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BUREAU OF TECHNICAL UTILITY SERVICES

February 26, 2014

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

Dear Ms. Chiavetta:

As specifically directed by the Pennsylvania Public Utility Commission (Docket M-2009-2092655, Order entered December 6, 2012), EDEWG convened a Web Portal Working Group (WPWG) to develop standardized solutions for the acquisition of both historical interval usage and billing quality interval data within 24 to 48 hours of daily meter reads via a secure web portal. The Order required that related standards are to be completed, not implemented, by March 1, 2014 and March 1, 2015 respectively. The WPWG is currently meeting on a weekly basis to accomplish this task.

The intent of this letter is to communicate the current status of the WPWG's efforts to the Commission in alignment with the March 1, 2014 deliverable date as specified in the Commission's order. In a letter dated January 21, 2014, EDEWG Leadership, with the full support of the membership of the WPWG, respectfully requested that the Commission consent to modify the scope of the deliverable required by March 1, 2014. The WPWG proposed to deliver both of the aforementioned required standards concurrently by March 1, 2015 as minimum requirements that each EDC's solution must support, as opposed to delivering separate standards for a "standardized solution" on March 1, 2014 and March 1, 2015 respectively. To date, EDEWG Leadership has not received a response to this request and is therefore proceeding as previously communicated.

WPWG discussions have focused on process, data, and technology elements common to both required standards. In the attached draft working document titled "Pennsylvania Web Portal Working Group Solution Framework", the WPWG has outlined a structured approach to the development of these standards that is based on the Commission's original Order and subsequent meetings held by the WPWG. The intent of this document is to capture the consensus decisions and assumptions made by the WPWG within this structure to date and maintain an inventory of outstanding questions to be addressed prior to finalizing standard implementation guidelines. As a living document, the Solution Framework contains many redlined changes that the WPWG continues to discuss and finalize. A substantial increase in Supplier representation at WPWG meetings over the last 45 days has also resulted in various changes to prior assumptions and in some cases to consensus decisions previously agreed upon by WPWG participants, some of which remain redlined at present.

WPWG will continue to develop the attached Solution Framework and supporting documentation with the intention to deliver the standards no later than March 1, 2015.

Sincerely,

Matthew Sigg
EDEWG EGS Co-chair
Constellation (An Exelon Company)

Susan Scheetz
Susan Scheetz
EDEWG EDC Co-chair
PPL Electric Utilities

Brandon S. Siegel
Brandon S. Siegel
EDEWG Change Control Manager
Intelometry

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Revision History

Version #	Date	Author	Description of the Change
0.0	11/1/13	PECO (Joe Bisti, Joe Hancher, Kyle Jordan)	Initial Draft Created by PECO
1.0	11/18/13	PECO (Kyle Jordan)	Included comments from WPWG that were shared via email, after reviewing the initial draft
1.1	1/6/14	PECO (Joe Bisti)	Updated Sections 2.1 thru 2.3 to reflect consensus decisions from prior meetings and reorganized to improve overall flow of information; Updates to remainder of document are still outstanding
1.2	1/16/14	PECO (Kyle Jordan)	Further updates to sections 2.1 thru 2.3 based on the last WPWG call on 1-8-14
1.3	2/7/14	PECO (Kyle Jordan)	Updates of sections 2.1 and 2.2 based on the last two WPWG calls on 1-22-14 and 2/5/14
1.4	2/27/14	PECO (Kyle Jordan)	Updates of sections 2.1, 2.2 and 2.3 based on the 2/12, 2/19, and 2/26 calls.

Document Overview

This document contains a structured approach for deliverables required of the Web Portal Working Group (WPWG) and is based on the PaPUC's original Order and subsequent meetings that have been held by the WPWG. The intent of the document is to capture the consensus decisions and assumptions made by the WPWG to date and maintain an inventory of outstanding questions that need to be addressed prior to finalizing standard implementation guidelines.

This document consists of:

1. **WPWG Charter** - An overview of the Mandate, Scope, and Guiding Principles that help shape the solution. (NOTE: All information in this section is provided exactly as written in the WPWG Charter document.)
2. **Solution Framework** - Summary of consensus decisions and assumptions considered in the WPWG meetings as well as outstanding questions requiring consensus.
3. **Technical Blueprint** - A high level pictorial representation of a technical architecture that is expected to be common to the design of any EDC "system-to-system" solution.

1. WPWG Charter

NOTE: All information in this section is provided exactly as written in the WPWG Charter document.

PaPUC Mandate Overview

The WPWG is tasked 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

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and Installation Order entered December 6th 2012 at Docket M-2009-2092655. These standard solutions are then to be incorporated within each electric distribution company's smart meter technology and implementation plan. The standardized solutions for historical interval data and billing quality interval data acquisition via a secure web-portal are to be completed, not implemented, by March 1, 2014 and March 1, 2015 respectively.

Scope

The Web Portal Working Group task shall be to formulate, but not implement, a standardized design, format, and interface for the sharing of smart meter data. This task will include, but may not be limited to, deciding on characteristics for the following:

- Type of web host, including minimum security protocols
- Method(s) of access for users
- Specific customer information available
- Methods and formats for the export of information
- Potential methods and limitations on batching data for delivery to electric generation suppliers (EGSs) or authorized parties
- Methods for customer privacy protection consistent with existing Commission rules and regulations. Methods to be considered include opt-out protocols and methods for customers to authorize the access of usage information by a third party.
- Any variances in functionality between customer, customer authorized representative, and EGS user-interfaces
- A potential recommendation for implementation options and ongoing support plans.

Intended Users

The web portal will be primarily intended for licensed EGSs and customer-authorized third parties. The PaPUC has not directed that this web portal usurp existing or potentially future EDC online customer communication platforms. However, discussion of customer interactions with the utility relative to sharing usage with authorized third parties could potentially affect the web portal standards developed as part of this effort.

Regional and National Standards

The WPWG shall leverage any appropriate NIST and/or NAESB standards in the development of this secure web-portal. Additionally, the WPWG shall leverage any protocols developed by the Green Button Initiative.

2. Solution Framework

The purpose of this section is to organize the consensus decisions and working assumptions that have been discussed in the Order and subsequent WPWG meetings. This section also attempts to lay out the open questions that need to be addressed before the conceptual design

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and implementation approach can be defined. The intent is to define the minimal standards required by the market participants.

Note that the Solution Framework presented below pertains only to the standards to be developed for Historical Interval Usage data exchange by March 1, 2014. The Solution Framework for the March 1, 2015 standards will be added at a later time.

In an effort to focus on the specific deliverables required, the WPWG discussed three available options for the overall request-response portal framework:

- I. **Single User ~ Single Request (SU-SR).** A user-based platform allowing for an authorized user to manually log into the portal, request, and receive data for one individual account at time via the portal's user interface. The results could be rendered within the web portal interface itself or exported to the user in a predefined file format.
- II. **Single User - Multiple Request (SU-MR).** Similar to above, except that the authorized user logging into the portal may submit and receive data for more than one account number as part of a single request.
- III. **System-to-System (StS) -** A platform allowing 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. (For instance, this could involve the use of File Transfer Protocol, aka "FTP", or web services to transmit and satisfy requests.)

During the initial calls, the WPWG agreed to focus on the SU-MR framework as the minimum required standard on which the required deliverables should focus. During the January 8th WPWG meetings there were more suppliers represented, and concerns were raised on the approach to focus on the SU-MR framework. The StS framework was preferred by most Suppliers and this issue has been reopened, along with a request to discuss approaching the PaPUC about clarifying the March 1st, 2014 filing deliverable requirements

The WPWG also agreed that this document should address both of the required standards, the March 2014 standard on historical interval usage (most recent 12 months of billed data) as well as the March 2015 standard for bill quality usage available within 48 hours of the read. Working both standards at the same time has proven to be more efficient and the WPWG proposal to the commission is to submit both solution approaches on the March 2015 milestone date.

Furthermore, in contrast to the original WPWG charter, this deliverable will prescribe minimally required standards but **NOT** a single solution as may have been intended by the PaPUC. The WPWG believes that the efficiencies and avoidance of complexities realized by this course of action are justified in order to meet the overall intended goal of the PaPUC.

Proposed changes to any of the standards contained in the pages that follow require EDEWG review and approval via pre-existing formalized EDEWG change control procedures.

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The associated Web Portal solution standards can be broken down into the processes that will need to be supported:

- 2.1. Certification, Access, and Customer Privacy
- 2.2. Data Request
- 2.3. Data Response
- 2.4. Security
- 2.5. Tracking and Reporting

2.1. Certification, Access, and Customer Privacy

2.1.1. Determination of portal user eligibility

2.1.2. Granting Access

2.1.3. Customer Privacy

NOTE: As the items in Section 2.1 are discussed, please also see Section 2.4 Security, specifically the first two sub-bullets on "Governance" and "Access Controls", as it may make sense for the working group to discuss those points relative to this section also.

2.1.1. Determination of portal user eligibility

- a. Each request will be logged into a unique Web Portal for each EDC.
- b. The WPWG Charter indicates that the portal is "primarily intended for licensed EGSs and customer-authorized third parties".
- c. In subsequent WPWG discussions, the WPWG agreed on the following:
 - i. 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.)
 - ii. 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. 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.*)
 - iii. 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. These include but are not limited to curtailment service providers, demand response / load management providers, researchers, public agencies with subpoenas, PaPUC-licensed Natural Gas Suppliers (NGSs), customers themselves, and other customer-authorized entities.
 - a. On the 1/22/14 call, a concern that these parties should be accommodated without having to register as a licensed EGS. The concern was raised that the full licensed obligations are more than

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a CSP would need/want to adhere to. There are two options for including CSPs:

Option	Description	Pros/Cons
A. Create New Eligibility Process	Instead of relying on the current EGS eligibility process in the market, a new list would be created and maintained.	1. This option would be the most effort to create and execute the eligibility process.
B. Modify PUC EGS License Process	Create a new, less burdensome, process within the current EGS License process and use the existing PUC Eligibility process.	1. The current License process would be more complex with adding a level of eligibility that will not have full EGS capabilities in the market.

Response

During the discussions regarding CSPs, with WPWG confirmed that the term refers to Conservation Service Providers versus Curtailment Service Providers.

Also, the following questions were discussed with the PUC. ~~(need to cite source)~~

From: McCracken, Jeffrey [mailto:jmccracken@pa.gov]:
Sent: Tuesday, February 18, 2014 9:01 AM

#1-Are they required to obtain licensing from the PUC?

CSPs are registered. The PUC maintains a CSP registry. They are not required to be EGS licensed.

#2-What laws protect the customer info is its compromised via misuse from CSPs

If the CSP is contracted with an EDCs to do Act 129 work, our regulation over the EDC and the principal/agent relationship between the EDC and CSP would give us the ability to act.

If the CSP is acquiring usage info from the EDC in the capacity as and EGS than the CSP must have been licensed as an EGS, and consequently, our authority over EGS actions would give us the ability to act.

PUC would recommend licensure. The PUC has authority to penalize EGSs for fraudulent operations. If the CSP wants access, they get a license, and they therefore give the PUC authority to prosecute them in the event that they handle info fraudulently. If they share account numbers we can go after them because they are an EGS.

#3-Can the WPWG recommend a solutions framework in which CSPs are not part of and expect the Commission accept?

I'd recommend stating that CSPs can obtain an EGS license if they want to use the Web Portal, and consequently, they do not have to be kept out.

Consumer protection is paramount. Plus, we give bonding reductions for brokers/marketers. It is possible for Staff to consider an even further reduction for CSPs who have interest in gathering info

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from EDCs and consequently seek EGS licensure, but I'll obviously leave that up to you.

Conclusion

~~If the CSP wishes to access the Web Portal, they would need to either be provided access under an existing EGS or be licensed as an EGS themselves. Staff's response leaned in this direction basically saying the PUC's enforcement relative to customer data protection is under the umbrella of an EGS license and not a CSP license. Considering the options and responses to the questions, the EDCs should consider using the current market CSP eligibility list, along with the existing EGS eligibility list to conclude eligibility for the Web Portal.~~

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2. Such entities can register with the PaPUC as licensed EGSs, thereby creating eligibility for them within the portal.
3. 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).
4. EDCs will encourage customers to leverage separate and, in some cases, pre-existing customer-facing interfaces, many of which are self-service and designed specifically for customers.

2.1.2. *Granting Access*

- a. An EGS interested in serving customers of a specific EDC must follow that EDC’s trading partner certification process. Part of certification includes verifying the licensing status of the EGS. As such, EDCs should 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, the licensed EGS will have to submit a request to that EDC directly for web portal access. (The EDC must verify that the EGS is PaPUC-licensed prior to granting access.)
- c. The minimal requirement is for organization-level credentials associated with a PaPUC-licensed EGS entity, credentials which may be leveraged by multiple individuals within the EGS’s organization.
 - i. The PaPUC will audit and if necessary pursue licensee organizations, not individuals.
 - ii. EDCs may tie credentials to specific individuals if desired, but this would be above and beyond minimum requirements.
 - iii. **Open Question:** How should EDCs provide and manage subcontractor/agent credentials? For instance, do EDCs need to have multiple sets of credentials for each EGS to accommodate sub-contractors or agents of that EGS? Alternatively, could agents be using the EGS’s credentials directly? Or could agents have one set of credentials but then be required – for each use of the portal – to select a licensee on whose behalf a transaction is conducted?
On the 1/29/14 call, a concern was raised over the minimal standards for credentials with the potential for an dismissed EGS employee having access to a login and password during their termination. With this concern, there were parties on the all that would like to propose the minimum standard be raised to

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individual employee level credentials, by EGS, versus the EGS level credentials.
 Below are three options for minimal standards for credentials :

Option	Description	Pros/Cons
EGS/CSP Level Credentials	Each EGS/CSP will be given a single login and password. When employees leave, the EGS/CSP will change password to protect data.	<ol style="list-style-type: none"> 1. Complexity of managing the passwords will be a responsibility of the EGS/CSP, but will be tightly coupled with the employee process and more simple overall. 2. Tracking of when login is abused will not be able to track to an individual. 3. Responsibility of abuse is at the EGS/CSP level.
Individual Level Credentials	Each individual (employee, representative, service provider, etc) that EGS/CSP requests access for will be given a unique login and password. EGS/CSP will notify EDC when employees should be granted and removed from access list.	<ol style="list-style-type: none"> 1. Complexity of managing new and old employees will depend on EGS/CSP process being connected into a new EDC process for logins. 2. Tracking abuse of login down to an individual will be enabled. 3. Responsibility of abuse is still at the EGS/CSP level.
Administrator Capabilities	The solution would enable an EGS/CSP representative to be given capabilities to create and maintain credentials for their company.	<ol style="list-style-type: none"> 1. Creation of a new process and tools to create administrator capabilities. 2. Each EGS/CSP can manage their own credential process to the level of complexity they deem necessary.

Response

During the February 12th call, the options were discussed and participants presented their preferences. With the focus on protecting the customer data, and ensuring that the governance of credentials is a priority for the EDCs, EGS, and CSPs, the Individual Level and Administrator Capabilities options were considered the two that would deliver the minimum standards.

The following participants that weighed in on options were as follows:
 Peco preferred EGS level credentials.

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PPL preferred the Individual Level Credentials
DQE preferred the Individual Level Credentials
FE Solutions preferred Individual Level or Administrator Capabilities
FE preferred Administrator Capabilities
Constellation preferred EGS level credentials.

PPL is undergoing an internal audit of their current web portal credential process, and the WPWG would like to understand any of these positions before concluding on an option.

Conclusion

TBD after feedback from the PPL internal audit insight on March 12th.

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- d. EDCs with existing web portal solutions used by EGSs should leverage existing EGS credentials to the extent possible, as opposed to creating new credentials that are unique to the new web portal.
- e. Open Question: How will 3rd Parties receive their access credentials and how will they be maintained? (For example, PECO's process is to provide organizational credentials to a specific number of individuals within the EGS's organization and then make it incumbent upon the EGS to manage distribution of its own credentials internally and to its service providers.)
- f. EGSs must satisfy all related EDC testing requirements (if applicable) as a prerequisite to receiving access. Each EDC will establish and execute its own processes for certification testing based upon its solution design.
 - i. Open Question: Answer is dependent on subsequent sections & technology to be used. If testing requirements will exist for an EDC, may an EDC set a standard schedule for test execution 'cycles' and if so how frequently and for how many parties within a given "cycle" (similarly to EDI certification testing)?
- g. Open Question: Should access procedures align to the current Trading Partner access approaches and NAESB 1.6 standards?

2.1.3. 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 EGSs, 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.

2.2. 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. As defined previously in this document, the request process may encompass either an online, user-driven process and/or a batch, system-to-system process.

This section originally assumed that the WPWG has agreed to focus on the online, user-driven "Single Use - Multiple Request" (SU-MR) framework as the minimum required standard on which the required deliverables should focus. In light of the discussion around the possibility of having System to System (StS) as a minimal standard, this section should be re-reviewed with that in mind.

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- 2.2.1. The EGS may request information for multiple customers at a given time.
- 2.2.2. Do the same eligibility rules apply with regard to requested account numbers? (Example: PECO does not honor EDI-based historical usage requests on finalled accounts.) On the January 22nd call, no objections were raised to keeping the eligibility rules the same as the EDI rules.
- 2.2.3. The web portal will require the EGS to provide only the EDC account number in the request. This does not take into account the open issue of supplying meter level data.
- 2.2.4. The EDC web portal must be able to accommodate an EGS's request for information on at least 10 accounts simultaneously in the required format. This is unique to the User to System solution.
- 2.2.5. Above the minimal standard of 10 accounts, EDCs reserve the right to cap the maximum number of account numbers requested simultaneously at their discretion.
- 2.2.6. 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.
- 2.2.7. **Open Question:** This method implies a "submit request and wait for the response" approach, as opposed to having multiple request transactions be submitted in a batch approach. Is that correct? This will be worked out in the technical discussion.
- 2.2.8. Each EDC will have the ability to design its own User Interface (UI) for the web portal.
- 2.2.9. This solution is not required to support a 'subscription model'.
 - a. **Open Question:** If an EDC would like to provide this service, may an EDC be permitted to do so as a premium service, potentially with an associated "user fee"?
 - b. **Open Question:** Should the Web Portal have the ability to track previous requests, groups of accounts, and allow participants to add/remove list of accounts to their request groups?

2.3 Data Response

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

- 2.3.1. The Response process begins once a valid Request has been submitted.
- 2.3.2. The EDC may reject all or part of a request and must provide a descriptive rejection reason.
 - a. The EDC reserves the right to reject an entire set of requests based on holistic submission errors (for instance, an Excel file uploaded to the request portal may contain unexpected delimiters or special characters).
 - b. The EDC reserves the right to reject individual account numbers within a given request based on errors unique to a specific account number requested (for instance, invalid or ineligible account numbers, not an interval-metered account, interval data unavailable/missing, etc.).
 - c. The minimum standard will be to replicate the EDI reject reason, which does not prohibit the EDC from giving a more detailed reject reason to avoid follow up questions by the EGS/CSP. Followup questions on reject reasons will be supported by the EDC mailbox process that is currently in place in the market.

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2.3.3. Assuming that the EDC Web Portal does not reject the entire request submitted outright (as specified in Section 2.3.2a above), the EDC must export the results of a specific request to the EGS (portal user) in format to be determined (i.e. CSV, XML, etc).

a. **Open Question:** On the Feb 12th call, everyone agreed that a single standard should be picked, but we did not come to a conclusion on what the format standard should be. Input on what should be considered included, file sizes, federal standards, other state standards, flexibility for use in backoffice systems, downloadable into excel, and total cost of ownership of a format (i.e. tools, liscensing, etc)

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b. **Open Question:** Should the files be directly “pushed” to the user, or can they be transferred to a specific “location” within the web portal where the user can download them after submission (and if so how long will those remain available for “pickup”)?

2.3.4. Historical summary and interval usage data shared that pertains to the standard associated with 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. **Open Question:** How many versions of billed data must be available? Current EDC assumption is that the most recent data billed is the only version that the EGS can receive, which is consistent with EDI practices for the same today. On the Feb 19th call, agreement was reached that only 1 version, the most recent, would be published.

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2.3.5. Data within 48 hours of the read must be bill-quality data, defined as data that has been through an EDC’s complete Validation, Estimation, and Editing (VEE) processes. (This means that the E=DC has not necessarily billed the associated period yet.)

a. **Open Question:** Timing and methods within each EDC’s VEE processes vary considerably among EDCs. In some cases, certain steps of the VEE process may not be executed until the associated period is actually billed. For instance, PECO has certain estimation processes spanning the entire bill period that do not execute until the first day of the associated billing cycle. This means that data may not be available until the account bills for that period. If this is unacceptable, it means that EGSs would be viewing data before that data is fully VEEd. In another example, PPL performs all of their VEE processes within 48 hours of the readings coming off the meter. In this case, the reads will be fully validated and not depend on the billing process to be available. The WPWG needs to determine if these inconsistencies are acceptable in the market.

b. **Open Question:** Data within 48 hours of the read only applies for periods in which the associated period has not been billed. If billed data exists, then that is what the portal will provide. Is this consistent with EGS expectations? This was discussed on the Feb 19th call, but not concluded as it seemed that EGSs did not understand the differences in the current EDI and Portal transactions.

b. **Further Discussion:** On the Feb 26th call, the VEE differences in the market as well as the variations of Billed and partially validated data was discussed. A few of the EGS’s expressed concern over the differences between Billed and partially validated data, and needed to talk to their business groups to conclude their position (Constellation, ConEd Solutions, and AEP). Other EGSs confirmed that they were more dependent on the Historical Usage data for their pricing algorithms and did not have has much concern over the 48 Hour data (Dominion) The WPWG also

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confirmed that data used to Bill the customer should still be gathered through the EDI transactions that are in place in the market. A request for the EGS's to supply use cases for the data so that we can validate our current positions.

- c. **Open Question:** How many versions of data within 48 hours of the read must be available? (The data may change several times inbetween 48 hours of the read and the time of billing.) On the Feb 19th call, agreement that only the most recent version would be published.

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2.3.6. Data elements available to users in accepted requests

- a. Each EDC must make data elements available at the ACCOUNT level. (Providing METER-level data is optional.) 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.

- i. **Open Question** - From the Feb 19th call, some WPWG participants asked if someone could describe the value of having meter level. On a future call, we will get someone to represent this perspective. On the Feb 26th call, further discussion about the value of the Meter level was presented at a general level, with the assumption that the more detail the better, but no Use Cases were presented. A few of the suppliers on the call offered to go back to their pricing/marketing groups to solicit feedback. Also, recognition that there are varying levels of tools at each EGS that might be able to take advantage of the meter level data in the future.

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- b. The web portal will return the following data elements by default:

- i. A minimum of the most recent 12 months of billed monthly summary usage, aka consumption or kwh (NOTE: 12 months may not be available, in which case the portal will return data for the available number of months)
- ii. A minimum of the most recent 12 months of billed monthly summary demand, aka kw (may be measured/registered or calculated/billed - but characteristic should be indicated; Also see note above regarding 12 months not necessarily being available - also applies here)
- iii. A minimum of the most recent 12 months of summarized billed interval detail, aka consumption or kwh (See note above regarding 12 months not necessarily being available - also applies here)
- iv. Peak Load Contribution (PLC, also known as "capacity obligation")
- v. Network Service Peak Load (NSPL, also known as "transmission obligation")
- vi. Rate Class
- vii. Bill Cycle
- viii. Load Profile
- ix. Special Meter Configuration (currently indicates net metered status)
- x. Quantity Qualifier, both for summary and interval detail usage (designates actual vs. estimate and load vs. generation)
- xi. Meter Multiplier

1. **Open Question:** Is meter multiplier needed at all? It is not present in the Historical Interval Usage transaction. If this is account-level data, then EDC

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will not be including meter numbers or the number of meters. So should this be rephrased from "Meter Multiplier" to "Sum of the Meter Multipliers"? On the Feb 19th call, PPL described their web portals reason for providing the Meter Multiplier - which was to help EGS analyze when the Intervals do not add up to the readings. Peco agreed to think through the value of adding the element to keep consistent with a standard and how it could be done with their current meter configurations.

- xii. ~~Open Question:~~ Any need to specify precision requirements? On the Feb 19th call, the WPWG agreed that precision will be dictated by each EDC AMI network and this solution will not dictate precision standards.
 - c. 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.
- 2.3.7. The EDC will respond to each request in "near real time".
- a. ~~Open Question:~~ Performance concerns should be considered for each EDC. Response times might vary, depending on the EDC's technology and capabilities. Should each EDC have their own Service Level for response times, and are Service Levels even part of the required standard?
- 2.3.8. ~~Open Question:~~ Will customer types and interval precision differences have different performance results, that will dictate differences in service level response times?
- 2.3.9. ~~Open Question:~~ What volumes should the solution support? Is it necessary for each EDC to have the ability to set limits on the transaction volumes, if the approach will be the "SUMR" nature of the portal?

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2.4 Security

Ensuring that the customer data is delivered with the highest integrity and privacy, Security for the Web Portal will be considered in detail. The Security process covers the standards, tools, and policies that will be considered for the exchange of this data.

Open Questions

1. ~~Should 3rd party credentials require periodic user password resets~~
2. ~~What are other security concerns that should be addressed?~~

The following security controls (from the NIST Cybersecurity Framework) are applicable:

1. Governance
2. Access Control
3. Data Security
4. Protective Technology
5. Security Monitoring

NOTE: Consider the first two sub-sections for discussion as part of Section 2.1 (Certification / Access) above.

Questions for consideration are:

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Governance:

1. Will adherence to control standards be established or required? For example, web site security controls will adhere to NIST or OWASP cybersecurity standards?
2. Will the service be required to undergo independent security assessments and/or audits?

Access Controls:

1. Will password-only access be sufficient, or will multi-factor authentication be required?
2. Will access and accounts be only for our organization's web site service, or should federated accounts be established for all organizations providing data?
3. What are the requirements for approving a third party access to the site? Who will be responsible for performing this review? Who (and at what level of authority) should made approval decisions?
4. How will notification of a user leaving the organization be communicated so access is revoked?
5. How will accounts be assessed to confirm that users are still authorized to access the web site?
6. What access records will need to be maintained, and for what duration?

Data Security:

1. Will any data in a database or data cache be considered confidential enough to require encryption controls?
2. Will the data when transferred to a third party need to be encrypted? Would network encryption suffice, or would the data itself need to be encrypted?
3. What agreements are needed with the third party on their responsibility to securely maintain data they receive?

Protective Technology:

1. What is the recovery time objective for the web service, especially for situations involving system failures, scheduled maintenance outages, and/or denial of service attacks? What technology should be required to achieve recovery time objectives? (For example: high availability configurations, denial of service monitoring and mitigation services, etc.)
2. Will the web site need to be protected against Internet-based attacks (such as SQL injection, cross-site scripting attacks, etc.). Will web application firewalls or other proxy controls be required?
3. What standards should be followed to securely configure the presentation, application, and data tiers of the system?
4. What backup standards and procedures will be required for the system? How long should backups be maintained?
5. Will static and dynamic code analysis be required prior to go-live or when changes to the web site are made?

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6. How frequently will vulnerability scans be required? Will results need to be reported to anyone outside of the organization?

Security Monitoring:

1. What controls will be required to detect cybersecurity events?
2. Who should be notified in the event of a data breach?
3. What logs should be collected to provide incident information about a data breach? How long should security logs be maintained?

2.5 Tracking and Reporting

Logging of the transactions and the ability to respond to reporting requests, on an ad hoc basis or a predefined schedule.

1. Will the PaPUC have periodic or ad hoc reporting requirements that EDCs must be able to accommodate? If so, how frequently and for what data?
2. Same question as above but tailored toward portal users (for instance, an EGS needs to know how many times they accessed a particular customer's information)
3. What are the data retention requirements?
4. Will the Customer have the ability to ask the EDC who has accessed their data?

Working Assumptions

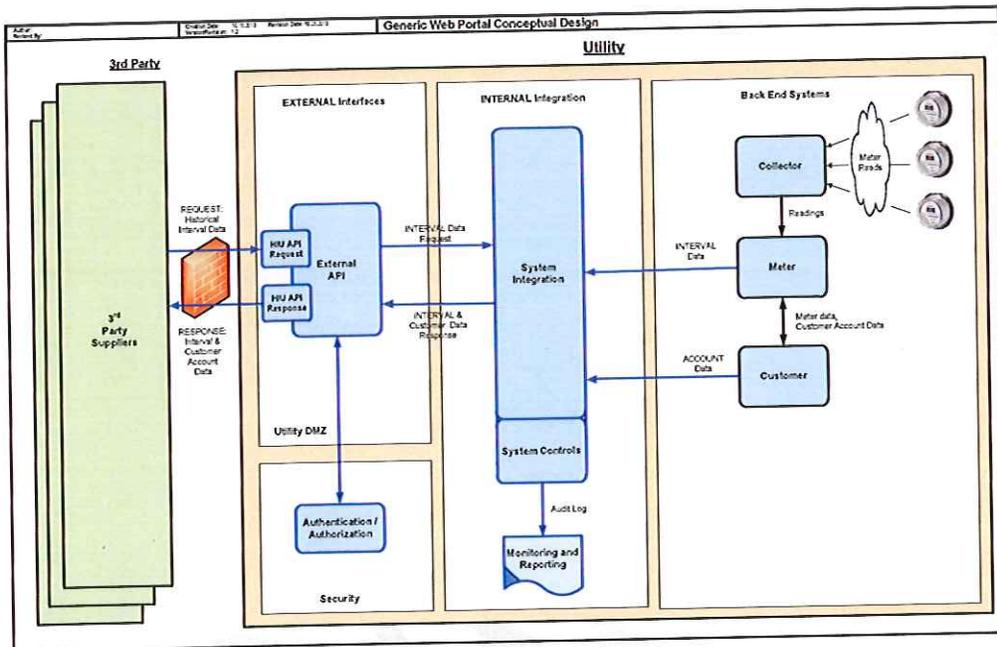
1. Event logging should be designed to track account queries. The logging does not need to track which specific characteristics the entity sought under each account.

3. Technical Blueprint

This section attempts to layout a conceptual architectural design for the EDCs, and inventories the technical working assumptions and open questions.

The following is a high level conceptual diagram that shows how each EDC could deploy the obligations of the Order:

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Open Questions

1. Format of the response could vary, how many and which options should be considered for the format of the response?
2. A User Interface (UI), commonly called the Web Portal, should be added to the diagram. Should it be hosted within the Utility Interface box or the 3rd party solution box?
- 3.

Technology Working Assumptions

4. Multiple open formats will be considered for the Response transactions. Three of the options will be XML, JSON, and Green Button (Comma Delimited).
5. Both synchronous and asynchronous Request/Response transactions will be supported.

The following was provided by DLQ as a guide to the SOA Reference Architecture that could be utilized to create the details of the Technical Solution Blueprint:

SOA Reference Architecture

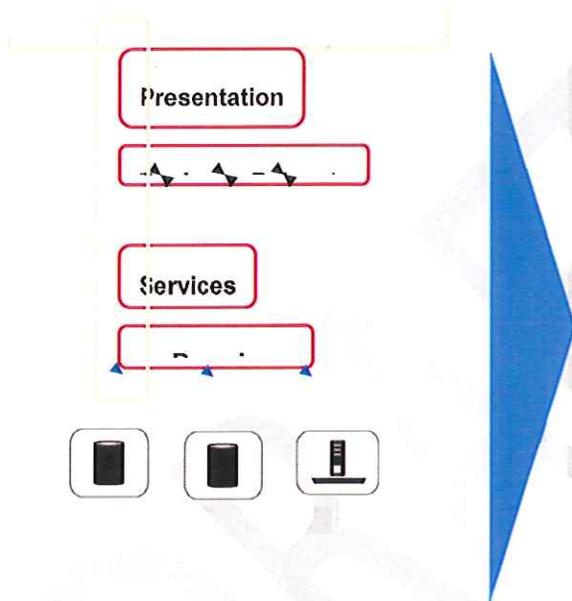
Web Application Tier

- **Custom Application Requirements**
 - Provide unified user experience across the web site
 - Standardize look and feel across all the sites
 - Create a single point to access all information

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- Provide only the information the user has access to
- Provide a highly reliable, available and scalable environment
- Provide user the capability to personalize their pages
- Reduce operational cost /TCO

Web Application Tier: Custom Application Architecture Approach



- Based on SOA that promotes re-use at multiple levels
- Provides rapid delivery capability
- Leverage each product for what it is good at, example portal for presentations based on entitlements
- Enable business to combine multiple services to provide new capabilities
- Loosely coupling presentation from the business logic makes it reliable and scalable

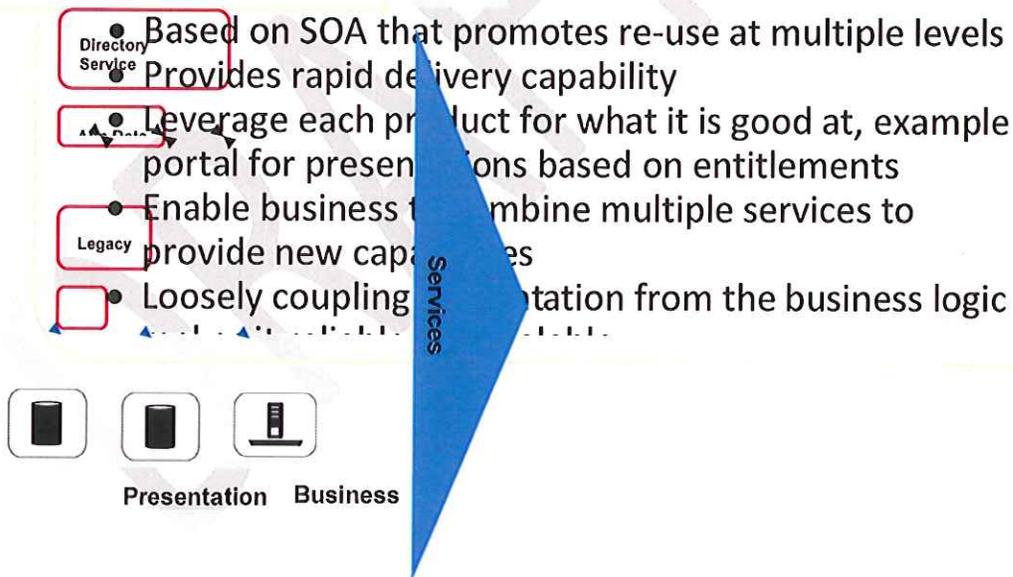
Web Application Tier: Custom Application Framework Components

Framework Components	Description
Data Services, Logging, Exception Handling, Applications Configuration, Monitoring	Standard framework components and most IT organizations already have these components
Search Framework	Service leveraged by the Presentation tier for paginations

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Notification Framework	Leverage for any external notification such as eMail, IM, SMS, etc.
Service Proxy	Service proxy to EJBs, Web Services or any other external service/protocol
Security Framework consisting of Authentication, Authorizations, SSO, Identity Management, Auditing	Standard client security framework to integrate with enterprise security service as well as develop custom authorization modules for the applications

Web Application Tier: Custom Application Framework Components



Technical aspects of a portal

Portals provide a secure single point of access to diverse information and applications, personalized to the needs of their users. In some respects, Enterprise information portals, B2B marketplaces, employee work spaces, and public Web portals have common requirements. All of these require scalable

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infrastructure, a flexible and powerful presentation framework, and a framework for building portal components easily. Each requires a high degree of personalization so that the most relevant information is delivered to the user, enabling a more productive interactive experience and encouraging user loyalty to the portal.

Depending on the nature and sensitivity of the information, some portals may require a greater degree of security, including specialized forms of authentication and access control. Depending on the size of the user base, some portals might require very high availability and scalability. Consumer portals generally allow users to enroll themselves and manage their own accounts. Conversely, enterprise portals often require integration with existing user databases or enrollment systems.

Portlets

A key building block in most portal frameworks is the *portlet*. Portlets are Java-based reusable user interface components that process requests and generate dynamic content. Executing in a runtime environment called a *portlet container*, portlets present their content in a window-like display on a portal page. Similar to a window on a desktop, the portlet window has a title bar that contains controls that allow the user to expand (maximize) and shrink (minimize) the application.

The portal framework simplifies the development and maintenance of portal sites.

- The page structure is defined only once
- Portlets are defined independently
- Portlets can be changed without impacting the overall page design
- Targeting multiple browsers and mobile devices is made easier

Web clients interact with a portlet using the standard request/response paradigm. For a given request cycle, each portlet (identified via a configuration mechanism) generates specific content called a *fragment*. Each fragment represents a small portion of markup (for example, HTML or XHTML) that is aggregated with other fragments to form the complete response document.

Portlet container

Most portal frameworks provide the runtime execution environment for the portlets known as a *portlet container*. This is responsible for instantiating, invoking, and destroying the portlets it hosts in response to requests it receives from the portal server. Content aggregation is not a function associated with the portlet container, but rather with the portal or portal server.

Important: A portlet is visible on a portal page as a single small window.

Etc...