Green Button Today

Enabling Secure, Digital Access and Sharing of Standardized Energy Data

"Experiences and lessons learned in North America, background of the GBA, what works, what doesn't, what's next."

STANDARDIZATION OF PRIVATE DATA IN ENERGY MARKETS
23 February 2021

The Green Button®

Green Button methods

Green Button solutions can be provided in two methods:

- **Connect My Data® (CMD sometimes called GBC)**
  - A way for a customer to authorize a Third Party to obtain Utility data for them.

- **Download My Data® (DMD sometimes simply GB)**
  - A way for a customer to login and download their data from a Utility.

What do CMD and DMD do for us?

CMD allows a third-party company to *analyze continual (daily) data* on behalf of a ***mutual customer*** of the utility and the third-party company **without the customer needing to manually and continually obtain the data**.

With **DMD**, the utility customer logs in, downloads data into a file, and then uploads the file (to a third party) or otherwise handles the data for analysis.
It's great for *one-off or occasional data acquisition* (for sizing a solar array or determining historical usage).

Green Button components

NAESB REQ.21 'ESPI'

North American Energy Standards Board,
Retail Electric Quadrant, book 21,
'Energy Services Provider Interface':
➔ The core component of all Green Button solutions.

IETF 'Atom' RSS

Internet Engineering Task Force,
XML-based Web content and metadata syndication format:
➔ Provides relational-database aspects to the flat, XML file/stream.

IETF 'OAuth 2.0'

Internet Engineering Task Force,
Authorization framework for a third-party to obtain limited access to a service:
➔ Allows secure authorization for sharing customer data from a utility to a service provider.

Into the Present

Passing the Baton to Industry

Creation of the Green Button Alliance:

- the U.S. National Institute of Standards & Technology (NIST),
- the U.S. Department of Energy (DOE),
- the Smart Grid Interoperability Panel (SGIP),
- the Utility Communications Architecture International Users Group (UCAIug), and
- the U.S. White House.

The North American Energy Standards Board's *Energy Services Provider Interface* (NAESB REQ.21 ESPI standard) serves as the basis for Green Button technology by providing a model for business practices, use cases, and an XML schema for the standard.

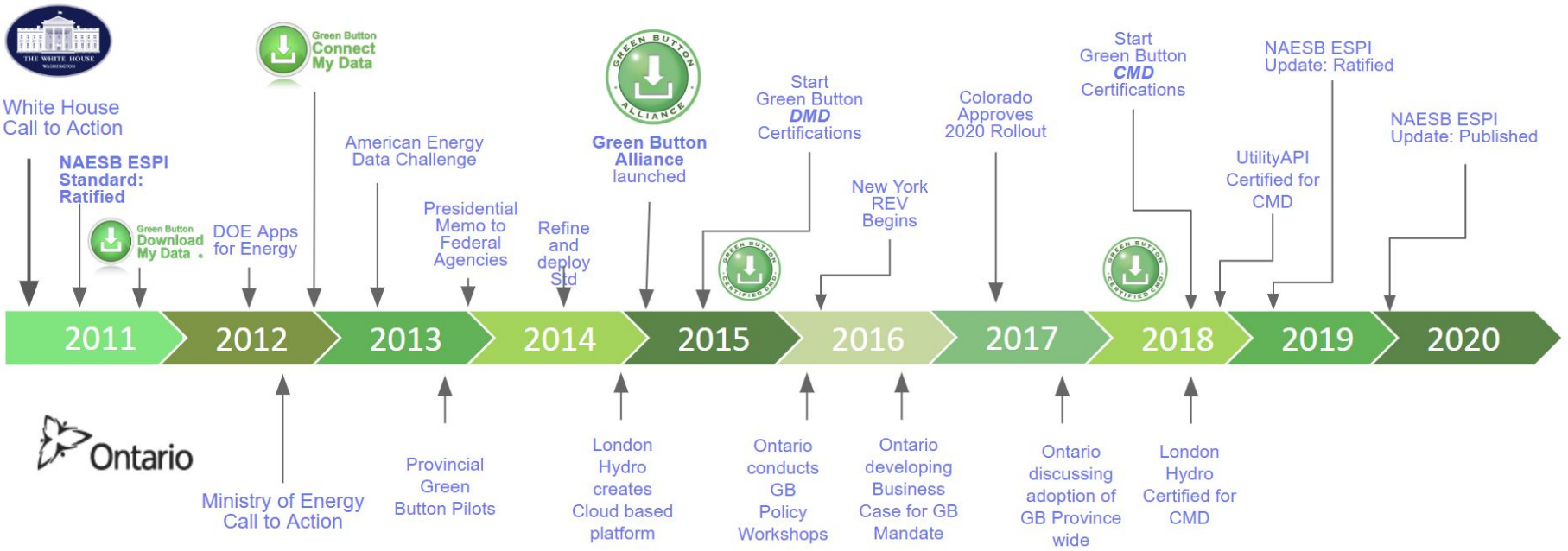
Green Button “ESPI” core updates

The North American Energy Standards Board (NAESB)

Latest version, 3.3…

- Replaced OAuth 1.0 with **OAuth 2.0** for “Confidential Clients”
- Updated security requirements to **TLS 1.2** as a minimum
- Revised the **Energy Usage Information (EUI) data structure and definitions**
- **Created the Retail Customer (PII) data structure and definitions**
- **Deprecated original Use Cases** that do not meet OAuth 2.0 data security req’s
- **Added Use Case for *Download My Data* (DMD)**
- **Simplified Use Case 2**: “Customer Authorization process”
- **Documented Standard ESPI Application Program Interface (API) formats**

Timeline of the Green Button Initiative



What Works?

What works?

1. **Use of “off-the-shelf” standards and technologies**
   a. No need to invent transport, security, or authorization methods
   b. Seamless integration with existing utility systems
2. **Open forum to discuss changes to the standard**
   a. OpenADE.org — our anyone-welcome, technical task force
   (*open automated data exchange* — a pre- “Green Button” moniker, still used today)
   b. OpenADE ideas brought to NAESB and to IETF
3. **Few barriers to implementation**
   a. GitHub for examples
   b. No memberships required
   c. No licensing fees
   d. ESPI standard available for low cost to anyone

What works?

1. **Separation of usage data from personal data**
    a. Parallel data streams
    b. Security and GDPR adherence
2. **Community acceptance**
    a. Non-voting governmental participation
    b. No lobbying by GBA
3. **Single place for all resources:**
    a. GBA provides a community (Slack, GitHub, Zoom)
    b. GBA provides technical education
    c. GBA provides compliance testing
    d. GBA provides support of standardization enhancements

What Doesn’t Work?

What doesn’t work?

1. **Waiting to form a trade group**
    a. From the initial ideas to the forming of GBA: five years had past
    b. Lack of coordination between efforts (standard, support, go-to, testing, websites)
    c. Use of logos and terms (“Green Button”) without oversight/compliance
    d. No registry of implementations
2. **Too-few mandatory parts**
    a. Establishing minimum-implementation requirements that don’t meet the needs of the industry or the consumers
    b. No requirements to meet the latest standards

What’s Next?

What's next?

1. **Regulations/Legislations**
   a. Statewide (USA) & Provincewide (Canada) mandates for data sharing
   b. Expansion to other countries (Korea, others)
   c. Certification to ensure compliance
2. **Registry of implementations**
   a. An "app store" for residential and commercial solutions
   b. Listing of which utilities offer what
   c. Go-To Place to learn more
3. **Enhancements**
   a. Working with standards orgs (NAESB, IETF, etc.) to improve offerings
   b. Tools for users (data-viewing solutions) and developers (sandboxes)
   c. Templates for utility-industry regulators to call-out best practices

Standardization of Private Data in Energy Markets

“Green Button Today”

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