Chicagoin' Green

How to be morally superior to your neighbors

Our mission is to improve environmental sustainability in Chicago neighborhoods

How it works

Environmental Rating

Determine how environmentally friendly Chicago neighborhoods are based on their energy usage ,primarily focusing on electricity and natural gas.

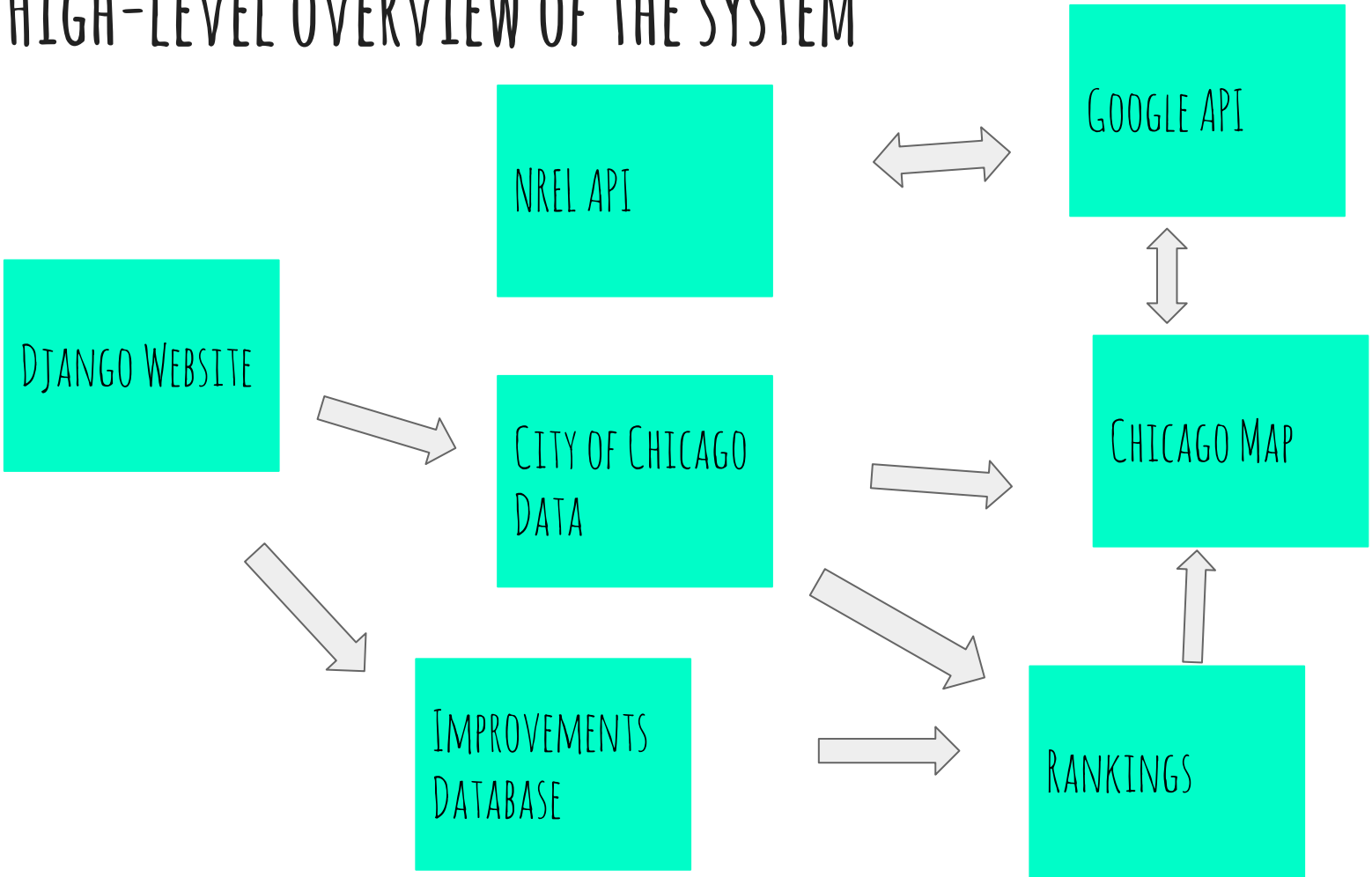
Improvement Plan

Provide suggestions that families and businesses can use in order to decrease the energy consumption in their neighborhood. This will include information regarding how much money and energy (electricity, natural gas, etc.) will be saved.

Interactive Website

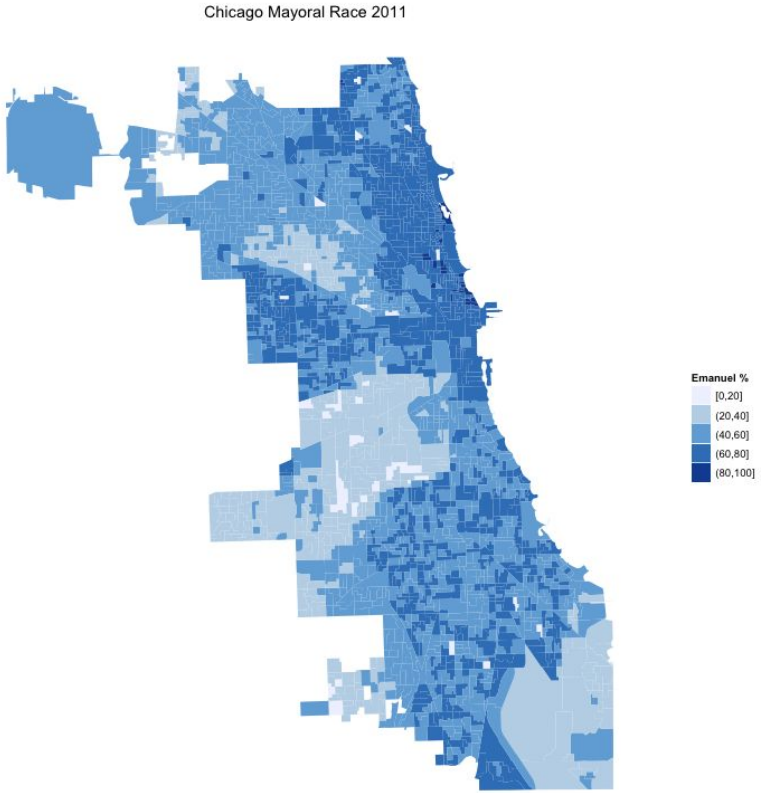
Present this information using a website with an interactive map. Users can interact with the website by clicking on their neighborhood which will then provide information on ways they can decrease their energy dependence.

High-level overview of the system



Choropleth mapping will be used to separate neighborhoods

The variable used will be the environmental rating. The map will easily show which neighborhoods have the best/worst environmental rating.



Source: http://www.r-bloggers.com/mapping-the-chicago-mayoral-election/

THE DATA

City of Chicago + NREL

Data Sources

City of Chicago

Use API to gather data about energy usage (electricity and natural gas).

NREL

Gather data on photovoltaic (PV)installs and costs by county/zip code.

NREL (continued)

Gather data on the performance of PVs (AC monthly usage).

Data Sources

NREL (continued)

Utility rates for a particular location can be extracted. This can provide information on the electricity rate for different building types.

Crawling Sites

Websites that give tips on how to save electricity and gas.

Other APIs

Geocoding API and Federal Communications Commission API used to convert between addresses, latitudes and longitudes, and census blocks.


MAPPING
JavaScript,
Leaflet,
GEOJSON

Data Sources & Tools

City of Chicago

Community Area Boundaries GEOJSON

MapBox

Provided base map

Leaflet

Open-source JavaScript library for creating interactive maps


User interface
Django

New Technologies

Website

Django

- Used to implement website

Mapping

Javascript, Leaflet, & GEOJSON

- Used to create interactive choropleth maps

Sorting

Quicksort Algorithms

- Used to rank neighborhoods by energy efficiency (electricity and gas)

Challenges

- Data Collection and Sorting Algorithms
  - Ambiguities with improvements: Difficult to find exact, quantitative values for improvements. Resorted to using averages (People's Gas, Standby Power)
  - Making sure all the conversions are correct.
- Mapping
  - There are almost too many options. It's hard to tell which one is best until you've been playing around for hours.
  - Interactions which seem intuitive are surprisingly difficult to implement
- Django
  - Keeping the files organized

Interesting surprises

- Data Collection and Quicksort
  - NREL API very extensive
  - Quicksort works incredibly fast
- Mapping
  - There are a lot of free maps and map-making tools available.
  - City of Chicago has lots of city mapping data
- Django
  - Once you understand the structure of the files, it’s fairly easy to use

Demo