



Response to:

The New Jersey Department of Environmental Protection  
State Park Service

Request for Expression of Interest  
for the use of the former

New Jersey School of Conservation Building Complex

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## Introduction

Even as New Jersey confronts multiple economic and social dislocations resulting from the impacts of COVID – the climate crisis, which will continue to devastate our communities without aggressive and direct intervention, looms large. ambitious sustainable energy goals will require action locally, nationally, and across the globe. Moreover, clean energy and sustainability innovation is a key driver to achieving domestic energy security, mitigating climate change, and enabling the rational use of low-carbon forms of energy, with the overall aim of creating a strong, low-carbon and universally accessible economy.

Reimagining the School of Conservation gives New Jersey the opportunity to build upon the historic legacy of an institution that was ahead of its time in realizing that training its citizenry to be effective stewards of the environment was essential to our future. Now, we can make the best and most creative efforts in environmental conservation that incorporate the fields of sustainability and clean energy. We can link together a commitment to environmental education to innovation in the Green Economy. This is the promise of the New Jersey School of Conservation.

Under the leadership of a new president, Montclair State University proposes to resume management of the School of Conservation site and rededicate itself to its historic mission to educate K-12 students about the environment. This is part of the identity and philosophy of the University taking shape as the state's higher education leader in community engagement. The School will have a key role in engaging and drawing in diverse communities who do not traditionally access nature and nature-based education. This proposal presents a plan for the School that incrementally builds a sustainable, entrepreneurial business model that seeks infrastructure investment for facilities that demonstrate sustainability in action and a beautiful setting that highlights the critical balance of nature. The School would be an inclusive hub that brings together innovators in sustainability and climate change, communicates economic opportunities, and educates the public in environmental conservation and the latest practices in clean energy adoption and sustainability. By partnering with municipalities, non-governmental organizations (NGOs), environmental justice (EJ) communities, and other education institutions across New Jersey, the School will emulate impactful models of collaboration like the Cary Institute of Ecosystem Studies and the Liberty Science Center.

## **1. Background**

Originally purchased in 1924 by the present-day NJDEP as an addition to Stokes State Forest, the grounds of the New Jersey School of Conservation have a rich history. In 1934, the Civilian Conservation Corps created Skellinger Group Camp at Lake Wapalanne, 12 cabins and supporting buildings to provide a summer camping experience for underserved youth. Its mission was to educate K-12 students about the environment and conservation, with a focus on children from inner cities. In 1949, the administration of the Camp was transferred to the present-day Montclair State University and the School of Conservation was established as a conservation field campus. During the 1950's, college courses and teacher workshops at the School brought together the nations leaders in Outdoor Education and Conservation Education. The number of students attending the School increased from sixty in the first program in 1957, to approximately three thousand in the 1960. Since then, the School has had six directors, with the longest tenure by Dr. John J. Kirk from 1963-2001.

Historically, Montclair professors and their undergraduate and graduate students from a variety of academic programs worked and studied at the School. The diverse habitats of the area enabled undergraduate and graduate students, post-doctoral fellows, and university faculty members to carry out research in ecology, conservation, and the like. The University also established a strong and well-developed partnership with AmeriCorps to bring Conservation Specialists to the site. AmeriCorps is a state and national service initiative that provides opportunities for participants to engage in community service in return for a stipend and scholarship funds. Each year over 100,000 American citizens serve their communities and country through participation in AmeriCorps programs located throughout the United States. The School of Conservation's AmeriCorps program provided environmental training opportunities and teaching experience in the residential environmental education programs. In addition to gaining experience in field instruction, AmeriCorps members planned, organized, and coordinated environmental service projects, and helped maintain and restore the School's infrastructure and habitat related to the educational and environmental mission of the School.

Fiscal issues arose in 2011 when the State eliminated the School's annual appropriation of approximately \$1 million in funding. Because of the University's long history with the School of Conservation and the importance of the field of conservation to New Jersey, the University made every effort to continue the programs of the School with no operating or capital support by the State and the University's each-year-diminishing state appropriations of general operating funds. Ultimately, in spring 2020, additional major cuts to the University's state appropriations, combined with the growing need for capital investments in the School's deteriorating buildings and grounds and the tremendous burden of expenditures and lost

revenues associated with the coronavirus pandemic, made continued assumption of the operating losses of the School untenable without State assistance. In September 2020, facing a projected deficit of \$30 million and a delayed annual state budget appropriation, the University returned management of the School to the NJDEP. In fact, the university suffered an unexpected loss of approximately \$41 million in revenues in 2020 by pandemic expenses.

Much has changed since 2020. The University has a new president, Dr. Jonathan Koppell, and is implementing pppa new Strategic Plan, Project SOAR, with three guiding pillars: Fostering Student Transformation; Growing Through Diversity and Access; Discovery and Application of Knowledge. (See **Appendix A** for full description.) Underlying the pillars, strategies and success measures is a single aspiration: to be ceaselessly innovative and demonstrably effective in meeting the changing needs of society. The University has been and will continue to be both nimble and thoughtful in making the continuing adjustments essential to maintaining its vital relevance for both transmitting cultural traditions, creating new knowledge, meeting emerging market demands, and serving the higher education needs of an evolving world.

President Koppell believes strongly in the power of public universities to make a difference in the world, to create transformational opportunities for students, and to engage closely with the communities they serve to solve the most pressing problems of society. With its unwavering commitment to diversity, student success, social justice, research and community service, the University's mission aligns closely with his personal values and vision for higher education. This is why President Koppell is supportive of exploring how the University and the State can work together to leverage resources to support the School of Conservation and scale up its use by adding a new Green Innovation Center at the Complex. The School has tremendous unrealized potential. The University has learned from its previous experiences managing the School and is committed to develop a cost effective management structure for long term sustainable growth and fiscal responsibility as described in the next sections.

## **2. Concept**

The University's concept for the operation of the School of Conservation is as sole manager of the Complex providing activities, workshops and events in three areas: K-16 student education, stakeholder engagement and workforce development, and field science and research. Following a highly collaborative approach to managing the activities at the School, the University will work with stakeholders, including the Friends of the School of Conservation and other civic groups, local, county and state governments, and private industry, who are essential to shape the site experience and cultivate broad public engagement. In a phased project, Montclair State

University proposes to create the state's premier facility in sustainability and clean energy by creating an innovation hub that showcases state-of-the-art sustainability technology and practical green building remediation throughout the Complex. The University will leverage its designations as a Hispanic Serving Institution (HSI) and Carnegie Classification R2 Doctoral University, High Research Activity to make the science accessible to a broad public, furthering diversity, equity, inclusion and targeting underrepresented backgrounds and/or overburdened communities. An expanded mission that includes actionable topics such as climate science and sustainability and a program to increase transportation and accessibility to the site will invigorate the School of Conservation's programming and impact. The University's College of Science and Mathematics will take the lead in the School's management and integrate the research expertise of its institutes and centers in environmental science and sustainability. Drawing on the University's long history of innovation in education, the School will continue its mission of educating K-16 students about the environment so that they can address current issues of climate change and sustainability.

### ***2.1 The NJ Green Innovation Center***

New Jersey has ambitious clean energy goals and a need to communicate the innovations and economic opportunities that it creates. The University proposes to put sustainability and conservation theory into practice at the state's premier active learning and training center, the NJ Green Innovation Center. The College of Science and Mathematics is preparing a \$5 million proposal for the FY 2021 American Rescue Plan Act Economic Adjustment Assistance Notice of Funding Opportunity. This infrastructure funding opportunity would support the construction of the new Center, a net carbon neutral building with state of the art sustainability technology. The Center will be a hub that brings together innovators in climate tech, communicates economic opportunities, and educates the public in the latest practices in clean energy adoption and sustainable practices. The site can serve as a living laboratory to showcase and test sustainability and clean energy design in a setting that emphasizes the importance of conservation. Future phases of the renovation include retrofitting the remaining School of Conservation infrastructure to meet today's ADA and clean energy standards and complement the activities of the Center.

#### ***Proposed programming plan:***

The Center will facilitate active learning, workforce education, and training throughout the year while bringing economic opportunities to this rural and historically underserved part of New Jersey. The Center can also provide a shared resource for academic institutions, government

entities, and industry to hold offsite meetings in a unique setting. It will serve as a meeting point for New Jersey's stakeholders to exchange ideas about the most recent developments in sustainability, initiate new projects and connect with young scientists. When fully functional, the site has the capacity to serve ten thousand in-person visitors per year. Remote access could expand the reach exponentially.

By partnering with municipalities, NGOs, EJ communities, and other universities across NJ, the Center can be a hub of collaboration with energy, informatics, and environmental professional societies and local industry. Montclair State will establish training programs in partnership with social action groups on environmental justice based action and ecosystem resilience. The University has a history of directly supporting startup companies on its campus and has expanded its partnerships with venture capital firms to identify New Jersey talent in the areas of climate technology and life sciences. The Center can support a variety of meetings hosted by these partners, from short courses and technical seminars to industry expos and career fairs.

Building on Montclair State University's established degree programs for post secondary education, the Center will deliver state approved certificate-level training in green technology, conservation, ecology, energy, robotics, hydrology, information systems, automation, as well as energy security to serve the industry's workforce needs. The University estimates that at least 100 certificates will be facilitated by the Center each year helping trainees get new jobs in local businesses and organizations. Additional programming can be provided by Montclair State partners such as continuing education by Continuing Professional Education Services (CPES) and professional development by Professional Resources in Science and Mathematics (PRISM), historically serving hundreds of professionals each year. These programs will dovetail with internship and research opportunities such as the Wind Institute Fellowships, Capstone research in energy, ecology and environment, PSEG Institute for Sustainability Studies' Sustainable Public Service Program, and the College of Science and Mathematics' Faculty Student Research Program.

***Proposed innovation demonstrated in the new construction:***

- The design of the Center will meet standards so that it is LEED Gold certified. (See **Appendix B** for concept diagrams.) It will maximize natural daylight and views to nature. Light Pollution Reduction credit would ensure the project does not disrupt 'dark sky' conditions which are extremely important at this site. The project would use 100% native landscaping which would achieve exemplary performance for the Protect and Restore Habitat credit. This landscape design will also enable the exclusion of traditional irrigation and utilize captured/stored stormwater. The careful selection of materials with

sustainable characteristics like recycled content, low embodied carbon, hyper-local, and low /no toxicity will achieve multiple credits in the Materials & Resources category.

- The building will utilize smart grid technology. The site has an existing solar field. In addition, roof top and parking area photovoltaic arrays will provide electricity for the Center. A building with this energy profile would need to “borrow” approximately 15% of the electricity from the parking to achieve net zero energy. The remaining electricity could help other buildings on campus achieve net zero energy / net zero carbon.
- The heating and cooling of the building will be controlled by IoT sensor systems that allow for room-by-room energy and indoor air quality (IAQ) optimization. For example, Komfort IQ uses an occupancy sensor to “talk” to the mechanical system serving that room and when unoccupied the temperature is allowed to fluctuate up or down within a certain range saving heating or cooling energy. This system uses machine learning and predictive analytics to deliver heating / cooling to each space more precisely.
- Geothermal heating and cooling will be provided by Ground Source Heat Pump technology. For commercial applications, vertical boreholes are drilled (approx. 300'-400'), piping is inserted, and a thermally conductive fluid is circulated. The relatively stable temperature of the ground allows the fluid to either reject heat (cooling season / summer) or absorb heat (heating season / winter). That fluid is pumped back into a heat pump in the building's mechanical room where it exchanges heat / cooling with a liquid refrigerant inside the heat pump where it heats or cools air that is distributed throughout the building.
- Electrochromic glass can be used to reject heat on south and west facing windows. Andluca is a good candidate as a local NJ startup. There could be multiple glazing installations that are tested in-situ alongside conventional glazing with roof shading to help determine a cost / energy efficiency / visual comfort optimization. Voice responsive lighting controls and circadian lighting could be installed and tested.
- Best practices in water conservation will also be demonstrated. The site around the Center will utilize green infrastructure so stormwater can be absorbed into the soil. These measures (rain gardens, bioswales, etc) will be linked so they work as a networked system to handle larger rainfall events. On the building, the green roof will absorb stormwater. Excess roof runoff can either be diverted into tanks, minimally treated, and re-used for irrigation and toilet flushing or it can be sent into the site green infrastructure system for absorption.

If the proposal for the NJ Green Innovation Center is successful, the University will complete the architectural design process and determine the availability of funds and finalize a plan for immediate remediation of existing structures. Priority will be given to support functionality of the Center.

## **2.2 Student Education: K-16**

The School of Conservation has the capacity to host thousands of students each year and a mission to provide K-12 programs about the environment to underserved communities. The University has a distinguished history of managing the School so it could deliver on its mission and is uniquely positioned as a Hispanic Serving Institution (HSI) and a majority minority institution with deep ties to Newark and Paterson to continue its goals of inclusion and diversity. The University plans to offer to its extensive network of school system partners opportunities of experiential learning and day camp programs for students and teachers. Programming will expand to climate science with energy, sustainability and conservation related projects and curriculum modules, furthering the NJDEP's mission to protect and promote the environment.

The School will implement programs for certifications, credentialing, industry practicums, tool kits, and curriculum development for early-career training, retraining, and mid-career training, with attention to recruiting traditionally underrepresented groups. Drawing on the University's established programs in education, such as Red Hawks Rising and PRISM, climate science and sustainability activities at the School will have significant impact on New Jersey's current and future educators. Other early-career programs will train high school and university students to get jobs in sustainability with cross-cutting skills in energy optimization and management, data science and analytics, and conservation. Example early-career programs include: Sustainable Sustainability Talent (SST) for high school students; and Women in Sustainability and Energy (WISE) programs for high school and university students to get jobs in energy and sustainability industry with cross-cutting skills in energy optimization and management, sustainability analytics, ecology and conservation. The workforce development approach will follow the partnered-participatory learning approach: experiential, participatory learning, and shared teaching with industry representatives and other employers.

Programming will be provided by groups dedicated to the preservation of our natural resources such as the University's New Jersey Center for Water Science and Technology (NJCWST). Its talented team, whose expertise is in the study of water quality, pollution and technological solutions, researches, monitors, and aids in the management of lakes, rivers, reservoirs, and other water bodies throughout the state of New Jersey. They provide technical assistance to conservation groups, water managers, and municipalities in a continuous effort to keep our water safe for drinking and recreation, to ensure that our seafood is safe for human consumption, and to preserve native ecosystems and precious water resources. The NJCWST also enriches public outreach through environmental education for K-12 students and the general public through its EcoExplorers program and their summer Eco-Institute, which promotes environmental awareness and stewardship and to enhance scientific literacy



The innovation in solar energy at the site is a potential educational site for K-12, and college and university students studying energy and sustainability and taking solar technology training that can lead to solar project manager and solar analyst design specialists. The solar and geothermal along with other training at site (e.g, lighting, HVAC, mechanical) will lead to workforce development and trainees getting jobs as certified energy auditors The load management, circular economy, energy forecasting, and allied training will lead to trainees getting jobs as energy analysts, energy market operation specialists, sustainability officers and analysts.

Montclair State University's partnerships with county colleges and high schools will allow the Center to develop courses that support dual enrollment and reverse transfer pathways that remove barriers to advanced STEM degrees. Potential examples of partners include Sussex County College and Montclair High School. Currently, Montclair State accepts hundreds of transfer students into STEM majors and over 100 dual enrollment students each year. The Center's activities will be incorporated into the new freshmen orientation, called the Summer Bridge Program. This program will approximately serve 1,000 students per year and is projected to expand.

### ***2.3 Science and Research***

The College of Science and Mathematics proposes to develop a School of the Environment which will foster a multidisciplinary approach to expand our understanding of the Earth and its environment. Three of the most challenging environmental issues confronting society are Climate and Energy, Terrestrial and Marine Ecosystems and the interface between Human Health and the Environment. The University is designated an R2 Doctoral University, High Research Activity, by the Carnegie Classification of Institutions of Higher Education and is home to world class researchers and the School of Conservation can be a significant resource in the study of all three areas. The research activities at the School will span the domains of several Colleges and Schools at the University. The College of Science and Mathematics is the home to biology, earth and environmental studies, chemistry, physics, computer science, and the math sciences. Through its undergraduate and graduate programs, it will bring to bear its collaborations with business and economics, public health, and the social sciences. University will use the Complex by integrating knowledge from multiple disciplines and societal practice. This approach centers around processes of experimentation, evaluation, learning and innovation for students and researchers alike to facilitate societal transformation.

Specifically in the area of Climate and Energy, the public needs to understand what a carbon transition means, anticipate the challenges that will come with it, and see the benefits of the

change. The State needs to showcase ways in which each of us can move towards the ambitious clean energy goals set by the Governor. The NJ Green Innovation Center, as part of the School of Conservation, will be a place to explore new, sustainable technology, and learn about goods and practices that guide consumer behavior in more constructive directions. Overall, the School will build shared physical and virtual resources to translate innovations into actionable solutions, scale-up, and outreach. Virtual webinars, remote meetings, and online discussion groups will be used to share expertise from academic partners and industry collaborators. Energy and sustainability hackathons, data challenges, summer camps for high school and university students based on data sets and real-world data science challenges fueled by university research and industry collaborators will facilitate early career training and recruitment of entry-level professionals.

Through the University's collaboration with AmeriCorps and its focus on science and research, the School will continue its mission to promote a multi-pronged approach to environmental studies, including environmental education, environmental and energy research, and select pursuits in environmental management. This research will be infused in its elementary school programs and teacher training workshops as well. The School will leverage the AmeriCorps resources to address the changing needs of students and educators, drawing on its original approach to instruction: discovery through field study.

### **3. Economic Sustainability**

The University estimates that across the year utilization of the campus based on the proposed concept when fully realized will require approximately \$13 million capital investment. This will require \$7 million for a new Green Innovation Center, \$3 million for remediating the existing buildings and bringing them back to code, \$2 million for supporting infrastructure development (e.g., parking canopy, permeable pavements, roads, food services), and \$1 million for staffing for program development and subcontracts to bring back the facilities to full use. The running cost per year at full utilization is expected to be approximately \$2 million per year with potential for significant revenue generation through educational programming, workforce development, and philanthropy.

The University is committed to funding an initial phase of these projects while developing the capacity to fund the full scope of the project. The administration is fully supportive of this endeavor and will be creative to secure funding support from diverse sources aimed towards remediating and reinvigorating the School. That, of course, includes pursuing state investment in the New Jersey School of Conservation to ensure its viability. Montclair State University is

committed to the education mission of the School of Conservation: to help students learn, live, and practice conservation as a way of life. However, the budgetary reality of the University – supported primarily by the tuition paid by its students – does not provide the basis to support this endeavor on its own. In addition, a business model for the School based solely on educational revenue is not viable. The University is submitting this proposal based on a vision of funding secured from diverse sources (e.g, federal-EDA, state support, private donors through university fundraising initiative and so forth) as part of a robust business model. The university has not asked for state support through the legislative and executive action through this year's state budget – that obviously was not plausible in advance of this process – but will do so and would hope to return to the status quo ex ante where an annual appropriation supported the administration of SOC.

#### **4. Organization and Staffing**

The University proposes that management of the site resumes on July 1, 2022, aligning with the FY23 budget cycle. During the startup phase, the University proposes the following managerial staffing which is significant reduction from the model in 2019:

- Associate Director of Innovation-Responsible for creating programs and revenue targets, business connections and fund raising activities.
- Program Manager-Coordinates and markets K-16 programs+events. Responsibilities include field education and other outreach.
- Infrastructure Manager-Responsibilities include building maintenance, sustainability, grounds, and services (e.g., locally sourced food services).
- Development Officer-Responsible for fundraising with donors and foundations.

The University has the scale and capacity to recruit and manage these full time employees with benefits at an estimated cost of \$600,000. Additional staff will be hired as contractors or part time employees to support programs and educational activities. This efficient and cost effective approach will draw on services provided by the local communities.

#### **5. Infrastructure Considerations**

Based on the University's experience managing the complex, the transportation connectivity serves as a barrier to underserved communities, K-16 students (particularly from inner cities), and other stakeholders. To increase access to the site, the University proposes transportation

loops between Montclair's main campus and the School of Conservation. The University will also expand the transportation loop to K-12 schools participating in educational programs at the complex as needed. The transportation sector is now the leading emitter of greenhouse gas in the United States. In order to reach greenhouse gas emission reduction goals to mitigate the effects of climate change, zero-emission vehicle bus fleets should be used. The University will explore electric buses that include both a hydrogen fuel cell and batteries/capacitors in a hybrid architecture. At full capacity of three loops a day, the estimated cost of transportation will be \$600,000 annually. The University will target incentives and grants to defray capital investments and running costs for transportation.

At the School, the roads and parking areas are insufficient for the expected increase in traffic flow. **Appendix C** provides the concept for increased parking and better traffic management near the site of the proposed NJ Green Innovation Center. Permeable pavement would be preferred since it does not produce a heat island, it can be made using recycled materials, and water and precipitation will seep through the pavement, preventing ice formation and providing a safer surface for driving and walking.

Near the entrance to Wapalanne Road, there is a 0.5 acre, 100,000-watt solar farm that was constructed in 2012. Its annual maintenance costs are minimal. The proposal is to increase the solar capacity on campus through construction of rooftop solar on the NJ Green Innovation Center and solar canopies on the new parking lot, as shown in **Appendix C**.

Kittatinny Hall, Long House, Big Timbers and several other buildings, including the older cabins on the eastern side of the lake, were built in the 1930s by the Civilian Conservation Corps. Future phases of the renovation include retrofitting these buildings to meet today's ADA and clean energy standards and complement the activities of the Center. The University respects their historic significance and will make every effort to preserve and maintain the integrity of the original structures while remediating their interiors for educational use.

## **6. Conclusion**

At a pivotal moment in higher education, Montclair State University – with its deep commitment to serving the public interest and advancing student success – has an opportunity to define the future. It has grown and flourished in ways that would have been hard to imagine 112 years ago. From the first class of 187 students, it now serves 21,000 graduate and undergraduate students in 300 programs offered by 10 schools and colleges. The University employs more than 4,000 faculty and staff members and is New Jersey's second largest

university. The University will build on its strong foundation of excellence in bold, imaginative ways to contribute to the prosperity, health and well being of New Jersey and the nation. The University is an institution on the rise, one that plays an increasingly important role in New Jersey and beyond. Through this RFEI response to assume management of the NJ School of Conservation, the University will not only promote environment, recreation, research, and engagement but also provide for a sustainable plan to operate the Complex and become an welcoming destination for people from all walks of life to be part of our inclusive and innovative community.

## **Appendix A: Montclair State University's strategic plan, PROJECT SOAR (2019-2025)**

The plan is structured around three guiding “Pillars” or themes, each pointing toward and promoting student success at every level of the institution. It is built on the foundation of an entrepreneurial approach that empowers the university to be persistently innovative and demonstrably effective in promotion of every policy and practice that will improve academic quality, promote student success and augment institutional communication and efficiency.



### **Montclair State University's Vision**

By 2025 Montclair State University will be nationally recognized as a premier public university, serving 25,000 students with programs from bachelor's to PhD. It will provide students with a welcoming, supportive and responsive student experience that enables post-graduate success. It will continue to be affordable and accessible, acclaimed for its research contributions, locally valued for its community and business partnerships, fiscally sound and nimble in its business practices, and diverse in its students and employees.

### **Montclair State University's Values**

**Success:** Continually promoting academic excellence and post-graduate achievement

**Access:** Proactively employing strategies to level the playing field for students seeking further education

**Innovation:** Embracing innovation, experimentation, and creativity for excellence and efficiency

**Social Justice:** Understanding and working to dismantle barriers to the opportunities and privileges appropriate to all residents of New Jersey

**Sustainability:** Building practices and programs for long-term survival and flourishing of the University

**Community:** Connecting to community through strategic partnerships, collaborations, and services



## Appendix B: Concept diagrams for the NJ Green Innovation Center



## Appendix B: Concept diagrams for the NJ Green Innovation Center (continued)

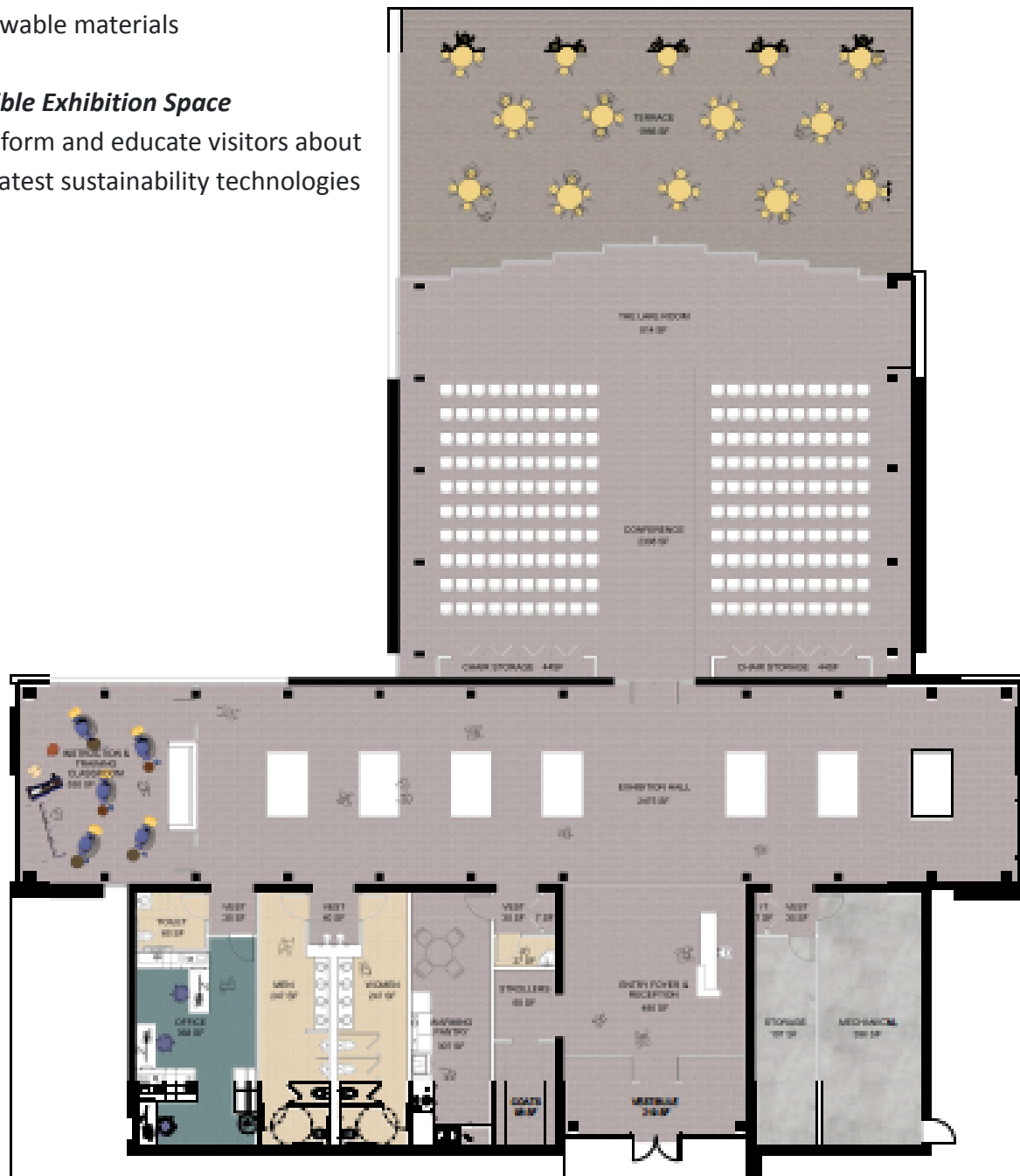
### New Building Floor Plan

#### *Flexible Conference and Event Space*

Using low embodied carbon and renewable materials

#### *Flexible Exhibition Space*

To inform and educate visitors about the latest sustainability technologies





## Appendix C: Concept for parking and traffic flow

