

Project Performance Assessment Working Group Meeting

August 24, 2017



Meeting Agenda

- I. Introduction (All)
- II. Review from last meeting
- III. Benefit-Cost Analysis Update
- IV. Performance Outcomes Analytical Framework
- V. Performance Outcomes Test Results
- VI. Performance Outcomes Mapping Tool
- VII. Meeting Evaluation (All)

Recap: June and July Working Group Meetings

Benefit-Cost Analysis

- SACOG's travel model and Benefit-Cost Analysis
- Benefit-Cost Analysis for rural projects
- Results from working group identified test projects
- Review of feasibility for new measures

Performance Outcomes Analysis

- Interpretation of data for project performance analysis
- Indicators for federal and state programs

Upcoming

September- Last Working Group Meeting!

- Synthesis of working group feedback
- Final thoughts for moving forward with development of Benefit-Cost Analysis and Performance Outcomes Analysis
- Asking for working group consensus next steps
- Continued engagement and transparency

Two New Methods for Project Performance Assessment



Benefit Cost Analysis

Benefit Cost Analysis (BCA) is a focused analysis that places a dollar value on the various benefits of major transportation projects, such as:

- Improve travel time
- Decrease accidents
- Reduce emissions
- Reduce out of pocket uses costs
- Improve travel reliability
- Increase physical activity

Performance Outcomes Analysis

Performance Outcome Analysis (POA) is a broader analysis that connects a vision for improving mobility and quality of life with key performance outcomes:

- Reduce VMT per capita
- Reduce congestion
- Increase multi-modal travel and choice of transportation options
- Provide long term economic benefit
- Improve goods movement
- Improve safety and security
- Demonstrate state of good repair

SACOG plans on incorporating **both** methodologies to potentially:

1. **Improve** MTP/SCS investment list
2. Possible **better link** to flexible funding rounds
3. **Support** for other grant applications

Performance Indicators by Methodology

BCA Performance Measures

- Travel time by mode (auto, transit, bike, walk, commercial)
- Reliability (buffer hours)
- Safety (# of fatality, injury and property damage collisions)
- User operator costs
- Auto ownership
- Emissions (CO2, PM2.5, Sox, ROG, Nox)
- Public health (30 min active transportation)

Existing 7 Performance Outcomes

- Reduce driving
- Reduce bottlenecks
- Increase multi-modal travel & create transportation options
- Create economic benefits
- Improve goods movement
- Improve safety and security
- State of good repair

Benefit-Cost Analysis

- No sponsors volunteered projects this month
- Monetization values and sensitivity test
- Aggregation and rollup technique

BCA Benefit & Cost Measures Explanation				
	Unit	Monetized	Explanation	Source
Travel Time Savings				
Passenger Travel Time	hours	\$ 16.03	1/2 mean wage	Caltrans
Walk & Bike Travel Time	hours	\$ 16.03		
Transit Travel Time	hours	\$ 16.03		
Freight Travel Time	hours	\$ 26.24	truck driver wage + cargo carrying value	FHWA
Travel Cost Savings				
Auto Operating Costs	VMT	\$ 0.2518	fuel, maintenance	Caltrans
Truck Operating Costs	VMT	\$ 0.370		
Auto Ownership Costs	number of cars	\$ 6,290	Lease, insurance	MTC (Bay Area #, we could update)
Reliability Improvement				
Auto	Buffer hour	\$ 16.03	set to travel time #	SHRP2
Truck	Buffer hour	\$ 26.24		
Emissions Reduction				
CO ₂	Metric ton	\$ 55.35	societal cost	BAAQMD (we could look to update)
PM2.5	ton	\$ 490,000	negative health costs	
Nox	ton	\$ 7,800		
ROG	ton	varies (~\$10,000)		
SO ₂	ton	\$ 40,500		
Safety				
Injury + Fatality Collisions	incident	\$ 82,036	medical costs, lost productivity	Caltrans (SACOG blended)
Property Damage Collisions	incident	\$ 2,455		Caltrans
Public Health				
30 Minutes Physical Activity	number of people	\$ 1,330	health care, productivity	CA Center for Public Health Advocacy
Construction and Operating				
Capital Costs	amortized	project specific, provided by sponsor		
Yearly O&M Costs	O&M			

Performance Outcomes Analysis

Analytical Framework

What are the “outcomes”?

- Reduce VMT per capita
- Reduce congested VMT per capita
- Increase multi-modal travel/alternative travel/choice of transportation options
- Provide long-term economic benefit within the region, recognizing importance of sustaining both urban and rural economies
- Improve goods movement, including farm-to-market travel, in and through the region
- Improve safety and security
- Demonstrate “state of good repair” benefits

“Outcomes” Assessment Concepts

- Project location and “buffer” area around project
 - Buffer is the area within a specified distance of the project location—1/4 mile for this proof-of-concept
- Data layers available for use for each project buffer
 - Safety/TIMS accident occurrences
 - Transit service/GTFS files
 - Land use/SACOG base year land data
 - Demographics/SACOG base year population files
 - Equity/Low-income, high minority population areas from MTP/SCS Title VI analysis
 - Street pattern/regional roadway centerline GIS
 - Bike facilities/regional bike lane GIS
 - VMT, congestion and mode of commute/SACOG travel model outputs
 - Economics and jobs access/SACOG employment estimates and employment centers GIS

Performance Outcomes Analysis

Test Results

- Some measures being finalized
- Sample set taken from prior funding round plus BCA test projects

Outcome 1: Reduce VMT

Project	Supports a low VMT area	Accessibility	Future change in VMT/ capita	Change in density	Project Design elements	
Pole Line (Davis)	18.0	<i>Accessibility measure being finalized</i>	-9%	0%		
Loyola (Davis)	17.4		-8%	8%		
Kammerer (Elk Grove)	26.1		-12%	70%		
Sunrise (Rancho)	16.7		-18%	39%		
W. Main St (Woodland)	13.9		-7%	17%		
Goethe (Sac County)	16.0		-3%	-2%		
MLK (Sac County)	10.5		3%	33%		
Lincoln Ave (Galt)	17.2		-9%	17%		
CR98 (Yolo County)	20.9		7%	1%		
US 50 HOV (ED County)						
Hazel Ave (Sac County)	21.1		-10%	-1%		
Measure description	Existing VMT/ Capita	# of jobs by drive and transit shed	Change in VMT/ Capita	DU/net rez acre + emp/net emp acre	Rules based	

Outcome 2: Congestion

Project	Is facility currently congested?	Is area currently congested?	Factors to increase congestion in future	Project design elements
Pole Line (Davis)	0%	0%	1%	
Loyola (Davis)	0%	0%	14%	
Kammerer (Elk Grove)	2%	1%	109%	
Sunrise (Rancho)	15%	15%	63%	
W. Main St (Woodland)	0%	0%	21%	
Goethe (Sac County)	0%	0%	-1%	
MLK (Sac County)	0%	13%	63%	
Lincoln Ave (Galt)	0%	0%	31%	
CR98 (Yolo County)	0%	0%	1%	
US 50 HOV (ED County)	9%	9%	112%	
Hazel Ave (Sac County)	0%	8%	1%	
Measure description	CVMT/VMT on segment	CVMT/VMT in area	% growth HH + EMP	Rules based

Outcome 3: Multi-Modal

Project	Walk: neighborhood connectivity	Walk: street density	Bike: Gap closure	Bike: Suitability	Transit: service/ acre
Pole Line (Davis)	66%	7	84%	Finalizing measure	0.3
Loyola (Davis)	76%	26	41%		0.9
Kammerer (Elk Grove)	78%	6	24%		0.0
Sunrise (Rancho)	89%	4	50%		0.4
W. Main St (Woodland)	90%	16	21%		0.9
Goethe (Sac County)	73%	31	21%		0.8
MLK (Sac County)	75%	20	26%		1.0
Lincoln Ave (Galt)	83%	27	17%		0.0
CR98 (Yolo County)	71%	1	1%		0.0
US 50 HOV (ED County)	75%	7	1%		0.0
Hazel Ave (Sac County)	59%	15	51%		0.0
Measure	% of 3 & 4-type intersections	# of intersections / acre	Bike lane/ total road mileage	Car volumes & speed on facility	# of vehicle stops

Outcome 3: Multi-Modal Cont'

Project	Multi-modal: Density	Multi-modal: T/B/W mode share	Multi-modal: Increase in mode share	Project design elements
Pole Line (Davis)	14	29%	30%	
Loyola (Davis)	7	32%	35%	
Kammerer (Elk Grove)	2	8%	8%	
Sunrise (Rancho)	19	8%	20%	
W. Main St (Woodland)	15	26%	28%	
Goethe (Sac County)	12	10%	13%	
MLK (Sac County)	8	12%	14%	
Lincoln Ave (Galt)	7	17%	17%	
CR98 (Yolo County)	2	6%	8%	
US 50 HOV (ED County)	7	5%	7%	
Hazel Ave (Sac County)	7	4%	5%	
Measure	(jobs + emp)/ net acre	Existing transit, bike, walk share	FY transit, bike, walk share	Rules based

Outcome 4: Economy

Project	Does project serve existing job centers?	Future employment growth	Reliability	Access
Pole Line (Davis)	1	0%	Still developing a measure (not yet started)	Finalizing measure
Loyola (Davis)	1	5%		
Kammerer (Elk Grove)	0	212%		
Sunrise (Rancho)	2	58%		
W. Main St (Woodland)	1	35%		
Goethe (Sac County)	4	0%		
MLK (Sac County)	3	108%		
Lincoln Ave (Galt)	0	42%		
CR98 (Yolo County)	2	0%		
US 50 HOV (ED County)	1	129%		
Hazel Ave (Sac County)	2	0%		
Measure	Count of job centers w/in buffer	Planned emp growth		

Additional Working Group Outcomes

Project	Equity	Ag intensity	Ag preservation
Pole Line (Davis)	0%	55%	0%
Loyola (Davis)	18%	0%	-
Kammerer (Elk Grove)	0%	54%	-14%
Sunrise (Rancho)	0%	0%	-
W. Main St (Woodland)	46%	13%	0%
Goethe (Sac County)	38%	0%	-
MLK (Sac County)	82%	0%	-
Lincoln Ave (Galt)	50%	1%	-89%
CR98 (Yolo County)	0%	95%	0%
US 50 HOV (ED County)	0%	18%	-34%
Hazel Ave (Sac County)	0%	0%	-
Measure	LIHM population	Ag acres/total acres	change in ag acres

Outcome 5: Freight

Project	Freight volumes	Dependent industries	Freight network	Project design elements
Pole Line (Davis)	0.8%	0%	Being developed	
Loyola (Davis)	1.5%	0%		
Kammerer (Elk Grove)	0.5%	12%		
Sunrise (Rancho)	2.9%	22%		
W. Main St (Woodland)	8.7%	7%		
Goethe (Sac County)	3.4%	0%		
MLK (Sac County)	0.1%	16%		
Lincoln Ave (Galt)	0.7%	7%		
CR98 (Yolo County)	3.1%	100%		
US 50 HOV (ED County)	0.3%	1%		
Hazel Ave (Sac County)	0.5%	0%		
Measure	C3 volume/ total volume	% jobs in freight dependent industry	Freight route density	Rules based

Outcome 6: Safety

Project	Total Collisions Rate	% Fatal Collisions	% Bike/Ped Collisions	Emergency evacuation/ climate vulnerability	Project design elements
Pole Line (Davis)	0.51	0%	11%	Being developed (haven't started yet)	
Loyola (Davis)	0.36	0%	0%		
Kammerer (Elk Grove)	0.33	3%	3%		
Sunrise (Rancho)	0.24	1%	11%		
W. Main St (Woodland)	0.85	4%	38%		
Goethe (Sac County)	0.12	0%	50%		
MLK (Sac County)	0.10	7%	40%		
Lincoln Ave (Galt)	0.11	0%	29%		
CR98 (Yolo County)	1.60	3%	3%		
US 50 HOV (ED County)	0.18	2%	1%		
Hazel Ave (Sac County)	0.14	0%	5%		
Measure	Collisions per 1 million VMT	% fatal collisions	% bike/ped collisions		





















































Outcome 7: Maintenance



Project	Pavement condition	Transit maintenance	Complete Street Opportunity
Pole Line (Davis)	Project sponsor provides	TAM Plan as regional resource	Measure still being developed
Loyola (Davis)			
Kammerer (Elk Grove)			
Sunrise (Rancho)			
W. Main St (Woodland)			
Goethe (Sac County)			
MLK (Sac County)			
Lincoln Ave (Galt)			
CR98 (Yolo County)			
US 50 HOV (ED County)			
Hazel Ave (Sac County)			
Measure	PCI		CS Flag

Draft Assessment Framework- Working Concept

- Relevance of project types to outcomes
 - Some projects are more relevant to particular outcomes than others
 - E.g. rehab projects not relevant to congestion outcome
- Projects ranked on each buffered data layer
- Rankings for each outcome combined to identify unusually high or low projects for each outcome
 - Half or more of the buffered data layers "high" = project "high" for that outcome
 - Half or more of the buffered data layers "low" = project "low" for that outcome
 - All else "medium"

Draft Outcomes Rollup

Name	Reduce VMT	Reduce Congestion	Increase MultiModal	Support Economy	Freight	Ag	Promote Equity	Safety
Pole Line	n/a	n/a	n/a					n/a
Loyola Drive	n/a	n/a	n/a					n/a
Kammerer Widening	n/a							
Sunrise Blvd Rehab		n/a	n/a					n/a
Woodland Main St		n/a						
Goethe Rd		n/a						
MLK Blvd		n/a						
Lincoln Ave (Galt)		n/a						
CR98 Safety Improvements	n/a	n/a	n/a					
US-50 HOV Lanes								
Hazel Ave								

	Low
	Medium
	High

Performance Outcomes Analysis

Demo of Mapping Tool