1) Identify specific goals and aspirations, where adoption of alterations at research sites and their activities has potential to safely and practically contribute to climate resiliency. This includes consideration of on-site wet and dry research labs, off-site UIUC research labs, agricultural land, and field sites. This should include a review of best practices from peers and other organizations such as I2SL and My Green Lab.

Core Green labs program including best practices and innovative ideas and inspiration from research community elevating the program to world class status.

**Short term 3-5 years:**

Employ green lab director, student interns/employees and create a network of sustainable research champions to implement core program best practices campus wide.

**Core program to Include but not limited to:**

       **Lab Sustainability Education, Engagement & Awareness**

**Lunch n learns** -Sharing new ideas, past successes, and failures, brainstorming and innovation, manufacturer/supplier's presentations.

  **Educational campaigns,** competitions, and promotions

 Top-down sponsorship\*

 Surveys to identify opportunities & barriers\*

Campus competitions Shut-The-Sash & Freezer Challenge\*

 Hazardous waste marketing campaign\*

       **Website and media development**

       **Green Lab/Research Operating Guides, Resource Guides** & **Toolkits**

 Lab energy savings tip sheets\*

 Sample cold-storage best practices

       **Recruit Scientist Participation**

Green Lab Champions or Eco Leaders are volunteers.

Advanced members or even paid team leads.

**Innovation, Incentive & Awards programs**

ULT (Ultra Low Temperature) Freezer Rebate Program

Recognition Program, such as Environmental Stewardship in Sustainable Laboratory Practices Certificate\*

Pilot program funding and support to promote iCAP goals within research

Water reduction – lab sink aerators\*, small closed-loop cooling\*

**Lab Ventilation education, awareness, and reduction opportunities**

 Lab exhaust ventilation strategy for new construction/renovations\*

 Policy on de-energizing and decommissioning hoods\*

**Create Research Equipment and Supplies Sharing and Reuse Program\***

**Collaborate the development and implementation of effective/safe waste reduction/recycling/reuse programs throughout campus**

 Animal bedding and research plant composting\*

 Chemical inventory management\*

 Expanded recycling of research materials – pipettes, gloves, etc.\*

 **Long term** (beyond the 3-5 years focus of creating the core program)

Program director maintains core program and evolves existing efforts into cutting edge practices by partnering with the research community. Examples: develop case studies, pilot programs and research components that innovate solutions and advance current best practices.

2) Develop a program whereby individual research groups and Departments may qualify for “Green Lab” and/or “Green Research” Certification by adopting best practices that maintain the safety of the research group and community.

Implementing a certification program can vary significantly by the amount of effort it takes to participate, implement, and manage. The cost of these items varies proportionally along with their impacts and outcomes.

**A comprehensive certification** **program** focuses on safe and sustainable practices and contains elements that apply to all research across campus, i.e., energy efficiency, optimizing process/procedures, reducing/reusing equipment and/or supplies, space utilization and efficient use of resources. Including many if not all the iCAP objectives, energy, transportation, Land & water, zero-waste, education, resilience, and implementation.

The My Green Lab certification is a great example, it focusses on institutions, industry and governmental research groups and includes scope 1, 2 & 3 emissions elements along with several of the United Nations Sustainable Development Goals (SDG’s). Their certification program was selected as a key indicator of progress for the United Nations Climate Change's High Level Climate Champions 2030 Breakthroughs Race to Zero campaign!

**Other benefits**- sharing our progress Internationally, increases worldwide recognition, has the potential for securing funding preferences (BETR grants) and tells the world what we do and how we lead by example as environmental stewards, would contribute to our worldclass ranking.

3) Outline a framework to recommend building-specific plans for safe energy conservation in our research spaces that include interdisciplinary research institutes, academic colleges, and field sites. This includes reviewing operations and procedures for off-boarding and hibernation of research space and equipment; along with developing a prioritized list for remodeling or renovating research buildings and laboratories that contain aging or particularly inefficient laboratory spaces. This list will inform the overall campus sustainability efforts. Because funding for renovations is limited, information driven prioritization will focus on the most advantageous projects while maximizing safety and climate resiliency of the campus community.

Establish a scoring system to prioritize building/space funding list with sustainability opportunities as a key selection criterion. Publish information on building energy usage and projected reductions.\*

Maybe adding recruitment and on-boarding because operating a sustainable lab starts with setting up the lab, from procurement of equipment and supplies to the layout of furniture and designing the lab's operating flow?

Developing a lab ventilation management plan for each space (requires accurate chemical inventory to properly evaluate risk and determine proper ventilation rates), utilizing an equipment sharing program, maximizing centralized services within departments or floors, optimize glass washing with centralized washing facilities, consolidate mechanical systems such as fume hood exhaust systems, plan and install closed-loop cooling (chilled water system or building chiller)\*. Upgrade systems to the most efficient currently available.

In addition to the lab's specific items, key elements to consider in this area are building Infrastructure, equipment, scheduling, and optimization. Updating these systems and continuously commissioning them for optimization.

**Roles and Funding/Budget Considerations**

**Employ green lab director,** industry standard range $65k to $85k and up pending experience or could hire an existing staff/faculty with a dual role position and similar qualifications with parallel work goals, outcomes or responsibilities and shared leadership and wage responsibility.

An example of a shared position would be their current wage plus an additional wage for the Green Research Position/Role and shared leadership for their reporting line. Many units have this on campus already.

This role utilizes their time to implement all aspects of the core program, while developing and implementing innovative pilot initiatives, and promoting longer term program components.

**Student interns/employees** gain through the ISEE intern network. If they are student employees, the avg. wage of $15/hr. would apply.

Interns assist the program with outreach, awareness, media design/campaigns and research community assistance with sustainable items such as registration, implementation, and guidance.

**Create a network of sustainable research champions** to implement core program best practices campus wide.  Some campuses have paid these folks and other programs are on a volunteer basis. A wage may be similar to student or grad student workers at $15-18/hr.

A volunteer program with 1-2 champions, and incentives would be effective and efficient.

**Core program operations**, **implementation and reporting** should be covered by the above expenses with additional program funding necessary to run each campaign, initiative, competition, or pilot program.

 **Discussions with peer Institutional programs** has shown multiple streams for funding Green Research Initiatives, among the most common are:

* Provosts Office
* OVCRI
* Facilities & Services
* Purchasing Department- specifically contracting
* Student Sustainability Committee (SSC)
* Ameren Energy Efficiency Program
* Specialty opportunities i.e. Solar Farm renewable energy credits/carbon credits

**Many Green Labs programs** have been funded directly as an institutional entity: for example, Harvard, CU Boulder and UBC.

Some share their support with the Facilities folks: CU boulder and UVA.

At UBC, the purchasing contract with VWR/Avantor can have annual refunds which the purchasing Dept. chose to contribute $25k toward the green labs program and committed resources toward setting up sustainable and green purchasing efforts toward sustainable purchasing.

The SSC fund has opportunities for piloting projects, engagement projects and initiatives across campus.