

EXHIBIT 4

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 and surveillance purposes. 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

[The MSRB coordinated its plans for the RTRS facility with the new real-time comparison system for municipal and corporate bonds (the "Real-Time Trade Matching" or "RTTM" system) implemented by National Securities Clearing Corporation (NSCC).¹ The use of the NSCC telecommunication facility as a data collection point or "Portal" for transaction data and the use of a standard common format for trade reporting and automated comparison through NSCC are intended to reduce dealer costs in complying with the 15-minute transaction reporting requirement. Retail and institutional customer transactions and IDRO reports are reported through NSCC using the same record format as used for inter-dealer trades.² NSCC will not process customer transactions in the comparison system, but will forward the data to the MSRB and thus allow dealers to avoid setting up separate telecommunications links and facilities specifically for trade reporting to the MSRB.³ In this manner NSCC and MSRB have attempted to provide a means for dealers to leverage their systems development work to satisfy two goals at once – that of real-time transaction reporting and real-time comparison of inter-dealer transactions. In this regard, the development plans for both systems have been coordinated to provide the greatest efficiencies possible for dealers.]

[Improved Functionality. The objective of real-time transaction reporting is to make price and volume information publicly available as soon as possible after trades are executed. Real-time reporting will also bring improved functionality to dealers and enforcement agencies, compared with the former batch-oriented reporting system. These improvements include:

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.

- The ability to correct regulatory data, such as time of trade, on inter-dealer trade reports;
- The ability for a dealer to ensure the accuracy of regulatory data even when that information is reported on its behalf by a clearing broker;
- The capability for dealers to report their capacity as agent in inter-dealer trades; and
- Improvements in the “audit trail” of trade information.]

[Submission of Transaction Reports by Intermediaries. As in the former transaction reporting system, a dealer will be able to use an intermediary, *i.e.*, its clearing broker or service bureau, to submit transaction reports to RTRS. Also following prior policies, inter-dealer transaction reporting and comparison will be accomplished using one transaction report. The MSRB expects those dealers that are not self-clearing to submit inter-dealer trades through their clearing broker. However, these dealers must ensure that the clearing broker will be able to submit the trade report satisfying both comparison and transaction reporting requirements within 15 minutes of the time of trade. Both dealers in this case will have the responsibility to work together to ensure that such trade submissions are timely and accurate. It is possible for the correspondent to submit customer trade reports directly to the MSRB or for the clearing broker to submit on the correspondent’s behalf.]

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 [format]options are available for submission of data into RTRS: 1) message-based [trade]input[,] (commonly referred as computer-to-computer or B2B submission), and 2) [W]web-based [trade]input[.] (commonly referred to as user-interface based submission).

In message-based [trade]input, each trade report is submitted [as a “message” in a standardized format. A trade input message consists of a sequence of data tags and data fields — for example, the tag “SETT” followed by a date field indicates the settlement date of the trade. For real-time trade reporting and comparison, the format standard is the ISO 15022 format established by]in the International Organization for Standardization.⁴] (ISO) 15022 format. Each message is sent as a separate unit between two computers[. The fact that a trade message is the basic telecommunications unit enables real-time reporting, comparison and interactive feedback. Messages are well-suited to automated high-volume operations and to “straight-through processing” methods.] and consists of a sequence of data tags and data fields.

In using the [W]web-based input method, [the dealer]a submitter manually accesses a [Web site]website through [an Internet]a web browser[to enter, correct or view trade data.]. As described below, different [Web sites]websites are used depending on whether the data is entered for both comparison and regulatory reporting or only for [reporting purposes. The Web-based

method requires no system development work beyond setting up an Internet connection and obtaining the appropriate user ID, password and security safeguards. However, Web input is manual and it will not be possible to interface the Web-based method with the dealer's processing system. Therefore, exclusive use of the Web-based method for submitting transactions generally will be appropriate only for relatively low-volume submitters. regulatory reporting purposes. Screen input entered via the web-based method is converted into message format, as applicable, RTRS Web or RTTM Web, as defined below and sent from that web server to RTRS.

[For high-volume submitters of transaction data, such as large dealers, clearing brokers and service bureaus, the only efficient and practical means for initial trade submission is likely to be message-based.]

[Dealers may use the message-based method, the Web-based method, or both. Some high-volume dealers may submit the initial trade report as a message, review their submission and the RTRS status information on a Web site, and make corrections manually using Web-based trade input. Instead of using the Web, dealers may also submit corrections in message format. Alternatively, some low-volume dealers may use the message-based system if messaging is made available to them by clearing brokers or service bureaus.⁵] RTRS Portals. [The MSRB has designated] There are three RTRS [“]Portals[”] for the [receipt]submission of municipal securities [trade]transaction data. Each Portal has a different policy governing the type of [trade]transaction data it can accept. Message-based [trade]input must go through [the]NSCC’s Message Portal, but [W]web-based [trade]input may go through either the RTRS Web Portal or the RTTM Web Portal.

- [The] NSCC’s Message Portal [is operated by NSCC and](“Message Portal”) accepts any type of municipal security trade submission or modification[. All trade messages that] from a submitter. In the [dealer]Message Portal, a submitter indicates [should be forwarded to]whether the submission or modification is intended for processing by RTTM, RTRS [will be relayed to RTRS by NSCC. In addition, messages that the dealer indicates should be processed by the comparison system will be routed to RTTM.⁶]or both.
- The MSRB’s RTRS Web Portal [is operated by the MSRB and](“RTRS Web”) accepts [any]municipal security trade [submission or modification]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 [comparison]RTTM system[using a method authorized by NSCC such as the Message Portal or the RTTM Web Portal). The RTRS Web Portal may be used to report or correct (a) customer trade data, (b) IDRO data, and (c) inter-dealer trade data, but only if that data is not used in comparison]. For example, a dealer may use the RTRS Web Portal to correct an inter-dealer [trade record]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.

- [The] NSCC's RTTM Web Portal [is operated by NSCC for comparison purposes.⁷ It may be used to report or correct](“RTTM Web”) accepts both [“]comparison data[”] (CUSIP number, par, price, etc.)] and [“]regulatory reporting data[”] (e.g., time of trade[, etc.,] 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 [IDRO trade records]inter-dealer regulatory-only transactions.

[All RTRS Portals will be open to receive trade data for at least 90 minutes after the end of an RTRS Business Day and 30 minutes before the beginning of the next Business Day, *i.e.*, they will be open at least from 7:00 a.m. through 8:00 p.m. Eastern Time. The RTRS Web Portal will be open for an additional 60 minutes at the beginning and end of the RTRS Business day, *i.e.*, it will be open from 6:00 a.m. to 9:00 p.m. Eastern Time. The RTRS Web Portal is available for viewing trade data twenty-four hours a day, seven days a week, subject to the right of the MSRB to make the RTRS Web Portal unavailable outside of the hours of 6:00 a.m. to 9:00 p.m. Eastern Time for required maintenance, upgrades or other purposes, or at other times as needed to ensure the integrity of MSRB systems.]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. 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.

[Measurement of Timely Reporting. The time taken to report the trade will be measured by comparing the time of trade reported by the dealer with the time of receipt of the trade report at the designated RTRS Portal. RTRS will assess each trade against its reporting deadline (15 minutes or end-of-day). Trades not received by the appropriate reporting deadline will be considered late.]

[Enhancement of Information Available to Regulators. MSRB worked with the Financial Industry Regulatory Authority (FINRA, formerly known as NASD) and other regulators to improve the audit trail and other surveillance capabilities that are available as data is collected on a real-time basis. One addition concerns the situation in which one dealer passes an order to a second dealer for execution directly out of the second dealer’s principal account, with settlement made directly between the second dealer and the party placing the order. The situation requiring this “Inter-Dealer Regulatory-Only or “IDRO” report typically occurs when a fully disclosed introducing broker submits a customer order to its clearing broker for execution, and the clearing broker executes and settles directly with the introducing broker’s customer. The former TRS system required only one trade report in this situation — a customer trade report from the introducing broker. RTRS procedures require another trade report showing the identity and role of the clearing broker — it will be described as an Inter-Dealer Regulatory-Only transaction. The new trade report was requested by FINRA to provide a more complete audit trail for surveillance purposes.^{8]}]

[The former transaction reporting procedures required a dealer effecting a trade “as agent” for a customer to designate its capacity on the customer trade report. This requirement is in RTRS. Inter-dealer transaction reports did not require a capacity field to show whether the inter-dealer trade was done as agent for a customer, but RTRS added such a requirement.⁹]

[Another feature added in the real-time environment is the Special Condition Code. RTRS requires a dealer that executes a trade with certain special conditions to code the trade report accordingly. For example, if there is a specific reason for a trade being reported at a price that is not a true market price, the dealer will indicate this with a Special Condition Code. A trade report with a Special Condition Code that is indicative of an off-market price will not be disseminated by RTRS, but will be made available to regulatory agencies for market surveillance and inspection purposes. Some Special Condition Codes will not be indicative of an off-market price but will report conditions such as a security that is traded “flat.”¹⁰]

[RTRS also added the reporting of a code by which a dealer will indicate that a price being reported was derived as part of a “weighted average price” transaction. A weighted average price transaction is one in which a dealer agrees to purchase up to a certain quantity of securities for a customer at market prices during the day, culminating with one sale transaction to the customer of the aggregate par value, with a price representing a weighted average of the dealer’s purchases. The Price Dissemination Plan previously called for displaying the “weighted average price” code along with other data about the transaction.]

[Finally, although it did not require any change in dealer procedures, RTRS provides regulators with the record of all changes reported by a dealer after its initial trade submission. This is an enhancement over the former system, which reported the results of trade modifications but did not show the initial submission or the subsequent change records. RTRS provides reports to regulators showing each modification or cancellation of a trade report, including the time the change was made. The MSRB also provides regulators with real-time connections to RTRS. This enables regulatory agency staff to obtain routine reports of transactions more quickly than was previously possible.]

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. [Following]Below is a description of certain key steps in RTRS processing [with regard to input requirements, input data flow, format edits, submitter validation, timestamping, lateness checking, content validation, feedback, modification and cancellation, and the maintenance of the surveillance database].

[Input Requirements. The basic transaction information to be reported by a dealer in RTRS is similar to that reported in the former transaction reporting system. This information supports both the price transparency and surveillance functions of the system. The complete list of data elements that are required on a trade report are in Specifications for Real-time Reporting of Municipal Securities Transactions¹¹ and are included within the RTRS Users Manual, available at [www.msrb.org.](http://www.msrb.org/)]

Input Requirements. The list of required data elements, as defined in Rule G-14, is set forth in the RTRS Users Manual, available through <http://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.[trade individually.¹² All inter-dealer trade messages that contain initial values or modifications to data elements needed for comparison (e.g., dollar price or par), come to RTRS as messages via RTTM or as input to the RTTM Web. Inter-dealer trade messages that affect only data elements needed for regulatory reporting (e.g., time of trade) come to RTRS either as messages via the RTTM network, or as Web-based input via the RTTM Web or RTRS Web. Customer and IDRO messages, since they contain data needed exclusively for regulatory reporting, come to RTRS as messages via the RTTM network or as input to the RTRS Web (but not via the RTTM Web).]

Format [edits]checks. Each [message]trade report is [edited]checked in an attempt to verify that[its format is correct.¹³ This involves checking that] required data elements are present in the correct format (e.g., dates are in date format and money amounts are in decimal format) and with the correct number of digits or characters. Messages]).² Trade reports that fail [these edits are]format checks may not be processed further[and], in which case an error message describing the deficiency is returned to the submitter. [Both RTTM and RTRS conduct format edits. Input from Web-based screens is checked before it is transferred from the user's personal computer to the Web server.]

Submitter validation. [RTRS accepts input only from parties known to the MSRB.]Trade [messages routed]reports submitted through RTTM are[checked by RTTM and rejected unless] accepted by RTTM if submitted to RTTM by an NSCC participant. [The message is]Trade reports are checked [again when received]by RTRS and [is]are not processed further unless [it]the trade report bears the identifier of a [clearing broker or service bureau known to]dealer registered with the MSRB. RTRS further checks each trade [message]report to verify that the dealer has[previously], via MSRB Form A-12, authorized the submitter to report trades on its behalf.

²

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

RTRS Web-based input is also validated at multiple levels. [First, the]An RTRS Web user cannot logon to RTRS [unless he or she enters a]Web without a valid user identifier and password issued by the MSRB. [RTRS security controls allow a dealer access only to trades in which it was a party or]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. [Finally, the dealer-submitter combination is validated in the same way as input from RTTM, above.]

Timestamping. [To enforce the rule on timely reporting of trades in real-time environment, each trade message is given an electronic timestamp, accurate to the second, when it is received. RTRS interprets the timestamp as the time the trade was reported. Messages that are input through the Message Portal or the RTTM Web Portal are timestamped by RTTM, and messages submitted via the RTRS Web Portal are timestamped by the RTRS server. By this means, any] 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 [includes]with the timestamp assigned by RTTM or RTRS. The submitter has the option to include an indicator in the trade [message]report that shows [the]that the submitter believes an extended reporting deadline [that it understands]set forth in Rule G-14 applies to the trade report.¹⁴ RTRS then determines whether the trade was], 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[at the end of processing]. 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 edits. The values in the reported trade are checked to determine that they are within reasonable limits, in order to detect input errors such as misplaced decimal points. The relationship between values is checked (e.g., the settlement date may not precede the trade date) and crucial data elements are verified against reference tables (e.g., the identifier of the dealer that effected the trade must be present in the RTRS dealer reference table). Finally, for those trades where the dollar price and yield are reported, the consistency of price and yield are verified when possible.]

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.

Feedback. [If a dealer's message is deficient, RTRS interactive feedback provides descriptive

detail. MSRB anticipated that this feedback would help dealers to detect and correct errors quickly.] RTRS generates an acknowledgement or error message for [every]reported [trade, except]trades. Trade reports for inter-dealer trades that have passed RTTM [edits]checks and which do not have any RTRS errors[. (These trades will already have been] are only acknowledged by RTTM[.) The acknowledgement/error message is sent to the dealer and/or submitter in the format(s) that the dealer or submitter has previously requested. The available feedback formats are message or e-mail. In addition, the dealer and the submitter may view the trade, and any errors found, using RTRS Web.] and not by RTRS.

[Feedback will indicate to the dealer whether the trade is error-free or late, and whether it is questionable or unsatisfactory for reporting purposes. A “questionable” trade message is one that appears to have an error, but which may be correct depending on circumstances. Examples are a trade with a yield that exceeds ten percent of the dollar price (bonds traded very close to a premium call may have a very high nominal yield, but this is most likely an input error) or a reported time of trade before 0600 hours (trading is allowed at any time of day, but this is most likely intended to be a time in the afternoon, *e.g.*, 5:00 p.m. reported as 0500). Under the Rule G-14 RTRS Procedures, paragraph (a)(v), dealers must examine such trade reports to determine if they are in fact erroneous and, if so, correct them. A trade is “unsatisfactory for reporting purposes” if it is missing an essential data element, is defective in some way that prevents it from being processed, or cannot be included in the surveillance database or publicly reported. Examples of “unsatisfactory” conditions are a reported trade date in the future, a missing dealer symbol, and an incorrect CUSIP check digit. Certain modification attempts are also unsatisfactory, such as a modification that cannot be matched with any previous message from the dealer.]

[Modification and cancellation. The dealer is responsible for timely and accurate submission of trade reports. The dealer must monitor its reported trades by any of the available feedback methods and must correct any errors as soon as possible. If a dealer is unable to report a trade within the deadline, it must report the trade as soon as possible. RTRS produces statistics on dealer performance in timely submission and timely correction of errors and provides the statistics to dealers.]

[RTRS enables dealers to submit, modify and cancel messages for all types of trades. Unlike the former transaction reporting system in which only customer trades could be modified to correct regulatory data, RTRS supports such changes for all trade types.]

[Surveillance database. The RTRS Surveillance Database stores each message submitted by a dealer or service bureau. Audit trail reports provide regulators with information about trades effected by a dealer, trades in specific CUSIPs, highest/lowest prices for a CUSIP within a day or other time period, and specific data elements such as trades with Special Condition Codes reported by a dealer. Other reports show all modifications and cancellations reported by a dealer.]

[Price]Transaction Dissemination by RTRS

[Description of Service. Real-time price data is available by subscription, after subscribers sign an agreement regarding re-dissemination. During the RTRS Business Day, price data is disseminated in real time, immediately after receipt. Modifications and cancellations submitted by dealers that apply to earlier trade submissions are also disseminated in real time.]

[In addition to real-time reports, the MSRB provides reports each morning covering the previous day's trades (T+1 reports), as well as daily reports covering all trades done on the trading day one week earlier (T+5 reports), and monthly reports covering all trades done during the previous month.]

[Trades to be Disseminated. During the RTRS Business Day, the MSRB disseminates data on all transactions as soon as it is received, except for two types of dealer submissions. The exceptions, which are stored in the surveillance database but not disseminated in real-time, are trades marked by the dealer as having prices other than market prices, using a Special Condition Code,¹⁵ and reports of “inter-dealer regulatory-only” transactions. These have already been described.]

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.

[List of Information Items to be Disseminated. The specific items disseminated by RTRS for price transparency purposes are:

- CUSIP number and description of the issue traded;
- Par value of the transaction if five million dollars or under; otherwise reported as “MM+”;
- Dollar price;
- Yield (for inter-dealer and customer new issue transactions done on a yield basis, and for all inter-dealer and customer transactions in non-defaulted securities when the yield can be computed from dollar price);
- Date and time of trade;
- Whether the transaction was a (i) purchase from a customer; (ii) sale to a customer; or (iii) inter-dealer transaction;
- Indicator that an inter-dealer transaction was done by a broker’s broker, and if so, the broker’s broker role as buyer or seller;
- When-issued indicator, if any;
- List price indicator, if any;
- Takedown transaction indicator, if any;
- Assumed settlement date, if initial settlement date is not known at time of trade;
- Indicator that dollar price was computed by MSRB using an estimated settlement date for an issue on which the initial settlement date has not been set;
- Indicator that a trade was done at the weighted average price of trades done earlier in the day;
- Alternative trading system transaction indicator, if any;

- Non-transaction-based compensation arrangement transaction indicator, if any;
- Modification/Cancellation indicator, if any;
- RTRS broadcast time, date and sequential trade message number; and
- RTRS Control Number.]

[Transactions Done During RTRS Business Day. As noted, dealers are required, with limited exceptions, to report within 15 minutes of the time of trade all transactions done during the RTRS Business Day. Trade submissions made during the RTRS Business Day are disseminated within a few minutes of receipt.]

[Dissemination of Compared or Uncompared Inter-Dealer Trades. Unless the trade report contains errors or is subject to an exception, transactions reported by dealers during the RTRS Business Day are disseminated within a few minutes after receipt at the designated RTRS Portal. Dissemination of inter-dealer price information occurs only after comparison is achieved on the trade, as done in the former system. Comparison of the inter-dealer trade ensures the reliability of the data that was submitted, since the buyer's and the seller's details are matched. However, RTRS was designed with the flexibility to disseminate uncompered inter-dealer transaction data if it is found that a substantial proportion of trades take longer than 15 minutes to be compared.^{16]}]

[Transactions Done Outside the RTRS Business Day. Dealers are required to report transactions done outside of the RTRS Business Day, but are not required to do so on a real-time basis. Instead, trades are required to be reported within the first 15 minutes of the next RTRS Business Day, at which time they would be disseminated.]

[Late Trade Reports and Trade Data Modifications. Trades that are not reported within the timeframe set by Rule G-14 would be considered late. Late trade reports and trade modifications are disseminated by RTRS as soon as received if they are submitted during the RTRS Business Day and at the start of the next Business Day otherwise.]

[Broker's Broker Indicator. Trades by broker's brokers are marked as such on disseminated trade reports and the buy/sell indicator shows whether the broker's broker was buying or selling. Because broker's broker trades occur in matched pairs that, in market terms, many observers view as representing one movement of securities between two dealers, the Board believes it is helpful to RTRS data users if broker's broker trades are identified as such in trade reports.]

¹ NSCC is a clearing agency registered under the Securities Exchange Act.]

² For RTTM message specifications, see Interactive Messaging: NSCC Participant Specifications for Matching Input and Output Version 1.0 (March 31, 2003), and "Modifications to RTTM Messaging Specifications," FICC CMU RTTM New Project Update Issue 6 (April 20, 2004), on www.ficc.com.]

- [³ By agreement with the MSRB, NSCC does not charge dealers for serving as the portal for customer transaction data, but MSRB reimburses NSCC for any system costs that are attributable exclusively to this function.]
- [⁴ The ISO 15022 format is also used by NSCC's parent organization, the Fixed Income Clearing Corporation, for processing government, mortgage-backed, corporate, and unit interest trust securities.]
- [⁵ See "Operational Overview of MSRB's Real-Time Transaction Reporting System," MSRSB Notice 2003-13 (April 7, 2003), on www.msrb.org.]
- [⁶ Use of the Message Portal for trade comparison is currently restricted to NSCC participants.]
- [⁷ Use of the RTTM Web Portal is restricted to NSCC participants.]
- [⁸ To satisfy the need for this audit trail requirement the execution of the order by the clearing broker for the correspondent will be considered to constitute an inter-dealer "transaction" between the two dealers even though no principal position transfers between the two dealers. (The principal position in these situations moves directly from the clearing broker to the customer.) If a principal position does transfer between dealers, the trade is an "Inter-dealer Transaction Eligible for Comparison," and the trade must be compared and reported, even though settlement between the parties may occur only as a movement on the books of the clearing broker. This is consistent with G-14 policy in former TRS.]
- [⁹ The dealer is not required to link the inter-dealer and customer transaction reports associated with agency transactions.]
- [¹⁰ The MSRB in its June 2003 Notice requesting comment on plans for real-time reporting (discussed below), referred to some of what are now termed Special Condition Codes as "Special Price Reason Codes."]
- [¹¹ See "Revised Specifications for the Real-Time Transaction Reporting System, Version 1.2," MSRB Notice 2004-2 (January 23, 2004), on www.msrb.org.]
- [¹² Screen input through either Web Portal is converted into message format by the appropriate Web server and sent from that server to the RTRS host computer.]
- [¹³ Message formats are defined in detail in the Specifications for Real-time Reporting of Municipal Securities.]

- [¹⁴ As noted, trades must be reported within 15 minutes of the time of trade, except for new issue trades by syndicate managers or members at the list price (for which the deadline is the end of the first day of trading), and trades in variable rate products or commercial paper (for which the dead-line is the end of trade date).]
- [¹⁵ In an inter-dealer trade, if either dealer indicates the trade was done at a special price, RTRS considers the entire trade to be a special price trade.]
- [¹⁶ Unlike inter-dealer transactions, which have two submissions (both a buy side and a sell side) that must be compared, customer trades, which comprise approximately 80% of all reported trades, do not require comparison and are disseminated as soon as automated error checks are completed.]

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. 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.

[The MSRB disseminates municipal securities transaction prices in real-time through its Real-

Time Transaction Data Subscription Service (“Service”). The Service is available by subscription for an annual fee of \$11,000 and is a part of the MSRB’s Real-Time Transaction Reporting System (“RTRS”).]

[Description]

[The Service is available by subscription and provides a real-time stream of data representing municipal securities transaction reports made by brokers, dealers and municipal securities dealers (“dealers”) to RTRS.¹ After receipt of a trade report from a dealer, RTRS will automatically check the report for errors, ensure that it is a valid trade report for dissemination, appropriately format the report, and make it available for immediate electronic transmittal to each subscriber.²]

[The real-time data stream is in the form of messages and will be available either over the Internet or by leased line, at the subscriber’s option.³ The subscriber must use either the MQ Series⁴ or a TCP Socket connection for messaging with RTRS. Messages representing trade reports are sent out by the Service based on the order that they are received at RTRS, *i.e.*, on a “first in-first out” basis.⁵ The Service also offers a “Day Replay” file containing all messages sent during the day, in case a subscriber needs to check its records for completeness of recovery from communication breaks.⁶]

[Hours of Operation.] The “RTRS Business Day,” during which time dealers are required by Rule G-14 to submit trade reports within 15 minutes of execution, begins at 7:30 a.m. and ends at 6:30 p.m. Eastern Time. However, RTRS will actually accept, and the Service will disseminate, any trade reports received between 6:00 a.m. and 9:00 p.m. Eastern Time (“RTRS ‘Window’ Hours”).⁷ Transaction reports submitted to RTRS after 9:00 p.m. Eastern Time will not be processed by RTRS but will be pended for processing and dissemination at 6:00 a.m. Eastern Time the next business day.⁸ 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.]

[Transaction Data Disseminated.] The data contained in each transaction price report sent to subscribers is discussed in detail in the RTRS filing.⁹ It includes the same transaction information previously disseminated in the MSRB’s existing overnight batch system of transaction reporting, with additional data elements that were added for real-time transaction reporting. The specific items of information that are disseminated are:]

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 sent in the real-time broadcast (*i.e.*, a trade message, a “heartbeat” message or a system message). Heartbeat messages are sent once every 60 seconds in the absence of real-time transaction messages to indicate that the connection is working properly but that there are no messages to send. System messages are sent to indicate the daily open and close of the RTRS real-time subscriber service and to notify subscribers if publishing will be intentionally interrupted during system hours (*e.g.*, the markets have been closed because of extraordinary circumstances).]

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

[Unique sequential number of the trade message. If more than one message has been published for a trade due to modification or cancellation, the trade is uniquely identified by the RTRS ID described below.]

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

RTRS Control Number

The [RTRS ID]identifier for [the]each transaction. [This]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.

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.

CUSIP

The CUSIP number of the [issue]security traded.

Security Description

Text description of the security [obtained from the CUSIP Service Bureau]traded.

Dated Date

Dated date of the [issue]security traded[obtained from the CUSIP Service Bureau].

Coupon [(if available)]

Interest rate of the [issue]security traded (blank for zero-coupon bonds)[obtained from the CUSIP Service Bureau].

Maturity Date

Maturity date of the [issue]security traded[obtained from the CUSIP Service Bureau].

When-Issued Indicator [(if applicable)]

Indicates whether the [issue]security traded on or before the [issue's]security's initial settlement date[obtained from Standard and Poor's].

[Assumed] Settlement Date [(if applicable)]

[For new issues where]If the [initial]dealer reports a settlement date [is not known at the time]of [execution]the trade, this field [is a date 15 business days after trade date. If this field is]will be populated [there will be no data in].

Assumed Settlement Date

If the dealer does not report a settlement date [field.]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.

[Settlement Date (if known)]

[The settlement date of the trade if reported by the dealer will be shown. If this field is populated there will be no data in assumed settlement date field.]

Par Traded

The par value of the trade as reported by the dealer[will be shown]. Trades with a par amount over \$5 million will [show]indicate par value as “MM+” until five [days](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

[For customer trades, the]The dollar price of the trade[will be shown, as reported by the dealer].

Yield [(if applicable)]

[For customer and inter-dealer trades, yield]Yield is calculated by RTRS when yield can be computed from [dollar price.]available information.⁴

Broker's Broker Indicator [(if applicable)]

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

Weighted Price Indicator [(if applicable)]

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 [(if applicable)]

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.

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

Takedown Transaction Indicator [(if applicable)]

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 [(if applicable)]

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 [(if applicable)]

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

RTRS [Broadcast]Publish Date

The date the message was [published]disseminated to subscribers.

RTRS [Broadcast]Publish Time

The time the message was [first]disseminated to subscribers.

Version Number

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

[Subscription Fee.] The Real-Time Service is available by subscription for an annual fee of \$11,000. The MSRB may, in its discretion, waive or reduce such fees for a service or product for non-profit organizations (including institutions of higher education) and for organizations providing, at no out-of-pocket charge, services or products to the MSRB for internal or public use or dissemination on EMMA on terms agreeable to the MSRB. Subscribers will be allowed to re-disseminate transaction data to an unlimited number of their own customers or clients at no additional charge. Subscribers may (i) use the data for their internal business purposes; (ii) re-disseminate the data to their customers, clients and system users; and/or (iii) re-disseminate the data in other products or services that they offer to their customers, clients and system users, subject to certain limitations described in the subscription agreement. The MSRB wishes to encourage information vendors — and various other entities that make securities data available to members of the securities industry and the public — to use the transaction data in their products and services. The MSRB also encourages those parties to re-disseminate the data, either in its original form or with enhancements to address the specific needs of specific data users.^{10]}

MSRB Comprehensive Transaction Data Subscription Service

[In addition to offering the Real-Time Service, RTRS provides the]The Comprehensive Transaction Data Subscription Service (“Comprehensive Service[, which]”) 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) [trade reports]transaction data for a specific trade date made available at approximately 6:00 a.m. Eastern Time on the [business day]RTRS Business Day following trade date (“T+1[”), which display a notation that the par value is \$5 million or over, in lieu of the exact par value, where applicable]”⁵; (ii) [trade reports]transaction data for a specific trade date made available five [business days](5) weekdays (including holidays) after that trade date (“T+5”) [showing exact par values for those transactions with a par value over \$5 million, showing]⁶, which will provide all late trade reports [made after the specified trade date,]and the effect of modifications or cancellations submitted up until the [date of]close of the RTRS Business Day prior to the T+5 report’s dissemination [and showing the effect of modifications or cancellations submitted by dealers after trade date]; and (iii) [trade reports]transaction data for a specific trade date made available twenty (20[days]) weekdays (including holidays) after that trade date ("T+20 [showing]"), 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.

[The Comprehensive Transaction Data Subscription Service is made available exclusively through electronic file download over the Internet. The trade records in the Comprehensive Transaction Data Subscription Service: (i) include exact par values for those transactions with a par value over \$5 million; (ii) show all late trade reports made after the specified trade date, up until the date of dissemination; and (iii) show the effect of modifications or cancellations

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.

submitted by dealers after trade date. The annual fee for this service is \$5,500. The MSRB may, in its discretion, waive or reduce such fees for a service or product for non-profit organizations (including institutions of higher education) and for organizations providing, at no out-of-pocket charge, services or products to the MSRB for internal or public use or dissemination on EMMA on terms agreeable to the MSRB. Under RTRS, subscribers to the Real-Time Data Subscription Service receive a subscription to the Comprehensive Transaction Data Subscription Service at no additional charge.]

[¹ Modifications and cancellation messages submitted by dealers will also be disseminated in realtime.]

[² The MSRB anticipates that, during peak traffic periods, these automated functions will be accomplished within two minutes, and during lighter periods will be accomplished within a few seconds.]

[Certain trade reports made by dealers, which are coded by the dealers to indicate that the trade is for a specific reason not done at a market price, will not be disseminated but will be available to regulators as part of the surveillance function offered by RTRS. Certain other types of “transactions” that are required to be reported exclusively for audit trail purposes (relating to clearing brokers and their correspondents in certain fully-disclosed clearing arrangements where the correspondent does not take a principal position) also will not be disseminated but will be available to regulators.]

[³ Subscribers will be responsible for all telecommunications charges for leased lines.]

[⁴ To receive real-time trade messages via MQ Series, subscribers must license and configure their own MQ software.]

[⁵ If a subscriber detects that a message or a series of messages was missed during the day, the subscriber can request a trade message replay or “snapshot.”]

[⁶ The MSRB also maintains a hot-site from which it will provide real-time feed subscribers with a second source for the feed in the event that it can no longer be broadcast from the RTRS primary site.]

[⁷ The RTRS “window” hours provide extra time before the Business Day and after the Business Day for dealers that may need to report late trades or correct mistakes that are discovered after the close of the Business Day. The 9:00 p.m. Eastern Time closing time for the window is intended to allow time for certain kinds of trades that, pursuant to Rule G-14, are permitted to be reported at the “end of day” for operational reasons (*e.g.*, syndicate trades executed at list price). These can be reported up until 9:00 p.m. Eastern Time when the RTRS “window” closes.]

[⁸ In addition, at 6:00 a.m. Eastern Time RTRS will send modifications showing exact par values for transactions that were initially broadcast with a par value of “MM+.” As

described in the RTRS filing, because of concerns regarding liquidity, transactions with a par value exceeding \$5 million will initially be disseminated with a par value of “MM+.” Five business days after trade date, the actual par value will be shown.]

[⁹ File No. SR-MSRB-2004-02 (June 1, 2004); *see also* “Real-Time Transaction Reporting: Notice of Filing of Proposed Rule Change to Rules G-14 and G-12(f),” MSRB Notice 2004-13 (June 1, 2004) at www.msrb.org. The SEC approved this filing on August 31, 2004, in Securities Exchange Act Release No. 50294; *see also* “Approval by the SEC of Real-Time Transaction Reporting and Price Dissemination,” MSRB Notice 2004-29 (Sept. 2, 2004), at www.msrb.org.]

[¹⁰ Although the transaction data collected by the MSRB is not restricted with respect to redissemination by subscribers to their end user clients, there are certain restrictions on use of the proprietary “CUSIP numbers and CUSIP Securities Descriptions.” Subscribers would be subject to all of the terms of the subscription agreement to be entered into between the MSRB and each subscriber, including proprietary and intellectual property rights of third parties in information provided by such third parties that is made available through the subscription.]

MSRB Historical Transaction Data Product

[In addition to offering the Real-Time and Comprehensive Transaction Data Subscription Services, RTRS offers a Historical Data Product, which consists of the same transaction information as is provided by the Comprehensive Transaction Data Subscription Service.] The Historical Transaction Data [may be purchased in one calendar year data sets for \$2,500 per calendar year. No smaller data sets will be available. The Historical Transaction Data will be] Product (“Historical Data Product”) is made available to purchasers [on CD-ROM¹,] via electronic media pursuant to the terms of [the Historical Transaction Data Purchase Agreement, which must be executed by purchasers prior to delivery of the Historical Data Product.² A] la 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 [of \$2,000 will be charged to new] for first-time purchasers of the Historical Data Product, unless the purchaser is a current subscriber to an MSRB [Subscription Service, including the MSRB Real-Time Transaction Data Subscription Service, Comprehensive Transaction Data Subscription Service, Short-Term Obligation Rate Transparency Subscription Service, Primary Market Disclosure Subscription Service, or Continuing Disclosure Subscription Service.³] 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

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

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- [¹ As technology evolves, or if the volume of information included in the Historical Data Product increases, the MSRB may in the future decide to use a different medium for delivering the Historical Data Product.]
- [² Purchasers are subject to all of the terms of the purchase agreement to be entered into between the MSRB and each purchaser, including proprietary and intellectual property rights of third parties in information provided by such third parties that is made available through the product.]
- [³ The purchase price does not include sales tax as required by Virginia state law. The purchase price is a one-time charge for the Historical Transaction Data Product and will not include any future additions or enhancements that may be added to the data. The MSRB may, in its discretion, waive or reduce fees for a service or a product for non-profit organizations (including institutions of higher education) and for organizations providing, at no out-of-pocket charge, services or products to the MSRB for internal or public use or dissemination on EMMA on terms agreeable to the MSRB.]

MSRB Academic Historical Transaction Data Product

[The MSRB offers an Academic Historical Transaction Data Product, which consists of the same transaction information as is provided by the MSRB Historical Transaction Data Product with the exception that it also includes anonymized dealer identifiers and excludes List Offering Price/Takedown Transactions as those terms are defined in MSRB Rule G-14. The Academic Historical Transaction Data Product may be obtained only by institutions of higher education in one-year data sets for \$500 per year for data that are aged no less than 36 months. Each requestor will receive a unique data set with different anonymized dealer identifiers. No smaller data sets will be available. The Academic Historical Transaction Data Product will be made available on CD-ROM,¹ pursuant to the terms of the Academic Historical Transaction Data Product Agreement, which must be executed prior to delivery of the Academic Historical Transaction Data Product.² A one-time initial set-up fee of \$500 will be charged for the Academic Historical Transaction Data Product, unless the requestor is a prior recipient of a historical data product or current subscriber to an MSRB Subscription Service, including the MSRB Real-Time Transaction Data Subscription Service, Comprehensive Transaction Data Subscription Service, Short-Term Obligation Rate Transparency Subscription Service, Primary Market Disclosure Subscription Service or Continuing Disclosure Subscription Service.³]

[¹ As technology evolves, or if the volume of information included in the Academic Historical Transaction Data Product increases, the MSRB may in the future use a

different medium that is equally effective for delivering the Academic Historical Transaction Data Product.]

- [² Institutions of higher education shall be required to execute and shall be subject to the terms of the Academic Historical Transaction Data Product Agreement to be entered into with the MSRB, which shall address proprietary and intellectual property rights of third parties in information provided by such third parties that is made available through the Academic Historical Transaction Data Product.]
- [³ Any applicable fees do not include sales tax. The fee for each one-year data set represents a one-time charge and will not include any future additions or enhancements that may be added to the data.]

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.