

# Consumer-centric Display of Smart Meter Information Via Set-Top Box

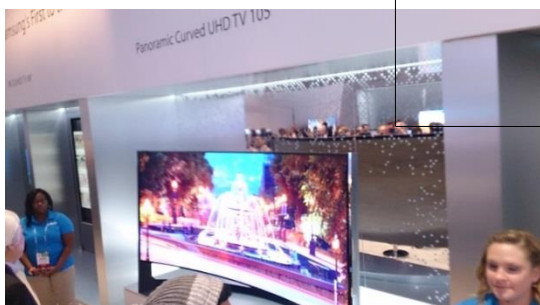
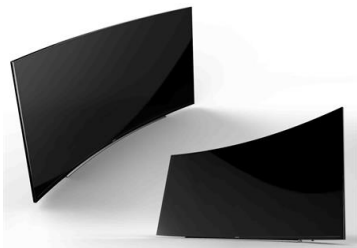


**Zhentao Sun, MSEE  
Project Manager**

**May, 2014**

**[www.calplug.org](http://www.calplug.org)**

# Universal Display Technology



Creating Connections. Powering Innovation. Boosting Efficiency.

# Good and Bad Visual

Page 2 of 2

visit us online at [www.msmpower.co.uk](http://www.msmpower.co.uk)

## → Your usage - in detail

For more information about this calculation, go to [www.msmpower.co.uk/billing/](http://www.msmpower.co.uk/billing/)

Meter readings for meter number **12345678901234**  
Your current tariff is **Electro Saver 100**

Previous reading	Recent reading	Units used	Units as kWh	Pence per kWh	Charge for energy used
3223 (gas)	3425	202	6349 over 54 days	First 1177 kWh @ 3.717p Next 5172 kWh @ 2.100p	43.75 108.61
66112 (electricity)	66909	N/A	797 over 54 days	First 222 kWh @ 16.439p Next 572 kWh @ 9.657p	36.49 55.53

15 Dec 2009 (reading)

20 Mar 2010 (estimate)

**10** Total Charge 244.38

### How we calculate your energy charges

**Gas**  
3.717 pence for the first unit 12.512 kilowatts used a day, then 2.100 pence per kilowatt for the rest.

**Electricity**  
16.439 pence per kilowatt for the first 2.406 kilowatts a day, and 9.657 pence for the rest.

### Estimated meter readings

Our estimated reads are based on our records of your previous usage. Where we do not have this our estimated reads are based on average consumption levels.

To ensure accurate billing you may supply us with actual meter reads either via your account section at [www.msmpower.co.uk](http://www.msmpower.co.uk) or over the phone on 0845 123 4567

### 17 If you have a complaint

Please call us on 0845 123 4567 - we will aim to resolve your problem straight away.

If you are still unhappy after speaking with an advisor, please ask to speak to a manager. You can write to our Compliance Manager, Tony Harrison, at MSM Ltd, Harrison Road, London, NW1 1HM

**Need Help?**  
**0845 123 4567**

**Mon-Fri** 8am-8pm  
**Saturday** 9am-6pm  
**Sunday** 10am-4pm

Your call may be recorded for training purposes. Please read page 2 before calling us.

### Are you the account holder?

We can only speak to the person named on the bill. If you wish someone to deal with us on your behalf, please inform us that you gave granted them permission to do so.

### Moving home? Take us with you!

**0845 123 4567**

To give us your meter readings on the day you move.

**Energy efficiency**  
[electropower.co.uk/ee/](http://electropower.co.uk/ee/)  
**0845 123 4567**

For advice and help on saving you money by becoming more energy efficient.

**24-hour Gas Emergency Service**  
**0800 123 4567**

If you have a gas leak or need to report a dangerous situation call us immediately.

**24-hour Electricity Emergency Service**  
**0800 123 4567**

If you have a power out or need to report a dangerous situation call us immediately.

### Services for customers with specific needs

We'll help if you have specific needs. For example, we can send you bills in large print format or Braille, or on audio tapes.

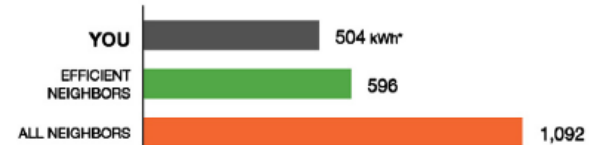
To find out about the range of services we can offer, simply call us on 0845 123 4567

**14**

670005H4M4N51158 NAB00 800SH

## Last Month Neighborhood Comparison

Last month you used **15% LESS** electricity than your efficient neighbors.



\*kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

YOUR EFFICIENCY STANDING:

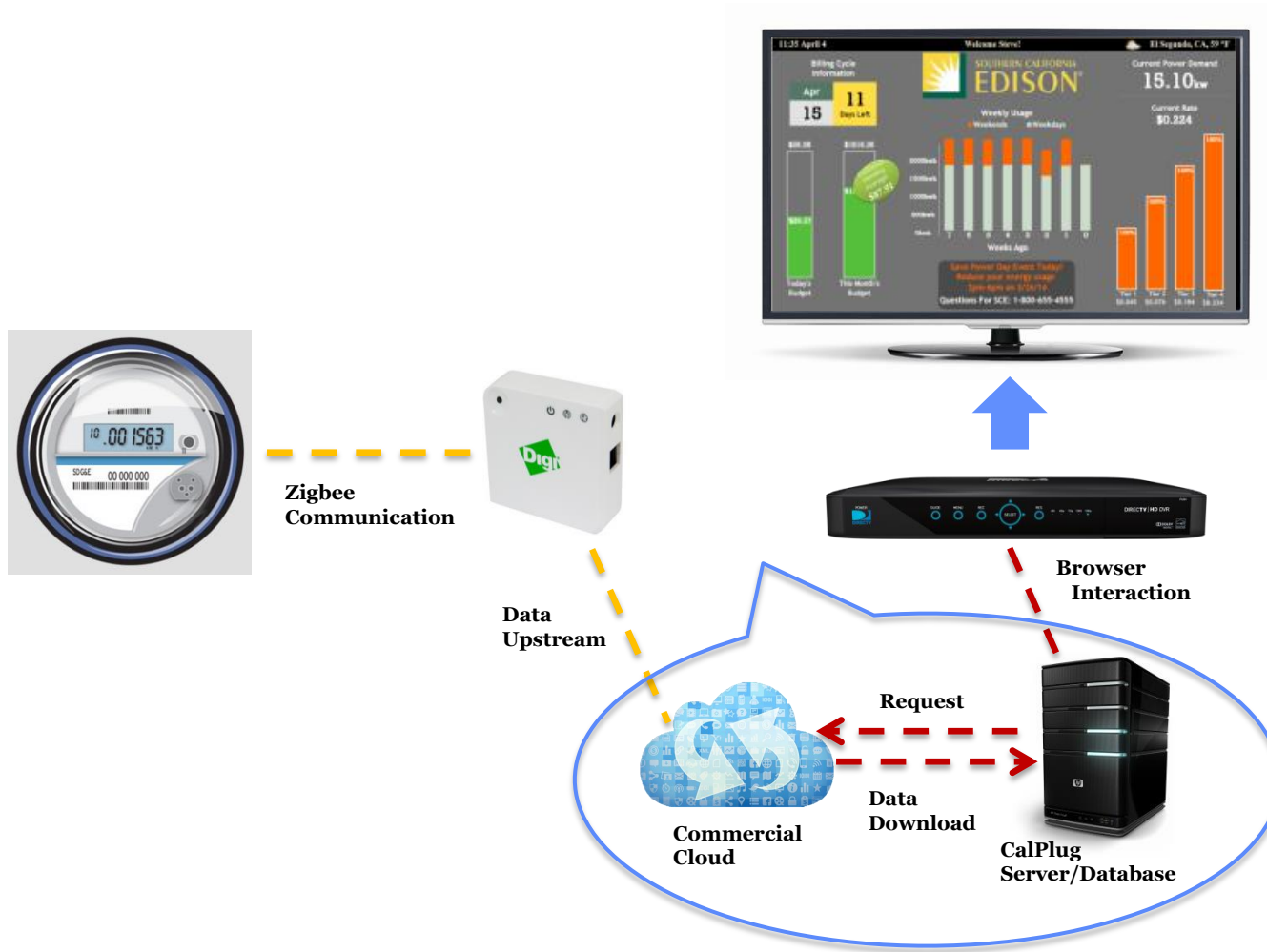


# Project Scope

- To build a channel that connects Smart Meter Energy Info with utility customers
- Building user friendly interface for ubiquitous energy display



# Smart Meter Data on TV



# Gateway Selection



Path: /ws/XbeeAttributeDataCore

HTTP Method:  GET  POST  PUT  DELETE  HEAD

1

GET /ws/XbeeAttributeDataCore 200

Response Request

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<result>
  <resultTotalRows>36</resultTotalRows>
  <requestedStartRow>0</requestedStartRow>
  <resultSize>36</resultSize>
  <requestedSize>1000</requestedSize>
  <remainingSize>0</remainingSize>
  <XbeeAttributeDataCore>
    <id>
      <xpExtAddr>00:07:81:00:00:83:F0:7D</xpExtAddr>
      <xeEndpointId>16</xeEndpointId>
      <xcClusterType>0</xcClusterType>
      <xcClusterId>0</xcClusterId>
      <xaAttributeId>4</xaAttributeId>
    </id>
    <cstId>3981</cstId>
    <devConnectwareId>00000000-00000000-00409DFF-FF5C14FD</devConnectwareId>
    <xeProfileId>265</xeProfileId>
    <xeDeviceId>1280</xeDeviceId>
    <xeDeviceVersion>0</xeDeviceVersion>
  </XbeeAttributeDataCore>
</result>
</?xml>
```

ce

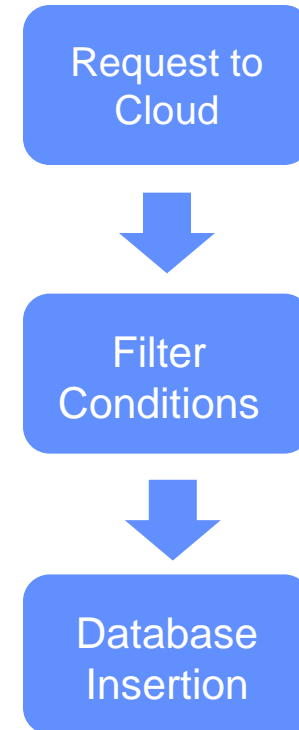
9.00

79.99

20.00

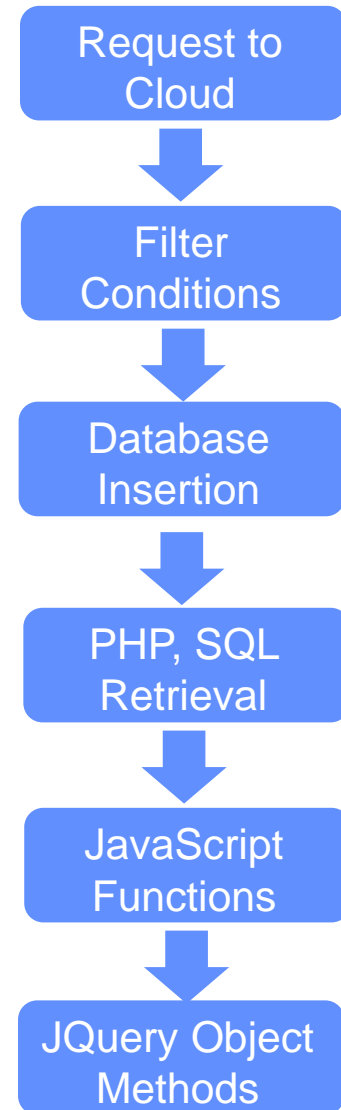
# Retrieving Data

- **Java request and database insertion (MySQL, PostgreSQL)**
- **Request to iDigi Device Cloud using customized APIs**
- **Filter conditions: MAC address, attribute names, etc.**
- **Insert timestamp, consumption, current power into the database table**



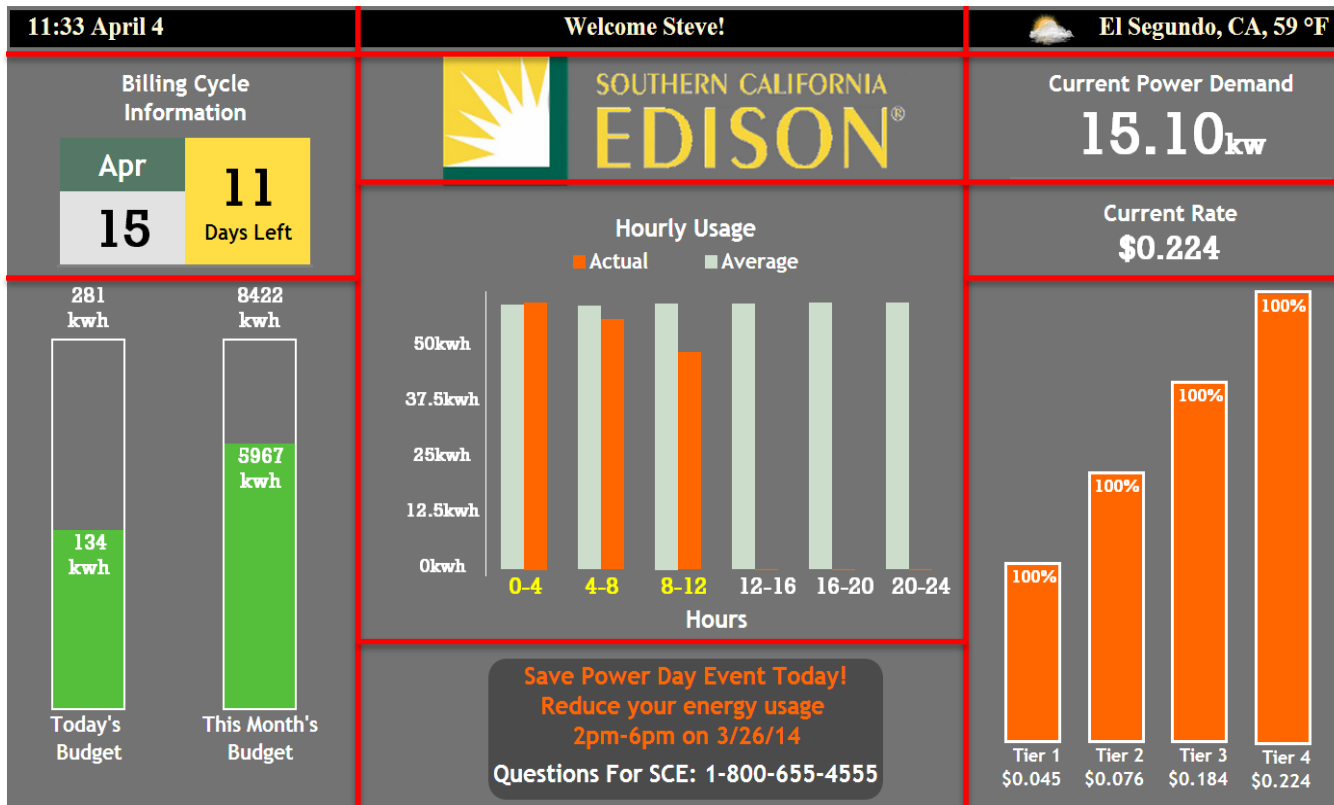
# Display Interface

- **JavaScript** calculation (current usage, history analysis) and projection(future estimation)
- **JQuery methods** for page block configuration.
- **Draw charts**(highchart.js, <table>, JQuery)





# Display Interface (continued)

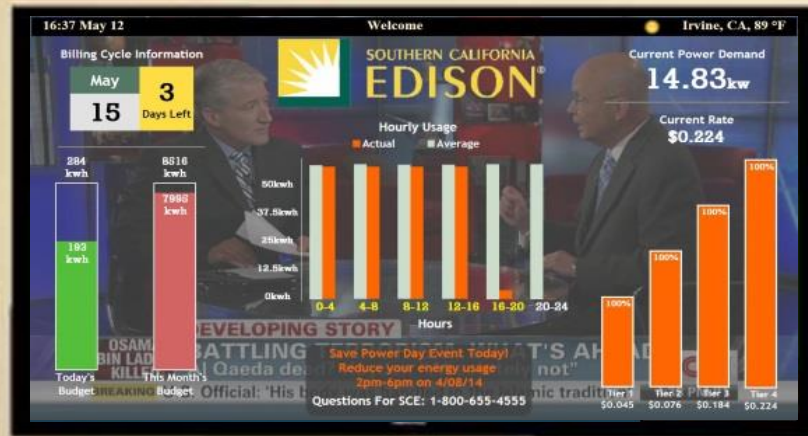


# DirecTV Demo



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# Seamless Integration with Home Entertainment



# Future Work (Phase II)

- **Green Button Data**



- **Social Network Integration**



- **Mobile Web & Native Apps**



# Thank you!!!