pressure vessel installers must notify the Chief Boiler Inspector, DLLR, at least 30 days prior to installation (410-767-2330). Frederick County must contact Hartford Insurance (1-800-333-4677) and reference Policy Number BKW 752453003 so that an inspection and necessary corrections may be performed prior to inspection by State DLLR.						
q	All equipment and building systems shall be installed in accordance with the manufacturing company's installation instructions, e.g., clearances, or as directed by County.						
r	ALL outdoor units shall have six-inch legs under units, the design of which shall be approved by the Office of Facility Maintenance. Must use 12" stands under all Mitsubshi outdoor equipment.						
s	Locate a roof hose bib within 40 feet of rooftop mechanical units that require water for servicing.						
t	Filters must be easily accessible (e.g., can be efficiently removed and replaced without damaging filter) while adhering to OSHA and MOSH guidelines.						
u	Filter grilles shall be employed as often as possible to avoid filter changes above suspended ceilings.						
v	All systems will have a pressure reducing valve and a backflow prevention device installed as required by Code. Adding a thermal expansion tank.						
w	Backflow prevention devices shall be effectively positioned so routine maintenance can be performed as required by Code. An annual inspection must be performed during the warranty period.						
x	Prior to building acceptance, Office of Project Management staff will verify proper drainage of floors that include drains.						
y	All valves are to be full port ball or butterfly rated at a minimum 150% operating pressure.						
z	VRF HVAC systems shall have 1/2" insulation on condensate lines and 3/4" on refrigerant lines.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
aa	Urinals and toilets must be manufactured by Kohler and use Sloan Royal Series flush valves.						
bb	Faucets at handwashing sinks shall be Delta 86T1153 or Sloan touchless model SF2150-4 Kitchen sinks shall use Krowne Royal Series faucets.						
cc	Toilet seats shall be solid plastic with stainless steel hinges.						
dd	All motor-driven equipment shall be furnished with external-vibration-eliminating mounting devices.						
ee	As required by Code, locate a shutoff device on both the inside and outside of the boiler room.						
ff	All restroom floors shall slope a minimum of one-half inch per ten feet and must positive drain within 15 minutes, with no visible puddles occurring. All restrooms shall have a floor drain located between fixtures and as close to center of room as possible. No waterless trap units are permitted. Include trap primers or trap seals. All Ceramic tile to be Saniglazed. Epoxy flooring should be included discussed as an option.						
gg	To facilitate service and maintenance, provide isolation valves on all major water lines leaving the mechanical room.						
hh	Provision of balance reports for water systems and HVAC is mandatory. Reports shall be submitted by Contractor to Consultant for initial review before copy is provided to County. In order to ensure delivery, a dollar value will be assigned in the Schedule of Values.						
16	ELECTRICAL						
a	Energy Management System (EMS) must be web-based and Cloud-compatible.						
b	When County standards conflict with the Code, the relevant Code shall govern.						
c	All wiring must be copper. Exceptions for aluminum for large power feeds will be granted if acceptable to the Offices of Project Management and Facility Maintenance.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
d	All underground wiring, including grounding wires to structural steel components, must be in rigid conduit. Direct burial is unacceptable. All conduits shall be sealed and water-tight if conduits enter the building envelope.						
e	All emergency and exit lights will be LED and self-testing.						
f	All electrical cord reels with outlets or lighting shall be manufactured by Lumapro with a minimum of 14/3 wire.						
g	Wire mold will be avoided and only used when agreed upon by the Offices of Project Management and Facility Maintenance. If wire mold is proposed, wall elevations showing the locations must be included as part of the design drawings.						
h	Interior and exterior lighting shall be LED light fixtures. Note, however, that for interior retrofit, depending on the usage of the space, it may not be cost-effective to replace T8s with LED.						
i	Confirm with County IIT and Office of Facility Maintenance electricians number and size of conduit that shall be provided for building's future phone, cable, security, electric vehicle charging infrastructure (as appropriate) etc. Obtain input from IIT and/or Security regarding security cameras.						
j	Fire Alarm Panels: Multi-floor and large buildings will install Simplex 4100ES; Office of Facility Maintenance and Property Management will determine whether Simplex 4010-ES is sufficient for a smaller structure.						
k	All conduit run through concrete shall be waterproof Schedule 80 Rigid conduit or equivalent in PVC, with a minimum of one-half inch thick expansion materials.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
l	Electrical equipment, to include transformers, switch gear, etc., may not be in direct contact with concrete surfaces: Provide a bond break between equipment and concrete. Housekeeping pad shall be four inches thick (min.) and pinned to the existing concrete surface. Maintain a four-inch perimeter around the equipment. Generator pads shall be sized and designed similarly.						
m	All new facility construction, and renovations as feasible, shall incorporate surge and phase protection.						
17	TELECOMMUNICATIONS						
a	Ascertain telecommunications requirements (including, but not limited to, voice, data, wireless access points, paging system, security cameras) and document on final floor plans.						
b	When designing access gates, vehicle charging stations, and gas islands, ensure appropriate conduit for IIT requirements.						
c	IIT closets shall be sized and designed by consultant and IIT representative during design development phase. Closets must accommodate access control panels. Adequate ventilation must be ensured.						
d	In new construction projects, equipment that does not support telecom (e.g., pipes, ductwork, electric panels) must not be located in or pass through closets.						
e	Note that IIT provides network connectivity to HVAC controls.						
f	Minimum closet ceiling height is 8'-6".						
g	Each closet shall have a fully opening door, min. size of 36" x 80".						
h	Temperature range for all telecommunications rooms shall be 64 to 75 degrees Fahrenheit;						
i	Relative humidity shall be kept below 60%.						
j	If closet requires atmospheric control, projected heat load will be determined by IIT after 50% design drawings are complete.						
k	HVAC shall be equipped with a high temperature alarm, with external notification to IIT and Facility Maintenance.						

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l	Outlet location and spacing will be determined by IIT and Facility Maintenance representatives and Consultant during design development.						
m	3/4" EMT conduit from device box to accessible ceiling space is required.						
n	4" sleeves are required for cable routing between floors. Conduits may not exceed 60% of capacity. Provide fire caulking as required.						
o	Fire retardant plywood shall be provided as needed in each IIT closet.						
18	CUSTODIAL SERVICES						
a	Bathroom accessory specifications (paper towel, soap, toilet tissue, waste cans, hand dryers, etc.) are to be elicited by Project Manager from Custodial Services at the inception of design and provided to Consultant. (Note that soap dispenser used is Pro-Link Foam Hand Soap Dispenser #GJPL-YH250.) Consultant must ensure that accessories are incorporated in design in a manner that meets ADA regulations. Note that soap dispenser used is Pro-Link Foam Hand Soap Dispenser #GJPL-YH250 his may be changing in the near future. Custodial Services will provide updates.						
b	Input from Custodial Services shall be elicited early in the design process. In designing custodial closets, consider the use and users of the facility, by whom it is cleaned, and the space that is available.						
c	Each building shall have a custodial closet with a basin sink on each floor and a floor drain. In new buildings, and renovations as feasible, slop sink shall be 24" x 24" x 10" high, molded high-density composite basin, PVC drain body, floor-mounted, with a stainless steel strainer. (Recommend Zurn model Z1996-24). Wall protection must be located on walls behind or adjacent to basin sink, and include epoxy to a minimum of 4' height and must cover all fixture mounts.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
d	In new construction, and renovations as feasible, sealed concrete or epoxy flooring shall be specified for custodial closets; VCT is prohibited Provide a waterproof membrane underneath the floor. Pitch floor to centralized drain.						
e	In new construction, and renovations as feasible, walls and ceilings of custodial closets must be finished.						
f	For new buildings, and renovations as feasible, note the following: Custodial closets shall not be less than 7' by 8' (56 square feet); buildings less than 20K s.f. require one closet per floor, and buildings 20K s.f. or larger require one additional closet per additional 20K s.f. Centrally locate the closet (ideally near the elevator), avoiding the dead end of a corridor, on a stair landing, inside another room, under stairways, or in narrow spaces. Avoid sharing space with other building services (e.g., MEP, telecommunications) or placing overtop any type of mechanical room.						
g	In new buildings, and renovations as feasible, custodial closets shall be devoid of plumbing fixtures, electrical panels, HVAC and telecommunications equipment, elevator controls, etc., because it impacts custodial operations.						
h	In new buildings, and renovations as feasible, provide one service sink faucet with separate hot and cold water handles. (Recommend Zurn model Z1996-SF) overtop the service sink. Provide a cold water hose connection, mounted 36" above service sink, dedicated to the cleaning chemical dilution system. (Recommend Zurn model Z1341).						

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i	In new buildings, and renovations as feasible, provide one 24" stainless steel mop and broom holder with three holder hooks overtop the service sink, opposite the wall with the service sink faucet. Mount at 6' (min.) height. (Recommend Bobrick Model B-223). Provide one 34" stainless steel mop and broom holder (four rag hooks; three mop/broom capacity) mounted overtop the service sink on the wall with service sink faucet. Mount at 5' (min.) to the top of the shelf. (Recommend Bobrick Model B-239).						
j	In new buildings, and renovations as feasible, provide one 36" door that swings <i>out</i> from custodial closet. If door must swing into closet, provide additional closet space to mitigate lost space.						
k	In new construction, and renovations as feasible, a system must be provided to prohibit custodial closet chemical odors from entering the facility.						
l	For new buildings, and renovations as feasible, note the following with respect to custodial supply/equipment storage requirements: Facilities less than 5K s.f. will use the custodial closet for storage of custodial supplies/equipment; buildings 5K - 9,999 s.f. shall be provided 25 s.f. for custodial supplies/equipment; buildings 10K - 14,999 s.f. shall be provided 50 s.f. for custodial supplies/equipment; buildings 15K - 19,999 s.f. shall be provided 75 s.f. for custodial supplies/equipment; buildings 20K s.f. or greater warrant a conversation early in design regarding custodial supply/equipment storage requirements.						
m	For new buildings, and renovations as feasible, the custodial supply/equipment storage shall be located near the facility's service entrance.						
n	For new buildings, and renovations as feasible, the custodial supply/equipment storage shall not share space with other building services (e.g., MEP, telecommunications).						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
o	For new buildings, and renovations as feasible, custodial supply/equipment storage space shall be provided one 36" door that swings <i>out</i> from the supply/equipment storage space. If door must swing into storage space, provide additional space to mitigate lost space.						
p	In new construction, and renovations as feasible, a system must be provided to prohibit custodial supply/equipment storage space chemical odors from entering the facility.						
q	Doors on custodial supply/equipment storage spaces require keyed locks. Storage space doors must be keyed alike.						
r	In new buildings, and renovations as feasible, custodial supply/equipment storage space shall be devoid of plumbing fixtures, electrical panels, HVAC and telecommunications equipment, elevator controls, roof access hatches, etc. Passageways, mechanical equipment rooms, pipe chases shall not serve as custodial supply/equipment storage space.						
s	If a County custodian is permanently housed in a facility, a 100 s.f. office, with a 36" door, outfitted similar to other facility offices of that size, must be provided for the custodian. That office shall be separate from, but located nearby or adjacent to, the custodial supply/equipment room.						
t	The Chief, Office of Facility Maintenance, must approve the provision of washers and dryers in County facilities. Washers and dryers shall be provided and maintained by the Division of Parks & Recreation.						
u	Locate an electrical outlet as close to a stair tower as feasible, to facilitate vacuum use.						
v	When applicable, slim jim trash cans shall be utilized in lieu of wall-mounted trash cans.						
w	Include cold/hot water hose bib under sinks in restrooms that are tamper resistant.						

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Division	STANDARD PROJECT REQUIREMENT	Design Kickoff	DD	50% CD	95% CD	Bid	U & O
x	Electric hand dryers shall be included for all restrooms that are utilized by the public.						
y	Eliminate the usage of recessed mats at entrances or vestibule areas.						