Appendix J - Electric and Gas Company Reporting Requirements Working Group Session 2 – July 11, 2024 (ENERGY STAR slide deck)

Solutions for Utility Data Access

Presentation to the MD BEPS Utility Working Group

July 11, 2024

EPA United States Environmental Protection Agency

Agenda

1. "Deep Dive" Topics:
   - Meter-to-Building Mapping
   - Gross vs. Net Consumption
   - Portfolio Manager Web Services API
   - Spreadsheet-Based Solutions
2. Wrap-up and Q&A

"Deep Dive" Topics

- Meter-to-Building Mapping
- Gross vs. Net Consumption
- Portfolio Manager Web Services API
- Spreadsheet-Based Solutions

- Meter-to-Building Mapping

Key Issue: Customers Need to Know that "Aggregate" Equals "Accurate"

Utilities need to protect the privacy of individual tenants' data…

Utility Meter-to-Building Mapping Process

…but building owners need to be able to validate that the aggregate consumption values are correct and complete

ute Metrics (2)

Add A Meter

View as a Diagram

Name Meter ID	Energy Type	Most Recent Bill Date	In Use? (Inactive Date)
Aggregate Electricity 1705353	Electric - Grid	11/30/2020	Yes
Aggregate Natural Gas 1705362	Natural Gas	11/30/2020	Yes

Download Annual Totals by Meter

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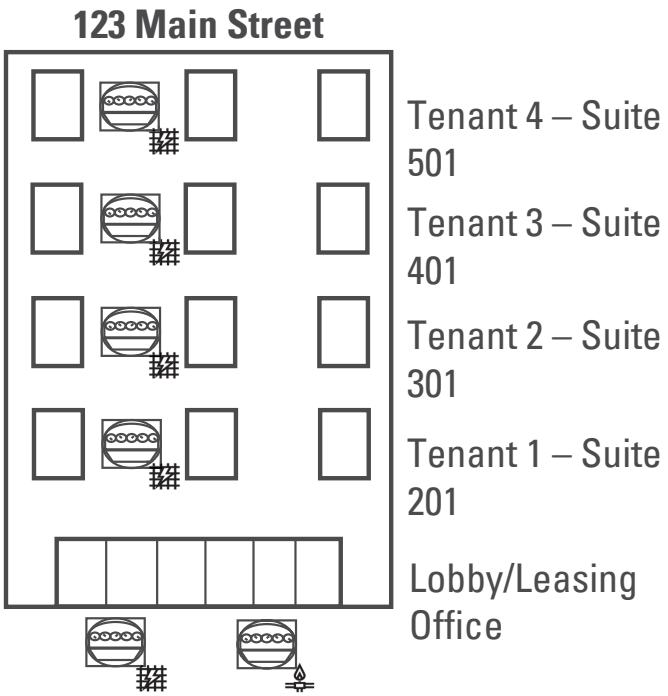
General Process for Aggregating Data

- Understand the physical location and boundaries of the property for which energy consumption data is being requested.
- Identify all the meter/service points associated with that location.
- Confirm the accuracy and completeness of this meter list with the data requestor.
- Establish an association in the utility's data system between the multiple "real-world" meter/service points and the "virtual" record being used to capture aggregate data.
- Maintain accurate meter-to-building mapping over time, to ensure that the aggregate consumption value reflects all the meters that track energy consumption during a given period.

Simplified Example of Portal-Based Mapping



Based on the addresses you provided, we've found the following meters/accounts at your property.

Please confirm which accounts should be associated with your property for purposes of providing whole-building aggregated data. If an account has been returned in error, please deselect. If you do not see an account associated with a tenant at your property, click "I don't see a tenant."

	Name and Address Associated with Account
X	Realty Partners, d.b.a. 123 Main Street, LLC 123 Main Street, Suite 101
X	ABC Consulting, Inc. 123 Main Street, Suite 201
X	Jones Accounting, LLC 123 Main Street, Suite 301
X	Gutierrez Advisors 123 Main Street, Suite 401
X	Smith Associates 123 Main Street, Suite 501
	ABC Associates 124 Broad Street, Suite 801

I don't see a tenant | Confirm associations

Documenting Meter-to-Building Mapping

- Meter-to-building mapping should be transparent, not a "black box."
- Critical for any scenario in which future review and validation of benchmarking data may be needed.
- Should be available to the building owner/data requestor "on demand."
- Mapping details should be updated as necessary to ensure that the "aggregate" consumption quantity reflects all meters/accounts measuring use during any given period.
- There is already an "aggregate meter" functionality where these details can be captured/stored in Portfolio Manager.

Example of an "Itemized Receipt" Using Portfolio Manager Functionality

Individual Meters Included in Electric Grid Meter

Use the table below to keep track of individual meters that are included in the usage of this aggregate meter.

Total Active Individual Meters = 3

		*Individual Meter Custom ID Name	*Individual Meter Custom ID	*Service Address for Meter	Meter is Active	*Date Meter Became Inactive
1	☐	Service Point	123456	123 Main St., Suite 201	☑	
2	☐	Service Point	345678	123 Main St., Suite 101	☑	
3	☐	Service Point	012345	123 Main St., Suite 302	☐	04/30/2021
4	☐	Service Point	234567	123 Main St., Suite 301	☑	

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Add Another Entry
Delete Selected Entries
Delete ****ALL**** Meter data for this meter

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- Gross vs. Net Consumption

Ensure that Aggregate Data Captures Gross Grid Electricity Consumption

- Applicable in cases where properties generate and consume onsite renewable electricity and sell excess generation back to the grid.
- Using only "net-metered" consumption prevents Portfolio Manager from differentiating between the amount of grid electricity vs. onsite renewable electricity that was used in the operation of the property.
- If the utility's billing system only reports net-metered consumption, then the corresponding amount of electricity sold back to the grid should be identified and added back in when calculating aggregate consumption data (or should be provided to the data requestor separately so that they can make the necessary updates manually in Portfolio Manager).
- If installed metering technology cannot support the provision or calculation of "gross" electricity consumption, the utility should make the data requestor aware.

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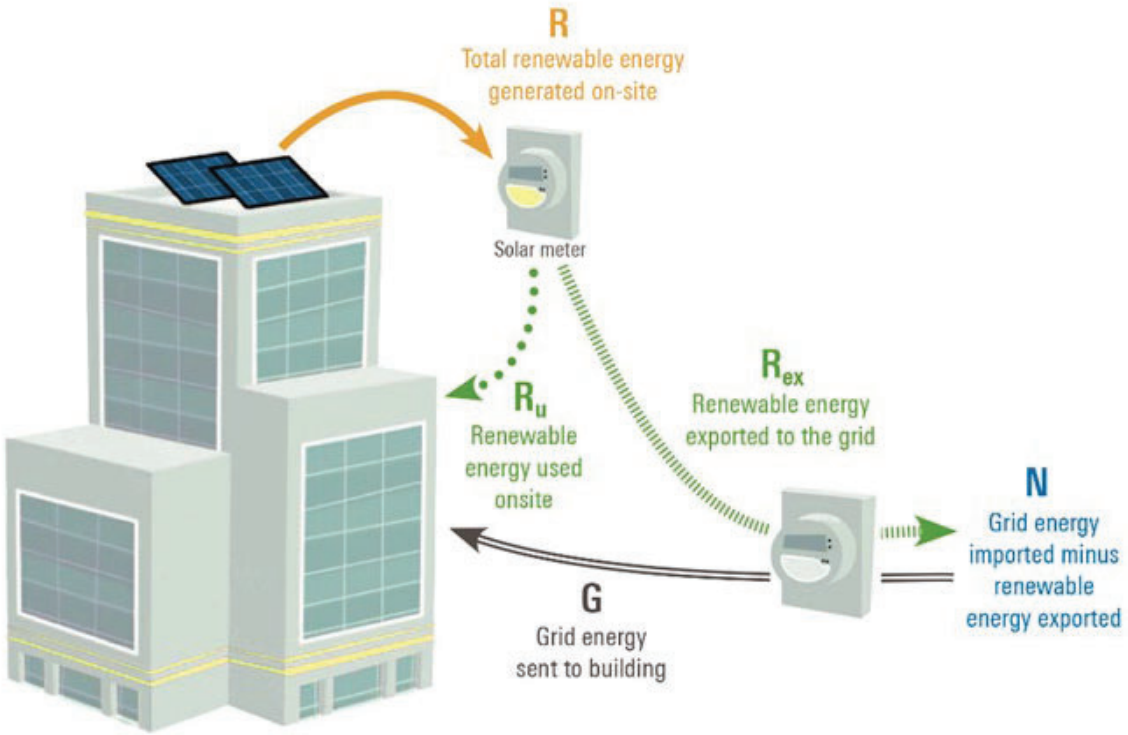
Data Flows for Benchmarking in Portfolio Manager



R: **Total amount of renewable energy generated onsite**
Properties with onsite renewables should have access to this quantity

R_{ex}: **Renewable energy generated onsite, exported back to grid**
Availability depends on metering (utility meter or owner submeter)

R_u: **Renewable energy generated onsite, used onsite**
Can be calculated as $R - R_{ex}$.

G: **Grid energy sent to building**
Availability depends on metering (utility meter or owner submeter)

N: **Net consumption of grid energy, accounting for exports**
Shows what a customer owes on utility bills. Equal to $G - R_{ex}$.

Total site energy required to operate the building: Equal to Ru + G *or* N + R.

Total source energy required to operate the building: Must be calculated as Ru + G.

Meter Technology Can Affect Which Data Are Available

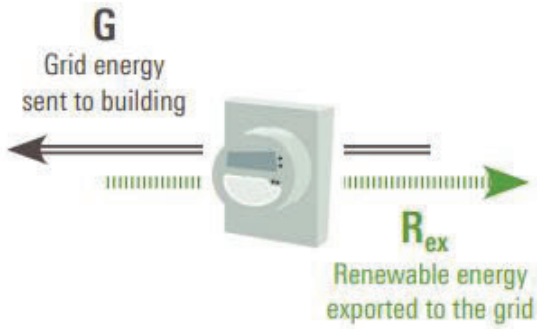
Net meters

Net meters can spin forward or backward, showing the net consumption of power. They won't tell you exactly what you imported and what you exported. They only indicate the difference between the two, or net usage (N).

Net meters are most closely aligned with utility billing systems. These systems only require a measure of net usage to calculate bill amounts.

Bi-directional meters

Bi-directional meters tell you how much grid energy you imported (G) and how much renewable energy you exported (R_{ex}). Utilities may share these two values with the customer, or they may only share the difference, or "net" usage.



Dual meters

With dual metering, a traditional usage meter measures how much grid energy you imported (G), while a separate meter measures how much renewable energy you exported (R_{ex}). Utilities may share these two values with the customer, or they may only share the difference, or "net" usage. This is far less common than net meters and bi-directional meters.

- Portfolio Manager Web Services API

Getting Data to Customers: Portfolio Manager Web Services API

- Upon customer request, utility uses EPA's web services API to send consumption data directly to customer's Portfolio Manager account.
- Can be used for initial provision of data, and then for ongoing monthly data updates.
- Once link is established between utility data system and customer PM account (via Connection/Sharing functionality), no further request is needed from customer to trigger monthly update.
- Establishes a "two-way" connection, by which the utility can see customer benchmarking results.

What Is the Portfolio Manager API?

- General Description
  - Suite of web services that allow utilities to exchange data directly with Portfolio Manager
  - Allows data entry and/or metrics retrieval that would otherwise be performed manually in the Portfolio Manager user interface
  - Facilitates automation and bulk data transfer on the part of the data provider
  - Covers most functions that can be performed via the Portfolio Manager graphical user interface (GUI)
- Technical Details
  - REST protocol
  - Basic HTML methods (GET, PUT, POST, DELETE)
  - Data transferred in XML format (no support for JSON at this time)
  - Providers responsible for developing their own back-end software solution and integration code

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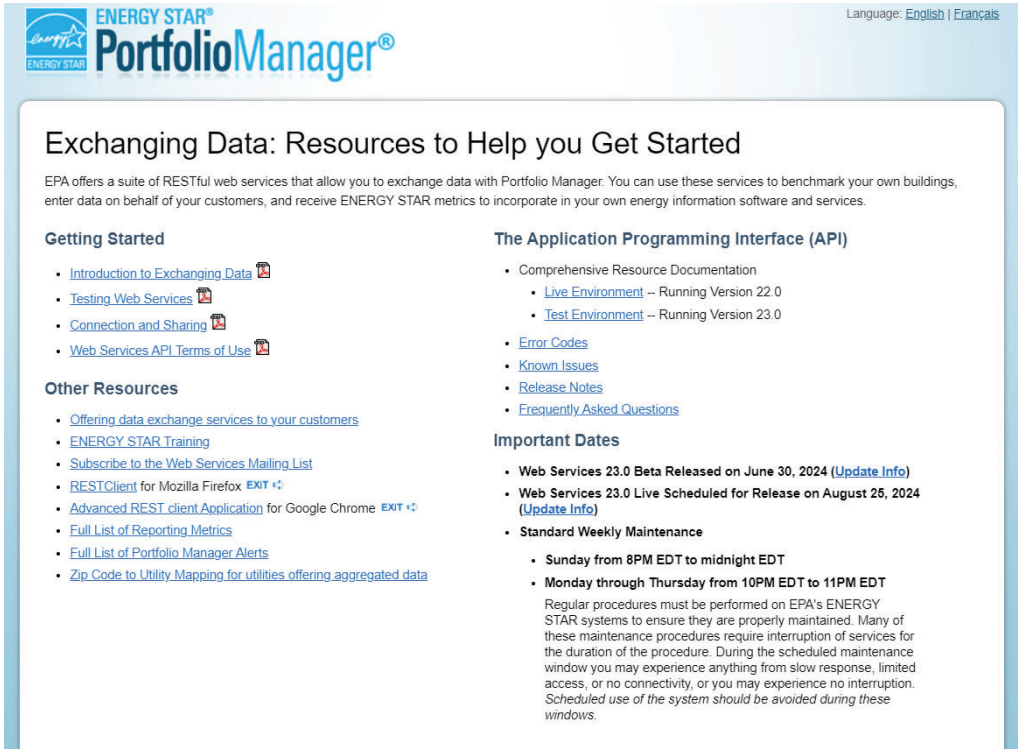
Online Resources Available, Including Full Technical Documentation

- APIs for Live and Test environments
- XML schemas
- Example requests and responses for each web service call
- Release notes
- Guidance documents
- Maintenance and update schedules



API Crosswalk for Typical Utility Process

Action	Responsibility	API Calls
Utility sets up API-enabled Portfolio Manager account	Utility	N/A – takes place in PM user interface
Utility establishes any Custom IDs, as needed to validate requestor and/or property	Utility	Create Custom Field
Property owner sets up property record in PM	Property owner	N/A – takes place in PM user interface
Property owner sends Connection request to utility via PM	Property owner	N/A – takes place in PM user interface
Utility reviews pending Connection request	Utility	Get Pending Connection Requests

API Crosswalk for Typical Utility Process (cont'd.)

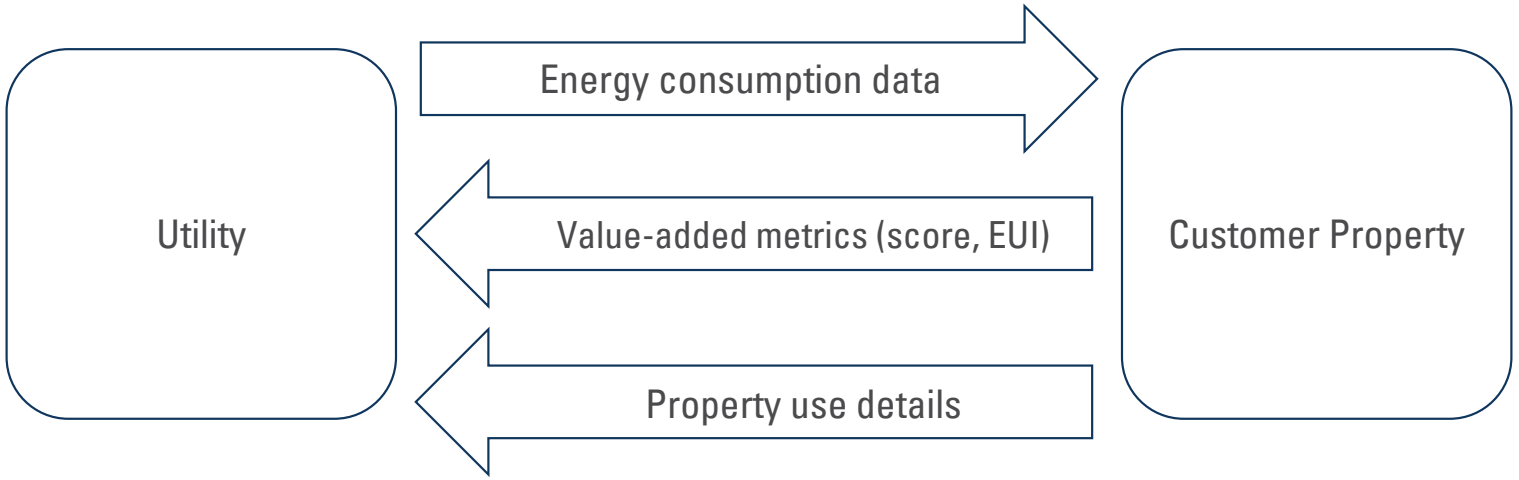
Action	Responsibility	API Calls
Utility accepts/rejects pending Connection request	Utility	Accept/Reject Pending Connection Requests
Property owner shares property/meter(s) with utility via PM	Property owner	N/A – takes place in PM user interface
Utility reviews pending Property Share request(s)	Utility	Get Pending Property Share Requests
Utility accepts/rejects pending Property Share request(s)	Utility	Accept/Reject Pending Property Share Requests
Utility reviews pending Meter Share request(s) (if necessary)	Utility	Get Pending Meter Share Requests
Utility accepts/rejects pending Meter Share request(s) (if necessary)	Utility	Accept/Reject Pending Meter Share Requests
Create new aggregated meter data object in customer's PM property record (if necessary)	Utility	Add Meter Associate Meter to a Property

API Crosswalk for Typical Utility Process (cont'd.)

Action	Responsibility	API Calls
Utility performs meter-to-building mapping in order to calculate aggregate consumption data that will be pushed to a corresponding meter object in the customer's Portfolio Manager property record 		
Send aggregated consumption data to a corresponding meter object in Portfolio Manager	Utility	Add Consumption Data
Query customer property record in Portfolio Manager for performance metrics at the whole-building level (as needed)	Utility	Reporting Services (multiple approaches/options)

The API May Provide the Most Benefits for Both Utility and Customer

- Goes beyond basic access to data.
- Streamlines process for both utility and customer.
- Facilitates regular, monthly updates.
- Allows two-way exchange of data to inform program design & delivery.



Discussion

- For utilities that have not yet begun scoping/developing their data access solutions…
  - What questions do you have about meter-to-building mapping, the requirement for gross (rather than net) energy consumption, and/or the Portfolio Manager web services API?

- For utilities that have already developed data access solutions …
  - Do you have any recommendations, considerations, or clarifications that you'd like to share with your peer utilities?
  - Do you have any questions/concerns about what it would take to close any gaps between your current solution and the new MD requirements?
  - What strategies/methodologies have you used to tackle meter-to-building mapping (e.g., address-based lookups; geolocation of meters)?

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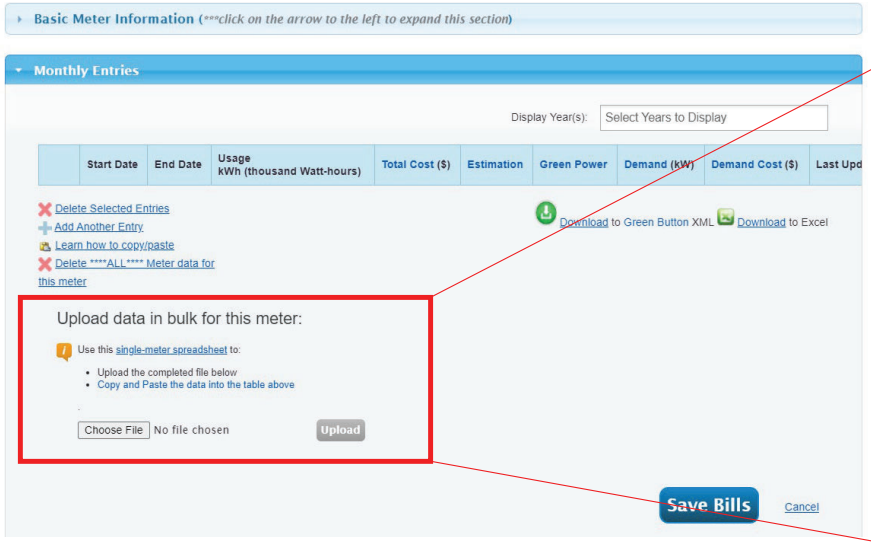
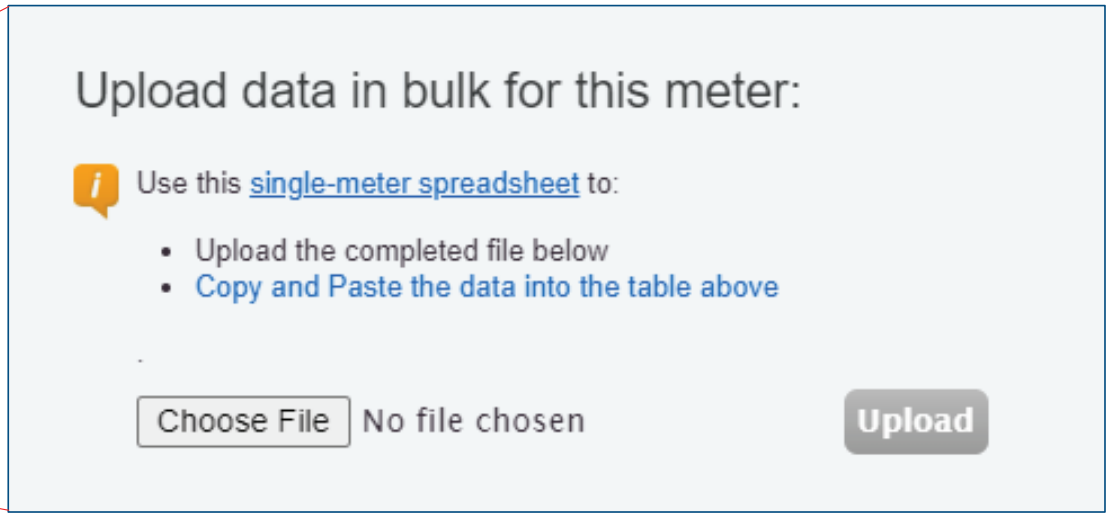
- Spreadsheet-Based Solutions

Getting Data To Customers: Spreadsheet-Based Delivery

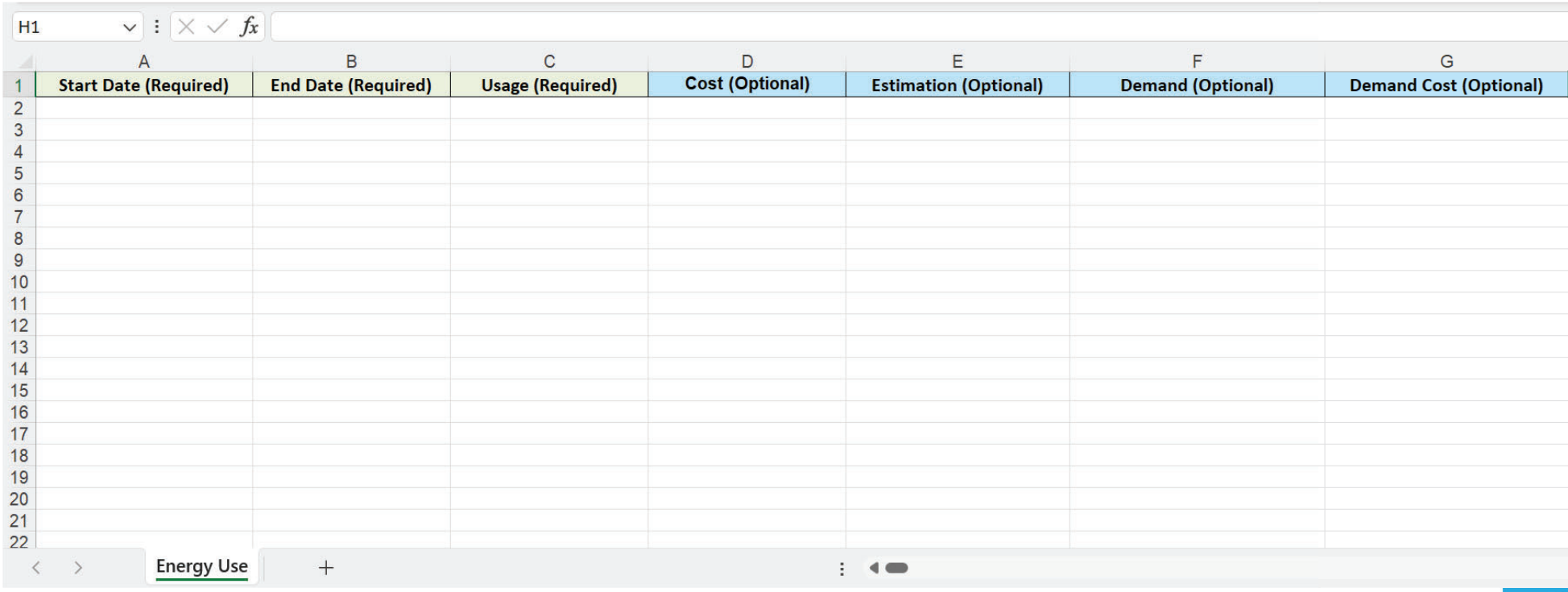
- Upon request, utility prepares data and sends to customer in spreadsheet format (ideally, in a format suitable for upload to Portfolio Manager)
- Customer responsible for getting data into Portfolio Manager
- Historically used for one-time provision of 12+ months of data
- Utility does not have visibility into customer benchmarking results

Meter-Level Upload Templates in Portfolio Manager





Template for Electricity



	A	B	C	D	E	F	G
1	Start Date (Required)	End Date (Required)	Usage (Required)	Cost (Optional)	Estimation (Optional)	Demand (Optional)	Demand Cost (Optional)
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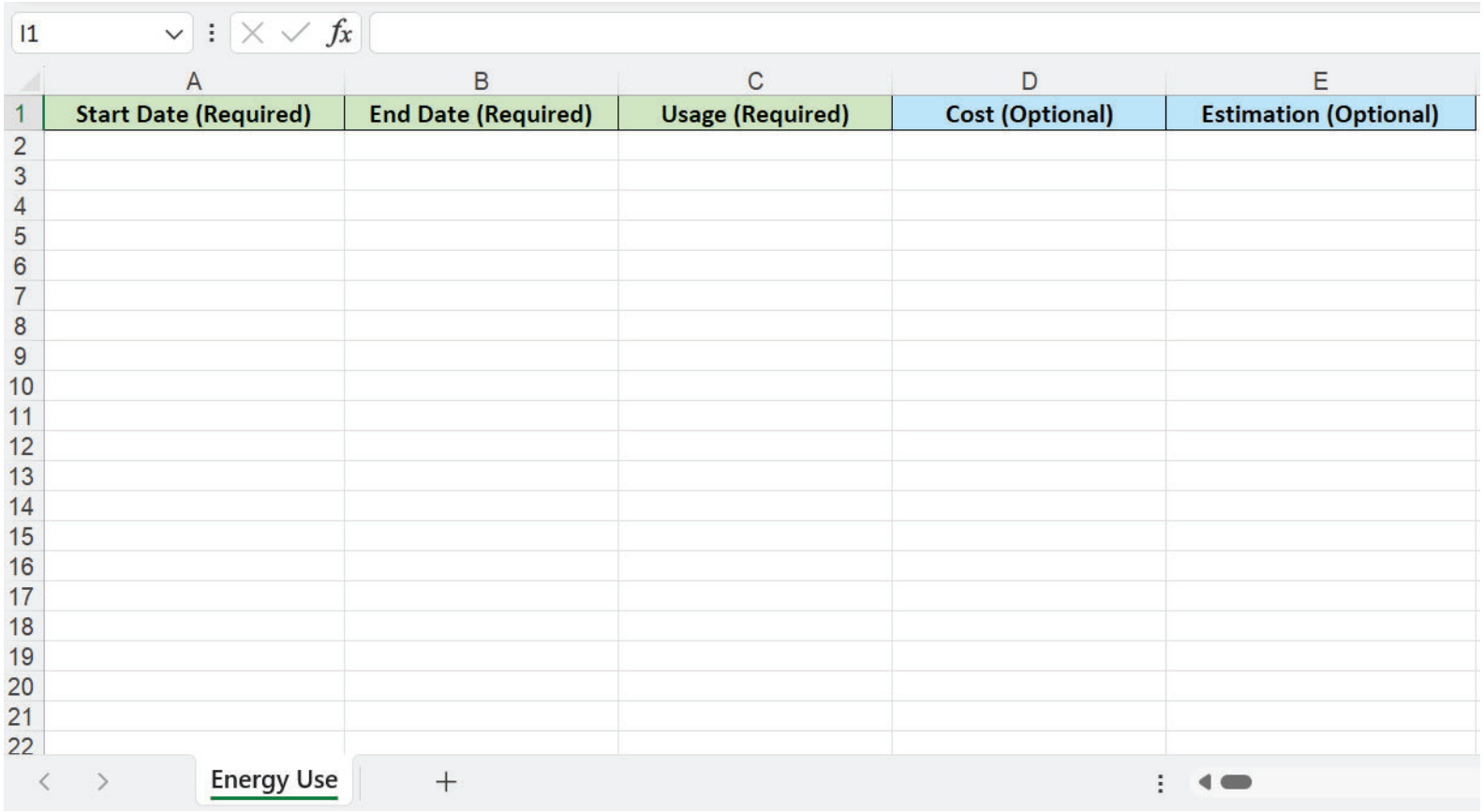
Template for Metered Non-Electric Fuels



	A	B	C	D	E
1	Start Date (Required)	End Date (Required)	Usage (Required)	Cost (Optional)	Estimation (Optional)
2					
3					
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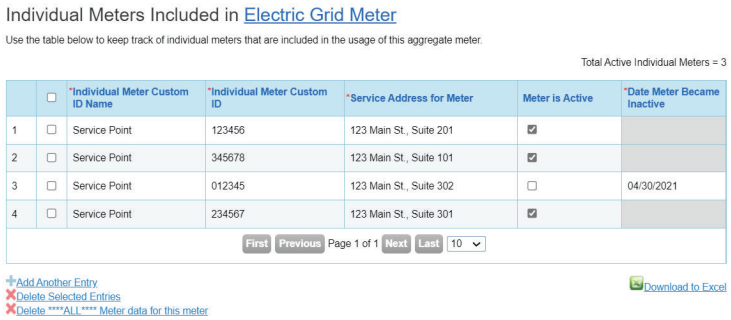
Reminder for Spreadsheet-Based Solutions

- Data format for spreadsheet-based solutions can be straightforward (start date, end date, consumption quantity for each monthly consumption record).
- However, these solutions still need to consider/address ongoing delivery of monthly data, documentation of meter-to-building mapping, and management of billing corrections/revisions.

No Established Solution (Yet) for Communicating Meter-to-Building Mapping Details via Spreadsheet

Since the utility is not pushing data to Portfolio Manager, it will need to determine how else to convey meter mapping information via spreadsheet.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Add Another Entry
Delete Selected Entries
Delete ****ALL**** Meter data for this meter

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Individual Meter Count	Individual Meter Custom ID Name (e.g., Meter ID, Premise ID, Service Point ID)	Individual Meter Custom ID (alphanumeric)	Service Address for Meter	Meter is Active? (Yes/No)	Date Meter Became Inactive
1	Meter ID	7654321	123 Main Steet, Suite 200	Yes	
2	Premise ID	33-V-100	456 Broad Street, Suites 100 - 110	Yes	
3	Meter ID	1234567	123 Main Street, Suite 100	No	4/1/2022
...	...	...	...	...	...
...	...	...	...	...	...
n - 1	Premise ID	33-V-200	456 Broad Street, Suites 200 - 210	Yes	
n	Meter ID	456789	123 Main Street, Suite 100	Yes	

Discussion

- For utilities that have not yet begun scoping/developing their data access solutions…
  - What questions do you have about delivering aggregate whole-building data to customers via spreadsheet?
  - Would you consider using the Portfolio Manager API as a data delivery mechanism, even if not required to do so?

- For utilities that have already developed data access solutions that entail spreadsheet-based data delivery…
  - Do you have any recommendations, considerations, or clarifications that you'd like to share with your peer utilities?

Wrap-up and Additional Q&A

Reach Out to the ENERGY STAR Team!

- Please review the Guidance for Utilities on Providing Whole-Building Energy Data to Enable Benchmarking in ENERGY STAR Portfolio Manager®.
- Reach out for additional 1-on-1 discussions with the ENERGY STAR team (contact information on next slide). We are available to:
  - Help utilities explore key considerations and best practices for the development of data access solutions.
  - Situate data access within the broader customer use of Portfolio Manager.
  - Advise utility IT teams, as well as with 3rd party vendors deploying solutions on behalf of utilities
  - Facilitate networking with other utilities that have developed solutions.

Thank you!

- **Brendan Hall: Hall.Brendan@epa.gov**
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- **Tracy Narel: Narel.Tracy@epa.gov**
- **Andrew Schulte: Andrew.Schulte@icf.com**

Search FAQs and submit questions to the ENERGY STAR Helpdesk:

https://energystar.my.site.com/PortfolioManager/s/