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Goal

- User friendly home energy monitoring system
- Graphical detail on energy use
- Real time as well as weekly, monthly, annual
- User customization of panels and relevant information
- Allow consumers to identify areas of high energy consumption

Motivations and Objectives

- Motivations
  - Create energy saving habits and detect high usage areas
  - Easy to navigate views show trends in consumption
  - Help facilitate efficient decisions with regard to new appliance purchases.

- Objectives
  - Integrated mobile access with notifications and alerts
  - Personal panel and breaker cluster customization
  - Provide accurate energy bill estimates

Research Challenges

- Stabilizing and calibrating AC current values
- Efficiently utilizing Arduino code
- Quickly sending data over network for real time performance
- Staying within NEC code
- Multi-platform integration
- Accurate real-time values

Acknowledgement

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Methodology

- Use ACS712 based current sensor to read current values (AC & DC)
- Read analog values (0-1023 units) and convert to appropriate voltage using 4.9mV/unit.
- Convert voltage to amps using chip sensitivity (66mV/Amp)
- Ruby on Rails
  - MVC Framework
  - Rails API for JSON doc storage
- HighCharts
  - Pure JS Charts
  - AJAX to update
  - Twitter Bootstrap

Results

- Real time POST
- Modern UI
- Immediate and extended current draw values
- View and panel customization

References