University of Rhode Island
Office of Sustainability
COVID-19 Pandemic Energy Review
Introduction

- The URI Office of Sustainability is committed to instilling sustainability into our culture and providing education and outreach to students, faculty, and staff on energy efficiency and sustainable practices.
- Energy efficiency habits are decision and behavior based, changing these habits can be difficult but through this report we can show that reducing our campus electricity usage while still being able to operate efficiently is possible.
- Through COVID-19 the Sustainability Office wanted to see the effects on consumption and electricity usage on a nearly empty campus throughout the second half of the spring semester, summer, and beginning of a blended fall semester.

If you’re THINKING GREEN
then you’re THINKING BIG
Background

The COVID-19 pandemic is an ongoing worldwide viral pandemic of a novel infectious disease.

Many U.S states including Rhode Island ordered states of emergency as well as passed stay at home and quarantine orders that included closing everything that is not considered essential.

In RI the stay at home order lasted from the end of March through the beginning of May and then entered the first phase of its reopening plan.

By the end of June, RI had entered stage three of reopening and in the beginning of August the number of COVID-19 cases hit 20,000

URI remained closed throughout these months and very few individuals remained on campus for essential services
Important Dates & Announcements

Spring 2020

- March 6th - Last day of classes before spring break
  where campus is at full capacity.
- March 16 URI announces all face-to-face undergraduate and graduate classes on all campuses are canceled and to begin remotely March 23rd until at least April 3rd.
- The remainder of the Spring 2020 semester is announced to be delivered remotely
- For the remainder of the semester special events are cancelled

Summer 2020

- April 6th - announcement that all summer sessions 2020 courses will be offered remotely.
- Announcement that all summer camps and special events are cancelled
Important Dates & Announcements Cont.

Fall 2020

- June announcement states that for the 2020/2021 academic year, classes will be offered in-person, blended, and online. A portion of courses must be offered online to reduce the number of people in classrooms, mitigate risks, and promote a healthy environment on campus for all.

- Beginning August 23rd over a span of two weeks, 4,500 students will move into on-campus housing at the University of Rhode Island Kingston Campus.

- September 9th, first day of fall classes commence.
HVAC Policy

June 5th: Announcement, “As part of the COVID-19 effort, Facilities Operations and the Office of Capital Projects evaluated and reconfigured all URI buildings that employ forced air systems for heating, ventilation and air conditioning (HVAC). The following steps have been taken where appropriate:

- Relying on as much outside air as possible rather than recycling building air. In buildings where fresh air intake is not possible at a high rate, we employ higher level filtration where possible.

- Eliminating efficiency setbacks. To keep air circulating through the building our systems will run on longer or continuous programs.

- In buildings without forced air we look to operable windows and adjusting any mechanical exhaust systems a building may have.

- Checking all HVAC systems to make sure they are running to original specifications as much as possible.
The URI Utilities office plans, coordinates and monitors the University’s utility systems including electrical, steam, fuel, water and sewage distribution networks.

We retrieved our data from the URI Access Database managed by the Utilities Office.

Using annual and monthly data on electricity usage and electricity costs for the URI Kingston Campus.

We focused on eight different buildings from four different categories:

<table>
<thead>
<tr>
<th>Residential</th>
<th>Academic</th>
<th>Public</th>
<th>Administrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hillside Hall</td>
<td>Chemistry (Beaupre)</td>
<td>Library</td>
<td>Roosevelt Hall</td>
</tr>
<tr>
<td>Garrah Hall</td>
<td>Ballentine Hall</td>
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<td></td>
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<tr>
<td>Peck Hall</td>
<td>Lippitt Hall</td>
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Methods

Electricity consumption measured in kWh

Costs are determined using averages for kWh prices for each month and year using (total kWh) x ($ per kWh)

Square footage data for focus buildings retrieved from the URI Campus Planning Office.

Calculated greenhouse gas equivalencies using the EPA online calculator of total electricity consumption from kWh into metric tons.
HVAC policy in June caused the only spike in electricity usage from the previous year with a 16.09% increase in total consumption from 2019 to 2020.

May had the largest decrease in total consumption from 2019 to 2020 with a 22.06% reduction.
University of Rhode Island Robert L. Carothers Library & Learning Commons Total Electricity Consumption Feb-Sept, 2019 vs. 2020

March 2020: COVID-19 Causes Transition to Remote Learning

*March 9th: First Day of Spring Break
*March 23rd: First Day of Remote Learning Classes

June 2020: COVID-19 HVAC Policy Implemented

Total Electricity Use (kWh)

<table>
<thead>
<tr>
<th>Month</th>
<th>% Decrease</th>
<th>% Increase</th>
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<tbody>
<tr>
<td>Feb-19</td>
<td>-3.13%</td>
<td></td>
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<tr>
<td>Feb-20</td>
<td>-5.74%</td>
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<tr>
<td>Mar-19</td>
<td>-19.18%</td>
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<tr>
<td>Mar-20</td>
<td>-12.50%</td>
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<tr>
<td>Apr-19</td>
<td></td>
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<td>Apr-20</td>
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<td>May-19</td>
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<td>May-20</td>
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<tr>
<td>Jun-19</td>
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<tr>
<td>Jun-20</td>
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<tr>
<td>Jul-19</td>
<td>8.20%</td>
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<tr>
<td>Jul-20</td>
<td>13.56%</td>
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<tr>
<td>Aug-19</td>
<td>1.54%</td>
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<tr>
<td>Aug-20</td>
<td></td>
<td></td>
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<tr>
<td>Sep-19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sep-20</td>
<td>-9.55%</td>
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</tr>
</tbody>
</table>

% Decrease | % Increase

THINK BIG. WE DO.
Residence Halls saw an initial decrease in consumption levels but as students began to return to campus had an increase in electricity usage from 2019 to 2020 in July and August. Academic Halls saw an overall decrease in electricity consumption between 2019 and 2020 and saw a large drop in September at 18.94% as most classes were held virtually.
Using square footage data from each building we were able to compare the efficiency of each building by how many kWh they used per square foot of building space. This is a more accurate measurement of efficiency because it can be deceiving that buildings with high total kWh data can be seen as less efficient than those with lower total kWh data without looking at the size of the buildings.
The highest change in GHG equivalents was noted in May where GHG emissions decreased by -22.07%
Findings

June caused the only spike in electricity usage from the previous year with a 16.09% increase in total consumption from 2019 to 2020. May had the largest decrease in total consumption from 2019 to 2020 with a 22.06% reduction.

Residence Halls saw an initial decrease in consumption levels but as students began to return to campus had an increase in electricity usage from 2019 to 2020 in July and August.

Academic Halls saw an overall decrease in electricity consumption between 2019 and 2020 and saw a large drop in September at 18.94% as most classes were held virtually.

Using square footage data from each building we were able to compare the efficiency of each building by how many kWh they used per square foot of building space. With this we saw that Hillside who is LEED Gold certified operated efficiently while other older buildings like Lippitt and Garrahy had large amounts of kWh used per square foot.

In general our GHG emissions decreased from 2019 to 2020 through reduction in electricity consumption excluding the month of June during the peak of the new HVAC policy.
What is Next?

With these findings we see that a reduction in electricity levels can be achieved and we will continue to encourage energy efficient behaviors to achieve lower levels of total consumption.

URI installed smart meters that monitor electricity usage and work on a programmed system to shut on and off appliances on a set schedule. We can use these to help achieve lower electricity consumption levels.

Continue to monitor data throughout the COVID-19 pandemic and create subsequent reports with a longer time period, different buildings, different years, etc.

Continue to promote our behavior change programs through outreach and education to achieve these lower levels of GHG emissions we have seen throughout the Pandemic thus far.
Conclusion

COVID-19 has caused many effects world wide, nationwide, statewide, and locally.

Through our research we have found that compared to 2019, 2020 electricity consumption on campus has generally decreased due to a mostly empty campus, state wide closure of schools, stay at home orders, etc.

URI’s HVAC policy implemented in June caused a large initial spike in electricity consumption due to things like eliminating efficiency setbacks.

We conclude that reducing our GHG emissions as well as electricity consumption is possible while still maintaining an operable level at the URI Kingston campus and efforts to support this reduction will continue to be encouraged to the URI community through the Office of Sustainability.