Long Island University Climate Action Plan

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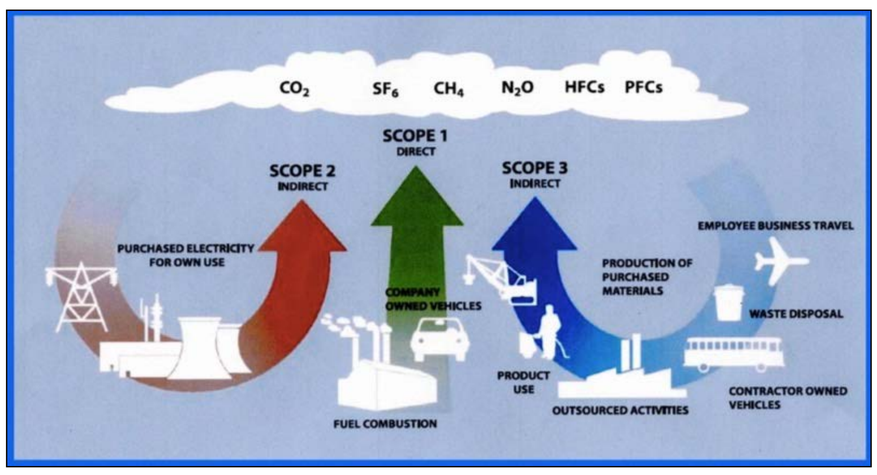
The LIU Climate Action Plan (CAP) is designed to reduce the Greenhouse Gas (GHG) emissions that are produced by the University; the first step is a full Inventory of those emissions. The GHG inventory is divided into three major categories (Scopes), shown in the graphic below (left). Between September 2015 and August 2016, LIU Post's campus was responsible for 21,000 metric tons of carbon dioxide equivalent. The goal of the Climate Action Plan is to reduce GHG emissions to 50% of current levels by 2035 and have a 100% renewable electrical grid by 2045. Below we present information about the GHG inventory, how we plan to achieve the goals of the CAP, and a more detailed look at one aspect of the CAP: installing solar panels on campus.

Greenhouse Gas Inventory Profile



The table below shows the amount of GHGs emitted under each Scope, measured in metric tons of carbon dioxide equivalent (MtCO2e):

Scope 1 contributes 23% of emissions
Scope 2 contributes 45% of emissions
Scope 3 contributes 32% of emissions

Fiscal Year	2017
Scope 1 - Stationary Combustion	4,366
Scope 1 - Mobile Combustion	383
Scope 2 - Purchased Electricity	9,417
Scope 3 - Commuting	6,676
Scope 3 - Solid Waste	164
Net Emissions	**21,008**

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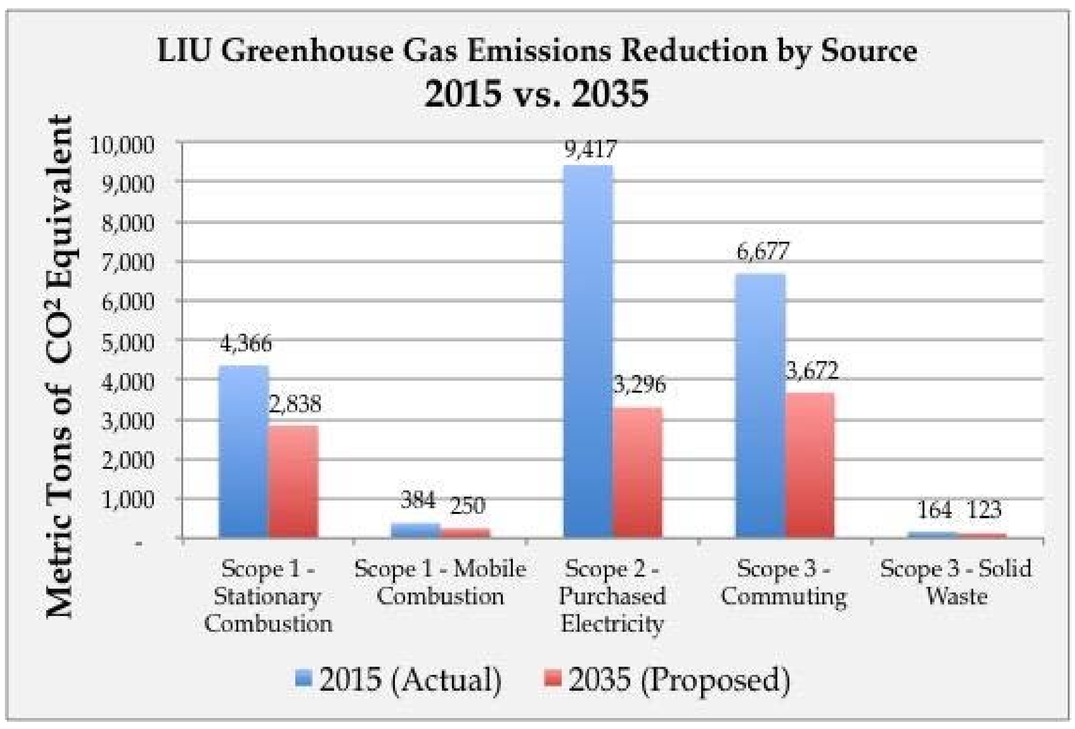
GOAL: 50% Reduction in Greenhouse Gas Emissions by 2035



The above chart shows how much each category will contribute to reaching our goal of 50% emissions reduction by 2035. Emissions in 2015 totaled 21,008 MtCO2e. Reaching our goal requires bringing that total down to 10,504 MtCO2e.

What can we do to reach this goal?

Energy Conservation and Efficiency

- Promote behavior change among students and faculty that encourages energy conservation
- Create a first-year seminar class dedicated to climate literacy
- Continue to upgrade campus HVAC systems as well as lighting fixtures
- Require all new building construction to be LEED Certified
- Utilize Smart Building Controls - expand Building Management System to at least 50% of the buildings on campus (currently conneted to ~20% of campus buildings)

On-site Renewables & Purchased Electricity

- Install solar panels above parking lots (proposal described in following section)
- Install geothermal heating & cooling systems in all new buildings
- Long Island's electric grid should be generating 50% of its energy from renewable sources by 2030. Since Purchased Electricity is LIU's largest source of GHG emissions, this will help us reach our goal

Commuting & Campus Fleet

- Encourage car-pooling and ride-sharing to campus
- Install Electric Charging Stations and incentivize purchase of electric and other low carbon vehicles
- Require a "No-idling" policy on-campus
- Purchase fuel-efficient vehicles and/or alternative fuel vehicles
- Average car fleet MPG expected to increase 90% by 2035 (compared to 2011 standards). This will help us reach our goal

Waste Management & Purchasing

- Reduce, Reuse, and Recycle!
- Bring back the LIU Post recycling program
- Implement a Sustainable Purchasing Policy on-campus
- Support locally produced goods and services
- Maintain the LIU Energy Star purchasing requirement for all new appliances

Campus Power Plan: Parking Lot Solar Panels

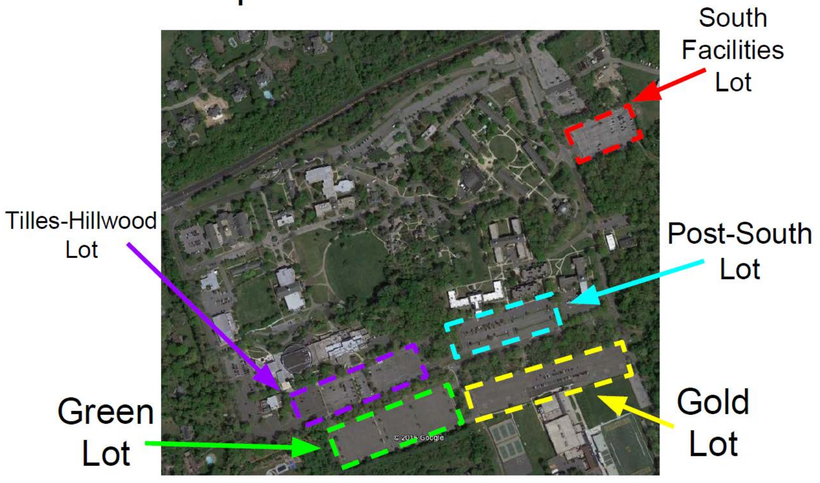
Standard asphalt parking lots absorb about 90% of incoming solar radiation, re-emitting into the atmosphere as heat, making a small contribution to global warming. Placing solar panels over parking spaces reduces the surface area of asphalt exposed to the sun while generating clean electricity. Parking lot solar power generation (AKA Carport Solar) is an established technology that has been successfully installed at multiple Long Island locations, included a number of train stations and government buildings in Suffolk County.

We believe that installing carport solar at LIU's C.W. Post campus can significantly reduce the university's greenhouse gas emissions and generate more than enough power to pay for installation and maintenance in a reasonable time frame. Carport solar turns wasted space into a profitable asset with minimal effects on commuter experience and campus aesthetics.

In our model, installing the maximum number of carport solar units in the five proposed locations gives a total capacity of 3660 kW, expected to produce a total yield of about 4,500,000 kWh per year, or about $820,000 worth of electricity per year. For this simplified model we estimate an installation cost of $4,250,000.

By paying down the principal with 100% of the value of money saved by producing solar power (rather than buying off the grid), a loan for the full cost of the project (annual payments at 6% interest) could be paid off in less than 7 years. Even if the yield is less than expected, the loan is paid well before the expected lifespan of the solar panels, producing an estimated net value of $7,350,000 to $14,250,000; at least double the capital investment before considering side benefits.

Proposed Lot Locations



We have created several models for Carport Solar at LIU; here we present one example. We chose 5 lots (Left) at the rear of the campus to minimize aesthetic concerns.

We calculated the number of panels that could be installed in each lot, the resulting power generation (in kWh per Year) and the dollar value of that electricity based on LIPA's 18 cents per kWh (Right).