



# Cornell College

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## WHITE PAPER SERIES

From President Jonathan Brand

*March 2020*

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### **Enhancing Cornell College’s historic campus through an innovative partnership**

Cornellians value our beautiful historic campus. It is considered a national treasure as the first college campus listed in its entirety on the National Register of Historic Places. Not only was our campus carefully planned, it has been distinctively preserved and is continuously evolving for modern learning.

Our recently completed strategic plan had as a cornerstone the goal of enhancing a beautiful and well-purposed historic campus. As a result, over five years we completed numerous renovations (such as to Pauley-Rorem, Dows, and Tarr residence halls; Thomas Commons; Van Etten-Lacey House; West Science Hall; and multiple athletic venues) and opened the state-of-the-art Russell Science Center. We have also invested more in the maintenance of our spectacular grounds, including the extension of the Pedestrian Mall. Now we are taking the next step, which is to upgrade the efficiency of our buildings. Through an innovative agreement, we have a multi-million dollar plan that will pay for itself over 18 years with no up-front costs for Cornell.

Maintaining a historic campus of 45 buildings, some dating to the 1800s, is costly. Over the decades the college’s central heating plant that once served all of the main campus has evolved from coal-fire to fuel oil to natural gas. Its underground steam lines were prone to breaking and leaking. We have been slowly moving buildings off of the plant to individual high-efficiency boilers. But our plan to convert the campus was going to take decades. Meanwhile, the buildings were not as comfortable for students, faculty, and staff as they should be.

Then an engineering firm approached us with an innovative arrangement to allow Cornell to make heating and other energy upgrades in two years, paid off with our utility savings over 18 years. After careful consideration, we entered into a contract with Johnson Controls International, a global firm headquartered in Milwaukee, Wisconsin, to oversee \$5.9 million in infrastructure improvements.

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The agreement, known as a contingent payment program, guarantees that infrastructure upgrades will produce savings that repay Johnson Controls for project costs over time. If there is a shortfall in results, Johnson Controls is obligated to fix the root causes. If Johnson Controls overperforms, Cornell keeps the additional savings. It also transfers risk to Johnson Controls and guarantees savings that Cornell will use to repay project costs through Feb. 1, 2037.

This arrangement is an alternative to traditional financing and does not impact the college's existing debt obligations. That means no loans, while also greatly decreasing the cost of maintaining aging infrastructure. Thus Cornell upgrades its infrastructure and becomes more energy efficient without upfront costs.

### **What we're doing**

Engineers from Johnson Controls targeted three areas of campus infrastructure in need of repair, which will result in a 20% reduction in energy usage across campus. The work is being done by five contractors in addition to Johnson Controls and involves:

- Installing high-efficiency boilers to remove the final eight buildings from the campus steam plant, and installing boilers in the Richard and Norma Small Sport Center.
- Installing new windows in our two oldest buildings, Old Sem (1853) and College Hall (1857).
- Upgrading nearly every campus building and exterior lights with LEDs.

The process began with a lighting and energy audit of every building. Of the 45 main campus buildings, 27 are receiving new LED lighting. (The others already had LED lighting or were too small for benefits to cover expenses.) In fact, the majority of the 20% energy reduction we'll enjoy comes from these changes in lighting.

Contractors began working on the heating upgrades in August 2019, and that work is substantially completed. King Chapel and College, South, Norton, Bowman-Carter, McWethy, and Armstrong-Youngker halls were removed from the central heating plant (and the heating plant itself was decommissioned). The Richard and Norma Small Sport Center also received high-efficiency boilers.

Each building includes controls to measure and validate the energy savings, as well as technology that will allow Cornell facilities staff to operate HVAC remotely. Johnson Controls is also training and working with our facilities and information technology staff to operate the new technology.

Lighting upgrades are scheduled to be completed by the end of March. Lastly, new windows will be installed in Old Sem and College Hall this upcoming summer.

Throughout the process, Johnson Controls has kept Cornell's Sustainability Committee, composed of faculty, students, and staff, informed.

### **What are the benefits**

Johnson Controls will continually monitor progress and provide an annual energy report over 18 years to ensure that the company's projects are providing the agreed-upon savings. We expect a savings of nearly \$500,000 in the first full year and more than \$11 million at the end of 18 years.

In addition, we will lower our operational costs in non-measurable ways such as by:

- Spending far less facilities staff time on persistent problems across campus, including steam line breaks.
- Extending the life of pianos and other instruments stored in King Chapel and Armstrong Hall by the use of proper humidity.
- Realizing savings from piping insulation and energy-efficient windows.

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Of course, the ultimate benefit is creating a more comfortable environment for our students, faculty, and staff.

It also includes being better stewards of the environment and making efforts to mitigate climate change. Johnson Controls reports that, after the first year, the project's reduced annual emissions would be equivalent to the carbon dioxide absorbed or produced by each of the following:

- 52,866 tree seedlings grown for 10 years in an urban setting.
- 440 acres of pine or fir forests.
- 394 passenger vehicles.
- 4,795 barrels of oil consumed.

We are also looking at a possible additional project with Johnson Controls that involves installing solar to cover more of the college's energy needs. In the meantime, without burdening our budget, we are making rapid progress on what were formerly mid-term goals to upgrade our infrastructure and increase the efficiency of our buildings. By saving operational costs, we can put more resources toward our educational mission, all while maintaining Cornell's beautiful and well-purposed historic campus in the best way possible.



Jonathan Brand  
PRESIDENT

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*This presidential white paper is part of a series on matters of importance to Cornellians.*

*I welcome any comments or observations you might have on this white paper topic.*

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