Smart Mobility Framework Implementation Study

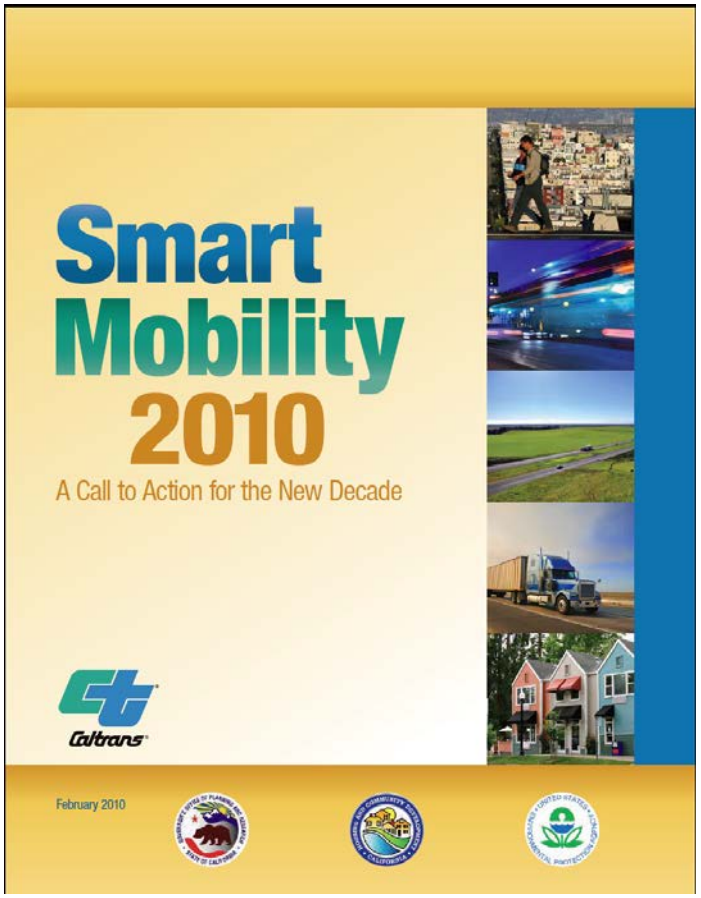
Pilot Area 2: SBCCOG Sub-regional Transportation Plan
Metro Sustainability Committee
July 16, 2014

Agenda

- Smart Mobility Framework Overview
- Background
- Pilot Study Objectives
- Pilot Study Performance Measures
- Portfolio Scenario
- Evaluation
- Challenges

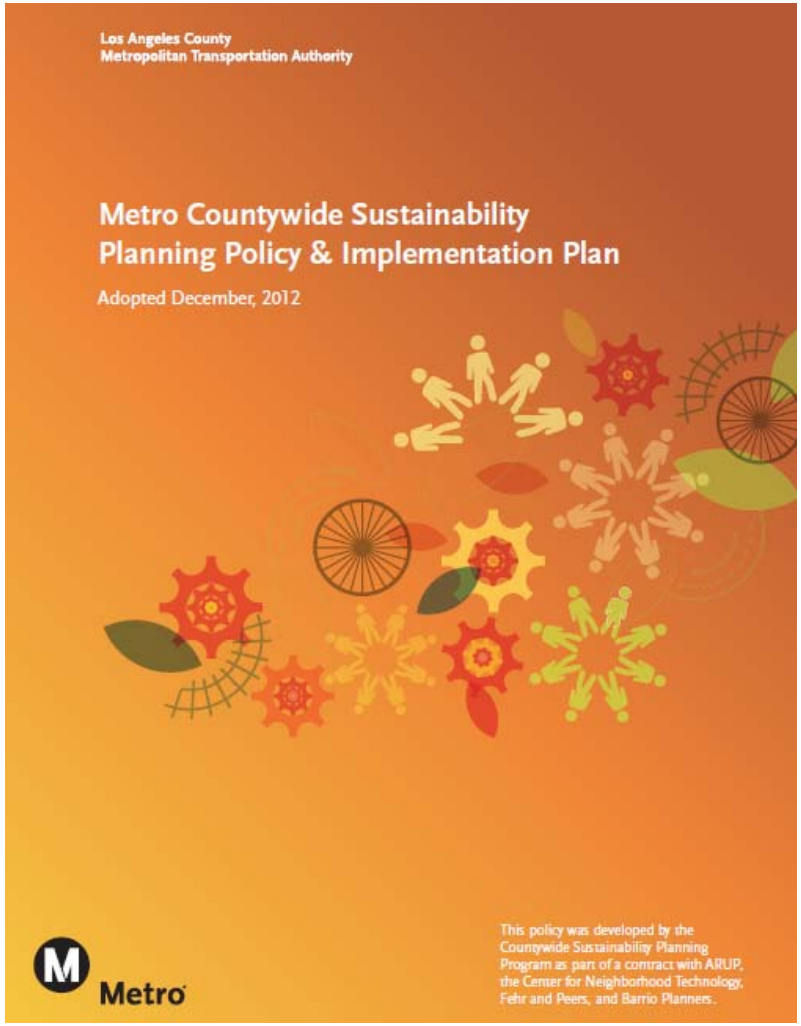
Caltrans Smart Mobility Framework Overview

- *Smart Mobility 2010*
  - Integrate the new principles, practices, and tools into Caltrans policies and practice
- Definition of Smart Mobility:
  - *Smart Mobility moves people and freight while enhancing California's **economic**, **environmental**, and human resources by emphasizing convenient and safe **multi-modal** travel, speed suitability, **accessibility**, management of the circulation network, and **efficient use of land**.*
- Performance measures to evaluate sustainability
  - *Implementation Pilot Studies*
    - *Pilot Area 1: Contra Costa I-680 CSMP*
    - *Pilot Area 2: SBCCOG Mobility Plan*



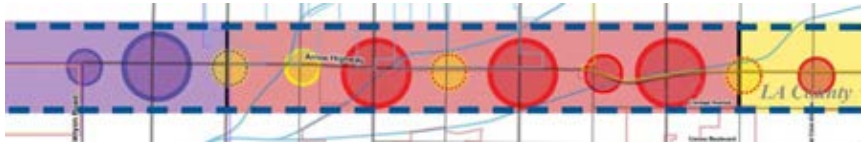
Metro's Sustainability Policy

- Metro's Policy
  - Countywide Sustainability Planning Policy (CSPP)
    - Establishes sustainability priorities for countywide transportation network.
    - Includes performance metrics to monitor countywide progress.
    - Directs development of sustainability metrics and tools to assess plans and projects

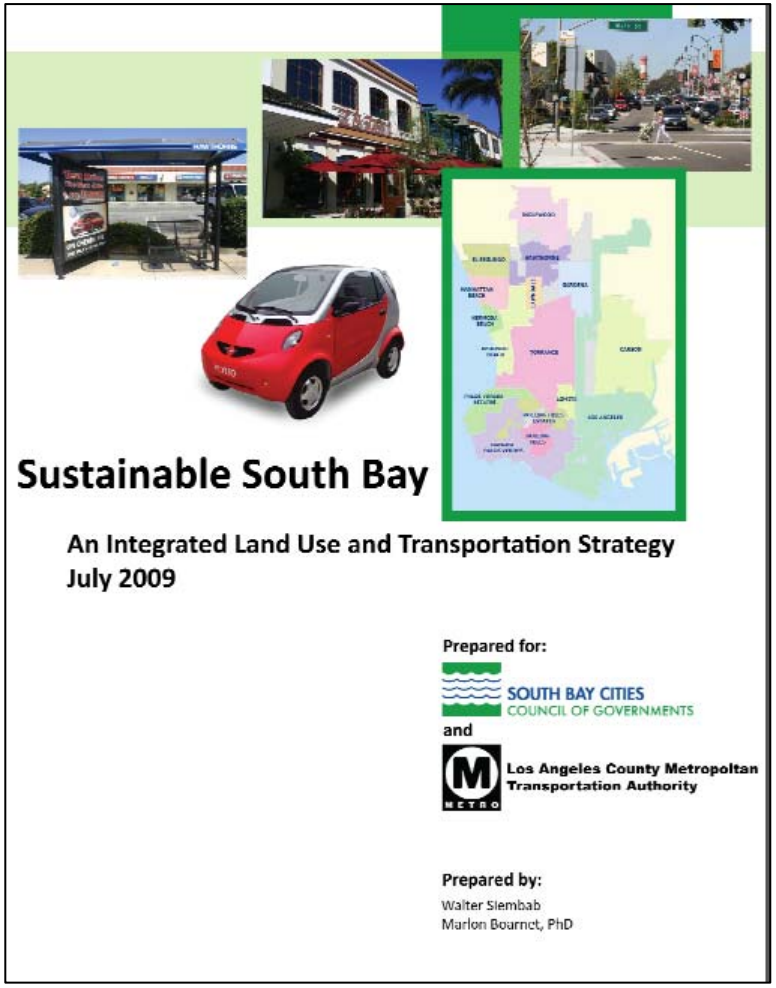


SBCCOG Sustainability Strategy

- SBCCOG Sustainable South Bay Strategy
  - Land use and multi-mobility at inter-neighborhood scale
  - Neighborhoods First
- Objective
  - Evaluate the effects of proposed land use at neighborhood scale (nodes)



  - Demonstrate the benefits of slow speed vehicles and other non-transit, non-highway alternatives



Pilot Area Study Objective

- To apply the “sustainability” principles and performance measures to assess future land use strategies and transportation projects
- To develop a tool to “test” performance measures that could be used to assess sustainability benefits of future subregional mobility plans

- Key Questions:
  - Are there tools and data to analyze performance of sub-regional plans using sustainability metrics?
  - Are these metrics more sensitive, or do they respond better, to impacts of innovative transportation and land-use strategies, including ***slow speed vehicles (includes NEVs and bicycles)***?
  - Can these “metrics” and associated analytical tools be relied upon to make investment decisions?

Sustainability Performance Measures

Traditional Performance Measures	Sustainability Performance Measure
Transit Ridership (boardings per mile)	Walking, Slow Speed Vehicle, and Transit Mode Shares (Zero Emission Travel Options)
Population and Employment Density	Accessibility and Connectivity -Average Proximity to Employment -Slow Speed Vehicle, Walking Facilities
Access for Transit Dependent	
Auto Accessibility	
Highway Travel Time Mobility	Multi-Modal Travel Mobility
Vehicle Travel Speed	Multi-Modal Safety
VMT and Emissions	Climate and Energy Conservation
	GhG and Criteria Emissions Reduction
Highway Delay (hour savings per mile)	Congestion Effects on Productivity
Cost Effectiveness	Network Performance Optimization

Recommended Performance Measures and Related Sustainability Principles

	Metro's Sustainability Principles		
Recommended SMF Performance Metric	**Connect People and Places**	**Create Community Value**	**Conserve Resources**
Accessibility and Connectivity	×	×	
Average Vehicle Occupancy (AVO)			×
Modal Travel Time and Cost	×		
Slow Speed Vehicles (NEV and Bicycle) and Walking Facilities	×		×
Percentage of Trips by Walking		×	
Quantities of Criteria Pollutants and GhGs			×
Vehicle Hours of Delay (VHD) or Person Hours of Delay			×
Vehicle Miles Traveled (VMT) or Person Miles Traveled			×
Vehicle Hours Traveled (VHT)			×
VMT per Capita by Speed Range			×

Portfolio Scenarios

- Focus area within the South Bay
  - Hawthorne Blvd Corridor

Transportation

Traditional
- Roadway capacity improvements
- Intersection improvements
- Corridor Systems operations / ITS
- Bicycle / Pedestrian improvements
- Transit improvement

Innovative
- Livable Boulevard/Complete Streets
- South Bay PEV Readiness Plan
- First-Last Mile/Metro Path concept
- Bike lanes
- Safe Routes to School program
- NEV Subsidy / Incentive program
- Neighborhood Vanpool

Dashboard Calculator Tool

NEV Ownership due to innovative trasportation (percent of population)

10%

NEV Use due to infrastructure improvements (as percent of VMT)

40%

Bike Use due to Innovative Transportation (percent increase)

4%

10%

Percent of population using bikes for 1/3 of VMT

Transit Use due to Innovative Transportation (percent increase)

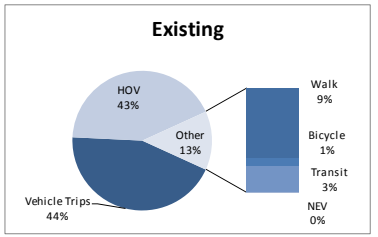
10%

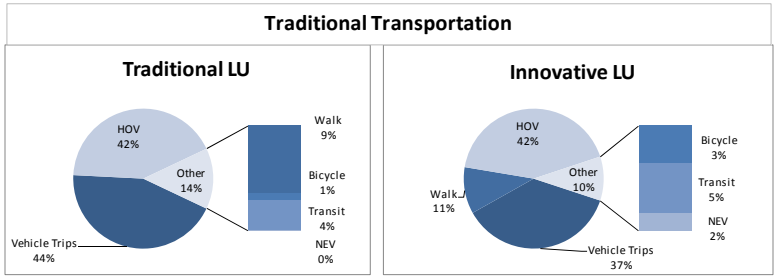
Pedestrian modeshare increase due to Innovative Transportation and Land Use (percent increase)

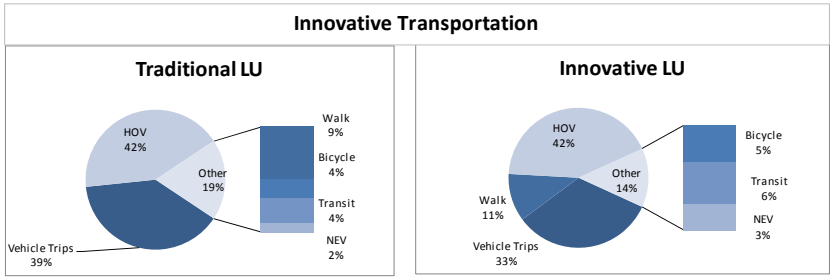
5%

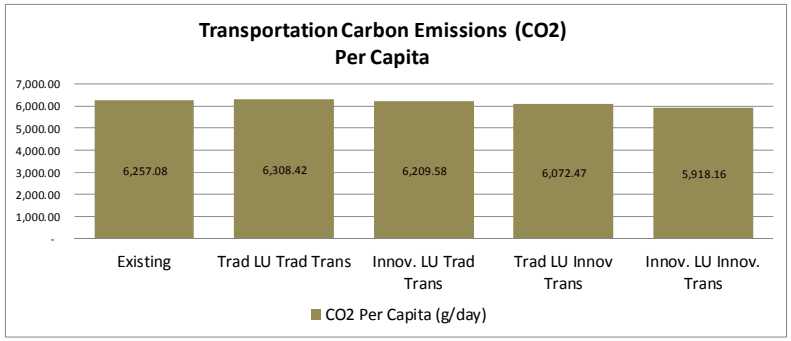
HOV/Carsharing Use due to Innovative Transportation (percent increase)

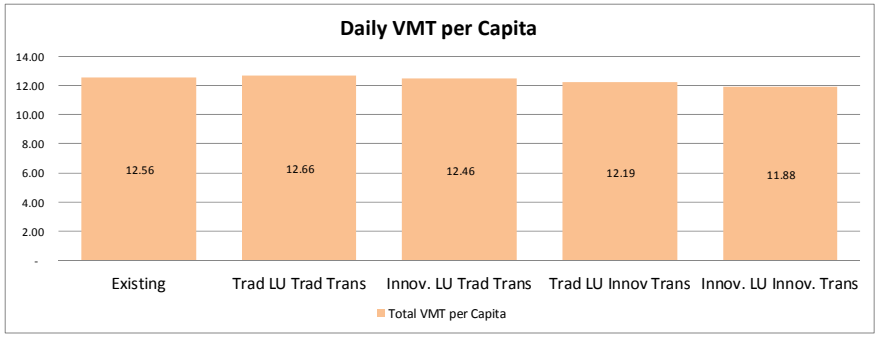
2%



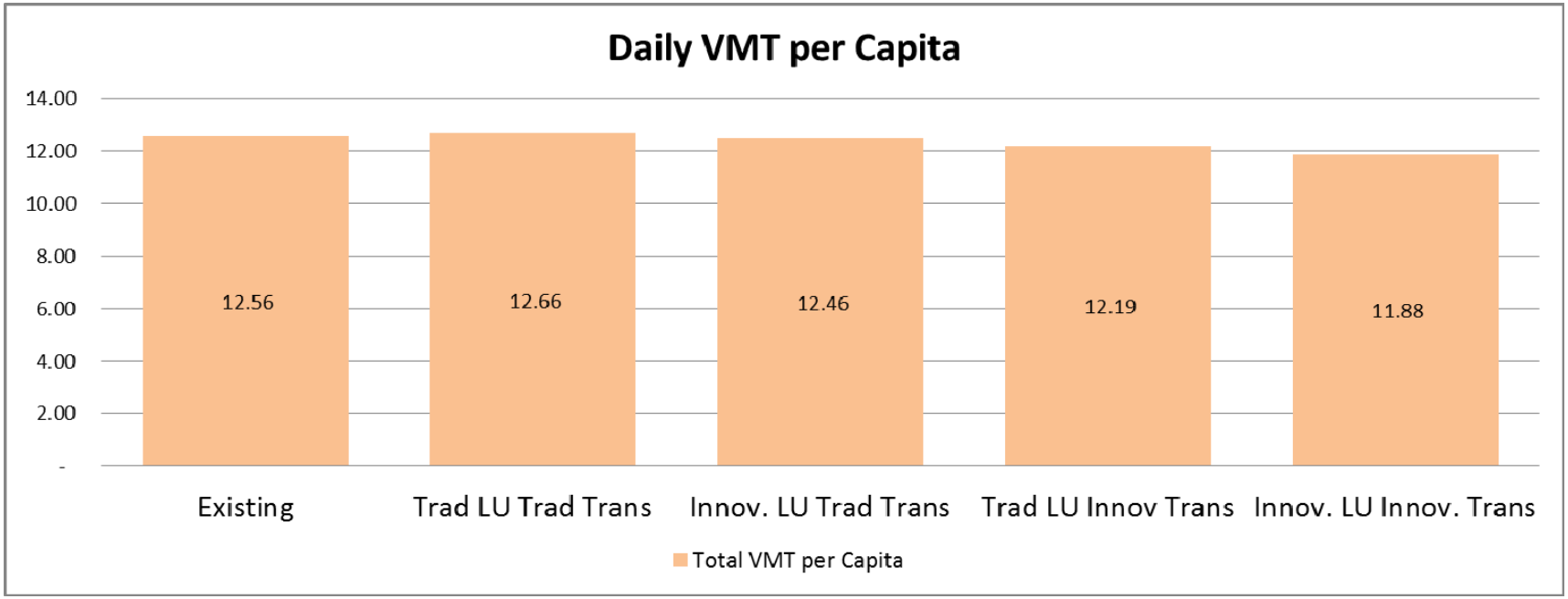


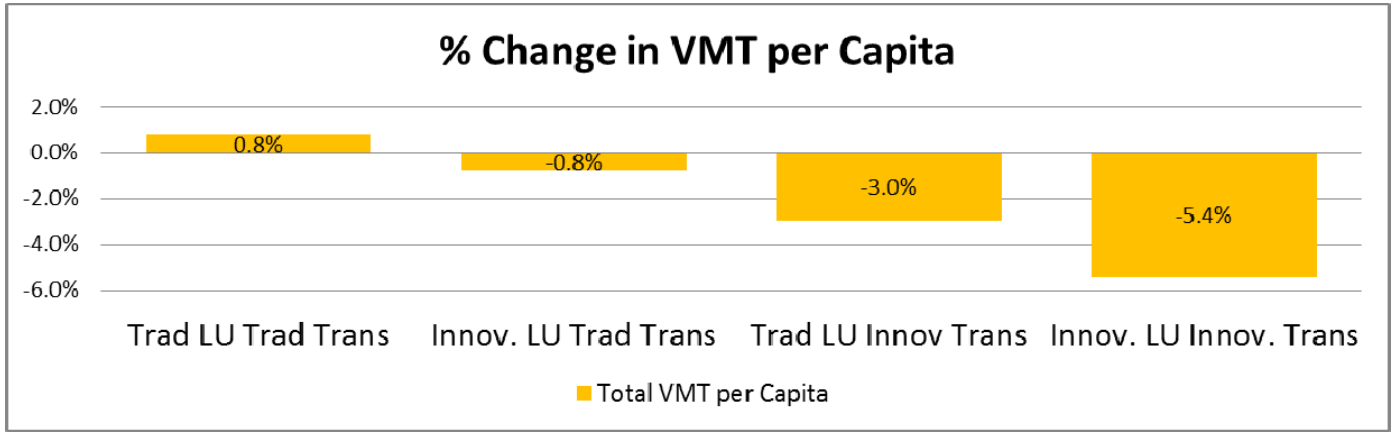






Dashboard – VMT per Capita





Report Card

- "Roughly Right vs Precisely Wrong"
- Letter Grades and Directional Change

SMF Pilot Area 2 Performance Measures							
Study Area 1 - Hawthorne							
	Existing	Traditional LU			Innovative LU		
	Landuse: B Transportation: C	Directional Change	Qualitative Assesment		Directional Change	Qualitative Assesment	
Measure	Metric		Traditional Transportation	Innovative Transportation		Traditional Transportation	Innovative Transportation
Average Vehicle Occupancy	1.27	=	D	B	↑	C	B
Vehicle Hours of Delay per Day	1,062.00	↑↑	C	B	↑	C	B
Vehicle Miles Traveled (VMT) per Day	570,873	↑	C	B	↓	B	A
Vehicle Hours Traveled per Day	15,740	↑↑	C	B	↑	A	A
VMT per Capita by Speed Range							
65+	65%	↑			↓↓		
45-65	3%	↑	C	B	↓	B	A
35-45	15%	↑			=		
25-35	13%	↑			↑		
Under 25	4%	↓			↑↑		

Findings

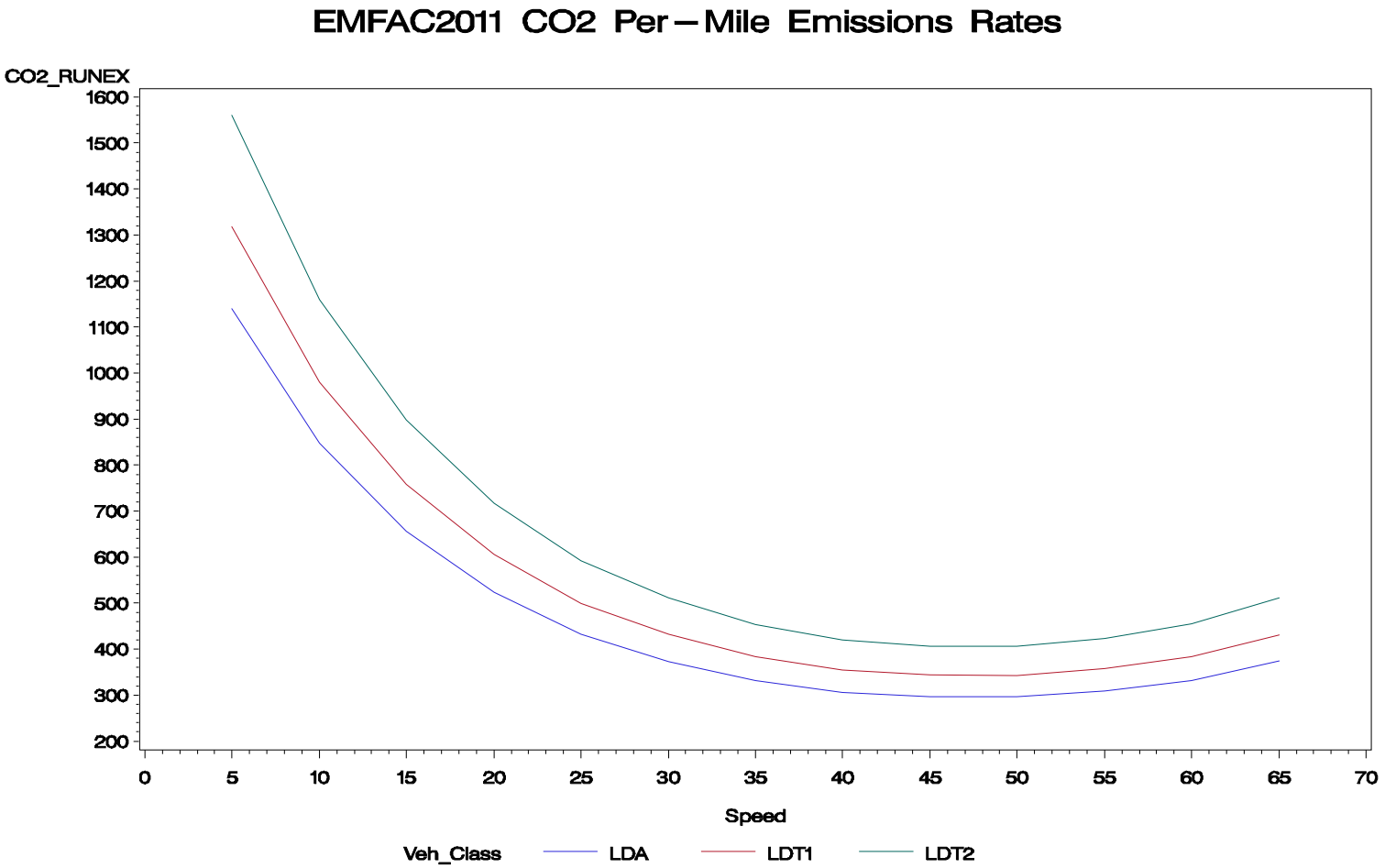
- Best Practices / Literature Review
  - Conventional approaches and performance measures are changing, so best practices continue to be redefined.
- Current tools and data are limited to analyze sustainability performance measures.
- Some sustainability metrics respond better to impacts of innovative transportation and land use strategies.
- Analytical tools need to be validated before they can be relied upon to make investment decisions

Challenges

- Tool limitations and adaptations
  - Scenario planning tools have limitations for analyzing performance of innovative transportation projects and programs, like the NEV program, bike lanes, and pedestrian programs.
  - Adapting tools requires more data and research to adequately evaluate innovative transportation projects.
- Future Tool Development
  - Need more data post-implementation for validation
  - Best to validate future work in South Bay and then expand to region as a whole.
  - Lack of tool to evaluate the benefit of shorter and slower trips.

Improve Accounting for Short Trips

- Zero Emission Travel Options to replace Short Trips
- Higher emission rates at Slow Speeds



Report Card Metrics, Source, Scale - handout

Metric	Source	Scale
Percent Employment (within 30 min drive)	ET+	Subregional
Percent Employment (within 30 min transit)	ET+	Subregional
Average Vehicle Occupancy	SCAG Model	Regional
Balanced Modal Travel Cost	ET+	Local
NEV, Bicycle, Walking Facilities	Qualitative	Local
Percentage of Trips by Transit	SCAG Model/ET+	Local
Percentage of Trips by NEV	Not sufficient data	Local
Percentage of Trips by Bicycling	SCAG Model/ET+	Local
Percentage of Trips by Walking	SCAG Model/ET+	Local
CO2 emission per Household	ET+	Local
Vehicle Hours of Delay per Day	SCAG Model	Subregional
Vehicle Miles Traveled (VMT) per Day	SCAG Model	Subregional
Vehicle Hours Traveled per Day	SCAG Model	Subregional
VMT per Capita by Speed Range	SCAG Model	Subregional
Number of Crashes (per/1000)	UC Berkeley TIMS, SWITRS	Subregional
Number of Vulnerable User Crashes	ET+	Local

Report Card - handout

SMF Pilot Area 2 Performance Measures
Study Area 1 - Hawthorne

	Existing	Traditional LU			Innovative LU		
	Landuse: B Transportation: C	Directional Change	Qualitative Assesment		Directional Change	Qualitative Assesment	
Measure	Metric		Traditional Transportation	Innovative Transportation		Traditional Transportation	Innovative Transportation
Average Proximity to Employment (within 30 min drive)	24.1%	↑	C	C	↑↑	B	A
Average Proximity to Employment (within 30 min transit)	2.0%	↓	C	B	↑	B	A
Average Vehicle Occupancy	1.27	=	D	B	↑	C	B
Balanced Modal Travel Cost	$601	=	D	C	↓	C	B
NEV, Bicycle, Walking Facilities	Low	Low	D	B	Low	D	B
Percentage of Trips by Transit	3.3%	↑	C	B	↑↑	B	A
Percentage of Trips by NEV	N/A	N/A	F	D	N/A	C	B
Percentage of Trips by Bicycling	1.0%	=	D	C	↑	B	A
Percentage of Trips by Walking	9.1%	↑	C	B	↑↑	A	A
Quantity of Criteria Pollutants per Capita (g/per)	6,257	↑	C	B	↓	C	B
Vehicle Hours of Delay per Day	1,062.00	↑↑	C	B	↑	C	B
Vehicle Miles Traveled (VMT) per Day	570,873	↑	C	B	↓	B	A
Vehicle Hours Traveled per Day	15,740	↑↑	C	B	↑	A	A
VMT per Capita by Speed Range							
65+	65%	↑			↓↓		
45-65	3%	↑	C	B	↓	B	A
35-45	15%	↑			=		
25-35	13%	↑			↑		
Under 25	4%	↓			↑↑		
Number of Crashes (per/1000)	23	-66%	C	B	-75%	B	A
Number of Vulnerable User Crashes	250	85	C	B	62.5	B	A