From: Dr. Scott Carlin's EVS 530/GGR29 Students – Sustainable Energy Systems and Climate Change
To: President Kimberly Cline
CC: Dr. Jeff Kane, VP for Academic Affairs, Dr. Nicholas Ramer, Dean of Arts & Sciences, Dr. Margaret Boorstein, Dept. Chair - Earth and Environmental Science.
Re: The American College and University Presidents' Climate Commitment
Date: January 6, 2016

Dear Dr. Cline,

After much research and discussion, we, graduate and undergraduate students of LIU Post, invite you to sign the American College and University Presidents' Climate Commitment (ACUPCC). Your and LIU' s commitment would enhance LIU's position in the academic and sustainable communities and generate important economic and environmental benefits. President Cline, your signature is a demonstration of leadership on a critical issue that will engage our students, faculty, and staff. It can also help attract new sources of funding, develop new research ideas, and garner support from our alumni and university friends.

Hundreds of institutions of higher learning have committed to real and meaningful changes in their operations with the goals of sustainability and combating climate change. The ACUPCC is:

1. **Realistic**: this is an actual plan with real, verifiable, and attainable goals.
2. **Financially Sound**: this is not a vanity project, but an investment that will pay for itself.
3. **Good**: for the university, for students, faculty, and staff, and for the public in general.

The basic premise of the ACUPCC is two-fold:

> First, each institution that signs the Commitment is expected to develop a set of goals aimed at achieving net zero carbon emissions as well as a two-year timeline for initiating those goals. There are numerous resources available to help a newly-signed institution identify major sources of carbon emissions and eliminate or ameliorate them. The goals that are set must be concrete and verifiable; there are strict guidelines for reporting and verification outlined in the ACUPCC. For example, within one year of signing, the university would have to complete an inventory of its greenhouse gas emissions and make it publicly available using protocols outlined by the ACUPCC Implementation Guide.
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> Second, each institution is expected to integrate sustainability into the mission of the university. LIU would:
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> - Require sustainability education so LIU students can build a sustainable future;
> - Research new sustainability solutions; and
> - Act as a leader in the higher education community and in society in general.
>
> In other words: "[train] the people who will develop the social, economic, and technological solutions to reverse global warming". These changes would be made throughout the LIU system.

Colleges and universities that have already signed the ACUPCC include UCLA, Arizona State University, and Cornell University. Local signers include NYU, SUNY Stony Brook, City College, and smaller schools like Wagner College.

Why do this? That is a complicated question and there are two answers to consider:

First, our society has an obligation to take on climate change and prevent the worst predictions from coming true. We have an obligation towards those who will follow us; they did not cause this problem but will suffer nonetheless. From this perspective, doing what you (and we) can (by signing the ACUPCC) is "Good" because it benefits humanity.

Second, we have an obligation to take on climate change because climate change is going to affect *our* lives and livelihood. We see the effects of climate change here on Long Island. 2015, the warmest year of record, ended with an incredibly warm December. While many welcome this respite from winter, climate change will negatively affect our weather, economy, regional ecosystems, and public health decades into the future. The scale and long term duration of these impacts will depend upon how quickly we reduce greenhouse gas emissions around the world.

From this perspective, doing what you can (by signing the ACUPCC) is "Good" because it is good for you, both personally and in your capacity as President of this university. Please keep in mind that the weight of public opinion is shifting, especially among prospective students, and we do not want LIU to be left behind.

Do we *need* to do this? We hope to convince you that the answer is a resounding yes. Robert Henson (2014) succinctly summarizes are situation: "The options for climate change risk management are numerous, well developed, and reasonably straightforward to think through." This type of logical reasoning also pervades the ACUPCC framework.

What is the evidence for climate change, and what are some of the consequences?

Since 1880 the average global temperature has risen at least 0.85 °C; each of the last three decades has been successively warmer than any other decade since 1850; forecasts for the total temperature rise by 2100 range from 1.5 °C to 5 °C and depend on the choices we make (IPCC AR5, 2014).

Since 1900, global sea levels have risen by about 0.2 meters, but the rate of sea level rise has begun to accelerate. Global sea levels may rise by as much as 0.8 meters by the end of this century (IPCC AR5, 2014); the exact amount depends on the choices we make. Some foresee alarmingly higher sea levels (Hansen, *et al*. 2015) – a direct threat to life on Long Island.

Climate change also makes several weather-related disasters more likely. There have been observed increases in the rates of heat waves (doubled in some area), extreme precipitation events, and flooding. The frequency of weather disasters costing more than $1,000,000,000 has increased 5% annually over the last 30 years (Katz and Smith, 2013).

How specifically can these changes affect us here on Long Island?

Rising temperatures and increasing numbers of heat waves mean greater operating costs as the demand for air conditioning increases, as well as increasing health costs for those who cannot afford sufficient air conditioning. Disease patterns may also change.

Salt water intrusion into our aquifers is already a problem. Rising sea levels could push salt water into coastal aquifers, threatening coastal communities' source of potable water (NYS DEC, 2010). This could result in water shortages or increasing costs over the next century.

Lastly, climate change greatly increases the risk of significant damage to the university and its environs as a result of tropical storms or hurricanes. After Sandy, LIU Post was closed for two weeks as the school waited for repairs to the electric grid. Warmer oceans are likely to fuel even more powerful storms in the future (IPCC AR5, 2014).

Is ACUPCC practical for a tuition-driven institution?

There are a several benefits to joining the ACUPCC. As discussed in the introduction, signing improves LIU's competitive position as a sustainable and environmentally conscious university. The ACUPCC represents a practical and beneficial way for LIU to take action and to do its part to combat climate change. In the following pages we will describe:

1. The state of the university's energy usage.
2. The implementation of the ACUPCC over the first 18 months.
3. Immediate actions we can take to increase our sustainability.
4. What other New York universities have done as signatories to the ACUPCC.

The cost of action is not insignificant, but the cost of inaction is far greater. Furthermore, action today often provides a reasonable return on investment and buffers LIU from unexpected future energy price shocks.

Energy Usage on Campus

LIU Post already has a strong reputation for its energy efficiency. As the data below shows, energy consumption, except for steam/hot water, declined over the past two years. At LIU Post, building energy usage in 2014-2015 declined 4,396 million British Thermal Units (MMBTUs) from 2013-2014. Electricity usage dropped 1,862 megawatts (MW). Just in one year, LIU Post saved approximately $200,000. Many colleges are learning how to realize these kinds of annual reductions on a consistent basis as they achieve their ACUPCC pledge goals.

LIU has already made a number of valuable investments in its energy systems. LIU Post retrofitted the Public Safety and Facilities building with solar panels and the mansion with geothermal heating and cooling. Newer outdoor lighting fixtures use next-generation LED technology. The Browse and the new press box in the Bethpage Federal Credit Union stadium also use efficient LED light mats.

Total Building Energy Consumption - (*All information provided by LIU Post Facilities services*.)

- 2013-2014= 152,371 MMBTUs
- 2014-2015= 147,975 MMBTUs
- Difference= -4,396 MMBTUs

Electricity

- 2013-2014= 59,716 MMBTUs or 17,515 Megawatts
- 2014-2015= 53,367 MMBTUs or 15,653 Megawatts
- Difference = -6,349 MMBTUs or 1,862 Megawatts

Steam/hot water

- 2013-2014= 92,655 MMBtus
- 2014-2015= 94,608 MMBtus
- Difference= 1,953 MMBtus

Unfortunately, LIU Post steam and hot water increased by 1,953 MMBtus more in 2015 than in 2014. We did not have time to research why this happened – but last winter was long and cold.

What does the implementation of the ACUPCC look like?

To answer this, we created a simplified draft schedule based on the ACUPCC implementation guide. The focal point of the ACUPCC process is the creation and implementation of a Climate Action Plan (CAP). Below, we also discuss the need for an administrative framework for this process.

Implementation Schedule

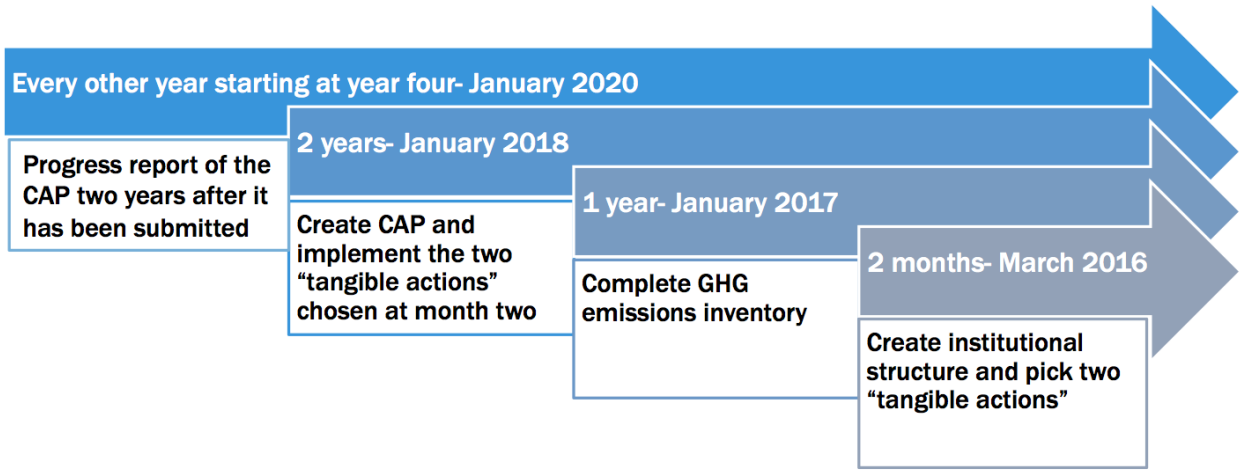

Figure 1. Hypothetical implementation schedule starting on January 2016

Institutional Structure

According to the ACUPCC's *Implementation Guide*, the institutional structure for a Climate Action Plan (CAP) can take the form of a "committee, taskforce, council or other body that is appointed specifically for the purpose of implementing the terms of the ACUPCC," and can be a previously established body (2009). LIU already has pre-existing Sustainability Committees at Post and Brooklyn. We recommend reviewing the CAP institutional structures at other institutions for guidance on effective management practices. A CAP should have diverse a membership that includes administrators, students, faculty, and staff. The CAP could also include or consult with trustees, alumni, local government and business officials (ACUPCC, 2009). Finally, the committee must have a designated chairperson to act as a liaison between LIU and the ACUPCC contacts; this chairperson should be empowered with enough authority to carry out the Commitment.

Greenhouse Gas (GHG) Emissions Inventory

One year after signing the ACUPCC, LIU should complete its first Greenhouse Gas Emissions Inventory. Since LIU is not enrolled in a statewide greenhouse gas or climate registry, the institution would follow the standards outlined in the Greenhouse Gas Protocol by the World Resources Institute (WRI) and World Business Council on Sustainable Development (WBCSD). This is a globally recognized standard for measuring, managing and reporting GHG emissions (Greenhouse Gas Protocol, 2012).

In our research, we discovered several past efforts to assess LIU's GHG emissions in the past: LIU Post Environmental Sustainability Master's candidates have researched this topic. LIU Brooklyn's Student Environmental Action organization pledges to reduce GHG emissions and save money on energy costs (LIU Brooklyn, 2015). LIU's CAP would streamline these unrelated efforts into one comprehensive process and make emissions information easily accessible to any interested party.

An emissions inventory addresses three different "scopes" of emissions. Scope 1 refers to the direct emissions from stationary machinery and activity on LIU campuses. Scope 2 covers secondary emissions from electricity usage. Scope 3 denotes a variety of other indirect emissions caused by means not owned or controlled by the institution; for example, emissions from commuting (ACUPCC, 2009). Creating a thorough and careful report by considering these different scopes will make the transition toward carbon neutrality a much smoother process in the long run.

While carbon dioxide is the main focus of an emissions inventory, there are five other gases that must be accounted for: methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (ACUPCC, 2009). LIU's production of GHGs should be tracked several years back (to the best of our ability) so we can better estimate the trend in our emissions.

The cost of completing a GHG inventory (and updating it every other year) can range from free – for example, if it is completed by students as part of a class project – to several thousand dollars, if an outside firm is hired. Many campuses create an Office of Sustainability to coordinate these and related efforts. Grant funding is available especially for innovative efforts. Cornell University received a $425,000 grant from NYSERDA to develop a comprehensive plan, which will include detailed feasibility studies of various emissions-reduction activities (ACUPCC, n.d.).

Tangible Actions

We must agree to initiate two or more tangible actions while our plan is being developed. These tangible actions need to be selected within two months and implemented within two years of selection. Policies in place prior to joining the ACUPCC can count toward these two actions.

Below are seven examples of short term actions provided in the ACUPCC implementation guide:

A. Green building policy

- All new campus construction will be built to at least LEED silver. We must adopt and implement a written policy stating our intent to meet or exceed LEED Silver for all new buildings and major renovations. We are encouraged, not required, to apply for LEED Silver campus wide.
- We may limit policy to only include new buildings over 5,000 gross SQ FT. We may self-evaluate all new buildings to ensure they meet LEED silver, but do not need to be certified (Example: UNC Chapel Hill's plan states that certification is not required, but takes measures that would allow it to be certified).
- We may use alternative green building standards as long as we report our rationale as to their LEED Silver equivalence to ACUPCC.

B. Energy star procurement plan

- We must adopt an energy-efficient appliance purchase policy requiring we purchase ENERGY STAR certified products when applicable. We must adopt a written policy stating our intent to purchase ENERGY STAR certified products when applicable.
- We may limit policy to "Whenever financially possible", "when cost is less than, or equal to the resulting energy savings," or "whenever practical".

C. Air travel

- We must establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by LIU. We must adopt and implement a written policy stating our intent to purchase carbon offsets for campus air travel.
- We may, but are not required, to take actions to reduce campus air travel. We may use average statistics on price per passenger air mile to convert expenditures into air miles.
- We cannot count green power purchases (see section E below) toward this.

D. Provision of public transportation

- We must encourage use and give access to public transportation for faculty, staff, students, and visitors. We must make public transportation to a nearby neighborhood free or subsidize it at least 50%.
- We must provide a free inner-campus shuttle. We must provide a free shuttle to a nearby neighborhood.
- Many of these elements are already in place at LIU.

E. Green power production or purchasing

- We must begin purchasing or producing 15% of our electricity from renewable sources. We may achieve this by use of on or off campus wind, solar, geothermal, renewable energy credits "REC" (also known as greentags), or any other credible sources, or a combination of sources.
- If means are owned, or maintained by a third party, we must have the rights to the associated emissions reductions. In order to count, REC's must be Green-E certified.

F. Climate friendly investing

- For endowment investments in corporations, we must establish either a policy or a committee that supports climate and sustainability shareholder proposals. We must adopt and implement a written policy stating our intent to vote in favor of shareholder resolutions that support action to reduce greenhouse gas emissions.
- Alternatively, we may establish a committee on environmentally responsible investment with student and faculty to review and make recommendations on climate-related resolutions with companies in which our endowment is invested. We are encouraged but not required to use other climate friendly strategies, including direct shareholder engagement with GHG emitters and invest in climate friendly technologies and funds.

G. Waste minimization

- We must participate in the waste portion of the national RecycleMania competition, and adopt three or more measures to reduce waste. RecycleMania is a yearly ten-week competition held in the spring. Universities gain points when students report waste savings online. Waste points are measured in amount of waste per person.

- We must adopt three or more associated measures to reduce waste. Examples of these measures include:

  -Establish campus recycling program (already implemented).
  -Create accrual mechanisms to use savings in disposal to fund new recycling initiatives.
  -Purchase office equipment with waste prevention in mind (ex: double sided printer).
  -Establish campus surplus department.
  -Work with vendors to reduce transport packaging.
  -Reuse packing material.
  -Promote reuse of materials, for example inter-office envelopes.

Climate Action Plan

We must agree to create a plan for becoming "climate neutral." The plan is to be developed within two years of the implementation start date. The plan should be designed to be achieved as fast as possible and should include a target date and milestone dates for becoming climate neutral. For the ACUPCC, climate neutral is defined as having no net GHG emissions. The way to have no GHG emissions is to minimize Scope 1, 2, and 3 emissions as much as possible and use offsets or other mitigation methods to address any remaining annual emissions. While this is challenging, keep in mind that New York State has pledged to reduce its GHG emissions 80% by 2050 and rapidly increase statewide renewable energy production (NYS DEC, 2016).

We will want to make a list of measurements for avoiding or reducing emissions from each GHG source, and then evaluate each of these emissions mitigation strategies according to criteria we establish. Examples are:

1. Potential to avoid or reduce emissions.
2. Amount of flexibility we want to give ourselves.
3. The amount of return on investment we make and financial impact.
4. Potential positive or negative social and environmental effects.
5. Relationship to other academic majors.
6. Potential to be up scaled if successful.
7. Potential for student and faculty involvement.

Once each option has been evaluated, we can set our institutional priorities. Many actions should reduce operating costs and generate savings. We should then reinvest these savings into other methods that offer a lower financial return. Careful planning of these measures will give us targets to achieve climate neutrality in a flexible and affordable manner.

How can we learn from other institutions?

We present two case studies describing the Climate Action Planning efforts at Stony Brook University and Wagner College.

Stony Brook University

With more than 25,000 undergraduate and graduate students, the University pledged to "become leaders and role models in social, economic, and technological efforts to reverse global warming," in 2007 when President Shirley Strum Kenny signed the American College and University Presidents' Climate Commitment (Stony Brook University, 2008).

Based on the results of a campus wide survey, President Shirley Strum Kenny focused on the aspects that the campus said were most important such as open communication and developing committees to ensure that a diverse group of individuals from all backgrounds could have input into the plan. Based on this, the committees focused on creating tangible goals that can easily be observed. Goals were broken into Scope 1, 2 and 3 (as noted on page 5 above) to conform with the ACUPCC methodology.

Tangible goals addressed in the plan include public transportation, green building codes, and improving the efficiency of heat and water systems. The university also developed clear educational strategies to strengthen sustainability in and out of the classroom. Today Stony Brook has a number of sustainability majors and offers important seminars and events to promote campus regional sustainability efforts. Stony Brook set a goal of reducing GHG emissions 25% each decade and hopes to reach climate neutrality by 2050.

Wagner College

Wagner College is a relatively small school with 1,850 Undergraduate students and 375 Graduate students, giving them a low student-to-faculty ratio (14:1). Unlike some larger schools, they have no Bachelor's or Master's degree in Environmental Science; it is available only as a minor. In 2012, 65% of Wagner College's total emissions were attributed to energy consumed by campus facilities. Purchased electricity and stationary combustion comprised 29% and 36% of total emissions, respectively. The President of Wagner College signed the ACUPCC in 2007 with the goal of becoming carbon neutral by 2050, as shown in milestone table below.

Wagner College provided us with a number of their documents and openly shared the challenges they faced in implementing their Commitment. What was clear from this information was the critical role played (or not played) by their university president. Once a new president took office and made a strong pledge to honor the prior ACUPCC, Wagner has successfully been moving forward with a number of new initiatives. For example, Wagner recently opened a new state of the art LEED certified green building. Since Wagner is a private college, it may provide a number of valuable lessons for LIU as we move forward with our efforts to reduce GHG emissions.

Wagner has plans for a number of strategies to proceed forward with its ACUPCC:

- Planned photovoltaic cells on Student Union and Spiro Sports Center; each building will have three arrays providing approximately 96 kW each.
- Future cogeneration of electricity and useful heat will require 47% less electricity.
- HVAC & Lighting Upgrades include replacing existing chillers, boilers, pump motors, and fan motors with higher efficiency equipment. Lighting upgrades will reduce its overall lighting consumption by 19%.
- Sustainability is a concept instilled in the college's curriculum regardless of topic of study.
- Sustainability Committee composed of faculty, staff, and students.
- Recycling is planned for all campus residents and includes a RecycleMania competition.
- *Compost to support campus and community gardens.*

- *Wagner's* ***Foundation Hall*** is recognized by the US Green Building Council LEED award.
    - Highly insulated for increased energy efficiency.
    - Natural lighting to minimize artificial light.
    - White roof to minimize heat gain through a dark roof.
    - Energy efficient lighting to reduce the overall energy impact.
    - Low-VOC (Volatile Organic Compounds) paint, adhesive, sealants to improve indoor air quality.
    - Regional materials used to reduce transportation costs of materials used in construction.

Wagner ACUPCC Milestone Dates	
ACUPCC Requirements	**Timeline**
Implementation of Commitment	January 15, 2012
Greenhouse Gas Inventory	March 15, 2013
Climate Action Plan	March 15, 2014
Greenhouse Gas Annual Reporting	2013-Ongoing
Execute CAP	2014 - Ongoing
Progress Report	March 15, 2016
Achieve Carbon Neutrality	2050

Summary

To continue to advance LIU's sustainability leadership, LIU needs clear policies to reduce its GHG emissions. We believe that ACUPCC offers the best management platform for achieving tangible results. Signing the ACUPCC should spur many campus improvements and create significant savings on energy and heating; these savings should be reinvested in the campus.

The ACUPCC GHG inventory and CAP protocols will strengthen LIU's new strategic plan; improve sustainable education programs for students, staff, and faculty; and quicken LIU's efforts to replace our consumption of fossil fuels with renewable energy sources. These investments make operational sense for the university and would be an attractive selling point for prospective students and donors.

There are some up-front costs, but sustainability efforts quickly pay for themselves. While some sustainability pledges never lead to any action, the ACUPCC is not empty rhetoric. It is a real, detailed model for taking concrete sustainable actions towards a climate neutral future. This will strengthen LIU's leadership in making our world a better place for us all.

Report Contributors:

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