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**TARIFF BILLING CODE**

**MARKET TEST PLAN**  
**WAVE 4**

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## 1. Introduction

This Market Test Plan provides a description of the processes and testing materials that will be used for testing the readiness of AltaGas Utilities Inc. and their systems to become compliant with v1.4 of *AUC Rule 004: Alberta Tariff Billing Code* (the “Code”).

### 1.1. Purpose

This Market Test Plan provides direction to regulated market participants under the jurisdiction of the AUC, as well as non-regulated market participants who choose to participate in testing, of the processes, procedures and testing requirements to be followed to complete market testing and to ensure successful implementation of the Code.

The main objective of this document is to provide the mechanism and criteria for evaluating a market participant’s ability to create and process Tariff Billing Code compliant files and transactions that adhere to defined standards as stated in the Code.

### 1.2. Intended Audience

This market test plan is primarily intended for the testing and development teams of AltaGas, who are engaged in Tariff Billing Code system(s) development, testing and deployment to achieve compliance.

### 1.3. Approach

This market test plan was developed by the AUC in consultation with AltaGas and incorporates feedback received from retailers who were provided the opportunity to review the test plan.

As of July 1, 2006, all regulated market participants implemented systems to transact according to the requirements of the Code; however, not all participants were able to comply or fully comply with the requirements of the Code at that time. AltaGas is intending to be compliant with the Code by March 1, 2010.

To expedite the test planning process, this test plan has been developed based on previous Tariff Billing Code Market Test Plans and incorporates lessons learned from previous test phases to improve testing processes.

The Market Test Plan approach is as follows:

1. Discrete business requirements were initially extracted from the Code following its publication on September 24, 2004. Business requirements current to the v1.4 release of the Code, including amendments to the Code, form the basis of the Market Test Plan test requirements.
2. Test scenarios based on the business requirements of v1.4 of the Code have been defined to test a specific test requirement or function of AltaGas’ system. Individual test scenarios map directly to one or more business requirements.
3. Logical groupings of test scenarios have been packaged into individual test cases for testing purposes. Within each test case, one or more functional test scenarios form test sequences used to test a single or multi-function process.
4. A test schedule will be produced based on AltaGas’ compliance plan and stakeholder input to establish the testing schedule for execution of this Market Test Plan.
5. Standardized test data will be developed by AltaGas to reflect their production system(s) and process inputs and outputs to support execution of published test cases.

## 1.4. Scope Definition

This Market Test Plan covers the customer billing process flow as outlined in Section 3.1, Customer Billing Process Flow, as it relates to the tariff bill file and the associated transactions as outlined in Section 4, Information Exchange, of the Code. It includes testing of electronic business transactions and associated business processes, according to a market agreed upon test schedule, using defined test cases and test data.

### 1.4.1. In Scope

The following items are in scope for this market test plan:

- The electronic and non-electronic transactions as stated in Section 4, Information Exchange, of the Code and the associated data validations as stated in Section 5, Validation and Exception Handling, of the same document.
- The tariff billing events as stated in Section 3.2, Tariff Billing Events, of the Code.
- Testing of the transition period (i.e. pre-implementation and post-implementation presentation of tariff billing information to facilitate market participant evaluation of this information).
- Tariff billing adjustments that cover the transition period (i.e. cancel/rebill pre-implementation and post-implementation tariff billing information).

See Appendices 6.3 and 6.4 for a list of in-scope distributor and retailer stand-alone test cases, respectively.

### 1.4.2. Out of Scope

The following items are not in scope for this market test plan, but should be conducted by AltaGas prior to self-certification:

- Unit, integration, function, stress and performance tests necessary to confirm the correctness, robustness and effectiveness of AltaGas' systems used to produce, transmit, receive and process Code compliant files.
- Optional transactions, as stated in Appendix F of the Code<sup>1</sup>.
- Tests necessary to determine the robustness or effectiveness of AltaGas' market transport mechanism (currently DropChute<sup>TM</sup>).
- Tests necessary to determine the security of AltaGas' system(s).

## 1.5. Assumptions

The following assumptions have been made in the creation of this test plan:

- Regulated market participants (limited to AltaGas) participating in the Alberta natural gas market will adhere in full with this document for Code testing processes and guidelines.
- The test plan is designed to test the standard files, transactions and business processes related to the production or processing of a tariff bill file which market participants and their trading partners must exchange.
- Each market participant will use automated processes, where possible, when testing their systems.

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<sup>1</sup> AltaGas may include optional transactions in their test data sets to provide additional clarity to retailers.

- In addition to testing outlined in this test plan, AltaGas will perform unit, integration, stress and performance testing, where deemed necessary.
- The test plan is not intended to exercise every conceivable market condition or billing situation; however, it will cover the common, high impact market conditions as well as market conditions that are expected to cause problems.
- The test plan cannot anticipate limitations within each market participant's system(s) (including test environments). As a result, it is strongly recommended that market participants perform additional testing of their own systems as well as the interaction with their trading partners' systems.
- Each market participant has assembled, or is able to assemble, a test team with the requisite skills to develop and execute test activities outlined in this test plan.
- Market participants will abide by the published test schedule for executing the market test plan. Where a market participant is unable to abide by the test schedule, notification in writing to the AUC must be provided.
- Testing of non-tariff billing procedures and systems will be tested, where deemed appropriate given the extent of concurrent change, individually by market participants outside of this plan.

## 2. Test Plan

### 2.1. Overview

Testing has been organized into two test phases:

- **Distributor Stand-alone Testing** – AltaGas performs testing of their internal systems using mock-up and/or production test data to evaluate their ability to produce and process Code compliant files and transactions related to the production and processing of a tariff bill file. Testing by AltaGas during this phase of testing will be performed independently of testing by their trading partner(s).
- **Retailer Stand-alone Testing** - Each retailer choosing to participate in the testing performs testing of their internal systems using standardized test data produced by AltaGas to evaluate their ability to correctly interpret and process information provided by AltaGas related to the production and processing of tariff bill files and associated settlement transactions. Testing by retailers during this phase is performed independently of AltaGas. This phase of testing requires that AltaGas has successfully completed distributor stand-alone testing and have generated test data to support retailer stand-alone testing.

The scope of testing as defined by AltaGas must correlate to their Compliance Plan for version 1.4 of the Code (as well as any revisions to that document), approved exemptions, and intended use of optional transactions.

### 2.2. Distributor Stand-Alone Testing

#### 2.2.1. Objective

Distributor stand-alone testing is designed to evaluate AltaGas' ability to produce and process Code compliant transactions related to the production and processing of a tariff bill file using mock-up and/or production test data. Successful completion of this test phase will provide AltaGas, their trading partners,

and the AUC with a level of assurance that AltaGas has successfully met the stand-alone testing exit criteria (described in Section 5.2.2 of this document).

### **2.2.2. Description**

Testing during this phase is performed independently of AltaGas' trading partners testing which eliminates AltaGas' dependence on their trading partners.

Standard test cases have been established for the execution of distributor stand-alone testing that organize test scenarios (derived directly from business requirements stated in the Code) into sequences. These sequences are focused on testing business and system processes that are frequently executed and/or may cause major problems during live market operations.

Execution of all distributor stand-alone test cases will exercise all aspects of tariff billing transactions as they relate to that market participant as described in Table 4-1 of Section 4, Information Exchange, of the Code.

Distributor stand-alone test cases have been defined to take into account the differences between distributors' business processes as they relate to the Code. One or more possible outcome has been provided, where appropriate, in the expected results for each sequence within a test case to accommodate these differences.

Due to the discrepancies in distributors' systems, test scripts (defined in this document as detailed steps necessary to execute a test sequence within a test case) have not been defined for distributor stand-alone test cases. AltaGas is expected to create these detailed test scripts from the test sequence descriptions to support execution of each test case.

To support the execution of distributor stand-alone testing, AltaGas must create test data, or extract test data from their production environment, that accurately reflects their system inputs and business processes for each test case.

## **2.3. Retailer Stand-Alone Testing**

### **2.3.1. Objective**

Retailer stand-alone testing is designed to evaluate a retailer's ability to correctly interpret and process information provided by AltaGas related to the production and processing of a tariff bill file using standard test data. While there is no requirement for deregulated retailers to participate in the testing, issues identified by retailers as a part the retailer stand-alone testing should be forwarded to the AUC for review. Successful completion of this test phase will provide the retailer and the AUC with an additional level of assurance that AltaGas and its trading partners are ready to exchange tariff bill file information.

### **2.3.2. Description**

Testing during this phase is performed independently of AltaGas' testing which eliminates the retailer's dependence on AltaGas.

Standard test cases have been established for the execution of retailer stand-alone testing that organize test scenarios (derived directly from business requirements stated in the Code) into sequences and map directly to distributor test case sequences. The retailer sequences are focused on testing business and system processes that are frequently executed and/or may cause major problems during live market operations.



Execution of all relevant retailer stand-alone test cases will exercise all aspects of tariff billing transactions as they relate to that market participant as described in Table 4-1 of Section 4, Information Exchange, of the Code.

Due to the discrepancies in retailers' systems, test scripts (defined in this document as detailed steps necessary to execute a test sequence within a test case) have not been defined for retailer stand-alone test cases. Retailers choosing to participate in testing are expected to create these detailed test scripts from the test sequence descriptions to support execution of each test case.

To support the execution of retailer stand-alone testing, distributor stand-alone test cases that relate to the production and processing of a tariff bill file, map directly to retailer stand-alone test cases. AltaGas will publish standard test data to the AUC that accurately reflects their system output and business processes for each test case. Retailers will utilize the published standard test data as input for the execution of a given test case.

## **2.4. Test Materials**

### **2.4.1. Test Case Documentation**

Standard test cases have been established for the execution of distributor and retailer stand-alone testing. Each test case contains one or more test case sequences describing the specific conditions under which a particular feature or function of a market participant's system must be tested, as well as, the expected results following execution of that sequence. The test cases required for distributor stand-alone testing and retailer stand-alone testing can be obtained by downloading the *Distributor Stand-Alone Test Case Set* and *Retailer Stand-Alone Test Case Set*, respectively, from the AUC's web site. (See Appendix 6.2 for the link.)

Recognizing differences in market participants' business processes, systems and compliance plans, individual market participants may approach execution of a given test case, or sequence within that test case, in a different manner, or it may not apply. Where exceptions are necessary, AltaGas must notify the AUC of the exception. Following approval by the AUC, these exceptions will be maintained by the AUC and published on the AUC's web site (Appendix 6.2) during the testing process.

### **2.4.2. Test Data**

Market participants will create test data to support the execution of stand-alone test cases that accurately reflect their system and business process input and output. Test data generated by AltaGas that will be used as input into the execution of retailer stand-alone testing, must be published to the AUC for review and validation prior to the beginning of retailer stand-alone testing. Please refer to Section 4 of this document for detailed information on the test data management process.

## **2.5. Test Tools**

Market participants are strongly encouraged to implement test tools to assist with execution of the market test plan. These tools can include, but are not limited to: test automation, data management, test case management, and defect management.

## **2.6. Test Schedule**

The AUC will create and publish a test schedule outlining the timing of testing activities to be performed by market participants involved in Wave 4 testing. This schedule is highly dependent upon AltaGas' adherence to

their development schedule as stated in their compliance plan. The AUC will publish this schedule, as well as any amendments to the schedule, on the AUC's web site at least 30 days in advance of the beginning of distributor stand-alone testing. (See Appendix 6.2 for the link.)

## **2.7. Test Issue Reporting and Resolution**

All market participants involved in the execution of this test plan are expected to report issues experienced during testing. Issues will be captured in an issues log that will be maintained on a regular basis by the AUC. The AUC will also schedule conference calls with members of the Testing Working Group to discuss and resolve issues relating to testing and to mitigate delays in the testing schedule.

## **3. Test environment**

### **3.1. Overview**

Each market participant executing this market test plan must establish a test environment that accurately reflects that organization's production environment for creating and processing Code compliant files and transactions to support stand-alone testing. This testing environment includes, but may not be limited to:

- Billing System(s)
- Feeder systems to the billing system, (e.g. MDM, enrollment, etc), where appropriate
- Destination systems (invoicing) from the billing system, where appropriate

#### **3.1.1. Stand-Alone Testing Test Environment**

To support stand-alone testing, AltaGas must establish a dedicated test environment(s) that meets the following minimum requirements:

- a) Accurately reflects their respective billing system's production environment, excepting the volume of data that can be processed
- b) Integrates with other systems or processes that are required for creating, transmitting, receiving, or processing Code compliant files and transactions (i.e. metering system, settlement system, customer information system, etc.)
- c) Can be restored to a previous state in the event the environment is compromised

### **3.2. Test Environment Management**

It is the responsibility of each market participant to maintain the abovementioned test environment, ensure appropriate backups and restores are performed, and ensure that code releases and/or data loads are performed during periods where these activities will not interfere with daily operations, test activities and/or test results.

## **4. Test Data Management Process**

The test data management process, applicable to stand-alone testing, defines the production and management of test data and applies to the following:

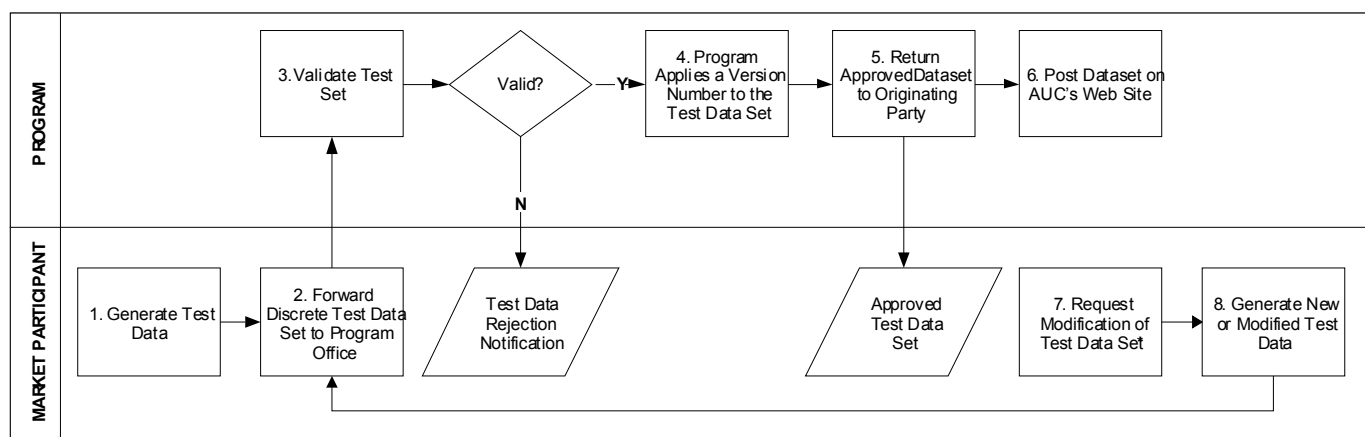
- Expected results produced by AltaGas to support distributor stand-alone testing

- Actual results generated by AltaGas following execution of a given test sequence during distributor stand-alone testing
- Standardized test data produced by AltaGas to support a given test sequence for retailer stand-alone testing
- Expected results produced by a retailer to support retailer stand-alone testing

Test data generated for the execution of the stand-alone testing phases will be used by market participants and the AUC to evaluate Code compliance.

In order to accurately track the publication of test data, and any requested modifications, it is necessary to apply a common process for all market participants involved.

#### 4.1. Process



\* A modification to test data may be requested prior to or following the execution of a test case

#### *Test Data Management Process*

The following steps outline the test data management process:

1. Market participant generates a test data set to be used as:
  - a. Input into the execution of a specific test case or test case sequence
  - b. Actual results following execution of a given test case sequence

The above data sets must consist of all relevant tariff billing files and/or transactions, SSC transactions, and/or data from other feeder systems to support validation of that data set.

2. Market participant sends the test data set to the AUC via email or CD.
3. AUC validates the test data set using a mix of automated tools and manual processes to determine adherence to tariff billing code standards, published tariffs, and adherence to the specific test case or test sequence, and either accepts or rejects the test data set. Working papers prepared during this validation will be maintained for reference. Assuming market participants provide stand-alone test data sets to the AUC for validation in a staggered manner, the AUC expects to provide feedback to a market participant within 3 business days of receipt of the data set. Where a market participant provides a complete data set to the AUC following execution of all required test cases, the AUC expects to provide feedback to a market participant within 5 – 10 business days of receipt of the data set.

4. If the AUC approves the test data set, a version number will be applied to the test data set, otherwise a test data rejection notification will be provided to the originating party via email.
5. AUC returns the approved test data set to the originating market participant via email or CD.
6. AUC posts AltaGas test data sets that have been sanitized and approved for use in Retailer Stand-alone testing to the AUC's web site to enable retailers to download the test data set required for the execution of a specific test case. (See Appendix 6.2 for the link.)
7. Conditional – Market participant requests one or more modifications to a test data set as a result of an error found in that test data set.
8. Conditional – If Step 7 occurs and the request is valid, the originator of the data set generates a new test data set.
9. Conditional – If Step 8 occurs, steps 2 through 6 are repeated.

## **4.2. Roles and Responsibilities**

### **4.2.1. Distributors**

To support the test data management process, AltaGas must:

- Generate test data as input into the execution of test cases used in distributor stand-alone testing.
- Sanitize approved test data for use by retailers in the execution of retailer stand-alone test cases. Test data generated by a distributor to support retailer stand-alone testing must be retailer non-specific (i.e. Retailer ID = 999999999) and data relating a customer to a site must be converted into non-identifiable information to support the Code of Conduct requirements.
- Publish standard test data to support retailer execution of stand-alone testing to the AUC for validation and approval.
- Notify the AUC of required modifications and/or augmentations to approved test data, where necessary.

### **4.2.2. Retailers**

To support the test data management process, a retailer must:

- Download approved test data specific to AltaGas from the AUC's web site prior to the execution of a specific test case. (See Appendix 6.2 for the link.)
- Generate test data as input into the execution of test cases that do not require processing of a tariff bill file. Retailers systems being modified or developed to comply with Code requirements may have unique data requirements for executing one or more stand-alone test cases. Therefore, it is necessary for each retailer to create the supporting test data sets for these test cases.
- Generate test data to serve as expected results for comparing and evaluating the output of a given test case against.

### **4.2.3. AUC**

To support the market testing test data management process, the AUC must:

- Collaborate with the market participant that generated the test data set, as well as, the market participant(s) utilizing the test data set, to validate and either approve or reject the test data set.
- Version test data sets that have been received from market participants and subsequently validated and approved.
- Publish approved test data sets to support stand-alone testing to the market participant that generated the data.
- Publish approved AltaGas test data sets to support retailer stand-alone testing on the AUC's web site. (See Appendix 6.2 for the link.).

### **4.3. Test Data**

A test data set is comprised of data constructed in a format specified in the Code, in the case of Code compliant files or transactions, or in a format that can be recognized by a market participant's system, in the case of input data that is not specified in the Code. Test data sets will include all relevant input, output, and/or reference data to billing such as mandatory and optional tariff billing transactions, relevant settlement transactions, and at a distributor's discretion, internal transactions for providing additional clarity to retailers.

In both cases, test data will be generated and/or extracted to support stand-alone testing, introducing discrepancies by manipulating system generated files, where required, to meet the objectives of a specific test case.

The following general requirements must be adhered to for the generation of test data used to support stand-alone testing:

- Test data must be produced in comma-delimited (.CSV) format, to comply with file or transaction format requirements of the Code and associated settlement transactions, as well as, for efficient upload into market participants' systems.
- Test data developed for stand-alone testing that are related to Code compliant transactions must be organized to 'respond' to, in the same testing timeframe, as transactions received during that testing timeframe. For example, TBF files received by a retailer during the testing timeframe require response transactions from that retailer (i.e. TBA, TBR and/or TBD) during the same testing timeframe. The same principle applies to distributor responding transactions such as TRN and cancel/re-bills.
- Test data created to support Code compliant files or transactions must be transaction specific, meaning that the data set will be formatted as specified in Appendix B.4, Standards, and comply with the production rules specified Section 4, Information Exchange, of the Code, except in instances where a specific change is requested in order to exercise a specific sequence within a test case.
- The naming convention used to name the test data set, as well as test data files within that test data set, must adhere to the naming convention stated in Section 4.3.3.

#### **4.3.1. Distributor Stand-Alone Test Data**

AltaGas is required to generate test data to support each distributor stand-alone test case and test sequence within a test case. This includes the generation of test data to serve as input into the execution of a test case. It is also recommended AltaGas generate test data to serve as expected results for comparison to output generated from the execution of a given test case.

Test data generated by AltaGas must adhere to the following minimum requirements:

- Test data must accurately reflect AltaGas' production input and output data as of the expected transition date (i.e. must adhere to the same format and rules of relevant settlement transactions, tariff billing transactions, or other required inputs, except where manual manipulation of the test data is required in order to test negative results).
- To promote testing efficiency test data used in distributor stand-alone testing must reflect an October 1, 2009, transition date. AltaGas must take a copy of their production environment's data on or shortly after September 30, 2009, so that their test environment will reflect production up to and including September 30, 2009)
- A copy of production data or mock up data may be used to execute a particular test sequence provided the data in its existing state, or following manual manipulation, accurately represents the data required to execute a given test sequence.
- A control set of sites must be created to support distributor stand-alone testing and must include as many sites as necessary to test the various combinations of site attributes, metering characteristics and applicable rate codes for AltaGas. The control set of sites must also be large enough to support the replacement of a site where challenges with that site are encountered.
- Sites used in stand-alone testing should also take into account any other circumstances that experience has shown should require special attention by AltaGas.
- A maximum of five (5) consecutive billing periods for sites within a common bill cycle must be used for the execution of stand-alone testing, with the exception of sites assigned to a different bill cycle for testing off-cycle billing events.

#### **4.3.2. Retailer Stand-Alone Test Data**

AltaGas is required to generate test data to support each retailer stand-alone test case, and test sequence within a test case, that relates to the processing of a tariff bill file. Retailers must use the AUC validated and approved test data generated during the execution of distributor stand-alone testing as the basis for execution of their stand-alone test cases. In order for all retailers to utilize the test data generated by AltaGas, AltaGas must adhere to the following minimum requirements when producing test data to support retailer stand-alone test data:

- The test data must accurately reflect tariff billing data generated from AltaGas' production environment as of the expected transition date, except where manual manipulation of test data is required to test negative test results.
- Test data must match the timeframe (i.e. start and end date of the bill periods in which data is relevant) used in distributor stand-alone testing to promote testing efficiency Test data to support retailer stand-alone testing must reflect an October 1, 2009 transition date.
- The test data must be retailer non-specific (i.e. Retailer ID = 999999999) and data relating a customer to a site must be converted into non-identifiable information to support the Code of Conduct requirements of the Market Surveillance Administrator (MSA).
- Test data must include all supporting files, transactions, and other data (i.e. Account set-up data and settlement transactions) to support a retailer's execution of a given test sequence.

In addition, AltaGas must publish a test case relationship map using the *Test Case Relationship Map Template* published on the AUC's web site (see Appendix 6.2) to map retailer stand-alone test case

sequences to each applicable site within AltaGas' control set of sites used to support retailer stand-alone testing.

### 4.3.3. Test Data Set Naming Convention

All test data files required to execute a particular test case/test case sequence must be compiled within a ZIP (.zip) file adhering to the following naming convention:

TestCaseNo\_TestCaseSequenceNo\_MarketParticipant\_YYYYMMDD.zip

where,

TestCaseNo:	four character alpha-numeric code identifying the test case (e.g., W001, R001, etc.)
TestCaseSequenceNo:	three digit code identifying the test case sequence within a test case (e.g. 001, 002, etc.). Where test data within the zip file is applicable to all sequences within a test case (i.e. all sequences for a test case are included in a single TBF), this code must be excluded from the file name (e.g., TestCaseNo_MarketParticipant_YYYYMMDD.zip)
MarketParticipant:	ID of the Market Participant (i.e., Distributor ID or Retailer ID of the distributor or retailer, respectively, responsible for creating the test data set.
YYYYMMDD:	Date the file was created (e.g., 20041202)

Test data files provided within the ZIP (.zip) file must be given file names that adhere to the applicable file naming convention as stated in the Code and, for applicable transactions listed in Appendix 6.5, as stated in *AUC Rule 021: Settlement System Code Rules*.

## 4.4. Approval

### 4.4.1. Stand-Alone Testing

Test data generated by a distributor for a specific stand-alone test case may be submitted to the AUC for review, validation and approval prior to using that test data as input into, or as expected results for comparing the output data generated from, the execution of a given test case.

AltaGas must submit the actual results from the execution of a given stand-alone test case, including all of the supporting files, transactions, and other data related to the execution of that test case, to the AUC for validation.

## 4.5. Version Control

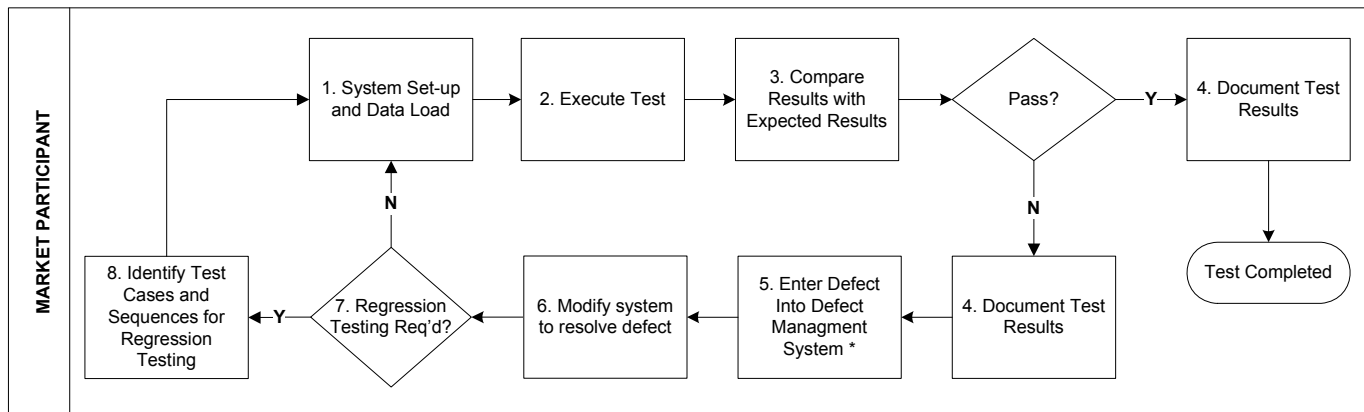
Test data, following validation and approval by the AUC, will be versioned and stored on a server maintained by the AUC prior to posting to the AUC's web site. (See Appendix 6.2 for the link.)

In the event changes are required to test data that supports a stand-alone test case, the market participant identifying the change, or the market participant that originally created the test data, must notify the AUC of the required modification. If a modification is warranted, the market participant that originally created the test data must submit replacement test data to the AUC for validation and approval. Following approval, the AUC will apply an incremental version number to that test data and repost it to the AUC's web site (Appendix 6.2).

## 5. Test Execution Guidelines

The following section outlines the test execution guidelines that must be followed prior to, and during, stand-alone testing.

### 5.1. Test Execution Process



\* Internal to Market Participant

#### *Test Execution Process*

The following steps outline the test execution process:

1. Market participant performs general setup of their systems and populates these systems with input test data to support the execution of the test case.
2. Once systems are prepared and contain the necessary test data, the test is executed.
3. The resulting output of the test is compared to the expected results generated for that test case or sequence.
4. Test results must be reported for each test case sequence using the *Distributor Stand-alone Test Reporting Template*, in the case of AltaGas, or *Retailer Stand-alone Test Reporting Template*, in the case of a retailer. These templates will be available on the AUC's web site. (See Appendix 6.2 for the link.)
5. If a sequence within a test case fails, the defect must be identified and tracked via a manual or automated defect management process established by the market participant. Details of the defect must be reported using the appropriate test results reporting template as mentioned above.
6. Following system modifications to resolve the defect, the market participant must re-test the test case sequence by repeating steps 1 through 5.
7. If system modifications are made to resolve a defect, a market participant must assess the impact to their system(s) and determine if regression testing is required for previously executed test cases and sequences that may have been affected.
8. If regression testing is required, a market participant must identify the test cases and sequences that need to be retested and repeat steps 1 through 5 for each.



## 5.2. Distributor Stand-Alone Testing

### 5.2.1. Entrance Criteria

To be eligible to participate in distributor stand-alone testing AltaGas must have achieved the following:

1. A dedicated test environment complying with the requirements stated in Section 3 of this document is in place.
2. System development has been completed and passed internal unit, integration, and function testing.
3. The *Distributor Stand-alone Test Case Set* has been downloaded from the AUC's web site. (See Appendix 6.2 for the link.)
4. Test scripts have been created to support the sequences within each test case.
5. A copy of production data has been taken on the date specified by the AUC in this plan.
6. The *Distributor Stand-alone Test Reporting Template* has been downloaded from the AUC's web site (Appendix 6.2).

### 5.2.2. Exit Criteria

To complete distributor stand-alone testing AltaGas must have achieved the following:

1. All sequences within the *Distributor Stand-alone Test Case Set* have been executed. This criterion excludes test case sequences that are not applicable to AltaGas based on their approved compliance plan and approved exemptions.
2. The pass/fail and defect severity ratio meets the requirements stated in the Market Readiness Review Checklist for Milestone 2 in the Market Transition Plan.
3. All high priority test requirements have passed testing, as evidenced by AltaGas' test results and review and approval of these test results by the AUC.
4. Actual results of distributor test cases that serve as input into retailer stand-alone test cases have been sanitized and approved by the AUC.

## 5.3. Retailer Stand-Alone Testing

### 5.3.1. Entrance Criteria

To participate in retailer stand-alone testing a retailer should have achieved the following:

1. A dedicated test environment complying with the requirements stated in Section 3 of this document is in place.
2. The *Retailer Stand-alone Test Case Set* has been downloaded from the AUC's web site. (See Appendix 6.2 for the link.)
3. Test scripts have been created to execute the sequences within each test case.
4. AUC approved test data generated by AltaGas has been downloaded from the AUC's web site (Appendix 6.2) for the execution of each test case sequence.
5. The *Retailer Stand-alone Test Reporting Template* has been downloaded from the AUC's web site (Appendix 6.2).

### 5.3.2. Exit Criteria

For successful completion of retailer stand-alone testing, the retailer should have achieved the following:

1. All sequences within the *Retailer Stand-alone Test Case Set* have been executed. This criterion excludes test case sequences that are not applicable to a retailer.
2. The retailer has notified the AUC of any issues experienced while processing AltaGas' stand-alone test data.

## 5.4. Test Result Reporting

AltaGas must report to the AUC their stand-alone testing results. The AUC will use these results to track AltaGas' progress. The AUC will not require formal test result reporting from competitive retailers but will solicit feedback from time to time on progress and issues.

### 5.4.1. Reporting Template

Test results must be reported for each test case, and sequence within that test case, using the *Distributor Stand-alone Test Reporting Template*, in the case of AltaGas, or optionally using the *Retailer Stand-alone Test Reporting Template*, in the case of a retailer. These templates are available on the AUC's web site. (See Appendix 6.2 for the link.)

When completing the applicable template, a market participant must report on the current status of all test cases/test case sequences that have been executed to date. For example, if test case sequence W001\_002 was reported in a prior period, this same record, or an update to this record (if the sequence has been re-tested), must be included in the new report.

### 5.4.2. Pass/Fail Criteria

A market participant may only report a 'Pass' for a specific test sequence (within a test case) if the actual results generated following executing match the expected results produced prior to the execution of that test sequence. Any deviation of the actual results from the expected results must be reported as a 'Fail'.

The AUC will acknowledge that a market participant has passed a specific test case if all test case sequences within that test case have a status of 'Pass', excepting test sequences that are not applicable to that market participant (test cases that are deemed not applicable by a market participant must correlate to that market participant's Compliance Plan and approved exemptions)

### 5.4.3. Reporting Frequency

AltaGas must report their stand-alone test case execution results to the AUC on a weekly basis. Commencing on the first Friday following the beginning of the specific test phase, and every Friday thereafter until closure of that phase of testing, AltaGas must provide an updated report to the AUC.

### 5.5. Test Support

The AUC will provide test support to market participants during each phase of testing. The roles, responsibilities, and contact information of AUC personnel are provided in the table below.

*AUC Test Support*

Resource	Role	Test Related Responsibilities	Contact Information
Fino Tiberi	Program Director	Oversight, evaluation, and escalation	Email: fino.tiberi@auc.ab.ca Phone: +1.403.592.4410
Anne Glass	Program Manager, Facilitator and Test Coordinator	Oversight, evaluation, facilitation, and coordination of market testing.	Email: anne.glass@auc.ab.ca Phone: +1.403.592.4389

For questions, concerns, or disputes related to stand-alone test data, market participants are encouraged to contact AltaGas prior to engaging the AUC.

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## **6. Appendices**

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## 6.1. Definitions

### 6.1.1. Test Type Definitions

- **Function testing** refers to system testing of an integrated, black box system against its operational (i.e., functional) requirements.
- **Integration testing** refers to testing related information system components to ensure they perform to specification.
- **Performance testing** refers to testing conducted to evaluate the compliance of a system or component with specified performance requirements. Often this is performed using an automated test tool to simulate large number of users or large amount of data.
- **Stress testing** refers to testing conducted to evaluate a system or component at or beyond the limits of its specified requirements. Often this is performance testing using a very high level of simulated load.
- **Unit testing** refers to the testing of individual units or modules of code. Typically, this type of testing is performed by the developer and verifies that their piece of code achieves its expected outcome(s). Typically, no integration to the larger system occurs for unit testing.

### 6.1.2. Defect Severity Levels

The definition of defect severity levels, as it relates to this market test plan, is as follows:

**Level 1** – the system, or a critical part of the system, does not work.

**Level 2** – the system cannot meet primary business requirements and there is no simple workaround to mend the situation.

**Level 3** – the system can still perform the primary business requirements, does not block the execution of other test cases, and a simple workaround exists to mend the situation.

## 6.2. References and Related Documents

Relevant documents to this test plan are located on the AUC’s web site.

For documents relating to the Code, go to:

<http://www.auc.ab.ca/acts-regulations-and-auc-rules/rules/Pages/Rule004.aspx>.

For documents relating to testing, go to:

<http://www.auc.ab.ca/rule-development/tariff-billing-code/Pages/TariffBillingCodeMarketTestingWorkingGroup.aspx>.

For all other documents, go to:

<http://www.auc.ab.ca/rule-development/tariff-billing-code/Pages/default.aspx>.

### *Related Documentation*

Document Title	Version	Description
Rule 004: Alberta Tariff Billing Code (released July 20, 2007)	1.4	Establishes the standards for communicating site-specific distribution tariff charges and usage information from distributors to retailers.

Document Title	Version	Description
Rule 004 Effective Amendments	As of November 1, 2008	
Distributor Stand-alone Test Case Set	1.4	The sum of the test sequences that a distributor must execute for stand-alone testing.
Retailer Stand-alone Test Case Set	1.4	The sum of the test sequences that a retailer must execute for stand-alone testing.
Test Case Relationship Map Template	1.4	Template for distributors to complete to support retailer stand-alone testing that maps retailer stand-alone test case sequences to sites contained within the distributor created test data.
Test Schedule	1.4	A timeline that establishes market participant test execution activities and timelines.
Retailer Stand-alone Test Reporting Template	1.4	A template used by retailers to report to the AUC the results of stand-alone test case execution.
Distributor Stand-alone Test Reporting Template	1.4	A template used by distributors to report to the AUC the results of stand-alone test case execution.

### 6.3. In-Scope Distributor Test Case Sequences for Wave 4 Testing

The following test case sequences are in-scope for Wave 4 distributor stand-alone testing:

Test Case: W001

Sequences: 001

Test Case: W002

Sequences: 001

Test Case: W003

Sequences: 001, 002, 004, 005, 006, 007, 008, 009

Test Case: W004

Sequences: 001, 002, 003, 004, 005, 006, 007

Test Case: W005

Sequences: 001, 002, 003, 004, 005, 006, 007, 008, 009, 011, 012, 013, 014, 015 (modified for locked off instead of idle), 016 (modified for locked off instead of idle), 017, 018, 019, 020, 021, 023, 024, 025, 026, 028, 029, 030, 031, 034, 035, 036, 037, 039

Test Case: W006

Sequences: 001, 002, 003, 004, 005, 006 (modified for cumulative-cumulative meter change), 007, 008, 009, 010, 011, 012, 014

Test Case: W007

Sequences: 001, 002, 003, 004

Test Case: W008

Sequences: 001, 002, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020, 021, 022, 023, 024, 026, 027, 028, 029, 031, 032, 034, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 046, 047, 049

Test Case: W009

Sequences: 001, 002

Test Case: W010

Sequences: 001, 002

Test Case: W011

Sequences: 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013

#### 6.4. In-Scope Retailer Test Case Sequences for Wave 4 Testing

The following test case sequences are in-scope for Wave 4 retailer stand-alone testing:

Test Case: R003

Sequences: 001, 002, 003, 004, 005, 006, 007

Test Case: R004

Sequences: 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014 (modified for locked off instead of idle), 015 (modified for locked off instead of idle), 016, 017, 018, 019, 021, 022, 023, 024, 025, 026, 027, 028, 029, 032, 033, 034, 035, 037

Test Case: R005

Sequences: 001, 002, 003, 004, 005, 006 (modified for cumulative-cumulative meter change), 007, 008, 009, 010, 011, 012, 014

#### 6.5. In-Scope Settlement Transactions

In Appendix B of the Code, it states that, for consistency in the marketplace, the Code will adopt the standards included in *AUC Rule 021: Settlement System Code Rules* where appropriate. Rule 021 governs electricity transactions in the market, but AltaGas will follow Version 2.0 of that rule with modifications necessary for natural gas for the following transactions:

<b>DCM</b>	Daily Cumulative Meter transaction
<b>DEC</b>	De-Energize Completion transaction
<b>DEF</b>	De-Energize Failure transaction
<b>DER</b>	De-Energize Request transaction
<b>DSN</b>	De-Select Notification transaction
<b>DSR</b>	De-Select Request transaction
<b>ENC</b>	Energize Completion transaction
<b>ENF</b>	Energize Failure transaction

<b>ENR</b>	Energize Request transaction
<b>RDS</b>	Revoke De-Select Request transaction
<b>RDN</b>	Revoke De-Select Notification transaction
<b>RDR</b>	Revoke De-Energize Request transaction
<b>ROC</b>	Request Off Cycle Meter Read Completion transaction
<b>ROR</b>	Request Off Cycle Meter Read transaction
<b>RUC</b>	Request Update Customer Information transaction
<b>SID</b>	Site ID Catalogue
<b>SMC</b>	Site Metering Characteristics transaction
<b>SRN</b>	Select Retailer Notification transaction
<b>SRO</b>	Notify Old Retailer transaction
<b>SRR</b>	Select Retailer Request transaction
<b>UCI</b>	Update Customer Information transaction

In general, the modifications necessary to allow the transactions to be used for natural gas are changes to the names of fields within the transactions and are as follows:

- Fields called LSA ID are changed to Settlement ID
- Fields called WSP ID are changed to Gas Distributor ID
- Fields called kWh are changed to Energy Usage
- Fields called Max kVa are changed to a placeholder field
- Fields called Max KW are changed to Max Active Demand
- Fields called Max Reading (Watt) are changed to a placeholder field
- Fields called Max Reading (Voltamp) to a placeholder field
- Fields called Meter Multiplier are changed to Billing Multiplier
- Fields called Consumption (kWh) Status are changed to Energy Usage Status
- Fields called Demand (kVa) Status are changed to a placeholder field
- Fields called Demand (KW) Status are changed to Active Demand Status