SACOG PROJECT PERFORMANCE ASSESSMENT:
REGIONAL PROGRAM TECHNICAL DOCUMENTATION

The SACOG Board of Directors has directed staff to augment performance-based planning, monitoring, and programming within the agency. A performance-based approach examines information about roads, trails, and transit systems, the form and function of neighborhoods and communities, and the people living in those communities to make sound investment decisions on projects with demonstrated performance benefits. In response, SACOG has created the Project Performance Assessment (PPA) tool and provided an online platform for its use.

This document describes the various data indicators and data outputs used as part of the project performance assessment evaluation. SACOG will use the tool in the 2018 regional flexible funding round, as well as possibly in future planning and programming. Local jurisdictions and project sponsors will also have access to the tool in support of other efforts. This documentation describes how the tool will be used in the 2018 Regional Program, one program within the 2018 flexible funding round. The tool is a required component of the application to the 2018 Regional Program.

Section 1 contains major concepts for the Project Performance Assessment. Please note project sponsors are not required to provide any additional data, save the exceptions outlined below.

Section 2 contains a description of indicators for the seven performance outcomes identified by SACOG, the data source for each, and how SACOG interprets each indicator.

Check for program updates under the SACOG 2018 Regional Program website:
https://www.sacog.org/regional-program

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Summary Description

The SACOG Board of Directors has directed staff to augment performance-based planning, monitoring, and programming within the agency. A performance-based approach examines information about roads, trails, and transit systems, the form and function of neighborhoods and communities, and the people living in those communities to make sound investment decisions on projects with demonstrated performance benefits. In response, SACOG has created the Project Performance Assessment (PPA) tool and provided an online platform for its use. The tool brings together the numerous data sets SACOG maintains to provide data, context and performance indicators for individual transportation projects. By drawing on these regional data sources, the tool gives a consistent, transparent baseline to measure performance for transportation projects across the region. SACOG will use the tool in the 2018 regional flexible funding round, as well as possibly in future planning and programming. Local jurisdictions and project sponsors will also have access to the tool in support of other efforts. This documentation describes how the tool will be used in the 2018 Regional Program, one program within the 2018 flexible funding round. The tool is a required component of the application to the 2018 Regional Program.

Part 1. Major Concepts

Seven Performance Outcomes

SACOG developed the online project performance assessment tool to align with the seven performance outcomes used in the Regional Program. Staff recognize there are numerous ways to measure performance of individual transportation projects. These seven performance outcomes contained in the PPA tool have been endorsed by the SACOG Board, and have a longstanding use in agency practice to guide projects that will best achieve the region goals of the MTP/SCS. In short, these seven performance outcomes represent the emphasis of the Regional Program: to fund transportation projects that implement the MTP/SCS by providing regional benefits.

The seven performance outcomes used in the Regional Program PPA tool are:

- Reduce regional VMT per capita
- Reduce regional congested VMT per capita
- Increase Multimodal Travel/Alternative Travel/Choice of Transportation options
- Provide long-term economic benefit within the region, recognizing the importance of sustaining urban, suburban, and rural economies
- Improve Goods Movement, including Farm-To-Market travel, in and through the region
- Significantly improve safety and security
- Demonstrate 'State of Good Repair' benefits that improve the efficiency of the existing transportation system

The tool also includes equity indicators as a cross-cutting measure.

Buffering for project area

The PPA tool creates a buffered area around a transportation investment using GIS (geographic information systems), and examines both existing and forecasted future conditions in the buffered area. The data come from a variety of sources (Part II below on the individual performance outcomes lists the data source for each indicator) including SACOG's parcel based land use data, its integrated land-use transportation data, the regional centerline file, the SACSIM travel demand model, the General Transit Feed Specification (GTFS), and the Transportation Injury Mapping System (TIMS).

All buffers are for a half mile around the project segment, except those listed below-

- Data with ¼ mile buffer: total centerline, freeway, local street and route miles, and bike facility miles (by class 1,2,3, and 4); VMT and CVMT on model network by freeway/surface street; count of intersections by 1,3 and 4-way; unique transit stop locations; transit service density
- Data with 50-foot buffer: all collisions data (the 50 feet is to include any incident that occurred near the right of way, or in the intersection)
- The accessibility indicators measure the accessibility for TAZs (transportation analysis zones) intersecting the project, weighted by population/jobs. The indicators use 30 minutes for driving and 45 minutes for transit.

Some projects will need an additional step to establish a project buffer area. Examples include:

- Construction of an entirely new facility
- System wide investments not tied to a specific facility

For these projects, the sponsor will work with SACOG staff to define project area in the tool. For new construction this can include identifying a parallel route where applicable. Area or system projects can create a polygon (instead of line) buffered network to serve the project extent.

If your project is a new facility or an area-wide investment, please work with SACOG staff **in advance** of the application deadline. Staff can help prepare the inputs to the Project Performance Assessment data tool for projects with unique geographies. Staff contacts for the PPA tool are:

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Finally, transit asset management projects not tied to a specific route or facility will use the transit asset data spreadsheet in lieu of the online data tool if applying for the maintenance outcome. In other words, these projects will be asked a series of custom data questions instead of a project buffer indicator.

Performance Evaluation Framework

The PPA online tool provides a series of data indicators about individual transportation facilities and the form and function of the neighborhoods they serve. Data on existing conditions demonstrate the need for a specific type of transportation investment, while forecasted future conditions relate to how a project can support the changes envisioned or predicted for the area in the MTP/SCS. The tool reports all the baseline data needed to apply through the 2018 Regional Program. In other words, the project sponsor will not need to collect outside data for the application, except for the custom cases referenced below. Importantly though, project sponsors still need to demonstrate how the project design elements maintain, enhance or respond to the performance data and need identified by the tool. The project sponsor will make this case through the narrative component of the application.

The PPA tool helps improve transparency in agency performance-based planning and programming, while reducing the data burden on applicants. While there is value in a consistent, transparent, baseline data set that can be used across the region, SACOG recognizes that project sponsors have their own wealth of data about project conditions and performance. In the narrative section of the application, SACOG welcomes any local data, studies or documentation to support the application's performance outcome, including data that the local sponsor feels better describes the project conditions and purpose. This additional data is optional. The only required additional data from project sponsors are for projects selecting the maintenance (#7) and transportation choice (#3) performance outcomes.

For projects selecting Outcome #3, the sponsor must provide:

- the segment's estimated annual average daily traffic (AADT). SACOG has created a Traffic Volume Table as a reference for project sponsors
- the segment's posted speed limit (not required for fixed rail transit investments)

The project sponsor inputs both of these indicators into the user-input segment of the PPA tool.

For projects selecting Outcome #7, the project sponsor must provide:

Road projects-

- the segment's Pavement Condition Index (PCI)
- the segment's estimated annual average daily traffic (AADT). SACOG has created a Traffic Volume Table as a reference for project sponsors

The project sponsor inputs both of these indicators into the user-input segment of the PPA tool.

Please do not use commas in any of the user input fields of the online tool.

Transit asset projects-

- The project sponsor will complete the transit asset management spreadsheet. This is a custom spreadsheet that does not input into the PPA tool.

Finally, SACOG recognizes, and has a long tradition supporting and funding, projects across types and sizes, including in urban, suburban and rural communities. Further, SACOG recognizes that not all projects are intended to address every performance outcome established in the MTP/SCS. The PPA tool, and the performance criteria it uses, supports project evaluation across size, scope and places through means such as the following:

- Applicants only select 3 of the 7 performance outcomes. Projects are only evaluated on the outcomes selected.
- Performance indicators are relative by design, through either percentage, per capita or per acre indicators. In other words, a larger project won't skew results because of its extent or cost, but is evaluated relative to its size.
- The indicators allow a project to demonstrate positive change through time, and how investments can help move the MTP/SCS performance outcomes in the desired direction.
- The tool provides placetype averages by indicator to account for the diversity of the SACOG region. The tool uses the MTP/SCS placetypes of: center/corridor, established community, developing community, rural residential, and agricultural/open space. The working group evaluates projects relative to those of similar placetypes.

Part 1 Summary

- Project sponsors are required to input their project into the Project Performance Assessment data tool as part of the application to SACOG's 2018 Regional Funding Program (merged Regional/Local and Bike/Ped program).
- Projects with unique geographies (e.g. new facility, system wide investments not tied to a specific facility) need to work with SACOG staff to create a custom geography in the tool. It is important not to wait until the application deadline to complete this step.
- The PPA tool provides the baseline data used in the Regional Funding Program's quantitative performance assessment, which is one component of the project's overall evaluation. Project sponsors are not required to provide any additional data, save the exceptions below. In the narrative component of the application the project sponsor can choose to include any additional local data, studies, or documentation to support the relevant performance outcome, including data the project sponsor feels better describes the project conditions and purpose.
- If a project sponsor selects Outcome #3, the sponsor must provide the segment's average annual daily traffic (AADT) and speed limit on the user input tab of the PPA.
- If a road project selects Outcome #7, the sponsor must provide the segment's average annual daily traffic (AADT) and Pavement Condition Index (PCI).
- If a transit asset management project selects Outcome #7, the sponsor must complete a custom data spreadsheet instead of the online tool.

Part II. Description of Indicators by the Seven Performance Outcomes

As described above, SACOG uses seven Performance Outcomes to evaluate transportation projects applying to the merged Regional Funding Program. To measure performance, the PPA tool provides two to five specific data indicators within each Performance Outcome. This section describes what indicators are included in each outcome, the data source for each, and how SACOG interprets each indicator (e.g., is a higher or lower value more supportive of the performance outcome, by indicator). The section starts with a summary table of indicators by outcome. It then describes the more detailed data source and methodology of each indicator in turn.

Definitions

Performance Outcome: one of the seven outcomes used in the funding round to support MTP/SCS implementation

Indicator: specific data to evaluate performance on the given outcome. Each outcome has two to five data indicators

After the project sponsor inputs the project into the online interface, the PPA tool will calculate a score for each indicator. For the funding round the project sponsor will select which three of the seven outcomes to be evaluated on. SACOG will only bring forward the data indicators in the three selected performance outcomes.

Importantly, the PPA tool provides regional and place type averages on each indicator. The guidelines of the 2018 Regional Program establish how projects are evaluated relative to size. The community type average is an important part of the evaluation framework, where projects are compared relative to size and community type. The table on the following page provides the average scores by indicator for each place type and the region as a whole.

Outcome	Indicator	Project Performance Assessment Averages by Community Type					
		Established	Corridor	Developing	Rural Residential	Ag/Other	Regional Average
Outcome #1 - Reduce VMT	VMT/Capita	17.5	13.5	21.7	28.8	31.1	18.3
	Net Jobs+ Dwelling Units / acre	6.1	16.8	2.2	0.3	0.4	3.1
	change VMT/ capita	-6.4%	-11.1%	-7.6%	-2.0%	-1.9%	-6.4%
	Net Density Increase	16%	31%	152%	10%	0%	31%
Outcome #2 - Reduce Congestion	Buffer CVMT/VMT	4.6%	5.44%	5.0%	0.85%	3.0%	4.1%
	% growth DU + EMP	24%	57%	313%	12%	0%	40%
Outcome #3 - Increase Multimodal	3- or 4-way intersections per acre	0.11	0.16	0.02	0.01	0.00	0.03
	bike lane + path/ total road mileage	17.4%	22.5%	10.2%	1.7%	1.6%	9.7%
	AADT	Volume Ref Table	Volume Ref Table	Volume Ref Table	Volume Ref Table	Volume Ref Table	Volume Ref Table
	Posted Speed Limit	n/a	n/a	n/a	n/a	n/a	n/a
	Transit vehicle stops per acre	0.19	1.21	0.00	0.00	0.00	0.06
	T/B/W future mode share	12%	29%	7%	3%	4%	13%
Outcome #4 - Support Economy	Transit + Drive Job Access	410,933	527,887	266,223	181,067	164,173	403,102
	2012 K-university enrollment per net acre	1.1	3.1	0.2	0.0	0.0	0.21
	% Emp growth	41%	49%	290%	18%	0%	49%
	% Ag Acres current	5%	4%	55%	15%	48%	41%
	% Change in Ag Acres	-20%	-60%	-13%	-1%	0%	-1%
Outcome #5 - Freight	% Commercial VMT	17%	42%	14%	11%	17%	19%
	Commercial CVMT/ Commercial VMT	4%	3%	4%	3%	1%	4%
	% Industrial Jobs	18%	8%	30%	20%	37%	16%
Outcome #6 - Safety	Total Collisions/1M VMT	0.72	0.90	0.42	0.53	0.40	0.70
	% Fatal Collisions (All Roads)	1.7%	1.3%	3.4%	3.6%	4.6%	2.0%
	% Bike/Ped Collisions	14%	18%	7%	4%	3%	14%
Outcome #7 - Maintenance	PCI	n/a	n/a	n/a	n/a	n/a	n/a
	AADT	Volume Ref Table	Volume Ref Table	Volume Ref Table	Volume Ref Table	Volume Ref Table	Volume Ref Table
	Complete Street Potential Index	relative	relative	relative	relative	relative	relative

Summary of Indicators within each Performance Outcome

Question	Indicator	Score more supportive of outcome
Performance Outcome #1: Reduce VMT per capita		
Does the project serve an area that has low VMT per capita?	VMT per capita	Lower
Does the project serve an area with high employment and/or residential density?	Density	Higher
Does the project support an area significantly decreasing its VMT per capita through time?	% change VMT per capita	Lower (including into negative)
Does the project serve an area with planned increases in density?	Density increase	Higher
Performance Outcome #2: Reduce congested VMT per capita		
How severe is current congestion in the project area?	% of congested travel, project area	Higher
To what extent is project area projected to have growth that could increase future congestion?	% dwelling unit and job growth	Higher
Performance Outcome #3: Increase in multimodal/alternative travel/choice of transportation options		
To what extent is the project in, or add to an area supported by a network of dedicated bike facilities?	Bike lane/path coverage	Higher
To what extent is the facility conducive to bike travel?	Facility speed and volume	Context
To what extent is the project in, or add to, an area with high street connectivity that encourages walking?	Intersections/acre	Higher
To what extent does the project support an area with productive transit service?	Transit service density	Higher
Does the project serve an area projected to increase bike/ped/transit mode share?	Future year mode share	Higher
Performance Outcome #4: Provide long-term economic benefit within the region		
To what extent does the project support job accessibility?	Job accessibility	Higher
To what extent does the project support accessibility to educational facilities?	Educational enrollment	Higher
Does the project serve a fast growing employment area?	Employment growth	Higher
To what extent does the project support the agricultural economy?	% of current ag acres	Higher

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Does the project serve an area projected in the MTP/SCS to stay in agriculture use?	% change in agricultural acres	Higher (0% change most supportive)
Performance Outcome #5: Improve goods movement		
Does the project serve, or connect to, a corridor used by goods movement?	% commercial VMT	Higher
Does the project serve an area that is congested for commercial travel?	% commercial VMT that is congested	Higher
Does the project serve an area with freight-dependent jobs?	% jobs in freight-dependent sectors	Higher
Performance Outcome #6: Significantly improve safety and security		
Does the facility have a high rate of collisions?	Collisions/1M VMT	Higher
Does the facility have a high rate of fatal collisions?	% fatal collisions	Higher
Does the facility have a high rate of bike/ped collisions?	% collisions involving bike or ped	Higher
Performance Outcome #7 Demonstrate State of Good Repair benefits (Road)		
Does the project serve a facility with poor pavement conditions?	PCI	Lower
Does the project serve a facility with a high volume of use?	AADT	Higher
What level of transportation needs are created by the surrounding land uses in the project area?	Complete Street index	Context
Performance Outcome #7 Demonstrate State of Good Repair benefits (Transit)		
Project sponsor uses custom data spreadsheet		

Performance Outcome #1. Regional Reduction in VMT Per Capita

A vehicle mile traveled, or VMT, is one vehicle traveling on a roadway for one mile. Each vehicle traveling on a roadway within the Sacramento region generates one VMT for each mile it travels, regardless of how many people are traveling in the vehicle.

The 2016 MTP/SCS describes the key factors that contribute to the reduction of regional VMT. The PPA tool translates these factors into four indicators that stress both existing conditions (projects that enhance existing low VMT areas) as well as change through time (e.g., projects that help a high VMT/capita area move to medium VMT/capita area, etc.). In the narrative portion of the application the project sponsor will need to demonstrate how the project design and scope contributes to the predicted decline in VMT.

1.1) Does the project serve an area that has low VMT/capita?

Indicator: Existing VMT/capita
This indicator establishes the existing daily household generated VMT/capita in the project buffer area. The data comes from SACOG's 2016 MTP/SCS, with population from the Plan's parcel-based base year population file and VMT from the agency's travel demand model. The calculation divides total daily household generated VMT in the project area by that area's population. A lower VMT/capita relative to similar areas is more supportive of this performance outcome.

1.2) Does the project serve an area with high employment and/or residential density?

Indicator: Existing Net Density

This indicator documents the current jobs and dwelling units per acre in the project area. The data for this indicator come from the parcel-level base year of SACOG's 2016 MTP/SCS. Total net density consists of the sum of dwelling units and jobs within the project buffer area divided by net developable acres. 'Net' refers to the portion of the buffer area not excluded from development. In other words, the indicator excludes all environmentally constrained lands (rivers/streams, wetlands, vernal pools, hardwood, parks, etc.). It also removes the portion of the land used for roads and public right of way. For example, the net density of a project located next to a river would not include any water parcels in the density calculation, and would also take out the land used for the transportation network. A higher net density in this indicator relative to similar areas would be more supportive of this performance outcome.

1.3) Does the project support an area significantly decreasing its VMT per capita through time?

Indicator: Percent Change in VMT/capita

The first two indicators for Performance Outcome #1 relate to how a project enhances an area supportive of low VMT/capita. The final two indicators measure how a project can support a decrease in VMT through time.

The percent change in VMT/capita indicator first calculates the project buffer area's VMT/capita for the year 2036 (the horizon year of SACOG's current MTP/SCS). The calculation draws on the same inputs and method as Indicator 1.1 (current VMT/capita), save for the MTP's horizon instead of the base year. The indicator then takes the percent change in VMT/capita between these data points (horizon year and base year of the MTP/SCS). The greater the decline in VMT per capita, the more supportive a project of this performance outcome (e.g., a -15% change in VMT per capita would be more supportive of this outcome

than a -5% change, which in turn would be more supportive than a 5% increase).

1.4) Does the project serve an area with planned increases in density?

Indicator: Net Density Increase

The final indicator of the first performance outcome relates to the increases in density envisioned by the MTP/SCS. The indicator calculates net density (jobs + dwelling units/acre) in the project buffer area for the horizon year of the plan, using the same methodology as the existing net density indicator discussed above (indicator 1.2). It then takes the percent change between the MTP's horizon and base year, per the approach of indicator 1.3. The calculation uses a floor of seven jobs and dwelling units per acre to report percent changes in net density. SACOG interprets a higher change in net density relative to similar areas as more supportive of the first performance outcome.

Table 1. Indicators within Performance Outcome #1: Reduction VMT/ Capita

Question	Indicator	Score supportive of outcome
Does the project serve an area that has low VMT per capita?	VMT/capita	Lower
Does the project serve an area with high employment and/or residential density?	Net Jobs+ Dwelling Units/acre	Higher
Does the project serve an area with significantly reduced VMT per capita through time?	% change VMT/capita	Lower (including into negative)
Does the project serve an area with planned increases in density?	% change density	Higher

Performance Outcome #2. Regional Reduction in Congested VMT Per Capita

SACOG traditionally has focused on the presence of congestion, rather than the amount of delay, in its evaluation of this performance criteria. Following this practice, the PPA tool defines congestion as the VMT that occurs on roadways with volume-to-capacity ratios of 1.0 or greater. For example, if volumes on a facility are 1,100 vehicles, while the facility is designed to handle 1,000 vehicles, the facility has a congestion measure of 1.1 (of congested VMT/VMT).

The 2016 MTP/SCS describes key factors that contribute to the reduction of regional congestion, including facility optimization, capacity, and mode shift. The two indicators in this performance outcome establish the extent of congestion along project area, as well as likely factors that could add to congestion in the future. In the narrative component of the application, the project sponsor will demonstrate how the project's scope addresses the congestion identified in the PPA tool.

2.1) How severe is current congestion in the project area?

Indicator: Buffer CVMT/VMT

This indicator measures the current level of congestion in the project area, per SACOG's definition of congestion. The data for the indicator come from SACSIM, the agency's travel demand model, for the current MTP/SCS's base year.

A higher score in this indicator relative to projects in similar areas denotes a greater proportion of congested travel, and thus the need for projects that reduce this condition.

2.2) To what extent is the project area projected to have growth that could increase future congestion?

Indicator: Percent dwelling unit and employment growth in project area

Like the first performance outcome on VMT, the congestion outcome also includes an indicator responding to future conditions/needs. The final indicator within the congestion performance outcome reports the percent growth in dwelling units and employment in the project area between existing conditions and the year 2036 (horizon year of the current MTP/SCS). The source for the data is the 2016 MTP/SCS, and the indicator highlights congestion impacts as the region continues to grow through time. The method uses a floor of 100 combined job and dwelling unit growth to minimize the effect of outliers on the percent change calculation. SACOG interprets a higher percentage of project area dwelling unit and employment growth relative to similar areas as more supportive of projects claiming a need for congestion reduction design or operational elements.

Table 2. Indicators within Performance Outcome #2: Congestion Reduction

Question	Indicator	Score supportive of outcome
How severe is current congestion in the project area?	CVMT/VMT in buffer area	Higher
To what extent is project area projected to have growth that could increase future congestion?	Percent dwelling unit and employment growth in project area	Higher

Performance Outcome #3. Increase in Multimodal Travel/Alternative Travel/Choice of Transportation Options

The MTP/SCS envisions a larger and more complete bicycle and pedestrian network, along with transit investments supporting robust and cost-effective service. Together, investments in non-single occupancy vehicle travel improve regional mobility, decrease emissions from the transportation sector, and improve quality of life in the region.

The indicators within this third performance outcome focus on high performing projects that not only increase transportation options but also their use. It is not expected that all projects will support or enhance every type of alternative travel or transportation option. This performance outcome divides indicators into three modal buckets: bicycle, pedestrian, and transit. In the application, project sponsors may select to be evaluated on one, two, or all three of these indicator sets.

Set 1: Increase Biking

3.1.1) To what extent is the project in, or add to an area supported by a network of dedicated bike facilities?

Indicator: Bike lanes and paths as proportion to total roadway mileage

The indicator draws on SACOG's 2018 existing bikeway network to document the extent to which a proposed project helps overcome an existing gap in bicycle infrastructure, complete a planned active transportation network, or in the case of trails projects, provide a continuous route for active transportation users. The measure divides the number of class 1 ,2, and 4 centerline miles in the project area by the total number of centerline miles in the same area. Like each indicator in this outcome, the measure aims not only to denote presence/absence, but the effectiveness of the investment given context sensitivity. A higher score on this indicator relative to similar areas reflects a project more supportive of the performance outcome.

3.1.2) To what extent is the facility conducive to bike travel?

Indicator: Facility speed and volumes

Building off the theme of context-sensitivity, this indicator asks the project sponsor to input the average speed (or speed limit if average speed not known) and average daily link volumes on the facility itself (not the buffer area). These inputs are provided by the project sponsor, not from a calculation in the PPA tool. SACOG interprets projects that offer a lower traffic stress environment as more supportive of the performance outcome.

3.1.3) Does the project serve an area projected to increase bike/pedestrian/transit mode share?

Indicator: Future year mode share

The final indicator reports the proportion of trips made by walking, biking and transit in the horizon year of the current MTP/SCS, by project buffer. The source of the forecasted data is SACOG's travel demand model. SACOG interprets a higher bike/ped/transit mode share relative to similar areas as more supportive of projects increasing transportation alternatives and use.

Set 2: Increase walking

3.2.1) To what extent is the project in, or add to, an area with high street connectivity that encourages walking?

Indicator: Number of 3- or 4-way intersections per acre

This indicator reports the number of 3- and 4-way intersections per acre of project buffer. The source is the regional centerline file, for the base year of the current MTP/SCS. SACOG interprets projects with higher intersection density relative to similar areas as more supportive of projects aiming to increase transportation choice outcome, especially for improvements targeted to pedestrians.

3.2.2) Does the project serve an area projected to increase bike/pedestrian/transit mode share?

Indicator: Future year mode share

The final indicator reports the proportion of trips made by walking, biking and transit in the horizon year of the current MTP/SCS, by project buffer. The source of the forecasted data is SACOG's travel demand model. SACOG interprets a higher bike/ped/transit mode share relative to similar areas as more supportive of projects increasing transportation alternatives and use.

Set 3: increase transit use

3.3.1) To what extent does the project support an area with productive transit service?

Indicator: Transit service density

Improvements to transit operations and facilities will help realize the MTP/SCS vision of cost-effective transit service and expanded mobility options. This next indicator calculates the number of times a transit vehicle stops daily in the project area, relative to the project buffer area, drawing on the GTFS (General Transit Feed Specification). Note that while this indicator measures frequency it does not measure use, as SACOG does not have access to a consistent, geographic data layer that measures boardings by route by operator. For this indicator, SACOG interprets an area with higher transit density relative to similar areas as more reflective of the performance outcome.

3.3.2) Does the project serve an area projected to increase bike/pedestrian/transit mode share?

Indicator: Future year mode share

The final indicator reports the proportion of trips made by walking, biking and transit in the horizon year of the current MTP/SCS, by project buffer. The source of the forecasted data is SACOG's travel demand model. SACOG interprets a higher bike/ped/transit mode share relative to similar areas as more supportive of projects increasing transportation alternatives and use.

Table 3. Indicators for Performance Outcome #3: Increase Multimodal and Transportation Options

Question	Indicator	Score supportive of outcome
To what extent is project in, or add to an area supported by a network of dedicated bike facilities?	Bike lanes and paths/ total roadway mileage	Higher
To what extent is the facility conducive to active travel?	Facility speed and volume	Context
To what extent is the project in, or add to an area with high street connectivity?	# of 3 or 4 intersections per acre	Higher
To what extent does the project support an area with productive transit service?	Transit service density	Higher
Does the project serve an area projected to increase bike/ped/ transit mode share?	Future year mode share	Higher

Performance Outcome #4. Provide Long-Term Economic Benefit within the Region, Recognizing the Importance of Sustaining Urban, Suburban and Rural Economies

The integrated land use and transportation planning of the MTP/SCS supports the region's economic vitality in several fundamental ways, including regional employment patterns, commute times and travel, goods movement, access to employment and training opportunities, and the overall quality of life that influences both firm and worker decisions to locate, expand and/or grow in the region.

The link between land use, transportation, and economic prosperity is multi-faceted. As SACOG continues to build upon the link between transportation investments and regional economic prosperity, staff have infused each of the seven performance outcomes with economic prosperity measures. Indicators in this fourth performance outcome focus on how transportation investments improve accessibility to employment and educational training opportunities. They also allow local project sponsors to demonstrate how a project supports the agricultural economy, a specific focus of SACOG efforts through the Rural-Urban Connections Strategy (RUCS) program.

Like in Outcome #3, for this fourth outcome the project sponsor will select which set of indicators to be evaluated on. While the third outcome lets sponsors select up to three indicator sets, this fourth outcome requires project sponsors to select only one or the other set of two indicators.

Set #1: Accessibility

4.1.1) To what extent does the project support job accessibility?

Indicator: Transit + Drive Job Access

One of the more complicated data indicators, this measure calculates the average number of jobs reached in a given time threshold per person in transportation analysis zones (TAZs) intersecting the project area, weighted by TAZ population. The indicator first calculates the measure for drive accessibility, calculating the number of jobs that can be reached within 30 minutes of driving. Next, the measure does the same calculation for transit, but uses a 45 minute (instead of 30 minute) threshold of travel. If none of the intersecting TAZs has any residents, the measure takes the unweighted TAZ average. The measure comes from SACSIM, the agency's travel demand model, for the base year of the current MTP/SCS.

The indicator adds the average number of jobs reached with 30 minutes of driving with the average number of jobs reached by 45 minutes of transit to get the combined accessibility count. In short, the indicator reports the number of jobs an individual can access (in the given time sheds) via the project area by either driving or using transit. SACOG interprets investments that improve high combined employment accessibility relative to similar areas as more supportive of this performance outcome

4.1.2) To what extent does the project support accessibility to educational facilities?

Indicator: Kindergarten through university enrollment per net acre in project area

Drawing on the land use data from the current MTP/SCS base year, this indicator counts the number of enrollments (from kindergarten through university) by net acre in the project buffer area. It complements the above employment accessibility indicator by looking not at the current workforce, but projects that can support educational training opportunities for the future workforce. The evaluation criteria interpret an area of higher school enrollment relative to project size and similar area as more supportive of this performance outcome.

4.1.3) Does the project serve a fast growing employment area?

Indicator: Percent employment growth

Similar to indicators in other outcomes, this indicator draws on the planning and strategies embodied in the MTP/SCS to document how the proposed project responds to envisioned future conditions. The indicator calculates employment in the project area in the base year of the plan, employment in the same area in the plan's horizon year, and takes the percent change. The indicator uses a floor of 75 jobs to limit outliers in the percent change calculation. The evaluation interprets investments in areas of fast employment growth relative to similar areas as supportive of implementing the vision of the MTP/SCS.

Set #2: Agricultural Economy

Building off the work of prior funding rounds, SACOG's Rural-Urban Connections Strategy (RUCS) program, and the polices/strategies of the MTP/SCS, applicants may use the below data indicators for the performance assessment within Outcome #4. These alternative indicators focus on a project's impact on the region's agricultural economy.

4.2.1) Does the project support the agricultural economy?

Indicator: Percent of current agricultural acres

This alternative indicator calculates the percentage of acres in the project area in agricultural use. The data layer comes from SACOG's RUCS crop map. SACOG interprets a higher proportion of acres dedicated to agriculture as more supportive of the performance outcome.

4.2.2) Does the project serve an area projected in the MTP/SCS to stay in agricultural use?

Indicator: Percent change in agricultural acres

The first alternative indicator establishes agricultural intensity in the project buffer area. This second alternative indicator looks to assess if these acres stay in agriculture during the course of the MTP/SCS. The measure takes the percent change of agricultural acres in the project area between the plan's base year and future year. Projects with no change in agricultural acres are considered most supportive of this outcome, while projects with larger decreases in agricultural acres are considered less supportive of the outcome. For example, a project that converts no acres away from agriculture (receiving a score of 0%) is most supportive of the outcome. A project that converts fewer acres (e.g. one that loses 5% of ag acres, receiving a score of -5%) is more supportive than a project converting more acres (e.g. one that loses 15% of ag acres, receiving a score of -15%). A score of -5% is higher than -15%, so higher scores (i.e. negative numbers closer to zero) are more supportive of the outcome.

4.2.3) Does the project serve a fast growing employment area?

Indicator: Percent employment growth

Similar to indicators in other outcomes, this indicator draws on the planning and strategies embodied in the MTP/SCS to document how the proposed project responds to envisioned future conditions. The indicator calculates employment in the project area in the base year of the plan, employment in the same area in the plan's horizon year, and takes the percent change. The indicator uses a floor of 75 jobs to limit outliers in the percent change calculation. The evaluation interprets investments in areas of fast employment growth

relative to other areas as supportive of implementing the vision of the MTP/SCS.

Table 4. Indicators for Performance Outcome #4: Provide Long-Term Economic Benefit

Question	Indicator	Score supportive of outcome
To what extent does the project support job accessibility?	Transit + drive job access	Higher
To what extent does the project support accessibility to educational facilities?	K – university enrollment	Higher
Does the project serve a fast growing employment area?	% employment growth	Higher
To what extent does the project support the agricultural economy?	% of current ag acres	Higher
Does the project serve an area projected in the MTP/SCS to stay in agriculture use?	% change in agricultural acres	Higher (0% change most supportive)

Performance Outcome #5. Improve Goods Movement, Including Farm-To-Market Travel, In and Through the Region

The freight indicators in the 2018 Regional Program focus on the type of goods movement that supports regional industry and economic activity, including the viability of the regional manufacturing, distribution, and agricultural sectors. They also hone in on corridors playing a key role in the regional freight network.

5.1) Does the project serve, or connect to, a corridor used by goods movement?

Indicator: Commercial VMT/VMT

This indicator establishes the portion of volumes along the project corridor that come from commercial vehicle travel, relative to total travel along the corridor. The measure is based on the project buffer. The estimate of commercial travel comes from SACOG's travel demand model for the current MTP/SCS base year, which includes both two axle and three (or more) axle commercial vehicle trips. Likewise, SACOG uses the agency travel model to estimate total travel along the corridor. The evaluation interprets a higher portion of commercial VMT relative to overall VMT to demonstrate a more freight-utilized corridor, and thus more supportive of the performance outcome.

5.2) Does the project serve a facility that is congested for freight and goods movement travel?

Indicator: Commercial CVMT/Commercial VMT

This indicator replicates the congestion measures discussed above in Performance Outcome #2, but solely for commercial travel in the buffer area. In other words, the indicator estimates the portion of all commercial travel in the corridor that is congested, per SACOG's standard congestion definition (defined in Outcome #2). The estimate of commercial travel comes from SACOG's travel demand model for the base year of the current MTP/SCS, which includes both two axle and three (or more) axle commercial vehicle trips. SACOG interprets a higher portion of commercial congested VMT to total commercial VMT as demonstrative of a freight investment need.

5.3) Does the project serve an area with freight-dependent jobs?

Indicator: Percent of jobs in freight-dependent industries

This final indicator connects freight volumes and flow with corridors of local economic activity. The indicator measures the percent of all jobs in the project corridor that fall in SACOG's MTP/SCS industrial definition, including manufacturing, logistics, and also includes agriculture. The data source is the parcel level employment inventory for SACOG's MTP/SCS. A higher portion of jobs in freight-dependent industries relative to similar areas signifies local economy activity tied to goods movement, and a project more supportive of the performance outcome.

Table 5. Indicators in Performance Outcome #5: Improve Goods Movement

Question	Indicator	Score supportive of outcome
Does the project serve, or connect to, a corridor used by goods movement?	Commercial VMT/VMT	Higher
Does the project serve a facility that is congested for freight travel?	Commercial CVMT/Commercial VMT	Higher
Does the project serve an area with freight-dependent jobs?	Percent of freight-dependent jobs	Higher

Performance Outcome #6. Significantly Improve Safety and Security

The indicators under this performance outcome use the Transportation Injury Mapping System (TIMS) data series. In this PPA tool, SACOG has incorporated TIMS for the years 2011 to 2016. Each collision is a unique occurrence that can stem from a variety of factors, such as driver behavior and vehicle technology. Facility investments under this performance outcome can complement safety educational and enforcement efforts with the goal of improving safety and security.

6.1) Does the facility have a high rate of collisions?

Indicator: Collisions per 1 million VMT

This indicator divides the five-year TIMS collision average along the facility by its VMT (the calculation annualizes VMT, which usually is reported as a daily value, to get a comparison of average yearly collision by annual VMT). It then divides by 1 million to report as a per million VMT measure. The method interprets a higher rate relative to similar areas as more representative of need.

6.2) Does the facility have a high rate of fatal collisions?

Indicator: # of fatal collisions/# of total collisions

This indicator reports the portion of all collision along the project that result in a fatality, drawing on the five-year average from the TIMS dataset. The method interprets a higher rate relative to similar areas as more representative of need in the performance outcome.

6.3) Does the facility have a high rate of collisions involving pedestrians or cyclists?

Indicator: # of collisions involving a pedestrian or cyclist/total collisions

The final indictor looks at collisions involving pedestrians and cyclists. It reports the number of such collisions divided by total collisions, drawing on the five-year average from TIMS. The method interprets a higher percentage relative to similar areas as more representative of the performance outcome.

Table 6. Indicators in Performance Outcome #6: Significantly Improve Safety and Security

Question	Indicator	Score supportive of outcome
Does the facility have a high rate of collisions?	Total collisions per 1M VMT	Higher
Does the facility have a high rate of fatal collisions?	Percent fatal collisions to total collision	Higher
Does the facility have a high rate of collisions involving pedestrians or cyclists?	Percent bike/ped collision to total collision	Higher

Performance Outcome #7. Demonstrate 'State of Good Repair' Benefits That Improve the Efficiency of the Existing Transportation System

The current MTP/SCS prioritizes preservation of the existing transportation system when making investment decisions with revenues that can be used for maintenance and rehabilitation purposes. As mentioned in Part I of this user guide, in the maintenance outcome applicants must provide a few additional data points.

Road Projects

7.1) Does the project serve a facility with poor pavement conditions?

Indicator: PCI

For road projects the project sponsor will provide the facility's pavement condition index (PCI). SACOG interprets a lower PCI as more supportive of the outcome (the sponsor in the narrative section will also speak to the agency's larger pavement management system, including preventive maintenance strategies).

7.2) Does the project serve a facility with a high volume of use?

Indicator: AADT

For road projects the project sponsor will provide the facility's average annual daily traffic (AADT). SACOG interprets a higher AADT relative to similar areas as more demonstrative of need and supportive of the outcome. Like in all data indicators, projects are compared to those of similar place types. SACOG's Traffic Volume Table shows regional AADT by road type (freeway, arterial, collector, etc.) within each community type (rural residential, established communities, etc.).

7.3) What level of transportation needs are created by the surrounding land uses in the project area?

Indicator: Complete Streets index

Prior funding rounds have established how road maintenance and rehabilitation can serve as a cost-effective way to develop more complete streets in the region, given the appropriate local context. The complete streets index highlights those areas well suited to combine maintenance and rehabilitation activities with multimodal complete street design elements that support and enable safe access to all types of users. The index adds the total net density, daily transit stops, and school enrollment by acre in the project area, and then multiplies this sum by the percent increase in total net density.

SACOG interprets maintenance/rehabilitation projects with higher scores on the complete street index as benefiting from project design elements that support multimodal use along the facility. If the project scores high on the complete streets index but no complete street elements are included in the project design, the project sponsor should note the reasons why.

Table 7. Indicators within Performance Outcome #7: Road Maintenance

Question	Indicator	Score supportive of outcome
Does the project serve a facility with poor pavement conditions?	PCI	Lower
Does the project serve a facility with a relative high volume of use?	AADT	Higher
What level of transportation needs are created by the surrounding land uses in the project area?	Complete Streets index	Context

Traffic Volume Reference Table	Base Year AADT* by Community Type and Road Type					Region Average
Road Type	AG and Other	Corridor	Developing	Established	Rural Residential	
Freeway (Mixed Flow)	22,924	60,350	38,009	46,577	29,471	46,774
Expressway	11,952	30,864	15,753	23,165	14,755	17,397
Major Arterial	6,041	14,578	7,097	13,594	9,530	13,434
Major Arterial	6,041	14,578	7,097	13,594	9,530	13,434
Minor Arterial	2,210	6,631	4,159	6,181	7,395	6,145
Collector	506	2,614	1,327	2,251	999	1,903
Rural Highway	5,095	11,009	7,958	5,903	6,970	5,382
Rural Arterial	1,049	2,616	2,120	2,748	1,974	1,867

*Based on SACSIM15 volumes

Transit Projects

Transit project applying to Outcome #7 will use a standalone data spreadsheet separate from the online PPA tool. This documentation for the online PPA tool does not cover the indicators for the transit maintenance spreadsheet.

Cross-Cutting Outcome: Equity

The MTP/SCS uses a low income high minority (LIHM) definition for its environmental justice and equity analysis. The project performance assessment tool maintains the same definition for LIHM areas to provide a cross-cutting outcome on equity. The plan (and as such, the PPA tool) defines LIHM communities as those that meet one or all of the following:

- Census block groups where 45 percent or more of the population lives at 200 percent or less of the federal poverty level, based on the 2009-2013 American Community Survey
- Census block groups where 70 percent or more of the population is Asian, Pacific Island, African American, Hispanic, Native American, or other Non-White ethnic group based the 2009-2013 ACS
- Based on the 2009-2103 ACS, census block groups that are in the top quintile (compared to regional average) on at least four of five vulnerability measures:
  - Housing cost burden: percent of renter- and owner-occupied housing units paying more than 50 percent of household income in housing costs
  - Single parent households: percent of family households with their own children under age 18 with a single householder
  - Older population: percentage of population aged 75 and older
  - Educational attainment: percent of population 25 years and older with less than a high school degree
  - Linguistic isolation: percent of households where English is not the primary language and is not spoken very well
  -

1) Does the project serve a disadvantaged community?

Indicator: Percent LIHM population

This indicator reports what percent of the total population in the project area falls in a LIHM category, per SACOG's MTP/SCS definition. The LIHM indicator is not a scored performance outcome.

2) Does the project provide benefits to underserved populations?

Indicator: LIHM population

This indicator includes the total LIHM population in the project buffer area. Note that while most indicators are normalized to size, this is an absolute measure. The LIHM indicator is not a scored performance outcome.

Table 8. Cross Cutting Equity Indicators

Question	Indicator
Does the project serve a disadvantaged community?	% LIHM population
Does the project provide benefits to underserved populations?	LIHM population