

CSUN Carbon Footprinting

Green Core Meeting Oct 26, 2008

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Methodology for calculating GHG inventory

The carbon footprint calculation will be carried out according to the general reporting protocol (GRP) of the California Climate Action Registry (CCAR).

The California Registry is a non-profit organization created by the California state government to develop reporting and verification procedures for corporations, other legally constituted bodies, non-profit organizations, city, county and State government agencies.

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Methodology for calculating GHG inventory

GHG to be reported:

Carbon Dioxide (CO₂)
Methane (CH₄)
Nitrous Oxide (N₂O)

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Categories of GHG Emissions to be included

Direct emissions

- mobile combustion sources (cars, trucks, etc.) owned by CSUN and used to move product or people
- combustion sources used to produce electricity, steam, district heating or cooling
- process emissions (chemical processes)

Indirect emissions resulting from:

- purchased and consumed electricity
- purchased and consumed district heating and cooling

Other indirect emissions resulting from:

- employee and student commuting
- business travel

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Carbon sinks (offsets)

- renewable power generated on site
(Calculated carbon savings)
- sequestration by vegetation and trees on campus
(Urban tree planting projects can be used to sequester carbon dioxide)

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Direct emissions from mobile combustion

CO₂ emissions depend on the quantity of fuel consumed and the CO₂ emission factor for each fuel. CH₄ and N₂O emissions depend on emission control technologies, miles traveled and the emission factors for vehicle and fuel type.

Data sources

Vehicle fuel consumption data : EPA and California ARB (www.fueleconomy.gov/feg/)

Vehicle type, year and mileage for CSUN-owned vehicles: CSUN's Facilities.

Vehicle type and year for commuters (staff, faculty and students): questionnaires and student surveys of vehicles in parking lots

CO₂, CH₄ and N₂O emission factors for vehicle fuels: CCAR GRP

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Direct emissions from stationary combustion

Emissions depend on annual fuel consumption of each fuel, and the emissions factors for each fuel.

CH₄ and N₂O emissions must be converted to CO₂ equivalent emissions using published global warming potentials.

Data sources

CO₂, CH₄ and N₂O emissions factors for stationary combustion: CCAR GRP.

Consumption data: Physical Plant management and Facilities planning

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Indirect emissions from electricity use

These are determined from annual electricity use (kWh), and the electricity emissions factor (GHG lbs/kWh) for the supplier.

Data sources

CO₂ electricity emission factor: supplier or pool-based from US EPA's eGRID database:

www.epa.gov/cleanenergy/egrid/index.htm)

CH₄ and N₂O electricity emission factors: CCAR GRP.

Conversion factors for non-CO₂ emissions to CO₂ equivalents: IPCC's Second Assessment Report (1996)

Energy consumption and generation data: Physical Plant management and Facilities planning

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Indirect emissions from commuting and business travel

Computed by same methodology as direct emissions from mobile combustion.

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Carbon sinks

From vegetation and trees. GHG sequestration rates are based on vegetation type and area covered, or tree type and diameter of the tree at breast height.

Renewable power sources at CSUN include solar panels, microturbines and a fuel cell plant.

Data sources

Land cover, vegetation and trees: **aerial photography**

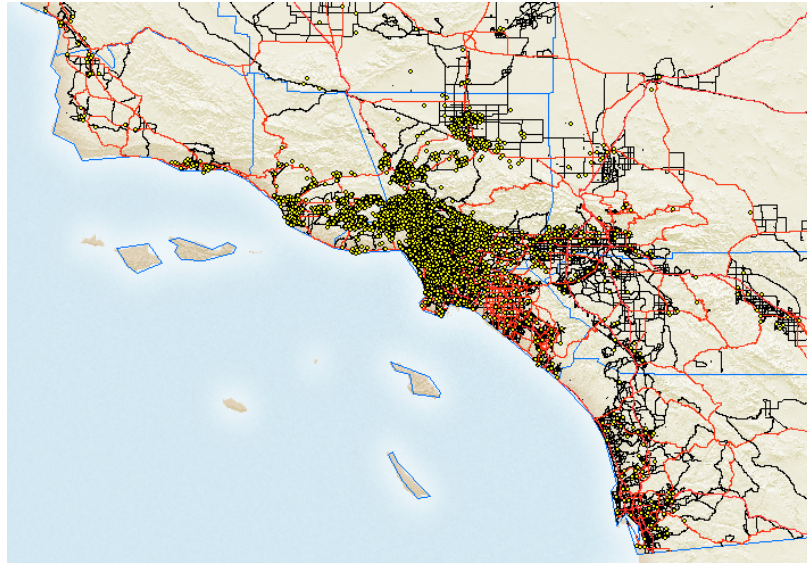
Tree types and sizes: Student measurements (carried out within Geog 416, scheduled for Spring 2009)

Tree emissions rates based on type, growth rate and size: Center for Urban Forestry Research Tree Carbon Calculator

CSUN Power generation data will be utilized to compute GHG emissions savings.

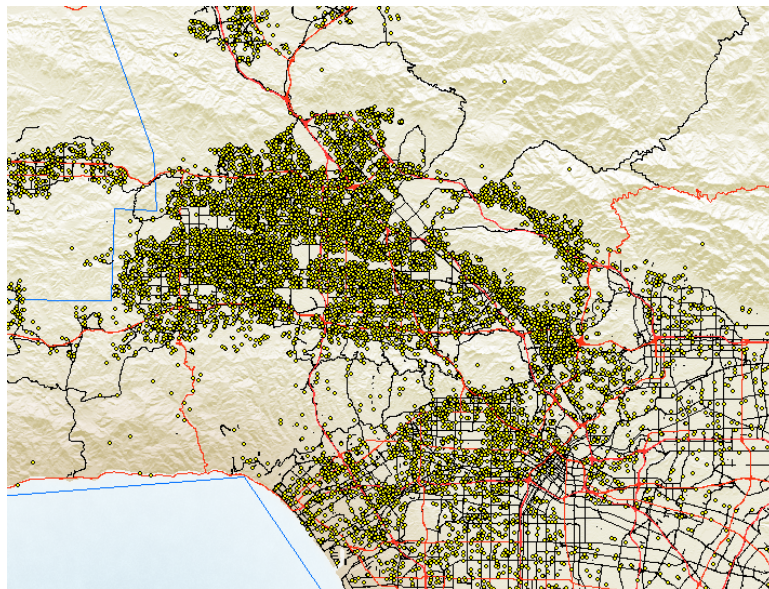
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Student Addresses
(used to calculate commuting miles and GHG emissions)



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Student Addresses



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CSUN Campus: Mapping of space

- Buildings
 - <all other values>
 - Classification
 - ClassRooms/Offices
 - Construction
 - Dorms
 - Food
 - Maintenance
 - Offices
 - Offices/Food
 - Parking
 - Pools
- Fields_and_Courts
 - <all other values>
 - Court_Field
 - Botanic Garden
 - Court
 - Field
 - Orange Groves

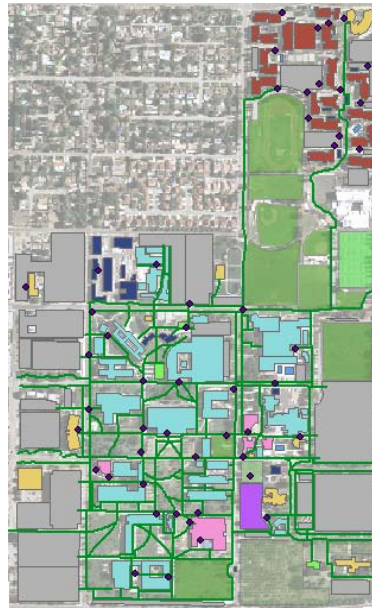


Map produced by Matthew and Pricila Hoggan

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CSUN Campus: Mapping of space and recycling bins

- Recycle Bins
 - ◆
- Walkways
 -
- Buildings
 - <all other values>
 - Classification
 - ClassRooms/Offices
 - Construction
 - Dorms
 - Food
 - Maintenance
 - Offices
 - Offices/Food
 - Parking
 - Pools
- Fields_and_Courts
 - <all other values>
 - Court_Field
 - Botanic Garden
 - Court
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 - Orange Groves

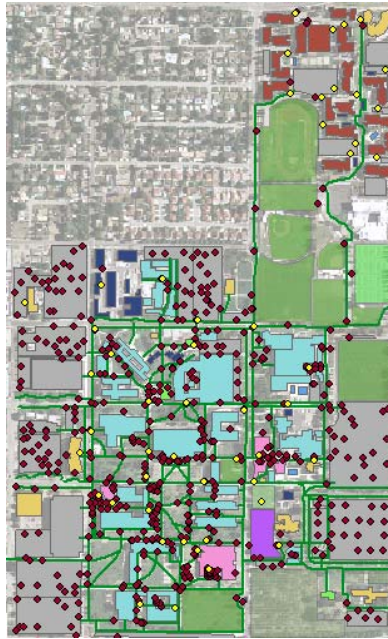


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CSUN Campus: Mapping of recycling and trash bins

- Recycle Bins
 - ◆
- Trash Cans
 - ◆
- Walkways
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