

IF-1: Real-Time Transaction Reporting and Price Dissemination (The "Real-Time Transaction Reporting System" or "RTRS")**RTRS Functionality**

This Information Facility ("IF-1") serves to outline the basic functionality of, and the high-level operational parameters by which the Municipal Securities Rulemaking Board ("MSRB") operates, the Real-Time Transaction Reporting System ("RTRS") which collects and disseminates transaction data in municipal securities for market transparency, surveillance purposes and analytics. Brokers, dealers and municipal securities dealers ("dealers") must report transactions in municipal securities pursuant to MSRB Rule G-14. RTRS has three "Portals" for submission of transaction data, and aspects of RTRS are designed to function in coordination with the National Securities Clearing Corporation's ("NSCC") Real-Time Trade Matching ("RTTM") system.¹

Submission of Transaction Reports. Pursuant to Rule G-14, each dealer reports to the MSRB or its designee information about each purchase and sale transaction effected in municipal securities to RTRS in the manner prescribed by Rule G-14. Rule G-14 establishes reporting requirements for three types of transactions: inter-dealer transactions eligible for comparison ("inter-dealer"), customer, and inter-dealer regulatory-only. As indicated in Rule G-14, dealers may employ agents for the purpose of submitting transaction data; however, the primary responsibility for timely and accurate submission remains with the dealer that effected the transaction.

Message-Based and Web-Based Input Methods. Two options are available for submission of data into RTRS: 1) message-based input (commonly referred as computer-to-computer or B2B submission), and 2) web-based input (commonly referred to as user-interface based submission).

In message-based input, each trade report is submitted in the International Organization for Standardization (ISO) 15022 format. Each message is sent as a separate unit between two computers and consists of a sequence of data tags and data fields.

In using the web-based input method, a submitter manually accesses a website through a web browser. As described below, different websites are used depending on whether the data is entered for both comparison and regulatory reporting or only for regulatory reporting purposes. Screen input entered via the web-based method is converted into message format by, as applicable, RTRS Web or RTTM Web, as defined below and sent from that web server to RTRS.

¹ Members of NSCC are eligible to use RTTM for trade capture, matching and settlement of municipal securities transactions. By agreement with the MSRB, NSCC does not charge dealers for serving as the portal for customer transaction data, but the MSRB reimburses NSCC for any system costs that are attributable exclusively to this function.

RTRS Portals. There are three RTRS Portals for the submission of municipal securities transaction data. Each Portal has a different policy governing the type of transaction data it can accept. Message-based input must go through NSCC's Message Portal, but web-based input may go through either the RTRS Web Portal or the RTTM Web Portal.

- NSCC's Message Portal ("Message Portal") accepts any type of municipal security trade submission or modification from a submitter. In the Message Portal, a submitter indicates whether the submission or modification is intended for processing by RTTM, RTRS or both.
- The MSRB's RTRS Web Portal ("RTRS Web") accepts municipal security trade submissions or modifications from submitters, except data that would initially report or modify inter-dealer transaction data used in the comparison process. Comparison data (e.g., CUSIP number, par or price) instead must be entered into the RTTM system. For example, a dealer may use the RTRS Web Portal to correct an inter-dealer transaction with regard to the time of trade or dealer capacity, but not to correct (or to input initially) the CUSIP number, par or price of the trade.
- NSCC's RTTM Web Portal ("RTTM Web") accepts both comparison data and regulatory reporting data (e.g., time of trade or special condition indicator) from submitters if that data is associated with an inter-dealer transaction eligible for comparison. The RTTM Web Portal may not be used to report or correct customer or inter-dealer regulatory-only transactions.

The MSRB maintains 7:00 a.m. to 7:00 p.m. Eastern Time as core operational hours on business days, which exclude weekends and holidays identified on the MSRB System Holiday Schedule published on the MSRB website. Core operational hours represent those hours when the MSRB's resources will be more readily available to respond to inquiries and incidents experienced by users of MSRB's systems. The hours of the RTRS Business Day, as defined in Rule G-14, are 7:30 a.m. to 6:30 p.m. Eastern Time. The RTRS portals will generally be open beginning 30 minutes prior to the beginning of the RTRS Business Day and ending 90 minutes after the end of the RTRS Business Day.

Information Available to Regulators. RTRS maintains an audit trail and provides regulators with transaction data and related information to enhance surveillance capabilities. The RTRS Surveillance Database stores each trade report submitted by, or on behalf of, a dealer and audit trail reports provide, among other things, information about trades effected by a dealer, modifications and cancellations reported by, or on behalf of, a dealer, trades in specific CUSIPs and specific data elements such as trades with special condition indicators. In addition, the MSRB may provide regulators with real-time connections to RTRS or subscriptions to RTRS products.

RTRS Processing. Below is a description of certain key steps in RTRS processing.

Input Requirements. The list of required data elements, as defined in Rule G-14, is set forth in the RTRS Users Manual, available through www.msrb.org.

Input data flow. RTRS receives information about each trade separately from a submitter as an electronic message and processes each message individually. RTRS enables dealers to submit, modify and cancel messages for all types of trades.

Format checks. Each trade report is checked in an attempt to verify that required data elements are present in the correct format (*e.g.*, dates are in date format and money amounts are in decimal format).² Trade reports that fail format checks may not be processed further, in which case an error message describing the deficiency is returned to the submitter.

Submitter validation. Trade reports submitted through RTTM are accepted by RTTM if submitted to RTTM by an NSCC participant. Trade reports are checked by RTRS and are not processed further unless the trade report bears the identifier of a dealer registered with the MSRB. RTRS further checks each trade report to verify that the dealer has, via MSRB Form A-12, authorized the submitter to report trades on its behalf.

RTRS Web-based input is also validated at multiple levels. An RTRS Web user cannot logon to RTRS Web without a valid user identifier and password issued by the MSRB. Similar to RTTM, RTRS Web checks each trade report to verify that the report bears the identifier of a dealer registered with the MSRB and that the dealer has, via MSRB Form A-12, authorized the submitter to report trades on its behalf. RTRS Web only allows a dealer or submitter access to view trades to which it was a party or for which it has submitted on behalf of another dealer.

Timestamping. Trade reports submitted through RTTM are timestamped by RTTM, and trade reports submitted through RTRS Web are timestamped by RTRS. Any delays that may occur in application processing or telecommunications connections between RTTM and the MSRB will not affect the assessment of the time the trade was reported.

Lateness checking. The time taken to report the trade is measured by comparing the time of trade reported by the dealer with the timestamp assigned by RTTM or RTRS. The submitter has the option to include an indicator in the trade report that shows that the submitter believes an extended reporting deadline set forth in Rule G-14 applies to the trade report, otherwise RTRS assesses each trade for timeliness by comparing the timestamp against the 15-minute reporting deadline provided for in Rule G-14. Trade reports not received by the appropriate reporting deadline are considered late. If a trade is reported late, an error message indicating this fact is sent to the submitter. RTRS produces statistics on dealer performance related to the timely submission of transactions and timely correction of errors and provides these statistics to dealers, as well as to regulators.

Content checks. Content in the trade report is checked for apparent discrepancies based on other data available to RTRS. Trade reports that fail content checks may not be processed further, in which case an error message describing the deficiency is returned to the submitter.

² Specifications for message formats are detailed in the RTRS Users Manual.

Feedback. RTRS generates an acknowledgement or error message for reported trades. Trade reports for inter-dealer trades that have passed RTTM checks and which do not have any RTRS errors are only acknowledged by RTTM and not by RTRS.

Transaction Dissemination by RTRS

The MSRB makes RTRS data available through various subscription services described in more detail below. The MSRB may, at its discretion, waive or reduce fees for a service or product for certain non-profit organizations and for organizations providing, at no out-of-pocket charge, services or products to the MSRB for internal or public use or dissemination on MSRB's Electronic Municipal Market Access System (EMMA®) on terms agreeable to the MSRB.

MSRB Real-Time Transaction Data Subscription Service

Subscription. MSRB's Real-Time Transaction Data Subscription Service ("Real-Time Service") is made available pursuant to the terms of a subscription agreement for a commercially reasonable fee as set forth in the "MSRB Subscription Services Price List" available at www.msrb.org. Subscribers are permitted to re-disseminate transaction data from the Real-Time Service pursuant to the terms of the subscription agreement.

Access to Real-Time Service and Replay Files. The Real-Time Service is provided in the form of messages and is available over the web. Subscribers to the Real-Time Service must use either a TCP secure socket connection or the web service for connecting with RTRS. The Real-Time Service also provides a "Replay" file containing all messages disseminated during a RTRS Business Day.

Real-Time Dissemination. From at least 6:00 a.m. to 9:00 p.m. Eastern Time on RTRS Business Days, the Real-Time Service disseminates data on transactions in real-time, which is promptly following processing by RTRS, subject to the right of the MSRB to withhold dissemination of transaction data if it contains an error or is subject to an exception. Messages representing transaction data are disseminated based on the order that they are processed by RTRS. In some cases, RTRS may re-disseminate transaction data if additional or updated information becomes available to RTRS.

Trade Reports that Fail a Format or Content Check. If a trade report fails a format or content check, the associated transaction data may not be disseminated, in whole or in part.

Trades Subject to Dissemination Exceptions. Transactions that are excepted from dissemination are (i) trades marked by the dealer as having prices other than market prices, using a special condition indicator, and (ii) reports of inter-dealer regulatory-only transactions.

Dissemination of Bilateral Inter-Dealer Trades. Dissemination of inter-dealer trades for bilateral submissions occurs only after comparison of the trade is achieved at RTTM.

List of Information Items to be Disseminated. The list of potential fields disseminated by the Real-Time Service is as follows:³

Message Type

Type of message. RTRS transmits transaction messages, which contain transaction data, and system messages, which coordinate communications from RTRS to subscribers and confirm system connectivity.

Sequential Number

Transaction messages are provided a unique sequential number on a daily basis.

RTRS Control Number

The identifier for each transaction. The RTRS Control Number may be used to apply subsequent modifications and cancellations to an initial transaction.

Trade Type Indicator

Type of trade: an inter-dealer trade, a purchase from a customer by a dealer, or a sale to a customer by a dealer.

Transaction Type Indicator

An indicator showing whether the message is a new transaction or modifies or cancels a previously disseminated transaction.

CUSIP

The CUSIP number of the security traded.

Security Description

Text description of the security traded.

Dated Date

Dated date of the security traded.

Coupon

³ The list contains the potential fields disseminated by the Real-Time Service, though certain fields may not be applicable or available for certain trades and, if so, such fields will be blank.

Interest rate of the security traded (blank for zero-coupon bonds).

Maturity Date

Maturity date of the security traded.

When-Issued Indicator

Indicates whether the security traded on or before the security's initial settlement date.

Settlement Date

If the dealer reports a settlement date of the trade, this field will be populated.

Assumed Settlement Date

If the dealer does not report a settlement date for a trade, this field will be populated with a date calculated by RTRS.

Trade Date

The date the trade was executed as reported by the dealer.

Time of Trade

The time of trade execution as reported by the dealer.

Par Traded

The par value of the trade as reported by the dealer. Trades with a par amount over \$5 million will indicate par value as "MM+" until five (5) weekdays (including holidays) after the stated trade date, at which time the par will be unmasked (i.e., the trade will be re-disseminated with the par value shown).

Dollar Price

The dollar price of the trade.

Yield

Yield is calculated by RTRS when yield can be computed from available information.⁴

⁴ In certain infrequent cases where a dealer is not required to report a dollar price, RTRS will publish the yield submitted by the dealer.

Broker's Broker Indicator

An indicator used for inter-dealer transactions executed by a broker's broker, including whether it was a purchase or sale by the broker's broker.

Weighted Price Indicator

An indicator that the transaction price was a "weighted average price" based on multiple transactions done at different prices earlier in the day to accumulate the par amount needed to execute an order for a customer.

List Price Indicator

An indicator showing that the transaction price was reported as a trade in a new issue by a sole underwriter, syndicate manager, syndicate member, selling group member or distribution participant to a customer at the list offering price on the first day of trading.

Takedown Transaction Indicator

An indicator showing that the transaction was by a sole underwriter or syndicate manager to a syndicate member, selling group member, or distribution participant on the first day of trading.

Alternative Trading System Transaction Indicator

An indicator showing that the transaction was executed with or using the services of an alternative trading system.

Non-Transaction-Based Compensation Arrangement Transaction Indicator

An indicator showing that a customer transaction did not include a mark-up, mark-down or commission.

RTRS Publish Date

The date the message was disseminated to subscribers.

RTRS Publish Time

The time the message was disseminated to subscribers.

Version Number

Version number of the message or file format used in the message or file.

MSRB Comprehensive Transaction Data Subscription Service

The Comprehensive Transaction Data Subscription Service ("Comprehensive Service") is made available through file download over the web pursuant to the terms of a subscription agreement for a commercially reasonable fee as determined by the MSRB and as set forth in the "MSRB

Subscription Services Price List” available at www.msrb.org. Subscribers are permitted to re-disseminate transaction data from the Comprehensive Service pursuant to the terms of the subscription agreement. Subscribers to the Real-Time Service receive a subscription to the Comprehensive Service at no additional charge.

The Comprehensive Service consists of similar data fields as the Real-Time Service but is provided on a delayed basis. The potential fields disseminated by the Real-Time Service, as identified in the “List of Information Items to be Disseminated” above, are the same potential fields disseminated by the Comprehensive Service, with the exception of “Message Type”, “Sequential Number” and “Transaction Type Indicator”.

The Comprehensive Service consists of (i) transaction data for a specific trade date made available at approximately 6:00 a.m. Eastern Time on the RTRS Business Day following trade date (“T+1”)⁵; (ii) transaction data for a specific trade date made available five (5) weekdays (including holidays) after that trade date (“T+5”)⁶, which will provide all late trade reports and the effect of modifications or cancellations submitted up until the close of the RTRS Business Day prior to the T+5 report’s dissemination; and (iii) transaction data for a specific trade date made available twenty (20) weekdays (including holidays) after that trade date (“T+20”), which will provide all late trade reports and the effects of any trade modifications or cancellations received since the T+5 report was produced up until the close of RTRS Business Day prior to the T+20 report’s dissemination.

MSRB Historical Transaction Data Product

The Historical Transaction Data Product (“Historical Data Product”) is made available to purchasers via electronic media pursuant to the terms of a purchase agreement for a commercially reasonable fee as determined by the MSRB and as set forth in the “MSRB Subscription Services Price List” available at www.msrb.org. There is also an initial one-time set-up fee for first-time purchasers of the Historical Data Product, unless the purchaser is a current subscriber to an MSRB subscription service. Purchasers are permitted to re-disseminate transaction data from the Historical Data Product pursuant to the terms of the purchase agreement. The Historical Data Product consists of the same data fields as is provided by the T+20 report from the Comprehensive Service and can be purchased in one calendar year data sets.⁷

⁵ As with the Real-Time Service, the T+1 report will provide a “MM+” notation, in lieu of the exact par value, if the par value is over \$5 million.

⁶ The T+5 report will provide exact par values for those transactions with a par value over \$5 million.

⁷ The Historical Data Product data sets are not modified to reflect additions or enhancements made, if any, to the underlying historical transaction data.

MSRB Academic Historical Transaction Data Product

The Academic Historical Transaction Data Product (“Academic Data Product”) is made available via electronic media pursuant to the terms of a purchase agreement for a commercially reasonable fee as determined by the MSRB and set forth in the “MSRB Subscription Services Price List” available at www.msrb.org. There is also an initial one-time set-up fee for first-time purchasers of the Academic Data Product, unless the purchaser is a current subscriber to an MSRB subscription service. The Academic Data Product primarily consists of the same data fields that are provided by the Historical Data Product with notable variances: (i) the data set is at least 36 months old and (ii) the data includes unique anonymized dealer identifiers. The Academic Data Product also excludes transactions with a List Price/Take Transaction Indicator. Only institutions of higher education can purchase the Academic Data Product, and each purchaser receives a one-year data set, with each data set having dealer identifiers uniquely anonymized for that purchaser.⁸

⁸ The Academic Data Product sets are not modified to reflect additions or enhancements made, if any, to the underlying historical transaction data.