Project Performance Assessment Case Studies

SACOG PPA Work Group meeting

April 26, 2017

Discussion Questions

Keep these questions in mind as the presentation unfolds:

What elements of the different evaluation frameworks do you like?

What elements of the different evaluation frameworks do you see as problematic?

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MAP-21 performance measures guide state and regional programs

Safety

Infrastructure condition

Freight movement and economic vitality

Congestion reduction

System reliability

Environmental sustainability

Reduced project delivery delays

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MAP-21 Performance Measures

Safety
- Number of fatalities
- Rate of fatalities
- Number of serious injuries
- Rate of serious injuries
- Number of non-motorized fatalities and non-motorized serious injuries

System Preservation
- Percent of the person-miles traveled on the Interstate that are reliable
- Percent of the person-miles traveled on the non-Interstate NHS that are reliable
- Percent change in tailpipe CO_2 emissions on the NHS compared to the calendar year 2017 level
- Truck travel time reliability (TTTR) index
- Annual hours of peak hour excessive delay per capita
- Total emissions reduction
- Percent of Non-SOV travel

Infrastructure
- Percentage of pavements of the Interstate System in good condition
- Percentage of pavements of the Interstate System in poor condition
- Percentage of pavements of the non-Interstate NHS in good condition
- Percentage of pavements in the non-Interstate NHS in poor condition
- Percentage of NHS bridges classified as in good condition
- Percentage of NHS bridges classified as in poor condition

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Current Practices Review

- Virginia Department of Transportation (VDOT)

- San Francisco Metropolitan Transportation Commission (SFMTC)

- Oregon Metro

- Minnesota Metropolitan Council

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Virginia DOT

"pick the right projects, build the best ones."

Governor Terry McAuliffe

SMART Scale process is applied to every project in the statewide long-range plan
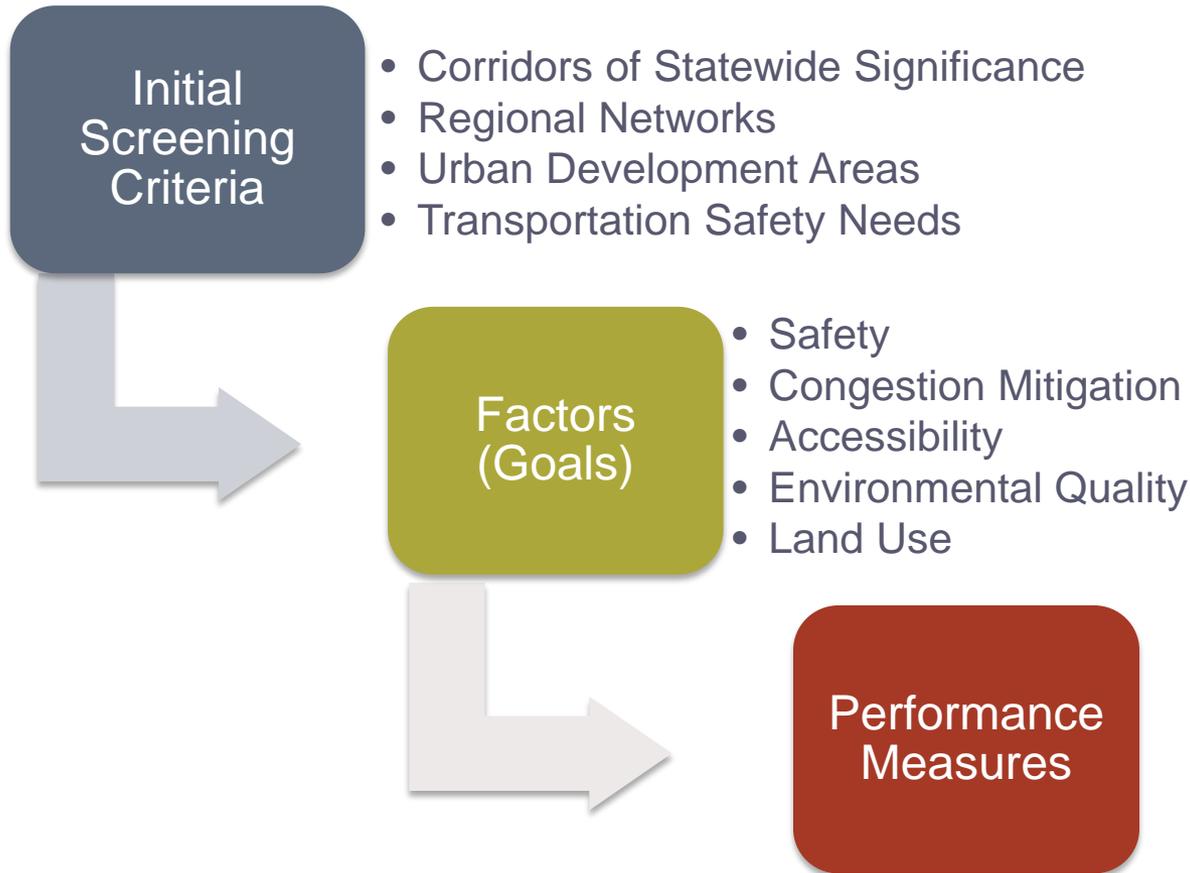
Eligible Projects include:

- Highway improvement

- Transit and rail capacity expansion

- Bicycle and pedestrian improvements

- Transportation demand management.

Excluded:

- Asset Management

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VDOT – Evaluation Framework

Initial Screening Criteria

- Corridors of Statewide Significance
- Regional Networks
- Urban Development Areas
- Transportation Safety Needs

Factors (Goals)

- Safety
- Congestion Mitigation
- Accessibility
- Environmental Quality
- Land Use

Performance Measures

| Factor Area	Measures
Safety	Number of Fatal and Injury Crashes (50%)
	Rate of Fatal and Injury Crashes (50%)
Congestion Mitigation	Person Throughput (50%)
	Person Hours of Delay (50%)
Accessibility	Access to Jobs (60%)
	Access to Jobs for Disadvantaged Persons (20%)
	Access to Multimodal Choices (20%)
Environmental Quality	Air Quality and Environmental Effect (50%)
	Impact to Natural and Cultural Resources (50%)
Economic Development	Project Support for Economic Development (60%)
	Intermodal Access and Efficiency (20%)
	Travel Time Reliability (20%)
Land Use	Transportation Efficient Land Use (100%)

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VDOT – Findings
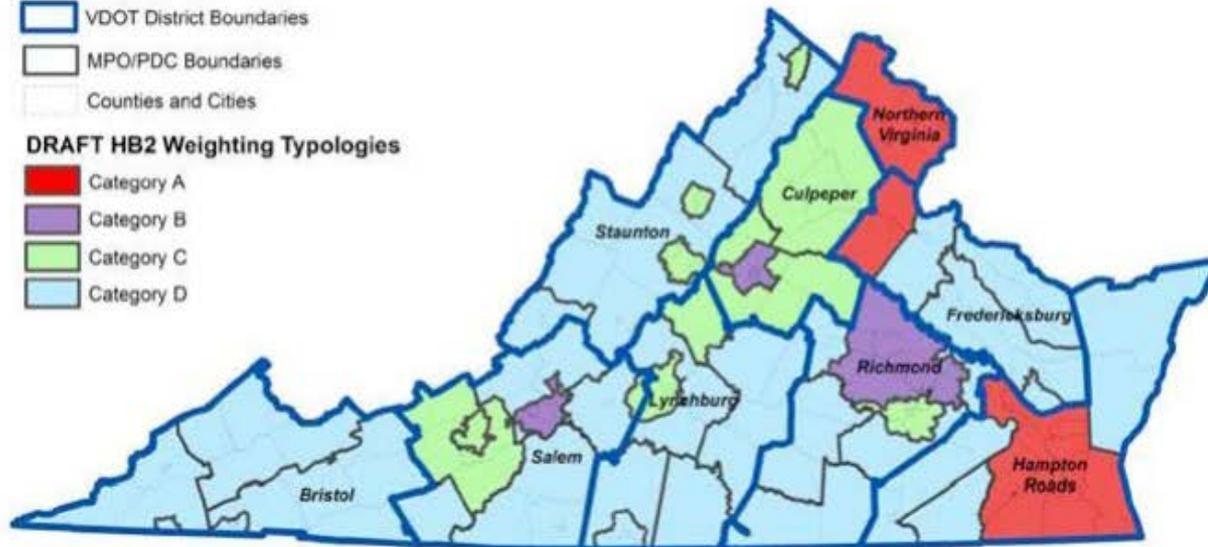
Factor	Congestion Mitigation	Economic Development	Accessibility	Safety	Environmental Quality	Land Use
Category A	45%	5%	15%	5%	10%	20%
Category B	15%	20%	25%	20%	10%	10%
Category C	15%	25%	25%	25%	10%	
Category D	10%	35%	15%	30%	10%	

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San Francisco MTC (SFMTC)

BRIEF HISTORY OF PERFORMANCE ASSESSMENT AT MTC

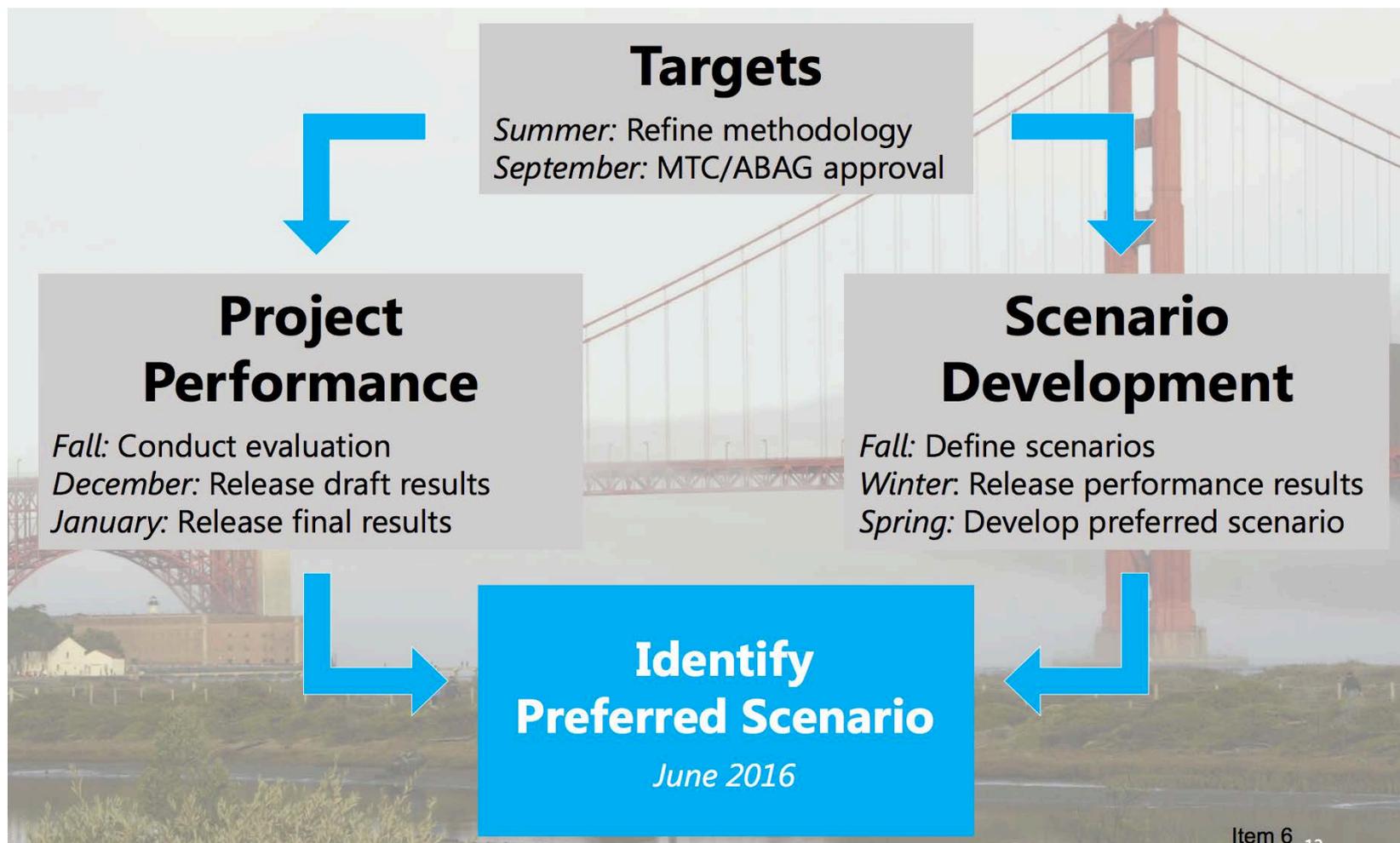| Year	2001	2005	2009	2013
	2001 REGIONAL TRANSPORTATION PLAN	TRANSPORTATION 2030	TRANSPORTATION 2035 CHANGE IN MOTION	BayArea Plan
SCENARIO PLANNING	Transportation investment packages	Transportation investment packages	Transportation investment packages	Integrated transportation & land use scenarios
PERFORMANCE TARGETS	Transportation targets	Transportation targets	Transportation targets	Integrated targets
QUALITATIVE PROJECT ASSESSMENT	None	Goals-based	Goals-based	Targets-based
QUANTITATIVE PROJECT ASSESSMENT	None	None	Limited benefit-cost analysis	Rigorous benefit-cost analysis
NUMBER OF PROJECTS ANALYZED	0	400	700	900

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SFMTC – Evaluation Framework

Principles

- Targets should be **able to be forecasted** well.
- Targets should be able to be **influenced by regional agencies** in cooperation with local agencies
- Targets should be **easy to understand**
- Targets should **address multiple areas of interest**
- Targets should have some **existing basis for the long-term numeric goal**

Targets

- The **total number** of targets selected should be **relatively small**
- Each of the targets should **measure distinct criteria**
- The set of targets should provide some **quantifiable metric** for each of the identified goals.

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SFMTC – Process Flow

Targets

Summer: Refine methodology
September: MTC/ABAG approval

Project Performance

Fall: Conduct evaluation
December: Release draft results
January: Release final results

Scenario Development

Fall: Define scenarios
Winter: Release performance results
Spring: Develop preferred scenario

Identify Preferred Scenario

June 2016

Item 6

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SFMTC – Goals and Targets

Goal/Outcome	Target
Climate Protection	Reduce per-capita CO2 emissions from cars and light-duty trucks by 15%
Adequate housing	House 1000% of regions projected growth by income level (very low, low, moderate, above moderate) without displacing current low-income residents
Healthy and safe communities	Reduce premature deaths from exposure to particulate emissions: • Reduce premature deaths from exposure to fine particulates (PM2.5) by 10% • Reduce coarse particulate emissions (PM10) by 30% • Achieve greater reductions in highly impacted areas
	Reduce by 50% the number of injuries and fatalities from all collisions (including bike and pedestrian)
	Increase the average daily time walking or biking per person for transportation by 70% (for an average of 15 minutes per person per day)
Open Space and Agricultural Preservation	Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries)
Equitable Access	Decrease by 10% the share of low-income and lower middle income residents' household income consumed by transportation and housing
Economic Vitality	Increase gross regional product (GRP) by an average growth rate of approximately 2%
Transportation System Effectiveness	Increase non-auto-mode share by 10% Decrease automobile vehicles miles traveled per capita by 10% Maintain the transportation system in a state of good repair: • Increase local road pavement condition index (PCI) to 75 or better • Decrease distressed lane-miles of state highways to less than 10% of total lane-miles • Reduce share of transit assets past their useful life to 0%

SFMTC – Scenarios
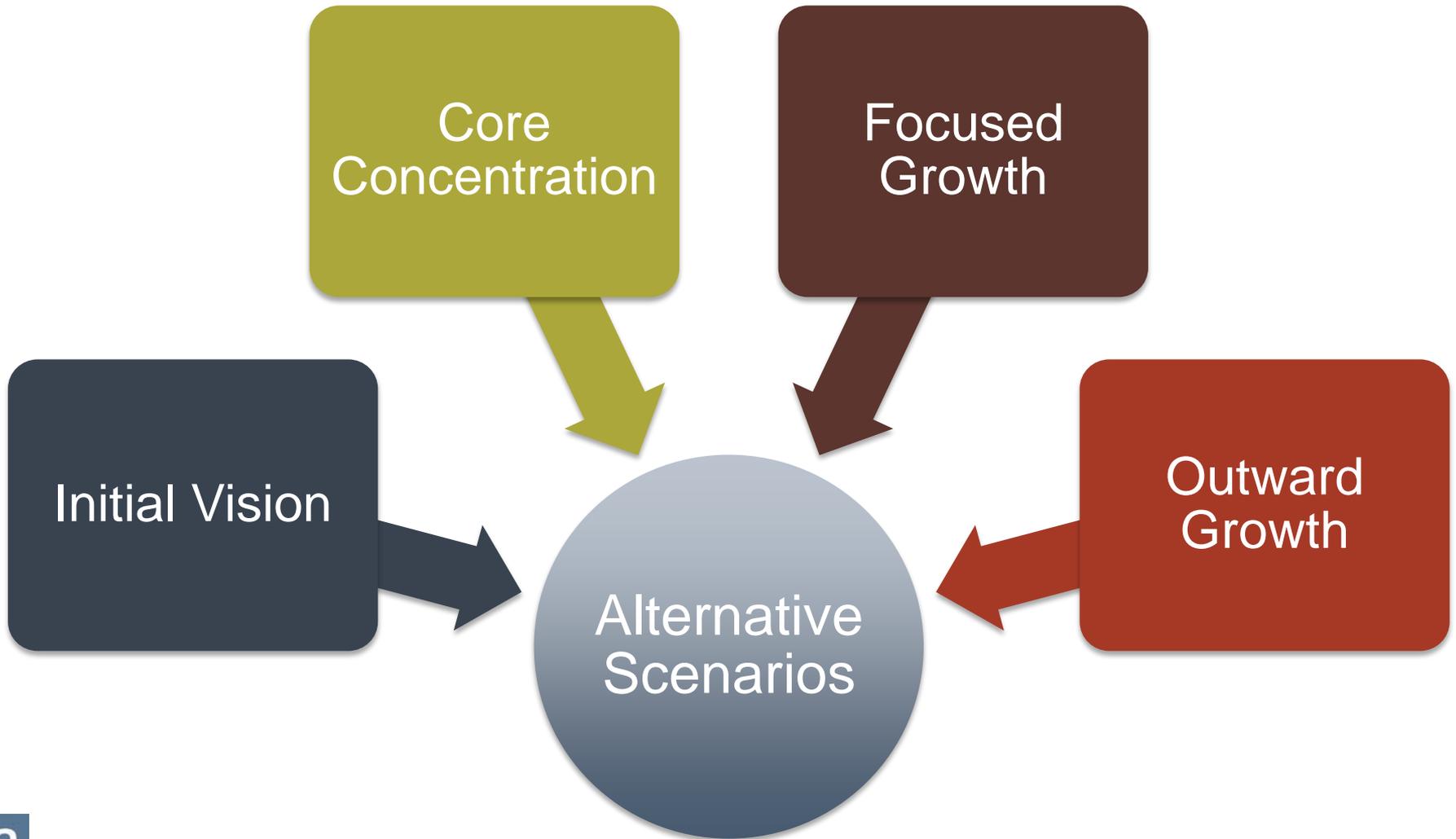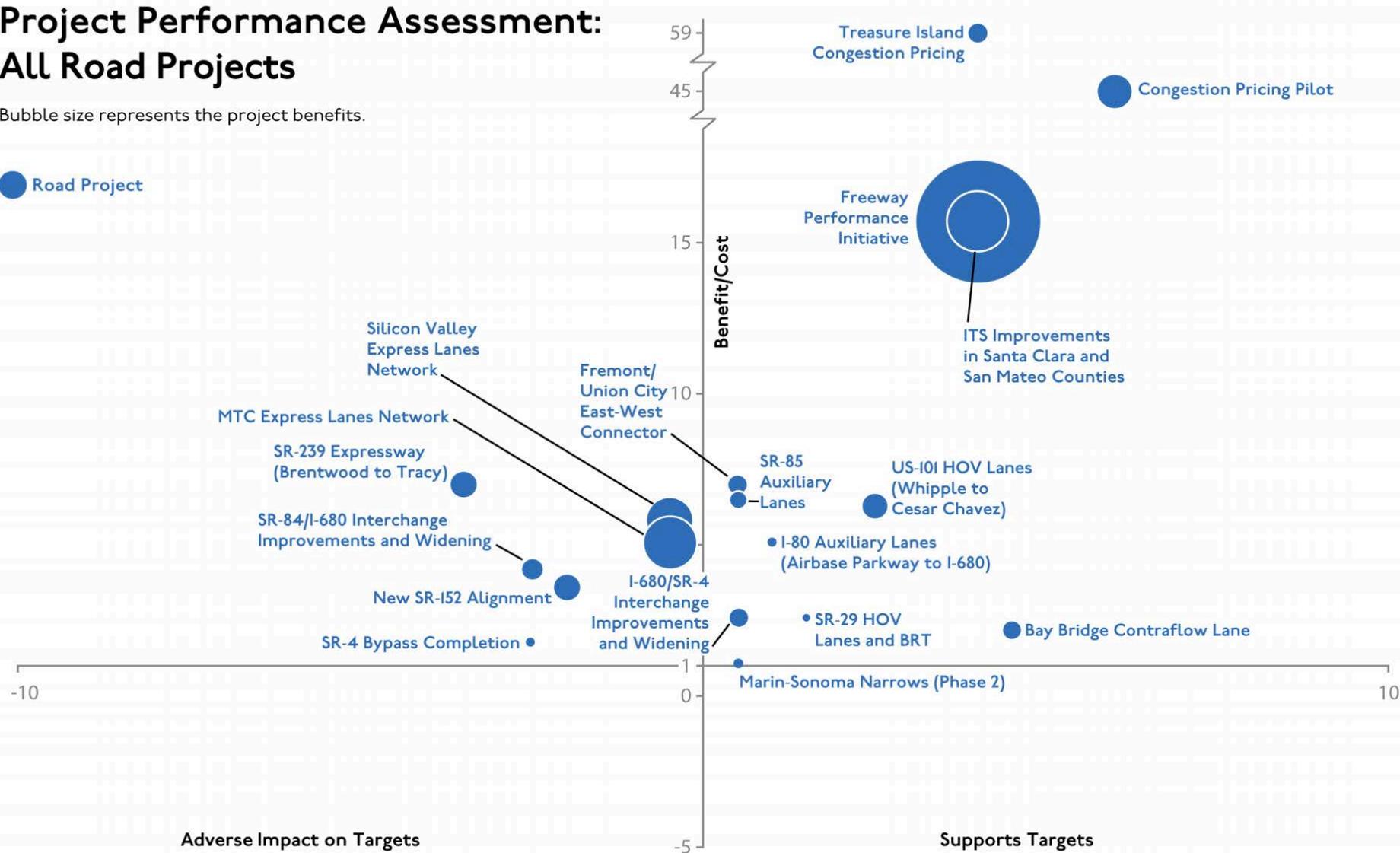
SFMTC – Example Performance Criteria

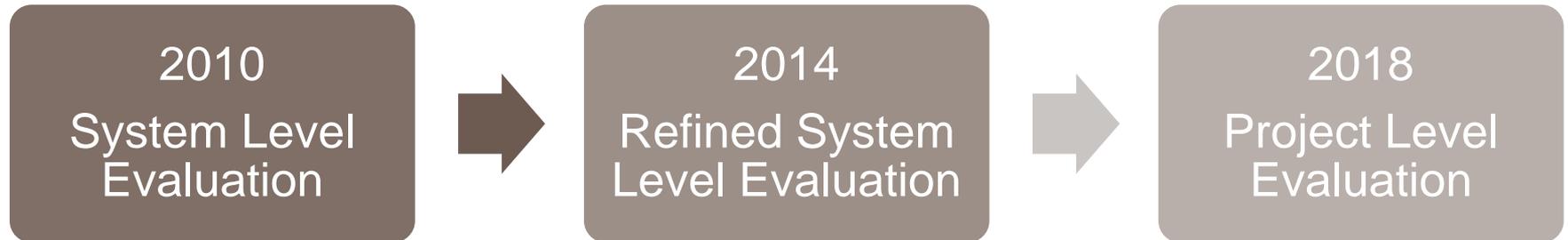| Target	Criteria for Project Support	Criteria for adverse Impact
Reduce per-capita C02 emissions from cars and light duty trucks	• Advances clean fuels and/or vehicles beyond CARB targets • Provides an alternative to driving alone • Provides a VMT reduction	• Results in VMT increase
House the region's projected growth	• Located in a jurisdiction with at least 1,500 units of forecasted housing production • Located in a jurisdiction with above average past performance in meeting Regional Housing Needs Assessment targets for very low and low income units	• Located in a jurisdiction with below average past performance in meeting Regional Housing Needs Assessment targets for very low and low income units

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SFMTC – Findings

Project Performance Assessment: All Road Projects

Bubble size represents the project benefits.

● Road Project

Benefit/Cost axis: 59, 45, 15, 10, 1, 0

- Treasure Island Congestion Pricing
- Congestion Pricing Pilot
- Freeway Performance Initiative
- ITS Improvements in Santa Clara and San Mateo Counties
- Silicon Valley Express Lanes Network
- Fremont/Union City East-West Connector
- MTC Express Lanes Network
- SR-239 Expressway (Brentwood to Tracy)
- SR-85 Auxiliary Lanes
- US-101 HOV Lanes (Whipple to Cesar Chavez)
- SR-84/I-680 Interchange Improvements and Widening
- I-80 Auxiliary Lanes (Airbase Parkway to I-680)
- New SR-152 Alignment
- I-680/SR-4 Interchange Improvements and Widening
- SR-29 HOV Lanes and BRT
- Bay Bridge Contraflow Lane
- SR-4 Bypass Completion
- Marin-Sonoma Narrows (Phase 2)

Adverse Impact on Targets ← -10   0   10 → Supports Targets

-5

Oregon Metro

| 2010 System Level Evaluation | → | 2014 Refined System Level Evaluation | → | 2018 Project Level Evaluation |

Why project level evaluation?

- Provide jurisdictions with information about the impact large-scale projects have on our regional goals and regional transportation system;

- Provide transparency to the public about the return on investment they receive by building regional projects;

- Help develop a mode-neutral project development pipeline so that the region is consistently working to advance a mix of multi-modal projects to address regional needs.

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Oregon Metro – Methodology

Criteria

- Air quality and climate change
- Congestion relief
- Environmental protection
- Equity and access to opportunity
- Freight and goods movement
- Jobs and economic development
- Leverage and cost-effectiveness
- Placemaking and 2040 centers support
- Transportation safety
- Travel options

Performance Criteria

- Award up to 10 points for each criteria

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Oregon Metro – Criteria Example

Criteria	Performance Measures	Points
1. Air quality and climate change **How well does the project reduce air pollutants including air toxics, criteria pollutants and greenhouse gas emissions? How well does the project avoid impacts to sensitive populations?**	Choose one: • The project will result in zero vehicle emissions by providing new or significantly expanded rail transit service, and/or new biking or walking facilities.	- 7
	• The project will reduce vehicle emissions by providing new or significantly expanded bus transit service.	- 5
	• The project will reduce vehicle miles of travel and related emissions by shortening vehicle trips through the use of a park and ride facility, wayfinding, or creating a more direct route for vehicles, walking and/or biking (e.g., street and/or active transportation connectivity).	3
	• The project will reduce vehicle idling and related emissions through the use of technology such as traffic signal coordination, transit or freight signal priority, variable speed signs, ramp metering where it does not currently exist, etc.	2
	• The project will reduce or eliminate vehicle trips and related emissions by providing transit-supportive elements not identified above.	1
	• The project does not reduce vehicle emissions.	0
	The project will reduce VMT and/or vehicle emissions in areas with high concentrations of air toxics and particulate matter OR within 1/4-mile of sensitive land uses (e.g., daycare facilities, hospitals, social services facilities, schools, and retirement homes).	3

Lessons Learned

- All evaluation frameworks start with long-range plan goals as the basis for defining criteria.

- Most evaluation frameworks established principles to guide the selection of targets/performance measures.

- All evaluation frameworks address multi-modal travel and most included other associated elements like equity, climate, and land use.

- Some evaluation frameworks use weighted criteria.

- Some evaluation frameworks use a quantitative point system.

- Some evaluation frameworks use both a scenario and a project level approach.

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Work Group Questions

Do you have any questions about the material presented?

What elements of the different evaluation frameworks do you like?

What elements of the different evaluation frameworks do you see as problematic?