Mitochondria Design Document

Idea

Our project focuses on illustrating the usage of energy across major US cities, as well as the overall national import and export of energy sources.

Details

Part I: Major US Cities
The first part focuses on the usage across US cities. We will have a map of the United States with major cities outlined in a circle. These circles' size depends on the level of usage, and colors on the type of energy. Scrolling over a side key allows users to see the specific form of energy on the map.

Part II: Import and Export
Using a bar graph, we plan on representing the different levels of import and export for all of the pre-specific energy types. Users can scroll over a sidebar to highlight specific energy types.

Site Map:
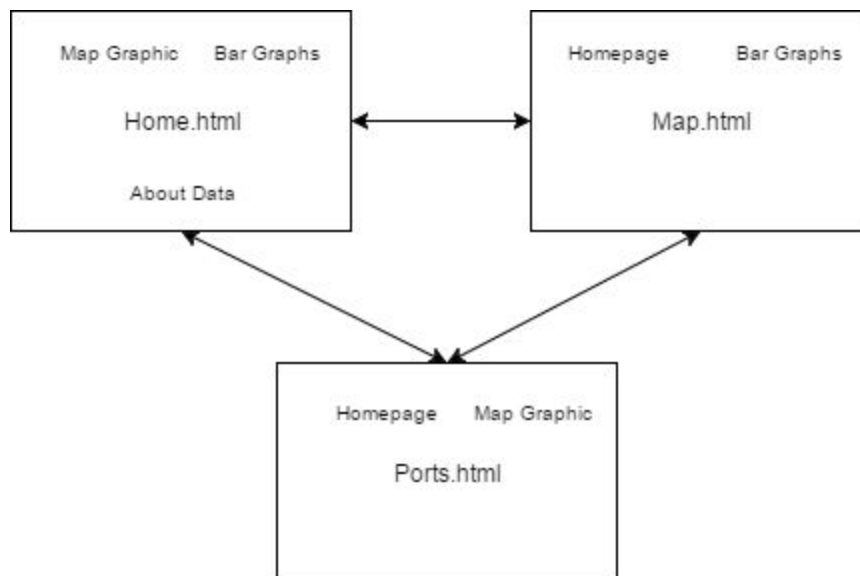
Component Description:

HTML

- **Home.html**
    - will have interesting energy animations, visually appealing
    - include links to the graphs

- **Map.html**
    - contains the map on an SVG element
    - javascript, d3, and css used to generate the circles, resize, and color them
    - a key on the side will be used as a filter for the various types of energy

- **Ports.html**
    - several bar graphs to show different levels of imports/exports
    - hovering over a bar will highlight it and display additional information
    - user can specify the year for the data

Javascript

Static

- Map
    - Height of map
    - Width of map
    - Geographic projection - Albers
        - translate - to center
        - scale - fit in map
    - Path generation
    - Legend text
    - SVG element - bind to map
- Bars
    - Height of chart
    - Width of chart
    - Legend text
    - SVG element - bind to map

Functions

- Map
    - energyByCity() - energy by city data
        - range - input data
    - drawCircles() - drawing circles on map

- size - radius directly related to amount of energy consumed
- color - refers to type of energy
- location - refers to city location
- Bars
  - drawBars()
    - height - amount imported/exported
    -

Component Map:
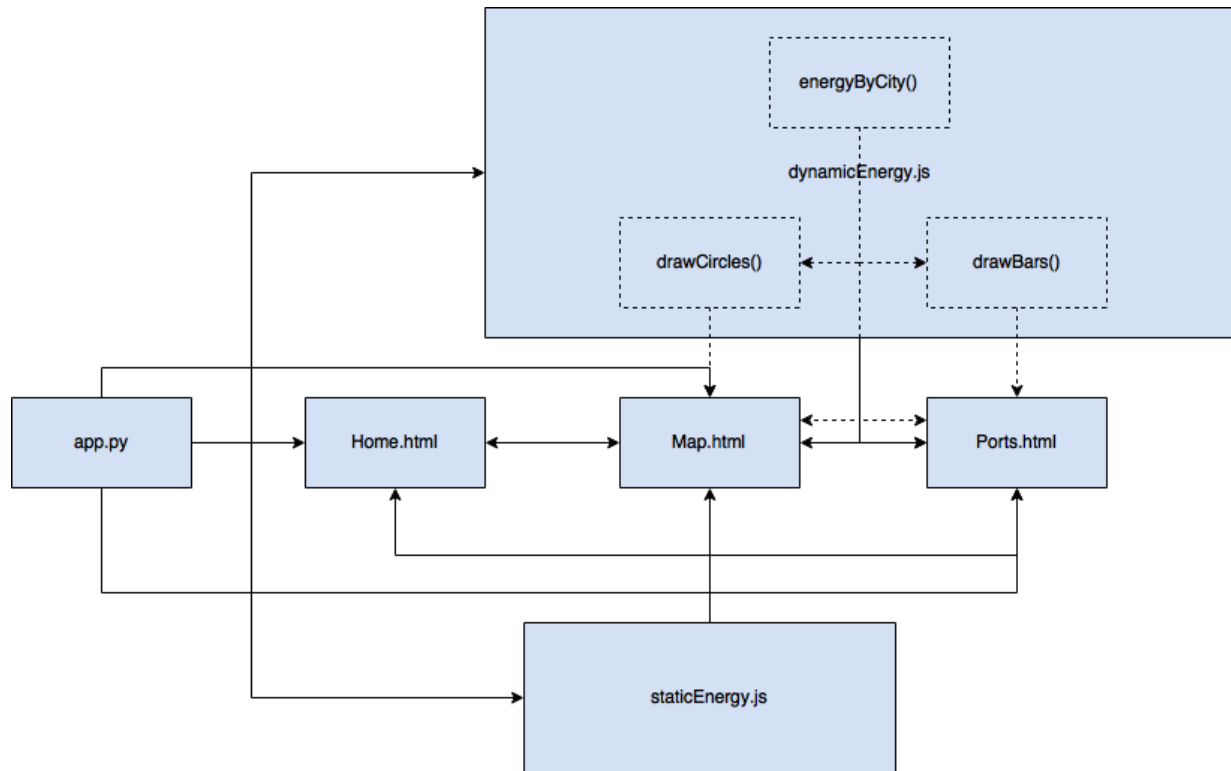
Delegation:

Anthony:
- Backend, parsing dataset information
- Helping on some visual designs for the bar graph/ map
- Adding some javascript to make the page more interactive

Nicholas:
- Finding datasets for each major city and organizing it
- Creating basic html templates
- Creating flask app and page interactions
- Displaying data

Janet:

- CSS for tooltips, etc.
- Backend for displaying graph data

Sharon:
- D3 development - static variables and functions
- Designing scale for map, components

Timeline:

3/29:
- start basic page templates (very simplistic designs)
- link the three pages together

3/30:
- parse through the dataset and gather the necessary information
- figure out how to overlay the US map (maybe instead of having it as a plain jpg, we could transport it to another file format to make it easier to display the circles)

3/31:
- begin drawing circles on the map
- using the data we obtained and d3 functions, start making the circles resize dynamically
- color the map, make it less bland

4/1:
- display numeric values when user hovers over circle
- start working on the bar graphs (d3 and js)
- maybe we can use numpy and pyplot to create a generic graph

4/2:
- add some stylistic touches to the graphs
- create the sidebars that allow for the filtering functionality
- continue decorating our homepage :D