



A COLLECTIVE EFFORT

2020 Sustainability Report



NORTH CENTRAL COLLEGE
Sustainability

COMMITMENT TO SUSTAINABILITY

At North Central College, sustainability is the **collective effort** of students, faculty, staff, and visitors working toward the development of a **socially just, environmentally responsible**, and **economically functional** campus community. The College is actively making smart choices to limit its impact on environmental systems. Not only will these actions enhance the North Central experience for current and future generations, but will prepare students for a world that increasingly relies on sound sustainable decision making.

One of the accountability measures the College has employed to ensure it is maintaining this commitment to sustainability is to **SET GOALS**. In 2016 North Central College set the following sustainability targets to reach by **2020**.

ENERGY

Reduce electric and natural gas energy use by **10%** (EUI)

Save **1,000,000** KWH annually by implementing lighting efficiency measures

Generate **1%** of the campus energy use through renewables

WASTE

Increase the annual diversion rate to **40%**

Implement a campus wide policy to eliminate the use of polystyrene foam on campus

WATER

Increase use of gray water by providing **15,000** gallons of storage to replace the use of potable water

Perform a campus wide water audit by September 2020. Set goals based on the audit outcomes

Increase the use of sustainable storm-water infrastructure on campus by **45,000** square feet

PAPER

Reduce paper use on campus by **30%** from FY2011 baseline

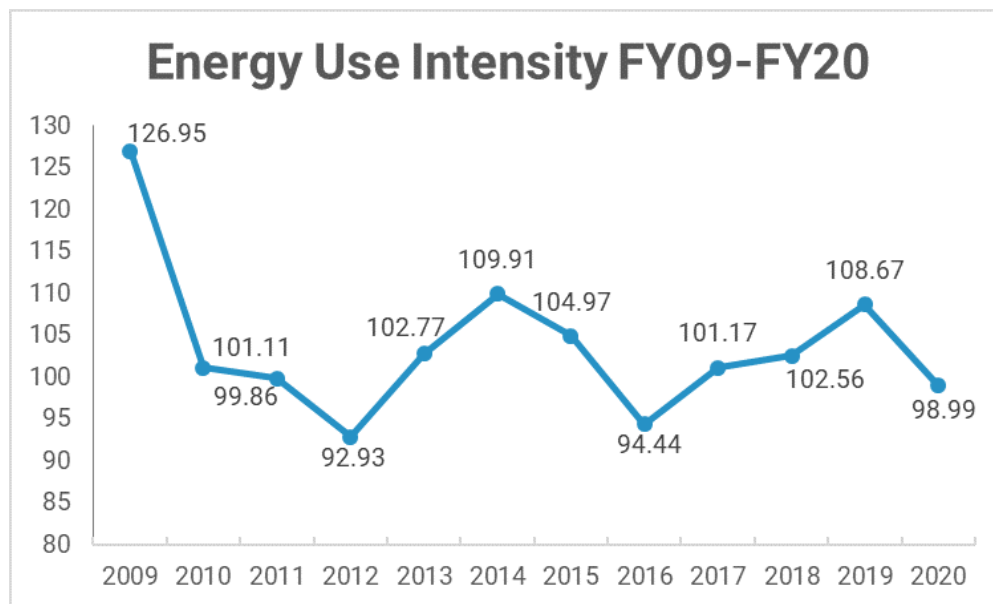
Using FY2009 as a baseline (unless otherwise noted)
Fiscal Year (FY): July 1 - June 30

ENERGY

$$\text{EUI} = \frac{\text{energy use (kbtu)}}{\text{size (sqft)}}$$

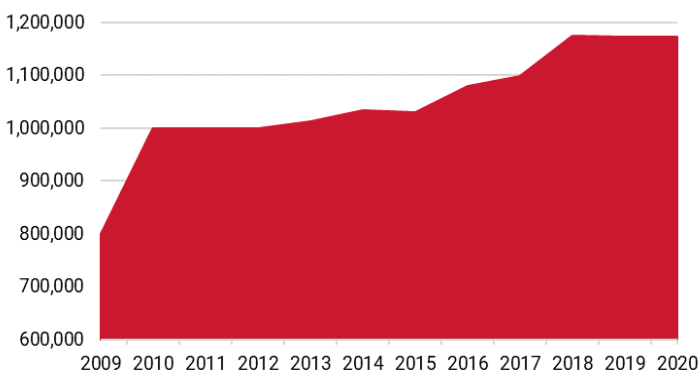
Goal - Reduce our Energy Use Intensity (EUI) by 10%

North Central College achieved the goal of reducing our site EUI by 10%. Between FY09-20, the College's site EUI was **REDUCED BY 22%**.

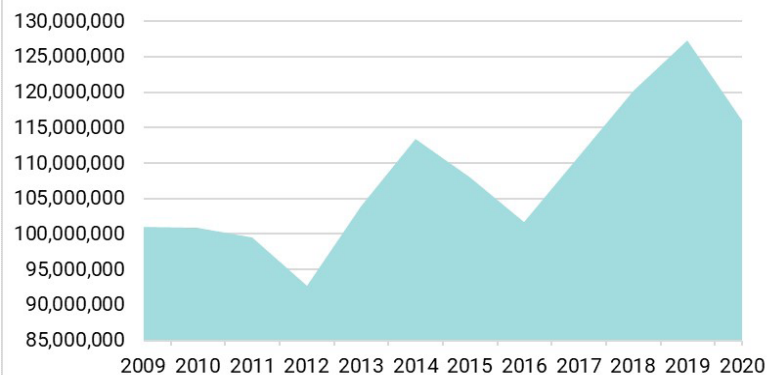


Despite campus square footage increasing over the past twelve years, total campus energy use has stayed relatively the same. Between FY09-FY20 campus square footage (SQFT) has increased **47%**, meanwhile total energy use (kbtu) has only increased **15%**.

Square Footage FY09-FY20



Energy Use (kbtu) FY09-FY20



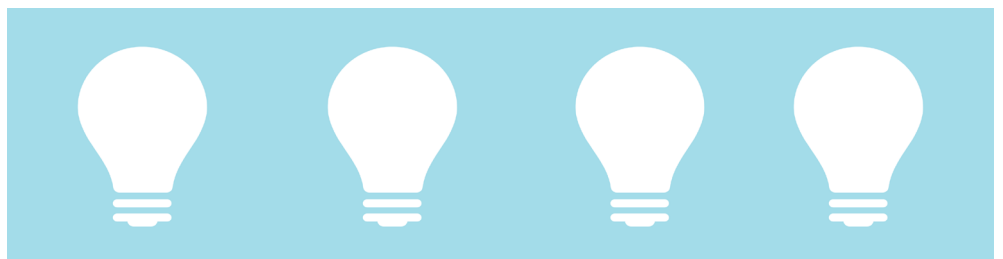
ENERGY

Goal - Save 1,000,000 KWH annually by implementing lighting efficiency measures

Available records indicate that between FY14-FY20 the College implemented various measures which **SAVE 681,000 KWH ANNUALLY**. Additional projects on the horizon that will get us closer to our goal include LED lighting retrofits planned for the athletic complex, library, and performing art spaces.



Gregory Arena, Merner Fieldhouse (left), Residence Hall/Recreation Center (right) are examples of two campus facilities that have been retrofit with **light-emitting diodes (LED)** fixtures. LED fixtures offer a number of advantages over traditional bulbs such as energy efficiency, long life span, low heat output, and brightness.

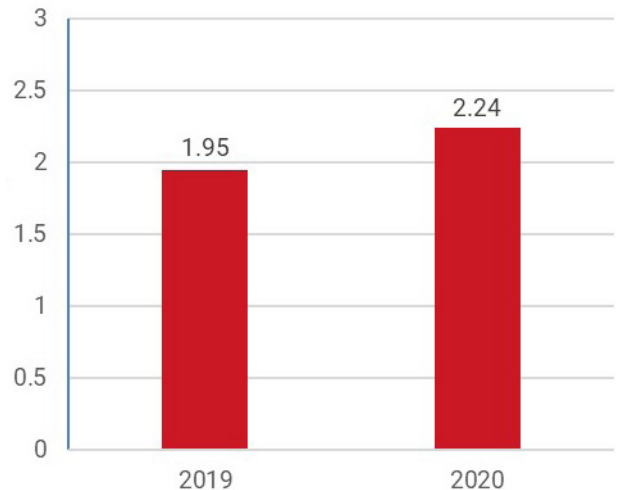


An occupancy sensor is another example of an energy efficient lighting strategy. Many facilities on our campus have been retrofitted with these, thanks to financial assistance provided by two grants from the City of Naperville's Greener Business Program. Occupancy sensors help decrease electricity consumption and costs by turning lights off in unoccupied areas. This is especially effective in multi-use spaces, and spaces with irregular use patterns where a light is more likely to be inadvertently left on when unoccupied.

ENERGY

Goal - Generate 1% of campus energy through renewables

North Central College's three rooftop solar photovoltaic (PV) systems generated over **760,000 kWh** in FY2020, which equated to more than **2% OF CAMPUS ENERGY**.



Percent of Campus Energy generated by Solar PV by Fiscal Year

Roof-Mounted Solar Projects on Campus

System Location	Type	Size (kW)	Installation Date
New Hall Residence Hall	Thermal	389	November 2015
Residence Hall/Recreation Center	Photovoltaic	538	January 2017
Wentz Science Center	Photovoltaic	60	November 2017
Operations & Maintenance (999)	Photovoltaic	56	November 2017

Photovoltaic vs. Thermal

Photovoltaic uses the sun's energy to generate **electricity**

Thermal uses the sun's energy to help heat domestic **hot water**



DID YOU KNOW...

You can view the real-time production of the Residence Hall/Recreation Center solar PV system **ONLINE**

New Hall Solar Thermal System

WATER

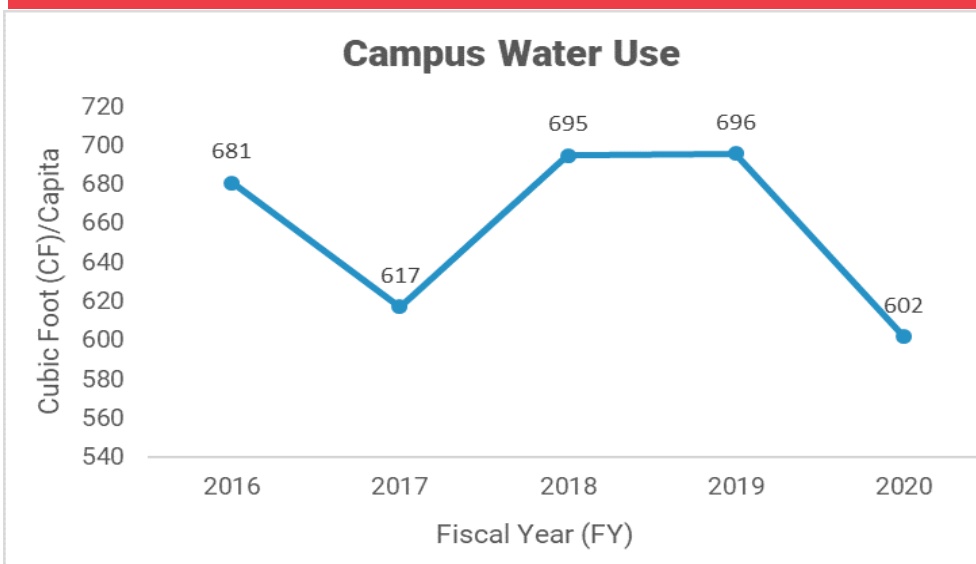
Goal - Increase use of gray water by providing 15,000 gallons of storage to replace the use of potable water

The College does not currently utilize any gray water storage. The Wentz Science Center was designed with a 1,000 gallon rainwater cistern for use in the greenhouse irrigation system. The cistern is currently not in use, as the College was unable to secure a use permit. The College wants to ensure there is a path to secure permitting for use of gray water and harvested rainwater on campus before investing further in infrastructure.

Goal - Perform a campus wide water audit, set targets based on the audit outcomes

A water audit of indoor campus fixtures (sink faucets, shower heads, toilets, etc) was conducted in December 2020. During the audit, flow rate (actual and intended) was recorded, as well as noting which fixtures have automatic sensors, aerators, and dual flush handles.

The top candidates recommended for water fixture upgrades were: Kaufman Dining Hall, Harold and Eva White Activities Center, Goldspohn Hall, and Rall Hall.



Automatic low-flow faucets like this one found in Wentz Science Center aid in our water conservation efforts. Conventional faucets flow as high as 3 gallons per minute (gpm), whereas this one has a 0.5 gpm flow rate.

WATER

Goal - Increase the use of sustainable storm-water infrastructure on campus by 45,000 square feet

Over **67,000 SQUARE FEET** of sustainable storm-water infrastructure has been added to campus. Notable projects include: **rain gardens** near Wentz Science Center, New Hall, Seager Hall, and Kaufman Hall; **permeable pavers** in walkways, parking lots, and patio spaces; and the **prairie restoration** project alongside the Dupage River.



Rain Gardens are shallow depressions with deep-rooted native plants and grasses. They offer many benefits:

- allow rainwater runoff to be absorbed back into the water table, and reduce runoff from flowing into storm drains
- create beautiful habitats for birds and beneficial insects
- require little maintenance or supplemental watering once established

Permeable Pavers are comprised of layers of stone that allow water to infiltrate otherwise impermeable ground. The benefits are quite similar to that of rain gardens:

- allow rainwater runoff to be absorbed back into the water table, and reduce runoff from flowing into storm drains
- filter out pollutants such as oil, salt, and other contaminants that are picked up by water running over paved surfaces



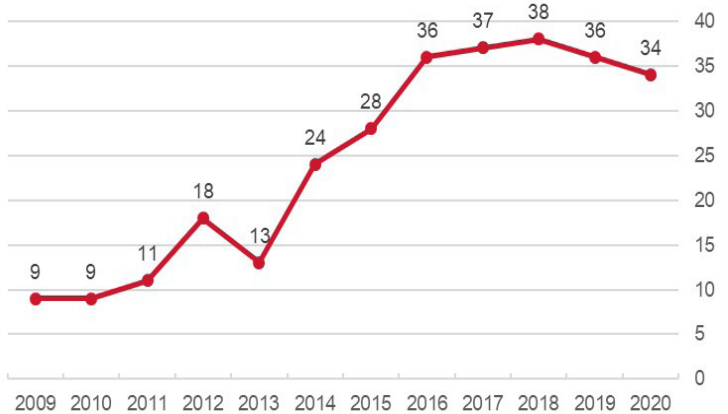
WASTE

Goal - Increase the annual diversion rate to 40%

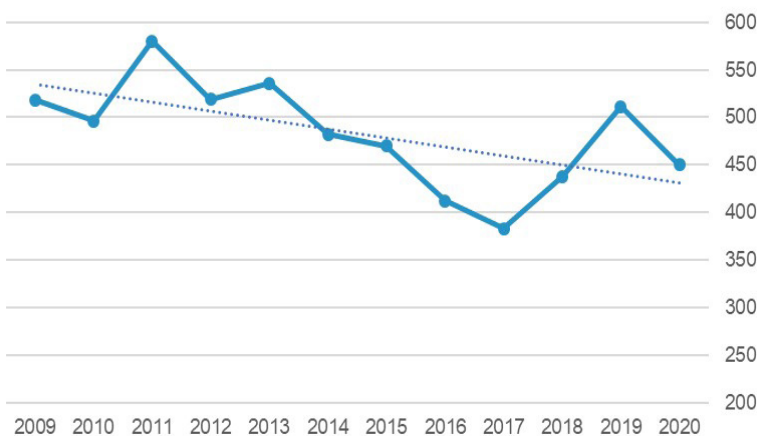
Diversion rate represents the percentage of waste that is not sent to landfill. At North Central College our diversion rate includes our various **recycling programs**, **compost**, and **surplus equipment sold or donated**. The College's diversion rate peaked in FY2018 at **38%**.

The drop in FY2020's diversion rate was due to service interruptions and stay-at-home orders issued during the COVID-19 pandemic.

Diversion Rate (%) FY09-FY20



Total Landfill (tons) FY09-FY20



DID YOU KNOW?

The College's tonnage and diversion rates are calculated using educated estimates, not actual weights. This model is efficient and requires minimal human resources, though it is important to understand it is not exact.

Diversion metrics are useful, but they are not a holistic measure of waste as they don't measure waste reduction, are based solely on weight, and provides incentive for recycling over reuse and reduction. The graph to the left shows a negative trendline for tonnage sent to landfill, a measure not captured by diversion rate alone.

Goal - Implement a campus wide policy to eliminate the use of polystyrene foam on campus

The College approved a policy prohibiting the sale, use, and ordering of polystyrene foam products in any College facilities, and at any College funded function, effective **JANUARY 1, 2017**.



PAPER

Goal - Reduce paper use on campus by 30% from FY2011 baseline

There is insufficient data available to assess this goal as written, but here is what we do know about the College's paper use:

The College's 2016 Sustainability Report indicated a savings of over **300,000 sheets of paper in 9 months**, with the switch to swipe-to-print

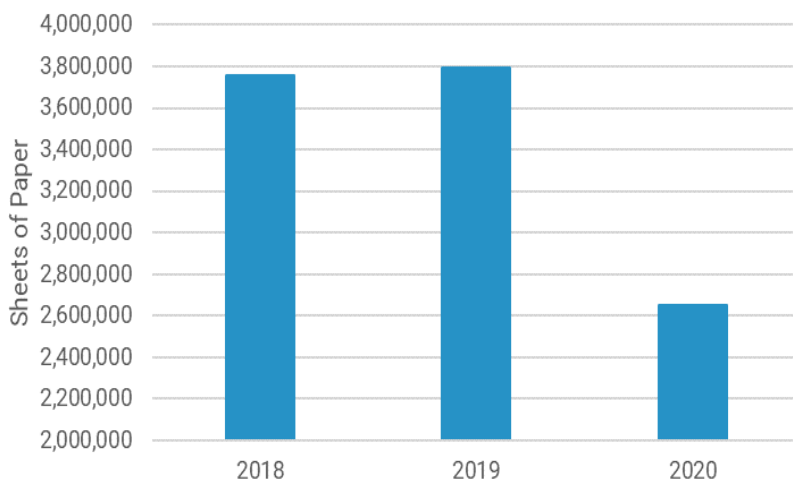
SWIPE TO PRINT

In April 2016 the College introduced a swipe-to-print system across campus. In order to make copies, print, or scan from a multi-function device (MFDs) found across campus, individuals swipe their campus ID card. Print Jobs will stay in a queue for 24 hours. If the job is not released within that time frame, it will automatically be deleted. On top of being more convenient for the community, this system vastly reduces wasted print jobs.

In FY2020 the College spent **22%** less on printing (campus and outside printing) than in FY2009. Printing expenditures peaked in FY2013 and decreased annually thereafter.



FY18-FY20 Paper Use: Follow Me Printing



Swipe-to-print alone showed a **29%** decrease from FY2018 to FY2020. However, printing essentially ceased in March 2020 when campus went remote following stay-at-home orders issued during the COVID-19 pandemic.

Additionally, swipe-to-print is not the only source of paper use. Other paper uses across campus include the print shop, personal printers, and printing jobs sent to external printers for large scale marketing.

SUMMARY

BY THE NUMBERS

FY2020 Energy Use
Intensity (EUI)

99
kBtu/sqft

EUI*

-22%

Annual kwh saved
LED light
upgrades*

681K
kwh

Dual Port EV
Charging Stations*

2

Rooftop Solar
Systems*

4

FY2020
Water Use

602
Cubic Feet/Capita

Sustainable stormwater
infrastructure added*

67,000
sqft

FY2020
Diversion Rate

34%

3 YR Average
Swipe-to-Print
Paper Use

3.4
million sheets/year

*in relation to FY2009 baseline
Fiscal Year (FY) July 1- June 30