

Cornell University

FY 2017

# Sustainability Report

*President's Sustainable Campus Committee*  
*[sustainablecampus.cornell.edu](http://sustainablecampus.cornell.edu)*

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October 10, 2017

Dear President Pollack,

Welcome to Cornell University – a campus leading the world in solutions to climate change and sustainable futures.

Cornell is committed to reaching carbon neutrality by 2035 and developing solutions to 21st century sustainability challenges through our ‘living laboratory approach.’ We see our campus buildings, operations, and people as real-time laboratories for studying and demonstrating innovative approaches to renewable energy, alternative transportation, and human well-being (just to name a few). We achieve this through deep, purposeful collaboration across staff, faculty, students and community partners.

[The President’s Sustainable Campus Committee \(PSCC\)](#) facilitates this work. With 150 cross-campus members, your committee includes undergraduate and graduate students, long-serving staff, and award-winning faculty: all working together to create a more sustainable Cornell.

Highlights on Cornell’s sustainability progress this year:

- Gold Rating in the national [Sustainability Tracking, Assessment, and Rating System](#) for a 6th consecutive year
- Ranked #7 in Princeton Review’s Top Green Schools
- 3 new solar farms (35,000 panels) brought online for a total of 5 solar farms online powering the campus
- 50 Green Offices and 12 Green Labs are now certified across campus
- 88% of incoming students surveyed on sustainability literacy & engagement said a top reason for choosing Cornell was its standing as a sustainable campus and institution
- Achieved successful 33% reduction to carbon emissions in pursuit of our goal to reach neutrality by 2035
- Published [Options for a Carbon Neutral Campus by 2035](#), confirming Earth Source Heat as the most viable and academically aligned option to provide carbon neutral heat to our campus
- Creation of a new [Cornell Guide to Sustainable Living](#) for students
- Launched a [Sustainable Landscape Trail](#) with over 10 locations and a walking trail across campus
- Re-launched [Big Red Bikes](#), a campus-wide bike sharing program
- Launched a [Sustainability Campus & Community Map](#), interactive & online
- Launched the Behavior Change Working Group to advance climate and sustainability literacy, and personal action
- Advanced the integration of a 4-part [Cornell sustainability framework: People, Prosperity, Planet, and Purpose](#) into decision-making and project evaluation (Purpose = supporting Cornell’s academic, research and land-grant mission).

This year, we launch the creation of a new 5-year Campus Sustainability Plan. The plan will create measurable, time-bound goals in areas like waste reduction, land management, and climate literacy for the first time. We hope you will support the PSCC in advancing broad input and collaboration from the Cornell community in creating and meeting these goals, and engage your senior leadership team in the process.

Sincerely,



Co-Chair, Bert Bland  
Associate Vice President, Energy & Sustainability  
Infrastructure, Properties & Planning



Co-Chair, Mike Hoffmann  
Executive Director, [Cornell Institute for Climate Smart Solutions](#), Professor, [Dept. of Entomology](#), Adjunct Professor, [Dept. of Earth and Atmospheric Sciences](#)

# About Campus Sustainability at Cornell

## *Focus Areas*

Cornell University organizes sustainability efforts in 10 focus areas:

- 1) Buildings
- 2) Energy
- 3) Climate
- 4) Land
- 5) Water
- 6) Food
- 7) Waste
- 8) Purchasing
- 9) People (engagement, diversity, well-being, etc.)
- 10) Transportation

## *Governance & Support*

### [President's Sustainable Campus Committee \(PSCC\)](#)

Provides high-level oversight on decisions that impact campus and regional sustainability, promotes a culture of sustainability on campus through collaborations, and advocates for policies, projects and programs that enhance Cornell's commitment to serve as a living laboratory. PSCC is comprised of a core Executive committee, and focus teams or working groups which serve as networks to connect partners across campus around each topic:

- Executive Committee
- Building Focus Team
- Energy Focus Team
- Climate Focus Team
- Land Focus Team
- Water Focus Team
- Food Focus Team
- Waste Focus Team
- Purchasing Focus Team
- People Focus Team
- Transportation Team
- Communications Committee

### [Senior Leaders Climate Action Group \(SLCAG\)](#)

The Senior Leaders Climate Action Group directs Cornell's role as an international leader and exemplar to the world in addressing climate change and promoting sustainability through research, education, engagement, and operations – using our own campus as a living laboratory. SLCAG is focused on advancing 9 of the key priorities in the Climate Action Plan. Lance Collins, Dean of Engineering & Rick Burgess, Vice President for Infrastructure, Properties and Planning (IPP) Co-Chairs.

### [Campus Sustainability Office](#)

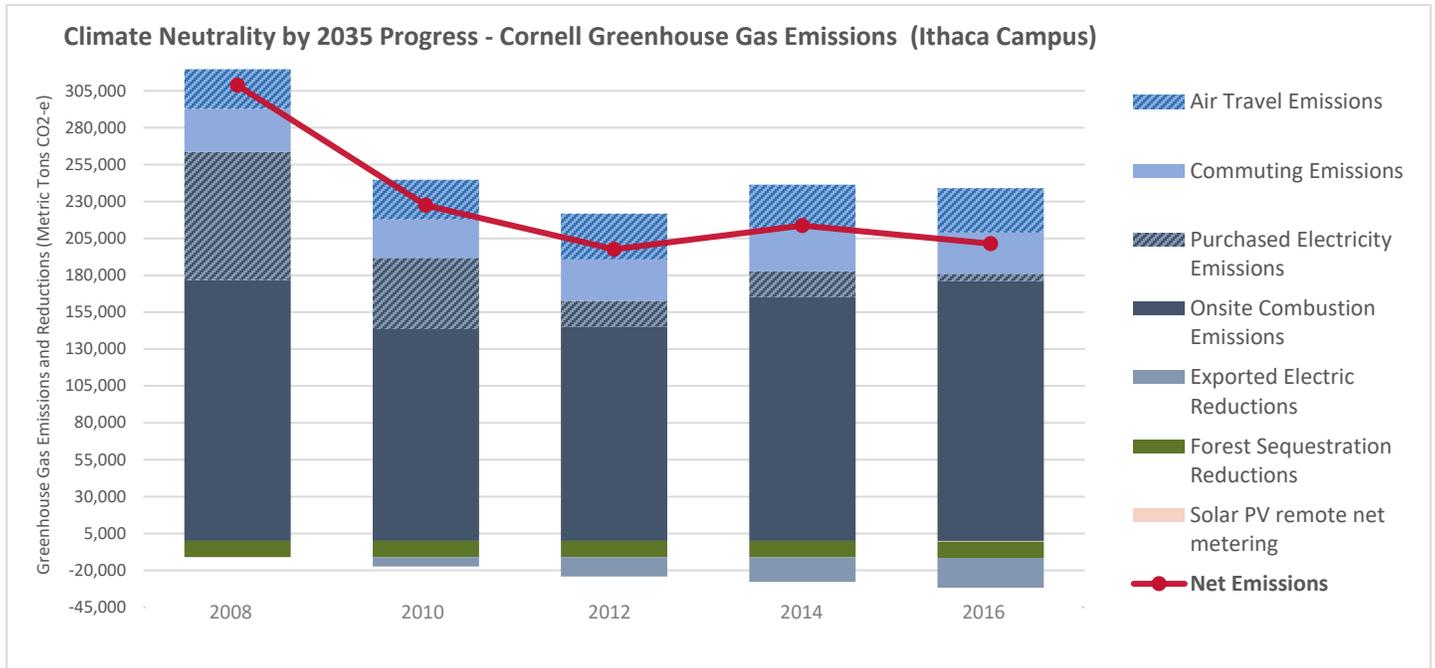
The Campus Sustainability Office (CSO) empowers, equips, and engages the Cornell community to create a sustainable Cornell. CSO's 5 person team is responsible for administering and coordinating the PSCC, its focus teams, the Senior Leaders' Climate Action Group, and numerous other participatory organizational structures and resources related to sustainability. The CSO manages external sustainability reporting, carbon neutrality & sustainability planning, and engagement and leadership programs.

### [ECO Student Environmental Collaborative \(ECO\)](#)

ECO serves as an umbrella organization for the >40 sustainability focused student clubs on campus. It receives byline funding from the Student Assembly for this purpose.

# Sustainability Progress Metrics

## Climate Metrics

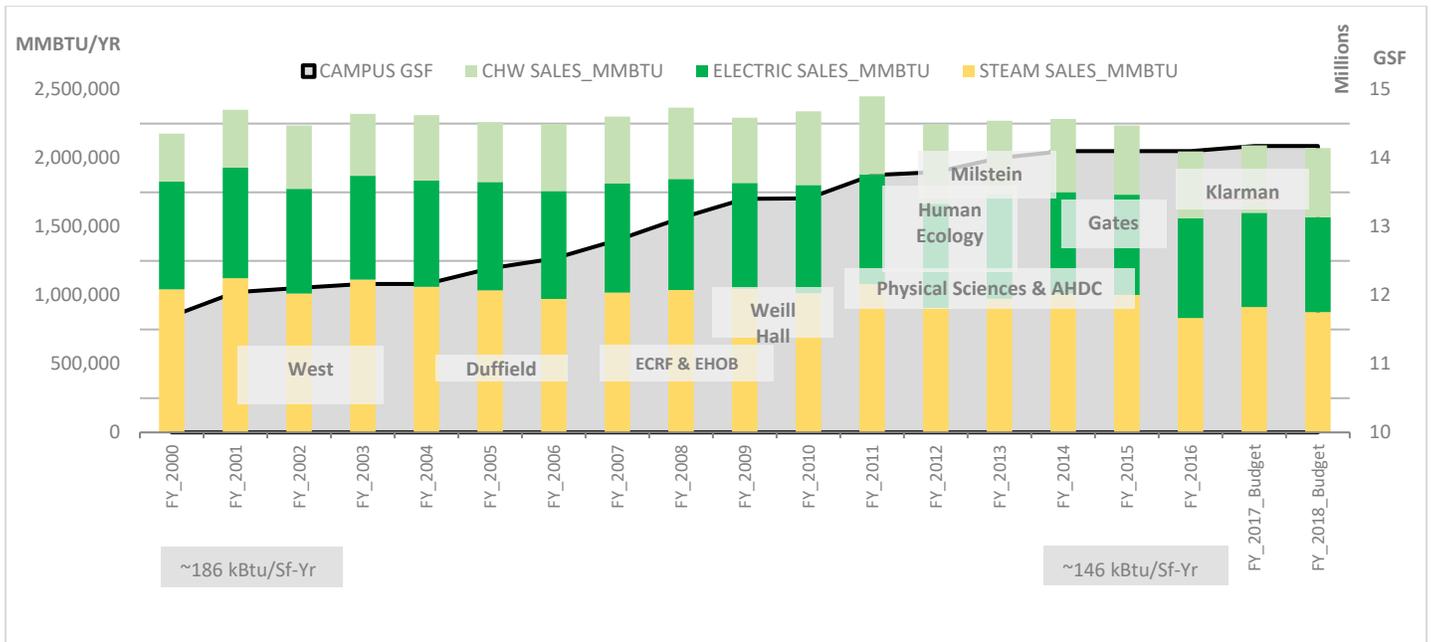


Cornell University is committed to achieving carbon neutrality by 2035. We have successfully reduced overall carbon emissions 33% since 2008 (our baseline), and 50% since 1990 (the original Kyoto Protocol baseline).

Our commitment includes measuring the Ithaca campus only, energy production and use, business travel and commuting, and offsets or carbon sequestration from forest and land management and renewable energy development.

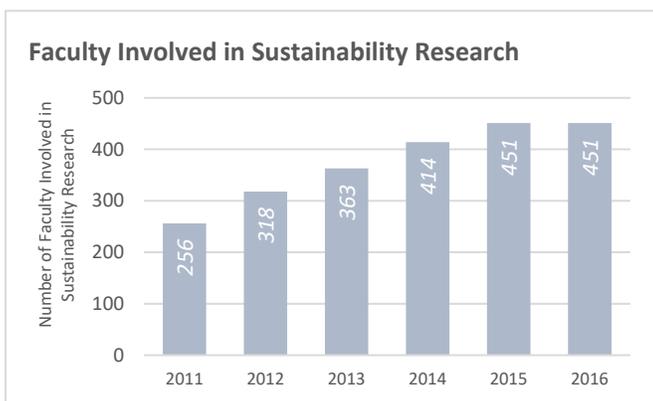
Greenhouse Gas Emissions by Type	2008	2016
<b>Carbon Emissions Total</b>	<b>319,743</b>	<b>239,000</b>
Air Travel Emissions	27,000	30,000
Commuting Emissions	29,000	28,000
Purchased Electricity Emissions	87,037	5,000
Onsite Combustion Emissions	176,706	176,000
<b>Carbon Sequestered / Offset Total</b>	<b>(11,000)</b>	<b>(37,600)</b>
Forest Sequestration Reductions	(11,000)	(11,000)
Exported Electric Reductions	None	(26,000)
Solar PV Remote Net Metering	None	(600)
<b>Net Emissions</b>	<b>308,743</b>	<b>201,400</b>
		<b>33% reduction to date</b>

### Building Energy Use vs. Campus Square Footage



Cornell University's successful Energy Conservation Initiative has held energy use flat despite a 20% growth in square footage since 2000. Measures include renovating, retrofitting, and weatherization of building controls, HVAC equipment, and the building envelope. Continuous recommissioning of buildings keeps building controls in optimal working condition.

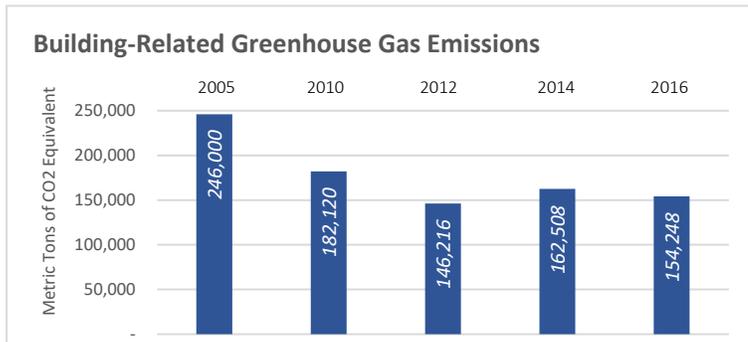
### Living Laboratory Metrics



Data collected by the Atkinson Center for a Sustainable Future.

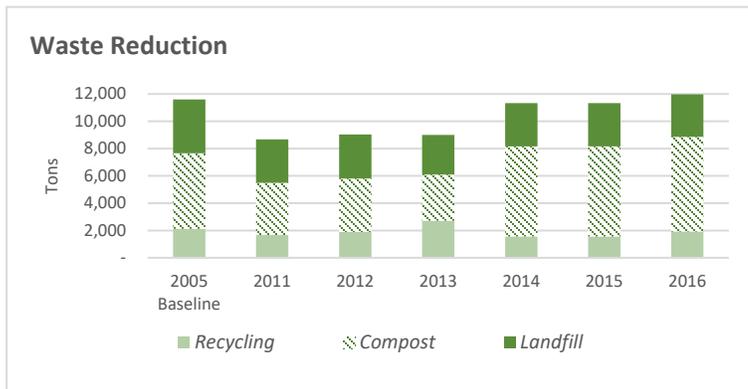
Faculty across disciplines are engaged in teaching and researching sustainability and climate solutions. Notably in 2016 the College of Engineering added sustainability learning outcomes to core education requirements.

# Campus Metrics

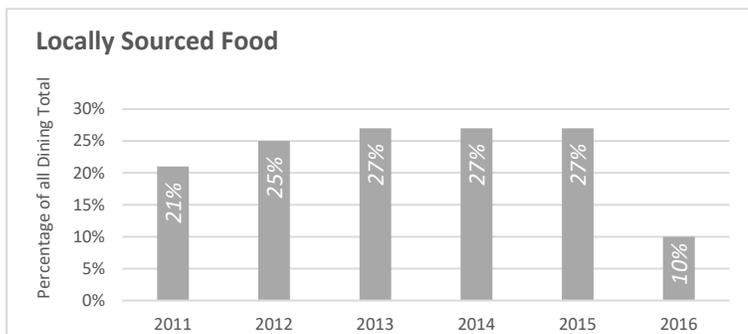


Overall building-related carbon emissions are down.

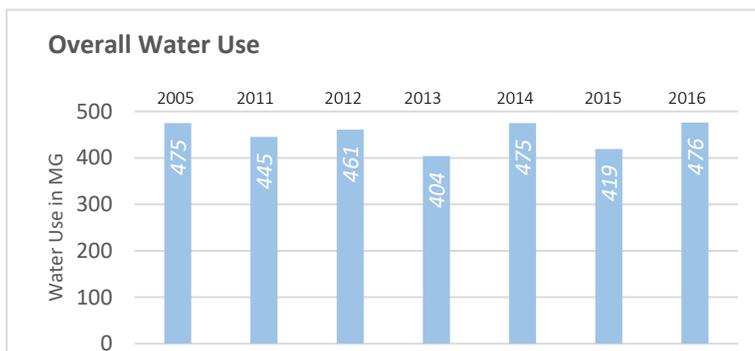
An unusually cold winter in 2014, compared to an unusually warm winter in 2012, led to an increase in net emissions from heating.



Composting increased in 2014 with the incorporation of manure from the new Teaching Dairy Barn. Recycling overall is down primarily due to a successful campaign to reduce paper waste. The bump in recycling in 2013 is due to recycling large amounts of construction and demolition waste from building renovations.



2016 did not see a total drop in purchased local food. AASHE STARS, our national sustainability reporting mechanism, significantly changed their standard for what “local food” includes. Much of Cornell’s local purchasing – such as from Cornell Dairy! – could not be included in this year’s accounting.



2016 campus water use increased due to an unprecedented need for irrigation during the Summer 2016 because of the Tompkins County and Upstate New York drought.

Residential and other building water use decreased by 20% on average during the drought. The numbers at left reflect total water use, including additional irrigation in use during a dry summer before the drought was declared.

# STARS Reporting

## Overall Score

It is a goal of the PSCC to help Cornell University achieve STARS Platinum, which requires 85pts or above.

Stanford University achieved STARS Platinum this year – the second in the country to do so. Cornell is the highest ranked Ivy League institution in STARS.



2011

2012

2013

2014

2015

2016

N/A

N/A

N/A

Points: 68.46

Points: 70.27

Points: **68.49**

## Detailed Scores

	2015	2016
<b>Total</b>	<b>70.27%</b>	<b>68.49%</b>
<b>Governance &amp; Finance</b>	<b>50.7%</b>	<b>52.5%</b>
Coordination & Planning	100.0%	96.9%
Investment & Finance	1.4%	1.9%
<b>Climate and Air</b>	<b>53.1%</b>	<b>63.3%</b>
<b>Campus</b>	<b>47.6%</b>	<b>48.5%</b>
Buildings	42.9%	33.1%
Energy	27.6%	42.3%
Food & Dining	29.7%	30.1%
Grounds	71.3%	70.0%
Purchasing	58.2%	71.2%
Transportation	65.0%	66.4%
Waste	36.9%	38.8%
Water	66.1%	37.1%
<b>Community</b>	<b>86.9%</b>	<b>76.8%</b>
Campus Engagement	86.2%	78.3%
Public Engagement	86.5%	78.3%
Diversity	96.3%	94.1%
Wellbeing	71.9%	58.0%
<b>Living Laboratory</b>	<b>71.2%</b>	<b>73.0%</b>
Curriculum	63.2%	75.9%
Research	88.9%	88.9%

	2015	2016
<b>Innovation Credits</b>	<b>100%</b>	<b>100%</b>
Energy & Water Conservation Loop		
Open Data for Water Conservation		
Campus-Wide Energy Direct Billing		
Lighting Control Standard		
<b>Exemplary Credits</b>	<b>100%</b>	<b>100%</b>
Sustainability Course Designation		
Green Laboratories		
Sustainable Dining Certification		
Grounds Certification		
Campus Pride Index		

For detailed explanation of the change in credits and suggestions for improvement, see Appendix B: AASHE STARS Detailed Report.

Cornell is one of the lowest scoring Universities in Investment & Finance, and one of the highest in Climate, Diversity, and Coordination & Planning.

# PSCC Updates

## *PSCC Strategies*

Accomplishments are organized according to President's Sustainable Campus Committee's outlined strategies for creating an engaged and sustainable campus and include work completed by the PSCC, its Focus Teams, SLCAG, and many other partners across campus.

### **Partner with units, colleges, and programs that advance sustainability-related initiatives**

- PSCC hosted the 6th annual Cornell PSCC Sustainability Leadership Summit, with more than 100 faculty, student, staff, and community leaders in attendance. Provided training on the incorporation of Cornell's new sustainability framework in to decision making and highlighted living laboratory research.
- Added Students as co-chairs to the 10 Focus Teams
- CSO signed MOU with Cornell ECO (Environmental Collaborative), an umbrella for 40+ sustainability organizations, and now funds a paid student coordinator to ensure the success of several key engagement events led and directed by a diverse student population
- Launched student steering committee for Recyclemania waste-reduction competition
- Supported and recertified labs and offices for the Green Office & Green Labs Program
- 4th unit-wide Think Big, Live Green sustainability engagement campaign launched in the Infrastructure, Properties & Planning Division, led by a new Infrastructure, Properties & Planning (IPP) Green Ambassador team
- Taught the ALS 2000 – Leadership for Campus Sustainability course. 14 students completed the class with 8 projects in campus residences, bringing the total number of participants and projects to 1,523 and 86 respectively
- Instructed the Sustainability module for the Cornell Management Academy
- Provided significant support to the Green Revolving Fund class in the Johnson School. Students analyzed the financial benefit for three proposed campus energy efficiency projects
- Supported CALS Communications Department in securing a grant from Engaged Cornell to create an integrated curriculum providing undergraduate students with the tools they need to be effective communicators about environmental and sustainability issues, culminating in an internship with one of our partner organizations. CSO hosted one of the first cohort of interns
- Collaborated with Atkinson Center on topical lunches on distributed renewables, smart cities, climate literacy, and transportation options

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### **Support the 10 Focus Teams and the Executive, and Communications Committees**

- Hosted the annual campus sustainability summit with more than 100 faculty, student, staff, and community leaders in attendance.
- Hosted a spring workshop for PSCC teams to develop SMART objectives for campus sustainability focus areas
- Hosted 2 networking and planning events for Focus Team co-chairs

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### **Track sustainability metrics across all areas of sustainable operations, research, education, and public engagement**

- Completed annual [AASHE STARS](#) data collection, received ["Gold" rating](#).
- Completed annual greenhouse gas inventory
- Completed annual Climate Action Plan Progress Report
- Completed biannual Ivy+ Sustainability Reporting

- 
- Completed Sierra Club and Cool Schools and Princeton Review reporting
- 

**Increase Cornell's recognition in national media through public sustainability reporting**

- #1 Ivy League school in the country for sustainability in Princeton Review Honor Roll, AASHE STARS, and Second Nature Carbon Commitment
  - Recognized as an AASHE "Top Performer" for Diversity and Affordability and Coordination and Planning
  - #1 ranked Ivy League institution in AASHE STARS
  - 7th on The Princeton Review's New "Top 50 Green Colleges" List overall
  - CSO tracks total media exposure internal and external to the campus, and performed a data analysis of newsletter and listserv efficacy. Total media exposure in FY16-17 expanded 33% internally and 46% externally, and internal communications via the sustainable campus listserv have a 99% success rate in delivery and average 86% open rate, underlining the need for support for communications and outreach on sustainability.
- 

**Support implementation of the University-wide sustainability initiatives including, but not limited to, the Ithaca Campus Sustainability Plan, Climate Action Plan, and Campus Master Plan**

- CSO staff achieved significant success at the state policy level by forming a state-wide coalition of like-minded businesses and institutions to petition the Department of Public Service and ensure that the regulatory and tariff environment needed to support renewable energy projects was maintained.
  - CSO staff led projects to install and commission [three additional solar farms](#) to serve the campus. Our five farms and five rooftop arrays now generate 7% of campus electric needs.
  - Supported the Senior Leadership Climate Action Group (SLCAG) to complete a [cost-benefit analysis of pursuing carbon neutrality by 2035](#) with positive endorsement from all Assemblies and the Faculty Senate for pursuing recommendations outlined in the report.
  - Formed the Behavior Change Working Group to develop and implement a campus-wide campaign that will bring about a change in culture.
  - PSCC Land Focus Team developed a campus [sustainable landscapes trail](#) and received a grant to install informational signage.
- 

**Promote recognition and training to encourage and empower sustainability leadership among students, staff, and faculty**

- Student staff coordinated the student sustainability summit leading to the creation of the student Environmental Collaborative
  - Presented 6<sup>th</sup> annual [CU Partners in Sustainability Awards](#) to students, staff, and community leaders
- 

*See next page for award-winning campus community sustainability recognition in 2016*

## 2016 Sustainability Champions

### Cornell University Partners in Sustainability Awards

The [Cornell University Partners in Sustainability Awards \(CUPSA\)](#) recognize individuals and teams who have exemplified the sustainability values of Cornell, made significant and notable contributions to the sustainable development and social equity of the Cornell campus, or displayed outstanding partnership for advancing sustainability within our campus and community.

#### Campus Organization

**ECO's Environmental Justice Committee:** The [Cornell Environmental Collaborative \(ECO\)](#) serves as an umbrella organization for the 40 plus sustainability focused student clubs. ECO's Environmental Justice Committee collaborates with outside partners to organize and host events that have positively contributed to the sustainability movement at Cornell in addition to contributing to the integration of sustainability within other sectors of campus.



#### Community Partner

**Get Your GreenBack Tompkins:** [Get Your GreenBack Tompkins \(GYGB\)](#) is a community-initiated and community-supported campaign that works collaboratively to help people and organizations take key steps in the areas of food, transportation, waste, and building energy that simultaneously reduce our community's carbon emissions, save money, and create a socially just local economy.



#### Faculty & Staff

**Dr. Bruce Monger:** Dr. Monger, is a Senior Lecturer in the Dept. of [Earth and Atmospheric Sciences](#). His [Oceanography, EAS 1540](#) course introduces hundreds of undergraduates at Cornell to issues of climate change, sustainability, and resource depletion each year – and provides students with a framework for creating solutions. He has creatively and continuously found ways to support student civic action, is a [Faculty Fellow](#) with the [Atkinson Center for a Sustainable Future](#), and is an advisor to the [Climate Justice Cornell](#) student organization.



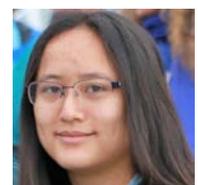
#### Faculty & Staff

**Julie Houston:** Julie Houston has worked in building care at Cornell for six years and has helped with her unit's [Green Office Certification](#), was awarded accolades for her role as a "[Composting Crusader](#)," and played a key role in her LED relamping initiative" which was a campus-wide energy conservation program which has saved Cornell over \$4,000.



#### Student (Undergraduate)

**Elizabeth Chi:** Elizabeth Chi, '18 is an Environmental and Sustainability Sciences major in the College of Agriculture and Life Sciences and has been a true "agent of change". She successfully organized a campaign for a university recommitment to a target of reaching carbon neutrality by 2035. Elizabeth is one of the key organizers for [Climate Justice Cornell](#), [Doris Duke Conservation Scholars Program](#), [Cornell Environmental Collaborative \(ECO\)](#) and an Undergraduate Representative of the Cornell Climate Action Advisory Group.



#### Student (Graduate)

**Katherine Bedding:** Kate Bedding '17 received her [Masters in Public Administration \(MPA\)](#) from the [Cornell Institute for Public Affairs \(CIPA\)](#) in May. She was instrumental in advancing Cornell's [Sustainability Tracking Assessment and Rating System \(STARS\)](#) report to ensure the University maintained and achieved a 5th and 6th Gold award rating.



# Focus Area Updates

## *Campus Sustainability Plan*

The [Ithaca Campus Sustainability Plan](#) is the overall strategic plan guiding Cornell University's efforts in sustainability leadership (inclusive of climate leadership). Cornell's commitment to, and public reporting of, sustainability spans the core areas of the university – research, teaching, public engagement, and all campus operations.

A five-year update of the plan is underway, scheduled for release in mid-2018. A steering committee of faculty, staff, and students is leading the process to update our visionary goals and to develop measurable, scientifically-relevant, high-level objectives (akin to our 2035 campus carbon neutrality goal) for each area in our sustainability management structure. Having these objectives in place will help the PSCC guide and prioritize our collective work.

## *Buildings*

- Energy conservation work in [Snee Hall](#) and [Barton Lab](#) reduce annual energy expenses by more than \$150k and GHG emissions by more than 200 tons.
- [Johnson Museum](#) energy conservation initiative cut overall energy use by more than 40%.
- [Klarman Hall](#) received LEED Platinum certification, our 4<sup>th</sup> Platinum space and 19<sup>th</sup> LEED certification.

## *Energy*

*5 solar farms and 5 rooftop arrays now generate 7% of campus electric needs. Cornell University has a goal to achieve 100% renewable energy by 2035, in support of our carbon neutrality goal.*

- The Campus Sustainability Office Director led the formation of a New York state-wide coalition to renewable energy regulations which favor continued production and maintenance of renewable energy sources. The group was successful in petitioning the Department of Public Service to ensure continuation of the regulatory and tariff environment needed to support renewable energy projects was maintained when it was under threat this year.
- [Three additional solar farms](#) were successfully installed and brought online to serve the campus this year. Cornell commissioned an [additional 6MW of solar PV](#) (equivalent to about 5% of Cornell's annual electricity use) on Cornell property through power purchase agreements.
- Participated in the 1st international "[Freezer Challenge](#)" throughout the Spring 2017 semester. The combined efforts are estimated to save Cornell \$5,400 in energy costs per year.
- Completed campus-wide LED lamp replacement project (156,000 light bulbs!) saving \$1.8 million in energy costs, and \$290,000 in O&M costs annually.
- Initiated a project to lease about 110 acres of Cornell land to a solar developer to build 18MW of community solar. Unlike existing farms, these systems would operate under a new state program where the power can be sold to residents and businesses in the region. Cornell retains the "renewable energy credits" to offset campus emissions.
- Developed an award-winning new strategy to [extend a building's HVAC controls to also control lighting](#).

## *Climate*

- Developed the Quadruple Bottom Line Sustainability Framework: See [Appendix A to this report available online](#)
- See Climate Action Plan Updates section of this report for details

## Land

- PSCC Land Focus Team developed a [sustainable landscapes trail](#) and received a grant to install informational signage.
- Developed Tall Grass, Small Gas signs to make passers-by aware of Grounds Dept initiative to reduce mowing and use of chemicals with naturalized areas around campus.
- Students worked with the Land Focus Team to [tag trees in the Arts Quad](#) with the dollar value of the “ecosystem services” they provide

## Food

- Dining halls offered more sustainable “[Plant-Powered Dinners](#)”
- Drop off locations for [Community Supported Agriculture](#) farm share members established on campus
- Undergraduate students working the Food Focus Team are examining the sustainability of Cornell's food purchases by the criteria provided by the Real Food Calculator

## People

### Think BIG, Live Green Sustainability Engagement Campaign

[Think BIG, Live Green](#) (TBLG) is the university-wide sustainability engagement campaign. It strives to improve resource conservation and community wellbeing in the colleges and administrative units through customized programming. These programs utilize peer to peer education, leadership development strategies, and community-based social marketing to engage the campus community. The campaign is comprised of six programs: [the College and Unit Engagement Program](#), the [Green Office Certification Program](#), the [Green Lab Certification Program](#), the [Cornell Building Dashboard](#), the [Green Ambassadors Program](#), and the student [EcoReps](#) program.

- The Fall 2016 Energy Smackdown competition had over 400 students, staff, faculty, and families actively participate. The on-campus Residential Competition saved an estimated 77,000 kWh of electricity.
- Cornell improved its performance across all RecycleMania categories
- Developed tools and guidance materials for piloting use of a “quadruple bottom line” 4-part Sustainability Framework as a project evaluation tool and decision-making/prioritization framework
- Collaborated with multiple campus partners to coordinate April as [Sustainability Month](#)
- Updated the [sustainability module](#) for Cornell Management Academy program
- CSO staff helped organize buses for undergraduate students to participate in the summers’ [Science March and People’s Climate March](#).
- Collaborated with Get Your Green Back Tompkins to connect Energy Navigators with Cornell's building care and food service workers staff providing them with expert advice and guidance to save energy and money in their homes
- Developed a [climate literacy session](#) for Staff Development Day
- The PSCC People Team completed a successful survey of sustainability literacy and behaviors for incoming first year students, to be used for faculty research and to inform on campus engagement.

## Purchasing

- Conducted a recycled paper promotion with supplier W.B. Mason
- Improved reporting on procurement of sustainable goods in campus administrative systems

## Transportation

- [Big Red Bikes](#) bike sharing program re-established on campus.
- Supported [National PARKing Day](#), transforming campus parking space to temporary parks, and [Run/Walk to Work/School Day](#) promoting active transportation
- Completed anti-vehicle idling campaign on campus in partnership with Transportation Services, Campus Sustainability Office, Wellness, Campus Police, Cornell Health, and others

## Waste

- Recyclemania Competition showed Cornell's results show improvement in all categories compared to the previous year.
- Promoted use of "[minibins](#)" for desk-side waste - pilot buildings had a 39% reduction in overall waste and a 22% improvement in proper waste sorting.
- Collaborated with campus and community partners to identify and promote [changes to composting guidelines](#) on campus to be consistent with community programs and best practice.

## Water

- Campus sustainability partners served as key coordinators during summer '16 [drought response](#) engagement, and [led programs](#) resulting in a nearly 30% water use reduction in residence halls during the first four weeks of the semester.
- Facilities Management fabricated [portable water bottle filling stations](#) for use at campus events. Premiered with great success at Slope Day.
- Utilities Department designed an [innovative closed-loop system](#) to replace inefficient open-loop equipment cooling saving \$24k and 475k gallons of water annually.
- The Soil and Water Lab and Water Resource Institute are developing a partnership with the Masters of Engineering program in ECE to develop monitoring networks to track the hydrological and environmental pulse of campus.

# Climate Action Updates

## *Climate Action Plan*

The [Climate Action Plan](#) (CAP) is Cornell's overarching plan to move to a low carbon future. The CAP was initially developed in 2009 by Cornell faculty, students, and staff in accordance with Cornell's commitment as a founding signatory of the [President's Climate Leadership Commitments](#). Per the requirements of The Carbon Commitment, the PSCC reviews and updates the CAP at least every five years, and submits an [Annual Progress Evaluation](#) to the [Second Nature reporting system](#).

Cornell's path to neutrality is planned through a four-tiered approach of: 1) avoidance of future energy use, 2) reduction of carbon pollution, 3) replacement of high-carbon fuels with low or zero-carbon sources, and 4) offsetting of unavoidable emissions. Importantly, the CAP also recognizes and incorporates the strength of Cornell's education, research, and public engagement mission, and the need to educate the next generation of thought leaders and to find research-based solutions to global climate challenges while we work to reduce the carbon footprint of our own campus.

## *Greenhouse Gas Inventory*

Per the requirements of the Carbon Commitment, Cornell prepares and submits regular greenhouse gas (GHG) inventory updates. In addition, more detailed annual energy [Fast Facts](#) are published on the Cornell Energy & Sustainability website. The 2016 GHG inventory shows a 33% reduction in inventoried emissions vs our 2008 baseline.

## *Updates*

- Successfully achieved 33% reduction in overall carbon emissions since 2008 baseline (50% since 1990)
- The Senior Leadership Climate Action Group (SLCAG) completed the *Options for a Carbon Neutral Campus by 2035* report, a [cost-benefit analysis of concrete steps and their relative cost needed to pursue carbon neutrality by 2035](#). The report received positive endorsement from all Assemblies, the Faculty Senate, and the Provost for pursuing recommendations outlined in the report. The report serves as the most recent CAP update and better informs decision-making on reaching the campus goal of achieving carbon neutrality by 2035. The report focuses on solutions to reducing energy demands and providing low carbon energy supply. Proposed solutions support the path laid out in the CAP and include:
  - Invest immediately in reducing energy demand through support for and advancement of our energy conservation programs;
  - Make preliminary investments in transitioning to a low-carbon campus energy supply;
  - Set goals and explore options to secure external funding;
  - Pursue energy solutions in partnership with local and regional entities;
  - Adopt rigorous building energy standards and project approval processes during retrofits, deferred maintenance projects, and new construction to create only "high-performance buildings" on campus;
  - Prioritize development of infrastructure to support a campus fleet of clean-fuel vehicles and replace existing fleet accordingly;
  - Evaluate Earth Source Heat and Ground Source Heat pumps as heating solutions;
  - Strive for 100 percent of the campus electric supply to come from renewable sources;
  - Seek campus-wide behavioral change through programs such as Think Big, Live Green and other campus engagement programs; and
  - Ensure all students graduate with a basic understanding of climate literacy.
- Reaffirmed commitment to pursuing [Earth Source Heat](#) as the most viable and academically aligned solution for providing low-carbon, renewable energy heat to the campus.
- Created and charged a new Behavior Change Working Group to develop and implement a broader campus campaign for climate and sustainability literacy, living, and engagement.
- Developed criteria to define and measure "climate literacy" for the Cornell community
- Submitted Climate Action Plan [progress report and greenhouse gas emissions inventory update](#) as required by our public [Carbon Commitment](#).
- Supported senior leadership in [creating and signing a statement](#), along with Ivy peers, affirming Cornell's commitment to progress on climate act
- Advanced the integration of a 4-part Cornell sustainability framework: People, Prosperity, Planet, and Purpose into decision-making and project evaluation (Purpose = supporting Cornell's academic, research and land-grant mission). *See Appendix A: Quadruple Bottom Line Framework and Tools*

# Appendix A: Quadruple Bottom Line Sustainability Framework tools

## Sustainability Framework Guidance Document

Sustainability is a signature area of excellence at Cornell University. Cornell is committed to achieving carbon neutrality for the Ithaca campus by 2035, and strives to reduce climate impact across operations. All projects must evaluate lifecycle impacts in line with the University's sustainability values and commitment to climate leadership.

### *The Quadruple Bottom Line – Purpose, People, Prosperity, & Planet*

Cornell University uses a matrix for sustainable project implementation which considers four impact areas:

1. How does the project help Cornell fulfill its academic mission and **purpose**?
2. How does it meet the needs of **people** on campus, in the community, New York State, and the world?
3. How will it enhance overall **prosperity** for the university and our region?
4. How does it support a sustainable **planet** including energy, climate, land, water, and ecosystem resources?

### *Assessment Process*

Project assessment should consider impacts, positive and negative, across each area. It can be helpful to segment impact areas into categories, which can be tailored to each project.

1. **Refine categories for Assessment**  
Determine appropriate categories for assessment in each of the four impact areas. Will you use sub-categories, or a basic ranking in each bottom line? Categories further refine impact areas into tangible, project-appropriate areas of assessment. Not all projects should have the same assessment categories, but when comparing projects all items should be compared with the same criteria.
2. **Rank**  
Assess costs, benefits, opportunities, and impacts in each area. Assign a ranking of positive benefit (1), neutral benefit (0), or detrimental costs (minimum -1). Expectations for maximum and minimum impact should be defined. Take notes on why you chose ranking for the project in each area, if applicable.

# Sustainability Framework Worksheet

## Example Excel Document



Bottom Lines	Questions to Consider	Your Notes
<b>Purpose</b>	<i>How does the project help Cornell fulfill its academic mission and purpose?</i>	
Mission Alignment	How does the project align with Cornell's educational and land grant mission?	
Reputation	How does it increase Cornell's reputation as a global institution addressing climate change and sustainability solutions?	
Leadership & Innovation	Is Cornell uniquely positioned to demonstrate a new solution? To show leadership by implementation?	
Scaleability	Is the solution a useful, scalable option to share with others?	
Teaching and Research	Does it create research, teaching opportunities? Is it aligned with existing programs? How does the project create living laboratory opportunities for students, faculty, and staff? Will it attract short, long-term research funding?	
<b>People</b>	<i>How does it meet the needs of people on campus, in the community, New York State, and the world?</i>	
Regional Climate Goals	Does it actively advance our regional carbon reduction efforts and Cornell's committed goals?	
Health & Well-Being	Does it impact human health? Happiness? Access to sunlight, clean air, reduced exposure to chemicals, etc.	
Community Character	Does it impact visual, infrastructure, transit or community resource development?	
Quality of Life	Does it increase the quality of life for employees, students, or the surrounding community? Safety & security? Educational attainment? Equity? Happiness & recreation?	
<b>Prosperity</b>		
Economic Impact	Does it create jobs? Long-term? Local base? Living wage?	
Socialized Costs	Does it have socialized costs or benefits associated with the project?	
Reducing Climate Risk	Does it mitigate future costs / uncertainties from resource scarcity, climate change, or other related concerns?	
Climate Resiliency	Does it ensure Cornell's resiliency to climate impacts for the next century? Does it reduce our climate vulnerability?	
Longevity	Does it reduce future costs?	
Overall Cost	Is it a wise investment of University resources?	
Financial Security	What are the first cost, annual cost and lifecycle costs? Does this project minimize life cycle costs?	
<b>Planet</b>		
Environmental Quality	What are the environmental and ecological benefits / risks related to land use, water, biodiversity, air quality or waste?	
Waste	What are the waste impacts from building, maintaining, and disposing of this project?	
Materials	What is the lifecycle impact of materials used in construction and upkeep?	
Carbon Neutrality	Does it actively help advance Cornell's commitment to achieving carbon neutrality by 2035?	
Renewable Energy	Does reduce the demand for fossil fuel and advance the transition to low or no carbon energy supply?	
Energy Efficiency	Does it actively reduce energy waste? Does it help reduce carbon and costs through greater efficiency?	
Sustainability	Does this project actively advance Cornell's campus and resource sustainability? Does it reduce negative impact?	
Ecosystem Services	What are the impacts on surrounding ecosystem provisioning, (e.g. production of food and water); regulating, (e.g. control of climate and disease); supporting, (e.g. nutrient cycles and crop pollination); and cultural, (e.g. spiritual and recreational) benefits.	

### Project Rankings

Use rating -1 (negative impact), 0 (neutral impact), 1 (positive impact)

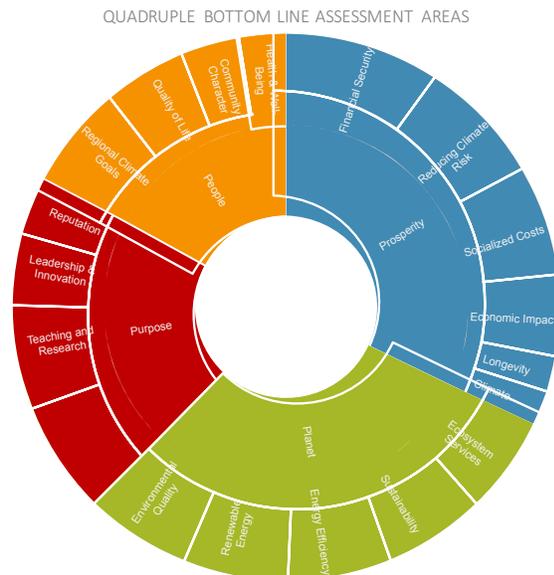
	Purpose	People	Planet	Prosperity
Sample Project	-1	-1	1	0
Project Name				

### Automatic Project Evaluation

This list will populate automatically

	Total
Sample Project	0
Project Name	0

### Automatically Generated Project Categories Diagram



# Appendix B: AASHE STARS Detailed Report



		Version 2.0	Version 2.0	Version 2.1	2015 - 2016			
Cornell University STARS Report 2016		2014	2015	2016	Changes	STARS Rating Changed	Notes on Changes	Areas of Improvement
<b>Total</b>		<b>68.46%</b>	<b>70.27%</b>	<b>68.49%</b>	<b>-1.78%</b>			
<b>Governance and Finance</b>	<b>Total</b>	<b>50.8%</b>	<b>50.7%</b>	<b>52.5%</b>	<b>1.8%</b>		Small percentage increase due to change in credit rating. Cornell did not substantially improve in this area.	
	Coordination & Planning	100.0%	100.0%	96.9%	-3.1%	✓	We lost .25 points under PA-2 Sustainability Planning due to lack of measurable sustainability objectives that address Investment and Finance.	Set sustainable investment goals in the 2018 CSP
	Investment & Finance	1.6%	1.4%	1.9%	0.5%	✓	We are one of the lowest scored campuses in investment and finance credits.	Create a committee on Investor Responsibility, increasing Sustainable Investment, and making annual investment holdings snapshots publically available.
<b>Climate</b>	<b>Climate and Air</b>	<b>51.2%</b>	<b>53.1%</b>	<b>63.3%</b>	<b>10.2%</b>		Data were last updated in 2014, score reflects 2 years of improvement. Cornell has reduced carbon emissions 33% since 2007 and 50% since 1990 levels, on track to meet our neutrality goal by 2035.	
<b>Campus</b>	<b>Total</b>	<b>44.3%</b>	<b>47.6%</b>	<b>48.5%</b>	<b>0.9%</b>			
	Buildings	41.1%	42.9%	33.1%	-9.8%	✓	LEED EBOM which we do not pursue, changed from being worth 4 to being worth 5 points due to it now incorporating the old Indoor Air Quality credit. We gained points in Building Design and Construction due to LEED certification increase.	LEED for existing buildings or another similar system for existing buildings.
	Energy	27.6%	27.6%	42.3%	14.7%	✓	Our Energy data was last updated in STARS in 2014, so this change reflects 2 years of improvement.	Increase amount of clean and renewable energy generated
	Food & Dining	29.7%	29.7%	30.1%	0.4%	✓	New criteria. We did lose points in a section in which we perform well: companies which profit over a certain amount no longer count as 'local,' additionally the source for all producer materials must be within 250 miles. Eliminated much of our dairy.	Work with AASHE to adapt this criteria. Increase local food & beverage purchases w/in 250 mile radius.
	Grounds	66.3%	71.3%	70.0%	-1.3%	✓	Credit weighting changed	Update IPM / Sustainable Landscape Management Plan. Inventory sustainable sites (SITES).
	Purchasing	53.0%	58.2%	71.2%	13.0%	✓	Cornell overall spent 22% less on office paper and increased expenditures on office paper with 70-89 percent post-consumer recycled, agricultural residue, and/or FSC certified content. With Electronics Purchasing, we've continued to increase our EPEAT expenditures. Although we've increased our expenditures on cleaning and janitorial products that are third party certified to meet recognized sustainability standards, the weighting of the Cleaning and Janitorial Purchasing credit has changed, and we received slightly fewer points here.	Adopt a Green Seal or "green" clean program in future or increase expenditures that are certified "green" seal. Reduce paper use overall and increase expenditures for 30% post consumable recycled paper.
	Transportation	66.1%	65.0%	66.4%	1.4%	✓	Percentage of students that used more sustainable commuting options as their primary means of transportation increased (although it decreased slightly for employees). Additionally, the weighting for Support for Sustainable Transportation changed and we are now receiving full points although the data has not changed	New transportation demand survey, and comprehensive transportation plan.
	Waste	41.0%	36.9%	38.8%	1.9%	✓	Percentage of construction and demolition materials diverted from the landfill or incinerator through recycling, donation and/or other forms of recovery increased.	Need to increase materials recycled, composted, reused and decrease materials disposed in a solid waste landfill or incinerator as well as decrease construction and demolition materials landfilled or incinerated.
	Water	38.0%	66.1%	37.1%	-29.0%	✓	Water use substantially increased due to the drought and more irrigation. Additionally, the credit was updated such that water use was weighted more heavily. Methodology updates also caused a 1 point loss on rainwater; category now measures impact, previous credit only whether program existed.	Regarding rainwater management, develop comprehensive policies that require LID practices for all new projects, improve outreach regarding behavior changes
<b>Community</b>	<b>Total</b>	<b>87.8%</b>	<b>86.9%</b>	<b>76.8%</b>	<b>-10.1%</b>			
	Campus Engagement	79.5%	86.2%	78.3%	-7.9%	✓	We decreased slightly in the Student Educators Program, Employee Educators Program, and Staff Professional Development credits due to better reporting as well as changes in questions asked in the credits. Assessing Sustainability Culture was a new credit this year that we only receive half credit for since we only measure a subset of the population.	Areas of Improvement: Increase student and employee peer-to-peer sustainability outreach and education programs, give cultural sustainability assessment to entire campus community or representative sample, encourage/incentivize more staff to participate in sustainability professional development/trainings
	Public Engagement	85.0%	86.5%	78.3%	-8.1%	✓	The percentage of students engaged in community service decreased (42% in 2015 to 31% in 2016) although the total number of community service hours contributed increased (187,450 hours in 2015 to 229,060 in 2016).	Collect service data from students who are not affiliated with the Public Service Center.
	Diversity	96.9%	96.3%	94.1%	-2.2%	✓	Methodology changed: To further improve, we should increase the proportion of staff and faculty participating in cultural competence trainings and activities	Increase proportion of staff and faculty participating in cultural competence trainings and activities
	Wellbeing	81.4%	71.9%	58.0%	-13.9%	✓	New question added asking the compensation provided to the institution's lowest paid regular (i.e., permanent) employee meets or exceeds what percentage of the living wage. We have not made a formal commitment to pay a living wage, and do not have proof that contract workers receive a living wage.	More equitable pay
<b>Living Laboratory</b>	<b>Total</b>	<b>71.3%</b>	<b>71.2%</b>	<b>73.0%</b>	<b>1.8%</b>			
	Curriculum	63.3%	63.2%	75.9%	12.7%	✓	For the first time the College of Engineering published learning outcomes that included sustainability, increased sustainability learning outcomes credit. We did not get points for AC-6 Sustainability Literacy Assessment because our incoming student survey did not have enough literacy questions (too behavior focused).	Encourage schools other than CALS, Vet, and Engineering to develop and publish sustainability learning outcomes. Revise incoming student sustainability survey to focus on literacy.
	Research	88.9%	88.9%	88.9%	0.0%		No change.	Develop an Open Access Policy (e.g. free availability on the internet, permitting any user to read, download, copy, distribute, print, search or link to the full texts of articles).
<b>Innovation</b>	Innovation A						Cornell Energy & Water Cooling Conservation Loop	Previously Cornell's on-site energy plant created waste heat and used un-reclaimed potable water to prevent generator overheating. Utilities engineer Garret Quist redesigned the system using heat exchanger-based water-cooling from the campus chilled-water network. By creating this feedback loop with existing systems, previously wasted energy is a part of a closed loop energy system. The new system, built for about \$42,000, saves the university \$24,000 annually in water, sewer and treatment costs, and reduces an annual 475,000-gallon water loss to zero.
	Innovation B						Open Data for Water Conservation	During a 2016 drought, Cornell quickly developed an open-source data tool to share daily water use & comparisons to historic baselines for 160 buildings on campus. Deployed with an engagement campaign, the campus was able to set and achieve a goal of reducing water use 20% over the duration of the drought. The tool can be used alongside existing metering in the campus Energy Dashboard, allowing community members to explore how personal behaviors and operational choices impact resource use at the energy-water nexus.
	Innovation C	100.0%	100.0%	100.0%			Cornell consistently receives full points in this area	Cornell's new budget model, which went into effect FY 2014, makes each college/unit on campus responsible for its own utility bill. This model provides a compelling incentive for colleges and units to reduce their energy consumption and increase cost-saving measures, allowing users and energy staff to engage with data for campus engagement and behavior change programs. For example, an energy reduction competition in one college achieved an overall 17.1% energy reduction, and participating residence halls achieved a 16.2% reduction.

Innovation D				Lighting Control Standard		<p>Cornell now uses the building automation (controls) to do lighting control instead of the industry standard of a separate, more expensive and harder to maintain proprietary lighting control system. A true paradigm change, this shift has won Cornell and our automated logic controls dealer Logical Control Solutions 'project of the year' international award for the recent redesign of Klarman Hall. This lighting solution has proved to be lower cost and more effective than traditional lighting control solutions and is now standard for all current and future project designs.</p>	
Exemplary Practice	Credit 1			Cornell consistently receives full points in this area	Sustainability Course Designation		
	Credit 2	100.0%	100.0%		100.0%		Green Laboratories
	Credit 3						Sustainable Dining Certification
	Credit 4						Grounds Certification
	Credit 5						Campus Pride Index

**2016 Low Scores & Decreases**

Investment & Finance	Create a committee on Investor Responsibility, increasing Sustainable Investment, and making annual investment holdings snapshots publically available.
Buildings	LEED for existing buildings or another similar system for existing buildings.
Water	Regarding rainwater management, develop comprehensive policies that require LID practices for all new projects, improve outreach regarding behavior changes
Wellbeing	More equitable pay

**2016 High Scores & Accomplishments**

Climate and Air	Data were last updated in 2014, score reflects 2 years of improvement. Cornell has reduced carbon emissions 33% since 2007 and 50% since 1990 levels, on track to meet our neutrality goal by 2035.
Energy	Our Energy data was last updated in STARS in 2014, so this change reflects 2 years of improvement.
Purchasing	Cornell overall spent 22% less on office paper and increased expenditures on office paper with 70-89 percent post-consumer recycled, agricultural residue, and/or FSC certified content. With Electronics Purchasing, we've continued to increase our EPEAT expenditures. Although we've increased our expenditures on cleaning and janitorial products that are third party certified to meet recognized sustainability standards, the weighting of the Cleaning and Janitorial Purchasing credit has changed, and we received slightly fewer points here.
Curriculum	For the first time the College of Engineering published learning outcomes that included sustainability, increased sustainability learning outcomes credit. We did not get points for AC-6 Sustainability Literacy Assessment because our incoming student survey did not have enough literacy questions (too behavior focused).

The following chart enumerates Cornell's performance compared to our Ivy+ peers reporting under STARS v2.1 (scoring varies dramatically from version to version). Of our peer institutions Columbia, Penn, and Princeton also report to STARS but have not updated to v2.1. They score substantially lower than Cornell did in those older versions.

School	Stanford University	Cornell University	Yale University
Rating	Platinum	Gold	Silver
Total Score	85.74	68.49	62.54
Curriculum	34.77	26.35	27.09
Research	17	16	14
Campus Engagement	20.5	15.13	12.33
Public Engagement	18.86	16.99	11.72
Coordination & Planning	7.25	7.75	5.5
Diversity & Affordability	9.84	9.41	8.96
Investment & Finance	3.33	0.13	3
Wellbeing & Work	5.71	4.06	4.2
Air & Climate	8.07	6.96	4.88
Buildings	3.79	2.65	3.34
Energy	6.47	4.23	2.46
Food & Dining	3.78	2.41	3.11
Grounds	3	2.8	3
Purchasing	5.04	4.27	4.16
Transportation	5.15	4.65	4.8
Waste	5.37	3.88	4.71
Water	8	2.6	1
Exemplary Practice	2.5	2.5	0
Innovation	2	4	4