We support third parties as they develop innovative solutions that deliver greater value to our customers. This handbook will guide you through the process of accessing our customer-approved usage data.

Through Green Button Connect and Anonymous Data Service, we are able to provide a link between third parties and customers to enhance the customer experience.

Please follow the step-by-step instructions provided in this handbook to register your product or offer and access our customer usage data.

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INTRODUCTION

Do you have an offer that can help customers take control of their energy use? One of the benefits of smart meter technology is the availability of energy usage data. ComEd offers third parties (including Retail Electric Suppliers) access to this data to help support energy-related products and services designed to deliver greater value to our customers.

There are two Data Services available to support the development and rollout of your products and services:

**Green Button Connect**
Through Green Button Connect (GBC), residential, commercial and industrial customers can authorize ComEd to provide you with easy access to their energy usage data in a secure and user-friendly electronic format. GBC automates the process, eliminating the need for customers to repeatedly download and provide their files. Customers only need to authorize access to their data once, and they can revoke access whenever they choose.

**Anonymous Data Service**
Using Anonymous Data Service (ADS), you’ll have access to up to 24 months of 30-minute interval energy usage data. This data is not aggregated and is available on a meter-by-meter basis. Data sets will include data available for all ZIP codes where smart meters have been installed within the areas ComEd serves.

RETAIL ELECTRIC SUPPLIERS (RES)
Additional Data Services are available to you! Visit [ComEd.com/DoingBusinessWithUs](http://ComEd.com/DoingBusinessWithUs)
To use GBC, you will need to complete a number of steps. This chart identifies the process categories described on the following pages.

**PART ONE: PREPARATION**
- Implement GBC Application Program Interface (API)
- Function Block Testing

**PART TWO: REGISTRATION**
- Registration

**PART THREE: TESTING**
- Stage Environment Testing
- Data Request Testing
- Validation/Go Live
PART ONE: PREPARATION

Implement GBC Application Program Interface (API)

To begin, you must implement the GBC API in your system. Access the Green Button Alliance’s website at GreenButtonData.org to find information and answers to implementation questions. Please follow all instructions.

Function Block Testing

Next, you must pass Green Button Alliance Function Block test cases for the Green Button Alliance’s OpenESPI DataCustodian implementation.

START YOUR FUNCTION BLOCK TESTING HERE:
http://green-button.github.io/build/

When Function Block testing is complete, you can move on to registration.

PART TWO: REGISTRATION

Upon completion of API implementation and Function Block testing, you may register with ComEd as a Third Party Provider. Visit ComEd.com/GreenButton and click the Register button to submit to ComEd.

Please review the full process to make sure your system is set up for successful implementation.
You are now ready to move to stage environment testing.

PART TWO: REGISTRATION

CONTINUED

1. Provide all the information requested and submit your registration form online.

2. After receiving your registration form, ComEd will send you an email with a Non-Disclosure Agreement (NDA) and a Rate DART (Data Access and Retrieval Tenets) Form.

3. Complete these forms and return them via email.

4. Upon receipt of the NDA and Rate DART Form, ComEd will:
   - Schedule a meeting to learn about the products and services you offer
   - Confirm that you have implemented the GBC API and are ready to integrate with our system

5. ComEd can then review your registration and upon approval, will register your organization into the GBC system.

6. You will receive an email with onboarding instructions and credentials necessary to access the stage environment.

You are now ready to move to stage environment testing.
PART THREE: STAGE ENVIRONMENT TESTING

ComEd is available to assist as you work through stage environment setup and testing.

Stage Environment Setup

- Using the credentials you received with your registration confirmation, invoke the authorization API at the authorization_server_token_endpoint provided.

- After invoking this API, you will receive a client access token and the ResourceURI (data_custodian_resource_endpoint). You can use your client access token to invoke the ServiceStatus API.

Once you receive a status code “2” from the ServiceStatusAPI, your set up is complete and testing can begin.

Customer Authorization Testing

When a customer is interested in your offer, they must opt-in to allow you access to their usage data. They can opt-in through the ComEd website or through your website. ComEd will test functionality in the staging environment, using two test accounts that you provide. Both scenarios will be tested:

- Customer granting authorization starting at ComEd.com

- Customer granting authorization starting at your website (if applicable)

A meeting with ComEd, typically a screen-sharing session, is encouraged. This will allow you to experience the customer authorization process and expedite any necessary troubleshooting.

The authorization process uses OAuth2.0 framework per the GBC APIs. The GBC APIs are Green Button Alliance compliant. No personal information is transmitted in ComEd’s GBC Implementation. It is recommended that you go through the refresh-token process which follows GBC and OAuth2 standards.
Data Request/Response Testing

After a customer provides data access authorization (becomes an “authorized customer”), the client access token you received can be used to request the data. Next, you will test the GBC customer data request/response process.

1. **Invoke the BatchAPI using the BulkURI associated with your authorization ResourceURI.** This allows you to request data for all authorized customers.

2. **Submit your data request.** You will receive a notification that your request has been submitted successfully.

3. **When the data is available,** you will receive another notification at the third_party_notify_uri you provided during registration. This notification will contain the endpoint where you can retrieve the data.

4. **Once you have downloaded the data,** you will need to confirm to ComEd via email that you have received the data successfully.

Production Validation/Go Live

Once testing is complete and functionality is verified, ComEd will work with you to schedule a meeting to review the detailed go-live plan and determine a timeframe for go-live. During go-live, ComEd will work with you to perform registration and production validation. To validate the production setup, an additional test will be performed in the production environment, similar to stage environment testing.
FAQs

Q – What is Green Button Connect?
A – Green Button Connect is a utility industry-led effort that gives customers easy access to their energy usage data in a streamlined and secure format. Through Green Button Connect, ComEd customers can easily share their energy usage data with third parties offering products and services that can help them save energy.

Q – How often can I retrieve customer energy usage data?
A – Data requests will be fulfilled daily. ComEd will notify you when your requested data file is ready. The file will be archived for five days after the notification is sent. You may retrieve this file as many times as needed during the five-day period.

Q – Does ComEd provide personally identifiable information for authorized customers?
A – ComEd does not provide the name, address, account number, or any personally identifiable customer information within the GBC implementation.

Q – Are additional data services available for Retail Electric Suppliers (RES)?
A – Yes. Please visit ComEd.com/DoingBusinessWithUs to learn more.

QUESTIONS?
If you have Green Button Connect questions, please contact ComEd through the Green Button Connect mailbox:
GreenButton@ExelonCorp.com

The Data Services Handbook is for training and discussion purposes. If any conflict exists between this document and ComEd Tariffs or Illinois regulations, tariffs and regulations prevail.
ADDITIONAL INFORMATION FOR GBC

The ComEd GBC DataCustodian was developed using the OpenESPI 1.1 DataCustodian implementation. This may be used as a reference for testing. ComEd GBC DataCustodian implementation was tested against the OpenESPI 1.1 Third Party implementation.

Both are available on GitHub at https://github.com/energyos.

The ComEd GBC DataCustodian is compatible with the following GBC APIs:

- ApplicationInformation
- Authorization
- Batch
- IntervalBlock
- LocalTimeParameters
- MeterReading
- ReadingType
- ServiceStatus

To view Function Block test cases:


To view Authorization and Bulk Transfer examples:

ANONYMOUS DATA SERVICE

You can now access anonymized interval energy usage data in 30 minute intervals for all ZIP codes where smart meters have been installed within the areas ComEd serves. Based on the anonymization protocol specified by the Illinois Commerce Commission (ICC), there are two products available:

- **Five-digit ZIP code data**
- **Nine-digit ZIP code data**

ComEd compiles and updates customer data monthly and makes that data available to you via a secure electronic system.

ANONYMIZATION PROTOCOL

To ensure anonymity, customer names, addresses and account numbers are omitted from the files. In addition, ComEd institutes the 15/15 anonymization protocol: Each data set must contain at least 15 customers, and not one of the 15 can have 15% or more of the usage within that data set.

PLEASE NOTE

Prior to submitting a request for Anonymous Data Service (ADS), ComEd recommends completing the following steps:

- Review this handbook and the ADS FAQs
- Ask your legal counsel to review the ADS Agreement and Registration Form
- Ask your IT professional to review the Accessing Data Step-by-Step Guide
PART ONE: REGISTRATION

1 The Anonymous Data Agreement and Registration Form are available at ComEd.com/ADS. These are editable PDF files. Complete each document and return via email to EnergyDataService@ComEd.com.

2 Upon receipt of these forms, ComEd will send you an invoice for your charges to access the ADS files (up to 24 months of interval data) as requested. Pricing options and any available discounts are shown on the Registration Form and are subject to change.
PART ONE: REGISTRATION CONTINUED

3 Once payment has been confirmed, you will receive an email with instructions to set up a ShareFile account.

4 Click the link noted “Click here to activate your account and view this folder.”
PART ONE: REGISTRATION CONTINUED

5. Complete the fields required. Confirm your name and company and click “continue.”

6. Create a password that meets the requirements listed.

7. You will receive an email confirming the successful set-up of your account.

You are now ready to access up to 24 months of anonymous data files.
PART TWO: ACCESSING DATA STEP-BY-STEP GUIDE

1. Each month, ComEd generates and uploads the ADS files for the previous month. This happens no later than the fifteenth day of each month.

2. Through ShareFile, you can review/download up to 24 months of anonymous data files.

Files are grouped by month in YYYY/MM format.

- Each month will include a list of delivery classes that passed the 15/15 rule within each ZIP code.
- If a ZIP code/delivery class combination is not listed, it did not pass the 15/15 rule and will not be downloaded.
Once you open a folder, you will be asked if you want to download the data. Click “download.”

Click “open” at the bottom of screen.
5 This file will then save to your computer. Double click the file to access the data.

Example of the data you will see:

6 You will have 35 days to access and download the applicable ADS files through ShareFile. After 35 days, the data will no longer be available.
FAQs

Q – What is Anonymous Data Service?
A – Anonymous Data Service offers up to 24 months of 30-minute interval energy usage data, on a meter-by-meter, not aggregated basis. Data sets include data available for all ZIP codes where smart meters have been installed within the areas ComEd serves. Based on the anonymization protocol specified by the Illinois Commerce Commission (ICC) there are two products available:

- Five-digit ZIP Code Data
- Nine-digit ZIP Code Data

Q – What is anonymous usage data?
A – Anonymous usage data does not include any personally identifiable customer information to ensure the confidentiality of customer-specific usage information. The 15/15 anonymization protocol set by the Illinois Commerce Commission (ICC) is also used for added anonymity.

Q – What is the 15/15 anonymization protocol?
A – Each data set must contain at least 15 customers. Data from any one of those 15 customers cannot represent 15% or more of the total usage data within that data set.

Q – How often is the data captured?
A – Data is captured monthly by ZIP or ZIP+4 codes and uploaded by the 15th of the month for the previous month.

Q – What is included and how is the data provided?
A – The data is available for download in a CSV file. Each record contains:

- The ZIP or ZIP+4 number
- A random account identifier for each customer
- The customer’s delivery class
- The customer’s 30-minute interval usage by day for the entire month

Q – Does the random account identifier stay the same for each customer?
A – No. To ensure anonymity, the random account identifiers will continue to change for each customer.
FAQs CONTINUED

Q – What is the download speed of the data delivery?
A – Because data requests vary (potentially up to 24 months of data), download times will vary. ComEd is unable to estimate download speeds.

Q – What is the fee for accessing the anonymous data?
A – Pricing can be found on the Registration Form at ComEd.com/ADS and is subject to change. Eligible nonprofits, educational institutions, government agencies and grant-based researchers may receive a discount. Descriptions for organizations eligible for a discount can be found in the Data Service Descriptions PDF at ComEd.com/ADS.

Q – Is the data aggregated?
A – No, the data is not aggregated (summed or averaged). You will receive up to 24 months of 30-minute interval energy usage data on a meter-by-meter basis.

Q – Is there ZIP+3 data or specific city or county anonymous data available?
A – The offering for these products is based on access to all ZIP codes. If you are looking for something more specific, you can make a special request to ComEd. Please submit your request to EnergyDataService@ComEd.com. Special requests will be priced at an hourly fee. Details can be found in the Data Services Descriptions PDF at ComEd.com/ADS.

Q – Are additional data services available for Retail Electric Suppliers (RES)?
A – Yes. Please visit ComEd.com/DoingBusinessWithUs to learn more.