

Metropolitan Transportation Commission Operations Committee

October 11, 2019

Agenda Item 6a

Bay Area Regional Broadband Communications Strategic Investment Plan

Subject: Report on the Bay Area Regional Broadband Communications Strategic Investment Plan, which provides a framework to enable Caltrans and other regional and local stakeholders to develop a regional data communications network.

Background: There are four major types of communications technologies: fiber optics cables composed from multiple glass tubes installed in underground conduit or overhead wires; communications (e.g., wireless, copper) leased for a recurring cost from companies such as AT&T; and high bandwidth and low bandwidth wireless communications transmitting data over air using radio waves at different frequencies.

In 2009, MTC and Caltrans District 4 collaborated on the development of the first Bay Area Regional Communications Plan (Plan). The Plan promotes sharing of communications infrastructure that allows agencies to transmit and exchange information and facilitates implementation of technology-based congestion management strategies. The focus was on identifying strategies to upgrade the communications network to expand and accommodate the Caltrans video system, as well as other field devices, such as changeable message signs. Fast forward to 2019, the age of big data, when many emerging technologies require fast, reliable and high bandwidth connections. In many cases, agency-owned fiber can meet future data and technology needs efficiently and cost-effectively.

MTC is leading the effort to update the Plan, which provides a framework for MTC, Caltrans, and other regional and local stakeholders to develop a modern regional communications network. MTC staff has worked to develop the Plan with stakeholders including Caltrans, county transportation agencies, transit agencies, and local cities.

The proposed network would enable information sharing and facilitate the implementation of technology-based congestion management strategies focused on enhancing the livability and economic vitality of communities throughout the nine-county Bay Area. The communications network would give agencies the ability to support managed lanes, integrated corridor management, smart cities and other emerging, advanced technologies. The Plan also promotes sharing of communications infrastructure to support coordinated and interoperable transportation systems across multiple jurisdictions.

Based on goals and objectives identified by the stakeholders, the updated Plan identifies 40 projects at a total cost of \$150 million, and prioritizes projects based on their benefits and costs. These projects leverage existing and planned fiber infrastructure by closing gaps and connecting communications systems at hubs and at traffic management centers. The updated Plan also describes traditional and

creative funding sources and outlines best practices for sharing communications infrastructure. A boilerplate sharing agreement was created, and can be used to facilitate negotiations regarding sharing infrastructure.

The Plan recommends policies that MTC, Caltrans, county transportation agencies and local jurisdictions can undertake to facilitate the build-out of a regional data communications network. Because much of the physical network infrastructure proposed in the Plan has not been constructed, the Plan recommends development of guidelines that encourage consideration of regional communications infrastructure in project development phases, such as initial development, scoping, and permitting. Agencies are also encouraged to install fiber communications infrastructure for the regional communications network if the project limits overlap with a proposed project in the Plan. This will minimize construction project excavations (and costs) and minimize impacts to the traveling public. The Utah Department of Transportation estimated a 15.5% per mile cost savings when conduit and fiber were installed during a road project rather than being installed independent of a road project.

To incentivize local agencies to construct and deploy communications infrastructure identified in the Plan, staff proposes establishing a pilot challenge grant program named Interconnect Bay Area. Administered by MTC, the program would make available approximately \$2.5M of federal funding to help cities, counties and transportation agencies with communications project implementation, through consultant technical assistance and capital support. Staff will make a recommendation to the Programming and Allocations Committee at its October 9th meeting, to direct OBAG 2 federal funding towards this pilot challenge grant, pending Commission approval at its October 23rd meeting. Although staff is only in the early stage of designing grant guidelines, it is anticipated that a call for projects would take place in the summer of 2020.

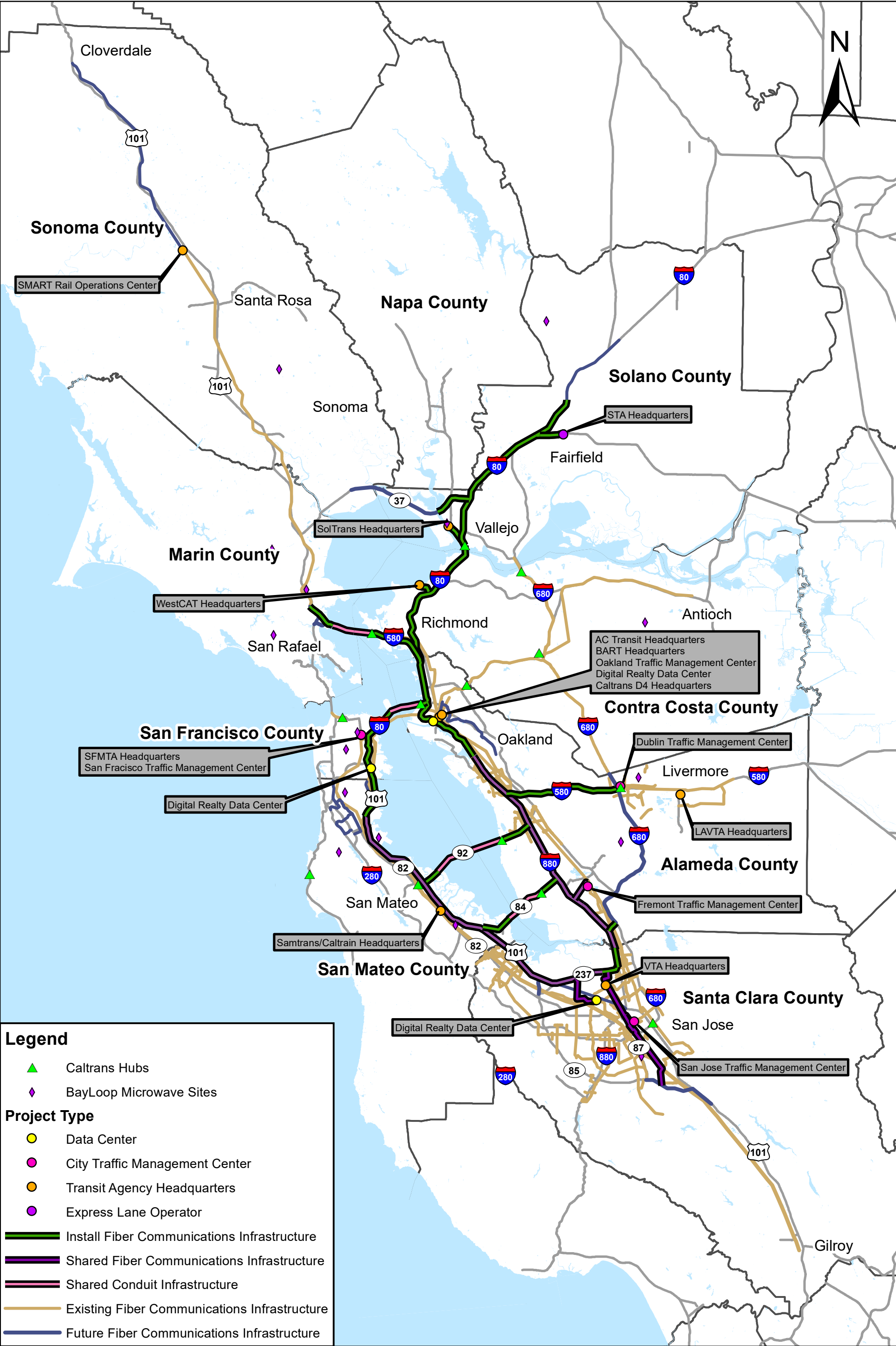
Issues: None identified.

Recommendation: Receive report on the Regional Broadband Communications Strategic Investment Plan.

Attachments: Attachment A: Proposed Regional Broadband Communications Network Build-Out Map
Attachment B: Presentation on the Bay Area Regional Broadband Communications Strategic Investment Plan



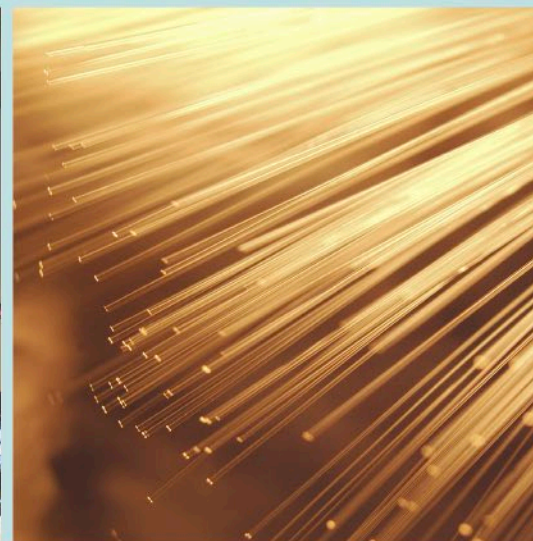
Therese W. McMillan





BAY AREA REGIONAL BROADBAND COMMUNICATIONS STRATEGIC INVESTMENT PLAN

MTC Operations Committee
October 11, 2019



Re-Evaluate Communications Strategy



Image sources:
<https://www.mobilekarobar.com/images/posts/1510787370.jpg>
<https://mlsvc01-prod.s3.amazonaws.com/ef1df1f5101/9f889eb2-4d90-42e0-8f29-fd3c9cd7b3f7.png?ver=1553637334000>

Regional Communications At A Glance



Provide a framework to develop a **fast, reliable, redundant, and cost-effective** regional communications network



Enable the **sharing** of data, and maintenance and operations costs



Support **coordinated and interoperable** transportation systems



Facilitate **technology-based congestion management** strategies



Leverage infrastructure **assets and investments**



Realize **cost savings**

Regional Communications Applications



Signal Synchronization



Video Sharing



Regional Traffic Systems Control



Connected Vehicle/
Autonomous Vehicle
(CV/AV)

Value of Agency Owned Fiber

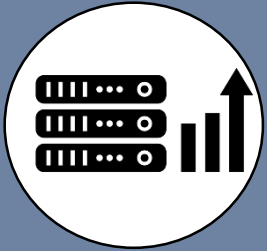
Return on Investment: 15 years



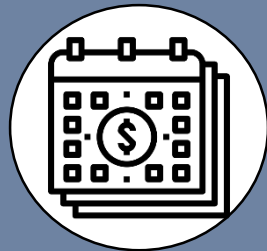
Maintenance



Repairs

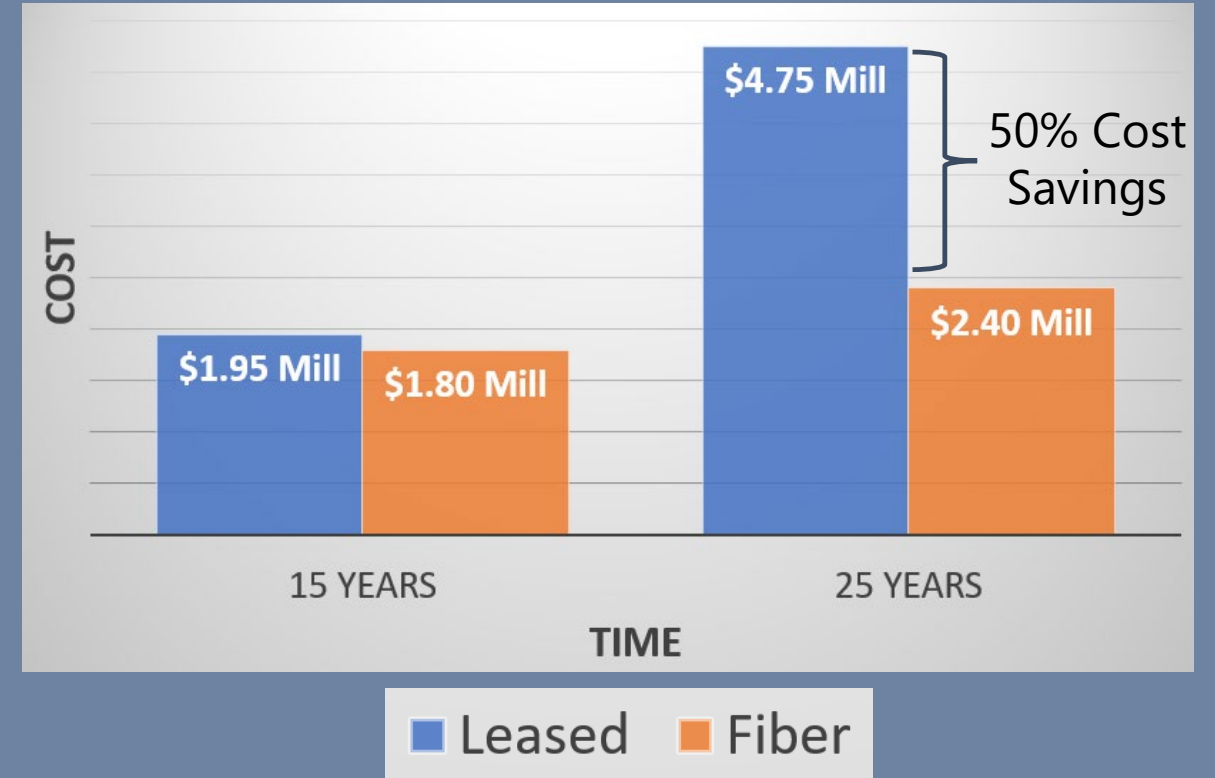


Equipment Upgrade



Leased Line Fees

Agency owned Fiber vs. Leased Line costs Per mile

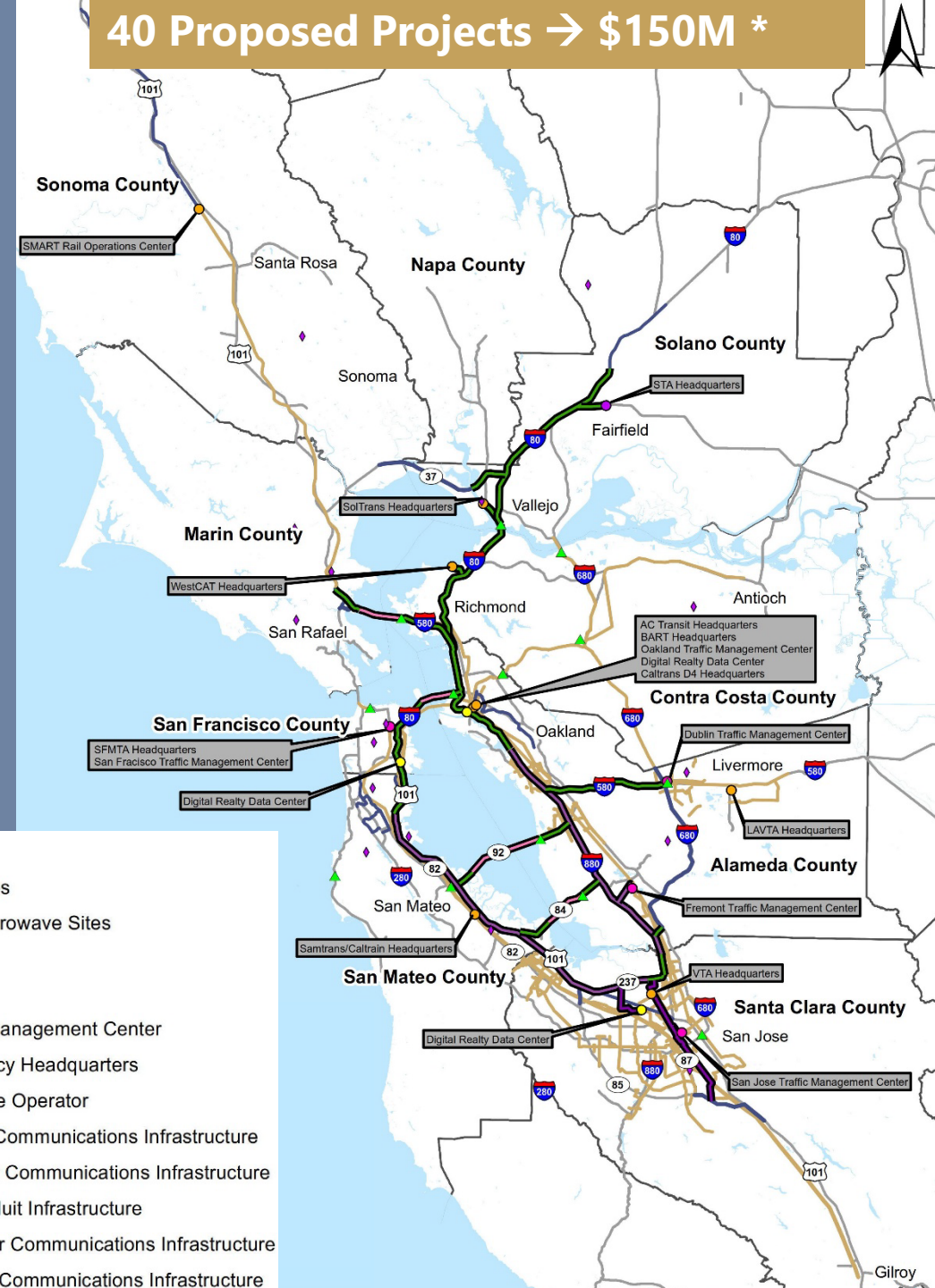


Assuming future bandwidth needs to accommodate emerging technologies (CV/AV, Vehicle Occupancy Detection, etc) on a one mile urban corridor.

Building a Regional Network

Phase	Description	# of Projects
1	Share infrastructure to complete the regional communications ring around the bay	5
2	Install infrastructure to complete the regional communications ring around the bay	6
3	Install and share infrastructure to build out the regional communications network along highways	9
4	Install and share infrastructure to build out the regional communications network along local roads	20

40 Proposed Projects → \$150M *



Legend

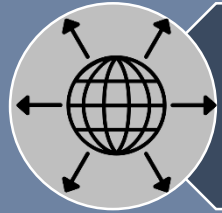
- ▲ Caltrans Hubs
- ◆ BayLoop Microwave Sites

Project Type

- Data Center
- City Traffic Management Center
- Transit Agency Headquarters
- Express Lane Operator

- Install Fiber Communications Infrastructure
- Shared Fiber Communications Infrastructure
- Shared Conduit Infrastructure
- Existing Fiber Communications Infrastructure
- Future Fiber Communications Infrastructure

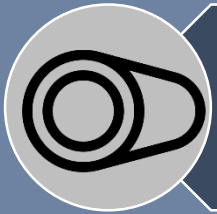
Policy Recommendations



Identify opportunities to build out the communications network



- Stakeholders
- Caltrans
 - MTC
 - County Transportation Agencies
 - Local cities and Counties



Promote a Smart Dig Policy



- Caltrans
- MTC
- County Transportation Agencies
- Local cities and Counties



Incorporate communications policies in funding guidelines



- Caltrans
- MTC
- County Transportation Agencies



Pilot a block grant program:
InterConnect Bay Area Challenge Grant



- MTC

Image source: the Noun Project

InterConnect Bay Area Grant: Proposed Timeline

