



Municipal Securities Rulemaking Board

Short-term Obligation Rate Transparency System

XML Interface Specification and Data Elements

Version 1.4
August 9, 2010

Revision History

| Version | Date | Major Changes |
|----------------|--|---|
| 1.0 | December 10, 2008 | Initial version. |
| 1.1 | December 16, 2008 | Clarified descriptions of certain data elements in Section VI; added details of SHORT System Web Service in Section IX. |
| 1.2 | January 28, 2009 | Changed address of the production web service and added address of testing web service for testing in Section IX; revised list of error codes in Section VII. |
| 1.3 | May 11, 2009 | Clarified descriptions of the following data elements in Section VI: VRDO Date/Time of Interest Rate Reset, Par Amount Auctioned, Minimum Denomination, Liquidity Facility, Minimum Rate, and Maximum Rate; changed ARS/VRDO Indicator data element from modifiable to non-modifiable in Section VI; revised descriptions of error codes 2021 and TM04; deleted error code 2032; and added error codes TM29 and TM30 in Section VII |
| 1.4 | August 9, 2010 Changes Effective: September 27, 2010 | Improved processing of submissions that contain transaction-level errors as described in Section VII. |

File: SHORT System XML Interface Specification and Data Elements Version 1.4.pdf

Table of Contents

| | | |
|--------------|---|-----------|
| I. | INTRODUCTION..... | 1 |
| | OTHER RESOURCES | 2 |
| | CONTACT INFORMATION..... | 2 |
| II. | SHORT SYSTEM OVERVIEW..... | 3 |
| | SUBMISSIONS TO THE SHORT SYSTEM..... | 3 |
| | SHORT SYSTEM PROCESSING | 4 |
| | SHORT SYSTEM DATA DISSEMINATION..... | 4 |
| III. | NORMAL SYSTEM HOURS | 5 |
| IV. | SHORT SYSTEM REGISTRATION | 6 |
| | USER ACCOUNT MANAGEMENT SYSTEM..... | 6 |
| | AGENT INVITATION AND DESIGNATION SYSTEM..... | 6 |
| V. | ARS AUCTION AGENT AND PROGRAM DEALER SUBMISSIONS | 8 |
| VI. | DATA ELEMENTS | 9 |
| | ALL DATA ELEMENTS..... | 10 |
| | ARS DATA ELEMENTS DESCRIPTION | 13 |
| | VRDO DATA ELEMENTS DESCRIPTION..... | 15 |
| VII. | SHORT SYSTEM ERROR CODES | 17 |
| | FORMAT EDITS..... | 17 |
| | CONTENT EDITS..... | 17 |
| | ERROR CODE TABLES..... | 18 |
| | FORMAT EDITS | 18 |
| | CONTENT EDITS | 20 |
| VIII. | SHORT SYSTEM SUBMISSION FEEDBACK | 21 |
| | FEEDBACK DELIVERY | 21 |
| IX. | SHORT SYSTEM WEB SERVICE | 22 |
| X. | SAMPLE SUBMITTER INPUT XML | 23 |
| XI. | SAMPLE SUBMITTER QUERY XML..... | 26 |
| XII. | SAMPLE SUBMITTER RESPONSE XML..... | 26 |

I. Introduction

The purpose of this document is to assist submitters in creating properly formatted Extensible Markup Language (XML) files for upload to the Municipal Securities Rulemaking Board's (MSRB) Short-term Obligation Rate Transparency ("SHORT") System. The XML Interface is designed to permit users of the SHORT System to upload XML files that include all information required by MSRB Rule G-34(c). Rule G-34(c) provides for the collection of information about Auction Rate Securities ("ARS") and Variable Rate Demand Obligations ("VRDO").

This document details the procedures for registering with the MSRB to submit information to the SHORT System. Also included in this document are schemas used by the SHORT System to parse XML file submissions. The schemas can be used by SHORT System submitters to verify that XML files are properly formatted. In addition, this document sets forth the data elements that will be used in connection with the XML Interface for the SHORT System.

The MSRB plans to provide a SHORT System Web User Interface for manual input of data to the SHORT System. The SHORT System Web User Interface would display information submitted by XML as well as any error codes returned on a submission. A separate user manual for the SHORT System Web User Interface will be available on www.msrb.org.

Other Resources

MSRB Public Web Site: www.msrb.org

Rule G-34(c): www.msrb.org/Rules-and-Interpretations/MSRB-Rules/General/Rule-G-34.aspx

Contact Information

MSRB Market Information Department
703-797-6668

MarketInformationGeneralMailbox@msrb.org

Municipal Securities Rulemaking Board
1900 Duke Street
Suite 600
Alexandria, VA 22314
Tel: 703-797-6600
Fax: 703-797-6700

II. SHORT System Overview

The SHORT System is a facility of the MSRB for the collection and dissemination of information about securities bearing interest at short-term rates and making such information publicly available through a dissemination service.

Submissions to the SHORT System

The SHORT System receives submissions of information about securities bearing interest at short-term rates under MSRB Rule G-34(c).

Information to be Submitted. The basic items of information required to be submitted to the SHORT System are the same as those required to be submitted to the MSRB under MSRB Rule G-34(c).

Submitters. Submissions to the SHORT System may be made solely by authorized submitters using password-protected accounts in the MSRB's user authentication system, MSRB Gateway. Through MSRB Gateway, submitters also have the ability to designate third-party agents to submit information to the SHORT System on the submitter's behalf.

Submissions may be made by the following classes of submitters:

- ARS Program Dealer;
- VRDO Remarketing Agent;
- ARS Auction Agent; and
- Designated Agent, which may submit any information otherwise permitted to be submitted by another class of submitter which has designated such agent, as provided below.

Submitters may designate agents to submit information on their behalf, and may revoke the designation of any such agents, through MSRB Gateway. Such Designated Agents must register to obtain password-protected accounts through MSRB Gateway in order to make submissions on behalf of the designating submitters. All actions taken by a Designated Agent on behalf of a submitter that has designated such agent shall be the responsibility of the submitter.

The MSRB anticipates that a majority of ARS information will be submitted by ARS Auction Agents. ARS Auction Agents would be allowed to submit information to the SHORT System without prior designation by an ARS Program Dealer. In the event that an ARS Auction Agent submits information about an auction to the SHORT System, an ARS Program Dealer would not also be required to submit information provided that the ARS Program Dealer has been correctly identified on the submission by the ARS Auction Agent. In the event that an ARS Auction Agent fails to submit information about an ARS auction, the ARS Program Dealer would be required to submit the required information about the auction to the SHORT System

Timing of Submissions. Submitters are required to make submissions to the SHORT System within the timeframes set forth in MSRB Rule G-34(c). Submissions generally are required to be made by no later than 6:30 P.M. Eastern Time on the day that an auction occurs in an ARS or on the day that an interest rate reset occurs for a VRDO. Submissions of information to the SHORT System may be made throughout any RTRS Business Day, as defined in Rule G-14 RTRS Procedures, from at least the hours of 6:00 A.M. to 9:00 P.M. Eastern Time, subject to the right of the MSRB to make such processes unavailable at times as needed to ensure the integrity of the SHORT System and any related systems. The MSRB shall provide advance notice of any planned periods of unavailability and shall endeavor to provide information to submitters as to the status of the submission interface during unanticipated periods of unavailability, to the extent technically feasible.

Method of Submission. Information may be submitted to the SHORT System through a secure, password-protected, web-based electronic submitter interface or through a secure, authenticated computer-to-computer data connection, at the election of the submitter. When making submissions using the web-based interface, related information is entered manually into an on-line form. Computer-to-computer submissions utilize XML (see section IX).

SHORT System Processing

The SHORT System performs various data checks to ensure that information submitted is in the correct format. In addition, data checks are performed to monitor dealer compliance with MSRB Rule G-34(c) as well as to identify information submitted in correct formats that may contain errors due to information not falling within reasonable ranges of expected values for a given item of information. All submissions generate an acknowledgement or error message, and all dealers that have information submitted on their behalf by either an ARS Auction Agent or a Designated Agent are able to monitor such information submissions.

SHORT System Data Dissemination

Information submitted to the SHORT System that passes the format checks described above is processed and disseminated on a real-time basis. Any changes to submissions also are processed upon receipt and updated information is disseminated in real-time. Information submitted to the SHORT System is, in general, disseminated to the EMMA short-term obligation rate transparency service within 15 minutes of acceptance, although during peak traffic periods dissemination may occur within one hour of acceptance. The MSRB plans to offer subscriptions to the information submitted to the SHORT System in the future.

III. Normal System Hours

Submissions of information to the SHORT System may be made throughout any RTRS Business Day, as defined in Rule G-14 RTRS Procedures, from at least the hours of 6:00 A.M. to 9:00 P.M. Eastern Time, subject to the right of the MSRB to make such processes unavailable at times as needed to ensure the integrity of the SHORT System and any related systems. The MSRB shall provide advance notice of any planned periods of unavailability and shall endeavor to provide information to submitters as to the status of the submission interface during unanticipated periods of unavailability, to the extent technically feasible.

IV. SHORT System Registration

Submissions to the SHORT System may be made solely by authorized submitters using password-protected accounts in MSRB Gateway. Submitters of information to the SHORT System are required to obtain an account in MSRB Gateway in order to submit information to the SHORT System. Through MSRB Gateway, submitters also have the ability to designate third-party agents to submit information to the SHORT System on the submitter's behalf.

Submissions to the SHORT System may be made by the following classes of submitters:

- ARS Program Dealer;
- VRDO Remarketing Agent;
- ARS Auction Agent; and
- Designated Agent, which may submit any information otherwise permitted to be submitted by another class of submitter which has designated such agent.

User Account Management System

MSRB has assigned a master MSRB Gateway account to each dealer and each account is administered by the dealer's Primary Contact under MSRB Rule G-40, on electronic mail contacts. Each dealer controls the administration of its master account and is able to create and manage individual user accounts within MSRB Gateway. Dealers can also appoint account administrators to assist with managing user profiles and account access rights. Accounts in MSRB Gateway will be created by MSRB staff for each ARS Auction Agent.

Agent Invitation and Designation System

MSRB Gateway allows submitters to designate third-party agents to submit information to the SHORT System on their behalf. To designate an agent through MSRB Gateway, submitters send "invitations" to third-parties to act as Designated Agents. MSRB Gateway transmits these invitations by e-mail to the third parties, and upon receipt, the third party can create their own accounts in MSRB Gateway if they are not already registered users. These third parties can then accept submitter invitations through MSRB Gateway.

Submitters can also electronically confirm Designated Agents through MSRB Gateway before such Designated Agents begin making submissions to the SHORT System. Once confirmed by a submitter, a Designated Agent can log into MSRB Gateway to make electronic submissions on behalf of the designating submitter. Submitters will be responsible in all respects for actions taken by Designated Agents on their behalf. MSRB Gateway will also allow submitters to revoke designations of Designated Agents at any time.

Please note that once a Designated Agent has been established as a recognized company in MSRB Gateway, the Designated Agent will utilize the User Account Management System as described above.

V. ARS Auction Agent and Program Dealer Submissions

ARS Auction Agents are allowed to submit information about an ARS to the SHORT System without prior designation by an ARS Program Dealer. In the event that an ARS Auction Agent submits information about an auction to the SHORT System, an ARS Program Dealer would not also be required to submit information provided that the ARS Program Dealer has been correctly identified on the submission by the ARS Auction Agent. In the event that an ARS Auction Agent fails to submit information about an ARS auction, the ARS Program Dealer is required to submit the required information about the auction to the SHORT System. Note that if there are multiple ARS Program Dealers associated with an auction for which an ARS Auction Agent fails to submit information about the auction to the SHORT System, ARS Program Dealers would only be allowed to report their own identity on an ARS submission unless another ARS Program Dealer has designated the submitting ARS Program Dealer to submit information to the SHORT System on its behalf through MSRB Gateway.

If there are more than one ARS Program Dealers associated with an auction and the ARS Auction Agent has not submitted the required information, the information about the ARS auction submitted by the first ARS Program Dealer to submit information to the SHORT System is disseminated. Upon receipt of additional submissions of information about the same ARS auction from other ARS Program Dealers, those dealers' identities would be added to the information about the ARS auction; however the other information required to be submitted will continue to reflect the information submitted by the first ARS Program Dealer to submit information. Submissions of information by an ARS Auction Agent supersede information submitted by another class of submitter, with the exception of the identities of ARS Program Dealers, even if an ARS Program Dealer has already submitted information about the ARS auction.

VI. Data Elements

This Section sets forth the data elements that will be used in connection with the XML interface for the SHORT System. The data elements are listed in tables that have the following columns. The order of the data elements in these tables does not necessarily represent the order of the fields in the XML-formatted file.

| Column Name | Description |
|--------------------|---|
| Field Name | Name of the data element |
| Required? | Indicates whether the data element is required in the submission |
| Values | Possible values for the data element, if applicable |
| Format | Data type and other structural information about the data element |
| Modifiable? | Indicates whether a data element may be changed after it has been submitted through a modification or whether the data element may only be changed through cancelling and resubmitting a new submission |
| Repeatable? | Indicates whether multiple values may be submitted for a data element |
| Length | Maximum size of a data element |

All Data Elements

| Field Name | XML Tag | Required? | Values | Format | Modifiable? | Repeatable? | Length |
|---|--------------------|-------------|--|-------------------------------------|-------------|--------------|--------|
| User ID | UserID | Y | | Alpha Numeric | N | N | 15 |
| Password | Password | Y | | Alpha Numeric | N | N | 15 |
| Submission Control Number | SubmissionCtrlNum | Y | | Alpha Numeric | N | N | 16 |
| CUSIP | CUSIP9 | Y | | Alpha Numeric | N | Y | 9 |
| ARS/VRDO Indicator | InstrumentType | Y | A – ARS V – VRDO | Alpha | N | N | 1 |
| Transaction Type | TransactionType | Y | I – Instruct M – Modify C – Cancel | Alpha | N | N | 1 |
| Dealer MSRB Number | DealerMSRBNum | Y | | Alpha Numeric | Y | Y (only ARS) | 15 |
| Date of Interest Rate Reset | Date | Y | | Date – yyyy-mm-dd | N | N | 8 |
| Time of Interest Rate Reset | Time | Y | | Time – hh24:mi:ss | Y | N | 6 |
| Date of Interest Rate Posting | Date | Y(ARS Only) | | Date – yyyy-mm-dd | N | N | 8 |
| Time of Interest Rate Posting | Time | Y(ARS Only) | | Time – hh24:mi:ss | Y | N | 6 |
| Length of the Interest Reset Period in Days | InterestRatePeriod | Y | | Numeric | Y | N | 3 |
| Interest Rate | InterestRate | Y | | Fixed Decimal (in percent) – nn.nnn | Y | N | 5 |
| Minimum Denomination | MinDenomination | Y | | Numeric | Y | N | 9 |

| Field Name | | Required? | Values | Format | Modifiable? | Repeatable | Length |
|---------------------------------------|---------------------|---------------|--|--|-------------|------------|--------|
| Rate Type | RateType | Y | ARS M – Max Rate H – All Hold Rate A – Set by Auction VRDO M – Max Rate F – Set by Formula R – Set by Agent | Alpha | Y | N | 1 |
| Par Amount Auctioned | ParAmountAuctioned | Y (ARS Only) | | Numeric | Y | N | 10 |
| Par Amount Remarketed | ParAmountRemarketed | N (VRDO Only) | | Numeric | Y | N | 10 |
| Length of Notification Period in Days | NotificationPeriod | Y (VRDO Only) | | Numeric | Y | N | 3 |
| Minimum Rate | MinRate | N* | | Fixed Decimal (in percent) – <i>nn.nnn</i> (or “NC” if not calculable) | Y | N | 5 |
| Maximum Rate | MaxRate | N* | | Fixed Decimal (in percent) – <i>nn.nnn</i> (or “NC” if not calculable) | Y | N | 5 |

| Field Name | | Required? | Values | Format | Modifiable? | Repeatable | Length |
|------------------------------------|------------------------------|---|---|--------------------------|-------------|------------|--------|
| Liquidity Facility | LiquidityFacilityType | N*(VRDO Only) | P – Standby Bond Purchase Agreement L – Letter of Credit | Alpha | Y | Y | 1 |
| Liquidity Facility Expiration Date | LiquidityFacilityExpire Date | N (Y if Liquidity Facility is Provided) | | Date – <i>yyyy-mm-dd</i> | Y | N | 8 |

* Note that null or blank is a valid value for these fields, thus these fields are “not required” in a submission to the SHORT System; however, Rule G-34 requires that these fields be populated with a value when a value applies. For example, if a maximum rate is specified in official documents for an ARS or VRDO, the maximum rate is required to be included in a submission to the SHORT System.

ARS Data Elements Description

| Field Name | Description |
|---|---|
| User ID | Submitter User ID in MSRB Gateway. |
| Password | Submitter password in MSRB Gateway. |
| Submission Control Number | Submitter assigned reference number. |
| CUSIP | CUSIP Number for the ARS |
| ARS/VRDO Indicator | Indication of whether a submission is an ARS or VRDO |
| Transaction Type | Indication of whether a submission is a new submission (I), a modification of an existing submission (M), or a cancellation of an existing submission (C) |
| Dealer MSRB Number | MSRB Registration Number of the ARS Program Dealer. Note that each ARS Program Dealer must be identified and an ARS Auction Agent may include the identities of any ARS Program Dealer without prior designated by an ARS Program Dealer. ARS Program Dealers would only be allowed to report their own identity on an ARS submission unless another ARS Program Dealer has designated the submitting ARS Program Dealer to submit information to the SHORT System. |
| Date of Interest Rate Reset | Date that the ARS auction occurred. |
| Time of Interest Rate Reset | Time that the ARS auction occurred. All reported times are Eastern Time and must be entered in military format. Note that seconds may be entered as "00" if your system is not capable of reporting seconds or if the seconds are not known. |
| Date of Interest Rate Posting | Date that the ARS auction results were communicated to ARS Program Dealers. |
| Time of Interest Rate Posting | Time that the ARS auction results were communicated to ARS Program Dealers. All reported times are Eastern Time and must be entered in military format. Note that seconds may be entered as "00" if your system is not capable of reporting seconds or if the seconds are not known. |
| Length of the Interest Reset Period in Days | Number of calendar days that the interest rate produced by the auction process is applicable. |
| Interest Rate | Interest rate, in percent, produced by the auction process. |
| Minimum Denomination | Minimum allowable transaction size, in par amount, applicable on the day of the ARS auction. |
| Rate Type | Indication of whether the interest rate submitted represents a maximum rate (M), all hold rate (H), or an interest rate set by the auction process (A) |

| | |
|----------------------|---|
| Par Amount Auctioned | Par amount auctioned not including hold orders effective at any interest rate. The par amount auctioned is commonly referred to in results of an auction communicated to Program Dealers by Auction Agents as the “accepted sells” or the “executed sells.” |
| Minimum Rate | Minimum interest rate, in percent, applicable at the time of the auction or if such minimum interest rate is not able to be calculated, an indication that such rate is not calculable (NC). Leave blank if there is no minimum rate applicable. |
| Maximum Rate | Maximum interest rate, in percent, applicable at the time of the auction or if such maximum interest rate is not able to be calculated, an indication that such rate is not calculable (NC). Leave blank if there is no maximum rate applicable. |

VRDO Data Elements Description

| Field Name | Description |
|---|---|
| User ID | Submitter User ID in MSRB Gateway. |
| Password | Submitter password in MSRB Gateway. |
| Submission Control Number | Submitter assigned reference number. |
| CUSIP | CUSIP Number for the VRDO |
| ARS/VRDO Indicator | Indication of whether a submission is an ARS or VRDO |
| Transaction Type | Indication of whether a submission is a new submission (I), a modification of an existing submission (M), or a cancellation of an existing submission (C) |
| Dealer MSRB Number | MSRB Registration Number of the VRDO Remarketing Agent. |
| Date of Interest Rate Reset | Date that the VRDO interest rate was determined. |
| Time of Interest Rate Reset | Time that the VRDO interest rate reset was determined. All reported times are Eastern Time and must be entered in military format. Note that seconds may be entered as "00" if your system is not capable of reporting seconds or if the seconds are not known. |
| Length of the Interest Reset Period in Days | Number of calendar days that the interest rate produced by the interest rate reset is applicable. |
| Interest Rate | Interest rate, in percent, produced by the interest rate reset. |
| Minimum Denomination | Minimum allowable transaction size, in par amount, applicable on the day of the VRDO interest rate reset. |
| Rate Type | Indication of whether the interest rate submitted represents a maximum rate (M), a rate that was set by a formula (F), or a rate that was set by the VRDO Remarketing Agent (R) |
| Par Amount Remarketed | Par amount of the VRDO held by a party other than the VRDO Remarketing Agent. |
| Length of Notification Period in Days | Number of calendar days that may lapse between a holder of a VRDO tendering its security and a liquidity provider purchasing the tendered security in the event that the Remarketing Agent is unable to remarket the tendered security. |
| Minimum Rate | Minimum interest rate, in percent, applicable at the time of the interest rate or if such minimum interest rate is not able to be calculated, an indication that such rate is not calculable (NC). Leave blank if there is no minimum rate applicable. |
| Maximum Rate | Maximum interest rate, in percent, applicable at the time of the interest rate reset or if such maximum interest rate is not able to be calculated, an indication that such rate is not calculable (NC). Leave blank if there is no maximum rate applicable. |

| | |
|------------------------------------|---|
| Liquidity Facility | For each liquidity facility applicable to the VRDO, an indication of whether each is a standby bond purchase agreement (P) or letter or credit (L). |
| Liquidity Facility Expiration Date | The expiration date of each liquidity facility applicable to the VRDO. |

VII. SHORT System Error Codes

The SHORT System performs various data checks to ensure that information submitted is in the correct format. In addition, data checks are performed to monitor compliance with MSRB Rule G-34(c) as well as to identify information submitted in correct formats that may contain errors due to information not falling within reasonable ranges of expected values for a given item of information. Note that the data checks performed are subject to change.

Format Edits

Each submission, which may contain more than one “transaction” representing, for example, a report of a VRDO interest rate reset, is reviewed by the SHORT System to verify that its format as well as the format of each transaction is correct. This involves checking various required data elements to ensure that they are present in the correct form (e.g., dates are in date format) and with the correct number of digits or characters. Submissions that fail these edits are not processed further and must be resubmitted in the correct format in order for the submission to be processed by the SHORT System. Transactions receiving a format edit error code also must be resubmitted in the correct format in order for the transactions to be processed by the SHORT System. Beginning September 27, 2010, for submissions containing multiple transactions, the SHORT System will accept all transactions that do not receive a format error code and only those transactions receiving a format error must be resubmitted in the correct format

The SHORT System only accepts information from parties known to the MSRB. In addition, information submitted by a Designated Agent on behalf of a dealer or ARS Auction Agent will only be accepted if such dealer or ARS Auction Agent for whom the Designated Agent is submitting information has previously been so designated by the dealer or ARS Auction Agent. Submissions by parties that are not known to the MSRB or by a party for whom a dealer or ARS Auction Agent has not designated as a Designated Agent receive a format edit error code and such information must be resubmitted by a party known to the MSRB or by a Designated Agent.

Content Edits

The values in submissions of data to the SHORT System that pass all format edits are checked to determine that they are within reasonable limits. Transactions receiving a content edit error code must be reviewed to check that the information was correctly reported. If the information was correctly reported, no further action is required; however, any erroneous information must be corrected by either modifying the information or cancelling and resubmitting a correct report. Corrections must be made as soon as possible.

Error Code Tables

Listed below are all of the error codes that could be returned in response to a submission to the SHORT System. For each error code, a short description is provided as well as an indication of whether each error code applies to instruct, modification or cancellation as well as whether each error code applies to a report of an ARS or VRDO.

Submission-Level Edits

| Error Code | Description | Instruct | Modify | Cancel | ARS | VRDO |
|------------|-----------------------------------|----------|--------|--------|-----|------|
| E002 | Unparseable Message | Y | Y | Y | Y | Y |
| E003 | Invalid Transaction(s) In Message | Y | Y | Y | Y | Y |
| E004 | Authentication Error | Y | Y | Y | Y | Y |
| E006 | System Down | Y | Y | Y | Y | Y |
| E007 | System Busy | Y | Y | Y | Y | Y |
| E009 | Unsupported Mode | Y | Y | Y | Y | Y |
| E010 | Missing Submission Control Number | Y | Y | Y | Y | Y |
| E011 | Invalid Submission Control Number | Y | Y | Y | Y | Y |
| E012 | Missing Information Type | Y | Y | Y | Y | Y |
| E013 | Unsupported Information Type | Y | Y | Y | Y | Y |
| E014 | Missing Message Timestamp | Y | Y | Y | Y | Y |
| E015 | Invalid Message Timestamp | Y | Y | Y | Y | Y |
| E101 | Zero Transaction(s) Processed | Y | Y | Y | Y | Y |
| S101 | Transaction(s) Included | Y | Y | Y | Y | Y |

Transaction-Level Edits

Format Edits

| Error Code | Description | Instruct | Modify | Cancel | ARS | VRDO |
|------------|--|----------|--------|--------|-----|------|
| S001 | Submitted Transaction(s) Successfully Processed | Y | Y | Y | Y | Y |
| E001 | No Transaction(s) found | Y | Y | Y | Y | Y |
| 1001 | Submitter does not have privileges to submit to SHORT System | Y | Y | Y | Y | Y |
| 1003 | Submitter does not have permissions for MSRB ID | Y | Y | Y | Y | Y |
| 2001 | UNSAT CUSIP check digit missing or incorrect | Y | Y | Y | Y | Y |
| 2002 | Missing ARS/VRDO Indicator | Y | Y | Y | Y | Y |
| 2003 | Invalid ARS/VRDO Indicator – not A or V | Y | Y | Y | Y | Y |
| 2004 | Missing Transaction Type | Y | Y | Y | Y | Y |
| 2005 | Invalid Transaction Type – not I, M or C | Y | Y | Y | Y | Y |
| 2006 | Missing Dealer MSRB Number | Y | Y | Y | Y | Y |
| 2007 | Invalid Dealer MSRB Number | Y | Y | Y | Y | Y |
| 2008 | Missing Date of Interest Rate Reset | Y | Y | Y | Y | Y |

| Error Code | Description | Instruct | Modify | Cancel | ARS | VRDO |
|------------|--|----------|--------|--------|-----|------|
| 2009 | Date of Interest Rate Reset not in correct format – yyyy-mm-dd | Y | Y | Y | Y | Y |
| 2010 | Missing Time of Interest Rate Reset | Y | Y | Y | Y | Y |
| 2011 | Time of Interest Rate Reset not in correct format – hh24:mi:ss | Y | Y | Y | Y | Y |
| 2013 | Missing Date of Interest Rate Posting | Y | Y | Y | Y | |
| 2014 | Date of Interest Rate Posting not in correct format – yyyy-mm-dd | Y | Y | Y | Y | |
| 2015 | Missing Time of Interest Rate Posting | Y | Y | Y | Y | |
| 2016 | Time of Interest Rate Posting not in correct format – hh24:mi:ss | Y | Y | Y | Y | |
| 2018 | Missing Length of Interest Rate Reset Period | Y | Y | Y | Y | Y |
| 2019 | Length of Interest Rate Reset Period is non-numeric | Y | Y | Y | Y | Y |
| 2020 | Missing Interest Rate | Y | Y | Y | Y | Y |
| 2021 | Interest Rate not in correct format – nn.nnn or outside of min/max rates | Y | Y | Y | Y | Y |
| 2022 | Missing Minimum Denomination | Y | Y | Y | Y | Y |
| 2023 | Minimum Denomination is non-numeric | Y | Y | Y | Y | Y |
| 2024 | Missing Rate Type | Y | Y | Y | Y | Y |
| 2025 | Invalid Rate Type – not M, H or A for ARS or not M, F or R for VRDO | Y | Y | Y | Y | Y |
| 2026 | Missing Par Amount Auctioned for ARS | Y | Y | Y | Y | |
| 2027 | Par Amount Auctioned is non-numeric | Y | Y | Y | Y | |
| 2028 | Missing Length of Notification Period for VRDO | Y | Y | Y | | Y |
| 2029 | Length of Notification Period is non numeric | Y | Y | Y | | Y |
| 2033 | Maximum Rate not in correct format – nn.nnn or NC | Y | Y | Y | Y | Y |
| 2034 | Missing Liquidity Facility for VRDO | Y | Y | Y | | Y |
| 2035 | Invalid Liquidity Facility – not P or L | Y | Y | Y | | Y |
| 2036 | Missing Liquidity Facility Expiration Date for VRDO | Y | Y | Y | | Y |
| 2037 | Liquidity Facility Expiration Date not in correct format – yyyy-mm-dd | Y | Y | Y | | Y |
| 2040 | Minimum Rate not in correct format - nn.nnn or NC | Y | Y | Y | Y | Y |
| 2041 | Missing Minimum Rate | Y | Y | Y | Y | Y |
| TM01 | Invalid Dealer MSRB Number Format | Y | Y | Y | Y | Y |
| TM02 | Par Amount is out of range | Y | Y | | Y | |
| TM25 | Par Amount Remarketed is out of range | Y | Y | | | Y |
| TM03 | Notification Period is out of range | Y | Y | | | Y |
| TM04 | Maximum Rate is missing or out of range | Y | Y | | Y | Y |
| TM05 | Liquidity Facility Expiration Date is out of range | Y | Y | | | Y |

Content Edits

| Error Code | Description | Instruct | Modify | Cancel | ARS | VRDO |
|-------------------|--|-----------------|---------------|---------------|------------|-------------|
| 3001 | Date/Time of Interest Rate Reset in future | Y | Y | Y | Y | Y |
| 3002 | Date/Time of Interest Rate Posting in future | Y | Y | Y | Y | |
| 4001 | Late Submission | Y | Y | Y | Y | Y |
| 5001 | Modification does not have matching instruct | | Y | | Y | Y |
| 5002 | Cancel does not have matching instruct | | | Y | Y | Y |
| 6001 | ARS Program Dealer submission where information has already been submitted by another submitter (in this case only the submitting Dealer MSRB Number is added to list of dealers already identified, if necessary) | Y | | | Y | |
| TM13 | Duplicate Transaction | Y | Y | Y | Y | Y |
| TM23 | Submission in the Future | Y | Y | | Y | Y |
| TM27 | VRDO submissions are not allowed | Y | Y | Y | | Y |
| TM29 | Rate Period must be greater than 0 | Y | Y | Y | Y | Y |
| TM30 | Liquidity Facility Expiry Date cannot be in the past | Y | Y | Y | | Y |

VIII. SHORT System Submission Feedback

All submissions processed by the SHORT System generate an acknowledgement or error message. Each transaction within a submission also receives an acknowledgement or error message. In addition, all dealers that have information submitted on their behalf by either an ARS Auction Agent or a Designated Agent will be able to monitor such submissions in real-time, once such submissions have passed all format edits processed by the SHORT System.

Feedback Delivery

All submissions and transactions within a submission to the SHORT System are assigned an acknowledgement or error code. Such information is available by the following means:

Electronic Feedback. All submitters that submit information to the SHORT System using XML receive a response message by XML. (See section XII for the Submitter Response XML schema.)

SHORT System Web User Interface. All submitters, as well as any party for whom information has been submitted on its behalf, may view submissions and any error codes returned using the SHORT System Web User Interface. A separate user manual for the SHORT System Web User Interface will be made available on www.msrb.org.

IX. SHORT System Web Service

Submissions of information to the SHORT System using a computer-to-computer connection are made by transmitting a properly formatted XML file to the SHORT System Web Service. Information on how to submit properly formatted XML files using the SHORT System Web Service as well as the location of the web service on the Internet, is available at:

Beginning January 30, 2009 the location of the SHORT System Web Service will change and separate web services will be used for submitting information to the SHORT System pursuant to Rule G-34 (“SHORT System Production Environment”) or for making test submissions (“SHORT System Test Environment”). Beginning January 30, 2009, the web services will be at the following locations:

SHORT System Production Environment:

https://short.msrb.org/msrb_avts_ws/services/avts_submitter_services?wsdl

SHORT System Test Environment:

https://shorttest.msrb.org/msrb_avts_ws/services/avts_submitter_services?wsdl

Submissions of information to the SHORT System using the Web Service to satisfy the requirements of Rule G-34 must be made using the SHORT System Production Environment web service.

X. Sample Submitter Input XML

```
<?xml version="1.0" ?>
<SubmitterInput xmlns="http://www.msrb.org/avts/submitter"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:avts="http://www.msrb.org/avts/common"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.msrb.org/avts/submitter SubmitterInput.xsd
  http://www.msrb.org/avts/common Common.xsd">

  <Submitter>
    <avts:UserID>bthomps01234567</avts:UserID>
    <avts:SubmitterMessageTimeStamp>
      <avts>Date>2008-08-22</avts>Date>
      <avts:Time>15:00:00</avts:Time>
    </avts:SubmitterMessageTimeStamp>
    <avts:SubmissionCtrlNum>2008082200000001</avts:SubmissionCtrlNum>
    <avts:InformationType>ResetRate/Liquidity</avts:InformationType>
    <avts>Password>password0123456</avts>Password>
  </Submitter>
  <Transactions>
    <Transaction>
      <TransactionType>I</TransactionType>
      <Instrument>
        <avts:CUSIP9>123456AB1</avts:CUSIP9>
        <avts:InstrumentType>V</avts:InstrumentType>
      </Instrument>
      <Dealers>
        <avts:DealerMSRBNum>A1234</avts:DealerMSRBNum>
      </Dealers>
      <RateInformation>
        <InterestRateResetDateTime>
          <avts>Date>2008-09-22</avts>Date>
          <avts:Time>12:00:00</avts:Time>
        </InterestRateResetDateTime>
        <InterestRatePeriod>7</InterestRatePeriod>
        <NotificationPeriod>7</NotificationPeriod>
        <InterestRate>4.250</InterestRate>
        <MinDenomination>100000</MinDenomination>
        <RateType>F</RateType>
        <ParAmountRemarketed>45000000</ParAmountRemarketed>
      </RateInformation>
    </Transaction>
  </Transactions>
</SubmitterInput>
```

```

    <MinRate>03.500</MinRate>
    <MaxRate>06.500</MaxRate>
    <LiquidityFacilities>
      <LiquidityFacility>
        <LiquidityFacilityType>P</LiquidityFacilityType>
        <LiquidityFacilityExpireDate>2008-12-01</LiquidityFacilityExpireDate>
      </LiquidityFacility>
      <LiquidityFacility>
        <LiquidityFacilityType>L</LiquidityFacilityType>
        <LiquidityFacilityExpireDate>2009-01-31</LiquidityFacilityExpireDate>
      </LiquidityFacility>
    </LiquidityFacilities>
  </RateInformation>
</Transaction>
<Transaction>
  <TransactionType>M</TransactionType>
  <Instrument>
    <avts:CUSIP9>987654ZX2</avts:CUSIP9>
    <avts:InstrumentType>V</avts:InstrumentType>
  </Instrument>
  <Dealers>
    <avts:DealerMSRBNum>B2345</avts:DealerMSRBNum>
  </Dealers>
  <RateInformation>
    <InterestRateResetDateTime>
      <avts>Date>2008-09-22</avts>Date>
      <avts:Time>15:30:00</avts:Time>
    </InterestRateResetDateTime>
    <InterestRatePeriod>7</InterestRatePeriod>
    <NotificationPeriod>7</NotificationPeriod>
    <InterestRate>05.325</InterestRate>
    <MinDenomination>100000</MinDenomination>
    <RateType>R</RateType>
    <ParAmountRemarketed>45000000</ParAmountRemarketed>
    <MinRate>NC</MinRate>
    <MaxRate>NC</MaxRate>
    <LiquidityFacilities>
      <LiquidityFacility>
        <LiquidityFacilityType>L</LiquidityFacilityType>
        <LiquidityFacilityExpireDate>2008-12-31</LiquidityFacilityExpireDate>
      </LiquidityFacility>
    </LiquidityFacilities>
  </RateInformation>
</Transaction>

```

```
        </LiquidityFacilities>
      </RateInformation>
    </Transaction>
  <Transaction>
    <TransactionType>I</TransactionType>
    <Instrument>
      <avts:CUSIP9>656565BB3</avts:CUSIP9>
      <avts:InstrumentType>A</avts:InstrumentType>
    </Instrument>
    <Dealers>
      <avts:DealerMSRBNum>A3456</avts:DealerMSRBNum>
      <avts:DealerMSRBNum>A5245</avts:DealerMSRBNum>
    </Dealers>
    <RateInformation>
      <InterestRateResetDateTime>
        <avts>Date>2008-09-22</avts>Date>
        <avts:Time>12:00:00</avts:Time>
      </InterestRateResetDateTime>
      <InterestRatePeriod>7</InterestRatePeriod>
      <InterestRatePostingDateTime>
        <avts>Date>2008-09-22</avts>Date>
        <avts:Time>14:00:00</avts:Time>
      </InterestRatePostingDateTime>
      <InterestRate>05.330</InterestRate>
      <MinDenomination>100000</MinDenomination>
      <RateType>A</RateType>
      <ParAmountAuctioned>45000000</ParAmountAuctioned>
    </RateInformation>
  </Transaction>
</Transactions>
</SubmitterInput>
```

XI. Sample Submitter Query XML

```
<?xml version="1.0" encoding="utf-8"?>
<SubmitterQuery xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns="http://www.msrb.org/avts/submitter_query"
  xmlns:avts="http://www.msrb.org/avts/common"
  xmlns:submitter="http://www.msrb.org/avts/submitter"
  xsi:schemaLocation="http://www.msrb.org/avts/submitter_query SubmitterQuery.xsd
  http://www.msrb.org/avts/common Common.xsd http://www.msrb.org/avts/submitter SubmitterInput.xsd">

  <Submitter>
    <avts:UserID>bthomps</avts:UserID>
    <avts:SubmitterMessageTimeStamp>
      <avts>Date>2008-08-22</avts>Date>
      <avts:Time>15:00:00</avts:Time>
    </avts:SubmitterMessageTimeStamp>
    <avts:SubmissionCtrlNum>2008082200000001</avts:SubmissionCtrlNum>
    <avts:InformationType>ResetRate/Liquidity</avts:InformationType>
    <avts>Password>password</avts>Password>
  </Submitter>

</SubmitterQuery>
```

XII. Sample Submitter Response XML

```
<?xml version="1.0" encoding="utf-8"?>
<SubmitterResponse xmlns="http://www.msrb.org/avts/submitter_response"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:avts="http://www.msrb.org/avts/common"
  xsi:schemaLocation="http://www.msrb.org/avts/submitter_response
  SubmitterResponse.xsd">

  <ResponseMessageHeader>
    <avts:ResponseMessageID>1234567890</avts:ResponseMessageID>
    <avts:ResponseMessageTimeStamp>
      <avts>Date>2008-09-22</avts>Date>
      <avts:Time>12:00:00</avts:Time>
  </ResponseMessageHeader>
```

```
    </avts:ResponseMessageTimeStamp>
  </ResponseMessageHeader>

  <SubmitterMessage>
    <SubmitterDetails>
      <avts:UserID>bthompso</avts:UserID>
      <avts:SubmitterMessageTimeStamp>
        <avts>Date>2008-09-22</avts>Date>
        <avts:Time>12:00:00</avts:Time>
      </avts:SubmitterMessageTimeStamp>
      <avts:SubmissionCtrlNum>2008082200000001</avts:SubmissionCtrlNum>
      <avts:InformationType>ResetRate/Liquidity</avts:InformationType>
    </SubmitterDetails>
    <SubmittedTransactions>
      <Status>
        <avts:Result>
          <avts:ResultCode>S001</avts:ResultCode>
          <avts:ResultMessage>
            Success: SubmitterResponse Successful
          </avts:ResultMessage>
        </avts:Result>
        <avts:Result>
          <avts:ResultCode>S002</avts:ResultCode>
          <avts:ResultMessage>
            Success: 3 Transaction(s) Processed Successfully
          </avts:ResultMessage>
        </avts:Result>
      </Status>
      <SubmittedTransaction>
        <TransactionType>M</TransactionType>
        <Instrument>
          <avts:CUSIP9>987654ZX2</avts:CUSIP9>
          <avts:InstrumentType>V</avts:InstrumentType>
        </Instrument>
        <InterestRateResetDateTime>
          <avts>Date>2008-09-22</avts>Date>
          <avts:Time>12:00:00</avts:Time>
        </InterestRateResetDateTime>
        <Results>
          <avts:Result>
            <avts:ResultCode>S001</avts:ResultCode>
          </avts:Result>
        </Results>
      </SubmittedTransaction>
    </SubmittedTransactions>
  </SubmitterMessage>
</ResponseMessage>
```

```

                <avts:ResultMessage>
                    Success: SubmittedTransaction Successful
                </avts:ResultMessage>
            </avts:Result>
        </Results>
    </SubmittedTransaction>
<SubmittedTransaction>
    <TransactionType>I</TransactionType>
    <Instrument>
        <avts:CUSIP9>12345XYZ1</avts:CUSIP9>
        <avts:InstrumentType>V</avts:InstrumentType>
    </Instrument>
    <InterestRateResetDateTime>
        <avts>Date>2008-09-22</avts>Date>
        <avts:Time>12:00:00</avts:Time>
    </InterestRateResetDateTime>
    <Results>
        <avts:Result>
            <avts:ResultCode>E001</avts:ResultCode>
            <avts:ResultMessage>
                Error: SubmittedTransaction Failed - Invalid
                CUSIP
            </avts:ResultMessage>
        </avts:Result>
        <avts:Result>
            <avts:ResultCode>E037</avts:ResultCode>
            <avts:ResultMessage>
                Error: SubmittedTransaction Failed - Invalid
                Security Type
            </avts:ResultMessage>
        </avts:Result>
    </Results>
</SubmittedTransaction>
<SubmittedTransaction>
    <TransactionType>C</TransactionType>
    <Instrument>
        <avts:CUSIP9>987654ZX2</avts:CUSIP9>
        <avts:InstrumentType>V</avts:InstrumentType>
    </Instrument>
    <InterestRateResetDateTime>
        <avts>Date>2008-09-22</avts>Date>

```

```
        <avts:Time>12:00:00</avts:Time>
      </InterestRateResetDateTime>
    <Results>
      <avts:Result>
        <avts:ResultCode>S001</avts:ResultCode>
        <avts:ResultMessage>
          Success: SubmittedTransaction Successful
        </avts:ResultMessage>
      </avts:Result>
    </Results>
  </SubmittedTransaction>
</SubmittedTransactions>
</SubmitterMessage>
</SubmitterResponse>
```