


ALAMEDA COUNTY TRANSPORTATION COMMISSION

# Countywide Multimodal Arterial Plan

Improving multimodal mobility for better economic, health and environmental outcomes



ACTAC February 5<sup>th</sup>, 2015 Meeting  
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## Presentation Overview

- Background – Arterials
- Background – Multimodal Arterial Plan
- Plan Framework
- Vision and Goals
- Performance Measures and Draft Evaluation Framework
- Draft Arterial Network Selection Criteria
- Actions Requested:
  - ✓ Approve Arterial Plan Vision, Goals and Performance Measures
  - ✓ Provide input on *Arterials of Countywide Significance* Network Selection Criteria

## Background - Arterials

Arterial roadways are essential to the Alameda County transportation system, they:

- Provide regional access to the state highway system
- Provide multimodal access within and around communities and employment centers
- Support economic development within communities

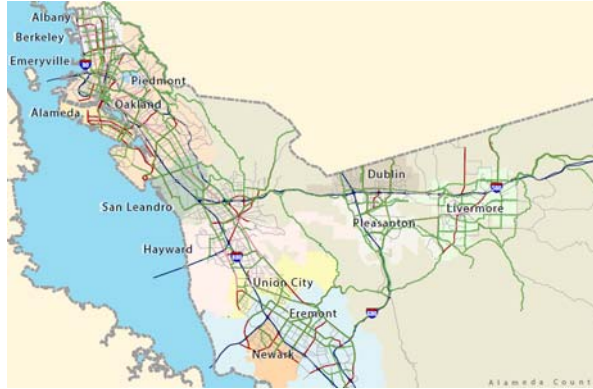


## Future of Alameda County

- By 2040:
  - ✓ 32% growth in population
  - ✓ 36% growth in employment
  - ✓ 100% increase in proportion of seniors (age 65+)
  - ✓ 18% households with no vehicle
- Aggressive emissions regulations and targets
- Meeting multimodal transportation demand will be challenging in the context of:
  - ✓ Economy
  - ✓ Environment
  - ✓ Equity
- VMT per capita likely to remain stable or decrease

## Background – Multimodal Arterial Plan

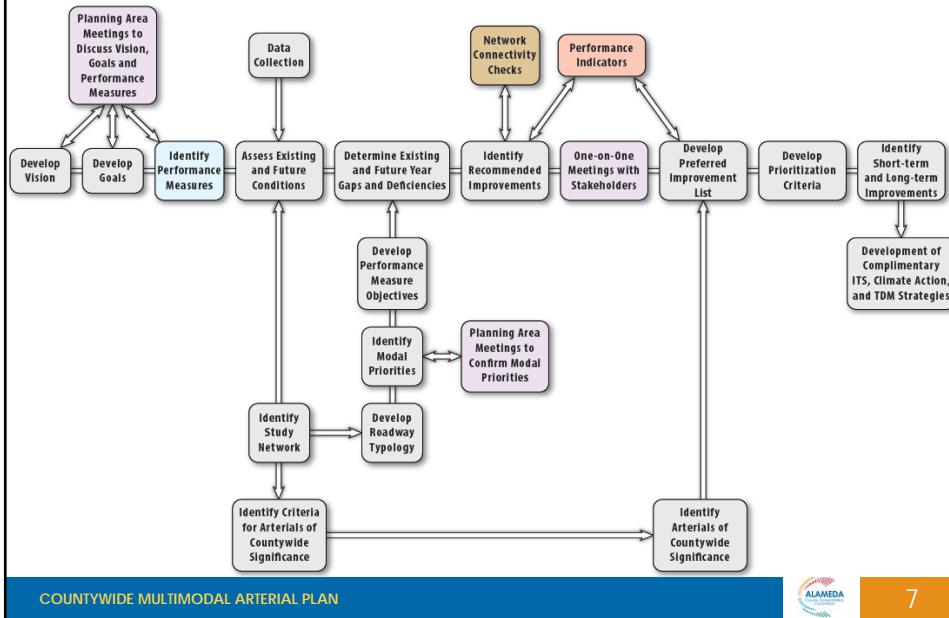
- Purpose of Plan is to improve overall mobility, access, connectivity, safety and efficiency of the multimodal network for all users, including goods movement.
- The Plan provides a basis for prioritization.



## Plan Progress to Date

- Consultant Team Charrette to Identify Draft Vision, Goals and Performance Measures – September 2014
- Planning Area Meetings to Discuss Draft Vision, Goals and Performance Measures – October/November 2014
- Draft Final Vision and Goals – November 2014
- Stakeholder Review of Draft Performance Measures – January 2015
- Draft Final Performance Measures – January 2015
- Draft Arterial Network Criteria – January 2015

# Arterial Plan Framework



# Summary Scope – Milestone #1



## Arterial Plan Vision Statement

*“Alameda County will have a network of efficient, safe and equitably accessible arterials that facilitate the multimodal movement of people and goods, and help create a strong economy, healthy environment and vibrant communities, while maintaining local contexts.”*

## Arterial Plan Goals

The vision is supported by five goals:

- Multimodal
  - ✓ *High quality, well-maintained and reliable*
- Accessible and Equitable
  - ✓ *Complete community*
- Connected Across the County and Region
  - ✓ *Seamless connections supportive of land use*
- Efficient Use of Resources
  - ✓ *ITS technology and leverage resources*
- Safe, Healthy and Vibrant
  - ✓ *Safety, air quality and community context*

And two supporting principles:

- Support Strong Economy
- Adaptable and Resilient

## Performance Measure Framework

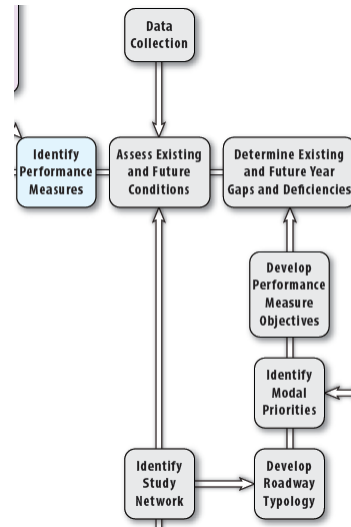
- Plan builds on prior and ongoing modal plans
- Plan identifies modal priorities
- Performance measures assess how well arterials serve modes

## Performance Measure Framework

- Plan will utilize performance measures and indicators
  - ✓ Quantitative and qualitative measures/indicators are proposed
- Detailed performance measure evaluation methodology will be presented in April
- Current focus is approval of proposed performance measures and indicators

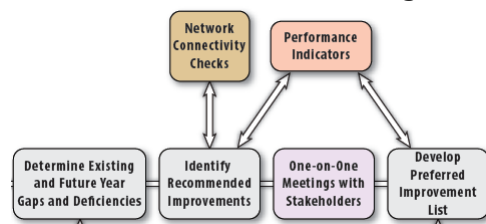
## Performance Measure Framework

- Performance measures assess Existing and Future Conditions
- Network gaps and needs identified by applying performance objectives (to be identified later) to Existing and Future Conditions assessment
  - ✓ Objectives are influenced by modal priority



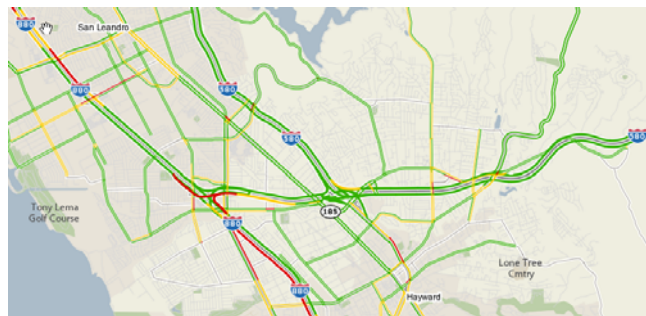
## Performance Measure Framework

- Short and long-term improvements identified based on Study Network gaps and needs
- Network connectivity checks applied after recommended improvements are identified to ensure improvements provide complete modal Study Network
- Performance indicators generally assessed after improvements are identified to ensure that improvements meet Arterial Plan goals



## Performance Measures

Goal	Category	Performance Measure	Evaluation Approach	Application
Multimodal	1.1 – Auto	1.1A – Congested Speed	Based on average PM peak hour congested speed.	Facility-Specific Measure, Existing and Future Conditions
		1.1B – Reliability	Based on PM peak hour volume-to-capacity ratio, categorized as: <ul style="list-style-type: none"> <li>Reliable ( V/C between 0 – 0.8)</li> <li>Less Reliable ( V/C between 0.8 – 1.0)</li> <li>Unreliable (V/C greater than 1.0)</li> </ul>	Facility-Specific Measure, Existing and Future Conditions



## Performance Measures

Goal	Category	Performance Measure	Evaluation Approach	Application
Multimodal	1.2 - Transit	1.2A – Transit Travel Speed	Based on average PM peak hour transit travel speed provided by transit agencies that operate in the County.	Facility-Specific Measure, Existing and Future Conditions
		1.2B – Transit Reliability	Based on average PM peak hour transit travel speed to non-peak hour travel speed ratio. Measure with supportive data to be provided by transit agencies that operate in the County.	Facility-Specific Measure, Existing and Future Conditions
		1.2C – Transit Infrastructure Index	Based on the following factors: <ul style="list-style-type: none"> <li>Provided bus stop amenities</li> <li>Bus stop location</li> <li>Bus stop design</li> </ul>	Facility-Specific Measure, Existing and Future Conditions



Photo: David Jaeger / Jonah Chiarenza, www.community-design.com



# Performance Measures

Goal	Category	Performance Measure	Evaluation Approach	Application
Multimodal	1.3 – Pedestrian	1.3 – Pedestrian Comfort Index	Based on the following factors: <ul style="list-style-type: none"> <li>Sidewalk width</li> <li>Presence of buffer between sidewalk and roadway</li> <li>Average crosswalk spacing</li> <li>Roadway classification, average daily vehicle volume, number of travel lanes and speed limit</li> <li>Percent heavy vehicle traffic</li> </ul>	Facility-Specific Measure, Existing and Future Conditions

## LEVEL OF TRAFFIC STRESS (LTS)

PEDESTRIAN		
		Existing Condition
Field	Category	Input
1	Location	Commercial Corridor
2	Sidewalk or Clear Walkway Width (feet)	3
3	Buffer Present	Landscaped (planting strips, trees)
4	Roadway Classification	Arterial
5	Roadway Volume (2-way) (AADT) (assume unchanged)	15,000
6	What is the prevailing speed?	25
7	% Heavy Vehicle Traffic	2
8	Number of travel lanes (total for both directions)	4
8	Number of travel lanes (total for both directions)	
Segment Comfort Level		Medium Level of Comfort
Segment Ped Score		14



# Performance Measures

Goal	Category	Performance Measure	Evaluation Approach	Application
Multimodal	1.4 – Bicycle	1.4 – Bicycle Comfort Index	Application of the Level of Traffic Stress (LTS) methodology, which is based on the type of bicycle facility provided and separation from vehicle travel lanes. LTS methodology classifies roadway segments into one of four levels of traffic stress, which are termed as LTS1 through LTS4. Groups of cyclists are categorized by how much stress they will tolerate in different environments.	Facility-Specific Measure, Existing and Future Conditions

## LEVEL OF TRAFFIC STRESS (LTS)

BICYCLE		
		Existing Condition
Field	Category	Input
1	Mode separation	Mixed-Flow
2	Is this a residential street?	No
3	Adjacent parking	Yes
4	Lanes in analysis direction	2
5	Is there a median (that may restrict passing vehicles)?	Raised
6	Is there a center line?	
7	What is the prevailing speed?	25
8	Bike Lane + Parking Width	
9	How often do bike lane blockages occur? (default = frequent, buffered = rare)	
Segment Comfort Level		Medium Level of Comfort
Segment Bike Score		2



## Performance Measures

Goal	Category	Performance Measure	Evaluation Approach	Application
Multimodal	1.5 – Trucks/ Goods Movement	1.5 – Truck Route Accommodation Index	Based on curb-lane width. Additional consideration for on-street parking; on-street parking will be considered only in urban contexts where many businesses are expected to load from the street.	Facility-Specific Measure, Existing and Future Conditions
	1.7 – State of Good Repair	1.7 Pavement Condition Index (PCI)	Based on the PCI data obtained from the MTC StreetSaver database	Facility-Specific Measure, Existing Conditions



Source: Cambridge Systematics Analysis; Truck Routes and restriction information collected from cities.

## Performance Measures

Goal	Category	Performance Measure	Evaluation Approach	Application
Connected Across the County and Region	3.1 – Transit	3.1 – Transit Connectivity	Connectivity measures will be assessed through a mapping exercise. The transit, pedestrian, bicycle and truck networks will be mapped to identify gaps or inconsistencies in the networks. The pedestrian and bicycle assessment will include consideration of relative comfort.	Area-Wide Measure, Existing and Future Conditions
	3.2 – Pedestrian	3.2 – Pedestrian Connectivity		
	3.3 – Bicycle	3.3 – Bicycle Connectivity		
	3.4 – Trucks	3.4 – Network Connectivity		

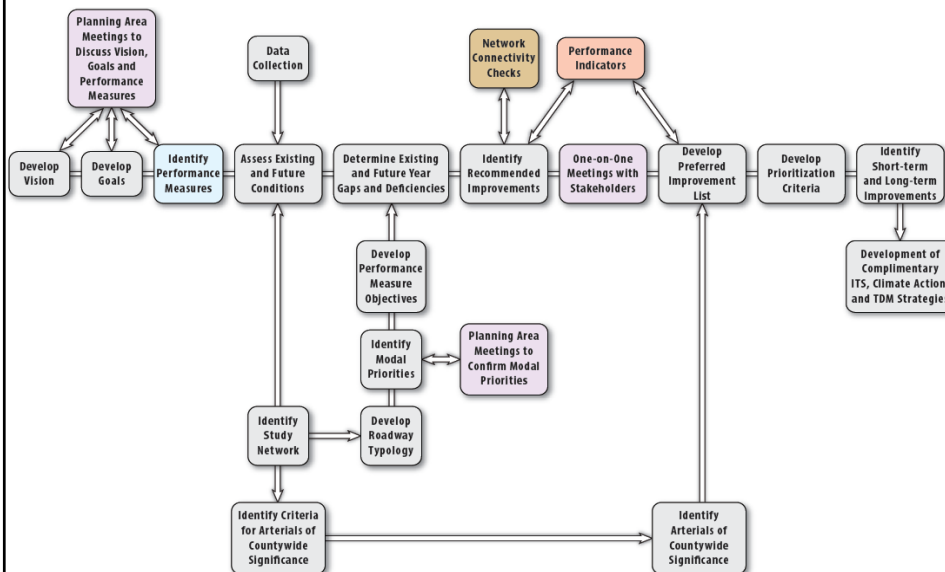


**ACTC Bicycle Routes**  
 — Class I Trail Existing  
 - - - Class I Trail Planned  
 — Class II Route Existing  
 - - - Class II Route Planned

# Performance Measures

Goal	Category	Performance Measure	Evaluation Approach	Application
Efficient Use of Resources	4.1 – Efficient Use of Operations Funding	4.1 – Operating Cost Effectiveness	Based on the ratio of improvement operating costs to existing facility operating costs: <ul style="list-style-type: none"> <li>Develop unit operating costs for cross-sectional elements, including maintenance costs</li> <li>Estimate operating costs to maintain existing cross-section (<math>O_E</math>)</li> <li>Estimate operating costs to maintain preferred cross-sectional improvements (<math>O_P</math>)</li> <li>Operating Cost Effectiveness = <math>O_P/O_E</math></li> </ul>	Facility-Specific Measure, Future Conditions
	4.3 – ITS Infrastructure	4.3 – Coordinated Technology	Four-point scale (0 – 3) based on the level of ITS investment defined by built infrastructure. Consideration for coordination with adjacent jurisdictions and/or Caltrans, as applicable: <ul style="list-style-type: none"> <li>0: no ITS infrastructure</li> <li>1: basic investment ITS network</li> <li>2: medium investment ITS network</li> <li>3: high investment ITS network</li> </ul>	Facility-Specific Measure, Existing and Future Conditions
Safe, Healthy and Vibrant	5.1 – Safety	5.1 – Collision Rates	Using the SWITRS database and existing traffic volumes, the following collision rates will be calculated: <ul style="list-style-type: none"> <li>Total collisions per million vehicle miles</li> <li>Total fatal collisions per million vehicle miles</li> </ul>	Facility-Specific Measure, Existing Conditions

# Arterial Plan Framework



# Performance Indicators

Goal	Category	Performance Measure	Evaluation Approach	Application
Multimodal	1.6 – Enhanced Mobility	1.6 – Non-Auto Transportation Mode Share	Qualitative assessment of cross-sectional improvements on likelihood of changes to transit, pedestrian, and bicycle travel (proxy for person throughput).	Area-Wide Indicator, Existing and Future Conditions
Accessible and Equitable	2.1 – Social Equity	2.1 – Benefit to Communities of Concern	After short and long-term improvements are identified, a ratio will be estimated by dividing the number of arterial miles of identified improvements within Communities of Concern (COC) by the number of arterial miles of all identified improvements benefiting each jurisdiction. For Transit, number of population benefitted within COC versus overall population benefitted in the County will be used.	Area-Wide Indicator, Future Conditions



Photo: <http://www.flickr.com/photos/geekstinkbreath/4741427550/in/photostream/>



# Performance Indicators

Goal	Category	Performance Measure	Evaluation Approach	Application
Efficient Use of Resources	4.2 – Implementation Feasibility	4.2 – Implementation Feasibility Score	Four-point scale (0 – 4), zero being most feasible and four being the least feasible based on the following variables: <ul style="list-style-type: none"> <li>Travel lane removal required (yes = 1 pt, no = 0 pts)</li> <li>Parking removal required (yes = 1 pt, no = 0 pts)</li> <li>Multi-jurisdiction coordination required (yes = 1 pt, no = 0 pts)</li> <li>Curb changes required (yes = 1 pt, no = 0 pts)</li> </ul>	Facility-Specific Indicator, Future Conditions
	4.4 – Economic Benefits	4.4 – Property Value Index	Based on the change in residential and commercial property values influenced by transportation infrastructure improvements within the built environment.	Facility-Specific Indicator, Future Conditions



Graphic: [www.bikeeastbay.org](http://www.bikeeastbay.org)



## Performance Indicators

Goal	Category	Performance Measure	Evaluation Approach	Application
Safe, Healthy and Vibrant	5.2 – Active Transportation Mode Share	5.2 – Demand for Active Transportation	Qualitatively assesses the potential of shifting from driving to active transportation modes on a low, medium or high scale.	Area-Wide Indicator, Future Conditions
	5.3 – VMT	5.3 – VMT per Capita	VMT per capita will be assessed using the Alameda Countywide Travel Demand Model.	Area-Wide Indicator, Future Conditions
	5.4 – GHG	5.4 – GHG per Capita	GHG will be estimated using the GHG Estimator, a tool based on Emissions Factors (EMFAC) model developed by California Air Resources Board, added to the Alameda Countywide Travel Demand Model.	Area-Wide Indicator, Future Conditions



## Study and Arterial Networks

### Study Network

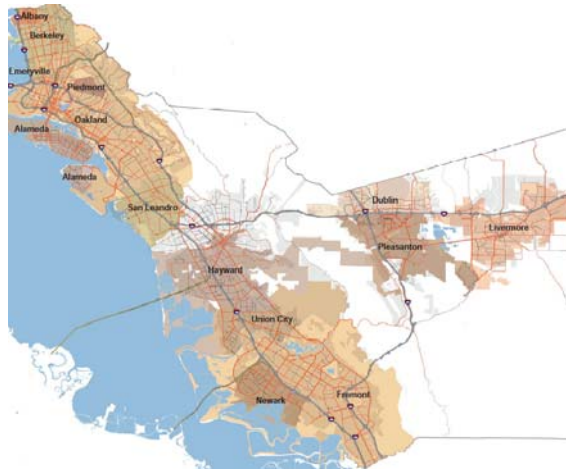
- Layered network
  - ✓ 700 miles of arterials
  - ✓ 500 miles of collectors
- Used for data collection and analysis to identify gaps, needs and recommended improvements

### Arterial Network

- Arterial Network represents *Arterials of Countywide Significance* (Subset of Study Network)
- Short and long-term improvements will focus on Arterial Network

## Study Network

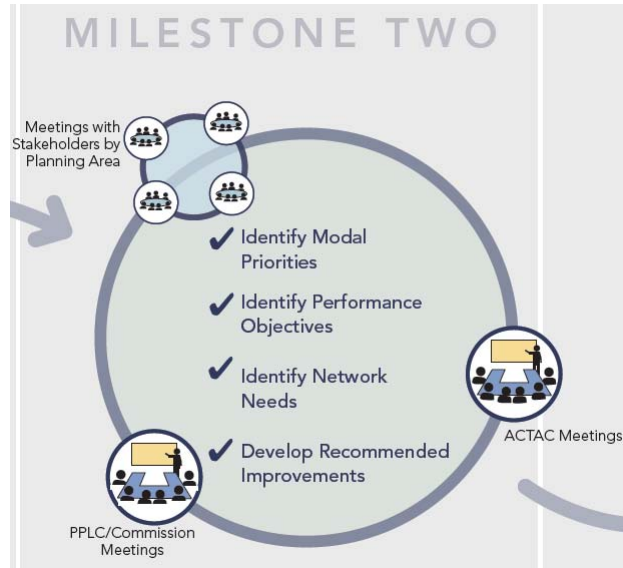
- Based on the California Road System classification
- Composed of arterials, major and minor collectors



## Arterial Network

Mode	Arterials of Countywide Significance Network Selection Criteria
Auto	<ul style="list-style-type: none"> <li>• CMP Network</li> <li>• MTS Network</li> <li>• State Route Network (Non-Freeway)</li> <li>• Roads that provide access to freeway interchanges</li> <li>• Other considerations:                             <ul style="list-style-type: none"> <li>○ Rural roads with an appropriate average daily traffic (ADT) volume threshold</li> <li>○ County connectors with an appropriate ADT volume threshold</li> </ul> </li> </ul>
Transit	<ul style="list-style-type: none"> <li>• AC Transit, LAVTA and Union City Transit major corridors</li> <li>• Cross-Town Routes as identified by AC Transit</li> </ul>
Bicycle	<ul style="list-style-type: none"> <li>• Countywide Bicycle Plan – Vision Network</li> </ul>
Pedestrian	<ul style="list-style-type: none"> <li>• Countywide Pedestrian Plan – Vision Network</li> <li>• Other considerations:                             <ul style="list-style-type: none"> <li>○ PDAs not included in the Vision Network</li> <li>○ Communities of Concern areas not included in the Vision Network</li> </ul> </li> </ul>
Truck	<ul style="list-style-type: none"> <li>• Tier 1 Truck Routes, as appropriate</li> <li>• Tier 2 Truck Routes, as appropriate</li> <li>• Other considerations:                             <ul style="list-style-type: none"> <li>○ Tier 3 Truck Routes</li> </ul> </li> </ul>

## Summary Scope – Milestone #2



## Summary Scope – Milestone #3



## Actions and Next Steps

### Actions Requested at February 2015 Committees and Commission Meetings:

- Approve Vision, Goals and Performance Measures
- Provide Input on Arterial Network Selection Criteria

### Next Steps:

- Arterial Network – March 2015
- Performance Objectives and Refined Evaluation Methodology – April 2015
- Second set of Planning Area Meetings to Present Typology and Determine Modal Priorities – April 2015
- Approve Roadway Typology and Modal Priorities – May 2015

Questions?