



TARIFF BILLING CODE

**STANDARD FILE CONTENT VALIDATION
PSEUDOCODE**

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INTRODUCTION

This document presents pseudocode, a notation resembling a programming language that combines some of the structure of a programming language with an informal natural-language description of the computations to be carried out, for each of the standard file content validation tests provided in Table 5-2 of v1.3 of the Tariff Billing Code.

The pseudocode presented in this document has been written from a retailers perspective using simple "IF THEN ELSE" statements and "FOR LOOP" logic to point out the conditions that should be taken into consideration by retailers for each validation test. The AUC realizes that market participants have various programming languages and tools at their disposal and may program these validations differently according to their available resources as well as for increased performance.

FILE CONTENT VALIDATION CHECK # 1 – Unique Record ID (with previous Tariff Bill Files)

DESCRIPTION – All Record IDs must be unique to a distributor.

PSEUDOCODE:

For each record in a tariff bill file

Compare Record ID of each record in current TBF with Record IDs of records received in previous tariff bill files from the same distributor that were accepted by a retailer (i.e., TBF has a corresponding Tariff Bill Accept (TBA) Transaction or 1 elapsed business day has passed following retailer receipt of a TBF and no TBR has been received).

If record with a duplicate Record ID found Then
Produce TBD with TBF Dispute Code 7000

End

Next Record

FILE CONTENT VALIDATION CHECK # 2 – Site Ownership

DESCRIPTION – Retailer must be assigned as Retailer of Record for the site for the entire Tariff Bill Period or One-time Charge

PSEUDOCODE:

Extract all records from a tariff bill file having

1. Record Type equal to 'TH', and
2. Cancel Indicator equal to 'N'

For each 'TH' record

Extract Site ID
Extract Tariff Bill Period Start Date
Extract Tariff Bill Period End Date

Compare Tariff Bill Period Start Date and Tariff Bill Period End Date with period of Site Ownership (i.e. period(s) established by SRN and SRO transactions)

If Site Ownership Start Date is greater than Tariff Bill Period Start Date OR Site Ownership End Date is less than Tariff Bill Period End Date Then
 Produce TBD with TBF Dispute Code 7001
End

Next 'TH' record

Extract all records from a tariff bill file having

1. Record Type equal to 'OC'
2. Cancel Indicator equal to 'N'

For each 'OC' record

Extract Site ID
Extract Charge Date

Compare Tariff Charge Date with period of Site Ownership (i.e. period(s) established by SRN and SRO transactions)

If Site Ownership Start Date is greater than Charge Date OR Site Ownership End Date is less than Charge Date Then
 Produce TBD with TBF Dispute Code 7001
End

Next 'OC' record

FILE CONTENT VALIDATION CHECK # 3 – Site Header Bill Cycle ID

DESCRIPTION – Bill Cycle ID reported for that site in the Tariff Bill File must match any one of the Bill Cycle IDs reported in the Tariff Billing Calendar File for that distributor

PSEUDOCODE:

Extract all records from a tariff bill file having
1. Record Type equal to 'SH'

For each 'SH' record

 Extract Bill Cycle

 If Bill Cycle is not equal to one of the bill cycles provided in that
 distributor's Tariff Bill Calendar File Then

 Produce TBD with TBF Dispute Code 7013

 End

Next 'SH' record

FILE CONTENT VALIDATION CHECK # 4 – Tariff Bill Period Overlap (with previous Tariff Bill Files)

DESCRIPTION – Tariff Bill Periods within Tariff Bill File may not overlap with any Tariff Bill period previously sent and not cancelled

PSEUDOCODE:

Extract all records within the tariff bill file having:

1. Record Type equal to 'TH'
2. Cancel Indicator equal to 'N'

For each TH record

Extract Site ID
Extract Tariff Bill Period Start Date
Extract Tariff Bill Period End Date

Extract all records within previous TBFs that have not been previously cancelled for the same distributor having:

1. Site ID equal to the Site ID of the 'TH' record
2. Record Type equal to 'TH'
3. (Tariff Bill Period Start Date less than or equal to the Tariff Bill Period Start Date of the current 'TH' record AND Tariff Bill Period End Date is greater than or equal to the Tariff Bill Period Start Date of the current 'TH' record) OR Tariff Bill Period Start Date is greater than Tariff Bill Period Start Date of the current 'TH' AND the Tariff Bill Period Start Date is less than the Tariff Bill Period End Date of the current 'TH' record)
4. Cancel Indicator equal to 'N'

If 'TH' record(s) from a previous TBF are returned Then
 Produce TBD with TBF Dispute Code 7004
End

Next 'TH' record

FILE CONTENT VALIDATION CHECK # 5 – Tariff Bill Period Gap (with previous Tariff Bill Files)

DESCRIPTION – Tariff Bill Periods must be continuous, except for periods of time accounted for by enrollment events

PSEUDOCODE:

Extract the Site ID and MIN(Tariff Bill Period Start Date) within the tariff bill file for each site having:

1. Record Type equal to 'TH'
2. Cancel Indicator equal to 'N'

For each record returned

Extract from previously received tariff bill periods for that site that have not been previously cancelled the MAX(Tariff Bill Period End Date) where:

1. Site ID equal to the extracted Site ID of the current record
2. Record Type equal to 'TH'
3. Cancel Indicator equal to 'N'

If MAX(Tariff Bill Period End Date) exist Then

If MIN(Tariff Bill Period Start Date) of current record is not equal to MAX(Tariff Bill Period End Date) of previous 'TH' records + 1 day for the same site Then

Establish Gap Period (i.e. MAX(Tariff Bill Period End Date of historic 'TH' records + 1 day to MIN(Tariff Bill Period Start Date)- 1 day)

Compare the date range of the Gap Period with the period of Site Ownership (i.e. period(s) established by SRN and SRO transactions)

If (Site Ownership Start Date is less than Start Date of Gap Period AND Site Ownership End Date is greater than Gap Period Start Date) OR (Site Ownership Start Date is greater than Gap Period Start Date AND less than Gap Period End Date) Then

Produce TBD with TBF Dispute Code 7003

End

End

End

Next 'TH' record

FILE CONTENT VALIDATION CHECK # 6 – Invalid Usage Value

DESCRIPTION – Usage value may not exceed a calculated value if the peak was continuously hit during the billing period (Limited to evaluating peak demand or metered demand type whose reporting demand values are greater than 0)

PSEUDOCODE:

Extract all records within the tariff bill file having:

1. Record Type equal to 'DU'
2. Cancel Indicator equal to 'N'

For each 'DU' record

Extract Site ID
Extract Parent ID
Extract Usage Value

Extract demand records from the tariff bill file where:

1. Site ID equal to the Site ID of the 'DU' record,
2. Parent ID equal to the Parent ID of the 'DU' record,
3. Record Type equal to 'DD',
4. Demand Type Code equal to 4080 or 4130, and
5. Demand Value is greater than 0

For each 'DD' record

Calculate Maximum Allowable Usage:
 $((\text{Demand Period End Date} - \text{Demand Period Start Date} + 1) \times 24)^1 \times \text{Demand Value}$

If Usage Amount from 'DU' record is greater than Calculated Maximum Allowable Usage Then

Produce TBD with TBF Dispute Code 7005

End

Next 'DD' record

Next 'DU' record

¹ Note: If the demand period in question spans a change in Daylights Savings Time, the number of hours in the period should be increased or decreased by 1 hour (Example: for the October change in DST the number of hours in the demand period equals $((\text{Demand Period End Date} - \text{Demand Period Start Date} + 1) \times 24) + 1$)

FILE CONTENT VALIDATION CHECK # 7 – Tariff Bill Period Events

DESCRIPTION – Tariff Bill Periods must be presented (i.e. larger periods broken into smaller periods) according to the Tariff Bill Period Events articulated in Table 3-1

*Note that a distributor may view all Tariff Billing Events as they relate to presentation of tariff charges; however, a retailer has a limited view of the same events and is therefore limited in capacity to perform complete validation tests according to the Tariff Billing Event rules.

PSEUDOCODE:

(Note: Standard format validation checks for tariff bill period/usage period alignment and tariff bill period/charge period alignment ensure that the earliest start and latest end dates of the usage and charge periods align with the tariff bill period start and end dates, respectively. As a result, there is no need to perform additional validation tests to determine if the usage period start or end dates and the charge period start or end dates align with an event that requires a mandatory tariff bill period break.)

a. Validate Regular Bill Cycle

Pseudocode has not been provided for this event as a result of the variation in distributor practice in the marketplace that would require distributor specific coding.

b. Validate Enrollment (following initial enrollment or retailer switch)

For each SH record

This validation should be performed following site Ownership validation
(ensures retailer was retailer of record for the tariff bill periods presented)

Extract the MIN(Tariff Bill Period Start Date) from TH records in the tariff bill file having:

1. Site ID equal to the Site ID of the SH record
2. Cancel Indicator equal to 'N'

Determine if the site has been previously billed up to date established by the MIN(Tariff Bill Period Start Date) - 1 day

If site has not been previously billed Then

Extract MAX(Switch date) from SRN transactions for that site having:

1. Site ID equal to the Site ID presented in the SH record
2. Switch Date less than or equal to the MIN(Tariff Bill Period Start Date)

If SRN Switch Date is not equal to the MIN(Tariff Bill Period Start Date)
Then

'Assume new site and billing will occur following initial energization

Extract ENC transactions for that site having:

1. Site ID equal to the Site ID presented in the SH record
2. Energized date equal to the MIN(Tariff Bill Period Start Date)

If an ENC transaction is not returned Then

'In the event an ENC transaction was not sent, look for an SMC transaction

Extract SMC transactions for that site having:

1. Site ID equal to the Site ID presented in the SH record
2. Date Time effective equal to the MIN(Tariff Bill Period Start Date)
3. Energized Ind equal to 'Y'

If an SMC transaction is not returned Then
Produce TBD with TBF Dispute Code 7008

End

End

End

End

Next SH record

*Note: Some distributors commence billing for sites that are eligible for incurring idle charges a certain number of days following site creation if an energized request is not received from the retailer.

c. Validate De-enrollment

Extract all records from a Tariff Bill File having:

1. Record Type equal to 'SH'

For each SH record

Extract all SRO transactions for that site having:

1. Switch Date greater than or equal to Current Billing Period Start Date and Switch Date less than or equal to Current Billing Period End Date

If SRO transactions exist Then

Extract MAX(Tariff Bill Period End Date) from all records in the tariff bill file having:

1. Record Type equal to TH
2. Site ID equal to Site ID of parent SH record
3. Cancel Indicator equal to 'N'

If MAX(Tariff Bill Period End Date) is not equal to Switch Date - 1 of the SRO transaction Then

Produce TBD with TBF Dispute Code 7008

End

End

Next SH record

d. Validate Customer Switch

Extract all records from a Tariff Bill File having:

1. Record Type equal to 'SH'

For each SH record

Extract all CSR transactions for that site having:

1. Effective Date greater than or equal to Current Billing Period Start Date and Effective Date less than or equal to Current Billing Period End Date
2. CSA Transaction Status Code equal to 0000

If CSR transaction(s) exist Then

Extract Tariff Bill Period End Date from all records in the tariff bill file having:

1. Record Type equal to TH
2. Site ID equal to Site ID of parent SH record
3. Cancel Indicator equal to 'N'

If Tariff Bill Period End Date is not equal to Effective Date - 1 of the CSR transaction Then

Produce TBD with TBF Dispute Code 7008

End

End

Next SH record

e. Validate Change in Site Status

Due to the variability in the marketplace with respect to how distributors use settlement transactions to disclose a change in site status, the pseudocode provided for this test does not make reference to ENC, DEC, or SMC transactions. Instead, it assumes that each market participant stores, or is able to determine, a site's energization history.

Extract all records from a Tariff Bill File having:

1. Record Type equal to 'TH'
2. Cancel Indicator equals 'N'

For each TH record

Extract Site Status

Extract Tariff Bill Period Start Date

Extract Tariff Bill Period End Date

If Site Status equals 'E' Then

Compare Tariff Bill Period Start Date and Tariff Bill Period End Date with site energization history (i.e. period(s) established by ENC, DEC, and/or SMC transactions)

If a period of de-energization exists within the Tariff Bill Period Start and End Dates Then

Produce TBD with TBF Dispute Code 7001

End

Else

Compare Tariff Bill Period Start Date and Tariff Bill Period End Date with site energization history (i.e. period(s) established by ENC, DEC, and/or SMC transactions)

If a period of energization exists within the Tariff Bill Period Start and End Dates Then

Produce TBD with TBF Dispute Code 7001

End
End

Next TH record

*Subject to interpretation of De-energized/Energized Date and Time within each DEC/ENC/SMC transaction according to each distributor's deemed time rules.

f. Validate Rate Code Change

Pseudocode has not been provided for this validation as retailers do not have visibility into the timing of this event.

g. Validate Change to Totalized Sites

Pseudocode has not been provided for this validation as retailers do not have visibility into the timing of this event.

FILE CONTENT VALIDATION CHECK # 8 – Usage Period Events

DESCRIPTION – Usage Periods must be presented (i.e. larger periods broken into smaller periods) according to the Usage Period Events articulated in Table 3-1

*Note that a distributor may view all Tariff Billing Events as they relate to presentation of tariff charges; however, a retailer has a limited view of the same events and is therefore limited in capacity to perform complete validation tests according to the Tariff Billing Event rules

PSEUDOCODE:

a. Validate MDM Metering Output

Extract all records from a Tariff Bill File having:

1. Record Type equal to 'TH'
2. Cancel Indicator equals 'N'

For each TH record

Extract all DCM transactions for that site having:

1. Site ID equal to the Site ID presented in the TH record
2. Current Reading Datetime greater than or equal to Tariff Bill Period Start Date and Current Reading Datetime less than or equal to Tariff Bill Period End Date*

If DCM transaction(s) exist for that site Then

For each DCM transaction

Extract usage records from the tariff bill file having:

1. Record Type equal to DU,
2. Site ID equal to Site ID of parent TH record,
3. Parent ID equal to the Record ID of the parent TH record,
4. Cancel Indicator equal to 'N',
5. Usage Period End Date equal to the Current Reading Datetime of the DCM transaction*

If no DU record returned Then

Produce TBD with TBF Dispute Code 7008

End

Next DCM transaction

End

Next TH record

*Subject to interpretation of Current Reading Datetime within each DCM transaction according to each distributor's deemed time rules.

b. Validate Off-cycle Meter Read

(Note: An off-cycle meter read is the same as an MDM Metering Output. Program to propose to the marketplace that this billing event be removed from the Code)

c. Validate Equipment Change

Extract all records from a Tariff Bill File having:

1. Record Type equal to 'TH'

2. Cancel Indicator equal to 'N'

For each TH record

Extract all SMC transactions for that site having:

1. Site ID equal to Site ID presented in TH record, and
2. Date time Effective of SMC greater than or equal to Tariff Bill Period Start Date and Date time Effective of SMC less than or equal to Tariff Bill Period End Date*

If SMC transaction(s) exist Then

Sort SMC transactions in ascending date order.

For each SMC transaction

If first SMC transaction Then

Extract Type of Metering from previous SMC transaction having:

1. Site ID equal to Site ID presented in the TH record
2. MAX(Date and Time Effective) < Current SMC Date and Time Effective of current SMC transaction

If Type of Metering returned Then

If Type of Metering is not equal to Type of Metering of current SMC transaction Then

Extract usage records from the tariff bill period having:

1. Site ID equal to Site ID of TH record
2. Parent ID equal to Record ID of TH record
3. Cancel Indicator equal to 'N', and
4. Usage Period End Date equal to the Date time Effective - 1 of the SMC transaction OR Usage Period Start Date equal to the Date time Effective of the SMC transaction*

If no DU record returned Then

Produce TBD with TBF Dispute Code 7009

End

End

Else

Store Type of Metering

End

Else

Extract Type of Metering of current SMC

If Type of Metering of current SMC is not equal to Type of Metering of previous SMC Then

Extract usage records from the tariff bill period having:

1. Site ID equal to Site ID of TH record
2. Parent ID equal to Record ID of TH record
3. Usage Period End Date equal to the Date time Effective - 1 of the SMC transaction OR Usage Period Start Date equal to the Date time Effective of the SMC transaction*

If no DU record returned Then

```
                Produce TBD with TBF Dispute Code 7009
            End
        Else
            Store Type of Metering
        End
    End
Next SMC transaction
End
```

Next TH record

*Subject to interpretation of Date time Effective within each SMC transaction according to each distributor's deemed time rules.

d. Validate RRT Energy Rate Price Change

Pseudocode has not been provided for this validation since retailers would be required to store the date of the RRT Energy Rate Price Change within their respective systems to automate the validation of the event.

e. Validate Distribution or Transmission Tariff Price Change (energy based charges)

Pseudocode has not been provided for this validation as retailers do not have visibility into the event.

FILE CONTENT VALIDATION CHECK # 9 – Charge Period Events

DESCRIPTION – Charge Periods must be presented (i.e. larger periods broken into smaller periods) according to the Charge Period Events articulated in Table 3-1

*Note that a distributor may view all Tariff Billing Events as they relate to presentation of tariff charges; however, a retailer has a limited view of the same events and is therefore limited in capacity to perform complete validation tests according to the Tariff Billing Event rules

PSEUDOCODE:

a. Validate Distribution or Transmission Tariff Price Change (energy based charges)

Pseudocode has not been provided for this validation as retailers do not have visibility into the timing of this event.

b. Validate Distribution or Transmission Tariff Price Change (non-energy based charges)

Pseudocode has not been provided for this validation as retailers do not have visibility into the timing of this event.

FILE CONTENT VALIDATION CHECK # 10 – Dial Readings

DESCRIPTION – For a cumulative metered site, the From Reading value on a usage determinant record must match the To Reading value on the previous usage determinant record for the same meter (except when the site was de-energized for the previous period, the site is billing for the first time, or in the case of a cancel/rebill)

PSEUDOCODE:

Extract all records within the tariff bill file having:

1. Record Type equal to 'DU',
2. Cancel Indicator equal to 'N',
3. Meter Type Code equal to 'C',
4. From Reading not equal to [null], and
5. To Reading not equal to [null]

Sort records by Site ID, Parent ID and Usage Period Start Date in ascending date sequence

For each 'DU' record returned

 Extract Site ID
 Extract Meter Number
 Extract To Reading
 Extract From Reading

 If analyzing the first DU record in the tariff bill file for that site

 Retrieve the last 'DU' record received for that site having:

1. Site ID equal to Site ID of current 'DU' record,
2. Cancel Indicator equal to 'N',
3. Meter Number equals Meter Number of current 'DU' record,
4. From Reading not equal to [null],
5. To Reading not equal to [null], and
6. Usage Period End Date less than the current DU record Usage Period Start Date

 If the To Reading of the last 'DU' record is not equal to the From Reading of the current 'DU' record Then

 Produce TBD with TBF Dispute Code 7011

 Else

 Store To Reading of current 'DU'

 End

 Else

 If From Reading of current 'DU' record is not equal to the To Reading of the previous 'DU' record within the tariff bill file for that site Then

 Produce TBD with TBF Dispute Code 7011

 Else

 Store To Reading of current 'DU'

 End

 End

Next 'DU' record

FILE CONTENT VALIDATION CHECK # 11 – Duplicate One-time Charge

DESCRIPTION – One-time charge records flagged with Cancel Indicator = 'N' must not overlap with previously received one-time charges for the same charge code, site, and charge date and have not been cancelled

PSEUDOCODE:

Extract all records within the tariff bill file having:

1. Record Type equal to 'OC', and
2. Cancel Indicator equal to 'N'

For each 'OC' record

Extract Site ID
Extract Charge Date
Extract Charge Code

Retrieve all 'OC' records from current tariff bill file having:

1. Site ID equal to Site ID of current 'OC' record
2. Charge Date equal to Charge Date of current 'OC' record
3. Charge Code equal to Charge Code of current 'OC' record

If 'OC' records returned Then
 Produce TBD with TBF Dispute Code 7012
End If

Retrieve all 'OC' records from previous tariff bill files that have not been previously cancelled having:

1. Site ID equal to Site ID of current 'OC' record
2. Charge Date equal to Charge Date of current 'OC' record
3. Charge Code equal to Charge Code of current 'OC' record

If 'OC' records returned Then
 Produce TBD with TBF Dispute Code 7012
End If

Next 'OC' record

FILE CONTENT VALIDATION CHECK # 12 – Invalid Meter Rollover

DESCRIPTION – If the current meter read is less than the previous meter read then the dial difference must be less than 70% of the meter for a reading period of 5 months or less

PSEUDOCODE:

Extract all records within the tariff bill file having:

1. Record Type equal to 'DU',
2. Cancel Indicator equal to 'N',
3. Meter Type equal to 'C', and
4. Site Status of parent 'TH' record equal to 'E'

For each 'DU' record

```
Extract From Reading
Extract To Reading
Extract Usage Period Start Date
Extract Usage Period End Date
Extract Number of Dials
```

```
Determine Meter Capacity:  $10^{\text{Number of Dials}} - 1$ 
Determine
```

```
If To Usage Period End Date - Usage Period Start Date is less than or equal to
365/12 x 5 Then
```

```
  If To Reading is greater than From Reading Then
    If To Reading - From Reading is greater than or equal to  $0.7 \times$ 
    Meter Capacity Then
      Produce TBD with TBF Dispute Code 7014
```

```
    End
```

```
  ElseIf To Reading is less than From Reading Then
    If  $10^{\text{Number of Dials}} + \text{To Reading} - \text{From Reading}$  is greater than or
    equal to  $0.7 \times \text{Meter Capacity}$  Then
      Produce TBD with TBF Dispute Code 7014
```

```
    End
```

```
  Else
    Next 'DU' Record
```

```
  End
```

```
End
```

```
Next 'DU' records
```