

# Metro Countywide Sustainability Planning Policy & Implementation Plan

Adopted December, 2012





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## Section 1: Overview, Purpose and Background

### 1.1 Overview

The Los Angeles County Metropolitan Transportation Authority (Metro) is dedicated to the sustainability of Los Angeles County's people, environment, and economy. Many people and organizations share these goals and are pursuing visions of sustainability in their own households, neighborhoods, businesses, cities, and region-wide. Metro's unique role in achieving a sustainable future is to plan, fund, construct, and operate a transportation system that improves residents' health and well-being, strengthens the economy, and enhances the natural environment.

The Metro Countywide Sustainability Planning Policy is a complement to Metro's efforts to improve air quality and increase transportation choices that have been underway for more than two decades. It is a tool for better defining the agency's long-term, desired sustainability outcomes in order to facilitate greater coordination and collaboration across transportation modes, planning disciplines (land-use, housing, environment, economic development, health, utilities), and government agencies.

The Policy's focus on coordination and collaboration with respect to sustainability comes at a time of great opportunity as Metro is significantly expanding its transit system, implementing highway improvements, and supporting the development of active transportation networks. To successfully implement these projects and gain support for future projects, Metro will be increasingly called upon to quantify its contributions to society, not just in terms of mobility, but with respect to a broad range of social, economic, and environmental indicators. This is evident from the Livability Principles that influence funding decisions made by federal agencies, the addition of climate change metrics in Regional Transportation Plans (per California Senate Bill 375), and the increased interest from local stakeholders in assessing the health impacts of transportation projects. The Policy was developed in consideration of these factors to establish a planning framework for advancing the mission and goals of the agency, in concert with a broader set of sustainability priorities.

### 1.2 Purpose

**The Countywide Sustainability Planning Policy is a guide to:**

- > More fully integrate sustainability into the agency's planning functions,
- > Complement and provide a framework for building upon federal, state, regional and local sustainability policies and plans, and
- > Foster collaboration and inspire partnerships that will lead to more sustainable communities.

The policy demonstrates the agency's continued commitment to sustainability as a core business value and as a strategy for enhancing the quality, efficiency, and value of the transportation system for constituents.

**The policy is organized into five sections:**

1. Overview, Purpose & Background
2. Planning a Sustainable Transportation System
3. Planning Guidance
4. Policy Implementation & Impact
5. Conclusion

### 1.3 Background

Metro is responsible for the continuous improvement of an efficient and effective transportation system for Los Angeles County. To advance this mission, Metro has adopted a set of values to guide agency actions. These values include a commitment to sustainability. The agency's business goals reiterate the importance of promoting sustainability by reducing greenhouse gas emissions and increasing energy efficiency. "Sustainability" became an official part of the agency's work program in 2007 when the Board of Directors, with guidance from the Ad Hoc Sustainability Committee, adopted the Sustainability Implementation Plan. The Plan included the following Sustainability Mission and Vision, accompanied by a list of short-term and long-term projects through Fiscal Year 2012.

**Mission:**

We will provide leadership in sustainability within the Los Angeles region without compromising our core mission of moving people efficiently and effectively.

**Vision:**

We will be the leader in maximizing the sustainability efforts and its benefits to Los Angeles County's people, finances, and environment.

Building on the overarching guidance of the Sustainability Implementation Plan, the Ad Hoc Sustainability Committee and supporting staff have generally focused on advancing strategies in three primary areas:

1. Leadership, Coordination, and Outreach: Lead the region's sustainability efforts by supporting internal coordination and by collaborating with regional stakeholders.
2. Sustainable Agency and Practices: Minimize environmental impacts from the design, construction, operation, and maintenance of Metro's facilities and operations.
3. Sustainable Regional Transportation System: Plan and implement a regional transportation system that increases mobility, fosters walkable and livable communities, and minimizes GHG emissions and environmental impacts.

The Countywide Sustainability Planning Policy is intended to define outcomes and establish measurements related to the third focus area: developing a Sustainable Regional Transportation System and as a result will further the first focus area related to Leadership, Coordination and Outreach. The Policy broadens Metro's approach to sustainability from focusing on a particular project or transportation mode to developing a more holistic and system-based framework for sustainability analysis and planning. In addition to supporting the environmental aspects of sustainability, the framework also more fully embraces the social and economic dimensions of sustainability.

## Section 2: Planning a Sustainable Transportation System

### 2.1 Principles & Priorities

Sustainability is broadly understood as meeting the needs of the present without compromising the ability of future generations to meet their own needs as originally defined by the Brundtland Commission. The Countywide Sustainability Planning Policy refines this definition in the context of transportation planning through endorsement of the principles and priorities on page 7. Metro's policy will be to use these principles and priorities to bring greater clarity, meaning, and consistency to its approach for implementing the "sustainability" commitments currently reflected in its principal values, business goals, and sustainability mission and vision.

The Policy is based on the three themes of "Connect, Create, and Conserve." These themes are the summation of the principles and priorities discussed on page 7. The principles align with the areas of responsibility within which Metro's planning practices have the opportunity to influence sustainability outcomes—as a regional mobility provider (Connect), a project manager (Create), and a steward of public funds (Conserve). As illustrated in [Figure 2.1](#), there are three priorities associated with each principle that highlight the key social, economic, and environmental dimensions of sustainability to be advanced through the transportation planning process. Over time, these principles and priorities will be increasingly embedded in planning activities to:

- > Align and optimize transportation strategies implemented through various planning programs toward a common vision of sustainability
- > Evaluate proposals for funding programs
- > Inspire project design, creativity, innovation, and
- > Guide and communicate sustainability performance

Successful implementation of all of these actions will require additional engagement with regional stakeholders to optimize the countywide benefits of Metro's programs and plans.

**Figure 2.1: Principles and Priorities**

CONNECT PEOPLE AND PLACES	
	<b>Access.</b> Better integrate land-use and transportation planning to reduce trip lengths and increase travel choices.
	<b>Prosperity.</b> Reduce transportation costs for residents and provide the mobility necessary to increase economic competitiveness.
	<b>Green Modes.</b> Promote clean mobility options to reduce criteria pollutants, greenhouse gas emissions, and dependence on foreign oil.
CREATE COMMUNITY VALUE	
	<b>Healthy Neighborhoods.</b> Improve public health through traffic safety, reduced exposure to pollutants, and design and infrastructure for active transportation.
	<b>Community Development.</b> Design and build transportation facilities that promote infill development, build community identity, and support social and economic activity.
	<b>Urban Greening.</b> Enhance and restore natural systems to mitigate the impacts of transportation projects on communities and wildlife, and ecosystems.
CONSERVE RESOURCES	
	<b>Context Sensitivity.</b> Build upon the unique strengths of Los Angeles County's communities through strategies that match local and regional context and support investment in existing communities.
	<b>System Productivity.</b> Increase the efficiency and ensure the long-term viability of the multimodal transportation system.
	<b>Environmental Stewardship.</b> Plan and support transportation improvements that minimize material and resource use through conservation, re-use, re-cycling, and re-purposing.

-  = Principle that highlights the social dimension of sustainability.
-  = Principle that highlights the economic dimension of sustainability.
-  = Principle that highlights the environmental dimension of sustainability.

## 2.2 Key Concepts

Several inter-related key concepts underlie the policy and its approach to achieve priority outcomes. These are introduced in this section.

### Green Modes

The Policy and supporting documentation use the term “Green Modes” to describe a growing category of clean mobility options. These include active transportation, rideshare, transit, and clean fueled vehicles. Active transportation is considered to be all methods of travel that are human-powered, the most common modes being walking and bicycling. All of these options are part of sustainable planning approaches, and have varying ability to achieve the full range of sustainability aims. For example, collisions involving pedestrians and bicyclists must be reduced for healthy community objectives to be achieved, all vehicles should be increasingly zero- or near-zero emissions to achieve climate and environmental aims, and greater transit ridership will be required from a system productivity perspective to maximize mobility while limiting congestion growth. Emerging technologies that complement or even replace conventional travel modes are also considered part of the Green Modes range of choices.

### Transportation and Land Use Integration

Transportation is such a familiar part of our lives that we can easily take its complexity for granted. Going to school or work, visiting a friend or going to the doctor’s office, enjoying the beach or the mountains – all of these require moving about in a complicated web of inter-related systems. Land use patterns shape people’s need to travel and inform investments in the transportation network. In turn, transportation investments impact land use by providing mobility options that may accommodate growth and heightened activity in existing communities or open up new land for development.

The interactions of these two systems – and the resulting impacts on travel demand – have significant implications for the sustainability of communities. For this reason, greater coordination and strategic planning between transportation and land use agencies is required to achieve the priorities of the policy. In an effort to be inclusive and fully capture the diverse communities within Los Angeles County, the Policy introduces a place-based planning framework as a tool for integrated planning and policy development at Metro in addition to more universally applicable strategies. The framework is described in Section 2.3.

Focusing on integrated planning to achieve sustainability outcomes is supported by State climate change regulations and is required at the regional level under Senate Bill (SB) 375. SB 375 establishes a process to help achieve statewide greenhouse gas reduction goals required as part of Assembly Bill (AB) 32. The SB 375 legislation charges each Metropolitan Planning Organization (MPO) with developing a Sustainable Communities Strategy (SCS) to specifically address how integrated land use, housing, and transportation planning will lead to greenhouse gas emissions reductions from passenger vehicles within their respective regions. The Southern California Association of Governments (SCAG), the MPO for this region, has prepared a SCS as part of the 2012 Regional Transportation Plan (RTP). The RTP presents a growth vision for the region, which compiles local land-use data for 2020 and 2035. This growth vision supports greater use of active transportation and transit by increasing opportunities for people to live and work in transit corridors and more compact communities.

This RTP/SCS provides a strong foundation upon which Metro and its partners can build and advance sustainability initiatives. While SCAG assembles the RTP/SCS, the land-use and transportation changes within it are largely driven by the actions of local governments and County Transportation Commissions, like Metro, that control the majority of transportation funds flowing into the region. This policy and the place-based framework it presents are resources to facilitate continued progress within Los Angeles County toward reducing the climate impacts of the transportation network and meeting SB 375 requirements.

### **Bundling Strategies for Greatest Impact**

“Bundling” strategies refers to the practice of implementing complementary strategies together in order to have a cumulative impact and create multiple benefits. Bundling recognizes the complexity of transportation and land use systems by addressing multiple factors in unified programs. An extensive body of travel performance research conducted over decades has established that multiple-strategy approaches are most effective in terms of reliable and consistent outcomes and magnitude of positive change. Combined scenarios involving land use, transit, and pricing strategies are consistently shown to result in greater reductions in vehicle miles traveled (VMT) than single-strategy scenarios, in both the short and long term. A synthesis of regional modeling outputs undertaken for the California Air Resources Board reported that combined strategies in the three arenas of land use, transit, and auto pricing policies demonstrated the long-term potential for VMT reduction with results ranging from -14.5% (10 years) to -24.1% (40 years). Bundling is also supported by the results of the original data analysis performed by Metro to support development of this policy, which is documented in a supplemental Technical Document. These findings support Metro’s participation in a full range of strategies at various scales in order to derive the greatest return on major investments.

### **Network Optimization**

The success of the technology industry has been driven by advances in computing hardware that exponentially increase system connectivity and performance within the same physical envelope, for example, a microchip. To serve a growing population with increasingly scarce resources, the transportation industry is similarly challenged to take a new look at its hardware—a complex network of local roads, arterials, highways and rights-of-way—and find ways to improve connectivity and performance within largely the same footprint. Complete streets, transit-oriented development, congestion pricing, signal prioritization, real-time ride share matching, and smart technologies are leading us to a more efficient and effective transportation system. These advancements respond to the demands of a 21st century lifestyle where connectivity and time saving are highly prized and can be achieved by many different means.

### **Act Regionally and Locally**

As a countywide agency serving millions of people per day, many of Metro’s planning activities have focused on regionally significant trips and corridors that span many miles and often cross city boundaries. However, an increased focus on sustainable communities and on improved accessibility suggests that Metro’s direct or indirect sponsorship of localized strategies may also be needed to advance regional goals. By adopting the principles in Section 2.1, Metro is committing itself to supporting initiatives aimed at intermodal connectivity, green modes, urban greening, and healthy neighborhoods. These priorities require implementation and attention to detail at the local level. Desired outcomes include a higher number of trips made by active transportation and growth in transit trips that benefit from more attractive and welcoming pedestrian and bicycle infrastructure

linking to transit. Land use changes for greater connectivity similarly support a higher number of non-drive trips and shorter trips across all modes for travelers in the region. These changes reduce vehicle miles traveled overall, taking local trips off the regional roadway network, and increase active travel with commensurate health benefits. How these objectives are met will be largely based on the local conditions, extent of transit investments serving local communities, and innovative local solutions informed by regional and national experience.

## 2.3 Planning Framework

The Policy is based on a planning framework that organizes guidance and strategies into two elements: universal and place-based. This section describes the analysis that informed the development of the place-based portion of the framework and discusses applications in the context of the Policy.

### Place Types as a Tool for Integrated Planning

Due to the size and diversity of Los Angeles County, Metro cannot and should not attempt to achieve sustainability outcomes through a prescriptive “one size fits all” approach. Recognizing this diversity, “place types” are used to find solutions that are appropriate for areas with common characteristics. The place type is an increasingly popular foundation for better integrating transportation and land use planning and has been utilized across the United States by a multitude of state, regional, and local agencies. It allows planners to categorize a large number of places (e.g. station areas or neighborhoods) based on shared characteristics. The shared characteristics of neighborhoods, when grouped within a given place type can help illuminate shared issues or barriers, strategies to overcome these barriers, typical or desired performance on a range of measures, and particular types of investments that are needed.

### Accessibility Clusters

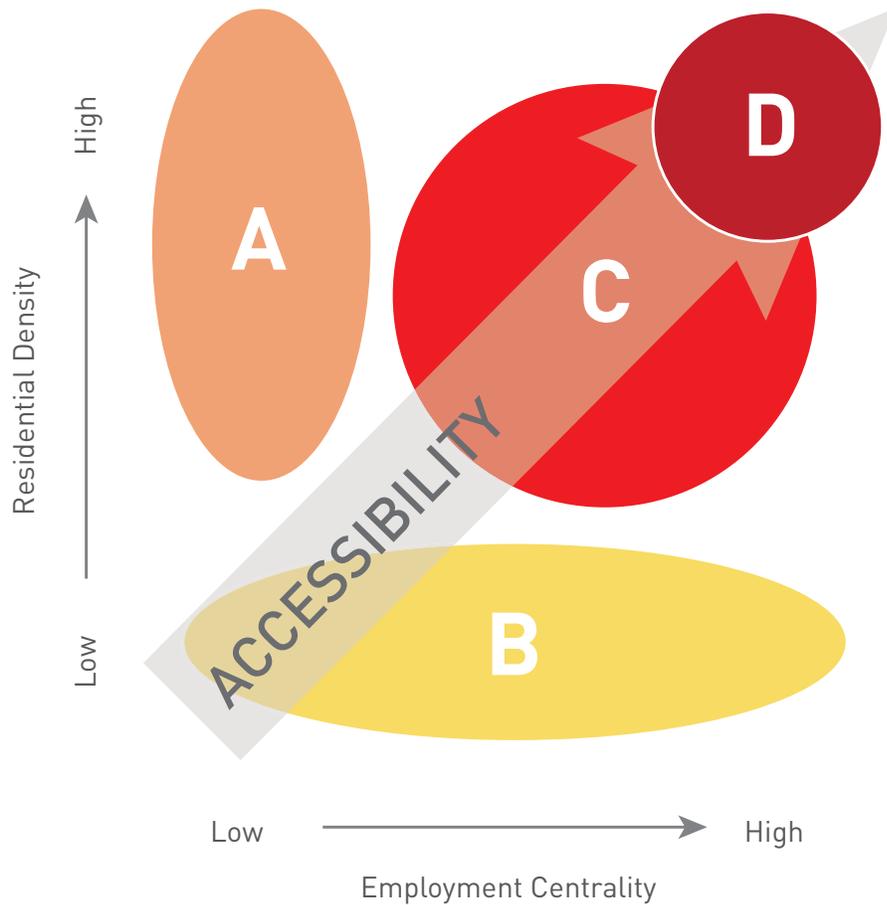
The planning framework was developed using a place-sensitive approach that categorizes locations at the census tract level into four place-types that we refer to as Accessibility Clusters. The clusters are defined by land-use conditions that were identified, through original local analysis, to have the greatest impact on travel behavior, as defined by vehicle miles traveled. These characteristics include net residential density (number of households per census tract) and job centrality (calculation based on the number of jobs and their distance from each tract). In general, the higher the residential density and job centrality for a given location, the less people drive to achieve their daily needs, as reflected in Figure 2.2.

**Figure 2.2: Average Annual VMT for Typical Los Angeles County Household**



The four clusters are illustrated below in Figure 2.3 and described in greater detail in Figure 2.4. Additional information on the methodology and analysis used to develop the clusters is included in Appendix A.

**Figure 2.3: Accessibility Clusters**



**Figure 2.4: Summary of Accessibility Clusters**

DENSITY	SUMMARY	RESIDENTIAL DENSITY (HOUSEHOLD/ RES ACRE)	JOB CENTRALITY	AVG ANNUAL VMT PER HH
Cluster A 	<p>Small districts and corridors with a higher density residential pattern, often serving as centers in lower density communities. While not as well-connected to the region's economic centers and the wide array of economic activity in the county as other clusters, these areas are good candidates for sustainable local travel.</p> <p><b>Examples include: Agoura Hills, Claremont, La Crescenta-Montrose, Marina Del Rey, San Fernando, Santa Clarita and many communities in the South Bay Cities including Redondo Beach and San Pedro.</b></p>	Medium-High	Low	20,477
Cluster B 	<p>All locations in Cluster B have low average residential density. The job centrality of these places is varied, as shown to the right. Low density makes these places predominantly auto-oriented. Nearby downtowns and compact neighborhoods may be appropriate places for transit investments.</p> <p><b>Examples include: Bel Air, Granada Hills, La Cañada Flintridge, La Habra Heights, Malibu, Montebello, most communities in Palmdale, and Rancho Palos Verdes.</b></p>	Low	Low-High	23,275
Cluster B Special Use Areas	<p>High job centrality places where there is no housing or where housing is a minor component, such as large industrial zones, warehousing, ports, and airports. Also includes places serving recreational or entertainment purposes.</p> <p><b>Examples include: Los Angeles International Airport, the Port of Los Angeles and the Port of Long Beach.</b></p>	None/ Very Low	High	23,275
Cluster C 	<p>Both residential and mixed-use areas near centers of economic activity that can support the growing use of active transportation and transit. Includes predominantly traditional single-family residential areas and historic downtown-adjacent neighborhoods with a compact feel.</p> <p><b>Examples include: Burbank (west of I-5), Commerce, Lawndale, Van Nuys, and Venice.</b></p>	Medium-High	Medium-High	18,717
Cluster D 	<p>Concentrations of economic, entertainment, and cultural activity, drawing large volumes of commuters and visitors every day. Host to a full range of horizontally- and vertically-mixed land uses, often with high capacity transit stations and corridors (present or planned).</p>	High	High	15,988

Understanding a place's "accessibility" –residential density and job centrality—can help define appropriate sustainability strategies. For example, while walking to work may be a great option for more sustainable living in a location where many residents and jobs are close together (Clusters C and D); this option will likely not be widely available in locations where residents and jobs are far apart (Clusters A and B).

### **Applying the Framework to Real Places**

The Accessibility Clusters are general. The policies presented in relation to each cluster will be relevant in many cases, but variation to a policy and a greater level of differentiation may be justified in particular circumstances. Any given corridor may traverse multiple Accessibility Clusters and therefore judgment, data, and creativity will be needed to craft solutions and to customize strategies appropriate to the local community. Empirical data at a finer geographic scale (i.e. census block group, census block) should be used to confirm the relevance of the Accessibility Clusters and strategies.

## **Section 3: Planning Guidance**

### **3.1 Introduction**

This section presents guidance to support Metro in implementing the principles and achieving the priorities established by the policy. The guidance recognizes that many of the priorities can be achieved simply by providing the opportunity for more people to drive less, and in more efficient vehicles. A reduction in per capita vehicle miles traveled (VMT), which can be achieved through mode shift, is associated with the following benefits:

1. Reduced vehicular, bicycle, and pedestrian collisions
2. Reduced fuel use
3. Reduced traffic congestion, particularly during rush hour
4. Reduced emissions of criteria pollutants, resulting in reduced respiratory ailments especially for young children and older adults
5. Reduced greenhouse gas emissions (GHGs)
6. Increased use of active transportation and transit
7. Increased physical activity contributing to a reduction in diseases related to a sedentary lifestyle, such as obesity
8. Economic benefits through the reduction of household transportation costs
9. Reduced infrastructure costs and associated environmental benefits accrued from energy, waste, water reduction and land preservation

When measures to reduce VMT are complemented by actions to increase the efficiency of vehicles through enhancements in technology and congestion reduction, the full range of sustainability priorities presented in the policy can be achieved. Advancements in vehicle technology are particularly important for increasing the efficiency and reducing the impacts of trips that are critical to the health of our economy. In goods movement, for example, an increase in vehicle miles travelled is a sign of strong economic growth. To support this growth, while achieving a broader range of sustainability

outcomes, the policy endorses strategies to promote zero-emission vehicles. Similarly, even though the policy encourages a reduction in per-capita vehicles miles travelled, Metro recognizes that the majority of trips will continue to be made by single-occupancy vehicles, and therefore, transitioning to more fuel efficient vehicles needs to be a priority in a comprehensive sustainability program.

Congestion reduction is another means to increase the efficiency of vehicles and achieve many of the social, economic and environmental aims of the policy, including reducing time spent traveling, emissions and fuel consumption. Congestion reduction can be achieved by reducing vehicle miles travelled, improving traffic operations to smooth traffic flow, and adding auto capacity. Guidance is provided to support the former two strategies; however, adding capacity is not addressed by the policy and should be considered on a case-by-case basis because of the strong potential for these projects to have adverse impacts that outweigh their short-term congestion reduction benefits.

Demographic and market trends suggest that more people would choose to drive less, if they had attractive alternatives. According to the 2012 RTP/SCS, as the Baby Boomer generation gets older (the share of the population 65 years or older will increase from 11 percent in 2010 to 18 percent in 2035), there will be a greater demand and need for alternative transportation to serve non-drivers. Other recent studies, such as a joint report conducted by the Frontier Group and the U.S. PIRG Education Foundation, have highlighted an emerging trend that young people are driving less. Reasons for this are many, but include improvements that support alternative transportation. From 2001 to 2009, the average annual number of vehicle miles traveled by young people (16 to 34-year-olds) decreased from 10,300 miles to 7,900 miles per capita—a drop of 23 percent.

While helping more people to drive less, and in more efficient vehicles, is a fairly simple goal, the size of the county and its diversity of land-use patterns make achieving this goal complex. The guidance addresses this complexity by presenting “universal” policies (3.2) that should be considered in all types of locations, and “place-based” policies (3.3) that provide alternative strategies for improving the sustainability of the transportation system in differing types of locations. The Planning Framework, Section 2.3 provides greater detail on the Accessibility Clusters as well as Appendix A.

### 3.2 Universal Policies

The universal policies have relevance in many locations throughout the county, regardless of accessibility. The policy topics as presented do not reflect an order of importance.

**The following policies will guide Metro’s activities countywide:**

POLICY TOPIC	UNIVERSAL POLICY (UP)
Implementation of SCAG Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS)	<p>UP I: Promote regional compliance with state climate change law by supporting SCAG’s efforts to implement the regionally-adopted, land-use and transportation vision in the Regional Transportation Plan/Sustainable Communities Strategy (outlined below), and encourage local jurisdictions to adopt supportive local policies. (Metro does not have jurisdiction over land-use, but can advance regionally adopted land-use strategies through incentive programs, like TOD planning grants, and supportive transportation investments).</p> <p>a) Support SCAG’s efforts to advance the following regionally adopted land-use strategies:</p> <ul style="list-style-type: none"> <li>i) Focus growth in areas well served by transit (also referred to as High-Quality Transit Areas).</li> <li>ii) Focus growth along main streets, downtowns, and other appropriate infill locations</li> <li>iii) Shift development from single-family towards multi-family residential development to reflect recent market trends, and</li> <li>iv) Promote supportive land use implementation activities, including Compass Blueprint Demonstration projects, which are planning efforts led by local jurisdictions and funded by SCAG</li> </ul> <p>b) Support SCAG’s efforts to advance the following regionally adopted transportation strategies</p> <ul style="list-style-type: none"> <li>i) Continue investments to improve the transportation system through 2035 as reflected in the plans of the County Transportation Commissions</li> <li>ii) Implement regional funding strategy to triple the resources available for Active Transportation, as compared to the 2008 Regional Transportation Plan</li> <li>iii) Emphasize and provide additional resources for transportation demand management strategies to reduce solo driving, including carpooling, transit, active transportation, and flexible work schedules</li> <li>iv) Emphasize and provide additional strategies to support improved transportation systems management, including Express Lanes, tolling, and signal synchronization</li> <li>v) Maintain a focus on efficient goods movement to support the growth of the regional economy</li> <li>vi) Advance financial policies that emphasize system preservation to address deferred maintenance and that consider new revenue sources and innovative financing techniques to transition the fuel tax-based system to a more direct, user fee approach.</li> </ul> <p>UP II: Draw from the recommendations included in the RTP/SCS to implement appropriate transportation mitigation measures for all projects.</p>
Green Design	<p>UP III: Implement and encourage local incorporation of green design techniques that minimize the environmental impact of transportation projects and/or support local urban greening; consider requiring green design techniques as a condition of funding when these techniques can be implemented with little to no additional cost to project sponsors (i.e. native landscaping).</p>
Vehicle Technology	<p>UP IV: Facilitate the early adoption of zero and near-zero emission vehicles (fleet services, transit vehicles, clean trucks, passenger vehicles) and promote supportive regional and local policies.</p>

Local Access	UP VI: Encourage and support land-use policies and transportation projects that seek to reduce trip lengths by reconnecting the street grid, increasing the mix of land-uses, providing mid-block crossings, incorporating neighborhood traffic calming, reducing set-backs, and breaking up superblocks in new or (re)development projects, among other strategies.
Performance Measurement	UP VII: Pursue alternatives and/or supplements to the use of level of service (LOS) and delay metrics that prioritize mobility for the single occupancy automobile, for project evaluation and encourage regional and local agencies to consider a broader range of metrics to assess multimodal impacts.
System Productivity	<p>UP VIII: Encourage through regional planning, funding policies, infrastructure investments, and promotion of supportive local policies (including parking management policies, road pricing, first/last mile investments, transit preferential treatments, and other demand management and systems management policies/projects) strategies that seek to optimize transit service by increasing its competitiveness with automobiles.</p> <p>UP IX: Incorporate traffic operations system elements into all new highway projects to effectively operate the regions freeway system and coordinate with local transportation management systems. This may include installing equipment along freeways to monitor and manage traffic flows through detection, surveillance, communication, and control equipment, such as loop detectors, CCTV cameras, message signs, and ramp meters and/or promoting highway corridor level operational improvements such as integrated corridor management, congestion pricing, decision support systems, traveler information services, etc.</p> <p>UP X: Support through policy and project development greater utilization of transportation systems management tools that combine traffic engineering measures and traffic operation controls to better manage congestion on surface streets, optimize person throughput, and promote safe and efficient travel for all users of the roadway.</p>
Complete Streets	UP XI: Consistent with state law, explore opportunities through policy and project development to increase access for all users by making streets more “complete” and promote complete streets at the local level through partnerships and incentive programs.
Transit-Oriented Development	UP XII: Pursue opportunities to realize appropriately-scaled, transit-oriented development in rail and bus corridors as part of corridor studies, project development, incentive programs, and the promotion of supportive local policies (TOD Ordinances, land use and zoning changes, General Plan updates, etc).
Virtual Access	UP XIII: Leverage project development to facilitate the early adoption of emerging technologies that complement or even replace conventional travel modes through virtual access, and promote supportive regional and local policies (telecommute programs).

### 3.3 Place-Based Policies

#### Cluster A

Areas in Cluster A have moderate to high residential density with low job centrality. People living in these areas generally benefit from relatively short trip distances to local retail and services, but their limited access to major job centers and disparate geography often require long commutes to work. Some locations within this cluster include small commercial districts with higher density residential that serve as activity centers and/or sub-regional transportation hubs for surrounding low density communities. Areas falling into this cluster include many of the South Bay Cities, portions of the eastern San Fernando Valley such as the Reseda corridor, historic downtowns in places like Monrovia, and the area around the Newhall Metrolink station in Santa Clarita.

Residents in these communities should be able to easily access alternative commute options like commuter rail or bus, carpooling, and vanpooling. In many cases, residents should be able to take advantage of nearby retail districts without a car. Residents living along compact corridors such as Reseda can (and do) take rapid buses for their daily needs. However, in some cases walking and biking are unpleasant choices due to nearby auto-oriented corridors and a more suburban block pattern. Making these corridors more supportive of active transportation and reduced-speed vehicles can foster last mile connections to nearby regional transit options or commercial districts and may support community and economic development aims to capture a greater share of local spending.

Cluster A has the second-lowest rate of transit ridership (4.9%) for commute mode; 76% of commuters drive alone to work. These locations have the highest carpool share in LA County relative to locations within other clusters. If an additional 2% of solo driving commuters were to shift to 2-person carpools, nearly 10,000 single-occupant vehicle trips would come off the roads at peak hours. If the shift were to 3-person carpools, over 13,000 peak hour trips would come off the roads, compared to 2009 conditions.

#### The following policies should guide Metro's activities in Cluster A:

POLICY TOPICS	CLUSTER A: PLACE-BASED POLICIES
Sustainable Transportation	A I: Support use of green modes through development and sponsorship of facilities and services promoting safe active transportation, rideshare, transit, and low impact vehicles.
Local Government Planning	A II: Support local governments in planning and development activities that result in Transit-Oriented Development at select locations and neighborhood-oriented development, focusing on mixed use centers.
Transit Services (Metro, Municipal and Local Transit Providers)	A III: Provide and encourage transit services reflecting area densities and design characteristics, focusing on commute and lifeline services to employment centers, key corridors, and feeder services.
Street Operations	A IV: Implement, encourage and sponsor projects that create safe, attractive, and efficient conditions for active transportation, transit-use, and slow speed vehicles (i.e. roadway design for lower vehicle speeds, installing bicycle parking in the public right-of-way, etc). Encourage integrated trips with transit and active modes.  A V: In project development and sponsorship, prioritize efficiency projects that seek to better utilize existing capacity by all modes (i.e. signal timing, complete streets) over increasing capacity.

## Cluster B

Cluster B includes locations that have in common an overall housing density lower than seven units per net acre. Within this classification are two distinct types:

- > Suburban/Rural Communities: Communities meeting the low residential density criteria with low to high job centrality, and
- > Special Use Areas: Large industrial zones, ports and airports, and open space areas

This category includes places with a wide variety of conditions – from open space areas with almost no population, to low density outlying communities like most of Palmdale, to industrial areas such as the Port of Long Beach. These varied conditions require diverse transportation strategies, sometimes focused on goods movement, sometimes on responding to travel needs of residents and workers. Locations within Cluster B have the lowest rate of transit ridership (2.3%) for commute trips, less than half the rate of the Cluster A. Approximately, 83% of commuters within this cluster drive alone, while approximately 12% carpool to work.

### Suburban/Rural Communities

Automobile travel will likely continue to be the most efficient means of local mobility for low density communities in Cluster B. Nonetheless, opportunities to drive less and in more efficient vehicles should be encouraged and supported by a variety of transportation policies and investments. Most of these communities have nearby compact neighborhoods, which can be the focal point for transit and ride-share opportunities.

Actions to support telecommuting and the use of cleaner vehicles may be the most promising sustainable alternative for many low-density neighborhoods. This cluster has relatively high numbers of people working at home, and increasing the proportion of people working at home is an important strategy. Additionally, given the high percentage of drive alone work trips for this cluster, focusing on use of cleaner vehicles, including hybrids and electric, can have a considerable impact on emissions. If 5% of 2009 households in “B” cluster locations were to switch from conventional gasoline vehicles to electric or hybrid passenger cars, over 2.3 million daily and over 857 million annual vehicle miles would be driven in less carbon-intensive vehicles. Over 144,000 metric tons of CO<sub>2</sub> would be saved annually if these miles were traveled in hybrid cars, and over 284,000 metric tons if with electric cars (based on 2012 model year passenger vehicle averages).

Integrated land-use and transportation planning is of particular importance in these areas, where the transportation system may be less built out. If there is a local desire for greater development, Metro, through its partnership with SCAG, should support cities in undertaking visioning exercises in advance of capacity enhancements to determine the most effective strategies for limiting congestion and providing the transportation choices communities desire. Metro should discourage road capacity enhancements that may proceed or be inconsistent with the local land-use plans and the Regional Sustainable Communities Strategy.

**The following policies should guide Metro's activities in the Cluster B (Suburban/Rural Communities):**

POLICY TOPICS	CLUSTER B: PLACE-BASED POLICIES FOR SUBURBAN/RURAL COMMUNITIES
Sustainable Transportation	B I: Support use of active transportation for local trips and motorized green modes (rideshare, transit, clean fuel vehicles) for longer-distance trips through development and sponsorship of facilities and services.
Local Government Planning	B II: Work with local governments to identify specific transportation needs that can be met with green modes as well as opportunities to improve efficiency and safety of both goods movement and passenger travel.  B III: Where greater development is desired, encourage cities to undertake planning exercises in advance of road capacity enhancements to determine the most effective strategies for limiting congestion and providing the transportation choices communities' desire.
Transit Services (Metro, Municipal and Local Transit Providers)	B IV: Provide and encourage transit services reflecting area densities and design characteristics, focusing on lifeline services and commute services to employment centers, subregional transportation hubs, and feeder services. Encourage integrated trips with Active Modes.
Street Operations	B V: Implement, encourage, and sponsor projects that create safe, attractive, and efficient conditions for active transportation and transit use (i.e. roadway design for lower vehicle speeds, installing bicycle parking in the public right-of-way, etc) and encourage integrated trips with transit and active modes.  B VI: In project development and sponsorship, prioritize efficiency projects that seek to better utilize existing capacity by all modes (i.e. signal timing, complete streets) over increasing capacity.

**Special Use Areas**

Many places in the county fall into the Special Use Areas category. These represent high job centrality places where there is no housing or where housing is a minor component of the place. Special Use Areas may include large industrial zones, ports, and airports, the latter of which has additional transit needs for users. The distinct mobility needs of these places, often focusing on goods movement, are recognized in the text below.

Sensitivity is needed to provide for goods movement in the more industrial areas in this cluster, particularly as trucks enter and exit these areas near population centers that are accommodating high volumes of people using all modes. As many of these industrial areas also fall adjacent to existing or planned fixed-guideway transit corridors, addressing these numerous mobility objectives is a high priority.

While mitigating potential mobility conflicts adjacent to centers or communities, it is also critical to maximize the efficiency of major freeway and freight corridors, such as the Alameda Corridor, in order to advance goals for economic prosperity. These places are more difficult to serve with transportation alternatives for commuters, but encouraging such alternatives can provide critical job access and support workforce development objectives.

While this type includes warehousing and manufacturing districts such as the City of Industry and areas around Los Angeles International Airport, it can also include a number of places serving recreational or entertainment purposes, such as the Arroyo Seco / Rose Bowl area of Pasadena. It is important to note that open space areas are included in this category, such as Angeles National Forest, Topanga State Park, and Saddleback Butte State Park.

**Due to the unique nature of areas within Cluster B: Special-Use Areas, the following policies should guide Metro’s activities in Cluster B only as they relate to industrial areas and goods movement corridors. No additional guidance for other types of Special Use Areas is provided beyond that recommended in the Universal Policies given the distinctiveness and specific characteristics of these locations.**

POLICY TOPICS	CLUSTER B: PLACE-BASED POLICIES FOR SPECIAL USE AREAS (INDUSTRIAL AREAS AND GOODS MOVEMENT CORRIDORS)
Sustainable Transportation	B VII: Support use of motorized green modes (clean fuel vehicles) through development and sponsorship of facilities and services.
Local Government Planning	B VIII: Work with local governments to identify specific transportation needs that can be met with green modes as well as opportunities to improve efficiency and safety of both goods movement and passenger travel.  B IX: Where greater development is desired, encourage cities to undertake planning exercises in advance of road capacity enhancements to determine the most effective strategies for limiting congestion and maximizing the efficiency of freight movement.
Transit Services (Metro, Municipal and Local Transit Providers)	B X: Provide and encourage transit services reflecting area densities and design characteristics, focusing on commute services to employment centers and subregional transportation hubs, and feeder services to fixed-guideway transit corridors.
Street Operations	B XI: Implement, encourage, and sponsor projects that give priority to goods movement through designated routes and corridors, while creating safe and efficient conditions for active transportation and transit use to address mobility conflicts in areas adjacent to population centers and nearby communities.  B XII: In project development and sponsorship, prioritize efficiency projects that seek to better utilize existing capacity over increasing capacity.

### Cluster C

Cluster C includes sub-regional centers, neighborhoods, and districts where employment centers are nearby and residential densities are high enough to support local commercial activity. People living in these areas generally benefit from relatively short trip lengths, which make active transportation and transit use possible for a wide range of activities. The predominant development pattern in many of these places is the single-family detached home. As a result of its historic pre-war growth boom, Los Angeles County has a much higher single-family residential density pattern than most counties in major metropolitan regions and across the nation. These areas may be either residential or more mixed-use in nature. Cluster C includes historic downtown-adjacent neighborhoods with a compact feel like the Mid-City District of Los Angeles and the eastern San Fernando Valley including most of the City of Burbank.

Residents and workers in this cluster benefit from frequent and predictable transit service – including very high quality commute services. Transit-oriented development is a good fit in these communities with their established mix of relatively high housing density and proximity to jobs. Facilities for transit and active transportation will help support the vibrant mix of uses that is possible in these places due to their density and proximity to jobs and other amenities.

Cluster C has the second-highest rate of transit ridership (7.1%) and second lowest rate of driving alone (76%) for commute travel. Nearly 11% of commuters in this cluster do not take an automobile to work. Households and businesses in these locations should see continued growth in attractive multimodal travel options, with a growing share of neighborhoods well-served by high quality all-day transit connecting to a wide variety of destinations. Integration of active transportation and transit should be encouraged in these Clusters.

Home to nearly 40% of the county’s residents, or 3.8 million people, locations within this cluster serve an important role in achieving the sustainability principles and priorities advanced by the policy. With wide participation, even small changes in travel behavior could lead to significant countywide progress. For example, if a 5 percent increase in transit commuters were achieved through a shift from solo drivers living in these locations, over 10,000 daily drive alone commute trips would be reduced, with a proportional increase in transit ridership.

**The following policies should guide Metro’s activities in Cluster C:**

POLICY TOPICS	CLUSTER C: PLACE-BASED POLICIES
Sustainable Transportation	C I: Provide mobility options to support car-free and one-car living through development and sponsorship of facilities and services promoting high levels of active transportation and transit use for all types of trips as well as carshare and rideshare.
Local Government Planning	C II: Support local governments in planning and development activities to create transit supportive densities and design features, with a focus on mixed use corridors and districts.
Transit Services (Metro, Municipal and Local Transit Providers)	C III: Provide and encourage local transit coverage, frequency, and reliability within close proximity to homes and businesses and with short headways or timed transfers, all-day; connect local service to high-quality transit investments (Bus Rapid Transit, Light and Heavy Rail) that provide access to destinations across LA County, Southern California, and the State.
Street Operations	C IV: Implement, encourage, and sponsor projects that give priority to transit and active modes except on key segments of through routes and goods movement corridors. C V: Implement, encourage, and sponsor projects that seek to increase the share of transit services operating in exclusive rights of way.

**Cluster D**

This cluster includes regional centers with concentrated economic, entertainment, and cultural activity. They are major destinations to which hundreds of thousands of commuters travel every day, and that also draw the region’s residents for more occasional activities like nightlife, cultural events, shopping, and dining. In some, but not all cases they offer 24-hour districts, where people can live, work, and play without ever stepping into a car. These places have a full range of horizontally- and vertically-mixed land uses with high capacity transit stops and corridors (present or planned). The urban character of residential and business districts in regional centers should complement the highest levels of multimodal connectivity at the local, regional, and statewide scale.

High levels of congestion are typical in regional centers, and peak hour conditions can last for much of the day. Relief comes when people can opt out of congestion by using active transportation and taking transit operating in dedicated rights-of-way and given operating priority. Accessibility, which is the benefit of having places one needs to go located close by, is abundant, though mobility – conventionally understood as the ability to travel quickly– may be in short supply for private vehicles.

This cluster covers areas with significant urban office centers such as the downtowns of Los Angeles, Pasadena, Century City, Glendale, Santa Monica, and Warner Center. This designation also includes more mixed-use but high-density locations such as Hollywood. A number of higher intensity industrial and entertainment areas such as Downtown Burbank – with large clusters of movie studio jobs - are also included.

Cluster D has the highest rate of transit ridership (17%--more than double the next cluster) and lowest rate of driving alone (66.2%) for commute travel. Additionally, nearly a quarter (23.7%) either walk, bike, or take transit to work. While households in these places also have the lowest VMT (15,988) in the county, these places don't consistently provide the mobility choices needed to make car-free and one-car living attractive and easy for all residents. Strategies in this cluster should emphasize increasing the attractiveness of active transportation, because of public health and environmental benefits and low cost relative to other transportation options. If solo drivers were to shift to those active travel modes so that the share of both walk and bike commute trips doubled relative to 2009 conditions, the drive alone commute would be reduced by over 62,000 people, nearly 10% of the number of drive alone commuters in this cluster in 2009.

**The following policies should guide Metro's activities in Cluster D:**

POLICY TOPICS	CLUSTER D PLACE-BASED POLICY
Sustainable Transportation	D I: Provide mobility options to support car-free and one-car living through development and sponsorship of facilities and services promoting very high levels of active transportation and transit use for all types of trips.
Local Government Planning	D II: Support local governments in planning and development activities resulting in transit supportive densities and design features throughout Cluster D areas.
Transit Services (Metro, Municipal and Local Transit Providers)	D III: Provide and encourage local transit coverage, frequency, and reliability within close proximity to homes and businesses and with short headways or timed transfers, all-day (and potentially night owl service); connect local service to high-quality transit investments (Bus Rapid Transit, Light and Heavy Rail) that provide access to destinations across LA County, Southern California and the State. Encourage appropriate bicycle parking at stations to improve first-last mile connections to transit.
Street Operations	D IV: Implement, encourage, and sponsor projects that give priority to transit and active modes, except on key segments of through routes and goods movement corridors. D V: Implement, encourage, and sponsor projects that seek to increase the share of transit services operating in exclusive right of way.

## Section 4: Evaluation Metrics

The policy includes a performance evaluation component that will track progress toward achieving Metro's sustainability policies and priorities. Because of the many factors involved in advancing these aims, the performance evaluation has several key parts:

- > Tracking Metro's success at implementing projects and activities to advance the policy, to be accomplished through Program Metrics
- > Tracking outcomes across the county, to be accomplished through Countywide Performance Metrics

The time frame for influencing outcomes can be lengthy, and full strategy implementation can likewise take several years. Therefore, the monitoring program will have a set of metrics that are monitored annually, and another set that are monitored less frequently.

Metro will evaluate and report on progress toward policy goals by monitoring the program activities and performance metrics shown in [Figure 4.1](#). Evaluation metrics track key indicators that reflect progress toward multiple priorities.

### **Program Metrics**

In years 1-5 following adoption of the policy, program metrics will track progress in integrating the framework into Metro activities. In subsequent years, program metrics will track system change – for example, programming of funds for projects including green mode or urban greening components.

### **Countywide Performance Metrics**

Performance metrics will also track the countywide outcomes, which are influenced by Metro's activities as well as factors beyond the agency's direct control. The majority of these will be tracked annually (e.g., collisions and fatalities; and VMT). Other candidate performance metrics could be tracked on a five-year basis, such as the percent of housing and jobs near transit. The candidate metrics will be finalized based on data availability. Staff within Countywide Planning will be tasked with tracking the performance metrics and reporting countywide outcomes to the Ad Hoc Sustainability Committee on a yearly basis.

**Figure 4.1: Preliminary Program and Performance Metrics**

METRICS		CONNECT	CREATE	CONSERVE	MEASUREMENT INTERVAL
<b>PROGRAM METRICS</b>					
1	Actions Completed to Implement Policy	x	x	x	Annual
2	Projects and Activities Advancing Universal Policies and Place-Based Policies in Appropriate Accessibility Clusters	x	x	x	Annual
<b>COUNTYWIDE PERFORMANCE METRICS</b>					
3	Vehicle Miles Traveled	x	x	x	Annual
4	Collisions	x	x	x	Annual
5	Transportation Fuel Usage	x		x	Annual
6	Congestion	x		x	Annual
7	Transportation GHG Emissions	x	x	x	Annual
8	Transit Ridership	x		x	Annual
9	Active Transportation Trips	x	x		TBD
10	Carpooling Trips	x	x		TBD
11	Environmental Enhancements		x	x	Annual
12	Jobs Adjacent to Transit	x	x		TBD
13	Population Adjacent to Transit	x	x		3-5 Years
14	Transit Service in Accessibility Clusters C and D	x		x	Annual

## Section 5: Conclusion

Metro is committed to being a leader in sustainability for the region, while providing for the continuous improvement of an efficient and effective transportation system for Los Angeles County. Adhering to these roles the Countywide Sustainability Planning Policy offers principles, priorities, and strategies for advancing sustainability in transportation, based on the following key ideas:

1. The projects implemented through Measure R in the coming decades should be complemented by regional and local strategies that will help get the greatest possible benefit from these once-in-a-generation investments.
2. Every opportunity should be taken to leverage the efforts underway to achieve a more sustainable countywide transportation system, including, but not limited to, implementation of Measure R projects, Transit-Oriented Development (TOD) Planning Grants, Call for Projects funding, etc., in order to increase collective benefits.
3. LA County's broad diversity of places requires strategies that are customized and tailored to local circumstance.
4. While recognizing the characteristics of different locations, commonalities among places can inform appropriate choices of transportation strategies.
5. Partnerships with regional, subregional, and local agencies are essential to optimize the countywide benefits of Metro's programs and plans.

Successful implementation of the policy will require ongoing communication and collaboration with regional and local stakeholders as well as support from Metro staff and the Board of Directors. Recognizing the importance of coordination and collaboration, Metro has carried out an extensive internal and external review process as part of the development of this policy. Over the course of the creation of the policy and its related research and analysis, Metro staff has actively engaged the Ad Hoc Sustainability Committee and enlisted feedback and support from its members. Additionally, staff from different Metro Departments has been pivotal in providing input to enhance the policy. Through an external outreach process, Metro has also reached out to local, subregional, and regional agencies and hosted broader stakeholder workshops to solicit feedback on the policy.

## Implementation Plan

As a core business value of Metro, sustainability should touch every aspect of transportation planning. This Plan provides direction for implementing the Countywide Sustainability Planning Policy and replaces the Metro Sustainability Implementation Plan, which was developed in 2007 and included a list of suggested projects through the end of Fiscal Year 2012.

The following Implementation Plan, though focused on Metro actions, will integrate sustainability into the agency's planning functions and foster collaboration and inspire partnerships that will lead to more sustainable communities.

COUNTYWIDE SUSTAINABILITY PLANNING POLICY IMPLEMENTATION PLAN	INITIATION TIMEFRAME	PARTICIPANTS
<b>1. Performance Measurement and Monitoring</b>		
1.1 Develop/Refine Sustainability Assessment Tools to evaluate the sustainability of projects and plans.	0-2 year	Countywide Planning
1.2 Include sustainability performance metrics in the Sustainability section of the Short Range Transportation Plan.	0-1 year	Countywide Planning
1.3 Evaluate and report on progress toward achieving sustainability policies and priorities by developing an annual report on the program and countywide performance metrics.	Annual	Countywide Planning
1.4 Include sustainability performance metrics in the Sustainability section of the Long Range Transportation Plan.	Next Cycle	Countywide Planning
1.5 Conduct before and after studies of projects funded through the Call for Projects to quantify impact.	Next Cycle	Countywide Planning, Highway Program

2. Integration of Sustainability Principles into Metro's Planning Functions		
2.1 Strengthen Call for Projects link to Metro's sustainability commitments.	0-1 years	Countywide Planning, Highway Program
2.2 Continue to offer the Transit-Oriented Development Planning Grant Program and provide related technical support and resources to cities and the county, including a model TOD ordinance, to encourage local land use changes that provide transit and sustainability benefits.	0-2 years	Countywide Planning
2.3 Per Board Direction, continue development of an Active Transportation and Design Policy that will advance the Context Sensitivity, Green Modes and Healthy Neighborhoods policy priorities.	0-2 years	Countywide Planning
2.4 Organize staff webinars and briefings, as needed, to highlight trends and promote continuous learning within Countywide Planning, as well as between departments, on sustainability issues.	Ongoing	Countywide Planning, other Departments as applicable
2.5 Per Board Direction, develop a Countywide Safe Routes to School initiative to promote active transportation among school-age children.	1-3 years	Countywide Planning
2.6 Per Board Direction, develop safe routes to transit programs that target families as well as youth, senior, and low-income populations.	1-4 years	Countywide Planning
3. Pilot Projects and Community Partnerships		
3.1 Subject to management and board approval, develop a Sustainable Transportation Demonstration Program to support city partners in implementing innovative capital or operations improvements that apply guidance from the policy. Seek funding from SCAG, AQMD, State Strategic Growth Council, and federal/state grants.	0-2 years	Countywide Planning
3.2 Per Board Resolution, partner with the Department of Public Health and Tree People to develop a Systemwide Urban Greening Plan to improve placemaking, increase environmental stewardship, and create livable streets around transit stations with funds awarded by the State Strategic Growth Council.	0-2 years	Countywide Planning

4. Collaboration / Outreach / Education		
4.1 External: Disseminate information on the policy, associated strategies, and tools to regional stakeholders and the greater public.	0-2 years	Countywide Planning
4.2 Internal: Disseminate information on the policy, associated strategies, and tools for inter- and intra-department coordination and collaboration.	0-2 years	Countywide Planning
4.3 Organize forums and workshops to promote and inform cities, industry professionals, and other stakeholders of best practices in the areas of active transportation, transportation demand management, and other sustainability topics.	Ongoing	Countywide Planning
5. Regional Planning and Policy Development		
5.1 Partner with SCAG to conduct a First-Last Mile Strategic Plan to explore opportunities to increase ridership through access improvements adjacent to transit stops.	0-2	Countywide Planning
5.2 Serve on advisory committees to develop regional policies and plans that seek to implement the 2012 Regional Transportation Plan/Sustainable Communities Strategy	0-4	Countywide Planning
5.3 Continue efforts to coordinate a Countywide Zero-Emissions Truck Collaborative to accelerate market adoption of zero and near-zero vehicles in Los Angeles County.	0-2	Highway Program, Countywide Planning
5.4 Provide leadership for the development of the 2016 Regional Transportation Plan/Sustainable Communities Strategy by working with SCAG and engaging other County Transportation Commissions to share best practices, advance innovation, and develop coalitions to advocate for greater federal and state funding.	0-4	CEO's Office, Countywide Planning
6. Funding		
6.1 Seek federal, state, and local funds to implement planning guidance and strategies to advance both Metro's sustainability goals and those of the RTP/SCS.	0-4	Countywide Planning
7. Policy Updates		
7.1 Review and consider updates to the policy at least every five years.		Metro Board, Countywide Planning

## Appendix A

### Accessibility Clusters and Index (AI)

The Accessibility Clusters are based on an Accessibility Index (AI) that gauges the extent to which community characteristics enable local residents and workers to drive less, either by reducing trip lengths or by taking transit and using active transportation. Improving accessibility and the attractiveness of trips by walk, bike, rideshare, and transit is critical to advancing many of the policy's principles and priorities.

The index measures community characteristics at the census tract level based on two features: net residential density and job centrality.

- > Residential density is calculated using the number of households in each census tract divided by the total net acreage of residential land. Data sources are the 2009 U.S. Census American Community Survey 5-year estimates and SCAG's 2008 parcel level land use data.
- > Job Centrality is a measure of employment accessibility calculated for each census tract. For use in the Accessibility Index, job centrality was derived using a gravity model which considered both number of jobs and their distance from each tract, with jobs in or near the tract having more weight than those at further distance. The model uses 2007 Longitudinal Employer Dynamics (LED) data provided by the U.S. Census.

Both characteristics have a strong influence on average annual distance driven –known as vehicle miles traveled (VMT) – as demonstrated by national and international academic research. Residential density and proximity to jobs are two of the most significant built environment characteristics influencing VMT in Los Angeles County.

In an effort to establish a meaningful set of Accessibility Indexes to assign to each census tract in the county, census tracts are divided into three categories based on residential density and job centrality as shown in [Figure 1](#). The thresholds for the “high,” “medium,” or “low” categories are shown in the Figure.

**Figure 1: Accessibility Index Performance Thresholds**

BRACKET THRESHOLD	NET RESIDENTIAL DENSITY (HOUSEHOLDS/RES ACRE)	JOB CENTRALITY GRAVITY MODEL INDEX
Low	0 to 7	0 to 52,300
Medium	7 to 14	52,300 to 71,500
High	14 and greater	71,500 and greater

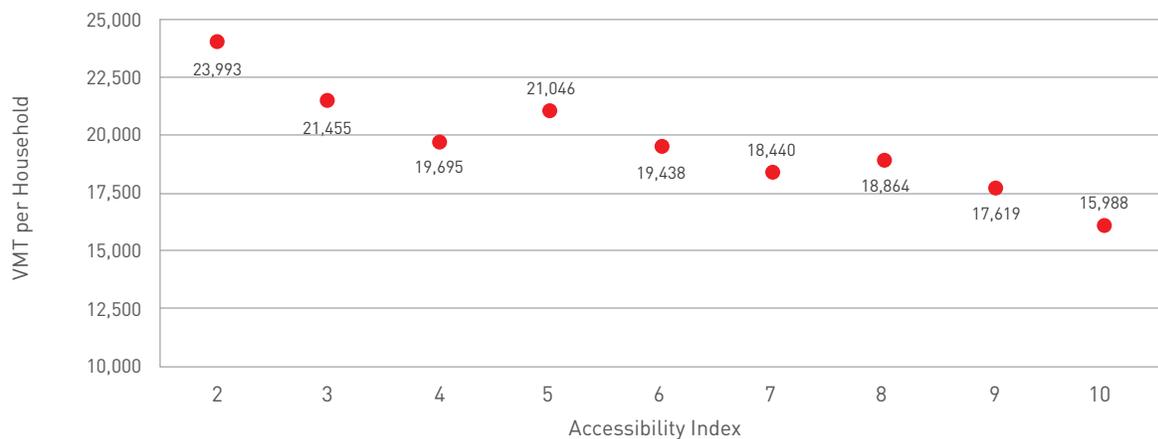
Each census tract is assigned an Index of 2 through 10, based on its residential density and job centrality characteristics. As shown in Figure 2, tracts can receive a maximum residential density score of 7 and a maximum job centrality score of 3. The scoring weighs residential density more strongly than job centrality because the analysis conducted for this policy indicates that it is more influential in reducing vehicle miles traveled. Figure 2 details how scores are assigned for each characteristic.

**Figure 2: Accessibility Index Calculation**

DENSITY	CENTRALITY	RESIDENTIAL DENSITY POINTS	EMPLOYMENT CENTRALITY POINTS	ACCESSIBILITY INDEX
High	High	7	3	10
	Medium	7	2	9
	Low	7	1	8
Medium	High	4	3	7
	Medium	4	2	6
	Low	4	1	5
Low	High	1	3	4
	Medium	1	2	3
	Low	1	1	2

Each of the Accessibility Index scores exhibits distinct average annual vehicle miles traveled for the typical Los Angeles County household (based on modeled results). The general trend is a negative correlation—as the Index increases to reflect higher density and greater job centrality, annual VMT decreases. This is shown in Figure 3.

**Figure 3: Average Annual VMT for the Typical Los Angeles County Household by AI**

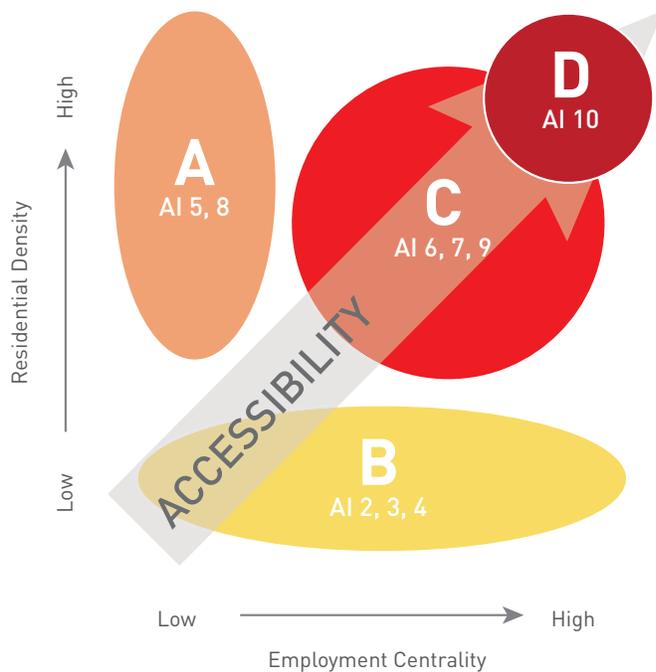


### Accessibility Clusters

The Accessibility Index serves as the foundation for grouping together the nine AI values into four clusters, as shown in Figure 4. The clusters are: A, B, C, D. The clusters are necessarily broad and cannot capture many important variations in local conditions. Subareas of local character are not well represented by the clusters given the county's large size. Unique design, economic, cultural, and historic factors must be considered through the local planning process.

Each cluster matches distinct residential density and job centrality scores. Census tracts within each type are broadly characterized in Figure 4. The objective of the policy is not to move areas from lower to higher accessibility index clusters necessarily. Rather, it is to characterize clusters in such a way that "best fit" strategies can be identified that help advance the policy's principles and priorities.

**Figure 4: Accessibility Clusters**



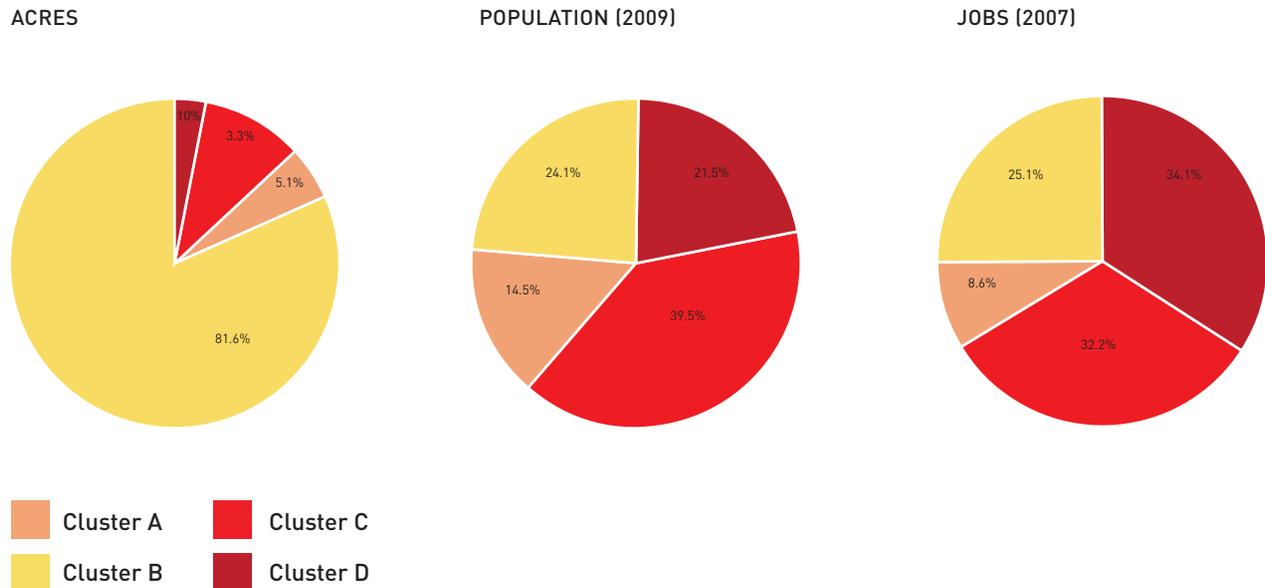
**Figure 5: Summary of Accessibility Clusters**

DENSITY	SUMMARY	AI	RESIDENTIAL DENSITY (HOUSHOLDS /RES ACRE)		JOB CENTRALITY	
Cluster A	Small districts and corridors with a higher density residential pattern, often serving as centers in lower density communities. While not as well-connected to the region's economic centers and the wide array of economic activity in the county, these areas are good candidates for sustainable local travel.	5	7-14	Medium	Low	0-52,300
		8	14+	High	Low	0-52,300
Cluster B	All locations in this cluster have low average residential density. The job centrality of these places is varied, as shown in the data to the right and in Figure 2.4. Low density makes these places predominantly auto-oriented. Nearby downtowns and compact neighborhoods may be appropriate places for transit investments.	2	0-7	Low	Low	0-52,300
		3	0-7	Low	Medium	52,300-71,500
		4a	0-7	Low	High	71,500+
Cluster B Special Use Areas	High job centrality places where there is no housing or where housing is a minor component, such as large industrial zones, warehousing, ports, and airports. Also includes places serving recreational or entertainment purposes.	4b	0-7	None/ Very low	High	71,523+
Cluster C	Both residential and mixed-use areas near centers of economic activity and characterized by sufficient density to support growing use of green modes, including predominantly traditional single-family residential areas. Includes historic downtown-adjacent neighborhoods with a compact feel.	6	14+	High	Medium	52,300-71,500
		7	7-14	Medium	High	71,500+
		9	7-14	Medium	Medium	52,300-71,500
Cluster D	Unique concentrations of economic, entertainment, and cultural activity, drawing large volumes of commuters and visitors every day. Host to a full range of horizontally- and vertically-mixed land uses, with high capacity transit stations and corridors present or planned.	10	14+	High	High	71,500+

Source: CNT, Arup 2012

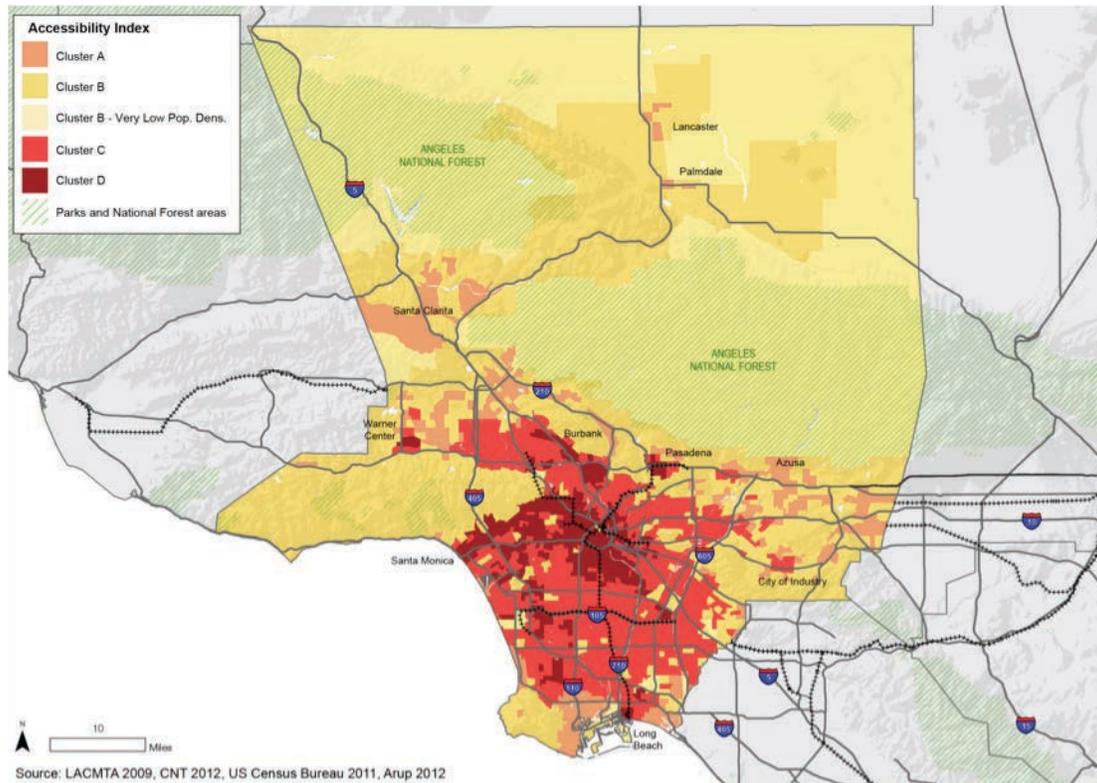
Each cluster represents a different share of the county's area, population, and jobs, as described by Figure 6. The clusters vary significantly across these metrics. For instance, areas in Cluster B cover over 81% of the county's land area but contain only about a quarter of the county's population and jobs. In contrast, areas in Cluster D contain over 34% of the jobs and 21.5% of the population, yet represent less than 3.3% of the acreage.

**Figure 6: Accessibility Cluster Characteristics**



Source: U.S. Census American Community Survey 2009 (5-year estimates), Local Employment Dynamics (LED) 2007, CNT/Arup 2012

The four Accessibility Clusters are mapped below, in Figure 7, using residential density and employment centrality data at the census tract level. Residential density and employment centrality are dynamic and will change overtime. Metro and its partners should consider both current and future land-use plans when applying place-based policies. Empirical data at a finer geographic scale may also be necessary to confirm the relevance of Accessibility Clusters and associated strategies, especially in locations where census tracts cover large land areas.

**Figure 7: 2009 Snapshot: Accessibility Clusters Across Los Angeles County**

## Appendix B

### Sources

The Policy relies on original analysis conducted specifically for the Metro Sustainable Community Planning Framework (SCPF) by the Chicago-based Center for Neighborhood Technology in order to establish the place types and Accessibility Index, and to illuminate the relationship between built environment and travel behavior. This analysis was conducted in the 4th quarter of 2011 and the first quarter of 2012, using data from a variety of sources. Further information can be found in the Metro Countywide Sustainability Planning Policy Technical Document. The development of the Policy relied heavily on the following research and analysis, in addition to the original analysis undertaken for this effort:

**LA County and SCAG regional activities focusing on implementation SB 375 and AB 32** as well as activities generally supporting improved transportation and land use integration. These include the many activities associated with the SCAG Sustainable Community Strategy and the Compass Blueprint, as well as sub-regional efforts such as the South Bay Cities Council of Government's South Bay Sustainable Strategy: An Integrated Land Use and Transportation Strategy.

**Published research results that report on original analysis**, such as Brian Taylor et al's, "Nature and/or nurture? Analyzing the determinants of transit ridership" in *Transportation Research Part A: Policy and Practice*, Volume 43, Issue 1, January 2009, in which the authors apply basic consumer economics theory to transit ridership, using the U.S. Census as a source for socioeconomic data, and the National Transit Database (NTD) compiled annually by the Federal Transit Administration as a source of transit data for 265 urbanized areas analyzed. Another study examining data from multiple regions is Garrick and Marshall's "Effect of Street Network Design on Walking and Biking" included in the Transportation Research Board's *Pedestrians 2010*.

**Published professional guidance** aimed specifically at providing an evidence-based foundation for application of an integrated transportation and land use strategy, such as the California Air Pollution Control Officers Association (CAPCOA) 2010 publication, *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*.

**Published syntheses of prior work that draw conclusions based on multiple sources** in order to support policy and implementation choices. This project benefits from the growth in this category of work following adoption in California of the Sustainable Communities and Climate Protection Act of 2008 (SB 375) which has led to sponsorship of a very useful body of synthesis research by the State of California. Work by Carolyn Rodier, Susan Handy, Marlon Boarnet, and others is included in this category and was commissioned specifically to support SB 375 implementation. There is a growing number of this type of publication, sometimes with a specific focus on supporting efforts aimed at the growing use of green modes. One valuable example is the article by Ann Forsyth and Kevin Krizek, "Promoting Walking and Bicycling: Assessing the Evidence to Assist Planners" in *Journal of the Built Environment* VOL 36 NO 4. While many recent compilations focus on strategies to reduce vehicle miles traveled in support of climate-related goals, others focus on objectives that relate to SCPF objectives. These include the UC Transportation Center's 2009 *Performance Measures for Complete, Green Streets: A Proposal for Urban Arterials in California*, by Elisabeth MacDonald, Rebecca Sanders and Alia Anderson.





