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Ontario Electricity Support Program

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Version 1.10  
03/16/2017

# Ontario Electricity Support Program

## Utility Interface Specifications



## Document Control

### Change Record:

Date	Version	Change Reference
14/4/2015	0.2	Creation of document
12/5/2015	0.4	Updated to support handling errors
13/5/2015	0.6	Added Schema and extra Benefit transaction
14/5/2015	1.0	Updated type and error discussion
22/5/2015	1.1	Clarification added
25/5/2015	1.2	Approved version
28/5/2015	1.3	Minor error message updates
15/6/2015	1.4	Schema revisions for clarity and structure validation
26/6/2015	1.5	Header Error condition added
21/7/2015	1.6	FTP transfer information and error handling
27/7/2015	1.6a	Correction of typographical errors in XSD sample
15/08/2015	1.6b	Correction of typographical errors in XSD sample, correction of XML data formats in XML samples
25/08/2015	1.7	Added clarification around error code definitions. Added notes on encryption standards. Added clarification on file naming convention for multiple files. Added clarification on handling of corrupt files. Correction of typographical errors in XML sample
01/14/2016	1.8	Revised key assumptions, utility record formatting rules, tariff table brought in line with already approved tables as per regulation, multiple text clarification and formatting across the whole document



Date	Version	Change Reference
01/25/2016	1.9	1) Revised header information for special characters. 2) Revised "T0" section extensively. Added an explanation of ICFs implementation of T0 for applications that are not on OESP and are subsequently not accepted into the Program -- in this scenario T0 is sent to Utilities for these applicants (which they should ignore) though they do not receive OESP. 3) added a clarification that Utilities are not to show \$0 OESP amount on the bill when an applicant has been given a T0 4) Changed the structure of the document control tables. 5) Updated the proper use of error codes and differentiate between user errors and <b>system</b> errors.
03/16/2017	1.10	Update document to reflect amended tariff amounts for T1 - T9 and introduction of Tariffs T10 - T13, which have come into effect on 05/01/2017.

**Distribution:**

Organization		
Utilities		



## TABLE of CONTENTS

<b>TABLE of CONTENTS .....</b>	<b>4</b>
<b>1 Overview .....</b>	<b>5</b>
1.1 Approach, Purpose and Scope .....	5
1.2 Key Assumptions .....	5
1.3 Generic Formatting Rules .....	6
1.4 Transport Protocol .....	6
1.4.1 SFTP Account Setup .....	6
1.4.2 File transfer .....	6
1.4.3 Pick-up/Drop-off schedule .....	7
1.4.4 File Naming Convention .....	7
<b>2 Content .....</b>	<b>8</b>
2.1 Inventory of Interfaces .....	8
2.2 Utility Record Formatting Rules .....	9
2.2.1 Special Character Handling in XML .....	11
2.2.2 Utility ID .....	11
2.3 Utility Interface Schema .....	13
2.3.1 Schema Map .....	13
2.3.2 Schema Definition File (XSD) .....	14
2.4 Interface Details .....	19
2.4.1 Header Information .....	19
2.4.2 Header Errors .....	20
2.4.3 Customer Request (CusReq) .....	20
2.4.4 Customer Confirmed (ReqRes) .....	21
2.4.5 Customer Tariff (CusTar) .....	22
2.4.6 Customer Adjustment (CusAdj) .....	24
2.4.7 Benefit Response (BftRes) .....	25
2.5 Error Handling .....	26
2.5.1 Error Codes .....	26
2.5.2 Out of order file processing .....	27
2.5.3 Out of Order record processing .....	27
2.5.4 Corrupt Files or Invalid Schema .....	28
<b>3 Architecture View .....</b>	<b>30</b>



# 1 Overview

## 1.1 Approach, Purpose and Scope

This Interface Specification document is intended to describe the technical interface between the Central Service Provider (CSP) and the Utility required to support the Ontario Electricity Support Program (OESP) solution. The technical interface is required to confirm an applicant as a utility's residential customer and communicate an OESP Tariff to the Utility.

## 1.2 Key Assumptions

The following assumptions apply to this interface specification document:

1. English language has been selected for purpose of this specification communications only. The interface itself supports French and English.
2. Decimal point used in currency fields to delimit cents, not a comma.
3. "Utilities" or "Utility" refers to Local Distribution Company (LDC) and Unit Sub Meter Provider (USMP).
4. Utilities are expected to track client participation in the OESP within their CIS/billing system. Utilities will have to update their CIS/billing system to create an OESP flag similar to the existing LEAP/EFA flag that is updated accordingly for active OESP participants that will be used to indicate to the Utility that low-income rules apply to this client because of their participation in OESP.



## 1.3 Generic Formatting Rules

XML data will be sent from the system following the generic format below:

Data Format	Comments
Boolean	Values : true and false
Text	No padding required -- all ASCII characters can be used as per schema prolog: <?xml version="1.0" encoding="UTF-8"?>
Date	YYYY-MM-DD format used in the interface as a standard
Alpha	AAAAAA
Numeric	99999999
AlphaNumeric	A99999A
Dollars	9999.99

## 1.4 Transport Protocol

XML data file will be sent using Managed Secure File Transfer Protocol between the CSP and each of the Utilities. If there are no transaction specific to a Utility for that day a zero record file will be sent for the Utility to manage updates effectively. No response file will be expected from the Utility for zero record files.

Managed FTP server software can support multiple file transfer protocols. OESP uses SFTP.

The CSP is compliant with GO-ITS and therefore it is important that Utilities ensure that their connection software is aligned to these same standards in order to facilitate the secure connection with the CSP. .

### 1.4.1 SFTP Account Setup

The CSP will host a separate SFTP server for each environment, which offers encryption at the transport layer level for file transfers. Files transferred in this manner are encrypted and secured, on the wire, for the entirety of the transfer. Authentication will be backed by an Active Directory server, ensuring centralized user access control in maintained for the entire solution. A user account will be assigned to each of the utilities, and each account will be "sandboxed", i.e. able to see only the files and folders pertaining to itself.

Each utility shall provide an IP range from which connections will originate to the CSP's SFTP on the various environments (Test and Production). These ranges will be whitelisted (i.e. addresses from which a blocking program will allow connection), and the CSP will reject any connections that do not originate from the authorized IP ranges.

### 1.4.2 File transfer

Upon successful authentication with the SFTP server, a user will be logged in, able to see the following folder structure:



The typical workflow for each utility is as follows:



1. Utility connects to the SFTP server
2. Utility uploads pending response files into /response
3. Utility downloads new requests from /request
4. Utility closes connection to the SFTP server

### 1.4.3 Pick-up/Drop-off schedule

Request files will be generated once a day (except weekends and Ontario Government statutory holidays) and will be waiting for pick-up by the utility in the /request folder at 2 AM the next day for processing. If more than one new request file is made available in the /request folder, the utility shall process the new files in order of the Transfer File ID (lowest to highest).

It is expected that the utility will respond to the request file within 1 business day.

Response files can be uploaded by the utility to the /response folder at any time. The CSP will pick-up files for processing after 10 PM for nightly batch processing daily. Files received until 10 PM Eastern Time can be expected to be processed in the same nightly batch by the CSP that is run between 10 PM and 2 AM. Files received after 10 PM will be processed in the next nightly batch the following day.

### 1.4.4 File Naming Convention

In order to minimize ambiguity and to aid in file maintenance, request files generated by the CSP and response files from the Utilities will follow the following naming convention:

[REDACTED]

[REDACTED]

*Example:*

Request file from the CSP: [REDACTED]

Response file from the Utility: [REDACTED]

Example (with optional Unique Identifier):

Request file from the CSP: [REDACTED]

Response file from the Utility: [REDACTED]



## 2 Content

### 2.1 Inventory of Interfaces

Interface Title	Source System	Target System	Description	Functional Specs (Transaction Name)
Request for Customer Confirmation	CSP	Utility	Batch validation request of the account number, name, and service Address for each of the applications being processed. It will determine if the Utility account exists and matches the information within the Utility described.	Customer_Request (CusReq)
Customer Confirmed as an active residential customer	Utility	CSP	Batch validation response of the account number, name, and service Address for each of the applications being processed. It will identify the Utility account exists within the Utility described and account, name, and service Address all match for a residential customer otherwise it returns an error.	Customer_Confirmed (ReqRes)
Communication of Customer Tariff Code to be applied	CSP	Utility	Batch Benefit request for Utility account number for each of the applications being processed. It will provide the Tariff Code, Approval Date, and duration along with the Utility Account, name and address for which the Tariff code is to be applied.	Customer_Tariff (CusTar)



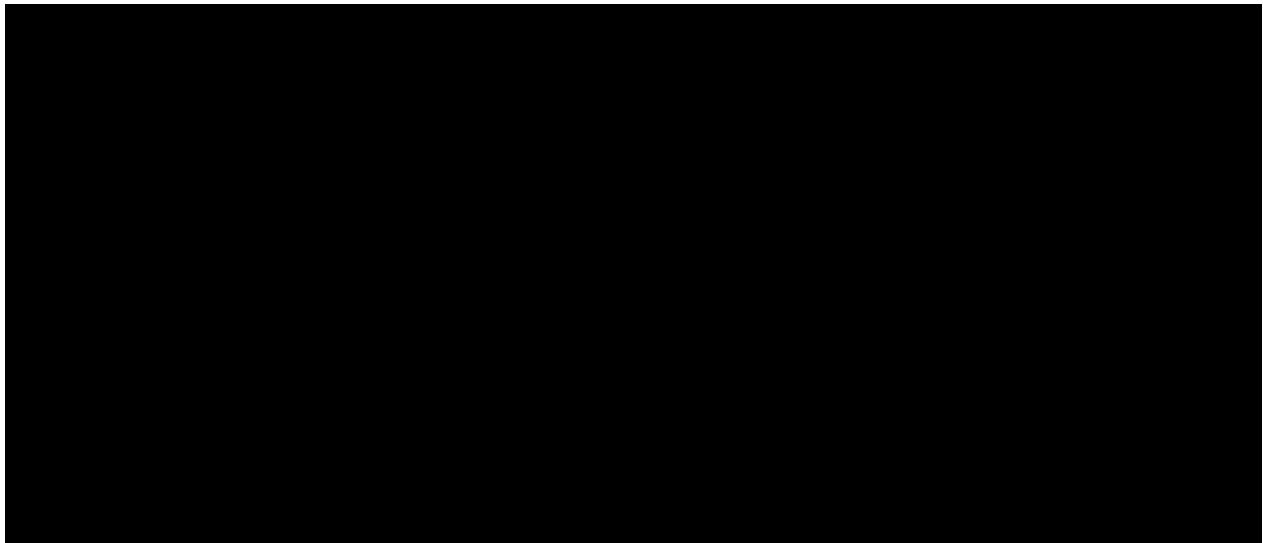


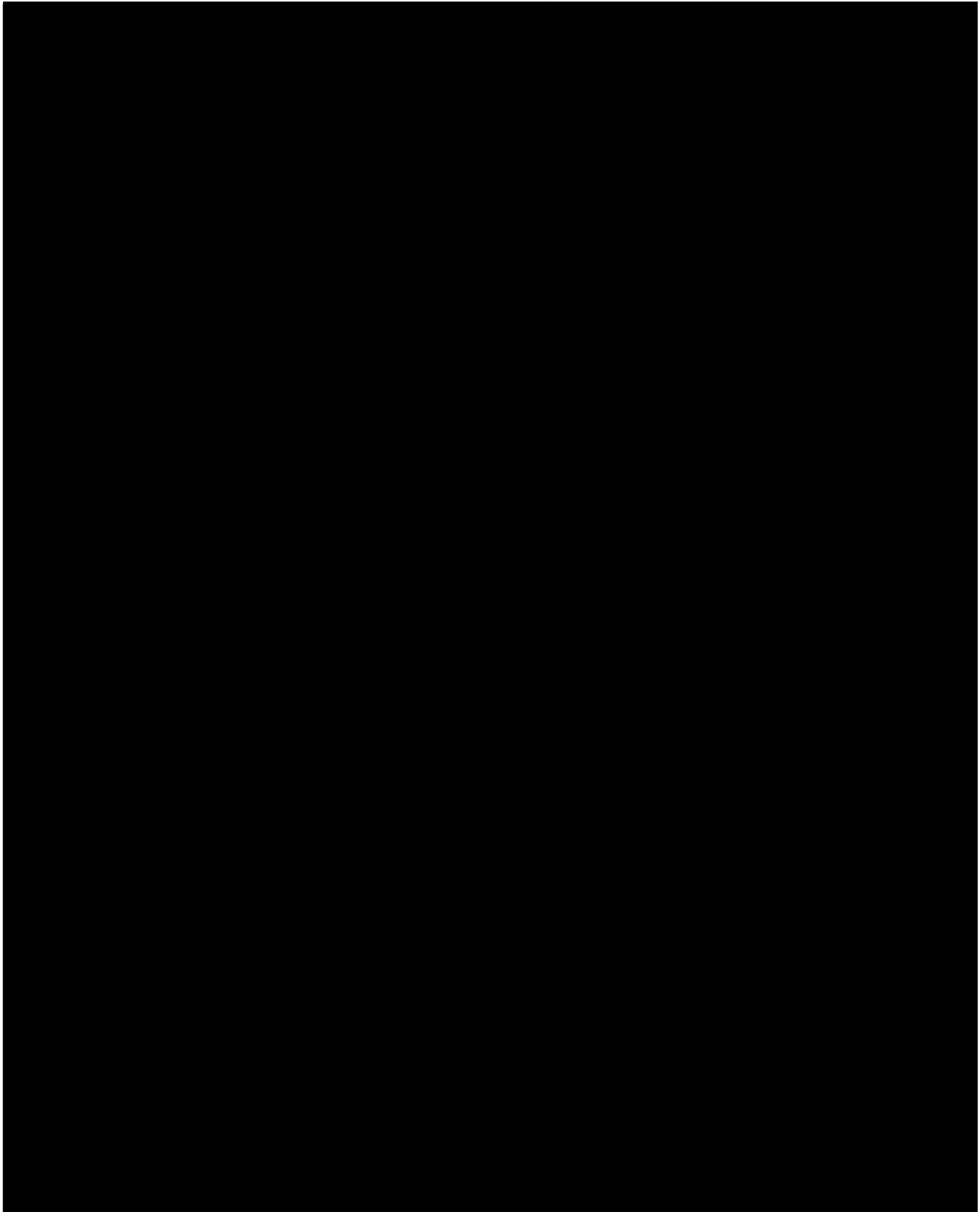
Interface Title	Source System	Target System	Description	Functional Specs (Transaction Name)
Customer one-time Adjustment to be applied	CSP	Utility	Batch Adjustment request for Utility Account adjustment as a one-time adjustment amount to be applied to the Utility account for one billing period.	Customer_Adjustment (CusAdj)
Confirmed Customer is still active and the tariff code or adjustment will be applied.	Utility	CSP	Batch validation response of the account number for each of the applications being processed. It will identify the Utility account exists with name and address and confirm the account is still active so that the Utility can record the OESP Tariff code or Adjustment and apply it going forward.	Benefit_Response (BftRes)

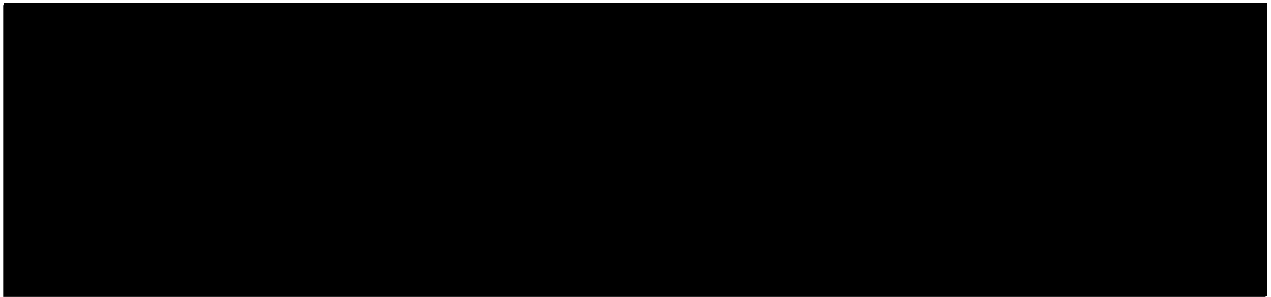
## 2.2 Utility Record Formatting Rules

The XSD Schema needs to be followed for all the detailed field definitions and rules.

The table below outlines the data elements and associated attributes. For more details please refer to XSD Schema in section 2.3.2.







### 2.2.1 Special Character Handling in XML

Because XML syntax uses some specific characters for tags and attributes, those characters cannot be directly used inside XML fields as values. This includes the following characters:

Name	Character	Description
quot	"	Quotation
amp	&	Ampersand
apos	'	Apostrophe
lt	<	Less Than
gt	>	Greater Than

Therefore, if it becomes necessary to include these special characters inside an XML value field then the format **&name;** must be used instead of that character.

As an example:

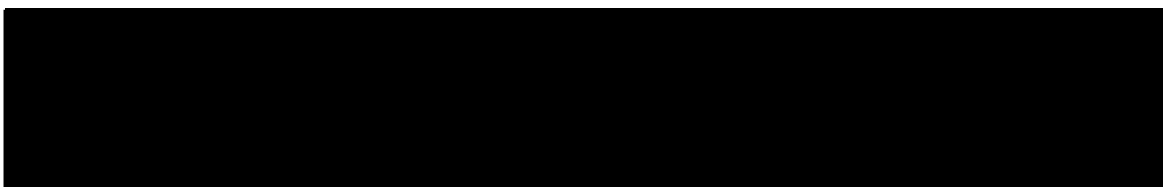
- To create the ampersand (&) symbol inside the text string field the value &amp; is used to represent this character.

Note: All other characters allowed by UTF-8 including French Accent characters shall be sent in standard character encoding.

### 2.2.2 Utility ID

In order to promote consistency across the programs of the OEB the UtilityID that will be used will be the same as what is used for the IESO settlements, as most USMP and LDC require this and are assumed to have such. The value will be used in the integration between the CSP and the Utility as the value for the UtilityID field. Below is a structure for this table as provided by the IESO that will be used for UtilityID

Note: The CSP will assign a unique UtilityID if a utility does not have it.



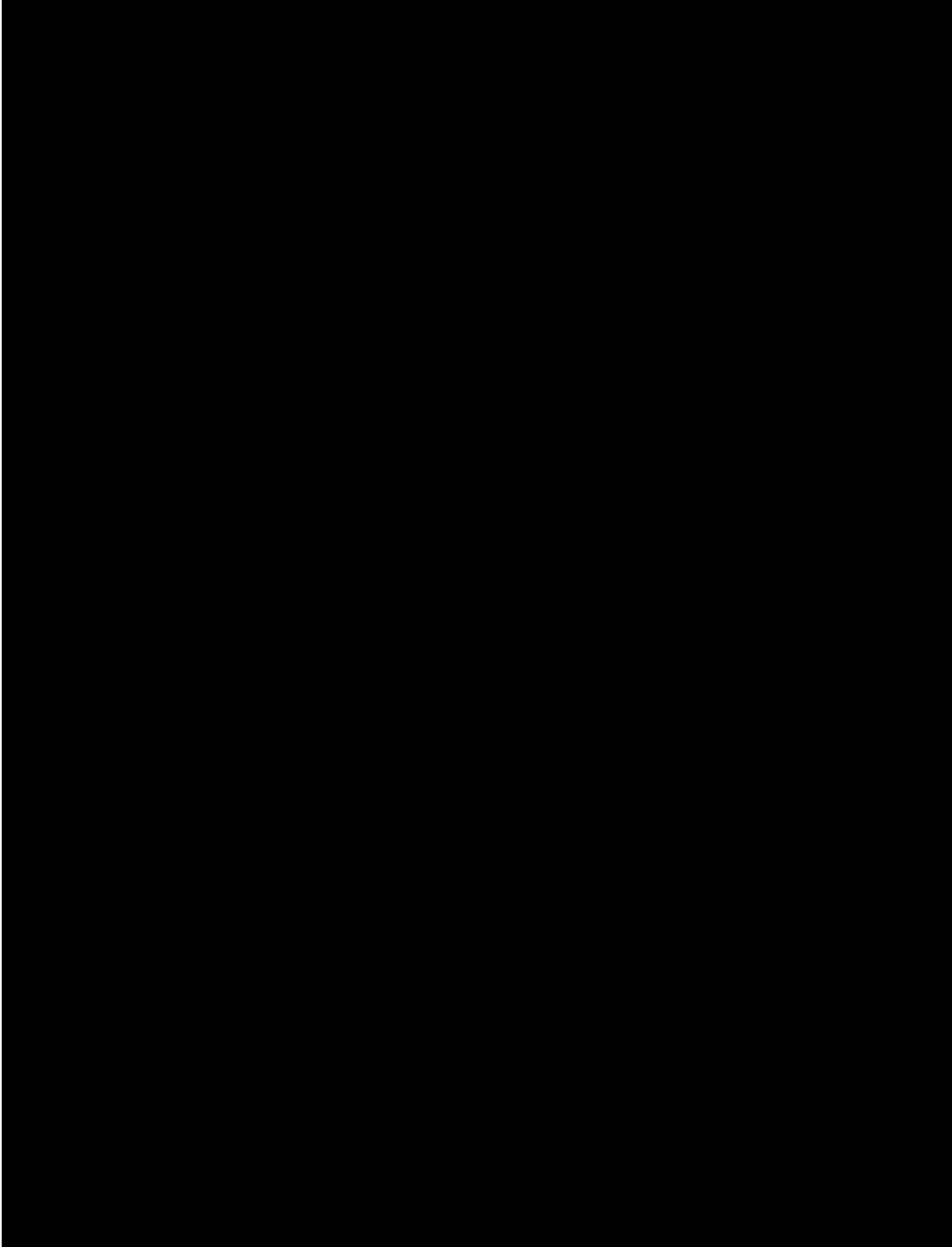


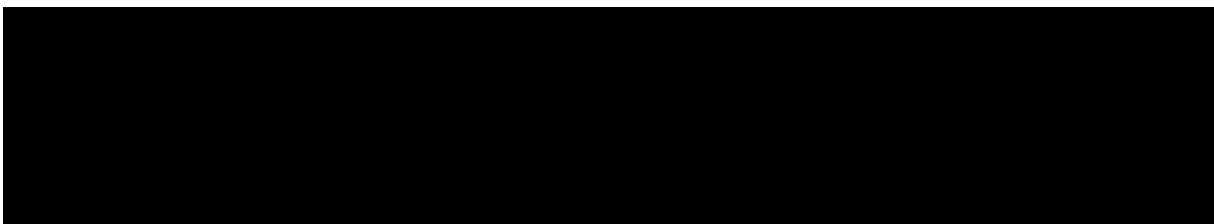
Each Utility need not contain the whole table but should be able to recognize their own "Bus. Assoc. Id" as this will be their UtilityID that will be contained in the XML and file naming convention used in the integration. The CSP will have the entire table as received from the IESO via the OEB on an as updated occurrence for all Utilities participating in the OESP solution. It is important to be aware that the IESO value is being used as the UtilityID. If the Utility does not currently have an IESO Id then they can apply to the CSP for a value as this UtilityID value will be managed by the CSP going forward.



## 2.3 Utility Interface Schema

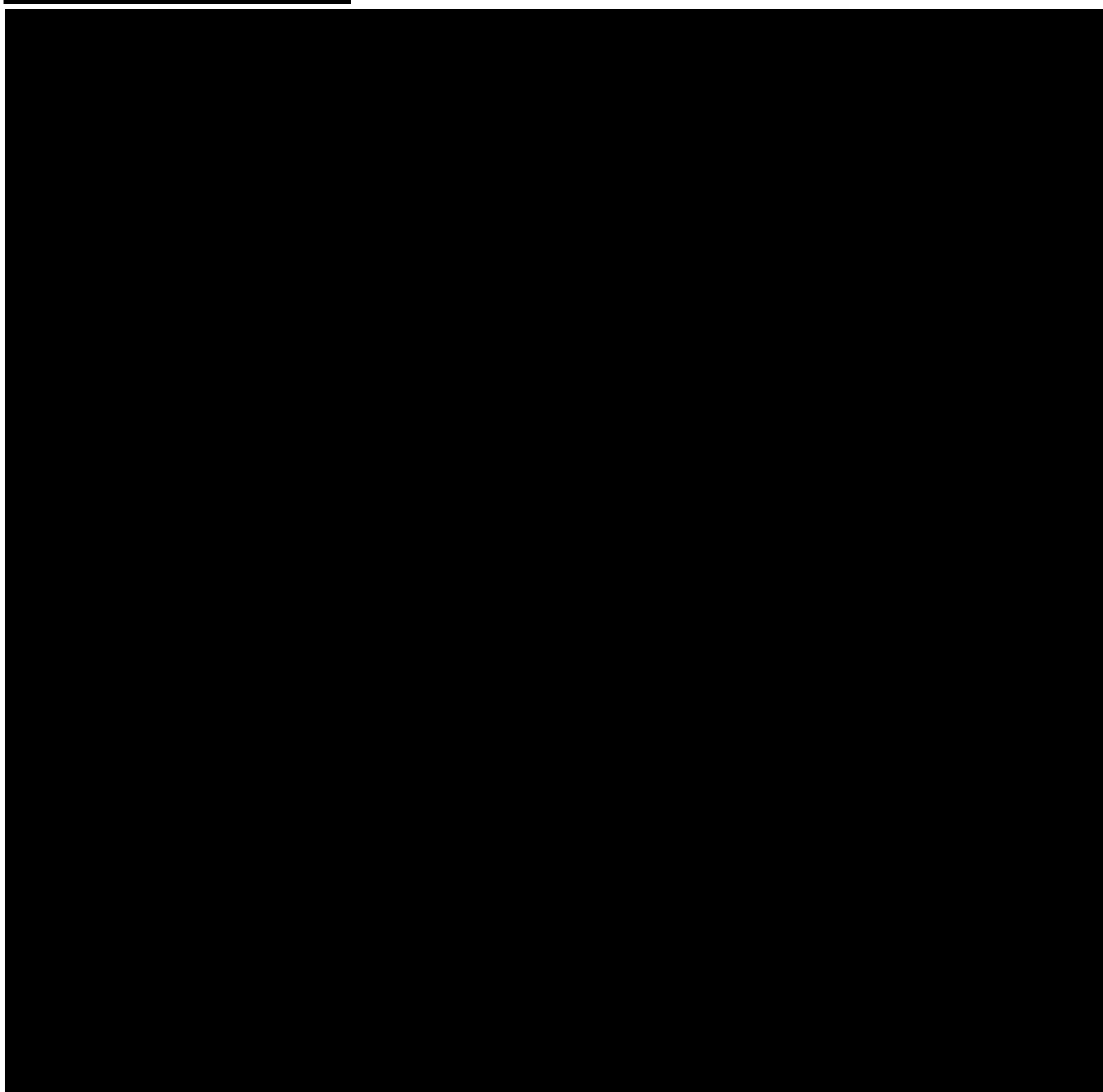
### 2.3.1 Schema Map

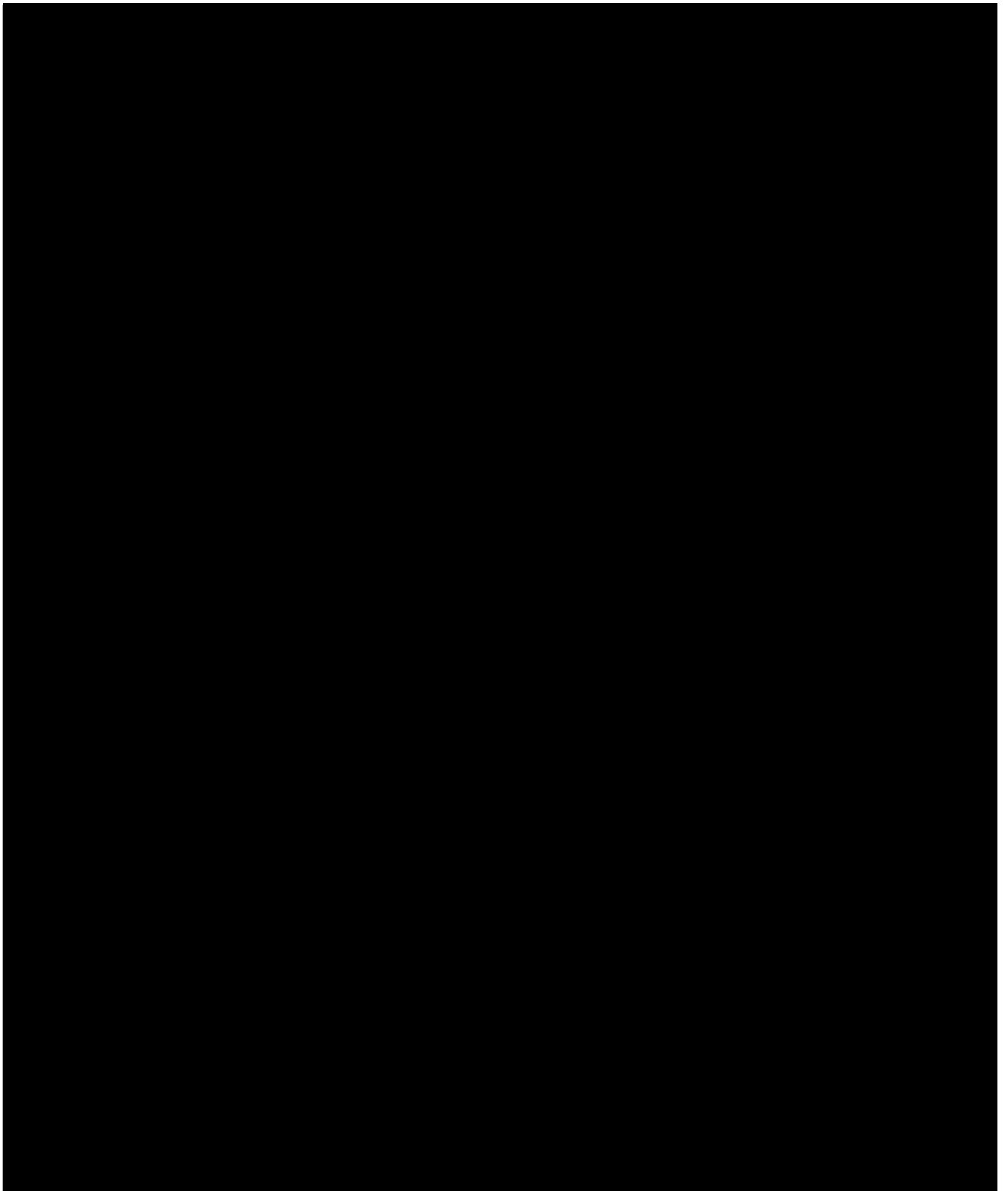


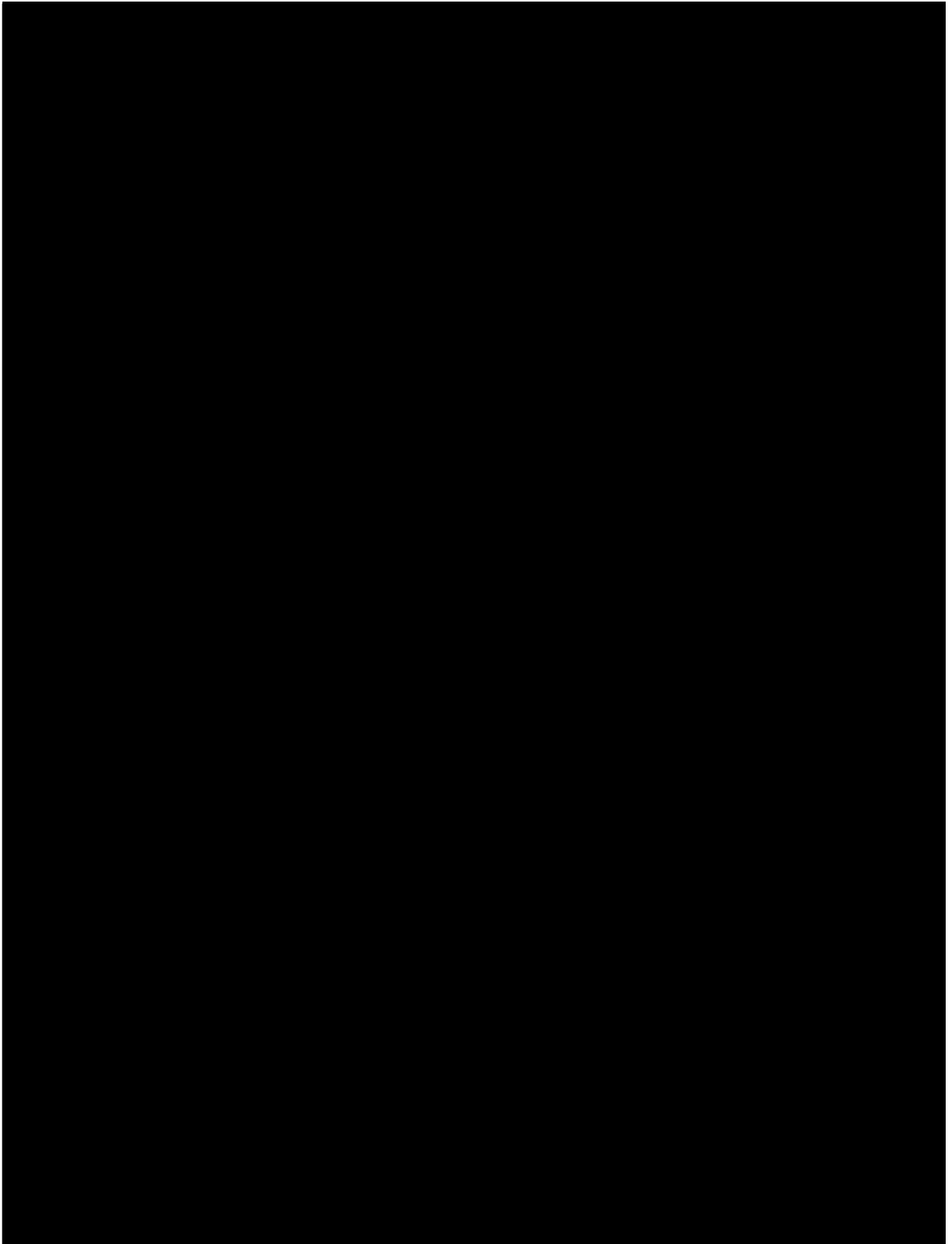


### 2.3.2 Schema Definition File (XSD)

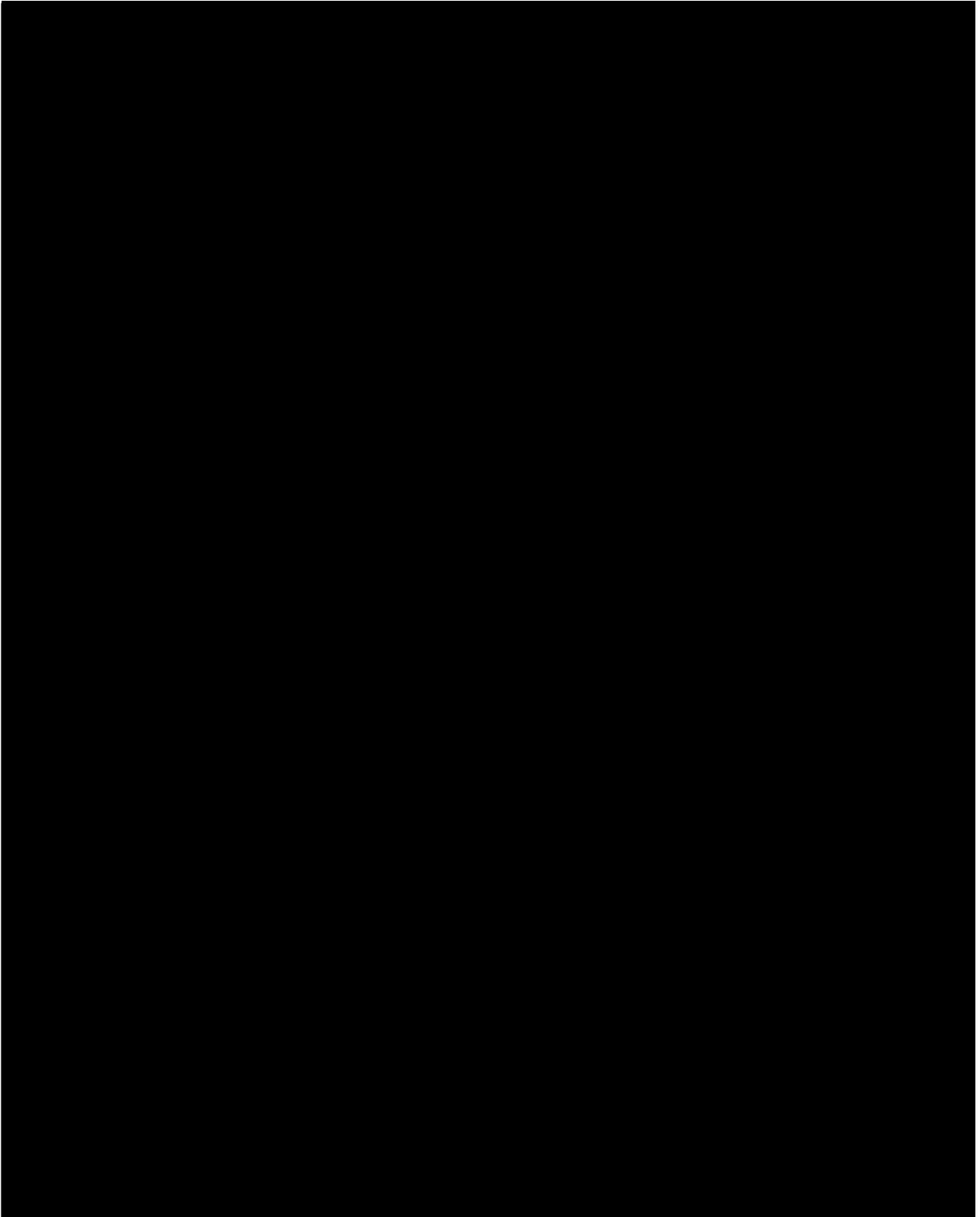
<?xml version="1.0" encoding="UTF-8"?>

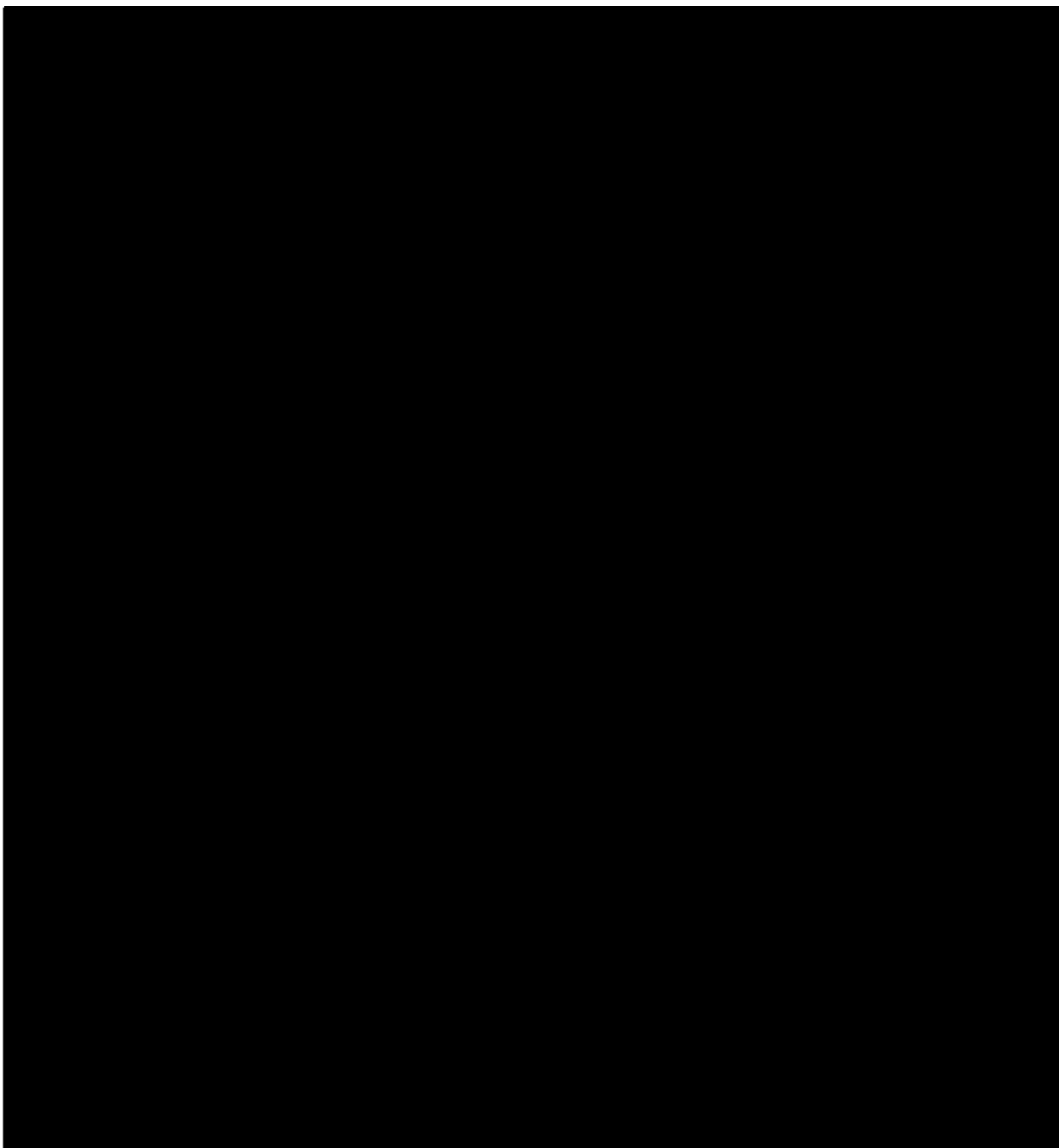






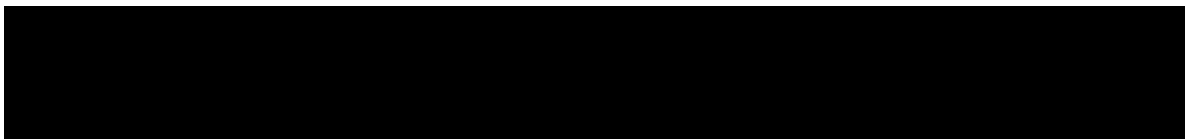








## 2.4 Interface Details

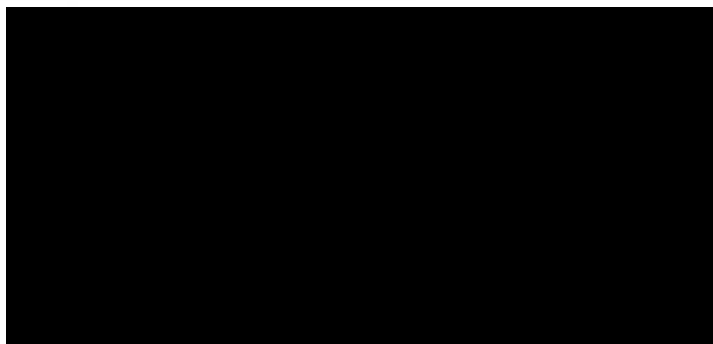


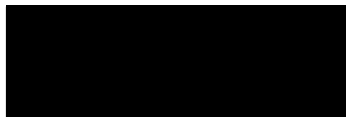
The following is assumed:

- The Utility Identifier (UtilityID) will be the same throughout the file for any one Utility and has been previously assigned during the Utility enrollment process so that the correct file is created for that Utility.
- Within the file it is expected that all Customer Requests will have been transmitted before any Customer Tariffs or Customer Adjustments are sent. However, in the unanticipated event that the Customer Request was not processed, sufficient information is provided in the Customer Tariff and Customer Adjustment transaction to support validation of the customer account to allow for the applying of the Tariff Code. Customer Adjustment will typically be sent in combination with a Customer Tariff Code as the Adjustment record is expected to be the result of an error caused by an incorrect Tariff Code having been sent previously.

### 2.4.1 Header Information

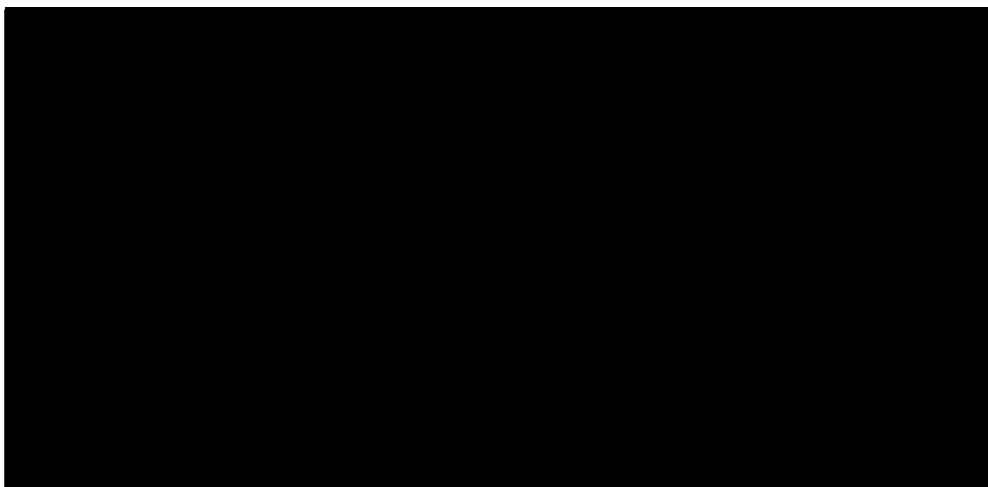
- Each transmitted file will have header information indicating Utility (UtilityID), a unique file identification (TransferFileID), and the number of records that are to be expected to be processed in the file (RecordCount).
- TransferFileID from CSP is sequentially indexed whereas TransferFileID from Utility is prefixed with a U and uses the received TransferFileID value from the CSP. If the utility cannot respond to all applications in the Request file in a single Response file, they can respond in multiple Response files using the file naming convention described in section 1.4.4.
- Additionally, the utility can attach any outstanding application record to a different response file on a different date. In this scenario, the TransferFileID of the latest transaction being responded to with a "U" prefix shall be used.
- Environment is a key field in the XML as it identifies which working system environment that the data transmission is to be applied to. The known values are Dev, Tst, Stg, Prd and one of these values must be entered or a processing error will be generated.
- An example XML header is shown here:





## 2.4.2 Header Errors

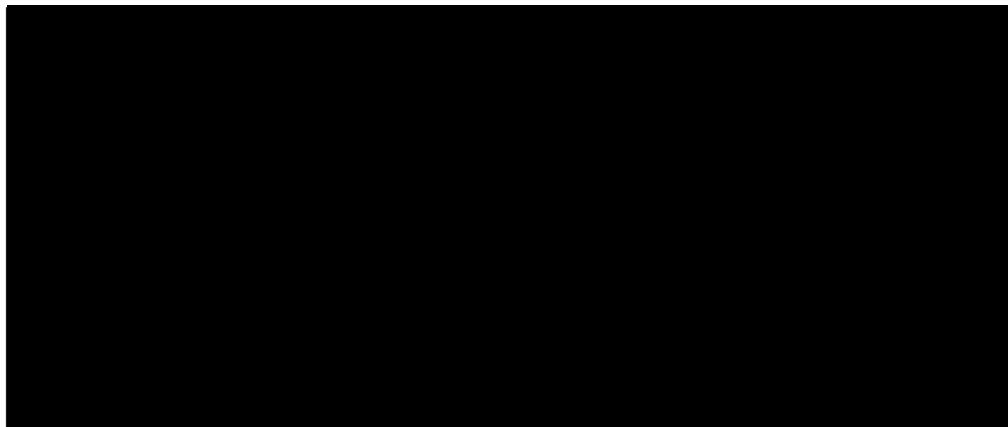
In the event that an error occurs in the UHeader record an error code will be returned that identifies the error. This error is returned in the UHeader structure as the remainder of the file will not be processed. There are currently only a limited number of error conditions possible in the UHeaderError which are 9010, 9020, 9030 and 9040. These will be returned to the CSP when such an error in processing occurs.



## 2.4.3 Customer Request (CusReq)

The CSP sending system will create an XML record for each application that needs to be verified. The Utility will receive and process all records against its system to verify that they have an active account number associated with the applicant (name) for a residential service Address, and provide a response to the CSP indicating such. The Utility will use the Customer Confirmed (ReqRes) transaction (below) to confirm receipt of this record.

The structure of the XML records for this CusReq type is shown in the example listed below:

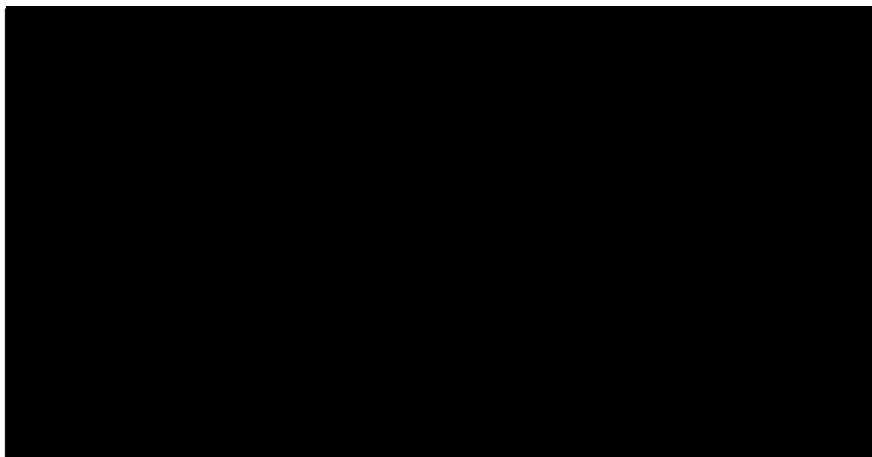


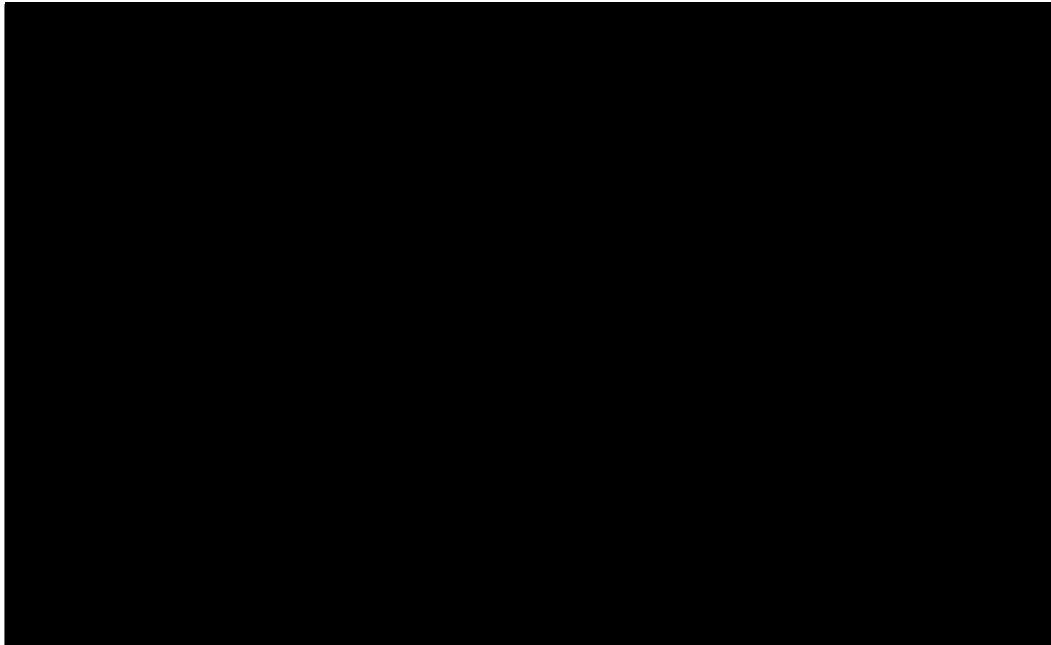


#### 2.4.4 Customer Confirmed (ReqRes)

The Utility will respond to XML records in the Request file from the CSP by creating a new XML Response file containing one response record for each transmitted request record. This updated information for each application record that was sent includes the value for the response <Validated> as either "true" or "false", indicating whether the name and service address match with the account number or not and whether the account is for a residential customer. When the name and address do not match to the account number or the account is not residential then "false" is entered in the <Validated> field along with the appropriate reason for rejection (see error conditions below). The Response file is transmitted to the CSP, who processes it. Based on the Utility responses, the CSP is able to either confirm the applicant-supplied utility information (and thus move on to the next step in the enrollment process), issue a notice to the applicant that an error has occurred or prompt a manual follow-up to the Utility from the CSP in order to resolve the error. For errors that trigger automatic customer communications, error information supplied by the Utility is passed on to the applicant in order to guide them to the portion of the application that needs to be corrected. Each customer confirmed response record is associated to the request record by the TransRefID. The response of each record will use the same TransRefID as that of the application record in the Request file.

The structure of the XML records for this ReqRes type is shown in the example listed below:





#### **2.4.5 Customer Tariff (CusTar)**

The CSP system will create an XML Request record for each Utility account that needs to have a tariff code applied in the Utility system. Each record will contain the tariff code identifier, the account number to which the tariff code should be applied, the approval date, and the duration along with name and address. This is then transmitted to the Utility where it will be processed against the Utility system to verify account number is still valid and schedule the tariff amount to be applied for a specified duration in months. The tariff code identifier will allow the Utility to lookup the monthly tariff to obtain the monthly amount from the OEB provided table to allow the Utility to implement the actual amount. The received tariff code will always supersede any previous tariff code and be applied for the duration specified using the approval date as a guide to when the new tariff amount should start. The actual start date will align with the Utilities billing cycle and go for the specified duration from the first time the tariff amount is applied or until a new tariff code and duration is sent from the CSP and applied by the Utility. The Utility will use the Benefit Response (BftRes) transaction (below) to confirm receipt of this record and to confirm that they are able to apply the tariff as indicated.

The utility is responsible to terminate the OESP amount from the utility account at the end of the duration. The CSP will not monitor this.

##### **The special case of “T0”**

The T0 tariff is designed to instruct the utility that the account in question is not to receive an OESP amount. It will be sent with a duration of 3 months. There are two contexts where this is applicable:



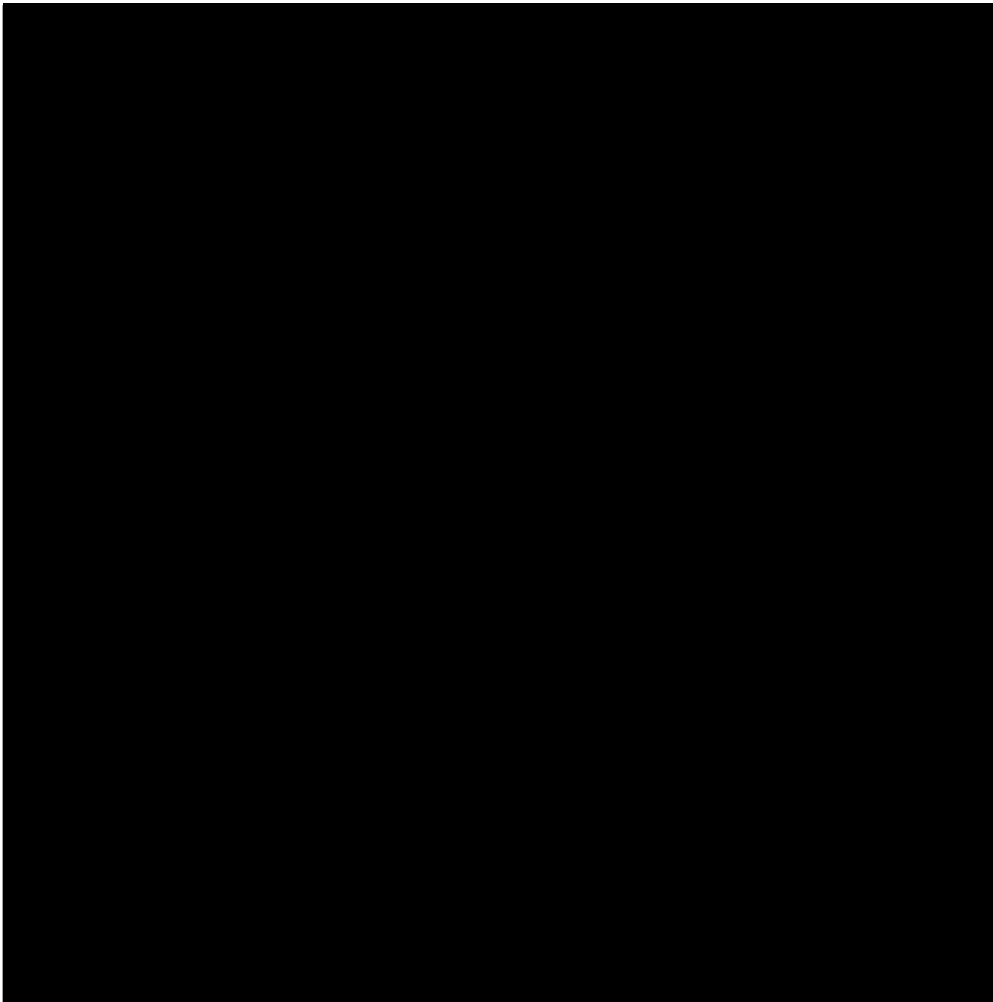
1. where an applicant who was receiving an OESP amount should no longer receive it (a termination, for example, if circumstances change prior to the natural eligibility period and the applicant is no longer enrolled in OESP)
2. where a new applicant has been assessed to be ineligible for OESP

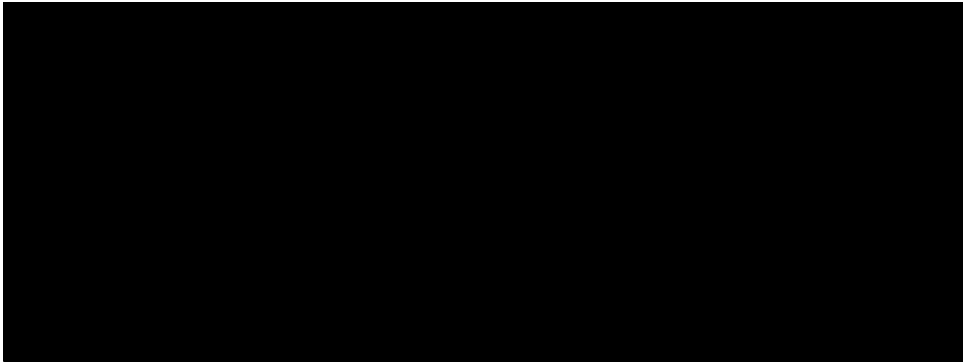
In either of these, the OESP amount should not be shown on the bill.

For an existing OESP recipient, when the Utility receives a "T0" they should simply stop applying the OESP amount to the bill (notwithstanding any prorating that may be applicable) and stop showing the OESP line item and information message altogether. A Benefit Response indicating whether the transaction was successfully completed is expected.

For a new applicant, the Utility will have no existing OESP amount and a receipt of "T0" will not invoke any updates or changes to that account. In this case, a valid Benefit Response is still required to complete the transaction. A successful response is expected by the system.

The structure of the XML records for this CusTar type is shown in the example listed below:

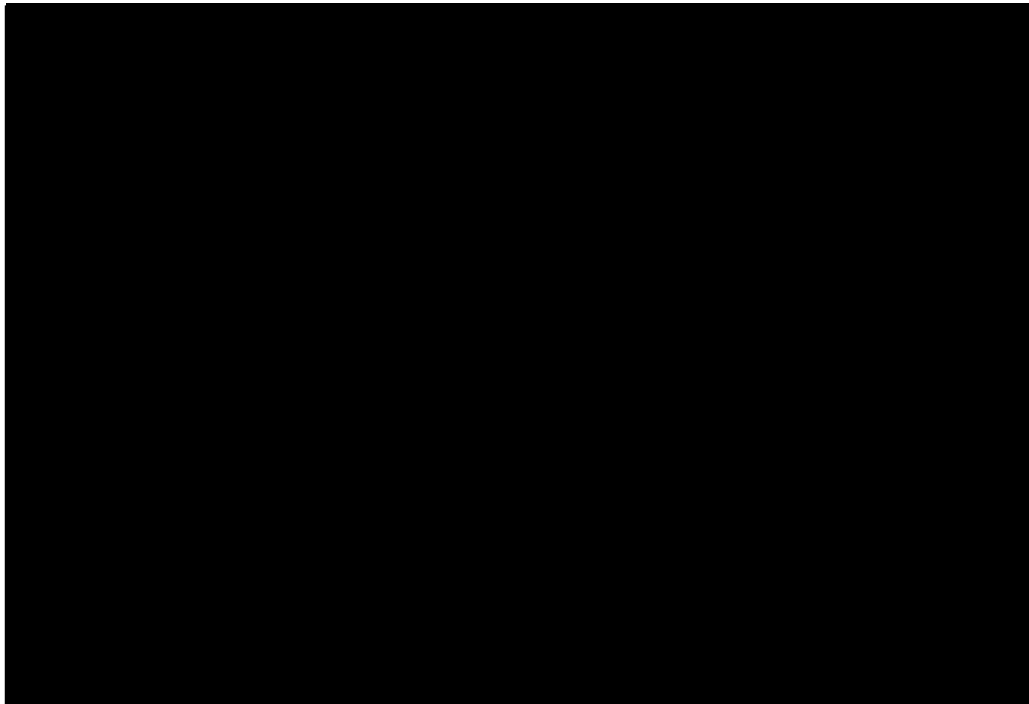




#### 2.4.6 Customer Adjustment (CusAdj)

The CSP sending system will create an XML record for each Utility account that needs to be sent an adjustment. Each record will contain the account number to be adjusted; the name of the account holder; the service address of the account; the approval date; and the one-time adjustment amount. This is then transmitted to the Utility where it will be processed against the Utility billing system to verify account number and schedule a one-time adjustment amount be applied along with the reason described. This will be applied in addition to the regular monthly tariff amount for the next billing cycle after the adjustment date. The Utility will use the Benefit Response (BftRes) transaction (below) to confirm receipt of this record and to confirm that they are able to apply the adjustment as indicated.

The structure of the XML records for this CusAdj type is shown in the example listed below:



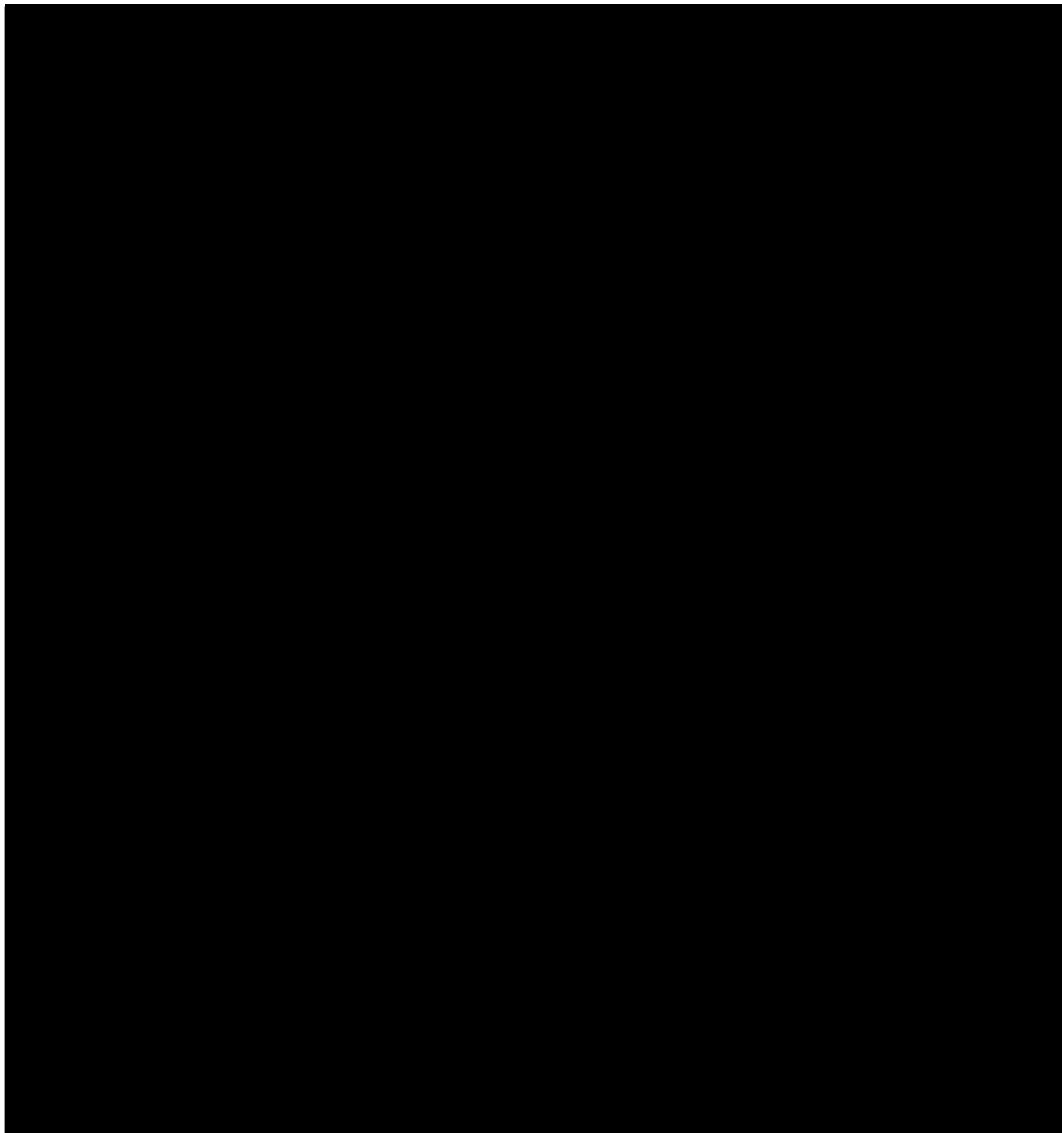


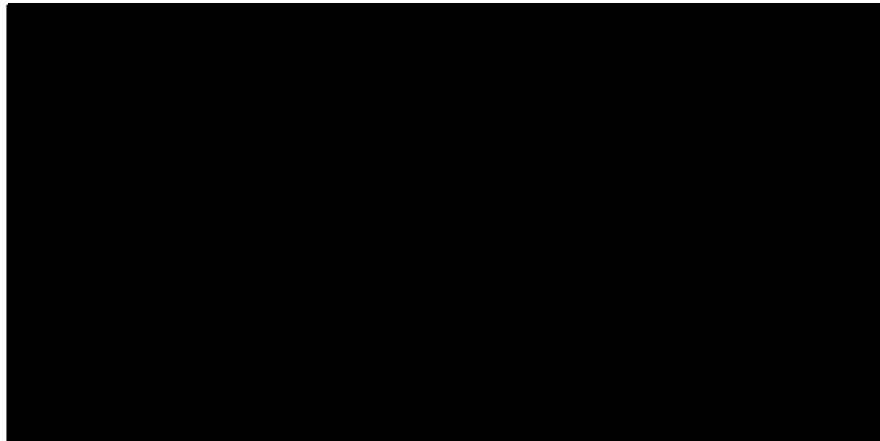


## 2.4.7 Benefit Response (BftRes)

The purpose of the BftRes transaction is to provide a mechanism for the Utility to respond to a Request from the CSP that they were either successful or unsuccessful in applying a given tariff or customer adjustment in the Utility's system. For each Request record, the Utility creates a corresponding XML Response record indicating "true" or "false" in the <Validated>field. A value of "true" indicates that the account, name and service address still exists and is still active so that they will be able to apply the tariff or customer adjustment successfully. A "false" will include an <Error> section for rejecting the amount using the ErrorCode and ErrorMessage below (e.g. "2010" and "Adjustment not applied"). This XML is then transmitted to the CSP where it will be processed against the CSP system and an appropriate notification will be sent to the applicant based on the error from the Utility. Each benefit response record is associated to the request record by the TransRefID. The response of each record will use the same TransRefID as that of the application record in the Request file.

The structure of the XML records for this BftRes type is shown in the example listed below:

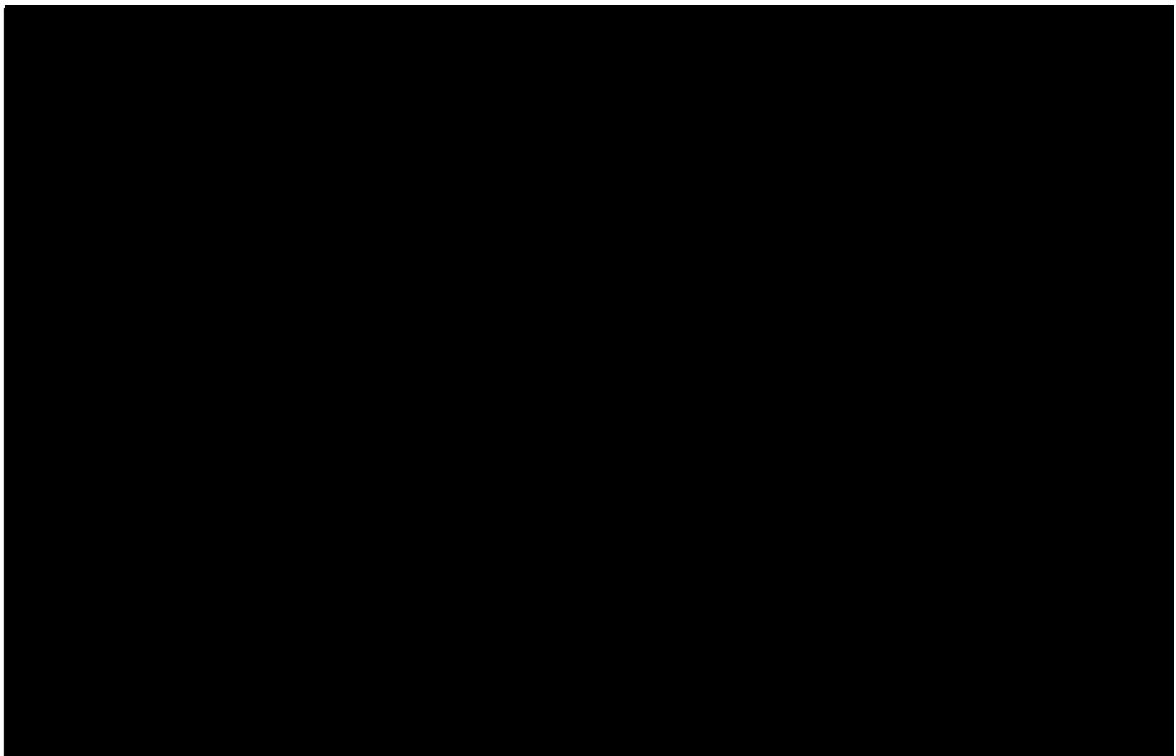


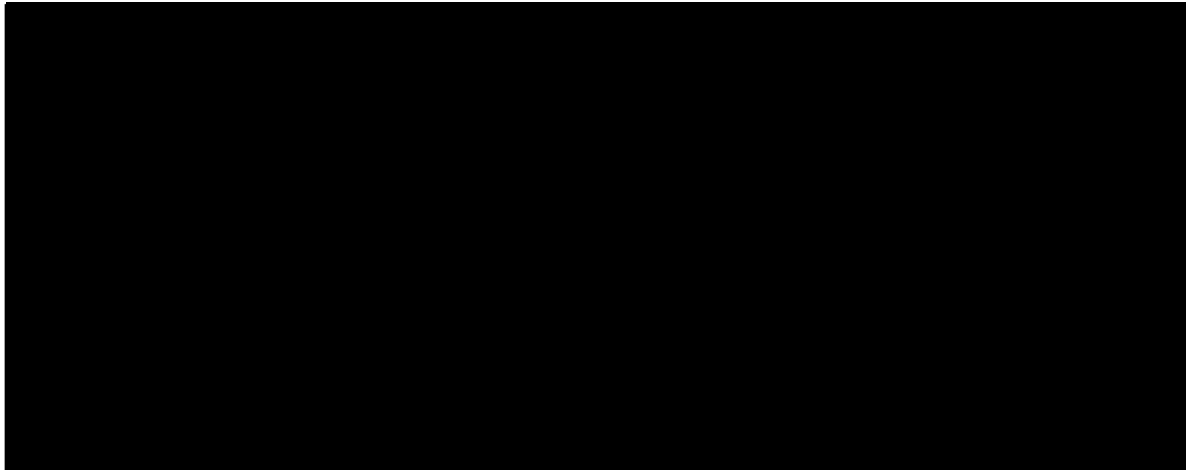


## 2.5 Error Handling

### 2.5.1 Error Codes

In general, error codes starting with 10XX will generate automatic communications to the end user prompting for further action to resolve the issue, while all other errors are classified as system errors and will trigger a manual follow-up by the CSP to resolve the issue. As such, it is expected that the most appropriate and specific 10XX error code according to the description below should be returned before a more generic error code is given.





Note: The Error Message is a text string of up to 255 characters that allows for the Utility to expand on the error condition as it sees fit to aid with communication to the CSP.

## 2.5.2 Out of order file processing

Transaction files should be processed in the order in which they are received. If the utility receives multiple files in the same batch then process in ascending order of the TransferFileID (the newer files will have a higher TransferFileID and all application records will have larger TransRefID). If for any reason, the utility receives an older file with a lower TransferFileID than one already processed, then the out of order record processing rules apply (see section 2.5.3 below).

## 2.5.3 Out of Order record processing

Within each file, transactions shall be processed in the order they appear in the file (i.e. newer transactions will have a higher Transaction Reference ID (TransRefID) and is in ascending order as you go down the file). If for any reason a transaction is encountered during processing that has an older Transaction Reference ID than the highest one processed to date, then process the transaction according to the Transaction Type as follows:

### Customer\_Request (CusReq)

- Process these transactions as per usual. Out of order processing of these transactions does not affect data integrity of the system.
- Duplicate transactions (where the Transaction Reference ID is the same as previously processed) can be ignored or processed as per usual as it has no impact to the data integrity of the systems.

### Customer\_Tariff

- The utility is expected to send an error code of 2020 in the response file for this transaction, with an error message of "Out of order transaction ID."
- Likewise if a duplicate transactions (where the Transaction Reference ID is the same as a previously processed) error code 2020 for this transaction should be the response with an error message of "Duplicate transaction ID."
- The CSP will re-issue a new Customer\_Tariff request in the next available Transaction File with the latest customer tariff code to be processed.

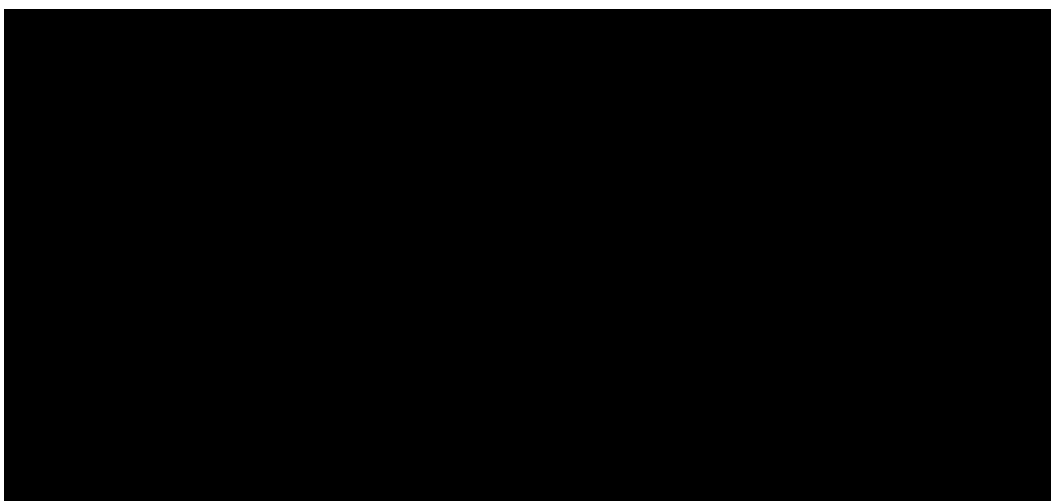
### Customer\_Adjustment



- Process these transactions as per usual. Out of order processing of these transactions does not affect data integrity system.
- Duplicate transactions (where the Transaction Reference ID is the same as previously processed) of this type shall be ignored and the utility is expected to send an error code of 2020 in the response file for this transaction, with an error message of "Duplicate transaction ID."

#### **2.5.4 Corrupt Files or Invalid Schema**

If a file is received that cannot be read / parsed because it has been corrupted or does not confirm to the valid schema, it is expected that a response file is generated with a header error as defined in Section 2.4.2 containing a 9040 error code with the appropriate error message. The TransferFileID can be derived from the filename as per the naming convention.





### Tariff Values

The Utility Tariff Table below displays the historical tariff values (Prior to May 1<sup>st</sup>, 2017) and the current tariff values, which came in to effect on May 1, 2017.

Utility Tariff Table

Tariff	Monthly OESP Amount (Prior to 05/01/2017)	Monthly OESP Amount (Effective 05/01/2017)
T0		
T1		
T2		
T3		
T4		
T5		
T6		
T7		
T8		
T9		
T10		
T11		
T12		
T13		

Note: T0 is a special case to identify the end of OESP eligibility and may result from a number of reasons. It is expected that the Utility will handle this in a fashion that is suitable to that decision.

This T0 will come with a 3 months duration to assure that it is implemented to a \$0 value to protect and prevent further OESP support being sent to the client under that application. No notice of renewal should be sent for any T0 tariffs.



### 3 Architecture View

