Metro Transit

January 18, 2013

Beverley Miller
Minnesota Valley Transit Authority
100 East Highway 13
Burnsville, MN 55337

Subject: AVL Regional Compatibility

Dear Beverley:

Thanks for your January 15th letter and I would be happy to clarify our position on the work that has gone into defining the Regional AVL Compatibility. No less than five meetings (3/31/12, 3/30/12, 6/15/12, 9/13/12, 12/14/12) between Council and MVTA staff have taken place to fully identify these concepts. Following the 9/13/12 meeting, Mike Abegg updated the tracking sheet (attached). My understanding was that all the issues were resolved with the exception of Text Messaging (1.3) and Live APC Data Transmission (1.7), which were to be included in scoping and pricing by the AVL vendors. A final decision on those two issues was to be made after the pricing is known. See my acknowledgement comments on the attached version. My preference is to continue to use this document to track/define the functional elements of regional compatibility.

As to the interface elements listed in your letter, these track closely with the Regional Compatibility Spreadsheet identified above. As noted in the attached , we are in agreement on these functional elements with the following caveats:

1. As referenced in your document, the "Council Data System" is TransitMaster.
2. Daily stored APC data will be provided through the interface to TransitMaster on at least a daily basis. However, we agree that live data is a future functionality.
3. Transit Control Center shall have the capability to send text messages via TransitMaster to MVTA buses. Capability of automatic and manual forwarding through the RouteMatch system shall be provided via the interface. *Use of automatic or manual forwarding is based on policy direction, but both shall be provided.*
4. If there is a desire to have MVTA regular route bus data available for regional Nextrip and Real Time Signs, prior to implementation of the interface, then an interim interface with Metro Transit's web service would be required.

Meetings this fall with RouteMatch, Trapeze, MVTA and Council staff were intended to discuss the functional elements for compatibility, verify that they were technically feasible, and convert them into scopes of work for the vendors. No less than five conference calls (10/25/12, 10/29/12, 11/5/12, 11/15/12, 11/29/12) took place for this purpose. At the conclusion of the last meeting, our understanding was that the vendors were very close to creating the scope documentation and

cost data that would then be reviewed to verify that compatibility could be accomplished. As outlined in my January 8, 2013 letter, we stand ready to review this documentation.

In regards to your question about the cost of the interface, our assumption is that it is a project cost subject to the funding limitations indicated in the January 8, 2013 letter.

I must reiterate that time is of the essence for the release of the $610,000 Cedar BRT CMAQ funding. Release of these CMAQ funds is critical to maintaining the METRO Red Line start-up timeframe. Our understanding is that you will be taking this issue to your Board on January 22, 2013.

If you have any additional concerns or question, please feel free to call me at 612-349-7606.

Sincerely,

Pat Jones
Assistant Director, Engineering
Metro Transit

cc: Mike Abegg
Lois Spear
Arlene McCarthy
Mark Krebsbach

Attachment: Regional AVL Compatibility Matrix

January 15, 2013

Mr. Pat Jones, Assistant Director, Engineering
Metro Transit
560 6th Ave N
Minneapolis, MN 55411

RE: AVL Regional Compatibility

Dear Mr. Jones:

We are in receipt of your letter of January 8, 2013, providing significant detail on the information requested by the Metropolitan Council in regard to the Regional AVL Compatibility project. We are reviewing and compiling the information requested, some of it for the first time, and expect to be able to provide it to you soon.

However, we must first request again that the Council provide specific agreement on the definition of "Regional AVL Compatibility." As you well know, MVTA has been requesting conclusion and agreement on this discussion for some fifteen months now, and while much progress has been made, we are unable to complete the information requested in your letter without having clear written concurrence from the Council as to the project that we agree to undertake. Specifically, the following interface elements have been extensively discussed and reviewed by staff and we request Council acknowledgement of its agreement to an interface that will include:

- Public display of real-time bus departure information from all MVTA-operated services through Council data system;
- Public display of real-time information for all regional services operating at MVTA-controlled stops through either Council or MVTA system (depending on how the signs are managed at any given stop);
- Council is able to request holds for transfers by sending text messages from Council dispatch system through MVTA dispatch to MVTA-operated buses; capable of either automatic or manual forwarding through MVTA dispatch system;
- Public phone/web system reports real-time status of MVTA operated buses through Council data system;
- Council Map and BusOps display real-time status of MVTA operated buses;
- MVTA-operated Transitway bus APC and schedule adherence data transmitted into live Council database when Council database is able to accept such data (currently APC data not able to be accepted);
- Real-time signs at Transitway and regional/shared facilities able to display emergency messages generated by Council;
- Council dispatch incident management able to view MVTA-operated buses on AVL Map and receive Overt/Covert alarms generated on those buses;
- Council able to playback situations occurring on all buses;

- Council is able to transmit incident reports directly to MTPD based on information in Council database; MVTA dispatch able to transmit incidents reports to Metro Transit Policy (PIMS);
- Schedule adherence reporting from Council data system available for MVTA-operated Transitway services; ridership reporting from Council data system based on APC data available for MVTA-operated Transitway services, but not at Cedar Transitway startup unless Council data system has been updated to receive APC live data.

By agreeing on these interface elements, the Council then allows MVTA to confirm to both RouteMatch and Trapeze the scope of their work required to achieve compatibility. That confirmation is a clear predecessor to obtaining the quote requested by the Council in your letter, and we are unable to supply those without Council agreement on the definition. Further, it is our intent to use our regional AVL funds for the interface and compatibility work. Your assurance that this is permissible is also requested.

Until we receive concurrence on this set of definitions, we are unable to have our Board consider the approvals required under its action of August 29, 2012, as we are unable to adequately define "the project" to meet the Council's needs. Understanding the time pressures in place for the related Council project, we request that the Council provide written agreement no later than Monday, January 21st, at close of business, in order for this item to be considered at the meeting of January 22nd. Of course, we are also happy to schedule this item for the MVTA's regularly scheduled meeting on January 30th or any regular meeting thereafter.

Sincerely,

Beverley Miller
Executive Director

BM/ma/ls/rs

Metro Transit

January 8, 2013

Beverley Miller
Minnesota Valley Transit Authority
100 East Highway 13
Burnsville, MN 55337

Subject: AVL Regional Compatibility

Dear Beverley:

This letter is a follow-up to the many meetings, discussions and correspondence on MVTA's AVL project, provided at your request. As indicated in former Metropolitan Council Chair Peter Bell's letters dated June 1, 2010, July 1, 2010, and September 13, 2010, the Council is prepared to make available additional funding for MVTA's AVL project once MVTA has demonstrated that its AVL system will be regionally compatible and that adequate provisions are in place for operating and maintenance agreements.

The following documents are needed for the Council to determine that MVTA's proposed interface will provide regional compatibility, understand the allocation of costs among the Regional AVL project, the Cedar Avenue Transitway project and other funding sources and to receive MVTA's input on a reimbursement schedule:

- Trapeze-RouteMatch Interface Description.
- Trapeze Interface Quote and Scope of Work.
- RouteMatch Interface Quote and Scope of Work.
- Update and modifications to Mike Abegg's AVL Cost spreadsheet Expense Summary and Expense Components Tabs detailing cost elements and proposed project funding sources, as follows:
  - Expense Summary Tab
    - Add a column that distinguishes between the Regional AVL scope and MVTA AVL scope items being pursued by MVTA.
    - In the Fleet Expansion rows, separate Cedar, I-35W, and Rosemount.
    - In the Notes, describe each cost split formula where applicable to clearly explain cost allocation to Cedar Ave BRT, Regional AVL, other projects, and Phase II costs.
    - After the Notes column, provide columns for each funding source and designate fund usage on a line-by-line basis.
    - Update cost components to latest estimated or known values.
    - Add a row for Metro Transit Staff costs currently estimated at $50,000.
  - Expense Components Tab

560 Sixth Avenue North Minneapolis, Minnesota 55411-4398 (612) 349-7400 Transit Info 373-3333 TTY 341-0140
http://www.metrotransit.org
An Equal Opportunity Employer

- Add a Column A that provides a Title for each row consistent with the Expense Summary Tab.
- Add a column that distinguishes between the Regional AVL scope and MVTA AVL scope items being pursued by MVTA.
- Add rows before Row C that provide number of units and unit price.
- In the Notes, describe cost split formula where applicable to clearly explain Cedar Ave BRT, Regional AVL, other projects, and Phase II costs.
- After the Notes column, provide columns for each funding source and designate fund usage on a line-by-line basis.
- Update cost components to latest estimated or known values.
- Add a row for Metro Transit Staff costs currently estimated at $50,000.

The above is offered in response to your recent request that the Council suggest a format for presenting the MVTA AVL project information.

- RouteMatch Maintenance Agreement Plan and Cost (including cost breakout of all interfaces).
- Project Schedule with Intermediate Milestones and Cost Allocation for each milestone to support a reimbursement schedule. The Council intends to follow normal practice in reimbursing MVTA for its AVL costs as those costs are incurred with MVTA submitting vendor invoices and cost documentation. This reimbursement approach will be reflected in the funding agreement.

Upon receipt of the above information, Council staff will review it. If complete, MVTA will then be notified in writing of the staff finding and the Council and MVTA will amend current funding agreement SG-2010-118. If the information is not complete, you will be notified in writing with a request to provide the remaining information.

As noted in the July 1, 2010 Bell letter, regional funds allocated to MVTA's AVL system totaled $2,118,528. A portion of these funds were forfeited due to sunk costs as a result of MVTA electing to withdraw from the Regional AVL project. This forfeited amount is now known to be $318,014 resulting in up to $1,800,514 in regional funds available for MVTA's AVL project. It should be noted that only components consistent with the original scope of the regional AVL project are eligible for reimbursement. For example, annunciators and real time signage and associated fiber optic upgrades were not part of the original Regional AVL project scope and budget.

On August 29, 2012, the MVTA Board approved an action to transfer $610,000 from the Cedar BRT CMAQ grant to the Metropolitan Council for Cedar Avenue BRT technology components being implemented by the Council, contingent upon the Council agreeing to provide the resources needed for MVTA's AVL project. You and your staff have indicated that a January 22, 2013 MVTA Board action could fulfill the contingency restriction and allow for release of these CMAQ funds which are critical to maintaining the METRO Red Line start-up timeframe. In order for Council staff to review the above requested documentation and provide a written response to MVTA by January 17 to meet MVTA's Board meeting packet mailing deadline, I ask that MVTA submit the requested information no later than Monday, January 14. I am willing to review draft information prior to January 14 to provide feedback on completeness of information requested.

As Council staff has discussed with you, MVTA will also be responsible for the following ongoing operating and maintenance conditions critical to sustaining regional AVL compatibility:

- MVTA will maintain the RouteMatch-Regional AVL interface in full working order.
- MVTA will be responsible for all ongoing operating and capital costs to maintain the RouteMatch-Regional AVL interface including those costs due to replacing, modifying or upgrading the Regional AVL system.

These conditions will be included in the Cedar Avenue BRT operating and maintenance agreements as well as in the SG-2010-118 grant amendment allowing for MVTA reimbursement with Regional AVL funds.

If you have any additional concerns or question, please feel free to call me at 612-349-7606. The Council/Metro Transit looks forward to receiving the requested information.

Sincerely,

Pat Jones
Assistant Director, Engineering
Metro Transit

Cc: Mike Abegg
Lois Spear
Arlene McCarthy
Mark Krebsbach

REGIONAL AVL COMPATIBLITY MATRIX
FUNCTIONAL ELEMENTS

	CUSTOMER SERVICE	Cedar Avenue BRT	Regional or Shared Facilities	MVTA-Only Route/ Facility	Potential RouteMatch/ TransitMaster Integration Needed at Minimum March 31	MVTA Comment April 30	Metro Transit Response June 15	September 13 Summary	Council Acknowledgement January 18, 2013
1.1	Real-time bus departure information signs shall display consistent information applicable for providers' service.	X	X	X	None if interfacing directly to current Metro Transit web service. Integration with TransitMaster DataCube likely required after V-28.1 software upgrade	Easy. MVTA to supply direct feed to MT Web Service. No need for Transitmaster integration.	OK	DONE: Per instructions to Trapeze, no direct feed to Web service required, this will be handled through Transitmaster data feed.	**Agree with 9/13 Summary. However, if there is a desire to have MVTA bus data available on RTS prior to implementation of the interface, then an interim interface with Metro Transit web service would be required.**
1.2	Real time bus departure signs shall display or be capable of displaying real-time bus departure information for all providers in the region.	X	X		None if interfacing directly to current Metro Transit web service. Integration with TransitMaster DataCube likely required after V-28.1 software upgrade	Easy. MVTA to supply direct feed to MT Web Service. No need for Transitmaster integration.	OK	DONE: Per instructions to Trapeze, no direct feed to Web service required, this will be handled through Transitmaster data feed.	**Agree with 9/13 Summary. However, if there is a desire to have MVTA bus data available on RTS prior to implementation of the interface, then an interim interface with Metro Transit web service would be**

REGIONAL AVL COMPATIBLITY MATRIX
FUNCTIONAL ELEMENTS

								required.
1.3	Transit Control center shall have the ability to communicate with and hold buses for transfer connections.	X	X	Interface with BusOps for text and canned messaging. Messages would be provided by MDT as defined in regional AVL standard operating procedure.	Text messages from TCC to MVTA-operated buses not permitted per MVTA-Schmitty's SOP. Portal should be made available for TCC to text message Schmitty's dispatch to relay messages to MVTA-operated buses.	Policy or contractual question and comes down to the question of liability for the service – MTS should weigh in on what terms should be included in operating contract to require this function for Red Line service (and clarify whether terms would apply to the subcontract with Schmitty and Sons).	No agreement on resolution. Council, MVTA, and Schmitty and Sons all incur liability in operation of service. MVTA believes allowing SST Dispatch to act as a relay for text messages is adequate to provide timely communications without confusion; TCC staff disagrees. MVTA notes that MVTA staff do not have authority to send text messages and so are not able to delegate this authority to the Council. *MA Note: While Met Council holds liability, MVTA and SST do also and solutions must respect all three parties – especially SST which does NOT have a statutory Liability cap*	**Based on Mike Abegg/Pat Jones call on 12/14 - Transit Control Center shall have the capability to send text messages via Transitmaster to MVTA buses. Capability of automatic and manual forwarding through the Routematch system shall be provided via the interface. *Use of automatic or manual forwarding is based on policy direction, but both shall be provided.***

REGIONAL AVL COMPATIBLITY MATRIX
FUNCTIONAL ELEMENTS

1.4	NexTrip phone and web system shall contain real time bus departure information for all providers.	X	X	X	None if interfacing directly to current Metro Transit web service. Integration with TransitMaster DataCube likely required after V-28.1 software upgrade	Easy. MVTA to supply direct feed to MT Web Service. No need for Transitmaster integration.	OK	DONE: Per instructions to Trapeze, no direct feed to Web service required, this will be handled through Transitmaster data feed.	**Agree with 9/13 Summary. However, if there is a desire to have MVTA bus data available on RTS prior to implementation of the interface, then an interim interface with Metro Transit web service would be required.**
1.5	Transit Control Center shall have the ability to view regional bus locations in real time on TransitMaster AVL Map and BusOps to assist with bus connections	X		X	Locations of buses needed to be seen, a lesser integration/ messaging may be possible with V28.1	Need further technical information: Is Transitmaster capable of bringing this information in? Apparently will be in the upgraded version; MVTA offers to provide a work-around until that time.	No interim solution required, integration needs to wait until deployment of TM upgrade.	DONE: Per instructions to Trapeze, live data on MVTA buses will appear on the Transitmaster "AVL Map" and related views.	**Agree with 9/13 Summary.**
1.6	Automatic Voice Annunciators compatible with TransitMaster and with Met Council	X			Full integration with TransitMaster required. Additional 'Stop Request' sign hardware likely required.	TM Integration not necessary: AVVAS doesn't need to be integrated with TransitMaster, it needs to be	Transitmaster integration not necessary, should confirm regional standard for messages/content.	DONE: MVTA will acquire AVVAS capability and Metro Transit and MVTA will need to coordinate on	**Agree with 9/13 Summary. AVVAS systems are to meet regional Standard Operating Procedures (SOP's) and utilize a coordinated voice and**

	standards shall be provided on all regional buses.				integrated with the specific AVL vendor on each bus. MVTA will apply regional and national best-practices to its AVVAS deployment.	Different voices acceptable.	messaging practices.	**message structure format.**
1.7	Ridership (APC), Schedule Adherence, and other service-related AVL data shall be available within TransitMaster databases.	X		Full integration with TransitMaster. The bus would need to perform and provide transit data as any currently installed TransitMaster-equipped bus. Buses would need to accept schedule merge files when sent.	Last statement is irrelevant – Transitmaster will never send schedule merge files to buses. Do not believe Transitmaster currently contains any ridership data, so not relevant. Expect that relevant data can be made available to "offline" databases and will not require any Transitmaster integration.	Split into two pieces: Need real-time schedule adherence data. Ridership data need not be in real time. Data storage should be through TM and/or NexTrip {I think this applied to real-time schedule adherence? -MA}	DONE: Schedule Adherence will be transmitted into the TM live database. Ridership from APCs will likely not be transmitted initially (not currently available live for any buses in the region); however, it was agreed to obtain pricing on this to determine whether it might be financially feasible now or soon.	**Agree with 9/13 Summary with the exception that Daily stored APC data will be provided through the interface to TransitMaster on at least a daily basis.**
	SAFETY				**SAFETY and SECURITY**			
2.1	Real time	X	X	Not an integration with	Agreed, not relevant	OK – we will request	DONE: This issue is	**Agree with 9/13**

	signage shall have the ability to display region-wide emergency messages.			TransitMaster. But, at minimum, this is an integration with the NexTrip web service and for LED signs the integration would be with IDI.	to AVL Compatibility. This issue is already for some locations in existing agreements.	messages to display at AVTS as needed.	fully addressed in SOP RAVL-1-MVTA which defines what an "MVTA" facility and a "Regional" facility is *from a Real Time Sign* perspective (only). Existing SOP will be followed. Note that AVTS signage will follow the "Regional" Real-Time Sign procedure.	**Summary.**
2.2	Transit Control Center shall have the ability to view location of all regional buses on TransitMaster AVL map	X	X	Locations of buses need to be seen, a lesser integration/ messaging may be possible with V28.1	Need further technical information: Is Transitmaster capable of bringing this information in? Apparently will be in the upgraded version; MVTA offers to provide a work-around until that time.	No interim solution required, integration needs to wait until deployment of TM upgrade.	DONE: Per instructions to Trapeze, live data on MVTA buses will appear on the Transitmaster "AVL Map" and related views.	**Agree with 9/13 Summary.**
2.3	Transit Control Center dispatch shall have the ability to	X	X	Full integration with TransitMaster required. Viewing on AVL Map, Covert/	MVTA not a party to the regional AVL SOP. Until we are, this requirement is	May be a higher-level policy question. Met Council incurs liability for some services (e.g.	Partial agreement on resolution. Council, MVTA, and Schmitty and Sons all incur	**Agree that technical capability is provided for through other listed elements. Policy**

	respond to regional transit service incidents, emergency alarms, etc. as called out in regional AVL SOP.			Overt Alarms, etc.	meaningless. Emergencies occurring on MVTA-operated buses and at MVTA-operated facilities will be addressed using existing protocols and agreements, to which MVTA, SST, and the Council may be parties. For incidents occurring in MVTA's area, typically the First Responders and/or Incident Commanders are local law enforcement and MVTA may supply information directly to those personnel.	Red Line) and thus requires consistency with other regional services and providers. For non-contracted service, technical capability for this should be in place in changes in policy occur.	liability in operation of service. Red Line Enforcement group has forwarded inability to form consensus on this issue to next levels of policy making. Agreed that the final policy for Red Line will also provide a good framework for the non-contracted policy. *MA note: I believe the "technical capability" will be contained in the methodology we requested of Trapeze.*	**and procedures are being developed.**
2.4	Transit Control Center shall have the ability to view "playback" of all regional buses for assistance	X	X	Full integration with TransitMaster required.	Need further explanation: TCC does not provide this service for MVTA operations, so there is no need for it to have playback capabilities.	For Red line BRT, operational use of data for playback will apply as it is Council-contracted work.	DONE: Per instructions to Trapeze, live data from MVTA buses will appear on the Transitmaster "AVL Map" and be contained in Data Mart	**Agree with 9/13 Summary except to clarify that live data will reside in TM databases rather than specifically in Data Mart.**

	with situation reconstruction, customer complaint resolution, etc.				Information provided directly into the Transitmaster system will be available to TCC; any additional information desired will need to be requested of MVTA and will be supplied to the extent that the incident in question is the responsibility of Metro Transit.		for later review. Policy question of whose job it is to do this investigation for specific contracted services is independent of AVL compatibility per se. (MVTA currently does investigation for Lakeville Cedar and Cedar Grove contract services, but Station-to-Station may be different. Or not.)	
2.5	Incident reporting system compatible with TransitMaster Incident Reports and with the Transit Police Dispatch system shall be provided.	X	X	Full integration with TransitMaster Incident reports required.	Need further explanation: MVTA has its own incident management process which does not today involve MTPD, so AVL does not need to feed MTPD's process. MVTA will build on its existing relationships with the MTPD to determine a streamlined process	Perhaps a higher-level question, certainly as it applies to Red Line. Met Council holds liability and needs the ability to have real-time incident reporting with TM and MTPD Dispatch.	DONE: Per instructions to Trapeze, live data on MVTA buses will appear on the Transitmaster "AVL Map" and related views, and thus incidents generated within the TCC will be automatically transmitted to Police Dispatch. *MA Note: MVTA staff*	**Agree with 9/13 Summary. The exception is for Red Line BRT, which should automatically generate Incident Reports via TM in the Transit Police System.**

					for sending required incident reports in a timely manner.		*will continue to work directly with MTPD on methodology for streamlined transmission of incidents generated by MVTA/SST.* *MA Note: While Met Council holds liability, MVTA and SST do also and solutions must respect all three parties – especially SST which does NOT have a statutory Liability cap*		
	RESPONSIBILITY FOR PERFORMANCE: REPORTING, LIABILITY								
3.1	Fare collection data shall be available at all times	X	X	X	Not a TransitMaster integration. Currently, TransitMaster only captures messages if there is a mobile interface failure between	Irrelevant to compatibility discussion since it's not a Transitmaster integration. MVTA will continue to	OK – Continue existing procedures.	DONE	**Agree and to clarify for Council contracted service, the interface between Routematch and Cubic Fare collection system must provide**

REGIONAL AVL COMPATIBLITY MATRIX
FUNCTIONAL ELEMENTS

			Cubic and TM devices	provide fare collection data using existing procedures for both its own service and Council-contracted service.			**latitude/longitude information linked to ridership.**
3.2	Multiple-door boarding passenger counts and Go-To technology operation shall be provided.	X		Irrelevant to compatibility discussion since it's not a Transitmaster integration. MVTA is already working with MT and SST staff to determine best practices and define procedures.	RouteMatch-Cubic integration required for mulit-door boarding counts – not relevant to TM compatibility. Technical ability to provide real-time APC information should be considered especially in the context of Red Line.	DONE: Agreed to obtain pricing on transmittal of "live" APC data into Transitmaster to determine whether it might be financially feasible now or soon. Noted that MT currently does not do this due primarily to live data pipeline capacity.	**Agree with 9/13 Summary. See comments from 1.7 and 3.1.**
3.3	AVL data shall be available at all times for schedule adherence and ridership reporting	X	Full integration with TransitMaster required.	What is the need for MT to report on MVTA-operated services?	Real-time schedule adherence required for Red Line. Ridership information not required in real time. Met Council has responsibility for reporting and will own the data, so historic	DONE: Real-time schedule adherence will be available in TM "Live" and Data Mart. Cost of live APCs transmittal will be requested. Red Line Data Reporting Committee will	**Agree with 9/13 Summary.**

			ridership and real-time schedule adherence are required.	develop policy guidance as to who is required to report what information – presumably the required reporter becomes the owner of said data.	