Rio Metro Regional Transit District

New Mexico Rail Runner Express

Commuter Rail
Operations & Maintenance

REQUEST FOR PROPOSALS

RMRTD Procurement No. 2021-03

Issued: March 29, 2021

Addendum #6

RFP #2021-03

Addenda #6 is issued to: respond to vendor questions

Rio Metro Regional Transit District

New Mexico Rail Runner Express Commuter Rail Operations and Maintenance RFP 2021-03

RFI LOG and Request for Information /Clarification or RFP Language Change Form

Number	Identify RFP Specific Part; Page and Section	Question or Request for Clarification to RMRTD	ANSWERS
1	Appendix 6.11, Section 7, Fare Collection	This contractor understands that the existing fare collection system is owned by the existing Service provider. For any other Service Providers there will be significant development and mobilization fees that aren't applicable to the current Provider. Can RMRTD provide a new line item specifically for the Fare Collection System in order to level the playing field and ensure that RMRTD gets the fare collection system that it wants and that going forward the system belongs to RMRTD.	See the pricing line-item instructions for lines 3A and 3B in Appendix 6.15 for costs to be included in the line item. Offeror shall inform RMRTD of development and mobilization costs, but shall only include the annualized management fees if any and a foot note on per transaction fees if any - RMRTD does not want to own the system at this time
2	Appendix 6.11, Section 7, Fare Collection	Can RMRTD provide specific details on how it wants the proposed Fare Collection system to operate? What features does RMRTD want included within the system? Can RMRTD provide any information on what features the existing Fare Collection has that it would improve upon?	At a minimum, the system must be able to do what the current GENFARE system does. In compliance with our ticketing policy and our zone based fare structure see information at the following link: https://www.riometro.org/232/Train-Fares This page also links to the existing web based purchasing portal and provides information on downloading the current application. This is not a prescriptive RFP, and RMRTD believes there have been many advances in ticketing that would make it more widely used and provide a better overall experience and is interested in innovations.
3	Appendix 6.11, Section 7, Fare Collection	Can RMRTD provide specific details on how it wants the proposed Fare Collection system to operate?	See above
4	Appendix 6.11, Section 7, Fare Collection	What features does RMRTD want included within the system?	See above
5	Appendix 6.11, Section 7, Fare Collection	Can RMRTD provide any information on what features the existing Fare Collection has that it would improve upon?	This is not a prescriptive RFP, and RMRTD believes there have been many advances in ticketing that would make it more widely used and provide a better overall experience and is interested in innovations
6	Addendum No. 2	Please confirm that under the current payment terms, that the 18,111.6 Train Hours indicated on the "Summary Report of Train Hours and Train Miles" would be compensated per Draft Contract, Section 4, B.	The price sheet contained in appendix 6.15 is amended as follows: the quantity in sections 4A and 4B is changed from 12,500 hours to 17,500 hours.
7	Addendum No. 2	Will RMRTD be implementing the same schedule prior September 21, 2021 that was in effect for the period between July 2018 and June 2019 that produced 18,111.6 Train Hours, and if so, why the discrepancy between this historical data and the 12,500 Train Hours in the Bid Proposal Form?	See above
8	Appendix 6.11, Section 7, Fare Collection	Can RMRTD guarantee that the current fare collection system will be made available to new Service provider?	No
9	General	Are all answers provided in pre-proposal questions, the RFP, and the contractors proposal made a part of the contract with the selected proposer?	The final contract will be negotiated
10	General	Will a contractor be subject to the FRA Tier 1 New Starts Deliverable requirements? If the answer to this question is yes, will this have to be completed during the mobilization period?	NMRX is not a “New Starts” project. No federal funds were used during initial project to acquire and or construct track or purchase rolling stock or to start the service
11	Appendix 6.14 Section 1, Paragraph 2, page 133	As part of the track database maintenance responsibilities, is the contractor responsible for performing Sub-div file updates? If the answer to this question is yes, for pricing purposes how many of these updates are expected to occur on an annual basis?	RMRTD will have a maintenance agreement with Wabtec that will include portions of the sub-div file updates. Contractor and Wabtec will be responsible for coordination and execution of sub-div updates. Contractor will provide V&V and testing.
12	Appendix 6.14 Section 5, Paragraph 1, page 141	This paragraph states that the Contractor will be responsible for “monitoring and maintaining” the NMRX Wi-Fi system. Can RMRTD please provide a more detailed description of this system?	(see attached)
13	Appendix 6.10 Paragraph k, page 72	This paragraph requires the contractor to provide security at the Maintenance Yard. For pricing purposes can the RMRTD please provide more detail on the expected coverage e.g. is it 24/7/365? Additionally, where should these costs be included (under what line item) in the price sheets?	This is an 8 hr. daily dusk to dawn daily service This is used to support activities included under Appendix 6.12 and should be applied to those cost centers in the pricing sheet (Loco, Cab, Coach miles)
14	Appendix 6.13 Paragraph I, page 110	In the last two years, how many times were chemical applications used to treat the corridor for vegetation control?	Pre-Emergent once per year and contact as needed

15	Appendix 6.13, Paragraph I, page 115	Can the RMRTD confirm that other track materials (ties, spikes, plates, anchors etc.) required to perform tie replacement for the 8000 ties and all other routine maintenance activities should be included in the lump sum price for Maintenance of Way?	That is correct
16	Appendix 6.12 Paragraph 7.g, page 100	This line implies that the contractor is responsible for paying the “costs involved in telephone and other utility, including all water, electricity and gas”. Are these costs for the entire complex, or just the maintenance yard? Additionally, in what line item in the price sheets should these costs be accounted for? Finally, can the RMRTD provide an estimate of these costs on an annual basis?	Maintenance Yard Only This is used to support activities included under Appendix 6.12 and should be applied to those cost centers in the pricing sheet (Loco, Cab, Coach miles) $30,000.00
17	General	Is there an overhead crane at the maintenance yard? If not and the contractor has to use crane services for maintenance of equipment activities will RMRTD pay for these costs directly or should they be included in the lump sum?	No. RMRTD will pay for these costs
18	Appendix 6.9 Section 2 page 52	What is the exact track mileage to be maintained including all spur tracks, sidings, BNSF owned, yard tracks, or other?	(See Appendix 6.9 Section 2 for description) Approximately 139.8 miles.
19	Appendix 6.10, Section F, page 70	This section states "Work performed by Contractor, other than routine work, performed pursuant to RMRTD's maintenance standards and any warranty work, shall be reimbursable to Contractor." Can the contractor assume that all work described in appendix 6.12 is considered routine work under this definition? If the answer to the above is “no” please define what is considered to be routine work.	Yes N/A
20	Appendix 6.11, Section 7 page 92	"Contractor shall maintain the fare collection equipment including supplies and the annual licensing required for the RMRTD supplied fare collection equipment." What is the annual licensing fee for the current RMRTD provided fare collection equipment?	The current GENFARE licensing/Subscription fee is $50,000 annually
21	General	Can the RMRTD confirm that there are approximately 100 track structures on the service property?	There are approximately 101 structures that require inspection and annually. There are numerous other smaller drainage culverts on the property.
22	Appendix 6.13, page 115	Can the RMRTD confirm that additional ties and materials required for routine maintenance are not considered capital spares even if the total price exceeds $5000?	Correct
23	Appendix 6.13 (h) page 109	Will the RMTD provide an on-track Brush Cutter or is the contractor responsible for providing this piece of equipment?	Contractor is Responsible
24	General	Please confirm that the only allowable use of RMRTD provided fuel is for locomotive fueling,	Correct
25	General	Who is responsible for scheduling non-revenue/deadhead moves and equipment cycles? If it’s the RMRTD, can you please provide this information?	Contractor is responsible for scheduling non-revenue/deadhead moves and equipment cycles required to run the revenue schedule presented in the RFP with RMRTD concurrence. N/A
26	Appendix 6.13 (i) page 109	Can RMRTD please clarify if the contractor is to provide non-destructive testing of concrete ties twice annually?	See Appendix 6.13 (i)
27	Appendix 6.12, 4	Due to the understanding the New Mexico Rail Runner Express Fleet is approaching a mid-life service age, please identify if there are any plans to have vehicles and/or their subsystem equipment enter into a mid-life overhaul/rehabilitation program within the duration of this contract? This could have an impact on Trainset reliability and vehicle corrective maintenance cost considerations.	Please see 15 and 16 of our Budget and Capital Plan available on our website at the following link: https://www.riometro.org/DocumentCenter/View/1215/Rio-Metro-Capital-Plan-Final-May-2020-PDF?bidId=

Wabtec's Technical Proposal for NMRX Passenger Wi-Fi

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1. Executive Summary

NMRX has identified a need to replace the existing passenger Wi-Fi system because the existing Wi-Fi system is no longer in operation and many of the components are no longer functioning or have become obsolete.

As part of the installation and implementation of the NMRX PTC initiative Wabtec identified a need to upgrade the communications infrastructure backbone to support the 220 MHz PTC data radio network. The PTC system upgrade consists of installing 32 towers and PTC220 radios along the right of way. As currently designed these new radio sites will serve to communicate PTC information to trains transiting the territory.

This presents a unique opportunity for NMRX to leverage the installation of the PTC infrastructure and at the same time design and install a state-of-the-art Wi-Fi system.

Cellular provides another path to support passenger Wi-Fi service. However, coverage is not available in parts of the network, and NMRX has expressed concern with cellular messaging costs. Therefore, the proposed system is designed to primarily use new NMRX communications infrastructure, with cellular provided as back-up and to supplement bandwidth if needed. Cellular bandwidth will be bonded with bandwidth from the NMRX infrastructure to provide seamless Wi-Fi connectivity to passengers.

This proposal focuses on the design of a robust RF core network that will extend the entire length of the territory from Belen station to Santa Fe station. The initial design is to support the passenger Wi-Fi system however once the core RF network is installed and proven to be reliable it could be used to connect the PTC base stations to the back office where WSRS (Wayside Status Relay Service) could be installed and serve to route PTC messages to designated base stations which would then be repeated and delivered to trains traversing the territory.

Passenger Wi-Fi will be provided based upon IEEE 802.11ac standards, using both 2.4 and 5 GHz communications. Wi-Fi services will be managed by a NMRX “splash page”, coupled with restrictions on use (no adult content, etc.) and bandwidth limits to be set by NMRX. The design approach is to support passengers starting Wi-Fi use at station platforms, with the ability to move on-board without need for new log-ins.

The big advantage for NMRX owning their own RF network is they could significantly eliminate cellular costs.

2. About Us

Wabtec is a public company, traded on the New York stock exchange as “WAB”. Public financial information is available on: www.wabtec.com. Wabtec is headquartered in Pittsburgh, PA.

With roots to 1869, Wabtec Corporation has established a long track record of performance. The current company was formed in 1999 when Westinghouse Air Brake Company (WABCO) merged with MotivePower Industries, Inc.

George Westinghouse founded the original Westinghouse Air Brake in 1869, shortly after he successfully demonstrated the first straight air brake systems to the railroad industry. Three years later, Westinghouse developed the first automatic air brake system, which had a built-in safeguard whereby the brakes on the entire train would apply automatically if the train should separate or if air pressure should escape due to leakage in the system. Throughout the past 150 years, Westinghouse Air Brake maintained worldwide leadership in rail equipment technologies designed to improve the safety and productivity of customers in the transportation industries. In 1990, the company's assets and the WABCO name were purchased in a management buyout, and a new WABCO was created that went public in 1995.

Many companies were acquired by WABCO, starting in the mid-1990’s, which expanded beyond the traditional air brake business, but maintained the primary focus on the rail industry. Two of the larger acquisitions was Motive Power Industries (locomotives) and Standard Car Truck. This led to changing names to Wabtec in 1998.

Wabtec acquisitions included building electronics and train control capabilities with a series of acquisitions which included Pulse Electronics, Rockwell Railway Electronics, Bach-Simpson, Q-Tron, and Xorail in North America, with additional international groups. This has led to Wabtec taking a leadership position in the supply of U.S. Positive Train Control systems, based upon our I-ETMS group of products. Wabtec has also taken the North American leadership position in supply of computer aided dispatch offices, with our TMDS product, with addition of PTC Back Office Server (BOS) products.

One of the larger acquisitions was Faiveley Transport, based in Paris, which is now the headquarters for the Wabtec Transit group of companies, with expanded global operations, centered in Europe.

In 2019, Wabtec acquired GE Transportation, which is the largest diesel electric locomotive supplier in the Americas. The GE Transportation group also adds a wide range of digital products and services which complements the previous Wabtec electronics and train control offerings.

Wabtec is now a “Fortune 300” company, with annual revenues of about $8 billion, operations in 50 countries, and 27,000 employees.

Wabtec Annual Reports going back 16 years can be found at https://www.wabtec.com/annual-report.

3. Wabtec's Technical Solution

The following sections describes the technical aspects of the overall solution. It describes the challenges, benefits and proposed components used to build out the NMRX core backhaul network and Wi-Fi system.

3.1 Proposed System Overview

Introduction

Wabtec proposes to provide an upgraded data communications system for NMRX to meet the following main objectives:

1. Provide passenger WI-FI services on trains, replacing the previous WiMAX based system which is no longer supported.

2. Upgrade tower backbone communications infrastructure as needed to support the 220 MHz PTC data radio network and data links to signal locations. The current plan has been to apply MCC 220 MHz data radios at each of the signal locations.

3. Leverage the current NMRX project to provide fiber optics links to stations, coupled with passenger Wi-Fi access points at stations.

4. Support most passenger Wi-Fi train-ground communications links over a private network, with use of cellular mainly to provide back-up data paths in event of failures is portions of the private ground network.

5. Provide a solution which can be supported and maintained at a reasonable cost for at least the next 10 years.

   The proposed system is based upon two main elements:

   1. Rajant Kinetic Mesh Network: The Rajant Kinetic Mesh Network using ME4 radios operating in the 4.9 GHz and 5 GHz range shall support a kinetic mesh mobile network which links stations, towers, and trains. This includes mesh networking between cars on the train, with an option to also extend to locomotives. This network replaces functions previously provided by 3.6 GHz WiMAX for tower to train communications, and 5 GHz point-to-point links between towers and between cars within each train.

   2. LTE Cellular Passenger Car Communications, WAAV Mobile Router: Application of two cellular modems (with options to increase to four) per passenger car, with bonding cellular networks to the Rajant network to provide increased bandwidth and back-up to the Rajant kinetic mesh network when needed.

Mesh networking between cars of the train will be used to help maintain continuous service in areas where part of the train may be out of coverage. A typical example of this is for roadway underpasses, where an individual car may lose coverage, but can link to other cars which are able to maintain coverage. The Rajant kinetic mesh network provides unique capabilities to dynamically reconfigure network connections without losing connectivity.

3.2 Inventory of Towers

Below is a summary of the towers that are proposed to support the Rajant network. This list includes new towers at all NMRX stations (15), new planned towers that are part of the PTC project, existing WIMAX towers that are no longer needed and existing control point towers that could possibly be used.

Figure 1 – BELEN STA TO ISLETA PUEBLO STA

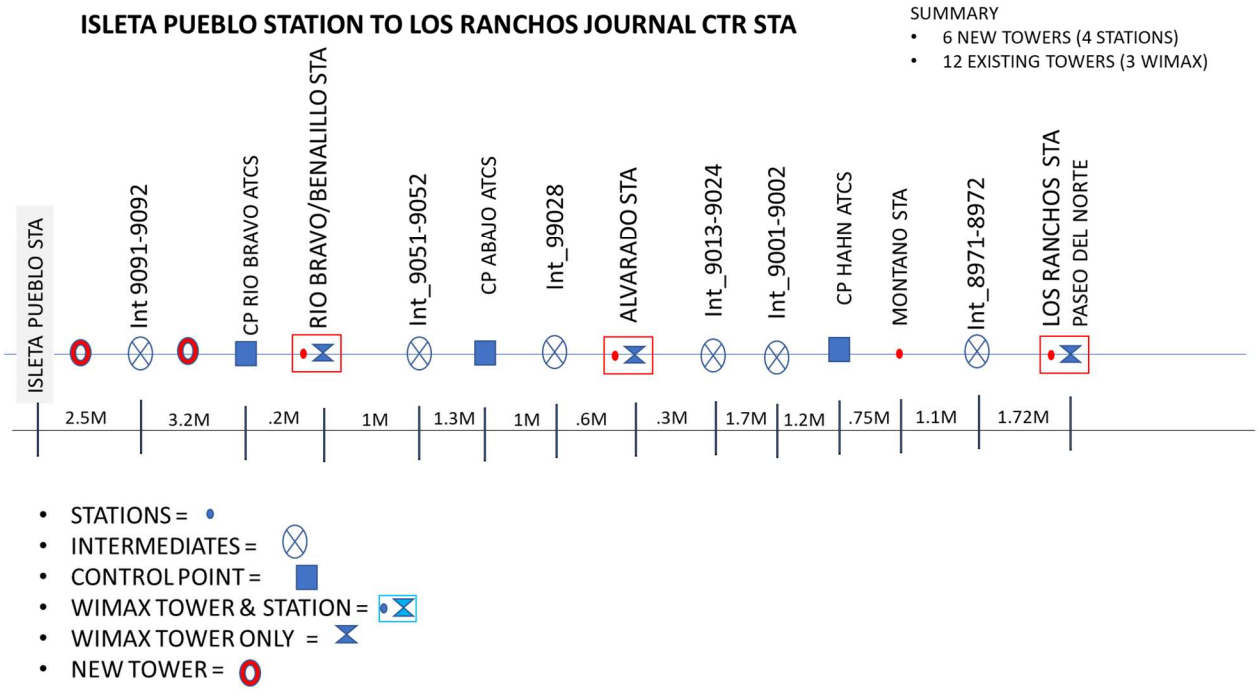

Figure 2 – ISLETA STA TO LOS RANCHOS STA

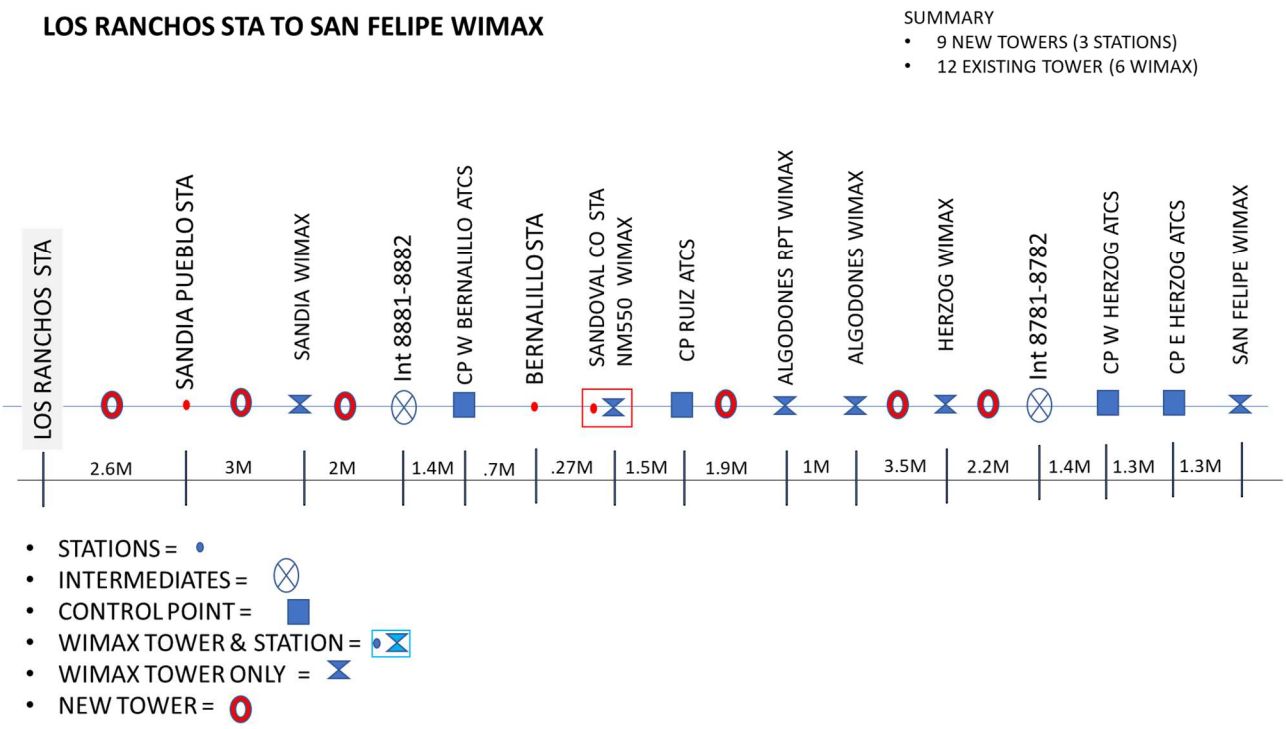

Figure 3 – LOS RANCHOS STA TO SAN FELIPE WIMAX

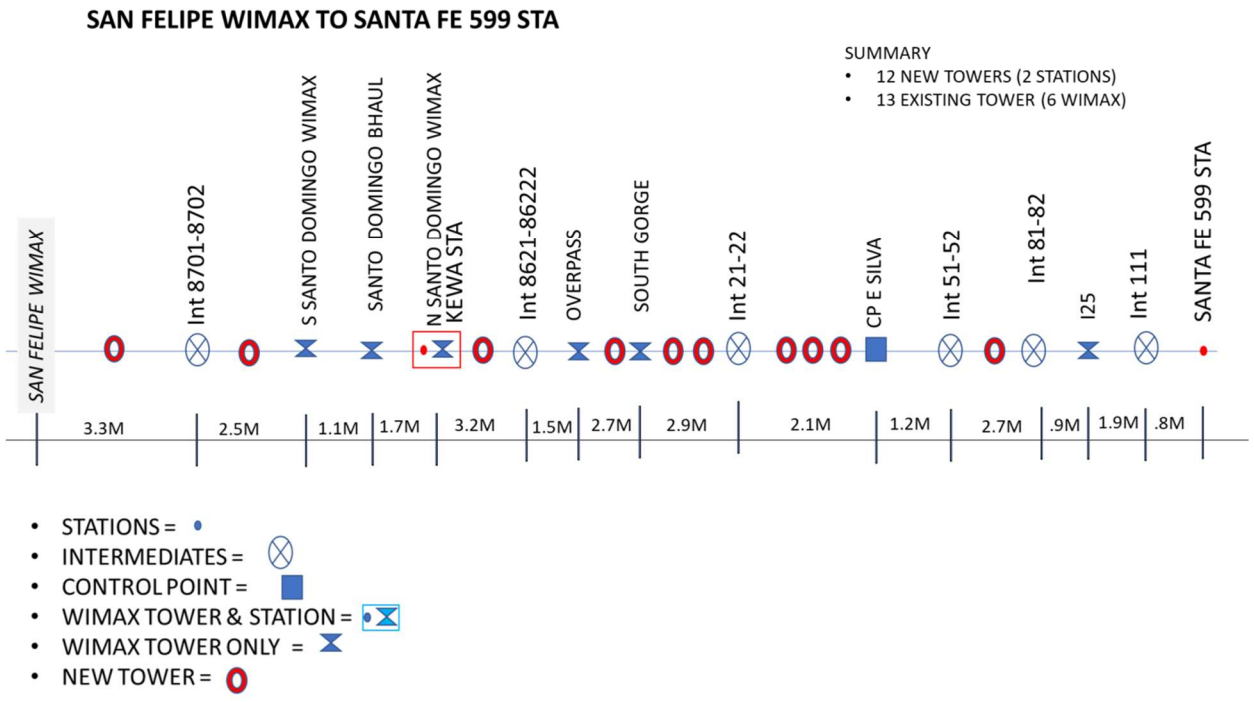

Figure 4 – SAN FELIPE WIMAX TO SANTA FE 599 STA

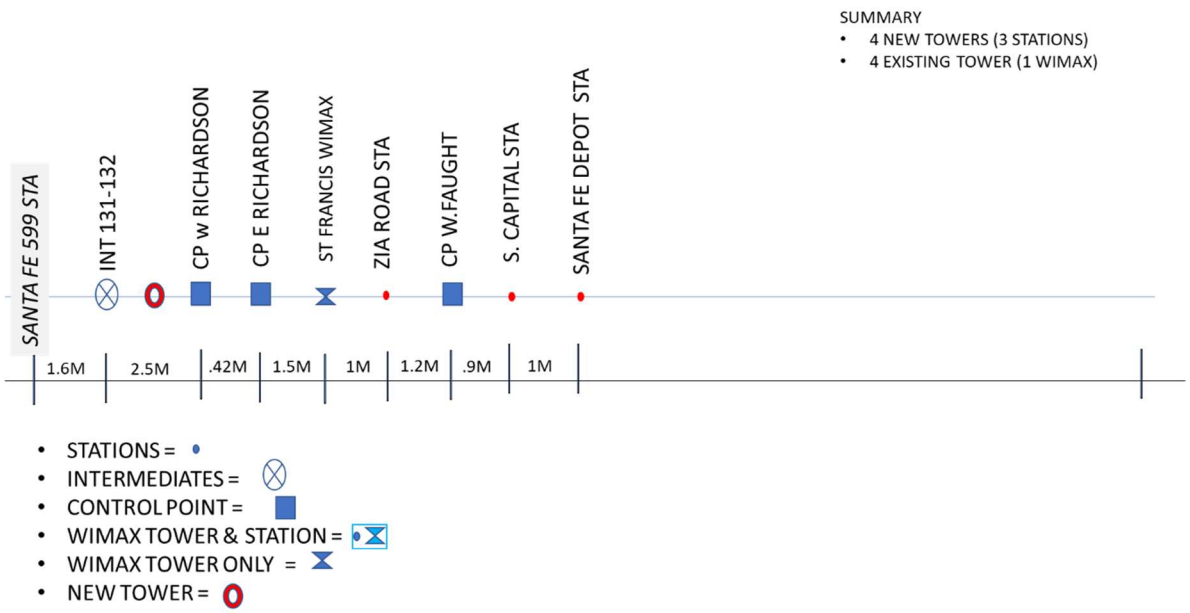

Figure 5 – SANTA FE 599 STA TO SANTA FE DEPOT STA

The trackside locations as planned are summarized as follows:

- Existing WiMAX Communication Towers: 19 of 22 existing.
- Existing Stations which include fiber links, with RF Towers to be added: 15 (count reduced by 8 if its determined towers are not needed following site survey).
- Intermediate Signal Locations, with new towers planned for PTC: 20 of 32 planned or existing.
- Control Point Locations with existing towers: 15 of 25 existing.
- New Solar Powered Tower Locations: TBD following detailed site survey estimate: 25

This results in a maximum total of 40 new 40' towers to be installed. It should be noted that of the 40 new towers the towers co-located with WiMAX communication towers can potentially be eliminated bringing the count to 32. This will need to be verified during the detailed site survey.

This plan will need to be updated following field RF testing at the start of the project. The overall goal is to co-locate new towers near existing power access locations. However, solar power can also be planned where it is not economical to access commercial power. In this case, it is estimated a single 250 W solar panel can provide sufficient power, and the size of battery requirements will need to be estimated as part of the site assessment.

3.3 Passenger Car Configuration

Notes on the car configuration and retrofit plans:

1. All equipment will be on one end of the car, in the area between the passenger ceiling and roof, generally in the sloped roof area, replacing the existing WiMAX based system.

2. The Rajant "BreadCrumb" ME4 is planned to be equipped at one end of each car, with 3 RF modules: a 4.9 GHz for trackside links, and two separate 5 GHz links for car-to-car communications within each train. In some cases, these 5 GHz links will also be able to mesh with the 5 GHz trackside to trackside location links as well, which will add to available bandwidth.

3. The WAAV AirBox GX Cellular Router is proposed with two cellular modems (nine cab cars only) and a GPS receiver. The AirBox also include the IEEE 802.11ac access points (2.4 and 5 GHz). The AirBox bonds bandwidth from the available cellular services with the Rajant network to provide increased continuous bandwidth for Wi-Fi users. This unit also manages the Wi-Fi interfaces, including a customized NMRX splash page, log-ins, and user restrictions.

4. An 8 port Ethernet Switch is planned on the same end of the car as the cellular and Rajant units. This provides the data link between all units, and also supports interface to the existing passenger display computer. Spare ports can support future interfaces.

5. Rajant 5 GHz antennas will be mounted to extend above the highest part of the roof, in the same position as the current 5 GHz car to car antennas. These will be planned as directional antennas, related to car-to-car links. The 4.9 GHz antennas will be omni-directional for trackside communications. The plan will be to keep the RF antenna cables to the Rajant ME4 as short as practical to minimize signal loss.

6. Two sets of LTE antennas and the GPS antenna will be mounted on the roof on the same end of the car as the WAAV AirBox cellular router. This will minimize RF cable lengths.

3.4 Cellular and Rajant Communications Service and Bonding

The proposed configuration is based upon providing the NMRX private network based upon the Rajant mesh network, supplemented by commercial cellular with two different commercial cellular providers. This requires bonding of both cellular carriers and the Rajant network to provide combined bandwidth to support multiple passenger Wi-Fi services. The bonding solution is provided by the WAAV Airbox units both on-board and at stations, combined with a cloud based service for bonding the Internet services. The cellular bonding is illustrated below, which will be supplemented by addition of bonding for the Rajant network.

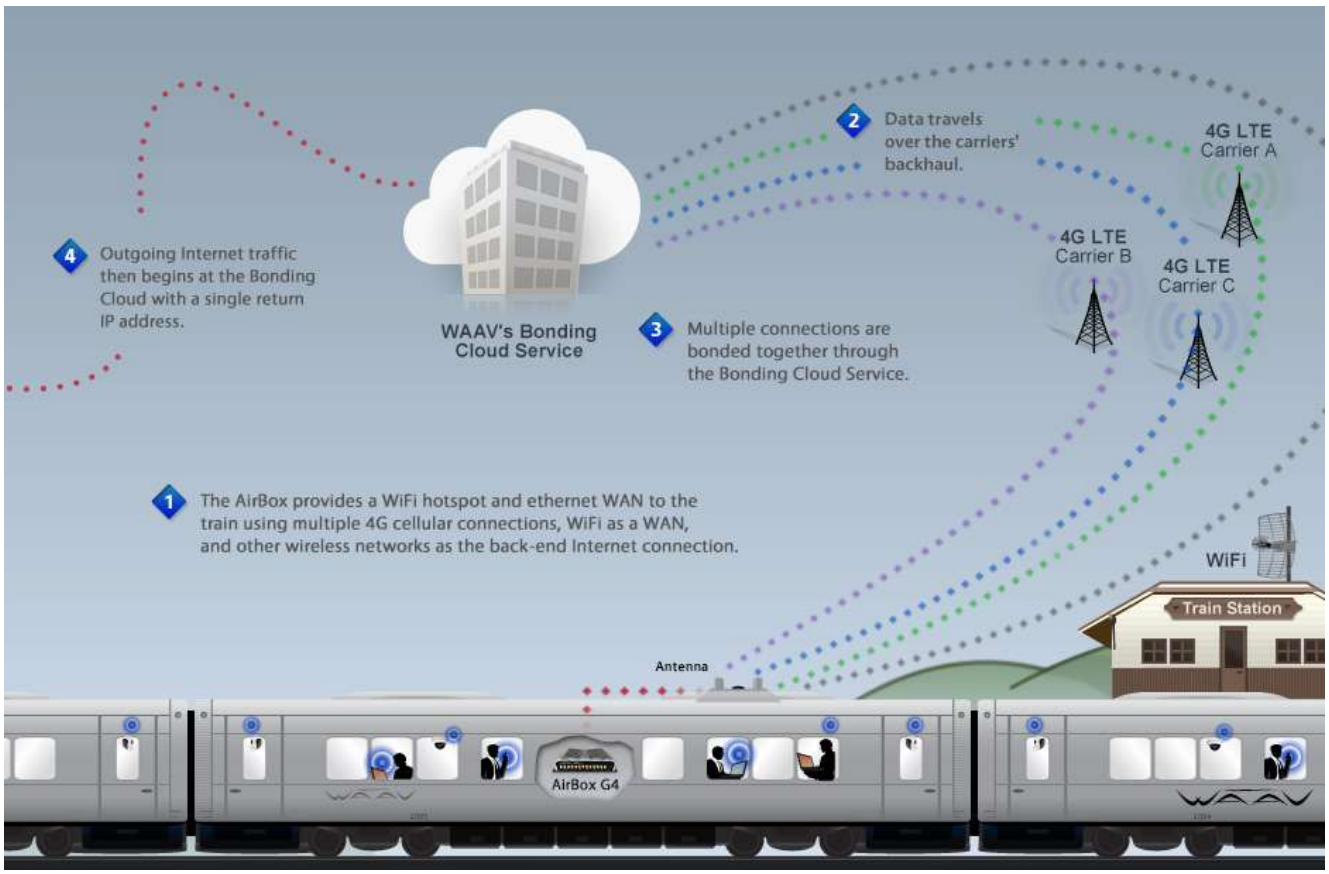

Figure 6 – BONDING OVERVIEW

The WAAV cloud-based service includes monitoring and data collection tools, outlined as follows:

1. Proportional Bandwidth Quality of Service (QoS): This prevents individual users from using too much bandwidth and provides proportional bandwidth QoS to all Wi-Fi users.

2. Custom Splash Page: A unique splash page will be created, with the user to accept terms and conditions as a condition to using the connection.

3. Content Filtering: Keep the train family friendly, with filtering of adult content.

4. Wi-Fi User Limit: If desired, the total number of users allowed on line at the same time can be set.

5. GPS Fleet Management: Operators can track coach cars in real time on a map, including zooming to specific trains to view details of speed, number of Wi-Fi users and other parameters.

6. Real Time Video Monitoring: Options can be provided to allow real time viewing of selected passenger CCTV cameras over the cellular or Rajant infrastructure. This would normally be done on an exception basis in event of an emergency or problem report.

7. Cybersecurity and Identity Access Management: Security provisions are a key part of the cloud design, which need to be coupled with management of user ID's.

4. Project Delivery

Wabtec is confident that we can provide a comprehensive Passenger Wi-Fi solution within a relatively short time period. To accomplish this, Wabtec is proposing a phased approach which covers the following:

Phase 1

- Conduct Detailed Site Survey to identify available infrastructure facilities (towers, bungalows, etc.)
- Conduct RF Propagation and Link study
- Conduct Cellular coverage tests
- Conduct RF coverage tests to validate RF modeling predictions (2ea. passenger cars, Rajant nodes on temporary tower sites).

Phase 2

- System Design at 30% and 90% levels.
- No PE Stamp included.
- Hardware procurement.
- Infrastructure Installation
- Onboard Installation
- Cutover & Performance testing

Phase 3

- As installed documentation
- Customer Training