

# LEED for Communities – Collegiate Level Experience and Laboratory Pilot

Clarkson University Adirondack Semester and the New York Olympic Region LEED for Communities Certification Integrated Research Project



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## **Abstract**

During the fall of 2018, Clarkson University and the US Green Building Council (USGBC) developed and executed a LEED for Communities/Cities (LFC) Collegiate Level Experience and Laboratory. In partnership with the New York Olympic Region<sup>3</sup>, an interdisciplinary team of fourteen (14) undergraduate students was guided by two (2) primary faculty and four (4) other instructors in a first of its kind partnership. This endeavor was successful in several facets: attaining LFC certification for the New York Olympic Region, providing a fully evaluated experiential project based education in the use of sustainable holistic planning systems such as LEED for Communities/Cities, and demonstrating the value of a university partnership with a local small town, rural, tourist based community to achieve their goals. This effort provides a replicable model to be used by other communities with institutions of higher learning in the future.

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<sup>3</sup> The New York Olympic Region, or NYOR, consists of the following jurisdictions and partners: Village of Lake Placid, Town of North Elba, Olympic Regional Development Authority, and Lake Placid Central School District

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## **Background**

In order to better understand the development of the LEED for Communities – Collegiate Level Experience and Laboratory Pilot, conducted as a part of the Clarkson University Adirondack Semester and the New York Olympic Region LEED for Communities Certification Integrated Research Project, some pertinent background material should be provided. This section will outline several aspects of the pilot and project including:

- LEED for Communities/Cities
- LEED Lab
- Clarkson University
- The Clarkson Adirondack Semester
- The New York Olympic Region

These preliminary subjects will enable clarity and better understanding when discussing the nature of the pilot effort.

### **LEED for Communities/Cities**

As was announced on 1 December 2016, Leadership in Energy and Environmental Design (LEED) for Cities and LEED for Communities “is revolutionizing city planning, development and operations, while also improving life for citizens around the world. Using the Arc performance platform, LEED for Cities projects can measure and manage their city’s water consumption, energy use, waste, transportation and human experience.”<sup>4</sup> “LEED for Communities (LFC) ... builds upon the same principles as LEED for Buildings, the world standard in green building certification, but significantly expands the scope of the program. LFC promotes better management of resources and smart city planning and design.”<sup>5</sup> LFC, in its pilot, requires cities, or communities, to track fourteen (14) core metrics as well as then opt to do one of two things: a) develop a set of plans for future performance tracking or, b) commit to a minimum number of community specific metrics which can be chosen from either a set of two-hundred (200) plus available metrics to choose from or create their own tailored metrics.<sup>6</sup> LFC is currently being improved through a merger with STAR Communities<sup>7</sup> and alignment with the UN Sustainable Development Goals<sup>8</sup> and has been released for comment as LEED for Cities and Communities v 4.1<sup>9</sup>.

### **LEED Lab**

“LEED Lab is a multidisciplinary immersion course that utilizes the built environment to educate and prepare students to become green building leaders and sustainability-focused citizens.”<sup>10</sup> Launched in 2011, with its Pilot at Catholic University of America, this program has focused on enabling collegiate

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<sup>4</sup> <https://new.usgbc.org/leed-for-cities>, accessed on 20 February 2019

<sup>5</sup> Flory, Megan, Barber, Paul, Buck, Benjamin, Ulrich-Verderber, Louisa, Chase, Sarah, Clark, Lindsay; Danyla, Adeline, Fudo, Lucas, Gatulik, Chloe, Melgar, Daniel, Meyer, Adam, Singh, Pranav, Terleckyj, Laryssa, Vondrak, Benjamin, “USGBC LEED for Communities Certification of the New York State Olympic Region Clarkson University Adirondack Semester, Last Revised: 17 December 2018”, Whitepaper, Clarkson University, December 2018

<sup>6</sup> <https://www.usgbc.org/cityperformance>, accessed on 20 February 2019

<sup>7</sup> <https://www.usgbc.org/articles/star-community-rating-system-be-fully-integrated-usgbc%E2%80%99s-leed-cities-communities-programs>, accessed on 20 February 2019

<sup>8</sup> <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>, accessed on 20 February 2019

<sup>9</sup> <https://new.usgbc.org/leed-v41#cities-and-communities>, accessed on 20 February 2019

<sup>10</sup> <https://www.usgbc.org/leed-lab>, accessed on 20 February 2019

students to use their own college or university as a place to learn about green building. “Through the course, students assess the performance of existing facilities on campus and chose one building where they will facilitate the LEED for Building Operations & Maintenance (LEED O+M) process with the goal of certifying the facility. At the close of the semester, the students are prepared to sit for the LEED O+M professional credential exam. LEED Lab meets the needs of industry by equipping students with the skills, knowledge and expertise needed to be effective communicators, project managers, critical thinkers, problem solvers, engaged leaders and team players.”<sup>11</sup> Overseen and supported by the USGBC, this program is now operating at over thirty (30) colleges or universities world-wide.

### **Clarkson University**

“Clarkson University is an independent, nationally recognized technological university whose faculty of teacher-scholars aspires to offer superior instruction and engage in high-quality research and scholarship in engineering, business, science, health, education and liberal arts. Our primary mission is to educate talented and motivated men and women to become successful professionals through quality pre-collegiate, undergraduate, graduate, and professional continuing education programs, with particular emphasis on the undergraduate experience. Campus settings enhance the quality of student life and afford students access to and interaction with their faculty. We value the diversity of our University community, and we strive to attune ourselves and our programs to our global, pluralistic society. We share the belief that humane and environmentally sound economic and social development derive from the expansion, diffusion, and application of knowledge.”<sup>12</sup>

Clarkson is organized into several Schools, Institutes and Centers. The Wallace H. Coulter School of Engineering (CSOE), the David D. Reh School of Business (RSOB), and the Clarkson School of Arts (CSAS) and Sciences, serve as disciplined focused degree-granting institutions. The Institute for a Sustainable Environment serves as an interdisciplinary locus of gathering offering limited degree programs and core faculty with numerous affiliate faculty in each of the undergraduate degree granting schools as well as the Graduate School, the Clarkson School (a pre-collegiate school), and the other Institutes of the Institute for STEM Education and the Beacon Institute of Rivers and Estuaries. Numerous Centers also exist to enable cross collaboration for research endeavors across the University.

### **The Clarkson Adirondack Semester**

The Clarkson University Adirondack (ADK) Semester, run by Clarkson’s Institute for a Sustainable Environment (ISE), “is a 15-credit, off-campus domestic study program for undergraduates pursuing an experience that is enriching both academically and culturally. Students from any major who are committed to learn about environmental science, policy, economics and the human history and contemporary issues of the Adirondack region”<sup>13</sup> take part in this immersive educational experience. The ADK semester is offered one of the two traditional academic semesters (fall or spring) but have occasioned both semesters as resources allow and needs warrant.

The 15 credit hour sequence is divided into two constituent parts: a) four (4) courses that run on compressed schedules and b) an integrated research project (IRP) which focuses on a unique problem for each ADK semester cohort. Past ADK semester IRP efforts have focused on such things as the effects of wood smoke on Adirondack Park residents to developing a hut-to-hut trail system in the area of the Saranac Lakes to developing conceptual options for better wildlife corridors between the Algonquin Provincial Park in Ontario Canada and the Adirondack Park. Student participants in the ADK semester

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<sup>11</sup> LEED Lab Welcome Packet, Center for Green Schools, USGBC, May 2017

<sup>12</sup> Mission Statement, Clarkson University, <https://www.clarkson.edu/about-clarkson>, accessed on 20 February 2019

<sup>13</sup> <https://www.clarkson.edu/adirondack-semester>, accessed on 20 February 2019

are selected through an application process that begins early the semester before and concludes by the end of the semester in which they apply. Cohorts are limited to fourteen (14) students based on several factors, including logistics and housing, but also to retain its special small group interactive nature. Faculty are selected for the four courses and the IRP based on the IRP focus, with EV322 The Adirondack Park and a Sense of Place, being a universal core course offering (see below for more on the course offerings related to this pilot).

**The New York Olympic Region**

The New York Olympic Region (NYOR) is comprised of four different jurisdictions that include the Town of North Elba, the Village of Lake Placid, the Lake Placid Central School District (LPCSD), and the Olympic Regional Development Authority (ORDA). “As a public benefit corporation, ORDA maintains the region’s world-class winter sports facilities (such as the Lake Placid Olympic Ski Jumping Complex and the Mount Van Hoevenberg Olympic Bobsled Run), as well as the ski resorts of Whiteface, Gore, and Belleayre.”<sup>14</sup> For the purposes of defining this region and ORDA’s involvement, “Whiteface and Gore are included in NYOR as satellite facilities, however, Belleayre is not included because it is far removed from the region ...”<sup>15</sup> and with regards to the LFC project for NYOR this facility was not seen as part of the Olympic character that was central to the partnership. To that final note, the partners in the NYOR LFC effort, in parallel with this pilot and the ADK semester effort, were working to facilitate a formal MOU between themselves and the USGBC as well as between themselves and Clarkson University. These are at present nearing completion.

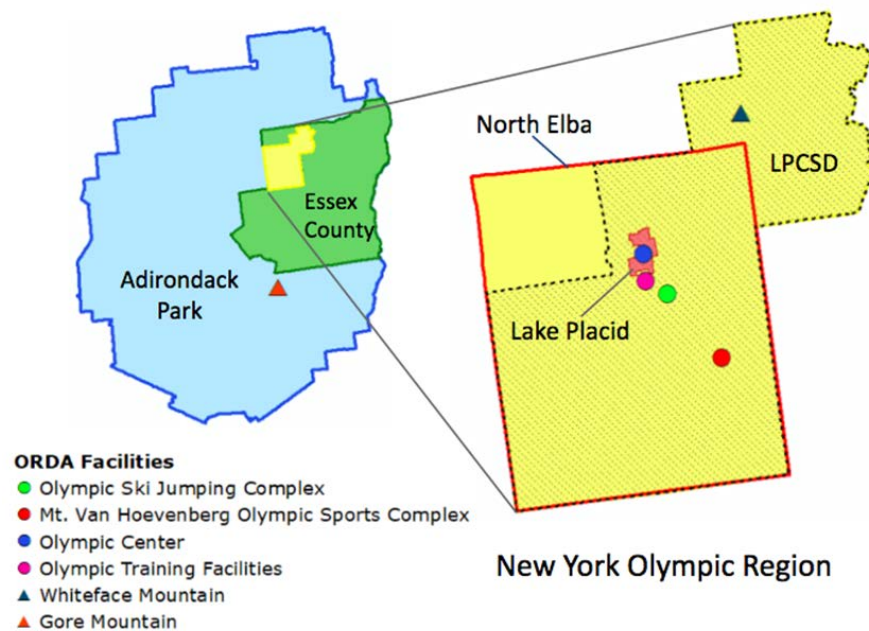


Figure 1, Map Graphic of the New York Olympic Region (NYOR)<sup>16</sup>

<sup>14</sup> Flory, Megan, Barber, Paul, Buck, Benjamin, Ulrich-Verderber, Louisa, Chase, Sarah, Clark, Lindsay; Danyla, Adeline, Fudo, Lucas, Gatulik, Chloe, Melgar, Daniel, Meyer, Adam, Singh, Pranav, Terleckyj, Laryssa, Vondrak, Benjamin, “USGBC LEED for Communities Certification of the New York State Olympic Region Clarkson University Adirondack Semester, Last Revised: 17 December 2018”, Whitepaper, Clarkson University, December 2018

<sup>15</sup> Ibid

<sup>16</sup> Ibid

NYOR has a “unique tourist-based economy due to its placement in the Adirondack Park as well as its Olympic background.”<sup>17</sup> Further the “region’s Olympic legacy is critical to its character, while its placement in the Adirondack Park means it’s under very strong environmental protections.”<sup>18</sup> These protections come from the fact that the Adirondack Park is a New York State (NYS) constitutionally protected park and forest preserve<sup>19</sup> that is provided oversight through the Adirondack Park Agency (APA)<sup>20</sup> which is headquartered in the hamlet of Ray Brook, within the Town of North Elba (thus within the NYOR boundary).

### **Construct of the Fall 2018 Pilot**

The fundamental construct of the LEED for Communities – Collegiate Level Experience and Laboratory Pilot mirrors the aforementioned Clarkson University Adirondack Semester format. The Pilot was conducted as an immersive experience enabling students to work and reside within the subject community while working on LEED for Communities certification. The semester effort began on 22 August 2018 and ended, formally, on 12 December 2018 with a formal presentation to the faculty and staff of Clarkson after a preceding presentation to the NYOR community members on 10 December 2018. Faculty from Clarkson travelled to the nearby region on a regular basis to conduct the actual classes, in a compressed format around the needs of the IRP. Engagement, with the community came through coordination between the faculty and community leaders as well as directly by the students in various ways. The following hopes to articulate the specifics of this pilot and how it may be replicated at other institutions.

### **Participants**

#### ***Faculty Participants***

The faculty participants in this pilot/the ADK semester in the Fall of 2018 included parties from within Clarkson’s tenure track and non-tenure track faculty as well as faculty at Paul Smiths College. The following is a listing of the courses taught and the faculty teaching each:

- EV322 Adirondack Park and a Sense of Place; Bethany Garretson<sup>21</sup>
- EV312 Adirondack Ecology and Environmental Science; Stephen F. Langdon<sup>22</sup>
- CE301/EV316 Adirondack Science – GIS; William “Bill” B. Olsen<sup>23</sup>
- EV320 Social and Political Issues in the Adirondacks; Martin Heintzelman<sup>24</sup> and Christopher Robinson<sup>25</sup>
- EV314 Integrated Research Project: LEED for Communities in the New York Olympic Region; Erik C. Backus<sup>26</sup> and Stephen Bird<sup>27</sup>

Biographical Sketches are provided in Appendix A for each of these faculty. Specifics to the course content will be covered in the curriculum section of this document.

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<sup>17</sup> Ibid

<sup>18</sup> Ibid

<sup>19</sup> <https://visitadirondacks.com/about/adirondack-park>, accessed on 20 February 2019

<sup>20</sup> <https://apa.ny.gov/>, accessed on 20 February 2019

<sup>21</sup> <https://www.paulsmiths.edu/people/garretson/>, accessed on 20 February 2019

<sup>22</sup> <https://www.shingleshanty.org/organization>, accessed on 20 February 2019

<sup>23</sup> <https://www.clarkson.edu/people/william-olsen>, accessed on 20 February 2019

<sup>24</sup> <https://www.clarkson.edu/people/martin-heintzelman>, accessed on 20 February 2019

<sup>25</sup> <https://www.clarkson.edu/people/christopher-robinson-faculty>, accessed on 20 February 2019

<sup>26</sup> <https://www.clarkson.edu/people/erik-backus>, accessed on 20 February 2019

<sup>27</sup> <https://www.clarkson.edu/people/stephen-bird>, accessed on 20 February 2019

**Student Participants**

Students selected for this semester were solicited early in the Spring 2018 semester. They were provided information about the ADK semester in general and about the particular focus IRP effort.

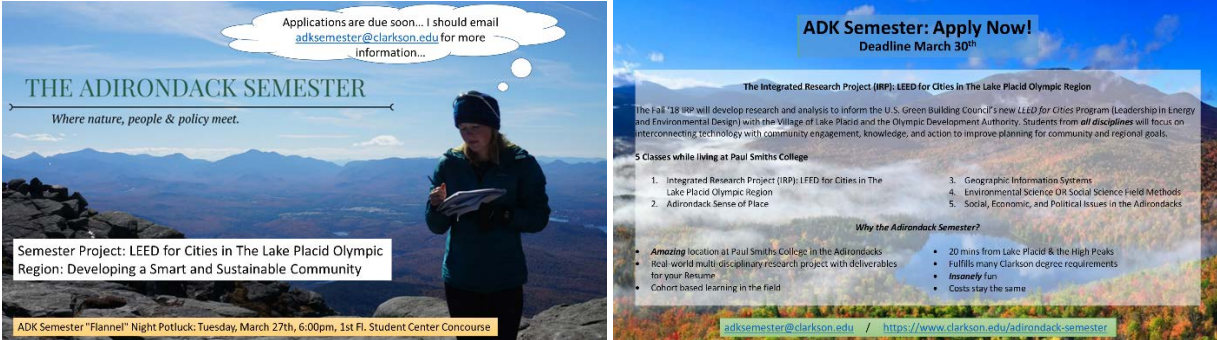


Figure 2: Images used to attract Clarkson Students to the Fall 2018 Experience

The Fall 2018 offering of the ADK semester received a record number of applicants, which was then reviewed by the ISE steering committee for the final selection of students to take part. Fourteen (14) students were selected, representing every school at the university and across numerous majors. The following table lists the student participants by name and what academic major.

Last Name	First Name	Major	Last Name	First Name	Major
		Environmental Engineering/CSOE			Environmental Science & Policy/ISE
		Civil Engineering/CSOE			Environmental Engineering/CSOE
		Environmental Engineering/CSOE			Environmental Engineering/CSOE
		Environmental Engineering/CSOE			Environmental Engineering/CSOE
		Environmental Science & Policy/ISE			Environmental Engineering/CSOE
		Psychology/CSAS			Engineering & Management/RSOB
		Environmental Engineering/CSOE			Innovation & Entrepreneurship/RSOB
Key: CSOE = Coulter School of Engineering; ISE = Institute for a Sustainable Environment; CSAS = Clarkson School of Arts and Sciences; RSOB = Reh School of Business.					

Table 1: Student Participants with Indicated Majors

Either the student participants were in their Sophomore or Junior year and none were native to the NYOR itself.

**Community Participants**

As part of this effort, numerous community participants were key to the success of any such endeavor. In this case, given the make-up of NYOR itself (see above), it required participation from all four (4) of the partner groups.

*Village of Lake Placid*

The Village of Lake Placid<sup>28</sup> was, and remains, primarily represented by Mayor Mr. Craig Randall. Craig is a long time resident of the Village and owner/operator of a local lodging facility. Helping the effort in different ways was Ms. Anita Estling, the Village Clerk as well as Mr. Kimball Daby, the Village Electric Superintendent.

#### *Town of North Elba*

The Town of North Elba<sup>29</sup> was, and remains, primarily represented by Town Councilman Mr. Jay Rand. Jay is a former Olympian (Ski Jumping) and still is a member of the New York Ski Educational Foundation.

Of note, the Town and Village have a strong history of partnership on many efforts, of which the 2014 Joint Comprehensive Plan is particularly pertinent. Mr. Dean Dietrich is the Chairperson for the Lake Placid/North Elba Development Commission.<sup>30</sup> Dean is a volunteer in this role and make significant contributions to the effort throughout the process.

#### *ORDA*

The Olympic Regional Development Authority<sup>31</sup>, as discussed above, is a public benefit corporation, founded under New York State law and acts as a quasi-state agency overseeing the operation of the various Olympic venues from the 1980 Olympics, which remain in active use for training and competition to this day. Mr. Mike Pratt is the CEO for ORDA, was, and remains an active participation in this effort. He assigned two of his staff, Mr. Cort Honey, Project Officer, and Mr. Nick Zachara, Events Logistics Coordinator, as point persons for this effort. Mr. Pratt, along with Mr. Robert “Bob” Hammond, ORDA Chief Engineer, participated in the early stages of the project and Mr. Honey and Mr. Zachara participated throughout.

#### *LPCSD*

The last of the core partner organizations is the Lake Placid Central School District<sup>32</sup>. Superintendent Dr. Roger Catania, who was active throughout this effort, leads the School District. Additionally, Ms. Tammy Morgan, a High School faculty member in the Environmental Science, was a key contributor to this effort as will be discussed elsewhere in this document.

#### *Other Partners*

In addition to the above parties several additional non-native to Clarkson University or NYOR partook in this pilot effort. These included consultants, associations and the USGBC itself.

#### *Smith Group*

Mr. Steven Baumgartner, “an engineer and urban systems and infrastructure strategist” from Smith Group<sup>33</sup>, as well as a support team, supported the students in conceptualizing several community development goals and metrics under a consultation contract that took place through the semester. His

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<sup>28</sup> <http://villageoflakeplacid.ny.gov/>, accessed on 20 February 2019

<sup>29</sup> <http://www.northelba.org/>, accessed on 20 February 2019

<sup>30</sup> <http://www.futurelakeplacid.com/>, accessed on 20 February 2019

<sup>31</sup> <http://www.orda.org/corporate/>, accessed on 20 February 2019

<sup>32</sup> <http://www.lpcsd.org/>, accessed on 20 February 2019

<sup>33</sup> <https://www.smithgroup.com/people/steven-baumgartner>, accessed on 20 February 2019



keen insights into how urban systems work as well as enabling thinking outside of the LEED for Cities/Communities construct (e.g. EcoDistricts) aided the student participants especially as they took a critical eye to LFC and its application in the NYOR.

### *USGBC*

Dr. Vatsal Bhatt, Director of Cities and Communities at the USGBC<sup>34</sup>, was instrumental in this pilot. He spoke remotely several times and participated in several iterative question and answer efforts related to particulars of the rating system itself as well as metric development on the part of the student participants. He was also a critical guide to Prof. Backus as he completed the certification entries for submission for review. Two other people from USGBC were of particular help. Mr. Harry Gordon, FAIA, LEED Fellow<sup>35</sup> partook in a joint presentation with the students at the Adirondack North Country Association sponsored Clean Energy Economy Conference on 25 October. Of note, Harry is the Vice-Chairperson for the NY Upstate Market Leadership Advisory Board (MLAB) and board member for the Green Business Certification, Inc. (GBCI, the for-profit entity that oversees LEED certification). Finally, Ms. Tracie Hall,<sup>36</sup> Director of the NY Upstate Community of the USGBC was in a supporting role throughout this effort.

### *ANCA*

The Adirondack North Country Association (ANCA)<sup>37</sup> is an, “independent non-profit organization working to build dynamic local economies that sustain thriving communities in Northern New York. Since 1955, ANCA has leveraged the investment of hundreds of millions of dollars into key sectors that drive sustainable local economic development.”<sup>38</sup> Jennifer Perry, the Energy Circuit Rider as well as several others were instrumental in the process, especially as this organization was the developers of the regional greenhouse gas (GHG) inventory that was the basis for evaluation for the LFC energy metric.

### **Preceding Activities**

Well ahead of developing any kind of LEED for Communities/Cities Collegiate Level Experience and Laboratory, as a member of the USGBC New York Upstate Market Leadership Advisory Board (MLAB), Erik Backus was an early enthusiast for the LEED for Communities and Cities pilot rating system in the early part of 2017. Coincidentally, Clarkson University was in partnership with the NYOR in relation to two upcoming events, the Winter International Children’s Games<sup>39</sup> (ICWG 2019<sup>40</sup>) and the Winter World College and University Games<sup>41</sup> (FISU Winter Universiade 2023<sup>42</sup>), the latter of which was in the bidding process in the summer of 2017. Working with the Clarkson department of external relations, members of

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<sup>34</sup> <https://www.usgbc.org/people/vatsal-bhatt/0011129534>, accessed on 20 February 2019

<sup>35</sup> <https://www.usgbc.org/people/harry-gordon/0000019716>, accessed on 20 February 2019

<sup>36</sup> <https://www.usgbc.org/people/tracie-hall/0011036905>, accessed on 20 February 2019

<sup>37</sup> <https://adirondack.org/>, accessed on 20 February 2019

<sup>38</sup> <https://adirondack.org/about>, accessed on 20 February 2019

<sup>39</sup> <http://international-childrens-games.org/icg/>, accessed on 20 February 2019

<sup>40</sup> <https://www.lakeplacid2019.com/>, accessed on 20 February 2019

<sup>41</sup> <https://www.fisu.net/>, accessed on 20 February 2019

<sup>42</sup> <https://www.fisu.net/sport-events/winter-universiades-events/31st-winter-universiade>,

the University<sup>43</sup>, along with USGBC<sup>44</sup>, presented the LFC rating system to NYOR representatives<sup>45</sup>. The presentation demonstrated LFC aligned with the goals of the NYOR to demonstrate commitment to sustainability that is now a key marker for winning bids for international sports competitions. By that Fall, under the leadership of Mayor Randall, the NYOR partnership group was being formed and was beginning commitment to do the LEED for Communities effort. In the Spring 2018, the group was expanded to include the Lake Placid Central School District and the Village of Lake Placid had gone forward with a commitment to become a New York State Climate Smart Community<sup>46</sup> (an aligned statewide program with LFC). In the early summer 2018, the parties of NYOR committed in principle to execute the LEED for Communities rating process (and became registered in the ARC platform).

Additionally, prior to the formal semester educational effort, Clarkson University had formed a team of faculty that were supporting the upcoming certification effort on the part of the NYOR and looking to conduct research in parallel with that effort. Professor Erik Backus led a team including Dr. Stephen Bird, Dr. Susan Powers, and numerous other colleagues, in the development of a National Science Foundation (NSF) proposal under the Smart and Connected Communities (SCC) in February of 2018. This was not funded, but the group remains active and pursuing other possibilities for the future.

Key to the LEED for Communities/Cities Collegiate Level Experience and Laboratory was that as a manner to kick off for the certification process and to help generate ideas to drive future support proposals, the collaborating research team executed a one-day workshop in Lake Placid on 22 August 2018. This workshop took on the form of a planning charrette with the following agenda:

Time	Topic/Agenda Item	Duration/Notes
8:00 to 8:45 am	Introduction/Introductions <ul style="list-style-type: none"> <li>• Overview of LEED for Communities</li> <li>• Preview of Synergy with Community Goals/Trajectories</li> <li>• Layout Potential Broad Research Plan</li> <li>• Personal Introductions</li> </ul>	45 min
8:45 to 9:00 am	BREAK	
9:00 to 10:00 am	Community and Stakeholder Kick-off and Engagement <ul style="list-style-type: none"> <li>• Contextual notes</li> <li>• Roles/responsibilities of various partners</li> <li>• Overall expectations/goals</li> <li>• Proposed/potential project timeline</li> </ul>	1 hour
10:00 to 10:15 am	BREAK	Community Stakeholders are invited to remain
10:15 to 12:15 pm	Research/Support Planning <ul style="list-style-type: none"> <li>• Research/Support Gaps</li> <li>• Past Research Ideas/Effort</li> <li>• Research Opportunities</li> <li>• New/Revised Research Ideas and Plans</li> </ul>	2 hours (30 min background, 1 hour breakouts and planning, 30 min plenary & wrap-up)
12:15 to 12:30 pm	Departure	all but the Clarkson Adirondack Semester Team
12:30 to 1:00 pm	Adirondack Semester Planning	30 min

Table 2: Olympic Region of New York State

<sup>43</sup> Represented by Clarkson VP of External Relations Dr. Kelly Chezum and Dean of the Graduate School Dr. Kerop Janoyan

<sup>44</sup> Represented by Dr. Vatsal Bhatt, Director of Cities and Communities and Ms. Tracie Hall, Director of the NY Upstate Community

<sup>45</sup> Represented by Mr. Michael Pratt, CEO ORDA, Mr. Jay Rand, Councilman, Town of North Elba, Mr. Craig Randall, Mayor, Village of Lake Placid, and Mr. Jim McKenna, CEO, Regional Office of Sustainable Tourism (ROOST)

<sup>46</sup> <https://climatesmart.ny.gov/>, accessed on 20 February 2019

## LEED for Communities Kick-off Event and Research Proposal Workshop Agenda<sup>47</sup>

Participants in this workshop included all of the individuals and organizations above (including outside consultants), as well as many more. Prof. Backus and Dr. Bhatt initiated the conversation with an overview of the LEED for Communities rating system and then Prof. Backus facilitated the discussion throughout the day. Notes were taken and saved for use in the upcoming efforts. As noted in the agenda, the end of the day was set to aid faculty in the ADK semester in doing final planning for the semester effort that was to begin the following Monday, 27 August 2018.

This particular workshop had a few critical aspects that should be considered in future LEED for Communities/Cities Collegiate Level Experience and Laboratory efforts:

- It opened lines of communication across all of the constituent groups that would participate with the students in the LFC Certification process
- It set expectations for the student effort
- It prepared faculty for their roles as facilitators of the student project based IRP effort.
- It set the stage and built energy for the community around the process

### Overarching Curriculum

The overarching curriculum for the LEED for Communities/Cities Collegiate Level Experience and Laboratory pilot was driven largely from two sources. The first, and primary source, was previous iterations of the ADK semester at Clarkson University. As described above, this immersive experience has a strong record of accomplishment to draw from and the form of the curriculum remained essentially unchanged from that perspective. The second was a white paper derived from a previous set of discussions on what such a LEED for Communities/Cities Collegiate Level Experience and Laboratory might look like. Provided in Appendix B, is a white paper that was developed around the conversations that were had around this concept. As cited therein, it was thought that this kind of effort would require three fundamental things:

- “Fundamental Skills Courses that equip students with core knowledge in the various technical and specific discipline domains that would be required at the community/city scale
- A hands on test bed using the college campus itself as a laboratory in order to understand the challenge of scoring and managing sustainability at the community/city scale.
- A capstone hands-on application, working with a local community as it seeks to obtain certification or recertification as a LEED community.”<sup>48</sup>

As such, the overall curriculum incorporated much of these three elements, although instead of an on-campus test-bed, given the early application, the students were able to jump right into the process with the community in this pilot effort.

The following figure depicts the layout of the courses and curriculum for the 15-week session of the Fall 2018 ADK semester and pilot of this program:

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<sup>47</sup> Backus, Erik, Olympic Region of New York State LEED for Communities Kick-off Event and Research Proposal Workshop, Workshop Agenda, 22 August 2018

<sup>48</sup> Backus, Erik, LEED for Communities Lab – Initial Meeting Notes and White Paper, Memo to Clarkson Faculty and Dr. Vatsal Bhatt, 20 November 2017

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
NYOR LEED for Communities	EV314 Adirondack Intergrated Research Project (Backus/Bird)														
										EV320 Political History/Econ in the ADK (Robinson/Heintzelmann)					
				CE301/EV316 Adirondack Science – GIS (Olsen)											
				EV312 Adirondack Ecology and Environmental Science (Langdon)											
	EV322 Sense of Place (Garretson, PSC)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Figure 3: 15 Week Layout of the Fall 2018 ADK Semester<sup>49</sup>

The following sections will discuss the supporting courses as well as the IRP, which centered on the LFC certification effort itself.

### Supporting Courses

The following details the description and specific key notes about each supporting course that was taught during the ADK semester in the Fall of 2018. More detail can be found through a reading of the syllabi for the courses, which is provided in Appendix C to this document. Users of this document are highly encouraged to review each of these syllabi and contact the related instructors should questions arise.

#### ***EV322 Adirondack Park and a Sense of Place***

Ms. Bethany Garretson an instructor at Paul Smith’s College, who is an avid writer, hiker, and outdoors person, taught this course. The following is the course description for this course:

“To understand a place, one must often understand the views of nature and the environment as seen by writers and essayists. Students will explore the Adirondacks through literature while experiencing the lakes, rivers, streams, and mountains. The readings, discussions, and written assignments will explore the aesthetics, the social and political climate, and the prevailing attitudes toward the environment that helped create the Adirondack Park. In addition, the course will provide students will an opportunity to participate in seasonal outdoor activities to learn how recreational activities have impacted the social, cultural, economic, and physical aspects of the Park.”<sup>50</sup>

This course begins with a backcountry expedition in the Adirondack forest preserve, with students literally learning while on the trail. The course then returns to the semester living-learning site at Paul Smiths College, where they continue discussions and round out their background understanding of the people and culture of the Adirondack region. As noted above, this course preceded all other supporting courses during the semester.

#### ***EV312 Adirondack Ecology and Environmental Science***

<sup>49</sup> Bird, Stephen and Backus, Erik, Semester Planning Spreadsheet, Revised, October 2018

<sup>50</sup> Clarkson University, Online Course Catalog, accessed through the following link:  
<https://www.clarkson.edu/student-administrative-services-sas/course-descriptions-and-class-schedules>

Taught by Mr. Stephen F. Langdon, this course included a trip to the Shingle Shanty Preserve and Research Station<sup>51</sup>, of which he is the director:

“This course introduces ecological and environmental science concepts relevant for understanding the structure and function of terrestrial, aquatic, and human systems in the Adirondack Park. Students will learn to identify important plant and animal species representative of the Adirondack Mountains, and learn major features of ecological systems in the Park. The course will also provide the students an assessment of human impacts on the ecology of the Adirondack Park.”<sup>52</sup>

The Fall 2018 session of this course included an overnight stay at the aforementioned research station and included extensive field study off the campus of Paul Smiths and into the preserve itself. This course and the following were executed simultaneously during the semester.

### ***CE301/EV316 Adirondack Science – GIS***

This is a variation on the traditional course taught on the Clarkson campus by Mr. William “Bill” B. Olsen. Mr. Olsen is a well-known geographer and geospatial science resource in the greater North Country region. Here is the course description for this supporting course:

“An introductory course in the concepts and uses of Geographic Information Systems (GIS) including analysis of GIS-based local and global geographic datasets. Provides basic knowledge of GIS theory and applications using existing state-of-the-art GIS software and current spatial data resources. Applications include: overlay analysis, spatial data query, map generation and terrain surface analysis. Students will also learn the basics of GPS data collection, remote sensing, 3D visualization, probability, statistics, and error analysis.”<sup>53</sup>

The Fall 2018 offering of this course was placed sequentially after Sense of Place and in parallel with Ecology. The focus of this course was in developing a map that was used to depict NYOR effectively as well as providing a tool to do data analysis across many of the LFC metrics. The results of this course work was included in the end of the semester white paper, which is cited throughout this document.

### ***EV320 Social and Political Issues in the Adirondacks***

This course was co-taught by Dr. Martin Heintzelman and Dr. Chris Robinson. Dr. Heintzelman is an ecological economist and Dr. Robinson is a public policy and political science researcher looking at ecological trauma and sustainable development.

“The historical, social, political, and environmental factors contributing to the fabric of the Adirondack Park is an evolving social experiment. The course readings will focus upon the New York State constitutional provisions that engendered the park, the policies that shaped the park, along with the political actions that influence the park today. The Adirondack State Park is extraordinary for its history and because it is a place where human residents live and recreate in sustainable ways that conserve resources and 'forever wild' regions of the park.”

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<sup>51</sup> <https://www.shingleshanty.org/>

<sup>52</sup> Clarkson University, Online Course Catalog, accessed through the following link: <https://www.clarkson.edu/student-administrative-services-sas/course-descriptions-and-class-schedules>

<sup>53</sup> Ibid

The Fall 2018 offering looked into the economic and political landscape of the region, specific to the Olympics in 1980 as well as today. Part of this course included trips to the APA and other governmental elements effecting NYOR. This course was taken at the end of the semester and its timing, as discussed below was somewhat ideal in relation to the IRP.

### ***The Integrated Research Project (LEED for Communities in NYOR)***

As indicated earlier, the Clarkson Adirondack Semester Integrated Research Project (IRP) for the Fall 2018 was the evaluation and certification of the New York Olympic Region. This effort was facilitated by Prof. Erik Backus and Dr. Stephen Bird as the primary instructors for the course, and was the centering point of the entire semester effort. The formal course description for EV314 Integrated Research Project: LEED for Communities in the New York Olympic Region is as follows:

“This problem-based learning course will task students to analyze and suggest solutions to complex problems relevant to the economic, social, and environmental welfare of the Adirondack Park. The course is intended to reinforce what students have learned in other Adirondack courses.”<sup>54</sup>

Consequently, this three (3) credit hour course represents the core “LEED for Communities/Cities Collegiate Level Experience and Laboratory” course model. This said, the supporting courses were critical in enabling and augmenting the IRP effort throughout and, thus, should be seen as critical to the overall IRP process. This section will discuss the conduct of the IRP in detail, more so than the previous courses discussion as it pertains to how others might envision running a specific LEED for Communities/Cities Collegiate Level Experience and Laboratory in the future.

### ***Kick-Off and Introduction***

The IRP itself began promptly on 27 August 2018, with an informal meet and greet with the students prior to their other ADK semester orientation activities. Prof. Backus and Dr. Bird began with a mutual sharing and outlining of the IRP in general terms, prepping the teams for what was to be a weekly engagement on the part of the faculty and more on the part of the students. Throughout the semester, students were to look for articles and scholarly works related to the LEED for Communities effort and provide a weekly report of their activities. This served as a manner for faculty to observe activities and to ensure students were conducting necessary independent investigations.

Bird and Backus alternated between Friday and Monday morning drop-in sessions throughout the semester to facilitate conversations as well as conduct interactions with community groups. The first of these occurred on 3 September (following the backcountry expedition as part of Sense of Place), where Dr. Bird and Prof. Backus conducted the first formal class session. Backus covered the basics of the LEED for Communities Rating System, which prompted a discussion of how to start thinking about collecting the requisite data for the certification process. On 7 September, Prof. Backus coordinated for a meeting between the students and ORDA officials as well as hosted a remote discussion session with Dr. Vatsal Bhatt and the students to further explore metric data gathering. On 10 September, Dr. Bird facilitated a discussion on research generally as well as how to use available reference materials and library resources for the study. Friday 14 September was an opportunity for the ADK semester students to meet the Lake Placid Central School Environmental Science Students during a field trip to nearby Lake Flower<sup>55</sup> and meet Mr. Stephen Langdon (instructor for the ADK Semester Ecology course). This was followed by the first meeting between the students and Mr. Dean Dietrich of the Lake Placid/North Elba Development Commission to start exploring community priorities. Monday 17 September featured a

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<sup>54</sup> Ibid

<sup>55</sup> Where an ongoing lake remediation project was taking place

lecture on Smart Growth and related topics for reference on the part of the students and closing the introductory materials for the IRP.

### ***Investigations and Data Collection***

By the fourth week, the ADK semester changes from a focus on the Sense of Place course and the IRP to the students taking two compressed courses (EV312 ADK Ecology and CE301/EV316 GIS) as well as continuing work on the IRP. For this reason, interactions between the facilitators are a bit more scattered and more work that is independent is expected of the students. This phase kicked off in earnest on 21 September, where Backus and Bird facilitated a brainstorming session for how the students would execute the needed data collection for LEED for Communities, specifically around the core metrics (the fourteen (14) required metrics in the LFC rating system). This was informed by the earlier conversation with Dr. Bhatt (who also partook in this session remotely), but delved also into where to seek this data beyond those suggestions. On Monday 24 September, there was a follow-up session, in the morning, to see how the students were structuring their search. In parallel with this, Prof. Backus met telephonically with Dean Dietrich in order to set up a steering committee on the part of the four LEED for Communities jurisdictions. This latter effort was one that took considerable effort on the part of Backus in order to finally bring together a group that would be identified as the core representatives for each party as part of the overall LFC effort.

On 28 September, Dr. Bird conducted a drop in assist session and attempted to address several questions relating to data. Notably, household income data and GHG emissions data quickly emerged as troubling data sets to determine. Additionally, during the last week of September, Stephen Langdon took the students on a tour of the Mount VanHoovenburg ORDA site in conjunction with the ecology class. This informed the data collection around water use as well as how to understand the data for ORDA in conjunction with the LFC effort. The first week of October then focused on continued data collection, work on developing a map for the NYOR region (in the GIS class), and an overnight stay at the Shingle Shanty Preserve and Research Station (as part of the ecology class). The next week was a continuation with a check-in by Bird with the students on Friday 12 October, wherein it was discussed that the students would make their first, preliminary presentation on their work at the Clean Energy Economy Conference in Glens Falls on October 25. After a check-in with Backus on 15 October, the students kept working on data collection and beginning on developing their presentation. While this was ongoing, Mr. Harry Gordon of USGBC and GBCI had agreed to co-present on LEED for Cities/Communities with the students at said conference. On Friday, 19 October, the students gave their first presentation of their progress to Mr. Gordon, Dr. Bird, and Prof. Backus followed by further coordination of preparations for the upcoming presentation. The evening of 18 October was very important, however, as Prof. Backus and Mayor Randal held a prolonged conversation about the Village of Lake Placid goals (which the Mayor laid out as Erik took copious notes) as well as worked to pull together the necessary steering group in the near term. The following week, Mr. Gordon did another prep session with the students who then presented at the Clean Energy Economy Conference (CEEC) on 25 October to a small yet very interested audience. From this experience, the students learned much about where they stood in the process as well as what more needed to be done for eventual certification. The conference was also a key turning point in the semester as the GIS and ecology courses concluded and the final full course taught by Dr. Heintzelman (who also attended the CEEC) and Dr. Robinson began.

### ***Certification Effort and Challenges***

Whilst data collection continued, the certification effort began in earnest on 26 October when Prof. Backus gave a lecture and demonstration of the ARC<sup>56</sup> platform. Up until this point, the students worked

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<sup>56</sup> <http://arcskoru.com>

primarily through a provided Google drive folder structure established at the outset of the semester. This is a critical note, as there is considerable work that is needed prior to uploading data and inputs into ARC, necessitating a file sharing capability. Google drive was ideal in this case because: 1) it was the university file sharing service, 2) it enabled use of Google docs, Google sheets, and other collaborative documents for shared development of the various documents and calculations, and 3) it was interoperable with ARC through its file sharing options imbedded in the platform. In order to let everyone catch-up, 29 October was a scheduled “work day” with Dr. Bird offering these specific comments on the status of the effort:

“[For] our work, our strategy should be to resolve our water, waste, and GHG metrics for certification.

Second, we have a beginning set of concerns to work with from Mayor Randall on the secondary goals and metrics for LFC, below. Please start thinking about these issues from the perspective of:

- addressing a literature review in these topics,
- thinking about data sources now and in the future,
- coordinating these goals across our 4 jurisdictions,
- adding more high-priority items to this list,
- and anything else that is relevant.

Goals list from Mayor Randall

- Create improved trails connectivity and conditions for biking, skiing, etc. to and from the Village and within the Village
- Enable continued savings in energy use and improve the local electrical security/resiliency/storage
- Provide full water metering for all connected users (current status: not fully metered in the village)
- Develop a comprehensive approach to manage stormwater within the village in order to address water body stresses especially for Lake Placid and Mirror Lake while accounting for multi-seasonal effects (e..g road salt, etc.)
- Address and improve traffic within the village and to the surrounding sites to enable vibrancy for the core for all citizens and visitors
- Address and enable solutions in order to improve housing equity within the region”

On 2 November, Dr. Bird and Prof. Backus met with the students to check in on status with Prof. Backus collaboratively developing with the students a comprehensive outline for the final end-of-semester whitepaper. This was helpful as it aided the students in building a structure for how to collect the disparate data and information that is needed to execute the LFC certification in ARC. What was still missing was further clarity on the community approach to ongoing certification, namely through a planning process or dedication to ongoing measurement of a number of community based metrics. This was resolved when, thanks to leadership on the part of both Prof. Backus and Mayor Randall, the steering committee met with the students on 5 November 2018 at the Beach-house in Lake Placid. In this initial meeting, the following persons represented the various groups:

Name, Position	Group/Partner
Jay Rand, Councilman	Town of North Elba (TNE)
Craig Randall, Mayor	Village of Lake Placid (VOLP)
Dean Dietrich, Chair	Lake Placid/North Elba Community Development Commission
Roger Catania, Superintendent	Lake Placid Central School District (LPCSD)



Cort Honey and Nick Zachara, Project Coordinators	ORDA
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Table 3: LFC Steering Committee Members<sup>57</sup>

In this meeting, the Mayor’s goals were reviewed and discussed, leading to a larger conversation about the goals, and corresponding metrics needed to track those goals, for each of the parties in NYOR. Dr. Catania indicated that the LPCSD goals should, in part, be derived from the School District students themselves. To that end, some of the Clarkson students took part in the Youth Climate Summit with some LPCSD students at the Wild Center in Tupper Lake on 8 November, and then followed by a meeting with Ms. Tammy Morgan’s LPCSD Environmental Science class, on 14 November. From this and ongoing work the Clarkson students were able to create a draft document for the community metrics, which was reviewed on 16 November by the steering committee (done remotely by the students, given weather conditions).

By this point, the Clarkson students had been able to largely resolve the challenges with the core metrics and were able to present those statuses to the stakeholders. On 12 November, the students with Dr. Bird met with Steven Baumgartner of SmithGroup to discuss the status of the project and further thinking about how to develop the community goals/objectives and corresponding metrics. The week of 19 November was the week of American Thanksgiving, which the students had off as a break. Following the Thanksgiving break, on 26 November was the final meeting between the students and the steering committee. At this meeting, not only were the community metrics identified, the various parties agreed who would commit to their input, the primary or lead group who would be in charge of managing that particular metric, likely sources of the needed data, and the difficulty of retrieving it for use in future LFC annual updates. At this point, all of the elements were in place for the students to execute the final steps for certification and entering the data into ARC.

***Closure, White Paper and Presentations***

Following the 26 November meeting, the Clarkson students worked in earnest to complete two end of semester deliverables: 1) a detailed whitepaper supporting LEED for Communities certification for the New York Olympic Region, and 2) a final presentation of those results. Over the week of 26 November, Bird and Backus fielded numerous questions related to the pre-certification elements and the various narrative justifications that were to be included with the core metrics upon entering the data into ARC. Further, these were used to detail elements of the closure whitepaper. Friday 30 November was set aside as a workday, with Monday 3 November set aside as a data entry day for entering data into ARC. A press release<sup>58</sup> was sent out on 30 November from Clarkson announcing the effort and that public presentations would occur in the community on 10 December and on campus on 12 December. Because of continued work, ARC entry was slowed and a work session was held on 5 December in order to clear up several details in support of the presentation as well as the whitepaper (a partial draft of which was delivered to Bird and Backus on 1 December). On Friday, 7 December, a rehearsal of the presentation was conducted in front of Bird and Backus, both gave comments for updates for the coming Monday. In parallel, the whitepaper was being revised to reflect comments from Backus and Bird as well as meet the needs for ARC data entry. Over the weekend of 8-9 December, the ADK semester students worked diligently to

<sup>57</sup> Flory, Megan, Barber, Paul, Buck, Benjamin, Ulrich-Verderber, Louisa, Chase, Sarah, Clark, Lindsay; Danyla, Adeline, Fudo, Lucas, Gatulik, Chloe, Melgar, Daniel, Meyer, Adam, Singh, Pranav, Terleckyj, Laryssa, Vondrak, Benjamin, “USGBC LEED for Communities Certification of the New York State Olympic Region Clarkson University Adirondack Semester, Last Revised: 17 December 2018”, Whitepaper, Clarkson University, December 2018

<sup>58</sup> <https://www.clarkson.edu/news/clarkson-students-assist-new-york-olympic-region-it-pursues-leed-community-sustainability>

polish and rehearse the presentation as well as fill in gaps in the whitepaper, simultaneous with ARC data and supporting document upload.

This fury of activity came to a crescendo on 10 December when the students held the first public presentation at the Lake Placid Convention Center at 4:30 pm. ORDA was kind enough to set up a presentation space and provide refreshments. Attendance was lighter than expected, but all of the participating parties were represented and several community members joined as well. As will be discussed, the presentation revealed several surprising results and confirmed others in relation to community expectations. This presentation with minor modifications was presented on 12 December on the Potsdam Hill Campus of Clarkson University (in Moore House at 10 am) to a campus wide audience. Aside from some technical issues with the projection of some slides, the presentation was very well received by all. The whitepaper<sup>59</sup> and ARC data/justification upload (on the part of the students) was completed on 17 December. The oft-discussed whitepaper, from which much of this document cites, is located in Appendix D. The final presentation given by the students is also provided in Appendix E.



Figure 4: Opening Slide, Final Fall 2018 IRP Presentation

At the conclusion of the ADK semester, all that remained was for Prof. Backus to work with USGBC and GBCI to enable certification review to move forward.<sup>60</sup> As was discussed, the final MOUs are still in progress to finalize this effort in this regard, but all parties are agreed in principle and as of this writing, the project is in the review cue with GBCI.

## **Results to Date**

The core results of this LEED for Communities/Cities Collegiate Level Experience and Laboratory, was that collegiate level students at Clarkson University more than successfully completed the core tasks to

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<sup>59</sup> Flory, Megan, Barber, Paul, Buck, Benjamin, Ulrich-Verderber, Louisa, Chase, Sarah, Clark, Lindsay; Danyla, Adeline, Fudo, Lucas, Gatulik, Chloe, Melgar, Daniel, Meyer, Adam, Singh, Pranav, Terleckyj, Laryssa, Vondrak, Benjamin, “USGBC LEED for Communities Certification of the New York State Olympic Region Clarkson University Adirondack Semester, Last Revised: 17 December 2018”, Whitepaper, Clarkson University, December 2018

<sup>60</sup> This was also contingent on the NYOR partners paying the requisite registration and certification review fees.

execute certification for the New York Olympic Region. As stated in the concluding whitepaper by the ADK semester students:

“We believe that the strategy of linking local universities with rural communities is an effective one, and is especially useful for communities with fewer human and financial resources available for projects such as this. The positive effects of these relationships between academic institutions and communities are felt in both directions. From community projects, students gain real world research and problem solving experience, while providing outside ideas and perspectives which may inspire fresh approaches that advance the community’s goals. With this in mind, the relationship between Clarkson and NYOR will continue”<sup>61</sup>

Through this process the students uncovered several things that were of interest to the community:

- Violent crime rates are by proportion higher than expected, even as the total numbers appear small. Further, trends seem to need to be watched to determine how best to address any concerns that may be derived from this discovery.<sup>62</sup>
- LFC struggles to deal with visitors and high levels of tourism. Transportation, Energy, Water and Waste metrics all relate to per-capita rates, which are largely skewed on account of this context. As stated in the whitepaper, “Perhaps the most significant question they raise is whether or not the transient visitor populations should be included in a region’s total population count. In areas with high tourist traffic, such as NYOR, including the visitor population in per capita measurements provides a more accurate assessment of the impact of an individual on use of resources.”<sup>63</sup>
- “Rural communities do not have access to the same levels of information for tracking that urban communities do.”<sup>64</sup>
- The problem of having sufficient level of precision for some metrics based on data sources is very clear, as census track and other data pools may not account for those variations, while yet still be very accurate in the aggregate.
- Most (almost all) of the chosen community metrics were not available from the two-hundred plus available additional metrics in ARC. This has delayed the ability to begin work to start entering data for tracking on these metrics on the part of the NYOR partners on that platform.<sup>65</sup>
- Several metrics required some base assumption (e.g. water, for well water usage) in order to arrive at a metric for the region. Care must be taken to use the same methodology going forward, and to eventually develop better means such that said assumptions can be replaced with factual data.<sup>66</sup>
- Working with a multi-jurisdictional construct, such as NYOR, requires clear delineation of roles, responsibilities and boundaries. It also requires extensive communication and linkages to be maintained through the LFC certification process, and more importantly for the community, and its constituent parts, to meet its mutually reinforcing goals.

Beyond these discoveries, the effort proved highly rewarding academically. The participating students in the ADK semester took away great appreciation for the challenges involved in executing the task required

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<sup>61</sup> Flory, Megan, Barber, Paul, Buck, Benjamin, Ulrich-Verderber, Louisa, Chase, Sarah, Clark, Lindsay; Danyla, Adeline, Fudo, Lucas, Gatulik, Chloe, Melgar, Daniel, Meyer, Adam, Singh, Pranav, Terleckyj, Laryssa, Vondrak, Benjamin, “USGBC LEED for Communities Certification of the New York State Olympic Region Clarkson University Adirondack Semester, Last Revised: 17 December 2018”, Whitepaper, Clarkson University, December 2018

<sup>62</sup> Ibid

<sup>63</sup> Ibid

<sup>64</sup> Ibid

<sup>65</sup> Ibid

<sup>66</sup> Ibid

to achieve certification within a sustainable holistic planning system like LFC. The faculty were also able to glean invaluable data from this pilot for future iterations of this experience. For instance, Clarkson will be using its Honor's sophomore level project course next year to continue the NYOR LFC certification effort (focused on performance in the core and community metrics compared against this first iteration).

Finally, the NYOR LEED for Communities Project was submitted for review in early February and is awaiting its certification score. Once completed, it is anticipated that a significant media effort will be made to announce how the place where the "Miracle on Ice" is now a certified LEED Community, thanks to the efforts of these students, their faculty, and the community that has hosted them.

## **Recommendations and Future Actions**

After executing the first ever LEED for Communities/Cities Collegiate Level Experience and Laboratory, there are some key recommendations that come to light:

- The nature of having an immersive living-learning experience within the community for the LFC effort is very beneficial. Future LEED for Communities/Cities Collegiate Level Experience and Laboratory efforts should look to repeat this model.
- The supporting coursework used in this pilot effort would seem essential for future efforts. While done within the same semester as the LEED for Communities/Cities Collegiate Level Experience and Laboratory (the IRP), there is merit to thinking these could be done preceding the semester lab experience. That said, the need for said courses to focus on the community that is the subject of certification might make that more challenging logistically or from a focus perspective.
- As is shown here, having a dedicated faculty that can work closely with local community leaders to facilitate the needed coordination and meeting facilitation is critical. This effort of course benefited from a faculty who was very active in the local USGBC community as well as had significant local government planning experience to fulfill this role, but this needs to be considered in future efforts. There is a real need to have this coordination and facilitation role whether through an office of external relations, specific community service coursework/service work activity, or otherwise.
- Further, it is also critical to have a faculty that is working on this project that has extensive public policy experience and hold academic credentials that can guide the participating students in a rigorous scholarly approach to this work. Local community leaders see academic institutions, rightly, as places to seek knowledge that they do not possess within the greater populace. To that end, in addition to filling in a human resources gap to accomplish the effort to complete a program like LFC, communities are looking for College or University partners to bring in expertise and knowledge through the student effort such as this. Again, this pilot was able to provide that through one of the IRP faculty as well as some of the supporting course faculty.
- Future iterations take into account that students are learning as they conduct the certification efforts/researching the best ways forward with a community. To this end, the effort will take some time, but ultimately result in a much better product.

In regards to future actions, it would be Clarkson's desire to continue to develop this LEED for Communities/Cities Collegiate Level Experience and Laboratory and find other beta sites for this concept, regionally, nationally, or internationally. Further, efforts to take this particular case study and provide generalizable guidance and curricula for other contexts would certainly be considered. It is hoped that the USGBC would aid this development, through either its Center for Green Schools, or other mechanisms. Please contact the corresponding author for ways to further collaborate in this manner.

**Appendix A: Faculty Biographical Sketches**

**Appendix B: LEED for Communities Lab – Initial Meeting Notes and White Paper**

**Appendix C: Supporting Course Syllabi**

**Appendix D: USGBC LEED for Communities Certification of the New York State Olympic Region Clarkson University Adirondack Semester**



**Appendix E: Presentation: USGBC LEED for Communities Certification of the New York State Olympic Region Clarkson University Adirondack Semester**