

ADAPTING GREEN: A STEP BY STEP METHODOLOGY
FOR INTEGRATING LEED AND WELL
STANDARDS INTO ADAPTIVE
REUSE PROJECTS

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INTRODUCTION

LEED is the most widely used green building system in the world. LEED provides tools that clearly lay out the sustainable criteria for a building project. LEED is being implemented more and more every day, as is shown by its 36,835 LEED certified projects constructed between January 2017 and December of 2021. These numbers give a glimpse into the amount of companies and people striving to minimize their carbon footprint on the world. Not only are green buildings growing in popularity by clients, but architecture firms are seeking to design with sustainability in mind as well. LEED primarily focuses on the impact the building has on the environment and less on the impact the building has on the people within it. This is where WELL comes in. The WELL Building Standard was designed to work with LEED buildings to better people's health and wellness. It too provides a list of criteria as to how to best achieve WELL certification.

Both LEED's and WELL's list of criteria and considerations, to achieve certification within their programs, are vast and apply to all building and construction typologies. That being said, both programs are geared to be more easily implemented into new builds rather than existing buildings or adaptive reuse projects. This subsequently makes getting, an adaptive reuse building, LEED and/or WELL certified less desirable. The research documented in this article seeks to understand all criteria considerations within both LEED and WELL and create a methodology that shows how to best implement those considerations within an adaptive reuse project.

RESEARCH METHODOLOGY

When researching how to implement LEED strategies into adaptive reuse projects, the search came back empty. Trying to find case studies on adaptive reuse buildings that are also LEED certified proved to be a challenge as well. Examples were found, but not as many as expected. Everything that was searched always came back with a similar result, the LEED Handbook for New Construction and Major Renovations. When simply reading the title, one would assume that the Major Renovations must apply to adaptive reuse projects. It does, but it doesn't provide solutions for what someone designing an adaptive reuse building might run into. This is the same when it comes to the WELL Building Standard. It lays out a similar set of "universal" strategies, but misses the mark when it comes to adaptive reuse projects.

Upon realizing the lack of information on how to apply LEED and WELL criteria and strategies within adaptive reuse projects, the next chosen step was to create a Methodology. This methodology aims to provide information, within each "applicable" criteria, on how to implement the strategy within an adaptive reuse project. It may also provide extra considerations that may need to be taken to achieve that criteria.

RESEARCH RESULTS

The following pages contain a list of all the prerequisites and credits for the LEED for New Construction and Major Renovations v3 2009 checklist. Also included in the following pages is a list of all the prerequisites and credits for the WELL Building Standard. Within these lists are additional strategies and considerations to take when applying the criteria to an adaptive reuse project.

Step By Step Methodology For LEED and WELL Certification Within Adaptive Re-use

1. The Process of Assuring Adherence to LEED-NC requirements include:

The planning of LEED early on into design

- Alternative Transportation: Bus Stops, Bike Racks and More
 - To reduce pollution and land development impacts related to automobile use, it's important to accommodate alternate means of transportation. This is especially important when designing an adaptive reuse project where the previous site may need special attention to accommodate these needs.
- Erosion and Sedimentation Control
 - To control erosion to reduce negative impacts on water and air quality, it's important to require the contractor to follow Environmental Protection Agency (EPA) standards. When repurposing an existing building, it's important to do this to keep debris from leaving the site due to surface water erosion and entering the storm sewer systems.

- Site Selection
 - It's important not to develop on previously undeveloped sites that are:
 - Prime farmland
 - Land which is within the 100-year flood plain
 - Habitat for any endangered species
 - Land within 100 feet of wetland
 - Land which was public parkland
 - This can be problematic with adaptive reuse. Many previously built buildings were designed in the above mentioned locations.
- Development Density, Reduced Site Disturbance, Heat Island Effect - Non-roof
 - Reuse of an existing developed site helps meet the LEED minimum development density for the site of 60,000 square feet per acre
 - Review local zoning requirements for open space percentage
 - Find ways to reduce the heat island effect. Light colored concrete with light reflectance levels of 0.35 or lower meets LEED Requirements. This will mean possibly replacing existing roofs, sidewalks, and courtyard spaces.

- Light Pollution Reduction

- Some ways to meet the foot-candle requirements set by the Illuminating Engineering Society of North America (IESNA) are:
- Perimeter lighting
- Pedestrian lighting that is fully shielded with louvers
- Building lighting
- Have all lighting controlled by photo cells (automatically turn on at night) and time clocks for flexibility

- Water Efficient Landscaping

- This includes but is not limited to automatic irrigation systems, low-flow drip irrigation with shrub planting beds, sprinkler controlled lawn.
- Select plantings for hardiness, xeriscape characteristics, and reduced maintenance requirements.

- Building Reuse - Floors

- It is good practice to retain, when applicable, undamaged flooring within adaptive reuse projects.

- Building Reuse - Windows

- It is good practice to retain, when applicable, windows within adaptive reuse projects. This can be done by repairing existing windows, salvaging old window components to help with the repairing, and installing new windows to best match when necessary.

- Local/Regional Materials
 - It is wise to plan on which local vendors to use for the project. Incorporation of local materials saves energy by minimizing the need to transport material great distances and supports the local economy. LEED requires a minimum 20% of the total material costs (from 45% of the total construction costs) to be products manufactured/fabricated within a 500 mile radius.
- Construction Waste Management
 - When designing an adaptive reuse building it is important to salvage or safely remove existing building materials that no longer function as their original intended use. The salvaging of existing materials helps lessen the demand for extraction of virgin materials and helps reduce water.
- **Inclusion of LEED requirements in construction documents**
- **Inclusion of LEED requirements in project specifications**
- **Coordination between consultants and architects**
- **Strong construction administration and regular LEED discussions at construction meetings**

2. Adhere to LEED Project Checklist

Documentation, information gathering, calculations and follow-through all aid in the completion of LEED requirements. LEED certification is ranked within four levels of overall credit achievement:

<u>Certification Levels</u>	
Certified	26-32
Silver	33-38
Gold	39-51
Platinum	52-69

3. Address the Seven Categories to Achieve LEED Certification

“Green building design strives to balance environmental responsibility, resource efficiency, occupant comfort and well-being, and community sensitivity.” Here are the six categories:

- LT - Location and Transportation (8 Credits)

- LEED for Neighborhood Development Location (Up To 16 Points)
 - There is a high probability that many adaptive reuse projects can meet this requirement. If the project meets this requirement it is not eligible for anymore points under this category (Location and Transportation).

- Sensitive Land Protection (1 Point)
 - This requirement will be met by almost all adaptive reuse projects due to the nature of the adaptive reuse.
- High Priority Site (2 Points)
 - Many adaptive reuse buildings may be located within an historic district.
 - Brownfield remediation is very possible when attempting adaptive reuse.
- Surrounding Density and Diverse Uses (**Possible 6 Points**)
 - This requirement encourages the development of areas with existing infrastructure, making it perfect for adaptive reuse projects.
 - (THIS IS GREAT OPTION IF ATTEMPTING WELL Standard Certification)
- Access to Quality Transit (Up To 5 Points)
 - Adaptive reuse projects may make it easier to obtain this goal due to the existing transit routes possibly on site.
- Bicycle Facilities (1 Point)
 - Universal requirements and considerations
- Reduced Parking Footprint (1 Point)
 - Universal requirements and considerations
- Green Vehicles (1 Point)
 - Universal requirements and considerations

- **SS - Sustainable Sites (7 Credits)**

- Construction Activity Pollution Prevention (**REQUIRED**)
 - This is especially important within adaptive reuse projects. All adaptive reuse will require some demolition and all necessary precautions must be taken.
- Site Assessment (1 Point)
 - This can be made easier, within adaptive reuse, due to the presence of a building on the site.
- Site Development - Protect or Restore Habitat (Up to 2 Points)
 - Within an adaptive reuse project there will be opportunities to restore previously disturbed sites.
- Open Space (1 Point)
 - This consideration may be difficult to obtain in certain adaptive reuse projects. Many existing buildings may not meet the building footprint requirements for exterior open space. This may lead to unanticipated demolition or choosing to not meet this requirement.
- Rainwater Management (Up To 3 Points)
 - Universal requirements and considerations
- Heat Island Reduction (Up To 2 Points)
 - Choosing to meet this consideration within an adaptive reuse project may require demolition of the existing roof. If existing roof is in good shape and demolition isn't the desired outcome, this consideration may not be feasible.
- Light Pollution Reduction (1 Point)
 - Universal requirements and considerations

- **WE - Water Efficiency (7 Credits)**

- Reduce the quantity of water needed (**REQUIRED**)

- This requires reducing the amount of indoor and outdoor water use. For outdoor water use LEED gives you 2 options for reduction: Option 1 is no irrigation required and Option 2 is reduced irrigation. In an adaptive reuse project this can be more tricky due to the fact that you are working with the structure and site given. Some sites may require specific plant species added or high efficiency irrigation systems.
- Indoor water use reduction can be achieved by reducing the amount of water fixtures within the building. In an adaptive reuse building, the designer may need to remove existing water fixtures throughout and strategically design accordingly.

- Building-Level Water Metering (**REQUIRED**)

- This step is the same for both new construction and adaptive reuse. It requires the installation of permanent water meters on each floor.

- Cooling Tower Water Use (Up To 2 Points)

- When attempting an adaptive reuse project, the designer may run across a building that already is using a cooling tower. If this is the case you will need to conduct a potable water analysis of the current cooling tower. If you pass, or make the necessary changes if you failed, you will need to conduct another potable water analysis within 5 years of submitting to be LEED Certified.

- **EA - Energy and Atmosphere (11 Credits)**

- Fundamental Commissioning and Verification (**REQUIRED**)

- This process is the same whether it's an adaptive reuse building or not.

- Minimum Energy Performance (**REQUIRED**)
 - Much of the requirements within this are universal between new construction and adaptive reuse.
 - One specific requirement for adaptive reuse is that the building needs to have a 14% energy improvement.
- Building-Level Energy Metering (**REQUIRED**)
 - Universal requirements. Only difference is the possible reuse of existing energy meters within an adaptive reuse.
- Fundamental Refrigerant Management (**REQUIRED**)
 - In an adaptive reuse scenario, designers may be looking at reusing the existing base building HVAC equipment. If so, they must complete a comprehensive CFC phase-out conversion prior to project completion. If the phase-out extends beyond the project completion date, it will be considered based on its merits.
- Enhanced Commissioning (Up To 6 Points)
 - The project will need a commissioning authority (CxA) with a documented commissioning process experience on at least two building projects with a similar scope of work. The experience must extend from early design phase through at least 10 months of occupancy.
 - This can be more challenging within an adaptive reuse project due to them being less common, which could make it harder to find an CxA with relevant experience.
- Optimize Energy Performance (Up To 18 Points)
 - Similar considerations as Minimum Energy Performance

- Advanced Energy Metering (1 Point)
 - Same as Building-Level Energy Metering
- Demand Response (Up To 2 Points)
 - Universal requirements and considerations
- Renewable Energy Production (Up To 3 Points)
 - Universal requirements and considerations
- Enhanced Refrigerant Management (1 Point)
 - Same as Fundamental Refrigerant Management
- Green Power and Carbon Offsets (Up To 2 Points)
 - Universal requirements and considerations
- **MR - Materials and Resources (7 Credits)**
 - Storage and Collection of Recyclables (**REQUIRED**)
 - Universal requirements and considerations
 - Construction and Demolition Waste Management Planning (**REQUIRED**)
 - Due to the possibility of more waste materials in an adaptive reuse project, designers may have extra documentation within this requirement.

- Building Life-Cycle Impact Reduction (Up To 5 Points)
 - This requirement is geared towards adaptive reuse and covers all aspects of adaptive reuse. Adaptive reuse buildings in this category earn more points than new construction buildings.
 - Option 1: historic building reuse is worth 5 points and will require minimal impact to the building and site. Option 2: renovation of abandoned or blighted building is worth 5 points and requires the building to maintain at least 50% of the existing structure. Up to 25% of that may be excluded due to deterioration or damage. Option 3: building and material reuse is worth 2-4 points. This includes reusing or salvaging of building materials on site or off site.
- Building Product Disclosure and Optimization - Environmental Product Declarations (Up To 2 Points)
 - Within an adaptive reuse project, this requirement refers to the new building materials added to the project. Many adaptive reuse buildings are of traditional brick construction. Traditional brick, when first installed in new construction, has a negative environmental impact due to the large quantities of energy it takes to make them. This results in greenhouse gas emissions.
 - If the existing building is of brick construction and additional brick needs to be added due to deterioration, damage, or design intent, the use of alternative bricks, which is more sustainable, is encouraged.
- Building Product Disclosure and Optimization - Sourcing of Raw Materials (Up To 2 Points)
 - Universal requirements and considerations
 - Similar considerations as above

- Building Product Disclosure and Optimization - Material Ingredients (Up To 2 Points)
 - Universal requirements and considerations
- Construction and Demolition Waste Management (Up To 2 Points)
 - Same considerations and recommendations as Construction and Demolition Waste Management Planning.
- **EQ - Indoor Environmental Quality (11 Credits)**
 - Minimum Indoor Air Quality Performance (**REQUIRED**)
 - **(IMPORTANT) THIS REQUIREMENT SHOULD BE CONSIDERED AT THE BEGINNING OF THE DESIGN PHASE.**
 - Due to the constrictions that can accompany adaptive reuse projects, implementing mechanically and or naturally ventilated spaces can prove to be challenging. This is why this should be implemented in the earliest stages of design development.
 - Environmental Tobacco Smoke Control (**REQUIRED**)
 - Universal requirements and considerations
 - Enhanced Indoor Air Quality Strategies (Up To 2 Points)
 - Universal requirements and considerations
 - Low-Emitting Materials (Up To 3 Points)
 - This may require some extra consideration within adaptive reuse buildings due to the possibility of existing contaminants within interior materials.

- Construction Indoor Air Quality Management Plan (1 Point)
 - Universal requirements and considerations
- Indoor Air Quality Assessment (Up To 2 Points)
 - This requirement can be more difficult in an adaptive reuse project. Depending on the state of the building prior to design, it may need contaminate removal such as asbestos, black mold, and more. This makes it that much more important to do the removal of such contaminants properly and running the air quality assessment prior to people occupying the space.
- Thermal Comfort (1 Point)
 - Universal requirements and considerations
- Interior Lighting (Up To 2 Points)
 - Universal requirements and considerations
- Daylight (Up To 3 Points)
 - It can be challenging to bring daylight properly into adaptive reuse buildings. When building new construction, designers have more control over the building footprint and how to best utilize the daylight coming into the building. When designing adaptive reuse, the designer is more constricted to the current footprint and how the daylight interacts with the building.
 - Different techniques, technologies, and considerations may be needed when manipulating daylight within and adaptive reuse project.

- Quality Views (1 Point)
 - Universal requirements and considerations
- Acoustic Performance (1 Point)
 - Depending on existing building materials, this can be a more difficult criteria to hit within an adaptive reuse building. Due to existing materials it may be costly to properly provide sound isolation and acoustics within the building.
- **ID - Innovation in Design (2 Credits)**
 - Innovation (Up To 5 Points)
 - Universal requirements and considerations
 - LEED Accredited Professional (1 Point)
 - Universal requirements and considerations

4. Adhere to WELL Building Standard Requirements

Projects become certified if a sufficient number of features are satisfied. To maintain WELL Certification, projects must be recertified a minimum of every three years because building conditions can deteriorate over time to the point of adversely affecting the health and wellness of occupants.

Project teams can register at any point as they progress through the design and development process. However, it's best to register as close to the very beginning of the process.

- The planning of WELL Building Standard early on into design
- Inclusion of WELL Building Standard requirements in construction documents
- Inclusion of WELL Building Standard requirements in project specifications
- Coordination between consultants and architects
- Strong construction administration and regular WELL Building Standard discussions at construction meetings

5. Adhere to WELL Building Standard Project Checklist

Documentation, information gathering, calculations and follow-through all aid in the completion of WELL Building Standard requirements. WELL Building Standard certification is ranked within four levels of overall credit achievement:

Certification Levels

Bronze	40
Silver	50
Gold	60
Platinum	80

6. Address the Seven Categories to Achieve WELL Certification

- Air

- 01 Air quality standards
 - This may require some extra consideration within adaptive reuse buildings due to the possibility of existing contaminants within interior.
- 02 Smoking ban
 - Universal requirements and considerations
- 03 Ventilation effectiveness
 - Universal requirements and considerations
- 04 VOC reduction
 - Existing paints, coatings, adhesives, sealants, flooring, and insulation may not meet requirements within adaptive reuse projects. Will need to work closely on whether or not this only applies to new materials.
- 05 Air filtration
 - The accommodation for filter space may be difficult within adaptive reuse due to previous restrictions.
- 06 Microbe and mold control
 - Universal requirements and considerations

- 07 Construction pollution management
 - Universal requirements and considerations
- 08 Healthy entrance
 - Universal requirements and considerations
- 09 Cleaning protocol
 - Universal requirements and considerations
- 10 Pesticide management
 - Universal requirements and considerations
- 11 Fundamental material safety
 - Asbestos and lead removal may be cumbersome and difficult within adaptive reuse projects. This will be encountered often when attempting adaptive reuse.
 - Existing water pipes can't have more than a weighted average of 0.25% of lead. Many existing pipes will need to be analyzed and possibly replaced within adaptive reuse projects.
 - Any adaptive reuse projects within buildings dating between the 1950's will need to conduct the removal and safe disposal of PCB-containing fluorescent light ballasts.
 - Existing equipment, recreational or not, will need to be tested for lead paint and other harmful sealants.
- 12 Moisture management
 - Condensation management may be more difficult depending on the adaptive reuse building being used.

- 13 Air flush
 - Universal requirements and considerations
- 14 Air infiltration management
 - Universal requirements and considerations
- 15 Increased ventilation
 - Universal requirements and considerations
- 16 Humidity control
 - Universal requirements and considerations
- 17 Direct source ventilation
 - Universal requirements and considerations
- 18 Air quality monitoring and feedback
 - Universal requirements and considerations
- 19 Operable windows
 - Universal requirements and considerations
- 20 Outdoor air systems
 - Universal requirements and considerations

- 21 Displacement ventilation
 - Universal requirements and considerations
- 22 Pest control
 - Universal requirements and considerations
- 23 Advanced air purification
 - Universal requirements and considerations
- 24 Combustion minimization
 - Universal requirements and considerations
- 25 Toxic material reduction
 - Possible removal of toxic materials in adaptive reuse projects
- 26 Enhanced material safety
 - Universal requirements and considerations
- 27 Antimicrobial activity for surfaces
 - Universal requirements and considerations
- 28 Cleanable environment
 - Universal requirements and considerations

- 29 Cleaning equipment
 - Universal requirements and considerations

- **Water**

- 30 Fundamental water quality
 - Universal requirements and considerations
- 31 Inorganic contaminants
 - Existing water supply will need to be tested and possibly replaced within adaptive reuse to meet WELL Standard requirements
- 32 Organic contaminants
 - Existing water supply will need to be tested and possibly replaced within adaptive reuse to meet WELL Standard requirements
- 33 Agricultural contaminants
 - Existing water supply will need to be tested and possibly replaced within adaptive reuse to meet WELL Standard requirements
- 34 Public water additives
 - Existing water supply will need to be tested and possibly replaced within adaptive reuse to meet WELL Standard requirements

- 35 Periodic water quality testing
 - This testing may eventually show levels of contaminants within adaptive reuse projects depending on the level of water supply replacement. Consider full replacement of old water pipes prior to project completion.
- 36 Water treatment
 - Universal requirements and considerations
- 37 Drinking water promotion
 - Universal requirements and considerations

- **Nourishment**

- 38 Fruits and vegetables
 - Universal requirements and considerations
- 39 Processed foods
 - Universal requirements and considerations
- 40 Food allergies
 - Universal requirements and considerations
- 41 Hand washing
 - Universal requirements and considerations

- 42 Food contamination
 - Universal requirements and considerations
- 43 Artificial ingredients
 - Universal requirements and considerations
- 44 Nutritional information
 - Universal requirements and considerations
- 45 Food advertising
 - Universal requirements and considerations
- 46 Safe food preparation materials
 - Universal requirements and considerations
- 47 Serving sizes
 - Universal requirements and considerations
- 48 Special diets
 - Universal requirements and considerations
- 49 Responsible food production
 - Universal requirements and considerations

- 50 Food storage
 - Universal requirements and considerations
- 51 Food production
 - Universal requirements and considerations
- 52 Mindful eating
 - Universal requirements and considerations

- **Light**

- 53 Visual lighting design
 - Universal requirements and considerations
- 54 Circadian lighting design
 - Universal requirements and considerations
- 55 Electric light glare control
 - Universal requirements and considerations
- 56 Solar glare control
 - Universal requirements and considerations

- 56 Solar glare control
 - Universal requirements and considerations
- 57 Low-glare workstation design
 - Universal requirements and considerations
- 58 Color quality
 - Universal requirements and considerations
- 59 Surface design
 - Universal requirements and considerations
- 60 Automated shading and dimming controls
 - Universal requirements and considerations
- 61 Right to light
 - Universal requirements and considerations
- 62 Daylight modeling
 - Some challenges that adaptive reuse projects may face is that the existing window placements don't meet the requirements for healthy sunlight exposure. Additional remodeling may be necessary to meet requirement.

- 63 Daylighting fenestrationFitness
 - Universal requirements and considerations
- Establish good indoor air quality
 - Universal requirements and considerations
- Eliminate, reduce and manage the sources of indoor air pollution
 - Universal requirements and considerations
- Ensure thermal comfort and systems controllability
 - Universal requirements and considerations
- Provide a connection to the outdoors
 - Universal requirements and considerations

- **Fitness**

- 64 Interior fitness circulation
 - This will apply to adaptive reuse projects of 2-4 floors.
- 65 Activity incentive programs
 - Universal requirements and considerations

- 66 Structured fitness opportunities
 - Universal requirements and considerations
- 67 Exterior active design
 - Within adaptive reuse, this requirement will depend on how much lot space the existing building occupies.
- 68 Physical activity spaces
 - Universal requirements and considerations
- 69 Active transportation support
 - Universal requirements and considerations
- 70 Fitness equipment
 - Universal requirements and considerations
- 71 Active furnishings
 - Universal requirements and considerations
- **Comfort**
 - 72 ADA accessible design standards
 - Universal requirements and considerations

- 73 Ergonomics: visual and physical
 - Universal requirements and considerations
- 74 Exterior noise intrusion
 - Some adaptive reuse projects will require creative solutions and considerations to accomplish this requirement.
- 75 Internally generated noise
 - New mechanical systems might be necessary within some adaptive reuse projects.
- 76 Thermal comfort
 - Universal requirements and considerations
- 77 Olfactory comfort
 - Universal requirements and considerations
- 78 Reverberation time
 - Universal requirements and considerations
- 79 Sound masking
 - Universal requirements and considerations
- 80 Sound reducing surfaces
 - Universal requirements and considerations

- 81 Sound barriers
 - Unintended demolition may be required within adaptive reuse projects to meet wall construction methodology.
- 82 Individual thermal control
 - Universal requirements and considerations
- 83 Radiant thermal comfort
 - Universal requirements and considerations

- **Mind**

- 84 Health and wellness awareness
 - Universal requirements and considerations
- 85 Integrative design
 - Universal requirements and considerations
- 86 Post-occupancy surveys
 - Universal requirements and considerations
- 87 Beauty and design I
 - Universal requirements and considerations

- 88 Biophilia I - qualitative
 - Universal requirements and considerations
- 89 Adaptable spaces
 - Universal requirements and considerations
- 90 Healthy sleep policy
 - Universal requirements and considerations
- 91 Business travel
 - Universal requirements and considerations
- 92 Building health policy
 - Universal requirements and considerations
- 93 Workplace family support
 - Universal requirements and considerations
- 94 Self-monitoring
 - Universal requirements and considerations
- 95 Stress and addiction treatment
 - Universal requirements and considerations

- 96 Altruism
 - Universal requirements and considerations
- 97 Material transparency
 - Universal requirements and considerations
- 98 Organizational transparency
 - Universal requirements and considerations
- 99 Beauty and design II
 - The ceiling height in some adaptive reuse buildings may not meet the required height. Extra considerations may need to be made.
- 100 Biophilia II - quantitative
 - Universal requirements and considerations

7. To maintain WELL Certification, projects must be certified a minimum of every three years because building conditions can deteriorate over time to the point of adversely affecting the health and wellness of occupants.

RESEARCH RESULTS

Upon completing the adaptive reuse focused breakdown of the LEED and WELL criteria, some criteria was found to be very easy to meet and others were going to present challenges. For instance, the LEED for Neighborhood Development location criteria will tend to be commonly met for adaptive reuse projects due to their typical locations within cities. If this criteria is met the project is awarded 16 points. The easiest criteria that adaptive reuse projects can meet is the Surrounding density and diverse uses. It states, "To conserve land and protect farmland and wildlife habitat by encouraging development in areas with existing infrastructure". Since adaptive reuse projects are reusing existing infrastructure this is an instant 5 points toward LEED certification. There are many more examples of criteria that are more easily met by adaptive reuse projects, but there are also examples of criteria that will be harder to meet as well. The Open Space criteria, for instance, could provide challenges to adaptive reuse projects. It states that one must provide outdoor space greater than or equal to 30% of the total site area which includes the building footprint. Since adaptive reuse projects have established footprints this may require unforeseen demolition and demolition costs. One thing to remember is that not all of the criteria within the LEED and WELL lists are required. Any of these criteria, except for the required ones, can be omitted if needed. These findings have shown that getting LEED and WELL certified within an adaptive reuse is very manageable. The cost difference between adaptive reuse and new construction certification is a hit or miss. Certain adaptive reuse projects might cost less due to the fact that they already meet criteria without having to pay to implement them. On the other hand they could cost more if additional demolition and construction is necessary to meet the criteria.

CONCLUSION

With this project I hope to show the benefits for more adaptive reuse buildings within communities and how to best implement LEED and WELL certifications. The project goal is to bring awareness to salvageable, existing, and possible historical buildings that are worth readapting and reusing. The aim for this project is to show possible cost savings doing adaptive reuse rather than new build as well as the benefits to the local economy and community. I hope that by creating a detailed methodology specific to adaptive reuse projects, it will help create proper expectations as well as make the certification process more streamline.
