

Caltrain Broadband Wireless Communications Project

Finance Committee
November 21, 2022



Background

A long-time goal for Caltrain to provide WiFi to its passengers

- There have been multiple efforts to deliver this customer requested service beginning as far back as 2006

Current effort started in 2019 leading up to possible award authorization today

- Hired **technical experts** to help guide Caltrain towards the best solution
- Issued a requirements-based RFP **open to multiple** technologies and delivery approaches

Business Case

Unlocks **existing fiber backbone capacity to revolutionize** the way Caltrain operates, maintains, and provides service

- **Custom Experience**
 - Enhance the **value proposition** to assist in **ridership recovery and growth**
- WiFi is part of the customer experience for several Bay Area transit providers

Business Case

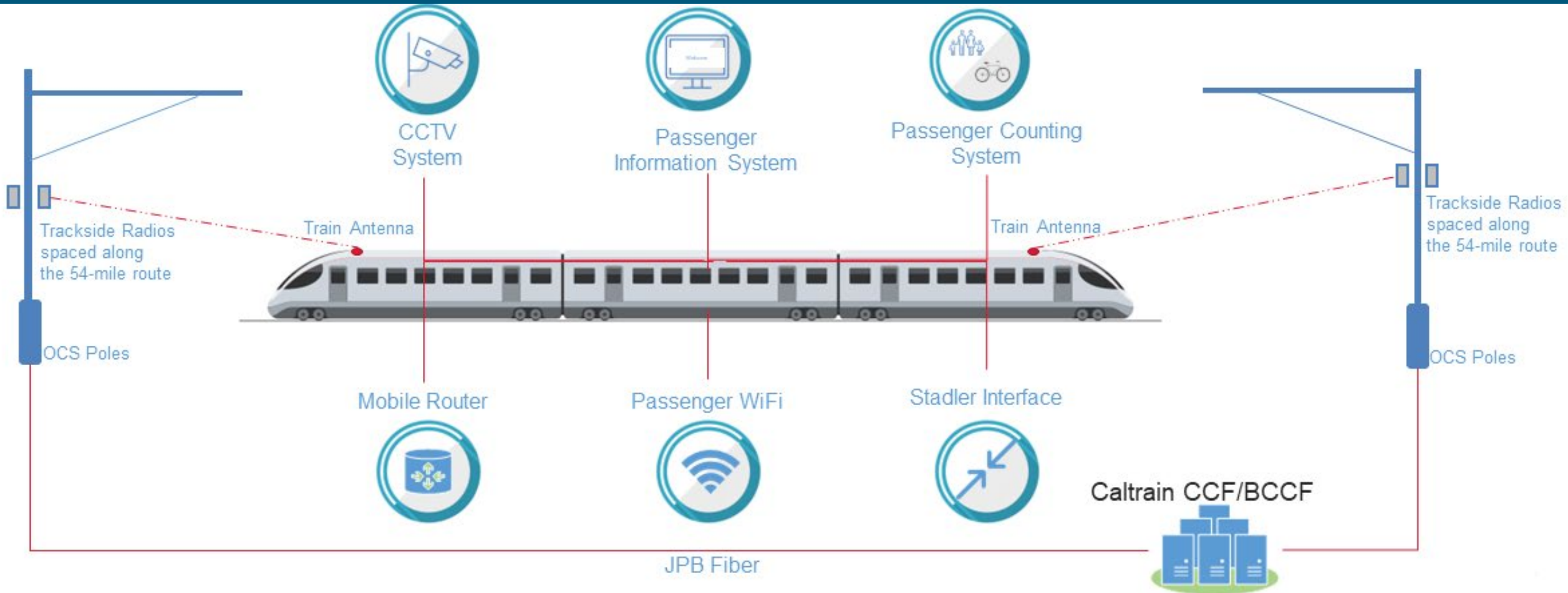
Unlocks **existing fiber backbone capacity to revolutionize** the way Caltrain operates, maintains, and provides service to:

- **Caltrain's Systems:** enhance **operations and maintenance** with robust wireless link to support further development of
 - **Passenger Information Systems**
 - Real-time connectivity for onboard messages and other content generated from Caltrain's Central Control Facility
 - **CCTV**
 - Connectivity for EMU CCTV
 - Allows real-time, 24/7 monitoring of onboard activity at Caltrain's Central Control Facility
 - **Passenger Counting System**
 - Connectivity for data collection at Caltrain's Central Control Facility

RFP Requirements

- Emphasis on **customer experience** and a high-quality onboard WiFi solution
- Provide for **train-to-wayside connectivity** for services including CCTV, passenger information, and passenger counting
- Continuous coverage with **99.9% uptime** during service hours and connectivity coinciding with EMU service from San Francisco to San Jose
- Option for WiFi service on **legacy diesel fleet** including service south of San Jose
- **Turnkey** solution inclusive of installation of EMU onboard and trackside equipment
- **Business Model Options** (Purchase, Managed Services, Partnership)

Project Conceptual Design



Procurement **Schedule**

- RFP released: **October 8, 2021**
- Pre-proposal conference: October 20, 2021
- Site visit: October 21, 2021
- Q&A period ends: October 27, 2021
- Proposals received: **December 30, 2021**
- Oral interviews: week of Jan 31, 2022
 - Short listed vendors and invited **Nomad Digital** and **Icomera** for a live demonstration
- Live demonstrations: April – May 2022
- Proposer negotiations: June – October 2022
- Award contract: **December 2022**

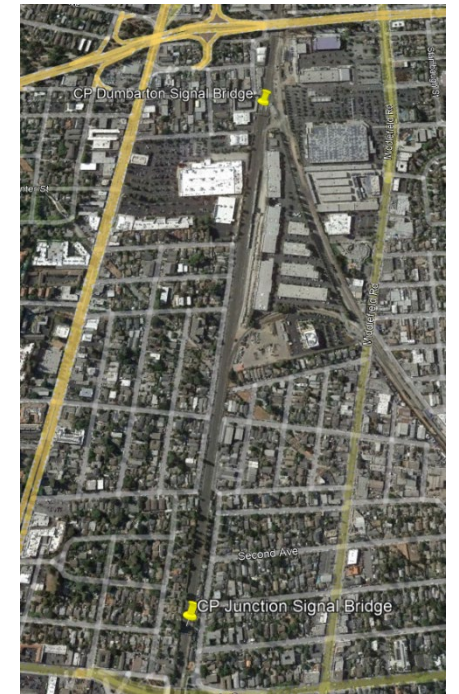


Procurement

- Received 4 proposals
- **Nomad Digital** and **Icomera** were shortlisted following a detailed evaluation
- Oral interviews and live system demonstrations were conducted with both
- Nomad Digital was selected for negotiations as the highest-scoring Proposer

Procurement **Live Demonstration**

- **Intent**
 - Proof of concept
 - **Validate** technical capabilities of proposed solution
- **What and Where**
 - Mount track side equipment on two signal bridges $\frac{3}{4}$ **of a mile apart**
 - Mounted equipment on a test train (locomotive, cab car and car)
 - All testing was done overnight from 11:30pm – 4am
- **Testing**
 - One day each for vendors and Caltrain
 - Measured maximum throughput, range, etc. of each proposer's solution



Nomad Digital System

- Uses an **advanced millimeter waveguide technology** operating at high frequency, avoiding interference from traditional WiFi solutions along the Caltrain alignment
- One of the **fastest available** train-to-wayside solutions in the marketplace
- Ability to deliver over **1 gigabits** per second (1,000 Mbps) to **each zone**
- Providing **64 zones** along the 52-mile alignment
- **Exceeds RFP minimum:** 100 Mbps passengers + 10 Mbps Caltrain's systems
- **Faster** than any other Proposer's offered solution

Customer Experience

Depends on **four** primary factors

- Provided **bandwidth** - **1 gigabit** per zone per second
- **Assumed number** of users - **700** concurrent users (~85% of 2018 average crush loading)
- Assumed bandwidth each rider will **use**
 - **Half** web surfing and emails (**1 Mbps**)
 - **Half** streaming video (**2 Mbps**)
- **Equity policy** – bandwidth limited per device to provide equity amongst users

Result with base case above: **~75% of capacity** provided used



Project Agreements

Following extensive negotiations with Nomad Digital, there are **two** Project Agreements under a **Managed Service** business approach

- **System Implementation and Deployment**
 - Design, furnish, install, and commission the Nomad technology both onboard the EMU trains and along the Caltrain right-of-way
 - Includes a one-year warranty period beginning after substantial completion
- **Operations and Maintenance Support Services**
 - Agreement to operate, maintain, and furnish spare parts for an initial **4-year period**
 - **Options:** years 5-6, 7-10, technology refresh, and diesel fleet upgrades
 - Base 4-year term **begins in FY25** and are subject to yearly economic **escalation**



Project Costs

Project Cost Summary (Capital Construction)			
72.7%	Construction Contract		\$20,941,684
	Nomad Base Contract	67.5%	\$19,441,684.48
	Trenching Allowance	5.2%	\$1,500,000.00
27.3%	Other Costs		\$7,878,557
	Expended to date	2.3%	\$649,789
	Project Contingency	8.9%	\$2,569,229
	Construction Management	7.3%	\$2,090,000
	TASI	3.4%	\$988,766
	ICAP	3.8%	\$1,083,479
	Other Costs	1.7%	\$497,294
	Total Project Costs	100.0%	\$28,820,241



Phased Funding Plan

Phased Funding Plan			
67%	Current Funding		\$19,193,586
	2019 TRCIP	48.6%	\$14,000,000
	FY23 Unrestricted Funds	18.0%	\$5,193,586
33%	Remaining Construction Funding Plan		\$9,626,655
	FY22 State Rail Assistance	19.1%	\$5,500,000
*	<i>FY23 State Rail Assistance</i>	<i>14.3%</i>	<i>\$4,126,655</i>
Total Phased Funding Plan			\$28,820,241

**Identified as backstop funds if State Broadband grant application(s) unsuccessful*



Phased Funding Plan

State Rail Assistance Funding			
	Available Balance	Proposed Use	Remaining Balance
FY22	\$5,500,000	\$5,500,000	\$0
FY23	\$5,600,000	\$4,126,655	\$1,473,345
FY24	\$6,000,000		\$6,000,000
FY25	\$6,222,069		\$6,222,069
Totals	\$23,322,069	\$9,626,655	\$13,695,414

Remaining balance if State Broadband grant application(s) successful

\$17,822,069



Recommended Board Actions

Staff recommends award of two contracts:

- **System Implementation and Deployment Contract**
 - **Total lump sum fixed price: \$20,941,685**
 - Base contract: \$19,441,685
 - Trenching allowance: \$1,500,000
 - **Contract term: 30-months**
 - Notice to proceed to substantial completion: 18 months
 - Warranty period: 12 months

Recommended Board Actions

Staff recommends award of two contracts:

- **Operations and Maintenance Support Services Contract**
 - 4-year base term: **\$5,668,665** (beginning in FY25)
 - Future potential options totaling **\$13,294,400**
 - Option 1 for years 5 and 6: \$3,003,856
 - Option 2 for years 7 to 10: \$6,119,026
 - Technology Refresh Option in year 7: \$1,506,526
 - Diesel Fleet Upgrade Option: \$2,666,992
- *Priced in October 2022 dollars subject to economic price adjustment*

Questions?

FOR MORE INFORMATION

WWW.CALTRAIN.COM

