

**CAPITOL CORRIDOR**



**REQUEST FOR  
INFORMATION  
(RFI)**

For the

**SAN FRANCISCO BAY AREA  
RAPID TRANSIT DISTRICT  
(BART)**

And the

**CAPITOL CORRIDOR JOINT POWERS  
AUTHORITY  
(CCJPA)**

**For Development of CCJPA Properties and Assets**

With

**A Broadband Wireless Network in a Transit Environment**

**To Be Assessed Through**

**A**

**Technical Trial**

**Issued March 31, 2006**

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March 31, 2006

**Subject: Request for Information (RFI) to Determine Development Potential of CCJPA Properties and Assets for a Wireless Broadband Access Network in a Transit Railway Environment Using a Technical Trial.**

To All Interested Parties:

The San Francisco Bay Area Rapid Transit District (BART) and its management and operating office for the Capitol Corridor Joint Powers Authority (CCJPA) are inviting national and international wireless carriers, equipment vendors, system integrators, enterprise solution providers and other members of the telecommunications community to assist these agencies in evaluating solutions for a wireless broadband network that operates in a transit environment. CCJPA is eliciting proposals for technical trials, sponsored and funded by the proposers, to be conducted from July to December, 2006. While BART and CCJPA are the lead transit agencies in this effort, the following agencies are actively involved and will be interested in the final results:

- Altamont Corridor Express (ACE)
- California Department of Transportation (Caltrans)
- Amtrak
- Peninsula Joint Powers Board (CalTrain)
- Santa Clara Valley Transportation Authority (VTA)
- North County Transit District (San Diego Coaster)
- Southern California Regional Rail Authority Los Angeles (Metrolink)
- Various counties and municipalities along the CCJPA rights-of-way

Other rail agencies throughout the United States and internationally have also been in regular contact with CCJPA staff. They will be closely monitoring this latest effort to establish a wireless broadband network in a passenger rail environment.

The primary purpose of the technical trial will be to determine the technical feasibility of providing seamless, broadband wireless connectivity inside designated CCJPA train cars, moving at commercial (79 miles-per-hour is CCJPA maximum train speed) speeds over that agency's operating rights-of-way from Auburn to San Jose, California. BART and CCJPA envision a network which provides Wi-Fi coverage within cars and uses a broadband wireless technology (Wi-MAX, proprietary Broadband Wireless Access [BWA], Third Generation [3G] cellular, or satellite) to backhaul from cars.

The technical trial is only the first step, albeit a necessary one, in the competitive bid process. Once the technical feasibility of one to three (maximum) wireless services is established, BART and the CCJPA, in collaboration with the participating and interested

passenger rail and transit agencies listed above are expected to move forward with separate Requests for Proposals (RFPs) to deploy broadband wireless networks to provide access to their riders and other customers and to support applications that meet their unique operating needs. Results and recommendations that are generated from this technical trial will be provided to each transit agency mentioned above, as well as others that may request results. All members expect RFPs to be issued sometime during the first and second quarters of calendar year 2007.

**A pre-submission meeting will be held on Wednesday, April 12, 2006 at 1:00 pm PDT in the BART Board of Directors Board Room, 344 20<sup>th</sup> Street, Kaiser Center Mall, 3<sup>rd</sup> Floor, Oakland, California.** Attendance is not mandatory. Firms interested in acquiring the RFI, or attending the pre-submission meeting, should contact Mr. Jim Allison, Principal Planner, CCJPA/BART at: 300 Lakeside Drive, 14<sup>th</sup> Floor East, Oakland, CA 94612; or contact him through e-mail at: [jalliso@bart.gov](mailto:jalliso@bart.gov); or call him at: (510) 464-6994. Mr. Allison's facsimile number is: (510) 464-6901. Requests (firm name and attendees) to attend the meeting should be received via letter, e-mail or fax no later than April 10<sup>th</sup> to ensure proper security clearance. The RFI will also be available on the CCJPA Web site at:

<http://www.capitolcorridor.org>.

CJPA demographic and wireless survey data, as well as various technical documents (including this RFI), that may be relevant to proposers' business analysis and development will be posted at:

<http://www.calccit.org/projects/train2.html#Capitol>

**The submission deadline for all RFI responses is Wednesday, May 23, 2006 at 4:00 p.m. PDT.** The RFI process is not an offer or solicitation by CCJPA or BART to purchase goods or services. No business entity will be selected to provide any service, product or associated work effort to BART, CCJPA or any of the participating transit agencies as a direct result of submittals. All written responses are to be submitted to the address below:

Mr. Jim Allison, Principal Planner  
CCJPA/BART  
300 Lakeside Drive, 14<sup>th</sup> Floor East  
Oakland, CA 94612-3534  
USA

All proposals received will be evaluated. Proposers should submit one (1) original and four (4) hard copies of their proposals; and one (1) digital copy on a CD-ROM. Confidential information should be suitably marked. In-depth interviews may be conducted in the following two weeks. Final decisions and recommendations to all participating agencies will be issued on July 3, 2006.

Thank you for your consideration of this matter—and all that it entails for BART, CCJPA and the participating agencies. We look forward to your best ideas and most creative proposals.

Sincerely,

A handwritten signature in black ink, appearing to read "Eugene K. Skoropowski". The signature is fluid and cursive, with a long horizontal stroke extending to the left.

Eugene K. Skoropowski,  
Managing Director  
CCJPA

Attachments

## **I. Introduction: Purpose of the RFI**

The Capitol Corridor Joint Powers Authority (CCJPA or Authority) possesses a number of assets, including access to significant rights-of-way (ROW), stations, access to fiber optic networks, excellent geographic and customer demographics and important sharing arrangements, e.g., with Caltrans, Union Pacific Railroad (UPRR), municipalities and counties along the ROW and other California transit agencies, etc. These assets will provide wireless equipment vendors, system integrators and other interested industry participants with an ideal environment to determine, during a six-month trial period, if broadband wireless technologies can provide sufficient bandwidth to meet the requirements set forth in this RFI. Ultimately, BART and the CCJPA believe the results from the technical trial will have a crucial role in establishing whether there is a viable business case, particularly in the United States, for broadband wireless technology deployment to the entire transit industry.

The CCJPA and the other interested agencies intend to explore how emerging and mature wireless broadband technologies can provide data connectivity for their riders and customers (public access) and support applications for the train operators (e.g., e-ticketing, CCTV systems).

More specifically, the CCJPA envisions the development of a commercial network that will provide continuous broadband coverage throughout the 171-mile ROW that will be established, maintained and operated by an independent network operator. Public access services will be managed by the network operator or by service provider(s) in partnership with the operator. The Authority may become involved with the marketing of the services. Network operators will have the opportunity to deploy the network with the CCJPA support and to have access to its assets. Furthermore, the Authority will be a main customer of the network operator as it will use the network for the in-train operations that require data connectivity.

Trials for broadband access on trains are now being conducted in several European countries using a combination of OFDM-based pre-WiMAX and proprietary BWA technologies, cellular networks and satellite links for the backhaul connection. CCJPA believes this will be the first broadband access trial in the United States that will include OFDM-based technologies.

The CCJPA has decided to adopt a technology-neutral approach, and is committed to evaluating proposals using any wireless broadband technology that meets the requirements set forth in this RFI. However, the Authority is particularly interested in soliciting proposals from vendors using emerging technologies like WiMAX and other OFDM solutions that promise higher throughput and more advanced functionality. This RFI seeks from the proposers a commitment of capital, technologies and ingenuity to show that their solution offer true broadband connectivity to passengers and train operator staff within train cars and that they can be deployed in a cost-effective way.

This RFI is designed to elicit responses from the leading members of the wireless industry interested in developing, **at their own expense**, a wireless broadband network trial that operates in train cars and provides both commercial public access and train operating services and applications. The RFI also seeks comments from proposers with respect to the cost-effectiveness of their solution and its ability to support multiple applications, its scalability and its upgradeability.

The RFI will lead to a six-month evaluation period of one to three (maximum) CCJPA-selected proposals along selected portions of the Authority's ROW, from Auburn to San Jose. Equipment locations will be determined with the test participants on a collaborative basis. Depending on need, equipment locations may have to be placed on property controlled by CCJPA, CCJPA/Amtrak, Amtrak and/or agency peers in the transit industry or local government. Every effort will be made to ensure the confidentiality of each proposer's equipment sites, activities and results.

CCJPA will closely evaluate the results of the tests with the selected proposer(s). These results will in turn be used to develop a Request for Proposals (RFP) that will be issued in the first quarter, calendar year 2007. The RFP will be aimed at companies or partnerships of companies that are interested in deploying, maintaining, and operating the network and the services offered. Other transit agencies following the trial will have access to the results of the tests, and are expected to use the functional specifications developed from the trial to develop and issue their own ROW-specific RFPs. CCJPA has taken the lead role, but other agencies are ready to join in the ongoing efforts.

## **II. Background**

The San Francisco Bay Area Rapid Transit District (BART) is an approximately 105-mile, automated rapid transit system serving over three million people in the three BART counties of Alameda, Contra Costa and San Francisco, as well as northern San Mateo County. Forty stations are located along five lines of double track. Trains traveling up to 79 miles per hour connect San Francisco and San Francisco Airport and other East Bay communities north to Richmond, northeast to Pittsburg/Bay Point, east to Dublin/Pleasanton and south to Fremont. Current weekday ridership is over 300,000. BART's existing system represents an investment of more than 10 billion dollars over the past 35 years.

In December, 1996, the CCJPA was created, with BART providing the administrative staff to the 16-member CCJPA Board of Directors. The CCJPA assumed management of the Capitol Corridor service in October, 1998 through a transfer agreement with the State of California. The CCJPA, as supported by BART, was given the responsibility of managing, operating and marketing the Amtrak intercity trains that run from Auburn to San Jose (a 171.5 mile route) under an operating agreement. The California Department of Transportation (Caltrans) owns the rolling stock inventory of cars, engines and other equipment used over the CCJPA system. The rolling stock is shared with the Caltrans-managed San Joaquin Intercity Passenger Rail Service. Cars equipped by proposers for the technical trial will be operating in both the Capitol Corridor and San Joaquin rights-

of-way during the test period (from Martinez to Oakland, these are overlapping service areas). UPRR owns the underlying rights-of-way except for 2.5 miles in the southern end in the San Jose area. UPRR freight trains and rolling stock share the ROW with the CCJPA and other Amtrak trains. CCJPA is charged with coordinating day-to-day activities, as well as longer-term capital projects, with Caltrans, UPRR and local communities along the entire Auburn to San Jose ROW.

The CCJPA system operates 24 daily weekday and 18 weekend trains (each train comprises an engine and five cars) that carry more than 1.25 million passengers annually—a 173% improvement since 1998. It provides a convenient choice for people traveling along the congested I-80, I-680 and I-880 freeways. Eight counties are served by the Authority. Sixteen stations along the 171.5 miles of ROW are operated by the agency.

The CCJPA is governed by a Board of Directors, comprised of 16 elected officials from six member agencies along the 171.5-mile Capitol Corridor rail route:

- Placer County Transportation Planning Agency (PCTPA)
- Solano Transportation Authority (STA)
- Yolo County Transportation District (YCTD)
- Sacramento Regional Transit District (Sac RT)
- San Francisco Bay Area Rapid Transit District (BART)
- Santa Clara Valley Transportation Authority (VTA)

Ex-officio members of the CCJPA include the Metropolitan Transportation Commission (MTC) and the Sacramento Area Council of Governments (SACOG), the Metropolitan Planning Organizations (MPOs) along the route. CCJPA maintains extensive, long-running relationships with local communities located along the ROW.

The CCJPA offers excellent demographics for wireless service providers. The following data are based on a 2005 survey:

- Average household income per rider: \$80,000
  - 48% of all riders earn \$75,000 or more
- 56% of all passengers are business travelers
- 71% of business travelers bring a laptop computer or PDA
  - 55% of all travelers bring a laptop or PDA
- 33% of computer/PDA users have used Wi-Fi aboard a CCJPA during a previous trial with PointShot Wireless in 2005
  - Average connection time was 78 minutes

CCJPA has a collaborative relationship with the California Center for Innovative Transportation (CCIT), a subsidiary of the Institute of Transportation Studies at the University of California at Berkeley that works closely with researchers, practitioners and private industry to implement transportation research and innovations that improve the efficiency, safety and security of transportation systems.



The CCIT operates a WiMAX test bed within the Oakland/Berkeley/Emeryville section of the ROW that may prove to be a valuable resource to companies selected for the technical trial. In addition, CCIT is currently operating a point-to-point WiMAX network between its headquarters in Berkeley and Pacific Park Plaza (PPP), a 30-story condominium building located in Emeryville, aligned in proximity to the Emeryville train station. Space and facilities available at the PPP may be available to parties participating in the trial. CCIT and the University of California at Berkeley may also make available during the test period experimental use of several frequencies currently licensed to the University.

### III. The Assets

The Authority’s ROW provides an attractive facility for conducting the proposed technical trial. The trial area comprises 171.5 miles of ROW with 16 stations. The greatest distance between two stations is 26.7 miles. The station locations are a mixture of urban and rural settings, with the densest urban setting located between the Richmond and Oakland stations. Each station, including parking lots, has ample room to place equipment and antennas. Power and commercial dark fiber (owned and available for commercial license from UPRR, MCI or other carriers in the ROW) are available along the entire run, with outlets and manholes near, or at each station.

Train stations along the CCJPA ROW and their distances are as follows:

<b>CCJPA Station</b>	<b>Rail Milepost</b>	<b>Distance to next Station (miles, headed north-east)</b>
San Jose	0	6.7
Great America	6.7	13.3
Fremont	20	11.7
Hayward	31.7	8.1
Oakland Coliseum	39.8	5.2
Oakland Jack London	45	3.9
Emeryville	48.9	2.6
Berkeley	51.5	5.8
Richmond	57.3	19.6
Martinez	76.9	17.2
Suisun	94.1	26.7
Davis	120.8	13.4
Sacramento	134.2	17.7
Roseville	151.9	6
Rocklin	157.9	13.6
Auburn	171.5	

Based on preliminary discussions with interested parties, CCJPA personnel believe there may be other benefits that will have a positive impact on the business case that can be

derived from participation in this project. The ROW includes high-occupancy, high-volume businesses, as well as high density residential neighborhoods where broadband services can be offered. In addition, RFID-based and Homeland Security applications may be offered at locations, such as the Port of Oakland (near the CCJPA Jack London Square Station). The broadband wireless network built along the railway could be enhanced to support some of these applications thereby increasing cost-effectiveness and the utilization of the deployed infrastructure. The development of publicly available in-train content (movies, gaming, etc.), location-based advertising, as well as applications for train operations and security are both areas for further business development.

The café cars on each trainset already include a GPS transponder with a cellular modem. Each trainset has its own power generated from the power generator on the locomotive that powers all cars in the trainset. There is space on each car for equipment storage/housing. All modifications to the equipment would either be completed by CCJPA, Amtrak, or other approved installers.

#### **IV. CCJPA Approach**

Broadband connectivity has become ubiquitous in the home and office environments. Increasingly, it is available also in public areas, through Wi-Fi hotspot connectivity and 3G cellular networks. At the same time, end-users are more likely to travel with laptops, PDAs and phones with Wi-Fi capability. People increasingly expect to be able to use these devices—wherever they are.

Trains are a particularly attractive environment. Many passengers are keen to complete work before they arrive to a meeting or in the office, or before they return home. For others, an Internet connection provides entertainment or a way to keep in touch with family and friends. CCJPA riders typically spend an hour or more on the train; commuters twice that time. That gives them more than sufficient time to power up their laptop, check their email, surf the Internet, or connect to their corporate network.

Train operators are increasingly aware of the operational advantages that data connectivity throughout the rail system offers. Ticketing, remote surveillance, safety, management of in-car services (e.g. food service) are only a few of the applications that data connectivity enables. A data connection along the tracks is no longer a convenience—it is fast becoming a requirement.

Transit systems, however, pose unique requirements for broadband connectivity. A train travels at sustained speeds and the connection has to be maintained through the journey. Trains cross urban areas, small cities, and rural areas. Each environment presents its own specific challenges and service providers must eventually address them all.

An equally important consideration is that any broadband wireless network must be cost-effective, i.e., it must prove profitable to the network operator. Commercial underground wireless systems have finally proven to be profitable for carriers in transit systems such

as BART and Washington D.C.'s metro system. While transit agencies are certainly willing to pay for broadband wireless network services, they are not capable of subsidizing the entire effort. The business case for a broadband wireless network—and particularly the type of joint development that must occur between the public and private sectors—is yet to be made.

CCJPA and other interested transit agencies believe now is the time to identify the best technology that meets the specific requirements of transit-specific agencies with the help of the leading industry players. The Authority understands that this is a nascent market with a huge opportunity for growth, but it also realizes that it is not yet clear which technology and which business models are better equipped to take advantage of this opportunity. CCJPA views the RFI as an occasion to address these issues and to move forward towards a commercial deployment.

In line with this approach, the RFI is technology agnostic. The CCJPA welcomes submissions that rely on different wireless technologies for backhaul. The Authority is not interested in establishing a solution that provides the most advanced performance regardless of the investment needed. Rather, CCJPA is seeking the technology that offers the most attractive cost/performance tradeoff, while meeting the requirements stated below.

The Authority's major objective is to compare the performance of different technologies and solutions on a side-by-side basis. To achieve this goal without imposing an excessive financial and operational burden on proposers, CCJPA requires that the technical trial will extend for a minimal number of miles along the ROW, and include a minimum of three base stations. Specifics are provided in the next section.

## V. Technical Requirements

The requirements listed below are to be construed as minimal requirements that all proposers should try to meet. If the requirements cannot be met, the proposers should address the reasons for non-performance, and provide a justification for what requirements may be substituted. Substitutions will be evaluated on a case-by-case basis by CCJPA. The requirements are:

- 1) **Network architecture.** The network will consist of two key parts, both to be provided by the proposer:
  - Within-train car coverage with Wi-Fi b/g
  - Backhaul wireless link from the train to base stations or satellite.
  
- 2) **Bandwidth requirements.** For public access, CCJPA will expect WLAN-connected passengers to have access to a 250 kbps uplink and a 750 kbps downlink connection with a contention (oversubscription) ratio of 20. CCJPA train operations will require an additional 1.5 Mbps of uncontented capacity.

Assuming that 15% of passengers will use the service at peak time, the required base station capacity will be around 4 Mbps.

3) **Applications.** Proposers should indicate which of the following applications they intend to support during the technical trial:

- Web browsing
- Email access
- VPN access
- File upload and download
- Best-effort VoIP
- Best-efforts video and audio streaming
- CCTV uploading with resolutions suitable for providing remote personnel actionable detail. (up to 3 concurrent channels)
- E-ticketing and management of passenger information
- Transmission of train diagnostic information.

CCJPA does not require that all of these applications be tested during the trial, but the proposed solution, and the analysis provided at the end of the trial, should be specific as to proposer's ability to support them. CCJPA does not expect that they will add a substantial requirement in terms of bandwidth or latency.

4) **QoS.** The network will support QoS functionality and will be able to give priority to surveillance and other real-time applications.

5) **Security.** The network will maintain carrier-grade security on the backhaul link from the trains to the base stations or satellite; and will support WPA2 for in-car Wi-Fi coverage.

6) **Scalability.** The proposed solution must be scalable and must demonstrate the ability to increase capacity over time in a cost-effective way as traffic demand grows.

7) **Trial scope.** For terrestrial solutions, the trial will include at a minimum three base stations that will provide coverage along a specified (by mutual agreement between the proposer and CCJPA) section of ROW (or other solution, as provided by a proposer or third party). Specified coverage must be provided in at least one train, with Wi-Fi coverage in one car. As needed, testing should take place for the system using surrogates for the train (e.g., automobile traveling within the test area) with eventual testing on moving train equipment (equipment, train crew, and track access to be provided or enabled by CCJPA).

8) **Final Report.** Each proposer selected to conduct a trial is required to submit to CCJPA a final report upon trial completion. The report will present detailed data showing that the solution meets the technical requirements and a discussion of the

overall test results. In addition, the report will include a revision of the initial cost estimate, updated in light of the test results.

The CCJPA may consider, solely in its discretion, alternative solutions that provide comparable performance.

## VI. Process

1) **Milestones.** The milestones for the RFI process are as follows:

RFI issued	March 31, 2006
Pre-submission meeting	April 12, 2006, 1:00pm
Deadline for RFI responses	May 23, 2006, 4:00pm
Evaluation of submissions	May 24, 2006 – June 30, 2006
Announcement of final selection(s)	July 3, 2006
Negotiations for technical trial(s)	July 4, 2006 – August 1, 2006
Technical trial(s)	August 1, 2006 – February 1, 2007
CCJPA Issues RFP	First Quarter, 2007

**RFI and accompanying documents.** The text of the RFI will be available on the CCJPA Web site: [www.capitolcorridor.gov](http://www.capitolcorridor.gov). CCJPA demographic and wireless survey data and technical documents that may be relevant to proposers' business analysis and development are posted at:

<http://www.calccit.org/projects/train2.html#Capitol>

Additional hard copies of the RFI may be requested from:

Mr. Jim Allison  
Principal Planner  
CCJPA/BART  
300 Lakeside Drive, 14<sup>th</sup> Floor East  
Oakland, CA 94612  
Email: [jalliso@bart.gov](mailto:jalliso@bart.gov)  
Phone: (510) 464-6994  
Fax: (510) 464-6901

3) **Pre-submission meeting.** A pre-submission meeting will be held on Wednesday, April 12, 2006 at 1:00 pm PDT in the BART Board of Directors Board Room, 344 20<sup>th</sup> Street, Kaiser Center Mall, 3<sup>rd</sup> Floor, Oakland, California. Attendance is not mandatory, but recommended.

The meeting is designed to provide answers to initial questions and introduce appropriate CCJPA personnel and their consultants to interested parties. Site visits at stations along the ROW will be conducted for interested parties on the same day.

Further meetings may be scheduled with those parties committed to submitting a response to the RFI.

Firms interested in attending the pre-submission meeting, should contact Mr. Jim Allison (see contact details above). Requests (firm name and attendees) to attend the meeting should be received via letter, e-mail or fax no later than April 10<sup>th</sup> to ensure proper security clearance.

- 4) **RFI responses.** The submission deadline for all RFI responses is Wednesday, May 23, 2006 at 4:00 p.m. PDT. No business entity will be selected to provide any service, product or associated work effort to BART, CCJPA or any of the participating transit agencies as a direct result of submittals. All written responses are to be submitted to the address below:

Mr. Jim Allison, Principal Planner  
CCJPA/BART  
300 Lakeside Drive, 14<sup>th</sup> Floor East  
Oakland, CA 94612-3534  
USA

Proposers should submit one (1) original and four (4) copies of their proposals in hard copy and one (1) electronic copy on a CD-ROM disc in Microsoft Word, Excel, or PowerPoint. Confidential information should be suitably marked. In-depth interviews may be conducted in the following two weeks. Final decisions and recommendations to all participating agencies will be issued before July 1<sup>st</sup>.

Because of the relatively short time frame for responses, those parties not interested in providing written proposals are not encouraged to request meeting dates, CCJPA staff resources are limited.

- 5) **Evaluation of submissions.** CCJPA will undertake a comprehensive review of each submission after May 23, 2004. At CCJPA's discretion, follow-up meetings may be scheduled with selected proposers to further discuss their proposals or to get clarifications on their submissions.
- 6) **Evaluation Criteria.** All proposals will be evaluated by the CCJPA to determine if they adhere to the format set forth in the RFI, and if they contain all required submissions such that they can be considered responsive. The Authority's selection of the successful proposer(s) for participation in the technical trial(s) shall be made solely at its discretion, based upon the information received. Responsive proposals shall be reviewed based upon CCJPA's evaluation of a number of factors, which are listed in no particular order of importance:

- Proposer's proposed architecture and functionality
- Proposer's evidenced financial ability and proposed level of investment

- Proposer’s previous experience and technical ability in developing, managing, marketing, designing, installing and/or operating broadband wireless networks
  - The level of detail, responsiveness and demonstrated capabilities, as provided by Proposer, in their Submission Documents, described in the next section.
  - The demonstrated willingness of Proposer to share information with CCJPA during the technical trial; including preparation of a final report that discusses trial results and useful comparisons with proposer’s initial submission.
- 7) **Final selection.** CCJPA’s final selection of submissions will be announced on July 3, 2006. CCJPA reserves the right to choose one or multiple submissions for the subsequent technical trial.

## VII. Submission Documents

All parties submitting responses to this RFI are required to follow the instructions for submittal of proposals, as stated in Attachment 1. Proposers must also submit the following documents in their proposal:

- 1) A completed Qualifications Statement Form (Attachment 2). If multiple companies participate in a joint submission, each company will submit an independent form.
- 2) A detailed description of the solution proposed, including:
  - A functional specification of the network elements to be deployed
  - Names of vendors who will provide key equipment
  - Technologies involved for in-car coverage, backhaul to terrestrial base stations or satellites, backhaul to an Internet peering point and their expected evolution in performance over the next five-year period, indicating which standards they comply with (e.g. IEEE 802.11, IEEE 802.16) and whether the products used will be certified for interoperability (e.g. Wi-Fi).
  - Spectrum bands, modulation techniques, channel width used.
  - Infrastructure requirements for the trial (equipment to be installed on trains and along railway, power and space requirements, regulatory permits required, etc.).
  - Comments on scalability ease of installation and maintenance, future technology evolution of the solution.
- 3) A discussion of the requirements defined in the RFI:
  - For each requirement, proposers should indicate whether the proposed solution meets or exceeds the requirement; or whether it does not meet the requirement but an alternative solution is proposed to provide the required functionality.
  - The requirements listed in the RFI are based on current expected usage and minimum functionality. Proposers should discuss how their solutions performance goes beyond the stated requirements or offers additional

functionality, and how they expect that it will evolve over the next five years—and scale with increases in demand.

- 4) A preliminary estimate of the costs and challenges involved in a commercial rollout for the entire 171-mile ROW. CCJPA understand this will be only an initial estimate based on the system specifications, rather than on a thorough evaluation of the ROW environment. The Authority will expect proposers to refine or restate their assessment at the end of the trial.
- 5) A management plan for the trial, including structure of the network to be deployed, tests to be conducted, and expected timing.
- 6) Comments on the cost-effectiveness of the solution proposed and its attractiveness to potential network operators. Specifically, CCJPA solicits the input of proposers on all or a selection of the following topics:
  - **Business model.** CCJPA expects that a network operator will manage, operate and maintain the network. Do you think this is a profitable model for the network operator? Do you envision other business models that could be more attractive? Are there any additional players that you think will or should be part of the ecosystem?
  - **Cost-efficiency.** Could you suggest ways in which the network costs could be significantly reduced with a minor impact on performance? Examples may include limiting the coverage or bandwidth requirements.
  - **Additional in-car applications.** Are there any additional applications that your solution can support? What impact will they have on the business model of the network operator?
  - **Complementary services along railway networks** (e.g. fixed data access, RFID-based applications, Homeland Security applications). Which applications do you think will be more attractive? How important a role do you think that they will play in strengthening the business case for a network operator?
  - For joint venture submissions: a statement that will define the role and responsibility of each party.

Furthermore, proposers are invited to submit the following, optional documentation in digital form, only if they deem to be relevant:

- 1) Relevant information about the solution proposed and the technology used.
- 2) Case studies on trials or commercial deployments for transit systems.



## VIII. Miscellaneous Provisions

- 1) **Substantive Qualifications.** The RFI submission will require substantive qualifications from proposers, including specific areas of experience, financial stability and a proven performance track record. CCJPA therefore respectfully limits this solicitation to those interested parties who will be ready, willing and able to commit the technological, professional and financial resources necessary to offer substantive proposals during the RFP phase. Other parties, including consulting firms, should not submit mere concept or idea papers.
- 2) **No Preclusion form RFP Process.** The information contained in the proposals will be used to assist CCJPA and the participating agencies in determining the bona fides and good faith of the submitting parties. These submissions will also be used to determine participation in any follow-up meetings with interested parties. No party will be precluded, however, from participating in a subsequent RFP process for failure to submit a response to the RFI.
- 3) **Follow-Up RFP.** The results of the trial will be used to guide CCJPA to develop a specific RFP or other procurement document for CCJPA in the first quarter of 2007. The results will be shared with other interested agencies and will inform their own decisions and competitive bid processes.
- 4) **Confidentiality.** CCJPA acknowledges the possible confidential nature of any information requested by this RFI. CCJPA also realizes that confidentiality will be required during the beta test between the agency and various participating proposers. Sharing information with CCJPA during the beta test process will be critical to development of functional specifications for the anticipated RFP. CCJPA therefore obliges itself in good faith not to disclose such information during these processes or afterwards. CCJPA and its consultants are also willing to review, and if legally acceptable, sign non-disclosure agreements (NDAs) as appropriate to protect confidential communications and documents. Disclosure of information shall be made only in accordance with California law and applicable Federal requirements.
- 5) **Rolling Stock Availability.** Proposers should also be aware that, if they select to perform any portion of their respective trial tests in the Fremont to San Jose portion of the ROW, that portion is shared with ACE commuter rail passenger rail service. Similarly, in the 2.5 miles north of San Jose, ROW is also shared with the Peninsula Joint Powers Board's Caltrain. In all cases, railcar equipment is shared between the Capitol Corridor and San Joaquin services. There are also common stations (with the exception of Berkeley, which the San Joaquin's does not use), between Martinez and Oakland.

- 6) **Compliance with Regulations and Security Measures.** Proposers will required to comply with all existing CCJPA, Amtrak and UPRR-created or adopted rules, regulations, policies and guidelines. Proposers' solutions shall meet all current, pending, and future regulatory requirements of all authorities having jurisdiction over the CCJPA and its ROW, including but not limited to the Federal Communications Commission, the California Public Utilities Commission, the California Department of Transportation, the relevant APCO, California the State of California (including environmental [CEQA] regulations), as well as the various municipalities and local governing agencies along the CCJPA ROW. Security along the ROW is essential at all times. Each selected proposer shall be required to comply with any additional security standards and safeguard measures established by CCJPA, or other relevant agency, during the technical trial.

**INSTRUCTIONS FOR SUBMITTAL OF PROPOSALS**

Any questions regarding this Request for Information (RFI) should be submitted in writing to Jim Allison, Principal Planner, BART/CCJPA, 300 Lakeside Drive, 14<sup>th</sup> Floor East, Oakland, CA 94612, or by fax, at fax number (510) 464-6901. Any changes to this Request for Information (RFI), or interpretations thereof, will only be by addendum under the signature of Mr. David Kutrosky, Deputy Director, Finance and Planning Department, BART/CCJPA, and will be sent to all submitters. Neither Mr. Allison, nor any other person connected with either BART or the CCJPA, is authorized to make interpretations of this RFI or to suggest any course of action or manner of response other than Mr. Kutrosky.

BART and CCJPA reserve all of their rights at law and equity, including the right, in its sole discretion, to reject all responses to this RFI. No respondent shall have any rights against either BART or CCJPA, jointly or severally, arising from the contents of this document, the receipt of comments or the incorporation in or rejection of comments in any subsequent Request for Proposals or other procurement or sale documents.

Neither BART nor CCJPA assumes any liability for any pre-contract activity and/or costs incurred by respondents to this RFI.

At such time as BART and CCJPA publish a subsequent Request for Proposals or other procurement or sale document, if any, each response will be evaluated on its own merits.

Information submitted to BART or CCJPA orally or in writing in response to this RFI thereafter shall not be considered as given in confidence and shall be the property of BART and CCJPA and may be used or disclosed by BART or CCJPA at any time without compensation or other obligation. Respondents should clearly state which, if any, of the information they provide is deemed proprietary in nature. BART and CCJPA will use reasonable efforts not to disclose such information, except in litigation and as required under its Freedom of Information Resolution.

BART and CCJPA reserve their right to waive defects in submissions. Either BART or CCJPA may, but shall not be obliged to, consider incomplete responses or to request or accept additional material or information.

BART and CCJPA may consult references familiar with your organization regarding your prior development projects, or management projects, financial resources, reputation and otherwise, Submission of an expression of interest and of qualifications in response to this RFI shall constitute permission for BART and CCJPA to make such inquiries and authorization to third parties to respond thereto.

BART and CCJPA make no representations, warranties or guarantees that the information contained herein is accurate, complete or timely or that such information accurately represents the conditions that would be encountered at various portions of CCJPA or BART rights-of-way or other facilities now or in the future. The furnishing of such information by BART and CCJPA shall not create, or be deemed to create any obligation or liability upon them for any reason whatsoever and each organization by expressing its interest and submitting its qualifications expressly agrees that it has not relied upon the foregoing information, and that it shall not hold either BART or CCJPA liable or responsible thereof in any manner whatsoever.

Neither the Directors of BART or the CCJPA, nor any of them, nor any officer, agent or employee thereof shall be charged personally by your organization with any liability or held liable to it under any term or provision of this RFI or any statements made herein or because of the submission, or attempted submission, or any response hereto or otherwise.

Your submission of interest and qualifications shall signify your agreement with all the provisions of the RFI.



**STATEMENT CONCERNING CRIMINAL CONVICTIONS/INVESTIGATIONS**

Has your firm, or any principal, director, officer or partner thereof, failed to complete a contract? Yes – No

If yes, provide brief explanation\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Has your firm or any principal, director, officer, or partner been convicted of any crime? Yes – No

If yes, provide brief explanation\_\_\_\_\_

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\_\_\_\_\_

Is your firm or any principal, director officer, or partner under indictment or investigation by any Federal, State or local agency for the commission of a crime? Yes – No

If yes, provide brief explanation\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

Is your firm currently disqualified from submitting bids or proposal to or receiving awards from or entering into contracts with any governmental entity or public authority? Yes – No

If yes, provide brief explanation\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

COMPLETED/CURRENT PROJECTS

Please list significant projects, completed or under contract, of a similar nature as described in your submittal. (Attach additional sheets as necessary).

Sponsor/Owner: \_\_\_\_\_

Principal Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

Location of Work: \_\_\_\_\_

Project Name: \_\_\_\_\_

Contract Value: \$ \_\_\_\_\_ Actual/Scheduled Compl. Date: \_\_\_\_\_

Description of Work: \_\_\_\_\_

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Please list significant projects, completed or under contract, of a similar nature as described in your submittal. (Attach additional sheets as necessary).

Sponsor/Owner: \_\_\_\_\_

Principal Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

Location of Work: \_\_\_\_\_

Project Name: \_\_\_\_\_

Contract Value: \$ \_\_\_\_\_ Actual/Scheduled Compl. Date: \_\_\_\_\_

Description of Work: \_\_\_\_\_

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## FINANCIAL STATEMENTS

Please provide the following information attached to this Qualification Statement:

- a) Certified financial statements, including applicable notes, reflecting the prospective firm's assets, liabilities, net worth, revenues, expenses, profit or loss and cash flow for the most recent calendar year or the prospective firm's and any participant's most recent fiscal year.
- b) The name and address of the prospective firm's and, if applicable, participant's chief banking representative handling the prospective firm's or participant's account. This information should include the name and address of the banking institution, as well as the name and telephone of the chief banking representative.