

ACCENTUATE THE POSITIVE, ELIMINATE THE NEGATIVE



Steve Heminger – Metropolitan Transportation Commission
Urban Sustainability Accelerator Symposium – September 2016

Performance-based planning is increasingly common across the U.S.

But there is a big difference between simply monitoring performance and using performance assessment to influence decision-making.



KEY POINTS

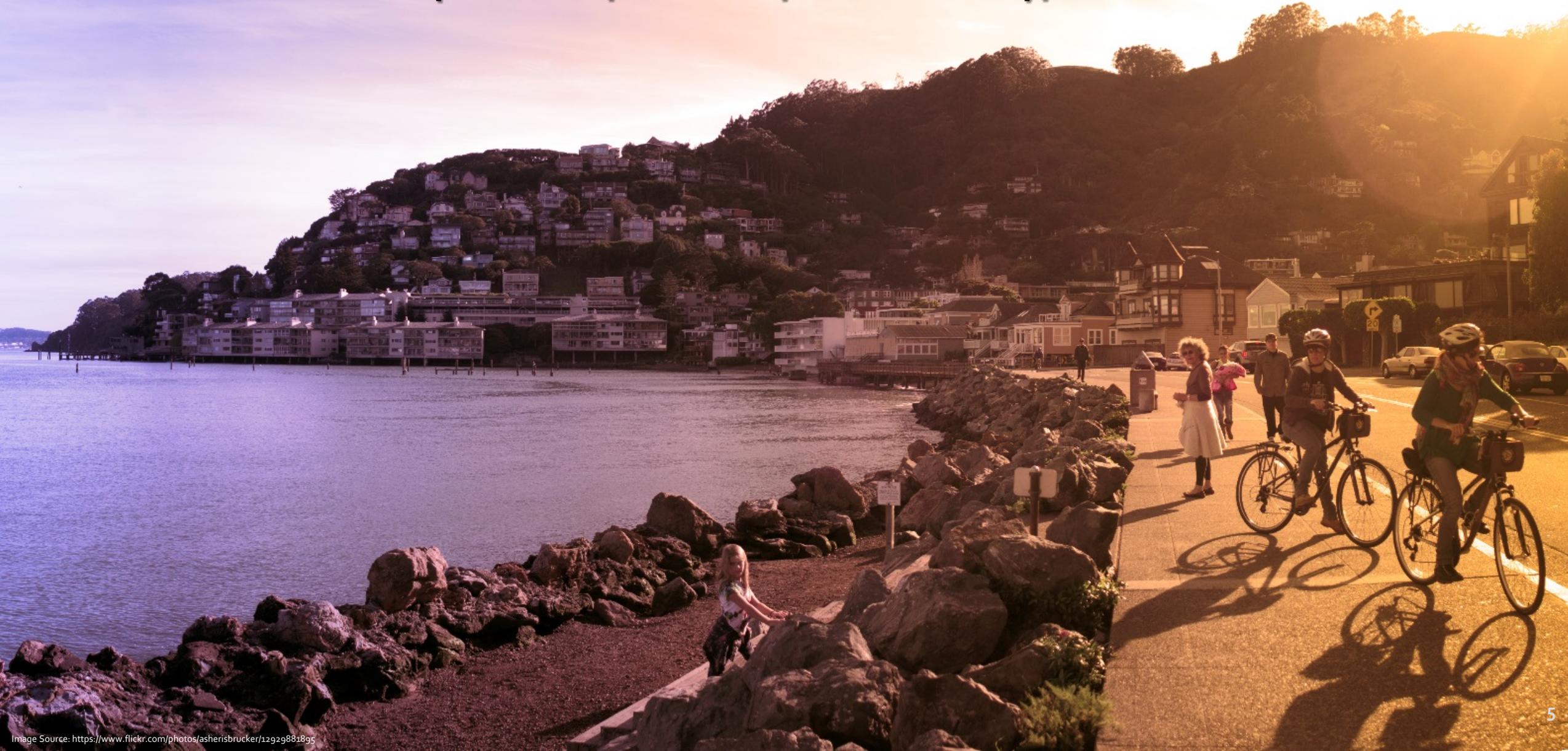
- ① Setting numeric performance targets can ground a planning process, but it must be done in a limited and focused manner.
- ② Rigorous quantitative evaluation of major transportation projects is worth it, despite the time and effort required.
- ③ Prioritizing high-performing projects is just as important as eliminating low-performing projects.
- ④ Investing in new analytical methodologies for non-expansion projects is critically important in the 21st century.



New federal performance requirements are a small step forward.

But they are flawed in many respects – too focused on annual reporting of 20th-century highway performance measures.

Metropolitan areas are leading the way – selecting measures to track and forecast outcomes for transportation, land use, the economy, and the environment.



ECONOMY

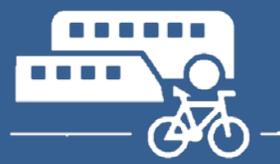


ECONOMIC
VITALITY

Increase access to jobs by all modes

Preserve the share of jobs in middle-wage industries

Reduce per-capita delay on freight network



TRANSPORTATION
SYSTEM
EFFECTIVENESS

Increase non-auto mode share

Reduce auto maintenance costs

Reduce transit delay associated with aged infrastructure

ENVIRONMENT



CLIMATE
PROTECTION

Reduce per-capita greenhouse gas emissions from cars and light-duty trucks



HEALTHY AND SAFE
COMMUNITIES

Reduce adverse health impacts



OPEN SPACE AND
AGRICULTURAL
PRESERVATION

Direct all non-agricultural development within the urban footprint

EQUITY



ADEQUATE
HOUSING

House all of the region's projected housing growth



EQUITABLE
ACCESS

Decrease housing + transport costs for lower-income households

Increase share of affordable housing

Do not increase the risk of displacement

Goals and Targets

Numeric targets associated with these measures are extremely ambitious.

The targets aim to mitigate all growth in displacement risk, prevent any development outside existing growth boundaries, bring all infrastructure into good condition, double the share of affordable housing, etc.



Summary of the Draft Preferred Scenario Performance Target Results

TARGET ACHIEVED (5)



Climate Protection



Adequate Housing



Open Space and Agricultural Preservation



Middle-Wage Job Creation



**Goods Movement/
Congestion Reduction**

RIGHT DIRECTION (5)



Healthy and Safe Communities



Affordable Housing



Non-Auto Mode Shift



Road Maintenance



Transit Maintenance

WRONG DIRECTION (3)



**Housing +
Transportation
Affordability**



Displacement Risk



Access to Jobs

Moving to a performance-based prioritization is best handled in an evolutionary manner to achieve greater buy-in from stakeholders.



Year	2001	2005	2009	2013	2017
	2001 REGIONAL TRANSPORTATION PLAN				
SCENARIO PLANNING	Transportation investment packages	Transportation investment packages	Transportation investment packages	Integrated transportation & land use scenarios	<i>Integrated transportation & land use scenarios</i>
PERFORMANCE TARGETS	Transportation targets	Transportation targets	Transportation targets	Integrated targets	<i>Integrated targets</i>
QUALITATIVE PROJECT ASSESSMENT	None	Goals-based	Goals-based	Targets-based	<i>Targets-based</i>
QUANTITATIVE PROJECT ASSESSMENT	None	None	Limited benefit-cost analysis	Rigorous benefit-cost analysis	<i>Rigorous benefit-cost analysis</i>
COMMITTED POLICY IN PLACE	n/a	Expansive definition of "committed"	Expansive definition of "committed"	Narrow definition of "committed"	<i>Narrow definition of "committed"</i>
COMPELLING CASE PROCESS IN PLACE	No	No	No	Yes	<i>Yes</i>
PROJECT TYPES EVALUATED	None	Expansion Efficiency	Expansion Efficiency	Expansion Efficiency	<i>Expansion Efficiency State of Good Repair</i>

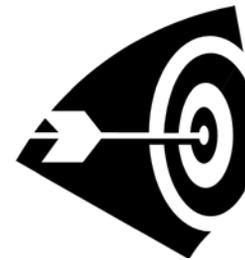
Adding state of good repair to the mix for the first time required significant research and development – integrating asset condition into a travel demand model. But it's critical in a region with only 9% of funding going to expansion.

For links to peer-reviewed methodologies: <http://data.mtc.ca.gov/performance/reference/>; published papers in TRR and Journal of Public Transportation



General Framework:

- Evaluate ~70 major transportation projects (>\$100M)
- Includes expansion, efficiency, and state of good repair investments
- Two components:
 - **Benefit-cost assessment**
 - Relies on travel demand model
 - Incorporates economic best practices
 - **Targets assessment**
 - Relies on qualitative criteria
 - Reflects regional values



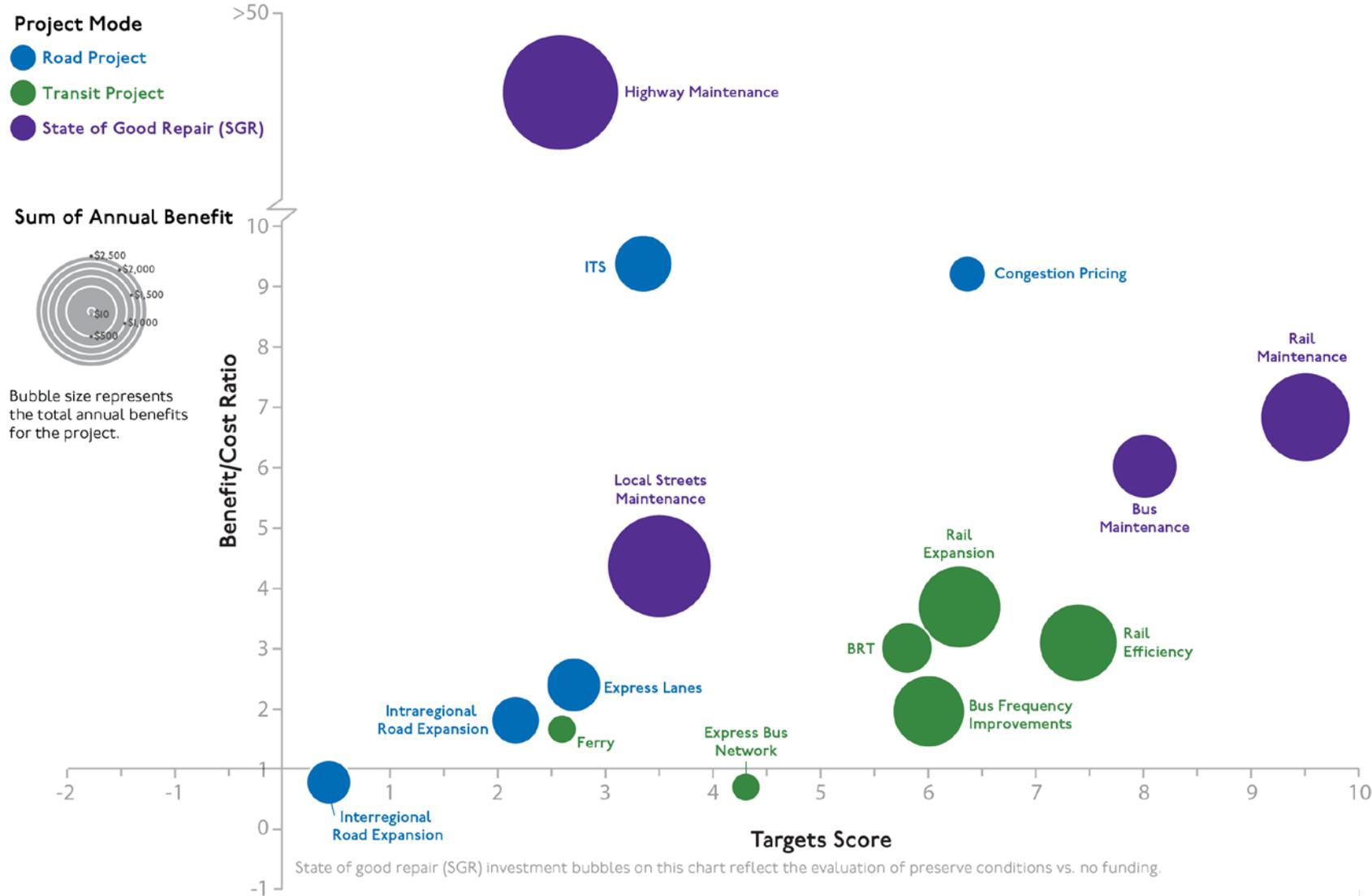
Time and Effort:

- 3 months – update methodologies & engage stakeholders
- 2 months – collect project definitions
- 4 months – run travel demand model & calculate scores



Plan Bay Area 2040

Project Performance Assessment: Overall Results by Project Type



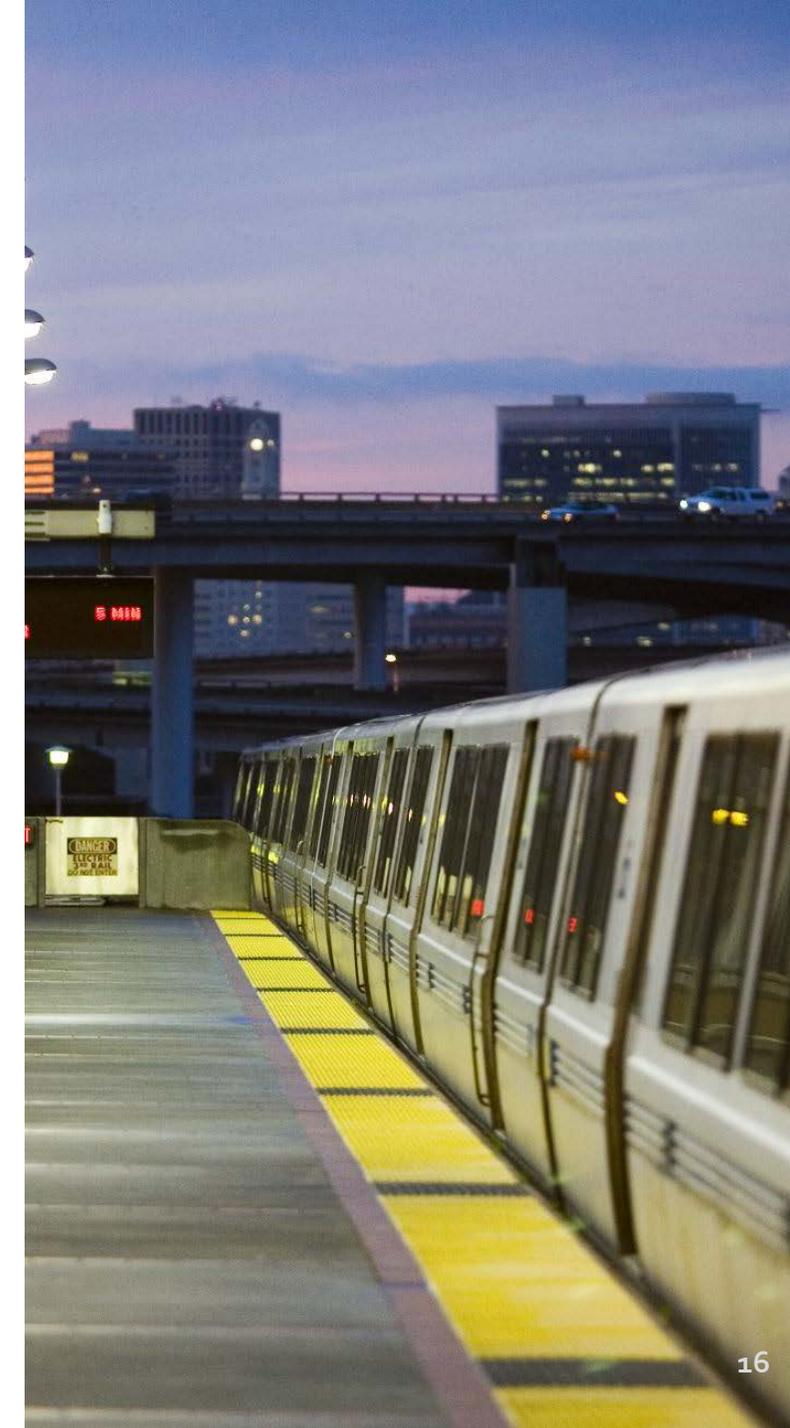
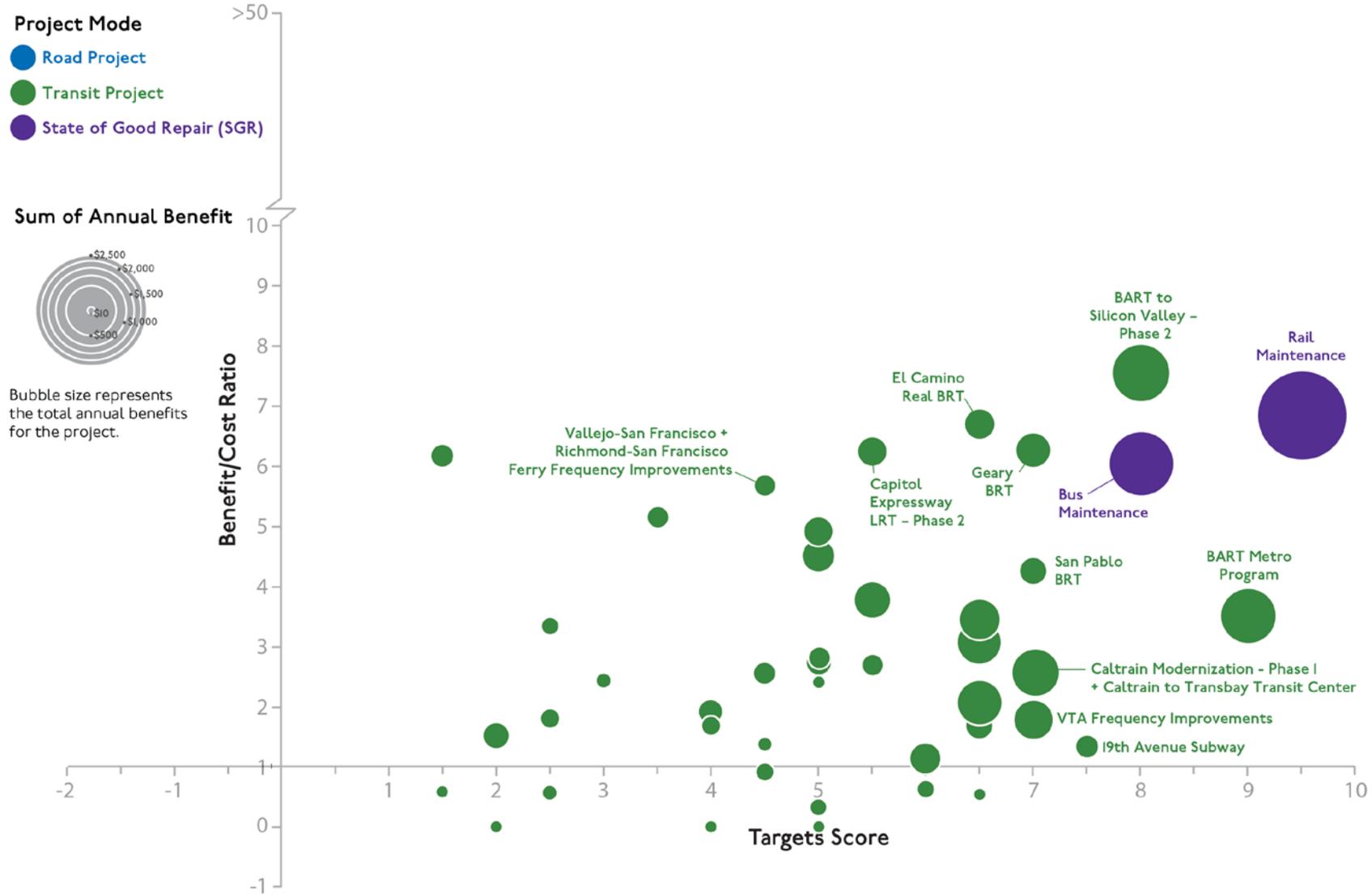
Plan Bay Area 2040

Project Performance Assessment: Results for Road Projects



Plan Bay Area 2040

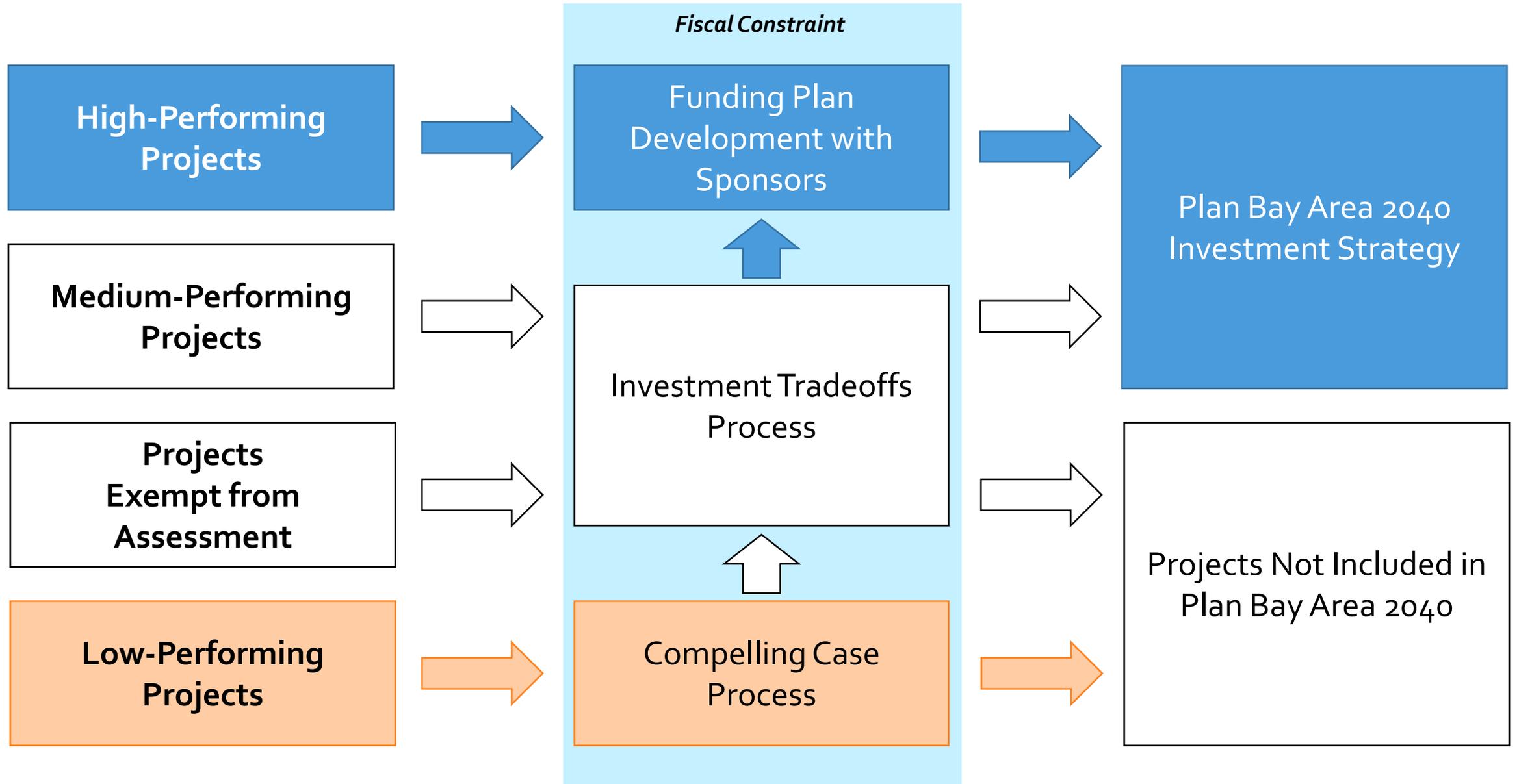
Project Performance Assessment: Results for Transit Projects



In addition to calculating benefit-cost ratios and target scores for state of good repair, we were also able to quantify benefits from maintenance for system users for the first time.

- Achieving state of good repair on state highways will save motorists \$3.5 billion per year in vehicle maintenance costs, while maintaining local streets will save \$2.3 billion per year.
- Between 270,000 and 320,000 transit boardings would be lost if we don't invest in transit maintenance – primarily choice riders.
- All expansion projects proposed for the region combined generate just \$5.5 billion in annual benefits – while state of good repair across all modes generates at least \$6.8 billion in annual benefits at a substantially lower annualized cost.

Prioritizing (and De-Prioritizing) Projects



Prioritizing (and De-Prioritizing) Projects

High benefit-cost ratio (B/C) and **medium** targets score (TS)

- Plan Bay Area 2040: $B/C \geq 7$ and $TS \geq 3$

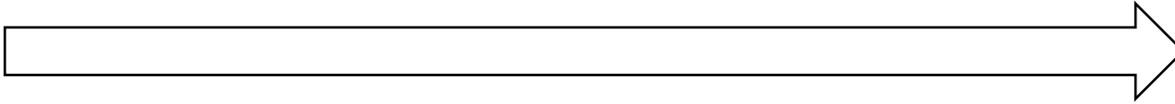
Medium benefit-cost ratio and **high** targets score

- Plan Bay Area 2040: $B/C \geq 3$ and $TS \geq 7$

All other projects

Low benefit-cost ratio or **low** targets score

- Plan Bay Area 2040: $B/C < 1$ or $TS < 0$



High-Performing Project

Medium-Performing Project

Low-Performing Project

High-Performing Projects

1

Rail Maintenance

2

Bus Maintenance

SHORTFALL COST = \$11 BILLION



Image Source: https://en.wikipedia.org/wiki/Sonoma_County_Transit#/media/File:Sonoma_County_Transit_245-a.jpg

3

Columbus Day Initiative

4

Downtown San Francisco Congestion Pricing

5

Treasure Island Congestion Pricing

PROJECTS COST = \$2 BILLION



Image Source: <https://www.flickr.com/photos/cobrasick/5297980956>

High-Performing Projects

6

BART Metro Program

7

BART to Silicon Valley: Phase 2

8

Caltrain Modernization + Extension to
Transbay

PROJECTS COST = \$15 BILLION

9

El Camino Bus Rapid Transit

10

San Pablo Bus Rapid Transit

11

Geary Bus Rapid Transit

PROJECTS COST = \$1 BILLION



Image Source: <https://www.instagram.com/p/qexmPMLVrt/?taken-by=gocaltrain>



Image Source: https://www.flickr.com/photos/pfsullivan_1056/6276359727

Making a Compelling Case

Process:

- Commission **approves thresholds** for high- and low-performers, as well as **eligible criteria** for a case
- Project sponsor must **submit compelling case letter** under adopted criteria
- Staff reviews cases and **makes recommendations**
- Commission reviews staff recommendations and **makes ultimate decision** on how to proceed

Eligible Cases:

- **Based on travel model limitations** (low B/C projects only):
Must demonstrate that project would exceed B/C ratio of one without limitation(s) in place
- **Based on federal requirements** (all projects):
Air quality conformity and Title VI



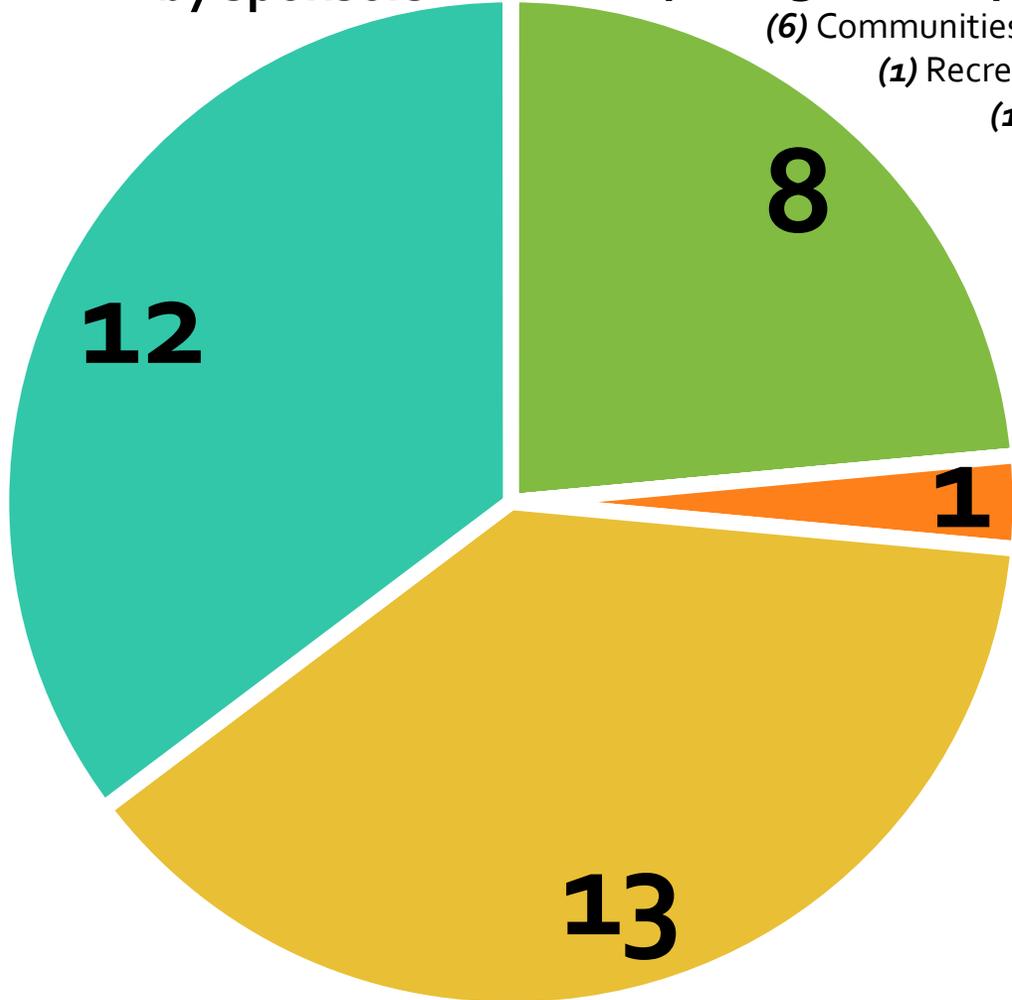
Plan Bay Area (34 low-performing projects)

Plan Bay Area 2040 (18 low-performing projects)

Projects withdrawn
by sponsors

Compelling cases approved:

- (6) Communities of Concern
- (1) Recreational trips
- (1) Air quality

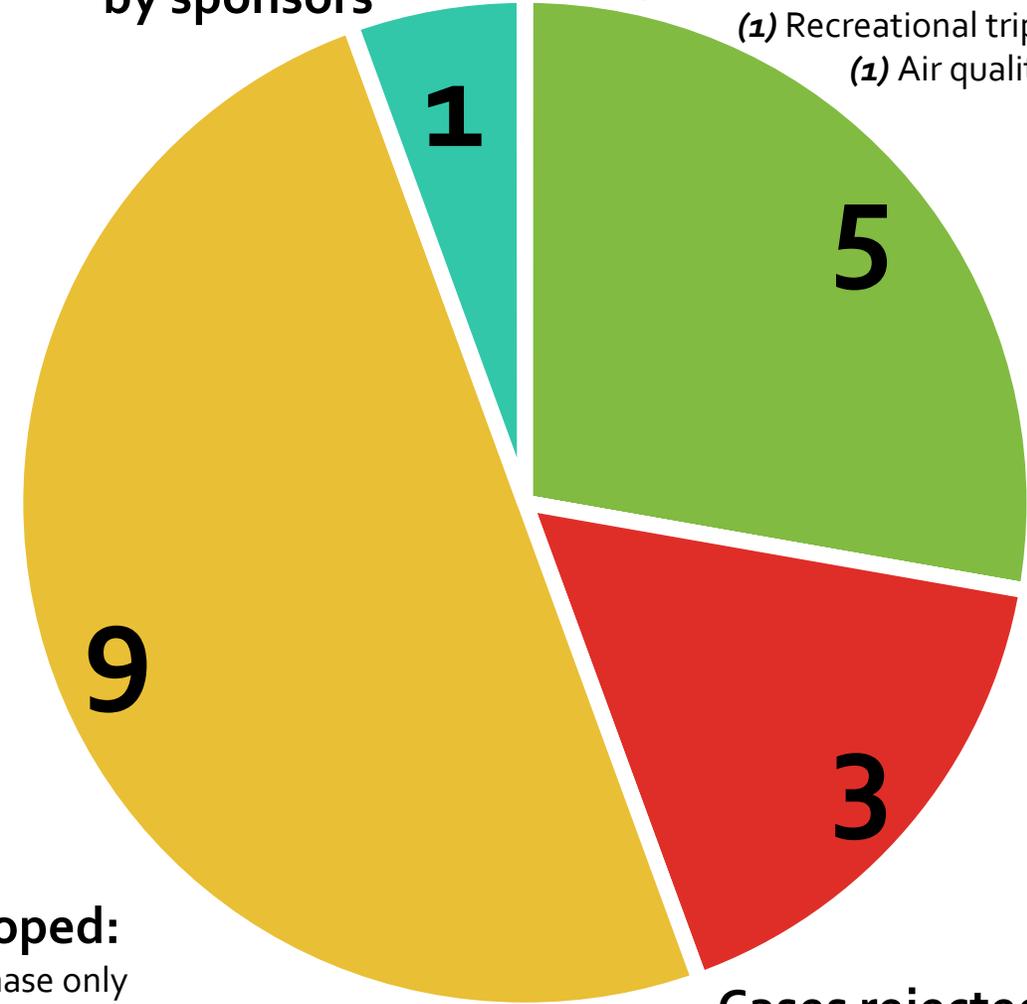


Case slated for rejection; "settled out of court"

Project withdrawn
by sponsors

Compelling cases approved:

- (3) Communities of Concern
- (1) Recreational trips
- (1) Air quality



Projects re-scoped:

- (5) Environmental phase only
- (2) Sponsor agreed to fully fund downscaled project locally
- (2) Reduced project costs to achieve B/C ratio greater than 1

Cases rejected
by Commission

Projects re-scoped:

- (7) Environmental phase only
- (5) Sponsor agreed to fully fund project locally
- (1) Down-scoped to achieve B/C ratio greater than 1

Low-Performing Projects: Rejected Cases

SR-152 Tollway



Redwood City Ferry



SMART (Phase 3)



What have we learned from two cycles of extensive project prioritization?

1

It's worth it in the end, despite a significant time commitment. Project sponsors have generally accepted the approach and have begun to proactively identify projects with potential performance issues. We feel that project performance is one of the most valuable aspects of the long-range planning process.

2

Adding state of good repair to the mix was essential in a maturing region. “Fix It First” shouldn't be taken on faith. This effort also highlighted the need for additional innovative methodologies to simulate benefits for other types of non-capacity increasing projects.



What have we learned from two cycles of extensive project prioritization?

3

While it's hard to talk about low-performing projects, it's better to face the music.

Many medium-performing projects join the high-performers in the final investment strategy, but failing to find a path forward in the compelling case leads to real-world consequences.

4

Evaluating transportation projects against a broad spectrum of targets is challenging.

Estimating the implications of a given transportation project on displacement (for example) is more art than science. Further investment in land use models are needed to help us validate sponsor's claims.



QUESTIONS?



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