



### From the Director's desk....

Winter is coming...and we have already had several rounds of snow flurries. October is a transitional month for our facilities operations. It's when we verify our snow removal tools and supplies, conduct training for equipment operators, inspect snow removal equipment, and prepare building ventilation systems for the cold weather (see [Page 4](#)).

While our crews will be working hard to clear snow and ice throughout this winter season, it is always a good idea to remember to *walk like a penguin* on potentially slippery surfaces.

- Slow down and take slow short steps or *shuffle* your feet to increase traction.
- Point your arms down at an angle and point your feet slightly outward—think *waddling*.
- Keep your *wings*—or hands—by your side and not in pockets; hands in pockets can't help break your fall.
- Keep your knees slightly bent.



The custodial workforce has adopted a new look. The new uniform outer garment provides added protection against viruses and bacteria they may encounter in the course of performing their duties.

## BREAKDOWNS AND FAILING FACILITY CONDITIONS

There was one major equipment failure in October 2020 which demanded significant unplanned efforts and increased the risk to UW-Madison's operations and programs.

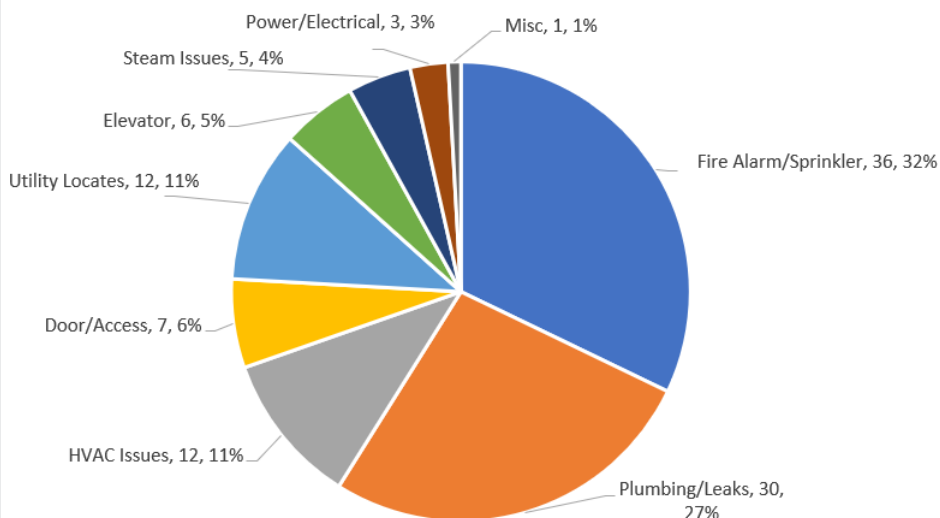
### West Campus Power Outage:

Damage to an underground electrical cable caused a power outage to a large portion of the west campus. A Physical Plant response team from the Electric Shop and Utilities & Energy Management quickly responded, made temporary repairs, and restored all power within an hour.

Permanent repairs were made during a planned outage starting at 3:00 AM the following day.

For more information tracking the reliability of campus utilities, see [Page 5](#).

### Facilities Emergency Calls (112 in October)



## ACTIVE FACILITIES-RELATED INSURANCE CLAIMS (LOSS EXCEEDING \$25K)

All work for claims incurred prior to July 25, 2020 is substantially complete, with two exceptions:

- **Engineering Campus Flood (February 5, 2020).** A pair of replacement doors arrived damaged and the supplier is replacing them. Delivery is scheduled for late December 2020.
- **Polar Vortex (February 1, 2019).** Replacement of network cabling in the Chemistry Building is the single remaining item from this claim, with an expected completion date of March 2021. *This event has a facilities-related cost of approximately \$826K.*

After July 25, 2020 there were four water-related events and one property-related event, totaling \$32K. Small claims (<\$25K) are not included below.

Event Date	Description	Estimated Facilities Cost	Percent Complete	Estimated Completion
July 27	<b>Wind &amp; Hail Damage</b> to ARS Peninsular buildings requiring roof repair and painting. Depending on the weather, some painting may need to wait until the warmer spring weather.	\$40k	30%	May 2021
August 25	<b>Electrical Failure</b> at the Microbial Science Substation caused by switch gear failure.	\$500k	10%	February 2021
September 10	<b>Water Damage</b> at Van Hise Hall caused by contractor cutting a glycol line.	\$30k	85%	November 2020
September 28	<b>Water Damage</b> at Social Science caused by the failure of a hot water reheat coil.	\$20k	65%	December 2020

## PROJECTS SUBSTANTIALLY COMPLETED AND CLOSED OUT—OCTOBER 2020

Thirteen projects (worth \$746K) reached substantial completion during the past month.

Project Number	Building	Description	Value
PRJ-20-001880	Helen C. White Hall	Room remodel	\$29K
PRJ-21-002133	Olin House	Replacing floor	\$62K
0181804	Helen C. White Hall	Noise abatement	\$11K
PRJ-20-001433	Biochemical Science	Additional office space	\$32K
PRJ-20-001816	Birge Hall	Relocate laboratory	\$79K
05261602	Primate Center	Remodel laboratory	\$89K
PRJ-20-001873	Engineering Research Building	Remodel laboratory	\$142K
05451707	Vilas Communication Hall	Signage and lighting	\$18K
PRJ-20-001539	Social Science	Restroom renovation	\$97K
PRJ-21-002212	McArdle Building	Remodal laboratories	\$19K
PRJ-20-001542	Ingraham Hall	Restroom renovation	\$66K
04691803	Humanities	Classroom renovations	\$32K
PRJ-20-002062	McArdle Building	Access control upgrades	\$70K
<b>Total Approved Construction Service Agreement (Final Amount TBD)</b>			<b>\$746K</b>

## UPDATED BATHROOMS IN SEVERAL CAMPUS BUILDINGS

Physical Plant teams recently completed renovations to three pairs of restrooms in three campus buildings.



Ingraham Hall: Before



Ingraham Hall: After



Social Sciences: Before



Social Sciences: After



Van Vleck: Before



Van Vleck: After



## MCARDLE LABORATORY RENOVATION FOR COVID-19 TESTING

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Physical Plant teams recently completed a critical laboratory renovation in the McArdle Building in support of UW-Madison's COVID-19 testing program for faculty, staff, and students.

This high-priority project required Physical Plant staff to rapidly shift priorities and resources as well as accelerate processes. The Architecture and Engineering Services team worked with the Project Delivery team to execute an accelerated design-build delivery method. Demolition activities began as the designers were working through final design details.

The two teams conducted physically distanced on-site meetings for rapid coordination, which allowed them to reduce design time and support a streamlined delivery of this critical renovation project.

FP&M was able to complete the entire project from initial request to substantial completion in less than six weeks. These renovations will help the university meet its testing goals, helping to limit the spread of COVID-19.

## PREPARING HVAC SYSTEMS FOR WINTER

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The UW-Madison campus has miles of underground pipe delivering chilled water to campus facilities to ensure reliable, energy efficient cooling. Every fall, a dedicated team of professional technicians from the Physical Plant Maintenance Mechanic Shop prepares these cooling systems to protect them during the harsh winters of Wisconsin.

The team monitors the weather closely to ensure cooling is provided for warm fall weather and heating is provided for early cold days. They aim to time this switch from cooling to heating to minimize the number of days when building occupants want air conditioning after the cooling system is shut down for the winter. However, the weather is out of their control, and some years there is a day or two when this happens.

Preparing for heating season includes:

- Pressure testing valves, piping, and coils for operational condition and to prevent floods.
- Flushing dirt and biofilm from the inside of coils for performance, efficiency, and energy savings.
- Blowing out chilled water coils with high pressure air to prevent freezing breaks on coils that are old or have draining issues.
- Turning on the coil air dry system to blow warm dry air through the coil to prevent freezing breaks.
- Monitoring the system and discharge temperatures and for operational condition, and to make the transition from cooling to heating seamless to building occupants.

The fall transition from cooling to heating takes four to six weeks and includes nearly 700 air handlers in 114 facilities across campus.

This process is prioritized based on the risk associated with the shutdown of cooling systems when air conditioning might still be needed. Physical Plant staff have worked hard over the past few years to refine this process so that it can be conducted with minimal impact to building occupants.



*As of the end of October, more than 60 of the 114 facilities have been converted from cooling to heating.*

## TRACKING THE RELIABILITY OF CAMPUS UTILITIES

The Physical Plant Utilities & Energy Management (UEM) team uses an industry metric called the System Average Interruption Duration Index (SAIDI) to measure and track the reliability of campus utilities. Primarily used by electrical utilities, SAIDI is the average duration a customer's service is interrupted in a year. Physical Plant tracks SAIDI for the three major utilities delivered to campus: steam, chilled water, and electricity.<sup>1</sup>

The UEM SAIDI chart (Figure 1) tracks the rolling 12 month outage duration on a per customer basis. The U.S. Energy Information Administration (EIA) last reported in 2016 that the average outage duration in the United States is just over four hours per customer. As of the end of September, steam and electric are well within the average while chilled water exceeds the average by just over an hour.

Two recent events affecting campus included a chilled water outage in June when a contractor drilled into a 42-inch diameter chilled water main on Linden Drive and an electrical equipment failure in August at the Bacteriology Substation located in the Microbial Sciences building, both of which shifted the SAIDI upward. Electrical outages are typically shorter in duration but the effects of an electrical outage on steam and chilled water system outages are typically much longer in duration. UEM staff must secure all equipment that has tripped offline and then restart each piece of equipment which can take several hours to accomplish after an outage event.

In addition, UEM tracks the type of outage, whether beyond our control or caused by an error of the UEM team. Of the outages shown in Figure 1, only 45 minutes are attributed to operator error during a steam outage in October 2019. A root cause analysis is created for each of these outage events and used for training of UEM staff to prevent future occurrences.

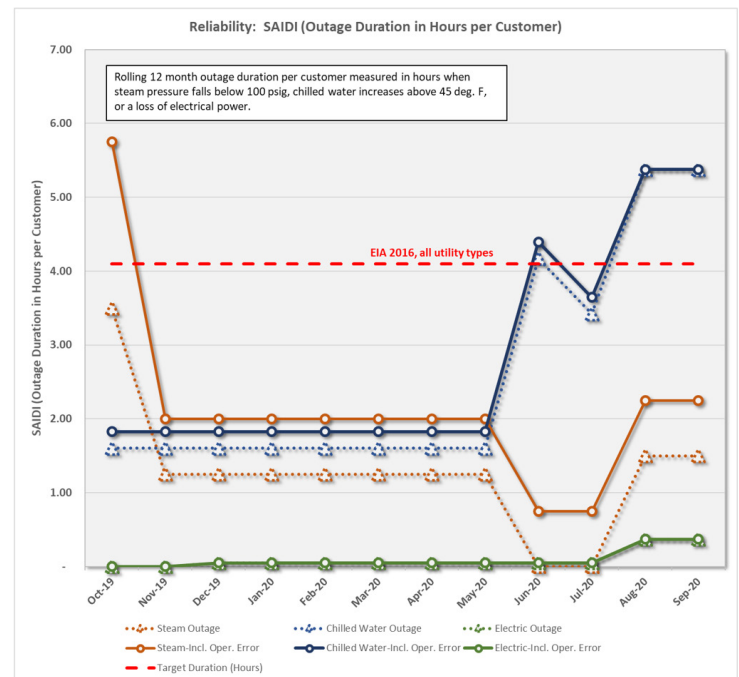


Figure 1: Reliability of Campus Utilities (October 2019-September 2020)

<sup>1</sup> Madison Gas & Electric (MGE) provides electricity to all of campus and natural gas to the campus heating & cooling plants. MGE has ranked in the top three utilities nationwide for the fewest outages in each of the last 12 years and ranked No. 1 nationwide for the fewest outages four of the last six years.

## POLICY CORNER

Facilities modifications, regardless of the funding source, require FP&M's review and approval. This isn't just for remodeling jobs; any time you attach or remove something, or put a hole in the woodwork, this policy applies.

*Prior approval [...] is required for any work, including acquisition and installation of equipment, which impacts the architectural, structural, mechanical, electrical or security system of a campus building or results in a change in space usage. This approval is required to ensure that the proposed work is a feasible project which complies with campus standards, state codes and Americans with Disabilities Act (ADA) guidelines, and that the existing systems can support any new equipment or remodeling. (University Housing and Wisconsin Union facilities are exempt from these procedures.)*

Reference: [Purchasing Policies and Procedures 04 – Exceptions/ Approvals/ Special Handling 04](#)

How to negotiate approval: Enter a [work request](#) with the specific details of your request and Physical Plant staff will consult with you about the issue and make a recommendation based on stewardship, total ownership costs, and the State's construction policy and process.