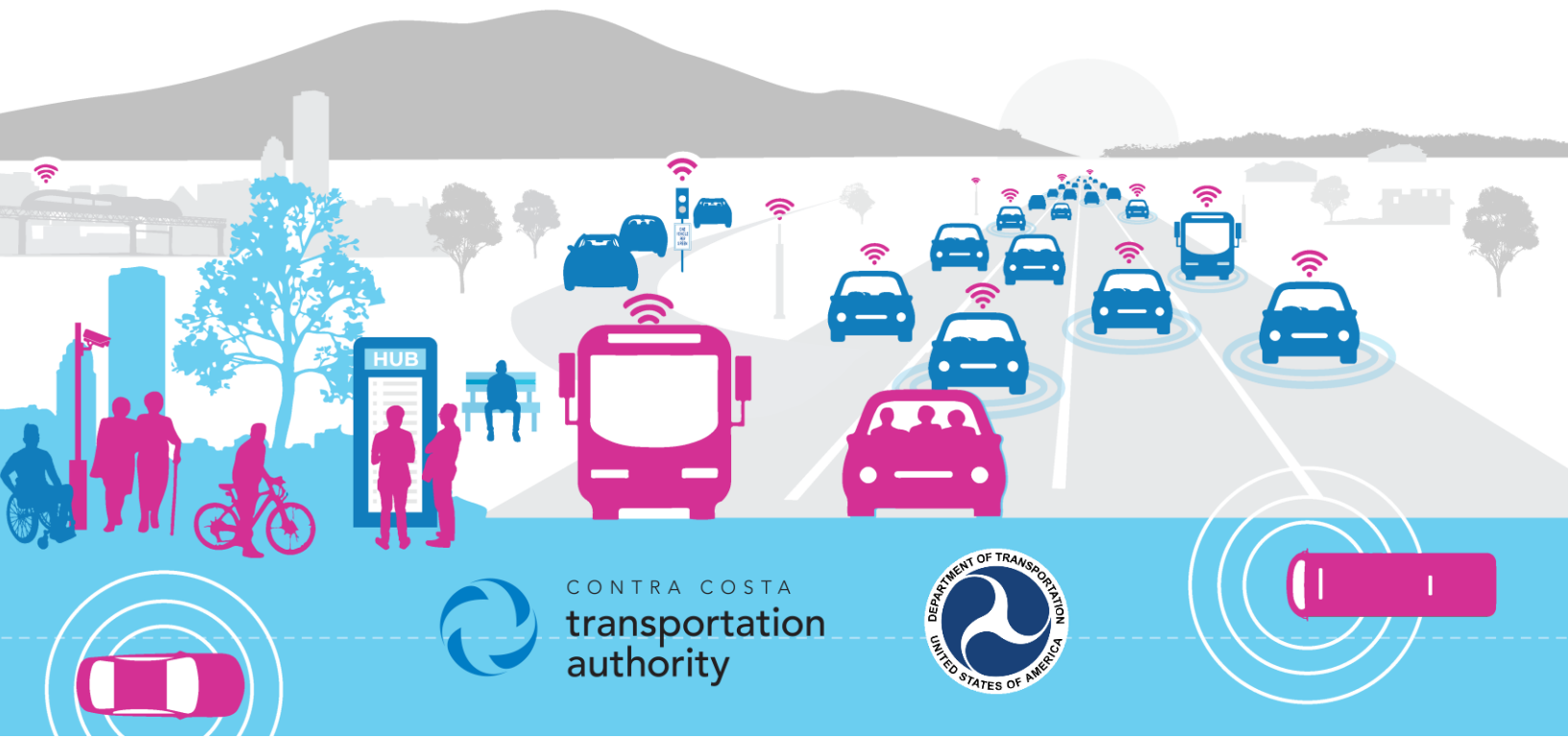


United States Department of Transportation
National Infrastructure Project Assistance

Multimodal Projects Discretionary Grant (MPDG)- Mega Program Application

NIPA-25-MEGA-25

INNOVATE 680
IMAGINE THE POSSIBILITIES



CONTRA COSTA
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authority



INNOVATE 680

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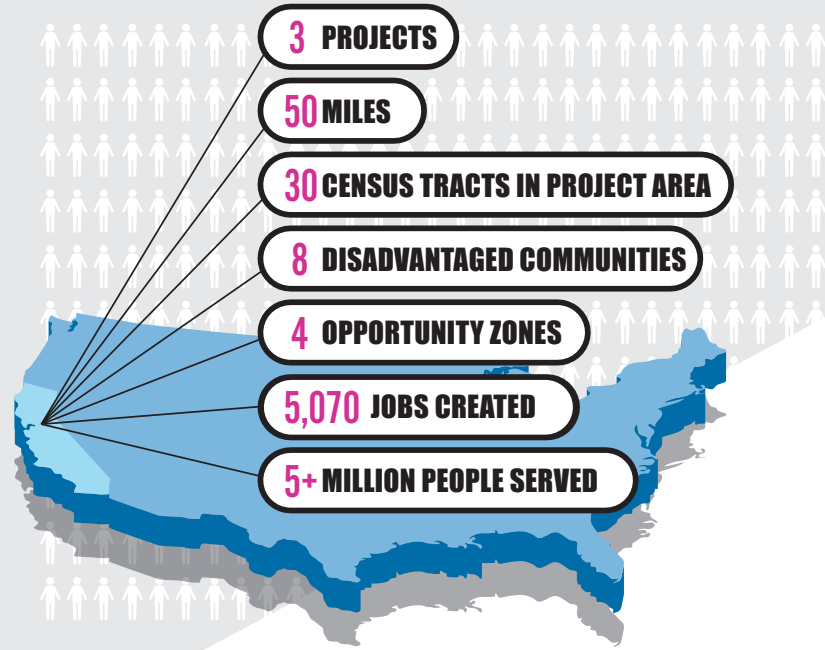
Attachments:

- A. [Benefit-Cost Analysis Narrative](#)
- B. [Required Forms](#)
- C. [Funding Commitments](#)
- D. [Letters of Support](#)
- E. [Resource Documents](#)
- F. [Mega Data Plan](#)

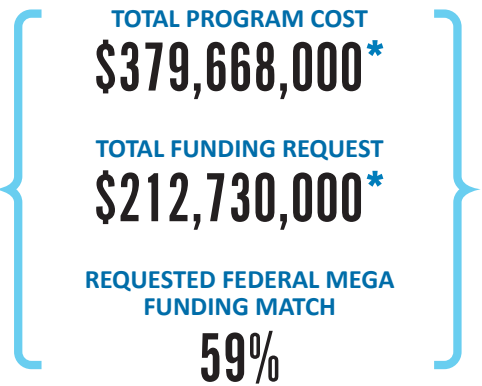
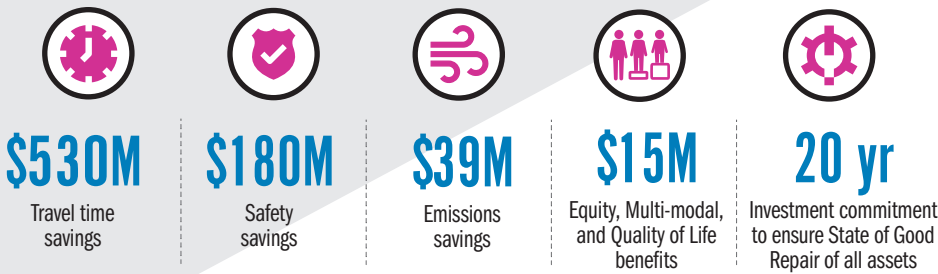


WHY INVEST IN INNOVATE 680?

Transportation challenges of the Interstate 680 corridor in Contra Costa County cannot be addressed by a one-size-fits-all solution. The Innovate 680 Program includes cutting-edge technologies in **coordinated adaptive ramp metering; shared mobility hubs that complement zero emission transit; and completion of express lanes.** These elements are designed to work together to enhance travel along Interstate 680, a critical corridor for the region.



Innovate 680 will benefit society.



Innovate 680 meets the USDOT grant criteria.

	Increases Safety	Facilitates a state of good repair	Generates positive economic impacts	Supports climate resiliency and the environment	Improves equity, multimodal options, and quality of life	Delivers Innovative solutions
Shared Mobility Hubs	✓	✓	✓	✓	✓	✓
Express Lane Completion	✓	✓	✓	✓	✓	✓
Coordinated Adaptive Ramp Metering	✓	✓	✓	✓	✓	✓

✓ Meets Project Outcome Criteria ✓ Exceeds Project Outcome Criteria

*Dollar amounts are approximate. Please refer to the application and corresponding BCA memorandum for exact amounts in discounted 2022 dollars.

I | Project Description

Interstate 680 (I-680) is a backbone corridor for Contra Costa County, which boasts significant economic activity with a gross domestic product (GDP) of \$95 billion in 2022, the 11th highest in California. I-680 is also a *regionally* significant corridor, with the county’s geographic location at the center of the nine-county San Francisco Bay Area, as well as the broader Northern California Megaregion that is the national leader in innovation with a GDP of \$1.3 trillion.

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. It provides a critical link for the region’s freight and commute connections to the Central Valley and Silicon Valley, as well as key ports, international airports, and business centers in San Francisco, Oakland, and San Jose ([Figure 1](#)). Residents, businesses, and regional commuters depend on I-680 for daily travel, and increased traffic congestion has led to significant delays.



[Figure 1: I-680 Corridor Location 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 **Innovate 680 program**, a visionary, holistic, multi-jurisdictional corridor-wide approach that combines transit improvements, congestion relief strategies, and innovative technologies that work in harmony to improve safety, smooth traffic, and increase access for all users of I-680.

PURPOSE AND NEED | I-680 is a key north-south freeway artery connecting Solano, Contra Costa, Alameda, and Santa Clara Counties, supporting heavy traffic between the East and South Bay. It has 23 northbound (NB) and 27 southbound (SB) interchanges in Contra Costa County, with significant junctions at SR-24, SR-242, and SR-4. Ranked among the top ten for congestion in the Northern California Megaregion, I-680 experiences both recurring and non-recurring congestion, causing delays, inconsistent travel times, and a higher collision rate. Capacity expansion is not viable due to environmental concerns and the developed nature of the corridor. With these challenges expected to persist, CCTA is implementing *Innovate 680*, which includes technological and multimodal strategies to improve traffic management and leverage existing infrastructure through a more cost-effective and sustainable approach.

The [Innovate 680 program](#) is a top Bay Area Regional Priority to pursue funding from the United States Department of Transportation’s (USDOT) Multimodal Project Discretionary Grant (MPDG) program. It is being implemented under an [Innovation Team Master Cooperative Agreement](#) in collaboration with the California Department of Transportation (Caltrans) and the Metropolitan Transportation Commission (MTC), the region’s Metropolitan Planning Organization (MPO), to ensure a coordinated approach to enhancing the corridor’s efficiency and mobility. Local cities and other regional agencies, such as California Highway Patrol (CHP) and transit operators, are also key strategic partners in implementing Innovate 680.

VISION + GOALS OF INNOVATE 680 ALIGN WITH MEGA

- **SAFETY** | Improve safety and operational efficiencies with innovative adaptive ramp metering technology, braided ramps to address weaving, and a new express lane.
- **MAXIMIZE EFFICIENCY OF EXISTING INFRASTRUCTURE** | Maximize the efficiency of existing infrastructure through advanced traffic operating systems, effective monitoring devices, ramp metering technologies, and enhanced transit connections/options.
- **ECONOMIC IMPACTS, FREIGHT MOVEMENT + JOBS** | Increase efficiency and operations of multimodal freight corridor and improve access to employment centers and vital services through express lanes, intelligent transportation systems, active traffic management, and strategic upgrades to existing infrastructure.
- **CLIMATE, RESILIENCE, AND THE ENVIRONMENT** | Reduce congestion, increase access to reliable transit and alternative hydrogen fueling, and improve non-motorized transportation options to positively impact climate change.
- **EQUITY, MULTIMODAL OPTIONS + QUALITY OF LIFE** | Investing in multimodal connections, building mobility hubs, and investing in affordable transit benefits disadvantaged communities and will give members in equity-priority areas more transportation options.
- **INNOVATION** | Utilize the latest proven transportation technologies to maximize efficiency, improve safety, and collect, analyze, and share real-time data for the development of the transportation system’s safety and performance measures.

INNOVATE 680 | The *Innovate 680* program (Combined Project) includes technology and transit projects that significantly improves the mobility of people and goods in the region. The Combined Project includes **Shared Mobility Hubs (SMH), Express Lanes Completion, and Coordinated Adaptive Ramp Metering (CARM)**. With a Benefit Cost Ratio (BCR) of 2.64, the Combined Project meets statutory selection requirements and offers economic, mobility, and safety advantages. The Combined Project aligns with national goals related to safety, congestion reduction, system reliability, economic vitality, and environmental sustainability ([Figure 2](#)). As discussed below and in [Section 7](#), each component project meets all statutory selection requirements, including cost-effectiveness, having secure and stable matching funds, as well as achieving national goals.

INNOVATE 680 FEATURED PROJECTS



Figure 2: *InnoVate 680* Program Location map.

CCTA has a long history of delivering complex transportation programs and projects for the county and is the lead agency to complete the Combined Project under this grant application.

1. SHARED MOBILITY HUBS



Three SMHs will be implemented along I-680 at the stops of the new Zero Emission Hydrogen (ZEH) I-680 Express Bus Service, namely Bollinger Canyon Road in San Ramon, the Walnut Creek Bay Area Rapid Transit (BART) Station, and the Martinez Amtrak Station ([access map here](#)). This new bus service addresses the existing rail gap on I-680 that was identified in the 2018 State Rail Plan, providing the much-needed connection for travelers on Amtrak’s national network and the Capitol Corridor and San Joaquin routes with regional rail service such as the BART and Altamont Commuter Express (ACE) rail networks. The ZEH I-680 Express Bus Service will be operated with ZEH Fuel Cell Electric Buses (FCEB) by County Connection and Livermore Amador Valley Transit Authority (LAVTA), who are constructing hydrogen fueling and maintenance infrastructure at their respective sites to support the FCEBs.

These three SMHs work in tandem with the ZEH I-680 Express Bus service and are crucial to its success. SMHs are places of connectivity for transit-oriented housing, business parks, and medical facilities, and where different travel options – biking, transit, carpooling, ride-sourcing, and micro transit – come together, providing first/last-mile connection options to the Express Bus riders and other users that stop at the SMHs. In addition to providing an integrated suite of mobility services, the hubs offer a variety of amenities to incentivize mode shift to non-auto modes, such as enhanced waiting areas, bike and electric vehicle charging stations, and wi-fi. The SMHs, together with the new ZEH I-680 Express Bus service, will promote the use of transit and shared modes to reduce congestion on the I-680 corridor and the connecting roadways and arterials. This coordinated suite of transit alternatives will be developed following the [Regional Mobility Hub Implementation Playbook](#) developed by MTC, which is a model that can be replicated throughout the region.

Design Status | The [Innovate 680 SMH Feasibility Study](#) was completed in January 2023. Environmental and design phases for Martinez Amtrak Station and Bollinger Canyon Road SMHs will begin in the summer and fall of 2024, respectively, with secured funding from other sources. The environmental and design phases for Walnut Creek BART SMH will start in early 2025. The preliminary design of the SMHs can be found here in [Attachment E, Concept Plans](#).

2. EXPRESS LANE COMPLETION



The **I-680 NB Express Lane Completion (Phase 1) (Express Lane Completion) project** aims to fill the last remaining express lane gap on NB I-680, alleviate corridor congestion, and address operational challenges on NB I-680. The component project involves constructing a NB express lane from just north of State Route 24 (SR-24) to State Route 242 (SR-242) and converting the existing NB High Occupancy Vehicle (HOV) Lane from SR-242 to north of Arthur Road near Martinez into an express lane. The project will also construct a [braided ramp system](#) between North Main Street and Treat Boulevard interchanges in Walnut Creek to address an existing bottleneck caused by weaving at this location, including a Caltrans truck scale/weigh station. Completing the I-680 express lane network through Contra Costa County will 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. Additionally, the proposed braided ramps, which physically separate on-ramps and off-ramps, will elevate the new Treat Blvd off-ramp above the North Main Street off-ramp to eliminate the existing weaving movements that pose safety risks to drivers and trucks. By eliminating these unsafe weaving areas, the project aims to enhance safety, especially for vehicles entering the truck weigh station at the Treat Blvd off-ramp.

The project will improve mobility and freight movement throughout the region.¹ I-680 is a key corridor in the regional Bay Area Express Lane Network, which is planned to grow from 215 lane-miles today to 600 by 2050². Regionwide, 45 lane-miles of express lanes are currently under construction. This extensive network of managed lanes is an example of a multi-agency coordination initiative to improve traffic flow and reduce congestion, which can be replicated on a national level. There is more on the component project [here](#).

Design Status | CCTA, in partnership with MTC and Caltrans, is currently working on the preliminary design and environmental clearance phase. The 45-day public review of the draft environmental document began on May 8, 2024. The design phase will commence after the Final Environmental Document is completed in June 2025.

3. COORDINATED ADAPTIVE RAMP METERING

The project will construct **CARM** (Segments 1 and 3A) on a 19-mile segment of NB I-680 between Alcosta Blvd in San Ramon and Olympic Blvd in Walnut Creek (Segment 1) and between North Main St and Willow Pass Rd in Concord (Segment 3A), along with implementation of ramp metering at all other I-680 ramps 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 on a system level. The project will supplement and upgrade the existing Caltrans Traffic Operations Systems (TOS) 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 TOS will provide a model that can be expanded throughout the region for active transportation management and monitoring. CARM will be constructed under two contracts to simplify and integrate construction work with related projects to reduce cost and minimize construction risks. Access the component project location map [here](#).

Design Status | A [CARM Feasibility Study](#) identified three segments for implementation. Segments 1 and 3A were found to be most beneficial to implement first. **Segment 1:** The preliminary engineering and design were developed to a 30% level to support the environmental review, which has been approved. The design includes ramp widening, intelligent transportation systems (ITS) work, and modification of one bridge abutment. A Preliminary Foundation Report and an Advanced Planning Study were completed, and the final design will begin in June 2024. **Segment 3A:** The [conceptual plan](#) and [estimate](#) for this segment have been developed and are included in [Attachment E](#). The approved [California Environmental Quality Act \(CEQA\)/ National Environmental Policy Act \(NEPA\) Categorical Exemption/Exclusion \(CE/CE\)](#) for ramp metering construction along I-680 will be updated to reflect the Segment 3A improvements. The I-680 Advanced Technology Project [CARM Concept of Operations \(ConOps\)](#) and [CARM System Engineering Management Plan \(SEMP\)](#) ([Attachment E, Resource Documents](#)) are undergoing final review. A detailed statement of work for each project is included in [Section 3: Project Budget](#) with a status summary included in [Section 6: Project Readiness and Environmental Risk](#).

¹ MTC's Regional Transportation Plan – Plan Bay Area 2050, October 2021

2 | Project Location

The Shapefile included per requirements of the Notice of Funding Opportunity (NOFO) is under a separate attachment.

The shapefile can also be accessed [here](#).

3 | Project Budget

GRANT FUNDS, SOURCES AND USES OF PROJECT FUNDING SUMMARY

MPDG Request Amount	\$ 212,730,000	56%	Federal MPDG
Other Federal Funding	\$ 52,030,000	14%	CRP, SHOPP, STIP, STP, PTA
Non-Federal Funding	\$ 97,476,000	25%	Measure J, Other Local, RM3, SB1 LPP, STIP, TIRCP
Prior Non-Participating	\$ 17,432,000	5%	Various
Total Combined Project	\$ 379,668,000	100%	

Note: Fund sources include the State Transportation Improvements Program (STIP), State Highway Operations and Protection Program (SHOPP), Surface Transportation Program (STP), Local Contra Costa ½ cent transportation sales tax Measure J, Congestion Relief Program (CRP), Regional Measure 3 (RM3), Bay Area Infrastructure Financing Authority (BAIFA) State Local Partnership Program (SB1 LPP), and Transit and Intercity Rail Capital Program (TIRCP).

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

Funding Sources	Shared Mobility Hubs	Express Lane Completion	Coordinated Adaptive Ramp Metering	Total Cost/Funding
MPDG Funding Request	\$ 46,461,593 59%	\$116,308,065 60%	\$ 49,780,170 56%	\$ 212,729,829 59%
Other Federal Funds	\$ 14,810,000 19%	17,250,000 9%	\$ 19,970,000 22%	\$ 52,030,000 14%
Non-Federal Funds	\$ 16,849,215 22%	61,296,318 31%	\$ 19,330,000 22%	\$ 97,475,533 27%
Total Combined Project	\$ 78,300,808 100%	194,854,383 100%	\$ 89,080,170 100%	\$ 362,235,362 100%

With \$167 million in state, other federal, regional, and local funding already secured, the Combined Project will fulfill the Mega grant goals to generate regional economic, mobility, and safety benefits and is consistent with USDOT’s priorities of delivering transportation projects that reduce vehicle miles traveled (VMT), reduce greenhouse gas (GHG) emissions and air pollutants, and increase equity and access to historically disadvantaged and low-income communities. Each component project has independent utility and is highly scalable based on available funding. A summary of funding is included in **Table 1** and a funding plan detailing Federal Fund Sources and required non-federal match for future eligible project costs is included in [Attachment C, Funding Commitments](#).

The secured funding will be utilized for the pre-construction phases. The requested MPDG funding will cover the construction costs of the SMH, Express Lane Completion, and CARM projects. The requested funds will also cover the operation costs of SMHs and CARM. More details on component project budgets and associated scope are available below, and relevant supporting documentation resources are linked throughout the application narrative.

1. SHARED MOBILITY HUBS

The three SMHs work in tandem with the ZEH I-680 Express Bus service to encourage transit use and achieve mode shift along the I-680 corridor. The integration of SMHs and the ZEH I-680 Express Bus service, noted in this MPDG application as the SMH project for simplicity, is being implemented by the partnership of CCTA, County Connection, and LAVTA. After the completion of the [Tri-Valley Hub Network Integration Study](#) (led by LAVTA) in 2021, the three agencies have been partnering to implement the ZEH I-680 Express Bus service and the SMHs. The capital infrastructure needed includes hydrogen fueling/maintenance facilities and the physical SMH

implementations at each of the stops of the ZEH I-680 Express Bus service. These are Bollinger Canyon Rd in San Ramon, Walnut Creek BART, and the Martinez Amtrak Station. The SMHs will facilitate transit connectivity and encourage travelers to take alternative modes of transportation. The SMHs will have services and amenities that will make it easier for travelers to connect to transit, including enhanced wayfinding, bike/pedestrian infrastructure, real-time travel data displays, shared micro-mobility services, transit signal priority (TSP) systems, bus bays, and electric vehicle/bike chargers. Access SMH conceptual plans [here](#).

Martinez Amtrak SMH | The SMH will connect Express Bus riders to other bus connections, Capitol Corridor Amtrak line, and active transportation modes. The component project includes enhancing bicycle connections with the local bike network and the surrounding recreational trails at the Martinez Regional Shoreline Park. The SMH is located at the northern end of the I-680 corridor and serves as a regional intermodal hub for Northern California Amtrak and Capitol Corridor service and the regional bus operators of County Connection, Tri Delta Transit, and Western Contra Costa County Transit (West CAT). The Amtrak station is located at the west end of downtown Martinez, which is a designated Disadvantaged Community (DAC). The SMH is close to commercial buildings, Contra Costa Community College, residential neighborhoods, and regional parks. As the seat of the County, downtown Martinez is also the home of the County Superior Court, County Administrative offices, and other governmental office complexes, which are major employers in the area. Access Martinez SMH cost estimate [here](#).

Walnut Creek BART SMH | The SMH will improve the BART Station to support the new ZEH I-680 Express Bus service. The proposed SMH improvements focus on providing improved bicycle and pedestrian access to the BART station through new on-street and off-street connections, improving street crossings, and enhancing wayfinding and amenities both inside the station and along the surrounding roadway network. These improvements will promote bicycle, pedestrian, and transit access to BART and support ridership growth potential from the adjacent Transit Oriented Developments (TOD), thereby reducing BART riders’ reliance on driving to the station. Access Walnut Creek BART SMH cost estimate [here](#).

Bollinger Canyon Road SMH | The SMH is located at Bishop Ranch, east of I-680/Bollinger Canyon Road interchange. Bishop Ranch is a large employment center with adjacent points of interest, including the City Center commercial center, Iron Horse Regional Trail that runs parallel to I-680, a large business campus that is the largest employment center in central Contra Costa County, and community services such as library, schools, and medical centers. Bishop Ranch is a mix of retail and commercial services with high-density residences currently under construction. The proposed SMH will provide mobility services to Bishop Ranch users and residents to create a mode shift from Single Occupancy Vehicle (SOV) trips to multimodal trips.

TABLE 2: SMH COST/FUNDING (YOES\$ IN THOUSANDS)

	Mega Request	Non-Federal Match	Other Federal	Total	Match Source	
SMHs and Hydrogen Fueling Infrastructure	ENV	-	\$1,008,000 94%	\$66,000 6%	\$1,074,000 100%	CRP, Measure J, RM3
	PS&E	-	\$3,533,000 70%	\$1,546,000 30%	\$5,079,000 100%	CRP, RM3, TIRCP
	CON	\$32,713,421 56%	\$12,308,215 21%	\$13,198,000 23%	\$58,219,636 100%	CRP,PTA, RM3, TIRCP, Other Local
	OPE*	\$13,928,172 100%	-	-	\$13,928,172 100%	
TOTALS	\$46,641,593 59%	\$16,849,215 22%	\$14,810,000 19%	\$78,300,808 100%	<i>*OPE = Operations</i>	

The construction costs of the SMHs shown in **Table 2** above include a 30% contingency to reflect the level of preliminary design from the Feasibility Study. The construction costs also include the implementation of the hydrogen fueling and maintenance facilities which are fully funded. The MPDG funding will cover construction costs of two SMHs at Walnut Creek BART Station and Martinez Amtrak Station (Bollinger Canyon SMH construction is fully funded, see [cost estimate](#)).

Since these SMHs are an environmental mitigation for transportation impacts under CEQA for the NB 680 Express Lane Completion Project, the requested MPDG funding includes operation costs of the three SMHs for a mitigation period of 20 years, which covers costs for data connectivity for the real-time displays, electrical charging for vehicles and bicycles, lighting, security, and maintaining the bus facilities in a state of good repair.

2. EXPRESS LANE COMPLETION

The requested MPDG funding will be used for the construction phase of the Express Lane Completion component project elements (**Table 3**):

- ➔ Construction of braided ramps between the North Main St/Lawrence Way Interchange and the Treat Boulevard Offramp, separating the Treat Blvd off-ramp traffic from the North Main St/Lawrence Way on-ramp. The Treat Blvd off-ramp would be elevated over the Lawrence Way on-ramp to make merging onto the freeway safer and more efficient.
- ➔ Construction of a new NB express lane from north of SR-24 to the SR-242 junction.
- ➔ Conversion of the existing NB HOV lane from SR-242 to south of the Benicia Martinez Bridge Toll Plaza to an express lane.
- ➔ Construction costs include system integration of the new express lane into the existing express lane tolling system.

TABLE 3: EXPRESS LANE COMPLETION COST/FUNDING (YOE\$ IN THOUSANDS)

		Mega Request	Non-Federal Match	Other Federal	Total	Match Source
Express Lane Completion	<i>ENV</i>	-		\$2,250,000 100%	\$2,250,000 100%	STP
	<i>PS&E</i>	-	\$15,880,000 100%	-	\$15,880,000 100%	BAIFA, RM3
	<i>ROW</i>	-	\$5,358,060 100%	-	\$5,358,060 100%	RM3
	<i>CON*</i>	\$116,308,065 68%	\$40,058,258 23%	\$15,000,000 9%	\$171,366,323 88%	BAIFA, RM3, STIP
TOTALS		\$116,308,065 60%	\$61,296,318 31%	\$17,250,000 9%	\$194,854,383 100%	

**Funds in italics can only be used for construction phase.*

The pre-construction phases are fully funded with other secured funds. The requested MPDG funds will cover construction costs, which include contingencies of 20% for roadway construction, 25% for structures, and 30% for system integration to cover unanticipated cost increases. The construction costs are estimated from the [30% level design](#) performed in the current environmental clearance phase. Access Express Lane Completion component project cost estimate [here](#).

3. COORDINATED ADAPTIVE RAMP METERING

The CARM component project will install TOS and ramp metering elements in the corridor. Vehicle detection equipment, including advanced infrared-based devices, will be installed along the freeway mainline and on each entrance ramp and exit ramp. The Project also includes construction of additional on-ramp storage and lanes at the following four interchanges: Bollinger Canyon Rd, Crow Canyon Rd, Sycamore Valley Rd, and Olympic Blvd for Segment 1; and Oak Rd and Willow Pass Rd for Segment 3A. The Project proposes to use The Infra-Red Traffic Logger (TIRTL) traffic detection technology to collect real-time information on traffic conditions and adaptively optimize ramp meter throughputs to balance queues and enhance traffic flow. Specifically, the Project requires 79 TIRTL sites nominally located at every 1/3 of a mile in the NB direction within the Project Limits.

The CARM Component Project includes 2 segments. Segment 1 covers NB ramps from Alcosta Blvd to Olympic Blvd with the [design at 30% level](#). Segment 3A covers NB ramps from North Main St to Willow Pass Rd with the [design at a conceptual level](#). The two segments will be constructed under two contracts for improved integration and cost efficiencies; specifically, Segment 3A will be constructed during the Express Lane Completion construction to minimize construction interface risks and disruption to the public. Segment 1 of CARM yields a BCR of 2.23, when CARM Segment 3A is added the component project will significantly improve traffic flow on a 19-mile segment of I-680 – the most congested section – yielding a benefit-cost ratio (BCR) of 4.38. Previously, \$1 million was expended on preliminary engineering and environmental approval. See **Table 4** and [Segment 1 cost estimate](#) and [Segment 3A cost estimate](#) and [systems integration and operations cost estimate](#) here.

TABLE 4: CARM COST/FUNDING (YOE\$ IN THOUSANDS)

	Mega Request	Non-Federal Match	Other Federal	Totals	Match Source
CARM	<i>ENV</i>	-	\$880,000	\$880,000	Measure J
			100%	100%	
	<i>PS&E</i>	-	\$3,450,000	\$3,450,000	Measure J, TVTC
			100%	100%	
	<i>CON*</i>	\$37,222,000	\$15,000,000	\$19,970,000	STIP, SHOPP
		52%	21%	28%	
	<i>OPE**</i>	\$12,558,000	-	\$12,558,000	
		100%		100%	
TOTALS	\$49,780,000	\$19,330,000	\$19,970,000	\$89,080,000	
	56%	22%	22%	100%	

**Funds in italics can only be used for construction phase. **OPE=Operation*

The CARM project budget includes contingencies based on the level of design completed and risks identified in the [project risk register](#). They are summarized in **Table 5**.

TABLE 5: CARM COMPONENT PROJECT CONTINGENCIES

CARM Seg.	Task	Contingency %	Comments
1	Construction	20%	Segment at 30% design. Risk register developed.
	System Integration	30%	Higher % used as this is a new technology.
3A	Construction	35%	Higher % used as design is at conceptual level.
	System Integration	35%	Higher % used as design is at conceptual level.

4 | Outcome Criteria

A Benefit-Cost Analysis (BCA) was conducted to analyze the Combined Project for the period from 2028 to 2050 accounting for 20 full years of operations for each component project. The analysis shows that the benefits amount to \$643.6 million, while the total costs for engineering, construction, and ROW are \$243.8 million—all benefit values in this section are adjusted to discounted 2022 dollars. The Combined Project achieves a Net Present Value (NPV) of **\$399.8 million** and a **BCR of 2.64**. With an **Internal Rate of Return of 12%**, the Combined Project will pay for itself in 12 years, as summarized in [Section 5, Table 13](#) of this application narrative. [Table 6](#) summarizes the Combined Project’s impacts and benefits, while [Section 4](#) expands on the MPDG/Mega grant selection criteria, the qualitative and quantitative benefits of the Combined Project, and each component project. The results of the complete analysis are included in the [BCA Narrative](#).

TABLE 6: INNOVATE 680 PROGRAM IMPACTS AND BENEFITS SUMMARY

Benefit	Description	Monetized (Discounted 2022 \$M)
Criterion #1: Safety	Combined Project improvements will enhance safety by synergizing the effects of component projects to smooth traffic flow and promote transit, carpooling, and shared transportation to reduce collisions and enhance overall safety.	179.8 M
Criterion #2: State of Good Repair	The improvements to the Combined Project were evaluated with a 20-year service life to match the analysis period, ensuring safe and smoother operations. The strategic recapitalization investment rejuvenates the CARM component project to a state of good repair. This crucial investment not only prolongs the Combined Project’s lifespan but also bolsters safety measures and sustains operational efficiency, delivering enduring benefits throughout its lifecycle.	-30.8 M
Criterion #3: Economic Impacts	Travel time savings are measured at both corridor and county levels, reflecting the increased efficiency and speed from all projects, with a total reduction of 1.6 million person-hours in the first year and 42.6 million hours over 20 years.	530.4 M
Criterion #4: Climate Change/Environment	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 (~142,000 tons of CO ₂), SOX (~1 ton), PM _{2.5} (~11 tons) and NO _x (~88 tons) emissions. Vehicle speeds along the corridor are expected to improve while any induced VMT is mitigated through the Transportation Demand Management (TDM) Program, and SMHs and as a result, emissions level is estimated to decrease over the Combined Project’s duration.	38.5 M
Criterion #5: Equity/Multimodal/Quality of Life	Enhanced facility amenities offer improved ride quality, comfort, and real-time information for various riders.	14.0 M
	Active transportation benefits for all bicyclists due to dedicated bicycle lanes (installation/extension).	1.1 M
	Health benefits for those who switch to biking instead of nonactive transportation modes, within eligible age range.	0.1 M
Criterion #6: Innovation	Implement advanced technologies such as CARM and express lane dynamic pricing to enhance corridor efficiency and capacity. Implement innovative project delivery and multimodal connections to transform corridor operations.	Qualitative



4.1. Safety | [\\$179.8 million in accident savings](#) will be achieved through a combination of innovative transportation technologies and traditional civil roadway infrastructure improvements that will modernize corridor operations to smooth traffic flow, reduce collisions, and provide access to transit and multimodal transportation options. It is estimated that total collisions will decrease by 2,169, including 5 fatal, 700 injury, and 1464 property damage only (PDO) (**Table 7**).

TABLE 7: INNOVATE 680 SAFETY BENEFITS

Project	Safety Feature(s) + Benefit(s)
Shared Mobility Hubs	SMHs will be implemented at the Martinez Amtrak Station, Walnut Creek BART station, and Bollinger Canyon Road in San Ramon. These neighborhood mobility centers will offer personalized travel options to provide first and last-mile connections to transit and may include amenities such as chargers for electric bikes and vehicles, bike lockers, and real-time travel displays. Application of enhanced access facilities, including installation and extension of dedicated bicycle lanes, led to a 27% reduction in collisions based on the Federal Highway Administration (FHWA) Crash Modification Factor (CMF) database. Implementing these improvements will reduce collisions by 225 (0 fatal, 76 injuries, 149 PDO collisions). Reduction of daily auto VMT also leads to additional reduction of crashes across the region due to fewer miles driven.
Express Lane Completion	Conversion of an HOV lane to an express lane would result in a 20% reduction in collisions based on FHWA's CMF applicable to urban site conditions and collisions of all types. The component project will also construct braided ramps, and replace concrete barrier Type 50 with Type 60G, a measure that will protect drivers from opposing headlights and improve driver safety and comfort where the median width is non-standard. Upgraded guardrails, enhanced pavement delineation, and lighting will add to safety benefits. Total collisions will be reduced by 1,301 (4 fatal, 416 injury, 881 PDO collisions).
Coordinated Adaptive Ramp Metering	Installing/upgrading ramps and the adaptive metering will break up the platoons of vehicles entering the freeway to smooth traffic flow, improve productivity, minimize speed changes, and reduce potential collisions. The improvement is anticipated to decrease overall collisions by at least 8%, according to the FHWA's CMF. This reduction translates to 855 collisions (2 fatal, 275 injury, and 578 PDO collisions).

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 the corridor incident management plan will facilitate quicker response to incidents and expedite access for emergency vehicles. The use of new variable message signs (VMS) to provide real-time traffic conditions and accident warnings also minimizes secondary accidents. Bay Area Infrastructure Financing Authority (BAIFA), which operates the [Bay Area Express Lanes network](#), has executed a Traffic Incident Management Plan with Caltrans that defines the roles, responsibilities, and communication channels involved in managing traffic incidents. Active incident management and coordination with the CHP further improve the safety protocols for the corridor. Proposed Braided Ramps will eliminate the existing unsafe weaving conflicts between vehicle movements at North Main St on-ramp and Treat Blvd off-ramp, as well as trucks entering the weigh station at Treat Blvd off-ramp.



4.2. State of Good Repair | The Combined Project also includes planned routine maintenance activities. Repair and rehabilitation costs throughout its life and a recapitalization investment to restore the CARM component project to its original value ensure an overall state of good repair, extending the lifespan of infrastructure assets, enhancing safety, and improving operational efficiency (**Table 8A**). The Combined Project will repair, upgrade, and replace critical infrastructure elements to ensure they meet current standards and functionality.

These improvements include pavement rehabilitation and additional implementation of safety elements including upgrades to guardrails, new concrete barriers, advanced and reliable traffic detection, and lighting upgrades. 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. This recapitalization is essential for sustaining long-term infrastructure viability and minimizing disruptions caused by aging or failing components.

Operations and Maintenance | The planning and management of the Combined Project is covered by an [Innovation Team Master Cooperative Agreement](#) to streamline delivery, achieve greater cost efficiency, and improve Combined Project outcomes. Combined Project operations and maintenance responsibilities are also covered by the [Innovate 680 Program ConOps](#). The planning and scoping of the projects follow the strategic guidance from the Technical Advisory Committee (TAC) and the Policy Advisory Committee (PAC) with representation from the partner agencies. Planning, funding and actively managing the operational elements of the program will require a coordinated effort between the various project partners. The program partners are developing plans to secure funds and execute the necessary agreements to operate and maintain the facilities for each Combined Project element (**See Table 8B**).

TABLE 8A: STATE OF GOOD REPAIR BENEFITS

Project	Safety Feature(s) + Benefit(s)
Shared Mobility Hubs	The implementation of multimodal facilities leads to a decrease in daily VMT, as there is a shift towards using transit and other active transportation modes. This shift contributes to less pavement wear and tear. Estimated reduction in daily VMT leads to reduction in overall vehicle operations and maintenance costs across 20 full years of operations.
Express Lane Completion	The expenditures pertinent to routine maintenance and periodic repair costs will ensure state of good repair throughout its lifecycle. Most of the project improvements scoped are expected to have an average service life of 20 years, which matches the 20-year analysis period, leading to an absence of residual value at the end of the period.
Coordinated Adaptive Ramp Metering	The expenditures pertinent to routine maintenance and periodic repair costs will ensure state of good repair throughout its lifecycle. Recapitalization of CARM software and detection infrastructure occurs in 10-year cycles while the analysis period is extended to account for 20 full years of operations.

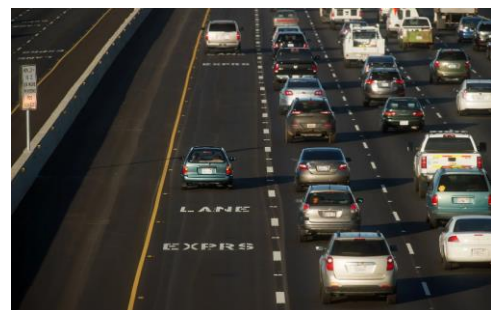
TABLE 8B: STATE OF GOOD REPAIR OPERATIONS AND MAINTENANCE

Innovate 680 Combined Project	Operations Lead	Operations Funding
SMH	Public owner of Right-of-Way (ROW) (state/local/transit operator)	Secured local/state funding
Express Lane Completion	BAIFA	Toll Revenue
CARM	Joint Caltrans/CCTA	SHOPP

** 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 will operate CARM for at least the initial three years and is in discussion with Caltrans over the operations and maintenance of subsequent years. The scope includes a Decision Support System and a county data center to support other advanced freeway and local arterial traffic management systems. BAIFA will manage the express lanes operations through an existing cooperative agreement with Caltrans. Caltrans will be responsible for the operations and maintenance of all traffic management equipment, including cameras, ramp meters, and supporting equipment. Interagency agreements formalizing these operational responsibilities will be executed prior to the project’s completion. The existing sites of the SMHs are currently maintained by the local entities that own them. Maintenance agreements will be executed to define roles and responsibilities for operating the completed SMHs.

The Combined Project improvements are designed with an average of 20-year service life aligning with the 20-year analysis period, ensuring full utilization of various assets. The strategic recapitalization investment is set to rejuvenate the CARM Project Component, securing its original value and ensuring a state of good repair. This crucial investment not only prolongs the assets’ lifespan but also bolsters safety measures and sustains operational efficiency, delivering lasting benefits throughout the project’s lifecycle.





4.3. Economic Impacts, Freight Movement and Job Creation |
[\\$530.4 million 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.

Contra Costa County is central to the Northern California 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 3](#)) - 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. I-680 extends south to Silicon Valley and north to Solano County. It 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, and thriving business centers such as 585-acre Bishop Ranch Business Park.



[Figure 3 -Larger View of California Megaregion map](#)

The Combined Project 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. It qualifies as an ideal choice for a model program of projects that could be expanded and scaled. See [Section 4.5](#) for expanded information on the characteristics of the Combined Project location related to economic development and equitable access to reduce barriers to opportunity.

Contra Costa County is home to over 1 million people, and the population is expected to grow by 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 the MTC, NB I-680 from Danville to Pleasant Hill (cities along the Combined Project) is the 10th most congested corridor in the entire region as of 2017. During 2018, Caltrans data shows that the I-680 had over 1.3 million vehicle hours of delay, with segments of the I-680 averaging daily traffic totals of nearly 150,000 vehicles. See the [Bay Area Economic Institute Report Analyzing the Regional Economic Importance of I-680 Corridor in Contra Costa County – May 2022](#) for additional economic data related to the region.

Table 9 presents quantified projections of the anticipated economic benefits, enhancements in freight logistics, and potential for new job opportunities.

SUPERCOMMUTER BOOM

The number of people with commutes of 90 minutes or more 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.

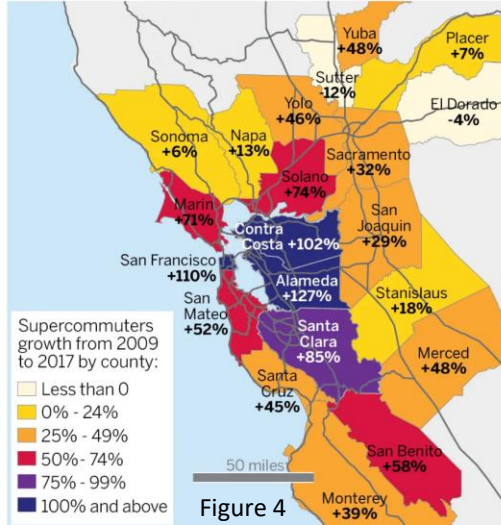


Figure 4

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 the connectivity provided by I-680 enables, 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 corridor³.

As the county continues to grow its population and economic centers, the Combined Project will provide residents and workers with more trip options (Figure 4). 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 and modal shift.

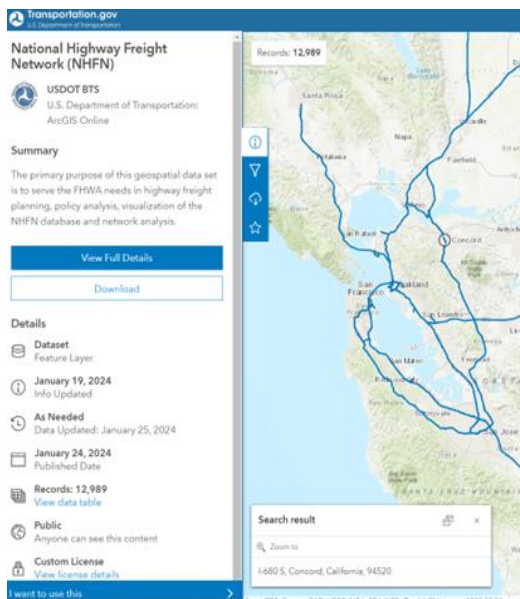


Figure 5

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. These corridors provide access to the Ports of Oakland, Richmond, Pittsburg, and Benicia 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. In the Combined Project area, there are two truck scales on I-680 and the I-680/SR-4 Interchange, the intersection of two major freight corridors in the Bay Area. I-680 is a part of the National Highway System (NHS) and National Highway Freight Network (Figure 5). I-680 connects with SR-4, an east-west corridor that supports the movement of goods from the Central Valley to and from the ports of Oakland and Richmond with connections to oil refineries and other industries. I-680 also carries heavy truck volumes

connecting San Jose and Silicon Valley to the I-580 corridor, a major gateway for the logistics center in the Central Valley and the I-5 corridor. Daily vehicle counts on I-680 average 189,000, with 9,135 or 4.83% of those accounting for freight volumes.

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

⁴ Caltrans GIS Truck Data, May 2020.

Create High-Quality Jobs and Increase Workforce Opportunities | Based on [FHWA's Employment Impacts of Highway Infrastructure Investment](#), the Combined Project will create close to **5,070 direct and indirect jobs**. These jobs will not only include high-paying construction jobs, but they will also support regional economic, environmental, and equity goals while building upon existing community characteristics and partnerships and mitigating impacts on areas with less development.

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, necessitating innovative, multimodal investments to limit congestion. Half of Contra Costa County's resident workforce is employed outside the county. Therefore, I-680 is crucial to enable intraregional trips that expand labor sheds and connect to job opportunities. Bishop Ranch, a 585-acre business park in San Ramon, is the headquarters for major Fortune 500 companies like Chevron and AT&T. It is a significant employment hub, including minimum-wage workers in local hotels and retail. It is primarily accessed via I-680 in the Combined Project area.

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 these manufacturers. The Northern Waterfront Economic Development Initiative is a regional cluster-based economic development strategy dependent on a functional I-680, with a goal of creating 18,000 new jobs by 2035.

I-680 also provides access to [GoMentum Station](#) in the City of Concord, a secured proving ground for connected autonomous vehicles (CAV) and other transportation technologies. GoMentum Station is acknowledged both nationally and internationally for its significant potential to bolster the local economy and enable the United States to remain competitive in the global economy. The test site is expected to enhance economic development in Concord and the surrounding communities by attracting high-quality jobs in autonomous vehicle (AV) testing, research, and development.

In addition to spearheading groundbreaking advancements and innovation, GoMentum Station is also part of the future planned housing development within the [Concord Community Reuse Plan](#). Over the next 30 years, this project aims to redevelop the former 5,000-acre Concord Naval Weapons Station, adding 12,000 housing units, which will accommodate approximately 28,000 new residents, with 25% of the units designated as affordable housing.

The Reuse Project intends to incorporate 6.1 million square feet of office, retail, and light industrial spaces, along with 2.3 million square feet allocated for higher education and/or research and development (R&D) facilities. Moreover, the development will feature parks, recreation areas, and sports facilities.

TABLE 9: SUPPORT ECONOMIC IMPACTS, FREIGHT MOVEMENT AND JOB CREATION

Project	Strategy + Benefits
Shared Mobility Hubs	<p>Housing is growing along the corridor. Integrated land use to influence a more balanced distribution of jobs and housing is needed to alleviate crowding on roads and provide direct access to transit networks. For example, 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. A new intermodal bus facility was also constructed at the station in 2019. In addition, the City of San Ramon has approved the future construction of 4,900 residential units within a few blocks of the Bollinger Canyon SMH. The SMHs will help provide nearby residents seamless and improved access to bus transit, rail, active transportation, and shared modes for their commute to jobs, academia, and other opportunities. The reduction of daily auto VMT will lead to congestion reduction, benefiting the commuters in the corridor and the overall county.</p>
Express Lane Completion	<p>This component project will complete the express lane to provide a continuous express lane from the border of Contra Costa/Solano County, through Alameda County, and into Santa Clara County/Silicon Valley. It encourages the use of transit and shared transportation options, leading to better multimodal transportation systems and operations. The efficiency of this corridor will be significantly improved, reducing travel time. The savings in travel time are measured for both the entire corridor and individual counties, with increased capacity and faster speeds attributed to the conversion of HOV lanes into express lanes. This improvement is expected to cut down on 1.8 million hours of travel time in the first year and a total of 26.2 million hours over 20 years.</p>
Coordinated Adaptive Ramp Metering	<p>Upgrading ramp-metering systems significantly improves freeway operations and reliability by reducing accidents and delays. This is especially beneficial for the logistics and manufacturing industries. The enhancements lead to a smoother traffic flow and higher speeds, resulting in at least 2% decrease in travel time during morning peak hours and at least 10% decrease during evening peak hours. Adjusted for future corridor demand, this results in a significant reduction of travel time, amounting to 1.2 million person-hours in the initial year and an impressive 15.4 million hours over a span of 20 years of operation, underscoring the long-term value of these enhancements.</p>



4.4. Climate Change, Resiliency, and the Environment | [\\$38.5 million in emissions savings](#) to directly support the USDOT's Climate Action Plan through combined investments in innovative transportation technologies, zero-emission transit, and improved connections to transit, active transportation, clean mobility options as shown in **Table 10**.

Mode Shift Toward Sustainability | Seventy percent of residents living along the I-680 corridor reported driving at least once per week within the corridor. Of these drivers, 91% indicated that their preferred mode of travel is driving alone in a personal vehicle. This trend leads to increased time spent in cars, which subsequently reduces overall quality of life while also contributing to the emission of harmful greenhouse gases (GHGs). One of the key *Innovate 680* program objectives is to shift solo drivers to shared or non-auto modes to improve sustainability and resiliency with clean mobility options. The Combined Project includes strategies that make transit more attractive to use and incentivize drivers to shift modes. SMHs that support ZEH I-680 Express Bus with first/last mile connectivity to other non-auto modes will result in a high-quality public transportation option that will reduce the region's transportation GHG emissions. The SMHs will also include better sidewalk and bike lanes connectivity for a more complete zero-emission journey. In addition, the Express Lanes Completion project will provide a more reliable travel time for buses that travel on the I-680 corridor, making transit a more attractive option.

Design for Climate Resiliency | According to [Adapting to Rising Tides-Bay Area](#), a regional sea level rise vulnerability and adaptation study prepared by Bay Conservation and Development Commission (BCDC), the northern limit of the Express Lanes Completion Project is vulnerable to sea-level rise (SLR) impacts due to the area's low roadway elevations and vicinity to Suisun Bay. Drainage improvements will be designed for 100-year tide to address the potential SLR impacts in this area.

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 *Innovate 680* 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](#).

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. Combined Project initiatives are coordinated with the findings, concerns and priorities of these communities based on [Community-Based Transportation Plans](#) (CBTPs) that were developed by CCTA; including associated environmental justice efforts.

For the last 20 years, CCTA's countywide TDM program known as [511 Contra Costa](#), has employed innovative strategies to encourage the use of 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 to support education and outreach for the SMHs that will support a new ZEH I-680 Express Bus service. In the summer of 2023, CCTA began the development of a countywide [Integrated Transit Plan](#) to study and implement strategies to improve equity in transit service and support climate initiatives throughout the county.

The Combined Project uses innovative strategies and technology to minimize potential environmental impacts and maximize the efficiency of the existing transportation system rather than pursuing expansion that may disrupt or even uproot established communities. Environmental impacts of each component project are currently being evaluated through the CEQA and NEPA environmental review process, and efforts will be made to reduce, avoid, and mitigate impacts to the environment.

TABLE 10: STRATEGIES TO SUPPORT CLIMATE GOALS AND RESILIENCY

Project	Strategy + Benefits
Shared Mobility Hubs	Reduced auto daily VMT together with increased speeds lead to corresponding reduction in GHG (23,700 tons of CO ₂), NO _X (2.8 tons), and SO _X (0.2 tons) emissions benefiting communities across the corridor. It also leads to regional-level emission reductions.
Express Lane Completion	Incentive-based mode shift from SOV to express lanes increases utilization of the transportation network, boosts person-throughput, and cuts congestion and related emissions, including approximately 98,000 tons of CO ₂ , 0.6 tons of SO _X , and 70.1 tons of NO _X . Improved vehicle speeds and a comprehensive TDM Program are expected to further reduce emissions over time.
Coordinated Adaptive Ramp Metering	Install and upgrade ramp metering to improve operational efficiencies to smooth traffic flow which will decrease congestion, idling, accidents and GHG emissions. CARM reduces weaving congestion and results in more stable speeds. The project also improves disaster preparedness and incident management. CO ₂ emissions are reduced by over 29,600 metric tons, as well as 0.02 tons of SO _X and 18 tons of NO _X .

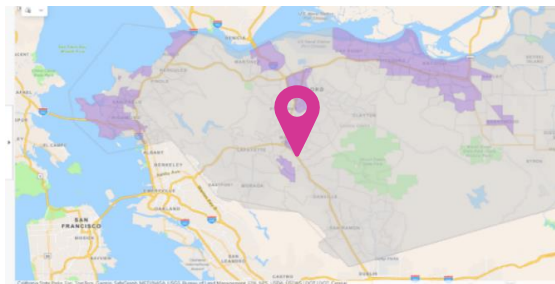


4.5. Equity, Multimodal Options, and Quality of Life | In addition to the \$530 million in time savings, the project will also generate \$15.2 million in health and active transportation benefits. This will enhance equity and quality of life, especially for low-income drivers in disadvantaged census tracts where approximately 20% of daily trips on NB I-680 conclude.

The disparity between housing availability, job opportunities, and the number of employed residents highlights a deficiency in job availability within Contra Costa County relative to the size of its resident workforce. Regional commute patterns indicate a steady increase in the reliance on the Contra Costa transportation system on a daily basis. This underscores the need for innovative, multimodal investments aimed at alleviating congestion. With half of Contra Costa County's resident workforce employed outside of the county, I-680 plays a crucial role in facilitating intraregional trips, expanding labor sheds, and connecting residents to job opportunities. According to the USDOT Equitable Transportation Community (ETC) Explorer ([Figure 6](#)), over one-third of the population in Contra Costa County is living in disadvantaged census tracts that spread across northern Contra Costa County and include tracts along the I-680 corridor in Martinez, Concord, and Walnut Creek.

The I-680 corridor is the primary highway route connecting residents of northern and eastern Contra Costa County to job centers in central and southern Contra Costa County, and in Alameda and Santa Clara Counties. A review of Replica data for trips along NB I-680 indicates 37,800 trips (per day) that use the corridor end in the disadvantaged census tracts. This represents about 20% of all trips using NB I-680 daily ([Figure 7](#)).

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 11**, 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.



Total Population Living in the Selected Project Area	Total Population Living in Disadvantaged Census Tracts in the Selected Project Area	% of Disadvantaged Census Tracts in Selected Project Area
1.1M	375k	32%

[Figure 6 – Disadvantaged Census Tracts in Contra Costa County | USDOT ETC Explorer](#)

The Combined Project brings important transportation benefits to disadvantaged communities through access to more reliable transit and multimodal travel options. Bishop Ranch business park in San Ramon, which is adjacent to the Bollinger Canyon SMH, is the largest employment center in the County and 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 within the Project limits.

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 these manufacturers. The [Northern Waterfront Economic Development Initiative™](#) is a regional cluster-based economic development strategy, dependent on a functional I-680, with a goal of creating 18,000 new jobs by 2035.

The Combined Project’s ability to reduce congestion and travel times along the corridor will directly benefit all users, especially those residents of disadvantaged census tracts who use the corridor daily.

By helping residents connect with multiple modes of transportation, SMHs, working together with the ZEH I-680 Express Bus service, will reduce dependence on SOVs, create mode shifts, and improve the travel experiences of those already using alternative transportation. This would be supplemented by 511 Contra Costa, which incentivizes transit and non-motorized travel and provides discounted fares to increase accessibility.

With the implementation of SMHs, transit users will benefit from improved frequency and reliability of Express Bus services to connect residents of disadvantaged census tracts to jobs. The bicycle and pedestrian improvements proposed at the SMHs will also increase walkability and accessibility.

The ability of the Express Lane Completion and CARM component projects to optimize productivity of the freeway to sustain higher, more reliable, and stable traffic flows will reduce the impact of traffic diverting into neighborhoods along I-680 corridor to avoid freeway congestion, especially in the disadvantaged census tracts located in Concord and Walnut Creek.

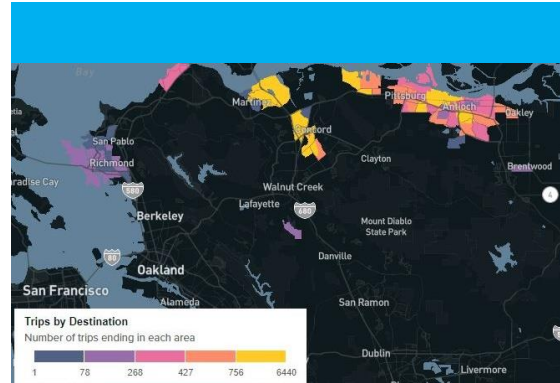


Figure 7 – Number of Daily Trips on NB I-680 that End in Disadvantaged Census Tracts in Contra Costa County | Source: Replica

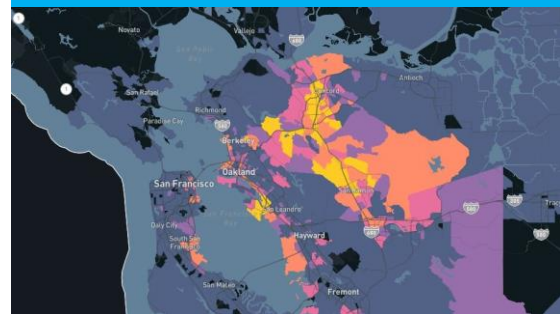


Figure 8 – Origin of Daily Trips on NB I-680 that End in Disadvantaged Census Tracts in Contra Costa County | Source: Replica

TABLE 11: SUPPORTING EQUITY, MULTIMODAL OPTIONS AND QUALITY OF LIFE

Project	Improvement
Shared Mobility Hubs	The project creates multimodal transportation hubs with services and amenities for easier transit connections, shared micromobility, and improved bike/pedestrian access. These hubs proactively address equity and barriers by leveraging their proximity to major employment and retail centers. Noise reduction from less SOVs benefits communities adjacent to I-680. Enhanced amenities and health benefits for bicyclists contribute to a \$15.2 million quantifiable benefit beyond travel time savings.
Express Lane Completion	The project improve travel time reliability. MTC/BAIFA is planning to pilot an equity/affordability means-based express lanes toll discount on the regional express lanes. The 511 Contra Costa Program would offer transit and non-motorized travel incentives, as well as discounted fares to enhance equity.
Coordinated Adaptive Ramp Metering	Innovative adaptive ramp metering will smooth traffic flow and reduce congestion on interregional highway network, minimize diversion to local arterials and corridors in neighboring disadvantaged communities, and support prioritizing the Express Bus during peak periods.

Areas Of Persistent Poverty, Historically Disadvantaged Communities + Opportunity Zones |

As a vital regional connector, the Combined Project supports Contra Costa County with 32% of the census tracts designated as Disadvantaged by the USDOT ETC Explorer mapping tool ([Figure 6](#)). The Combined Project area traverses 30 census tracts, 8 of which are federally designated DACs according to USDOT Grants Project Location Verification Tool (Shown in orange/light pink areas in [Figure 9](#)). Lastly, the Combined Project 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 10](#). MTC funded a [CBTP⁵](#) effort for these priority communities in line with [Lifeline Transportation Network](#) and environmental justice initiatives that identified strategies to meet the mobility and accessibility needs of minority, low-income, and senior residents and individuals with disabilities.

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 such as CARM and highlighted the need for SMHs and Express Bus service to better serve transit-dependent residents. A sample of the multi-lingual engagement efforts undertaken as part of this CBTP process can be accessed [here](#). The next round of CBTP will begin later this year, which will continue to inform future project planning and development.

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.

The *Innovate 680* TAC and PAC, along with community feedback, were essential in determining the Combined Projects direction, methods, and technology to align with local needs. As *Innovate 680* development continues, the Combined Project will continue a multi-year robust public engagement process that focuses on community-based participation that ensures voices of minority, low-income, under-represented, and disadvantaged communities are prioritized. The Combined Project has received significant local, regional, state, and community support, see [Attachment D, Letters of Support](#).

Figure 9: Disadvantaged Communities Map using the Grant Project Location Verification tool

Census Tracts: 3160, 3170, 3280, 3361.04, 3361.03, 3362.01, 3362.02, 3381.01

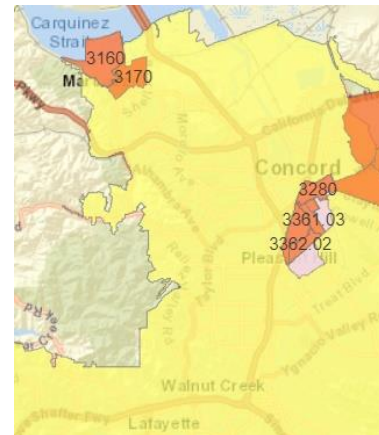
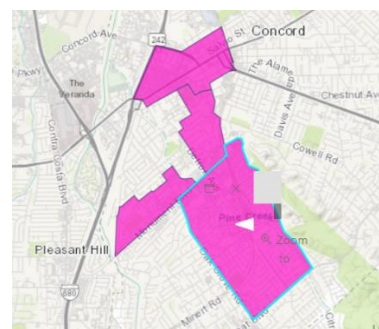


Figure 10: Federally Designated Opportunity Zones along the Monument Corridor in Concord: Bureau of Land Management Esri database:

3372, 3280, 3361.01, 3362.02



⁵ Monument Corridor Community Based Transportation Plan, Nelson Nygaard (February 2020).



4.6. Innovation Areas | Implement advanced technology, innovative project delivery and multimodal mobility options to transform corridor operations.

Innovative Technology | The CARM component project will use technology to transform the I-680 corridor with improved efficiency without freeway expansion. The SMH component project will improve multimodal options, where the availability of real-time transit information via travel displays and connectivity to a mobile application will allow travelers to make informed decisions about their journey. All projects within the Combined Project are necessary for an integrated approach to maximize the efficiency of the corridor. (See **Table 12**).

TABLE 12: INNOVATIVE TECHNOLOGIES TO MAXIMIZE CORRIDOR EFFICIENCY

Project	Innovative Strategy Towards Optimal Efficiency
Shared Mobility Hubs	<p>Innovative Technology The SMHs will use technology to enhance the users’ experience in the hubs to provide system efficiencies and to make transit as an attractive mode choice. The SMH will include charging facilities for electric bicycles and electric vehicles, TSP to provide buses with more reliable travel time, and traveler information displays that will provide users with real-time travel information for better trip planning. In addition, the three SMHs will be integrated and data from each hub will be shared and available on the Mobility on Demand (MOD) mobile application that CCTA is developing. As noted earlier in the application, the SMHs work together with the ZEH I-680 Express Bus service to provide a low carbon travel option.</p> <p>Innovative Delivery CCTA intends to explore public private partnerships with private vendors to provide services at SMHs, such as food/cafes and carshare/bikeshare options.</p>
I-680 Northbound Express Lane	<p>Innovative 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, provide reliable travel times, and give solo drivers the choice to pay a toll to use the lanes. The reduced tolls offered to electric vehicle drivers promote the use of clean air vehicles in the corridor. In addition, BAIFA, which operates and maintains the express lanes in Contra Costa, is committed to having robust cyber security to protect users’ information as outlined in their Privacy Policy.</p>
Coordinated Adaptive Ramp Metering	<p>Innovative Technology One of the first deployments in the nation and the Bay Area, CARM operations will optimize ramp meter throughputs across a series of onramps on a system level based on a dense network of advanced traffic detection devices to manage traffic in real-time and to alleviate congestion. This system would modulate upstream ramps to allow downstream ramps with limited storage to function adequately without costly widening that may also result in environmental impacts. The detection system utilizes solar power to minimize construction costs and impacts. The detection network allows any incident to be detected and captured quickly so that the necessary response can be affected immediately to minimize the impacts of accidents.</p> <p>Innovative Delivery Aligning Segment 3A construction with the Express Lanes project will yield more efficiency and better outcomes for I-680 communities.</p>

5 | Benefit-Cost Analysis

A BCA was conducted for the Combined Project for submission to the USDOT as a requirement of this grant application. The Combined Project contains three distinct component projects, each of which demonstrates independent utility, and are as follows:

- ➔ Shared Mobility Hubs
- ➔ Express Lane Completion Project
- ➔ Coordinated Adaptive Ramp Metering Project – Segments 1 and 3A

The analysis was conducted in accordance with the benefit-cost methodology as recommended by the USDOT in the 2024 Benefit-Cost Analysis Guidance for Discretionary Grant Programs. For each component project, a 20-year operating analysis period was evaluated in addition to the respective construction period. For component projects with multiple phases, benefits are accrued for a 20-year operating period following the completion of the construction period of each individual phase. For projects with multiple components or phases, the analysis period is determined, assuming a 20-year benefit accrual for each individual component/phase.

The total benefits from the Combined Project are calculated to be \$643.6 million in discounted 2022 dollars during the analysis period from 2028-2050. The total capital costs, including engineering, construction, ROW, and land acquisition, are calculated to be \$243.8 million in discounted 2022 dollars. The difference between the discounted benefits and costs equals an NPV of \$399.8 million in discounted 2022 dollars, resulting in a BCR of 2.64. The Internal Rate of Return for the project is 12%, with a Payback Period of 12 years. **Table 13** summarizes the benefits and costs by categories and presents the results from the BCA.

TABLE 13: BENEFIT-COST ANALYSIS RESULTS SUMMARY (See [Attachment A](#))

BCA Metric	Project Lifecycle	
	Undiscounted	Discounted (3.1%)
Total Benefits	\$1,021,404,216	\$643,634,535
Travel Time	\$844,844,049	\$530,352,748
Emissions	\$54,725,304	\$38,527,881
Safety	\$298,226,265	\$179,845,069
Active Transportation	\$1,793,679	\$1,115,468
Health	\$96,844	\$60,223
Facility Amenities	\$22,583,802	\$14,043,304
Residual Value /Recapitalization cost	(\$53,293,522)	(\$30,762,275)
Change in O&M / R&R Costs	(\$147,572,206)	(\$89,547,883)
Total Costs	\$283,729,948	\$243,838,295
Net Present Value (NPV)	\$737,674,267	\$399,796,240
Benefit Cost Ratio (BCR)	3.60	2.64
Internal Rate of Return (IRR)	12%	
Payback Period (Years)	12	

The BCA Narrative, which is included in [Attachment A](#), includes the BCA framework, evaluation metrics, and report analysis. [Section 4, Outcome Criteria](#), includes the Combined Project benefit matrix as well as a summary of the findings by outcome criteria. Excel versions of the BCA calculations for each project are also included on the resource webpage [here](#).

6 | 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 14 years.

The success of the *Innovate 680* program begins at the visioning and concept development phase, where CCTA project teams develop concepts in a holistic manner, including potential environmental impacts, construction, operation and maintenance, and lessons learned from similar projects. Advancement of each component project begins with a feasibility report that analyzes the project and its delivery. CCTA has assembled and integrated the *Innovate 680* Combined Project based on key considerations, including component 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, the *Innovate 680* program 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 component projects under the Combined Project (See **Table 14**). All work completed to date suggests that there are no fatal flaws in the delivery strategy. All the component projects can be designed and constructed using commercially available means and methods.

For the ITS elements of the Combined Project, CCTA follows federal guidelines for systems engineering analysis. The [Innovate 680 Program ConOps](#) has been completed for the *Innovate 680* program 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 *Innovate 680* ConOps included the evaluation and connectivity of the SMHs, Express Lanes, CARM, and other projects. Supporting individual ConOps documents have also been completed for the CARM project.

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) recently completed a pilot CARM project on I-25 in Denver. Riverside County Transportation Commission (RCTC) is also implementing CARM on I-15 in Southern California. CCTA has met with CDOT and RCTC staff to gain lessons learned to inform CARM implementation on I-680. Site visits and information sharing with these agencies have been beneficial for the development of the CCTA CARM project.

Most of the Combined Projects use the traditional design, bid, and build process; however, CCTA continues to evaluate alternative delivery methods that may expedite delivery and/or result in overall cost savings.

Environmental Approval, Permits + Risk | Each component project under the Combined Project has independent utility and logical termini. The component projects are considered as separate projects under both NEPA and CEQA. The environmental review is conducted on a project-by-project basis. **Table 14** below provides the status of the environmental review of each component project.

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 FHWA) to identify potential issues and challenges. This helps CCTA to identify the level of environmental documentation needed and to develop realistic schedules, proactive risk management plans, and strategies. CCTA embraces community and stakeholder input during

the planning and environmental process. This includes using advanced market research techniques in addition to community forums 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 proactively address any concerns or revise design to mitigate potential effects.

As shown in **Table 14**, CCTA does not anticipate any environmental or permitting challenges on the projects. The project teams have and will continue to have proactive discussions with any relevant permitting agencies on the conditions of the permits and the appropriate mitigation measures. The design of these projects does not require engineering expertise that is not readily available to CCTA, and the schedule shown in **Table 15** is readily achievable.

The three component projects will be constructed within public ROW, with the Express Lane project requiring limited additional ROW. Such properties are owned by public agencies that are members of the *Innovate 680* Program committees. Proactive discussions with these owners suggest that the ROW acquisition can be accomplished on schedule and within budget. The utility relocations needed are considered fairly conventional, with detailed investigation and field verification to be conducted during the design phase.

TABLE 14: ENVIRONMENTAL DOCUMENT AND RISK MANAGEMENT APPROACH

Anticipated CEQA/NEPA Document by Project	Risk Management Approach
Shared Mobility Hubs: CE/CE	Context-sensitive design is used to avoid any significant impacts. <i>No resource agency permit is anticipated.</i>
Express Lane Completion: EIR/EA	<i>Required permits and approval include those pertaining to air quality, endangered species, waterways, clean water, and historical/cultural resources, as well as funding and construction/encroachment permits. Through early engagement and consultations during the environmental clearance phase, CCTA does not anticipate any issues in obtaining these permits for project delivery. CCTA has also obtained Caltrans approval for the environmental mitigation of transportation impacts under CEQA by implementing SMHs (as noted in Section 3 under SMH)</i>
CARM Segment 1: CE/CE	
CARM Segment 3A: CEQA Addendum, NEPA Revalidation	Design avoids any potentially significant impacts. <i>No resource agency permit is anticipated.</i>

TABLE 15: Innovate 680 COMBINED PROJECT SCHEDULE

Project	Planning Complete	Environmental Complete	Design Complete	Construction Begin/End
Shared Mobility Hubs	Complete	25Q3	26Q2	26Q2-28Q1
Express Lane Completion	Complete	25Q2	26Q4	27Q1-30Q1
CARM Segment 1	Complete	Complete	25Q4	26Q1-27Q4
CARM Segment 3A	Complete	25Q2	26Q4	27Q3-30Q3

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

Financial Completeness | CCTA is requesting \$213 million in Mega grant funds. With an estimated total program cost of \$380 million, the Mega grant will help fully fund the program. Currently, CCTA does not anticipate any delays with state, federal, and regional funding that has been secured for this program. As shown in **Table 15** Combined Project Schedule and [Attachment C](#), all necessary activities will be completed to allow for MPDG funding obligation by September 30, 2028, consistent with the MPDG funding requirements. Project-specific details are included on the following pages.

1. SHARED MOBILITY HUBS

Project Status | The Preliminary Design/Feasibility Study for the SMHs was completed in January 2023. The Environmental phase for Martinez Amtrak SMH will begin in July 2024. Bollinger Canyon Road and Walnut Creek BART SMHs will start their environmental phase in Fall 2024. The timeline for each of the SMHs is shown below:

Project Schedule

PHASE	DATE	2024	2025	2026	2027	2028	2029	2030
Bollinger Canyon Road								
PID/PAED	10/24-8/25		■					
Design	2/25-4/26		■					
Construction	7/26-1/28			■	■			
Walnut Creek BART Station								
Environmental	10/24-8/25		■					
Design	2/25-4/26		■					
Construction	7/26-1/28			■	■			
Martinez Amtrak Station								
Environmental	7/24-5/25		■					
Design	11/24-12/25		■					
Construction	4/26-10/27			■	■			
Hydrogen Fueling Infrastructure*								
Construction	1/25-6/26		■	■				

* The construction of the hydrogen fueling infrastructure is being led by LAVTA and County Connection

Environmental Permits and Reviews | California Senate Bill 922 provides an expedited environmental clearance process for transit projects such as SMHs.

State and Local Approvals | Encroachment permits will be needed from BART and City of Martinez for construction of the SMHs. No resource agency permit will be needed.

Federal Transportation Requirements Affecting State and Local Planning | The Project complies with the planning requirements for designated Transportation Management Areas, including the congestion management process required under 23 CFR 450.322. The Project is included in MTC’s Plan Bay Area 2050 as well as the STIP.

2. EXPRESS LANE COMPLETION



Project Status | The [Express Lane Completion](#) component project is currently in the environmental clearance phase. Caltrans has approved the Draft Environmental Document (DED) for the 45-day public circulation period, which began on 5/8/24. See the project schedule below.

Project Schedule

PHASE	DATE	2024	2025	2026	2027	2028	2029	2030
Planning	10/15-1/19							
Environmental	7/19-6/25	█						
Design	6/25-12/26		█					
Right-of-Way	6/25-12/26		█					
Construction	3/27-3/30				█	█	█	█
System Integration	3/29-3/30						█	█
Operations	3/30-ongoing							█

Environmental Permits and Reviews | The Express Lanes Completion project is being cleared under an Environmental Impact Report (EIR) for CEQA. It is one of the first state highway projects in California to evaluate transportation impacts using VMT under CEQA. Working collaboratively with Caltrans, CCTA has received Caltrans’ approval of VMT mitigation proposal (SMH project as an environmental mitigation). The project is being cleared as an Environmental Assessment (EA) under NEPA. Selection of preferred alternative will be completed by Summer of 2024 after completion of public review of DED. The Final Environmental Document is expected to be completed by June 2025.

State and Local Approvals | Required permits and approval include those pertaining to air quality, endangered species, waterways, clean water, and historical/cultural resources; as well as funding and construction/encroachment permits. Through early engagement and consultations during the environmental clearance phase, CCTA does not anticipate any issues in obtaining these permits for project delivery.

Federal Transportation Requirements Affecting State and Local Planning | The component project complies with the planning requirement for designated Transportation Management Areas including the required congestion management process under 23 CFR 450.322. The Project is included in MTC’s Plan Bay Area 2050 as well as the STIP.

3. COORDINATED ADAPTIVE RAMP METERING

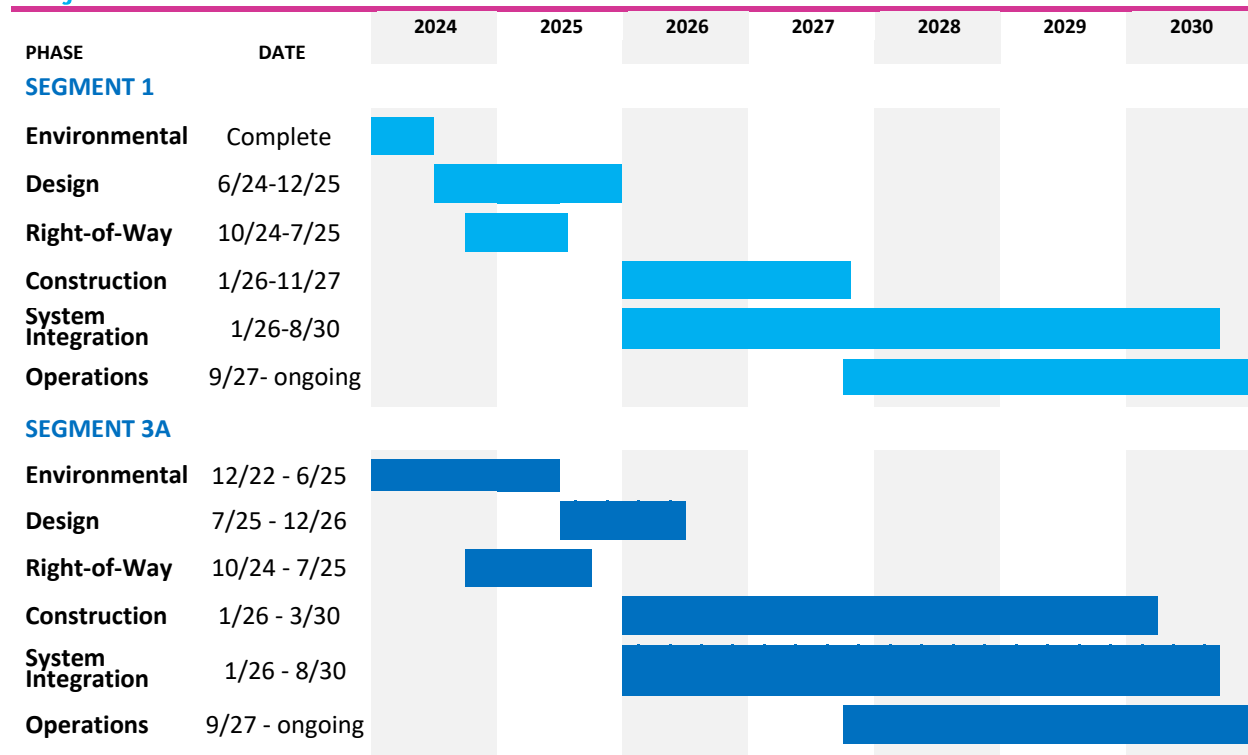


Project Status | The [design for Segment 1](#) is currently at approximately 30% of completion. The component project construction does not include any unusual features and no elevated risk was identified in the [project risk register](#) ([Attachment E](#)). All work will be conducted within Caltrans ROW and no ROW acquisition or resource agency permit is required. With the completion of the Foundation Report and APS for the modification of one bridge abutment, the overall design and construction risk is considered to be below average. The contingency allowance of 20% is considered to be appropriate for this work. The [design of CARM Segment](#)

[3A](#) is at a conceptual level. It will include conventional roadway and ITS work as well as standard Caltrans retaining wall. The contingency allowance is 35%.

Environmental clearance for Segment 1 was achieved in April 2024, paving the way for the start of the final design phase in June 2024. Environmental clearance for Segment 3A is expected to occur in June 2025, with design starting in July 2025. Provided that the Mega grant funding application is approved, there are no foreseeable obstacles to adhering to this timeline, given that all other necessary funding has been obtained and the majority of project approvals are already in place. See the project schedule for each segment below for details.

Project Schedule



Environmental Permits and Reviews | The [CEQA Categorical Exemption \(CE\)/NEPA Categorical Exclusion \(CE\) for Segment 1](#) was approved by Caltrans in April 2024. It is anticipated that the CEQA Addendum and NEPA Revalidation will be approved by June 2025. The CARM project does not require a resource agency. Caltrans granted the project a CE/CE in April 2024, ensuring all environmental clearances were in place. Despite the fact that the CEQA/NEPA exemption does not mandate a formal public engagement process, the *Innovate 680* program has implemented an extensive outreach strategy. This strategy keeps the community informed about the project’s progress via frequent public gatherings, email updates, and dedicated website pages. No resource agency permit will be needed.

State and Local Approvals | No other state or local permit is needed.

Federal Transportation Requirements Affecting State and Local Planning | The component project complies with the planning requirement for designated Transportation Management Areas including the required congestion management process under 23 CFR 450.322. The Project is included in MTC’s Plan Bay Area 2050 as well as the STIP.

7 | Statutory Project Requirements



The Combined Project meets all the funding requirements of the Mega and Infra grant application guidelines. Table 16 below indicates specific funding program requirements and links to applicable supporting documentation. An easily accessible [Innovate 680 MPDG webpage](#) has been created that includes application attachments and resources. Access the resource webpage [here](#).

TABLE 16: MPDG Program Requirements

(Check Mark Denotes Meeting Program Statutory Requirements per NOFO; "NPR" denotes Not a Program Requirement)

MPDG Program Requirements	Mega	INFRA Large	Application Section
1 Generate national or regional economic, mobility, or safety benefits.			
<p>The Innovate 680 Combined Project adopts a comprehensive, multimodal strategy to enhance mobility with innovative transportation strategies to optimize corridor efficiency and promote a transition from SOV to public or shared transportation. This approach aims to improve operational efficiency, ensure reliable travel times, enhance safety, and alleviate corridor congestion. Recognized as a Route of Regional Significance and a key connector in the Bay Area Mega Region Global Gateway, the I-680 corridor is also part of the NHS and NHFN. The efficacy of the Combined Project in fulfilling these roles is examined in Sections 4 and 5, with additional specifics provided for each individual project component in Table 17 below.</p>	☑	☑	<p>Section 4, Outcome Criteria</p> <p>Section 5, BCA Attachment A, BCA Narrative</p>
2 The project will be cost effective			
<p>The Combined Project has an NPV of \$399.8 million in discounted 2022 dollars, resulting in a BCR of 2.64. The Internal Rate of Return for the project is 12% with a Payback Period of 12 years.</p>			
<p>The Shared Mobility Hubs component project has an NPV of \$22.5 million in discounted 2022 dollars, resulting in a BCR of 1.46. The Internal Rate of Return for the project is 4% with a Payback Period of 19 years.</p>			<p>Section 5, BCA Attachment A:</p> <ul style="list-style-type: none"> – BCA Narrative – BCA Analysis
<p>The Express Lane Completion component project has an NPV of \$246 million in discounted 2022 dollars, resulting in a BCR of 2.66. The Internal Rate of Return for the project is 10% with a Payback Period of 13 years.</p>	☑	☑	
<p>The CARM component project has an NPV of \$155.1 million in discounted 2022 dollars, resulting in a BCR of 4.38. The Internal Rate of Return for the project is 21% with a Payback Period of 10 years.</p>			

3	<p>The project will contribute to 1 or more of the national goals described under 23 U.S.C. § 150</p> <p>The Combined Project and component projects will contribute to all of the national goals described under 23 U.S.C. § 150, including safety, infrastructure condition, congestion reduction, reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays. See Table 17 below.</p>	NPR	<input checked="" type="checkbox"/>	<p>Section 4, Outcome Criteria</p> <p>Section 5, BCA</p> <p>Table 17 below</p>
4	<p>The project is based on the results of preliminary engineering</p> <p>The three component projects under the Combined Project have completed preliminary engineering and studies, in coordination with stakeholders, to determine feasibility and to define scope, costs and schedule.</p>	NPR	<input checked="" type="checkbox"/>	<p>Section 3, Budget</p> <p>Section 6 Project Readiness</p>
5	<p>With respect to related non-federal financial commitments, 1 or more stable and dependable sources of funding and financing are available to construct, maintain, and operate the project, and contingency amounts are available to cover unanticipated cost increases</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>Section 3, Budget</p> <p>Attachment C, Funding Commitments</p>
6	<p>The project cannot be easily and efficiently completed without other Federal funding or financing available to the project sponsor</p> <p>The Combined Project as well as each project component requires MPDG to fund the construction phase. While CCTA has been successful in securing other fund sources for pre-construction phases, funding shortfalls for construction are difficult to bridge since other grant opportunities have smaller funding capacity. MPDG funding opportunity is the most suitable grant to seek funding for large construction projects. If MPDG is not received, project costs will increase due to cost escalations over time.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>Section 3, Budget</p> <p>Attachment C, Funding Commitments</p>
7	<p>The project is reasonably expected to begin construction not later than 18 months after the date of obligation of funds for the project</p> <p>Previously secured funding will be utilized for pre-construction phases which are currently underway. The requested MPDG funding will cover the construction costs of SMHs, Express Lane Completion, and CARM component</p>	NPR	<input checked="" type="checkbox"/>	<p>Section 6 Project Readiness</p>

projects. The requested funds will also cover the operation costs of SMHs and CARM. The Combined Project can begin construction no later than 18 months after funding obligation, when agreements are executed. CARM Segment 1 has received environmental clearance and will be the first component project to begin construction in January 2026. Construction of SMHs is expected to occur in 2026. The Express Lanes Completion and CARM Segment 3A are expected to begin construction in 2027. CCTA will be able to obligate MPDG funds by 9/30/2028.

8 The applicant has sufficient legal, financial, and technical capacity to carry out the project

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 14 years. CCTA has the legal, financial, and technical capacity to carry out the Combined project. CCTA’s financial acumen is demonstrated through its strategic management of funds and resources, ensuring the successful delivery of complex, multi-faceted and innovative transportation initiatives. This solid track record positions CCTA to confidently manage and execute the Combined project, maintaining the highest standards of quality and effectiveness.



NPR

[Section 6
Project
Readiness](#)

9 The application includes a plan for the collection and analysis of data to identify the impacts of the project and accuracy of forecasts included in the application.

A Data Plan has been prepared for the Combined Project that details how the technical team will collect and handle data and prepare the required reports, during and after the period of performance. The Data Plan includes the following:

- **High-Level Goals:** CCTA will monitor the project to achieve goals related to improving economy, mobility, and safety while maintaining cost-effectiveness.
- **Key Performance Indicators (KPIs):** Section 1.4 of Chapter 1 identifies KPIs mapped to criteria defined in the NOFO.
- **Data Types and Sources:** Chapter 2 describes data types, standards, metadata, and sources used for data collection.
- **Data Gathering Process:** Chapter 3 explains the process of data collection.
- **Data Analysis Approach:** Chapter 4 outlines the approach for analyzing data, including baseline, predicted project characteristics, and monitoring.
- **Access Policies:** Chapter 5 covers access restrictions and sharing policies.
- **Data Storage:** Chapter 6 specifies data storage location, policies, requirements, and tools.



NPR

[Attachment F,
Mega Data Plan](#)

TABLE 17. PROJECT IMPACTS AND BENEFITS SUMMARY – BY COMPONENT PROJECT

MPDG Outcome Criteria/Benefit	Description	Monetized (Discounted 2022 \$M)	National goals under 23 U.S.C. § 150
Shared Mobility Hubs			
Criterion #1: Safety	Enhanced access facilities including installation and extension of dedicated bicycle lanes lead to 27% reduction in collisions based on FHWA CMF database.	\$15.7 M	Safety
	Reduction of daily auto VMT leads to additional reduction of crashes across the region due to fewer miles driven.	\$0.9 M	
Criterion #2: State of Good Repair	Multimodal facilities reduce daily auto VMT and pavement damage by shifting to transit/active modes.	\$0.1 M	Infrastructure Condition
	Estimated reduction in daily VMT leads to reduction in overall vehicle operations and maintenance costs across 20 full years of operations.	\$27.6 M	
Criterion #3: Economic Impacts	Reduction of Daily auto VMT leads to congestion reduction benefiting the commuters in the corridor and the overall county.	\$7.3 M	Economic Vitality, Congestion Relief
Criterion #4: Climate Change/Environment	Reduced auto daily VMT together with increased speeds lead to corresponding reduction in GHG (23,700 tons of CO ₂), NO _x (2.8 tons), and SO _x (0.2 tons) emissions benefiting communities across the corridor. Reduced daily VMT also leads to regional-level emission reduction.	\$5.5 M	Env. Sustainability
Criterion #5: Equity/Multimodal/Quality of Life	The benefits of the enhanced facilities include improved ride quality, comfort, and access to real-time information for riders. The establishment and expansion of dedicated bicycle lanes provide active transportation and increased safety benefits to all cyclists. Additionally, there are health advantages and a reduction in mortality rates for those who switch to active transportation. Communities near the corridor also experience better noise levels due to the decrease in daily automobile VMT. The Martinez Amtrak Station SMH is located in a DAC, and will benefit communities of concern. Utilizing alternative fuel for ZEH I-680 Express Bus will also reduce carbon impact for a better environment.	\$15.3	Env. Sustainability, Reliability
Express Lane Completion			
Criterion #1: Safety	Conversion of an HOV lane to an Express Lane would result in a 20% reduction in collisions based on FHWA's Crash Modification Factor applicable to urban site conditions and collisions of all types. Braided Ramps will eliminate unsafe weaving movements.	\$109.5 M	Safety
Criterion #2: State of Good Repair	Improvements have a 20-year life with no residual value, equal to the analysis period.	\$0.0 M	Infrastructure Condition
Criterion #3: Economic Impacts	Converting HOV lanes to express lanes saves travel time at both corridor and county levels, with 1.8 million person-hours saved in the first year and 26.2 million over 20 years, due to increased throughput and speed.	\$314.9 M	Economic Vitality, Congestion Reduction

MPDG Outcome Criteria/Benefit	Description	Monetized (Discounted 2022 \$M)	National goals under 23 U.S.C. § 150
<u>Criterion #4:</u> Climate Change/Environment	Incentive-based mode shift from SOV to HOV enhance network use, boosting person-throughput and cutting congestion and related emissions—about 98,000 tons of CO2, 0.6 tons of SOX, and 70.1 tons of NOX. Expected corridor speed improvements and a TDM Program will mitigate for VMT, leading to an overall drop in emissions over time.	\$26.6 M	Env. Sustainability
<u>Criterion #5:</u> Equity/Multimodal/Quality of Life	The project optimizes the productivity of I-680 to yield a more reliable and stable traffic flows, reducing the impact of traffic diverting into neighborhoods along I-680 corridor to avoid freeway congestion, especially in the disadvantaged census tracts located in Concord and Walnut Creek. A complete express lane network will also provide reliable transit travel time, enhancing multimodal experience.	Qualitative Benefit	Congestion Reduction, Reliability
Coordinated Adaptive Ramp Metering			
<u>Criterion #1:</u> Safety	Application of adaptive ramp metering is expected to reduce collisions of all types by at least 8% based on FHWA's CMF for the proposed countermeasure for both Segments 1 and 3A.	\$69.6 M	Safety
<u>Criterion #2:</u> State of Good Repair	Recapitalization of CARM software and detection infrastructure occurs in 10-year cycles while the analysis period is extended to account for 20 full years of operations. The strategic recapitalization investment rejuvenates the CARM component project to a state of good repair.	-\$30.8 M	Infrastructure Condition
<u>Criterion #3:</u> Economic Impacts	The application of real-time and predictive traffic management is projected to lead to a 2% reduction in morning peak travel times and a 10% reduction in evening peak travel times, resulting in less congestion, smoother traffic, and faster average speeds. These benefits are projected to save 1.2 million person-hours in the first year and 15.4 million hours over 20 years, taking into account the increasing demand on the corridor.	\$183.0 M	Congestion Reduction, Reliability
<u>Criterion #4:</u> Climate Change/Environment	GHG (around 29,600 tons CO2 reduction), NOX (17.7 tons), and SOX (0.2 tons) Emission reductions due to an increase in freeway speeds with the reduction of weaving movements across the corridor segments where CARM is implemented	\$8.7 M	Envi. Sustainability
<u>Criterion #5:</u> Equity/Multimodal/Quality of Life	Deploying adaptive ramp metering technology will smooth traffic flow and reduce congestion on I-680 and on ramps. This minimizes diversion to local communities and reduces queue spillbacks to local streets. These can have positive impacts to Concord and Walnut Creek, which have disadvantaged census tracts.	Qualitative Benefit	Congestion Reduction
All Component Projects	The planning and management of the Combined Project is covered by an Innovation Team Master Cooperative Agreement to streamline delivery, achieve greater cost efficiency, and improve Combined Project outcomes.	Qualitative Benefit	Reduced Project Delivery Delays

8 | Mega Data Plan

The Mega Data Plan is submitted as Attachment F to this application narrative and can also be accessed [here](#).

9 | Letters of Support

Letters of Support are submitted as Attachment D to this application narrative and can also be accessed [here](#).

Attachments

- A. [Benefit-Cost Analysis Narrative](#)
- B. [Required Forms](#)
- C. [Funding Commitments](#)
- D. [Letters of Support](#)
- E. [Resource Documents](#)
- F. [Mega Data Plan](#)

