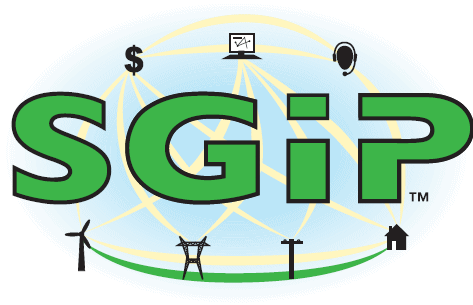
The Energy Services Provider Interface (ESPI) for Green Button: The nature and format of standardized Energy Usage Information (EUI) Saturday, October 15, 2011 07:59:00

Smart Grid Interoperability Panel



# Notes for Today’s Demo Materials

We presented today some files we quickly constructed to demonstrate the capabilities inherent in the web technologies when used in conjunction with the NAESB standards that we developed together.

The set of files demonstrated during our webinar today, along with the presentation, are in the zipped package accompanying this email. If you have any trouble receiving the zipped file please let me know and I can resend the files to you directly. We have also included a late draft of the ESPI standard with NAESB permission. We are happy to answer questions and to provide additional support to understand this contribution as you continue with your efforts to produce a working green button prototype.

Accompanying the ESPI standard are sample files which were built on to create:

1. An xml file representing a hypothetical customer’s EUI for a period of one month and two days.
2. An XSLT file that produces a pleasing rendering of this data for the customer to view in a web browser.

As a proof of concept exercise, these samples show the range and capabilities of the techniques and technologies, but do not represent a final product or recommendation of precisely what to do. On the other hand, they provide a clear starting point and methodology to quickly converge on a such a final product.

For your consideration, an over-simplified process for arriving at a final version could look something like this:

1. Review the ESPI model components for subset of desired features to expose
2. Trim or augment the example to represent this prototype
3. Enhance and/or constrain the demo XSLT to handle the diversity of EUI expected to be generated from the back-end
4. Agree on this defined interface
5. Build the back-end generator realization of this interface to assemble the EUI files for exposure via the green button.

# Files Provided

The following files are provided in the package:

|  |  |
| --- | --- |
| File | Description |
| ESPI Standard and Components\* | |
| espi\_090711.docx | The NAESB REQ21 ESPI |
| espi\_model\_090711.eap | The ESPI UML Model in Enterprise Architect |
| atom.xsd | ESPI Atom Publishing Schema fragment |
| espi.xsd | ESPI Message/Model Schema |
| GET Batch.xml | Sample Batch data Request message |
| GET Subscription.xml | Sample Subscription GET |
| POST Subscription.xml | Sample Post Subscription POST |
| ESPI Demonstration Files | |
| GETBatchSampleEUI.xml | Single file EUI example |
| ESPIRender\_xslt1.xslt | XSLT to render EUI in web browser\*\* |
| GETBatchSampleEUI.csv | Single file EUI example opened in Excel and then saved as CSV |
| LoadProfile.xlsm | Load profile generation spreadsheet |
| Green Button File Format 20111014.pptx | Today’s presentation |
| Green\_button\_background\_info\_NIST.docx | Last week’s backgrounder |

\* Standard last working draft – ESPI standard is in ratification and official versions will be available after posting in coming days through NAESB.

\*\* Note that this XSLT contains copyrighted templates from Marrowsoft LTD. We are pursuing permission to republish. See notice inside file.

# Annotated Rendering

This section presents the rendered file format showing where various components come from in the schema (espi.xsd). The comments contain an XPATH reference or partial reference to the data element. You will need to display comments to see this information. *Note that this mapping is approximate and the prototype was quickly assembled and minimally reviewed.*

|  |
| --- |
| **Energy Usage Information** |
| For location: 1423 Elm St., Derwood, MD 20850 |

|  |
| --- |
| **Meter Reading Information** |
| Type of readings: Electricity, Hourly Energy Consumption, Real energy (Watt-hours), Two-Phase Residential Service |

|  |
| --- |
| **Summary of Electric Power Usage Information\*** |
| \* Note: Quality of this summary and information is "raw: data that has not gone through the validation, editing and estimation process"  Current billing period as of: 2011-10-02 23:59:59  Curency: US Dollar  Cost of usage(US Dollar): 20.61  Consumption: (Real energy (Watt-hours)) 157  Last billing period: 2011-09-01 00:00:00 to 2011-10-01 00:00:00  Bill last period(US Dollar): 248.21  Cost of usage last billing period (US Dollar): 233.32  Cost additional last period (taxes and other fixed charges) (US Dollar): 14.89 |

|  |
| --- |
| **Hourly Electricity Usage**  Start date: 2011-09-01 00:00:00 for 32 days |
| |  | | --- | | Data for period starting: 2011-09-01 00:00:00 for 24 hours | | | Energy consumption time period | Usage  (Real energy (Watt-hours)) | Cost  (US Dollar) | Events occurred | | --- | --- | --- | --- | | 2011-09-01 00:00:00 to 2011-09-01 01:00:00 | 1 | 0.12 | (X) | | 2011-09-01 01:00:00 to 2011-09-01 02:00:00 | 1 | 0.12 |  | | 2011-09-01 02:00:00 to 2011-09-01 03:00:00 | 1 | 0.12 |  | | 2011-09-01 03:00:00 to 2011-09-01 04:00:00 | 1 | 0.12 |  | | 2011-09-01 04:00:00 to 2011-09-01 05:00:00 | 1 | 0.12 |  | | 2011-09-01 05:00:00 to 2011-09-01 06:00:00 | 3 | 0.36 |  | | 2011-09-01 06:00:00 to 2011-09-01 07:00:00 | 5 | 0.59 |  | | 2011-09-01 07:00:00 to 2011-09-01 08:00:00 | 5 | 0.59 |  | | 2011-09-01 08:00:00 to 2011-09-01 09:00:00 | 5 | 0.59 |  | | 2011-09-01 09:00:00 to 2011-09-01 10:00:00 | 5 | 0.59 |  | | 2011-09-01 10:00:00 to 2011-09-01 11:00:00 | 5 | 0.59 |  | | 2011-09-01 11:00:00 to 2011-09-01 12:00:00 | 5 | 0.59 |  | | 2011-09-01 12:00:00 to 2011-09-01 13:00:00 | 5 | 0.59 |  | | 2011-09-01 13:00:00 to 2011-09-01 14:00:00 | 5 | 0.59 |  | | 2011-09-01 14:00:00 to 2011-09-01 15:00:00 | 5 | 0.59 |  | | 2011-09-01 15:00:00 to 2011-09-01 16:00:00 | 5 | 0.59 |  | | 2011-09-01 16:00:00 to 2011-09-01 17:00:00 | 5 | 0.59 |  | | 2011-09-01 17:00:00 to 2011-09-01 18:00:00 | 5 | 0.59 |  | | 2011-09-01 18:00:00 to 2011-09-01 19:00:00 | 5 | 0.59 |  | | 2011-09-01 19:00:00 to 2011-09-01 20:00:00 | 5 | 0.59 |  | | 2011-09-01 20:00:00 to 2011-09-01 21:00:00 | 5 | 0.59 |  | | 2011-09-01 21:00:00 to 2011-09-01 22:00:00 | 5 | 0.59 |  | | 2011-09-01 22:00:00 to 2011-09-01 23:00:00 | 5 | 0.59 |  | | 2011-09-01 23:00:00 to 2011-09-02 00:00:00 | 3 | 0.36 |  | | |