

SUNY Green Building Experiential Learning Collaborative



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Introduction

GBELC at SUNY Poly

In 2018 the Intergovernmental Panel on Climate Change stated that a rise of 1.5°C in global temperatures would cause devastating regional changes. Part of New York's response was awarding \$15 million to SUNY campuses to promote clean energy workforce development and training programs. The SUNY Green Building Experiential Learning Collaborative (GBELC) is a partnership between SUNY Poly, SUNY ESF, and SUNY Oneonta that is using some of this grant money to offer new courses to engage students in Leadership in Energy and Environmental Design (LEED) certification. In the 2019-20 and 2020-21 academic years, SUNY Poly students will be using LEED v4.1 Operations and Maintenance (O+M) to certify two campus buildings. The purpose of this internship is to compile and prepare documentation to facilitate the success of these courses, and to give student researchers a chance to earn LEED Associated Professional credentials. In particular, this research has focused on preparing SUNY Poly's athletic facility, Wildcat Field House (Fig. 1), for LEED v4.1 O+M certification.



Figure 1. SUNY Polytechnic Institute's Wildcat Field House.

The USGBC and LEED

The United States Green Building Council (USGBC) positioned itself at the vanguard of the green building movement with the creation of the LEED certification program in 2000. This program awards points in credit categories that address topics like climate change mitigation, human health, and habitat protection (Fig. 2). LEED now boasts over 80,000 participating projects spanning across 162 countries (USGBC 2016). Projects can earn points toward LEED certification level by addressing a comprehensive range of topics that make buildings more sustainable (Table 1).

Methods

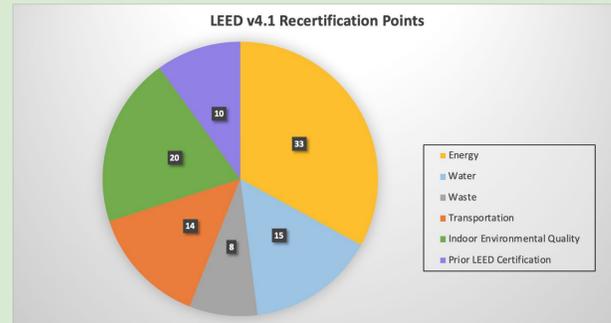


Figure 2. LEED v4.1 Recertification points chart

LEED v4.1 Certification Research

The first phase of research involved retrieving guides and information directly from USGBC. The documentation they provide online was the foundation of our work.

Table 1. LEED certification level requirements

Points	Certification Level
40 - 49	Certified
50 - 59	Silver
60 - 79	Gold
80+	Platinum

USGBC's guides explain which performance areas are considered and how each category is scored. Some categories, like human experience, rely on surveys that must be distributed to a representative sample of building occupants. Other categories, like energy and water, require project teams to provide usage data over a 12 month performance period (USGBC 2018). For the Wildcat Field House, this data is recorded by meters and tracked via the energy management software EnergyCAP (Fig. 3).



Figure 3. EnergyCAP monthly energy usage data

All surveys, data, and other documentation are entered into USGBC's online Arc platform for submittal and review. Projects are awarded the certification level corresponding to the points earned.

Results

Certifying the Wildcat Field House

USGBC's introduction of LEED v4.1 indicates a shift toward performance-based evaluation, as demonstrated by the scorecard below (Fig. 4).

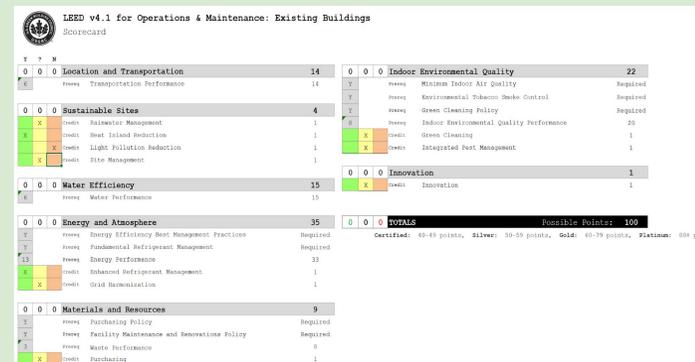


Figure 4. LEED v4.1 Operations and Maintenance Scorecard

Under LEED v4.1, projects that have been previously LEED certified, like Wildcat Field House, can claim the prerequisites and just submit performance data to achieve recertification. Table 2 breaks down some of the required information by performance-specific credits.

Table 2. LEED recertification performance data requirements

	Transportation	Water	Energy	Waste	IEQ
Weighted occupancy	✓	✓	✓	✓	✓
Weighted operating hours		✓	✓		
Gross floor area		✓	✓		
Survey results	✓				✓
Annual water consumption		✓			
Annual energy consumption			✓		
Outside air temperature			✓		
Location			✓		
Total waste generated				✓	
Total waste diverted				✓	
Air contaminant measurements					✓

It will fall upon SUNY students to calculate occupancy and operating hours, distribute surveys, and ensure all criteria are being monitored during the performance period. The SURP research team and the USGBC have provided all the tools necessary to facilitate this process. The execution must be carefully planned out to address all project variables. After collecting 12 months of performance data, Wildcat Field House should be ready to achieve recertification as early as the end of 2020 or the beginning of 2021.

Conclusions

As New York State transitions its infrastructure toward more sustainable operations, students need to have the skills necessary to be successful in the coming greener economy. The new courses provided under the GBELC will enhance student learning of green building strategies that help mitigate anthropogenic climate change, protect biodiversity, and conserve resources. After completing the certification project and passing their LEED exams, students will be better equipped to apply their knowledge in their future careers. They will bring what they have learned with them into the workforce and help push green building practices further into the mainstream. Successful certification of Wildcat Field House will increase awareness of the importance of green buildings (Fig. 5) and be a model for other SUNY campuses to follow.



Figure 5. Benefits of green buildings vs standard buildings

References

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