



April 7, 2016

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, Pennsylvania 17120

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PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Dear Ms. Chiavetta:

The Electronic Data Exchange Working Group ("EDEWG") submits the following recommendations, in response to the Pennsylvania Public Utility Commission ("Commission") Tentative Order regarding the Submission of the Electronic Data Exchange Working Group's Web Portal Working Group's Solution Framework for Historical Interval Usage and Billing Quality Interval Use under the Final Order issued September 3, 2015 (Docket No. M-2009-2092655).

In accordance with the Final Order, EDEWG reinstated the Web Portal Working Group (WPWG) to develop an expanded standardized solution for the acquisition of historical interval usage (HIU) and billing quality interval usage (BQIU) data via a secure web portal to include not only a Single User Multiple Request Solution, but also System-to-System functionality.

EDEWG Leadership respectfully submits the WPWG outlined recommendation as three separate standards documents. The original proposal was previously submitted and approved by the Final Order. Modifications were made from the approved Solution Framework Document to separate the original document into three individual recommendations. They are Single User Multiple Request (SU-MR), System-to-System 12 months of Historical Interval Usage (StS-HIU) and the System-to-System Rolling 10-day Billing Quality Interval Usage (StS-Rolling 10-Day). The WPWG proposed Technical Implementation Standards are enclosed. As originally mentioned in the Solution Framework Document, the WPWG continues its recommendation the EDCs pursue implementation of the StS Rolling 10-day solution either before or during implementation of the StS-HIU solution.

EDEWG Leadership appreciates this opportunity to submit recommendations and to continue our commitment in the development of the Commonwealth's retail markets for the benefit of Pennsylvania's consumers.

Sincerely,

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Constellation (An Exelon Company)

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**Pennsylvania Web Portal Working Group
Technical Implementation Standard
System to System – Historical Interval Usage**

**PUC Docket No. M-2009-2092655
Related Order Issued September 3, 2015**

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Pennsylvania EDEWG
Web Portal Standard – StS Historical Interval Usage

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Version History

Version	Date	Description of Change(s)
0.1D	3/14/2016	Initial Draft Version
0.2D	3/17/2016	Revised as follows: <ul style="list-style-type: none">1. General Notes - added bullet stating changes require EDEWG approval2. Data Response - removed duplicate bullet 'most recent version of data'3. Data Response - added bullets regarding data volumes4. Data Response - updated DST to match the other standards5. Security & Technical - added Data-at-Rest information
0.3D	3/31/2016	Revised as follows: <ul style="list-style-type: none">1. Removed comment boxes on business reject codes2. Added valid quantity qualifiers to 1.3.5.b3. Added the WSDL provided by PPL to end of document (p.38).
1.0	4/5/2016	Revised as follows: <ul style="list-style-type: none">1. As discussed during 4/5 WPWG call, updated Namespace in 1.2.5 and Note 6 on p.38 to reflect each EDC may have their own Namespace which is to be defined in their user guide documentation2. Updated version # and date. WPWG approved, final version for submission to PUC

**Pennsylvania EDEWG
Web Portal Standard – StS Historical Interval Usage**

Summary

This document contains the technical standard developed by the Electronic Data Exchange Working Group's (EDEWG) Web Portal Working Group (WPWG). The PaPUC required EDEWG to develop a standardized solution for the acquisition of historical interval usage and billing quality interval usage data via a secure web-portal, as specifically directed and detailed within the Pennsylvania Public Utility Commission's (PaPUC's) Smart Meter Procurement and Installation Order entered December 6th 2012 at Docket M-2009-2092655. Via Secretarial Letter dated 4/17/2014, in response to a request from EDEWG leadership, the PaPUC agreed that the contents herein would represent the minimally required standards to which each EDC's solution must adhere, as opposed to standards applicable to a "standardized" solution common to all EDCs. Subsequently the PaPUC required EDEWG to develop standards for System-to-System (StS) functionality under Order entered and September 3rd 2015 at Docket M-2009-2092655.

This Technical Implementation Standard applies to the use of the StS Historical Interval Usage method for sharing smart meter data. This method utilizes a platform which allows an authorized user's IT systems to communicate directly with the web portal system of the EDC without requiring a user to manually log into the web portal itself and leverage the user interface. The requestor connects to the EDC's system exchanging data via XML transactions.

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Web Portal Standard – StS Historical Interval Usage

General Notes

1. The following Electric Distribution Companies (EDCs) are required to support the System-to-System Web Interface:
 - a. Duquesne Light Company
 - b. First Energy (MetEd, Penelec, Penn Power, West Penn Power)
 - c. PECO
 - d. PPL Electric Utilities
2. The web portal is intended for the following customer-authorized third parties: Licensed Electric Generation Suppliers (EGSs), Act 129 Conservation Service Providers (CSPs) contracted with the EDCs, and their contracted agents. CSPs (either Curtailment or Conservation) desiring to access the web portals addressed by this framework either be provided access as agents of an existing EGS **OR** be licensed as EGSs themselves as a prerequisite to receiving access.
3. The PaPUC has not directed that this web portal use existing or potentially future EDC online customer communication platforms.
4. Any related items not specifically addressed by these standards are at the discretion of the individual EDCs.
5. Any change, modification or update to this data standard requires EDEWG approval via the change control process.

**Secure Web Portal Standard
System-to-System (StS) Historical Interval Usage**

The Web Portal solution standards can be broken down into the following processes:

- 1.1. Certification, Access, and Customer Privacy**
- 1.2. Data Request**
- 1.3. Data Response**
- 1.4. Security and Technical**
- 1.5. Tracking and Reporting**
- 1.6. EDEWG Leadership Responsibilities**

1.1. Certification, Access, and Customer Privacy

1.1.1. Portal user eligibility

- a. Each request will be logged into a unique Web Portal for each EDC.
- b. The portal is “primarily intended for licensed EGSs and customer-authorized third parties”.
- c. Entities licensed by the PUC as an EGS are eligible to access the web-portal. (Licensee status is available on the PaPUC’s website at http://www.puc.state.pa.us/consumer_info/electricity/suppliers_list.aspx.)
 - i. These include EGSs themselves, Conservation Service Providers (considered by PaPUC as “CSPs”), and demand response / load management providers (also known as Curtailment Service Providers, considered by PJM as “CSPs”). (Other third parties not considered PUC-licensed entities in this regard include but are not limited to researchers, public agencies with subpoenas, PaPUC-licensed Natural Gas Suppliers (NGSs), customers themselves, and other customer-authorized entities.)
 - ii. CSPs (either Curtailment or Conservation) desiring to access the web portals addressed by this framework either be provided access as agents of an existing EGS OR be licensed as EGSs themselves as a prerequisite to receiving access.
 1. The PUC has the authority to penalize EGSs for fraudulent operations.
 2. CSPs contracted with EDCs for Act 129 work are governed by PaPUC regulations over the EDC and the principal/agent relationship between the EDC and CSP.
 - iii. Unlicensed subcontractors or agents of licensed EGSs, such as Electronic Data Interchange (EDI) and billing providers, are eligible to receive access to the web portal on behalf of licensees that they represent, but their use must be directly associated with those licensees under the assumption

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that users are only accessing the portal in support of service to a specific licensed entity. For example, a provider obtaining usage for an account on behalf of fictitious supplier “ABC Energy” must be logged in such that the “ABC Energy” licensee is associated with and held accountable for associated use of the portal by that provider on ABC Energy’s behalf. *(This is covered in more detail in Section 2.5, Tracking and Reporting.)*

- iv. The capability for other 3rd parties (entities not licensed by the PaPUC as EGSs) to access this information is outside the scope of the WPWG effort. Such entities are **NOT** eligible for access to the web portal and must obtain customer data via other means.
 1. Alternative means of obtaining customer data include contacting the customer directly or – at the discretion of the EDC – submitting requests to the EDC accompanied by proper Letters Of Authorization, or “LOAs” (i.e. Duquesne’s current process).

1.1.2. Access Management

- a. EDCs may provide access to the web portal for said EGS after verifying that the EGS is PaPUC-licensed. (Completion of EDI certification testing is not a prerequisite.)
- b. The EDC and EGS must complete and document a pre-production connectivity test, during which the EGS calls the EDC web service for at least one account number specified by the EDC and receives a successful response from the EDC.
 - i. The EDC reserves the right to require EGSs to conduct more comprehensive testing and to require use of both test URLs and test credentials as part of that testing.
- c. 3rd parties that require Web Portal access but not full certification or treatment as an EDI-capable trading partner will have to submit a request to that EDC directly for web portal access. (The EDC must verify that the party is PaPUC-licensed as an EGS or broker/marketer prior to granting access.)
- d. The minimal requirement is for a single non-human system level user ID per PaPUC-licensed EGS entity.
 - i. Each use of the portal is directly associated with exactly one PaPUC-licensed entity.
 - ii. EDCs will associate a unique non-human system level ID with an entity’s name and DUNS+4 number(s). (The user ID cannot be the user’s e-mail address.)

NOTE: EDCs may elect to implement system level IDs at the organizational level, meaning one system level ID per user regardless of the number of DUNS+4 entities associated with that user, dependent upon the feasibility and cost-effectiveness of this option.

- iii. The system user ID must be associated with a **non-public** e-mail address directly associated with either the licensed entity or the associated

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- subcontractor/agent. (Examples of forbidden public e-mail addresses include but are not limited to Gmail, Yahoo, Hotmail, and AOL.)
- iv. The EDC must document their process for maintaining the non-human system level ID credentials in the user guide.
 - 1. Scheduled interval of system level ID password resets. EDC must provide notice no earlier than 15 days prior to the reset event. In the event of a breach in security, the EDC may immediately reset the system level ID password and notify the EGS.
- d. The EDC must publish and communicate availability of a System-to-System user guide for all portal users which covers the following:
 - i. Functional use of the solution
 - ii. Any EDC-specific administrative or security conditions more stringent than the standards published in this document
 - iii. Technical implementation information in order to facilitate system to system, examples include but not limited to...
 - 1. Production Web Service URL
 - 2. QA/Test Web Service URL
- e. The EDC must maintain, re-publish, and re-communicate the availability of the user guide as changes occur
- f. The PaPUC will audit and if necessary pursue licensee organizations, not individuals.

1.1.3. Customer Privacy

- a. Prior PaPUC regulatory mandates require that the EDC make this data available to EGSs and place the burden of customer authorization on licensed EGSs and their agents, who are subject to PUC audit for the same.
- b. The Web Portal will adhere to the privacy standards mandated by the PaPUC regardless of the customer's preference for release of information on file with the EDC.

1.2. Data Request

Once an EDC has established System-to-System access to the Web Portal, the requestor will be able to initiate requests for the available data via an online, system based process.

- 1.2.1. At a minimum, the EDC must satisfy requests for usage data at the ACCOUNT and METER levels.
- 1.2.2. An EGS may request either account or meter-level information for one (1) customer account per request.
- 1.2.3. The same eligibility rules leveraged in providing historical usage in response to EDI-based requests apply when providing usage via the portal. (Example: PECO does not honor EDI-based historical usage requests on finalled accounts.)

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- 1.2.4. The EDC web portal must be able to accommodate such xml request by providing the requested usage data simultaneously in the required xml format.
- 1.2.5. The EDC will document the required name space for the xml request in their user guide documentation.
- 1.2.6. The request must include the following data request parameters:
 - a. Authorized system level username and password
 - b. EDC Account Number
 - c. Usage Dates (“From” and “To”)
 - i. If omitted or blank, EDC would return all available data up to a maximum no smaller than the most recent twelve months (assuming that at least twelve months is available)
 - ii. EDC reserves the right to set a maximum on the time horizon over which usage can be returned and may reject requests for date ranges exceeding this maximum range. (Per PUC, EDC maximum must be no less than the most recent 12 months).
- 1.2.7. Account-Level or Meter-Level (but not both in the same request)

1.3. Data Response

Upon receipt of a Request, each EDC will respond with the associated data for each account number requested.

- 1.3.1. The Response process begins once a valid Request has been submitted.
- 1.3.2. The EDC will respond to each request in “near real time” meaning requests will NOT be queued. The request call will work or it will not. Failures for any reason must be re-attempted by the requestor
 - a. This solution is NOT intended for large data load or ETL (Extract, Transform and Load) functionality. It is intended to compliment the rolling 10-day file solution.
 - b. The EDC should endeavor to produce a system that is capable of processing a single account or meter level IU request for 24 months of data within 5 seconds.
 - c. The EDC should endeavor to produce a system that is capable of processing 100,000 single account or meter level IU requests for 24 months of data in any given 24 hour period.
 - d. The EDC will log each request including the supplier or third party name but will NOT place caps on the number of requests sent by any one supplier or third party.
 - e. In order to ensure fairness, the EDC reserves the right to monitor and/or restrict the number of requests sent by any individual supplier or third party in an attempt to ensure system availability for everyone.
- 1.3.3. The name space in the xml request will be...

```
<soap:address location="http://localhost:9722/WPVG/WPVG_SYS_TO_SYS.asmx" />
```

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- 1.3.4. The EDC may reject the Request and must provide a descriptive rejection reason.
- a. System level rejections will utilize standard HTTP rejection codes and messages for rejection scenarios including but not limited to the following:
 - i. HTTP 401 – Unauthorized or missing credentials
 - ii. HTTP 429 – Too many requests (may apply if EDC sets rate limits)
 - iii. HTTP 500 – Service unavailable (For instance, during maintenance windows)
 - b. Business level logic rejections will utilize existing reject reason codes similar to those used in EDI.
 - i. The EDC may reject individual account numbers within a given request based on errors unique to the specific account numbers requested (for instance, invalid or ineligible account numbers, not an interval-metered account, interval data unavailable/missing, etc.).
 - ii. The minimum standard will be to replicate the EDI reject reason. Follow-up questions on reject reasons will be supported by pre-existing EDC supplier support processes.
 - iii. Valid rejection codes for business level logic:
 - 1. A76 – Invalid Account
 - 2. UMA – Unmetered Account
 - 3. HIU – Historical Interval Usage Unavailable (PPL)
 - 4. SNP – Service Not Provided (PECO only; if gas account requested)
 - 5. 008 – Account Exists But Is Not Active
 - 6. NIA – Not Interval Account (PECO)
 - 7. MAN – Missing Account Number
 - 8. MDL – Missing Data Level
- 1.3.5. For each account number requested at the account level where the EDC has data available, and the Request was not rejected, the EDC will send the usage data.
- a. Each element listed is defined identically to the manner in which it is defined in the Pennsylvania Electronic Data Exchange Working Group (EDEWG) EDI Implementation Guides. Considering the PUC Order states that Meter Level should be provided, the EDCs proposed that the first implementation will delivery Account level, and each EDC will work toward providing Meter level as the market matures.
 - b. Data elements available to users in the downloadable XML file format for accepted requests must include the following:
 - i. Usage Level (Account-Level Usage or Meter-Level Usage)
 - ii. Customer identifier (varies by EDC; EDC account number is an example)
 - iii. Demand (calculated peak demand for billing period)
 - iv. Bill Cycle
 - v. Load Profile

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- vi. Rate Class
 - vii. Rate Subclass (if applicable for EDC; Otherwise, leave blank)
 - viii. Special Meter Configuration (currently indicates net metered status)
 - ix. Peak Load Contribution, kWh (PLC, also known as “capacity obligation) – current value
 - x. Future Peak Load Contribution, kWh (PLC, also known as “future capacity obligation)
 - xi. Network Service Peak Load, kWh (NSPL, also known as “transmission obligation”) – current value
 - xii. Future Network Service Peak Load, kWh (NSPL, also known as “future transmission obligation”)
 - xiii. Meter Number (Meter-Level only)
 - xiv. Meter Multiplier (Meter-Level only)
 - xv. Usage Date
 - xvi. Interval Increment for Usage Data (15, 30 or 60 minute)
 - xvii. Quantity Qualifier for detailed interval usage (designates actual vs. estimate and load vs. generation as well as unavailability of a specific interval)
 - 1. Valid Quantity Qualifiers...
 - a. QD = Actual Consumption (load)
 - b. KA = Estimated Consumption (load)
 - c. 87 = Actual Generation
 - d. 9H = Estimated Generation
 - e. 20 = Unavailable (data not available for interval reading)
 - xviii. Detailed usage data, aka consumption or kWh, spanning the 12 most recent billed periods as well as bill-quality interval data available within 48 hours of the read that the EDC has not yet billed. (NOTE: 12 months may not be available, in which case the portal will return data for the available number of months.)
- 1.3.6. Historical interval usage data shared that pertains to the standard originally required by March of 2014 must be billed data, defined as data from a billing cycle for which the EDC has already billed the customer.
- a. This data is subject to change in the event that the EDC cancels and rebills those periods.
 - b. Only the most recent version of billed data will be available in the portal.
- 1.3.7. Data within 48 hours of the read must be “bill-quality”, defined as “data that is sourced from an EDC’s meter data management system that has completed the process of being verified, estimated, and edited” as cited from Page 16 of the PaPUC Final Order. This means that the EDC has not necessarily billed the associated period yet.
- 1.3.8. All timestamps presented in the portal should be presented in 24-hour Eastern Time.
- 1.3.9. All intervals must be presented in hour-ending format.

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- a. End of day hour ending label will be 2359
 - b. **NOTE:** The solution assumes that all EDCs bill a 24-hour period of usage on a midnight-to-midnight basis.
- 1.3.10. The Historical Interval Usage data must accommodate Daylight Savings Time (DST) events on the appropriate date.
- a. Spring DST – For the short DST usage delivery date only, the interval reading during the time event will be null. The DST intervals will be reported as follows:
 - i. 60 minute – 0300 interval null
 - ii. 30 minute – 0230 and 0300 intervals null
 - iii. 15 minute – 0215, 0230, 0245 and 0300 intervals null
 - b. Fall DST – For the long DST usage delivery date only, additional interval usage values will be populated in the columns at the end of each record as a second set of data for hour-ending 0200, labeled 0200D (0115D, 0130D, 0145D). These columns will include null values for all other usage delivery days. The DST intervals will be repeated as follows:
 - i. 60 minute – 0200 interval repeated
 - ii. 30 minute – 0130 and 0200 intervals repeated
 - iii. 15 minute – 0115, 0130, 0145 and 0200 intervals repeated.
- 1.3.11. Precision of usage values will be dictated by the degree of precision available from each EDC’s AMI network. This solution will not dictate usage precision standards.
- 1.3.12. On-peak and off-peak characteristics of usage and demand are ***not*** necessary to include in the web portal, as these elements are typically tied to EDC tariffs. EGSs may calculate such components at their own discretion.

1.4. Security and Technical

Customer data must be delivered with the highest integrity and privacy. The Security standards cover the standards, tools, and policies that will be considered for the exchange of this data.

Several of these standards are varied adaptations of the Guidelines for Smart Grid Cybersecurity published by the National Institute of Standards and Technology, or NIST. (NIST also refers to these guidelines as Interagency Report 7628, or NISTIR 7628.)

NOTE: *EDC policies and procedures, including but not limited to those governing information security and configuration management, may be more stringent than the standards identified in this section. In the event of contradictions between these standards and EDC policies and procedures, the more restrictive of the two shall govern.*

- 1.4.1. No data governed within the scope of these standards will be publicly accessible.
 - a. Valid user login to an EDC’s secure web portal is required to access all related data.

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- b. All other access must be denied.
 - c. The user must log on each and every time they access the portal. (Any capability designed to “remember” the user should not preclude user logon.)
- 1.4.2. At a minimum, EDC portal solutions must be compatible with the two most recent major versions of Microsoft’s Internet Explorer web browser.
- 1.4.3. Each EDC’s portal solution requires the use of a non-self-signed SSL certificate issued by a Microsoft-trusted authority for governance of secure user connections via HTTPS, both before and after user authentication at logon. Both requestors and EDCs would be responsible for transmitting all data – both calls and responses – using SSL encryption.
- 1.4.4. The web portal will limit system level user to one concurrent session per credential.
- 1.4.5. The portal will lock out the system level user credential and prevent access if the system fails to successfully login with the same credential five times within a 30-minute period.
- 1.4.6. The EDC must notify portal users of any planned changes no later than two weeks prior to the planned implementation of those changes. (NOTE: This does not apply to implementation of added functionality that would have no impact on existing portal functions.)
- 1.4.7. If an EDC’s secure web portal experiences either technical problems or a cybersecurity incident (as defined by EDC information security procedures) which substantially disrupts portal operations OR increases the risk of compromising portal information (inadvertently allowing unauthorized users access to either customer usage data or user credentials), then the EDC must immediately perform the following:
- a. Deny all new attempts to access the portal by default.
 - b. Communicate status to portal users and stakeholders as appropriate given the nature of the issue or incident.
 - i. Avoid disclosing restricted details that could aid cybersecurity attackers.
 - ii. Consider EDEWG Leadership and PaPUC liaisons to EDEWG as impacted stakeholders.
 - c. Leave the above restrictions in place until deeming that the issue has been resolved and that any associated risk has been sufficiently mitigated. (This will vary based on several factors, potentially including but not limited to identification of the source of the issue and the degree to which any collateral damage has been contained.)
 - d. This standard does not supersede pre-existing EDC cybersecurity incident response plans. EDCs will always execute their own plans and rely on their own definitions with regard to cybersecurity incidents.
- 1.4.8. Data-at-Rest
- a. Defined as stored electronic information that is not in motion/transit, regardless of storage medium. Storage mediums include but are not limited to databases, file systems, storage networks, memory (temporary / cached or otherwise), and other writeable media.

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- b. EDCs and third parties authorized to use these solutions (as well as their agents) will employ reasonable technological measures to properly secure related customer, account, and usage data-at-rest within the scope of these solutions. *Such protections may include the use of encryption for rendering such data unusable, unreadable, and/or indecipherable to unauthorized individuals. Existing measures in place for this or other sensitive customer information procured via other means may also be sufficient.*

1.5. Tracking and Reporting

NOTE: The PA WPWG is not aware of any specific PaPUC reporting requirements relative to portal use and therefore assumes that the following standards would support any necessary ad hoc reporting for either EDCs or market participants on portal use and administration.

- 1.5.1. The EDC must track the following portal-related event information on a per-user basis:
 - a. User changes (user ID, associated entity, last updated date/time, add/update/terminate)
 - b. User login attempts (user ID entered, login attempt date/time, successful/failed)
 - c. Accounts queried (user ID, associated entity, EDC account number requested, date/time, yes/no for data provided, account-level/meter-level if “yes”, reason for rejection if “no”)
 - d. Quarterly review status of licensed entities (user ID, attestation date/time)
 - e. EDCs reserve the right to log additional information at their discretion, including the requester’s IP address.
- 1.5.2. The portal must perform all logging on the server-side.
- 1.5.3. The portal must retain all of the above portal-related event information for a period of at least three years.
- 1.5.4. Each EDC’s portal must provide the capability for users associated with each licensed entity to query and download any of the above portal-related event information within a specified date range for one or more users associated with that specific entity (but no others).
- 1.5.5. The EDC must have the capability to query and download any of the above portal-related event information for one or more users and/or licensed entities.
- 1.5.6. The portal must not allow any user, including EDC users, to directly edit the above log data.

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StS Historical Interval Usage – Data Dictionary

HIU Request

Element	Description	Use
EDC_ACCT_NO	Customer Identifier (varies by EDC; example is EDC Account Number)	Required
FROM_DATE	Beginning Date, the start date for the data being requested by the EGS. If null, the EDC will send up to the most recent 12 months of data, if available. Format as CCYY-MM-DD	Optional
TO_DATE	Ending Date, the start date for the data being requested by the EGS. If null, the EDC will send up to the most recent 12 months of data, if available. Format as CCYY-MM-DD	Optional
IU_REQUEST_LEVEL	Level of Data being requested by the EGS. Valid values are... "ACCOUNTLEVEL" "METERLEVEL"	Required

HIU Reject Response (used only when no HTTP level rejection is sent)

Element	Description	Use
STATUS_CODE	Code to denote reason for transaction rejection. Valid values... "A76" = Invalid Account "UMA" = Unmetered Account "HIU" = Historical Interval Usage Unavailable (PPL) "SNP" = Service Not Provided (PECO only when request is gas account) "008" = Account Exists But Is Not Active "NIA" = Not Interval Account (PECO) "MAN" = Missing Account Number "MDL" = Missing Data Level	Required
STATUS_MESSAGE	Text description of reject reason code. Recommend using above code descriptions	Required
ACCOUNT_LEVEL_DATA		
EDC_ACCT_NO	Customer Identifier (varies by EDC; example is EDC Account Number). If the EDC_ACCT_NO was not sent on the request, it will not be present in the response.	Conditional

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HIU Response – Account Level

Element	Description	Use
ACCOUNT_LEVEL_DATA		
USAGE_LEVEL	"ACCOUNTLEVEL" = Identifies level of usage data at the ACCOUNT level.	Required
EDC_ACCT_NO	Customer Identifier (varies by EDC; example is EDC Account Number)	Required
DEMAND	Calculated peak demand for billing period. Required if demand is being recorded for the account.	Conditional
BILL_CYCLE	Bill cycle for customer account.	Required
LOAD_PROFILE	EDC Load Profile	Required
LDC_RATE_CODE	EDC Rate Code/Class	Required
LDC_RATE_SUBCODE	EDC Rate Subclass. Required if present	Required
SPECIAL_METER_CONFIGURATION	Used to denote presence of net meter. Required if net meter is present. "NET METER" (sent by Duquesne, FirstEnergy, PECO) The following values sent by PPL... ASUN = Net Metering Solar AWIN = Net Metering Wind AHYD = Net Metering Hydro ABIO = Net Metering Biomass AWST = Net Metering Waste ACHP = Net Metering Combined Heat and Power AMLT = Net Metering Multiple Different Sources NSUN = Non-Net Metering Solar NWIN = Non-Net Metering Wind NHYD = Non-Net Metering Hydro NBIO = Non-Net Metering Biomass NWST = Non-Net Metering Waste NCHP = Non-Net Metering Combined Heat and Power NFOS = Non-Net Metering Fossil Fuel NMLT = Non-Net Metering Multiple Different Sources	Conditional
PEAK_LOAD_CONTRIBUTION	Capacity Obligation/PLC	Required
FUTURE_PEAK_LOAD_CONTRIBUTION	Future Capacity Obligation / PLC. Required if calculated and stored in EDC system	Required
NETWORK_SERVICE_PEAK_LOAD	Transmission Obligation / NSPL / NITS.	Required
FUTURE_NETWORK_SERVICE_PEAK_LOAD	Future Transmission Obligation / NSPL / NITS. Required if calculated and stored in EDC system.	Required
IU_ACCOUNT_DATA – repeated for each USAGE_DATE reported		
USAGE_DATE	Date of readings	Required
IU_60_MINUTE_USAGE_DATA IU_30_MINUTE_USAGE_DATA IU_15_MINUTE_USAGE_DATA Repeated for each interval data increment. Max use is one of each interval per account.		
QI_0015	Quantity Qualifier for kWh reported, repeated for each interval reading. Valid values... "KA" = Estimated Quantity Delivered "QD" = Actual Quantity Delivered "20" = Unavailable (meter data not available for interval)	Required

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	"87" = Actual Quantity Delivered (Net Metering / Generation) "9H" = Estimated Quantity Delivered (Net Metering / Generation)	
IU_0015	Consumption quantity in kWh. Decimal values vary by EDC	Required

HIU Response – Meter Level

Element	Description	Use
STATUS_CODE		Not Used
STATUS_MESSAGE		Not Used
ACCOUNT_LEVEL_DATA		
USAGE_LEVEL	"METERLEVEL" = Identifies level of usage data	Required
EDC_ACCT_NO	Customer Identifier (varies by EDC; example is EDC Account Number)	Required
DEMAND	Calculated peak demand for billing period. Required if demand is being recorded for the account.	Conditional
BILL_CYCLE	Bill cycle for customer account.	Required
LOAD_PROFILE	EDC Load Profile	Required
LDC_RATE_CODE	EDC Rate Code/Class	Required
LDC_RATE_SUBCODE	EDC Rate Subclass. Required if present	Required
SPECIAL_METER_CONFIGURATION	Used to denote presence of net meter. Required if net meter is present. "NET METER" (sent by Duquesne, FirstEnergy, PECO) The following values sent by PPL... ASUN = Net Metering Solar AWIN = Net Metering Wind AHYD = Net Metering Hydro ABIO = Net Metering Biomass AWST = Net Metering Waste ACHP = Net Metering Combined Heat and Power AMLT = Net Metering Multiple Different Sources NSUN = Non-Net Metering Solar NWIN = Non-Net Metering Wind NHYD = Non-Net Metering Hydro NBIO = Non-Net Metering Biomass NWST = Non-Net Metering Waste NCHP = Non-Net Metering Combined Heat and Power NFOS = Non-Net Metering Fossil Fuel NMLT = Non-Net Metering Multiple Different Sources	Conditional
PEAK_LOAD_CONTRIBUTION	Capacity Obligation/PLC	Required
FUTURE_PEAK_LOAD_CONTRIBUTION	Future Capacity Obligation / PLC. Required if calculated and stored in EDC system	Required
NETWORK_SERVICE_PEAK_LOAD	Transmission Obligation / NSPL / NITS.	Required
FUTURE_NETWORK_SERVICE_PEAK_LOAD	Future Transmission Obligation / NSPL / NITS. Required if calculated and stored in EDC system.	Required
IU_METER_DATA – repeated for each meter and USAGE_DATE reported		
METER_NO	Meter Number. Required when sending METERLEVEL usage data.	Required
METER_MULTIPLIER	Meter multiplier for meter. Required when sending	Required

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	METERLEVEL usage data.	
USAGE_DATE	Date of readings	Required
	IU_60_MINUTE_USAGE_DATA IU_30_MINUTE_USAGE_DATA IU_15_MINUTE_USAGE_DATA Repeated for each interval data increment. Max use is one of each interval per meter.	
QI_0015	Quantity Qualifier for kWh reported, repeated for each interval reading. Valid values... "KA" = Estimated Quantity Delivered "QD" = Actual Quantity Delivered "20" = Unavailable (meter data not available for interval) "87" = Actual Quantity Delivered (Net Metering / Generation) "9H" = Estimated Quantity Delivered (Net Metering / Generation)	Required
IU_0015	Consumption quantity in kWh. Decimal values vary by EDC	Required
IU_REQUEST_LEVEL	Level of Data being requested by the EGS. Valid values are... "ACCOUNTLEVEL" "METERLEVEL"	Required

StS Historical Interval Usage – Example XML Transactions

Request Examples

Account Level

```
<?xml version="1.0" encoding="utf-8"?>
<IURequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <IU_REQUEST>
    <EDC_ACCT_NO>4444877441</EDC_ACCT_NO>
    <FROM_DATE>2015-01-01</FROM_DATE>
    <TO_DATE>2016-12-31</TO_DATE>
    <IU_REQUEST_LEVEL>AccountLevel</IU_REQUEST_LEVEL>
  </IU_REQUEST>
</IURequest>
```

Account Level – No Dates

```
<?xml version="1.0" encoding="utf-8"?>
<IURequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <IU_REQUEST>
    <EDC_ACCT_NO>4444877441</EDC_ACCT_NO>
    <IU_REQUEST_LEVEL>AccountLevel</IU_REQUEST_LEVEL>
  </IU_REQUEST>
</IURequest>
```

Meter Level

```
<?xml version="1.0" encoding="utf-8"?>
<IURequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <IU_REQUEST>
    <EDC_ACCT_NO>4444877441</EDC_ACCT_NO>
    <FROM_DATE>2015-01-01</FROM_DATE>
    <TO_DATE>2016-12-31</TO_DATE>
    <IU_REQUEST_LEVEL> MeterLevel</IU_REQUEST_LEVEL>
  </IU_REQUEST>
</IURequest>
```

Meter Level – No Dates

```
<?xml version="1.0" encoding="utf-8"?>
<IURequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <IU_REQUEST>
    <EDC_ACCT_NO>4444877441</EDC_ACCT_NO>
    <IU_REQUEST_LEVEL> MeterLevel</IU_REQUEST_LEVEL>
  </IU_REQUEST>
</IURequest>
```

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Rejected Response Examples

Account Not Found

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <STATUS_CODE>A76</STATUS_CODE>
  <STATUS_MESSAGE>Invalid Account</STATUS_MESSAGE>
  <USAGE_LEVEL>AccountLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
  </ACCOUNT_LEVEL_DATA>
</IUResponse>
```

Response – Account Level Examples

Spring Daylight Savings Time

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <USAGE_LEVEL>AccountLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
    <DEMAND>17</DEMAND>
    <BILL_CYCLE>3</BILL_CYCLE>
    <LOAD_PROFILE>RS</LOAD_PROFILE>
    <LDC_RATE_CODE>RES</LDC_RATE_CODE>
    <PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
    <NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
  </ACCOUNT_LEVEL_DATA>
  <IU_ACCOUNT_DATA>
    <IUAccountData>
      <USAGE_DATE>2016-03-13</USAGE_DATE>
      <IU_60_MINUTE_USAGE_DATA>
        <IU_0100>3</IU_0100>
        <QI_0100>QD</QI_0100>
        <IU_0200>2</IU_0200>
        <QI_0200>QD</QI_0200>
        <IU_0200D>3</IU_0200D>
        <QI_0200D>QD</QI_0200D>
        <IU_0300>4</IU_0300>
        <QI_0300>QD</QI_0300>
        <IU_0400>4</IU_0400>
        <QI_0400>QD</QI_0400>
        <IU_0500>3</IU_0500>
        <QI_0500>QD</QI_0500>
        <IU_0600>3</IU_0600>
        <QI_0600>QD</QI_0600>
        <IU_0700>5.1</IU_0700>
        <QI_0700>QD</QI_0700>
        <IU_0800>7.3</IU_0800>
        <QI_0800>QD</QI_0800>
        <IU_0900>3.1</IU_0900>
        <QI_0900>QD</QI_0900>
      </IU_60_MINUTE_USAGE_DATA>
    </IUAccountData>
  </IU_ACCOUNT_DATA>
</IUResponse>
```

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```
<IU_1000>3</IU_1000>
<QI_1000>QD</QI_1000>
<IU_1100>2</IU_1100>
<QI_1100>QD</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>QD</QI_1200>
<IU_1300>1.77</IU_1300>
<QI_1300>QD</QI_1300>
<IU_1400>1</IU_1400>
<QI_1400>QD</QI_1400>
<IU_1500>2</IU_1500>
<QI_1500>QD</QI_1500>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1900>7.54</IU_1900>
<QI_1900>KA</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>KA</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>KA</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>KA</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>KA</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>KA</QI_2359>
</IU_60_MINUTE_USAGE_DATA>
</IUAccountData>
</IU_ACCOUNT_DATA>
</IUResponse>
```

Fall Daylight Savings Time

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <USAGE_LEVEL>AccountLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
    <DEMAND>17</DEMAND>
    <BILL_CYCLE>3</BILL_CYCLE>
    <LOAD_PROFILE>RS</LOAD_PROFILE>
    <LDC_RATE_CODE>RES</LDC_RATE_CODE>
    <PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
    <NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
  </ACCOUNT_LEVEL_DATA>
  <IU_ACCOUNT_DATA>
    <IUAccountData>
      <USAGE_DATE>2015-11-01</USAGE_DATE>
      <IU_60_MINUTE_USAGE_DATA>
        <IU_0100>3</IU_0100>
        <QI_0100>QD</QI_0100>
        <IU_0200>2</IU_0200>
```

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```
<QI_0200>QD</QI_0200>
<IU_0200D>3</IU_0200D>
<QI_0200D>QD</QI_0200D>
<IU_0300>4</IU_0300>
<QI_0300>QD</QI_0300>
<IU_0400>4</IU_0400>
<QI_0400>QD</QI_0400>
<IU_0500>3</IU_0500>
<QI_0500>QD</QI_0500>
<IU_0600>3</IU_0600>
<QI_0600>QD</QI_0600>
<IU_0700>5.1</IU_0700>
<QI_0700>QD</QI_0700>
<IU_0800>7.3</IU_0800>
<QI_0800>QD</QI_0800>
<IU_0900>3.1</IU_0900>
<QI_0900>QD</QI_0900>
<IU_1000>3</IU_1000>
<QI_1000>QD</QI_1000>
<IU_1100>2</IU_1100>
<QI_1100>QD</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>QD</QI_1200>
<IU_1300>1.77</IU_1300>
<QI_1300>QD</QI_1300>
<IU_1400>1</IU_1400>
<QI_1400>QD</QI_1400>
<IU_1500>2</IU_1500>
<QI_1500>QD</QI_1500>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1900>7.54</IU_1900>
<QI_1900>KA</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>KA</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>KA</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>KA</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>KA</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>KA</QI_2359>
</IU_60_MINUTE_USAGE_DATA>
</IUAccountData>
</IU_ACCOUNT_DATA>
</IUResponse>
```

Interval Increment Change

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
```

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```
<USAGE_LEVEL>AccountLevel</USAGE_LEVEL>
<ACCOUNT_LEVEL_DATA>
  <EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
  <DEMAND>17</DEMAND>
  <BILL_CYCLE>3</BILL_CYCLE>
  <LOAD_PROFILE>RS</LOAD_PROFILE>
  <LDC_RATE_CODE>RES</LDC_RATE_CODE>
  <PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
  <NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
</ACCOUNT_LEVEL_DATA>
<IU_ACCOUNT_DATA>
  <IUAccountData>
    <USAGE_DATE>2016-01-04</USAGE_DATE>
    <IU_60_MINUTE_USAGE_DATA>
      <IU_0100>3</IU_0100>
      <QI_0100>QD</QI_0100>
      <IU_0200>3</IU_0200>
      <QI_0200>QD</QI_0200>
      <IU_0300>4</IU_0300>
      <QI_0300>QD</QI_0300>
      <IU_0400>4</IU_0400>
      <QI_0400>QD</QI_0400>
      <IU_0500>3</IU_0500>
      <QI_0500>QD</QI_0500>
      <IU_0600>3</IU_0600>
      <QI_0600>QD</QI_0600>
      <IU_0700>5.1</IU_0700>
      <QI_0700>QD</QI_0700>
      <IU_0800>7.3</IU_0800>
      <QI_0800>QD</QI_0800>
      <IU_0900>3.1</IU_0900>
      <QI_0900>QD</QI_0900>
      <IU_1000>3</IU_1000>
      <QI_1000>QD</QI_1000>
      <IU_1100>2</IU_1100>
      <QI_1100>QD</QI_1100>
      <IU_1200>2</IU_1200>
      <QI_1200>QD</QI_1200>
      <IU_1300>1.77</IU_1300>
      <QI_1300>QD</QI_1300>
      <IU_1400>1</IU_1400>
      <QI_1400>QD</QI_1400>
      <IU_1500>2</IU_1500>
      <QI_1500>QD</QI_1500>
      <IU_1600>2</IU_1600>
      <QI_1600>QD</QI_1600>
      <IU_1700>2.7</IU_1700>
      <QI_1700>QD</QI_1700>
      <IU_1800>4.78</IU_1800>
      <QI_1800>QD</QI_1800>
      <IU_1900>7.54</IU_1900>
      <QI_1900>KA</QI_1900>
      <IU_2000>5.88</IU_2000>
      <QI_2000>KA</QI_2000>
      <IU_2100>3.77</IU_2100>
      <QI_2100>KA</QI_2100>
      <IU_2200>2.97</IU_2200>
```


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```
<QI_2200>KA</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>KA</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>KA</QI_2359>
<IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUAccountData>
<IUAccountData>
<USAGE_DATE>2016-01-05</USAGE_DATE>
<IU_60_MINUTE_USAGE_DATA>
<IU_0100>3</IU_0100>
<QI_0100>QD</QI_0100>
<IU_0200>3</IU_0200>
<QI_0200>QD</QI_0200>
<IU_0300>4</IU_0300>
<QI_0300>QD</QI_0300>
<IU_0400>4</IU_0400>
<QI_0400>QD</QI_0400>
<IU_0500>3</IU_0500>
<QI_0500>QD</QI_0500>
<IU_0600>3</IU_0600>
<QI_0600>QD</QI_0600>
<IU_0700>5.1</IU_0700>
<QI_0700>QD</QI_0700>
<IU_0800>7.3</IU_0800>
<QI_0800>QD</QI_0800>
<IU_0900>3.1</IU_0900>
<QI_0900>QD</QI_0900>
<IU_1000>3</IU_1000>
<QI_1000>QD</QI_1000>
<IU_1100>2</IU_1100>
<QI_1100>QD</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>QD</QI_1200>
<IU_1300>1.77</IU_1300>
<QI_1300>QD</QI_1300>
<IU_1400 xsi:nil="true" />
<IU_1500 xsi:nil="true" />
<IU_1600 xsi:nil="true" />
<IU_1700 xsi:nil="true" />
<IU_1800 xsi:nil="true" />
<IU_1900 xsi:nil="true" />
<IU_2000 xsi:nil="true" />
<IU_2100 xsi:nil="true" />
<IU_2200 xsi:nil="true" />
<IU_2300 xsi:nil="true" />
<IU_2359 xsi:nil="true" />
<IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUAccountData>
<IUAccountData>
<USAGE_DATE>2016-01-05</USAGE_DATE>
<IU_30_MINUTE_USAGE_DATA>
<IU_0030 xsi:nil="true" />
<IU_0100 xsi:nil="true" />
<IU_0130 xsi:nil="true" />
```

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```
<IU_0200 xsi:nil="true" />
<IU_0230 xsi:nil="true" />
<IU_0300 xsi:nil="true" />
<IU_0330 xsi:nil="true" />
<IU_0400 xsi:nil="true" />
<IU_0430 xsi:nil="true" />
<IU_0500 xsi:nil="true" />
<IU_0530 xsi:nil="true" />
<IU_0600 xsi:nil="true" />
<IU_0630 xsi:nil="true" />
<IU_0700 xsi:nil="true" />
<IU_0730 xsi:nil="true" />
<IU_0800 xsi:nil="true" />
<IU_0830 xsi:nil="true" />
<IU_0900 xsi:nil="true" />
<IU_0930 xsi:nil="true" />
<IU_1000 xsi:nil="true" />
<IU_1030 xsi:nil="true" />
<IU_1100 xsi:nil="true" />
<IU_1130 xsi:nil="true" />
<IU_1200 xsi:nil="true" />
<IU_1230 xsi:nil="true" />
<IU_1300 xsi:nil="true" />
<IU_1330>0.57</IU_1330>
<QI_1330>QD</QI_1330>
<IU_1400>1</IU_1400>
<QI_1400>QD</QI_1400>
<IU_1430>1</IU_1430>
<QI_1430>QD</QI_1430>
<IU_1500>2</IU_1500>
<QI_1500>QD</QI_1500>
<IU_1530>2</IU_1530>
<QI_1530>QD</QI_1530>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1630>2</IU_1630>
<QI_1630>QD</QI_1630>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1730>2.64</IU_1730>
<QI_1730>QD</QI_1730>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1830>4.12</IU_1830>
<QI_1830>QD</QI_1830>
<IU_1900>7.54</IU_1900>
<QI_1900>QD</QI_1900>
<IU_1930>4.78</IU_1930>
<QI_1930>QD</QI_1930>
<IU_2000>5.88</IU_2000>
<QI_2000>QD</QI_2000>
<IU_2030>4.2</IU_2030>
<QI_2030>QD</QI_2030>
<IU_2100>3.77</IU_2100>
<QI_2100>QD</QI_2100>
<IU_2130>1.96</IU_2130>
<QI_2130>QD</QI_2130>
```

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```
<IU_2200>2.97</IU_2200>
<QI_2200>QD</QI_2200>
<IU_2230>2.06</IU_2230>
<QI_2230>QD</QI_2230>
<IU_2300>1.71</IU_2300>
<QI_2300>QD</QI_2300>
<IU_2330>1.55</IU_2330>
<QI_2330>QD</QI_2330>
<IU_2359>1.65</IU_2359>
<QI_2359>QD</QI_2359>
<IU_0130D xsi:nil="true" />
<IU_0200D xsi:nil="true" />
</IU_30_MINUTE_USAGE_DATA>
</IUAccountData>
</IU_ACCOUNT_DATA>
</IUResponse>
```

Net Metering

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <USAGE_LEVEL>AccountLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
    <DEMAND>17</DEMAND>
    <BILL_CYCLE>3</BILL_CYCLE>
    <LOAD_PROFILE>RS</LOAD_PROFILE>
    <LDC_RATE_CODE>RES</LDC_RATE_CODE>
    <PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
    <NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
    <SPECIAL_METER_CONFIGURATION>ASUN</SPECIAL_METER_CONFIGURATION>
  </ACCOUNT_LEVEL_DATA>
  <IU_ACCOUNT_DATA>
    <IUAccountData>
      <USAGE_DATE>2016-01-04</USAGE_DATE>
      <IU_60_MINUTE_USAGE_DATA>
        <IU_0100>3</IU_0100>
        <QI_0100>QD</QI_0100>
        <IU_0200>3</IU_0200>
        <QI_0200>QD</QI_0200>
        <IU_0300>4</IU_0300>
        <QI_0300>QD</QI_0300>
        <IU_0400>4</IU_0400>
        <QI_0400>QD</QI_0400>
        <IU_0500>3</IU_0500>
        <QI_0500>QD</QI_0500>
        <IU_0600>3</IU_0600>
        <QI_0600>QD</QI_0600>
        <IU_0700>5.1</IU_0700>
        <QI_0700>QD</QI_0700>
        <IU_0800>7.3</IU_0800>
        <QI_0800>QD</QI_0800>
        <IU_0900>3.1</IU_0900>
        <QI_0900>QD</QI_0900>
        <IU_1000>3</IU_1000>
        <QI_1000>QD</QI_1000>
```

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```
<IU_1100>2</IU_1100>
<QI_1100>87</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>87</QI_1200>
<IU_1300>1.77</IU_1300>
<QI_1300>87</QI_1300>
<IU_1400>1</IU_1400>
<QI_1400>87</QI_1400>
<IU_1500>2</IU_1500>
<QI_1500>87</QI_1500>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1900>7.54</IU_1900>
<QI_1900>KA</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>KA</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>KA</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>KA</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>KA</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>KA</QI_2359>
<IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUAccountData>
</IU_ACCOUNT_DATA>
</IUResponse>
```

Pennsylvania EDEWG
Web Portal Standard – StS Historical Interval Usage

Response - Meter Level Examples

Spring Daylight Savings Time

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <USAGE_LEVEL>MeterLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>8888888888</EDC_ACCT_NO>
    <DEMAND>17</DEMAND>
    <BILL_CYCLE>3</BILL_CYCLE>
    <LOAD_PROFILE>RS</LOAD_PROFILE>
    <LDC_RATE_CODE>RES</LDC_RATE_CODE>
    <PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
    <NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
  </ACCOUNT_LEVEL_DATA>
  <IU_METER_DATA>
    <IUMeterData>
      <METER_NO>45658888</METER_NO>
      <METER_MULTIPLIER>1</METER_MULTIPLIER>
      <USAGE_DATE>2016-03-13</USAGE_DATE>
      <IU_60_MINUTE_USAGE_DATA>
        <IU_0100>3</IU_0100>
        <QI_0100>KA</QI_0100>
        <IU_0200>3</IU_0200>
        <QI_0200>KA</QI_0200>
        <IU_0400>4</IU_0400>
        <QI_0400>KA</QI_0400>
        <IU_0500>3</IU_0500>
        <QI_0500>KA</QI_0500>
        <IU_0600>3</IU_0600>
        <QI_0600>KA</QI_0600>
        <IU_0700>5.1</IU_0700>
        <QI_0700>KA</QI_0700>
        <IU_0800>7.3</IU_0800>
        <QI_0800>KA</QI_0800>
        <IU_0900>3.1</IU_0900>
        <QI_0900>KA</QI_0900>
        <IU_1000>3</IU_1000>
        <QI_1000>QD</QI_1000>
        <IU_1100>2</IU_1100>
        <QI_1100>QD</QI_1100>
        <IU_1200>2</IU_1200>
        <QI_1200>QD</QI_1200>
        <IU_1300>1.77</IU_1300>
        <QI_1300>QD</QI_1300>
        <IU_1400>1</IU_1400>
        <QI_1400>QD</QI_1400>
        <IU_1500>2</IU_1500>
        <QI_1500>QD</QI_1500>
        <IU_1600>2</IU_1600>
        <QI_1600>QD</QI_1600>
        <IU_1700>2.7</IU_1700>
        <QI_1700>QD</QI_1700>
        <IU_1800>4.78</IU_1800>
        <QI_1800>QD</QI_1800>
      </IU_60_MINUTE_USAGE_DATA>
    </IUMeterData>
  </IU_METER_DATA>
</IUResponse>
```

Pennsylvania EDEWG
Web Portal Standard – StS Historical Interval Usage

```
<IU_1900>7.54</IU_1900>
<QI_1900>QD</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>QD</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>QD</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>QD</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>QD</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>QD</QI_2359>
</IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
</IU_METER_DATA>
</IUResponse>
```

Fall Daylight Savings Time

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <USAGE_LEVEL>MeterLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
    <DEMAND>17</DEMAND>
    <BILL_CYCLE>3</BILL_CYCLE>
    <LOAD_PROFILE>RS</LOAD_PROFILE>
    <LDC_RATE_CODE>RES</LDC_RATE_CODE>
    <PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
    <NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
  </ACCOUNT_LEVEL_DATA>
  <IU_METER_DATA>
    <IUMeterData>
      <METER_NO>45656666</METER_NO>
      <METER_MULTIPLIER>1</METER_MULTIPLIER>
      <USAGE_DATE>2015-11-01</USAGE_DATE>
      <IU_60_MINUTE_USAGE_DATA>
        <IU_0100>3</IU_0100>
        <QI_0100>QD</QI_0100>
        <IU_0200>2</IU_0200>
        <QI_0200>QD</QI_0200>
        <IU_0200D>3</IU_0200D>
        <QI_0200D>QD</QI_0200D>
        <IU_0300>4</IU_0300>
        <QI_0300>QD</QI_0300>
        <IU_0400>4</IU_0400>
        <QI_0400>QD</QI_0400>
        <IU_0500>3</IU_0500>
        <QI_0500>QD</QI_0500>
        <IU_0600>3</IU_0600>
        <QI_0600>QD</QI_0600>
        <IU_0700>5.1</IU_0700>
        <QI_0700>QD</QI_0700>
        <IU_0800>7.3</IU_0800>
        <QI_0800>QD</QI_0800>
        <IU_0900>3.1</IU_0900>
```

Pennsylvania EDEWG
Web Portal Standard – StS Historical Interval Usage

```
<QI_0900>QD</QI_0900>
<IU_1000>3</IU_1000>
<QI_1000>QD</QI_1000>
<IU_1100>2</IU_1100>
<QI_1100>QD</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>QD</QI_1200>
<IU_1300>1.77</IU_1300>
<QI_1300>QD</QI_1300>
<IU_1400>1</IU_1400>
<QI_1400>QD</QI_1400>
<IU_1500>2</IU_1500>
<QI_1500>QD</QI_1500>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1900>7.54</IU_1900>
<QI_1900>KA</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>KA</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>KA</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>KA</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>KA</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>KA</QI_2359>
</IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
</IU_METER_DATA>
</IUResponse>
```

Interval Increment Change

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
<USAGE_LEVEL>MeterLevel</USAGE_LEVEL>
<ACCOUNT_LEVEL_DATA>
<EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
<DEMAND>17</DEMAND>
<BILL_CYCLE>3</BILL_CYCLE>
<LOAD_PROFILE>RS</LOAD_PROFILE>
<LDC_RATE_CODE>RES</LDC_RATE_CODE>
<PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
<NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
</ACCOUNT_LEVEL_DATA>
<IU_METER_DATA>
<IUMeterData>
<METER_NO>45656666</METER_NO>
<METER_MULTIPLIER>1</METER_MULTIPLIER>
<USAGE_DATE>2016-01-04</USAGE_DATE>
<IU_60_MINUTE_USAGE_DATA>
```

Pennsylvania EDEWG
Web Portal Standard – StS Historical Interval Usage

```
<IU_0100>3</IU_0100>
<QI_0100>KA</QI_0100>
<IU_0200>3</IU_0200>
<QI_0200>KA</QI_0200>
<IU_0300>4</IU_0300>
<QI_0300>KA</QI_0300>
<IU_0400>4</IU_0400>
<QI_0400>KA</QI_0400>
<IU_0500>3</IU_0500>
<QI_0500>KA</QI_0500>
<IU_0600>3</IU_0600>
<QI_0600>KA</QI_0600>
<IU_0700>5.1</IU_0700>
<QI_0700>KA</QI_0700>
<IU_0800>7.3</IU_0800>
<QI_0800>KA</QI_0800>
<IU_0900>3.1</IU_0900>
<QI_0900>KA</QI_0900>
<IU_1000 xsi:nil="true" />
<IU_1100 xsi:nil="true" />
<IU_1200 xsi:nil="true" />
<IU_1300 xsi:nil="true" />
<IU_1400 xsi:nil="true" />
<IU_1500 xsi:nil="true" />
<IU_1600 xsi:nil="true" />
<IU_1700 xsi:nil="true" />
<IU_1800 xsi:nil="true" />
<IU_1900 xsi:nil="true" />
<IU_2000 xsi:nil="true" />
<IU_2100 xsi:nil="true" />
<IU_2200 xsi:nil="true" />
<IU_2300 xsi:nil="true" />
<IU_2359 xsi:nil="true" />
<IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
<IUMeterData>
<METER_NO>45656666</METER_NO>
<METER_MULTIPLIER>10</METER_MULTIPLIER>
<USAGE_DATE>2016-01-04</USAGE_DATE>
<IU_60_MINUTE_USAGE_DATA>
<IU_0100 xsi:nil="true" />
<IU_0200 xsi:nil="true" />
<IU_0300 xsi:nil="true" />
<IU_0400 xsi:nil="true" />
<IU_0500 xsi:nil="true" />
<IU_0600 xsi:nil="true" />
<IU_0700 xsi:nil="true" />
<IU_0800 xsi:nil="true" />
<IU_0900 xsi:nil="true" />
<IU_1000>3</IU_1000>
<QI_1000>QD</QI_1000>
<IU_1100>2</IU_1100>
<QI_1100>QD</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>QD</QI_1200>
<IU_1300>1.77</IU_1300>
```


Pennsylvania EDEWG Web Portal Standard – StS Historical Interval Usage

```
<QI_1300>QD</QI_1300>
<IU_1400>1</IU_1400>
<QI_1400>QD</QI_1400>
<IU_1500>2</IU_1500>
<QI_1500>QD</QI_1500>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1900>7.54</IU_1900>
<QI_1900>QD</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>QD</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>QD</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>QD</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>QD</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>QD</QI_2359>
<IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
</IU_METER_DATA>
</IUResponse>
```

Net Metering

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <USAGE_LEVEL>MeterLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
    <DEMAND>17</DEMAND>
    <BILL_CYCLE>3</BILL_CYCLE>
    <LOAD_PROFILE>RS</LOAD_PROFILE>
    <LDC_RATE_CODE>RES</LDC_RATE_CODE>
    <PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
    <NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
    <SPECIAL_METER_CONFIGURATION>ASUN</SPECIAL_METER_CONFIGURATION>
  </ACCOUNT_LEVEL_DATA>
  <IU_METER_DATA>
    <IUMeterData>
      <METER_NO>45656666</METER_NO>
      <METER_MULTIPLIER>1</METER_MULTIPLIER>
      <USAGE_DATE>2016-01-04</USAGE_DATE>
      <IU_60_MINUTE_USAGE_DATA>
        <IU_0100>3</IU_0100>
        <QI_0100>KA</QI_0100>
        <IU_0200>3</IU_0200>
        <QI_0200>KA</QI_0200>
        <IU_0300>4</IU_0300>
        <QI_0300>KA</QI_0300>
```

**Pennsylvania EDEWG
Web Portal Standard – StS Historical Interval Usage**

```
<IU_0400>4</IU_0400>
<QI_0400>KA</QI_0400>
<IU_0500>3</IU_0500>
<QI_0500>KA</QI_0500>
<IU_0600>3</IU_0600>
<QI_0600>KA</QI_0600>
<IU_0700>5.1</IU_0700>
<QI_0700>KA</QI_0700>
<IU_0800>7.3</IU_0800>
<QI_0800>KA</QI_0800>
<IU_0900>3.1</IU_0900>
<QI_0900>KA</QI_0900>
<IU_1000>3</IU_1000>
<QI_1000>QD</QI_1000>
<IU_1100>2</IU_1100>
<QI_1100>87</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>87</QI_1200>
<IU_1300>1.77</IU_1300>
<QI_1300>87</QI_1300>
<IU_1400>1</IU_1400>
<QI_1400>87</QI_1400>
<IU_1500>2</IU_1500>
<QI_1500>QD</QI_1500>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1900>7.54</IU_1900>
<QI_1900>QD</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>QD</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>QD</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>QD</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>QD</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>QD</QI_2359>
<IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
</IU_METER_DATA>
</IUResponse>
```

Meter Change

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <USAGE_LEVEL>MeterLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>9999999999</EDC_ACCT_NO>
    <DEMAND>17</DEMAND>
```

Pennsylvania EDEWG
Web Portal Standard - StS Historical Interval Usage

```
<BILL_CYCLE>3</BILL_CYCLE>
<LOAD_PROFILE>RS</LOAD_PROFILE>
<LDC_RATE_CODE>RES</LDC_RATE_CODE>
<PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
<NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
</ACCOUNT_LEVEL_DATA>
<IU_METER_DATA>
<IUMeterData>
  <METER_NO>45656666</METER_NO>
  <METER_MULTIPLIER>1</METER_MULTIPLIER>
  <USAGE_DATE>2016-01-04</USAGE_DATE>
  <IU_60_MINUTE_USAGE_DATA>
    <IU_0100>3</IU_0100>
    <QI_0100>KA</QI_0100>
    <IU_0200>3</IU_0200>
    <QI_0200>KA</QI_0200>
    <IU_0300>4</IU_0300>
    <QI_0300>KA</QI_0300>
    <IU_0400>4</IU_0400>
    <QI_0400>KA</QI_0400>
    <IU_0500>3</IU_0500>
    <QI_0500>KA</QI_0500>
    <IU_0600>3</IU_0600>
    <QI_0600>KA</QI_0600>
    <IU_0700>5.1</IU_0700>
    <QI_0700>KA</QI_0700>
    <IU_0800>7.3</IU_0800>
    <QI_0800>KA</QI_0800>
    <IU_0900>3.1</IU_0900>
    <QI_0900>KA</QI_0900>
    <IU_1000 xsi:nil="true" />
    <IU_1100 xsi:nil="true" />
    <IU_1200 xsi:nil="true" />
    <IU_1300 xsi:nil="true" />
    <IU_1400 xsi:nil="true" />
    <IU_1500 xsi:nil="true" />
    <IU_1600 xsi:nil="true" />
    <IU_1700 xsi:nil="true" />
    <IU_1800 xsi:nil="true" />
    <IU_1900 xsi:nil="true" />
    <IU_2000 xsi:nil="true" />
    <IU_2100 xsi:nil="true" />
    <IU_2200 xsi:nil="true" />
    <IU_2300 xsi:nil="true" />
    <IU_2359 xsi:nil="true" />
    <IU_0200D xsi:nil="true" />
  </IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
<IUMeterData>
  <METER_NO>798789798</METER_NO>
  <METER_MULTIPLIER>1</METER_MULTIPLIER>
  <USAGE_DATE>2016-01-04</USAGE_DATE>
  <IU_60_MINUTE_USAGE_DATA>
    <IU_0100 xsi:nil="true" />
    <IU_0200 xsi:nil="true" />
    <IU_0300 xsi:nil="true" />
    <IU_0400 xsi:nil="true" />
```

Pennsylvania EDEWG Web Portal Standard – StS Historical Interval Usage

```
<IU_0500 xsi:nil="true" />
<IU_0600 xsi:nil="true" />
<IU_0700 xsi:nil="true" />
<IU_0800 xsi:nil="true" />
<IU_0900 xsi:nil="true" />
<IU_1000>3</IU_1000>
<QI_1000>QD</QI_1000>
<IU_1100>2</IU_1100>
<QI_1100>QD</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>QD</QI_1200>
<IU_1300>1.77</IU_1300>
<QI_1300>QD</QI_1300>
<IU_1400>1</IU_1400>
<QI_1400>QD</QI_1400>
<IU_1500>2</IU_1500>
<QI_1500>QD</QI_1500>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1900>7.54</IU_1900>
<QI_1900>QD</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>QD</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>QD</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>QD</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>QD</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>QD</QI_2359>
<IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
</IU_METER_DATA>
</IUResponse>
```

Meter Multiplier Change

```
<?xml version="1.0" encoding="utf-8"?>
<IUResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://wpwg.org/SYS_TO_SYS/Services">
  <USAGE_LEVEL>MeterLevel</USAGE_LEVEL>
  <ACCOUNT_LEVEL_DATA>
    <EDC_ACCT_NO>999999999</EDC_ACCT_NO>
    <DEMAND>17</DEMAND>
    <BILL_CYCLE>3</BILL_CYCLE>
    <LOAD_PROFILE>RS</LOAD_PROFILE>
    <LDC_RATE_CODE>RES</LDC_RATE_CODE>
    <PEAK_LOAD_CONTRIBUTION>72</PEAK_LOAD_CONTRIBUTION>
    <NETWORK_SERVICE_PEAK_LOAD>70</NETWORK_SERVICE_PEAK_LOAD>
  </ACCOUNT_LEVEL_DATA>
  <IU_METER_DATA>
```

Pennsylvania EDEWG
Web Portal Standard – StS Historical Interval Usage

```
<IUMeterData>
<METER_NO>45656666</METER_NO>
<METER_MULTIPLIER>1</METER_MULTIPLIER>
<USAGE_DATE>2016-01-04</USAGE_DATE>
<IU_60_MINUTE_USAGE_DATA>
  <IU_0100>3</IU_0100>
  <QI_0100>KA</QI_0100>
  <IU_0200>3</IU_0200>
  <QI_0200>KA</QI_0200>
  <IU_0300>4</IU_0300>
  <QI_0300>KA</QI_0300>
  <IU_0400>4</IU_0400>
  <QI_0400>KA</QI_0400>
  <IU_0500>3</IU_0500>
  <QI_0500>KA</QI_0500>
  <IU_0600>3</IU_0600>
  <QI_0600>KA</QI_0600>
  <IU_0700>5.1</IU_0700>
  <QI_0700>KA</QI_0700>
  <IU_0800>7.3</IU_0800>
  <QI_0800>KA</QI_0800>
  <IU_0900>3.1</IU_0900>
  <QI_0900>KA</QI_0900>
  <IU_1000 xsi:nil="true" />
  <IU_1100 xsi:nil="true" />
  <IU_1200 xsi:nil="true" />
  <IU_1300 xsi:nil="true" />
  <IU_1400 xsi:nil="true" />
  <IU_1500 xsi:nil="true" />
  <IU_1600 xsi:nil="true" />
  <IU_1700 xsi:nil="true" />
  <IU_1800 xsi:nil="true" />
  <IU_1900 xsi:nil="true" />
  <IU_2000 xsi:nil="true" />
  <IU_2100 xsi:nil="true" />
  <IU_2200 xsi:nil="true" />
  <IU_2300 xsi:nil="true" />
  <IU_2359 xsi:nil="true" />
  <IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
<IUMeterData>
<METER_NO>45656666</METER_NO>
<METER_MULTIPLIER>10</METER_MULTIPLIER>
<USAGE_DATE>2016-01-04</USAGE_DATE>
<IU_60_MINUTE_USAGE_DATA>
  <IU_0100 xsi:nil="true" />
  <IU_0200 xsi:nil="true" />
  <IU_0300 xsi:nil="true" />
  <IU_0400 xsi:nil="true" />
  <IU_0500 xsi:nil="true" />
  <IU_0600 xsi:nil="true" />
  <IU_0700 xsi:nil="true" />
  <IU_0800 xsi:nil="true" />
  <IU_0900 xsi:nil="true" />
  <IU_1000>3</IU_1000>
  <QI_1000>QD</QI_1000>
```

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```
<IU_1100>2</IU_1100>
<QI_1100>QD</QI_1100>
<IU_1200>2</IU_1200>
<QI_1200>QD</QI_1200>
<IU_1300>1.77</IU_1300>
<QI_1300>QD</QI_1300>
<IU_1400>1</IU_1400>
<QI_1400>QD</QI_1400>
<IU_1500>2</IU_1500>
<QI_1500>QD</QI_1500>
<IU_1600>2</IU_1600>
<QI_1600>QD</QI_1600>
<IU_1700>2.7</IU_1700>
<QI_1700>QD</QI_1700>
<IU_1800>4.78</IU_1800>
<QI_1800>QD</QI_1800>
<IU_1900>7.54</IU_1900>
<QI_1900>QD</QI_1900>
<IU_2000>5.88</IU_2000>
<QI_2000>QD</QI_2000>
<IU_2100>3.77</IU_2100>
<QI_2100>QD</QI_2100>
<IU_2200>2.97</IU_2200>
<QI_2200>QD</QI_2200>
<IU_2300>1.71</IU_2300>
<QI_2300>QD</QI_2300>
<IU_2359>1.65</IU_2359>
<QI_2359>QD</QI_2359>
<IU_0200D xsi:nil="true" />
</IU_60_MINUTE_USAGE_DATA>
</IUMeterData>
</IU_METER_DATA>
</IUResponse>
```

StS Historical Interval Usage – WSDL

Notes:

1. Each EDC will publish their individual WSDL and include in their user guide
2. Only one operation is defined as part of the system to system solution. It is called SYS_TO_SYS_GET_IU.
3. Note that all of the data types were previously all alliterated in our numerous XML examples.
4. This WSDL indicates a service capable of both SOAP 1.1 and 1.2. Other EDC's may not follow suit... choosing to provide either 1.1 only, 1.2 only, or both.
5. This WSDL indicates a location of http://localhost:9722/WPWWG/WPWWG_SYS_TO_SYS.asmx which is not an actual endpoint location. Each EDC will have a different location.
6. This WSDL indicates a target namespace of http://wpwg.org/SYS_TO_SYS/Services which will be PPL's production namespace. Each EDC may choose to provide a different target namespace. See the EDC's user guide documentation for more information.

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/" xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"
xmlns:tns="http://wpwg.org/SYS_TO_SYS/Services" xmlns:s="http://www.w3.org/2001/XMLSchema"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/" xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
targetNamespace="http://wpwg.org/SYS_TO_SYS/Services" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <s:schema elementFormDefault="qualified" targetNamespace="http://wpwg.org/SYS_TO_SYS/Services">
      <s:element name="SYS_TO_SYS_GET_IU">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="IU_REQUEST_DATA" type="tns:IURequest" />
          </s:sequence>
        </s:complexType>
      </s:element>
      <s:complexType name="IURequest">
        <s:sequence>
          <s:element minOccurs="1" maxOccurs="1" name="EDC_ACCT_NO" type="s:decimal" />
          <s:element minOccurs="1" maxOccurs="1" name="FROM_DATE" nillable="true" type="s:dateTime" />
          <s:element minOccurs="1" maxOccurs="1" name="TO_DATE" nillable="true" type="s:dateTime" />
          <s:element minOccurs="1" maxOccurs="1" name="IU_REQUEST_LEVEL" type="tns:UsageLevelEnum" />
        </s:sequence>
      </s:complexType>
      <s:simpleType name="UsageLevelEnum">
        <s:restriction base="s:string">
          <s:enumeration value="AccountLevel" />
          <s:enumeration value="MeterLevel" />
        </s:restriction>
      </s:simpleType>
      <s:element name="SYS_TO_SYS_GET_IUResponse">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="SYS_TO_SYS_GET_IUResult" type="tns:IUResponse" />
          </s:sequence>
        </s:complexType>
      </s:element>
      <s:complexType name="IUResponse">
        <s:sequence>
```

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```
<s:element minOccurs="0" maxOccurs="1" name="STATUS_CODE" type="s:string" />
<s:element minOccurs="0" maxOccurs="1" name="STATUS_MESSAGE" type="s:string" />
<s:element minOccurs="1" maxOccurs="1" name="USAGE_LEVEL" type="tns:UsageLevelEnum" />
<s:element minOccurs="0" maxOccurs="1" name="ACCOUNT_LEVEL_DATA" type="tns:AccountLevelData" />
<s:element minOccurs="0" maxOccurs="1" name="IU_ACCOUNT_DATA" type="tns:ArrayOfIUAccountData" />
<s:element minOccurs="0" maxOccurs="1" name="IU_METER_DATA" type="tns:ArrayOfIUMeterData" />
</s:sequence>
</s:complexType>
<s:complexType name="AccountLevelData">
  <s:sequence>
    <s:element minOccurs="1" maxOccurs="1" name="EDC_ACCT_NO" type="s:decimal" />
    <s:element minOccurs="1" maxOccurs="1" name="DEMAND" type="s:decimal" />
    <s:element minOccurs="1" maxOccurs="1" name="BILL_CYCLE" type="s:int" />
    <s:element minOccurs="0" maxOccurs="1" name="LOAD_PROFILE" type="s:string" />
    <s:element minOccurs="0" maxOccurs="1" name="LDC_RATE_CODE" type="s:string" />
    <s:element minOccurs="0" maxOccurs="1" name="LDC_RATE_SUBCODE" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="PEAK_LOAD_CONTRIBUTION" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="FUTURE_PEAK_LOAD_CONTRIBUTION" type="s:decimal" />
    <s:element minOccurs="1" maxOccurs="1" name="NETWORK_SERVICE_PEAK_LOAD" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="FUTURE_NETWORK_SERVICE_PEAK_LOAD" type="s:decimal" />
  </s:sequence>
</s:complexType>
<s:complexType name="ArrayOfIUAccountData">
  <s:sequence>
    <s:element minOccurs="0" maxOccurs="unbounded" name="IUAccountData" nillable="true" type="tns:IUAccountData" />
  </s:sequence>
</s:complexType>
<s:complexType name="IUAccountData">
  <s:sequence>
    <s:element minOccurs="0" maxOccurs="1" name="USAGE_DATE" type="s:string" />
    <s:element minOccurs="0" maxOccurs="1" name="IU_30_MINUTE_USAGE_DATA" type="tns:IU30Minute" />
    <s:element minOccurs="0" maxOccurs="1" name="IU_60_MINUTE_USAGE_DATA" type="tns:IU60Minute" />
    <s:element minOccurs="0" maxOccurs="1" name="IU_15_MINUTE_USAGE_DATA" type="tns:IU15Minute" />
  </s:sequence>
</s:complexType>
<s:complexType name="IU30Minute">
  <s:sequence>
    <s:element minOccurs="1" maxOccurs="1" name="IU_0030" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0030" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0100" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0100" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0130" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0130" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0200" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0200" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0230" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0230" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0300" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0300" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0330" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0330" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0400" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0400" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0430" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0430" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IU_0500" nillable="true" type="s:decimal" />
    <s:element minOccurs="0" maxOccurs="1" name="QI_0500" type="s:string" />
  </s:sequence>
</s:complexType>
```


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```
<:element minOccurs="0" maxOccurs="1" name="QI_2000" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2015" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2015" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2030" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2030" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2045" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2045" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2100" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2100" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2115" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2115" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2130" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2130" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2145" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2145" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2200" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2200" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2215" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2215" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2230" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2230" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2245" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2245" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2300" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2300" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2315" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2315" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2330" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2330" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2345" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2345" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_2359" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_2359" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_0115D" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_0115D" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_0130D" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_0130D" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_0145D" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_0145D" type="s:string" />
<:element minOccurs="1" maxOccurs="1" name="IU_0200D" nillable="true" type="s:decimal" />
<:element minOccurs="0" maxOccurs="1" name="QI_0200D" type="s:string" />
</s:sequence>
</s:complexType>
<s:complexType name="ArrayOfIUMeterData">
  <s:sequence>
    <:element minOccurs="0" maxOccurs="unbounded" name="IUMeterData" nillable="true" type="tns:IUMeterData" />
  </s:sequence>
</s:complexType>
<s:complexType name="IUMeterData">
  <s:sequence>
    <:element minOccurs="1" maxOccurs="1" name="METER_NO" type="s:decimal" />
    <:element minOccurs="1" maxOccurs="1" name="METER_MULTIPLIER" type="s:decimal" />
    <:element minOccurs="0" maxOccurs="1" name="USAGE_DATE" type="s:string" />
    <:element minOccurs="0" maxOccurs="1" name="IU_30_MINUTE_USAGE_DATA" type="tns:IU30Minute" />
    <:element minOccurs="0" maxOccurs="1" name="IU_60_MINUTE_USAGE_DATA" type="tns:IU60Minute" />
    <:element minOccurs="0" maxOccurs="1" name="IU_15_MINUTE_USAGE_DATA" type="tns:IU15Minute" />
  </s:sequence>
</s:complexType>
```

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```
</s:complexType>
</s:schema>
</wsdl:types>
<wsdl:message name="SYS_TO_SYS_GET_IUSoapIn">
  <wsdl:part name="parameters" element="tns:SYS_TO_SYS_GET_IU" />
</wsdl:message>
<wsdl:message name="SYS_TO_SYS_GET_IUSoapOut">
  <wsdl:part name="parameters" element="tns:SYS_TO_SYS_GET_IUResponse" />
</wsdl:message>
<wsdl:portType name="WPWG_SERVICESSoap">
  <wsdl:operation name="SYS_TO_SYS_GET_IU">
    <wsdl:input message="tns:SYS_TO_SYS_GET_IUSoapIn" />
    <wsdl:output message="tns:SYS_TO_SYS_GET_IUSoapOut" />
  </wsdl:operation>
</wsdl:portType>
<wsdl:binding name="WPWG_SERVICESSoap" type="tns:WPWG_SERVICESSoap">
  <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
  <wsdl:operation name="SYS_TO_SYS_GET_IU">
    <soap:operation soapAction="http://wpwg.org/SYS_TO_SYS/Services/SYS_TO_SYS_GET_IU" style="document" />
    <wsdl:input>
      <soap:body use="literal" />
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal" />
    </wsdl:output>
  </wsdl:operation>
</wsdl:binding>
<wsdl:binding name="WPWG_SERVICESSoap12" type="tns:WPWG_SERVICESSoap">
  <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
  <wsdl:operation name="SYS_TO_SYS_GET_IU">
    <soap12:operation soapAction="http://wpwg.org/SYS_TO_SYS/Services/SYS_TO_SYS_GET_IU" style="document" />
    <wsdl:input>
      <soap12:body use="literal" />
    </wsdl:input>
    <wsdl:output>
      <soap12:body use="literal" />
    </wsdl:output>
  </wsdl:operation>
</wsdl:binding>
<wsdl:service name="WPWG_SERVICES">
  <wsdl:port name="WPWG_SERVICESSoap" binding="tns:WPWG_SERVICESSoap">
    <soap:address location="http://localhost:9722/WPWG/WPWG_SYS_TO_SYS.asmx" />
  </wsdl:port>
  <wsdl:port name="WPWG_SERVICESSoap12" binding="tns:WPWG_SERVICESSoap12">
    <soap12:address location="http://localhost:9722/WPWG/WPWG_SYS_TO_SYS.asmx" />
  </wsdl:port>
</wsdl:service>
</wsdl:definitions>
```



**Pennsylvania Web Portal Working Group
Technical Implementation Standard
System-to-System Rolling 10-day**

**PUC Docket No. M-2009-2092655
Related Order Issued September 3, 2015**

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**Pennsylvania EDEWG
Web Portal Standard – StS Rolling 10-Day**

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Version History

Version	Date	Description of Change(s)
0.1D	3/17/2016	Initial Draft Version
0.2D	3/31/2016	Updated as follows: 1. Corrected bullet numbering 2. Updated from 3/29 meeting discussion (1.2.10, 1.2.11, 1.2.15, 1.4.1) 3. Added requirement for EDCs to publish their specific data file formats in their user guide (1.2.18) 4. Added examples to end (p.12)
1.0	4/5/2016	No changes except version # and date. WPWG approved, final version for submission to PUC

**Pennsylvania EDEWG
Web Portal Standard – StS Rolling 10-Day**

Summary

This document contains the technical standard developed by the Electronic Data Exchange Working Group's (EDEWG) Web Portal Working Group (WPWG). The PaPUC required EDEWG to develop a standardized solution for the acquisition of historical interval usage and billing quality interval usage data via a secure web-portal, as specifically directed and detailed within the Pennsylvania Public Utility Commission's (PaPUC's) Smart Meter Procurement and Installation Order entered December 6th 2012 at Docket M-2009-2092655. Via Secretarial Letter dated 4/17/2014, in response to a request from EDEWG leadership, the PaPUC agreed that the contents herein would represent the minimally required standards to which each EDC's solution must adhere, as opposed to standards applicable to a "standardized" solution common to all EDCs. Subsequently the PaPUC required EDEWG to develop standards for System-to-System (StS) functionality under Order entered and September 3rd 2015 at Docket M-2009-2092655.

This Technical Implementation Standard applies to the use of the StS Rolling 10-day method for sharing smart meter data. This method utilizes a "provide-and-park" approach, as opposed to a true system-to-system interface. The service allows an authorized user's IT systems to communicate directly with the web portal system of the EDC (Electric Distribution Company) without requiring a user to manually log into the web portal itself and leverage the user interface. The EDC publishes a file that includes all available detailed bill-quality meter-level interval usage in hour-ending format for the set of accounts served by a particular EGS (Electric Generation Supplier) DUNS(+4) number on a specific usage delivery date. The EGS connects to the EDC's system to retrieve the Rolling 10-day data file.

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Web Portal Standard – StS Rolling 10-Day

General Notes

1. The following Electric Distribution Companies (EDCs) are required to support the System-to-System Web Interface:
 - a. Duquesne Light Company
 - b. First Energy (MetEd, Penelec, Penn Power, West Penn Power)
 - c. PECO
 - d. PPL Electric Utilities

2. The web portal is intended for the following customer-authorized third parties: Licensed Electric Generation Suppliers (EGSs), Act 129 Conservation Service Providers (CSPs) contracted with the EDCs, and their contracted agents. CSPs (either Curtailment or Conservation) desiring to access the web portals addressed by this framework either be provided access as agents of an existing EGS **OR** be licensed as EGSs themselves as a prerequisite to receiving access.

3. *The PaPUC has not directed that this web portal use existing or potentially future EDC online customer communication platforms.*

4. Any related items not specifically addressed by these standards are at the discretion of the individual EDCs.

5. Any change, modification or update to this data standard requires EDEWG approval via the change control process.

Secure Web Portal Standard
System-to-System (StS) Rolling 10-Day

The Web Portal solution standard can be broken down into the following processes:

- 1.1. Certification, Access, and Customer Privacy**
- 1.2. Data Request**
- 1.3. Data Response**
- 1.4. Security and Technical**
- 1.5. Tracking and Reporting**

1.1. Certification, Access, and Customer Privacy

1.1.1. Portal user eligibility

- a. Each request will be logged into a unique Web Portal for each EDC.
- b. The portal is “primarily intended for licensed EGSs and customer-authorized third parties”.
- c. Entities licensed by the PUC as an EGS are eligible to access the web-portal. (Licensee status is available on the PaPUC’s website at http://www.puc.state.pa.us/consumer_info/electricity/suppliers_list.aspx.)
 - i. These include EGSs themselves, Conservation Service Providers (considered by PaPUC as “CSPs”), and demand response / load management providers (also known as Curtailment Service Providers, considered by PJM as “CSPs”). (Other third parties not considered PUC-licensed entities in this regard include but are not limited to researchers, public agencies with subpoenas, PaPUC-licensed Natural Gas Suppliers (NGSs), customers themselves, and other customer-authorized entities.)
 - ii. CSPs (either Curtailment or Conservation) desiring to access the web portals addressed by this framework either be provided access as agents of an existing EGS **OR** be licensed as EGSs themselves as a prerequisite to receiving access.
 - 1. The PUC has the authority to penalize EGSs for fraudulent operations.
 - 2. CSPs contracted with EDCs for Act 129 work are governed by PaPUC regulations over the EDC and the principal/agent relationship between the EDC and CSP.
 - iii. Unlicensed subcontractors or agents of licensed EGSs, such as Electronic Data Interchange (EDI) and billing providers, are eligible to receive access to the web portal on behalf of licensees that they represent, but their use must be directly associated with those licensees under the assumption that users are only accessing the portal in support of service to a specific licensed entity. For example, a provider obtaining usage for an account

Pennsylvania EDEWG
Web Portal Standard – StS Rolling 10-Day

on behalf of fictitious supplier “ABC Energy” must be logged in such that the “ABC Energy” licensee is associated with and held accountable for associated use of the portal by that provider on ABC Energy’s behalf. *(This is covered in more detail in Section 2.5, Tracking and Reporting.)*

- iv. The capability for other 3rd parties (entities not licensed by the PaPUC as EGSs) to access this information is outside the scope of the WPWG effort. Such entities are **NOT** eligible for access to the web portal and must obtain customer data via other means.
 - 1. Alternative means of obtaining customer data include contacting the customer directly or – at the discretion of the EDC – submitting requests to the EDC accompanied by proper Letters Of Authorization, or “LOAs” (i.e. Duquesne’s current process).

1.1.2. Access Management

- d. EDCs may provide access to the web portal for said EGS after verifying that the EGS is PaPUC-licensed. (Completion of EDI certification testing is not a prerequisite.)
- e. The EDC and EGS must complete and document a pre-production connectivity test, during which the EGS calls the EDC web service for at least one account number specified by the EDC and receives a successful response from the EDC.
 - i. The EDC reserves the right to require EGSs to conduct more comprehensive testing and to require use of both test URLs and test credentials as part of that testing.
- f. 3rd parties that require Web Portal access but not full certification or treatment as an EDI-capable trading partner will have to submit a request to that EDC directly for web portal access. (The EDC must verify that the party is PaPUC-licensed as an EGS or broker/marketer prior to granting access.)
- g. The minimal requirement is for a single non-human system level user ID per PaPUC-licensed EGS entity.
 - i. Each use of the portal is directly associated with exactly one PaPUC-licensed entity.
 - ii. EDCs will associate a unique non-human system level ID with an entity’s name and DUNS+4 number(s). (The user ID cannot be the user’s e-mail address.)

NOTE: EDCs may elect to implement system level IDs at the organizational level, meaning one system level ID per user regardless of the number of DUNS+4 entities associated with that user, dependent upon the feasibility and cost-effectiveness of this option.

- iii. The system user ID must be associated with a **non-public** e-mail address directly associated with either the licensed entity or the associated subcontractor/agent. (Examples of forbidden public e-mail addresses include but are not limited to Gmail, Yahoo, Hotmail, and AOL.)

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- iv. The EDC must document their process for maintaining the non-human system level ID credentials in the user guide.
 - 1. *Scheduled interval of system level ID password resets. EDC must provide notice no earlier than 15 days prior to the reset event. In the event of a breach in security, the EDC may immediately reset the system level ID password and notify the EGS.*
- d. The EDC must publish and communicate availability of a System-to-System user guide for all portal users which covers the following:
 - i. Functional use of the solution
 - ii. Any EDC-specific administrative or security conditions more stringent than the standards published in this document
- e. The EDC must maintain, re-publish, and re-communicate the availability of the user guide as changes occur
- f. The PaPUC will audit and if necessary pursue licensee organizations, not individuals.

1.1.3. Customer Privacy

- a. Prior PaPUC regulatory mandates require that the EDC make this data available to EGSs and place the burden of customer authorization on licensed EGSs and their agents, who are subject to PUC audit for the same.
- b. The Web Portal will adhere to the privacy standards mandated by the PaPUC regardless of the customer's preference for release of information on file with the EDC.

1.2. Data File Requirements

Once an EDC has established System-to-System access to the Web Portal, the requestor will be able to access available data via an online, system based process.

- 1.2.1. The EDC must publish each file to a specified FTP site within its secure web portal, allowing only web portal users registered under that specific DUNS(+4) to have access to that particular set of usage data.
- 1.2.2. The EDCs reserve the right to publish multiple data sets with predefined volumes (i.e. X accounts per file) based upon their existing infrastructures
 - a. *The data set structure parameters must be included and maintained in the EDC's user guide*
- 1.2.3. The EDC must provide the usage data at the METER level.
- 1.2.4. On a daily basis (processing days only), the EDC must publish all available detailed bill-quality meter-level interval usage in hour-ending format for the set of accounts served by a particular DUNS (+4) number on a specific usage delivery date.
 - a. The daily file publish schedule must be included and maintained in the EDC's user guide.

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- 1.2.5. Publication occurs over a rolling 10-day period with the EDC making best efforts to publish data for a given date as close to 48 hours following the last interval on that date as technically possible.
- 1.2.6. The EDC must remove older data in favor of more recent data as the rolling 10-day period renews itself over time.
- 1.2.7. The EDC must publish each file as a compressed, comma-delimited file (zipped CSV) based on the interval usage increments provided.
 - a. For instance, an EDC with a portion of meters capturing 60-minute increments and another set of meters capturing 15-minute increments will publish the associated interval usage in a minimum two separate files, one presenting accounts for which 60-minute intervals are available and another presenting accounts for which 15-minute intervals are available.
- 1.2.8. Each file published will have a unique filename adhering to the following standard: [EDC DUNS (+4)]_[EGS DUNS(+4)]_P[Publication Date]_IU[Usage Date]_[Interval Increment]_[File #].zip
 - a. For instance, the first PECO 60-minute file for usage delivery date of 9/2/2014 that corresponds to EGS DUNS “123-45-6789-0123”, if published on 9/8/2014, would be named as follows:
007914468_1234567890123_P20140908_IU20140902_60_01.zip
- 1.2.9. The same eligibility rules leveraged in providing historical usage in response to EDI-based requests apply when providing usage via the portal. (Example: PECO does not honor EDI-based historical usage requests on finalled accounts.)
- 1.2.10. For each account number where the EDC has data available the EDC will provide the usage data.
 - a. Each file must include the following data elements:
 - i. Customer identifier (varies by EDC; EDC account number is an example)
 - ii. Meter Number
 - iii. Usage Delivery Date (identical for all records)
 - iv. Multiplied Hour-Ending meter-level interval usage values. Detailed usage data, aka consumption or kWh, consisting of one day of bill-quality interval data available within 48 hours of the read that the EDC has not yet billed.
 1. EDCs will sign net metered (generation) values as negative.
- 1.2.11. Interval usage data shared that pertains to the standard originally required by March of 2014 must be billed data, defined as data from a billing cycle for which the EDC has already billed the customer.
 - a. This data is subject to change in the event that the EDC cancels and rebills those periods.
- 1.2.12. Data within 48 hours of the read must be “bill-quality”, defined as “data that is sourced from an EDC’s meter data management system that has completed the process of being verified, estimated, and edited” as cited from Page 16 of the PaPUC Final Order. This means that the EDC has not necessarily billed the associated period yet.

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- 1.2.13. All timestamps presented in the portal should be presented in 24-hour Eastern Time.
- 1.2.14. All intervals must be presented in hour-ending format.
 - a. End of day hour ending label will be 2359
 - b. **NOTE:** The solution assumes that all EDCs bill a 24-hour period of usage on a midnight-to-midnight basis.
- 1.2.15. The Interval Usage data must accommodate Daylight Savings Time (DST) events on the appropriate date.
 - a. Spring DST – For the short DST usage delivery date only, the interval reading during the time event will be null. The DST intervals will be reported as follows:
 - i. 60 minute – 0300 interval null
 - ii. 30 minute – 0230 and 0300 intervals null
 - iii. 15 minute – 0215, 0230, 0245 and 0300 intervals null
 - b. Fall DST – For the long DST usage delivery date only, additional interval usage values will be populated in the columns at the end of each record as a second set of data for hour-ending 0200, labeled 0200D (0115D, 0130D, 0145D). These columns will include null values for all other usage delivery days. The DST intervals will be repeated as follows:
 - i. 60 minute – 0200 interval repeated
 - ii. 30 minute – 0130 and 0200 intervals repeated
 - iii. 15 minute – 0115, 0130, 0145 and 0200 intervals repeated.
- 1.2.16. Precision of usage values will be dictated by the degree of precision available from each EDC's AMI network. This solution will not dictate usage precision standards.
- 1.2.17. On-peak and off-peak characteristics of usage and demand are **not** necessary to include in the web portal, as these elements are typically tied to EDC tariffs. EGSs may calculate such components at their own discretion.
- 1.2.18. The EDC will document their individual data file formats for both the online and downloadable CSV responses in their web portal user guide.

1.3. Security and Technical

Customer data must be delivered with the highest integrity and privacy. The Security standards cover the standards, tools, and policies that will be considered for the exchange of this data.

Several of these standards are varied adaptations of the Guidelines for Smart Grid Cybersecurity published by the National Institute of Standards and Technology, or NIST. (NIST also refers to these guidelines as Interagency Report 7628, or NISTIR 7628.)

NOTE: EDC policies and procedures, including but not limited to those governing information security and configuration management, may be more stringent than the standards identified in this section. In the event of contradictions between these standards and EDC policies and procedures, the more restrictive of the two shall govern.

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- 1.3.1. No data governed within the scope of these standards will be publicly accessible.
 - a. Valid user login to an EDC's secure web portal is required to access all related data.
 - b. All other access must be denied.
 - c. The user must log on each and every time they access the portal. (Any capability designed to "remember" the user should not preclude user logon.)
- 1.3.2. At a minimum, EDC portal solutions must be compatible with the two most recent major versions of Microsoft's Internet Explorer web browser.
- 1.3.3. Each EDC's portal solution requires the use of a non-self-signed SSL certificate issued by a Microsoft-trusted authority for governance of secure user connections via HTTPS, both before and after user authentication at logon. Both requestors and EDCs would be responsible for transmitting all data – both calls and responses – using SSL encryption.
- 1.3.4. The web portal will limit system level user to one concurrent session per credential.
- 1.3.5. The portal will lock out the system level user credential and prevent access if the system fails to successfully login with the same credential five times within a 30-minute period.
- 1.3.6. The EDC must notify portal users of any planned changes no later than two weeks prior to the planned implementation of those changes. (NOTE: This does not apply to implementation of added functionality that would have no impact on existing portal functions.)
- 1.3.7. If an EDC's secure web portal experiences either technical problems or a cybersecurity incident (as defined by EDC information security procedures) which substantially disrupts portal operations OR increases the risk of compromising portal information (inadvertently allowing unauthorized users access to either customer usage data or user credentials), then the EDC must immediately perform the following:
 - a. Deny all new attempts to access the portal by default.
 - b. Communicate status to portal users and stakeholders as appropriate given the nature of the issue or incident.
 - i. Avoid disclosing restricted details that could aid cybersecurity attackers.
 - ii. Consider EDEWG Leadership and PaPUC liaisons to EDEWG as impacted stakeholders.
 - c. Leave the above restrictions in place until deeming that the issue has been resolved and that any associated risk has been sufficiently mitigated. (This will vary based on several factors, potentially including but not limited to identification of the source of the issue and the degree to which any collateral damage has been contained.)
 - d. This standard does not supersede pre-existing EDC cybersecurity incident response plans. EDCs will always execute their own plans and rely on their own definitions with regard to cybersecurity incidents.
- 1.3.8. Data-at-Rest

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- a. Defined as stored electronic information that is not in motion/transit, regardless of storage medium. Storage mediums include but are not limited to databases, file systems, storage networks, memory (temporary / cached or otherwise), and other writeable media.
- b. EDCs and third parties authorized to use these solutions (as well as their agents) will employ reasonable technological measures to properly secure related customer, account, and usage data-at-rest within the scope of these solutions. Such protections may include the use of encryption for rendering such data unusable, unreadable, and/or indecipherable to unauthorized individuals. Existing measures in place for this or other sensitive customer information procured via other means may also be sufficient.

1.4. Tracking and Reporting

***NOTE:** The PA WPWG is not aware of any specific PaPUC reporting requirements relative to portal use and therefore assumes that the following standards would support any necessary ad hoc reporting for either EDCs or market participants on portal use and administration.*

- 1.4.1. The EDC must track the following portal-related event information on a per-user basis:
 - a. User changes (user ID, associated entity, last updated date/time, add/update/terminate)
 - b. User login attempts (user ID entered, login attempt date/time, successful/failed)
 - c. Quarterly review status of licensed entities (user ID, attestation date/time)
- 1.4.2. The portal must perform all logging on the server-side.
- 1.4.3. The portal must retain all of the above portal-related event information for a period of at least three years.
- 1.4.4. Each EDC's portal must provide the capability for users associated with each licensed entity to query and download any of the above portal-related event information within a specified date range for one or more users associated with that specific entity (but no others).
- 1.4.5. The EDC must have the capability to query and download any of the above portal-related event information for one or more users and/or licensed entities.
- 1.4.6. The portal must not allow any user, including EDC users, to directly edit the above log data.

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StS Rolling 10-Day Usage File Examples

Example provided as reference only. Each EDC must provide individual data file format(s) in their user guide.

Single & Multiple Meters (60 minute)

EDC_ACCT_NO	METER_NUMBER	METER_MULTIPLIER	USAGE_DATE	100'	200'	300'	400'	500'	600'	700'	800'	900'	1000'	1100'
1231231231	4564456	1	20140701	0.576	2.304	1.8432	1.4976	1.44	0.6336	0.576	2.304	1.8432	1.4976	1.44
2342342342	4545646	1	20140701	0.4608	5.5296	0.8064	2.9952	1.3824	0.864	0.4608	5.5296	0.8064	2.9952	1.3824
3453453453	5111654	1	20140701	1.3248	3.744	1.8432	1.2096	2.9376	1.44	1.3248	3.744	1.8432	1.2096	2.9376
4564564564	9874651	1	20140701	2.8224	5.3568	3.744	1.0944	2.6496	2.7072	2.8224	5.3568	3.744	1.0944	2.6496
5675675675	4687978	1	20140701	2.3616	3.2624	4.2048	1.997	2.6655	1.2672	1.4855	4.2624	4.2048	1.6704	2.7072
5675675675	8877844	1	20140701	1.3616	4.2624	3.2048	1.672	2.7072	0.1472	2.3616	4.2624	4.2048	1.6704	2.7072
6786786786	7897132	1	20140701	1.2096	3.5136	1.9008	2.8224	2.304	1.0944	1.2096	3.5136	1.9008	2.8224	2.304
7897897897	9871261	1	20140701	1.2096	2.2464	2.2464	2.9952	3.5136	1.44	1.2096	2.2464	2.2464	2.9952	3.5136
8908908908	1978979	1	20140701	3.1104	5.8176	3.744	3.6864	3.8016	2.304	3.1104	5.8176	3.744	3.6864	3.8016
9019019012	1979878	1	20140701	2.9376	5.5296	6.1632	3.456	2.9376	1.3248	2.9376	5.5296	6.1632	3.456	2.9376

1200'	1300'	1400'	1500'	1600'	1700'	1800'	1900'	2000'	2100'	2200'	2300'	2359'	0200D'
0.6336	0.576	2.304	1.8432	1.4976	1.44	0.6336	0.576	2.304	1.8432	1.4976	1.44	0.6336	
0.864	0.4608	5.5296	0.8064	2.9952	1.3824	0.864	0.4608	5.5296	0.8064	2.9952	1.3824	0.864	
1.44	1.3248	3.744	1.8432	1.2096	2.9376	1.44	1.3248	3.744	1.8432	1.2096	2.9376	1.44	
2.7072	2.8224	5.3568	3.744	1.0944	2.6496	2.7072	2.8224	5.3568	3.744	1.0944	2.6496	2.7072	
1.2672	2.3616	4.2624	4.2048	1.6704	2.7072	1.2672	2.3616	4.2624	4.2048	1.6704	2.7072	1.2672	
1.2672	2.3616	4.2624	4.2048	1.6704	2.7072	1.2672	2.3616	4.2624	4.2048	1.6704	2.7072	1.2672	
1.0944	1.2096	3.5136	1.9008	2.8224	2.304	1.0944	1.2096	3.5136	1.9008	2.8224	2.304	1.0944	
1.44	1.2096	2.2464	2.2464	2.9952	3.5136	1.44	1.2096	2.2464	2.2464	2.9952	3.5136	1.44	
2.304	3.1104	5.8176	3.744	3.6864	3.8016	2.304	3.1104	5.8176	3.744	3.6864	3.8016	2.304	
1.3248	2.9376	5.5296	6.1632	3.456	2.9376	1.3248	2.9376	5.5296	6.1632	3.456	2.9376	1.3248	

Meter Change (60 minute)

EDC_ACCT_NO	METER_NUMBER	METER_M.	USAGE_DATE	100'	200'	300'	400'	500'	600'	700'	800'	900'	1000'	1100'
5675675675	4687978	1	20140701	2.3616	3.2624	4.2048	1.997	2.6655	1.2672	1.4855	4.2624	4.2048	1.6704	2.7072
5675675675	8877844	1	20140701											

1200'	1300'	1400'	1500'	1600'	1700'	1800'	1900'	2000'	2100'	2200'	2300'	2359'	0200D'
1.2672	2.3616	4.2624											
			4.2048	1.6704	2.7072	1.2672	2.3616	4.2624	4.2048	1.6704	2.7072	1.2672	

Meter Change w/Multiplier Change (60 minute)

EDC_ACCT_NO	METER_NUMBER	METER_MULTIPLIER	USAGE_DATE	100'	200'	300'	400'	500'	600'	700'	800'	900'	1000'	1100'
5675675675	4687978	1	20140701	2.3616	3.2624	4.2048	1.997	2.6655	1.2672	1.4855	4.2624	4.2048	1.6704	2.7072
5675675675	8877844	100	20140701											

1200'	1300'	1400'	1500'	1600'	1700'	1800'	1900'	2000'	2100'	2200'	2300'	2359'	0200D'
1.2672	2.3616	4.2624											
			4.2048	1.6704	2.7072	1.2672	2.3616	4.2624	4.2048	1.6704	2.7072	1.2672	

Net Metering (60 minute)

EDC_ACCT_NO	METER_NUMBER	METER_MULTIPLIER	USAGE_DATE	100'	200'	300'	400'	500'	600'	700'	800'	900'	1000'	1100'
3453453453	5111654	1	20140701	1.3248	3.744	1.8432	1.2096	2.9376	1.44	1.3248	3.744	1.8432	1.2096	-1.22

1200'	1300'	1400'	1500'	1600'	1700'	1800'	1900'	2000'	2100'	2200'	2300'	2359'	0200D'
-1.44	-1.328	-3.74	-1.84	-1.206	2.9376	1.44	1.3248	3.744	1.8432	1.2096	2.9376	1.44	

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Spring Daylight Savings Time (60 minute)

EDC_ACCT_NO	METER_NUMBER	METER_MULTIPLIER	USAGE_DATE	100	200	300	400	500	600	700	800	900	1000	1100
7897897897	9871261	1	20140309	1.2096	2.2464		2.9952	3.5136	1.44	1.2096	2.2464	2.2464	2.9952	3.5136
	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2359	0200D
	1.44	1.2096	2.2464	2.2464	2.9952	3.5136	1.44	1.2096	2.2464	2.2464	2.9952	3.5136	1.44	

Fall Daylight Savings Time (60 minute)

EDC_ACCT_NO	METER_NUMBER	METER_MULTIPLIER	USAGE_DATE	100	200	300	400	500	600	700	800	900	1000	1100
7897897897	9871261	1	20141102	1.2096	2.2464	3.225	2.9952	3.5136	1.44	1.2096	2.2464	2.2464	2.9952	3.5136
	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2359	0200D
	1.44	1.2096	2.2464	2.2464	2.9952	3.5136	1.44	1.2096	2.2464	2.2464	2.9952	3.5136	1.44	3.124



Pennsylvania Web Portal Working Group Technical Implementation Standard Single User - Multiple Request

**PUC Docket No. M-2009-2092655
Related Order Issued September 3, 2015**

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Pennsylvania EDEWG
Web Portal Standard – Single User Multiple Request (SU-MR)

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Version History

Version	Date	Description of Change(s)
0.1D	2/26/2016	Initial Draft Version
0.2D	3/8/2016	Revised based on PECO comments and discussion during 3/8 meeting. Also added SU-MR CC #001.
0.3D	3/18/2016	Updated as follows: 1. Security and Technical – added ‘Data-at-Rest’ information 2. Data Response – updated DST requirements to match other standard documents
0.4D	3/31/2016	Updated as follows... 1. Added Quantity Qualifiers (1.3.12 & 1.3.13) 2. Added requirement for EDCs to publish their specific data/file formats in their user guide (1.3.19) 3. Added example to end (p.17)
1.0	4/5/2016	No changes except version # and date. WPWG approved, final version for submission to PUC

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Web Portal Standard – Single User Multiple Request (SU-MR)

Summary

This document contains the technical standard developed by the Electronic Data Exchange Working Group's (EDEWG) Web Portal Working Group (WPWG). The PaPUC required EDEWG to develop a standardized solution for the acquisition of historical interval usage and billing quality interval usage data via a secure web-portal, as specifically directed and detailed within the Pennsylvania Public Utility Commission's (PaPUC's) Smart Meter Procurement and Installation Order entered December 6th 2012 at Docket M-2009-2092655. Via Secretarial Letter dated 4/17/2014, in response to a request from EDEWG leadership, the PaPUC agreed that the contents herein would represent the minimally required standards to which each EDC's solution must adhere, as opposed to standards applicable to a "standardized" solution common to all EDCs. Subsequently the PaPUC required EDEWG to develop standards for System-to-System (StS) functionality under Order entered and September 3rd 2015 at Docket M-2009-2092655.

This Technical Implementation Standard applies to the use of the Single User – Multiple Request (SU-MR) method for sharing smart meter data. The SU-MR method requires a web-based platform allowing for an authorized user to manually log into a secure portal, request, and receive smart meter interval usage for one or more account numbers as part of a single request. The results are rendered within the web portal interface itself or exported to the user in a predefined file format.

General Notes

1. The following Electric Distribution Companies (EDCs) are required to support a Web Portal:
 - a. Duquesne Light Company
 - b. First Energy (MetEd, Penelec, Penn Power, West Penn Power)
 - c. PECO
 - d. PPL Electric Utilities

2. The web portal is intended for the following customer-authorized third parties: Licensed Electric Generation Suppliers (EGSs), Act 129 Conservation Service Providers (CSPs) contracted with the EDCs, and their contracted agents. CSPs (either Curtailment or Conservation) desiring to access the web portals addressed by this framework either be provided access as agents of an existing EGS **OR** be licensed as EGSs themselves as a prerequisite to receiving access.

3. The PaPUC has not directed that this web portal use existing or potentially future EDC online customer communication platforms.

4. Any related items not specifically addressed by these standards are at the discretion of the individual EDCs.

5. Any change, modification or update to this data standard requires EDEWG approval via the change control process.

Secure Web Portal Standard for Single User – Multiple Request

The Web Portal solution standards can be broken down into the following processes:

- 1.1. Certification, Access, and Customer Privacy
- 1.2. Data Request
- 1.3. Data Response
- 1.4. Security and Technical
- 1.5. Tracking and Reporting
- 1.6. EDEWG Leadership Responsibilities

1.1. Certification, Access, and Customer Privacy

1.1.1. Portal user eligibility

- a. Each request will be logged into a unique Web Portal for each EDC.
- b. Entities licensed by the PUC as an EGS are eligible to access the web-portal. (Licensee status is available on the PaPUC's website at http://www.puc.state.pa.us/consumer_info/electricity/suppliers_list.aspx.)
 - i. These include EGSs themselves, Conservation Service Providers (considered by PaPUC as "CSPs"), and demand response / load management providers (also known as Curtailment Service Providers, considered by PJM as "CSPs"). (Other third parties not considered PUC-licensed entities in this regard include but are not limited to researchers, public agencies with subpoenas, PaPUC-licensed Natural Gas Suppliers (NGSs), customers themselves, and other customer-authorized entities.)
 - ii. CSPs (either Curtailment or Conservation) desiring to access the web portals addressed by this framework either be provided access as agents of an existing EGS **OR** be licensed as EGSs themselves as a prerequisite to receiving access.
 1. The PUC has the authority to penalize EGSs for fraudulent operations.
 2. CSPs contracted with EDCs for Act 129 work are governed by PaPUC regulations over the EDC and the principal/agent relationship between the EDC and CSP.
 - iii. Unlicensed subcontractors or agents of licensed EGSs, such as Electronic Data Interchange (EDI) and billing providers, are eligible to receive access to the web portal on behalf of licensees that they represent, but their use must be directly associated with those licensees under the assumption that users are only accessing the portal in support of service to a specific licensed entity. For example, a provider obtaining usage for an account on behalf of fictitious supplier "ABC Energy" must be logged in such that

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the “ABC Energy” licensee is associated with and held accountable for associated use of the portal by that provider on ABC Energy’s behalf. *(This is covered in more detail in Section 2.5, Tracking and Reporting.)*

- iv. This standard does NOT authorize the capability for customers or other 3rd parties (entities not licensed by the PaPUC as EGSs) to access this information. Such entities are **NOT** eligible for access to the web portal and must obtain customer data via other means.
 - 1. Alternative means of obtaining customer data include contacting the customer directly for authorization or – at the discretion of the EDC – submitting requests to the EDC accompanied by proper Letters of Authorization, or “LOAs”.

1.1.2. Access Management

- a. EDCs may provide access to the web portal for said EGS after verifying that the EGS is PaPUC-licensed. (Completion of EDI certification testing is not a prerequisite.)
- b. 3rd parties that require Web Portal access but not full certification or treatment as an EDI-capable trading partner will have to submit a request to that EDC directly for web portal access. (The EDC must verify that the party is PaPUC-licensed as an EGS or broker/marketer prior to granting access.)
- c. The minimal requirement is for individual-level credentials, meaning one unique user ID per individual per PaPUC-licensed EGS entity.
 - i. Each use of the portal is directly associated with exactly one PaPUC-licensed entity.
 - ii. EDCs will associate a unique user ID with an entity’s name and DUNS+4 number(s). (The user ID cannot be the user’s e-mail address.)

NOTE: EDCs may elect to implement user IDs at the organizational level, meaning one user ID per user regardless of the number of DUNS+4 entities associated with that user, dependent upon the feasibility and cost-effectiveness of this option.

- iii. Each user ID must be associated with a **non-public** e-mail address directly associated with either the licensed entity itself or the associated subcontractor/agent. (Examples of forbidden public e-mail addresses include but are not limited to Gmail, Yahoo, Hotmail, and AOL.)
- iv. Users within unlicensed subcontractor/agent organizations that support multiple PaPUC-licensed EGS entities are subject to the following:
 - 1. Each user must receive unique user IDs for each PaPUC-licensed DUNS+4 numbers supported, as deemed appropriate by the associated entities themselves on a case-by-case basis.
 - 2. For each use, the user is responsible for accessing the portal with the user ID associated with the licensed DUNS+4 numbers that their portal usage supports. All activity under that user ID must be in support of the associated licensed entity’s DUNS+4 number,

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since the PaPUC will hold the licensed entity responsible for the user's actions.

- v. The EDC cannot and therefore will not attempt to detect whether an individual user is accessing the portal with the appropriate user ID.
- d. The EDC must publish and communicate availability of a user guide for all portal users which covers the following:
 - i. Functional use of the solution
 - ii. Any EDC-specific administrative or security conditions more stringent than the standards published in this document
- e. The EDC must maintain, re-publish, and re-communicate the availability of the user guide as changes occur
- f. The EDC will designate at least two “administrators” for each PaPUC-licensed entity’s DUNS+4 number as specified by that entity. (If applicable, the same administrators may be responsible for administration on all of that entity’s DUNS+4 numbers.) The administrators are responsible for the following:
 - i. Authorizing and communicating requests for the EDC to grant portal access to users (includes both new users and previously terminated users). The EDC may only honor requests sent directly by an administrator.
 - 1. The EDC has the option to grant each entity’s administrator the ability to add or remove user access for the given entity.
 - ii. Promoting awareness and review of the EDC user guide to all authorized users within their organizations.
 - iii. Maintaining attributes of existing portal credentials.
 - iv. Terminating/revoking access of existing portal credentials.
 - v. On a quarterly basis, reviewing and attesting to appropriateness of access for all users associated with that specific licensed entity. (In the absence of timely attestation, the EDC has the right to revoke access for all users associated with a specific entity, including administrators.)
- g. The EDC is responsible for the following:
 - i. Upon request from **ONLY** the entity’s identified administrators, granting access to new users as well as to users whose access was terminated/revoked – assuming that the e-mail address associated with the user is a non-public address.
 - 1. The EDC has the option to grant each entity’s administrator the ability to add or remove user access for the given entity.
 - ii. Driving the quarterly review process required of licensed entities via reminder communications.
 - iii. Revoking access for all users associated with a particular entity if the administrators for that entity fail to complete the quarterly review(s) in a timely manner.
 - iv. Performing and attesting to completion of its own quarterly review with regard to EDC user access.

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- h. The PaPUC will audit and if necessary pursue licensee organizations, not individuals.

1.1.3 Customer Privacy

- a. Prior PaPUC regulatory mandates require that the EDC make this data available to EGSs and place the burden of customer authorization on licensed EGSs and their agents, who are subject to PUC audit for the same.
- b. The Web Portal will adhere to the privacy standards mandated by the PaPUC regardless of the customer's preference for release of information on file with the EDC.

1.2. Data Request

Once an EDC has granted a requestor access to the Web Portal, the requestor will be able to initiate requests for the available data via an online, user-driven process.

For the initial phase of implementation, each EDC will minimally provide data at the ACCOUNT level. Given the PaPUC requirements in the Order for meter-level data, each EDC will work toward providing data at the METER level in a subsequent phase of implementation after the initial phase of its solution matures.

- 1.2.1. At a minimum, the EDC must satisfy requests for usage data at the ACCOUNT level. (Providing METER-level data is optional.)
- 1.2.2. The same eligibility rules leveraged in providing historical usage in response to EDI-based requests apply when providing usage via the portal. (Example: PECO does not honor EDI-based historical usage requests on finalled accounts.)
- 1.2.3. An EGS may request account-level information for at least ten (10) customer accounts at a given time.
- 1.2.4. An EGS may request meter-level information for one (1) customer account at a given time.
- 1.2.5. The EDC web portal must be able to accommodate such a request by providing the requested usage data simultaneously in the required format.
- 1.2.6. Above the minimal standard of 10 accounts, EDCs reserve the right to cap the maximum number of account numbers requested simultaneously at their discretion.
- 1.2.7. The web portal will require the EGS to provide only the EDC account number in the request.
- 1.2.8. The EDC web portal may either permit EGSs to either directly enter the account number(s) into the portal, allow the EGS to upload an Excel spreadsheet listing the account numbers for which information is requested, or both.
- 1.2.9. Each EDC will have the ability to design its own User Interface (UI) for the web portal.
- 1.2.10. This solution will not support a 'subscription service'.

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1.3. Data Response

Upon receipt of a Request, each EDC will respond with the associated data for each account number requested.

- 1.3.1. The Response process begins once a valid Request has been submitted.
- 1.3.2. The EDC may reject all or part of a request (meaning all or only selected account numbers) and must provide a descriptive rejection reason.
 - a. The EDC may reject individual account numbers within a given request based on errors unique to the specific account numbers requested (for instance, invalid or ineligible account numbers, not an interval-metered account, interval data unavailable/missing, etc.).
 - b. The minimum standard will be to replicate the EDI reject reason. Follow-up questions on reject reasons will be supported by pre-existing EDC supplier support processes.
- 1.3.3. For each account number requested at the account level where the EDC has data available, the EDC must render the following information online for each account:
 - a. EDC account number
 - b. Start and end dates for each billing period listed.
 - c. A minimum of the 12 most recent billed periods of account-level monthly summary usage, aka consumption or kWh. (NOTE: 12 moths may not be available, in which case the portal will return data for the available number of months.)
 - d. A minimum of the 12 most recent billed periods of account-level monthly demand, aka kW (both measured/registered and calculated/billed; Also, see note above regarding 12 months not necessarily being available – also applies here)
 - e. Quantity Qualifiers for both summary usage and registered demand (designates actual vs. estimate and load vs. generation)
 - f. All account-level or rate-level (varies by EDC) data elements provided in the Scheduling Determinant (FG) loop of the EDC's EDI historical usage transactions. This includes but may not be limited to Peak Load Contribution (current and future if known), Network Service Peak Load (current and future if known), bill group/cycle, rate class, rate subclass, and load profile.
- 1.3.4. For each account number requested at the meter level where the EDC has data available, the EDC must render the following information online for each meter:
 - a. EDC account number
 - b. Meter number
 - c. A minimum of the 12 most recent billed periods of meter-level monthly summary usage, aka consumption or kWh (NOTE: 12 moths may not be available, in which case the portal will return data for the available number of months.)

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- d. A minimum of the 12 most recent billed periods of meter-level monthly demand, aka kW (both measured/registered and calculated/billed; Also, see note above regarding 12 months not necessarily being available – also applies here)
 - e. Start and end dates for each billing period listed.
- 1.3.5. The EDC must provide the capability for the portal user to download the required data elements for each of the requested account numbers in the common comma-delimited CSV format included in Appendix A of this document.
- a. For account-level requests, the portal must provide the capability for the user to download one file per account requested.
 - b. For meter-level requests, the portal must provide the capability for the user to download one file per meter on a requested account.
- 1.3.6. Historical summary and interval usage data shared that pertains to the standard originally required by March of 2014 must be billed data, defined as data from a billing cycle for which the EDC has already billed the customer.
- a. This data is subject to change in the event that the EDC cancels and rebills those periods.
 - b. Only the most recent version of billed data will be available in the portal.
- 1.3.7. Data within 48 hours of the read must be “bill-quality”, defined as “data that is sourced from an EDC’s meter data management system that has completed the process of being verified, estimated, and edited” as cited from Page 16 of the PaPUC Final Order. This means that the EDC has not necessarily billed the associated period yet.
- 1.3.8. Only the most recent version of usage data will be available in the portal.
- 1.3.9. All timestamps presented in the portal should be presented in 24-hour Eastern Time.
- 1.3.10. All intervals must be presented in hour-ending format.
- NOTE:** The solution assumes that all EDCs bill a 24-hour period of usage on a midnight-to-midnight basis.
- 1.3.11. Each element listed is defined identically to the manner in which it is defined in the Pennsylvania Electronic Data Exchange Working Group (EDEWG) EDI Implementation Guides. Considering the PUC Order states that Meter Level should be provided, the EDCs proposed that the first implementation will delivery Account level, and each EDC will work toward providing Meter level as the market matures.
- 1.3.12. Data elements available to users in the downloadable file format for accepted account-level requests must include the following:
- a. Customer identifier (varies by EDC; Account number is an example)
 - b. Customer name
 - c. Report title (Account-Level Usage or Meter-Level Usage)
 - d. EDC name
 - e. Usage start and end dates (encompass all data provided in report)
 - f. Peak Load Contribution, kWh (PLC, also known as “capacity obligation) – Current and, if known, future
 - g. Network Service Peak Load, kWh (NSPL, also known as “transmission obligation”) – Current and, if known, future

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- h. Rate Class
 - i. Rate Subclass (if applicable for EDC; Otherwise, leave blank)
 - j. Bill Cycle
 - k. Load Profile
 - l. Special Meter Configuration (currently indicates net metered status)
 - m. A minimum of the 12 most recent billed periods of account-level monthly summary usage, aka consumption or kWh, with the most recent data first (NOTE: 12 months may not be available, in which case the portal will return data for the available number of months)
 - n. A minimum of the 12 most recent billed periods of account-level monthly demand, aka kW, with the most recent data first (both measured/registered and calculated/; Also see note above regarding 12 months not necessarily being available – also applies here)
 - o. Detailed account-level interval usage data, aka consumption or kWh, with the most recent data first, spanning the 12 most recent billed periods as well as bill-quality interval data available within 48 hours of the read that the EDC has not yet billed (See note above regarding 12 months of billed data not necessarily being available – also applies here)
 - p. Actual interval ending-time to designate the interval increment. (SU-MR CC #001)
 - q. Quantity Qualifiers for summary usage, summary registered demand, and detailed interval usage (designates actual vs. estimate and load vs. generation as well as unavailability of a specific interval)
 - i. Valid Quantity Qualifiers...
 1. QD = Actual Consumption (load)
 2. KA = Estimated Consumption (load)
 3. 87 = Actual Generation
 4. 9H = Estimated Generation
 5. 20 = Unavailable (data not available for interval reading)
 - r. Quality Indicator (populated with "VEE" if the EDC has not yet billed this data)
- 1.3.13. Data elements available to users in the downloadable file format for accepted meter-level requests must include the following:
- a. Customer identifier (varies by EDC; Account number is an example)
 - b. Customer name
 - c. Report title (Account-Level Usage or Meter-Level Usage)
 - d. EDC name
 - e. Premise (corresponds to a specific physical location)
 - f. Service Point (corresponds to a specific electric service)
 - g. Meter Number
 - h. Meter Manufacturer (name)
 - i. Meter Multiplier
 - j. Usage start and end dates (encompass all data provided in report)

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- k. Peak Load Contribution, kWh (PLC, also known as “capacity obligation) – Current and, if known, future
 - l. Network Service Peak Load, kWh (NSPL, also known as “transmission obligation”) – Current and, if known, future
 - m. Rate Class
 - n. Rate Subclass (if applicable for EDC; Otherwise, leave blank)
 - o. Bill Cycle
 - p. Load Profile
 - q. Special Meter Configuration (currently indicates net metered status)
 - r. A minimum of the 12 most recent billed periods of meter-level monthly summary usage, aka consumption or kWh, with the most recent data first (NOTE: 12 months may not be available, in which case the portal will return data for the available number of months)
 - s. A minimum of the 12 most recent billed periods of meter-level monthly demand, aka kW, with the most recent data first (both measured/registered and calculated/; Also see note above regarding 12 months not necessarily being available – also applies here)
 - t. Detailed meter-level interval usage data, aka consumption or kWh, with the most recent data first, spanning the 12 most recent billed periods as well as bill-quality interval data available within 48 hours of the read that the EDC has not yet billed (See note above regarding 12 months of billed data not necessarily being available – also applies here)
 - u. Actual interval ending-time to designate the interval increment. (SU-MR CC #001)
 - v. Quantity Qualifiers for summary usage, summary registered demand, and detailed interval usage (designates actual vs. estimate and load vs. generation as well as unavailability of a specific interval)
 - i. Valid Quantity Qualifiers...
 - 1. QD = Actual Consumption (load)
 - 2. KA = Estimated Consumption (load)
 - 3. 87 = Actual Generation
 - 4. 9H = Estimated Generation
 - 5. 20 = Unavailable (data not available for interval reading)
 - w. Quality Indicator (populated with “VEE” if the EDC has not yet billed this data)
- 1.3.14. The Historical Interval Usage data must accommodate Daylight Savings Time (DST) events on the appropriate date.
- a. Spring DST – For the short DST usage delivery date only, the interval reading during the time event will be null. The DST intervals will be reported as follows:
 - i. 60 minute – 0300 interval null
 - ii. 30 minute – 0230 and 0300 intervals null
 - iii. 15 minute – 0215, 0230, 0245 and 0300 intervals null
 - b. Fall DST – For the long DST usage delivery date only, additional interval usage values will be populated in the columns at the end of each record as a second set

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of data for hour-ending 0200, labeled 0200D (0115D, 0130D, 0145D). These columns will include null values for all other usage delivery days. The DST intervals will be repeated as follows:

- i. 60 minute – 0200 interval repeated
- ii. 30 minute – 0130 and 0200 intervals repeated
- iii. 15 minute – 0115, 0130, 0145 and 0200 intervals repeated.

- 1.3.15. The downloadable files must accommodate Spring Daylight Savings Time in hour-ending interval 3 via blank values on the appropriate date.
- 1.3.16. Precision of usage values will be dictated by the degree of precision available from each EDC's AMI network. This solution will not dictate usage precision standards.
- 1.3.17. On-peak and off-peak characteristics of usage and demand are ***not*** necessary to include in the web portal, as these elements are typically tied to EDC tariffs. EGSs may calculate such components at their own discretion.
- 1.3.18. The EDC will respond to each request in "near real time".
- 1.3.19. The EDC will document their individual data file formats for both the online and downloadable CSV responses in their web portal user guide.

1.4. Security and Technical

Customer data must be delivered with the highest integrity and privacy. The Security standards cover the standards, tools, and policies that will be considered for the exchange of this data.

Several of these standards are varied adaptations of the Guidelines for Smart Grid Cybersecurity published by the National Institute of Standards and Technology, or NIST. (NIST also refers to these guidelines as Interagency Report 7628, or NISTIR 7628.)

NOTE: *EDC policies and procedures, including but not limited to those governing information security and configuration management, may be more stringent than the standards identified in this section. In the event of contradictions between these standards and EDC policies and procedures, the more restrictive of the two shall govern.*

- 1.4.1. No data governed within the scope of these standards will be publicly accessible.
 - a. Valid user login to an EDC's secure web portal is required to access all related data.
 - b. All other access must be denied.
 - c. The user must log on each and every time they access the portal. (Any capability designed to "remember" the user should not preclude user logon.)
- 1.4.2. At a minimum, EDC portal solutions must be compatible with the two most recent major versions of Microsoft's Internet Explorer web browser.

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- 1.4.3. Each EDC's portal solution requires the use of a non-self-signed SSL certificate issued by a Microsoft-trusted authority for governance of secure user connections via HTTPS, both before and after user authentication at logon.
- 1.4.4. When a user attempts to log into the web portal, the portal must mask the user's password as the user enters it.
- 1.4.5. Immediately following successful user authentication and login, the portal must provide the following to the user:
 - a. Details of user's last login (date/time)
 - b. Applicable EDC's legal disclaimers, terms, and conditions as applicable (scope of which is based on EDC information security policies and PaPUC privacy regulations)
 - c. Capability for user logged on to affirmatively agree to EDC terms and conditions presented, as a prerequisite to accessing usage data
- 1.4.6. The web portal will limit users to one concurrent session per credential.
- 1.4.7. The portal will lock out a user's portal credential and prevent access if that user fails to successfully login with the same credential five times within a 30-minute period.
- 1.4.8. The portal will enforce a session timeout and lock a user's portal session when that user has been inactive for 30 consecutive minutes. The user must be required to re-login to the portal to continue.
- 1.4.9. Regarding the practice of "screen-scraping":
 - a. Portal users must not scrape billed usage data from portal screens. This data is available to licensed EGSs via Pennsylvania's approved statewide standard of EDI.
 - b. EDCs must not implement measures specifically designed to prevent screen-scraping. However, as a mitigating practice if necessary to limit the impact of screen scraping on portal performance, EDCs have the right to implement a daily cap (maximum) number of account numbers for which usage is requested per user ID.
- 1.4.10. The EDC must notify portal users of any planned changes no later than two weeks prior to the planned implementation of those changes. (NOTE: This does not apply to implementation of added functionality that would have no impact on existing portal functions.)
- 1.4.11. If an EDC's secure web portal experiences either technical problems or a cybersecurity incident (as defined by EDC information security procedures) which substantially disrupts portal operations OR increases the risk of compromising portal information (inadvertently allowing unauthorized users access to either customer usage data or user credentials), then the EDC must immediately perform the following:
 - a. Deny all new attempts to access the portal by default, gracefully indicating to users attempting to log on that the portal is temporarily unavailable.
 - b. Immediately terminate all active user sessions such that users already logged in can no longer access the data without re-logging into the portal.
 - c. Communicate status to portal users and stakeholders as appropriate given the nature of the issue or incident.

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- i. Avoid disclosing restricted details that could aid cybersecurity attackers.
 - ii. Consider EDEWG Leadership and PaPUC liaisons to EDEWG as impacted stakeholders.
 - d. Leave the above restrictions in place until deeming that the issue has been resolved and that any associated risk has been sufficiently mitigated. (This will vary based on several factors, potentially including but not limited to identification of the source of the issue and the degree to which any collateral damage has been contained.)
 - e. This standard does not supersede pre-existing EDC cybersecurity incident response plans. EDCs will always execute their own plans and rely on their own definitions with regard to cybersecurity incidents.
- 1.4.12. Error handling within the portal for all technical / internal system errors encountered (as opposed to rejected usage requests for an account) must not reveal more to the portal user than a simple error code and a “graceful” error message indicating next steps.
- 1.4.13. EDC portal solutions may only leverage Javascript-based active content (embedded software components triggering actions automatically) and mobile code (code that a web browser must process, typically triggered by active content). EDCs should refrain from using other similar technologies including but not limited to ActiveX controls, Flash, and VBScript within their portal solutions.
- 1.4.14. Data-at-Rest
- a. Defined as stored electronic information that is not in motion/transit, regardless of storage medium. Storage mediums include but are not limited to databases, file systems, storage networks, memory (temporary / cached or otherwise), and other writeable media.
 - b. EDCs and third parties authorized to use these solutions (as well as their agents) will employ reasonable technological measures to properly secure related customer, account, and usage data-at-rest within the scope of these solutions. Such protections may include the use of encryption for rendering such data unusable, unreadable, and/or indecipherable to unauthorized individuals. Existing measures in place for this or other sensitive customer information procured via other means may also be sufficient.

1.5. Tracking and Reporting

***NOTE:** The PA WPWG is not aware of any specific PaPUC reporting requirements relative to portal use and therefore assumes that the following standards would support any necessary ad hoc reporting for either EDCs or market participants on portal use and administration.*

- 1.5.1. The EDC must track the following portal-related event information on a per-user basis:

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- a. User changes (user ID, associated entity, last updated date/time, add/update/terminate)
 - b. User login attempts (user ID entered, login attempt date/time, successful/failed)
 - c. Accounts queried (user ID, associated entity, EDC account number requested, date/time, yes/no for data provided, account-level/meter-level if “yes”, reason for rejection if “no”)
 - d. Quarterly review status of licensed entities (user ID, attestation date/time)
- 1.5.2. The portal must perform all logging on the server-side.
- 1.5.3. The portal may only leverage cookies on the client-side if cookies are necessary for the purposes of session management and/or personalization.
- 1.5.4. The portal must retain all of the above portal-related event information for a period of at least three years.
- 1.5.5. Each EDC’s portal must provide the capability for users associated with each licensed entity to query and download any of the above portal-related event information within a specified date range for one or more users associated with that specific entity (but no others).
- 1.5.6. The EDC must have the capability to query and download any of the above portal-related event information for one or more users and/or licensed entities.
- 1.5.7. The portal must not allow any user, including EDC users, to directly edit the above log data.

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Solution Framework**

SU-MR Downloadable Usage File Example

Example provided as reference only. Each EDC must provide individual data file format(s) in their user guide.

Account-Level Usage (post csv)

Customer Identifier	<i>PECO & PPL - Acct #, First Energy - Customer #, Duquesne - Supplier Agreement ID</i>
Customer Name	
Report Title	Meter-Level Usage
EDC	
Premise	<i>For PECO and PPL, this is consistent across accounts</i>
Service Point	<i>For PECO and PPL, this is consistent across accounts</i>
Meter Number	
Meter Manufacturer	
Meter Multiplier	
Usage From Date	1/2/2013
Usage To Date	1/15/2014
Current Capacity PLC (kWh)	<i>If multiple service points on account, may vary by service point & therefore differ across meters</i>
Future Capacity PLC (kWh)	<i>Only populate if known. If multiple service points on account, may vary by service points & therefore across meters</i>
Current Transmission NSPL (kWh)	<i>If multiple service points on account, may vary by service point & therefore differ across meters</i>
Future Capacity NSPL (kWh)	<i>Only populate if known. If multiple service points on account, may vary by service points & therefore across meters</i>
Current Rate Class	<i>If multiple rate classes on account, may differ across meters</i>
Current Rate Subclass	<i>PECO only. Will be blank for all other EDCs</i>
Current Bill Group	
Current Load Profile	<i>If multiple rate classes on account, populate both cells B14 and C14</i>
Special Meter Configuration	<i>Populate one cell for each value of segment - B20, C20, etc.</i>

Summarized Monthly Billed Usage

Reading From Date	Reading To Date	kWh	kWh QTY	Registered kW	Registered kW QTY	Billed kW
11/27/2013	1/2/2014	200	9H	80	9H	80
10/29/2013	11/27/2013	150	KA	50	KA	50
9/30/2013	10/29/2013	150	87	60	87	60
8/29/2013	9/30/2013	200	QD	80	QD	80
7/31/2013	8/29/2013	325	QD	160	QD	160
7/1/2013	7/31/2013	350	QD	175	QD	175
5/31/2013	7/1/2013	300	9H	150	9H	150
5/1/2013	5/31/2013	175	KA	60	KA	60
4/2/2013	5/1/2013	150	87	50	87	50
3/4/2013	4/2/2013	200	QD	80	QD	80
2/1/2013	3/4/2013	300	QD	100	QD	100
1/2/2013	2/1/2013	200	QD	80	QD	80

Detailed Interval Usage

Reading Date	100	100 QTY	200	200 QTY	200 DST	200 DST QTY	2359	2359 QTY	Quality
1/2/2014	1.3248	QD	1.3248	QD	<i>Blank except on Fall DST date</i>	<i>Same Note</i>	1.3248	QD	VEE
1/1/2014	0.9216	QD	0.9216	QD	<i>(For Spring DST, Hour 3 blank)</i>		0.9216	QD	VEE
12/31/2013	0.9792	QD	0.9792	QD			0.9792	QD	VEE
12/30/2013	0.288	87	0.288	87			0.288	87	VEE
12/29/2013	0.3456	KA	0.3456	KA			0.3456	KA	VEE
12/28/2013	0.9216	9H	0.9216	9H			0.9216	9H	VEE
12/27/2013	0.6912	QD	0.6912	QD			0.6912	QD	VEE
12/26/2013	1.44	QD	1.44	QD			1.44	QD	VEE
12/25/2013	1.152	QD	1.152	QD			1.152	QD	VEE
12/24/2013	1.6128	87	1.6128	87			1.6128	87	VEE
12/22/2013	0.9792	KA	0.9792	KA			0.9792	KA	VEE
12/21/2013	0.3456	9H	0.3456	9H			0.3456	9H	VEE
12/20/2013	1.0944	QD	1.0944	QD			1.0944	QD	VEE
12/19/2013	1.2672	QD	1.2672	QD			1.2672	QD	VEE
12/18/2013	0.9792	QD	0.9792	QD			0.9792	QD	VEE
12/17/2013	0.6336	87	0.6336	87			0.6336	87	VEE
12/16/2013	0.8064	KA	0.8064	KA			0.8064	KA	VEE

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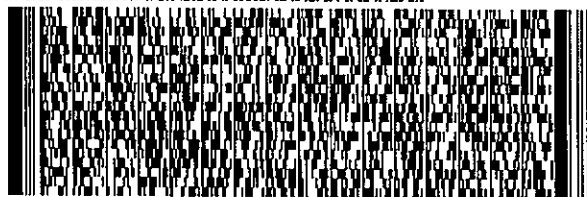
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After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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