ONC's API Task Force Virtual Hearing
January 26, 2016

Green Button for Energy Usage Information – Ecosystem and APIs

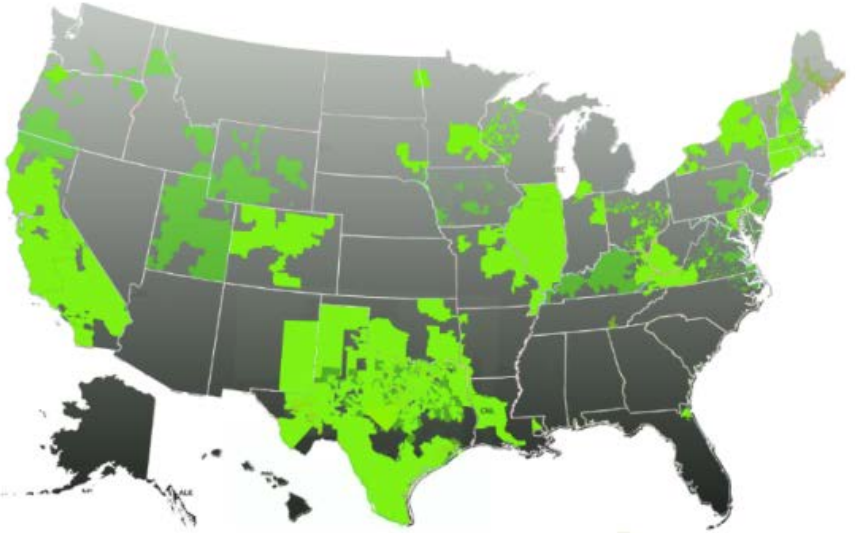
Dr. David Wollman – Deputy Director, Smart Grid and Cyber-Physical Systems Program Office, Engineering Laboratory, National Institute of Standards and Technology (NIST)
U.S. Department of Commerce
david.wollman@nist.gov

Dr. Marty Burns – SG&CPS Program Office, NIST
martin.burns@nist.gov

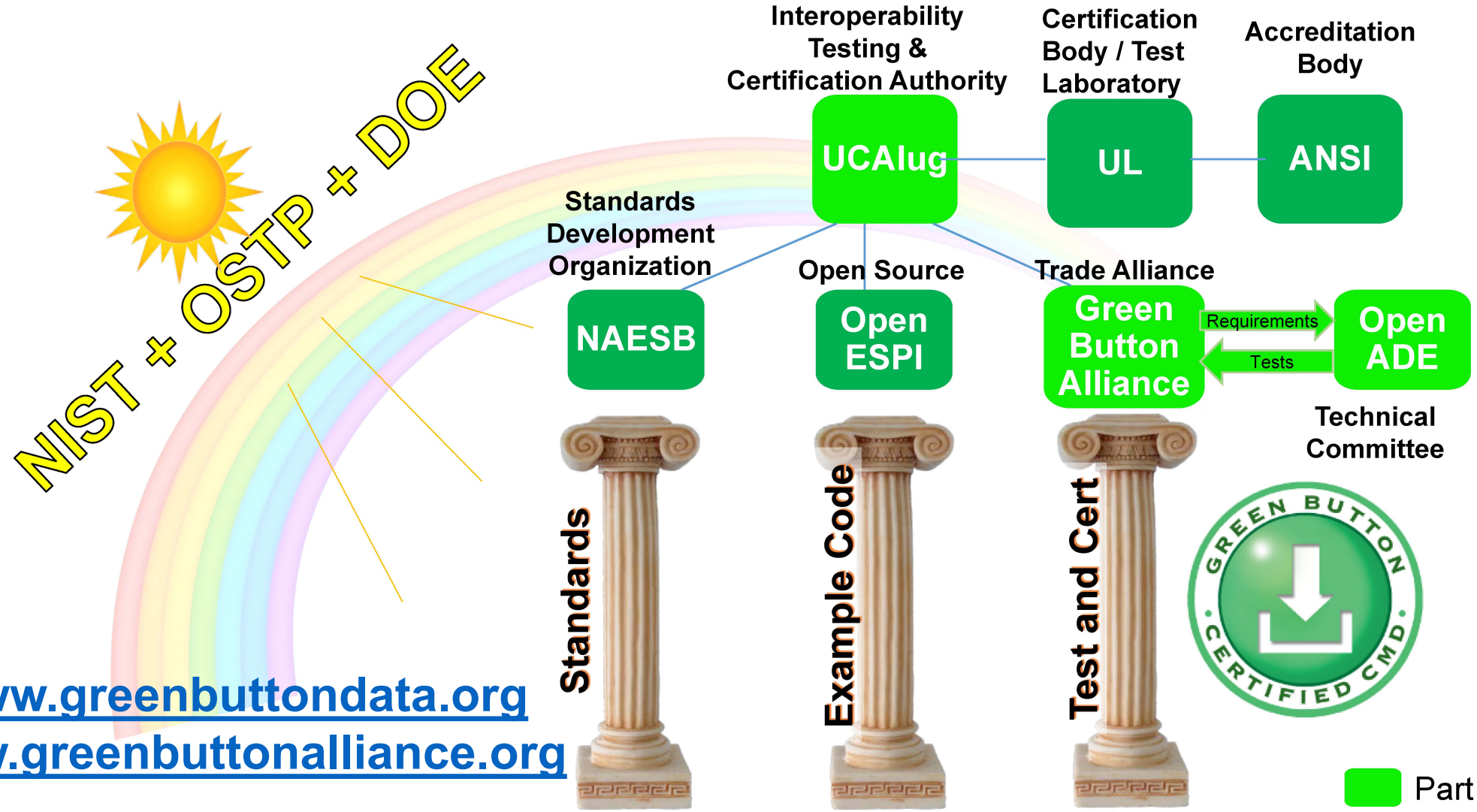
Green Button Initiative

- My Data: Enables electronic consumer access to energy data and supports development of ecosystem (apps) – Blue Button inspiration
- US: Available to 60+ million customers (100M people) and CANADA: 2.6 million+ (8M)
- Result of collaboration among White House, NIST, DOE, utilities, vendors, state regulators, UCA International Users Group (UCAIug), Smart Grid Interoperability Panel (SGIP), and North American Energy Standards Board (NAESB)
- Green Button Download My Data and Green Button Connect My Data

Map of US Green Button Commitments



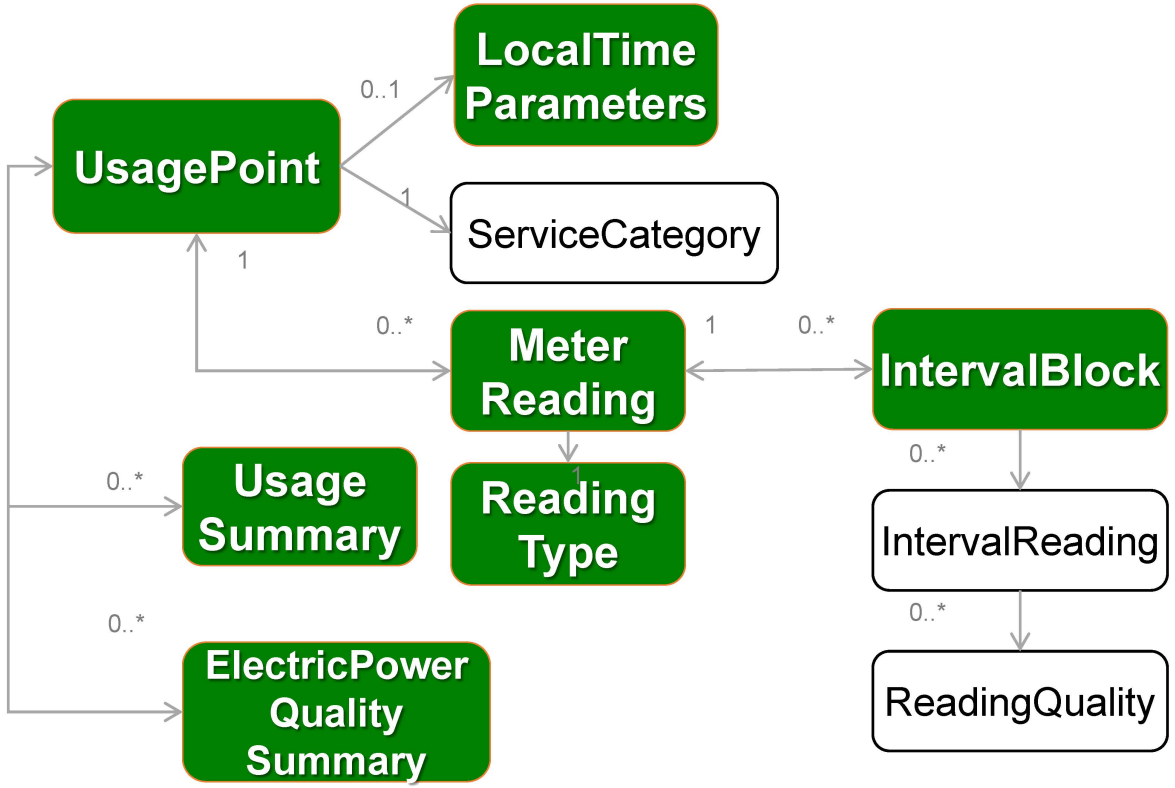
Green Button Ecosystem



www.greenbuttondata.org
www.greenbuttonalliance.org

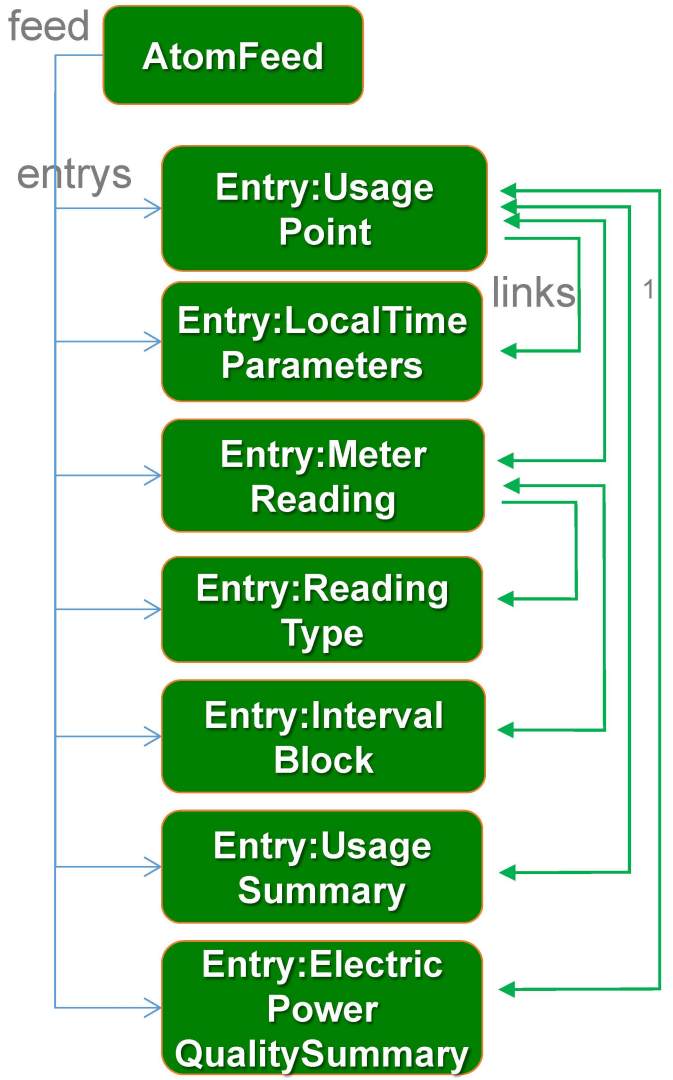
Green Button Data: Composition and Atom Feed

Information Model Profile View of Navigable Complex Data

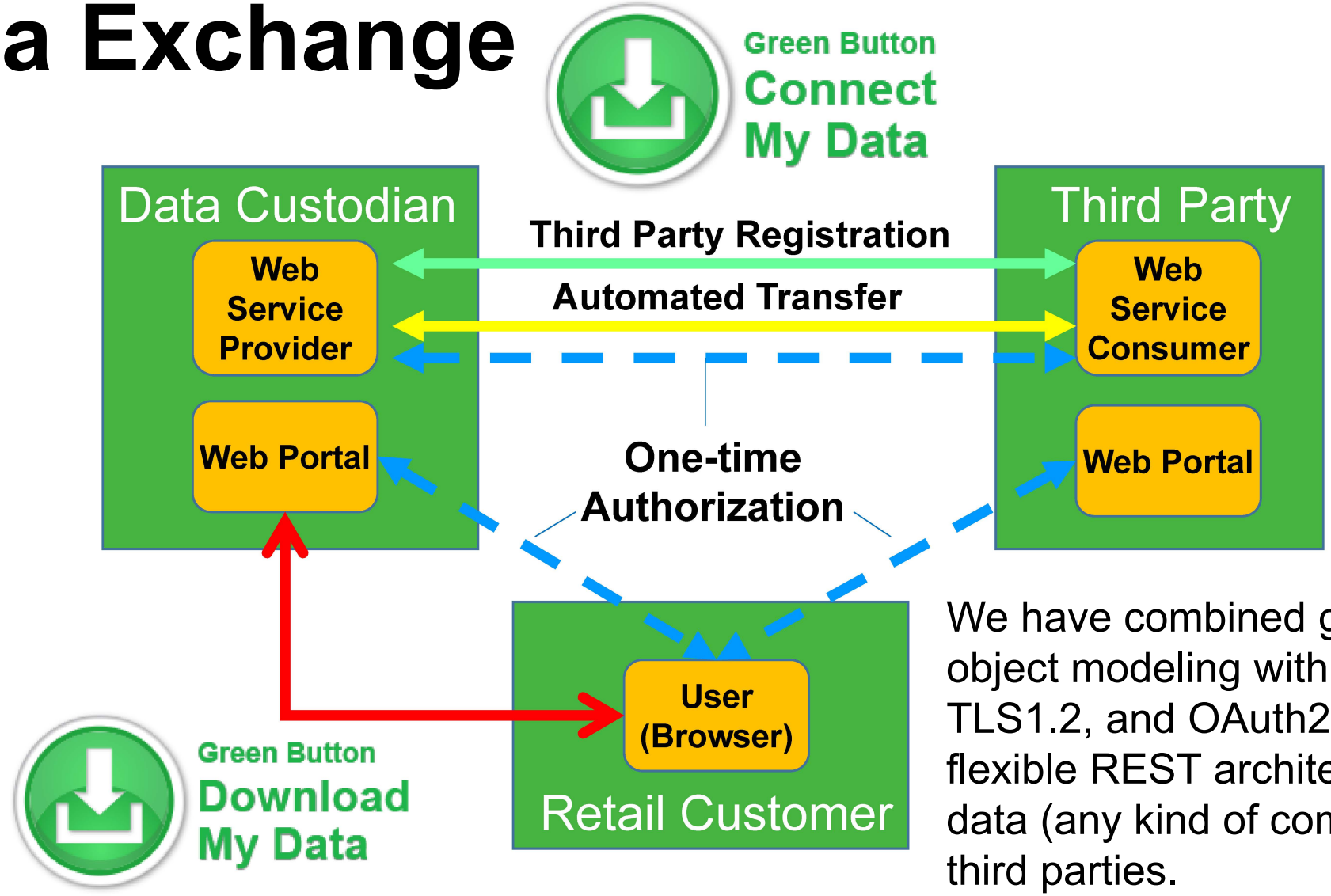


Note: This information is multidimensional. Many different reading types, summaries, and readings possible. i.e. not “flat”

Syntactic Model Feed View



Green Button Data Exchange



We have combined generic data object modeling with Atom Syndication, TLS1.2, and OAuth2.0 to achieve a rich flexible REST architecture for sharing data (any kind of complex data) with third parties.

Cyber Security/Privacy = Authentication + Authorization

- Authentication identifies Client to Server and allows communications over a secure channel
- Authorization identifies access rights to an authenticated party
- OAuth allows management of the conveyance of rights to data for a specific individual or account to a third party that is already authenticated to a data custodian

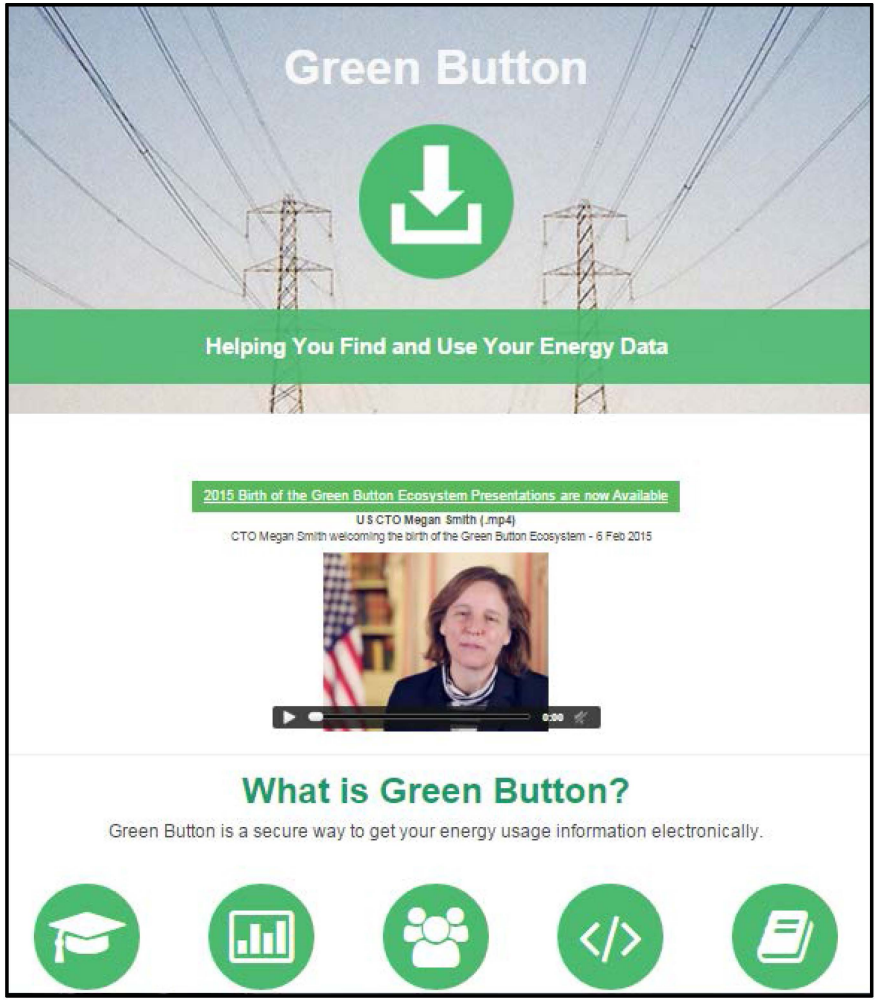
- No PII In Green Button Data
- Secure Messaging
  - HTTPS
  - TLS 1.2
  - > TLS_RSA_WITH_AES_128_CBC_SHA
  - FIPS 140-2 level 1 or higher code base
- Mutual Authentication
  - Mutual Traceable Certificates audited according to the criteria of ETSI or WebTrust
- Opaque Identifiers
  - Tokens RFC2422
  - Obfuscated IDs >48 bits
- Third Party secure authorization
  - OAuth 2.0

Green Button Use of OAuth 2.0

- Uses “Bearer” token to indicate authorization
- Uses “Scope Negotiation” to allow tailoring of relationship to a subset of data that may be available for a customer – thus not all or nothing access.
- Extends OAuth2.0 (outside of OAuth2.0) to enable long-lived authorizations with short-lived tokens
- Adds “Bulk” access via client_access_token of collections of data from authorized individual customers

Web resources – API sandbox, much more…

http://www.greenbuttondata.org



http://www.greenbuttondata.org/Presentations/index.html

http://www.greenbuttonalliance.org

http://energyos.github.io/OpenESPI-GreenButton-API-Documentation/API/