



TIRCP Quantification Methodology and Calculator Tool

Training Webinar

November 22, 2019

Webinar Outline

1. Background on Quantification Methodology (QM) and Benefits Calculator Tool
2. QM and Calculator Tool Basics
3. Changes to the QM and Calculator Tool
4. Calculator Tool Demo
5. Q&A

1. Background on QM and Benefits Calculator Tool

CARB's Role in California Climate Investments

- Funding Guidelines for Administering Agencies
- Guidance on investment minimums for “priority populations”

- Guidance on quantifying GHG reductions and co-benefits

- Guidance on and collection of reporting data for the Annual Report to the Legislature

**Focus for
today's
webinar**

GHG/Co-Benefits Quantification

- For all California Climate Investments programs, CARB provides guidance on estimating the greenhouse gas (GHG) emission reductions and co-benefits for individual projects
- Quantification Guidance includes 3 elements:
 1. Quantification methodology (PDF)
 2. Co-benefit assessment methodologies (via website)
 3. Benefits calculator tool (Excel) + accompanying User Guide (PDF)

GHG and Co-Benefit Quantification Resources

California Air Resources Board

Quantification Methodology

California State Transportation Agency
Transit and Intercity Rail Capital Program

California Climate Investments



FINAL
October 18, 2019



← → ↻ ww2.arb.ca.gov/resources/documents/ci-methodologies

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CCI Co-benefit Assessment Methodologies

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California Climate Investments


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California Climate Investments support the State's climate change goals and provide many additional benefits to individuals, households, businesses, and communities. These "co-benefits" include social, economic, and environmental benefits. CARB provides guidance on quantification methods and reporting to administering agencies. CARB contracted with the University of California, Berkeley (UC Berkeley) to help research and develop methods for evaluating project co-benefits. Guidance on using the co-benefit assessment methodologies is contained in [CARB's Funding Guidelines](#).

The co-benefits listed below were prioritized based on administering agency input and broad applicability to California Climate Investments programs. UC Berkeley first reviewed the scientific data to determine if methods could be developed and summarized the findings in literature reviews. Next, UC Berkeley and CARB developed Co-benefit Assessment Methodologies where feasible. CARB solicited public comment on draft versions in Spring 2018 prior to posting final Co-benefit Assessment Methodologies. CARB may review and update assessment methodologies periodically based on: new or evolving project types; new legislation; available resources; new scientific developments or tools, or modifications in the analytical tools or approaches upon which the methodologies were based; or input from administering agencies or the public.

Calculator Tool and User Guide



California Air Resources Board

Benefits Calculator Tool for the
Transit and Intercity Rail Capital Program

California Climate Investments

Note to applicants:

A step-by-step user guide, including project examples, for this Benefits Calculator Tool is available here:
https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/calsta_tircp_finaluserguide_cycle4.pdf

Project Name:	
Lead Agency Name:	
Contact Name:	
Contact Phone Number:	
Contact Email:	
Date Calculator Completed:	

Key for color-coded fields:

Green	Required input field
Blue	Optional input field*
Grey	Output field / not modifiable
Yellow	Helpful hints / important tips
Black	Not applicable

*See "Documentation" tab for additional information

Read Me

Project Info

Quantifiable Component 1

Quantifiable Component 2

Quantifiable Component 3

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+

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California Air Resources Board

User Guide

California State Transportation Agency
Transit and Intercity Rail Capital Program

California Climate Investments

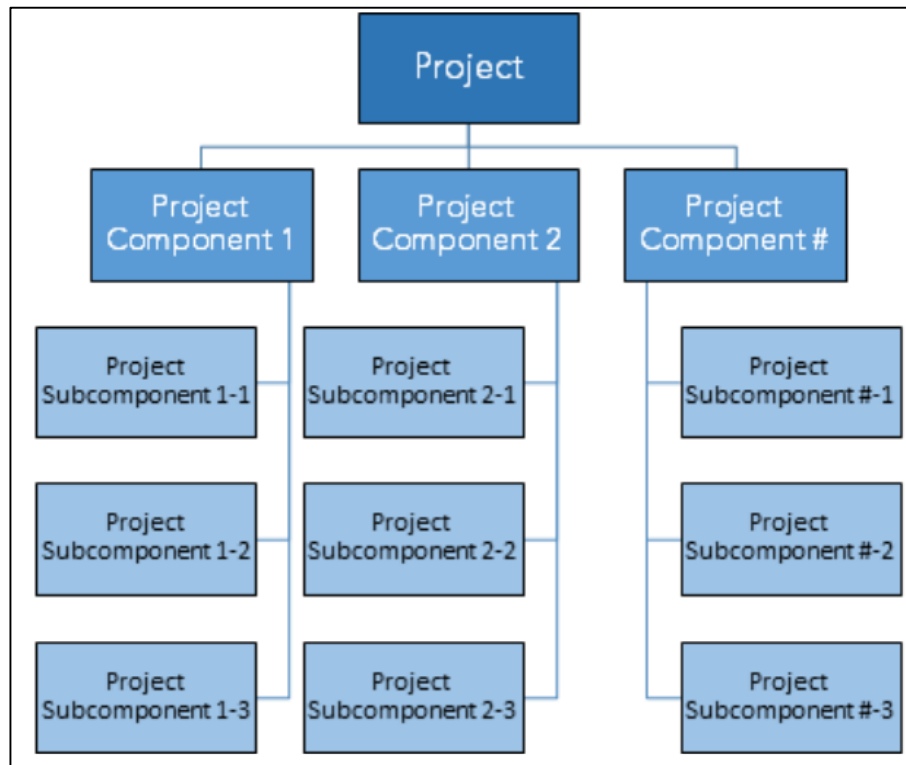


Cap and Trade
Dollars at Work

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2. QM and Calculator Tool Basics

How Project Subcomponents and Components Combine to Create a Project



Project Types

For quantification purposes, eligible TIRCP projects components or subcomponents fall into four project types:

1. New Service
2. System and Efficiency Improvements
3. Cleaner Vehicles/Technology/Fuels
4. Fuel/Energy Reduction

Project Type 1:

New Service

Project Type	Definition/Description	Examples
1. New Service	Project subcomponents result in new transportation service; may include expansion of an existing service.	<ul style="list-style-type: none">• Constructing a new rail line• Adding new buses to an existing transit route

Calculation Approach

Emission Reductions =
Emission Reductions from Displaced Autos – Emissions from New Service

Project Type 2:

System and Efficiency Improvements

Project Type	Definition/Description	Examples
2. System and Efficiency Improvements	Project subcomponents result in increased ridership for existing routes; may include projects that increase service levels, reliability, safety, or decrease travel times.	<ul style="list-style-type: none">• Integrated ticketing• Improved scheduling systems

Calculation Approach

Emission Reductions =
Emission Reductions from Displaced Autos

Project Type 3:

Cleaner Vehicles/Technology/Fuels

Project Type	Definition/Description	Examples
3. Cleaner Vehicles /Technology/ Fuels	Project subcomponents result in the use of cleaner vehicles, technologies, or fuels.	<ul style="list-style-type: none">• Replacing existing diesel buses with electric buses• Using renewable natural gas instead of fossil natural gas

Calculation Approach

Emission Reductions =

Emission Reductions from Displaced (Baseline) Vehicle – Emissions from New Vehicle

Project Type 4:

Fuel/Energy Reduction

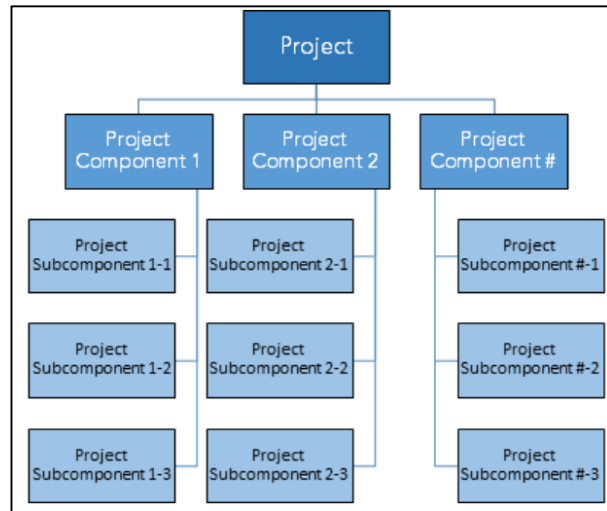
Project Type	Definition/Description	Examples
4. Fuel/Energy Reduction	Project subcomponents result in using less fuel or energy from existing transit services, or producing renewable energy/fuel; includes projects that reduce transit miles driven and idling, or generate renewable electricity.	<ul style="list-style-type: none"> Optimizing bus routes to reduce diesel fuel usage Installing solar panels to displace grid electricity.

Calculation Approach

Emission Reductions =
Emission Reductions from Reduced Fuel/Energy Usage OR
Displaced Fuel/Energy Usage from Renewable Energy/Fuel Production

FAQ: What if my project has more than one project type?

- The Calculator Tool allows users to divvy up projects into component tabs or, within each tab, subcomponent columns—similar to the figure at right (from slide 8).
- “Project type” must be selected for each project subcomponent.



The Calculator Tool is Intended to Simplify the Calculation Process

- Translates the quantification methodology into a Excel-based tool.
 - Project applicants provide the necessary input data and the tool does the calculations for them.
 - Results from the calculations appear in GHG and Co-Benefits Summary tabs.
- NOTE: Documentation/justification required for some inputs.

What is quantified?

- GHG emission reductions
- Passenger vehicle miles traveled reductions
- Fossil fuel use reductions
- Criteria and toxic air pollutant emission reductions

New this cycle:

- Energy and fuel cost savings
- Passenger travel cost savings

Helpful Tips

- Review all of the tabs before you begin using the tool to familiarize yourself:
 - Start with “Read Me”
 - Review the “Definitions and Acronyms” tab before you begin entering data
- Have the QM and User Guide handy
- Data in the tool should match information in the narrative portions of the application

3. Changes to the QM and Calculator Tool

Changes to the QM and Calculator Tool

- Created the “User Guide”
- Single approach for estimating electricity production of solar PV via the PVWatts® Calculator* (from National Renewable Energy Lab)
- In the Calculator Tool:
 - Added capability to enter data for up to three subcomponents per Quantifiable Component
 - Separated inputs for “Displaced Vehicle” and “Fuel/Energy Reduction”
 - For many project types, allow optional inputs (requires documentation)
 - Added Rail Multiple Units (diesel or electric) as an eligible vehicle type;
 - Added two new co-benefits: Energy and Fuel Cost Savings and Passenger Travel Cost Savings

4. Calculator Tool Demo



California Air Resources Board
Benefits Calculator Tool for the
Transit and Intercity Rail Capital Program
California Climate Investments

Note to applicants:

A step-by-step user guide, including project examples, for this Benefits Calculator Tool is available here:

https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/calsta_tircp_finaluserguide_cycle4.pdf

Project Name:	Expanded Commuter Services
Lead Agency Name:	Miscellaneous Transit Agency
Contact Name:	John Smith
Contact Phone Number:	916-123-4567
Contact Email:	john.smith@mta.org
Date Calculator Completed:	11/22/2019

Key for color-coded fields:	
Green	Required input field
Blue	Optional input field*
Grey	Output field / not modifiable
Yellow	Helpful hints / important tips
Black	Not applicable

*See "Documentation" tab for additional information

Example Project Description

- Component 1 – Subcomponent 1
 - The project will lay track to provide a new heavy rail service in Alameda county. The rail line will connect downtown to an existing transit terminal.
- Component 1 – Subcomponent 2
 - The new rail service from the previous subcomponent will enable more people to connect to an existing shuttle service that links the transit terminal to a business park.
- Component 1 – Subcomponent 3
 - Related to the shuttle service from subcomponent 2, the project will replace the existing 10 diesel shuttle buses with new CNG shuttle buses.



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Note to applicants:

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https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/calsta_trcp_finaluserguide_cycle4.pdf

Project Name:	Expanded Commuter Services
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Input	Description	Quantifiable Component 1: Subcomponent 1		Quantifiable Component 1: Subcomponent 2		Quantifiable Component 1: Subcomponent 3	
Identifying Descriptor (ID)	Brief description of the quantifiable component identifying it from other separable components.	New Heavy Rail Line (Downtown to Terminal B)		Increased Ridership from Unlinked Shuttle Trip (Terminal B to Business Park)		Shuttle Bus Replacement	
Funding Inputs							
TIRCP Funds Requested (\$)	Total TIRCP funds requested for this separable component.	\$20,000,000		\$0		\$12,000,000	
Total Project Cost (\$)	Total cost of this separable component.	\$50,000,000		\$0		\$25,000,000	
Additional CCI Program 1, if applicable							
CCI Program	Other CCI Program from which project has or will be requesting GGFR funds.	Caltrans - LCTOP					
Additional GGFR Funds (\$)	Total GGFR funds requested or to be requested from Additional CCI Program 1.	\$5,000,000					
Additional CCI Program 2, if applicable							
CCI Program	Other CCI Program from which project has or will be requesting GGFR funds.					CARB - Clean Truck & Bus	
Additional GGFR Funds (\$)	Total GGFR funds requested or to be requested from Additional CCI Program 2.					\$5,000,000	
Total GGFR Funds Requested (\$)	Total GGFR funds requested from all CCI Programs	\$25,000,000		\$0		\$17,000,000	
Project Info Inputs		Input		Input		Input	
Project Type	For the purposes of this quantification, eligible TIRCP projects fall into four project types. Select the project type that best describes this component.	New Service		System and Efficiency Improvements		Cleaner Vehicles/Technology/Fuels	
Service Type	The transit service (e.g., Intercity/Express Bus (Long Distance), Light Rail, Vanpool, etc.) directly associated with the proposed project. For projects that serve multiple services, select Multi-modal.	Rail		Local/ Intercity Bus (Short Distances)		Local/ Intercity Bus (Short Distances)	
Type of Region	The type of region that best encompasses the geographic location for the proposed project type.	County		County		County	
Region	The County or Air Basin where the majority of the service occurs.	Alameda		Alameda		Alameda	
Year 1 (Yr1)	The first year of service or the first year the facility or rolling stock will be in use.	2020		2020		2021	
Year F (YrF)	The final year of service or the final year the facility or rolling stock's useful life.	2030		2030		2031	
Useful Life (yrs)	The number of years the service is funded or the useful life of the facility or rolling stock. Limited to up to 50 years.	10		10		10	
Displaced Passenger Auto VMT Inputs		Input		Documentation		Input	
Yr1 Ridership	The increase in unlinked passenger trips directly associated with the proposed project in the first year (Yr1).	400,000		Estimate based upon historical ridership data		200,000	
YrF Ridership	The increase in unlinked passenger trips directly associated with the proposed project in the final year. If the ridership is not expected to change, Yr1 and YrF should be the same value.	460,000		Estimate based upon historical ridership data, 1.5% annual growth		220,000	
Adjustment Factor	Discount factor applied to annual ridership to account for transit dependent riders. Use: Document project-specific data or system average developed from a recent, statistically valid survey or default.	0.79		Default value		0.59	
Length of Average Trip (mi)	Annual passenger miles over unlinked trips directly associated with the proposed project.	15.00		Length of new track		6.00	
New Service Vehicle Inputs		Input		Documentation		Input	
Vehicle Type	The vehicle type (e.g., Transit Bus, Streetcar, Ferry, etc.) that will operate the new service or will be procured.	Heavy Rail				Cut-A-Way	
Engine Tier	The engine tier for the vehicle(s) that will operate the new service.	Tier 4					
Engine Horsepower	The engine horsepower rating for the vehicle(s) that will operate the new service.						
Fuel Type	The fuel type (e.g., electric, diesel, etc.) of the vehicle for the new service, or of the new vehicle(s) to be procured.	Diesel				CNG	
Hybrid Vehicle	Is the vehicle for the new service, or vehicle(s) to be procured, a hybrid? (Only applicable to non-zero emission fuel types)	No				Yes	
Model Year	The engine model year of the vehicle that will operate the new service, or of the new vehicle(s) to be procured.					2021	
Project-Specific GHG Emission Factor (gCO ₂ e/MJ)	If used, applicant must be able to demonstrate an approved carbon intensity value under the Low Carbon Fuel Standard and submit additional documentation.					36.17	
Annual VMT (mi/yr)	The estimated annual VMT required to operate the new service or of the new vehicle(s) to be procured (e.g., 72,000). For rail and ferry vehicles, applicants may alternatively use Annual Fuel. For vehicles with multiple engines (e.g., DMUs), provide the cumulative VMT across all the engines.	21,600		15 miles one-way * 4 trips/day * 355 days/year		40,000	
Annual Fuel Use	The estimated annual fuel (i.e., gallon of diesel, kWh of electricity) required to operate the new service, or of the new rail or ferry vehicle(s) to be procured (e.g., 26,000). Units of gallons for biodiesel, diesel, gasoline, LNG, renewable diesel; scf for CNG and renewable natural gas; kWh for electric; kg for hydrogen.						
						LCFS Pathway CNGLF201 See fuel supply contract.	
						Based upon existing routes	

Baseline Vehicle Inputs		Input	Documentation	Input	Documentation	Input	Documentation
Vehicle Type	The vehicle type (e.g., Transit Bus, Streetcar, Ferry, etc.) of the baseline vehicle(s).					Cut-A-Way	
Engine Tier	The engine tier of the baseline vehicle(s).						
Engine Horsepower	The engine horsepower rating of the baseline vehicle(s).						
Fuel Type	The fuel type (e.g., electric, diesel, etc.) of the baseline vehicle(s).					Diesel	
Model Year	The average engine model year(s) of the baseline vehicle(s).					2010	
Annual VMT (mi/yr)	The estimated annual VMT of the baseline vehicle(s). For rail and ferry vehicles, applicants may alternatively use Annual Fuel. For vehicles with multiple engines (e.g., DMUs), provide the cumulative VMT across all the engines.					40,000	Based upon existing routes
Annual Fuel Use	The estimated annual fuel the baseline vehicle(s) would have required to operate the equivalent as the new vehicle to be procured. Units of gallons for biodiesel, diesel, gasoline, LNG, renewable diesel; scf for CNG and renewable natural gas; kWh for electric; kg for hydrogen.						
Fuel/Energy Reductions Inputs		Input	Documentation	Input	Documentation	Input	Documentation
Vehicle Type	The vehicle type (e.g., Transit Bus, Streetcar, Ferry, etc.) of the displaced vehicle(s).						
Engine Tier	The engine tier of the displaced vehicle(s).						
Engine Horsepower	The engine horsepower rating of the displaced vehicle(s).						
Fuel Type	The fuel/energy type (e.g., diesel, grid electricity, etc.) being reduced as a result of the project.						
Model Year	The average engine model year(s) of the vehicle(s) to realize fuel/energy reductions as a result of the project.						
Annual Fuel Use	The estimated annual fuel/energy reductions expected to be realized as a result of the project. Units of gallons for biodiesel, diesel, gasoline, LNG, renewable diesel; scf for CNG and renewable natural gas; kWh for electric; kg for hydrogen. For projects that generate renewable electricity using solar photovoltaic panels, applicants should use the PVWatts Calculator to determine this input, available at http://pvwatts.nrel.gov/ .						
Travel Cost Savings Inputs		Input	Documentation	Input	Documentation	Input	Documentation
Baseline Average One-Way Fare Cost (\$/Trip/Rider)	The average fare cost per trip per rider prior to project implementation. If expanding service, baseline fare cost is zero.						
New Average One-Way Fare Cost (\$/Trip/Rider)	The new expected average fare cost per trip per rider resulting from the proposed project.	\$6.00	Based upon estimated fare revenue.				
Average Transit Facility Parking Cost (\$/Trip/Rider)	The average expected cost of parking per trip per rider that riders would pay at the transit facility where the trip originates. Consider that not all transit riders may use the parking. However, the calculations will already take into account that parking is only paid once per round trip.	\$3.00	Assume default value				
Average Avoided Parking Cost (\$/Trip/Rider)	The average expected cost of parking per trip per rider that riders would have otherwise paid if not using the service resulting from the project. The calculations will already take into account that parking is only paid once per round trip.	\$5.00	Based upon city parking data				
Average Avoided Toll Cost (\$/Trip/Rider)	The average expected cost of tolls per trip per rider that riders would have otherwise paid if not using the service resulting from the project. The calculations will already take into account that tolls are only paid once per round trip.	\$0.00	No tolls along transit route				

Example Project Description (cont.)

- Component 2 – Subcomponent 1
 - The project will extend an existing transit bus route using an electric bus. A 300 kW solar PV array will be installed to provide renewable electricity for the bus.
- Component 2 – Subcomponent 2
 - An integrated ticketing system will be installed to improve the ease of passenger travel across multiple transit modes.



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https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/calsta_tircp_finaluserguide_cycle4.pdf

Project Name:	Expanded Commuter Services
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Input	Description	Quantifiable Component 2: Subcomponent 1		Quantifiable Component 2: Subcomponent 2		Quantifiable Component 2: Subcomponent 3	
Identifying Descriptor (ID)	Brief description of the quantifiable component identifying it from other separable components.	Transit Bus Line Extension		Integrated Ticketing System			
Funding Inputs							
TIRCP Funds Requested (\$)	Total TIRCP funds requested for this separable component.	\$1,000,000		\$500,000			
Total Project Cost (\$)	Total cost of this separable component.	\$2,000,000		\$2,000,000			
Additional CCI Program 1, if applicable							
CCI Program	Other CCI Program from which project has or will be requesting GGFR funds.						
Additional GGFR Funds (\$)	Total GGFR funds requested or to be requested from Additional CCI Program 1.						
Additional CCI Program 2, if applicable							
CCI Program	Other CCI Program from which project has or will be requesting GGFR funds.						
Additional GGFR Funds (\$)	Total GGFR funds requested or to be requested from Additional CCI Program 2.						
Total GGFR Funds Requested (\$)	Total GGFR funds requested from all CCI Programs	\$1,000,000		\$500,000			
Project Info Inputs		Input		Input		Input	
Project Type	For the purposes of this quantification, eligible TIRCP projects fall into four project types. Select the project type that best describes this component.	Intercity/Express Bus (Long Distance)		System and Efficiency Improvements			
Service Type	The transit service (e.g., Intercity/Express Bus (Long Distance), Light Rail, Vanpool, etc.) directly associated with the proposed project. For projects that serve multiple services, select Multi-modal.	Rail		Multi-modal			
Type of Region	The type of region that best encompasses the geographic location for the proposed project type.	Air Basin		Air Basin			
Region	The County or Air Basin where the majority of the service occurs.	San Francisco Bay Area		San Francisco Bay Area			
Year 1 (Yr1)	The first year of service or the first year the facility or rolling stock will be in use.	2020		2020			
Year F (YrF)	The final year of service or the final year the facility or rolling stock's useful life.	2050		2025			
Useful Life (yrs)	The number of years the service is funded or the useful life of the facility or rolling stock. Limited to up to 50 years.	30		5			
Displaced Passenger Auto VMT Inputs		Input	Documentation	Input	Documentation	Input	Documentation
Yr1 Ridership	The increase in unlinked passenger trips directly associated with the proposed project in the first year (Yr1).	70,000	Estimate based upon historical ridership data	5,000	Estimate based upon historical ridership data		
YrF Ridership	The increase in unlinked passenger trips directly associated with the proposed project in the final year. If the ridership is not expected to change, Yr1 and YrF should be the same value.	80,000	Estimate based upon ridership projections	7,000	Estimate based upon ridership projections		
Adjustment Factor	Discount factor applied to annual ridership to account for transit dependent riders. Use: Document project-specific data or system average developed from a recent, statistically valid survey or default.	0.85	Based upon historical ridership data	0.85	Based upon historical ridership data		
Length of Average Trip (mi)	Annual passenger miles over unlinked trips directly associated with the proposed project.	5.00	Length of route extension	8.00	5 mile extension + 3 mile existing route		
New Service Vehicle Inputs		Input	Documentation	Input	Documentation	Input	Documentation
Vehicle Type	The vehicle type (e.g., Transit Bus, Streetcar, Ferry, etc.) that will operate the new service or will be procured.	Transit Bus					
Engine Tier	The engine tier for the vehicle(s) that will operate the new service.						
Engine Horsepower	The engine horsepower rating for the vehicle(s) that will operate the new service.						
Fuel Type	The fuel type (e.g., electric, diesel, etc.) of the vehicle for the new service, or of the new vehicle(s) to be procured.	Electric					
Hybrid Vehicle	Is the vehicle for the new service, or vehicle(s) to be procured, a hybrid? (Only applicable to non-zero emission fuel types)	N/A					
Model Year	The engine model year of the vehicle that will operate the new service, or of the new vehicle(s) to be procured.	2020					
Project-Specific GHG Emission Factor (gCO ₂ e/MJ)	If used, applicant must be able to demonstrate an approved carbon intensity value under the Low Carbon Fuel Standard and submit additional documentation.						
Annual VMT (mi/yr)	The estimated annual VMT required to operate the new service or of the new vehicle(s) to be procured (e.g., 72,000). For rail and ferry vehicles, applicants may alternatively use Annual Fuel. For vehicles with multiple engines (e.g., DMUs), provide the cumulative VMT across all the engines.	7,200	5 mile one-way * 4 trips/day * 360 days/year				
Annual Fuel Use	The estimated annual fuel (i.e., gallon of diesel, kWh of electricity) required to operate the new service, or of the new rail or ferry vehicle(s) to be procured (e.g., 26,000). Units of gallons for biodiesel, diesel, gasoline, LNG, renewable diesel; scf for CNG and renewable natural gas; kWh for electric; kg for hydrogen.						

Baseline Vehicle Inputs		Input	Documentation	Input	Documentation	Input	Documentation
Vehicle Type	The vehicle type (e.g., Transit Bus, Streetcar, Ferry, etc.) of the baseline vehicle(s).						
Engine Tier	The engine tier of the baseline vehicle(s).						
Engine Horsepower	The engine horsepower rating of the baseline vehicle(s).						
Fuel Type	The fuel type (e.g., electric, diesel, etc.) of the baseline vehicle(s).						
Model Year	The average engine model year(s) of the baseline vehicle(s).						
Annual VMT (mi/yr)	The estimated annual VMT of the baseline vehicle(s). For rail and ferry vehicles, applicants may alternatively use Annual Fuel. For vehicles with multiple engines (e.g., DMUs), provide the cumulative VMT across all the engines.						
Annual Fuel Use	The estimated annual fuel the baseline vehicle(s) would have required to operate the equivalent as the new vehicle to be procured. Units of gallons for biodiesel, diesel, gasoline, LNG, renewable diesel; scf for CNG and renewable natural gas; kWh for electric; kg for hydrogen.						
Fuel/Energy Reductions Inputs		Input	Documentation	Input	Documentation	Input	Documentation
Vehicle Type	The vehicle type (e.g., Transit Bus, Streetcar, Ferry, etc.) of the displaced vehicle(s).	Transit Bus					
Engine Tier	The engine tier of the displaced vehicle(s).						
Engine Horsepower	The engine horsepower rating of the displaced vehicle(s).						
Fuel Type	The fuel/energy type (e.g., diesel, grid electricity, etc.) being reduced as a result of the project.	Electric					
Model Year	The average engine model year(s) of the vehicle(s) to realize fuel/energy reductions as a result of the project.	2020					
Annual Fuel Use	The estimated annual fuel/energy reductions expected to be realized as a result of the project. Units of gallons for biodiesel, diesel, gasoline, LNG, renewable diesel; scf for CNG and renewable natural gas; kWh for electric; kg for hydrogen. For projects that generate renewable electricity using solar photovoltaic panels, applicants should use the PVWatts Calculator to determine this input, available at http://pvwatts.nrel.gov/ .	460,000	300 kW fixed roof-mounted solar installation; Result from PVWatts				
Travel Cost Savings Inputs		Input	Documentation	Input	Documentation	Input	Documentation
Baseline Average One-Way Fare Cost (\$/Trip/Rider)	The average fare cost per trip per rider prior to project implementation. If expanding service, baseline fare cost is zero.						
New Average One-Way Fare Cost (\$/Trip/Rider)	The new expected average fare cost per trip per rider resulting from the proposed project.	\$6.00	Based upon estimated fare revenue.				
Average Transit Facility Parking Cost (\$/Trip/Rider)	The average expected cost of parking per trip per rider that riders would pay at the transit facility where the trip originates. Consider that not all transit riders may use the parking. However, the calculations will already take into account that parking is only paid once per round trip.	\$0.00	Free parking				
Average Avoided Parking Cost (\$/Trip/Rider)	The average expected cost of parking per trip per rider that riders would have otherwise paid if not using the service resulting from the project. The calculations will already take into account that parking is only paid once per round trip.	\$3.00	Based upon city parking data				
Average Avoided Toll Cost (\$/Trip/Rider)	The average expected cost of tolls per trip per rider that riders would have otherwise paid if not using the service resulting from the project. The calculations will already take into account that tolls are only paid once per round trip.	\$5.00	Cost of bridge toll along transit route				



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Project Name:	Expanded Commuter Services
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	Quantified GHG Component 1	Quantified GHG Component 2	Quantified GHG Component 3	Quantified GHG Component 4	Quantified GHG Component 5	Quantified GHG Component 6	Total Project
Identifying Descriptor	New Heavy Rail Line (Downtown to Terminal B); Increased Ridership from Unlinked Shuttle Trip (Terminal B to	Transit Bus Line Extension; Integrated Ticketing System					
GHG Emission Reduction Start Date (Year)	2020; 2020; 2021	2020; 2020					
Total CCI							
Total GHG Emission Reductions (MTCO ₂ e)	16,973	7,455					24,428
Total GGRF Funds Requested (\$)	\$42,000,000	\$1,500,000					\$43,500,000
Total GHG Emission Reductions/Total GGRF Funds Requested (MTCO ₂ e/\$)	0.000404	0.004970					0.000562
TIRCP							
TIRCP GHG Emission Reductions (MTCO ₂ e)	12,932	7,455					20,387
TIRCP Funds Requested (\$)	\$32,000,000	\$1,500,000					\$33,500,000
TIRCP GHG Emission Reductions/TIRCP Funds Requested (MTCO ₂ e/\$)	0.000404	0.004970					0.000609
TIRCP Funds Requested/TIRCP GHG Emission Reductions (\$/MTCO ₂ e)	2,475	201					1,643
Additional CCI Program 1							
CCI Program	Caltrans - LCTOP						
GHG Emission Reductions Attributable to other GGRF Programs (MTCO ₂ e)	2,021						
Total Additional GGRF Funds to Implement Project (\$)	\$5,000,000						
Additional CCI Program 2							
CCI Program	Caltrans - LCTOP						
GHG Emission Reductions Attributable to other GGRF Programs (MTCO ₂ e)	2,021						
Total Additional GGRF Funds to Implement Project (\$)	\$5,000,000						



California Air Resources Board
Benefits Calculator Tool for the
Transit and Intercity Rail Capital Program
California Climate Investments

Project Name:	Expanded Commuter Services
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	Quantified Co-Benefit Component 1	Quantified Co-Benefit Component 2	Quantified Co-Benefit Component 3	Quantified Co-Benefit Component 4	Quantified Co-Benefit Component 5	Quantified Co-Benefit Component 6	Total Project
Identifying Descriptor	New Heavy Rail Line (Downtown to Terminal B); Increased Ridership from Unlinked Shuttle Trip (Terminal B to Business Park); Shuttle Bus	Transit Bus Line Extension; Integrated Ticketing System					
Total CCI							
Passenger VMT Reductions (miles)	58,584,000	9,766,500					68,350,500
Fossil Fuel Use Reductions (gallons)	1,519,163	329,803					1,848,966
Fossil Fuel Energy Use Reductions (kWh)		13,604,538					13,604,538
Energy and Fuel Cost Savings (\$)	\$24,434,827	\$14,736,652					\$39,171,480
Passenger Travel Cost Savings (\$)	\$20,321,920	\$9,489,570					\$29,811,490
ROG Emission Reductions (lbs)	672	196					868
NO _x Emission Reductions (lbs)	(11,348)	980					(10,368)
PM _{2.5} Emission Reductions (lbs)	2,221	7,321					9,542
Diesel PM Emission Reductions (lbs)	(242)	1					(241)
TIRCP							
Passenger VMT Reductions (miles)	44,635,429	9,766,500					54,401,929
Fossil Fuel Use Reductions (gallons)	1,157,457	329,803					1,487,260
Fossil Fuel Energy Use Reductions (kWh)		13,604,538					13,604,538
Energy and Fuel Cost Savings (\$)	\$18,617,011	\$14,736,652					\$33,353,664
Passenger Travel Cost Savings (\$)	\$15,483,368	\$9,489,570					\$24,972,938
ROG Emission Reductions (lbs)	512	196					708
NO _x Emission Reductions (lbs)	(8,646)	980					(7,666)
PM _{2.5} Emission Reductions (lbs)	1,692	7,321					9,014
Diesel PM Emission Reductions (lbs)	(184)	1					(183)

Additional CCI Program 1							
Passenger VMT Reductions (miles)	6,974,286						6,974,286
Fossil Fuel Use Reductions (gallons)	180,853						180,853
Fossil Fuel Energy Use Reductions (kWh)							
Energy and Fuel Cost Savings (\$)	\$2,908,908						\$2,908,908
Passenger Travel Cost Savings (\$)	\$2,419,276						\$2,419,276
ROG Emission Reductions (lbs)	80						80
NO _x Emission Reductions (lbs)	(1,351)						(1,351)
PM _{2.5} Emission Reductions (lbs)	264						264
Diesel PM Emission Reductions (lbs)	(29)						(29)
Additional CCI Program 2							
Passenger VMT Reductions (miles)	6,974,286						6,974,286
Fossil Fuel Use Reductions (gallons)	180,853						180,853
Fossil Fuel Energy Use Reductions (kWh)							
Energy and Fuel Cost Savings (\$)	\$2,908,908						\$2,908,908
Passenger Travel Cost Savings (\$)	\$2,419,276						\$2,419,276
ROG Emission Reductions (lbs)	80						80
NO _x Emission Reductions (lbs)	(1,351)						(1,351)
PM _{2.5} Emission Reductions (lbs)	264						264
Diesel PM Emission Reductions (lbs)	(29)						(29)

5. Q&A

Thank you!

*Webinar Slides and a Forthcoming FAQ document will be posted online.
(Info about web location forthcoming from Caltrans).*

Questions for CARB on the QM and Benefits Calculator Tool should be sent to:
GGRFProgram@arb.ca.gov

Questions pertaining to the TIRCP Guidelines and Call for Projects should be sent to:
TIRCPcomments@dot.ca.gov

TIRCP applications due to Caltrans: January 16, 2020

Innovative Clean Transit Regulation information available at:
<https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit>