

United States Department of Transportation
National Infrastructure Project Assistance

Multimodal Projects Discretionary Grant (MPDG)- Mega Program Application

NIPA-22-MEGA-22 | 5.23.2022

680 FORWARD



CONTRA COSTA
transportation
authority



680 FORWARD

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Attachments: <https://ccta.net/680FORWARD-2022-MPDG-Mega-Application-Resource-Page/>

- A. [Benefit-Cost Analysis Memorandum](#)
- B. [Required Forms](#)
- C. [Funding Documentation](#)
- D. [Letters of Support](#)
- E. [Resource Documents](#)
- F. [Data Collection Plan](#)
- G. [Environmental Review and Permits](#)



Cover Page

BASIC PROJECT INFORMATION																			
Project Name	680 Forward																		
Project Sponsor	Contra Costa Transportation Authority (CCTA) with Metropolitan Transportation Commission (MTC) and California Department of Transportation (Caltrans) as key partners.																		
Was an application for USDOT discretionary grant funding for this project submitted previously?	No																		
A project will be evaluated for eligibility for consideration for all three programs.	CCTA requests that 680 Forward be evaluated under all three funding programs; 1) INFRA, 2) Mega, and 3) Rural.																		
PROJECT COSTS (See Attachment C for detail)																			
MPDG Request Amount	Exact Amount in year-of-expenditure dollars: <u>\$ 394,880,000</u>																		
Estimated Other Federal funding (excl. MPDG)	Estimate in year-of-expenditure dollars: <u>\$ 22,104,000</u>																		
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Estimate in year-of-expenditure dollars, see Attachment C for details.																			
Future Eligible Project Cost	Estimate in year-of-expenditure dollars: <u>\$ 906,256,000</u>																		
Previously incurred project costs (if applicable)	Estimate in year-of-expenditure dollars: <u>\$ 38,180,000</u>																		
Total Project Cost (Sum of 'previous incurred' and 'future eligible')	Estimate in year-of-expenditure dollars: <u>\$ 944,436,000</u>																		

INFRA: Amount of Future Eligible Costs by Project Type	Project Type	Eligible Costs
	1 Highway or Bridge Project on National Highway Freight Network (NHFN)	N/A
	2 Highway or bridge on National Highway System	\$706,615,000
	3 Freight intermodal, rail, or freight	N/A
	4 Highway-railway grade or grade separation	N/A
	5 Wildlife Crossing	N/A
	6 International border crossing surface transportation project	N/A
	7 Marine highway corridor	N/A
	8 Highway, bridge, or freight project on the National Multimodal Freight Network	\$706,615,000
Mega: Amount of Future Eligible Costs by Project Type	Project Type	Eligible Costs
	1 Highway, bridge, or freight project on the National Multimodal Freight Network	\$706,615,000
	2 Highway or Bridge Project on National Highway Freight Network (NHFN)	N/A
	3 Highway or bridge on National Highway System	\$706,615,000
	4 Freight intermodal, rail, or freight	N/A
	5 Highway-railway grade or grade separation	N/A
	6 International border crossing surface transportation project	N/A
	7 Intercity passenger rail	N/A
	8 Public transportation project that is eligible under assistance under Chapter 53 of title 49	\$347,901,000
	9 Grouping, combination, program of interrelated connected, dependent projects	\$906,256,000
Rural: Amount of Future Eligible Costs by Project Type	Project Type	Eligible Costs
	1 Highway or Bridge Project on National Highway Performance Program	\$360,061,000
	2 Highway, bridge, or tunnel project eligible under Surface Transportation Block Grant	\$125,634,000
	3 Highway, bridge, or tunnel project eligible under Tribal Transportation Program	N/A
	4 Highway freight project eligible under National Highway Freight Program	N/A
	5 Highway safety improvement project, including a project to improve a high-risk rural road as defined by the Highway Safety Improvement Program	N/A
	6 Highway or bridge that provides/increases access to an agricultural, commercial, energy, or intermodal facility to improve economy	\$333,900,000
	7 Integrated mobility management system, a transportation demand management system, or on-demand mobility services	\$148,032,000

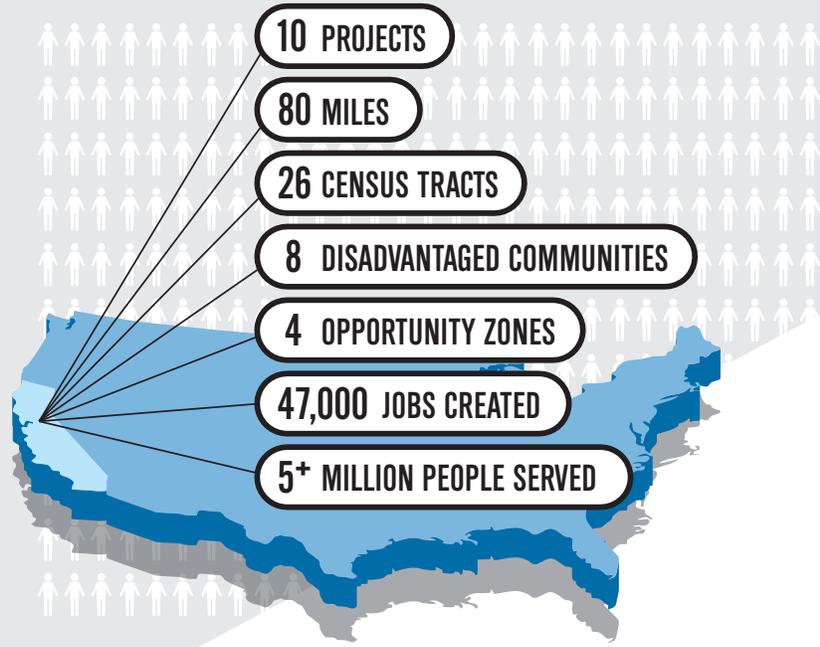
PROJECT LOCATION

State(s) in which project is located	California																																															
INFRA: Small or Large project	Large																																															
Urbanized Area in which project is located, if applicable	Contra Costa County: Congressional District 5, Representative Thompson Congressional District 11, Representative DeSaulnier Congressional District 15, Representative Swalwell																																															
Population of Urbanized Area (According to 2010 Census)	Population of Contra Costa County is 1,168,294 (These data were obtained from the California Department of Finance’s E-4: Population Estimates for Cities, Counties and State, https://dof.ca.gov/Forecasting/Demographics/Projections/)																																															
Is the project located (entirely or partially) in Area of Persistent Poverty or Historically Disadvantaged Community?	Yes. The project area traverses 26 census tracts, 8 (31%) of which are federally designated Areas of Persistent Poverty and Historically Disadvantaged Communities per the mapping tool provided by the USDOT at https://datahub.transportation.gov/stories/s/tsyd-k6ij . The census tracts are: 3150, 3270, 3240.02 3250, 3400.01, 3390.02, 3430.01, 3382.01																																															
Is the project located (entirely or partially) in Federal or USDOT designated areas	Yes. The project supports 4 federally designated Opportunity Zones in Pleasant Hill and Concord, California, per the USDOT link to the Esri database: 06013328000, 06013336101, 06013336202, 06013337200 The project is also included on the National Multimodal Freight Network, and The National Highway System.																																															
Is the project currently programmed in the:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="color: #0070c0;">680 Forward Projects</th> <th style="color: #0070c0;">TIP ID</th> <th style="color: #0070c0;">CTIPS ID</th> <th style="color: #0070c0;">RTP ID</th> </tr> </thead> <tbody> <tr> <td>Zero Emission Express Bus</td> <td>N/A</td> <td>N/A</td> <td>21-T12-122</td> </tr> <tr> <td>Part-Time Transit Lane (PTTL)</td> <td>CC-170061</td> <td>20600006503</td> <td>21-T12-122</td> </tr> <tr> <td>Shared Mobility Hubs (SMH)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Bike and Pedestrian Infrastructure (Iron Horse Trail Bike and Pedestrian Overcrossing and Gap Closure)</td> <td>CC-710014</td> <td>20600006233</td> <td>21-T08-060</td> </tr> <tr> <td>Express Lanes (I-680 NB Express Lane Completion)</td> <td>CC-170017</td> <td>20600006244</td> <td>21-T12-116</td> </tr> <tr> <td>I-680/SR-4 Interchange Improvements</td> <td>CC-010023</td> <td>20600002120</td> <td>21-T06-022</td> </tr> <tr> <td>Coordinated Adaptive Ramp Metering (CARM) (I-680 Advanced Technologies)</td> <td>CC-170062</td> <td>20600006504</td> <td>21-T07-057</td> </tr> <tr> <td>Highway Preservation and Rehabilitation (Caltrans SHOPP)</td> <td>VAR170004 - VAR170011</td> <td>N/A</td> <td>21-T01-006</td> </tr> <tr> <td>Automated Driving System (ADS)</td> <td>CC-190017</td> <td>20600006717</td> <td>21-T07-057</td> </tr> <tr> <td>Mobility-as-a-Service (MAAS)/Mobility on Demand (MOD)</td> <td>CC-190018</td> <td>20600006720</td> <td>21-T03-009</td> </tr> </tbody> </table>				680 Forward Projects	TIP ID	CTIPS ID	RTP ID	Zero Emission Express Bus	N/A	N/A	21-T12-122	Part-Time Transit Lane (PTTL)	CC-170061	20600006503	21-T12-122	Shared Mobility Hubs (SMH)				Bike and Pedestrian Infrastructure (Iron Horse Trail Bike and Pedestrian Overcrossing and Gap Closure)	CC-710014	20600006233	21-T08-060	Express Lanes (I-680 NB Express Lane Completion)	CC-170017	20600006244	21-T12-116	I-680/SR-4 Interchange Improvements	CC-010023	20600002120	21-T06-022	Coordinated Adaptive Ramp Metering (CARM) (I-680 Advanced Technologies)	CC-170062	20600006504	21-T07-057	Highway Preservation and Rehabilitation (Caltrans SHOPP)	VAR170004 - VAR170011	N/A	21-T01-006	Automated Driving System (ADS)	CC-190017	20600006717	21-T07-057	Mobility-as-a-Service (MAAS)/Mobility on Demand (MOD)	CC-190018	20600006720	21-T03-009
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An easily accessible *680 Forward* MPDG webpage has been created that includes application attachments and resources. Access the *680 Forward* Resource webpage [here](#).

WHY INVEST IN 680 FORWARD?

There is no single solution that solves the region's growing transportation needs. The 680 Forward program harnesses the latest technologies in traffic and congestion management, multimodal transportation options, autonomous vehicles, mobile applications, and market research to improve mobility for Interstate 680, a backbone corridor for the region. **INVESTING IN SMART, INTEGRATED, HOLISTIC, AND INNOVATIVE TRANSPORTATION SOLUTIONS IS THE RIGHT CHOICE.**



680 FORWARD will benefit society.



\$3.1B

Travel time savings



\$1.2B

Safety savings



\$38M

Emissions savings



\$261M

Equity benefits



\$106M

Operations and maintenance savings

TOTAL PROGRAM COST

\$944,436,000*

TOTAL FUNDING REQUEST

\$394,880,000*

REQUESTED FEDERAL MEGA FUNDING MATCH

42%



680 FORWARD meets all grant criteria.

Selection Criteria	Public Transit		Shared and Active Transportation		Highway Congestion Relief			Innovative Technology		
	Zero-Emission Express Bus	Part-Time Transit Lanes	Shared Mobility Hubs	Bike and Pedestrian Infrastructure	Express Lanes	I-680/SR-4 Interchange Improvements	Highway Preservation and Rehabilitation	Coordinated Adaptive Ramp Metering	Mobility-as-a-Service/Mobility on Demand	Automated Driving Systems
Increases safety	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Facilitates a state of good repair	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Generates positive economic impacts	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Supports climate resiliency and the environment	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Improves equity, mobility, and quality of life	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Delivers innovative solutions	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

✔ Meets grant criteria ✔ Exceeds grant criteria

*Dollar amounts are approximate. Please refer to the application for exact amounts.

I | Program Narrative

Interstate 680 (I-680) is a backbone corridor for Contra Costa County which boasts significant economic activity with a gross domestic product (GDP) of \$77 billion in 2020. The county’s geographic positioning —central to the nine-county San Francisco Bay Area region and a broader megaregion that is the leader in innovation nationally, with a GDP of \$1.2 trillion, makes it an important regional crossroads. In particular, the I-680 corridor plays a pivotal part in the movement of people and goods into, out of, and within the county, northern California and beyond (Figure 1).

I-680 provides a critical link for the region’s freight and commute connections to the Central Valley, Silicon Valley, as well as key ports, international airports and business centers in San Francisco, Oakland, and San Jose (Figure 1). Thousands of homes and businesses rely on this corridor for day-to-day travel, and increased congestion has led to unacceptable delays. Significant delays and inconsistent flow of traffic along the corridor are expected to continue in the future.



Figure 1: See Resource Page for larger version of map.

CONNECT + MODERNIZE TO ADDRESS TRANSPORTATION CHALLENGES

Contra Costa Transportation Authority (CCTA) has taken the lead role and joined forces with state, regional and local partners to develop the *680 Forward* program, a visionary, holistic, multi-jurisdictional corridor wide approach that combines transit improvements, active transportation projects, congestion relief strategies and innovative technologies that work in harmony to improve safety, smooth traffic, and increase access for all users of the I-680 Corridor.

VISION + GOALS OF 680 FORWARD - A CONNECTED CORRIDOR

- ➔ **SAFETY** | Improve safety and operational efficiencies with coordinated adaptive ramp metering technology and reconstructing substandard interchange ramps and connectors.
- ➔ **CLIMATE + SUSTAINABILITY** | Increasing access to reliable transit, switching to alternative fueling, and improving non-motorized transportation options to positively impact climate change.
- ➔ **ECONOMIC STRENGTH + GLOBAL COMPETITIVENESS** | Increase efficiency and operations of multimodal freight corridor and improved access to employment centers and vital services through express lanes, intelligent transportation systems, active traffic management and strategic upgrades to existing infrastructure.
- ➔ **EQUITY + QUALITY OF LIFE** | Investing in transit, improving bicycle and pedestrian infrastructure and connections, building mobility hubs, and investing in affordable transit will create a more socially equitable community and give disadvantaged community members more transportation options.
- ➔ **STATE OF GOOD REPAIR** | Improve state of good repair and sustainability through traffic operating systems, monitoring devices, proactive system preservation, upgrades to bridge structures, and cost effective multi-jurisdictional collaborations.
- ➔ **INNOVATION** | Modernize existing infrastructure using the latest innovations in transportation technology. Collect, analyze, and share data for development of the system’s safety and performance measures.



Figure 2: See Resource Page for larger version of map.

The [680 Forward](#) program consists of 10 projects that will, as a whole and individually, have a significant impact on mobility and goods movement in the region due to the geographic significance of the Corridor meeting a key statutory selection requirement to generate national or regional economic, mobility or safety benefits ([Figure 2](#)). As discussed below and in Section 8, Program Requirements, each project meets all statutory selection requirements including cost effectiveness, having secure and stable matching funds and the ability of the lead agencies to complete the project, as well as accomplishing one or more of the national goals of safety, congestion reduction, system reliability, economic vitality, and environmental sustainability. The program has been designated as the region’s priority project for the United States Department of Transportation’s (USDOT) Mega program and will be delivered in partnership with the California Department of Transportation (Caltrans) and the Metropolitan Transportation Commission (MTC), the region’s Metropolitan Planning Organization (MPO).

680 FORWARD PROJECTS



1. ZERO EMISSION EXPRESS BUS | New Zero Emission Express Bus Service

between Dublin/Pleasanton Bay Area Rapid Transit (BART) Station and Martinez Amtrak Station is a key element of *680 Forward*. The express service will have limited stops at Bollinger Canyon Road Park-and-Ride in San Ramon, Walnut Creek BART, and Martinez Amtrak stations, with a stop at the Pleasanton Altamont Corridor Express (ACE) train station during peak periods. This express bus service will close the gap identified in the 2018 State Rail Plan, providing vital connections throughout the region and megaregion. The service will be operated by County Connection and Livermore Amador Valley Transit Authority (LAVTA) with a hydrogen bus fleet that requires hydrogen fueling stations and maintenance facilities. The project will have a regional impact and will address the need for passengers traveling from disadvantaged and low-income communities along the I-680 corridor and improve connections to the greater Bay Area with direct connections to 56 different transit routes

and 16 different operators. The new express bus service will reduce barriers to transit, improve mobility, and reduce Greenhouse Gas (GHG) emissions. The project addresses several deterrents to commuters taking transit including ease of transfers, reliability, fare integration and comfort. The project is the first in the region to include close coordination between multiple transit operators with supporting improvements such as the Shared Mobility Hubs and Part-Time Transit Lane projects (See fact sheet [here](#)). Surveys and ridership data that will be collected can be used to replicate the successes of this program on a regional and national level.

2. PART-TIME TRANSIT LANE | The **Part-Time Transit Lane (PTTL)** project will enable transit buses to travel on the right shoulder or transit-only lanes (where possible) to bypass freeway congestion during periods of heavy traffic when corridor speed is below 35 mph. This will not only help reduce congestion on the freeway, but it will also make transit more reliable. PTTLs are proposed between Bollinger Canyon Road in San Ramon and the Walnut Creek BART station, with potential future expansion. A unique element of the project is the testing and training that will be conducted at the [GoMentum Station](#) testing facility before launch of PTTL operations and during the deployment phase (See Section 5.3 Economic Impacts, Freight Movement and Job Creation for additional information on GoMentum testing facility). Prototype PTTL roadway infrastructure will be constructed at GoMentum Station to facilitate training scenarios enabling practical behind-the-wheel training for bus drivers to gain experience in operating advanced technology devices that will be installed on the buses and other operational protocols. With limited PTTL projects deployed in California and the United States, feedback from the drivers, along with the data that will be collected on service reliability, accidents and ridership will be beneficial to improve and replicate PTTL programs on a regional and national level. More on the I-680 PTTL can be found [here](#).



3. SHARED MOBILITY HUBS WITH MICROMOBILITY AND CHARGING INFRASTRUCTURE |

The project will include **three Shared Mobility Hubs (SMH)** at the Zero Emission Express Bus stops along I-680 at Bollinger Canyon Road in San Ramon, the Walnut Creek BART Station, and the Martinez Amtrak Station. SMHs are places of connectivity where different travel options – biking, transit, carpooling, van pooling, ride-sourcing, and micro transit – come together. In addition to providing an integrated suite of mobility services, the hubs may offer a variety of amenities such as food trucks, package delivery, enhanced waiting areas, device charging, and wi-fi. The first mile/last mile connectivity provided by these three SMHs will promote the regional impacts of the corridor transit options and help to make the Zero Emission Express Bus service successful. This coordinated suite of transit alternatives will be developed following the Mobility Hub Implementation Playbook developed by MTC and is a model that can be replicated throughout the region. More on SHMs can be found [here](#).



4. BIKE AND PEDESTRIAN IMPROVEMENTS ALONG THE IRON HORSE TRAIL |

Iron Horse Trail (IHT) is a 32-mile multijurisdictional regional trail that parallels I-680 and connects the communities along I-680. **The IHT Pedestrian Overcrossings (POCs) project** will construct two pedestrian overcrossings, at Crow Canyon Road and Bollinger Canyon Road, which are major arterials in San Ramon that connect to Bishop Ranch Business Park, and retail/dining centers. The POCs will enhance safety by eliminating the current at-grade vehicle-bike/pedestrian conflicts and reduce emissions by removing vehicle stop-start from 470 daily crossings. The new POCs will support active transportation in an area with 1 million square feet of retail space, 36,000 jobs, four schools, a transit center, medical offices, a regional hospital, library, and planned high density residential development. Without the POC project, the crosswalk actuations are expected to increase significantly with future mixed-use housing developments in the project’s vicinity. Access project information [here](#).

Currently, I-680 is a barrier to connect the IHT and Contra Costa Canal Trail (CCCT), which are key regional trails in the County. As a **priority project of the bicycle community, the IHT/CCCT Gap Closure project** will connect these two trails to provide for a more cohesive bike network for the communities east and west of the I-680 in Central Contra Costa County. These mixed-use trail projects complete critical links in the bike and pedestrian network and provide low-cost travel options connecting disadvantaged communities and areas of persistent poverty to well-paying jobs in the county. These bike and pedestrian improvements can be used as a blueprint for developing a multi-use parallel facility to promote alternative transportation options and infill land use development.



5. EXPRESS LANES | The I-680 Northbound Express Lane Completion (Phase 1) project

consists of a new northbound (NB) express lane from north of State Route 24 (SR-24) to SR-242. The project will also convert the existing High-Occupancy Vehicle (HOV) lane that runs from SR-242 to the Benicia-Martinez Bridge Toll Plaza to an express lane. CCTA, in partnership with MTC and Caltrans, has started preliminary design and environmental clearance phase. Additionally, the project will construct a braided ramp system between North Main Street and Treat Boulevard interchanges in Walnut Creek to address an existing bottleneck at this location. The goal of the project is to complete the I-680 express lane network through Contra Costa County to improve travel time for those who travel by bus, carpool, vanpool, or motorcycle, and solo drivers who choose to pay to use the express lane. The project will also improve mobility and freight movement throughout the region. I-680 is a key corridor in the regional Bay Area Express Lane Network, which is planned to grow from 155 miles today to 615 directional miles by 2050¹. Regionwide, 66 miles of express lanes are currently under construction. This extensive network of managed lanes is an example of multi-agency coordination that can be replicated on a national level. More on the project [here](#).

6. I-680/SR-4 INTERCHANGE IMPROVEMENTS | The I-680/SR-4 Interchange Improvements project

will address operational deficiencies of the existing interchange generating safety, mobility, and regional economic benefits. The construction of an initial phase of the project was completed in April 2022. The funding requested will construct a two-lane flyover direct connector from NB I-680 to Westbound (WB) SR-4, construct auxiliary lanes, extend the Southbound (SB) I-680 collector-distributor ramp and install ramp metering. The operational improvements will increase safety by eliminating short weaving and merging sections, which will also reduce traffic congestion and delays. The interchange is a gateway to multiple freight corridors and is a critical link for Amazon, UPS and FedEx distribution facilities serving the region. Access the project fact sheet [here](#).

7. HIGHWAY PRESERVATION AND REHABILITATION | The Highway Preservation and Rehabilitation project

will rehabilitate pavement; upgrade guardrails; upgrade drainage systems; install lighting, traffic devices, closed-circuit TV (CCTV) and fiber; construct concrete barriers; and upgrade facilities to Americans with Disabilities Act (ADA) standards. These projects are all included in the 2022 Caltrans State Highway Operations and Protection Program (SHOPP). Projects in the 2022 SHOPP were developed under an asset management framework established through the California Transportation Asset Management Plan (TAMP). These Corridor rehabilitation projects will be designed and constructed using best management practices focused on sustainability, innovation and resiliency and will incorporate advanced construction technologies and material recycling techniques. Where possible the project will be coordinated with other corridor projects to maximize cost effectiveness and economies of scale and reduce construction impacts for the traveling public. More on the project [here](#).

¹ Bay Area Express Lanes Strategic Plan, April 2021



8. COORDINATED ADAPTIVE RAMP METERING | The project will construct **Coordinated Adaptive Ramp Metering (CARM)** (Segment 1) on NB I-680 between Alcosta Boulevard in San Ramon and Olympic Boulevard in Walnut Creek, along with ramp metering implementation in both directions of I-680 in Contra Costa to proactively manage recurrent

and non-recurrent congestion. CARM is the latest ramp metering technology that uses real-time traffic information to dynamically adjust ramp meters in real-time. The project will supplement and upgrade the existing Caltrans Traffic Operations Systems by adding traffic detection, domain awareness, communication bandwidth, and necessary ramp modifications. This will increase vehicle throughput, smooth travel speeds, reduce collisions, and improve travel time reliability, which is critical for goods movement. Active monitoring, data collection and analysis will assist in the refinement of the system operational parameters to maximize the benefits of the system. Data on system operations and impacts on safety and other performance measures will be made available for the development of similar projects on other freeways throughout the state. The advanced ramp metering and traffic operations systems will provide a model that can be expanded throughout the region for active transportation management and monitoring. More on the project [here](#).



9. MOBILITY ON DEMAND WITH A USER-FRIENDLY TRIP-PLANNING APPLICATION | The **Mobility-as-a-Service (MAAS)** project is a unique combination of public and private transportation services that will provide personalized mobility options

based on traveler needs. **At the core of MAAS is a Mobility on Demand (MOD) application (app)** currently under development, which will provide real-time, multimodal trip planning based on origin and destination. This app provides a variety of travel options based on a user's desire for the fastest, greenest, or most cost-effective trip. The app will also include a uniform payment system and incentives based on time of day and mode choice in an effort to reward select travel behaviors. The application is a model that can be replicated for use throughout the county and the region, combining public and private transportation services for customized mobility. For more information regarding MAAS/MOD, access the project fact sheet [here](#).



10. AUTOMATED DRIVING SYSTEMS | The **Automated Driving Systems (ADS)**

project is a set of three innovative deployments that will deliver greater mobility access and choices to the transportation-challenged and underserved communities while preparing for the future of connected and autonomous vehicle (CAV) and other mobility options such as shared autonomous vehicles (SAVs) for all corridor residents. These pilot projects will address current mobility needs, with sustainable zero-emissions vehicles, while advancing standards for ADS across the country. CCTA and project partners will collect essential ADS data on performance and safety measures at [GoMentum Station](#) testing facility and throughout the deployments that will support federal rulemaking. The use of SAVs for first mile/last mile connections is a model that can be replicated throughout the region. Access the project website [here](#).

EFFORTS AND EXPENDITURES TO DATE | *680 Forward* has been underway since 2018 and there are already significant matching investments from the local, regional, state, federal, and private technology sectors as shown in the detailed Program funding plan in Appendix C.

Similarly, planning documents, studies, and projects have been undertaken and completed and demonstrate the need for the I-680 improvements. Applicable supporting documentation is included in Attachment E, Resource Documents. A total of \$38,180,000 in matching funds have been expended to date of the total Program cost of \$944,436,000 that will be completed by early 2029. For the Program schedule see Section 7, Project Readiness.

CCTA and state and regional partners have long recognized the importance of this corridor. Consistent with CCTA’s adopted Strategic Plan and other fund programming documents, over \$300,000,000 from local, regional, state, and federal fund sources has been invested on the I-680 corridor over the last 25 years.

680 Forward is a top Bay Area priority for MPDG funds, having received regional endorsement by MTC, which identified a suite of regionally significant projects to help advance the Bay Area’s ambitious [Plan Bay Area 2050](#) goals to combat the climate crisis; deliver a well-connected, safe, and multimodal transportation network; and improve access to opportunity for all Bay Area residents.

2 | Project Location

Contra Costa County is central to the Bay Area megaregion with an extensive transportation network of regional and national significance – including I-80, I-680 and several state routes: BART service, heavy passenger (Amtrak and Capitol Corridor) and freight rail, ferry service, various bus operations, and the Port of Richmond. I-680 is Contra Costa’s backbone corridor and on the Bay Area’s Multimodal highway network (Figure 1) - making it a critical component of the regions goods movement and commute shed - linking jobs in San Francisco, Oakland, and Silicon Valley with residences lying to the east in Contra Costa County, the Central Valley, and beyond. It extends south to Silicon Valley and north to Solano County, and provides access to scenic recreational areas, popular retail hubs, three colleges, four hospitals, including the County’s Trauma Center, a seniors-only community of over 9,000 residents, thriving business centers such as 585-acre Bishop Ranch Business Park.

The IHT and CCCT that parallel the I-680 corridor are essential to the County’s active transportation network for commute and recreational use. The IHT is a 32-mile regional connector that connects major job centers, neighborhood schools, shopping centers, and transit hubs. The IHT corridor lies within 3 miles of comfortable biking distance for over 425,000 residents, which is conducive to encouraging mode shift with the proposed program improvements. From counts conducted by East Bay Regional Parks District in 2017 at limited, isolated locations, the trail is used by over 900 users per day at key destinations. This number is expected to be higher during the current pandemic.



Figure 1 -Larger View

The Program aims to deliver greater access to major job centers and transit hubs along I-680 in San Ramon, Walnut Creek, and Concord for those traveling from transportation-challenged and underserved communities, including those in east Contra Costa County and San Joaquin County (Central Valley) along SR-4. The location contains both urban and rural areas, including Mt. Diablo State Park and dozens of regional parks, and qualifies as an ideal choice for a model program of projects that could be expanded and scaled. See Section 5.3 and 5.5 for expanded information on the characteristics of the Program location related to economic development and equitable access to reduce barriers to opportunity.

Contra Costa County is home to over 1 million people with the population expected to grow 32% by 2055. More than 70% of households rely on personal automobiles, resulting in heavy congestion, unreliable travel times due to delays, and negative environmental impacts.

Based on data from the US Census Bureau, Contra Costa County has the longest commute time for all counties in California and ranks as the 33rd longest commute time in the nation. According to MTC, I-680 NB from Danville to Pleasant Hill is the 10th most congested corridor in the entire region as of 2017. During 2018, Caltrans data shows I-680 with over 1.3 million vehicle hours of delay, with segments of I-680 averaging daily traffic totals near 150,000 vehicles. (See Appendix F, Bay Area Economic Institute Report – May 2022).

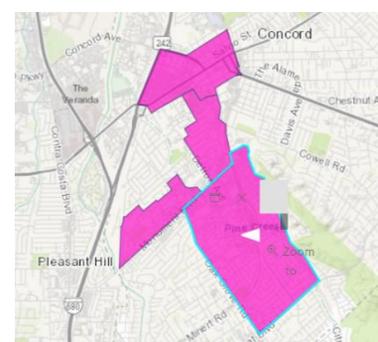
Areas Of Persistent Poverty, Disadvantaged Communities, and Opportunity Zone Benefits |

The Program area traverses 26 census tracts, eight (31%) of which are federally designated Areas of Persistent Poverty /Historically Disadvantaged Communities (Shown in orange/light orange areas in Figure 3). The Program supports four federally designated Opportunity Zones in Pleasant Hill and Concord, also known as the “Monument Corridor”; a Bay Area Community of Concern and Priority Development Area (PDA), shown in Figure 4. In 2020, MTC funded a Community-Based Transportation Planning (CBTP) effort for these priority communities in line with [Lifeline Transportation Network](#) and environmental justice initiatives to address the challenges and identify strategies to meet the mobility and accessibility needs of minority, low income and senior residents, and individuals with disabilities. Strategies identified in the Monument Corridor CBTP² include bicycle and pedestrian improvements and initiatives to enhance access to transit and encourage multimodal travel options and shared mobility. The low-income communities identified as tracts 6013320001 and 60133160000 are both in the top 40th percentile of population below the poverty rate as determined by CalEnviroScreen, which defines these tracts as twice the federal poverty rate due to the cost of living in California.

Figure 3: Disadvantaged Communities Map
Census Tracts: 3150, 3270, 3240.02, 3250, 3400.01, 3390.02, 3430.01, 3382.01



Figure 4: Federally Designated Opportunity Zones along the Monument Corridor in Concord:
Esri database: 06013328000, 06013336101, 06013336202, 06013337200.



² Monument Corridor Community Based Transportation Plan, Nelson Nygaard (February 2020).

3 | Project Parties

Contra Costa Transportation Authority | Lead Applicant | [CCTA](#) satisfies the applicant eligibility requirements in the 2022 MPDG/Mega Guidelines. As the lead applicant, CCTA will be responsible and accountable for the expenditure of MPDG/Mega funds and, if awarded, will comply with all relevant federal and state laws, regulations, policies, and procedures. CCTA is in compliance with all applicable registration and labor requirements, including the payment of prevailing wage rates on applicable projects as per California labor laws. CCTA has successfully leveraged other local, regional, and federal funding sources to complement the half-cent sales tax that it invests in countywide local transportation infrastructure and programs. CCTA has long exemplified best practices in fiscal management of taxpayer funds and its track-record of prudent fiscal management has allowed the agency to accelerate 25 years’ worth of planned projects and programs, totaling over \$2.8 billion, in just 12 years. A Technical Advisory Committee (TAC) and Policy Advisory Committee (PAC) currently oversee the delivery of a suite of innovative projects along I-680 known as “*Innovate 680*”, in coordination with the cities along the corridor, transit operators, Caltrans, California Highway Patrol (CHP), and MTC. This established partnership will play a key role in overseeing the *680 Forward* improvements.

KEY PARTNERS

Partner	Role
Metropolitan Transportation Commission (MTC)	Key Regional Partner: MTC serves the nine-county San Francisco Bay Area and is the region’s MPO and multimodal planning and funding agency. MTC’s Bay Area Toll Authority (BATA) manages the Bay Area’s FasTrak® electronic toll system and its Bay Area Infrastructure Financial Authority (BAIFA) operates Bay Area Express Lanes, including express lanes on I-680 in Contra Costa County. MTC has taken an active role in this partnership because the corridor-wide modernization strategy of <i>680 Forward</i> can be replicated to benefit the region’s transportation network to support Plan Bay Area 2050, the region’s long-range plan, to make the region affordable, connected, diverse, healthy, and vibrant.
California Department of Transportation (Caltrans)	Key State Partner: Caltrans has jurisdiction over the program area and as such has been a strong stakeholder and program partner. In addition to developing Statewide guidelines for PTTL projects, Caltrans is leading a comprehensive multimodal corridor plan for I-680, collaborating on multiple program elements, and taking an active role on the many I-680 advisory committees.
Transit Agencies: County Connection LAVTA BART	County Connection and LAVTA are public transit operators for their respective service areas, providing fixed-route bus and ADA paratransit services. They will be the operators of the Zero Emission Express Bus. BART provides rail transit service and is a partner on the MAAS/MOD project. Additionally, all of these transit agencies are direct recipients of federal and State funds and will comply with all relevant laws, policies, and procedures.
Local Jurisdictions (680 corridor)	Local cities and jurisdictions along the I-680 corridor, law enforcement, emergency services, and parks departments will contribute funding, assist with project performance and implementation on applicable project elements. They have been active participants in the I-680 advisory committees.
Private Partners	Amazon Web Services (AWS), Verizon, Nissan, Telegra are providing safe driving ADS technologies, dynamic high definition (HD) mapping and data collection, 5G communication, and data management. GoMentum Station is providing a controlled testing environment for CAV, SAV, and PTTL testing and is currently operated by the Automobile Association of America Northern California, Nevada, and Utah (AAA NCNU). Miles, Carzac, CycleHop, Bird, Gig Carshare are private partners on the MAAS/MOD app. Bishop Ranch employment center is also a private partner on development of SMHs along the I-680 corridor.
Academia	University of California, Berkeley Transportation Sustainability Research Center (TSRC) and Partners for Advanced Transportation Technology (PATH) are assisting with data management plan and program evaluation metrics.

Letters of support for the *680 Forward* program of projects are included in [Attachment D](#).

4 | Grant Funds, Sources and Uses of Project Funding

- MPDG Request Amount: \$ 394,880,000 | 42% total project cost
- Other Federal Funding: \$ 22,104,000 (STP, CMAQ, ATCMTD, ADS)
- Non-Federal Funding: \$ 489,272,000
- Prior Non-Participating: \$ 38,180,000
- Total 680 Forward: \$ 944,436,000

TABLE 1: COST/FUNDING (YOES\$ IN THOUSANDS)

680 Forward Project	Total Project Cost	Funding Match	Mega Request	Participating Costs	Prior Non-Participating Expenditure
Zero Emission Express Bus	\$55,464,000	\$6,644,000	\$48,820,000	\$55,464,000	\$0
Part-Time Transit Lane	\$25,000,000	\$7,900,000	\$16,600,000	\$24,500,000	\$500,000
Shared Mobility Hubs	\$50,065,000	\$4,295,000	\$45,230,000	\$49,525,000	\$540,000
Bike/Pedestrian Infrastructure	\$79,743,000	\$22,999,000	\$53,110,000	\$76,109,000	\$3,634,000
Express Lanes	\$213,380,000	\$100,679,000	\$99,190,000	\$199,869,000	\$13,511,000
I-680/SR-4 IC Improvements	\$338,900,000	\$220,500,000	\$113,400,000	\$333,900,000	\$5,000,000
Coordinated Adaptive Ramp Metering	\$123,924,000	\$116,515,000	\$5,670,000	\$122,185,000	\$1,739,000
Highway Preservation/Rehabilitation	\$0	\$0	\$0	\$0	\$0
Automated Driving Systems	\$32,843,000	\$20,591,000	\$5,570,000	\$26,161,000	\$6,682,000
MAAS/ MOD	\$25,117,000	\$11,253,000	\$7,290,000	\$18,543,000	\$6,574,000
680 Forward Total	\$944,436,000	\$511,376,000	\$394,880,000	\$906,256,000	\$38,180,000

With \$511,376,000 in state, other federal, regional, and local funding already committed, the project will fulfill the Mega grant goals through the generation of regional economic, mobility and safety benefits and will be consistent with USDOT’s priorities of delivering transportation projects that reduce vehicle miles traveled (VMT), reduce GHG emissions and criteria air pollutants, and increase equity and access to historically disadvantaged and neglected communities. Each project has an independent utility and is highly scalable based on available funding. A funding plan detailing Federal Funding Sources and any required non-Federal match for future eligible project costs is included in [Attachment C](#).

5 | Selection Criteria

A Benefit-Cost Analysis (BCA) was conducted to analyze the 680 Forward program of projects for the period from 2021 to 2057. **680 Forward received a BCA score of 6.09**, see Section 6 of the Narrative and [Attachment A, BCA Memorandum](#) for detailed analysis. The following summarizes each MPDG/Mega grant selection criteria and the qualitative and quantitative benefits for each project.



5.1. Safety | \$1.2 billion in accident savings will be achieved through a combination of innovative transportation technologies and traditional civil roadway infrastructure improvements that will modernize corridor operations, provide new bicycle and pedestrian safety improvements, and secure access to transit (See [Table 2](#)).

TABLE 2: SAFETY IMPROVEMENTS

Project	Safety Feature(s) + Benefit(s)
Zero Emission Express Bus	New express bus service to expand transit alternatives and encourage mode shift will result in fewer vehicles on the road and fewer collisions and incidents throughout the corridor. It is anticipated the project will result in savings of 35,000 VMT a day and a reduction in accidents equivalent to 3 fatal collisions and 12 serious injuries over the 30-year project life. Ridership will be further enhanced by PPTL and SMHs.
Part-Time Transit Lane	
Shared Mobility Hubs	Provide access to safe multimodal hubs. Pedestrian crosswalk improvements result in 40% reduction in bike/pedestrian related accidents and separated bicycle facilities result in an 81% decrease in bicycle related accidents. Construction of well-lit shelters and enhanced lighting throughout the facility will provide additional security.
IHT Pedestrian Overcrossings IHT-CCCT Gap Closure	The new overcrossings will provide separation for bicycle and pedestrian (bike/ped) users from traffic, which significantly increases bike/ped access and safety. The project results in 100% reduction of 6 bike/ped related incidents (over 5 years) at the POC locations and a 79% reduction of 10 bike/ped related incidents (over 5 years) at the IHT-CCCT gap closure project area. Currently, an average of 470 daily crossings occur at the two locations combined.
I-680 NB Express Lane	New braided ramps configuration to address and eliminate the weaving conflict between the Lawrence Way on-ramp and the Treat Boulevard off-ramp and improve safety of trucks entering the truck scale at the Treat Boulevard exit. Removes a short auxiliary lane and weaving section and eliminates a key bottleneck in the corridor resulting in 38% reduction in angle and sideswipe collisions and a 39% reduction in rear-end collisions (reduction of 1 fatal, 271 injury, and 271 property damage only collisions). Replace concrete barrier Type 50 with Type 60G will protect drivers from opposing headlights and improve driver comfort where the median width is non-standard. Improve safety and driver comfort. Upgrade guardrail, enhanced pavement delineation and lighting will add to safety benefits.
I-680/SR-4 Interchange	Improvements will improve interchange operations resulting in a 45% reduction in collisions where loop ramp is replaced with a direct flyover; 36% reduction of rear-end crashes where ramp meter is installed. 22% reduction in rear-end angle and sideswipe intersections with auxiliary lane; 30% reduction of all crashes on ramp (when loop replaced by short ramp); and a 17% reduction at Blum Road and Pacheco Boulevard Intersection. This is equivalent to a total reduction in 3 fatal, 93 injury and 171 property damage only collisions over 30 years.
Coordinated Adaptive Ramp Metering	Installing/upgrading ramp metering will break up the platoons of vehicles entering the freeway, minimize speed changes, and eliminate weaving to smooth traffic flow and reduce potential collisions. Implementation of CARM will result in an 8% reduction of all incidents on freeway, translating to a reduction in 2 fatal and 136 injury related collisions.
Highway Preservation and Rehabilitation	Pavement rehabilitation, upgraded lighting, concrete barriers, and addition of fiber optics built per new safety standards will result in 29% reduction in all incidents (dry conditions) due to improvements in pavement friction, 50% reduction in pedestrian related incidents with ADA improvements, 50% reduction in collisions in wet conditions with the storm water mitigation. The analysis indicates an overall reduction of 61 fatal and 3,254 injury collisions.
Automated Driving System	Testing for safety of future AV and SAV deployments to help inform federal policy and rulemaking in regard to safety performance measures of ADS. AVs reduce collisions due to human error providing safety benefits. It is estimated the project will result in 10% mode shift on I-680 (2-mile stretch); 19% modal shift in the Rossmoor area, 32% modal shift from the Valley hospital area - indicating an overall reduction of 29 fatal, 695 injury, and 2,011 property damage only collisions.
Mobility-as-a-Service/Mobility On Demand	Safety benefits are achieved through an 8-10% mode shift reduction as travelers switch from SOVs to transit or alternative modes of travel through the use of the multimodal trip planning app. Reduction in collisions associated with human error when people shift away from use of personal vehicles. Over the life of the project, it is estimated that collisions will be reduced by 7 injury and 15 property damage only collisions (See Attachment A for details).

In addition to the civil infrastructure and innovative operational improvements on I-680, the completion of the express lanes throughout the corridor will result in a fully monitored, managed lane network for over 25 miles of I-680 through Contra Costa County. The improved traffic monitoring from CARM and corridor incident management plan will facilitate quicker response to incidents and expedite access for emergency vehicles. The use of new changeable message signs to provide real-time traffic conditions and accident warning also minimizes secondary accidents. BAIFA, who operates the [Bay Area Express Lanes network](#) has executed a Traffic Incident Management Plan with Caltrans that defines the roles and responsibilities and communication channels involved in managing traffic incidents. Active incident management and coordination with the CHP further improves the safety protocols for the corridor.



5.2. State of Good Repair | \$106 million in maintenance savings resulting from pavement rehabilitation and additional implementation of safety elements including upgrades to guardrails, constructing concrete barriers, and upgrading lighting. The project will install new fiber optics cables and will be connected to new traffic management system elements throughout the corridor, providing the backbone communications system for increased monitoring and traffic management.

Highway Preservation and Rehabilitation | These projects are all included in the 2022 Caltrans SHOPP. The SHOPP is a performance-driven project portfolio built entirely by the principles of asset management and established through the TAMP. The projects will be designed and constructed using best management practices focused on sustainability, innovation, and resiliency, and will incorporate advanced construction technologies and material recycling techniques – resulting in a highway system that is more reliable and safer for all users. Incorporating recycled materials into the asphalt and concrete mixes will extend the life of the pavement and reduce the emissions generated in manufacturing the materials. Recycling pavement on the job site minimizes GHG emissions from trucking materials to and from the job site and eliminates waste.

Operations and Maintenance | Planning, funding and actively managing the operational elements of the program will require a coordinated effort between the various project partners. The program partners have developed plans to secure operations funds and execute necessary agreements to maintain the facilities for each program element. Management of the corridor strategies are guided through a TAC and a PAC with representation from the participating partners. (See **Table 3**)

TABLE 3: STATE OF GOOD REPAIR OPERATIONS AND MAINTENANCE

680 Forward Project	Operations Lead	Operations Funding
Zero Emission Express Bus	Transit Operator	Existing transit funding*
Part-Time Transit Lane	Transit Operator	Existing transit funding*
Shared Mobility Hubs	Public owner of ROW (state/local/transit operator)	Secured local/state funding
Bike/Ped Overcrossing and Gap Closure	Public owner of ROW (state/local)	Secured local/state funding
Express Lanes	BAIFA	Toll Revenue
I-680/SR-4 Interchange Improvements	Caltrans	SHOPP
Coordinated Adaptive Ramp Metering	Caltrans	SHOPP
Highway Preservation and Rehabilitation	Caltrans	SHOPP
Automated Driving Systems	CCTA	Secured Grant Funds**
Mobility-as-a-Service/Mobility on Demand	CCTA	Secured Grant Funds**

* Existing transit funding is sourced from SB1 funding - State Transit Assistance (STA) Program and State of Good Repair (SGR) Program

** See Attachment C for detailed funding plan

CCTA and Caltrans are in discussion over the operations and maintenance of CARM, including a Decision Support System and a county data center to support other advanced freeway traffic management systems. The express lanes operations will be managed by BAIFA through an existing cooperative agreement with Caltrans. Caltrans will be responsible for operations and maintenance for all traffic management equipment including cameras, ramp meters and supporting equipment. Interagency agreements formalizing these operational responsibilities will be executed prior to the completion of the project.



5.3. Economic Impacts, Freight Movement and Job Creation |

\$3.1 Billion in travel times savings to help foster regional economic growth and development, support freight and goods movement, and encourage job creation. All work will be completed in compliance with Buy America.

Population and Job Growth | The COVID-19 pandemic has made mobility and innovation investments in I-680 even more important, as housing and work location preferences have shifted to the eastern part of the Bay Area away from the San Francisco metropolitan area. During 2020, Contra Costa County was the only county in the nine-county Bay Area to grow its population—now nearing 1.2 million.

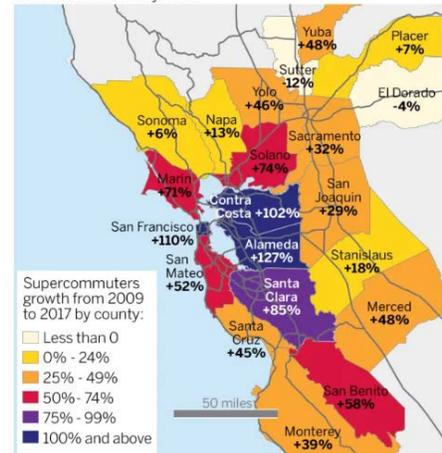
While the cities along the corridor have significant economic activity that is enabled by the connectivity provided by I-680, their future growth depends on efficient travel through the corridor. Contra Costa County is projected to add 168,000 jobs by 2055, a 41% increase from the 400,000 jobs countywide in 2018 with 60% of that projected employment growth situated along the I-680 corridor ³.

As the county continues to grow its population and economic centers, the Program will provide residents and workers with more options for their trips (Figure 5). According to a recent resident survey, fewer than half of all trips in the corridor were multimodal, and 70% of respondents said their primary mode for trips was an SOV—both numbers highlight the opportunity for increased efficiency.

Goods Movement Corridor and Significant Regional and National Improvements to support economic productivity | The key intraregional truck corridors in Contra Costa County are I-80, I-680, and SR-4 (Figure 6). These corridors provide access to the Ports of Oakland, Richmond, Pittsburg, Benicia, and Chicago and carry up to an average of 6,790⁴ trucks of all classes per day on average, performing both long-haul and short-haul truck moves. There are two truck scales located within this segment of I-680. Also, the I-680/SR-4 Interchange is located at the intersection of two major

SUPERCOMMUTER BOOM Figure 5

The number of people with commutes c is not just an out-of-town phenomenon; the increase of traffic congestion has made supercommuters of those who live in the heart of the Bay Area.



Source: Apartment List BAY AREA NEWS GROUP

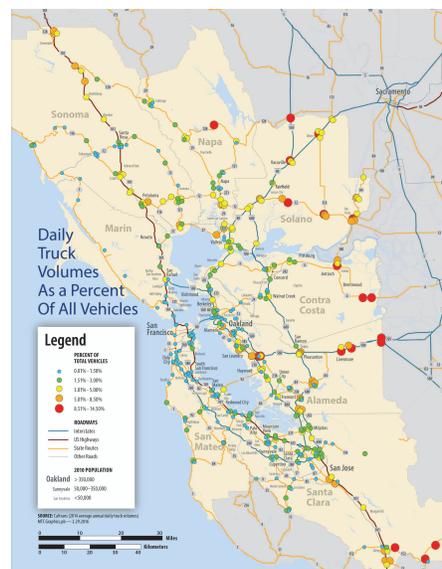


Figure 6

³ Economic Impacts of Transportation Investments, Bay Area Council of Economic Institute, January 2020.

⁴ Caltrans GIS Truck Data, May 2020.

freight corridors in the Bay Area. I-680 is part of the National Multimodal Freight Network and SR-4 supports the movement of goods from the Central Valley to and from the ports of Oakland and Richmond and provides an east-west connection to oil refineries, other industries, and customers. I-680 also carries heavy truck volumes connecting San Jose and Silicon Valley to the I-580 corridor. Daily vehicle counts on I-680 average 189,000 with 9,135 or 4.83% of those accounting for freight volumes.

Create High Quality Jobs and Increase Workforce Opportunities | [GoMentum Station](#)

is a proving ground for advanced technologies for driverless cars and will contribute to the economic development in Concord and surrounding communities by bringing jobs to the area and ensuring its recognition as the nation’s most innovative and diverse ecosystem for [AV testing](#), research, and development. With the ability to attract talent, expertise, business, and production from the region, nation, and around the globe, GoMentum Station is positioned to be the most complete proving ground for the development of optimal connectivity, mobility, and safety for CAVs and SAVs. The investments and improvements at GoMentum Station have already led to new partnerships and additional testing by innovative manufacturers and has attracted engineering talent from around the area to participate in forward thinking ADS testing and development and CAV infrastructure testing at the [V2X Signal Lab](#). The state-of-the-art technologies and collaborative public/private partnership ecosystem at GoMentum Station is recognized at both the national and international level and has demonstrated the greatest potential help the local economy and the U.S. to continue to compete in a global economy. Federal deployments will be certified Buy America.

In addition to groundbreaking advancements and innovation happening at GoMentum Station, the site is a future planned development in the [Concord Community Reuse Project](#). Over the next 30 years, the project will redevelop the former 5,000-acre Concord Naval Weapons Station adding 12,000 housing units, including single family homes for 28,000 new residents (25% affordable units). It plans to house 6.1 million square feet of office, retail, and light industrial spaces, and 2.3 million square feet of higher education and/or research and development (R&D) facilities. It will include parks, recreation areas, and sports facilities.

TABLE 4: SUPPORT ECONOMIC IMPACTS, FREIGHT MOVEMENT AND JOB CREATION

Project	Strategy + Benefits
Zero Emission Express Bus	New Zero Emission Express Bus service operating on 15-minute headways will improve access to multimodal transportation system and improve system operations, leading to first-year ridership of over a 1,000 riders per weekday resulting in 35,000 daily VMT reductions. It will decrease transportation costs and support integrated land use. The express bus service is the beginning of LAVTA’s larger vision to convert their fleet to clean fuel to support sustainability goals.
Part-Time Transit Lane	Support express bus operations to improve multimodal transportation system, system operations, and decrease transportation costs. Prototype PTTL roadway infrastructure will be constructed at GoMentum Station to facilitate training scenarios enabling CHP and Caltrans to evaluate operational scenarios and develop safety and enforcement protocols needed to advance PTTLs statewide. The test environment will facilitate behind-the-wheel training for bus drivers to learn about the technology and operational protocols. Additionally, it will increase workforce opportunities, foster economic growth and development, and support global competitiveness.
Mobility Hub: Walnut Creek BART	Housing is growing along the corridor. Integrated land use to influence more balanced distribution of jobs and housing is needed to alleviate crowding on roads and provide direct access to transit networks. Walnut Creek BART station is undergoing redevelopment, with the surrounding surface parking lots being converted to a Transit-Oriented Development (TOD) , including 596 multi-family housing units and 27,000 square feet of retail space. The

	<p>mobility hub will help provide new residences seamless access to points beyond with the use of express bus connections to regional rail services. In 2019, a new intermodal bus facility was constructed at the station, and it will be used by the express bus service.</p>
<p>IHT Pedestrian Overcrossings</p>	<p>Housing is growing along the corridor. The project improves access to bike/ped travel options and supports integrated land use and higher density housing developments by connecting housing to transit centers and jobs, and alleviating road congestion. The City Village Project at CityWalk in Bishop Ranch, is demolishing existing business/office buildings to construct 404 residential units in the mixed-use, active transportation TOD. This future development is conducive for active transportation as it is located 0.5 miles from the IHT and the proposed IHT POC at Crow Canyon Road and is about 2 miles from the proposed SMH at Bollinger Canyon Road Park-and-Ride, which is a stop for the Zero Emission Express Bus. The POC at IHT and Bollinger Canyon Road will provide travel time savings – shortening the signal cycle for users on Bollinger Canyon Road, saving approximately 0.0112 hours (37.5 seconds) per trip and eliminate waiting time for bike/ped crossings, saving approximately 0.0222 hours (80 seconds) for each trip. It will also decrease transportation costs and enhance access to state and regional parks.</p>
<p>IHT-CCCT Gap Closure</p>	<p>Housing is growing along the corridor. The project improves access to bike/ped travel options and supports integrated land use and higher density housing developments by connecting housing to transit centers and jobs, and alleviating road congestion. The City Village Project at CityWalk in Bishop Ranch, is demolishing existing business/office buildings to construct 404 residential units in the mixed-use, active transportation TOD. This future development is conducive for active transportation as it is located 0.5 miles from the IHT and the proposed IHT POC at Crow Canyon Road and is about 2 miles from the proposed SMH at Bollinger Canyon Road Park-and-Ride, which is a stop for the Zero Emission Express Bus. The POC at IHT and Bollinger Canyon Road will provide travel time savings – shortening the signal cycle for users on Bollinger Canyon Road, saving approximately 0.0112 hours (37.5 seconds) per trip and eliminate waiting time for bike/ped crossings, saving approximately 0.0222 hours (80 seconds) for each trip. It will also decrease transportation costs and enhance access to state and regional parks.</p>
<p>I-680 NB Express Lane</p>	<p>This is the final link in a continuous express lane implemented from the Contra Costa/Solano County border through Alameda County and into Santa Clara County/Silicon Valley, supporting transit and shared modes to improve multimodal transportation systems and system operations. It maximizes the efficiency of the corridor resulting in travel time savings from a 23% reduction in vehicle hours of delay in the opening year and a 15% reduction in vehicle hours of delay in the design year along the corridor.</p>
<p>I-680/SR-4 Interchange</p>	<p>Improved multimodal transportation systems and system operations at the intersection of two major freight corridors in the Bay Area megaregion, offering a significant boost to regional and national economic productivity and creation of high-quality jobs. It removes a bottleneck that will benefit the Concord Community Reuse Project discussed above. The project results in travel time savings from a 27% reduction in vehicle hours of delay in the opening year and a 24% reduction in vehicle hours of delay in the design year.</p>
<p>Coordinated Adaptive Ramp Metering</p>	<p>Install and upgrade ramp metering to improve ramp and mainline freeway operations. Travel time savings are realized with 8% reduction in the total vehicle hours of delay on the freeway.</p>
<p>Highway Preservation and Rehabilitation</p>	<p>Pavement rehabilitation, upgraded lighting, concrete barriers, increase fiber optics using recycled materials where possible on the job site. The project will create high quality construction jobs.</p>
<p>Automated Driving Systems</p>	<p>Increase workforce opportunities, foster economic growth and development, and support global competitiveness through CAV and Vehicle-to-everything (V2X) signal testing, as well as First Responder Training on the advanced technologies at GoMentum Station. A First Responder Training Facility is planned at GoMentum Station to support an innovative ‘smart training village’ equipped with scenarios and technologies that may be encountered when responding to incidents involving electric vehicles, electric vehicle charging stations, and CAV/SAVs. These technologies require specialized training to ensure emergency personnel can safely address these incidents. ADS also improves multimodal transportation systems operations and decrease transportation costs. Travel time savings are achieved with a 2-mph speed increase on the freeway resulting in a savings of 16 minutes per trip for transit users, 9 minutes per trip for current taxi/transportation network company (TNC) users, and 4 minutes per trip for automobile drivers that shift to SAV.</p>
<p>Mobility-as-a-Service/Mobility on Demand</p>	<p>Access to shared mobility services and first mile/last mile connections will increase transit ridership by 2-5%, reduces SOV travel, and reduces demand on infrastructure. It would also eliminate the need for BART to build additional parking structures at the transit stations and maximize the use of existing transportation systems in lieu of costly roadway network expansion. The project improves multimodal transportation systems and system operations; and decreases transportation costs and access.</p>



5.4. Climate Change, Resiliency, and the Environment | \$38 million in emissions savings to directly support the USDOT's Climate Action Plan through combined investments in transit, active transportation, innovative technologies, clean mobility options, and education and empowerment programs as shown in **Table 5**.

Mode Shift Toward Sustainability | 70% of the I-680 corridor residents said they drive once per week or more in the corridor and 91% of these drivers said that their preferred mode of travel is driving alone in a personal vehicle, contributing to more time spent in a car, decreasing quality of life while emitting harmful GHGs. One of the primary program objectives is to shift solo drivers to other modes of transportation to improve sustainability and resiliency with clean mobility options. This program will help to leverage existing transportation assets and innovative strategies in public transit service and support new housing developments that incorporate active transportation strategies to promote climate resiliency and overall community health.

Considerations of Climate Change and Environmental Justice | Similar to the USDOT, California realizes the importance of addressing climate change and resiliency through a significant and sustained reduction in GHG emissions. Senate Bill 375 is the state's mandate to reduce transportation related GHG emissions through coordinated land use and transportation planning across cities and counties. As such, CCTA, Caltrans, and MTC include considerations of climate change and environmental justice in their respective long and short-range planning and project delivery efforts. Together, the program strategies will contribute to meaningful environmental and climate gains, at the local and regional levels; supporting Contra Costa's Climate Action Plan and [MTC's Plan Bay Area 2050](#) and [Climate Initiatives Program](#). Additionally, the program area has been identified in [Plan Bay Area 2050](#) as a Priority Conservation Area for preservation of regionally significant open spaces and natural habitats.

CCTA collaborates closely with Disadvantaged Communities, Areas of Persistent Poverty and Opportunity Zone neighborhoods in Concord, Martinez, Pittsburg, and Bay Point where there are large industrial sectors, refineries, and freight corridors, to ensure that these initiatives provide the maximum benefit to reducing GHGs. Program initiatives are coordinated with the findings, concerns and priorities of these communities based on their [Community-Based Transportation Plans](#) (CBTPs); including associated environmental justice efforts.

For the last 20 years, CCTA's countywide transportation demand management (TDM) program known as [511 Contra Costa](#), has employed innovative strategies to help travelers use transit, rideshare, walk, bike, and telework to reduce congestion and improve quality of life. New strategies are constantly being piloted that provide incentives to change mode choices and expand mobility options particularly to Disadvantaged Communities, Areas of Persistent Poverty and Opportunity Zone neighborhoods. CCTA proposes to use this platform where necessary to support education and outreach for the new express bus service.

In the summer of 2022, CCTA will embark upon a countywide Integrated Transit Plan to study and implement strategies to improve equity in transit service and support climate initiatives throughout the county.

The program uses innovative strategies and technology to maximize efficiency of the existing transportation system, rather than pursuing expansion that consumes natural or working lands. Any environmental impacts will be assessed through the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) process, and efforts will be made to reduce or avoid impacts to the natural environment.

TABLE 5: STRATEGIES TO SUPPORT CLIMATE GOALS AND RESILIENCY

Project	Strategy + Benefits
Zero Emission Express Bus	Increases low-carbon mode travel, utilizes zero emissions vehicle infrastructure, and improves and connects multimodal travel options resulting in 35,000 daily VMT savings.
Part-Time Transit Lane	Increases operational efficiencies to decrease congestion, idling, and GHG emissions.
Shared Mobility Hubs	Reduction in 54,200 metric tons of carbon dioxide (CO2) emissions over the project’s 20-year life, due to travelers shifting from personal cars to public transit.
IHT Pedestrian Overcrossings	Providing active transportation options such as safe bike/ped connections reduces environmental impacts, GHG emissions, and improves overall health and quality of life.
I-680 NB Express Lane	Incentive-based mode shift from SOV to HOV, increasing utilization of the transportation network, thereby increasing person-throughput and reducing congestion and its associated GHG emissions. Vehicle speeds along the corridor are expected to improve resulting in an emissions reduction savings of \$54 million over 30 years. Improves disaster preparedness and incident management.
I-680/SR-4 Interchange	Improvements and reconfiguration of outdated infrastructure will improve the efficiency and operations of the multimodal freight network resulting in reduced congestion, idling, and approximately 6,200 metric tons of CO2 emissions.
Coordinated Adaptive Ramp Metering	Install and upgrade ramp metering to prioritize express bus, PTTL, and emergency vehicles where possible. CARM reduces weaving congestion and increases freeway speeds. Improves disaster preparedness and incident management.
Highway Preservation and Rehabilitation	Repairs outdated infrastructure using recycled materials into the asphalt and concrete mixes where possible on job site to extend the life of the pavement and reduce emissions and waste generated in manufacturing and trucking.
Automated Driving Systems	Use of technology to maximize current system through AV and SAV deployments that test low-speed zero emission vehicles to connect communities to transit, medical appointments, and other vital services. Zero emission AV shuttles increase multimodal transportation choices, improve mobility, and reduce energy consumption. Emission reductions are based on the reduction in overall travel time with the increase in speed.
Mobility-as-a-Service/Mobility on Demand	Incentive-based mode shift from SOV to other modes, increasing utilization of the transportation network, reducing congestion and its associated emissions estimated at a reduction of 5,250,000 metric tons of CO2 emissions over the life of the project.

 **5.5. Equity, Multimodal Options, and Quality of Life | \$261 million in savings to support equity, multimodal options, and quality of life as shown in Table 6.**

The imbalance between housing, jobs, and employed residents shows insufficient jobs located within the county for the size of the workforce housed in Contra Costa. Regional commute patterns show growth in the number of people relying on the Contra Costa transportation system daily, necessitating innovative, multimodal investments to limit congestion. Half of Contra Costa County’s resident workforce is employed outside of the county, therefore, I-680 is crucial to enable intraregional trips that expand labor sheds and connect to job opportunities.

Economic resilience and equity of travel hinge on the ability to access any service in the area as conveniently and affordably as possible. Providing access to a robust and affordable multimodal network and encouraging travelers to shift to active transportation options directly correlates to improved health and quality of life. **Table 6**, details specific program elements that directly support a holistic approach to achieving key regional economic, environmental, and equity goals, while building upon existing community characteristics and partnerships, and mitigating impacts on areas with less development.

The program brings important transportation benefits to disadvantaged communities through access to more reliable transit and multimodal travel options. The 585-acre [Bishop Ranch business park](#) in San Ramon, is the headquarters of many of the county’s top fortune 500 employers such as Chevron and AT&T. The business park provides thousands of jobs to minimum-wage earners working in hotels and retail establishments located in the area, with I-680 as the primary access point.

The county’s Northern Waterfront is home to many of Contra Costa’s more than 40,000 manufacturing jobs, and the I-680 corridor provides a critical artery for the movement of both workers and goods to support this industry. The [Northern Waterfront Economic Development Initiative™](#) is a regional cluster-based economic development strategy with a goal of creating 18,000 new jobs by 2035.

TABLE 6: SUPPORTING EQUITY, MULTIMODAL OPTIONS AND QUALITY OF LIFE

Project	Improvement
Zero Emission Express Bus	New express bus service that is reliable increases affordable and accessible transportation choices; reduces transportation and housing cost burdens; and supports Areas of Persistent Poverty and Disadvantaged Communities.
Part-Time Transit Lane	Conversion of highway shoulder to PTTL to support new express bus and existing transit service during peak traffic periods improves travel time reliability for communities that rely on public transit as their primary mode of travel.
Shared Mobility Hubs	Provide multimodal transportation hubs with services and amenities to make it easier for travelers to connect to transit, shared micromobility services, and enhanced bike/ped accessibility. Proactively address equity and barriers to opportunity by leveraging the mobility hubs’ proximity to major employment and retail centers, including major destinations such as Bishop Ranch, City Center, and Northern Waterfront.
IHT Pedestrian Overcrossings IHT-CCCT Gap Closure	Provide new and improved walking and biking infrastructure to increase walkability and bicycling, and increase affordable and accessible transportation choices.
I-680 NB Express Lane	Improve travel time reliability. MTC/BAIFA is planning to pilot an equity/affordability means based express lanes toll discount on the regional express lanes.
I-680/SR-4 Interchange	Improve freight access to underserved communities to increase access to goods and job opportunities.
Coordinated Adaptive Ramp Metering	Innovative adaptive ramp metering will smooth traffic flow and reduce congestion on interregional highway network; including prioritizing express bus and PTTL services during peak periods.
Highway Preservation and Rehabilitation	Pavement rehabilitation, upgraded lighting, high visibility striping, concrete barriers, and fiber optics will increase safety and reduce congestion and emissions – resulting in travel time savings, and improved quality of life.
Automated Driving Systems	AV wheelchair accessible shuttle will provide on-demand service to the County Hospital; improving equitable access to essential health services – for fewer missed appointments, fewer emergency room visits, greater use of the hospital, and better health outcomes. The first mile/last mile AV shuttle at Rossmoor will connect the senior community with essential goods and services in the surrounding community for greater independence.
Mobility-as-a-Service/Mobility on Demand	Addresses automobile dependence as a form of barrier to opportunity. Utilizes strategies such as smart phone provisions for disadvantaged populations who cannot afford transportation costs, and incentives for low-income populations.

Community and Regional Support | From 2018-2020, CCTA engaged in an extensive CBTP process with two low-income and underserved communities along the I-680 corridor – [Martinez](#) and the [Monument Corridor](#) community in Concord. The input from these two communities influenced the planning of corridor improvements and highlighted the need for express bus service to better serve transit-dependent residents. An extensive overview of the multi-lingual engagement efforts undertaken as part of this [CBTP process](#) can be found in Attachment E, Resources.

Recently, CCTA conducted a multi-lingual travel behavior survey to obtain diverse perspectives from communities throughout the corridor. The [survey results](#) are being used to guide the design of and communication about current and future projects. *680 Forward* will continue a multi-year robust public engagement process that focuses on community-based participation that ensuring voices of minority, low-income, under-represented, and disadvantaged communities are prioritized. The Program has received significant local, regional, state, and community support, see Attachment D, Letters of Support.



5.6. Innovation Areas | Implement advanced technology, innovative financing and multimodal mobility options to transform corridor operations.

Innovative Technology | By using advanced technology, CCTA can improve access to reliable mobility options by using real-time, data-driven traffic updates that allow travelers to make informed decisions about cost, timing, route, and mode. All projects within *680 Forward* are necessary for an integrated approach, when operating together, will maximize the efficiency of the corridor. The Program is innovative in nature and makes use of transformative technologies that are scalable (See **Table 7**).

TABLE 7: INNOVATIVE TECHNOLOGIES TO MAXIMIZE CORRIDOR EFFICIENCY

Project	Innovative Strategy Towards Optimal Efficiency
Zero Emission Express Bus	Transformative Technology Addition of 6 hydrogen fuel cell express buses and new express bus route to achieve GHG emissions reduction goals and lower maintenance costs.
Part-Time Transit Lane	Transformative Technology Enable buses to travel on the right shoulder (or transit-only lanes) to bypass congestion during periods of heavy traffic; supporting efficient transit service and creating mode shift to reduce VMT.
Shared Mobility Hubs	Innovative Financing Strategically located hubs with expanded services provided through a partnership with private sector service vendors. Exploration of concession agreements with private sector vendors to provide services and/or amenities such as food trucks, package delivery, enhanced waiting areas, device charging, and Wi-Fi.
IHT Pedestrian Overcrossings IHT-CCCT Gap Closure	Innovative Project Delivery Implementation of a steel twin-pylon cable-stayed bridge will utilize the Construction Manager/General Contractor (CM/GC) alternative delivery method due to the unique and complex nature of the steel construction; allowing for cost tracking in design and better constructability and accounting of construction risk.
I-680 NB Express Lane	Transformative Technology Using dynamic pricing, express lanes make the best use of existing capacity to improve system efficiency and operations. Express lanes encourage the use of carpools, vanpools, and express buses; provides reliable travel times; and gives solo drivers the choice to pay a toll to use the lanes.
I-680/SR-4 Interchange	Innovative Delivery Methods Use of ground penetration radar survey to minimize utility-related risks. Drones and Light Detection and Ranging (LiDAR) are used for survey, inspection, and other purposes.
Coordinated Adaptive Ramp Metering	Transformative Technology One of the first deployments in the nation and the Bay Area, CARM operations will optimize a multiple-ramp section of a highway to alleviate bottlenecks. Multiple response strategies can be deployed based on modeled conditions using a virtual

	intelligence engine. The effect of diversion can be spread over several ramps instead of relying on a single ramp to provide complete remediation.
Automated Driving Systems	Transformative Technology + Innovative Financing Utilizing V2X, vehicle-to-vehicle (V2V), and vehicle-to-infrastructure (V2I) technologies, ADS, CAVs, SAVs and AVs have the capability to communicate with each other and the roadway infrastructure or other devices to exchange information about position, speed, and trajectory, to optimize mobility and safety. CAV technology will transform operations of transportation systems and traffic management strategies through the collection of real-time data. Additionally, AV technology has been shown to reduce energy consumption and vehicle emissions (dynamic eco-routing) and increase the functional capacity of roadways when the headways are reduced.
Mobility-as-a-Service/Mobility on Demand	Transformative Technology + Innovative Financing Real-time, data driven, multimodal trip planning app which provides users with a variety of travel options based on the fastest, greenest, or most cost-effective trip. The app includes a uniform payment system and incentives based on time of day and mode in an effort to reward select travel behaviors.

Innovative Financing | Both the MOD and the ADS projects make use of an innovative public/private partnership strategy to finance the project. The ADS project partners with private sector companies in the planning, development, testing, and deployment of the SAV technologies that will be implemented. AAA NCNU as a partner in the GoMentum Station will coordinate access for testing of the various technologies. AWS, Verizon, and Intel Corporation will provide safe driving ADS technologies, dynamic HD mapping and data collection, 5G communications and data management. Similarly, the MOD project includes participation from over a dozen private companies that will provide matching services to support the program. These partnerships allow for advancement of publicly led initiatives with a substantially reduced commitment of public funds by leveraging private sector support and technologies.

6 | Benefit-Cost Analysis

TABLE 8: BENEFIT-COST ANALYSIS RESULTS SUMMARY (See Attachment A for BCA Memo)

BCA Metric	Project Lifecycle (2021-2057)	
	2020 \$	Discounted (7%)
Travel Time Savings	\$11,640,655,783	\$2,875,540,938
Prevented Accidents	\$3,948,387,118	\$1,145,252,161
Environmental Emissions	\$90,291,104	\$38,443,312
Residual Value in 2057	\$388,767,557	\$76,611,981
Maintenance Cost Savings	\$76,545,394	\$106,034,427
MOD Transit Ticketing Benefit	\$2,366,745	\$802,602
Quality of Life Benefits	\$867,897,417	\$260,417,734
Vehicle Operating Cost Savings	\$7,730,775	\$3,842,187
Total Benefits (numbers rounded)	\$17,022,641,891	\$4,506,945,343
Project Cost	\$(1,143,889,986)*	\$(740,496,170)
Net Present Value (2019 \$)	\$15,878,751,905	\$3,766,449,173
Benefit-Cost Ratio (BCR)	14.88	6.09

* Total Project Cost in BCA includes costs for Rehabilitation and Maintenance project which are fully funded with SHOPP funds. Based on direction received from DOT representative Alex Beres we are including this element in the BCA because of the project's importance in the overall corridor strategy. This element of the program is fully funded and not requesting MEGA funds.

See [Attachment A for full BCA Memorandum](#) and Section 5, Selection Criteria. Excel versions of the BCA calculations for each project are also included on the resource webpage [here](#).

7 | Project Readiness + Environmental Risk

As noted above, CCTA has a long and successful history of partnering with federal, regional, state, and local agencies as well as with its consultants and contractors to successfully deliver over \$2.8 billion of transportation projects in the last 12 years.

The success of this program begins at the visioning and concept development phase where CCTA project teams developed concepts in a holistic manner including potential environmental impacts, construction, operation and maintenance, and lessons learned from similar projects. Advancement of each project in the program begins with a feasibility report that analyzes the project and its delivery. CCTA has assembled and integrated the ten projects into the *680 Forward* program based on key considerations including project benefits, complexity, anticipated level of environmental documentation and permitting, project readiness, maturity of the enabling technology, funding, and logical phasing.

Technical Feasibility | As noted above, *680 Forward* utilizes advanced technologies on several projects. A project initiation document and/or an environmental document has been completed or is underway for each of the projects under *680 Forward*, with the exception of the IHT-CCCT Gap Closure project (See **Table 9**). All work completed to date suggests that there are no fatal flaws in the delivery strategy and these elements can be designed and constructed using commercially available means and methods.

For the Intelligent Transportation Systems (ITS) elements of *680 Forward*, CCTA follows federal guidelines for systems engineering analysis. A Concept of Operations (ConOps) has been completed to analyze how the program of projects works together to increase corridor reliability, smooth traffic flow, and provide innovative travel options through the corridor. The ConOps included the evaluation of the SMHs, PTTL, ADS, Express Lanes, and the CARM projects. Supporting individual ConOps documents have also been completed for the MOD, PTTL, and Express Lanes projects.

In addition to the systems engineering analysis, CCTA works with technology partners to conduct further analyses and testing at the GoMentum Station. Prior to any deployment on public roads, extensive testing, and evaluation of the SAVs will be completed at GoMentum Station in a secure test environment replicating the public facilities at which the SAVs will be deployed. As discussed in Section 5.3 (**Table 4**) prototype PTTL roadway infrastructure will be constructed at GoMentum Station to facilitate training and testing prior to deployment of the project on the state highway.

The GoMentum Station testing site provides an opportunity to test new technologies as well as share the results with other public agencies. CCTA routinely hosts public agencies from across the U.S. to share the advancements in transportation technology that are being evaluated at the site, supporting the advancement and deployment of these concepts on projects throughout the country.

A key part of the CCTA evaluation of emerging technology is information sharing with technology partners and other public agencies. For example, the Colorado Department of Transportation (CDOT) has started a pilot CARM project on I-25 in Denver. CCTA has met with CDOT staff to gain lessons learned to inform CARM implementation on I-680. Minneapolis, St. Paul, and San Diego have implemented PTTL. CCTA will coordinate with these agencies during development of PTTL project on I-680. Site visits and information sharing with these agencies will be beneficial for the development of these projects.

Most of the *680 Forward* projects will use the traditional design, bid, build process; however, CCTA continues to evaluate alternative delivery methods that may expedite delivery and/or result in overall cost savings. For example, by adopting the CM/GC approach where the design is informed by valuable feedback from the contractor and suppliers, CCTA has high confidence in the constructability of the

Bollinger Canyon Road IHT POC. CCTA is confident that *680 Forward* will not encounter technical challenges or complexity that would result in either significant cost increase or impaired performance.

Environmental Approval, Permits + Risk | Each project under *680 Forward* has independent utility and logical termini. The projects are considered as separate projects under both NEPA and CEQA. The environmental review is conducted on a project-by-project basis. **Table 9** below provides the status of the environmental review of each project. Additional project development details are provided in [Appendix G, Environmental Review and Permitting](#).

CCTA conducts early evaluation prior to beginning the environmental review process with our local and state agency partners (Caltrans is also the lead NEPA agency under assignment from the Federal Highway Administration (FHWA)) to identify potential issues and challenges. This helps CCTA to identify the level of environmental documentation needed, develop realistic schedules, and proactive risk management plans and strategies. CCTA embraces community and stakeholder input during the planning and environmental process. This includes the use of advanced market research techniques in addition to community forum and meetings. There are also regular check-in meetings with agencies, elected officials, and stakeholder groups to disseminate updated project information as well as solicit input. This has allowed CCTA to take proactive actions to address any concerns or to revise design to mitigate potential effects.

As shown in **Table 9**, CCTA does not anticipate any environmental or permitting challenges on most of the projects. The Express Lanes project, however, will need to be cleared under an Environmental Impact Report (EIR/CEQA)/Environmental Assessment (EA/NEPA) as it is one of the first state highway projects in California to evaluate transportation impacts using VMT as a criterion under CEQA. Working collaboratively with Caltrans district and headquarters staff, the project team is undertaking a very robust and thorough analysis on potential VMT impacts and developing potential mitigation strategies and opportunities. CCTA and Caltrans will then set up a framework to integrate appropriate mitigation measures as part of the delivery of the Express Lanes project.

Table 9 also shows the resource agency permits that would be needed for each project. The permits generally pertain to creek crossings. The project team will proactively discuss with the permitting agencies on the conditions of the permits and the appropriate mitigation measures. CCTA recently obtained permits for similar creek crossings in the same area and is confident that the needed permits can be secured as planned in the current schedule.

Among the projects under *680 Forward*, the I-680/SR-4 Interchange has the largest footprint. CCTA intends to evaluate and develop a mitigation banking approach for storm water treatment and biological and habitat mitigation. Under this concept, the project will include additional mitigation and treatment scope to account for impacts from other *680 Forward* projects. This approach will streamline and simplify project permitting, mitigation, monitoring and reporting processes and reduce costs. It is expected that the completed mitigation work would also perform better compared to mitigation developed on a project-by-project basis which tend to be more piecemeal in nature.

With the exception of the I-680/SR-4 Interchange, the other *680 Forward* projects require either no or limited amount of additional right-of-way (ROW) or utility relocation. With CCTA's proven experience in project delivery and recent experience in completing an earlier phase of the I-680/SR-4 Interchange, CCTA is confident that the ROW and utility relocation will be completed as shown in **Table 10**.

TABLE 9: ENVIRONMENTAL DOCUMENT AND RISK MANAGEMENT APPROACH

Project	Anticipated Env. Document (CEQA/NEPA)	Risk Management Approach
Zero Emission Express Bus	Categorical Exclusion (CE)/Categorical Exclusion (CE)	Minimal physical improvements necessary. <i>No resource agency permit is anticipated.</i>
Part-Time Transit Lane	CE/CE	Minimal physical improvements necessary. <i>No resource agency permit is anticipated.</i>
Shared Mobility Hubs	CE/CE	Context sensitive design to avoid any significant impacts. <i>No resource agency permit is anticipated.</i>
IHT POCs	Mitigated Negative Declaration (MND)/Finding of No Significant Impact (FONSI)	MND/FONSI completed. Supplemental Report completed for Bollinger Road crossing. Revalidation at the Crow Canyon crossing is needed. No additional impact is anticipated. <i>No resource agency permit is anticipated.</i>
IHT-CCCT Gap Closure	MND/FONSI	Design will keep project predominantly in public ROW. Proactive engagement with resource agency will facilitate permits needed for one creek crossing. <i>Resource agency permits are needed for creek crossing.</i>
I-680 NB Express Lane	EIR/EA	Proactive engagement with stakeholders and develop strategy to address VMT. <i>Resource agency permits are needed for culvert extension.</i>
I-680/SR-4 Interchange	MND/FONSI Completed Revalidation Required	No additional impact is anticipated. Proactive engagement with resource agencies for needed permits. <i>Resource agency permits are needed for creek crossing.</i>
CARM	CE/CE	Design avoids any potentially significant impacts. <i>No resource agency permit is anticipated.</i>
ADS	CE for CEQA	Complete. <i>No resource agency permit is anticipated.</i>
MOD	Exempt	Screening conducted. ENV Document was not required based on discussions with FTA

TABLE 10: 680 FORWARD PROGRAM SCHEDULE

Project	Planning Complete	Environmental Complete	Design Complete	Construction Begin/End
Zero Emission Express Bus	Complete	23Q1	23Q4	22Q4-23Q4
Part-Time Transit Lane	22Q3	23Q3	24Q3	24Q4-25Q3
Shared Mobility Hubs	22Q3	23Q3	25Q2	25Q3-27Q1
IHT POC Bollinger Canyon	Complete	Complete	Complete	22Q3-27Q1
IHT POC Crow Canyon	Complete	24Q1	25Q4	26Q1-27Q3
IHT-CCCT Gap Closure	23Q2	24Q4	26Q1	26Q2-28Q1
I-680 NB Express Lane	Complete	24Q2	26Q4	27Q1-29Q2
I-680/SR-4 IC Improvements	Complete	22Q3	25Q1	25Q2-27Q1
Coordinated Adaptive Ramp Metering	Complete	23Q2	24Q2	24Q3-27Q1
Highway Preservation and Rehabilitation	Complete	24Q3	26Q2	23Q3- 27Q3
Automated Driving Systems	22Q4	Complete	25Q1	25Q2-27Q1
Mobility-as-a-Service/ Mobility on Demand	22Q4	Exempt	25Q1	25Q2-27Q1

**The MPDG funding will be obligated by the statutory deadline.*

Financial Completeness | CTA is requesting \$395 million in Mega grant. With an estimated total program cost of \$944 million, the Mega grant will help fully fund the program. Currently, we do not anticipate any delays with state, federal and regional funding that has been secured for this program. As shown in **Table 10** Program Schedule, all necessary activities will be completed to allow for obligation by the dates shown in Attachment C and will following the MPDG/Mega Program fund requirements.

8 | Project Requirements

 The *680 Forward* program meets all the funding requirements of the Mega, Infra, and Rural grant application guidelines. The table indicates specific funding program requirements and link to applicable supporting documentation. An easily accessible *680 Forward* MPDG webpage has been created that includes application attachments and resources. Access the *680 Forward* Resource webpage [here](#).

Program Requirement Mega	Mega	INFRA	Rural	Location in Application
1 Generate National and Regional Safety Benefits				
The <i>680 Forward</i> program takes a multimodal, holistic approach to increasing mobility throughout the corridor that will encourage the shift from single occupancy vehicles to transit, increasing the operational safety in the corridor and travel time reliability. The ability of each project to meet this requirement is discussed in Section 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Section 5.1 and Attachment A BCA Memorandum.
2 In significant need of federal funding/ Cannot easily and efficiently be completed without federal funding or financial assistance.				
The program has secured close to \$550 million in funding, the grant funds requested are required to fully fund the \$944.4 million program. Without the requested funding, these projects as scoped will be delayed. Any delays will likely result in cost increases to the project due to escalation and inflationary impacts. The impact on project scope, schedule and cost for each project is shown in Attachment C.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	Attachment C, Funding Documents
3 Demonstrated Cost-effectiveness.				
The program has a benefit-cost ratio of 6.09. The complete benefit-cost analysis can be found in Section 6 and Attachment A.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BCA Section 6 and Attachment A
4 One or more stable and dependable non-federal funding or financing sources are available to construct, maintain, and operate the project, and to cover cost increases.				
All matching funds identified in the financial plan are secured and dedicated for use on this project. Attachment C expands on the financial plan for each project, providing details on the funding commitments for all program elements and the contingency amounts budgeted for each project. Where applicable, funding for ongoing operations has been secured and the operations lead and funding source is shown in Table 3, Section 5.2.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Attachment C, Funding Documents
5 Accomplish one or more of the National federal-aid highway program goals.				
The program of projects contributes the national goals including safety, reliability, congestion reduction and infrastructure condition. Additional detail can be found in Sections 1 and 5.	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Section 1, Project Narrative Section 5, Selection Criteria

<p>6 Based on results of preliminary engineering.</p>				
<p>All project cost estimates are based on completed studies, engineering and/or environmental analysis. The basis of cost estimates is included in Attachment C.</p>	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Attachment C
<p>7 Applicant has sufficient legal, financial, technical capacity to conduct the project.</p>				
<p>As discussed in Section 3, CCTA and partner agencies will be responsible and accountable for the expenditure of MPDG/Mega funds and, if awarded, will comply with all relevant federal and state laws, regulations, policies, and procedures. These agencies have long exemplified best practices in fiscal management of taxpayer funds and have a track-record of prudent fiscal management.</p> <p>County Connection and LAVTA are public transit agencies that will operate the Zero Emission Express Bus. These agencies are direct recipients of federal funds and are well versed in all federal funding, procurement, and reimbursement requirements.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Attachment C Funding Documents (expected obligation date/construction start)
<p>8 CCTA can meet the Mega data collection requirements. The proposed Data Collection Plan, including key performance indicators is attached to the application.</p>				
<p>The proposed Data Collection Plan, including key performance indicators is attached to the application.</p>	<input checked="" type="checkbox"/>	N/A	N/A	Attachment F
<p>9 Expected to begin construction no later than 18 months after obligation of funds.</p>				
<p>All projects will begin construction no later than 18 months after obligation of funds.</p>	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Attachment C Funding Documents (expected obligation date/construction start)