

To Whom It May Concern:

I'm writing to share brief comments on the data user experience for Green Button, Green Button Connect, and other aspects of my experience as a customer, customer advocate, energy practitioner and software developer.

### **General Comments**

The availability of interval data has been a boon for identifying and making decisions in C&I and residential applications. Better data has obvious benefits. I see a number of small improvements that could be made to make the existing systems even better for third-parties and customers. I especially like the new solar pv usage charts – very helpful. My comments below are currently specific to ComEd.

Overall, I think this group should explore modifications to the Green Button Connect requirement for web services. Green Button Connect is a dated standard based on SOAP and XML, and while it works well, as data becomes more “real time”, a RESTful web service that supports JSON may provide a better developer and customer experience for certain use cases. Rather than abandon Green Button, it may be best to add a REST API if this is desired and allow developers to choose their preferred connection, gradually deprecating Green Button. Benefits and downsides of this approach should be reviewed. My opinion is that a prescriptive approach should be avoided – as web standards evolve, the utilities should have flexibility to evolve with them or work with each other to develop the next generation Green Button data standard.

For commercial customers, the ability to get power factor and other electricity quality data still requires CTs. A Bacnet connection to the meter is not currently supported, even though this is less costly.

### **Specific Residential Data User Experience Issues:**

**User Experience Issue #1:** Interval data does not include demand or any billing information. For hourly-pricing customers, this used to be available, but it is no longer the case.

**Solution:** Provide interval demand and billing information. This is a useful data point for customers and third-parties. It appears this may already be part of the roadmap, so ignore if so. Many other utilities provide it.

**User Experience Issue #2:** The user experience of sharing data with third parties is clunky for ComEd's data connection. Currently, a user must navigate through several menus. A third party can provide a link directly to this endpoint (<https://secure.comed.com/MyAccount/MyBillUsage/pages/secure/GreenButtonConnectDownloadMyData.aspx>) but then must then give bread crumbs to the user to navigate to the Connect My Data field. As it's a javascript menu, a third party cannot provide an external script to navigate without user intervention.

**Solution:** Provide a target so a link at that endpoint can be made directly, or better yet provide an OpenID authorization or OAuth2 connection outside of Green Button to eliminate the need to navigate within the ComEd website (see below).

**User Experience Issue #3:** Customers must authenticate in two separate experiences to share data. Many customers will fail out.

**Solution:** ComEd should expand its OAuth2 provider API and allow third parties to obtain permission and connect through one authentication. I highly recommend looking at implementing OpenID Connect to allow third-parties (with permission) to authenticate users with a ComEd login. This would allow third parties to avoid having a separate authentication altogether and enable a direct connection to the agreement to share data after a user has authenticated.

Minor Issues:

**User Experience Issue #4:** Green Button Downloads and Green Button Connect My Data are not consistent, and data among customer “classes” do not follow the same schema.

**Solution:** The timestamps are not the same – this is not a huge issue, but they should be consistent as Green Button downloadable data is useful for testing and this requires error handling. The data for hourly pricing customers also includes cost, where it is not included with every other customer. Solar customers have zero reads instead of a negative where they are feeding to the grid. This could also be provided as a separate field, but the Green Button schema would need to be updated to account for it. These are edge cases that can be difficult to develop for.

I'm happy to provide clarification or answer questions.

Regards,

Kevin Dick  
Delta Institute