

Property Energy Plan (PEP) Update: Center for Communication & Creative Media

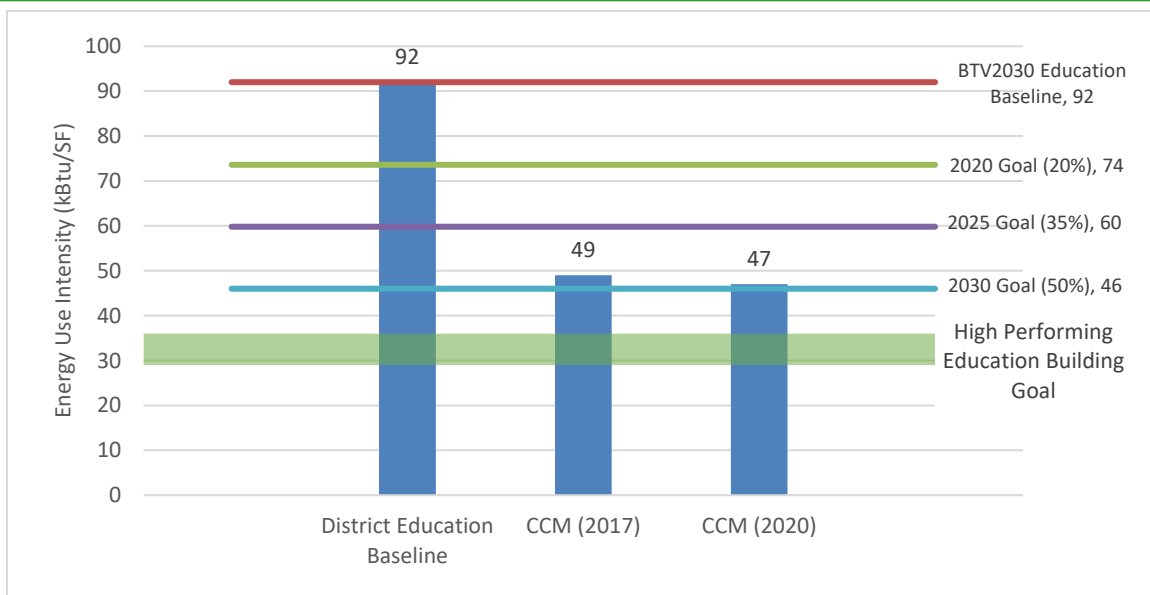
PROPERTY SNAPSHOT

Owner: Champlain College
 Address: 375 Maple Street
 Square footage: 87,187 ft²
 Building use: College / University
 Year constructed: 2015
 2017 EUI: 49 kBtu/ft²
 Current EUI: 47 kBtu/ft²

PROPERTY OVERVIEW

Champlain College’s Center for Communication and Creative Media (CCM) is a four-story building constructed as part of an addition to the Hauke Center and Alumni Auditorium on Champlain College’s campus. The building houses a dining and events center, the campus store, and all offices and classrooms associated with CCM including studios, a production stage, and computer labs.

PROPERTY ENERGY REPORT



For the year ending 02/29/2020*, the property’s EUI is 47 kBtu/ft². This is a **4% decrease in EUI** and energy use from when the building joined the Burlington 2030 District in 2017.

The building started out at a very low EUI compared to the district baseline for Education and remains close to reaching the 2030 goal for Education type buildings. Undertaking future projects and implementing energy saving strategies can help the building achieve and exceed the 2030 challenge goals. The high performing goal shown is the EUI target range for this building type in Vermont’s climate zone at which the building load can be feasibly offset with renewable energy.

Please see the PEP Update section below to learn more about what has contributed to the building’s persistent low energy use. The PEP Update section also includes suggested opportunities for increased energy efficiency.

Energy use intensity (EUI) signifies the amount of energy a building consumes per square foot per year. EUI is measured in thousands of BTUs per square foot per year (kBtu/ft²/year). Buildings in the 2030 District seek to achieve EUIs that are significantly lower than the regional baseline for their building type.

*Year ending 2/29/2020 used to avoid energy use skew due to COVID-19 shut-downs.

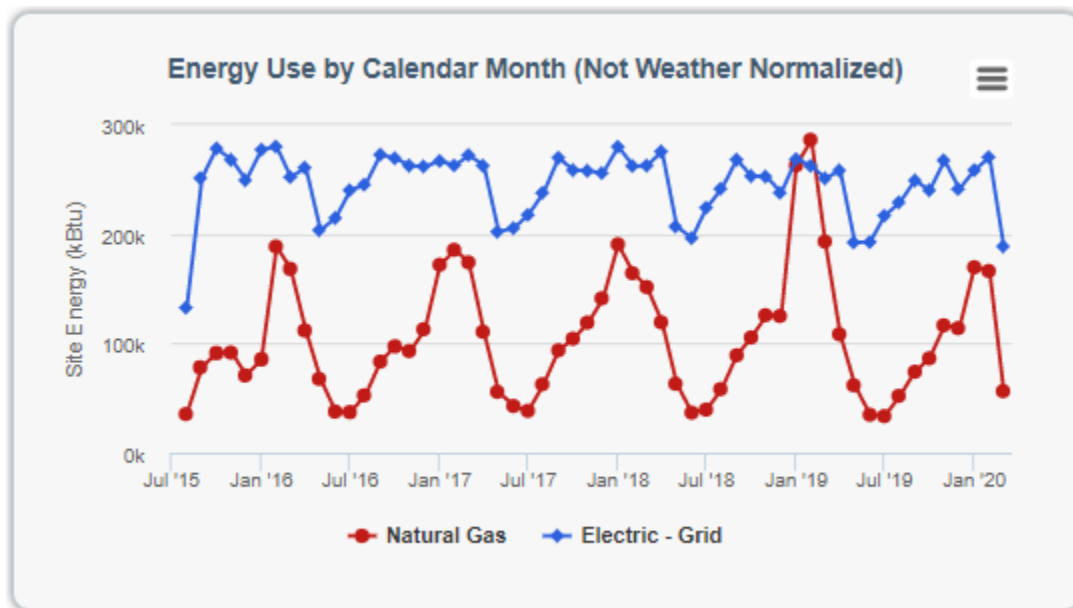
Questions? Contact Katie Mason or Krystina Kattermann at 802.861.2715

© Cx Associates, LLC | cx-associates.com | katie@cx-assoc.com | krystina@cx-assoc.com

This analysis used building information supplied by the owner and energy use data supplied by participating utilities.

BUILDING ENERGY USE OVER TIME

The chart below shows the CCM building's energy use in kBtu over time. The building has generally higher electric use than natural gas, which is expected due to geothermal heat pump system for heating and cooling. However, there was an unexpected spike in natural gas use during the winter of 2019. Continuing to monitor natural gas use can help reveal if this was an anomaly, or whether there is an upward trend in natural gas use in the building. Also, please note that this energy analysis does *not* include energy attributed to geothermal pumping. Efforts to parse out the pumping energy used per building served by the geothermal loop across the Champlain College campus are ongoing, and once complete, this energy use should be tracked as well.



ON THE WAY TO REACHING THE GOAL

1. Building Design & Construction

When originally constructed, the building adhered to Champlain's strong sustainability goals, targeting Green Globes Certification. The design included tying into the college's existing geothermal infrastructure, implementing a lighting controls strategy, and using demand-controlled ventilation. The construction process also kept a strong focus on optimizing the building's envelope, resulting in a building with low thermal leakage, one of the most important contributors to low energy use. It is great that the building's low energy use has continued to persist over the life of the building so far.

2. Lighting Control System Tune-Up

After the initial PEP was received in 2017, Champlain took the suggestion to fine-tune their lighting control system. This is an important step in longevity of energy savings from a lighting control system because it helps ensure that lighting levels and timer lengths meet occupant comfort goals. This in turn helps prevent building users from needing to override lighting controls.

3. Benchmarking the Champlain College Building Portfolio

Champlain College has taken the excellent step of working toward benchmarking their entire building portfolio. Working with Burlington Electric Department, Champlain College has set up automatic electric bill uploads, and plans to work with VGS to import their buildings' natural gas data as well. Understanding the campus' energy use will enable the college to better prioritize projects, share successes with its

Questions? Contact Katie Mason or Krystina Kattermann at 802.861.2715

© Cx Associates, LLC | cx-associates.com | katie@cx-assoc.com | krystina@cx-assoc.com

This analysis used building information supplied by the owner and energy use data supplied by participating utilities.

community and prospective students, help inform campus-wide energy goals, and address any anomalies in energy use.

FURTHER OPPORTUNITIES

Though Champlain College's CCM building is already nearly meeting the Burlington 2030 District goals, it is important to continue to strive for more energy savings. The following are some suggestions and recommendations to help identify future opportunities.

1. Maintaining System Optimization

As previously noted, the CCM building's EUI has decreased slightly since the building was first benchmarked in 2017. Over time it is normal to see some adjustments to a building's EUI as buildings are used, occupants overturn, and maintenance issues are found and solved. Because the building is nearing its 5-year occupancy mark, it is important to re-visit the building's operation to ensure that the systems are running properly and the low energy consumption continues to be maintained over the life of the building. Building systems can also be reviewed for additional opportunities that can improve the functionality and longevity of the equipment and provide energy savings. Three options for revisiting the buildings systems are outlined below. We suggest reviewing these with Burlington Electric Department and Vermont Gas to see if the CCM building is a good candidate for any of these options:

- a. **Retrocommissioning:** Retrocommissioning is a process of identifying low-cost, high return on investment energy saving measures in a building using building occupant interviews, building automation system analysis, and high level review of the building systems.
- b. **Recommissioning/On-Going Commissioning:** Recommissioning is a process by which a building's systems are essentially re-tuned so that they are working as well as or better than they were on day one. One especially important aspect of recommissioning is re-calibrating sensors upon which building controls are based, including temperature sensors, pressure sensors, and photocells. Recommissioning is often a suggested measure that comes out of the retrocommissioning process described above. As part of the process, an on-going commissioning plan can be developed that outlines the building's system, provides test documents to evaluate their functionality, and provides a schedule for re-tuning building systems.
- c. **Energy Management Service:** An Energy Management Service would provide real time feedback on usage for all energy uses and fault detection diagnostics to identify any issues before they become long-term problems. On-going commissioning can also be part of an Energy Management Service.

2. Re-Evaluating Building Schedules

During the COVID-19 crisis, Champlain College addressed the lack of occupancy in their buildings across campus by adjusting the building occupancy schedules to decrease equipment use and use temperature setbacks. However, upon a further look, the BED Energy Services Team noticed in the campus' building automation system that the buildings had not been universally put into a holiday-type mode during which the vast majority of buildings would be set to "unoccupied". They found that some buildings are running in occupancy mode for many hours per week even though the buildings are currently unoccupied. Though the COVID-19 crisis is certainly an unprecedented and highly unusual set of circumstances, the variance in occupancy schedules and modes across the campus does raise the question about whether the normal occupancy schedules match the needs and intentions for each building. Re-evaluating and updating the schedules so each building's schedule matches its actual occupancy under different times of day, days during the week, or different times of year can help Champlain College save energy and money.

3. Energy Efficiency Visualization and Education

Consider using presentation visuals to create energy efficiency messaging for building visitors. As a college with aspirational sustainability and carbon neutrality goals, sharing the mission and efforts being made can inspire students and faculty to instill sustainable practices in their own lives and can motivate other building owners to take similar steps. Consider installing permanent educational displays with a timeline of

Questions? Contact Katie Mason or Krystina Kattermann at 802.861.2715

© Cx Associates, LLC | cx-associates.com | katie@cx-assoc.com | krystina@cx-assoc.com

This analysis used building information supplied by the owner and energy use data supplied by participating utilities.

sustainable activities and ongoing efforts. An easy place to start could be this EPA-offered free [greenhouse gas equivalency calculator](#) that takes your electric or natural gas savings and converts those savings to show the impact of any implemented projects in terms of common, relatable carbon emitters.

As an educational organization, Champlain College has a unique opportunity to provide students and faculty with the tools and understanding needed to make behavioral differences in energy use. Especially at a university where climate action is so important to students, teaching them tactics to decrease their impact on energy use and showing them the importance of decreasing building energy use on carbon emissions could be effective in changing behavior. There may also be opportunities to involve students in these efforts, such as working with marketing students to highlight the school and its students' successes as they pertain to sustainability and climate action, and/or by engaging them in the process of moving the campus towards net-zero energy.

4. Renewable Energy

Once all cost-effective energy efficiency upgrades have been made, assess the possibility of meeting the remaining building load with renewable energy.

NEXT STEPS FOR YOUR PROPERTY

Consider sharing this report with faculty and student. Showing the goals Champlain College has made to decrease energy use and carbon emissions can motivate faculty and students to take steps to follow suit. Making students and faculty aware of the college's participation in the Burlington 2030 District may help attract students to the college by exemplifying Champlain's commitment to sustainability.

Contact the Burlington 2030 District Director team to get recommendations for local service providers for relevant equipment and technologies.

Think about sharing this report with other Burlington 2030 District members. By default, all benchmarking report contents are confidential.

Visit <http://www.2030districts.org/burlington> to obtain helpful resources for reducing energy use.

Attend an upcoming Burlington 2030 District Steering Committee meeting or educational event.

Look for developments in assessments of water use and carbon dioxide emissions from transportation, as the Burlington 2030 District expands its scope.

EUI INDEX

Category	EUI
General	99
Education	92
Food Sales	220
Food Service	285
Healthcare	207
Healthcare (Inpatient)	275
Healthcare (Outpatient)	104
Lodging	110
Mercantile	81
Office	114.6
Public Assembly	104
Public Order & Safety	128
Religious Worship	48
Service	85
Warehouse & Storage	50
Single Family Residential	52.3
2-4 Apartments	86
5+ Apartments	69

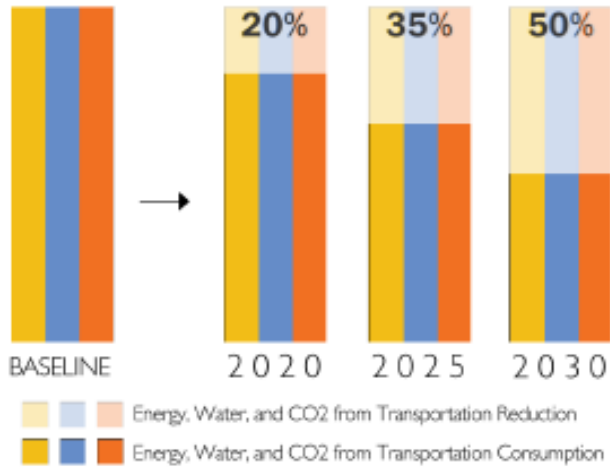
Questions? Contact Katie Mason or Krystina Kattermann at 802.861.2715

© Cx Associates, LLC | cx-associates.com | katie@cx-assoc.com | krystina@cx-assoc.com

This analysis used building information supplied by the owner and energy use data supplied by participating utilities.

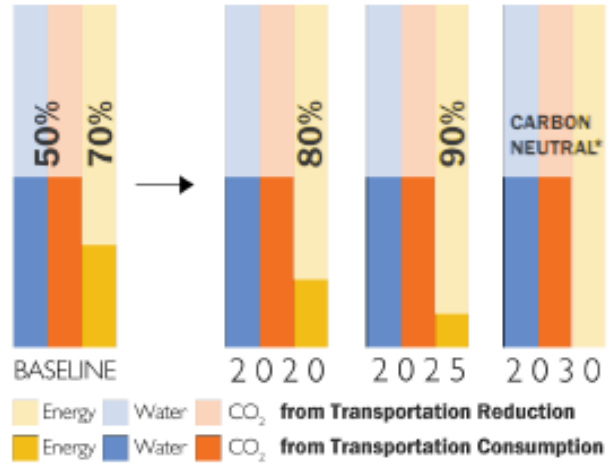
2030 CHALLENGE GOALS

2030 Challenge: Existing Buildings



Source: © 2015 2030, Inc. / Architecture 2030. All Rights Reserved.

2030 Challenge: New Buildings & Major Renovations



Source: © 2015 2030, Inc. / Architecture 2030. All Rights Reserved.
 *Using no fossil fuel GHG-emitting energy to operate.

Questions? Contact Katie Mason or Krystina Kattermann at 802.861.2715

© Cx Associates, LLC | cx-associates.com | katie@cx-assoc.com | krystina@cx-assoc.com

This analysis used building information supplied by the owner and energy use data supplied by participating utilities.