



Consumer Interface for Real-Time Electrical Demand

Changing the way we use electricity

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Smart Grids

- Integrate an extensive set of sensors, as well as various control and communication methods, in order to monitor, protect, and optimize the delivery of electricity, both at the transmission and distribution levels
- Enable two-way communication between generators and consumers
- Improved operational efficiency
- Economic, environmental, and reliability advantages
- Allow for demand response programs to not only be more effective, but also more widespread: smart grids have the potential to involve consumers in a way that the current grid does not.



Figure 1: Power Infrastructure

Objectives of this study

- To draw interest to power issues.
- To provide information to users about the current grid status and their electricity consumption
- To empower consumers to be make informed decisions about their electricity use

Physical Interface

Main advantages of the physical interface:

- More attention-grabbing than other display forms
- More intuitive to use, and thus more engaging for the whole family
- Especially effective when convincing less motivated customers to change the way they view and use electricity

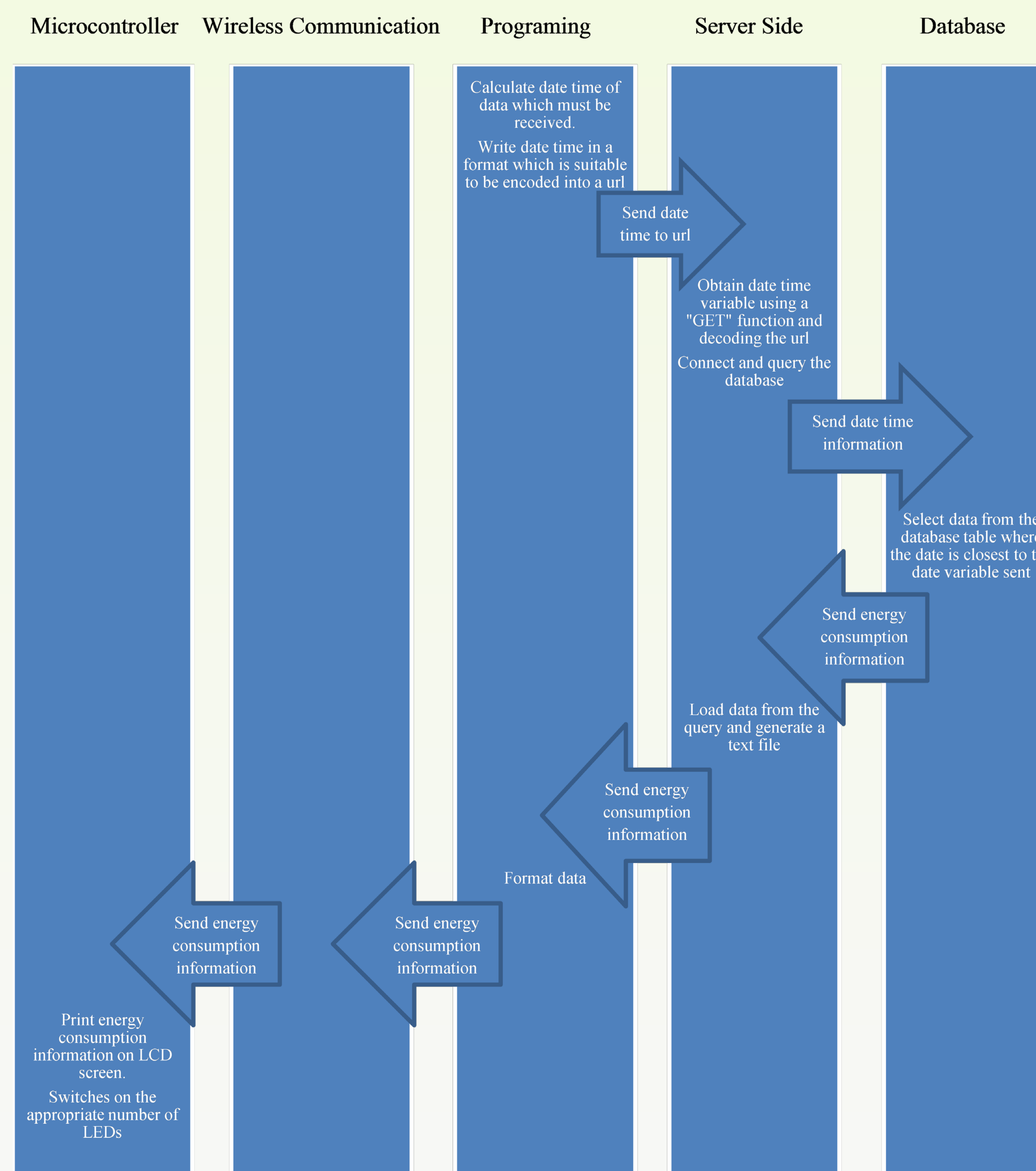


Figure 2: Flowchart illustrating the displaying of data for the physical interface

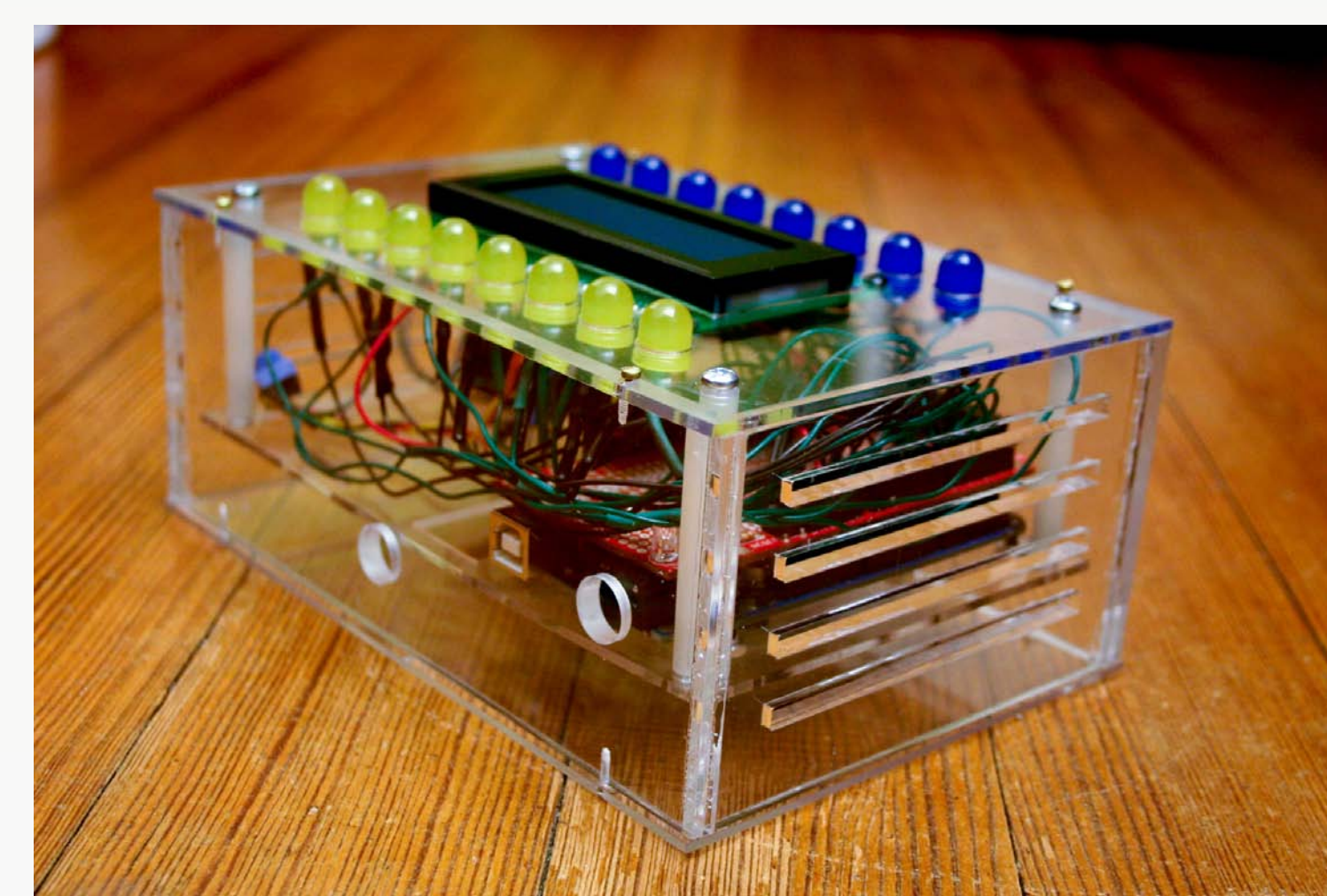


Figure 3: Physical Interface

Website Interface

Main advantages of the website interface:

- The information on it is available from anywhere
- Historical information is available through this display
- A comparison of a user's energy consumption to that of other buildings is provided through this display

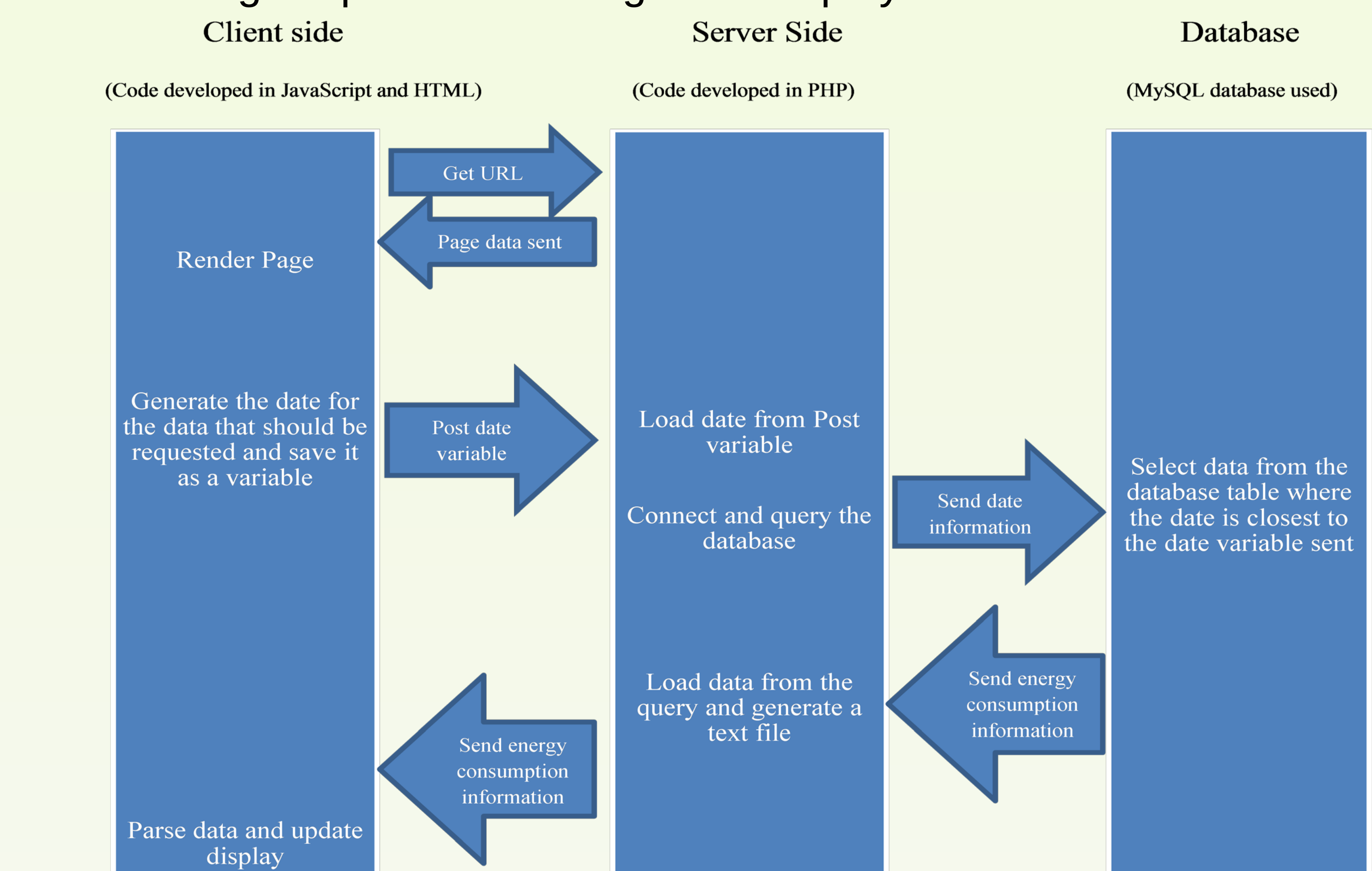


Figure 4: Flowchart illustrating the displaying of real-time data for the website interface

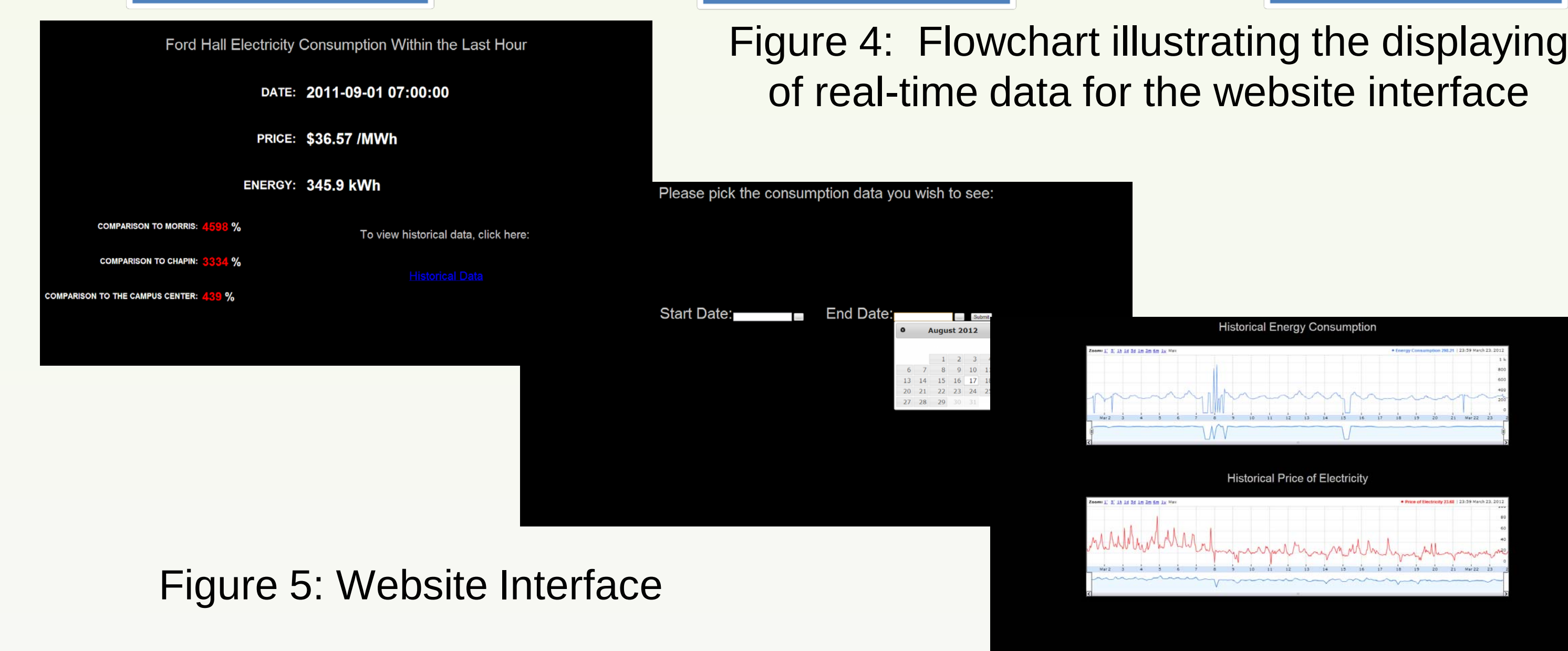


Figure 5: Website Interface

Future Work

Testing these displays by:

- Recording consumers' impressions and feedback on the design
- Comparing the electrical load of residences using these displays to their previous electrical load to get an idea of their capacity to reduce electricity consumption during peak demand hours

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