

# Transitioning from Automated Benchmarking Services (ABS) 2.5

September 2012

## Introduction

In June of 2013, EPA will release a complete upgrade for its popular Portfolio Manager tool. This tool, currently in use by more than 40,000 individual accounts to measure, track, assess, and report on the energy and water performance of more than 250,000 commercial buildings, will get the full treatment: a new interface, streamlined functionality, and improved usability.

This document specifically addresses how the web services used to exchange data with Portfolio Manager will change in June of 2013. Specifically, as part of the project, EPA has adopted a new software platform for web services, resulting in new system schema. This document is designed for organizations that currently exchange data with Portfolio Manager via web service (known as the current ABS 2.5 services). In the following sections we describe the software architecture, highlight benefits of this change, and enumerate major changes for your system.

## New Software Architecture

EPA is introducing a new software architecture for web services, with the goal of offering simple, synchronous services. The new system uses Representational State Transfer (REST). RESTful web services are an increasingly popular and effective approach that improve EPA's ability to support organizations exchanging data with Portfolio Manager via web services, while at the same time making it easier for those organizations to build and maintain systems that interact with Portfolio Manager.

REST based systems leverage standard URLs in the HTTP lexicon, in a system that is platform independent. That means that specific clients do not need to be written for different programming languages. Table 1 provides a comparison of the new REST approach with the older Standard Operation Access Protocol (SOAP) approach used in ABS 2.5.

Table 1 ABS 2.5 SOAP Approach and the new REST Approach	
ABS 2.5 Approach	New REST Approach
<ul style="list-style-type: none"> <li>• Uses XML-based SOAP services</li> <li>• Forces ABS Providers to rebuild software when XML Changes</li> <li>• Makes it difficult for EPA to debug errors and assist ABS Providers</li> <li>• Relies on custom service definitions</li> <li>• Depends on extensive XML markup to perform simple transactions</li> <li>• Requires specific support strategies for differing platforms (e.g. C# and .NET)</li> </ul>	<ul style="list-style-type: none"> <li>• Uses XML-based REST services</li> <li>• Lowers impacts when services change</li> <li>• Streamlines support because errors are easier to diagnose</li> <li>• Leverages standard URLs and the HTTP lexicon</li> <li>• Reduces the amount of XML markup needed for simple units of work</li> <li>• Is platform independent and does not require special coding workarounds</li> </ul>

## Benefits

EPA is investing in this upgrade to Portfolio Manager to expand the offerings for all of our Partners. In particular, we believe that there are many opportunities created by the move to REST services:

- Synchronous Service – Because the new REST services rely on smaller transactions, each individual is synchronous.
- Platform-Independent Integration – REST services are easier to consume because they use HTTP API calls and the HTTP protocol is independent of programming language.
- Easier Trouble-shooting – Trouble-shooting in the new services is quicker and easier for two reasons. First, EPA is incorporating more explicit error messages to alert you as to why a call has failed; you will be able to program your system to respond accordingly to specific error codes. Second, because the data payload for each REST call is very small, when an individual call fails you will have less to review. This also means that bad data for one meter will not affect the transactions associated with other meters.
- More Data Accessible via Web Services – In direct response to requests from our Partners, EPA has made more elements available via web service:
  - Meter Information – It is possible to populate each meter with a start and end date. The system will not require data outside of that window when performing calculations. Meters services also include new fields to capture green power purchases, when applicable. Finally, every individual meter consumption value is assigned a unique ID.
  - Metrics – EPA has expanded the list of metrics will be available via our Get Metrics Services. These include: Heating Degree Days (HDD) and Cooling Degree Days (CDD), Property Type, Weather Normalized Energy and Adjusted Energy (Adjusted for both climate and operation). In addition, you will be able to receive metrics in different units (e.g. kBtu or GJ).
  - Attribute Revision History – Services used to manage property use details (hours, workers, etc) now include a full revision history so that you can manage changes over time (e.g. when the number of workers at a property changes).
  - Last Modified Date – Within your GET calls, we return the date and user account associated with the last modification for properties, property uses, meters, and meter consumption data. In addition, we reveal the “Create” date.
- Enhanced Features in Portfolio Manager – Many new features are being developed in Portfolio Manager in general, and these will be available both on the front end (when it becomes available in June 2013) and via web service. Two important highlights are:
  - Ability to Save Target Finder Results – You will be able to enter a property not yet built as a “Design” and save the information associated with your planned design so that it can later be compared with actual operation. These design values may be entered and edited either via web service or via the Portfolio Manager interface.
    - Please note that because this is a new web service to be introduced with the June 2013 Portfolio Manager upgrade release, it is not available during the beta testing period.

- 86 Property Types – Because of the diversity of properties using Portfolio Manager, we have expanded to 86 different property types (view the full list at: [www.energystar.gov/PMUpgrade](http://www.energystar.gov/PMUpgrade)). These new property types are for general classification only, not all of them will be able to receive an ENERGY STAR score. This property types eligible for an ENERGY STAR score are highlighted on our published list.
- Expanded Live Environment –If you exchange data with Portfolio Manager via web services, then you will be able access the same user interface as your customers, starting in June of 2013. This will enable you to take advantage of our sharing and reporting features. The sharing feature will let you see and sort your customer list; the reporting feature will let you view metrics for multiple facilities and export data via excel spreadsheet (in addition to your web services).

## Major Changes

There are some basic changes in terminology, to reflect the overall reorganization of our underlying database, and there are also operational differences in how you build your software.

### *New Terminology*

The overall Portfolio Manager upgrade includes substantial revisions to our underlying database to improve system performance and scalability. In addition, we are merging the graphical user-interfaces that are accessed by general Portfolio Manager users and by organizations that exchange data through web services. The database changes and the merging of these interfaces have resulted in modifications to basic terminology we use to refer to the system. These changes are presented in Table 2, along with a brief explanation.

If you are interested in learning more about the new graphical user interface, you can visit [www.energystar.gov/PMUpgrade](http://www.energystar.gov/PMUpgrade) to learn more and to see screen shots. The recorded webinar from June 2012 includes a demonstration of basic property entry and sharing features.

<b>Table 2</b>		
<b>Important Changes in Terminology</b>		
<b>ABS 2.5 Terminology</b>	<b>New Terminology</b>	<b>Explanation</b>
ABS	Data Exchange/ Web Services	Automated Benchmarking System, referred to as “ABS” is a misleading acronym, because not all customers use web services to receive benchmarks. The words “data exchange” are more general and descriptive when working with customers, and the words “web services” are more clear and accurate when speaking with software developers.

Table 2 Important Changes in Terminology		
Authorization	Connection & Sharing	The authorization process leverages the new connection and sharing functionality in Portfolio Manager, which is the way that people who do not use web services connect with each other. We have divided the current authorization process into two parts: Connections and Sharing. Connection refers to authorization for individual customers; Sharing refers to authorization for individual properties and meters. To manage existing properties (e.g. properties in the system already for which you enter data), first you will need to connect with the property owner, and then they will share their properties and meters.
Building	Property	Property is a new object that can refer to a portion of a building, a single building, or a campus of buildings. Adoption of the single term Property for all three will make it easier for people to benchmark and track data. The same web services are used to add/enter data for all three types of properties
Space	Property Use	Because property can refer to a campus of multiple buildings, the word space can be confusing. The database object that is reflected in a “space” may actually refer to the overall use of the entire campus. In this case, the term “use” more correctly signifies “type of activity”. This object is meant to look at operational areas, which may or may not correspond to physical space boundaries. . As with ABS 2.5 it is possible to add multiple Property Uses within one Property.
Space Attribute	Property Use Detail	EPA has adopted the term “details” as a more intuitive term to describe the operation of a property (e.g. hours, workers, etc).

### *Operational Differences*

There are some significant changes in how you need to build your web service integration and interact with Portfolio Manager.

- **Transaction Size** – Instead of bundling all of your customers’ property and meter updates into a single file and submitting it with one web service call, you need to separate each update into its own individual REST web service call. For example, if you want to send updates that span 50 different meters then you need to make 50 different calls.
  - Note: the change to REST means that each ABS 2.5 service is now broken into several, more granular REST services. Therefore, there is not a direct mapping available for the “old” to the “new” schema.
- **Transaction Logging** – When the new Portfolio Manager is launched in June of 2013, EPA will not display a transaction log to you within that user interface. We recommend that you create a log of your own transactions. If your application sends a large number

of calls during “off” hours, you can create a log to help you review the status/messages for each call the next morning. This will help you organize and track your interactions with Portfolio Manager more efficiently. Finally, to help with your logs, note that within the response you receive from Portfolio Manager web services, EPA now includes the date and user account associated with the last modification for a property, property use, meter, and/or consumption data. This enables you to see if your customer has edited the data you entered.

- **Test Environment** – There are a few important details regarding the Test environment. When you are ready to get started, refer to [Testing Web Services](#)<sup>1</sup>.
  - **No User Interface** – There is no user interface associated with our Test environment. All testing occurs via web service only. EPA provides all schema and documentations and then you are required to create your account and transmit data via web service. To verify that any test transactions (POST, or PUT) were completed, you can to run a GET call to retrieve what is in the database. The Test environment is intended to help you learn how to use the web services, it is not meant to familiarize you with Portfolio Manager.
  - **No Data Migration** – No data will be migrated into or out of the test environment
    - No data has been migrated from Portfolio Manager into the new test environment. You are required to create a new account and create new properties to test the system.
    - When the upgraded Portfolio Manager launches in June of 2013, no data that you have entered into the Test environment will migrate to the live environment.
  - **Sharing (formerly Authorization) Testing Tool** – There is a new web service that you can use to create multiple pending share (*pending authorization*) requests. This will help you test more efficiently as compared with ABS 2.5, which only let you create pending requests one at a time via the user interface.
- **Backward Compatibility** – When the upgraded Portfolio Manager is released in June of 2013, there will **not be backward compatibility with ABS 2.5**. Therefore, it is very important that you begin to build and test your new system now, so that you can continue to exchange data for your customers.
- **Data Migration** – When the new live Portfolio Manager environment opens in June of 2013, all data that is in the old (current) live environment will be fully transferred. You will not need to re-enter any customer, property, or meter information into the new system and you will not need to re-establish any authorizations. Rather, you will just begin to use the new web services to interact with your customers and properties going forward.
- **Sharing (formerly Authorization)** – In addition to the terminology changes noted above, the process of sharing and authorization has been broken into a few steps:
  - First, your customer has to send you a connection request. This means they will search for you in the Portfolio Manager account directory and send you a connection request that includes any custom account information that you need to collect from them.

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<sup>1</sup> [http://portfoliomanager.energystar.gov/webservices/pdf/Testing\\_Web\\_Services.pdf](http://portfoliomanager.energystar.gov/webservices/pdf/Testing_Web_Services.pdf)

- Second, you have to accept the connection request. Through a connection service, you can retrieve a list of all pending connection requests for your account. You can accept or reject each of these requests via web service, or through your Portfolio Manager account.
  - Third, for any connection requests that you accept, your customer has to Share the property with you along with the meter(s) that they want to have you manage. Property and Meter sharing requests specify either read or read/write access and include any custom Property or Meter IDs.
  - Fourth, you need to call a share property service to retrieve the pending share requests for properties and a share meter service to retrieve the pending share requests for meters. You can accept or reject any pending share requests for individual properties and meters via web service, or through your Portfolio Manager account.
- Disconnect/Un-share (De-Authorization) Notices – We have created a new web service that allows you to retrieve any notifications for customer data that you no longer have access to. This could happen when another user deletes a property or meter that you had access to or if one of your customers wishes to remove your access. Being able to monitor when your access is removed will help you stay in synch with your customers' data.
  - ESP IDs – EPA now requires you to use the unique numeric Portfolio Manager IDs to submit your REST calls instead of using your own ESP ID. We have implemented this change to maintain short and simple calls, consistent with REST. We provide a web service that enables you to pull the mapping between your own ESP ID and the Portfolio Manager ID for each object. You pull this list, then use the Portfolio Manager ID in your web service calls.
    - Note that within the Test environment, the service used to map ESP IDs to Portfolio Manager IDs will not be able to return data because the ESP IDs only exist in the live Portfolio Manager system.
  - XML File Submission – EPA no longer offers a website or place within Portfolio Manager for you to submit XML files manually. This custom submission area will be removed because there are many free REST clients available that allow you to submit RESTful web service requests. Some of the easiest tools that allow you to do this are browser plugins such as the *RESTClient* for Mozilla Firefox (<https://addons.mozilla.org/en-US/firefox/addon/restclient/>) or *Advanced REST client Application* for Google Chrome (<https://chrome.google.com/webstore/detail/hqmlloofddfdnphfgcellkdfbfjeloo>).

### **Additional Documentation & Next Steps**

The upgraded Portfolio Manager is scheduled for release in June of 2013. At the time of public release of the live environment, there will be no backward compatibility with ABS 2.5. Therefore, it is critical that you begin your transition as soon as possible. The new TEST environment is available starting on September 24, 2012. Once you create a TEST account you can begin transmitting data with this new Test Environment in order to build your new integration.

We recommend you review some of the following resources to learn more about the Portfolio Manager upgrade and the introduction of our new REST-based web services:

- [Portfolio Manager Project webpage<sup>2</sup>](#) – View this webpage to learn more about the entire Portfolio Manager upgrade project. You can register for our quarterly webinar series and listen to recordings of previous webinars.
- [Portfolio Manager ABS Upgrade webpage<sup>3</sup>](#) – View this webpage to learn specific details about the move to REST services. In particular, you will see our project proposal from May of 2011, and summaries of feedback we received from our Partners during our design and development phase.
- [Portfolio Manager Web Services Documentation<sup>4</sup>](#) - View this webpage for more documentation specific to our web services. Specific documentation on that site includes:
  - [Using the Test Environment<sup>5</sup>](#) – This document is designed to help you start testing the REST services, including step-by-step procedures and example XML schema.
  - [Web Service API Documentation<sup>6</sup>](#) – This is the full documentation and schema for all web services.

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<sup>2</sup> [www.energystar.gov/PMUpgrade](http://www.energystar.gov/PMUpgrade)

<sup>3</sup> <https://www.energystar.gov/istar/has/index.cfm?fuseaction=absdemo.showDemoInfo>

<sup>4</sup> <http://portfoliomanager.energystar.gov/webservices/home>

<sup>5</sup> [http://portfoliomanager.energystar.gov/webservices/pdf/Testing\\_Web\\_Services.pdf](http://portfoliomanager.energystar.gov/webservices/pdf/Testing_Web_Services.pdf)

<sup>6</sup> <http://portfoliomanager.energystar.gov/webservices/home/api>