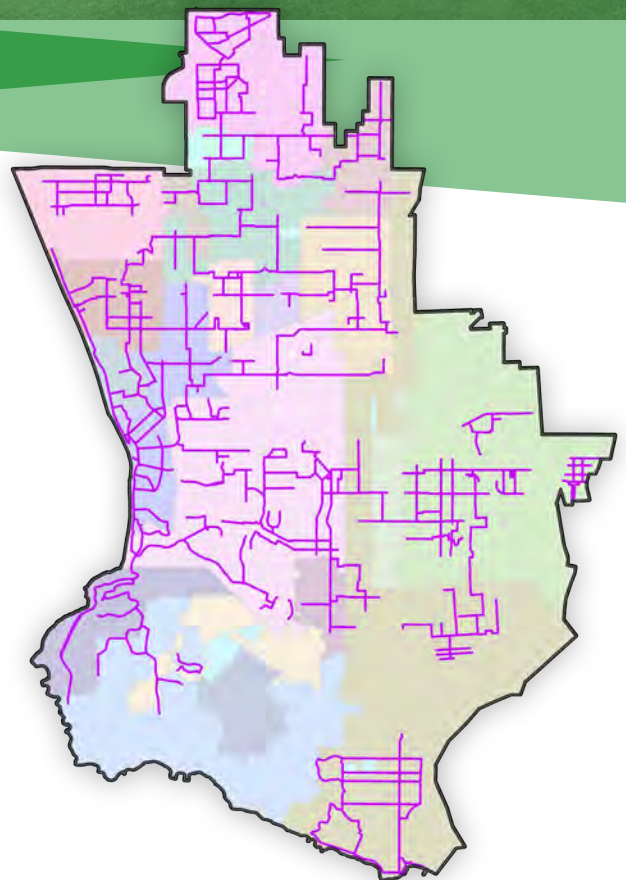


South Bay Cities Council of Governments'

Route Refinement Study

for a South Bay Local Travel Network



April 30, 2021

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Funding Provided by:
California Department of Transportation
Sustainability Planning Grant



SOUTH BAY CITIES
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Contents

Acknowledgements	7
1. Executive Summary	8
2. Vision	10
Short Term Vision	10
Long Term Vision	12
3. Methodology	14
Introduction	14
Project Area	15
Foundations for the Design of a Local Travel Network	16
Data Driven Approach:	17
Two-Step Process: Network Design (“Base Network”) and Network Refinement	20
LTN Working Assumptions for Algorithmic Street Selection	21
Phase 1 – Network Design	22
Building the Algorithm	22
Fehr and Peers Base Network Algorithm	25
South Bay Local Travel Network Base Network	28
Fehr and Peers Base Network Critique	29
Phase 2 – Base Network Refinements	30
City Stakeholder Outreach (Fall 2019 – December 2020)	32
Community Stakeholder Outreach (Fall 2019 – December 2020)	34
Ongoing Integration of Data, Community Feedback, and Network Functionality	36
Local Travel Network Iterations – Version #2	36
Local Travel Network Iterations – Version #3	39
Local Travel Network Iterations – Version #4	41
Local Travel Network Iterations – Version #5	46
LTN Version 6	49
LTN “Gaps” - Local Use Vehicle Lanes for Connectivity	53

Proofing Final Refinements	57
4. Outreach	60
Impact of COVID-19	60
South Bay Cities and Community Stakeholders	61
Public Engagement Events and Activities.....	63
Community Survey – South Bay Residents	65
Survey Results	69
Survey Summary	73
Public Events Planning Process	74
Inter-Agency Outreach.....	74
Event Design Vision.....	78
COVID-19: Pivoting to an Online Community Outreach and Engagement Experience.....	83
5. Technical Reports	85
Overview.....	85
Associated VMT and GHG Reductions	85
Moving Toward a More Robust VMT Analysis.....	85
Housing and the LTN.....	86
Associated Changes in Parking for New Developments	86
Parking and Charging Arrangement.....	87
Signage and Wayfinding.....	87
Funding Opportunities.....	87
“Cut Sheets” – Technical Renderings and Resources for LTN Treatments	88
6. Implementation.....	89
Policy and Program Recommendations	90
1. Implementing the LTN	90
2. Education.....	90
3. Developing Micro-Mobility Ecosystem	91
4. Local Parking and Charging Regulations.....	95

5. Equity in Micromobility	96
Costs.....	98
Sharrow System	98
LUV Lanes	99
Funding.....	100
Next Steps	101
Appendices	103
Methodology Appendix.....	104
Technical Procurement Process.....	105
Data Gathering in the South Bay	111
LTN Data Taxonomy.....	120
Field-Testing Slides with Narrative.....	121
City Map Feedback	126
City and Community Stakeholder Meetings	128
Neighborhood Analysis	130
Controlled Signals – Analysis.....	135
Outreach Appendix.....	139
Survey.....	140
Outreach Events Planning Logs.....	144
“Go Human” Tool Kit.....	145
Candidate Sites for Local Travel Network (LTN) Outreach Event Sites (10)	150
Ride and Drive LUV Fest – Circuit Proposals	157
Story Map – Esri Online App.....	160
Technical Reports Appendix.....	164
Associated Reductions in VMT and GHG.....	165
Moving to a More Robust VMT Analysis	172
Housing and Local Travel Network Memo.....	175
Associated Changes in Parking Requirements for New Developments.....	177
Parking and Charging Solutions.....	185
NEV Regulatory Signage and Wayfinding Policy Context	205
Draft NEV Legislation.....	215
Measure M Funding Opportunities.....	222
Cut Sheets	242
Implementation Appendix.....	258
“Back of the Envelope” Cost Scenario of Sharrow System.....	259
“Go Human” Resilient Street Report.....	260

Table of Figures

Table 3-1 Data Sources for Initial Network Design.....	17
Table 3-2 Base Network details	29
Table 3-3 Improved destination reach LTN Version 3 vs Version 4	41
Table 3-4 Field test coverage Version 4.....	46
Table 3-5 Key metrics comparison LTN Version 6 vs LTN Base Network	52
Table 3-6 LUV Lane opportunities by city	56
Table 4-1 Facebook reach and engagement metrics.....	67
Table 4-2 Survey Respodents in DAC locations	68
Table 4-3 Household vehicles of survey respondents.....	70
Table 4-4 Outreach events site selection matrix.....	81
Table 6-1 Proposed LTN mileage by city	89
Table 6-2 LTN estimated cost by city	100
Figure 3-1 South Bay Topography	15
Figure 3-2 Interconnected Networks.....	18
Figure 3-3 Reducing the universe of streets to the proposed final Local Travel Network	21
Figure 3-4 Data considerations in algorithmic model	23
Figure 3-5 Fehr & Peers formula for evaluating LTN-eligible street segments.....	25
Figure 3-6 Algorithmic street scores by data class	26
Figure 3-7 Composite scores LTN Base Network	27
Figure 3-8 LTN Base Network connectivity to Employment and Destination Centers.....	28
Figure 3-9 LTN Base Network.....	29
Figure 3-10 Signalized intersections in South Bay	37
Figure 3-11 Residential neighborhoods in South Bay	37
Figure 3-12 LTN Version 2 with traffic signals and residential parcels	38
Figure 3-13 LTN Version 3	40
Figure 3-14 Improved connectivity to Employers LTN Version 3 vs Version 4.....	42
Figure 3-15 Improved connectivity to Shopping LTN Version 3 vs Version 4	43
Figure 3-16 Improved connectivity to Schools LTN Version 3 vs Version 4	43
Figure 3-17 Improved connectivity to Parks & Recreation LTN Version 3 vs Version 4	44
Figure 3-18 Improved connectivity to Parks LTN Version 3 vs Version 4.....	44
Figure 3-19 LTN Version 4	45
Figure 3-20 Field testing Version 4 by vehicle type.....	47
Figure 3-21 Version 5 avoidance of pain points	47
Figure 3-22 LTN Version 5	48
Figure 3-23 South Bay topography.....	49
Figure 3-24 LTN Version 6	51
Figure 3-25 El Segundo as "Speed Island"	53
Figure 3-26 El Segundo connectivity to Manhattan Beach via LUV Lane.....	54
Figure 3-27 Connectivity to El Segundo employment corridor via LUV Lane.....	54
Figure 3-28 Torrance intracity connection via Van Ness LUV Lane.....	55
Figure 3-29 Torrance intracity connection via Skypark LUV Lane.....	55

Figure 3-30 Proposed final LTN	58
Figure 3-31 Proposed final LTN including LUV Lanes and Engineered Solutions	59
Figure 4-1 Stakeholders' outreach timeline.....	62
Figure 4-2 Community outreach events timeline.....	63
Figure 4-3 Community Survey screenshot	67
Figure 4-4 Survey Respondents by Zip Code.....	68
Figure 4-5 Survey respondent demographics	69
Figure 4-6 Survey respondent interest in LUVs.....	70
Figure 4-7 Survey respondent influence factors in LUVs	71
Figure 4-8 "Pain Point" encounters for survey respondents.....	71
Figure 4-10 Preferred street markings of survey respondents.....	72
Figure 4-11 Survey respondent attitude toward sharrows	73
Figure 4-12 Outreach event candidate locations	80

Acknowledgements

This report was made possible by a 2019 Sustainability Planning grant from the California Department of Transportation. Thank you to our two Caltrans' Project Managers, Melanie Bradford (now retired) and Benjamin Medina as well as the Caltrans' Team in District #7 and Sacramento Headquarters for your guidance and support throughout the process. The South Bay Cities Council of Governments would also like to express our appreciation our gratitude to the City of Inglewood who acted as lead agency to facilitate and administer federal funds that were associated with this grant.

The SBCCOG is very grateful for the forward-thinking work of Kati Rubinyi and her Team's Metro funded study, *"Slow Speed Network Strategic Plan for The South Bay"* (2017) – a conceptual framework from which this study's route refinement work began.

The task of refining routes was one of engagement, interaction, and feedback. The Project Team recognizes and thanks the many South Bay city staff members who volunteered their expertise and guidance in support of the route refinement efforts. So too, the consulting Team at Fehr and Peers who provided technical expertise over the course of the project.

Importantly, the SBCCOG acknowledges and thanks the following community stakeholders whose enthusiasm, expertise, and participation were invaluable to the final product – more so, given the challenges that COVID-19 presented during the last year of the project:

- Carson Bicycle Coalition
- E3 Vehicles
- Electric Bikes LA
- Los Angeles Bicycle Coalition
- Manhattan Beach Golf Cart Crew
- South Bay Bicycle Coalition

Lastly, with deep gratitude, SBCCOG recognizes the important and critical roles that Jon Rodman and Buck Doyle provided in support of the geo-spatial, mapping, and analytic tasks that were fundamental to produce the proposed Local Travel Network.

1. Executive Summary

Funded by a California Department of Transportation “Sustainability Planning” grant, this project served as a route refinement study to design and then refine a slow-speed network for the South Bay Cities of Los Angeles County. Building upon the conceptual framework of the *“Slow Speed Network Strategic Plan for The South Bay”* (Metro, 2017), this two-year study identified a network of slow-speed, low-stress streets that, with relatively low-cost street treatments, could be improved to accommodate the safe use for the growing market of personal zero-emission micromobility modes – A “Local Travel Network” that would support the universe of slow-speed sustainable vehicles (from pedal bikes to e-bikes to e-scooters to neighborhood electric vehicles to 3-wheel e-trikes to e-monoboarders). Vehicles that, ultimately, would be a more sustainable choice for the vast majority of short trips that are taken by residents of the South Bay. Modeling forecasts significant reduction of Vehicle Miles Travelled (VMT) and greenhouse gas (GHG) emissions to support the efficacy and rationale for implementation of the LTN.

This report provides a methodology used for developing the concept proposal into a network design that became the “base network.” The report further describes the multiple refinements and iterations of the base network that yielded the selection of streets and route segments defining the “Proposed Local Travel Network” - 243 miles of slow-speed streets – routes connecting neighborhoods to neighborhoods to local destinations – commercial, school, employment centers, and recreational areas. Refinement for safety was accomplished through selection of street and route segments with controlled intersections that would provide safe crossings across arterial and high-volume streets. At each stage, refinement of the LTN included feedback, observations, and notes from City-staff as well as leaders from community stakeholders – those whose organizations might be champions and users of a future Local Travel Network.

The project was to have included an engagement of the South Bay public about micromobility and the proposed Local Travel Network. Initially, four (4) large-scale “Community at-large” “ride & drive” events were planned. Public engagement events, where residents of the South Bay were to have had a chance to test-drive the modes that would use the LTN and provide feedback on the proposed streets that were selected for the network. The events were to have served as a catalyst to provide important and valuable feedback for cities should they move forward to develop the network. Due to COVID-19 public engagement restrictions, these events were cancelled. The planning efforts are documented as a resource should the opportunity present itself, at a later time, to support implementation through similar public engagements. In light of these challenges, the project pivoted to create and distribute two outreach tools to engage the public. A survey as well as an online immersive/interactive Story Map were developed as a

virtual outreach facsimile. These information and engagement tools are documented in the report.

In consideration of how South Bay cities will implement the LTN, the report provides technical memos and drawings for city use in support of the construction and road treatment elements to build a low-cost Local Travel Network. Critical next steps were identified and include:

- Adopting resolutions by City Councils and the South Bay Cities Council of Governments to request the State to approve the start of the local and sub-regional agency's process to create an NEV Plan.
- Continuing community engagement work to inform, educate, and promote the implementation of the Local Travel Network and the zero-emissions vehicles that will, ultimately, be used on the Network.
- Working with South Bay cities to design, plan, and prepare for Measure M applications for sub-regional or local return funds to construct the sharrows and wayfinding elements of the LTN.

2. Vision

The Local Travel Network (LTN) promises to be a low cost, fast deploying street adaptation that will accelerate the market for electric vehicles, help reduce street congestion and, importantly, improve safety in the South Bay of Los Angeles County. Co-benefits envisioned for implementation of the LTN will provide for affordable high-quality door-to-door, on-demand mobility services to create a more personalized option for residents of disadvantaged neighborhoods – mobility options that will minimize the environmental impact of state mandated housing growth while, at the same time, make it possible for the South Bay to meet the target of 50% decrease in greenhouse gas emissions before 2030. The LTN will positively affect the character of local neighborhoods, shaping future travel patterns across the South Bay through a network of safe routes to local destinations. The infrastructure will accommodate the vast majority of short trips that are taken every day by South Bay residents.

Short Term Vision

Trips in the South Bay sub-region are short. Today, probably 99% of trips are driven in large, fast, fossil-fueled motor vehicles. In the future, South Bay residents will get around using just the mode that the trip requires. Providing for safe infrastructure to support local travel using micromobility modes (for short trips) will break the decades-long monopoly of auto-mobility. Not replacing it but co-existing. A culture of *right-sized mobility* is our grand vehicle vision.

The South Bay Local Travel Network is the key to that transition. The LTN is formally a 243-mile route overlayed on the South Bay's 2,150 miles of streets to provide safe and efficient paths for residents to reach frequent destinations when using a micromobility mode – this includes the universe of slow-speed zero-emissions vehicles from pedal bikes to e-bikes, to e-scooters, to Neighborhood Electric Vehicles (NEVs), as well as other gyroscopic devices like segues.

Representing a small fraction of the total road miles and slow-speed neighborhood streets, the Local Travel Network is envisioned to provide micromobility users connectivity from neighborhood to neighborhood to local destinations - both close to home and across the sub-region.

The vision for implementing the Local Travel Network is based on the working assumption that the South Bay cities will be responsible for implementing their respective sections of the 243-mile network. SBCCOG will facilitate inter-city corridors as required. Operationally, formal use of the LTN will begin once continuous multi-city segments are completed. The new Network will provide South Bay residents with many co-benefits including:

Stimulating the Market for Micromobility Devices

Very few benefits will be captured if residents do not purchase the micromobility devices. Incremental use could come from the installed base, mostly bicycles, but the bigger impact will depend on increasing that base.

The COVID quarantine has led to dramatic increases in micromobility device purchases. Pedal bikes, e-bikes and NEVs all experienced record same-month sales increased 2019-20.

The LTN will build on that momentum, particularly if the institutional innovations to support local or neighborhood programs for telework, e-retail, distance education and tele-medicine are sustained in some form, post-pandemic.

Reducing Congestion

The street hierarchy of primary, collector, and local roads was designed in the 1930s so that 80% of vehicle traffic is carried by 20 percent of the road mileage. This is the case in the South Bay, where 22% of the streets have relatively fast speeds with 10 major arterials in each direction carrying approximately 80% of the traffic. Those routes are congested because the planners failed to anticipate that their design would not scale-up to handle the volume of motor vehicles in the South Bay today – That number is 665,000 vehicles and counting.

Our Vision is that the formal LTN and its informal feeder system (all 25 MPH streets) will convert motor vehicle trips to micro device trips which are diverted so that 20% of the road mileage carries only 60% of the trips, with the slow speed traffic spread out over the under-used 80% of streets.

Serving Residents

Once local travel defined by many short trips is carried by micromobility devices, the only fast-moving traffic will be that which is moving into, out of, or through the South Bay. The LTN will separate the fast inter-subregional traveler from local residents that live, work and play in the South Bay.

Implementation of the LTN will provide congestion free access to most South Bay destinations. When those destinations provide priority parking for micromobility devices and Level 1 (L1) charging, the LTN will deliver an even higher-quality travel experience designed specifically to serve South Bay residents.

Increasing Safety

Recent efforts to reduce auto-involved accidents have not succeeded. In general, those efforts have relied on road diets to slow traffic while the LTN relies on a vehicle diet.

By minimizing the operation of micromobility devices on fast streets (as in bike lanes on major arterials); by expanding the universe of qualified devices from pedal bikes to the growing marketplace of electric 2- and 3-wheel, slow speed devices; and by aggregating their travel onto a route shared with micro devices and slow-moving motor vehicles, there will be safety in numbers. No micromobility device can speed and full speed motor vehicles are less likely to speed.

Supporting Lessons Learned From COVID-19

The LTN will support the pandemic adaptations that have become manifest, keeping them going and possibly extending them. Telework especially can reduce the need to travel to a distant central office, replacing that with some local facility-based options. Spending more time at home increases local errands that were formerly chained to the journey to work. E-retail has expanded into groceries and restaurant meals.

Long Term Vision

The formal LTN will evolve as the volume of micromobility devices passes a threshold and travelers create their own routes based on familiarity, congestion aversion, and “pain point” aversion. Cities will respond to requests by micromobility device users to address remaining pain points on the most direct routes.

The LTN will interact with other mobility innovations, environmental and equity factors expected now and into the next decade. Anticipated areas where this interaction will occur include:

Support for the Adoption of Automated Vehicles (AV)

Fully automated vehicles are coming. Innovations in the types of vehicles and types of services they will support are being tested today. Some will be introduced as shared vehicles, with faster speeds, that will serve consumers for long trips. Other AV and delivery robot systems are being designed as slow-speed vehicles that will address local demand for delivery of services or goods from nearby commercial or retail centers. When you want to get a bottle of milk, one can envision a zero-emission slow speed vehicle will safely traverse the community, travelling from the local store, to bring it right to your door with no wait and no fuss.

Depending on the size and type of automated vehicle, the type of service and the mode that will facilitate it will be one of choosing between what right of way it will use - local sidewalks or travel in the street. When that choice is to use the street, the Local Travel Network will become a valuable asset for this growing delivery sector. Individuals will still have the sustainable choice of using their personal micromobility devices for local trips to commercial and retail destinations even as experiments in delivery robots will soon begin to appear on the Local Travel Network.

Providing for Equity

For disadvantaged communities, inequities in mobility are experienced in conditions of poor air quality and access to transportation. This is true now and will likely be so in the future. A robust Local Travel Network, supporting zero-emission vehicle travel, will play a significant role in making disadvantaged communities' healthier places to live and work.

Inequities also exist in the disparate access to affordable vehicles. Micromobility devices are the least expensive form of personal mobility on the market. A developing marketplace of micromobility vehicles – encouraged and supported by the robust use of the Network including, Slow-Speed Ride & Drive events, will encourage mobility ownership for those in disadvantaged neighborhoods.

Meeting GHG Reduction Goals

GHG emissions must decline by 50% from current rates by 2030 or society will experience the destruction of the planet's life support systems. The LTN provides a new approach to reducing carbon emissions that will have important implications now and into the future.

The LTN can lead the reduction of GHG emissions in the South Bay. SBCCOG vehicle demonstration projects have shown that 27% of the VMT is generated from trips shorter than 3 miles and 63% from trips shorter than 10 miles (36% between 3 and 10 miles). Our vision of the LTN, will enhance mode shift and become a catalyst to expand upon VMT and GHG reduction numbers.

If zero emission micromobility usage can be expanded before 2030 to include all trips less than 3 miles and half the trips between 3 and 10 miles, then the LTN will have played a significant role in the sub-region's efforts to meet and exceed its climate action goals for lowering GHG emissions.

Being a Catalyst to a South Bay Green Economy

To remain sustainable, the South Bay sub-region should develop strategies for transitioning to a "green economy."

Carbon free mobility should be considered as an option for leading that transition. As residents choose micromobility devices, ultimately, reducing the number of household internal combustion engine (ICE) motor vehicles, the opportunity to attract any element of the supply chain – from manufacturing, to assembly, to distribution, as well as the retail sales for all (or parts) of those devices in the sub-region increases. The LTN will be a catalyst for initiatives to de-carbonize the economy and grow these businesses in the South Bay.

3. Methodology

Introduction

“A Local Travel Network (LTN) is a new approach and definition for the use of the existing street system – a network of route segments that will safely carry a broad mix of zero-emission slow-speed modes with maximum speed of 25 mph.”

This chapter describes the process that resulted in the proposed South Bay Local Travel Network. The project goal was - from the existing network of South Bay streets – to identify the ideal range of route options to form a South Bay-wide Local Travel Network. Using the “Slow-Speed Network Strategic Plan” (Metro, 2017) as the conceptual starting point, this project’s scope of work was to design and then refine a sub-regional network of safe, slow-speed, streets into a near-ready planning guide for South Bay cities’ implementation of a Local Travel Network. Using an iterative multi-layered methodology, the Project Team worked with technical consultants from Fehr and Peers to select the streets and develop the routes that would become the “Proposed Local Travel Network”.

The project methodology was data driven using GIS coded datasets, city policy preferences, stakeholder feedback, and field testing. Network design choices for the qualities and characteristics of streets were critically reviewed and tested for safety, “usability”, proximity and/or integration into existing street infrastructure (i.e., bicycle networks). The route segments that evolved as the “Final Proposed South Bay Local Travel Network” reflect multiple iterations of data gathering, map-making and stakeholder feedback.

Project Area

The South Bay Cities Council of Governments' service territory includes 15 cities and areas of Council District 15 of the City of Los Angeles along the Harbor Freeway corridor into San Pedro and the Port of Los Angeles. Additional unincorporated areas of Los Angeles County are found within the SBCCOG's territory. Topographically, the beach cities and inland cities are, relatively, flat while the four (4) cities and community of San Pedro are challenged by steep hills and distance from the majority of South Bay cities.

For the purposes of the Route Refinement Study, a decision was made that the initial street and route refinements would be made for the Beach and Inland cities. A secondary effort, if time permitted, would then add the communities located on the Palos Verdes Peninsula.

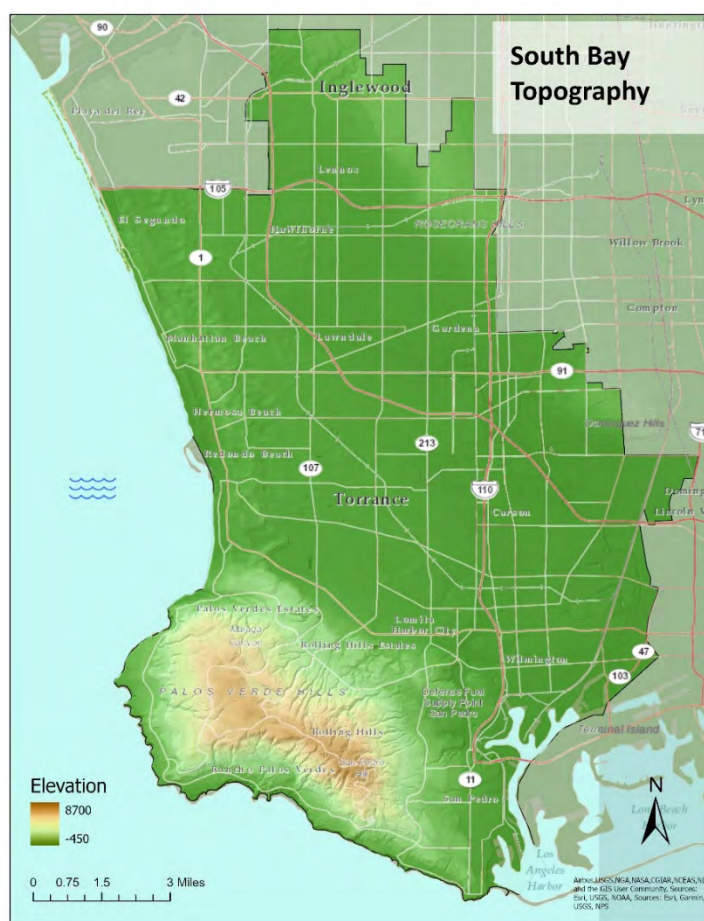


Figure 3-1 South Bay Topography

The rationale for triaging the process was based on the observation that the communities located “on the hill” would be unlikely candidates for the implementation of the Local Travel Network given the geographical and topological characteristics of their location. The Project Team observed that the market potential for slow-speed battery driven vehicles would be challenged due to the limited size of the batteries for the vehicles that might use the network. Travelling down, off the hill, might be possible, but a trip of any length with subsequent uphill travel home would be near impossible because of the limitations of the batteries as they quickly deplete on the return journey. Ultimately, users of slow-speed vehicles would be range-challenged.

Foundations for the Design of a Local Travel Network

The Project Team's network design tasks were grounded in the research and principles articulated from the Metro "Slow Speed Network Strategic Plan" (SSNSP). The following review and analysis of this plan became the foundational elements and assumptions for the methodology used for street selection and route choices that became the Local Travel Network.

Definitional:

The guiding principle from the SSNSP was that the selection of streets would expand "the concept of Complete Streets with a more fine-grained and high-resolution approach...providing infrastructure for the widest possible range of vehicles that travel at or less than 25 mph." (Slow Speed Network Study, 2017, pg. 4). The report provided a conceptual framework for how a network could be assembled – one that accounted for the "symbiotic" and growing relationship of the new slow-speed modes to the continued use of the cars. Importantly, it pointed towards the choice of "low-stress" and safe streets as well as alternative rights of way infrastructure for defining routes that might become the selected routes for this new Local Travel Network. This became the working definition of the LTN: a network, selected from, safe low-stress" roadways; streets that have a low volume of traffic on which all modes, including cars, share the same roadway.

Implementation Principles:

Three core implementation principles were carried over from the report into this project's vision statement and, into the map-making methodology that followed. These principles became the guides and reference points to test the viability, efficacy, and qualities of the street and route selection choices as each version of the network was created, reviewed, and refined. The principles that were used in the methods and design process were:

1. A Data Driven Approach - The optimal LTN street selection and routes would be derived through a data driven approach.
2. Connectivity - The LTN would span the entire South Bay through 3 defined and interconnected tiers of connectivity.
3. "Low-Stress" Safe Streets - Route selection would emphasize safe streets for mode sharing defined by slow speed & low volume.

Data Driven Approach:

As with the Slow Speed Network Strategic Plan, the design and subsequent route refinement of the network was a data driven design approach that attempted to analyze the relationship of where individuals lived, the destinations that they might frequent and work as well as the types and characteristics of streets that would safely support their travel using slow-speed zero-emission vehicles. The following table describes the data that the Project Team attempted to source for the initial network design:

ID	Layer Name/Content	Source	Version/Date Updated	Definition	Attributes
1	General Plan Land Use - Los Angeles	SCAG	3/15/2019	SCAG's 35 standardized land use categories	Land-use categories, city land-use designation, DU range (low & high), zone code, acreage
2	Cal EnviroScreen	CA OEHA	3.0	State identified disadvantaged communities	Includes information of exposure indicators, pollution burden, socioeconomic indicators, and environmental effects indicators
3.1	2010 TIGER Roads	LA County	2010	Road segments for the entire South Bay, oriented on centerlines	The attributes are minimal. It includes some very basic road characteristics, like whether or not it is a divided or a decked road
3.2	Roads above 35mph	Metro	6/3/2016	Roads with posted road speeds faster than 35mph	Could not find documentation
4.1	Proposed Bike Facilities	Metro	6/3/2016	Bicycle facilities proposed for implementation	Contextual information: jurisdiction of proposed facility, reference documents, year adopted, type of facility, segment counts, etc.
4.2	Existing Bike Facilities	Metro	6/3/2016	Existing bike facilities	Facility details: date installed, length, facility type, jurisdiction
5.1	2010 Census Pop & Housing	Census	2010	Population and housing estimates	Population and housing
5.2	2010 Census Demographics	Census	2010	Census demographic estimates	More than 7,000 attributes ranging from: age, sex, race, geographic mobility, worker demographics, commute variables, job, and much more
6	NAICS	Dunn & Bradstreet	2016	Organizational classifications	Location, sales, number of workers, 6-digit NAIC, financial stress
7	SWIRTS Incidents	Berkeley TIMS	2018	Incident data from police reports	Wide range of incident characteristics: parties involved, causes, fault, severity, context (road quality, lighting, weather, time of day)
8	LUV Study	SBCCOG	2012	GPS pings from NEV use	Ping time and date
9	Bike Count Data Clearing House	UCLA + SCAG	Rolling Submissions	Bicycle volume data	Varies between counts, generally includes: locations, survey period, counts, and direction
10	State Highway Traffic Volumes	CA DOT	2017	Average Daily Traffic for select points along South Bay state highways	Volumes for peak hour and month, both ahead and behind the observed intersection
11	Points of Interest	LA County	2016	73,000 points of interest (designated by LA County)	Destinations are organized into nested categories (i.e., NAICs) and include address, hours of operation, phone number, and website

Table 3-1 Data Sources for Initial Network Design

Connectivity:

The Slow Speed Network Strategy conceptualized “a system of three interconnected networks, each at a different scale” (Slow Speed Network Study, 2017 page 4). The three types of networks addressed connectivity from the aspect of distance and destinations both across the South Bay. Connectivity included:

- crossing multiple cities
- shorter trips within a city or an adjacent city
- connectivity from the neighborhoods (where trips might start) to the ultimate destination (commercial, work, educational)

Respectively, the SSNSP defines these as the “Regional Network”; “Sub-Regional Network”; and “Local Network”.

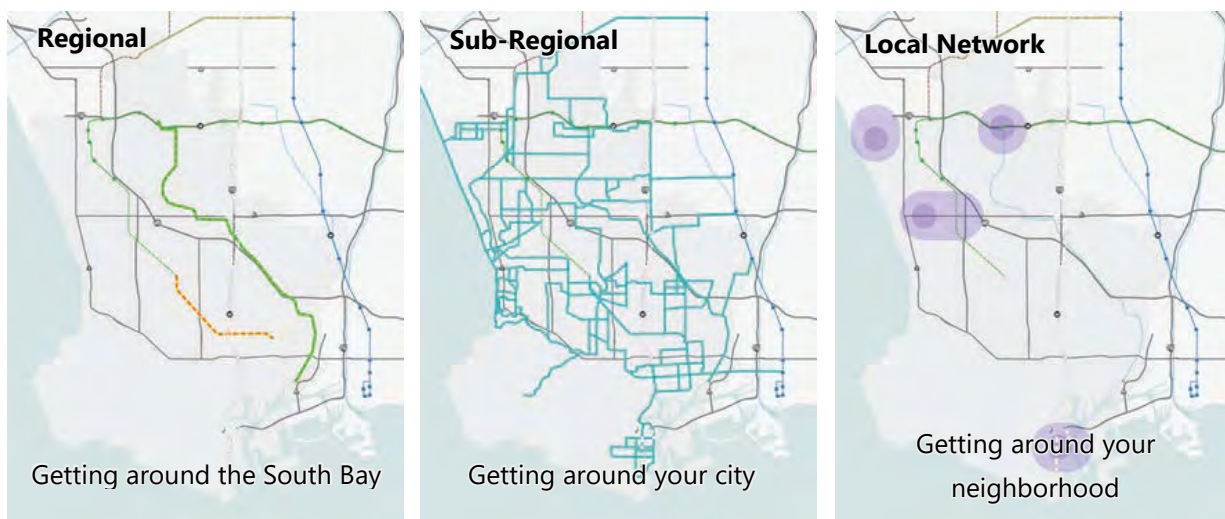


Figure 3-2 Interconnected Networks

The goal for the design and refinement of the Local Travel Network was to provide, if possible, qualities of connectivity at all three levels. The following is a brief description of the characteristics and qualities of each “Network” that were used to proof-test the network routes:

Regional Network

- The SSNSP defined the largest scale of network dedicated Rights of Ways (ROWs) for multiuse pathways that would safely accommodate NEVs (Neighborhood Electric Vehicles) as well as bicycles, pedestrians, and all other slow modes. The study described this infrastructure as “slow mode thruways” on re-purposed ROWs. In the South Bay, candidates for such facilities include existing multi-use paths under electrical corridors, a segment of the Harbor Subdivision ROW that extends south of the Green Line, and the 16-mile length of the Dominguez Channel – all could, if implemented, provide trans-South Bay slow mode connectivity to jobs, education, housing and regional amenities.” (Slow Speed Network Study, 2017, page 5).

Characteristics for the LTN:

The opportunities to use these ROWs proved more conceptual than realistic (for implementation) and are discussed in the barriers and constraints analysis. However, the inherent qualities and characteristics of these “slow mode thruways” – i.e., long stretches of safe roads that would take the user of the network through and across multiple South Bay cities became a touchpoint for the streets and routes that were selected for inclusion in the LTN.

Sub-Regional Network

The SSNSP envisioned signed and branded routes for on-street slow modes linking the Slow Zones (destinations) traversing the South Bay to form a Sub-regional Slow Mode Network. The network would build upon the Active Transportation Strategic Plan (ATSP) which called out existing bike infrastructure and, importantly, would be made up of “existing residential streets wherever possible” (Slow Speed Network Study, 2017, page 5). The conceptual network envisioned shared use facilities -- where cars, bikes, pedestrians, and other slow modes share the ROW with no separating barriers or striping. Preference would be given to a hierarchy of slow speed streets. Those with speeds of 25 mph would be most preferred, ranging upwards to 35 mph (or less) – all to accommodate the legal speed limit postings for Neighborhood Electric Vehicles.

Characteristics for the LTN:

The core characteristics of the Sub-Regional Network proved to be the critical qualities that determined street and route selection. The range of street speeds provided the core metrics for the algorithm and, subsequently, the refinement preferences for the Network iterations to follow. Additionally, accounting for existing bicycle infrastructure was a guide for consideration of street and route selection.

Local Network

The smallest scale of roadway network identified by the SSNSP was one defined as the “Local Network”. Conceptually, the network’s functionality (at this scale) was to provide connectivity at destinations - roughly encompassing a 1/2 mile to one mile area around pedestrian corridors; areas called “Slow Zones” (Slow Speed Network Study, 2017, page 5). Twelve distinct Slow Zones were identified in the sub-region.

Characteristics for the LTN:

Decision choices for street and route selection would need to be given significant weight based on the Network’s functionality to serve users to get to and from the destinations that they frequent for short trips. Understanding local destinations would become a critical touchstone for the streets and routes that would become the Local Travel Network; answering the question, would the network serve the mobility needs of users to get to and from commercial,

employment, recreational, and educational destinations – including first/last mile connectivity to transit options. Connectivity at this scale was considered at ½ mile as well as ¼ mile.

Low-Stress Safe Streets:

A critical assumption for the Slow-speed Network strategic plan was that the safest routes for slow-speed zero-emission Local Use Vehicles (LUVs) are those with slow speeds & low volumes. The ideal street would be 25 mph (or less) with the volume of a neighborhood road. “Safe Streets” would, therefore, allow for the broadest range of slow-speed vehicles to use the network – routes that would support the evolving and growing marketplace of slow-speed zero-emission vehicles. Mode types that range from pedal bikes, personal gyroscopic vehicles (like e-monoboarders), to e-bikes, to e-scooters, to Neighborhood Electric Vehicles (NEVs).

Two-Step Process: Network Design (“Base Network”) and Network Refinement

The Local Travel Network (LTN) was produced through a two-step process. The first step was one that was automated through a data driven algorithm. The purpose was to create a fully data driven selection process to design/map streets and routes that would form a starting point for the LTN map. From this automated modeling, additional refinements to the Base Network would be built upon.

The secondary step of refinements to the LTN Base Network was one that integrated a manual - “by hand” – process to iterate the mathematically modeled map. The Project Team developed supplementary data to create contextually specific GIS layers that informed and identified opportunities to refine the Base Network. Additional data gleaned from city and community stakeholder feedback, planning reports/documents were also used to revise and improve the Base Network. Importantly, the Base Network was tested and iterated through observed data using GIS field surveys, and field testing. Ultimately, reducing the universe of South Bay streets to the proposed final Local Travel Network:

Universe of All South Bay Streets



Proposed South Bay Local Travel Network

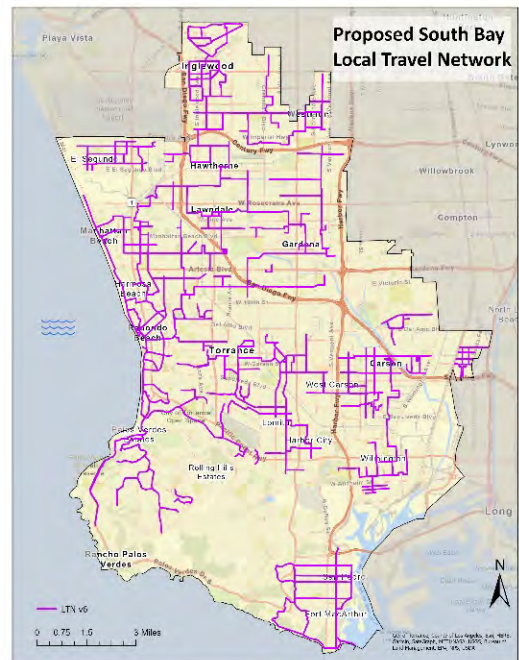


Figure 3-3 Reducing the universe of streets to the proposed final Local Travel Network

LTN Working Assumptions for Algorithmic Street Selection

The Slow-Speed Network Principles provided the framework for the initial working assumptions that were developed for the first iteration of the Local Travel Network's design. Refinement and iterations of the initial network design built upon the following assumptions:

- 25 mph (slow-speed and low-volume) roads should be chosen whenever possible.
- Roads, faster than 35 mph were categorically eliminated from consideration because most Local Use Vehicles (LUVs), particularly, Neighborhood Electric Vehicles (NEVs) have a legal cap 25 mph and are prohibited (by law) to travel on roads posted at more than 35 mph.
- Street speeds, for consideration, could range in speed from those less than 35 mph to residential neighborhood streets with speeds posted at 25 mph, or less.
- Decisions for street selection and route choices would be based on data.

- Connectivity of the network needed to consider local destinations both within and between cities to:
 - Shopping Centers -- Retail/Commercial/Personal Services
 - Employment Centers
 - Schools
 - Parks
- Navigation of the proposed Network would be through the use of wayfinding and "sharrow" signage.

Network Design and Technical Assistance

The network design and technical aspects required of this project were facilitated by a technical consultant. Procurement of the technical consultant was facilitated by the South Bay Cities' Council of Governments' Request of Proposal (RFP) process. Assistance in the RFP review and vendor selection was provided by a Technical Review Team recruited from a sampling of South Bay City Departments of Planning and Public Works. The firm of Fehr and Peers was selected and began work on the project starting June 2019, The Request for Proposal (RFP) process is detailed in the Methodology Appendix: "SBCCOG RFP Process".

Phase 1 – Network Design

Building the Algorithm

In consultation with the Project Team, Fehr and Peers began work to design a "Base Network" of what would become the Local Travel Network. The design tool of choice was to automate the process with a goal towards creating a tool that, as a function of its algorithm, could be generalized for the development of similar slow-speed networks. Conceptually, the algorithm would find ideal LTN routes using a weighted variable analysis; the algorithm would be fed by a variety transportation data as well as a curated set of local destinations. The metrics for the algorithm, defined by Fehr and Peers, became the "special sauce" for selecting the streets and routes that, when mapped, would become the Base Network's streets and routes for the Local Travel Network.

Data:

The effectiveness of an algorithmic model is always dependent on the amount and quality of datasets available. A robust set of data across the following metrics was gathered:

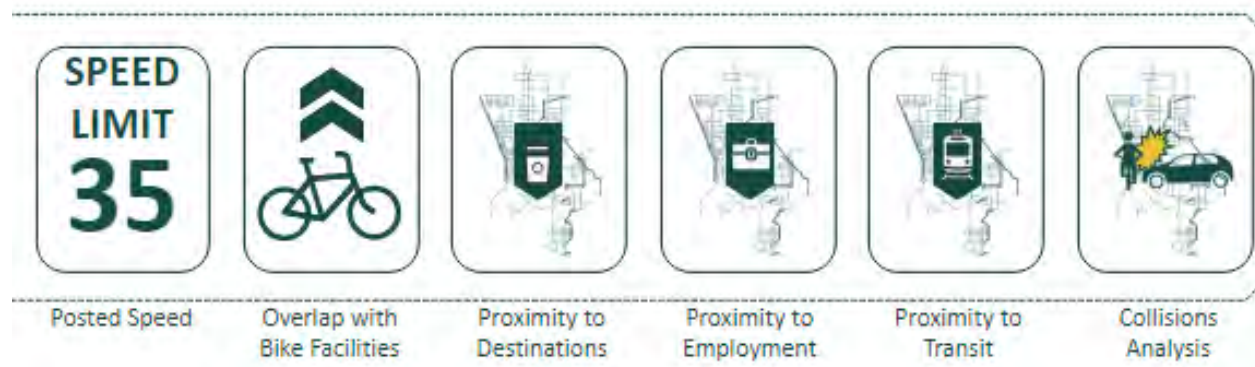


Figure 3-4 Data considerations in algorithmic model

In support of this outcome, an extensive search and gathering effort, from both the Fehr and Peers' Team and SBCCOG Project Team, was implemented. The Project Team targeted, whenever possible, South Bay specific data. If not available, efforts were made to parse or filter data to describe the project area. Data was secured and/or developed to be used in a GIS format for map making.

The primary data gathering effort involved outreach to 20 organizations across the public, private, & non-profit sectors. The Project Team worked collaboratively to gather and share data. Some datasets were already in hand or readily available for gathering on third party websites, these included:

- Businesses Dataset - North American Industry Classification System (NAICS, Dun and Bradstreet, 2018)
- Local Use Vehicle (LUV) Study Driver Destination Data (SBCCOG, 2016)
- Pedestrian & bike Volumes (UCLA Clearinghouse Data)
- State Highway Traffic Volumes (Los Angeles County)
- Incidents (Berkeley Transportation Injury Mapping System - TIMS)
- South Bay Cities Commute Data (U.S. Census Report, 2018)

Other necessary datasets of city road traits & other transportation related features, were only available all from the project area South Bay cities themselves and included:

- Existing and planned bicycle facilities
- Posted speed limits for all roads
- Roadway classifications
- Metered/ Street Parking
- Truck Routes
- Street dimensions—Curb-to-Curb Widths, Car Lane Widths, Bike Lane Widths
- Volumes/Average Daily Traffic (ADT)
- Speed Inventories

Data gathering was conducted throughout the project. For the purposes of designing the “Base Network” the Project Team’s efforts were focused on identifying the appropriate individual(s) within each South Bay city to assist in gathering the requested data. Beginning in June 2019, a three (3) month outreach effort was made to gather the requisite data. The result of this effort provided a sufficient, yet incomplete, dataset to run the Fehr and Peers’ Street and Route Planning algorithm. Data gathering efforts continued over the balance of the first year of the project as part of the engagement and refinement process with city stakeholders. As additional data was found it was evaluated for use in the refinement process of the Network. The challenges of data gathering at the local level are described in Appendix: “State of South Bay Data”.

Fehr and Peers Base Network Algorithm

Given the data gathering limitations, the model was still able to produce a “Base Network”. The algorithm used a weighted analysis of all eligible roads (approximate 24,000) at speeds of 35mph or slower with the use of metrics from three complete datasets:

- Planned & existing bike facilities,
- Bus & rail stops,
- Destinations (retail, education, personal services, recreation, & food).

Below is the formula for evaluating Local Travel Network Street Segments to produce a composite score, gauging how suitable a route might be for inclusion in the LTN.

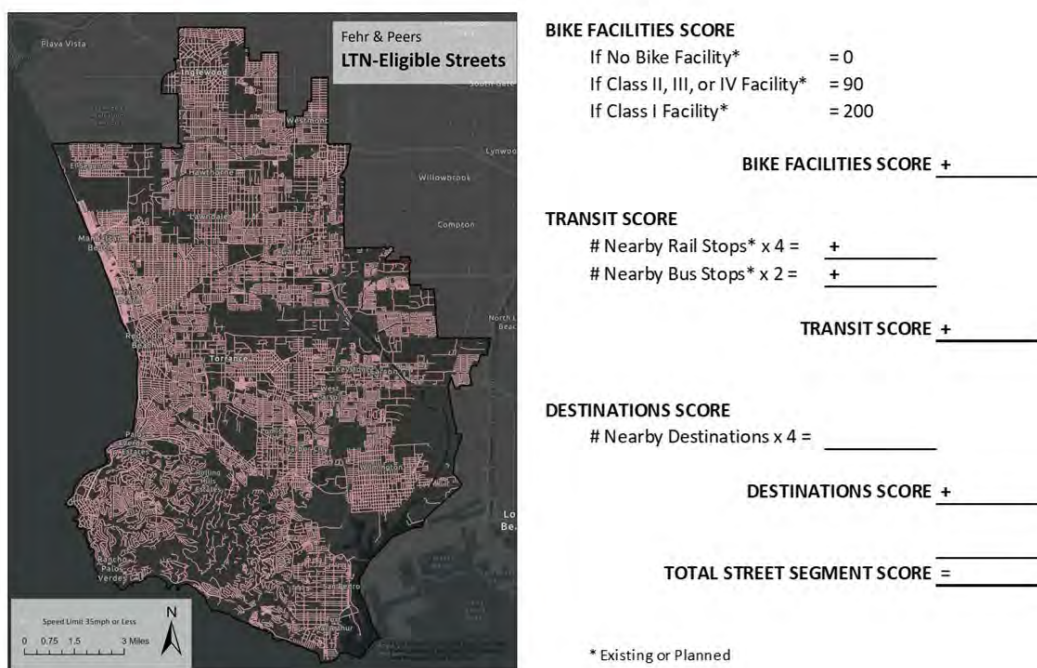


Figure 3-5 Fehr & Peers formula for evaluating LTN-eligible street segments

Working with a defined set of “eligible Local Travel Network Streets” those with posted speeds of 35 mph or less, the Fehr and Peers Team scored street segments in geospatial proximity to bike facilities, NAICS Destinations, and transit.

The following maps describe these scores as mapped to South Bay streets.

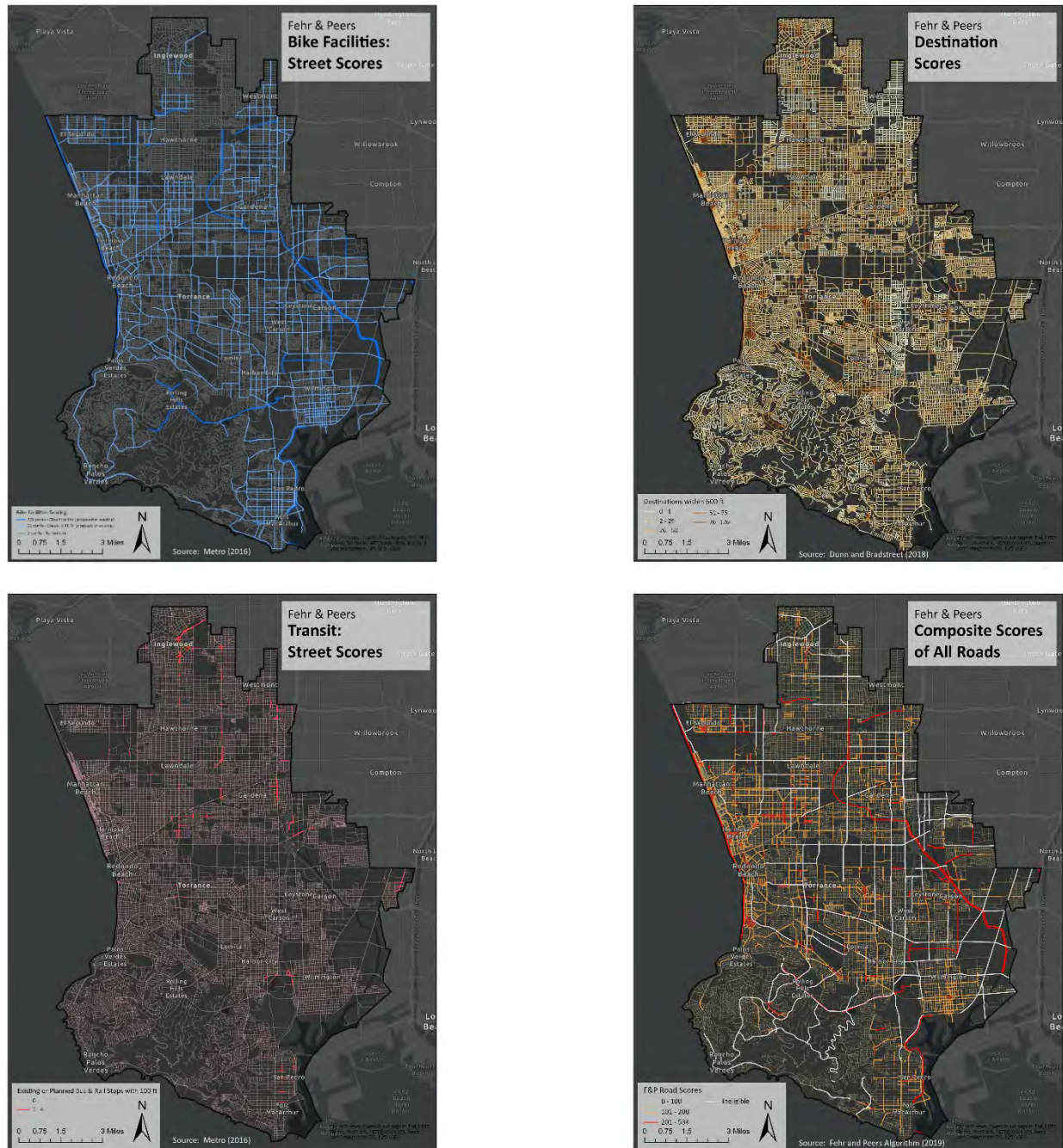


Figure 3-6 Algorithmic street scores by data class

The resulting composite scores produced a Local Travel Network “Base Network”:

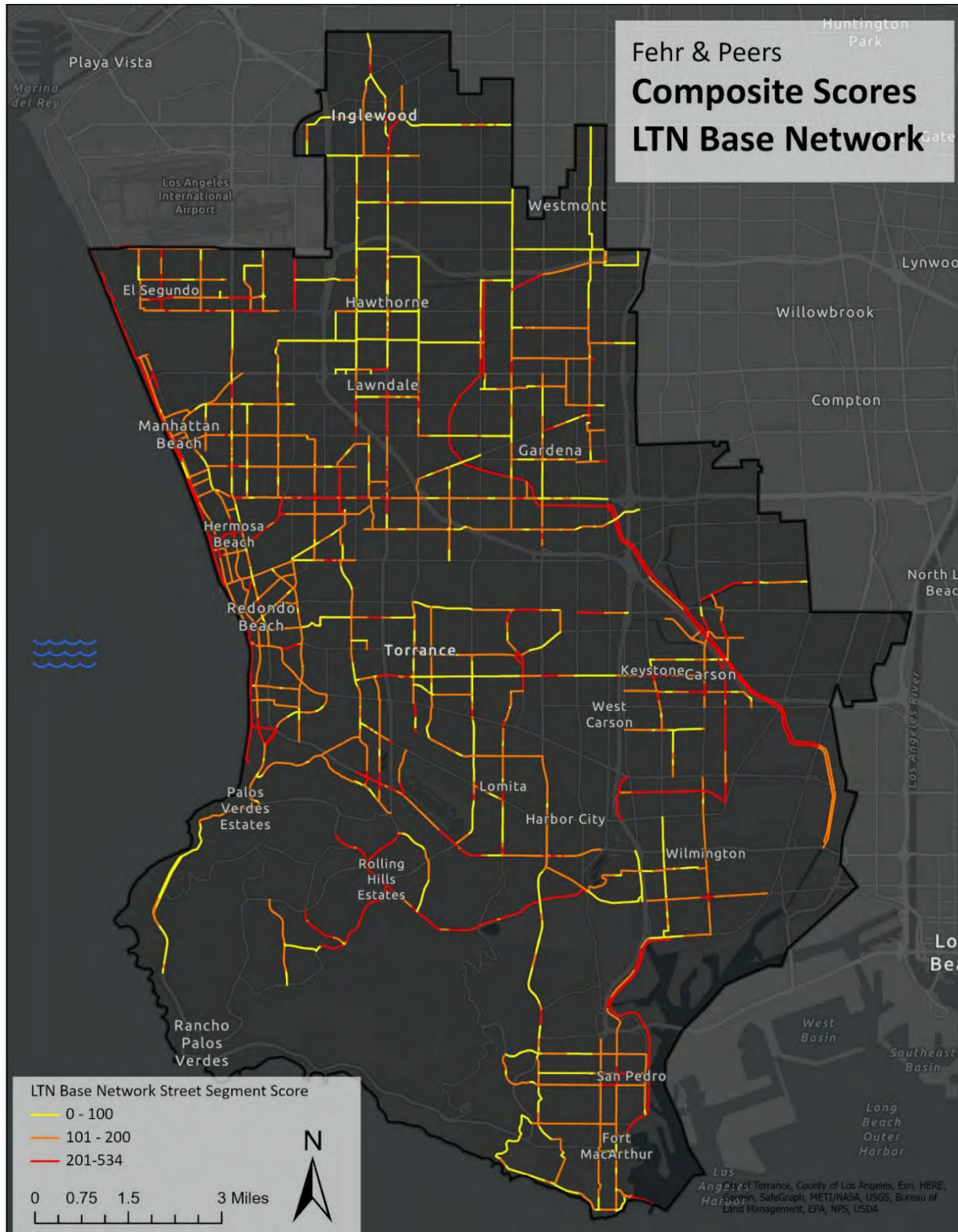


Figure 3-7 Composite scores LTN Base Network

Further testing of selected streets included the development of a “heat map” overlay of the underlying destination points by destination types. The proposed streets selected by the algorithm appear as “green lines”. Each of the following maps depicts the Base Network in relation to:

- Employment Sites
- Commercial Sites

The darker the color the denser the cluster of employers or businesses.

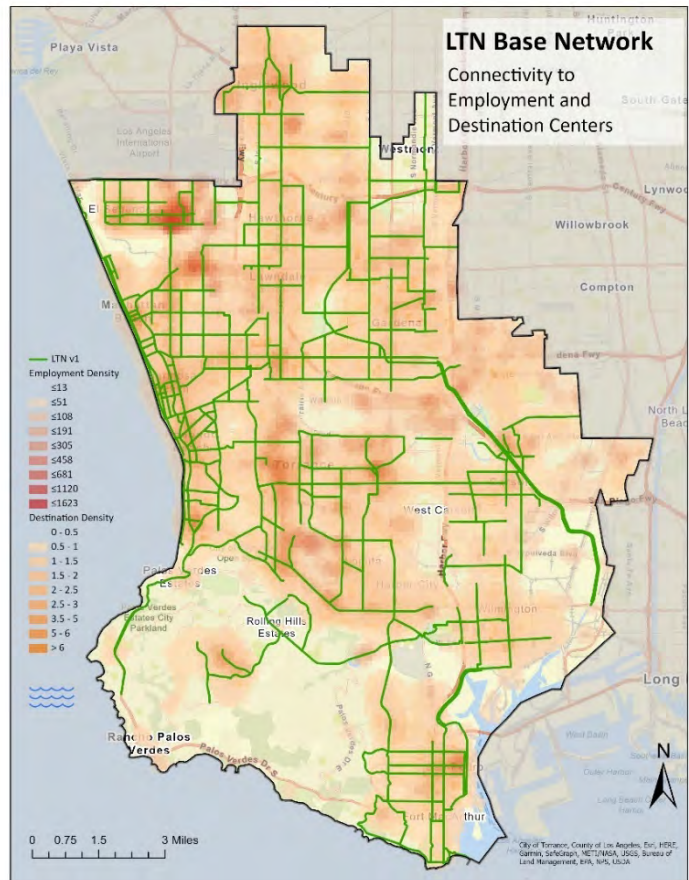


Figure 3-8 LTN Base Network connectivity to Employment and Destination Centers

South Bay Local Travel Network Base Network

The algorithm produced a Base Network of 308 total miles. The vast majority of route segments were located on streets with posted speed limits of 35 mph, or less. Less than twenty (20%) of the route segments were assigned to neighborhood streets with posted speed limits of 25 mph, or less. As expected, the algorithm produced seventy-nine (79%) percent of the chosen route segments that followed existing South Bay bike facilities. Approximately 1/3 of the selected route miles followed designated bus routes. The map and table below describe the routes, metrics, and characteristics of the Base Network that was produced through the use of the algorithm.



Figure 3-9 LTN Base Network

Local Travel Network Details	Base Network Miles (Percentage) of LTN
Total Network	308
Streets ≤35mph	255 (83%)
Streets ≤25mph	52 (17%)
# Controlled Intersections	641
LTN on Truck Routes	72
LTN on Bus Routes	128
LTN on State Hwy	15
LTN on Bike Facility	244

Table 3-2 Base Network details

Fehr and Peers Base Network Critique

The limitations of the algorithm produced a Base Network that, at a high-level, described a network of streets that satisfied potential routes for users of the network to reach the clusters of destinations and employers found in the South Bay - a map of grid-like route segments that would allow connectivity between and within South Bay cities and would provide relatively straight (fast) routes for accessing commercial and employment centers. Upon closer look, however, a great many route segments were recognized as “unsafe” – infrastructure where vehicles of greater weights, size, and speeds would share the same facilities. These route segments included those found on truck routes; bus routes; and State Highways. Without street volume data or observed experience, route segments of 35 mph that were selected by the algorithm yielded many selected streets that could, in theory, provide accommodation for users of LUVs, yet, upon observation, were unsafe, if not dangerous choices. Other examples of route

choices that fit the algorithm of the model yet were inherently dangerous included network segments at or near highway on/off ramps. Ironically, the model did yield network segments with 641 controlled intersections (stop lights or 4-way stop signs), seemingly a positive and significant quality (in terms of safety). However, on closer inspection, the preponderance of controlled intersections would be experienced by users of the Network travelling along the selected busy 35 mph route segments.

For the Project Team, solving for the deficiencies of the Base Network became the starting point for further iteration, refinement, and testing of the Local Travel Network.

Phase 2 – Base Network Refinements

Process and Tools for Network Refinements (Timeline)

The first version of the Local Travel Network (v1) was called the Base Network. Used as a starting point, the Base Network went through five (5) major iterations. This work began in the Fall, 2019 and continued through January 2021. The process of iteration was one of building upon new data, ideas, observations, and understandings of the existing infrastructure to develop succeeding “new versions” of the Local Travel Network. Each successive iteration produced a map of routes that would then be analyzed and critiqued for connectivity, safety, and functionality. Against each critique changes would be incorporated into the next version of the LTN. The changes reflected the addition and subtraction of streets and routes – always with the intent of mapping a new version of the network that was safer and more robust in terms of connectivity than the version that it was built upon. The work was primarily conducted by the SBCCOG Project Team with technical assistance from Fehr and Peers.

The refinement of the Local Travel Network was conducted using data inputs that included:

- Project Team’s on-going directed analysis, research, data gathering (Fall 2019 through January 2021)
- Observations and data collection from Municipal Stakeholders (Fall 2019 through December 2020)
- Anecdotes and data collection from Community Stakeholders (Fall 2019 through December 2020)
- Field testing of the LTN by the Project Team (Summer 2020 through October 2020)

The intention of the Project Team was that the collection of data and subsequent iterations of the network would take place through on-going GIS analysis, research, and data gathering. The use of GIS-tools provided the opportunity to inform the initial refinements of the Base Network. The tools provided an opportunity to test, explore, and present refinements to stakeholders for critique and comment. The work of project staff resulted in a wealth of GIS-mapping layers and datasets that were used exhaustively for analysis and mapping decisions. An index of GIS-Map Layers can be found in Appendix: GIS Taxonomy.

The inclusion of “Stakeholders” for the refinement process began with city municipal stakeholders followed by community stakeholders. The rationale for engagement in this fashion was to get input from the agencies and individuals in charge of maintaining, developing, and operating the street infrastructure for their respective cities. City staff observations of routes within their city boundaries as well as the acquisition of additional city-specific data provided the insights for the critique and understandings for subsequent map iterations – the addition and subtraction of street and route segments within each city.

As seen from potential “users” of the Local Travel Network, community stakeholders provided additional critique and input about the selected streets and route segments. Two groups were identified for community input. The first group consisted of community based “leaders” or organizations that provided leadership through service and activities to a larger membership. Examples of these groups included: South Bay Association of Chambers of Commerce whose membership includes representatives from local Chambers – importantly, those that serve disadvantaged communities. Other groups included the SBCCOG’s Senior Services Working Group, whose mission and interests serves the growing senior-aged communities of the South Bay. Still other groups served the interests of those communities whose missions and membership advocated active transportation and slow-speed mobility. These included three different bicycle coalitions (Los Angeles County; South Bay; and Carson) whose different membership base cut across many different demographics, yet, expressed similar interests for safe slow-speed infrastructure to support their respective missions. A unique group of NEV enthusiasts was also solicited for input to provide insight and critique from the mode-share perspective of the larger (and, potentially, faster) slow-speed zero-emission vehicles that might use the Local Travel Network.

Additionally, input from the community, at large, was planned for the Spring of 2020 as part of the “Community Outreach” tasks described in the project’s scope of work. Envisioned, were four (4) large scale “Ride and Drive” events where residents would have an opportunity to “kick the tires” and test drive slow-speed zero-emission micromobility vehicles. The events were planned to provide hands-on feedback of the selected streets and routes that they might envision using when the Local Travel Network was implemented. Because of COVID-19 restrictions on large-scale gatherings these events did not take place. In their place, an interactive GIS-based

educational public engagement tool called a “Story Map” was developed. Details of these activities can be found in the Community Outreach Chapter.

The final iterations of the Local Travel Network occurred through the field testing of the proposed routes. All work, prior to the field test, was conducted by the Project Team using GIS mapping tools. Inputs from data sources, observations gleaned from “street view”, policy documents, and other digital sources were used to develop the Base Network and subsequent iterations. Field testing the network was a reality-based exercise to determine if the virtual/conceptual network – represented as a map – was actually functional and safe. Riding the proposed LTN was the only way to identify and correct for “found” problems in the built environment. It provided an opportunity to refine the network and correct selected streets or route segments for safety and functionality as experienced, first-hand, by testing the Network. Details of the field testing can be found in Appendix: Field Testing.

City Stakeholder Outreach (Fall 2019 – December 2020)

Contributions and critique of the Base Network was provided by South Bay cities’ staff. The Project Team was able to gain city-specific insights that informed the first substantive iteration of the Base Network. Through staffs’ day-to-day working knowledge of the local streets, additional anecdotes and understandings were provided. Their institutional and historical knowledge about the operations and use of the rights of way (from similar network planning to support bicycle and active transportation) was extremely helpful. City staff, at in-person meetings (pre-COVID) or via videoconferencing (during COVID), were presented with an overview of the Route Refinement Project, goals of the Local Travel Network and, city-specific maps of the streets and route selection through their city. Feedback and observations were provided to help inform high-level considerations that would affect the city’s interest in implementation – that is, to identify “deal-breakers” that the Project Team should “steer clear of” in terms of refinement choices for routes and street selection. Examples of these kinds of observations solicited from city staff included: “our city isn’t going to give up parking lanes” or “we won’t even consider building protected bicycle lanes”.

The Project Team worked with full-page renderings of each respective city’s streets to mark-up the Base Network map (see Appendix: City Map Feedback). This exercise provided local insight and expertise to confirm the Project Team’s choices for streets and routes and, importantly, to offer specific options and opportunities that would enhance and inform the next iteration of the Network. Over the course of the project, the SBCCOG project team, supported by Fehr and Peers, met with 11 cities within the project area as well as the County of Los Angeles. Recruitment of city staff for participation in the city stakeholder feedback meetings included participation from Planning, Public Works, Community Development, and Transportation

Departments. Cities were encouraged to have multiple voices representing different department interests at the table. The range of expertise and levels of seniority included junior staff through department directors. Several cities provided feedback on multiple occasions.

City Stakeholder Feedback

In person engagement with City Staff often resulted in new datasets being discovered or made available for the project. Additionally, in-person meetings provided the Project Team access to planning reports as well as infrastructure implementation details/updates concerning rights of way improvement and Active Transportation Implementation Projects (i.e., bicycle infrastructure projects). The data, gathered as a result of these engagements, was used in a “hands-on” fashion to inform future iterations and refinements of the LTN routes within each city. Unfortunately, this exercise failed to produce complete datasets that could be used to increase the efficacy of the algorithm that produced the Base Network. The Project Team inquired and learned that city-specific data that might enhance the algorithmic Network was either incomplete; in an unusable format; or, non-existent, including:

- Street volumes
- Mode-share
- Details concerning the characteristics and qualities of street infrastructure.

The data challenges are documented in the Appendix: “State of South Bay Data.”

Additional data gathering proved problematic, yet city staff feedback (provided before the onset of COVID-19) was very helpful in identifying high-level “do’s and don’ts” for street and route choices. Staff universally rejected the following:

- “Any removal of parking spaces” – metered or non-metered
- “The removal of a travel lane” that would then become a “slow-speed” vehicle lane.
- Selected LTN streets should “not reside on truck routes”. of the requested data and (at times)

In terms of specific street or route choices, each respective city provided recommendations for improvements to the Network. Feedback that was included in one or another of the map iterations included:

- Directional observations – i.e., a particular “street is one-way.”
- “Traffic volume would be too high” on particular streets because the street is used by residents as a “short cut.”
- Historical information of neighbors or neighborhood areas that objected to the implementation of “bicycle ‘sharrows’ on their streets.”
- Planned safety improvements (i.e., speed bumps, stop signs, or new controlled signals at busy intersections.

- Suggestions for streets or routing that would be a “better choice” for safety of users; that is, provide access to local as well as downtown destinations but follow a low-stress route that would offer less volume of larger cars.

Community Stakeholder Outreach (Fall 2019 – December 2020)

Contributions, feedback, and guidance for street and route selection was also gathered from a broad range of community stakeholders. The goal of this outreach was to solicit feedback from individuals who represented larger communities of potential users of the Local Travel Network. Additionally, the Project Team solicited feedback from the businesses who sell and market Local Use Vehicles (LUVs) that would be used on the infrastructure improvements envisioned for the South Bay.

Meetings, either in-person, via telephone, or by videoconferencing were used as a process to inform the target audience about the proposed opportunities that an LTN would provide for their respective communities and interests followed by engagement of the stakeholders in feedback about the route planning and street selection process. Mapping exercises were used to learn what their interests, concerns, and challenges would be for the selection of the streets and routes of the Network. Feedback was also solicited from the stakeholders about amenities (i.e., parking) as well as signage that would support their use of the LTN for local trips.

Over a 1-year period, a broad range of community leaders and community-based organizations were solicited for their feedback about the project. Participation in the outreach effort included representatives from senior communities; a social justice organization that provides services and programs in one of the South Bay’s disadvantaged communities (DAC); business leaders from large to mid-sized companies who participate in regional Chamber of Commerce activities; representatives from a large HMO as well as the Beach Cities Health District (BCHD) that serves the cities of Hermosa Beach, Manhattan Beach and Redondo Beach; active transportation groups representing bicycle riders from the county, sub-regional, and local (DAC) perspective; an NEV user group; and, a micromobility leadership group consisting of micromobility vehicle owners, dealers, and elected officials. Representatives from OEM’s (Original Equipment Manufacturers) as well as local equipment and vehicle dealerships were also solicited (See Appendix: List of Stakeholders).

Each group or representative was briefed on the project’s history, scope, and goals. Feedback was provided in individual interviews or in a group setting as part of a focus group process. Maps were used interactively, through the aid of the Esri online tools, to contextualize the process and navigate areas of the network as a means to solicit comments, feedback, and observations from the participants.

A subset of the community stakeholders – local bicycle coalition members - were asked to use a GIS Survey App (“Esri Survey 123”) and map “pain points” on proposed network segments of the LTN. These individuals were seen as uniquely qualified based on their knowledge and familiarity from cycling local streets to provide “on road” observations and data. While local data collection was limited by the efficacy of the App, it did prove helpful in terms of validating anecdotal observations that were made by bicycle riders (see Appendix: “Community Stakeholder Feedback: A Deep Dive Using an Online GIS Tool”)

Community Stakeholder Feedback

Comments and feedback from community stakeholders varied, anecdotally, by the type of interest group that was represented at the briefing or focus group. Almost all community stakeholders provided high-level inputs for the qualities and characteristics that the streets and route segments should offer users of the LTN. Feedback was also provided about the amenities and features of the Network that would enhance “usability”. Street and route-specific feedback to inform network refinements was more apt to be provided by those groups or individuals who could readily see how the Local Travel Network might impact their personal mobility. These groups or representatives included bicycle enthusiasts or NEV owners and dealers. Data points were noted by the Project Team and incorporated into the refinement process and included the following:

- Education (at all levels) will be critical for “getting people to use the LTN.”
- Education will also be important as it relates to “people of color riding through neighborhoods” going to and from jobs - either late in the evening or early morning.
- Signage was key “for people to know that they are on the LTN.”
- Safety is a critical issue – providing for a safe mix between larger vehicles like cars and trucks, but also between different sized (and speeds) of slow-speed micromobility vehicles.
- Amenities to the Network were valued and included, “must haves:
 - Safe and secure parking at destinations
 - Lockers for storage – particularly for 1st/last mile connections to transit or shopping.
- Amenities to the Network were valued and included, “nice to have:
 - Electric Charging – “to top off” an NEV or electric bike.
 - Bicycle-friendly sensing or signal activation at controlled intersections

Ongoing Integration of Data, Community Feedback, and Network Functionality

The Project Team's refinement approach was to use a "hands-on" process to critically assemble, test, and revise street and route selections. Iteration of the Base Network Map and subsequent versions of the Local Travel Network relied upon an evolving process to solve for the issues and challenges identified in the algorithmic Base Network with input from Stakeholders' feedback, observations of the existing environment. The effort was on-going and, in contrast to a mathematically driven map-making process, entailed the following different processes:

- Routes were selected by hand as opposed to an algorithm.
- A straightforward set of supplementary GIS layers were created to guide street and route selection as opposed to complex composite variables.
- The emphasis shifted to include discrete neighborhoods.
- Emphasis was used to specify destinations rather than the aggregation of NAICS data to define destinations.
- Input, feedback and observations from city and community stakeholders was used to inform street and route selections for LTN iterations.

Local Travel Network Iterations – Version #2

With input from cities' staff, the Project Team focused on local conditions. The Base Network provided a rich canvas to review and refine the underlying assumptions of the network's functionality and connectivity that would, inherently, make travel on the Network safer and more effective from starting points and at destinations. This shift resulted in identifying three (5) key elements for the first refinements to the Base Network:

1. Defining and identifying safe crossings
2. Avoiding dangerous roads or route segments at or near highway on and off ramps
3. Minimizing potential on street interaction by avoiding sharing street segments with bus routes
4. Identifying residential neighborhoods for network connectivity
5. Optimizing street and route segment choices for connectivity between neighborhoods using long contiguous slow-speed low volume roads

The first refinements of the Base Network uncovered and corrected for problematic route segments at or near highway on and off ramps. Additional opportunities for Network refinements were highlighted when the Base Network and Transit routes were overlayed.

Key to the development of the LTN and its next iteration was an in-depth analysis and identification of unique neighborhoods in the South Bay (see Appendix: Residential Neighborhood Analysis). The analysis leveraged the grid system of secondary and tertiary streets - found in the beach and inland cities – to provide an understanding of the connectivity between residential neighborhoods at safe or signal-controlled intersections.

The refinement approach is described in Appendix: Controlled Intersection Analysis.

The first map describes the map layer of the universe of all controlled signals in the South Bay. Understanding where controlled signals at all types of intersections became a key tool for identifying safe streets that would allow for connectivity across busy or fast-moving streets at signalized intersections. The second map describes identified neighborhoods (201 in total) in the South Bay.



Figure 3-110 Signalized intersections in South Bay

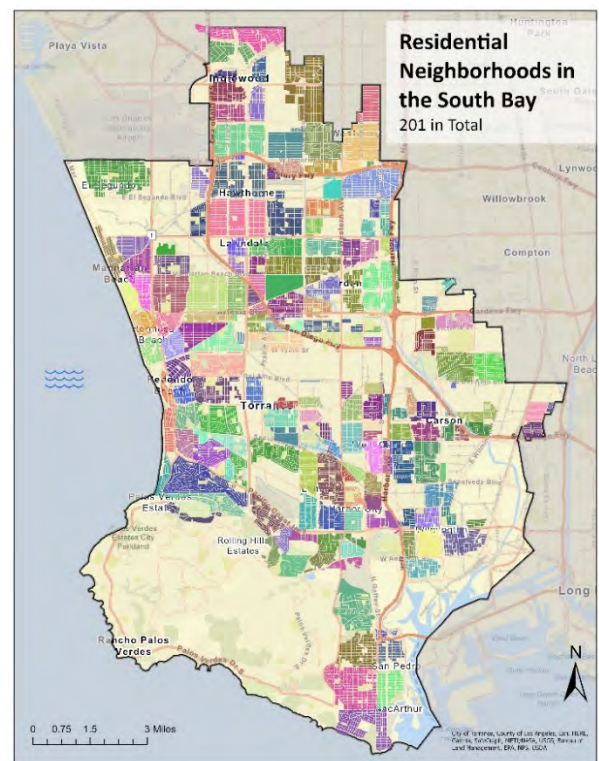


Figure 3-11 Residential neighborhoods in South Bay

The resulting overlay of slow-speed neighborhood streets with identified controlled crossing refined the Base Network map (see below) to provide a universe of slow-speed route segments that could be further refined towards a fully functional Network.

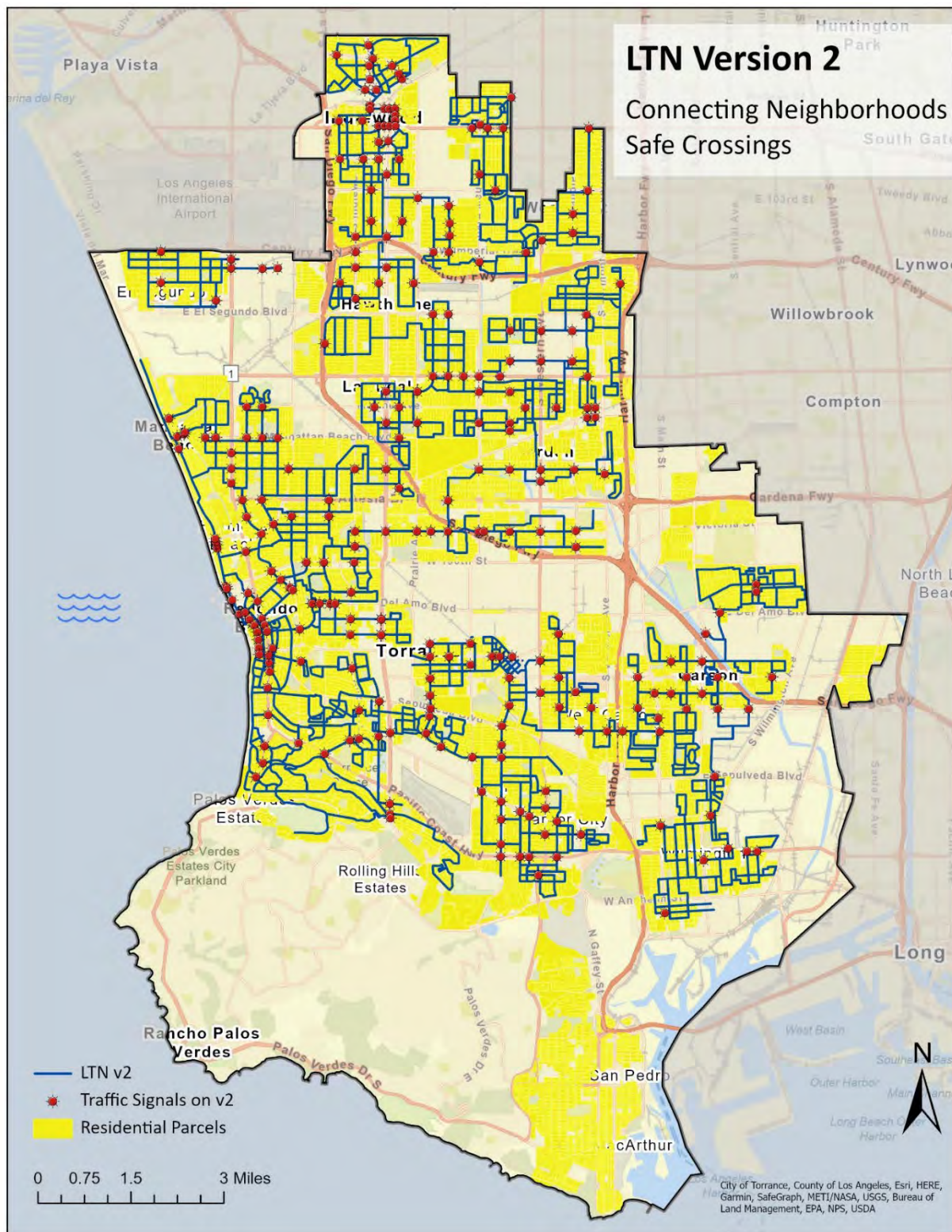


Figure 3-12 LTN Version 2 with traffic signals and residential parcels

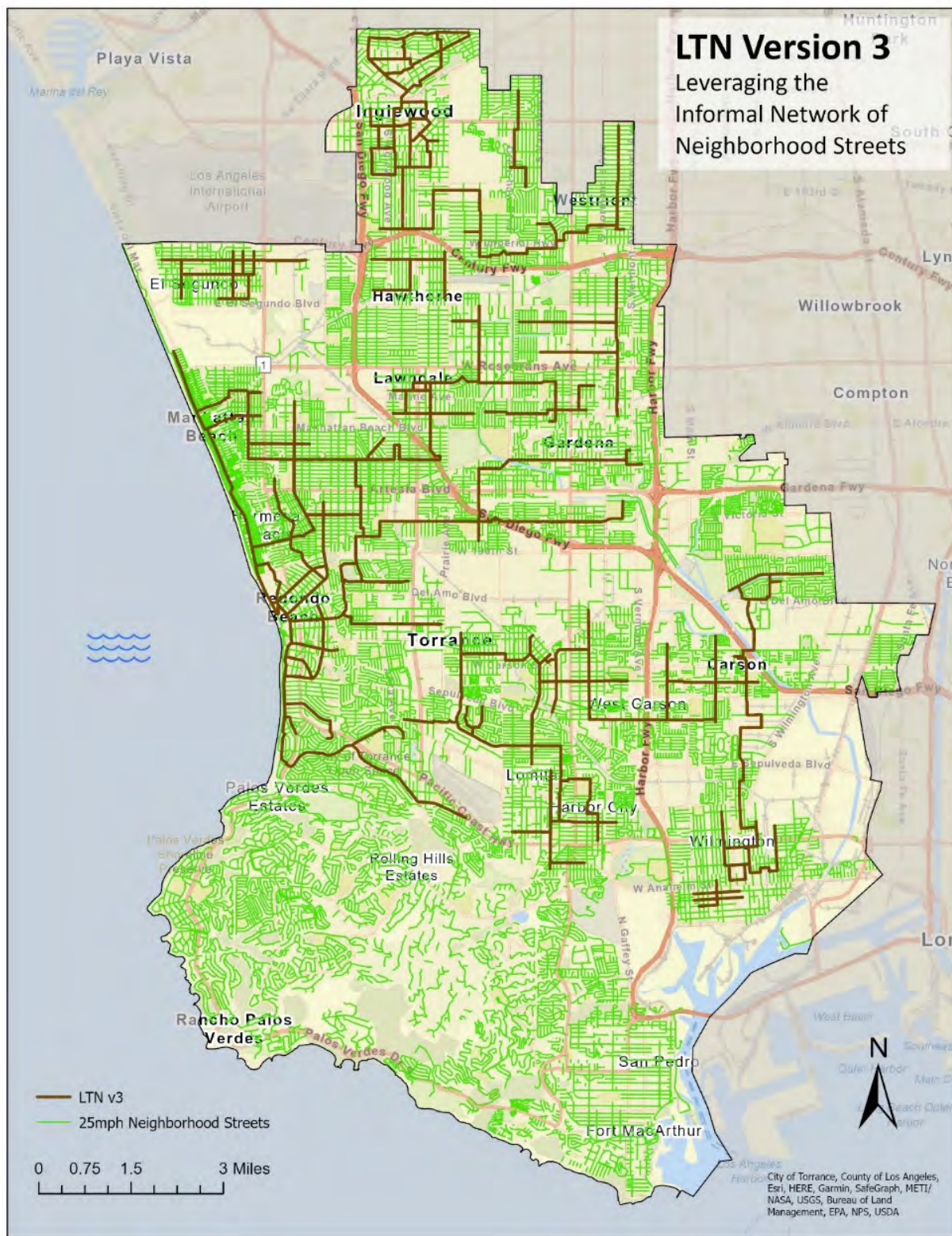
Local Travel Network Iterations – Version #3

The starting point for the next iteration of the Network began with a critical review of the Local Travel Network Version #2. The challenge identified that the resulting Network routes mapped an overabundance of street segments that were parallel and circular in nature - all dedicated to travel within neighborhoods on streets posted at 25 mph (or less). While Version #2 solved for the issues of identifying safe slow streets within neighborhoods as well as connectivity between neighborhoods, the resulting Network routes were a 'warren's nest' - unwieldy and not functional as a Local Travel Network.

Refinement for this iteration began with the observation that there exists an "informal" Network that individuals use for personal navigation at or near the neighborhoods in which they live. That is, individuals know, through learned experience, what streets to take for all trips that originate and end from their home. These hyper-local routes are the informal network of streets and routes that the Local Travel Network did not need to solve. Rather, allowing for this understanding meant that a refinement process to create Version #3 was one of reducing the Version #2 Network to select streets that would create a safe "backbone" of routes from one neighborhood to another as well as to the destinations that individuals might choose for their trips.

Stakeholders provided guidance that selection of the LTN "backbone" streets and route segments needed to minimize circuitry - that "getting from point A to point B" in about the same time" as they might otherwise enjoy if travelling on an existing bike lane or on faster streets with heavier volume of traffic. Solving for this challenge resulted in the identification and development of routes that became slow-speed neighborhood corridors. A neighborhood corridor was defined as a series of slow-speed, low volume neighborhood roads that run uninterrupted (often in straight lines) far longer than the average neighborhood road. Streets with these characteristics were ideal choices when they intersected faster higher volume streets at a controlled intersection. These routes formed the refinement that became the "backbone" streets for neighborhood connectivity. GIS mapping revealed that many of these neighborhood corridors had been or were proposed for development as bike facilities.

The following Map (Version #3) describes a "backbone" Local Travel Network that users would access from their individual "informal" Network. With sufficient education about the LTN as well as wayfinding and sharrow roadway markings, individuals using the LTN would be able to use the Network to access destinations of their choice.



Local Travel Network Iterations – Version #4

Methodologically, with Version #3 in hand, the refinement of the LTN flowed back to the fundamental issue of connectivity between home and destinations. The Base Network used aggregated NAICS data, regardless of size or type of business, to provide algorithmically defined route segments for Network connectivity in the South Bay. On observation, the Base Network's routes – as an overlay of density heat maps of South Bay businesses provided general insight into where businesses were located but was not granular enough to address, with specificity, the types of more frequent destinations that users of the LTN might frequent.

Frequency data gleaned from SBCCOG's LUV and BEV Studies, (2013 and 2015), provided the Project Team with a destination refinement for the categories and types of destinations that the routes would service. The process used data from Los Angeles County's "Places" map layer as well as curated data developed by the Project Team that identified South Bay specific data sets for branded commercial destinations (i.e., Trader Joe's, Starbuck's, schools).

The refinement of the Local Travel Network was one of first plotting specific destinations that users of the LTN would frequent. Four (4) categories of frequent destinations were described:

- Employer Sites
- Shopping Centers
- Schools
- Parks and Recreation Areas

Against Version #3, the iterative process involved using GIS and mapping tools to refine routes through the addition of streets and route segments that would provide access to these destinations. Final refinement, to yield Version #4, included consideration to identify specific street segments (the final ¼ mile) where parking might be accessed at different destinations.

The following table summarizes refinements to the LTN to increase the number of destinations "on" the Network:

Destinations within 1/4 mile of LTN							
	Destinations in South Bay	Destinations Reached by LTN v3		Destinations Reached by LTN v4		Improved Reach v4 vs v3	
Employment Centers	89	18	20%	49	55%	+31	(+172%)
Shopping Centers	31	14	45%	27	87%	+13	(+93%)
Schools	400	246	62%	273	68%	+27	(+11%)
Parks & Recreation	182	96	53%	106	58%	+10	(+10%)
Total Destinations	702	374	53%	455	65%	+81	(+22%)

Table 3-3 Improved destination reach LTN Version 3 vs Version 4

The following series of side-by-side maps describe the refinements and improvements of connectivity across all the four (4) categories of destinations: Employment Centers, Shopping Centers, Schools, and Parks.

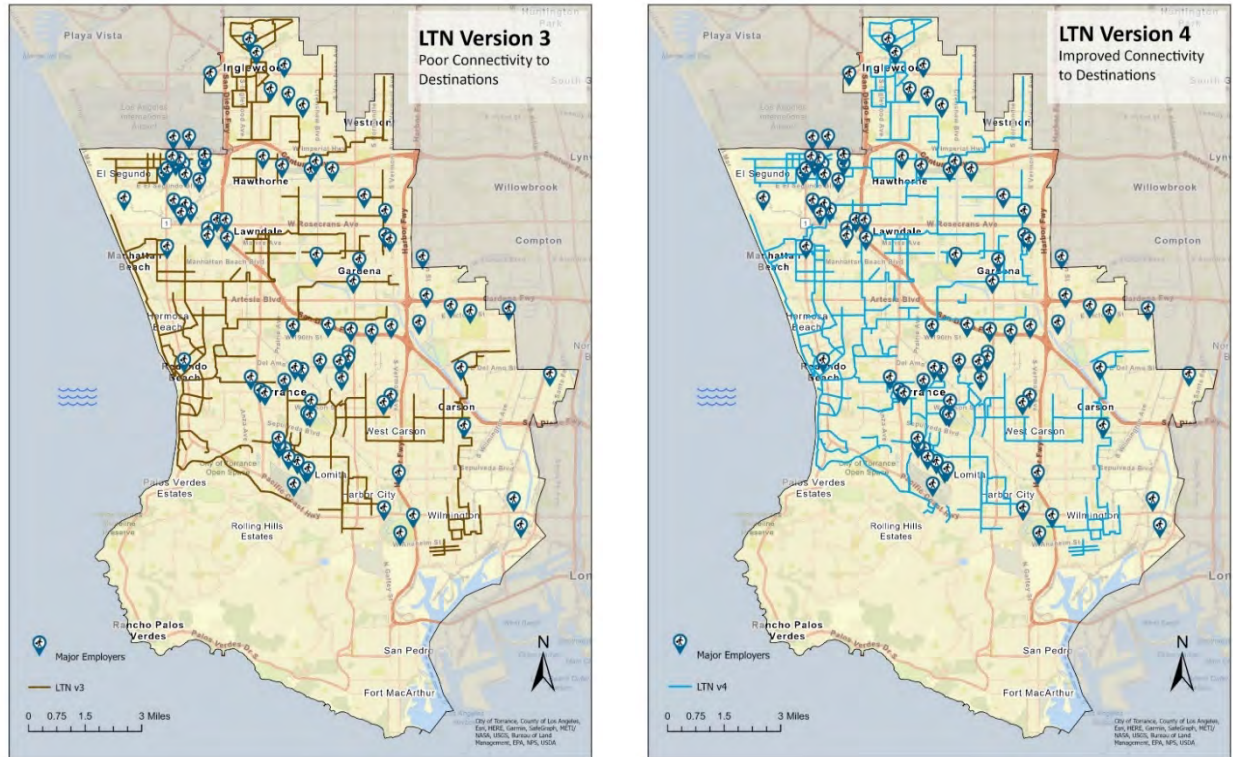


Figure 3-14 Improved connectivity to Employers LTN Version 3 vs Version 4

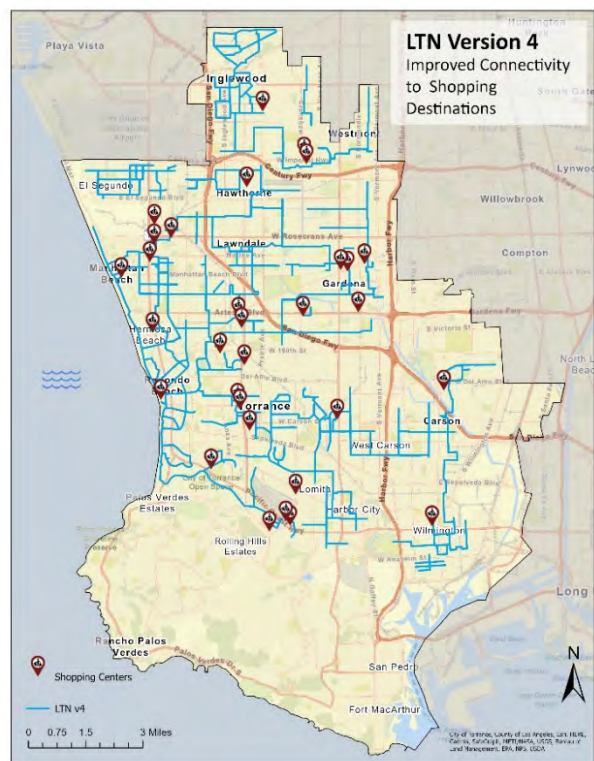
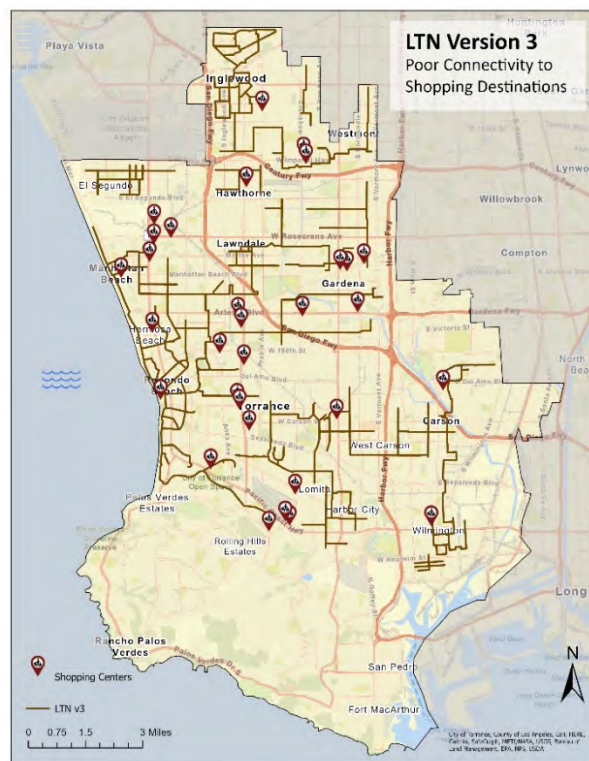


Figure 3-15 Improved connectivity to Shopping LTN Version 3 vs Version 4

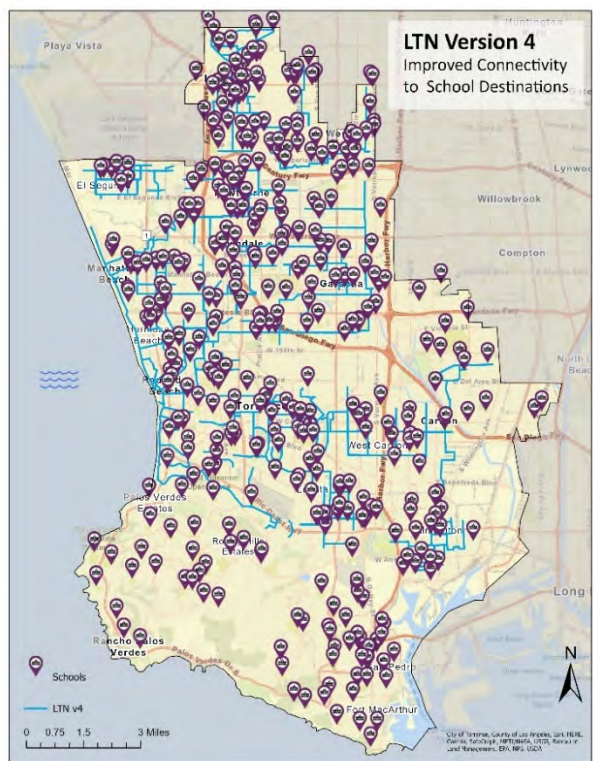
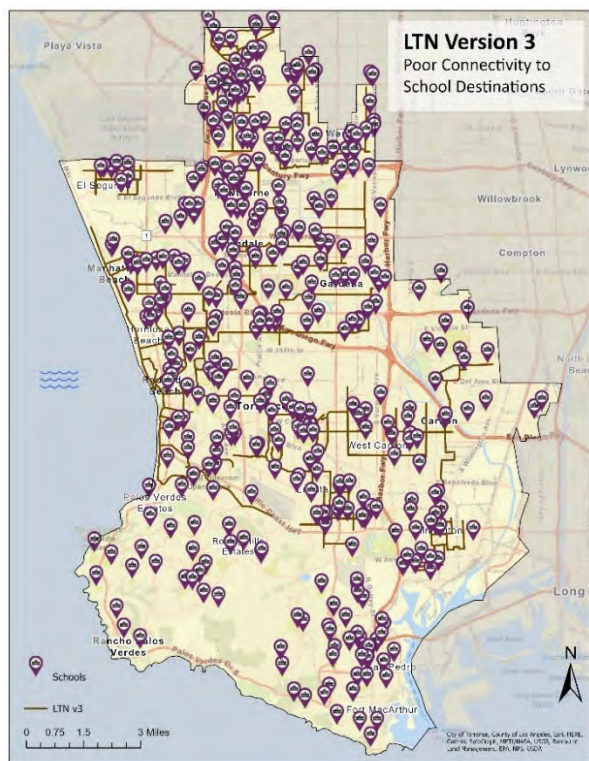


Figure 3-16 Improved connectivity to Schools LTN Version 3 vs Version 4

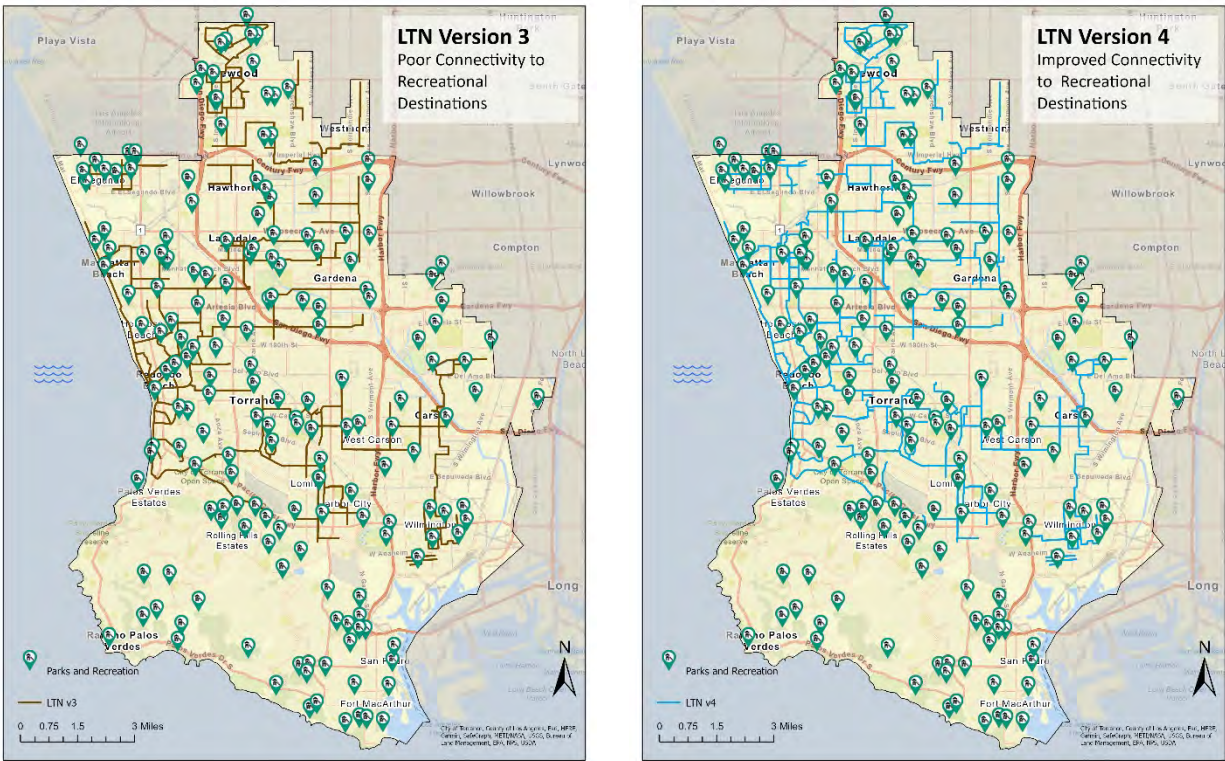


Figure 3-17 Improved connectivity to Parks & Recreation LTN Version 3 vs Version 4

While not all destinations could be connected to the LTN the iterative process from Version #3 to Version #4 yielded substantively more connectivity to specific destinations to the Network. Additional street segments were added to the Network to provide connectivity back into near-by neighborhoods. These short segments were considered “trailheads” – logically consistent additions to the backbone network as points into the “informal network of neighborhoods along the LTN. The following map describes the Local Travel Network Version #4 viewed without overlays of destinations:

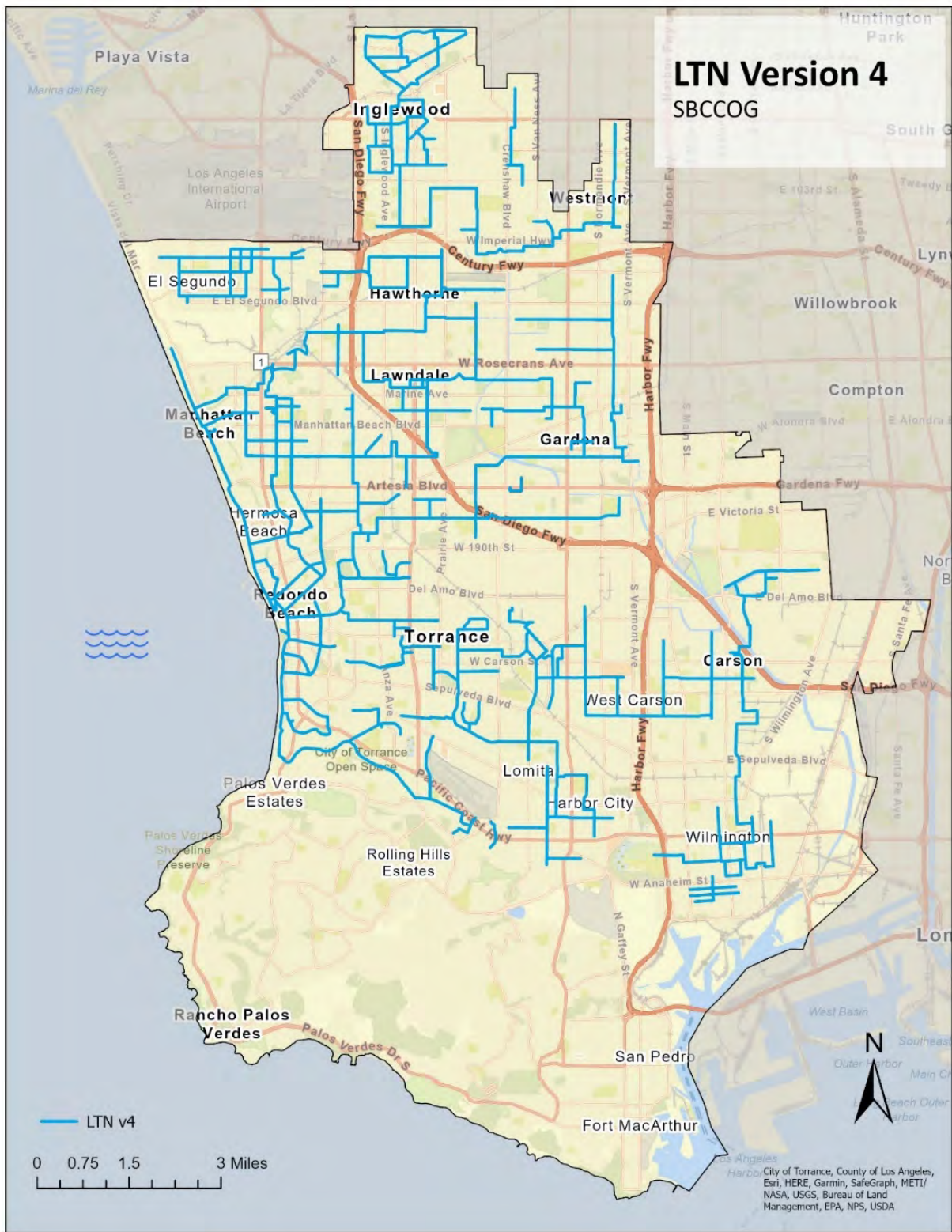


Figure 3-19 LTN Version 4

Local Travel Network Iterations – Version #5

The first four (4) iterations of the routes, selection of streets, and street segments had all been assembled and reviewed as a laboratory experience. That is, using GIS tools and informal knowledge or experience of selected streets or route segments, the Project Team had refined the Local Travel Network as a computer exercise. The penultimate iteration required field testing by the project team to determine if existing conditions on the street met the presumed conditions that were found online.

The field work was conducted by driving or riding the routes as described in Version #4 of the Local Travel Network. Following the described routes, observations were taken at street-level using an Esri GIS Mobile App called “Quick Capture” (see Appendix: Field Test). A total of 164 route miles were observed in the field test covering 83% of the Version #4 LTN. Depending upon availability of staff and access to Local Use Vehicles, different route segments were tested using different types of vehicles. Whenever possible, preference was given to field testing using an LUV. The following table describes the miles travelled for the field test using different modes:

Mode	Route Segment Miles Observed
Bicycle	71
Car	60
Neighborhood Electric Vehicle	33
Total Tested	164

Table 3-4 Field test coverage Version 4

Two classes of observations were defined for inclusion as refinement data. The first category was called, “Shouldn’t Go Here” points on the network. These identified streets or street segments that were subjectively observed:

- Too Narrow
- Limited Visibility
- Fast Traffic
- Steep Incline
- Other (i.e., poor road conditions)

Observations in this category were defined by the Project Team as “cautionary”. Each worthy of an analysis as to whether or not changing the street or street segment might be an appropriate refinement.

The second category of observations were defined as “Can’t Go There”. These included:

- Illegal Turn (left)
- Illegal Turn (right)
- No Cars Allowed
- Speed Posting of 40 mph or greater.

Data collected in this category were defined as “exclusionary”, route segments or streets that would require refinements to LTN to mitigate the discovered issues found during the field test. Specific data points collected in this category were validated by photographs of signage prohibiting route segments.

The first map describes the field testing of LTN Version #4 by the type of vehicle that was used for documenting. On-street issues are identified electronically as GIS located (colored) points along the routes that were observed.

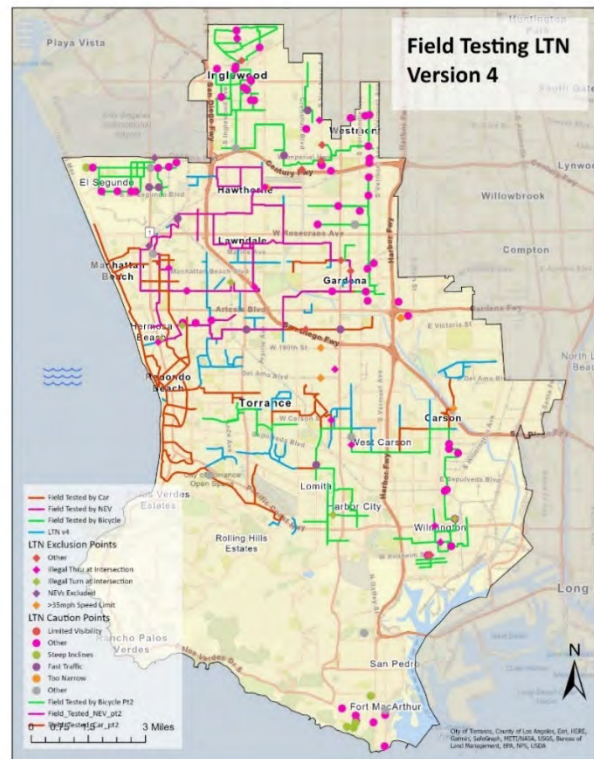


Figure 3-20 Field testing Version 4 by vehicle type



Figure 3-21 Version 5 avoidance of pain points

The second map describes the refinements that the Project Team implemented to solve the route or street challenges identified during field testing. Beyond the field-testing refinements, the Project Team was provided with new city-specific data from the City of Carson’s “Village Plan” describing streets within Carson neighborhoods that would support slow-speed travel for residents. This information was integrated into LTN Version #5 as additional refinements to the Network.

The following map describes the refined routes that yielded Version #5 of the Local Travel Network:

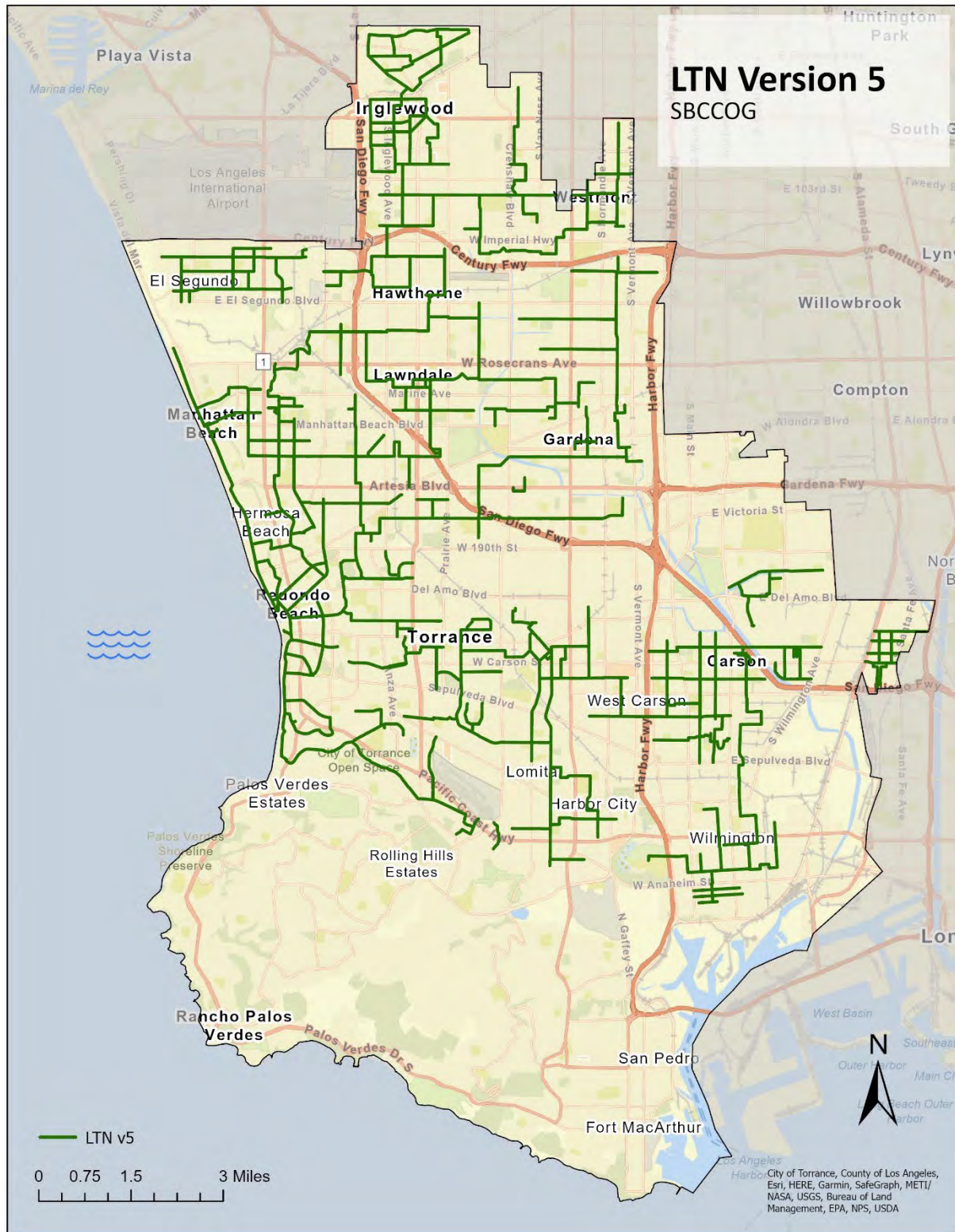


Figure 3-22 LTN Version 5

LTN Version 6

The refinements to the Network routes were selected to meet the implementation standard of being (primarily) neighborhood streets with posted speed limits of 25 mph. Importantly, the refined routes were selected to be “paint ready” for the application of sharrow markings on the road and wayfinding signage at the curb. The final refinements to the Local Travel Network pushed against these working assumptions to solve for inter-regional and inter-city connectivity of the Network – refinements that would establish connectivity to yield a complete sub-regional Network. The final iteration of the LTN focused on:

- How to connect the Palos Verdes Peninsula and the San Pedro (Port of Los Angeles) areas of the SBCCOG’s service territory.
- Solving for the identified areas of the LTN’s inter-city “gaps” in connectivity. Route segments that were constrained by street speeds greater than 35 mph or those that would necessitate “engineered” solutions (i.e., new traffic signals, etc.). The majority of these “constrained” route segments, were identified as opportunities for implementation of a protected “Local Use Vehicle” (LUV) lane – similar, to a Class IV bicycle track. Others are described as “Engineered Solutions” and are described in the “Barriers and Constraint” Section of the report.

Palos Verdes and San Pedro

The original scope of work defined the project area based on several conditions, including topography and distance relative to other South Bay cities. The project area targeted the cities and communities of the relatively flat and geographically proximate areas of the South Bay, often described as the beach and inland communities. The communities and businesses that were located in the topographically challenged and distant areas of the Palos Verdes Peninsula and San Pedro were excluded.

The initial rationale was that these areas would be unlikely candidates for the implementation of the Local Travel Network. Additionally, given the geographical characteristics, the market potential for slow-speed battery driven vehicles would be challenged. That is, due to the limited size of the batteries for the vehicles that might use the network, users would be range-

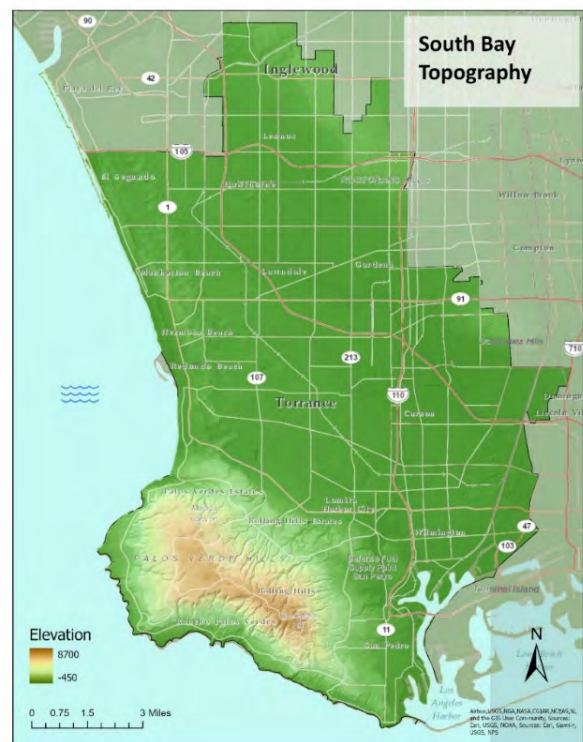


Figure 3-23 South Bay topography

challenged. Travelling down, off the hill, might be possible, but a trip of any length with subsequent uphill travel home would be near impossible because of the limitations of the batteries as they quickly deplete on the return journey. A Local Travel Network would not change that fact.

This observation, however, changed during the course of the project. COVID-19 became a catalyst to the growing market of e-bicycles. So too, were the developments in the batteries that powered this growing segment of LUVs. The new generation of batteries powering e-bikes provided greater range and capacity to navigate the hilly topography of the Peninsula. Development of battery technology will likely continue to expand the personal LUV marketplace beyond the pandemic. Additionally, the Project Team learned that the community of San Pedro (Council District 15 of the City of Los Angeles) had expanded bicycle infrastructure to provide for connectivity between San Pedro and significant commercial and educational destinations in adjacent communities. Together, these observations along with the existing culture for mobility innovation (i.e., shared mobility program and significant bicycle infrastructure) provided the impetus for the Project Team to refine and expand the LTN to include the furthest reaches of the South Bay.

Using GIS tools, observed experience, as well as an informal sampling and test-drive, new streets and route segments were proposed as additional refinements to the Local Travel Network.

Version #6 describes the proposed LTN inclusive of the Peninsula and San Pedro:

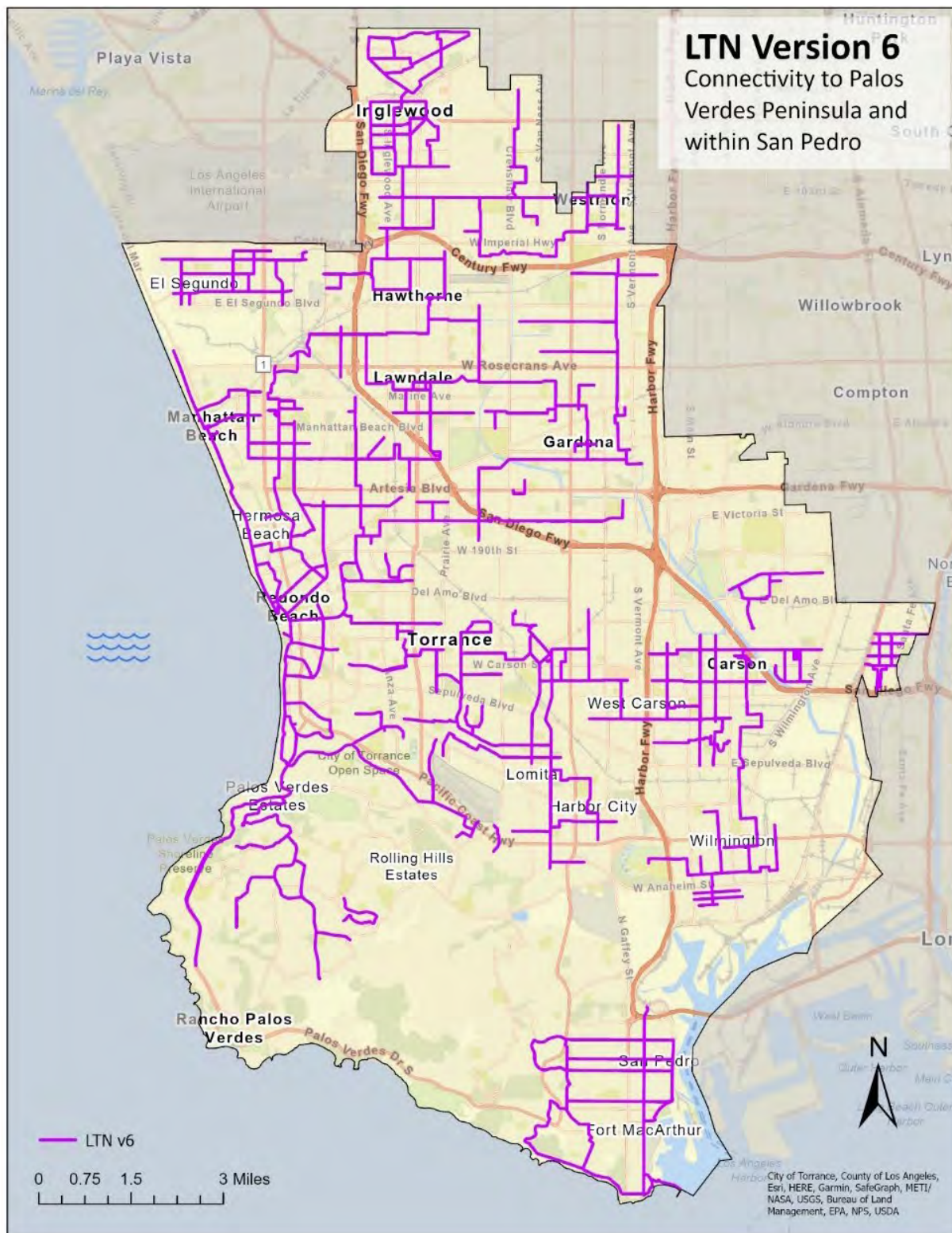


Figure 3-24 LTN Version 6

With route segments identified for the communities and neighborhoods on the Palos Verdes Peninsula and San Pedro, the Project goal of refining a Local Travel Network of safe, slow-speed routes through neighborhoods was almost complete. Network gaps still existed, from San Pedro north to the communities of Lomita and Carson and from Rancho Palos Verdes into Torrance, - these were described as “Network Gaps”.

The LTN, at this point, described a 222-mile system of neighborhood-to-neighborhood routes. Users of the LTN would access the Network using an “informal network” of hyper-local streets, to an identified “backbone” network of streets. Navigation of the LTN would be facilitated by marked sharrows on the rights of way and wayfinding signage along the routes. Users of the LTN would be able to access a Network of safe streets to get them to and from their homes to destinations in the South Bay. The following table describes many of the important metrics for the network that were refined between the Base Network (Version #1) and Version #6:

	LTN Base Network (v1)	LTN v6
Miles of Network	308	222
Streets ≤35mph	257 (83%)	243 (100%)
Streets ≤25mph	87 (28%)	175 (72%)
# Controlled Intersections	641*	372
LTN on Truck Routes	72	7
LTN on Bus Routes	128	36
LTN on State Hwy	15	0
LTN on Bike Facility	244	118
<p>* The difference between total controlled intersections is accounted for by the choice of streets and routes. LTN v6 proposes a vast majority of street segments on neighborhood streets that are controlled by stop-signs rather than signals. Additionally, controlled signals are, typically, found on arterial and collector streets. The LTN routes were selected to cross rather than travel upon these types of busy controlled corridors.</p>		

Table 3-5 Key metrics comparison LTN Version 6 vs LTN Base Network

LTN “Gaps” - Local Use Vehicle Lanes for Connectivity

Throughout the many iterations and refinements of the Local Travel Network, it became clear that there were still connective “gaps” to be solved so that the LTN can serve (connect) the entire region. The final iteration of the Network not only addressed the issues of connectivity to San Pedro and the Peninsula but also needed to propose infrastructure improvements to address the connective challenges - “gaps” - to the Network between and, in certain areas, within cities to enhance access to important destinations.

These constraints, that created these Network “gaps”, for the most part, were the result of streets with posted speed limits faster than 35 mph – streets initially ruled out for inclusion in the Network, but now required to complete the Local Travel Network. GIS analysis as well as field observations, identified two types of “gaps.” The first type addressed the issue of connectivity between cities on the Network. The second type of “gap” was one of connectivity within communities to optimize routes that would connect neighborhoods and commercial/retail destinations on high-speed streets.

Solving for these “gaps” in the Network was addressed, primarily, by the selection of street segments or routes that would require the building of a dedicated Local Use Vehicle (LUV) lane – a reallocation of road use and new construction to existing road infrastructure to create a protected lane for users of the Network. One that would be similar to a Class IV Protected Bicycle Track. Other refinements for connectivity and safety were described as “engineered” solutions (i.e., new traffic signals). These are described in detail in the Technical Constraints and Barriers Section.

Connectivity “gaps” between cities – due to streets greater than 35 mph were described by the Project Team, as “speed islands.” That is, within some South Bay communities, the LTN was refined to provide routes for local trips to local destinations. However, these very same communities were isolated with no way for users of the network to safely or legally enter or exit their city. Effectively, their use of all modes of LUVs was constrained, as if on an island, isolating that community or neighborhood in relationship to adjacent communities or cities.

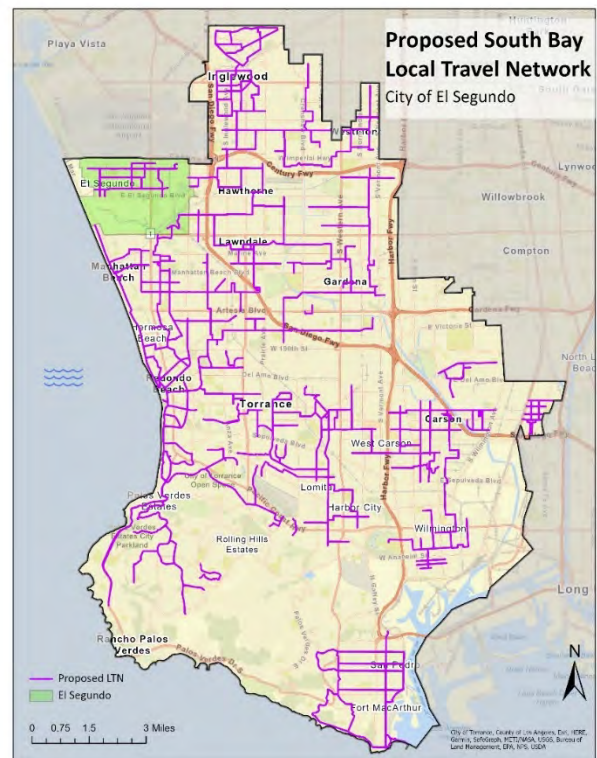


Figure 3-25 El Segundo as “Speed Island”

Speed Island Gaps

Several prominent “speed islands” were identified as gaps in the Local Travel Network. These included, San Pedro, Rancho Palos Verdes, and El Segundo.

Seen at the regional scale, the City of El Segundo – located in the Northwest corner of the South Bay - is an example of this challenge; at the city-scale, the LTN is an island unto itself.

Within the City of El Segundo, Local Travel Network routes provide for connectivity to centers of employment, schools, parks, and commercial activity. Connectivity to other South Bay cities via the Network is constrained by streets that are too fast for safe or legal use of LUVs. The following maps identify two (2) road segments that could be considered for implementation of the LUV lanes by lowering of speed limits and would provide a solution to safely connect users of the LTN to Manhattan Beach and other points in the South Bay.

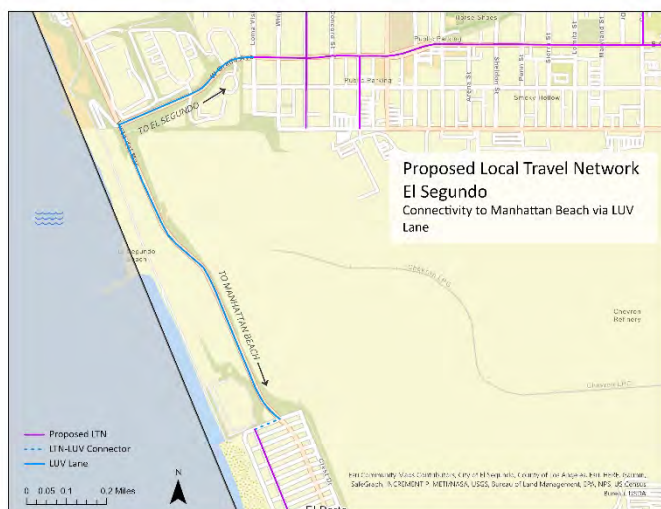


Figure 3-26 El Segundo connectivity to Manhattan Beach via LUV Lane

For users of the LTN in El Segundo, access to Manhattan Beach, on the west, would require a protected LUV lane that would begin at Loma Vista on Grand Avenue and would connect to Vista Del Mar heading southbound. Both streets are heavily trafficked with posted speeds of 40 mph.

On the eastside of El Segundo, Douglas Avenue, a north-south arterial with (at some points) six (6) lanes was identified as a corridor that could accommodate LUV lanes. Beginning at Maple and running south, the introduction of LUV lanes would provide ingress and egress to the southeast side of Manhattan Beach, access to employment centers along the corridor, and first/last mile connectivity to the Douglas Street Green Line Light Rail Station.

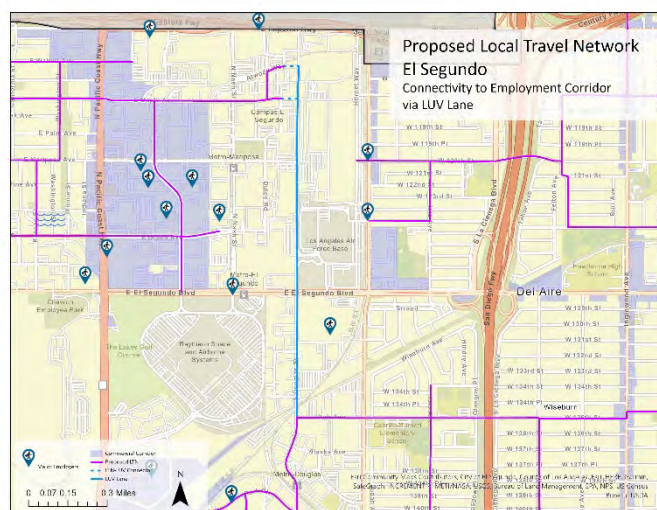


Figure 3-27 Connectivity to El Segundo employment corridor via LUV Lane

Intra-City Gaps

LUV lanes were also used to solve for intra-city connectivity to better align route segments to destinations. The following maps, respectfully, describe LUV lanes within the City of Torrance.

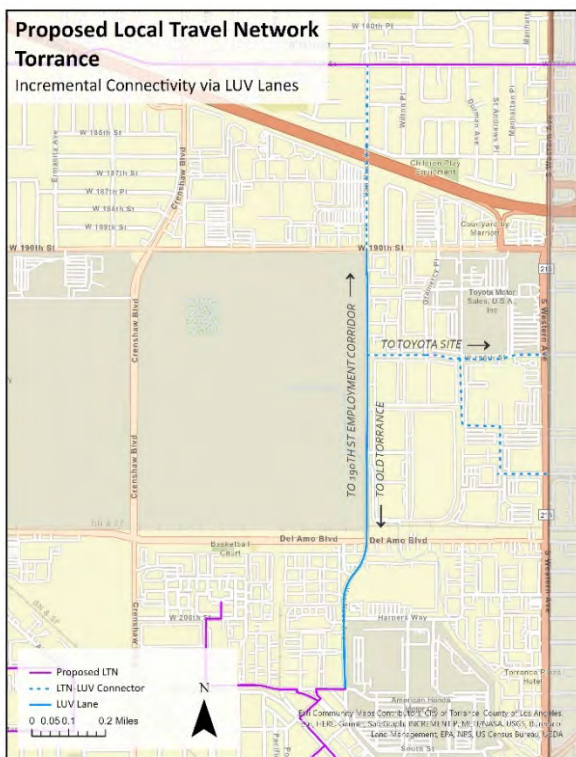


Figure 3-28 Torrance intracity connection via Van Ness LUV Lane

The north/south LUV route segment along Van Ness Blvd. – running between “Old Town” Torrance northbound, adjacent to the Honda Corporate campus -- would provide access to employment centers along Western Avenue, while also providing inter-city connectivity into the City of Gardena under the 405 Freeway at a point where there are no on or off ramps.

Another example of intra-city connectivity would be a LUV lane in the commercial area near Torrance Airport. Using Speedway Blvd., an LUV lane segment would provide access and neighborhood connectivity to commercial and medical facilities in the southern section of Torrance.

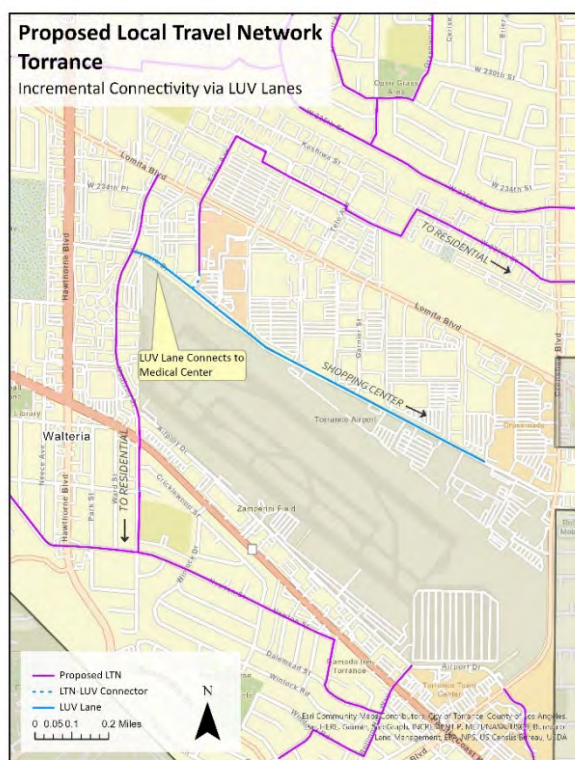


Figure 3-29 Torrance intracity connection via Skypark LUV Lane

A total of 22.6 route miles were identified across eight (8) cities as well as unincorporated areas of the South Bay. The majority of the LUV lanes were identified in Carson and Council District 15. LUV lanes, if introduced in Carson, would provide connectivity from California State University Dominguez Hills in the northwest into Gardena with access to the Harbor-Gateway Transit Center. LUV lanes in Council District 15 would address the “speed island” challenges and provide connectivity to Lomita as well as Carson.

City	LUV
Carson	5.8
El Segundo	2.8
Gardena	0.8
Lomita	0.7
Los Angeles (Council District 15)	5.6
Rancho Palos Verdes	1.9
Torrance	3.7
Unincorporated Los Angeles County	1.3
Total	22.6

Table 3-6 LUV Lane opportunities by city

“Engineered” Elements

For the purposes of completing the final iteration of the Local Travel Network, the Project Team identified approximately 1 mile (total) of route segments that would provide additional connectivity. These few elements were categorized as necessitating “Engineered” improvements. Examples are referenced in the Technical Chapter “Cut Sheets” and are not called out (due to map scale) in the final proposed Local Travel Network (below).

Proofing Final Refinements

After solving for connectivity between cities, final testing of the Network was undertaken through a GIS analysis to review connectivity and safety. The question to be answered was:

Does the totality of the selected Local Travel Network routes provide a safe, slow-speed corridor for travel to destinations in the South Bay?

To answer this question, the “Proposed Final Local Travel Network” maps and routes were plotted against a heat map of destinations and a map layer describing controlled intersections. Respectively, the maps (below) describe the successful resolution of these issues.

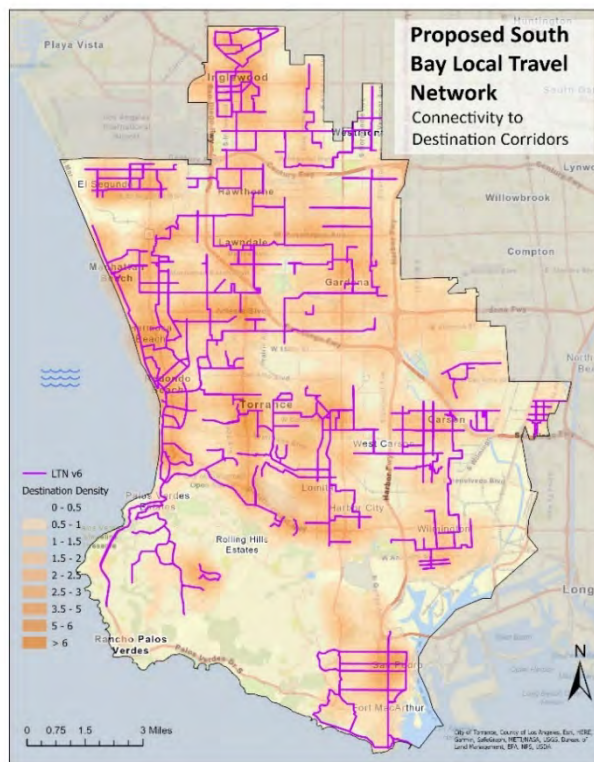


Figure 3-29 Proposed LTN connectivity to Destination Corridors

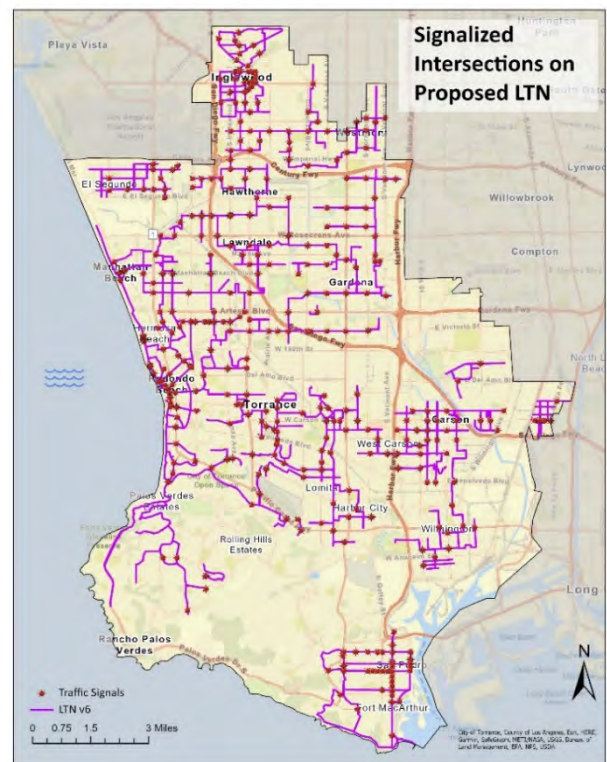


Figure 3-30 Signalized intersections on Proposed LTN

From this analysis, two (2) Final Proposed LTN are presented:

1. Without Engineered features: An LTN that could be implemented using a system of sharrow signage on the road, complemented by wayfinding signage.
2. A fully integrated LTN that would require the construction of LUV Lanes to provide complete connectivity throughout the South Bay.

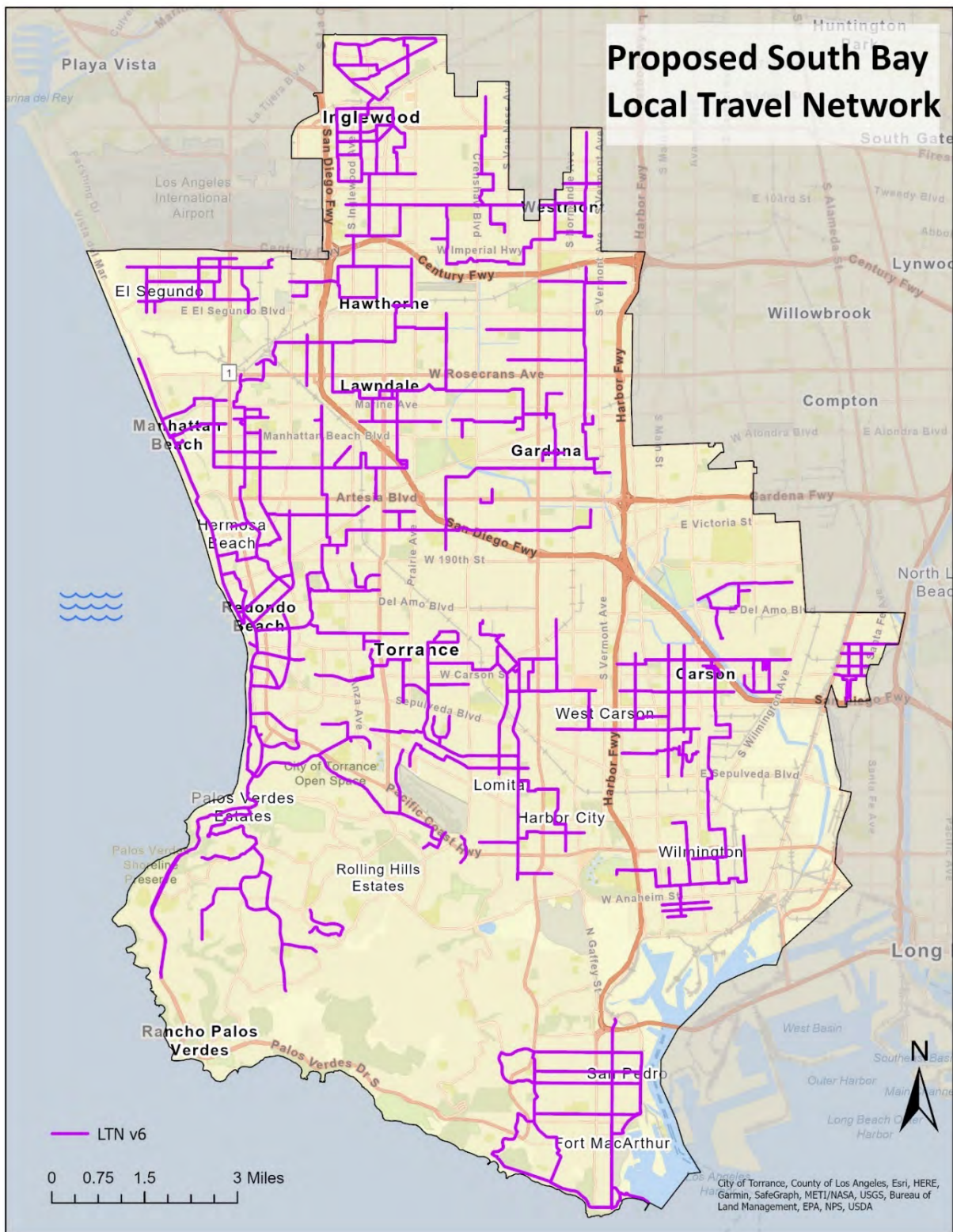


Figure 3-30 Proposed final LTN

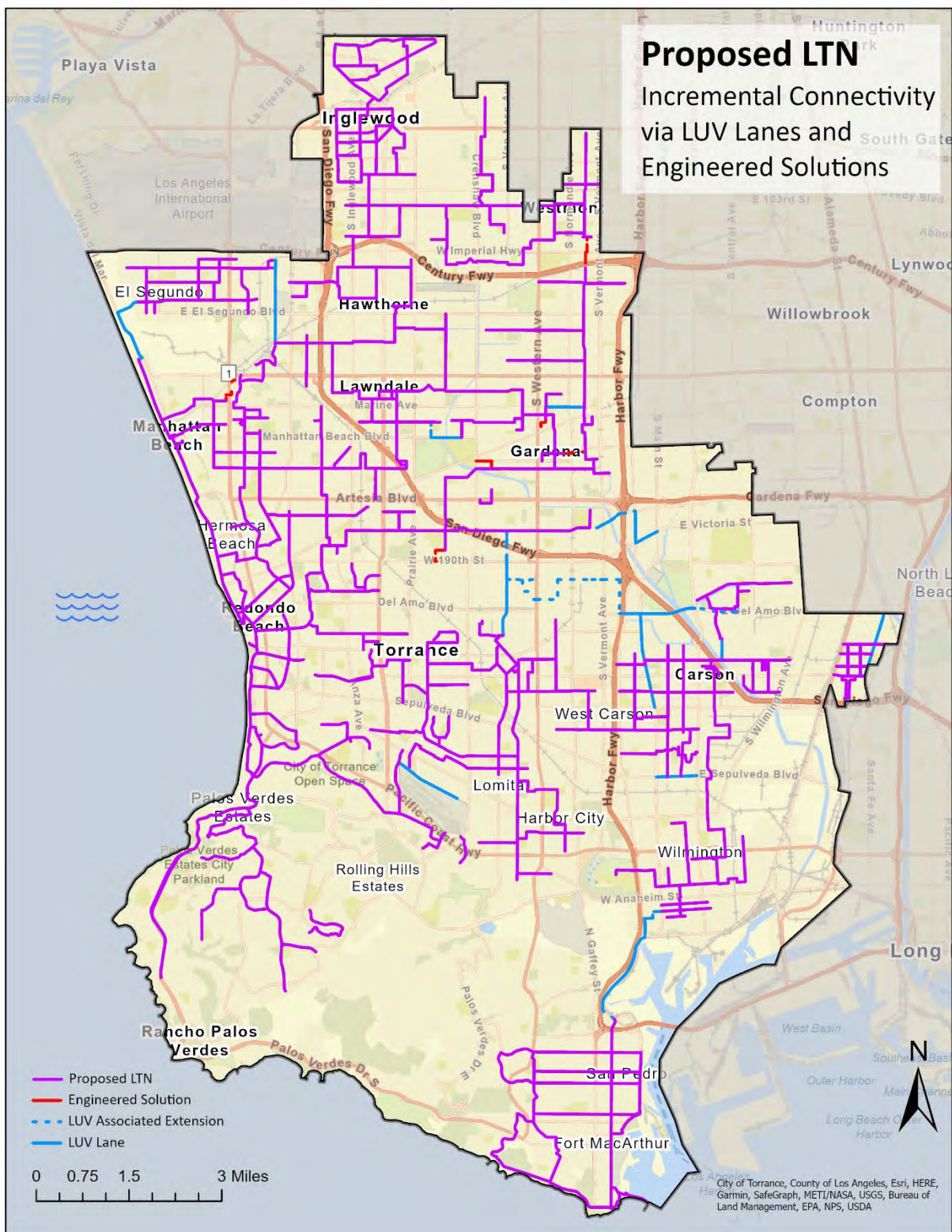


Figure 3-31 Proposed final LTN including LUV Lanes and Engineered Solutions

4. Outreach

The scope of work for the route refinement study to plan a Local Travel Network (LTN) for the South Bay had two (2) distinct research components. The first aspect was to design, plan, and map the streets and route segments that would become the Proposed Local Travel Network for the South Bay. The second research component was public engagement and education about the Network and the types of slow-speed, zero-emission vehicles that were envisioned for use on the LTN.

Through a series of events, the outreach tasks sought to engage, educate, and provide the public with opportunities to learn about the new Network. Two goals were established for these tasks. The first was to solicit feedback about the streets and routes that were selected for the LTN – information that would inform the iterative process for Network route selection. The second goal was to provide an opportunity for the public to learn and experience the slow-speed, zero-emission vehicles that they might, in the future, use on the new Network. Outreach to stakeholder groups, the community (at large), vendors, and other concerned parties was an integral part of the Project Team's work.

Impact of COVID-19

Outreach and engagement of the key cities' staff and community leader stakeholder groups was a critical component to the successful completion of refining the base map that would become the proposed LTN. The gathering of information for this task was envisioned as taking place, primarily, through face-to-face meetings. Similarly, for the community engagement events were proposed by the Project Team as large-scale four public events - fun-filled "hands-on" Ride & Drive experiences.

On March 17, 2020, the State of California and the County of Los Angeles issued COVID-19 guidelines and regulations that changed the nature of the project both in terms of how the day-to-day work was completed but also the deliverables of the project regarding the four (4) community events that were described in the scope of work.

Using communication tools like videoconferencing (Zoom, Team, or Go to Meetings) work continued to complete the street and route refinements for the Local Travel Network street. For the public events – all scheduled for the spring of 2020 - work was temporarily "put on hold." During this time, South Bay cities, identified as host agencies for the public outreach events, monitored and followed Los Angeles County's COVID-19 regulations and guidance concerning day-to-day operations and the hosting of large gatherings of people.

As the lockdown continued, the Project Team waited with the hope that conditions would change and that the public engagement events could be rescheduled in early summer. By June, however, the Project Team had been notified by each respective city host that all public events would be cancelled “indefinitely” for the summer and fall. Effectively, this meant that there was no chance that any of the public events planned for this project could be held before the end of the grant period in February 2021.

Therefore, the Project Team, in collaboration with Caltrans, pivoted to revise the public outreach and engagement tasks described in the scope of work to a work product that would be a “virtual” immersive experience (described below). The virtual tool was envisioned as a work product that would educate and inform South Bay residents about the Local Travel Network and the micro-vehicles that they could use for short trips on the new Network.

Even though the public events were not held, a good deal of the planning work had been completed. Local officials interested in future implementation of the proposed Local Travel Network will be able to create similar educational and experiential events in support of the new Network and the vehicles that will use the facility. As guidance, this report will provide details on the preliminary planning to support these types of events. Additionally, it will describe the on-line app that was developed as a public outreach engagement tool during COVID-19 as well as a survey instrument that was designed as an engagement tool to support the public outreach events. These tools can and will be used long after the grant has ended and well into implementation.

South Bay Cities and Community Stakeholders

The first outreach task was to solicit feedback, data, and observations that would inform the selection of streets and routes for the map-making of the LTN. From the fall of 2019 through 2020, the Project Team’s map refinement work involved recruitment, education, and engagement activities across two (2) types of stakeholder groups:

- South Bay cities’ staff
- Community Leaders

As detailed in the Methodology Section and Appendix, these groups of stakeholders offered expertise and guidance for the numerous iterations that refined the Base Map of the Local Travel Network. In terms of South Bay cities’ staff, they were able to provide day-to-day institutional knowledge and history for the operations, maintenance, and planning for their respective communities’ rights of way. They offered important and useful data and observations that informed street and route selections of the Network.

The second group of stakeholders reflected a broad range of community leaders representing organizations that would have a vested interest in the development and implementation of the LTN. Active engagement with these groups offered additional insights and guidance that both informed the selection of streets and routes and, importantly, provided guidance for the tools and strategies for future implementation. Meetings, either in-person, via telephone, or by videoconferencing were used as a process to educate and solicit feedback from the target audience about the proposed opportunities that an LTN would provide for their, respective communities. Mapping exercises were used to learn what their interests, concerns, and challenges would be for the selection of the streets and routes of the Network. Feedback was also solicited from the stakeholders about amenities (i.e., parking, storage, charging, etc.) as well as signage that would support their use of the LTN for local trips.

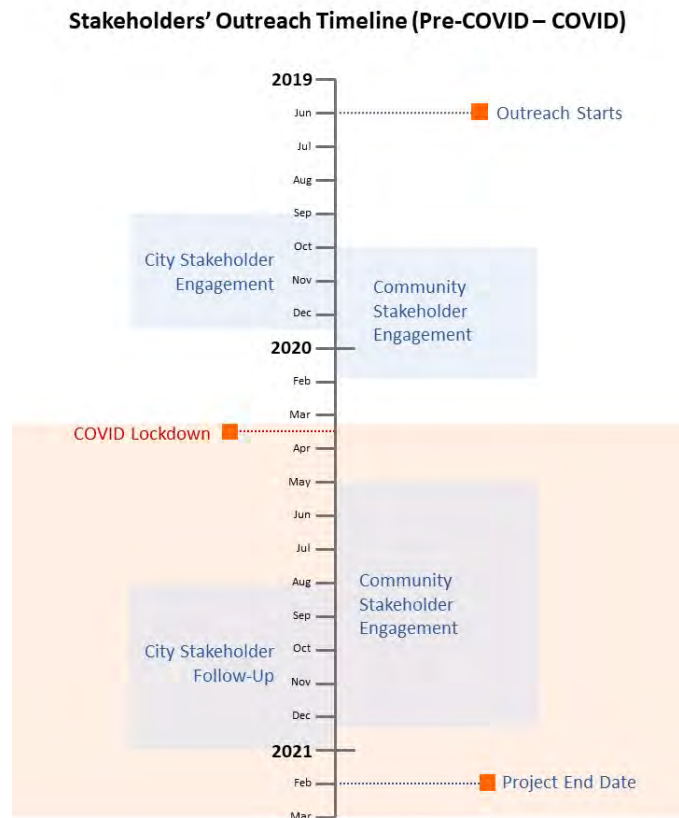


Figure 4-1 Stakeholders' outreach timeline

Over a 1-year period, a broad range of community leaders and community-based organizations were engaged to provide feedback about the project. Participation in the outreach effort included representatives from senior communities; a social justice organization that provides services and programs in one of the South Bay's disadvantaged communities (DAC); business leaders from large to mid-sized companies who participate in the South Bay Association of Chambers of Commerce activities; representatives from a large HMO that serves the public health needs of the South Bay; active transportation groups representing bicycle riders from the County, Sub-regional, and local (DAC) perspective; an NEV user group; and, a micromobility leadership group consisting of micromobility vehicle owners, dealers, and elected officials. Feedback from representatives of OEM's (Original Equipment Manufacturers) as well as local equipment and vehicle dealerships was also solicited (see Methodology Appendix: Stakeholders' Log).

Public Engagement Events and Activities

Beyond the development of the routes and maps that would become the Local Travel Network, the refinement study's design considered the issue of implementation and use of the proposed Network. One approach to implementation was, "if you build it, they will come" (and use the LTN). Another approach was that successful implementation would require a groundswell of local interest in the ownership and use of the growing category of slow-speed, zero-emission vehicles; low-cost Local Use Vehicles (LUVs) that would, ultimately, use the new Network. Public understanding, interest, and support would be the necessary metric to move forward with cities' decisions to fund and implement the Local Travel Network.

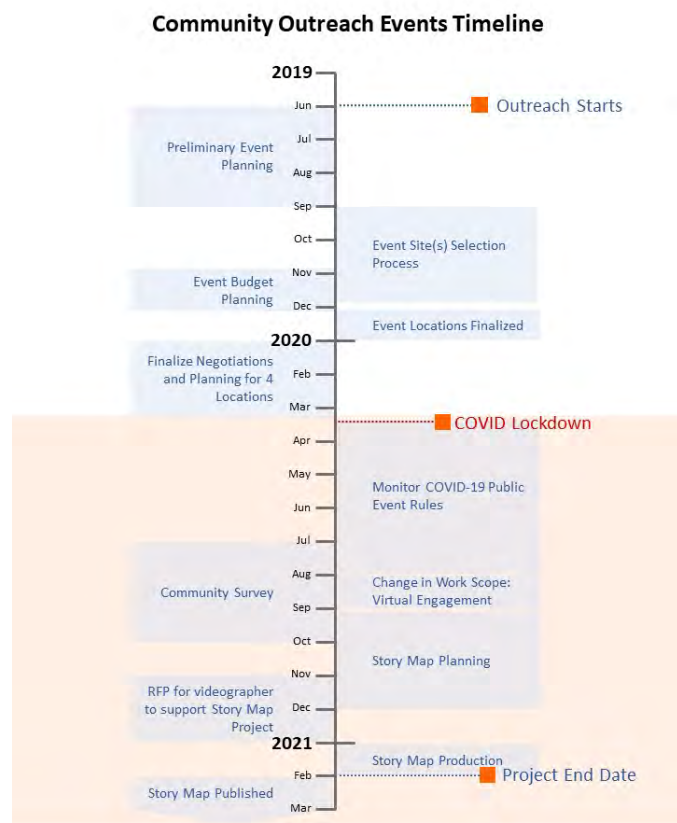


Figure 4-2 Community outreach events timeline

To that end, a critical task of this project was to reach out to the community and engage, educate, and provide opportunities for feedback about this project and micromobility, in general. The goal was to create a series of public events or forums where individuals could learn, through "hands-on" experience, what the Local Travel Network is and how, using slow-speed zero-emission vehicles it might affect their mobility. That is, to create an event or experience that would be both fun and experiential – similar to "Ride and Drive" and Active Transportation community events where individuals would have an opportunity to:

- Envision themselves using or owning a new sustainable transportation mode.
- Test drive an e-bicycle, e-scooter, electric golf cart – that might be used on the Local Travel Network.
- Introduce South Bay mobility consumers to the marketplace (and vendors) of Local Use Vehicles – the companies and products that they might consider for the purchasing of a new sustainable slow-speed mode.

- Consider, the idea of “Right-sizing” their vehicle choice – by size and cost - for the destination or trips that they might take.
- Provide objective feedback on the streets and routes that were selected for the Proposed Local Travel Network.

At the heart of the Public Outreach work were two (2) complementary tasks. The first task was to understand, from the public’s perspective, their interests, concerns, and behaviors regarding the class of slow-speed and zero-emission vehicles called Local Use Vehicles (LUVs) – vehicles that would be used on the Local Travel Network. This information would be important for:

- Designing educational and promotional materials to support the implementation and use of the Network.
- Understanding the concerns and issues that would support mode share change from driving large internal combustion engine (ICE) vehicles for their, relatively short local trips, to slow-speed zero-emission vehicles.
- Providing decision-makers within cities the data for future implementation opportunities and concerns.

Initially, the tool for gathering this data was a comprehensive survey that would be distributed over several months as an online instrument and, in-person, at the proposed public outreach events. Information gathered from the survey process would be reviewed between public events to provide understandings and insights at each subsequent public event. These insights would iterate the tools that would be used for the events’ public engagement experiences. Summary data from all surveys would then be used to inform the public policy and implementation recommendations generated by this study.

When COVID-19 restrictions forced the cancellation of public events, the survey task continued, however, without any direct public engagement at events. The public engagement experience then shifted to the creation of a virtual Story Map to include a shortened version of the survey as part of the online process.

The second category of tasks were the design, production, and execution of the large-scale public engagement events. Outreach experiences that were envisioned to be fun-filled educational and experiential opportunities for the communities of the South Bay to:

- Learn about the project and the Local Travel Network.
- Provide feedback about the Network's streets and route selections.
- Test-drive the growing class of LUV vehicles that they might use on the new Network.

The unfortunate timing of the pandemic, county-wide lockdown measures, and subsequent cancellation of all large-scale public events meant that this important outreach and engagement tool was not available to the Project Team.

As such, the outreach and public engagement focus pivoted to an online platform that would satisfy the conditions of educating the public about Local Use Vehicles while providing some contextual examples of how they might be used for the short trips that the Local Travel Network would accommodate. The following sections describe the comprehensive community-based Survey, the Public Event Planning Process, and the development of the online GIS-based "Story-Map" App.

Community Survey – South Bay Residents

Rationale/Design

With the cancellation of public events, due to COVID-19 restrictions, the survey design and distribution were rescheduled for the summer of 2020. Survey design and distribution began in July and were completed 3 months later, in September.

The survey was designed to engage and "gain insight" into South Bay residents travel habits. For the purposes of engagement, it was assumed that the public would have little or no real understanding of what a Local Travel Network was. Rather than an inquiry about a conceptual idea of proposed maps for short trips, the survey was contextualized around micromobility, the hyper-local travel patterns and mode choices that would be made by potential users of the Local Travel Network. The opening statement of the survey describes the intent of the survey and contextualizes the questions to follow:

*"We're especially interested in whether or not you're using any **Local Use Vehicles** such as bicycles, powered scooters, e-bikes, and street legal electric vehicles similar to golf carts for shorter trips. The questions below will ask you about your "destination oriented" trips – trips that start from home with a specific purpose in mind, such as going to work, shopping, Starbucks, etc."*

The survey design sought to gather as much meaningful data as possible while keeping the total number of questions and engagement time to a minimal level. Early iterations of the survey

were critiqued as being too long and time consuming – and would, likely, lead to fewer completed surveys. The final version of the survey, ultimately, contained a total of 23 questions that were organized in the following fashion:

- Demographic & Vehicle Inventory
- Local Use Vehicle (LUV) Perception and Use
- Interest and Potential for Change (to use Local Use Vehicles)

More specifically, respondents were asked questions that included:

- Identifying an “X/Y” coordinate of their home location.
- Identifying the types of vehicles in the household.
- Where vehicles are parked.
- Vehicle choice for most weekly trips (car vs. alternative modes).
- Experiences and behaviors using or not using alternative vehicle modes for personal trips.
- Barriers for the use of alternative modes for destination trips.
- Understanding and concerns about street signage and sharing the road.

The survey was designed for use on the Esri Online GIS App called “Survey 123” (see Appendix). Using a GIS App provided an opportunity for individuals to access the survey through phone, tablet, or desktop. Importantly, the geo-code function provided the opportunity to code for “home zip” information. Respondents were asked to “pin” their home location thereby defining an “X/Y” coordinate. This allowed the Project Team to map respondents’ home locations. Privacy was maintained through instructions to “pin “in the general vicinity” of one’s home. Geo-coding for home location allowed the Project Team to analyze survey distribution and reach across South Bay communities as well as individual survey respondents’ potential connectivity to the proposed LTN.

Marketing and Distribution:

The Project Team developed a marketing plan for distributing the Local Travel Network survey. Short articles were written to introduce the project and request participation of readers to complete the online survey. The plan included the identification of multiple distribution channels to facilitate the goal of broadly circulating the survey across the South Bay communities. Additionally, a secondary distribution goal was to target interest groups who might support the implementation of the Local Travel Network.

SBCCOG E-Blast

The distribution channel that resulted in the broadest reach was facilitated through the use of the SBCCOG’s internal mailing lists and its social media channels. The secondary outreach to

targeted slow-speed zero-emission user groups was facilitated through soliciting their direct assistance to distribute the survey through their respective mailing lists. These groups included: bicycle advocacy organizations as well as owners of neighborhood electric vehicles.

The primary outreach campaign to the public (at large) included the use of the South Bay Cities Council of Governments' Environmental Services' (SBESC) electronic newsletter mailing list. The SBESC is the environmental outreach arm of the SBCCOG, and its electronic newsletter list is an ongoing curated resource that the SBCCOG uses to inform the public about the organization's environmental programs, issues, and on-going work. The mailing list contains 16,000+ names and is generated and maintained through individuals who "opt in" to receive a monthly electronic newsletter and e-blasts about time-sensitive or important information.

Social Media: Facebook

The survey was also distributed through the SBCCOG's primary social media channel. Using the SBCCOG's Facebook page, the survey was posted in early September. The posting's reach was enhanced through Facebook's paid targeted advertising platform to extend and target the reach of the audience (beyond the SBCCOG's Facebook followers). The Project Team targeted South Bay residents as well as "tagged" individuals who were slow zero-emission mode users. Hashtags included: "#bicycle, #NEV, #ebike enthusiasts."

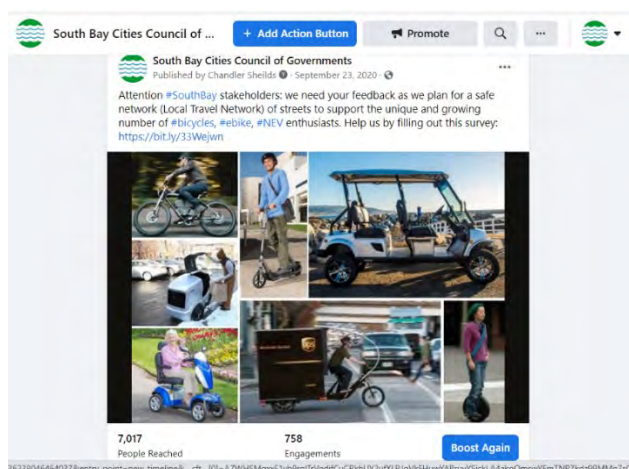


Figure 4-3 Community Survey screenshot

The Facebook posting and boosted ad ran for 2 weeks resulting in:

Individuals Reach	Engagements	"Click Through" to Survey
7017	758	43

Table 4-1 Facebook reach and engagement metrics

Target Interest Groups

Additional communication channels included direct outreach through soliciting the assistance of slow-mode zero-emission interest groups in the South Bay. The Project Team assisted the following groups to distribute the survey through their respective mailing lists:

- E3 Vehicles (South Bay NEV Dealership) owners and service accounts (90 individuals)
- South Bay Bicycle Coalition mailing list (738 members)
- Carson Bicycle Coalition mailing list (25 members)

Distribution Results

Across all communication channels, survey of the distribution reached approximately 25,000 individuals.

Survey Return

Across all communication channels, 245 surveys were completed. With a total distribution of 25,000 surveys, the marketing and distribution campaign yielded a return percentage of one (1) percent.

Analysis of home location coordinates (see table) described a broad reach of the survey across the entire South Bay including a thirty-six (36) percent return from communities designated as disadvantaged (as plotted against the Cal. Enviro Screen 3.0).

Survey Respondents by Zip Code

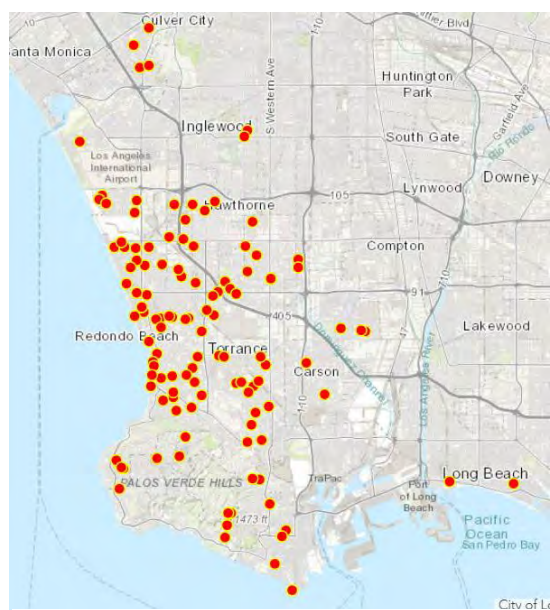


Figure 4-4 Survey Respondents by Zip Code

Total Respondents	216
Outside SBCCOG Territory	-8
Address (did not disclose)	-74
Total Known Locations in South Bay	134
Inglewood	2
Gardena	7
Lawndale	2
Hawthorne	5
Carson	6
Lomita	4
Torrance (N of 190 th St)	7
Torrance (Harbor Gateway adj.)	2
LA - San Pedro	6
LA - Harbor Gateway	2
Unincorporated	6
Total DAC Locations	
36% of respondents with known locations were in DACs.	49

Table 4-2 Survey Respondents in DAC locations

Survey Results

Demographic Summary

Survey results described the following characteristics of the respondents:

- 83 percent were over 45 years old.
- 30 percent lived with at least one person who did not have a driver's license.
- 44 percent lived in homes with 3 or more people.

The following charts provide additional demographic details:

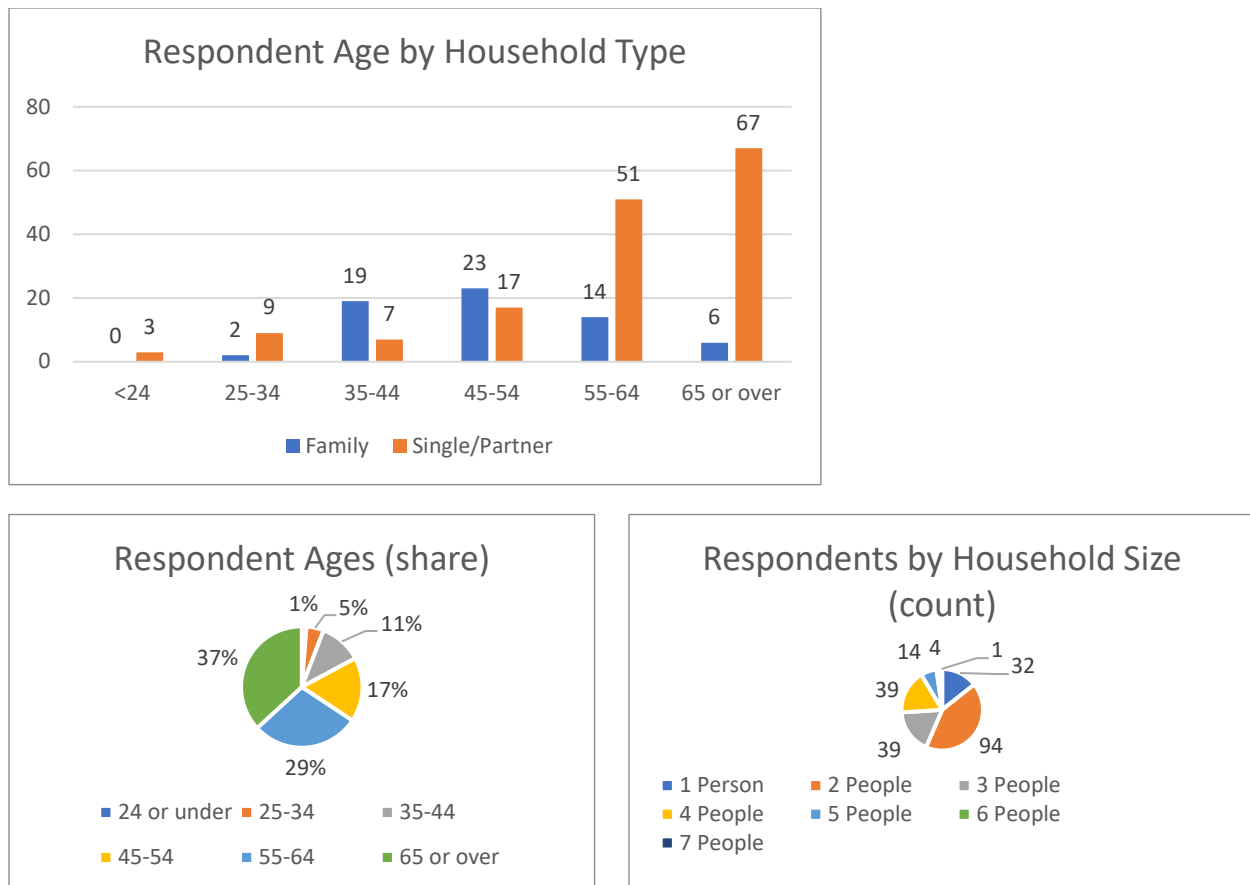


Figure 4-5 Survey respondent demographics

Household Vehicles Summary

Survey respondents indicated at all households had multiple full-sized vehicles most powered by traditional gas/diesel engines. When asked about Local Vehicles, over three quarters (79%) of households described having one or more pedal bicycles. New zero-emission modes were present albeit at much lower numbers with fourteen (14%) percent of households indicating that they owned more than one e-bike. Eight percent of survey respondents described owning a

neighborhood electric vehicle. The following table summarizes as a percentage the number and types of household vehicles:

Household Vehicles							
	Pedal Bikes	E-Bikes	E-Scooters	Other	NEV	Gas/Diesel	Hybrid/Electric
One	15%	10%	2%	6%	8%	33%	29%
Two	27%	4%	0%	2%	0%	41%	6%
Three or More	38%	0%	0%	2%	0%	19%	0%

Table 4-3 Household vehicles of survey respondents

Interest in Local Use Vehicles Summary

After survey respondents were told that most trips were local, they were asked whether they would use LUVs for more of their travel. Forty-three (43%) percent said “yes” and another twenty-nine (29%) percent indicated “maybe”.

When respondents were asked if they would consider buying or leasing an additional LUV, thirty-four (34%) percent said “yes” and another twenty-eight (28%) percent indicated “maybe”.

The following charts summarize survey results that point towards user interest and market demand for Local Use Vehicles to facilitate short-local trips:

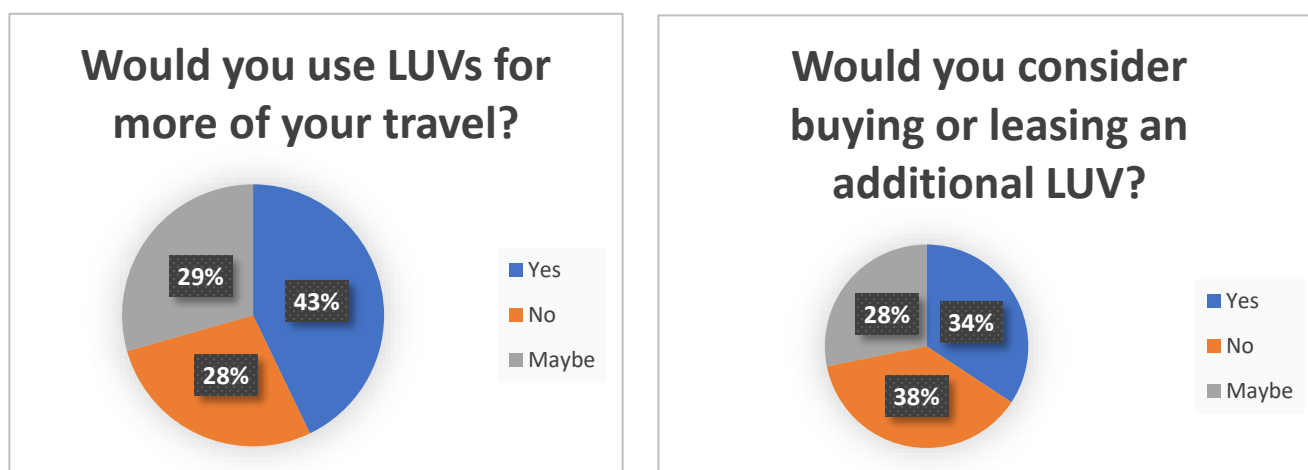


Figure 4-6 Survey respondent interest in LUVs

Further potential for the efficacy of a slow-speed network to safely accommodate LUVs was described by respondents in terms of incentives to “consider LUVs” for local travel, almost thirty (30%) indicated that “dedicated to slow-speed vehicles” was their primary choice:

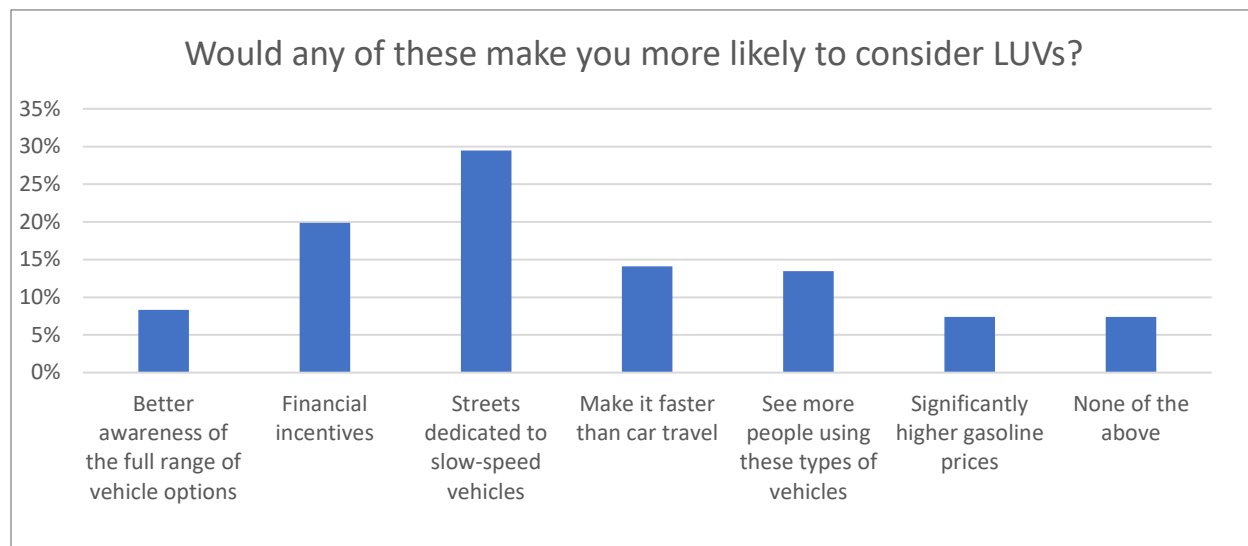


Figure 4-7 Survey respondent influence factors in LUVs

On the Road Experience Using Local Use Vehicle

The survey attempted to understand the challenges users of Local Use Vehicles experience. Safety, as it relates to sharing the road with high-speed traffic as well as large-sized vehicles (trucks and buses) was the top issue. Road speed and sharing the road with large-sized vehicles were identified as “pain points” for trips involving LUVs. This information provided another reference and check for the selected Local Travel Network routes.

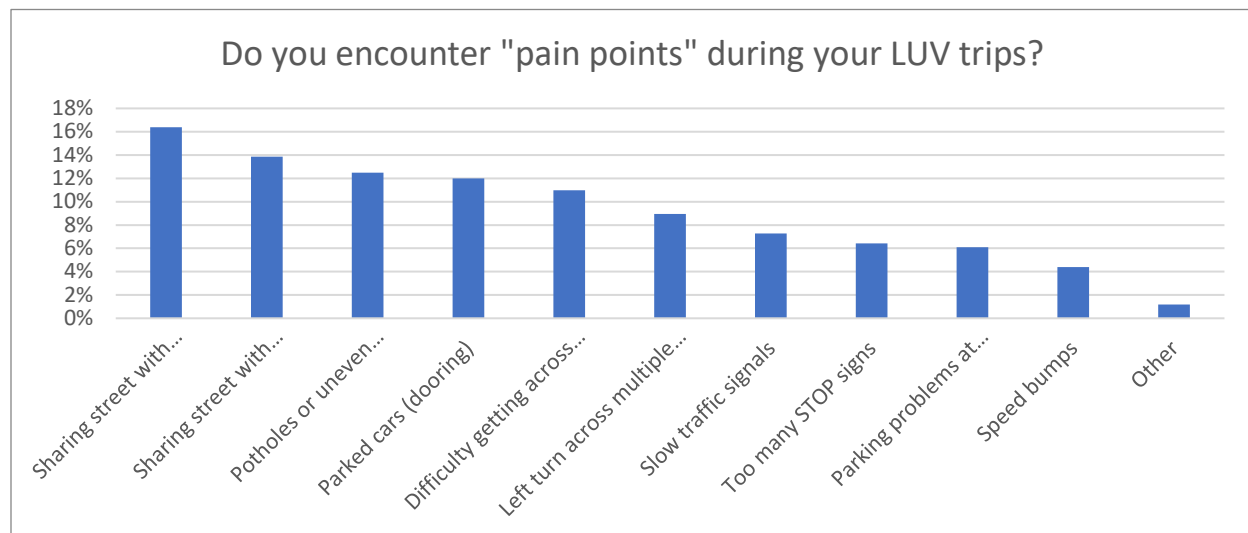


Figure 4-8 "Pain Point" encounters for survey respondents

Local Travel Network Implementation: Sharrow Treatment Opinions

In anticipation of future implementation of the Local Travel Network, treatment options concerning “sharrows” as road markings for the Network were presented. The Project Team asked respondents a series of questions about “sharrows”. In terms of basic understanding, a significant majority of individuals -eight-one (81%) percent - understood what a “sharrow” was. However, nineteen (19%) percent of individuals did not understand what a “sharrow” marking on the road meant.

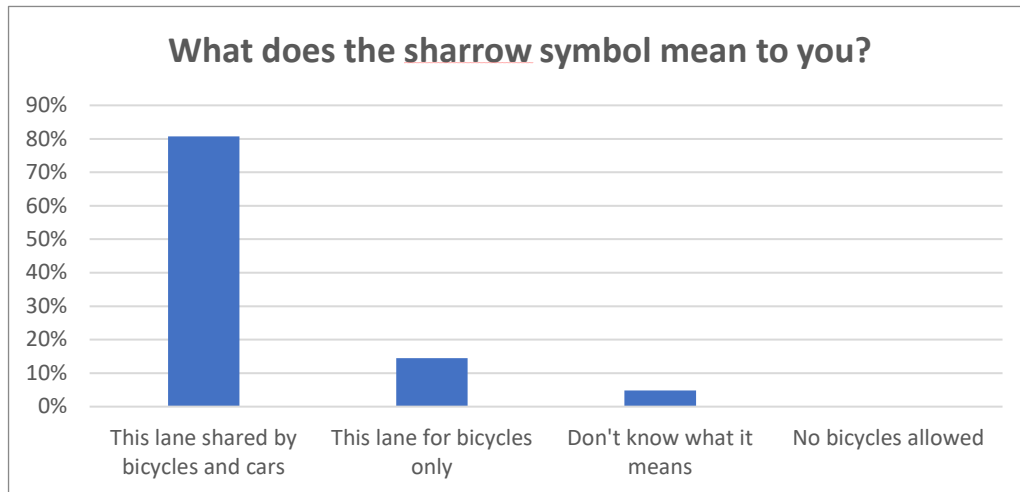


Figure 4-9 Understanding of sharrow symbol by survey respondents

Respondents were also asked about their experiences riding and traveling on South Bay roads. Interestingly, individuals preferred to pick their routes (44%) regardless of “how they are marked”. For fifty-six (56%) percent there was a preference to follow routes with sharrow markings. (16%) preferred a “dedicated” travel lane.

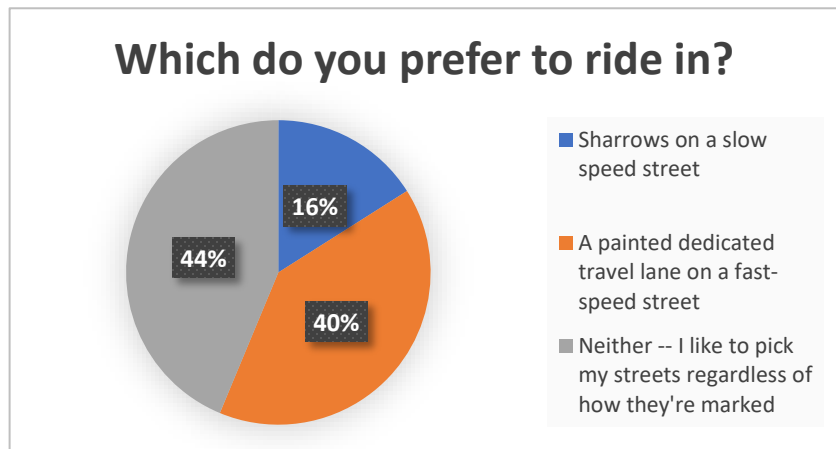


Figure 4-9 Preferred street markings of survey respondents

When asked specifically, if sharrows were helpful when using a Local Use Vehicle, fifty-six (56%) percent of respondents indicated that it was “somewhat” to “very helpful.” Forty-four (44%) percent, however, indicated that sharrows were not helpful. Anecdotal information, gleaned from stakeholder meetings, and survey “comments” suggest that (for some individuals) sharrows are not used because people

know where they want to go and what streets they want to travel based on past experience and perceived safety on the road. As one respondent described, “I know how to get to where I’m going, and whether a road has a sharrow (or not) makes no difference to me.”

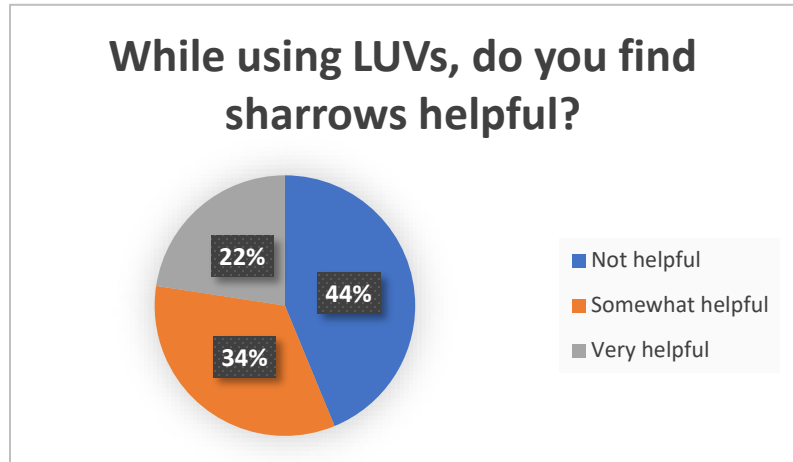


Figure 4-10 Survey respondent attitude toward sharrows

Survey Summary

Though the survey is not a random sample of South Bay residents, it can be used to point towards tendencies that might be verified at a later time. By age, the survey respondents skewed older – similar to the aging demographics of the South Bay community at large. While almost all households have pedal bicycles, it was not uncommon to find households with other slow-speed zero emission vehicles (LUVs).

This survey showed that respondents, when made aware that most local trips are short, have significant interest in personal ownership and use of Local Use Vehicles. It is also true that safety is the most important aspect with regard to the potential use of a LUV for short local trips.

Future implementation and demonstration of Local Use Vehicles will need to address education of South Bay residents. Understanding what a “sharrow” is and feeling that the routes marked, as such are safe will be key to acceptance and use of the Local Travel Network.

Public Events Planning Process

The community outreach events were an integral component to the work scope of the route refinement project. Public events were anticipated to provide an opportunity to showcase the proposed routes of the Local Travel Network and solicit feedback about the route choices and utility of the Network. Importantly, community events, staged as “hands-on” ride and drive events would provide South Bay residents with a unique experience to test the vehicles that they might use on the LTN and interact with the vendors and communities that support and encourage mode shifts from large gas-powered vehicles to slow-speed zero-emission vehicles.

Four (4) public events were proposed in the project’s Scope of Work to achieve these goals. Planning for these events began in the summer of 2019 with the initial target of staging the events in the winter and spring 2020 (see Appendix: Outreach Event Planning). Design and planning for the community events were organized around providing attendees from South Bay communities access to vehicles that could be used on the Network and an engagement and educational forum where attendees could provide feedback about their experiences using the vehicles as well as observations about the Proposed Local Travel Network – information that could be used by South Bay decision-makers for future implementation of the LTN.

The initial planning efforts included outreach to other agencies and organizations that had experience producing large-scale community events. In particular, outreach was made to those with public facing programs in support and advocacy of micromobility; increasing the adoption of zero-emission vehicles; and, advocating for “complete streets” – all with experience engaging the public with similar or complementary issues to those of this project. The goals were to learn best practices, lessons learned, and inquire about resource opportunities that might support the large-scale community events envisioned for this work task.

Inter-Agency Outreach

In the summer and early fall of 2019, the Project Team conducted a series of meetings with local agencies and organizations all of whom had experience and/or resources conducting large-scale events in support of their respective organizational missions to promote, advocate, and educate Southern California communities about active transportation, complete streets, and air quality issues. The Project Team met with: the “Go Human” Team at the Southern California Association of Governments (SCAG), representatives from the South Coast Air Quality Management District (SCAQMD), the Ride Share and Active Transportation team at Los Angeles Metropolitan Transportation Authority (Metro), representatives from CicLAvia, and AltCar Expo.com. The following synopsis reflects lessons learned, resource opportunities, and notes to be applied to the planning of the Local Travel Network’s community events:

“Go Human”

Go Human is a community outreach and advertising campaign run by the Southern California Association of Governments (SCAG). Its stated goals are “reducing traffic collisions in Southern California and encouraging people to walk and bike more...to create safer and healthier cities through education, advocacy, information sharing and events that help residents re-envision their neighborhoods.” Go Human assists communities to produce events that will lead to these goals.

Typically, “Go Human” events take place over one day and are held on closed local roads. The events are designed and produced to feature facsimiles of “complete street” treatments (i.e., street furniture and protected bicycle lanes) so that local residents could learn and experience proposed changes to their community’s roads. Importantly, these events feature hands-on real-world opportunities for families to “test-drive” and use the re-envisioned streets. Feedback is solicited from attendees during the day; gathered from survey booths and numerous interactive participatory stations (i.e., identifying street segments or areas of concern on a map). The events are designed for a fun-filled day, often with entertainment as well as food vendors.

Over the course of several years and many community events, the “Go Human” Team developed expertise and insights that proved important for the design and planning of the Local Travel Network’s community events. Details for budgeting, marketing, and feedback tools were made available through an in-person interview and are documented and available in the SCAG’s “Go Human” [Phase I and II Reports](#).

Functionally, the “Go Human Tool Kit” is a supply of on-road treatments that is provided free of charge to agencies or organizations that produce complete streets events (see Appendix). The Tool Kit is shipped to the event site and includes a large supply container including a wide variety of equipment and supplies to create:

- Protected Bicycle Lanes
- Dedicated Bicycle Lanes
- Bollards and planters to safely separate traffic from bicycles
- Street Furniture
- Markings for Intersection Improvements

In terms of lesson's learned, there were five (5) important considerations that the Project Team took away:

1. Events of community-scale required approximately a year to design, plan, and produce.
2. Staffing was a critical element to a successful community event:
 - a. to ensure safety for the "Ride & Drive" elements.
 - b. to interact and engage attendees in the feedback elements (surveys, interactive displays, tools, etc.).
3. A budget range, depending on the scale of the event, could easily be between \$30,000 and \$100,000 per event.
4. Where budgets were tight, cities or organizations of "Go Human" events would be encouraged to partner or "piggy-back" their event with a previously scheduled event to:
 - i. Leverage marketing dollars.
 - ii. Provide value-added yet, complementary content for the original event.
5. The "Go Human" Tool Kit would be a valuable resource for the LTN community events.

Potential resources and sponsorship contributions to the LTN budget were discussed. There were no direct funding opportunities and the SBCCOG was invited to apply for future grants. The "Tool Kit" was tentatively reserved for tentative event dates in the spring 2020.

South Coast Air Quality Management District (SCAQMD)

The Project Team met with representatives from the SCAQMD in early fall 2019. As the regulatory agency for air quality in Southern California, the Agency provides programming funds and grants to support the adoption of zero-emission vehicles and programs that support the reduction of vehicle miles traveled leading to the reduction of greenhouse gas (GHG) emissions. Notably, the SCAQMD, sponsors the work of SCAG's "Go Human" campaign as well as "AltCar Expos" – educational and professional showcase events that support the market for zero-emission vehicles. Featured activities at the AltCar Expos are the "Ride & Drive" events where individuals can test-drive many of the cars that are (or will soon be) on the market – essentially, an opportunity to "kick the tires" of a zero-emission vehicle without the pressure of having to go to a dealership. Given the SCAQMD's on-going interest and mission, including its history with the SBCCOG as the funding agency for the SBCCOG's Local Use Vehicle (LUV) and Battery Electric Vehicle (BEV) pilot projects, opportunities to support the community events activities for the Local Travel Network were discussed.

It was learned that the SCAQMD was supportive of sponsorships for zero-emission events and the SBCCOG's project goals and mission, in general. However, the Agency did not have discretionary funds available at the time of the meeting to support or sponsor community events. The Project Team was directed to explore potential grant opportunities for funding. In

terms of resources, the SCAQMD was willing to support the LTN events planned for spring 2020 through participation as an informational or educational partner.

Metro

There continues to be a long-standing relationship between the SBCCOG and Metro to work on sustainability programs and projects that complement each organization's missions and goals. These include the SBCCOG's on-going contract to support Metro's programs for van pools and ridesharing as well as the SBCCOG's management and support of Measure R and M transportation projects in the South Bay. With the exception of Measure R funds, the Metro programs support the sub-regional goals to reduce vehicle miles traveled in the South Bay. Measure M funds support projects directly tied to infrastructure improvements for active transportation in the South Bay – ultimately, funds that could be used for road treatments to implement Local Travel Network. Additionally, in support of Metro's active transportation goals, the Agency sponsors and participates in large-scale community events produced by CicLAvia. In that context, the Project Team approached Metro's active transportation and shared mobility team to engage them as potential stakeholders in the implementation of the Local Travel Network and, importantly, as sponsors for the community events. While no direct funding was available to support the planning or operations for the events, Metro did offer to participate as a vendor and informational participant; to showcase their new e-bike rental fleet and their active transportation program.

CicLAvia

Since 2010, CicLAvia has organized and produced the largest active transportation community events in Los Angeles County. As a non-profit organization, its stated mission is to catalyze "vibrant public spaces, active transportation, and good health through car-free streets." It does this through organizing and securing the closure of city streets to car traffic – along designated routes – for the public to use (free of charge) as a "public park" – reimagining city streets that are "a safe place to bike, walk, skate, roll, and dance through Los Angeles County." CicLAvia events are one-day events scheduled on a yearly calendar. As experts in the planning of active transportation events, the Project Team approached the organization for advice, lessons learned, and the opportunity for partnership in future South Bay CicLAvia events.

The following were the take-aways from this meeting:

- Large-scale community events require at least a 1-year planning window.
- Partnership, with city partners is critical – especially with law and traffic enforcement.
- Partnership across organizations with similar or complementary missions is also critical to create multiple educational and experiential opportunities for the families and individuals who participate in the event.

AltCar Expo

Each year, since 2005, a community-wide multi-day event is produced for the public at large and professionals focusing on alternative fueled vehicles otherwise known as the “AltCar Expo”. Over the years, the event has grown from one location hosted in Santa Monica to multiple locations in different parts of the State. Drawing thousands, over the course of several days, the event is a showcase in support of the marketplace for zero-emission modes. Importantly, the events are produced to include a “Ride & Drive” component. A chance for individual consumers to “kick the tires” and test drive zero-emission vehicles that they might be interested in purchasing. The Project Team was referred to the event’s production team by the Western Riverside Council of Governments who hosted an AltCar Expo in the fall of 2019. The Altcar Expo producers shared the following information:

- Successful events require 9-12 months of preparation.
- Consultative services, in support of marketing and day of services (for a 1-day event), could range upwards of \$15,000.
- Staffing, be it volunteers or paid, is critical to the event’s success.
- Branding of the Local Travel Network would be important, not only to the marketing of the individual events but to future iterations and/or engagements to implement the Network.

Event Design Vision

In the fall of 2019, planning worked moved from information gathering to the design of the events, site selection process, and budgeting. The advice, input and best practices of organizations experienced in the design, planning, and production of large-scale mobility events was used to frame the task of planning for four (4) Local Travel Network community-wide events.

The vision for the events was that they would be scheduled to take place for one day and last for approximately 8 hours. Thematically, the event would have 3 elements components:

- Educational Engagement – booths, table-tops, games, feedback experiences.
- “Ride & Drive” circuit – for test-driving different slow-speed zero-emission vehicles.
- Entertainment – food trucks, music, etc.

With the basic design vision in hand, the Project Team worked to develop a “brand” or theme that could be used for marketing – both in terms of soliciting locations, partnerships, and vendors as well as the public at large. Using the SBCCOG’s “LUV” motif, the Project Team decided to call the events “LUV Fests.” For solicitation purposes, an “elevator pitch” was created that read:

“The event’s goal is to provide a fun-filled day where South Bay folks can learn about slow-speed vehicles and the proposed infrastructure that will support travel in the South Bay. Importantly, the event will provide a “hands-on” experience of slow-speed vehicles through test rides – on a safe roadway. The working title is: “LUV Fest 2020” (Local Use Vehicles)!”

In terms of schedule and production of the events, the Project Team pointed towards the first and second quarter of 2020. Budget allocation was reviewed with approximately \$100,000 available to produce the events.

Site Selection Process

The primary objectives of the community Outreach events were two-fold: to reach and engage as many South Bay residents as possible and, importantly, to find sites that were located or that offered access to disadvantaged communities (DACs). Site characteristics, including available parking for attendees as well as space or areas where a “ride & drive” circuit could be set up were important considerations for identifying potential and practical sites where vision for the event could be actualized.

Given the best practices for producing these kinds of events, the Project Team also considered the challenges of administratively engaging facilities or organizations to secure or schedule the events. For example, was a “known contact” available to assist or guide the solicitation process? Additionally, consideration was given to “Partnership” opportunities where the “LUV Fest” event could be an “event within an event” thereby leveraging existing marketing, day-of logistics, and costs.

Ten locations across the South Bay were identified as possible sites (see map below).

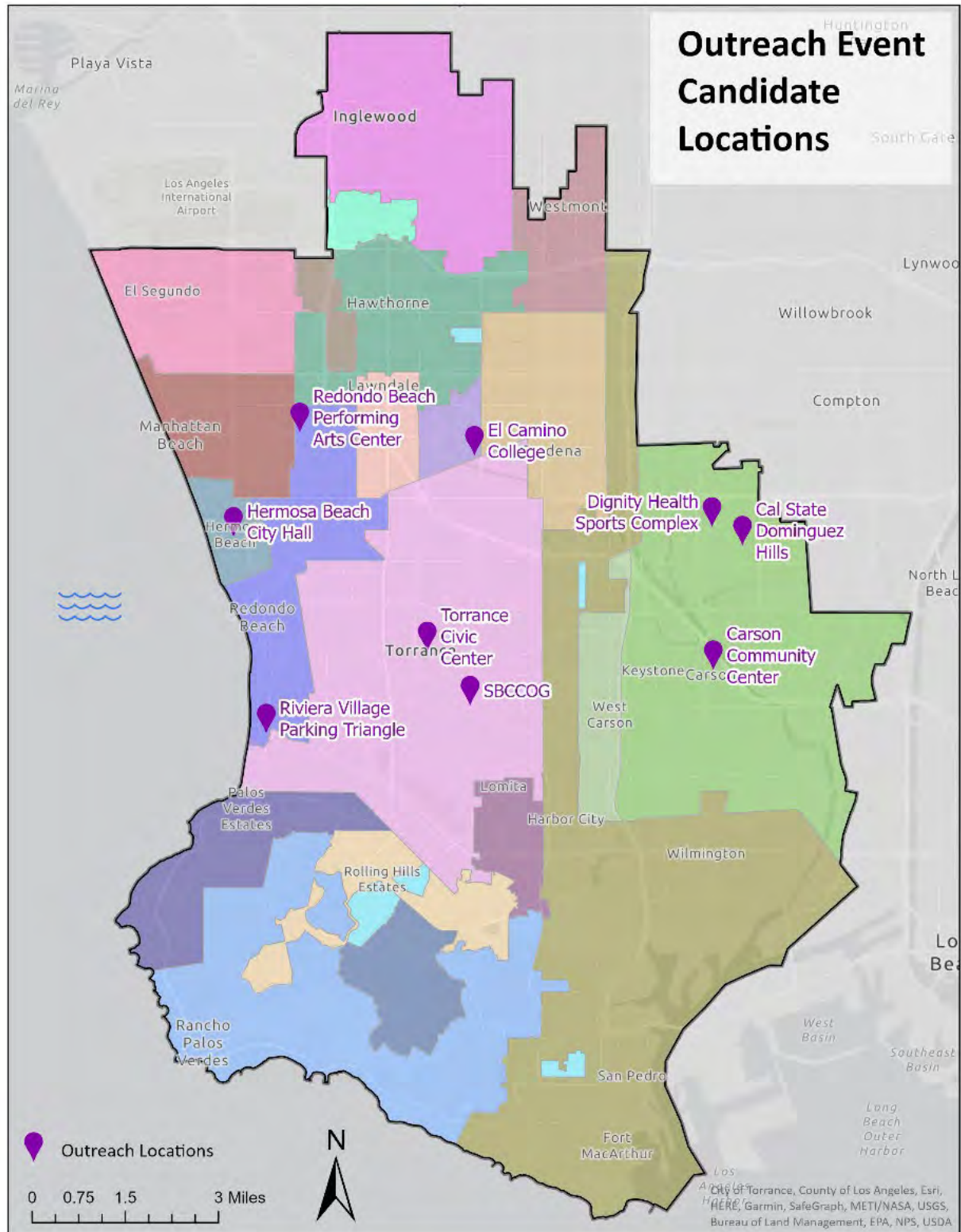


Figure 4-11 Outreach event candidate locations

The matrix (below) describes the qualities and characteristics for each location. All sites were reviewed for suitability of the “Ride & Drive” test track using a mapping analysis (see appendix).

“LUV Fest” Outreach Events Site Selection Matrix						
Location	Known Contact	Parking (Attendees)	Ride & Drive Areas	Partnership Opportunity	Available Dates	DAC
El Camino College	N	Y	Y	N	Unknown	Y
Dignity Health Sports Complex	N	Y	Y	N	Unknown	Y
Cal. State Dominguez Hills	N	Y	Y	N	Unknown	Y
Redondo Beach Performing Arts Center	Y	Y	Y	N	6/1/2020	N
Carson Community Center	Y	Y	Y	Y	4/15/2020	Y
Carson Community Center for SBCCOG General Assembly	Y	Y	Y	Y	3/19/2020	Y
Hermosa Beach City Hall	Y	Y	Y	Y	5/5/2020	N
Torrance Civic Center	Y	Y	Y	Y	6/5/2020	Y
Riviera Village Commercial Triangle	N	Y	N	N	Unknown	N
SBCCOG Office	Y	Y	Y	N	4/22/2020	N

Table 4-4 Outreach events site selection matrix

Selection of Four Sites

From the initial 10 sites, 4 sites were identified as target venues (highlighted in the Event Matrix above) for the LUV Fest events. Three (3) of the sites offered access to DAC communities and all sites offered the opportunity for “piggy-backing” the LUV Fest event with an existing and previously scheduled community event. Additionally, the proposed calendar of events offered an opportunity to produce the events spaced at monthly intervals thereby providing the Project Team to test and refine the design and engagement from one event to another.

The proposed venues and events that were targeted were:

- March 19: SBCCOG's General Assembly, held annually at the City of Carson's Community Center.
- April 15: City of Carson's Earth Day Celebration.
- May 5: Hermosa Beach Classic Car Show (LUV Fest venue to be held at Community Center near city hall).
- June 5: City of Torrance's Public Works' Open House

In early November, the Project Team began work with the respective venues and city organizing teams to secure participation and co-branding opportunities at each venue. Ride & Drive Circuits were proposed for approval at each location (see appendix). Additionally, the "Go Human" Tool Kit was reserved for the proposed dates.

Budget

The Caltrans' grant provided for approximately \$100,000 for the community outreach tasks, inclusive of the four (4) events. A preliminary budget was created based on lessons learned, best practices, and anticipated scope of work to produce each event based on anticipated number of attendees and logistics at each venue. Unit costs for supplies, marketing, and staffing were gathered, reviewed and analyzed (see appendix). The Project Team concluded that sufficient funds were available to produce the events.

The analysis was based on projections from an event scenario for a "mid-sized" event (see appendix). The bottom-line cost range of \$27,110 to \$39,850. Further reflection suggested that the allocation of funds would vary based on ease of logistics, number of attendees, co-branding marketing opportunities, and allocation of staff time. For example, the anticipated costs of the LUV Fest component for the SBCCOG's General Assembly would be less expensive because the window for engagement and "Ride & Drive" elements would be approximately five hours, rather than a full day. Additionally, marketing dollars would be saved through leveraging the SBCCOG's existing marketing efforts for the event. In contrast, larger-scale events would, likely, be more expensive. At the high-end would be the larger community event venues in Hermosa Beach and the City of Torrance that would, based on logistics, require additional staff. Marketing costs would vary across each event with the goal of allocating budget to complement the strength and reach of each event's in-house marketing plan.

COVID-19: Pivoting to an Online Community Outreach and Engagement Experience

By January 2020, LUV Fest planning was well underway. Zero-emission vendors were being solicited and recruited for the Ride & Drive elements at each of the respective venues. The Project Team continued work to develop engagement tools and resources for the public educational and engagement elements of the event. Discussions with city/event hosts continued to develop, refine, and confirm day-of logistics as well as co-branding and marketing support for each event. All of this work, however, was placed on-hold in late February as city hosts anticipated the implementation of COVID-19 regulations and restrictions placed on the gathering of large groups of people. Effectively, the Project's community event planning efforts were placed on "hold" until such time as the restrictions were lifted. Short-term, the Project Team was hopeful that the events would be rescheduled for late summer or early fall. Unfortunately, this did not come to pass.

As such, the Project Team pivoted to a virtual outreach strategy to engage the public about the project, micromobility, and the proposed Local Travel Network routes. The strategy employed was the use of Esri's online App called a "Story Map." A Story Map is a cloud-based App that allows the opportunity to "weave content together" as an interactive narrative. The content is available online and presented to the viewer in a scrolled linear fashion. Within the Story Map template is the opportunity to create an immersive experience where videos, photos, and, importantly, interactive GIS maps can be used by the viewer to learn, in a personal way, the "story" – in this case about the Local Travel Network.

In late summer, when it became apparent that all in-person events were likely not to happen during the project's duration, the Project Team began development of a Story Map. Goal was to create a product that, like the Final Report, would live and be used well beyond the scope of the project. Over the course of several months, a story was outlined and "story-boarded" to create scenes that would engage viewers about the project (see appendix). The design and production of the Story Map was envisioned to yield a product that would be a facsimile (virtually speaking) to the cancelled LUV Fest events. Content was developed to:

- Visually tell the story about micromobility and the different modes that are available in the marketplace – including resources to see and try the different modes
- Engage the viewer about why micromobility matters.
- Present the rationale for the Local Travel Network and how it was designed.
- Engage the viewer with how they might envision using the Network.
- Suggest ways that the viewer can become involved in the implementation of the LTN.
- Provide feedback for the viewer in the [form of a survey](#) and "opt" in for inclusion about future LTN news.
- Provide additional resources to other groups, activities, and reports for the viewer.

Production of the Story Map included issuing of a Request for Qualifications (RFQ) to create new, project specific content (video and still photography) as well as post-production. The published version of the Local Travel Network Story Map was published in January 2020 and is available on the South Bay Cities Council of Governments' [Local Travel Network webpage](#) along with the survey which will be used to provide direction and feedback to cities as they consider implementation of the network.

Besides being on the SBCCOG website, the SBCCOG has asked cities to post the story map on their own websites and it was part of the exhibits shared at the SBCCOG's virtual March 18, 2021 General Assembly. It has also been sent out to the 16,000 SBESC e-mail list.

5. Technical Reports

Overview

The firm of Fehr and Peers was hired to provide the Project Team technical expertise on all facets of the route refinement study. Analysis, technical drawings, renderings, as well as policy memos were produced as products for the project's Scope of Work. This chapter is organized to provide a synopsis of each technical memorandum as well as guidance for future use of the material. All memorandum and reports are provided, in-full, as appendices.

Associated VMT and GHG Reductions

The Local Travel Network (LTN) will provide a comfortable and attractive travel network for low-speed zero-emission and human-powered vehicles, such as neighborhood electric vehicles (NEVs), micromobility modes, and bicycles. The many connection points between South Bay area residential neighborhoods and commercial corridors and centers make it both convenient to use and competitive with travel by full-size vehicle in general purpose travel lanes for local trips. The LTN's implementation is likely to result in increased use of low-speed zero-emission and human-powered vehicles, and a decrease in the use of passenger vehicles which generate vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions. This memorandum presents a summary of the data, sources, and modeling methods used to estimate the reduction in VMT and greenhouse gas (GHG) emissions that can be reasonably expected to result from implementation of the South Bay Cities Council of Governments (SBCCOG) LTN. It also documents some of the limitations in existing modeling tools which may result in an underestimate of the shift in travel mode away from VMT-generating vehicles resulting from LTN implementation.

Moving Toward a More Robust VMT Analysis

The Fehr and Peers' VMT and GHG calculations and modeling (sited above) are considered "state of the art" for the reduction benefits that would accrue through the implementation of the Local Travel Network and anticipated use of micromobility on the Network. This memo proposes that the current model should be considered for revision to include the emerging mode share of individuals using micromobility vehicles. The memo presents recommendations for the inclusion of micromobility sales data as well as sub-regional trip data - gleaned from the SBCCOG's extensive research of South Bay residents' travel patterns - that would yield a "more granular" and robust VMT and GHG reduction analysis. Back-of-the-envelope scenarios suggest

that the LTN and increased micromobility mode share may provide more VMT and GHG reductions than what is currently modeled.

Housing and the LTN

The implementation of a Local Travel Network as a sustainable mobility and transportation strategy does not stand alone as an infrastructure enhancement to the roadways of the South Bay. Rather, it also provides co-benefits that will positively impact housing within South Bay cities. Describing the relationship between transportation and land use has never been more important than at this moment. Congestion, poor air-quality, and safety are endemic issues that mobility innovations like the Local Travel Network will solve. So too, the LTN presents the unique opportunity – when tied to the South Bay neighborhood center strategies – to positively impact and address the state-mandated challenges to provide additional housing capacity in the South Bay. This memorandum provides insights into how the complementary strategies of the South Bay’s mobility strategy of a Local Travel Network and neighborhood-oriented land-use strategies will yield positive housing outcomes.

Associated Changes in Parking for New Developments

This memorandum presents recommended changes to parking requirements for private development to encourage adoption of and accommodation for local use vehicles (LUVs), including neighborhood electric vehicles (NEVs) and electric bicycles (e-bikes), using the SBCCOG Local Travel Network.

Adoption of NEVs and other electric micromobility options will change the parking and vehicle storage needs for residents and visitors. NEVs occupy less physical space than standard passenger vehicles, so a relatively higher number of NEV spaces can be accommodated in a given parking area. This means that NEVs may also be able to utilize existing spaces more efficiently, in a wider assortment of configurations. NEV parking spaces also should be located adjacent to charging infrastructure. Local jurisdictions may wish to update parking standards for new developments to specifically address storage and charging of NEVs and full-sized Battery Electric Vehicles (BEVs). The SBCCOG can support member jurisdictions who wish to do so by drafting sample zoning and building code amendment language that can be adopted universally or tailored to fit the specific needs of each diverse jurisdiction.

Parking and Charging Arrangement

This memorandum presents strategies and policy recommendations to address and balance the on- or off-street public parking, charging, and curbside access needs that might be required for a slow-speed Local Travel Network (LTN). Using the SBCCOG's commissioned study, "South Bay Shared Mobility Action Plan" the memo describes how the learned experiences from the micromobility rental market can be applied to describe "best practices" for parking and charging of zero-emission of vehicles that will use the LTN. The information is summarized in a "Best Practice" matrix.

Signage and Wayfinding

The Local Travel Network is designed to accommodate multi-modal slow-speed zero-emission vehicles: from pedal bicycles to neighborhood electric vehicles (NEVs). Signage and wayfinding for the universe of modes that will use the LTN is regulated by the state; particularly, as it pertains to NEVs. For the Local Travel Network to be something more than a revision to the existing South Bay bicycle master plan, the branding, signage, and wayfinding will require compliance with state regulations governing NEVs. This memo addresses general signage and wayfinding principles as well as actions that the SBCCOG and South Bay cities will need to take to allow for NEVs to be a formal part of the LTN. The memo serves to provide an overview of the existing regulatory framework governing non-standard regulatory signage and wayfinding in the South Bay, including relevant local, state, and the Manual for Uniform Traffic Control Devices (MUTCD) policies.

By law, "Local agencies in California authorized by legislation in the California Streets and Highways Code and California Vehicle Code may install signs in areas with established NEV Transportation Plans." For LTN signage, wayfinding, and markings on the road to include "NEV" (as a descriptor) all agencies would, necessarily, need to request the State to authorize an "NEV Plan" for their, respective, communities. This appendix provides a draft bill that would be carried forward by a State Assemblyperson or State Senator.

Funding Opportunities

Implementation of the Local Travel Network will necessitate funding. This memorandum includes an overview of the funding structure, agency eligibility, evaluation criteria, and timelines for the program elements most relevant to phased implementation of the LTN. Regional and state funding sources as well as Los Angeles Metro Measure M related funding opportunities are described.

“Cut Sheets” – Technical Renderings and Resources for LTN Treatments

The Proposed Local Travel Network describes 243 miles of route segments (streets) in the South Bay. As a resource for cities' implementation, “Cut Sheets” – renderings, drawings, with specifications and references – that cities can use for their city-specific implementation treatments to build the Local Travel Network were created. Since the project scope did not permit cut sheets for all cities describing all street segments, this technical report was created to address eight (8) identified “constraints and barriers” that, if solved, could provide additional connectivity and utility to the Proposed LTN. Additionally, the Technical Team focused on a “Case Study” of an intersection with proposed treatments to solve for the necessity of safe connectivity across the Network. Within these renderings and drawings, most of the anticipated treatments to build the LTN are described. A resource guide including the NEV Plan Roadway Design Guidance as well as unit costs for proposed treatments are included.

It is anticipated that the “Cut Sheets” and additional resources will be used by cities' staff as design elements for future implementation projects. Included in the “Cut Sheet” package are:

- Glossary of Terms
- Glossary of Mobility
- Neighborhood Accessibility Concept Designs
- Concept Details: Intersection
- Treatments
- Resource Guide

6. Implementation

The Caltrans' Sustainability Planning Grant provided funding for a route refinement study that has yielded a "Proposed Local Travel Network" for the South Bay. The Network, when implemented, would provide a total Network of 243 miles route miles. Two hundred and twenty-two (222) miles would be routes through low-stress slow-speed neighborhood streets, and another twenty-three (23) miles would necessitate the construction of protected Local Use Vehicle (LUV) lanes for safe connectivity on the Network. Less than one (1) mile of route segments were identified as those that would (if implemented) require "Engineered" solutions – examples include the construction of a signal and signage to provide safe crossings at a "dog-leg" connection along Budlong

Avenue, or removal of a potted plant/tree barrier to provide connectivity from the commercial center at Manhattan Beach Village across Pacific Coast Highway into an adjoining neighborhood. In terms of connectivity, "Engineered" elements would add marginal improvements to the Network.

Implementation of the Local Travel Network will provide for the sub-region and local municipalities to have a significant impact on reducing vehicle miles travelled and the reduction of greenhouse gas (GHG) emissions. This chapter will review policy implications that will need to be addressed as well as cost estimates and funding for implementation. Next steps, including a discussion of the timeline for city and South Bay Cities Council of Government actions, Public Works' planning strategies, and public engagement, are provided.

City	LTN	LUV	Engineered
Carson	27.1	5.8	
El Segundo	10.5	2.8	
Gardena	12.3	0.8	
Hawthorne	11.3		
Hermosa Beach	4.8		
Inglewood	22.9		
Lawndale	6.4		
Lomita	3.4	0.7	
Los Angeles (Council District 15)	33.7	5.6	
Manhattan Beach	13.1		0.2
Palos Verdes Estates	9.2		
Rancho Palos Verdes	5.0	1.9	
Redondo Beach	20.6		
Rolling Hills Estates	1.4		
Torrance	44.5	3.7	0.4
Unincorporated	17.2	1.3	0.3
Total	243.4	22.6	0.9

Table 6-1 Proposed LTN mileage by city

Policy and Program Recommendations

This section identifies the key policies and initiatives necessary to implement the LTN and accelerate and support a new ecology for micromobility in the South Bay. Five key areas have been described where changes in policies, programming, and resources, would support and provide additional capacity to the implementation and ongoing opportunities that the Local Travel Network provides:

1. Implementing the LTN

South Bay cities, with the support of the South Bay Cities Council of Governments (SBCCOG), will be responsible for making the Local Travel Network (LTN) a reality. Each city will have the responsibility of completing their respective segments of the network. The challenge to complete a sub-regional network, one that reaches into every city, will be working through ways to seamlessly connect the LTN at the borders from one city to another. The SBCCOG will offer coordination and assistance to help South Bay cities facilitate the building and legislative process to develop the LTN segments within each respective city as well as collaboration between cities for the corridors' connectivity to make the network operational across the sub-region.

The SBCCOG will also facilitate the important “next step” of developing the wayfinding signage that will provide functionality and a brand designating the LTN as both a sub-regional network while providing cities the opportunity to customize the signs by adding their logo or some other identifier. Three specific actions will be necessary to assist with the initial implementation process:

- *SBCCOG Board of Directors endorsement of this Route Refinement Study and affirmation of the desire to implement the LTN.*
- *Introducing state legislation to create a State approved “NEV Plan” for the South Bay cities.*
- *SBCCOG using subregional Measure M funds for a project to design and plan the LTN wayfinding system.*

2. Education

Over the course of two years, the Project Team learned the value of education as a critical communications tool to engage stakeholders about the concept of what a local travel network might be and the opportunities that implementation of a network of safe slow-speed streets would bring to the South Bay. Community stakeholders were fast to point out that, beyond the

general marketing of the network and the streets that are proposed, educational programs would “absolutely be critical” to the ongoing operation and safety of people who will use the LTN.

Currently, the Local Travel Network Story Map is the only tool available to deliver the basic information/education about micromobility and the Local Travel Network. The following actions are proposed to augment the educational materials, tools, and programs that will be instrumental to the successful implementation of the LTN:

- *Request or apply for supplementary funding for educational programs from agencies whose mission supports micromobility, electric vehicles, active transportation, safe streets (“Vision Zero”), and clean air programs. These include SCAQMD, SCAG, Metro and CARB.*
- *Work with bicycle coalition members, cities, and other community stakeholders to integrate the Local Travel Network into new or planned bicycle educational safety programs.*

3. Developing Micro-Mobility Ecosystem

Street adaptation is one side of the challenge that the Local Travel Network addresses. The other side is how to support the emerging consumer market for micromobility modes – encouraging purchase of new modes and their use on the Network by local residents. The policy objective is to lead city decision makers, owners of popular destinations, and especially the public to think differently about mobility – to shift mode choice for short trips from the automobile that has dominated social consciousness for almost a century to the use of zero-emission vehicles for local trips. While there are many programs that could advance the transition, these few are priorities:

Develop an Appropriate Mobility Tool (drive only what you need)

SBCCOG demonstration projects revealed that very few households are aware of their actual mobility needs meaning how far they typically travel, the destinations they frequent, and the relative cost of ownership of traditional large gas-burning vehicle. Participants in the Battery Electric Vehicle (BEV) demonstration (2015) consistently claimed they needed a 150-mile range on a single charge even though their GPS record showed that the most mobile sub-group averaged only 37 miles per day. This inconsistency is apparently the manifestation of range anxiety and the unfamiliarity with a new way of fueling the vehicle.

In fact, most trips by South Bay residents are short. Whether in a BEV or internal combustion engine (ICE) vehicle, they don’t go very far. About 45% of the trips were less than 1 mile; 65% less than 2 miles and 70% less than 3 miles. Since our study, SCAG, Metro and other agencies have affirmed that the overwhelming majority of trips in the South Bay are fit this description.

Micromobility devices of any kind can easily satisfy the mobility needs for 2/3 of all trips originating from home.

Add to that the fact that personal ICE vehicles are significantly more expensive to own and operate as well as the reality that they are typically parked 95% of the time, and there is an incongruity that informs the operation and costs that individuals have for the vehicles they own and those that they might purchase in the future.

- *Developing or acquiring an online tool that would lead respondents on a process of self-discovery of their actual mobility needs. This would be an integral tool to changing the micromobility ecosystem impacting the behavioral choice of individuals considering right-sizing for their household mobility needs.*

Support and Advocate for Government Subsidy Programs for Micromobility

The California Air Resources Board (CARB) has offered subsidies provided to incentivize the electric vehicle marketplace through its Clean Vehicle Rebate Program (CVRP). Over the years, vehicle eligibility requirements have shifted and changed. At one time, neighborhood electric vehicles qualified for a minimal subsidy but even that is no longer available as program requirements have changed based on manufacturer's warranties and battery capacity standards.

Currently the CVRP provides cash rebates of \$2,000 to 20 full-sized battery electric models. The largest rebates of \$4,500 are offered to 3 models of hydrogen fuel cell vehicles. Plug-in hybrids are eligible for \$1,000 and \$750 for motorcycles (some with three wheels).

In 2018, the SBCCOG discussed with CARB a pilot program that would offer rebates for micromobility devices. Proposed rebates included the broad range of electric vehicles from Neighborhood Electric Vehicles receiving 30% off the retail price for an NEV and an e-bike up to a maximum of \$3,000 to \$900 respectively – effectively, making the purchase of these two popular micromobility modes well within the reach of many consumers. The proposal was rejected.

- *Revisiting an incentive for micromobility devices the adoption of which would fundamentally shift the marketplace to support wide-spread adoption of the vehicles that will use the Local Travel Network.*

The numbers are compelling. A \$200,000 CARB subsidy, under current rules, would pay about half of the sales tax for 100 BEVs or pay 1/3 of the purchase price for 330 e-bikes. The miles travelled would be the same whether driving a BEV or an e-bike since the distances to destinations would remain short. In other words, subsidizing micro-devices would increase the ZE VMT (Zero Emission Vehicle Miles Travelled) produced over 3 times more per dollar than subsidizing part of the sales tax for BEVs. With some creativity, the rebate for bikes could be conditioned on proof that they are replacing an ICE vehicle.

On the Federal level, Congress has taken up the opportunity to support the burgeoning micromobility market for e-bicycles. Examples of proposed legislation include: the Electric Bicycle Incentive “Kickstart for the Environment” (E-BIKE) Act, proposed by Representatives Earl Blumenauer (D-OR) and Jimmy Panetta (D-C). This proposed legislation will provide a federal tax credit of 30% of purchase cost up to \$1,500 for e-bikes, a high-leverage incentive given that the market for e-bikes ranges from \$400-\$800 at the low end to the high end of \$1,500 to over \$3,000.

- *Supporting proposed federal tax credits for the purchase of e-bicycles as a policy and action that will positively impact future users of the Local Travel Network.*

Innovation through pilot programs in the “shared mobility” space are another opportunity to support implementation of the LTN and encourage the use of micromobility vehicles. One example would be to deploy and test a small fleet of micromobility devices for “shared use” at multi-family buildings or with community-based organizations in disadvantaged communities. The program would be coupled with assistance to subsidize the installation of EV charging platforms at fleet locations. Participation and subsidies would be contingent on the building owners and managers agreeing to participate in the pilot project managing the micromobility sharing program for tenants.

- *Supporting innovations through pilot projects. SBCCOG would like to sponsor a pilot program to test the cost/benefits of a CARB subsidy for the purchase of small fleets of micromobility devices from e-bike to NEVs.*

State Data Collection

Micro-mobility will not be able to contribute to the state and regional zero-emission electric vehicle sustainability strategies until the appropriate data and modeling resources have been developed to support it. As it stands, there are few data available to plan, forecast, or evaluate micro-mobility initiatives. The following proposals would address these issues:

- *Evaluating the LTN impact from the perspective of real-time use for safety and future improvements to the network.*
- *Monitoring sales of micromobility devices at a level not available at this time to have more precise calculations for GHG emission reduction. Only NEVs currently require a license plate.*
- *Supporting a policy change for the Department of Motor Vehicles (DMV) to add NEV sales to its published data base for public use. The commercial vehicle sales data includes NEVs but the free public data based does not.*

- *Tracking and making available sales of other micro-mobility devices for public access. The State DMV should consider a way to track sales for all micro devices as they are part of the transportation fleet so that this information is available to planning and public works agencies.*

Market data is critically important to the entities concerned with monitoring the success of local and sub-regional climate action strategies for reducing vehicle miles travelled and greenhouse gas (GHG) emissions. Current models for calculating GHG emission reduction are limited by the lack of micromobility mode ownership data. This will become significant as usage grows.

Both route planning and evaluation require current traffic volumes, in real time if possible. Traffic counts on all streets, especially candidates for inclusion in the LTN were limited and available only in cases where the city had occasion to conduct a traffic analysis. The lack of current or real-time data forced SBCCOG staff to make subjective assessments of low volume streets based solely on streets with posted limits of 25MPH.

- *In the ideal future, monitoring devices sufficiently sensitive to detect what kind of vehicle is using the road are needed. Policies and resources that lead to the build-out of such monitoring devices are integral to the planning of future LTN improvements or similar slow-speed networks across the State.*

Redefining More Complete – “Complete Streets”

Policies to reform city streets are not new. The Complete Streets Act (AB 1358) was signed into law in 2008 as a way to expand safe access to public streets by travel modes other than motor vehicles. Encouraging carbon-free mobility was the primary goal.

While the legislation mandates that streets serve all users, it specifically cites motor vehicles, bicycles, and transit modes. Implementation of complete streets has been based on that narrow interpretation of the legislation. For example, designated streets have been marked with class 2 bike lanes so that cyclists can be mixed on the same street with motor vehicles. Those streets are defined as “complete.”

However, the SBCCOG believes that the definition of “complete” should reflect the substantial expansion over the last decade of micro-mobility beyond bike, peds and transit. Micromobility includes not only all the pedal technologies but also electric powered short range, slow speed devices. Those micro devices, from e-scooters to NEVs, expand the fleet of vehicles that will advance the pursuit of carbon-free mobility and therefore should be incorporated into complete streets planning.

The SBCCOG’s Local Travel Network approach to reforming the street infrastructure takes nothing away from motorists. Instead, alternative modes are re-routed to streets already designated for slow speeds by all users. This approach promises to relieve congestion. Today

80% of traffic is carried by 20 percent of the road mileage (20% = 400 miles of streets; 10 major arterials in each direction). The formal LTN and its informal feeder system (all residential streets) could divert traffic so that 20 % of the road mileage carries only 60% of the road miles, with the other traffic spread out over the under-used 80%.

- *An evaluation framework should be developed to monitor the impact of the LTN in terms of ease of use, safety, and as a catalyst for increasing micromobility mode share.*
- *The SBCCOG proposes, that Southern California Association of Governments (SCAG) "Complete Streets Toolkit" and "Resilient Street Toolkit" be updated to include and promote the Local Travel Network as a important complete street infrastructure element*

4. Local Parking and Charging Regulations

The Local Travel Network was designed to provide safe routes for South Bay residents to travel from home, through neighborhoods, to local destinations. Community stakeholders interviewed as part of the route refinement study noted that parking as well as charging were important amenities for the future viability of the network. These considerations were addressed by Fehr and Peers, technical consultant to the SBCCOG on the project. Among their findings they have identified the following recommendations that local governments should advance to support the use of the LTN:

Electric Vehicle Charging

Provide EV charging for residential and commercial properties:

- *Residential: Require one (1) EV-ready parking space per unit in buildings required to provide parking*
- *Commercial: Require 20% of parking spaces to provide Level 2 EV charging*

Provide access to charging infrastructure at micromobility parking facilities:

- *Long-term = provide one (1) or more outlets*
- *Short-term = provide outlets sufficient to accommodate e-bikes in at least 25% of bicycle parking spaces*
- *NEV parking spaces should provide L1 charging access*

Parking

Commercial uses to provide dedicated NEV parking in preferential locations near the building entrance at the following minimum levels by land use:

- *Retail/commercial centers = two (2) spaces per 10,000 feet of building area*
- *Medical facilities = four (4) spaces*
- *Educational facilities = six (6) spaces*

Allow replacement/substitution of vehicle parking with micromobility parking:

- *Residential up to 15% of spaces*
- *Commercial up to 30% of spaces*
- *Apply to existing uses, converting/expanding uses in existing buildings, and new development*
- *Develop a mechanism for business owners to request installation of corrals in front of or near their business to accommodate a variety of micromobility modes*
- *Neighborhood parks = four (4) spaces*

5. Equity in Micromobility

Micromobility democratizes mobility. The highest level of mobility service is door-to-door, on-demand (D2DOD) which has not been universally affordable.

Public mass transit is considered the answer to mobility equity - subsidized rides providing relatively inexpensive mobility is available regardless of income within their service area. This is especially important in highly centralized regions where many people regularly converge on one place.

In recent times, traditional public mass transit, with its scheduled, fixed routes, has primarily been used by those without a personal mobility option – they are “transit dependent.” UCLA’s 2019 study of the causes for a 10 year drop in transit ridership despite costs per ride being 88% publicly subsidized identified access to a private automobile as the top reason even among the formerly transit dependent.

In other words, the convenience, time efficiency, and comfort of private mobility is the level of service that almost everyone prefers. Plus, the increasingly decentralized destination patterns of public transit riders have reduced the effectiveness of mass public transit.

These realities suggest that it is time to update the concept of mobility equity. Ownership of full-sized vehicles, zero-emission, or not, can be cost prohibitive. Micromobility devices, however, cost between a few hundred dollars up to around \$12,000, and all are battery electric, sustainable modes for local mobility. Supporting policies and programs that address affordability is a step towards equity in the transportation and mobility for all.

- *CARB clean vehicle subsidies (as discussed above) would help lower the cost threshold of purchase, providing micromobility equity for those that are transit dependent with their own door to door on demand option.*

Location is another dimension of equity. Current neighborhood Electric Vehicle ownership is concentrated in the beach cities of the South Bay. These cities host the majority of bike lane miles and are inhabited largely by more affluent residents. The beach area street network is also slower and narrower than on the east side of the South Bay where incomes are lower, and the major arterials carry more commuters to the blue-collar jobs in the sub-region as well as accommodating Port truck traffic. Adverse impacts on health and quality of life are experienced. Continued support for policy and programs that address and mitigate issues of air-quality and congestion are integral to equity and the idea of providing positive mobility for everyone, regardless of geography, income, or color. The implementation and use of the Local Travel Network in designated disadvantaged areas of the South Bay will help mitigate some of these issues. In general, policy and programs to mitigate health, transportation, and climate issues in disadvantaged communities should be strongly advocated and supported. Examples of specific programs and actions that would support the implementation of the LTN and development of the micromobility ecosystem include:

- *Southern California Air Quality Management District (SCAQMD) sponsorship of micromobility "Ride & Drive" events.*
- *Support and encourage cities to apply for "sustainable transportation projects" through grant opportunities through the Strategic Growth Council's "Affordable Housing and Sustainable Communities" program.*
- *Support cash incentives for residents specifically of disadvantaged communities which will help them select low-cost options for their mobility needs which they will safely be able to use on the LTN for their local travel needs.*

Costs

Over ninety (90%) percent of the Proposed LTN would require “paint on the road” and wayfinding treatments. The physical improvements to rights of way to create the sharrow system elements for the Local Travel Network would require simple painted treatments for stripping of lanes, sharrow markings on the road, and signage (posted signs every ¼ mile).

The additional improvements to complete the Network would require construction to build “LUV Lanes” which would be infrastructure improvements that would be similar to Class IV bicycle infrastructure. Construction of dedicated protected LUV Lanes would provide safe connectivity across twenty-three (23) miles of route segments that could not, otherwise, be treated as a simple Sharrow Network.

Therefore, there is a range of costs for city’s implementation plans. It suggests a staged implementation for cities that have both the Sharrow Network and LUV Lane improvements.

Sharrow System

A comparable sub-regional sharrow system that would be similar to the Local Travel Network does not exist. As such, cost estimates for a sharrow system were modeled on existing bicycle sharrow networks. Local estimates were derived from the City of Manhattan Beach’s commissioned Sharrow System Report (2011) that estimated \$25,000 per mile for a sharrowed bicycle network. Staff reported that with an inflation multiplier of twenty (20%), today’s (2021) cost to the City would be approximately \$30,000 per mile. Similar figures of \$25,000 per mile are found in the Federal Highway Administration’s (2015) handbook for [“Incorporating On-Road Bicycle Networks into Resurfacing Project”](#). Research findings in “Street’s Blog (August 2018) reference a range of \$20,000 to \$1,000,000 for complete road re-pavement projects in California – simple usage of signage to designate bike routes and bike boulevards, without sharrow markings, were estimated at \$10,000 per mile.

Typically, best practice for implementation of sharrow treatments involves incorporating sharrow markings into the final construction elements for road stripping as part of capital improvement projects (CIPs) (i.e., road re-surfacing or other large-scale improvement projects). This practice was confirmed by City of Carson’s staff upon completion of a 2020 major resurfacing project that included the addition of new bicycle routes using sharrow markings painted as part of the stripping elements for CIPs project.

The Project Team learned that, on rare occasions, “one-off” projects to provide sharrow markings along one or two blocks have been implemented within a City. Addressing safety

concerns, city staff from Manhattan Beach reported applying sharrows along a two-block area of a neighborhood on the west-side of Pacific Coast Highway. The exact costs were not available, however, Fehr and Peers' reports that the unit cost for painting each sharrow is approximately four-hundred dollars (see Technical "Cut-Out Appendix). Best practice for painting sharrows on street segments would provide a minimum of at least four (4) sharrows on each block – two (2) in each direction (usually located at each intersection). Using a "Back of the Envelope" Analysis (see appendix) the total costs for implementing a sharrow system across the entire LTN was estimated to be \$5,238,000; the per mile costs is estimated at \$21,555.

LUV Lanes

Local Use Vehicle lanes are an integral treatment for complete connectivity of the LTN between and within defined areas of the South Bay. LUV Lanes, however, as a defined NACTO treatment do not exist. Rather, these treatments are envisioned to be similar in design to Class IV bicycle treatments that are now used to create "separated bikeways". The LUV Lane would be designed to a width that would accommodate golf carts. The construction choices and costs would range, based on city preferences for incorporating different types of safety elements. Examples of safety treatments vary from bollards to physical concrete barriers – all, reflecting different costs. At the low-end, Streetsblog USA article 7/29/20," quotes a study from the Pedestrian and Bicycle Information Center, that describes costs for modern, protected bike lanes that [can range from \\$133,170 to \\$536,680 per mile](#). At the high-end, Streetsblog research points to a [Caltrans' estimate](#) of \$1,000,000 per mile to "separate mixed-use" of roadways between cars and bicycles.

Range of Costs (Estimated): Using conservative high-end estimate for sharrow treatments and the construction of LUV Lanes the total Network costs were estimated at \$29,660,000. The following table describes the estimated costs by City (based on actual route segment miles) to build the Proposed Local Travel Network. Sharrow costs are estimated at \$30,000 per mile and LUV costs are estimated at \$1,000,000 mile.

City	LTN	LTN Cost	LUV	LUV Cost	Estimated Cost
Carson	27.1	\$813,000	5.8	5,800,000	\$6,613,000
El Segundo	10.5	\$315,000	2.8	2,800,000	\$3,115,000
Gardena	12.3	\$369,000	0.8	800,000	\$1,169,000
Hawthorne	11.3	\$339,000			\$339,000
Hermosa Beach	4.8	\$144,000			\$144,000
Inglewood	22.9	\$687,000			\$687,000
Lawndale	6.4	\$192,000			\$192,000
Lomita	3.4	\$102,000	0.7	700,000	\$802,000
Los Angeles (Council District 15)	33.7	\$1,011,000	5.6	5,600,000	\$0
					\$6,611,000
Manhattan Beach	13.1	411,000	0.2	200,000	\$611,000
Palos Verdes Estates	9.2	\$276,000			\$276,000
Rancho Palos Verdes	5	\$150,000	1.9	1,900,000	\$2,050,000
Redondo Beach	20.6	618,000			\$618,000
Rolling Hills Estates	1.4	42,000			\$42,000
Torrance	44.5	1,335,000	4.1	4,100,000	\$5,435,000
Unincorporated	17.2	\$516,000	1.6	1,600,000	\$2,116,000
Total	243.4	\$7,320,000	23.5	\$23,500,000	\$30,820,000

Table 6-2 LTN estimated cost by city

Funding

The South Bay Cities are uniquely positioned to use Metro's Sub-Regional Measure M Construction Funds for implementation of the Local Travel Network. This project and the materials contained herein provide the necessary rationale and initial design elements that would be required in the annual SBCCOG call for projects budget request.

Next Steps

Implementation of the Proposed LTN will require the following actions:

1. Resolutions by City Councils and the South Bay Cities Council of Governments to request the State to approve the start of the local and sub-regional agency's process to create an NEV Plan (see Technical Appendix: "NEV Regulatory Signage" Memo and NEV Draft Bill). Without State approval for an NEV planning process, the Local Travel Network would not be able to use or reference Neighborhood Electric Vehicles on the rights of way or wayfinding signage.

Timeline/Actions: City Councils and the SBCCOG need to work with local legislators to introduce the required legislation. The draft resolution (attached in the appendix) provides language for the necessary legislation to create an NEV network.

2. Public Works' Planning: Road stripping and the implementation of sharrow treatments are usually constructed as part of larger Capital Improvement Projects (CIP) including ongoing or future road repairs, resurfacing and slurry projects. Additionally, in advance of State approval for an NEV plan, active transportation improvements should be considered as opportunities to include LTN treatments. Cities' Public Works Directors will be engaged to consider the scheduling and future inclusion of Local Travel Network improvements for these types of projects.

- a. *Timeline/Action: The SBCCOG's Infrastructure Working Group meets monthly. It is recommended that a standing agenda item be included at each meeting to discuss opportunities for implementing the LTN.*
- b. *South Bay cities should be encouraged to prepare and submit Measure M projects for the implementation of the LTN in their respective cities.*
- c. *Working with the South Bay cities, the SBCCOG has submitted a Measure M project to design a logo/brand for the LTN wayfinding that will be used by cities as they implement the LTN.*

3. Community Engagement: Implementation of a sub-regional Local Travel Network will require community interest, support, and education. Existing champions for the Network were identified by the Project Team through the course of the refinement tasks. These groups and individuals should be engaged to continue to advocate for the implementation of the LTN. Additionally, the community at large has not had the opportunity to participate in “live” engagements about the LTN nor have they had the opportunity to participate in Ride & Drive events that would encourage potential purchasing and “right-sizing” of vehicle modes.
 - a. *Timeline/Action: The Local Travel Network Story Map will continue to tell the story about the project and the opportunities for micromobility in the South Bay. Marketing of the Story Map will continue through the communication channels of the SBCCOG. Cities will be encouraged to share the link through their public communications channels, as well.*
 - b. *As COVID-19 restrictions ease, planning for community-wide public meetings as well as a large-scale micromobility event(s) should be considered.*
 - c. *Continued meetings (quarterly) with “key stakeholders” should be planned.*

Appendices

Methodology Appendix

Technical Procurement Process

RFP Title: The SBCCOG is Requesting Proposals to Complete: A Refinement and Planning Study for a South Bay Local "Slow Speed" Travel Network

RFP Procurement Schedule

Procurement Schedule as follows (all times Pacific):

March 4, 2019	RFP Released
March 19, 2019, 11:00 AM	Pre-Proposal Meeting
March 22, 2019, 5:00 PM	Deadline for Questions from Potential Proposers
March 27, 2019, 5:00 PM	Formal Responses to Questions to be Posted Online
April 8, 2019, 5:00 PM	Proposals Due
	<i>Submitted via email to info@southbaycities.org</i>
	<i>Plus three (3) complete copies in sealed package delivered to SBCCOG office</i>
April 8th - 17th, 2019	Evaluation of Proposals
April 18, 2019	Notice/Invitation(s) for Proposer Interview(s)
April 23, 2019 (9 AM - 4 PM)	Proposer Presentations (Time TBD)
April 24, 2019	Notification of Top Ranked Proposal
May 1, 2019	Notice to Proceed
May 23, 2019	Kick-off Meeting with Fehr and Peers

Page Break

Request for Proposal to Complete: A Refinement and Planning Study For a South Bay Local "Slow Speed" Travel Network

**South Bay Cities Council of Governments
Technical Consulting for a Route Refinement and Planning Study**

(March 4, 2019)

PROCUREMENT SCHEDULE

Deadline for submittal is: 5 PM Pacific Time - Monday, April 8, 2019

PRE-PROPOSAL MEETING: 11 AM Pacific – Tuesday, March 19, 2019

Pre-proposal meeting will be held at the SBCCOG Office:

20285 S. WESTERN AVE., SUITE 100, TORRANCE, CA 90501

NOTE: RSVP'S TO THE PRE-PROPOSAL MEETING ARE ENCOURAGED. NOTIFICATION TO ATTEND SHOULD BE SENT TO: info@southbaycities.org.

Questions: all questions and requests for changes in the RFP must be submitted in writing by e-mail to: info@southbaycities.org

Final Deadline for submission of questions and requests for changes in the RFP is:

5 PM PACIFIC - Friday, March 22, 2019

Responses to all questions to be posted: **Wednesday, March 27, 2019**

Notice/Invitation for Proposer Interview: Thursday, April 18, 2019
Proposer Interviews: Tuesday, April 23, 2019 (Time TBD between 9 AM – 4 PM Pacific)
Notification of Top Ranked Proposal: Wednesday, April 24, 2019
Notice to Proceed: Wednesday, May 1, 2019 (pending SBCCOG Board Contract Approval)

The SBCCOG is a joint powers authority of 16 cities and the South Bay unincorporated areas of Los Angeles County that share the goal of improving transportation and the environment and strengthening economic development in the South Bay. Information on the SBCCOG can be found at: www.southbaycities.org

The contract for these services is principally funded by a Caltrans Sustainability Grant awarded to the City of Inglewood and its implementing sub-contractor partner, the South Bay Cities Council of Governments (SBCCOG). On behalf of Inglewood, the SBCCOG serves as the primary contact and project manager for this contract.

The SBCCOG is seeking technical assistance from qualified firms to produce a refinement study for a Local Travel Network (LTN) that will establish network options, study limits, and potentially significant environmental concerns for each of the options described in the study.

A Local Travel Network is a new approach to managing the existing street system – one that will safely carry a broad mix of slow-speed modes with maximum speed of 25 mph. As expressed in the Slow Speed Strategic Plan: “The Local Travel Network Plan for the South Bay relies on slow, low-stress roadways that have a low volume of traffic on which all modes, including cars, share the same roadway (i.e., “sharrows”). In planning for a future with a large variety of modes, this seems more practical than imagining each mode having its own separate lane.” See the Vision Statement for a more detailed description.

The plan will build upon the SBCCOG’s LTN master plan entitled:

“Slow Speed Network Strategic Plan for the South Bay” (Civic Projects, September, 2018) and the SBCCOG’s *Vision Statement*. Proposals should describe how your firm will achieve the SBCCOG’s LTN Vision from where we’re at today.

The content requirements of proposals are deliberately under-specified in order to give proposers the flexibility to be creative. The approach and details of the work scope will form the basis for evaluation. Proposals should describe the analyses that will be undertaken, the reasoning behind them, the priority data needs and the sources of those data sets.

The following resources available at www.southbaycities.org should help formulate your approach:

- [Vision Statement](#)
- [Slow Speed Network Strategic Plan for the South Bay](#)
- [Caltrans’ Award Slow Speed Network Scope of Work](#)
- [Land Use – Transportation Chapter of the South Bay Climate Action Plan](#)
- [Cambridge Systematics Mobility Matrix](#)
- [Neighborhood Electric Vehicle Demonstration: Local Use Vehicles: The Missing Mode in Sustainable Transportation](#)
- [Sustainable South Bay Strategy report](#)
- [Luskin Center charging infrastructure study](#)
- [Battery Electric Vehicle Demonstration: Drive the Future](#)

The RFP seeks a firm that will bring technical expertise to assist the SBCCOG in defining the process, criteria, and methodology for choosing the route segments that will connect South Bay residents (including disadvantaged communities) to destinations, employment centers, and transit

hubs (for trips outside the South Bay) – that will result in a complete South Bay LTN. The product of this refinement study will be to compile and prepare preliminary assessments of the network segments in sufficient detail for the project to be taken into the formal project assessment and environmental documentation (PAED) phase and to ensure that each of the network options are ready to be formally evaluated in a CEQA Environmental Process.

Proposals should address the opportunities, challenges, and constraints described in the “Slow Speed Strategic Plan”. The overall SBCCOG objective is to design and plan a low-cost safe network of routes, using regular slow speed city streets and a few identified under-utilized rights of way, that can be implemented at the conclusion of the study by the cities in the South Bay. Beyond the technical elements of the grant, the project includes a public education and outreach process. The SBCCOG will take the lead engaging the South Bay’s stakeholder communities. Outreach will include 3 public workshops including an exhibition of vehicles and devices that would be eligible to use the LTN. The consultant will need to support these efforts with data and presentation graphics, as needed.

The consultant budget is “not to exceed” \$150,000. Final deliverables will be completed and approved by the SBCCOG no later than Thursday, April 30, 2020.

Proposal Requirements

Proposals should describe the firm’s approach, methodology, and analyses to produce the project’s deliverables. The selected firm should allocate some budget and time to provide maps, materials and/or elements of their work in support of the SBCCOG’s outreach tasks. Proposers should also schedule and budget for participation in the kickoff meeting, monthly Project Team’s Technical Advisory Committee (TAC) meetings, three public workshops, SBCCOG-specific meetings that may include SBCCOG’s working Groups, Steering Committee, and Board meetings (maximum of 6).

Submissions should describe any subcontractors and include each firm’s qualifications to complete the proposed work plan including capacity, history, and experience delivering representative planning-level design work for public streets and rights of way

Proposers should indicate the maximum level of detail in each category that can be produced within the budget proposed.

A. Approach and Methodology:

Describe the proposed approach in terms of methods, analyses and data.

B. Scope of Work + Deliverables:

Detail the specific tasks that will realize the proposed approach. The following organization is suggested along with the deliverables that are envisioned in each category. Feel free to add or subtract categories or suggest other deliverables.

1. Define Network Route

Envisioned products include:

- Report regarding route options based on criteria developed jointly with SBCCOG Project Team, pros and cons of each segment (costs and benefits of each), potential constraints and challenges
- Maps and drawings for selected route segments needed for implementation to be considered for refinement study
- Report describing the potential savings in auto VMT and GHG emission savings

- Report of a “Housing Impact Analysis” -- how the LTN could impact the parking requirements of new housing

2. **Parking and Charging Arrangements**

Envisioned products include:

- Report on choices for approaching parking (docking) and charging arrangements including city owned parking facilities, public-private
- partnerships for integrated parking and charging, etc. A range of local use vehicles (LUVs) will need to be addressed under different usage options (rent by the minute, subscription service, ownership, etc.). Include pros and cons of each of the choices.

3. **Wayfinding, Signage and Regulation Improvements**

Envisioned products include:

- Report identifying the design components, costs, and issues that will accommodate Wayfinding, specific signage and proposed regulations for cities to enact along proposed route segments.

4. **Special Considerations**

Envisioned products include:

- Report addressing issues or overcoming challenges that are otherwise not included in the previous products. For example, will state authorization be required for the LTN as it is for NEV plans? What are the pros and cons and possible different levels of responsibility for implementation?

5. **Final Recommendations**

Envisioned products include:

- Implementation strategy for both cities and the region
- Network Options to be further considered in a PAED or CEQA process

C. Budget

Proposals will include a detailed budget by task for delivering their proposed Scope of Work. The proposed budget is “not to exceed” \$150,000.

Upon selection, an agreed upon budget/deliverables will become an attachment to the final signed contract between the Proposer and the SBCCOG.

D. SCHEDULE

The schedule should be planned based on estimated start date of May 1, 2019 and an end date of April 30, 2020.

E. Qualifications:

All proposals are required to submit their Team’s qualifications. This information should include the following:

- **Management Approach:** A description of the firm's proposed project management and organizational approach
- **Summary of completed comparable projects**
- **Team Qualifications:** resumes of key personnel and the role of each in the project. The project manager and contract administrator for the project should be identified with the time commitment that they are making to this project, which should be reflected in the proposed budget.
- **References:** Minimum of two and maximum of six references; a government or public agency referral is encouraged. A list and short abstract of recent relevant experience for similar projects/services is encouraged.

F. Review and Exceptions to SBCCOG Standard Contract:

All proposals are required to download the [SBCCOG Standard Contract](#) for review and mark-up as part of their electronic submission. The SBCCOG prefers to use its standard contract as a template for all future contracts. In advance of selecting a final proposer, the SBCCOG is interested in any exceptions or changes that a potential awardee might have to the basic contract template. All changes should be done in "tracking changes" and submitted as a "Word.doc" attachment to their firm's electronic submission.

PROPOSAL CHECKLIST

Proposals shall be no more than 20 pages and submitted in the specified format as follows:

- Cover Letter – Provide the name, mailing address, telephone number, email address, title, and signature of the firm's authority and a contact person for this procurement. Also include the office location if it is different than the mailing address.
- Technical Approach and Methodology
- Proposed Scope of Work with Deliverables
- Proposed Budget and Schedule
- Project Team's Qualification (Including Resumes and References)
- Review and Exceptions to South Bay Cities Council of Governments' Standard Contract

Proposals shall be submitted in electronic format as well as a total of three (3) two-sided hard copies with one (1) unbound and two (2) bound. Deadline for receipt of all proposals is:

5 PM Pacific Time - Monday, April 8, 2019

Hard-Copy Submissions Should be addressed to:

South Bay Cities Council of Governments

20285 S. Western Avenue, Suite 100, Torrance, CA 90501

Attn: LTN RFP

Please include:

Proposer Company

Contact Name + E-MAIL ADDRESS

Emailed proposals

Email submissions should be sent to:

Info@southbaycities.org

Subject: LTN RFP Submission

All attachments must be print-ready (i.e. pdf).

No faxes will be accepted. All submissions will receive a confirmation email within 1 business day. If you do not receive a confirmation email for your proposal submission, please contact:

Aaron Baum at 310 371-7222.

Proposals received after April 8, 2019 at 5 pm PST will be rejected. Requests for extensions of this time and date will not be granted. Proposals or unsolicited amendments to proposals received by the SBCCOG after the acceptance date will not be considered.

The SBCCOG reserves the right to reject any or all proposals, or to negotiate separately (in any manner necessary) to serve the best interests of the SBCCOG. The SBCCOG will select the most qualified contractor and not necessarily the lowest bidder. The SBCCOG also retains the right to waive irregularities in the proposal.

The SBCCOG will not be responsible for any expenses incurred by a firm in preparing and submitting a proposal.

Data Gathering in the South Bay

State of Data Gathering in South Bay Cities: Project Team Observations (SBCCOG, Internal Memo, 2020)

The Local Travel Network (LTN) algorithmic design was based, in theory, on the ready accessibility of complete and relevant datasets that would be used to select streets as the Base Network for the project. Though, largely data driven, the LTN design was possible only in theory because the requisite baseline data – available in a usable format – was unavailable. Usable data was defined as data that was able to be manipulated within an Excel Spreadsheet and, importantly, include “X/Y” coordinates. Both conditions were essential prerequisites to allow for mapping.

The Project Team invested significant time and energy to gather this data. What was available was used in the Base Network algorithm. This Appendix documents the challenges to gathering data that would assist similar modeling for Local Travel Network route refinement.

In general, the challenges to data gathering can be categorized in the following ways:

- In many instances, data simply did not exist.
- When data was available, it was not centrally located; rather, spread across different city departments.
- Data, when it was available, often was accessible in hard to use formats.

Data and GIS capacity varied greatly from city to city. The range of capacity ranged from a few cities that had dedicated GIS departments with robust datasets and practices to some that had almost no GIS capacity. Still other cities had no capacity to provide in-house data. For some of these cities data gathering was limited or unavailable as GIS services were contracted to a part-time outside vendor. Most cities fell in between this continuum. Generally, having some GIS capacity, cities’ data was siloed in different city departments and only available on an as needed basis.

Data Challenges: Usability

Project Team’s efforts to gather usable datasets were stymied by two (2) recurring types of issues:

Format—The data required for the LTN Network Design and subsequent route refinements needed to be formatted in a GIS format. Usable datasets needed to be in a manipulable software (Excel) and, importantly, include “X/Y” coordinates. Both conditions were a prerequisite to allow for mapping. Format issues included:

Miscellaneous Observations: Data Gaps

In many cases, datasets simply did not exist. The Project Team observed that city staff might have knowledge of changes and developments regarding street infrastructure or active transportation planning (i.e., implementation of bicycle infrastructure), but the resulting data was never organized, aggregated, presented, or translated into a useable GIS format. Similarly, old information may never have been reviewed and refurbished for modern use – existing only as a static document. Example of these kinds of observations include:

- Street dimensions—Most cities only had road design standards that were decades old. The piecemeal nature of urban development led to cities often deviating from the original standards & never having aggregated/tracked the changes over time.
- Bike facilities did not exist for the same reason. While they were incrementally expanded overtime, few cities had recently updated maps of all bike facilities or even an aggregated list of them.

City Data: City Staff Outreach and Website Review

City websites were thoroughly searched, and relevant city staffers were contacted through phone or email. The Project Team had limited success engaging staff via phone and email. However, face-to-face meetings with Staff (as part of the City Stakeholders' Outreach and Feedback Process) provided access and insights to data that proved useful for future route refinement of the Local Travel Network.

The Project Team's survey of city websites yielded a general index of discovered information that was incrementally built out. Five (5) categories of information were extrapolated from this research:

1. **Plans**
2. **Maps**
3. **Design Standards**
4. **Ordinances**
5. **Studies/Analyses**

An index (by type) of available City-level data is described in the following table:

ID	Layer Name/Content	Source	Version/Date Updated	Definition	Attributes
1	General Plan Land Use - Los Angeles	SCAG	3/15/2019	SCAG's 35 standardized land use categories	Land-use categories, city land-use designation, DU range (low & high), zone code, acreage
2	Cal EnviroScreen	CA OEHA	3.0	State identified disadvantaged communities	Includes information of exposure indicators, pollution burden, socioeconomic indicators, and environmental effects indicators
3.1	2010 TIGER Roads	LA County	2010	Road segments for the entire South Bay, oriented on centerlines	The attributes are minimal. It includes some very basic road characteristics, like whether or not it is a divided or a decked road
3.2	Roads above 35mph	Metro	6/3/2016	Roads with posted road speeds faster than 35mph	Could not find documentation
4.1	Proposed Bike Facilities	Metro	6/3/2016	Bicycle facilities proposed for implementation	Contextual information: jurisdiction of proposed facility, reference documents, year adopted, type of facility, segment counts, etc.
4.2	Existing Bike Facilities	Metro	6/3/2016	Existing bike facilities	Facility details: date installed, length, facility type, jurisdiction
5.1	2010 Census Pop & Housing	Census	2010	Population and housing estimates	Population and housing
5.2	2010 Census Demographics	Census	2010	Census demographic estimates	More than 7,000 attributes ranging from: age, sex, race, geographic mobility, worker demographics, commute variables, job, and much more
6	NAICS	Dunn & Bradstreet	2016	Organizational classifications	Location, sales, number of workers, 6-digit NAIC, financial stress
7	SWIRTS Incidents	Berkeley TIMS	2018	Incident data from police reports	Wide range of incident characteristics: parties involved, causes, fault, severity, context (road quality, lighting, weather, time of day)
8	LUV Study	SBCCOG	2012	GPS pings from NEV use	Ping time and date
9	Bike Count Data Clearing House	UCLA + SCAG	Rolling Submissions	Bicycle volume data	Varies between counts, generally includes: locations, survey period, counts, and direction
10	State Highway Traffic Volumes	CA DOT	2017	Average Daily Traffic for select points along South Bay state highways	Volumes for peak hour and month, both ahead and behind the observed intersection
11	Points of Interest	LA County	2016	73,000 points of interest (designated by LA County)	Destinations are organized into nested categories (i.e., NAICs) and include address, hours of operation, phone number, and website

Each City was approached by email and phone calls to provide or direct the Project Team to relevant city-level data. Few cities were responsive to the Project Team's directed outreach request. The data gathering approach shifted to an on-line "dive" into the resources and public accessible data that could be gathered through each city's website. The following are the lists (by cities) of potential useful data that the Project Team gathered for the route refinement process:

Carson		
Name	Year	Type
Property Information System	***	Map (interactive app)
Carson 2040 (General Plan Update)	2018	General Plan (website)
Public Works (design) Standards	***	Link list (webpage)
101--Interior Collector, Local Street, Through	1987	Design Standard (pdf)
102--Existing Local Streets	1987	Design Standard (pdf)
103--Alley Section	1987	Design Standard (pdf)
115--Sidewalk Designations	1987	Design Standard (pdf)
116--Case 1 sidewalk with parkway	1987	Design Standard (pdf)
117--Case 2 Full with sidewalk with Tree Well	1987	Design Standard (pdf)
118--Case 3 Full Wiedth Sidewalk	1987	Design Standard (pdf)
119--Case Meandering Sidewalk	1987	Design Standard (pdf)
Stub Hub Preferential Parking Zone	***	Map (pdf)
Traffic Count Map	2018	Map (pdf)
Carson GIS	***	Archive (website)
Bike Master Plan	2013	Action/Master Plan (pdf)
Carson 2040 Existing Conditions Report	2018	Report/Study (pdf)
General Plan	2004	General Plan (pdf)

El Segundo		
Name	Year	Type (format)
Smoky Hollow plan	***	Specific Plan (website)
Specific plans	***	Link list (webpage)
Bicycle plan	***	Action/Master Plan (webpage)
Climate plan	2018	Action/Master Plan (pdf)
GIS Map Gallery	***	Link list (webpage)
General plan	***	Link list (webpage)
Circulation element	2004	General Plan (pdf)
Downtown plan	2000	Specific Plan (pdf)

Gardena		
Name	Year	Type
City maps	***	Link list (webpage)
General plan	***	Link list (webpage)
Land-Use element	2013	General Plan (pdf)
Traffic Count	2015	Map (pdf)

Hawthorne		
Name	Year	Type
Municipal Code	***	Archive (website)
Commercial & Industrial Development Standards	***	Table list (pdf)
Residential & Mixed-Use Development Standards	***	Table list (pdf)
Zoning Map	2017	Map (pdf)
General Plan	***	Link list (webpage)
Land Use Element	2016	General Plan (pdf)
Circulation Element	1990	General Plan (pdf)
Conservation Element	1989	General Plan (pdf)
Economic Development Element	2015	General Plan (pdf)
Housing Element	2014	General Plan (pdf)
Noise Element	2018	General Plan (pdf)
Open Space Element	1989	General Plan (pdf)
Safety Element	1989	General Plan (pdf)
Catalogue of Enterprise Systems	***	Table list (pdf)
Speed limit ordinance	2016	List (webpage)

Hermosa Beach		
Name	Year	Type
Transportation Element	2016	General Plan (pdf)
Transportation and Traffic	2013	Report/Study (pdf)
Sketchers Design Center and Offices Project	2016	Report/Study (pdf)
2017-2018 Preliminary Budget & CIP	2016	Report/Study (pdf)
General Plan Land Use Map	2017	Map (pdf)
Zoning Map	2017	Map (pdf)
Codebook	***	Archive (website)
Maps Gallery	2016	Link list (webpage)
City Map	***	Map (pdf)
Parks and Schools	***	Map (pdf)
Street Sweeping Schedule	***	Map (pdf)
Elevation Map	***	Map (pdf)
Contours Map	***	Map (pdf)
Utility Undergrounding Districts	***	Map (pdf)
Bike Facilities	***	Map (webpage)
Public Parking tool	***	Map (interactive app)
Parks & Facilities	***	Map (interactive app)
Census response rate	***	Map (interactive app)
City Budget	***	Link list (webpage)

Inglewood		
Name	Year	Type
GIS Services	***	Link list (webpage)
Envision Inglewood (General Plan ?)	***	Report (website)
Transportation and Traffic	***	List (webpage)
Traffic Counts	***	Request info (webpage)
Inglewood Transit Corridor	***	Report (webpage)
Mobility Plan	***	Report (webpage)
Neighborhood Protection Plan	***	Report (webpage)
The New Downtown TOD Plans	***	Report (pdf)
Downtown & Fairview Heights TOD Plan	***	Link list (webpage)
Imagine Inglewood (transportation element)	***	General Plan (website)
Inglewood BikePedCount 2016 (tool)	2016	Map (interactive app)
Image Inglewood Interactive Map 1 (tool)	***	Map (interactive app)
General Plan	***	Link list (webpage)
Codebook	***	Archive (website)

Lawndale		
Name	Year	Type
Parkway Design Policy Guidelines	2018	Action/Master Plan (pdf)
General Plan	1992	General Plan (webpage)
Residential Development Standards	2012	List (pdf)
Commercial Zoning Standards	***	Link list (webpage)
Zoning Map	***	Map (pdf)
Codebook	***	Archive (website)
Hawthorne Blvd Specific Plan	1999	Specific Plan (webpage)
Speed Limits Municipal Code	***	List (webpage)

Lomita		
Name	Year	Type
General Plan	***	Webpage
General Plan Map	***	Map (pdf)

Manhattan Beach		
Name	Year	Type
City Map Detail	***	Map (pdf)
Mobility Plan Initial Study	***	Plan
Downtown Initial Study	2016	Specific Plan
Street Index	***	Map (pdf)
Zoning	***	Map (pdf)
General Plan	***	Map (pdf)
Speed Limit	***	Map (pdf)
City Parking Lots	***	Map (pdf)
Downtown Parking	***	Map (pdf)
Tree Inventory 2018	***	Map (pdf)
Athletic Fields	***	Map (pdf)
MB Bikeways	***	Map (pdf)
Bicycle Parking	***	Map (pdf)
Waste Water System	***	Map (pdf)
Storm Water System	***	Map (pdf)
Topographic Map	***	Map (pdf)
Map Gallery	***	Link list (webpage)
Interactive Map	***	Map (interactive app)
Codebook	***	Archive (website)
Neighborhood Traffic Management	2005	Action/Master Plan (pdf)
Downtown Parking Management Plan	2008	Action/Master Plan (pdf)

Redondo Beach		
Name	Year	Type
General Plan	***	Link list (webpage)
GIS Portal	***	Archive (website)
Existing Land Use and Parcel Map	2005	Map (pdf)
General Plan Land Use Map	2008	Map (pdf)
Zoning Map	2011	Map (pdf)
Codebook	***	Archive (website)
Residential Design Guidelines	2003	Link list (webpage)
Traffic Volumes	***	List & Map (pdf)
Living Streets Design Manual: Beach Cities	2018	Action/Master Plan (pdf)

Torrance		
Name	Year	Type
Street Map Truck Routes	2016	Map (pdf)
Citywide Traffic Analysis	2008	Report/Study (pdf)
Traffic Counts	2008	Map (pdf)
Traffic Engineering	***	Link list (webpage)
Traffic Signal Map	2018	Map (pdf)
Citywide Speed Zone Survey	2018	Report/Study (pdf)
Traffic Impact Analysis Guidelines	2018	Action/Master Plan (webpage)
Trees and City Landscapes	***	List (webpage)
Complete List of Trees	2015	Table list (pdf)
Hillside Overlay District Street Trees	***	List (pdf)
Special Designated Areas for Street trees	2005	Map (pdf)

Over the course of the project, additional online resources were found. The following is a list of those references that proved helpful to the route refinement and policy development of the project:

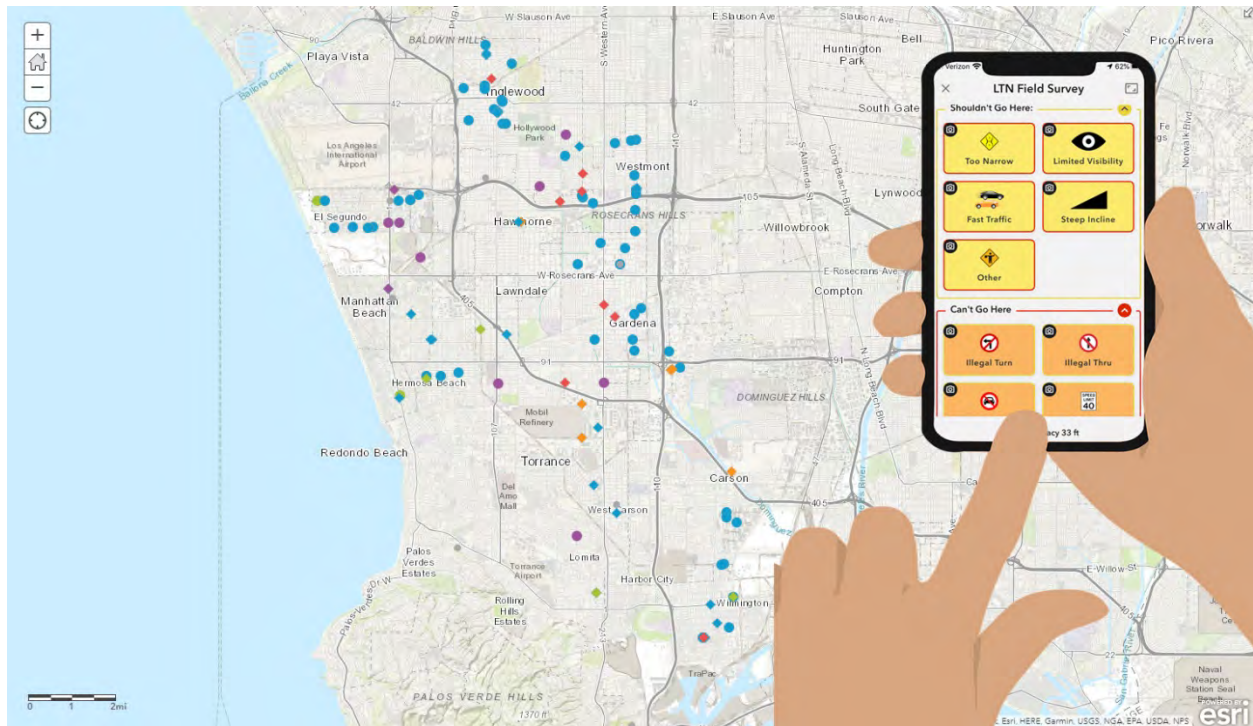
<u>Title</u>	<u>Org</u>	<u>Year</u>	<u>Document Type</u>
Low-Stress Bicycling and Network Connectivity Final CVAG Non-Motorized Transportation Plan Update	San Jose State University	2012	Report
CV Link Draft Plan	CVAG	2010	Plan
CV Link Draft Plan Appendices	CVAG	2014	Plan
CV Link Conceptual Master Plan Vol. 1	CVAG	2016	Master Plan
CV Link Conceptual Master Plan Vol. 2 Appendices	CVAG	2016	Master Plan
CV Link Conceptual Master Plan Vol. 3 Preliminary Plan Set	CVAG	2016	Master Plan
CV Link Conceptual Master Plan Vol. 4 NEV Transportation Plan	CVAG	2016	Master Plan
CVAG Traffic Census Report	CVAG	2015	Report
NEV Transportation Plan Evaluation	Lincoln	2008	Evaluation
NEV Transportation Plan	Lincoln	2006	Plan
Twelve Bridges Golf Cart Transportation Plan	Lincoln	2006	Plan
Lincoln-Rocklin Joint Report to CA Legislature	Lincoln	2011	Report
Bicycle Transportation Plan Update	Lincoln	2012	Plan
NEV Transportation Plan	WRCOG	2010	Plan
Complete Streets Guidelines	Edmonton	2013	Guidelines
Chicago Bicycle Crash Analysis	Chicago	2012	Report
Chicago Pedestrian Crash Analysis	Chicago	2011	Report
Chicago Pedestrian Crash Analysis Technical Report	Chicago	2011	Report
Complete Streets Chicago Design Guidelines	Chicago	2013	Guidelines
Sustainable Urban Infrastructure Policies and Guidelines Vol. 1	Chicago	2014	Guidelines
People Spot Design Guidelines	Chicago	2016	Guidelines
Recommended Complete Street Policy Elements	LA Metro		
Complete Streets Policy	LA Metro	2014	
Model for Living Streets Design Manual	LA County	2014	Manual
Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians	CalTrans	2010	Guidelines
Los Angeles County Jurisdictions with Complete Streets Policy/Updated General Plan Adopted or In Progress	LA County	2015	Archive
Main Street CA Guide for Improving Community and Trans Vitality	CalTrans	2013	Guidelines
Planning Complete Streets for an Aging America	AARP	2009	Report
Complete Streets: CONCEPTUAL DESIGN AND PLAN FOR SAN PABLO AVENUE AND BUCHANAN STREET	Albany, CA		

LTN Data Taxonomy

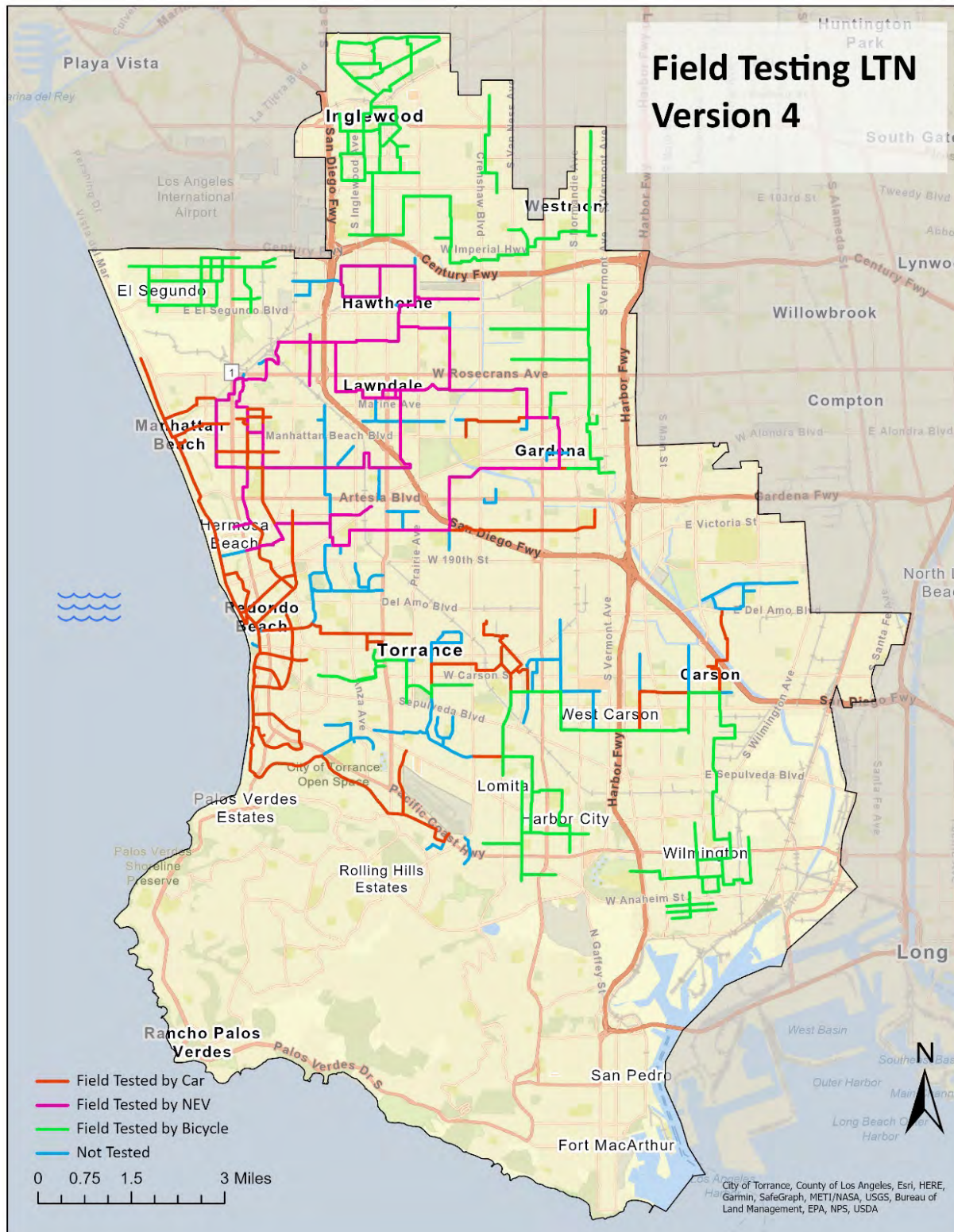
Data Source	Source File	Layer(s) Where Used
Open Streets www.openstreets.org	Open Streets Map	Speed Limits LTN all versions (Selected Segments) Engineered Solutions LUV Lane Solutions Field Tested by Car Field Tested by Bike Field Tested by NEV Truck Routes Freeway Buffers
NAICS		Destination Density Employment Density
County of Los Angeles Enterprise Geographic Information Systems https://egis-lacounty.hub.arcgis.com/	LA County LMS (Location Management System)	Shopping Centers Schools Parks & Recreation
SCAG Open Data Portal https://gisdata-scag.opendata.arcgis.com/	City Boundaries – SCAG Region Bike Routes – SCAG Region General Use Land Plan – Los Angeles	City Boundaries SBCCOG Service Area Boundary Bike Facility (Existing or Planned) Commercial Corridor Residential Corridor
South Coast Air Quality Management Board (SCAQMD)	Rule 2202 Data Base	Major Employers
ESRI Living Atlas / ArcGIS Online	ESRI World Streetmap ESRI World Hillshade ESRI World Elevation Terrain	(Basemap Layer) (Basemap Layer) Elevation
SBCCOG Original	(City-Provided Analog Data) (ESRI QuickCapture Data) (SBCCOG Original)	Downtown Districts LTN Exclusion Points LTN Caution Points Traffic Signals Outreach Event Locations Outreach Ride & Drive Courses

Field-Testing Slides with Narrative

Examples of the Arc GIS Online Map Software that was configured for “on-street” survey of the Local Travel Network Version #4 (Image 1).



A total of 179 Route Miles were tested using 3 different type modes (Bicycle, Neighborhood Electric Vehicle, and Car – Field Testing LTN Version 4)



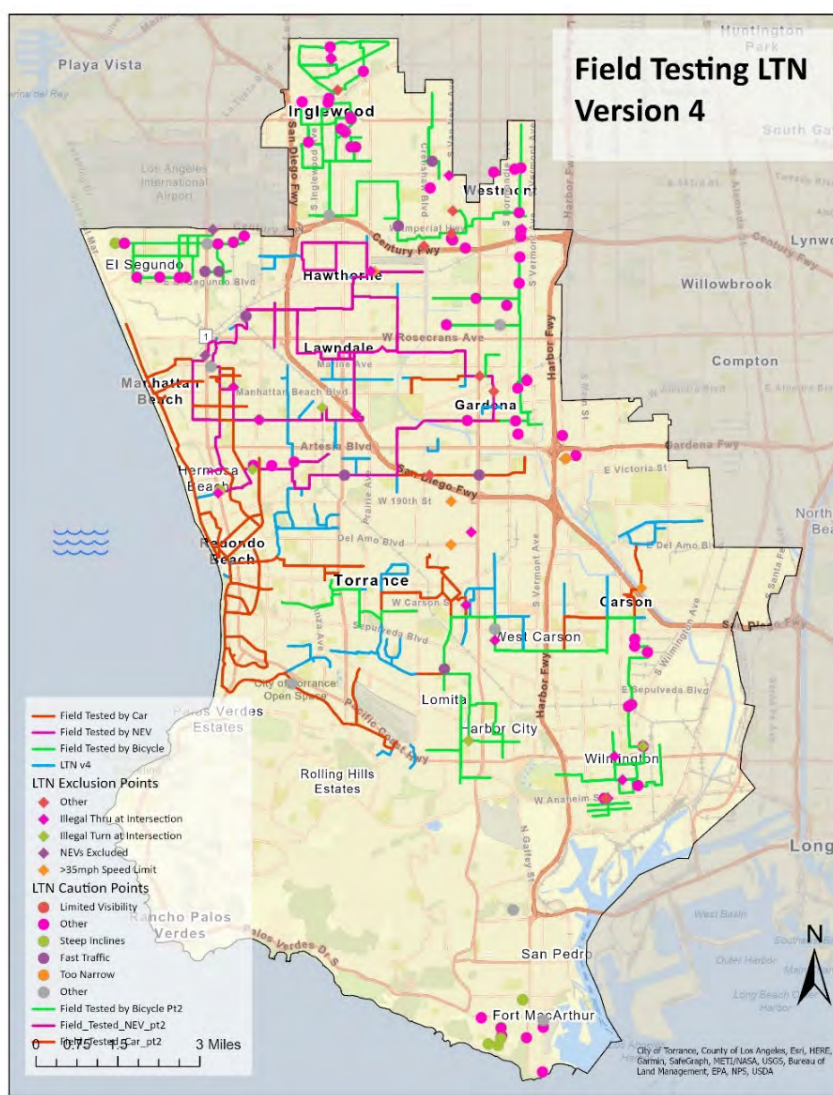
Summary Tables for the two (2) survey categories that were mapped while field testing the Local Travel Network:

“Can’t Go Here” Exclusion Points:

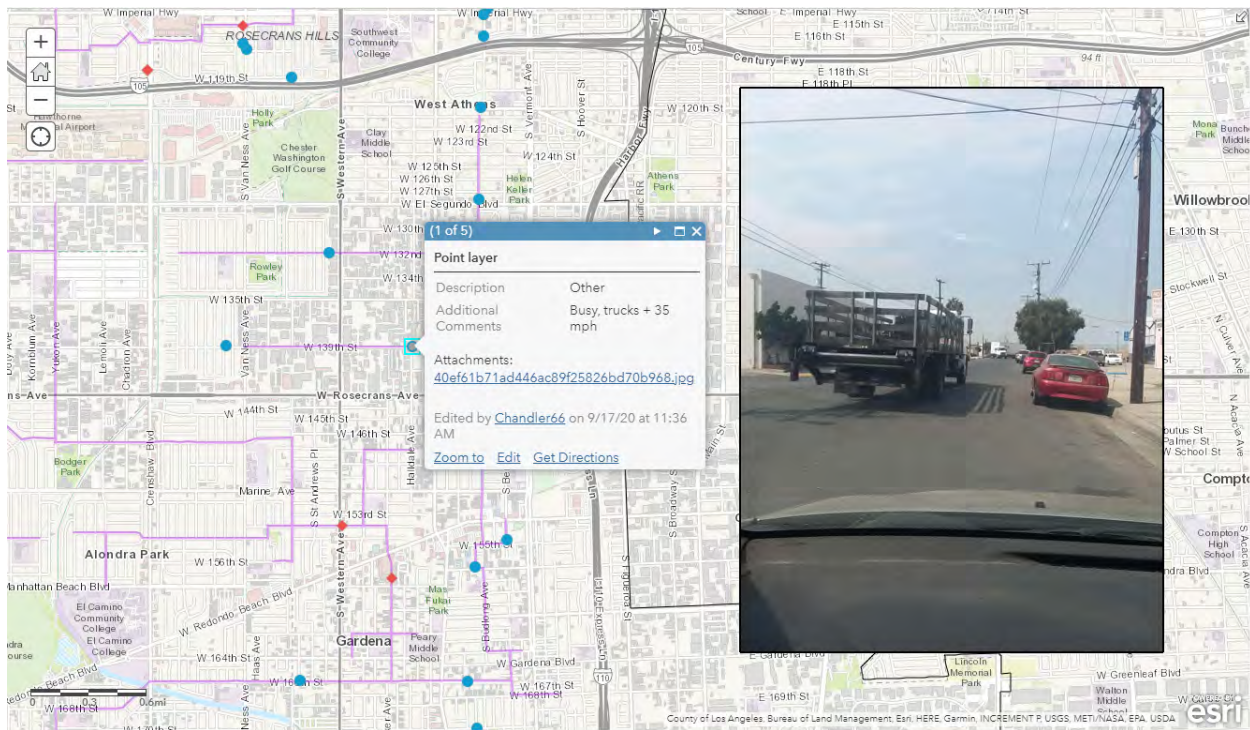
Speed Limit > 35mph	9
Illegal Thru Intersection	28
Unsuitable for NEV	3
Private Property (Other)	1
Uncontrolled or Dangerous Intersection (Other)	6
Total	47

“Shouldn’t Go Here” Caution Points:

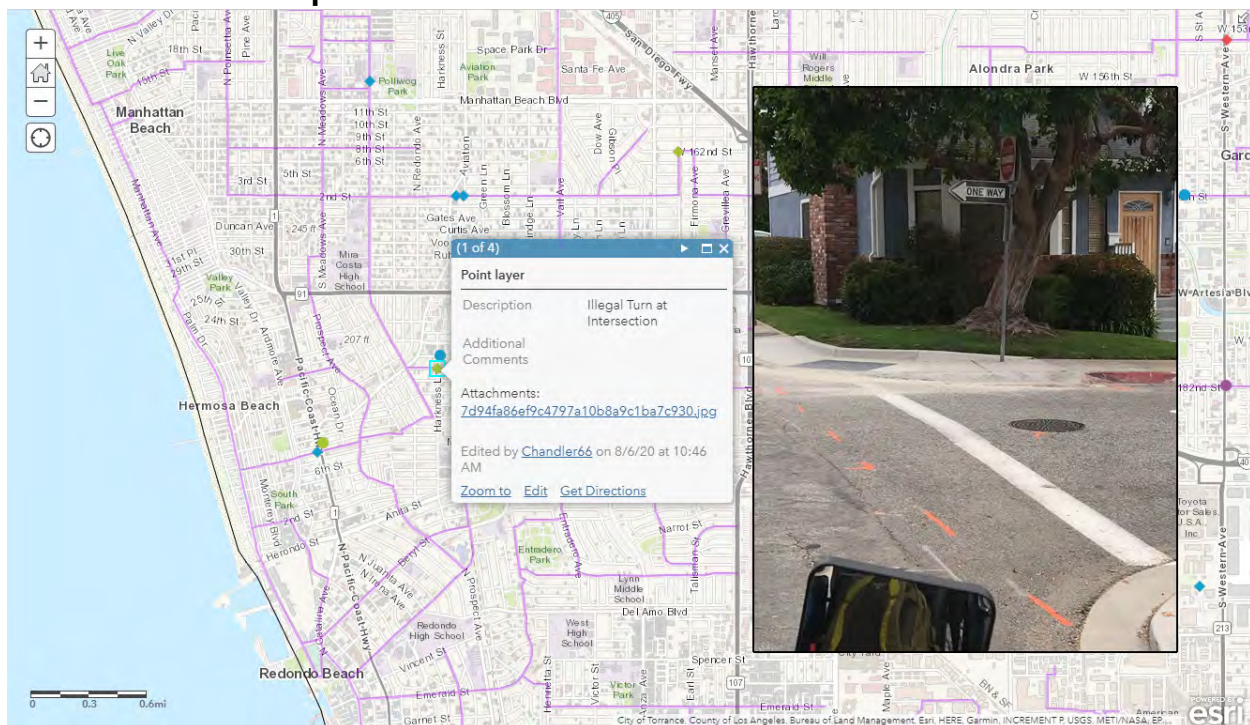
Narrow Street	6
Obstructed bike lane (it was trash day in SP)	1
Fast Traffic	9
Limited Visibility	2
Steep Inclines	10
Miscellaneous Concerns (difficult turns, trains tracks, other streets)	61
Total	90



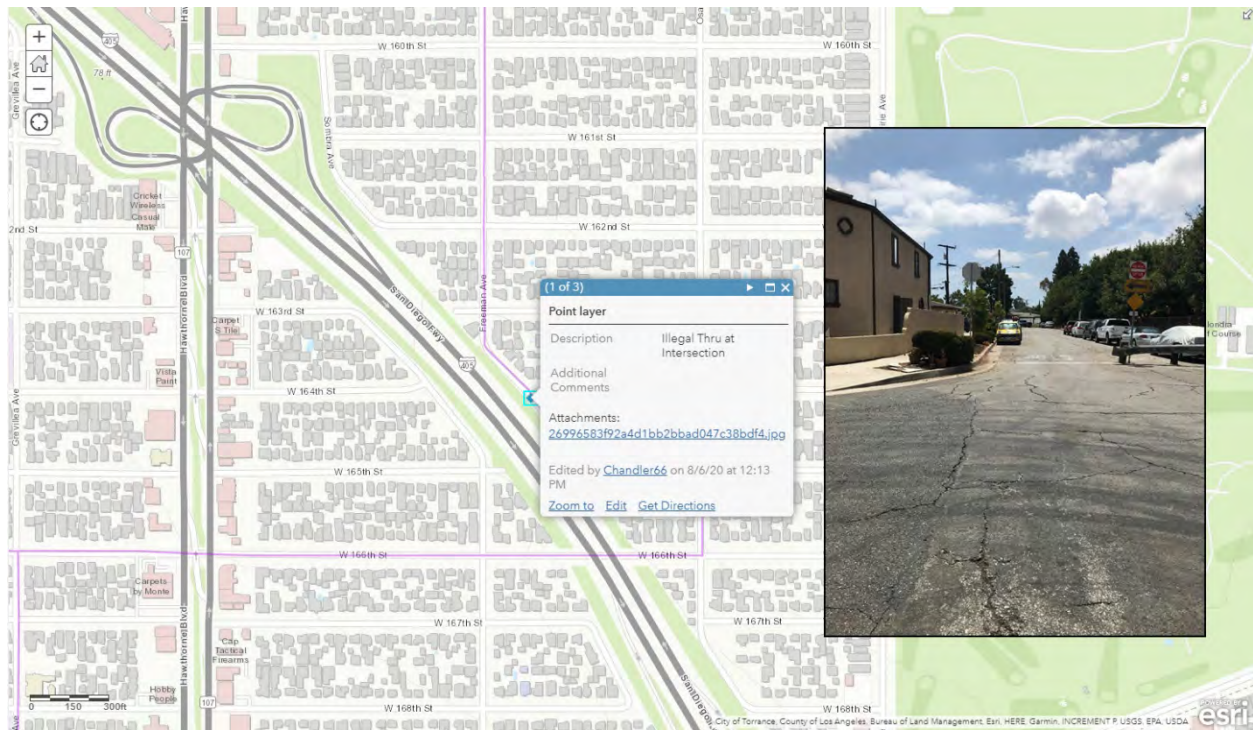
“Shouldn’t Go Here” Example:



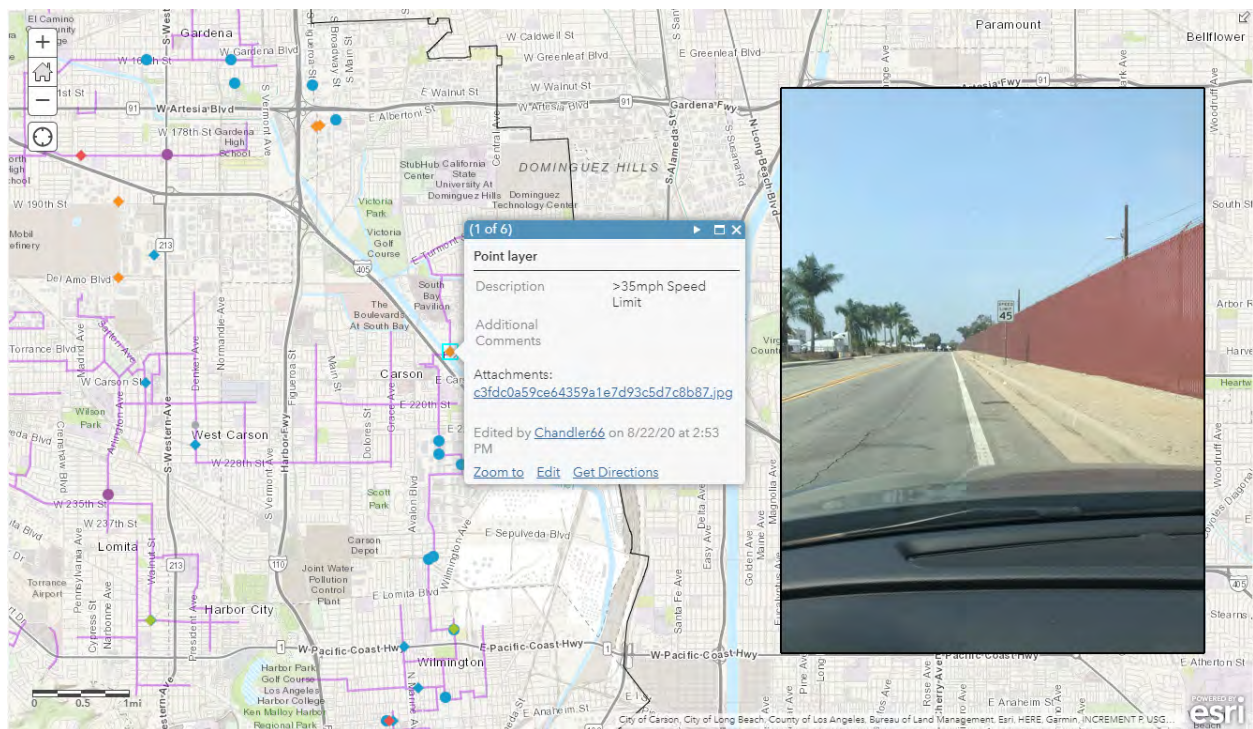
“Can’t Go Here” Example:



"Can't Go Here" Example #2:



"Can't Go Here" Example #3:

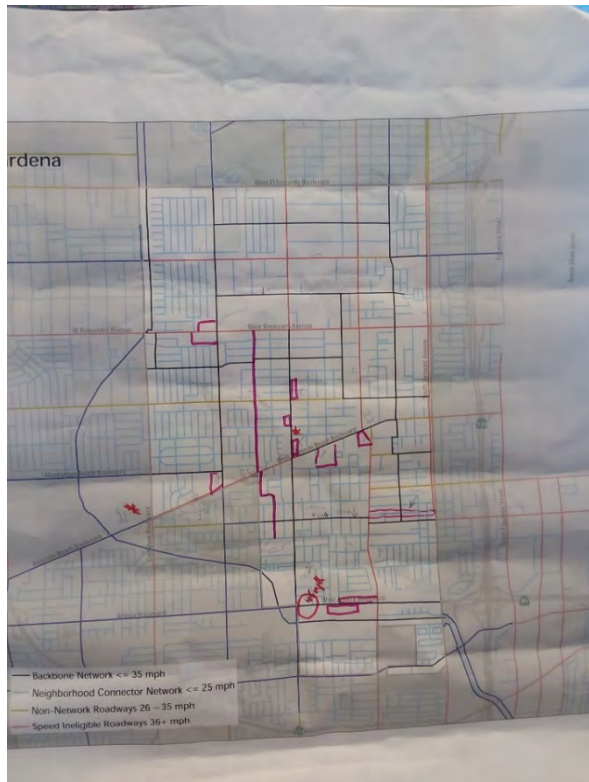


City Map Feedback

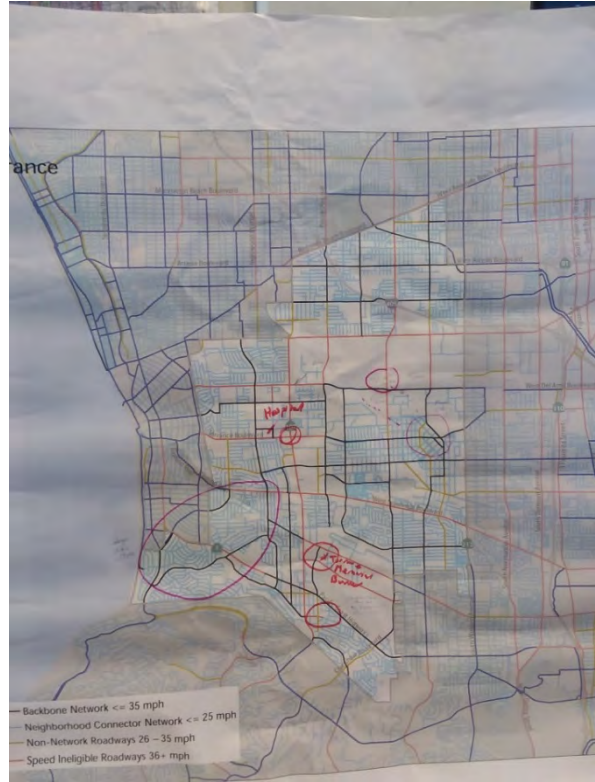
Examples of City Staff LTN Mark-ups

The following are map “mark-ups” of the Local Travel Network by City Stakeholders (South Bay cities’ staff):

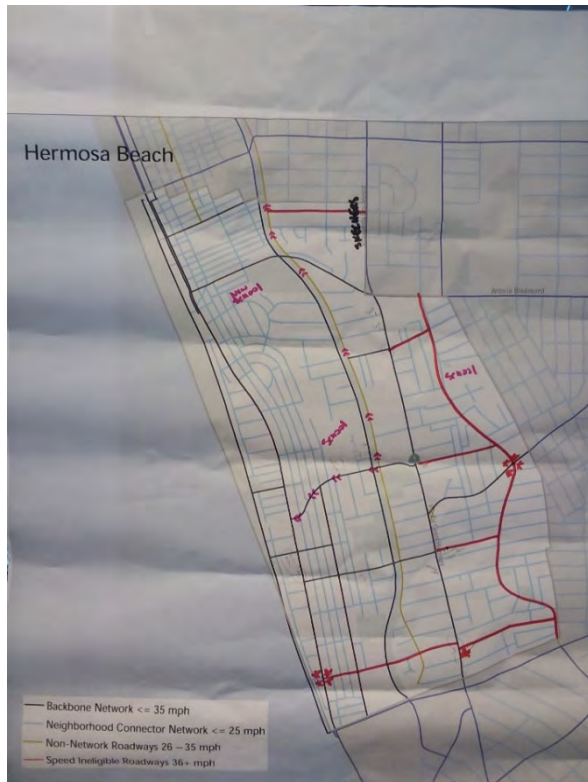
Gardena:



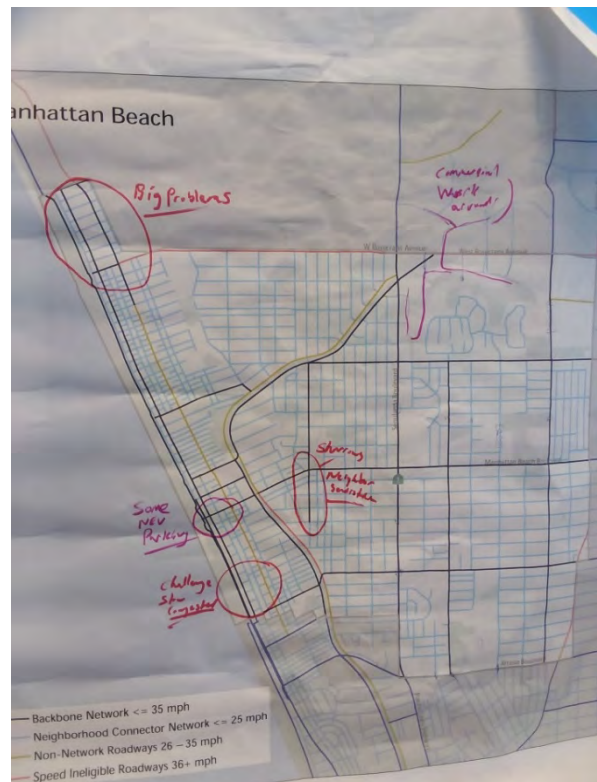
Torrance:



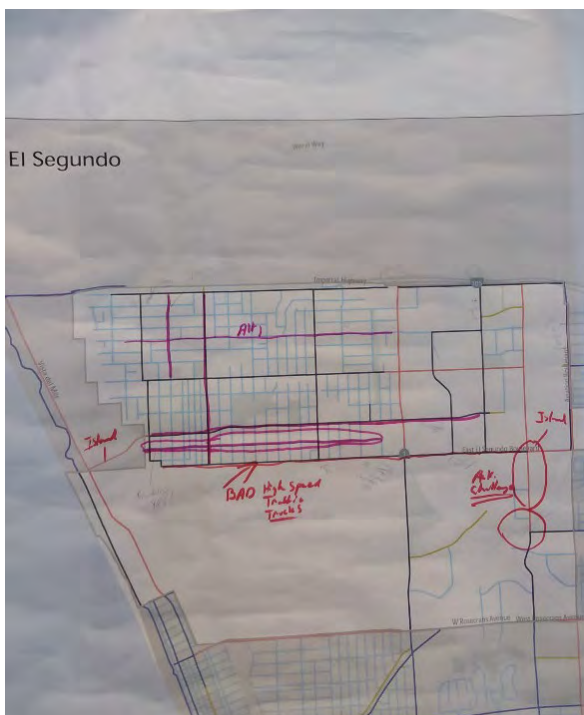
Hermosa Beach



Manhattan Beach



El Segundo



City and Community Stakeholder Meetings

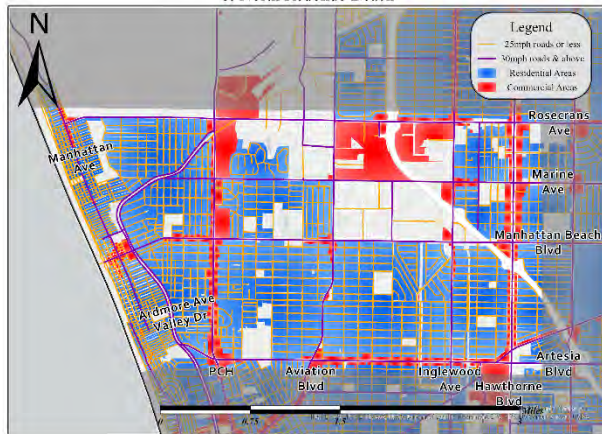
Local Travel Network					
City Stakeholders + Meetings	Date 2019	Location	Date 2020	Mtg. Type	Map Feedback + Notes
Carson	10-Oct	Community Center	29-Oct	Zoom	Yes
El Segundo		City Hall			Yes
Gardena	21-Oct	City Hall			Yes
Hawthorne					No
Hermosa Beach	23-Oct	City Hall	12-May	Phone	Yes
Inglewood	4-Nov	City Hall	21-Oct	Zoom	Yes
Lawndale	21-Nov	City Hall			Yes
Los Angeles (C.D. 15)	6-Dec	District Office			Yes
Lomita	15-Oct	City Hall			Yes
Manhattan Beach	17-Sep	City Hall		Phone	Yes
Redondo Beach	20-Nov	City Hall			Yes
Torrance	15-Oct	City Hall		Phone	Yes
County of Los Angeles	11-Sep	Phone			Yes
SBCCOG Infrastructure Working Group	11-Sep	Redondo Beach Restaurant			Yes
SBCCOG GIS Working Group	3-Sep	Torrance			
Shared Mobility Working Group	11-Sep	Email Thread	1-Jan	Zoom	Yes

Local Travel Network Outreach Community Stakeholders Outreach Meetings/Presentations					
Stakeholder Presentations	Meeting Date 2019	Meeting Date 2020	Location	Status	Notes
Manhattan Beach Golf Cart Crew		4-Nov	Phone	X	Interviewed at Halloween Golf Cart Parade; Follow-up interview by phone
NEV Owners/Leaders/Champions		27-Oct	Zoom	X	Included NEV Leaders; Bicycle Advocates; Elected Officials
Employers Group (Northrup)		18-Feb	Phone	X	Phone interview; follow-up for focus group delayed indefinitely due to COVID-19
Kaiser Permanente Health Services		9-Jan	Kaiser Medical Center Harbor City	X	Working with K.P. Gov't Affairs to facilitate other site visits and focus groups in DAC communities for February/March timeframe
Kaiser Permanente Senior Health Group - Carson		1-Apr	Kaiser Medical Aux. Site - Carson	Cancelled	Proposed meeting (in-person) with "Active/Wellness" seniors group. Originally scheduled for March or April 2020; All meetings put on hold then cancelled due to safety and staff capacity re: first responders
Kaiser Permanente South Bay Employees Harbor City		1-Apr	Kaiser Medical Aux. Site - Harbor City	Cancelled	Proposed meeting (in-person) with Employee Interest Group - Transportation/Mobility Originally scheduled for March or April 2020; All meetings put on hold then cancelled due to safety and staff capacity re: first responders
South Bay Bicycle Coalition		9-Sep	Zoom	X	Working with Gov't Affairs to facilitate
Carson Bicycle Coalition		9-Jul	Zoom	X	
LA County Bicycle Coalition		9-Jul	Zoom	X	
Beach Cities Health District - Senior Mgmt.		13-May	Zoom	X	
BCHD - Stakeholder Livable Communities Focus Group		15-Oct	Zoom	X	Email out to BCHD to assist with organizing
South Bay Association of Chambers of Commerce		3-Mar	Chamber Office, Torrance	X	
Commercial Retailer Meeting (M.B. Village)		TBD	Manhattan Beach Village	TBD	Need to confirm with Amy
Commercial Retailer Meeting (Del Amo Mall)		TBD	Del Amo Mall	TBD	Wally/Christian??
Seniors Village 1 - Torrance		19-Mar	Phone	X	Met with Senior Leader by phone. In person meeting/focus group with members proposed but placed on hold re: COVID-19. Never rescheduled
Seniors Village 2 - Hawthorne		19-Feb	Phone	X	Phone exchange. No meetings scheduled due to "at risk" population and cancellation of programs at Hawthorne Community Center
SBCCOG Seniors Working Group	11-Sep		In-person		
Social Justice Learning Institute		18-May	Phone	X	
South Bay Adult Night School		26-Mar	In-person	Cancelled	COVID-19 restrictions; Date for restarting program unknown
Century Heights Neighborhood Watch Association (CHNWA)	7-Sep		In-person	X	
OEM's, Dealerships, and Services					
Circuit Rider		30-Mar	email/phone	X	
Razor		30-Jan	Phone	X	
Honda R&D		28-Feb	Honda Corp Campus Torrance	X	
Electric Bike LA		15-Sep	Zoom	X	
E3 Vehicles		24-Aug	Zoom	X	

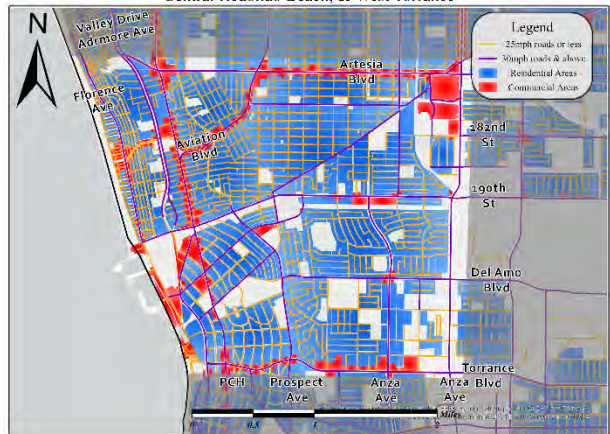
Neighborhood Analysis

An analysis using zoning and speed data sets was used as a tool to describe discrete neighborhoods for potential connectivity to and through the Local Travel Network. The following are eight (8) examples of neighborhoods defined by commercial parcels (red) and roads with posted speeds. Residential parcels are described in blue.

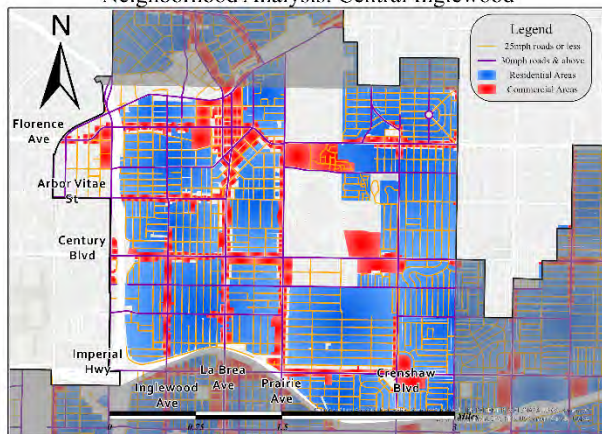
Neighborhood Analysis: Manhattan Beach
& North Redondo Beach



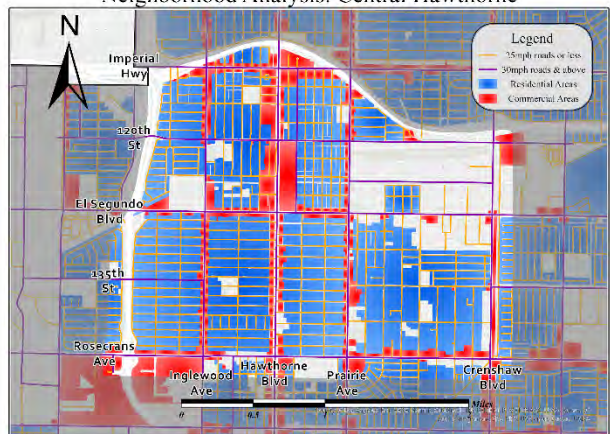
Neighborhood Analysis: Hermosa Beach,
Central Redondo Beach, & West Torrance



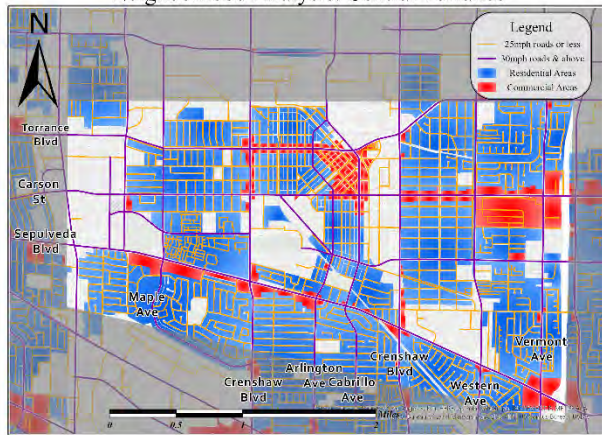
Neighborhood Analysis: Central Inglewood



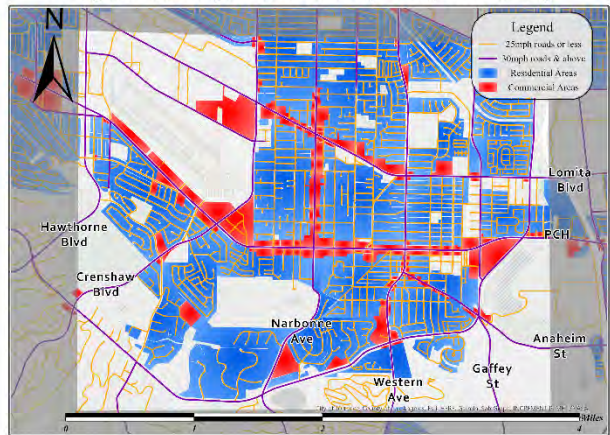
Neighborhood Analysis: Central Hawthorne



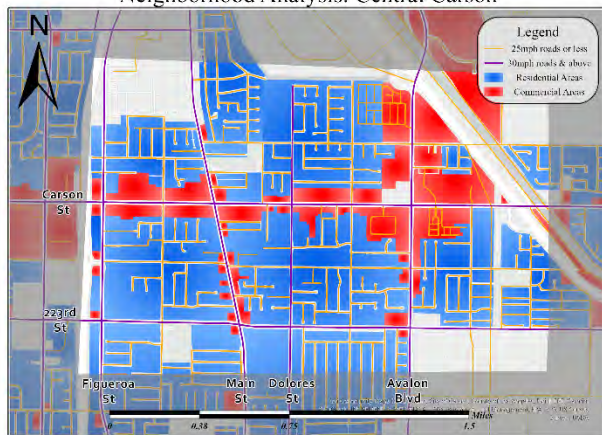
Neighborhood Analysis: Central Torrance



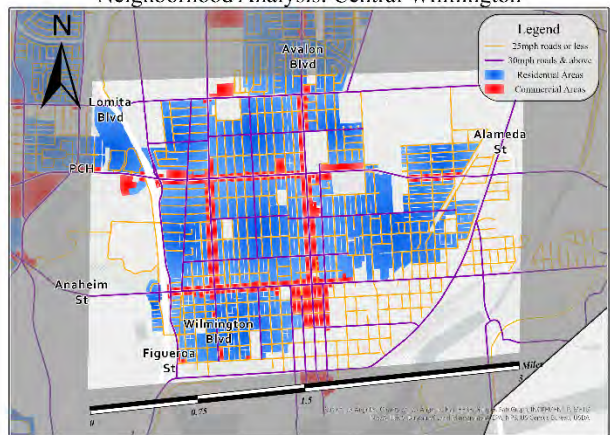
Neighborhood Analysis: South Torrance, Lomita, & Harbor City



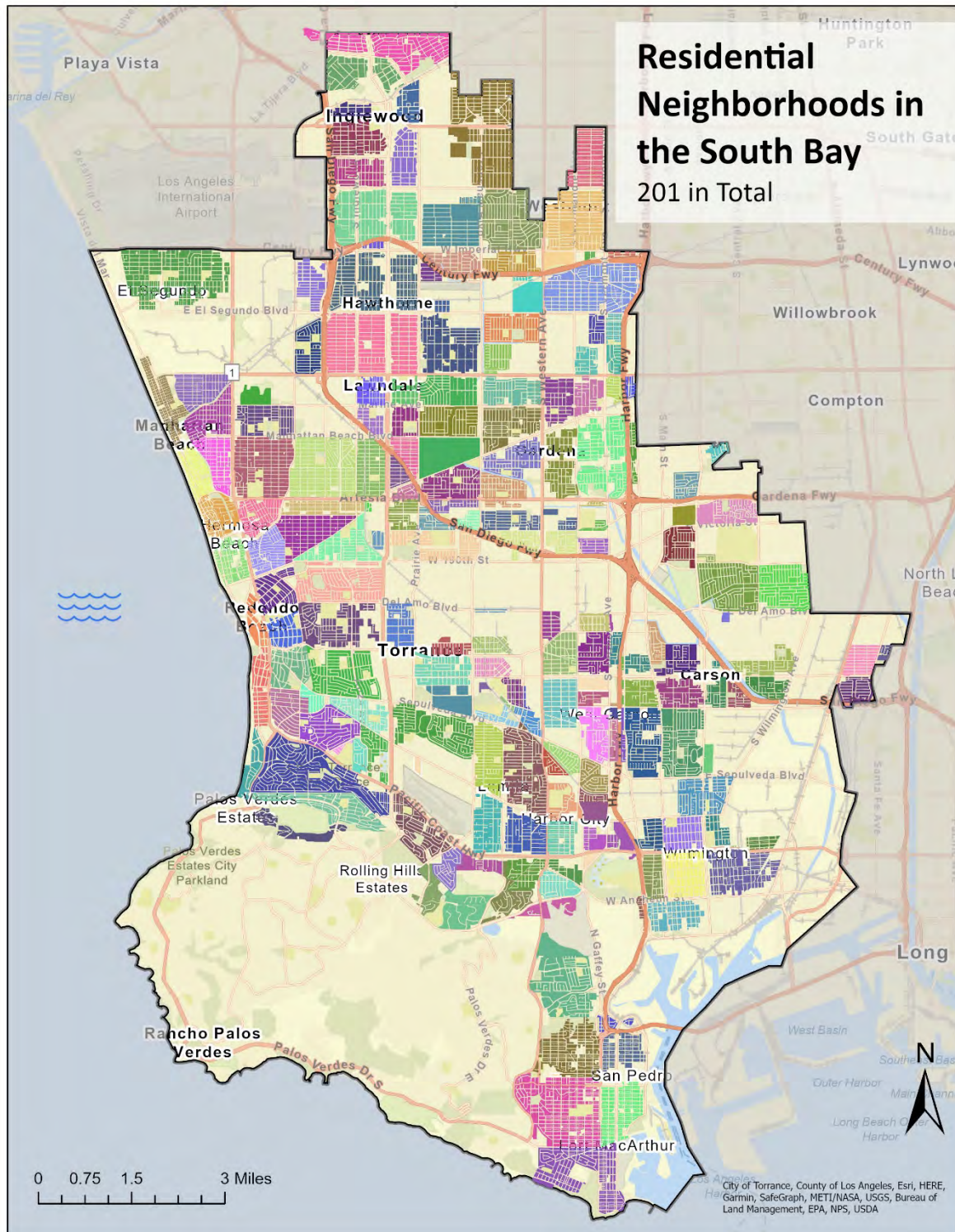
Neighborhood Analysis: Central Carson



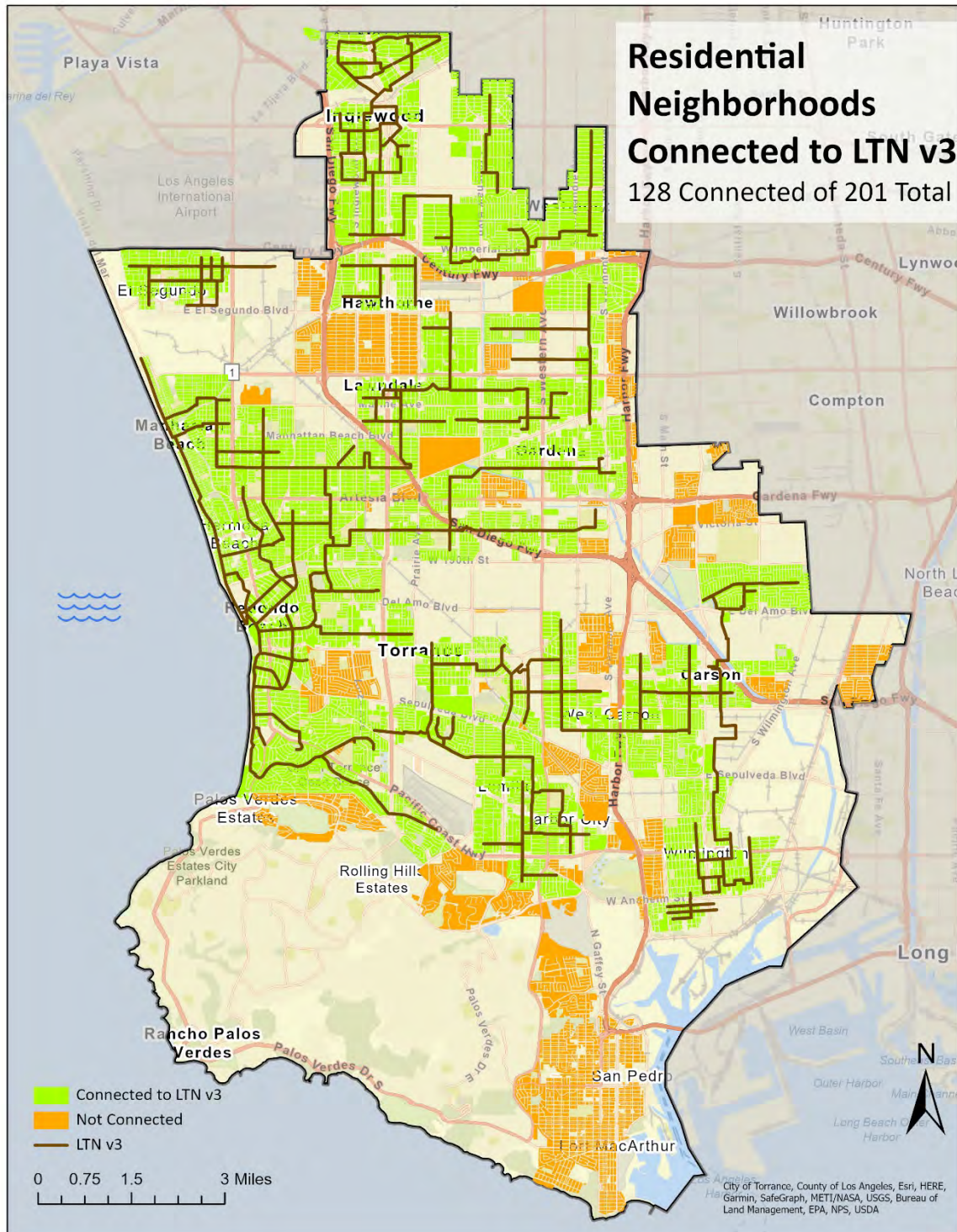
Neighborhood Analysis: Central Wilmington



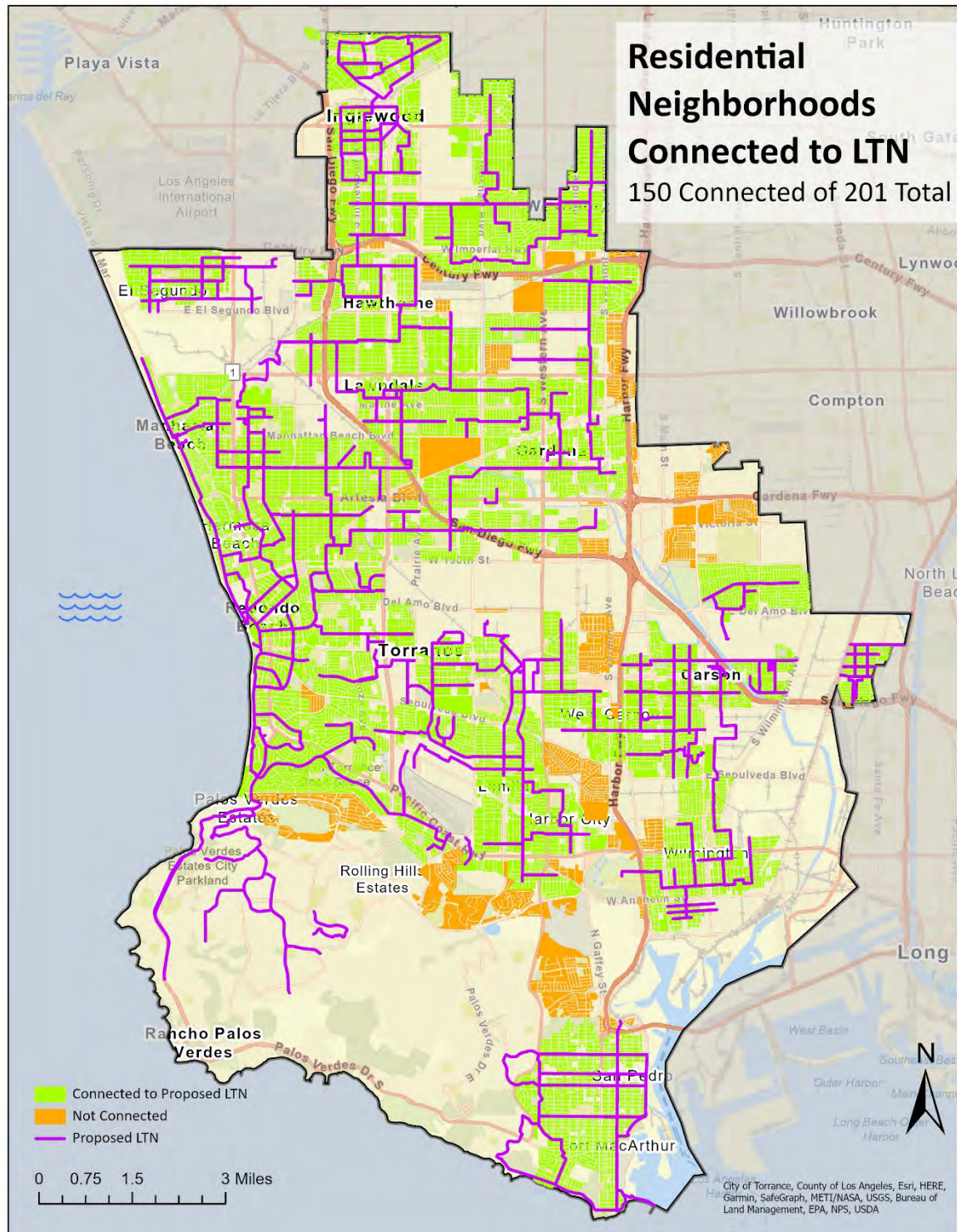
Neighborhood Analysis – 201 discrete neighborhoods (without Palos Verdes Peninsula)



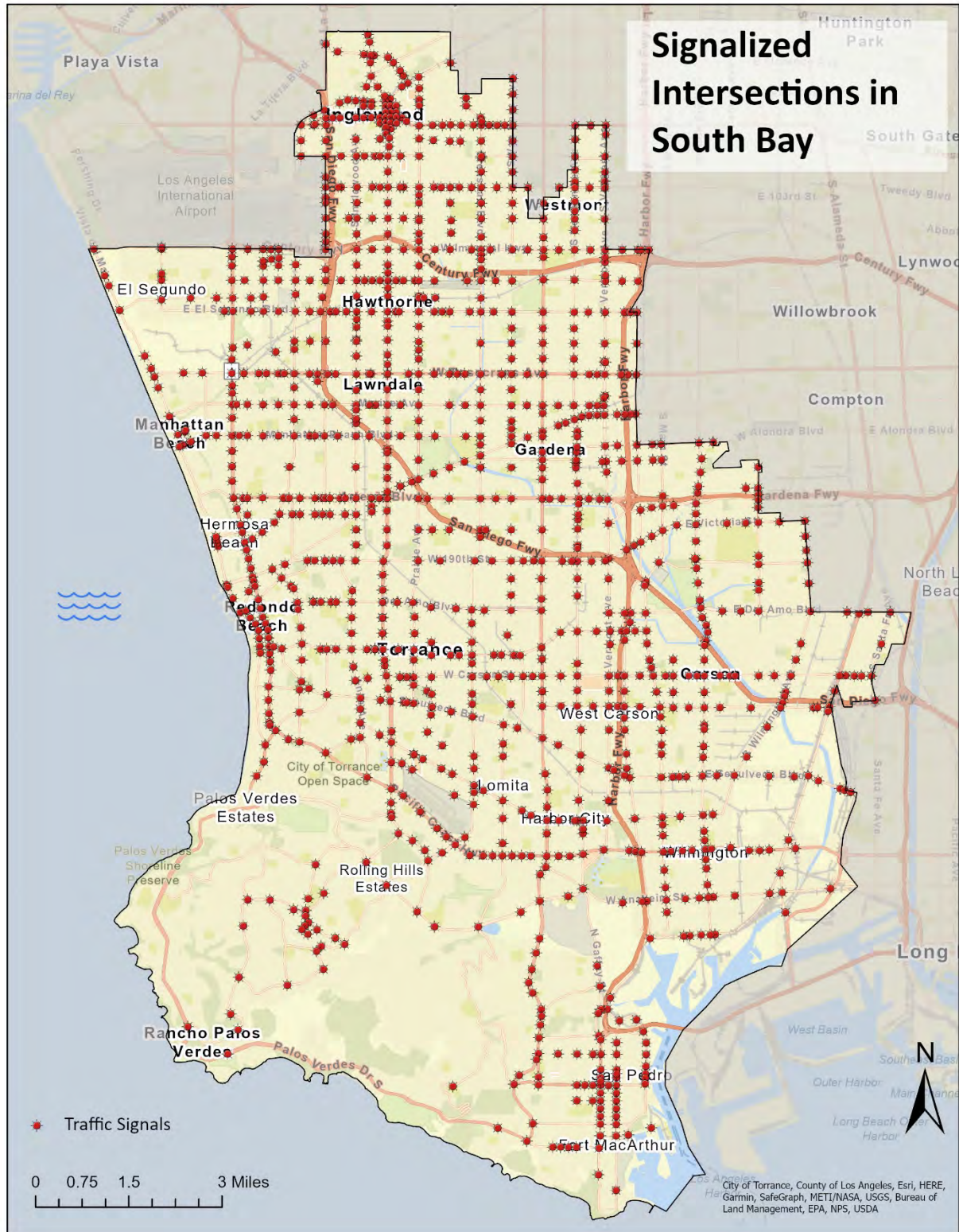
Neighborhood Connectivity Checks (without Palos Verdes Peninsula) Version #3

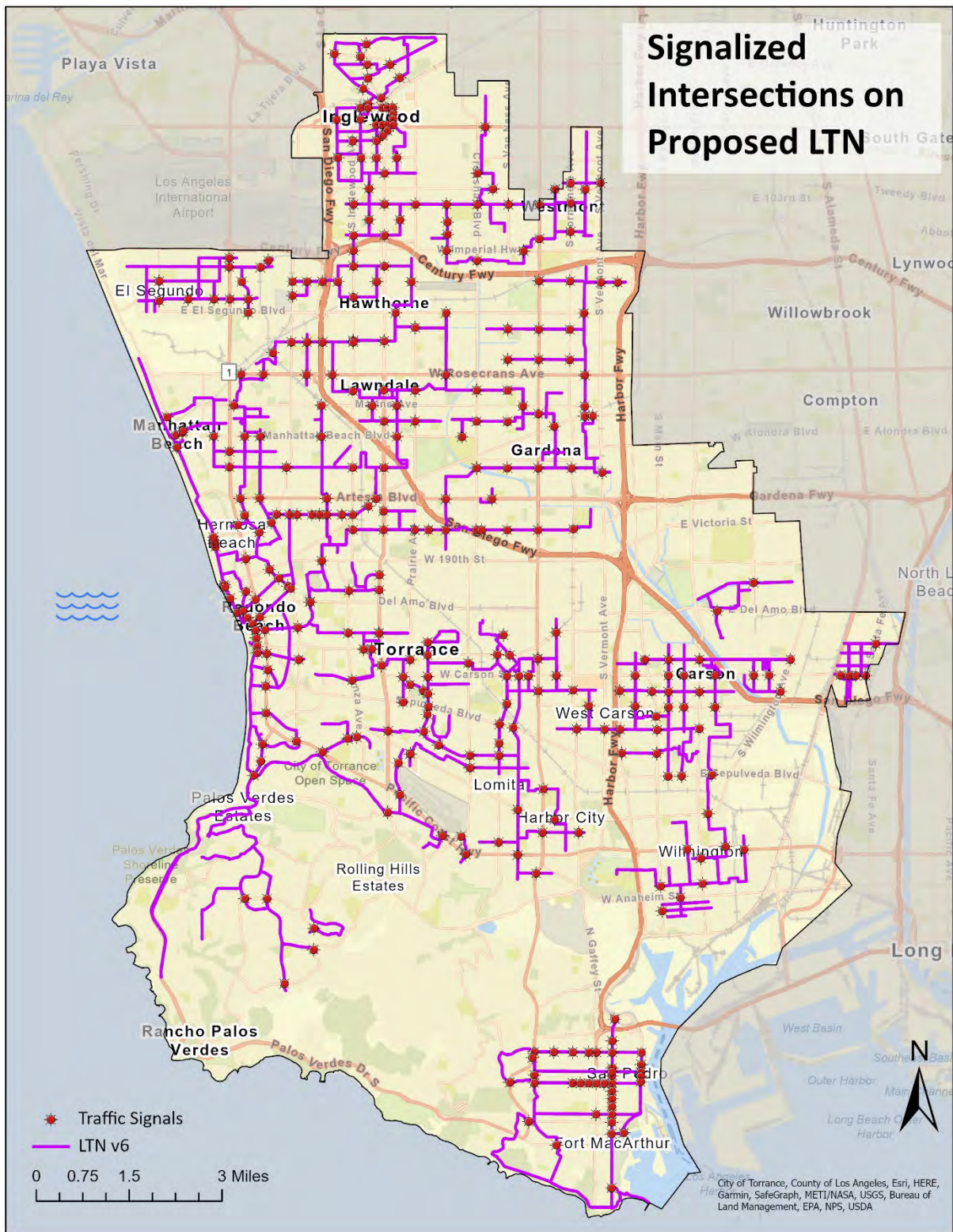


Neighborhood Connectivity Checks Version #6



Controlled Signals – Analysis





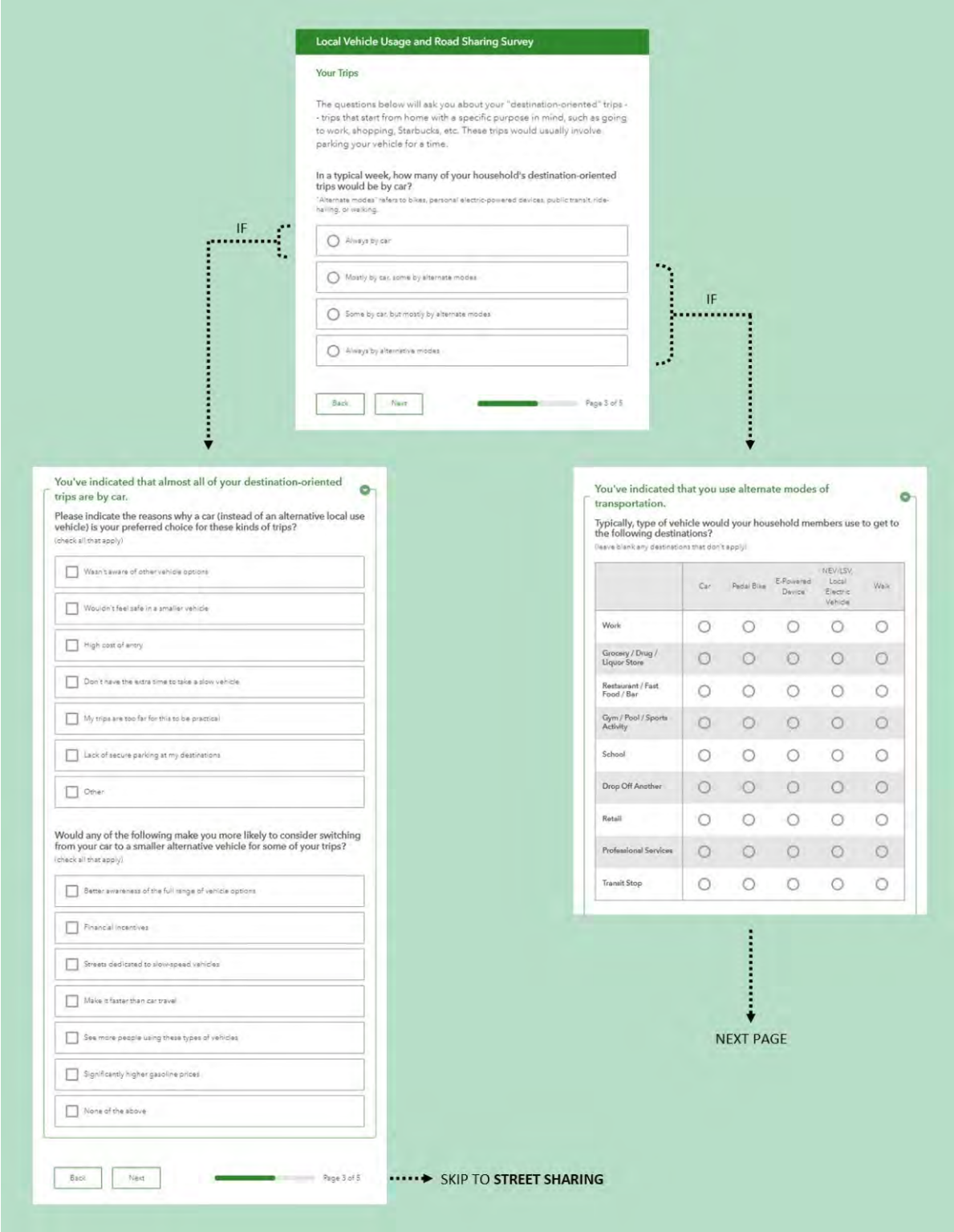




Outreach Appendix

Layout – “Survey 123” – Esri App Survey was designed to capture “x/y” coordinates of respondents; bifurcated by mode choice for destinations:

[140]



For trips not taken in a car:

Does some segment of your route include a designated bicycle lane, with painted striping (at minimum) to keep it separate from car traffic?

	Yes	No	Not Sure
Work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grocery / Drug / Liquor Store	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restaurant / Fast Food / Bar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gym / Pool / Sports Activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drop Off Another	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Retail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional Services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transit Stop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During your alternative-vehicle trips, do you encounter "pain points" that interfere with safe or efficient travel?

(check all that apply)

☐ Difficulty getting across major roads

☐ Sharing street with high-speed vehicular traffic

☐ Sharing street with trucks and/or buses

☐ Potholes or uneven surface

☐ Left turn across multiple lanes

☐ Parked cars (obscuring)

☐ Slow traffic signals

☐ Too many STOP signs

☐ Speed bumps

☐ Parking problems at destination

☐ Other

How do you deal with these barriers?

(check all that apply)

☐ I avoid them by taking a different but less direct route

☐ I ride through them

☐ I do something that might be considered unsafe

☐ I do something that might be considered illegal

☐ Other

Please indicate the reasons why you don't use your alternative vehicle (such as bike or golf cart) for more of these kinds of personal trips? (check all that apply)

☐ Wasn't aware of other vehicle options

☐ Physical limitations

☐ Wouldn't feel safe from collision with car

☐ Don't have the extra time to take a slower vehicle

☐ Don't have the extra time to take a slower vehicle

☐ My trips are too long for this to be practical

☐ Lack of secure parking at my destinations

☐ My device isn't legal on streets I need to drive

☐ Other

Would any of the following make you more likely to consider trying any of these other vehicle options for more of your destination-oriented trips?

(check all that apply)

☐ Better awareness of the full range of vehicle options

☐ Financial incentives

☐ Streets dedicated to slow-speed vehicles

☐ Make it faster than car travel

☐ See more people using these types of vehicles

☐ Significantly higher gasoline prices

☐ None of the above

Back

Next

Page 3 of 5

NEXT PAGE

Local Vehicle Usage and Road Sharing Survey

Street Sharing



The road symbol above is called a "sharrow." What does it mean to you?

☐ This lane for bicycles only

☐ This lane shared by bicycles and cars

☐ No bicycles allowed

☐ Don't know what it means

How do you feel about driving your car on sharrowed streets?
(choose the one that best applies)

☐ I don't mind driving on sharrowed streets

☐ I'm not happy, but use them anyway

☐ I try to avoid sharrowed streets

Do you find sharrows to be helpful when you are on any of your personal devices?

☐ Not helpful

☐ Somewhat helpful

☐ Very helpful

Which do you prefer to ride in:
(choose the one that most often applies)

☐ Sharrows on a slow speed street

☐ A painted dedicated travel lane on a fast-speed street

☐ Neither -- I like to pick my streets regardless of how they're marked



Do you have concerns about sharing streets or designated lanes with certain powered devices like those pictured above?

☐ Yes

☐ No

☐ Maybe

What are your concerns?

(check all that apply)

☐ Collisions

☐ Sideswipes

☐ Congestion

☐ Fear

☐ Other

If all South Bay cities cooperated to implement an extensive Local Travel Network of safe, slow-speed sharrowed streets that would connect to popular destinations for work and shopping:

Would you use a Local Use Vehicle like those pictured above for more of your travel?

☐ Yes

☐ No

☐ Maybe

Would you consider buying or leasing an additional low speed vehicle?

☐ Yes

☐ No

☐ Maybe

[Back](#)

[Next](#)

Page 4 of 5

Local Vehicle Usage and Road Sharing Survey

Survey Feedback and Follow Up

If you would like to participate in a focus group to discuss the design of a South Bay Local Travel Network of safe, slow-speed sharrowed streets that would connect to popular destinations for work and shopping, please provide your email below.

Thank you! Please leave any additional comments on this survey or about the idea of using local-use vehicles for short trips.

[Back](#)

[Submit](#)

Page 5 of 5

Outreach Events Planning Logs

Local Travel Network Outreach Community Events + Prep Meetings/Presentations								
Sites for Local Travel Network "Ride & Drive" Events	Planning Meetings				Event Location	Event Date	Status	Notes
	Date 2019	Date 2019	Date 2020	Date 2020				
Torrance Public Works Open House	15-Oct	12-Dec	20-Jan	27-Mar	Torrance City Hall and Public Works Yard	7-Jun	Confirmed	Postponed indefinitely then cancelled because of COVID-19
Carson Earth Day	26-Sep	10-Oct	27-Feb	10-Mar	Carson Community Center	11-Apr	Confirmed	Postponed indefinitely then cancelled because of COVID-19
Hermosa Beach Vintage Car Festival	24-Oct	12-Dec		19-Mar	Hermosa Beach City Hall	2-May	Tentative	Postponed indefinitely then cancelled because of COVID-19
SBCCOG General Assembly		13-Nov	28-Jan	28-Feb	Carson Community Center	19-Mar	Confirmed	Razor + E3 Vehicles to Participate as Content Sponsors; Postponed indefinitely then cancelled because of COVID-19
Redondo Beach Performing Arts Venue	3-Sep	21-Oct					TBD	
Other Agencies and Organizations								
Ciclaviva	22-Oct							Phone meeting; pitched participation; unlikely due to full calendar of events
CoMotion LA	6-Aug							Possible Marketing Assistance
SCAG - "Go Human"	19-Aug							SCAG to support events with "Go Human" Tool kit
SCAQMD	8-Nov							Pitched Sponsorship. Participation TBD
Sponsors/Vendors								
Razor							Confirmed	Bringing different types of vehicles
E3 Vehicles							Confirmed	Confirmed for Torrance and Hermosa Beach
Electric Bikes LA							Confirmed	Bringing e-bikes and vendor demo of e-skateboards and mono-boards

“Go Human” Tool Kit

Go Human Kit of Parts: Purpose & Overview



- Provide a “Library” of pop-up demonstration materials
- To be used in conjunction with an existing event, such as a street fair, open streets, or engagement event
- Kit of Parts is intended only for a few days max and not intended to be installed without staff oversight during the entire duration of the demonstration
- *Go Human* is currently exploring how the Kit of Parts is to be used, within public health guidance.



Example of artistic crosswalk

Go Human Kit of Parts: Purpose & Overview



- Provide a “Library” of pop-up demonstration materials
- To be used in conjunction with an existing event, such as a street fair, open streets, or engagement event
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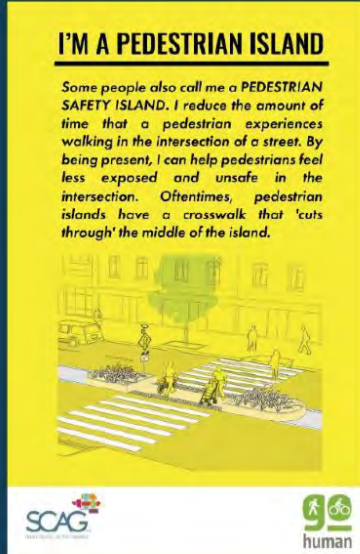
Example of artistic crosswalk

Go Human Kit of Parts - Signage



The Kit of Parts also includes:

- Traffic markings, like sharrows and sharks teeth that can be affixed to the street alongside infrastructure
- Educational and directional signage materials
- Feedback survey tools to collect stakeholder input



Typology Sign: Option A



Temporary Demonstration Resources – Kit of Parts: Protected Bike Lane



Temporary Demonstration Resources – Kit of Parts: Artistic Crosswalk



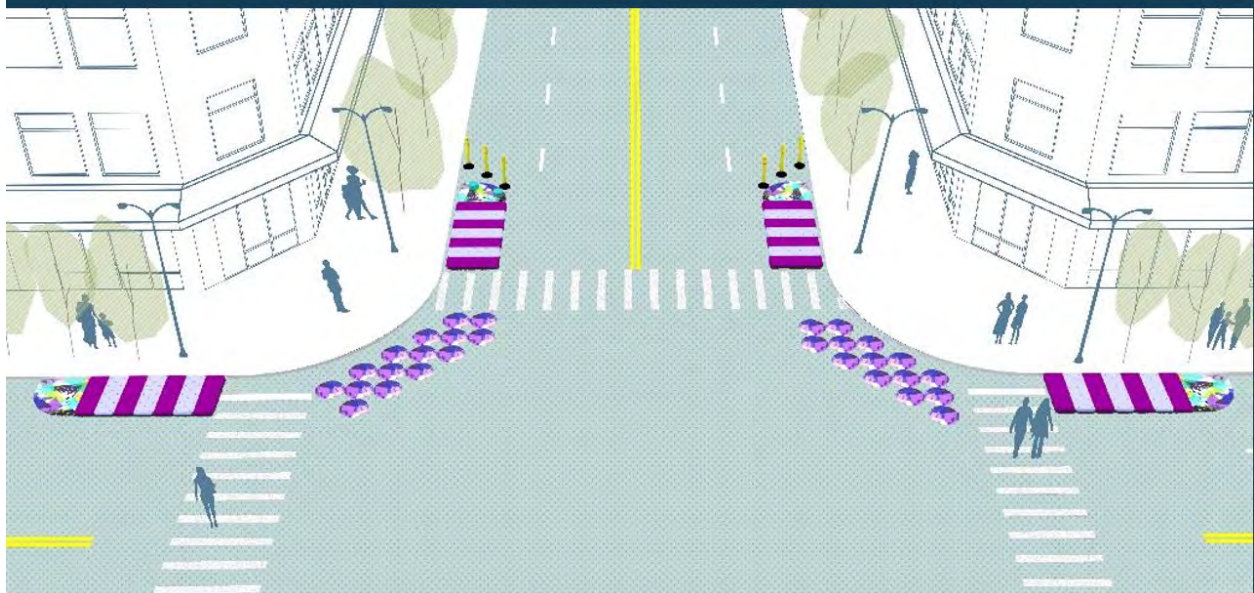
Temporary Demonstration Resources – Kit of Parts: Parklet



Temporary Demonstration Resources – Kit of Parts: Median Refuge Island



Safety Resources: Go Human Kit of Parts: Curb Extensions



Go Human Co-Branding: Purpose & Overview



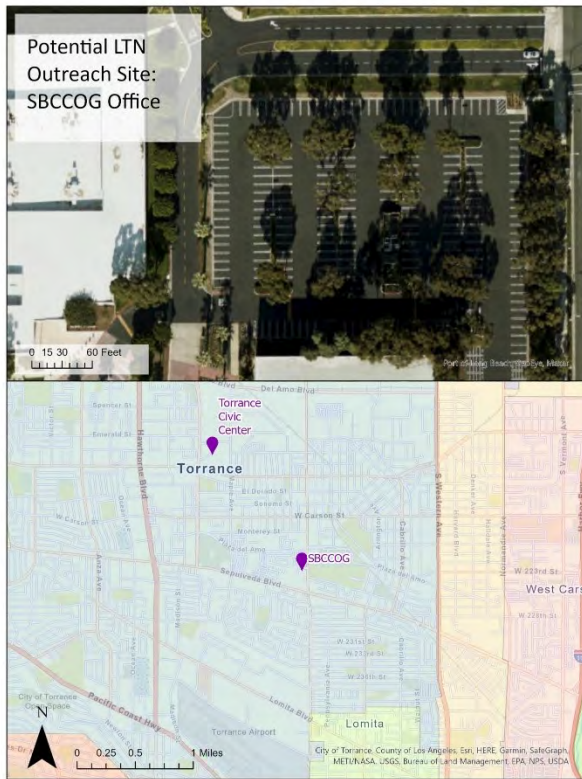
The co-branded materials are community informed, message tested and data informed safety messages, available in English and Spanish.

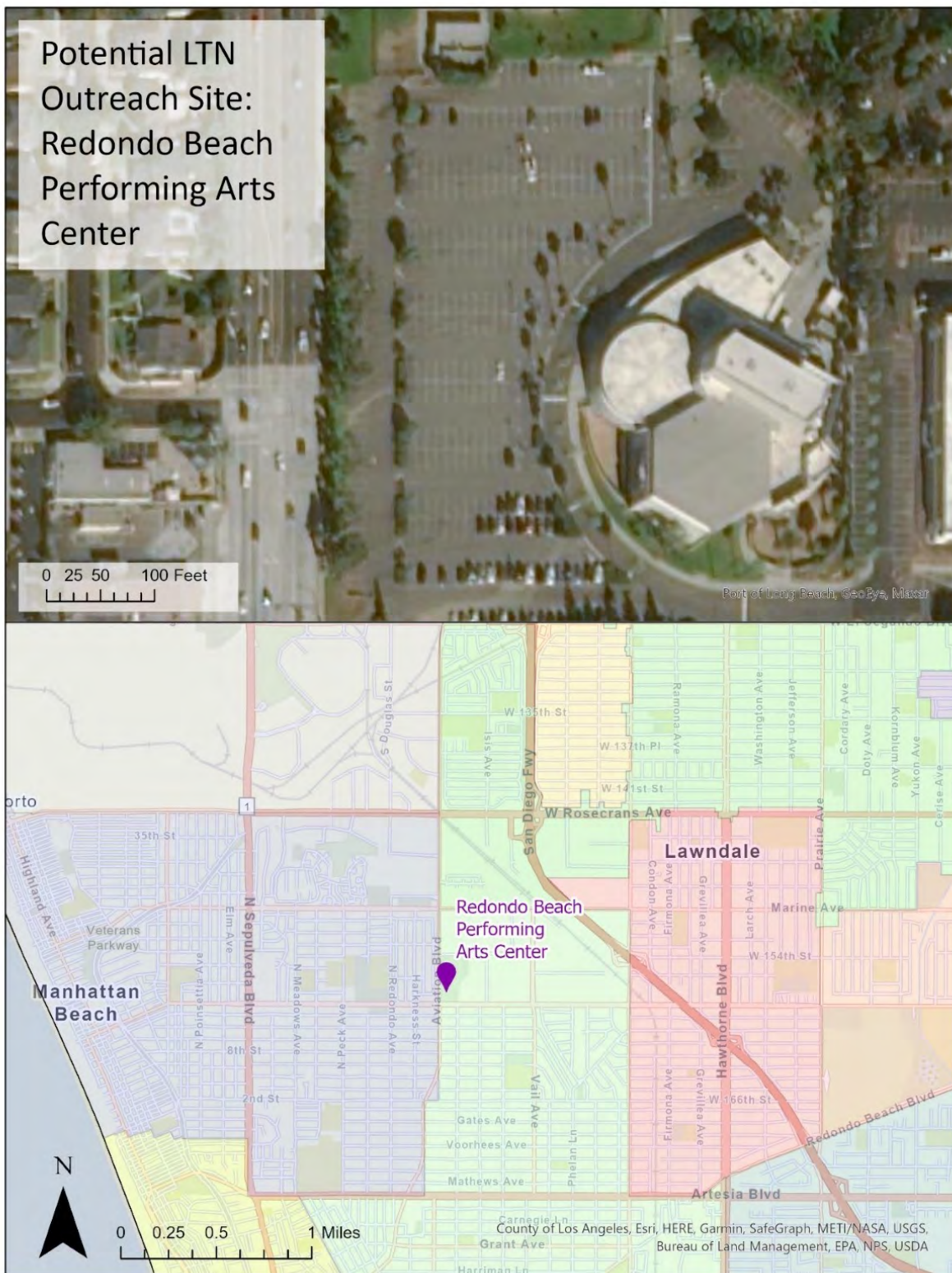
Ad types include:

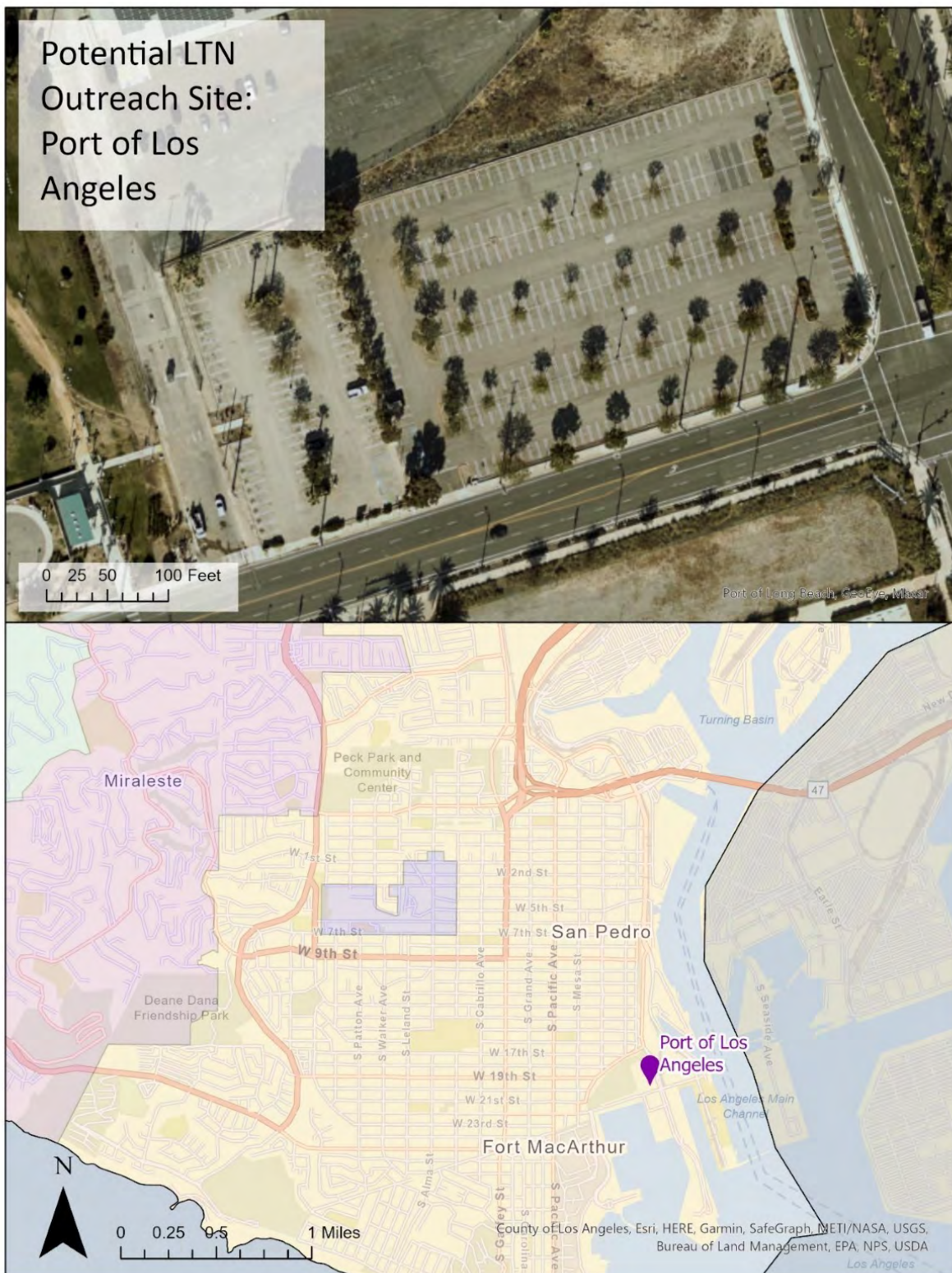
- Lawn Signs
- Social Media / Digital
- Bus Ads
- Billboards
- Posters



Candidate Sites for Local Travel Network (LTN) Outreach Event Sites (10)

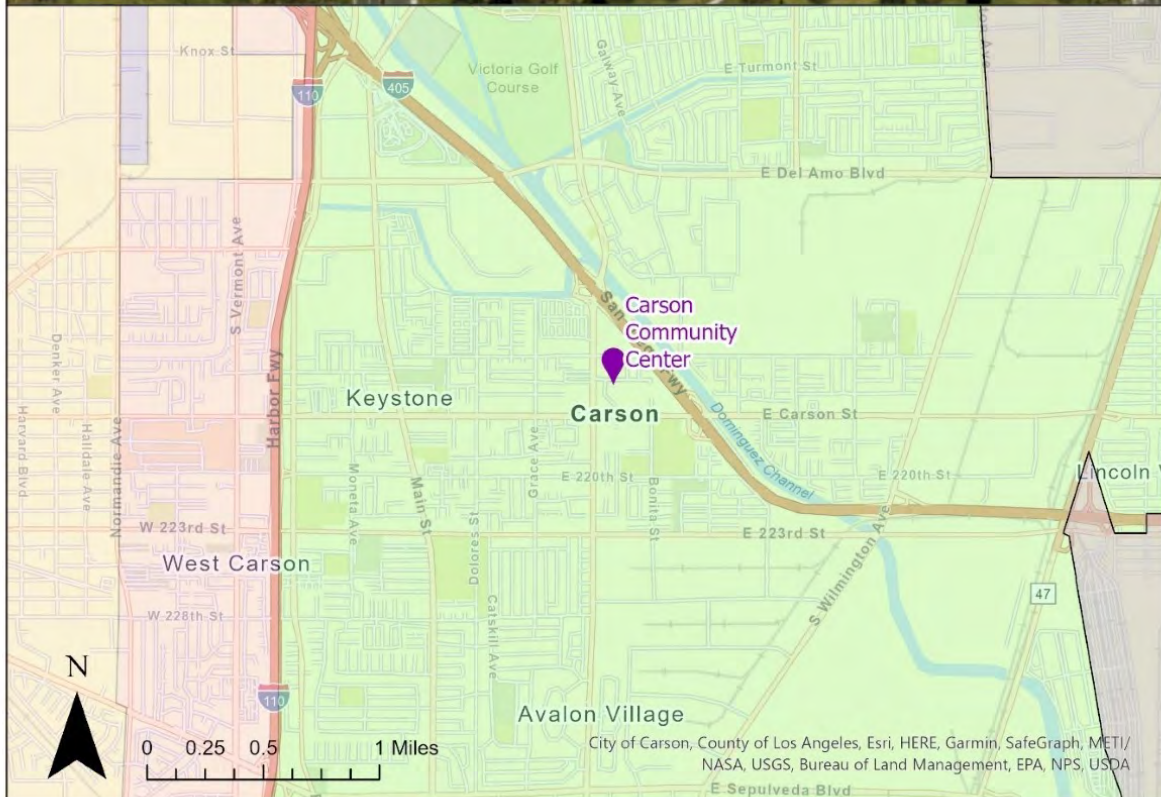
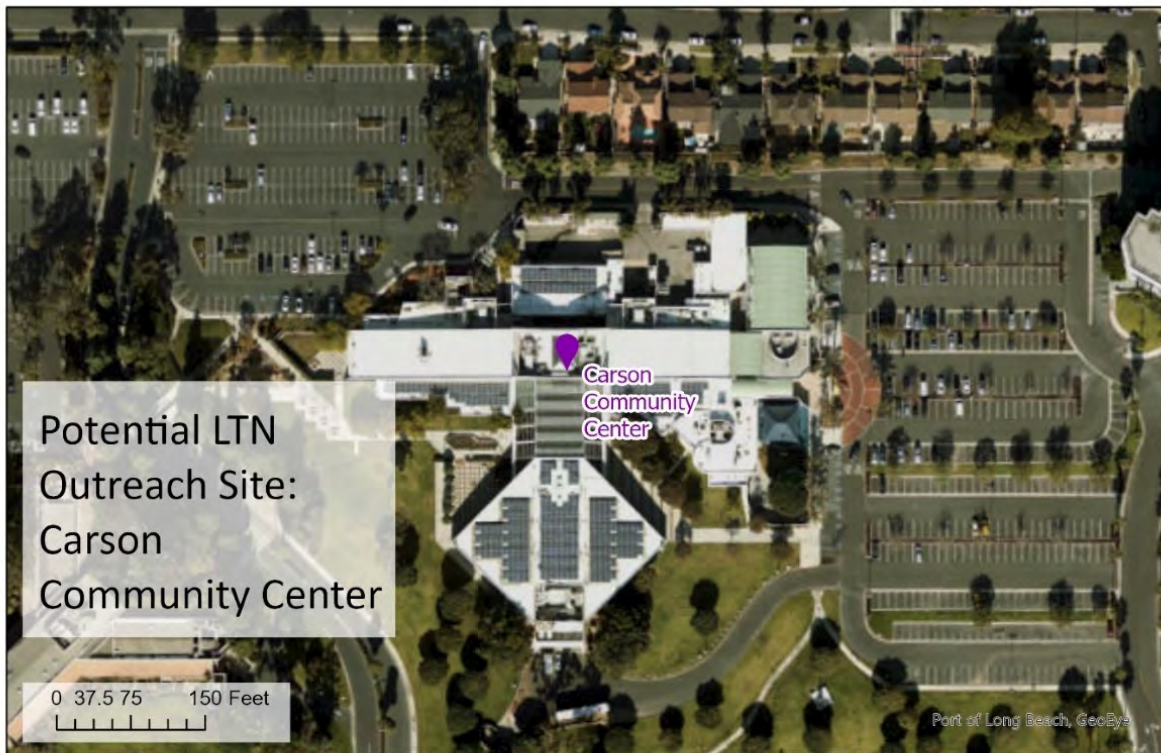


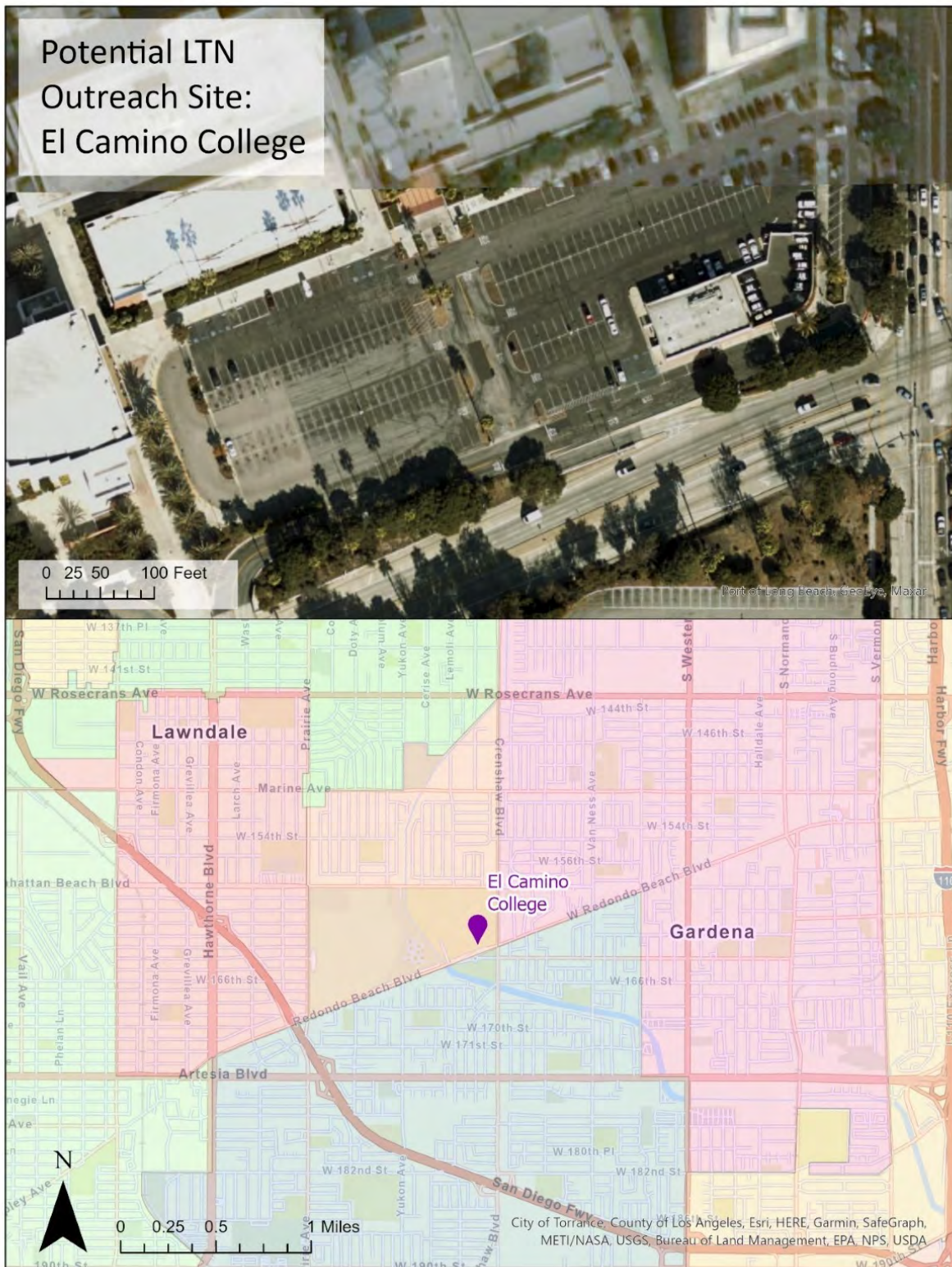












Ride and Drive LUV Fest – Circuit Proposals

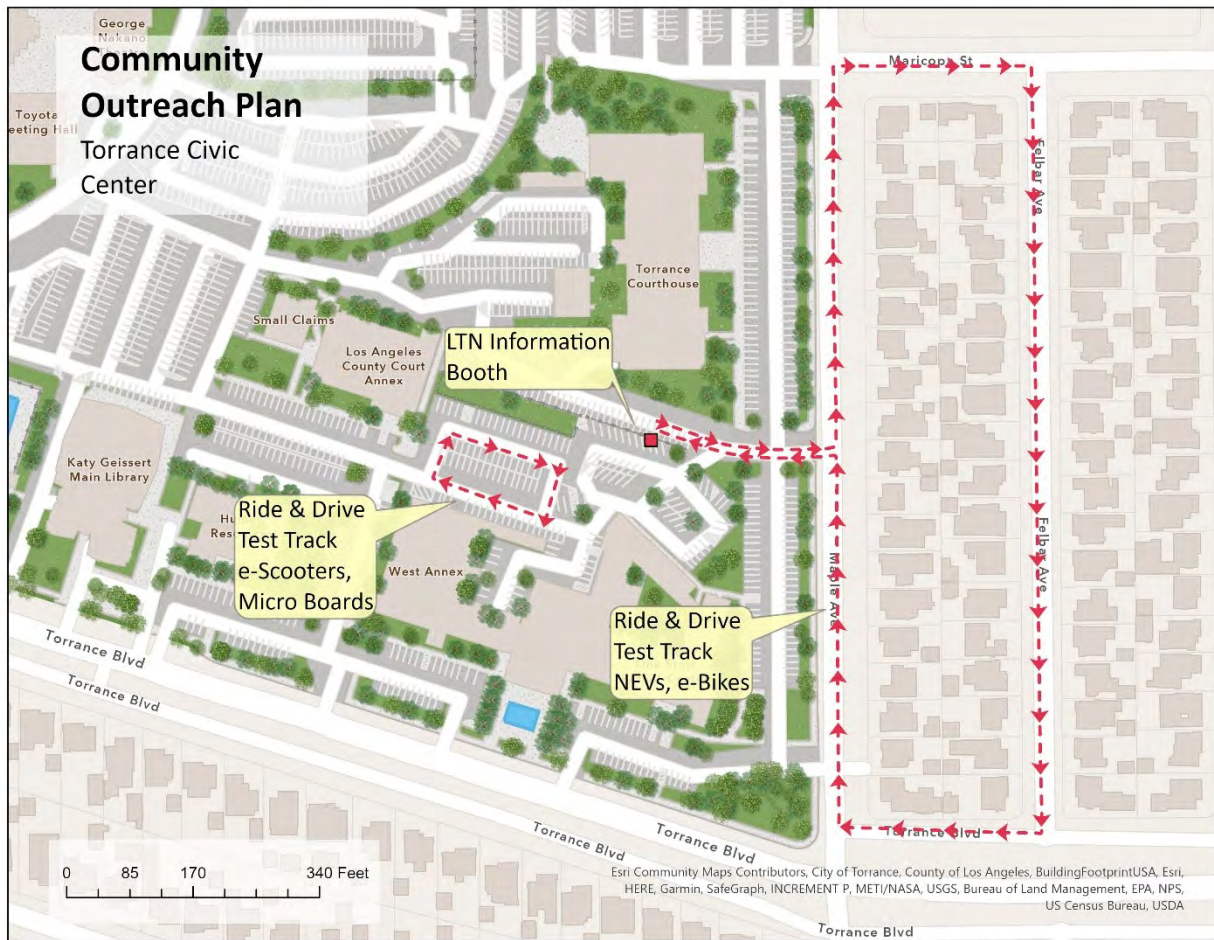
Carson (SBCCOG General Assembly + Earth Day Celebration)



Hermosa Beach (Classic Car Show Auxiliary LUV Fest Event)



Torrance Civic Center (Auxiliary LUV Fest Event)



Story Map – Esri Online App

The following describes the Local Travel Network Story Map Design Process:

- Detailed Outline of story elements
- Followed by, “story boarding” screen shots

Story Map Outline

1. Title Page

2. About micromobility

- a. Bicycle as original micromobility
- b. New forms of micromobility
 - i. NEVs
 - ii. E-Scooters
 - iii. E-Bikes
 - iv. E-Cargo Bikes
 - v. Other / Novelties

3. Why micromobility is relevant to the South Bay

- a. Most trips are short
- b. Cars are oversized vs. use
- c. Streets are overcrowded
- d. Connection between travel habits and climate change

4. Micromobility gives an opportunity to right-size our vehicles for short trips, via an LTN

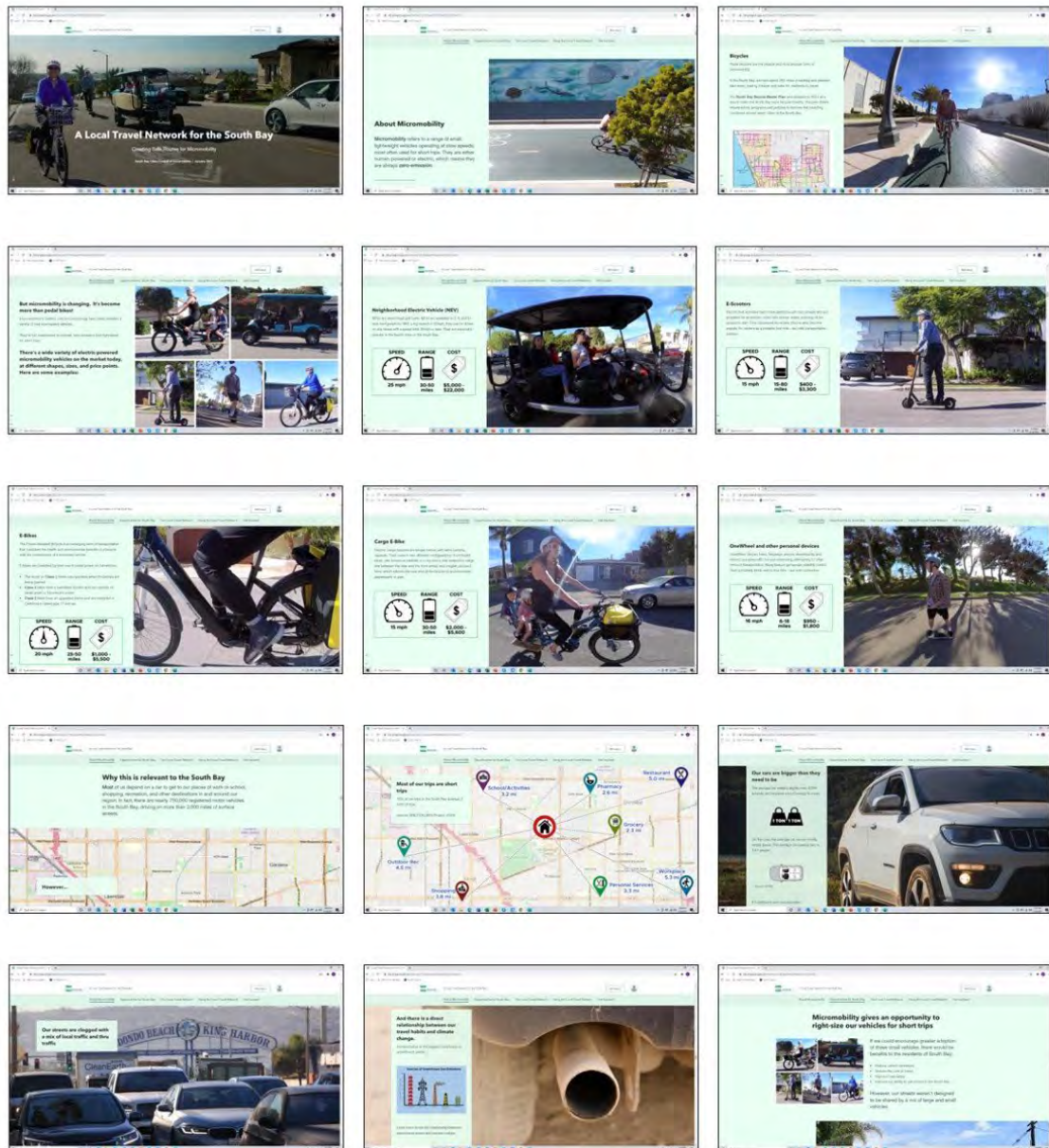
- a. Benefits
 - i. Reduce emissions
 - ii. Reduce travel cost
 - iii. Improve road safety
 - iv. Improve ability to get around
- b. Strategies for LTN
 - i. Establish safe routes for smaller vehicles
 - ii. Connect neighborhoods and destinations
 - iii. Separate local from thru traffic
 - iv. Open bike lanes to other forms of micromobility
 - v. Promote micromobility in the community

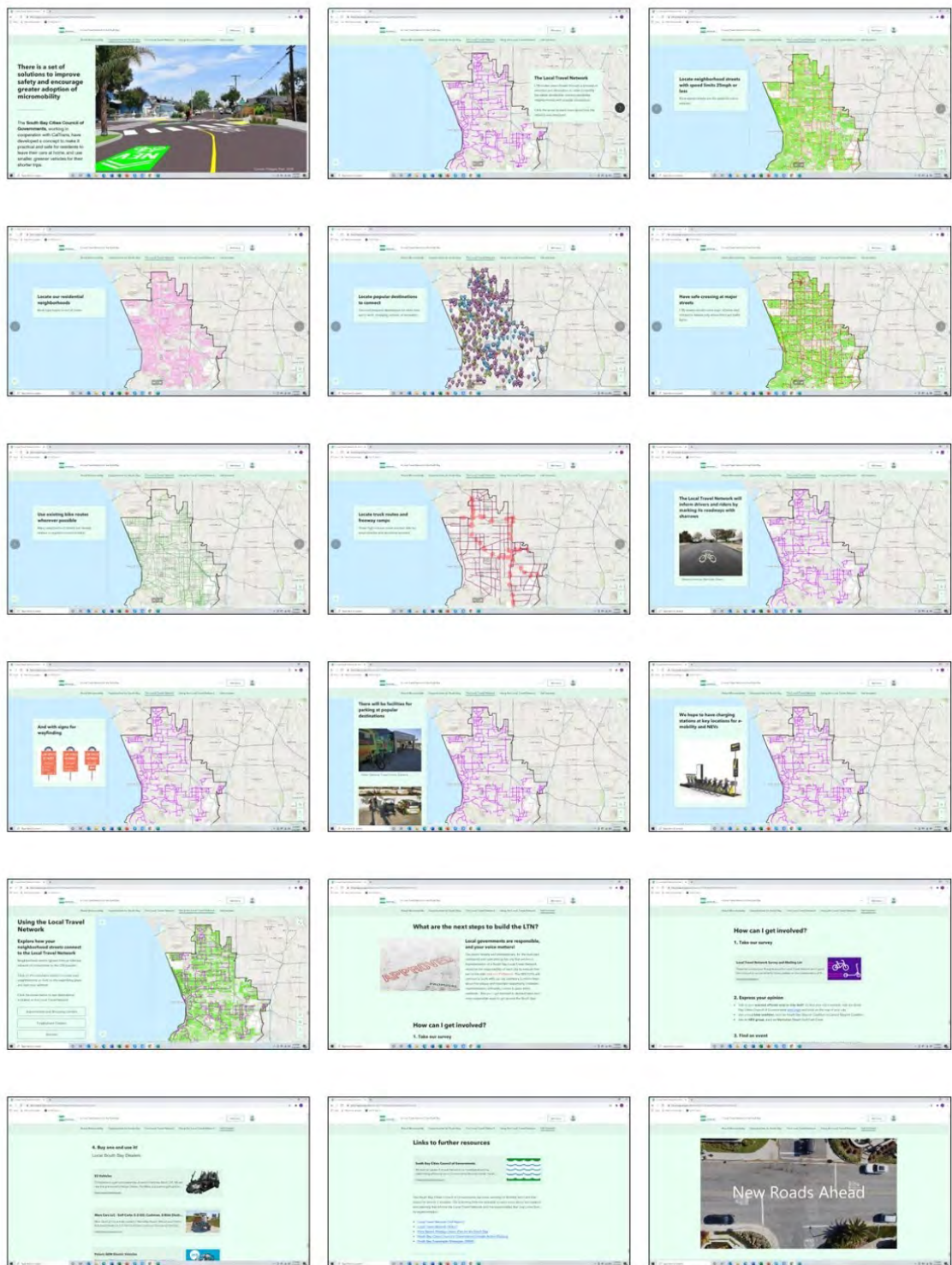
5. LTN Design Methodology

- a. Identify streets 25mph or less
- b. Identify residential neighborhoods
- c. Identify popular destinations
 - i. Shopping Centers
 - ii. Major Employers
 - iii. Schools
 - iv. Parks and Recreation

- d. Identify intersections controlled by traffic light
 - e. Identify bicycle facilities, existing and planned
 - f. Identify places to avoid
 - i. Freeway exits and entrances
 - ii. Truck routes
- 6. LTN Amenities**
- a. Sharrows
 - b. Signage for wayfinding
 - c. Parking at destinations
 - d. Charging at destinations
- 7. How to use the network (Interactive map)**
- a. Invite user to zoom to their neighborhood
 - b. Display popular destinations nearby
 - c. Invite user to explore how they could use the LTN for their own local trips
- 8. Next steps for building LTN**
- 9. How residents can get involved**
- a. Complete a survey
 - b. Express an opinion
 - i. Talk to city staff
 - ii. Join a bike coalition
 - iii. Join an NEV group
 - c. Links to events
 - i. SCAG (Go Human)
 - ii. CycLAvia
 - iii. Manhattan Beach Golf Cart Crew
 - d. Links to local dealers
 - i. NEVs
 - ii. Bikes and E-Bikes
 - e. Links to further resources
 - i. SBCCOG website
 - ii. Related report documents
- 10. End screen and Story Map credits**

Story Map Screen Shots





Technical Reports Appendix

Memorandum

Date: January 12, 2021
To: Aaron Baum and Wally Siembab, South Bay Cities Council of Governments
From: Rachel Neumann and Jeremy Klop, Fehr & Peers
Subject: **SBCCOG Low Speed Travel Network-Associated Reductions in VMT and GHG**

LA19-3128

The South Bay Cities Council of Governments (SBCCOG) Low Speed Travel Network (LTN) will provide a comfortable and attractive travel network for low-speed zero-emission and human-powered vehicles, such as neighborhood electric vehicles (NEV), micromobility modes, and bicycles. The many connection points between South Bay area residential neighborhoods and commercial corridors and centers make it both convenient to use and competitive with travel by full-size vehicle in general purpose travel lanes for local trips. The LTN's implementation is likely to result in increased use of low-speed zero-emission and human-powered vehicles, and a decrease in the use of passenger vehicles which generate vehicle miles traveled (VMT). This memorandum presents a summary of the data, sources, and modeling methods used to estimate the reduction in VMT and greenhouse gas (GHG) emissions that can be reasonably expected to result from implementation of the SBCCOG LTN, and also documents some of the limitations in existing modeling tools which may result in an underestimate of the shift in travel mode away from VMT-generating vehicles resulting from LTN implementation.

Data, Sources, and Methods

Data and Sources

VMT and emissions estimates for large urban areas are commonly developed using regional travel demand models. These models are developed and periodically updated, calibrated, and validated for use in long-range infrastructure planning, environmental impact assessments, and air quality conformity analyses by local and regional agencies. Trip-based travel forecasting models generate (output) daily vehicle trips for each traffic analysis zone (TAZ) across various trip purposes based on inputs such as the transportation network and socioeconomic data such as population, household, and employment. Southern California Association of Governments (SCAG) staff maintain a regional travel demand model that uses a four-step model process to arrive at a set of forecast vehicle trips



based on the data described above. The VMT and emissions analysis for the LTN utilized data inputs and outputs from the SCAG regional travel demand model including:

- SBCCOG roadway network
- Passenger vehicle trips
- Vehicle trip origins and destinations

As described above, the source of the VMT data is the current SCAG Regional Travel Demand Model that includes the six-county area of SCAG member agencies. The current version of the SCAG model available for use at the time of modeling for this project, approved in 2016, has a base year of 2012 and horizon year of 2040, and a forecasting year of 2016. For both the VMT and GHG emissions inventories, data was modeled for the base (2016) model year. VMT calculations were performed utilizing the methods described in the following section.

The source of the emissions data is the California Air Resources Board (CARB) Emissions Factors (EMFAC) model. Year 2016 was used as the EMFAC study year, corresponding to the SCAG model year. The EMFAC emissions model was developed by CARB to assess emissions from on-road vehicles including cars, trucks, and buses in California.

Methods

Modeling

Since the SCAG model is a trip-based model and does not include the breadth of low-speed zero-emission or human-powered vehicles which may utilize the LTN, several tools and studies were reviewed for reference prior to the modeling process to determine the most accurate mode shift away from VMT-generating vehicles expected from implementation of the LTN. These tools and studies included the California Air Pollution Control Officers Association (CAPCOA) tool *Quantifying Greenhouse Gas Mitigation Measures*¹ and the Los Angeles County Metropolitan Transportation Authority (Metro) *Bicycle Sketch Plan Tool*². In consultation with SBCCOG following review of available sources, it was determined that the mode shift away from VMT-generating vehicles resulting from implementation of the project is expected to be between 1% and 15%. (The true percent reduction will be driven by the level of implementation cities decide on.) To estimate the reduction in VMT resulting from shift in transportation mode for both the lower and the upper bound scenarios, passenger vehicle trips on roads within the SBCCOG area were reduced by 1% and 15% respectively, and the SCAG model was re-run at the assignment stage. The outputs generated in this step were then applied as inputs in the VMT and GHG estimation tasks described below.

¹ <http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>
² http://media.metro.net/about_us/committees/images/report_tac_mbspt_02-2014.pdf



VMT

The Boundary Method was used to measure VMT since it can isolate only the portion of a trip that occurs within a specific geographic area, and truncates mileage traveled outside the border of that geographic area. For this analysis, the boundaries of the SBCCOG area were used to set the geographic study area. Using this method, all VMT generated on SBCCOG roadways is accounted for, including for those trips that neither start nor end within the SBCCOG area, and excluding including the mileage from those trips that occurred outside the boundary. This is done by selecting the highway links within SBCCOG boundary in SCAG model. VMT is then calculated based on the link volumes and link lengths for the selected links. This method was utilized to develop the VMT estimates included in the greenhouse gas (GHG) emissions calculations, as it provides a clearer picture of all VMT occurring within a specific geography and the related pollutant exposure there.

Emission

Emissions were calculated through use of the California Air Resources Board's Emission Factor (EMFAC) model³. EMFAC inventories emissions by multiplying emissions rates with vehicle activity data for all motor vehicles, from passenger cars to heavy-duty trucks. The total of intra- and interzonal VMT was used to update the EMFAC emissions template. Then, EMFAC was used to download the sub-area emission template. EMFAC emissions are calculated by geographic sub-areas. The SBCCOG falls into one of two EMFAC sub-areas, the South Coast (SC) sub-area. Sub-area emissions templates were then updated to reflect total passenger vehicle and truck VMT. VMT by speed bin is used to update the emission distribution by speed bin by time of day and vehicle profile. Finally, the updated emissions templates were run within the EMFAC model for SBCCOG to calculate daily pollution emissions by tons per day.

Results

Utilizing the methodology described above, the expected reductions to VMT and GHG resulting from implementation of the LTN were estimated and are presented in Table 1, below. As shown, a 1% change in transportation mode from VMT-generating passenger vehicles to low-speed zero-emission or human-powered vehicles results in a reduction of more than 40,000 VMT per day, equal to a 0.22% reduction in total daily VMT. A 15% change in transportation mode results in a reduction of more than 600,000 VMT per day, equal to a 3.33% reduction in total daily VMT.

Table 1 – Estimated VMT Reduction

Baseline	Lower Bound Scenario (-1%)			Upper Bound Scenario (-15%)		
VMT	VMT	Reduction	% Reduction	VMT	Reduction	% Reduction
18,321,800	18,281,300	-40,500	-0.22%	17,712,000	-609,800	-3.33%

Source: SCAG 2016.

³ <https://arb.ca.gov/emfac/>



Table 2 presents the expected reduction in concomitant GHGs. As shown, shifting mode from passenger vehicles to low-speed zero-emission or human-powered vehicles measurably reduces almost all greenhouse gases in either scenario. The exception is PM 2.5 in the lower bound scenario, in which the reduction is too small to report.

Table 2 – Estimated GHG Reduction

GHG	Organic Gases	Reactive Organic Gases	Carbon Mono-oxide	Nitro-gen Dioxide	Carbon Dioxide	PM10	PM2.5	Sulfur Oxides
Baseline								
Value	10.19	9.07	83.07	23.48	16,611.72	2.44	1.21	0.17
Lower Bound Scenario (-1%)								
Value	10.17	9.05	82.86	23.47	16,581.84	2.43	1.21	0.16
Reduction	-0.02	-0.02	-0.21	-0.01	-29.88	-0.01	0.00	-0.01
% Reduction	-0.20%	-0.22%	-0.25%	-0.04%	-0.18%	-0.41%	0.00%	-5.88%
Upper Bound Scenario (-15%)								
Value	9.85	8.76	79.92	23.22	16,129.34	2.37	1.19	0.16
Reduction	-0.34	-0.31	-3.15	-0.26	-482.38	-0.07	-0.02	-0.01
% Reduction	-3.34%	-3.42%	-3.79%	-1.11%	-2.90%	-2.87%	-1.65%	-5.88%

Data Limitations

The 2016 SCAG Regional Travel Demand Model does not directly account for any type of electric or zero-emission vehicles, including NEVs or micromobility modes (nor have these modes been included in the forthcoming 2020 SCAG Regional Travel Demand Model). Additionally, current model validation practices are based on roadway volume checks, but do not evaluate the accuracy of VMT estimates. Its forecasts therefore cannot accurately reflect the changes envisioned following development of the LTN. The tools used to develop the lower and upper mode shift bounds are also not perfect applications for this analysis. CAPCOA's assumptions about NEV networks are limited by being based exclusively on one community (Lincoln, CA) more homogenous in nature than the South Bay area, and with a smaller supporting facility network. The Metro Bicycle Sketch Plan Tool was developed before the advent and rise in popularity of micromobility. There are no reliable, available forecasts – government, industry, or economic – regarding demand for privately-owned micromobility vehicles or NEVs. Given these data limitations, the reductions presented in Tables 1 and 2 above may underrepresent demand for the LTN and therefore also underrepresent the reductions in VMT and GHG that will be achieved through LTN implementation.



To improve future forecasts and further its mission to expand zero-emission vehicle use in the South Bay, SBCCOG should encourage state and regional government agencies to identify or develop the data sources needed to estimate demand for a broad suite of vehicles types, pursue identification of NEVs as non-VMT generating vehicles at the State level, and should collaborate with SCAG to expand model calibration and validation practices to include VMT validation, include a more diverse fleet of vehicles in its next model update including micromobility vehicles. In its efforts, SBCCOG can lean on its broad body of research conducted over the last 15 years regarding NEVs and other zero-emission vehicles, such as battery electric vehicles (BEV). These

While forecasting the demand for NEV fleet absorption is challenging, quantifying and documenting the benefits of their use has long been an emphasis in the South Bay. In 2013, SBCCOG conducted a NEV demonstration in which XX participants were provided an NEV for regular and flexible use.⁴ They were also provided with trackers which recorded all trips made by participants in both the loaner NEV and their gas-powered or long-range electric passenger vehicle. On average, study participants utilized the loaner NEV for 46% of all household trips, amounting to 19% of total household VMT, showing that they utilized the NEVs more frequently for short trips and reserved use of their full-size vehicle for longer trips. While the study participants were self-selected and therefore predisposed to using an NEV, the study revealed the convenience and attraction provided by NEVs for local trips such that participants with access to an NEV made almost half their trips using one, even without safe, dedicated infrastructure.

In 2015, SBCCOG conducted a BEV demonstration project similar in structure to the NEV study, in which participants test drove mid-range zero-emission vehicles for two months.⁵ Participant travel was tracked in both the loaner zero-emission vehicle and the participant's own gas-powered or hybrid electric passenger vehicle. The data revealed that, regardless of vehicle type, more than 70% of trips made by study participants were 3 miles or shorter, and that more than 90% of trips were less than 10 miles in length. This suggests that the vast majority of South Bay trips could be made in a low-speed zero-emission vehicle if appropriate infrastructure was available. Taken together, the two studies suggest how insufficient existing data sources and travel models may be at measuring the shift in transportation mode that may occur as a result of LTN implementation.

In a driver survey, California drivers indicated that easy access to public charging stations was a primary concern when decided whether to purchase an electric vehicle.⁶ Other studies have found that development of public charging infrastructure is three times more effective than subsidizing electric vehicle purchases at increasing the EV market saturation rate.⁷ Though studies haven't

⁴ SBCCOG, "Zero Emission Local Use Vehicles: The Neglected Sustainable Transportation Mode – Neighborhood Electric Vehicle Demonstration Final Report", (2013).

⁵ SBCCOG, "Drive the Future: Battery Electric Vehicle Project", (2015).

⁶ Consumers Union and Union of Concerned Scientists, "Electric Vehicle Survey Methodology and Assumptions", (2016).

⁷ Yu, Z., Li, S., & Tong, L., *Market dynamics and indirect network effects in electric vehicle diffusion*.



explicitly compared range anxiety in NEV users versus in those driving longer-range electric vehicles, but one could assume that, at minimum, the same would apply to NEV users, and that their range anxiety may be even stronger as NEVs have a relatively short range per battery charge. In January 2018, former California Governor Jerry Brown issued Executive Order (EO) B-48-18, which set a target to install 200 hydrogen fueling stations and 250,000 electric vehicle chargers by 2025. The order also directed state agencies to help expand private investment in zero-emission vehicle infrastructure. The potential growth in use of all types of EVs, including low-speed zero-emission vehicles, resulting from full implementation of Governor Brown's EO B-48-18 is also not captured in existing forecasting tools, and is another reason to assume they underestimate future growth.

In September 2020, California Governor Gavin Newsom issued EO N-79-20, requiring sales of all new passenger vehicles to be zero-emission by 2035, vastly accelerating prior goals set by the state.⁸ The order directed CARB to develop regulations mandating 100% of in-state sales of new passenger cars and trucks are zero-emission by 2035. To ensure that needed infrastructure to support vehicle fleet electrification is developed, the order requires state agencies, in partnership with the private sector, to accelerate deployment of affordable fueling and charging options, further expanding on Governor Brown's order. The order also directs state agencies to develop strategies to incorporate safe and accessible infrastructure into projects to support bicycle, micromobility, and pedestrian transportation, particularly in low-income and disadvantaged communities. The order aims to accelerate investment, innovations, research, development, and manufacturing to create price competitiveness in the electric vehicle market, and could also provide direct incentives to consumers to purchase zero-emission vehicles. Given the range of measures included in the EO, the State of California forecast that, by the time the rule goes into effect, zero-emission vehicles will almost certainly be cheaper and better than traditional gas-powered vehicles, making them the more attractive purchase, and is likely to also expand the suite of zero-emission vehicle options on the market, including NEVs.

It is estimated that average daily VMT in the United States decreased more than 10% in 2020 compared to 2019 due to the COVID-19 pandemic.⁹ Travel behavior changes driven by the COVID-19 pandemic, including increased telecommuting and use of telehealth services, reduced use of public transportation, reduced long-distance and air travel, shorter trip lengths, and increases in walking, bicycling, and other active modes, as well as increased interest in alternative vehicles, were not foreseen by or accounted for in any available travel demand forecasts. It is difficult to predict the level at which some of these changes may become permanent following

Transportation Research Part D: Transport and Environment, 47, 336–356, 2016.

<https://doi.org/10.1016/j.trd.2016.06.010>

⁸ <https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-dramatically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/>

⁹ <https://lender.nce.edu/urbanedge/2020/07/27/transportation-traffic-dropped-66-it-came-back-and-covid-19-followed>



widespread vaccination and a "return to normal", but it is likely that many people will continue to move around differently than they did prior to the COVID-19 pandemic. They may continue to take shorter trips than they did prior to the start of the pandemic, they may continue to favor modes that allow them to avoid crowded interiors such as on public transit or in shared mobility vehicles, and they may gravitate toward vehicle types designed for solo and/or shorter trips, both of which could result in greater LTN utilization than might have occurred but for the COVID-19 pandemic.

Lastly, the analysis described above did not consider the potential for the LTN to be utilized as a network for small vehicle last mile distribution services, which could yield additional GHG benefits if more commercial deliveries can be achieved through zero-emission small vehicles, rather than in full-size delivery vehicles.

Given the above data limitations and changing regulatory and public health environment, it is likely that the estimated VMT and GHG reductions expected from implementation of the LTN presented here may be underestimates, and that the actual congestion and environmental benefits achieved from implementation are likely to be greater. Ongoing monitoring and data collection efforts in this rapidly changing space will be needed to continue to build an empirical basis for future analyses.

Moving to a More Robust VMT Analysis

A Critique of the VMT Benefits from the Local Travel Network:

Moving Towards a More Robust Analysis

(Staff Memo in Response to Fehr & Peers' VMT Analysis)

"The LTN's implementation is likely to result in increased use of low-speed zero-emission and human-powered vehicles, and a decrease in the use of passenger vehicles which generate vehicle miles traveled (VMT)." Fehr and Peers, VMT Memorandum

Caltrans' interest is focused on VMT reduction and the related reductions in GHG emissions and criteria pollutants that would have otherwise been generated by burning fossil fuels. In light of the lack of relevant data, quantifying those impacts is the challenge.

Fehr and Peers, technical consultants to the SBCCOG route refinement study, provided the following forecast:

"In consultation with SBCCOG following review of available sources, it was determined that the mode shift away from VMT-generating vehicles resulting from implementation of the project is expected to be between 1% and 15%. (The true percent reduction will be driven by the level of implementation cities decide on.) To estimate the reduction in VMT resulting from shift in transportation mode for both the lower and the upper bound scenarios, passenger vehicle trips on roads within the SBCCOG area were reduced by 1% and 15% respectively, and the SCAG model was re-run at the assignment stage.

As shown, a 1% change in transportation mode from VMT-generating passenger vehicles to low-speed zero-emission or human-powered vehicles results in a reduction of more than 40,000 VMT per day, equal to a 0.22% reduction in total daily VMT. A 15% change in transportation mode results in a reduction of more than 600,000 VMT per day, equal to a 3.33% reduction in total daily VMT."

That forecast is based on limited data and current modeling capabilities described, as follows:

Trip-based travel forecasting models generate (output) daily vehicle trips for each traffic analysis zone (TAZ) across various trip purposes based on inputs such as the transportation network and socioeconomic data such as population, household, and employment. Southern California Association of Governments (SCAG) staff maintain a regional travel demand model that uses a four-step model process to arrive at a set of forecast vehicle trips based on the data described above. The VMT and emissions analysis for the LTN utilized data inputs and outputs from the SCAG regional travel demand model including:

- SBCCOG roadway network
- Passenger vehicle trips
- Vehicle trip origins and destinations

The source of the VMT data is the current SCAG Regional Travel Demand Model that includes the six-county area of SCAG member agencies. The current version of the SCAG model,

available for use at the time of modeling for this project, was approved in 2016 and has a base year of 2012; a horizon year of 2040; and a forecasting year of 2016. For both the VMT and GHG emissions inventories, data was modeled for the base (2016) model year. VMT calculations were performed utilizing the methods described in the Fehr and Peers Memorandum.

The challenge, however, is that the Fehr and Peer's approach produced a "coarse-grained" estimate of the Local Travel Network impact on VMT reductions. Lack of pertinent data is the primary reason that a better estimate cannot be made.

For future analysis, two variables are required to achieve greater granularity regarding passenger VMT:

- Number of micro devices owned by residents – currently owned and those purchased going forward; and
- The amount each device is used per day, most likely a function of trip distance..

Given this level of relevant data, the actual equation that would produce a more granular forecast is the following:

LTN + other factors that affect number of devices and daily usage = micromobility VMT

Usage in Consideration of LTN Development and Demand for New Micromobility Modes

The LTN provides a safe route from most neighborhoods to many destinations. Existing device owners should be the first group to react, by increasing daily usage. The second group will be those who purchase their first micro device probably with usage beginning modestly and growing as familiarity and comfort levels increase.

Among the micro devices, only NEV purchases can be tracked. This is because they require registration and license plates issued by the DMV. A finer granularity to calculate VMT reduction from usage of the LTN will need to account for the number of total micromobility modes used (or potential available for use) on the Network. NEV data along with sales data of other micromobility modes will provide for this granularity.

Other factors that will impact usage will manifest as the LTN route segments are built and the new network become operational. These factors include:

- An online tool for helping households identify their actual mobility needs, and links to how to get them satisfied (participants in both of our vehicle projects consistently over-estimated their mobility needs)
- Policy reforms to offer subsidies for LUV ownership parallel to the current Clean Vehicle Rebate Program offered by the CARB to subsidize commuter ZEVs. (Past attempts at this have not been successful.)
- Programs that will increase access to LUVs in DACs, perhaps through CBO ownership of fleets for sharing. (The SBCCOG has been exploring grant opportunities to fund a pilot project.)

- Implementation of the South Bay Fiber Network middle mile access through anchor institutions could shorten travel distances to virtual forms of schools, medical clinics, city halls, etc. Shorter distance increases the probability of micromobility.
- Public outreach programs to help overcome consumer resistance to migrating away from the mono-culture of automobility, stressing the virtues of micro devices.
- Education programs about road-space sharing for both zero-emission micromobility vehicles and motor vehicle operators, how to coexist on the road.
- Support for cities to implement the sharrows, LUV lanes, parking arrangements and signage that define the LTN, including public mobilization led by retailers.
- Wide deployment of charging stations for micromobility vehicles and long range BEVs.

Mode Usage Assumptions and VMT Reduction Scenarios

Comparable experiences have proven difficult to locate. The experience in Lincoln, CA with their NEV network. The NEV network was implemented in 2005 and by 2007 the number of street-legal golf carts and NEVs (Lincoln has both) per capita had increased by 12%. Applying the same increase to the South Bay would result in 120,000 new NEVs, e-bikes, e-trikes, e-scooters, pedal bikes, self-balancing personal transporters, and others.

While the stock of devices is hard to estimate without better data, the SBCCOG has solid usage statistics produced by the two vehicle demonstration projects.

Another approach would be to identify the potential micromobility contributions to satisfying the current target of 50% reduction in GHG emissions by 2030, recently established by climate scientists.

Usage data from our BEV study, showed that households drive commuter vehicles 26 miles when per day on average assuming 400,000 household vehicles they collectively generate 10.4 million VMT per day. The 50% target would require 5.2 million VMT reduced per day.

Drawing on the Lincoln experience, if 120,000 micro devices were sold in say even a 3-year period, and that each were driven 10 miles a day (slightly higher than in the NEV demonstration for the LTN effect), that would reduce daily VMT by 1.2 million or 23 % of the target by 2024.

Alternatively, assume every household owned one micro device as its second car. If each of those were used for 10 miles each day, that would reduce daily VMT by 4 million, or 77% of the target.

Finally, from the SBCCOG research, usage data show that 3.5 million VMTs (27%) are happening on trips < 3 miles. If all trips 3 miles or less were driven in a zero- emission vehicle or device, the South Bay would satisfy 2/3 of the target GHG emissions reduction.

Those same data show that 4.7 million VMT per day (36% of the total) are generated on trips 3-10 miles. If ¼ of those longer trips were driving in a zero-emission vehicle or micro device an additional 1.2million VMT would be reduced, or 23% of the target.

Combining those two scenarios, all trips of 3 miles or less and ¼ of those between 3 and 10 miles would effectively satisfy the target GHG reductions.

Housing and Local Travel Network Memo



The Local Travel Network (LTN), when operational, will implement one of the key land use and transportation components of the South Bay Sub-Regional Climate Action Plan (CAP). Broadly speaking, the LTN is the mobility infrastructure that will support the sub-region's Neighborhood-Oriented sustainability strategies. These strategies were designed to integrate mobility options

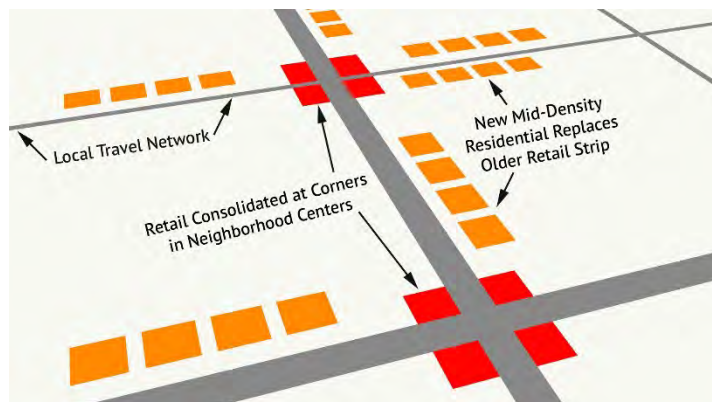
for reducing VMT and greenhouse gas (GHG) emissions with land-use and housing approaches that focus on creating density of services and resources within the neighborhoods to consolidate trip needs. The Local Travel Network would provide the infrastructure to support shorter trips for community members who would walk, bike, or use other micromobility modes to access commercial and retail destinations in the neighborhood.

The land use strategy promotes the “densification of retail and commercial uses” to create neighborhood villages or ‘centers’ for the community’s use. Access to the ‘Centers’, for South Bay residents, would be facilitated via travel on the LTN. Residents would use zero-emission micromobility vehicles for these trips.

While development of neighborhood centers are envisioned to provide commercial and retail activities for residents, they would attract housing, as well. The SBCCOG Climate Action and Sustainability Plans call for redeveloping retail corridors into medium density housing - providing additional housing stock for the South Bay cities.

The Local Travel Network would provide safe, mobility infrastructure for residents of these new homes.

Residents would have the sustainable mobility option to use low-cost, zero-emission vehicles for local trips to the neighborhood center or other destinations in the South Bay.



The complementary benefits accrued through this land-use and mobility strategy include reduced travel costs making housing more affordable and local commercial land uses will be better served with less need for parking.

Additional co-benefits that implementation of the Local Travel Network will have on housing include:

Parking

Micromobility vehicles have much smaller footprints than the automobile. Households owning a micro device will require less parking space than an auto. Parking adds to the cost of housing which affects affordability.

Maintenance Cost Savings

Micromobility vehicles devices are much less expensive than automobiles to own, operate, and maintain. In comparison to traditional automobiles, operation and maintenance costs are significantly less expensive. Lower mobility costs are expected for residents who use the LTN. This means more disposable income for the resident or for those in the market to purchase a home.

Shared Micromobility as an Amenity

Multi-family building owners have the option of offering micromobility devices for sharing by tenants as a building amenity. Access to “just in time” mobility as an amenity would, like other shared assets such as swimming pool, recreation room, and outdoor kitchen, be a favorable factor for renters in multi-family buildings or owners of condominiums.

Associated Changes in Parking Requirements for New Developments



Memorandum

Date: November 6, 2020

To: Aaron Baum and Wally Siembab, South Bay Cities Council of Governments

From: Rachel Neumann and Jeremy Klop, Fehr & Peers

Subject: SBCCOG Low Speed Travel Network-Associated Changes in Parking Requirements for New Developments

LA19-3121

This memorandum presents recommended changes to parking requirements for private development to encourage adoption of and accommodate local use vehicles (LUVs), including neighborhood electric vehicles (NEVs) and electric bicycles (e-bikes), on the South Bay Cities Council of Governments (SBCCOG) Low Speed Travel Network (LTN).

NEVs occupy less physical space than standard passenger vehicles, so a relatively higher number of NEV spaces can be accommodated in a given parking area. This means that NEVs may also be able to utilize existing spaces more efficiently, in a wider assortment of configurations. However, NEV parking spaces also need to be located adjacent to charging infrastructure. Therefore, adoption of NEVs and other electric micro-mobility options will change the parking and vehicle storage needs for residents and visitors. Local jurisdictions may wish to update parking standards for new developments to specifically address storage and charging of NEVs. The SBCCOG can support member jurisdictions who wish to do so by drafting example zoning and building code amendment language that can be adopted universally or tailored to fit the specific needs of each diverse jurisdiction.

Regulatory Framework and Best Practices

A review of regulatory framework was conducted to understand the current parking regulations and requirements. This review includes the following:

- California Building Code
- California Green Building Code (CALGreen)
- California Air Resources Board (CARB) Electric Vehicle (EV) Charging Infrastructure: Multifamily (MF) Building Standards



- Local municipal zoning codes
- Other adopted plans

Additionally, existing NEV plans were reviewed to identify emerging best practices related to NEV parking and charging. The recommendations that follow in this memo were based on a review of plans from cities setting the standard including Santa Monica, San Francisco, Los Angeles, and Austin (Texas).

Recommended Regulations

Some cities in the SBCCOG area may already be implementing these recommendations and an in-depth review of each city's zoning codes will be needed to assess the applicability of these recommendations on a case-by-case basis.

EV Charging Infrastructure

Currently, California's Green Building Standards Code (CALGreen) requires new multifamily housing developments with 17 units or more to install EV charging infrastructure in at least 3% of total parking spaces¹. California Air Resources Board (CARB) staff completed a technical and cost analysis, which indicated that the 17-unit size threshold should be eliminated, recommending that the requirements be applied to developments of all sizes, and that a higher 10% requirement is needed beginning in 2020 to meet the demand for Level 2 charging stations between 2025 and 2030². CARB also recommended increasing the EV Capable percentages in the voluntary provisions from 5% to 15% for Tier 1 and 20% for Tier 2.

The City of Santa Monica adopted the *Electrical Vehicle Action Plan*³ in November 2017. The plan recommended updating the zoning ordinance requirements to increase the parking spaces available for EV charging, as follows:

- Residential: require one EV-ready parking space per residential unit in buildings where parking is required (minimum provision: electric panel capacity and conduit to support 240 volts, with a 40-amp outlet at each parking space)
- Commercial: increase requirements for EV-ready parking spaces in new commercial buildings from 5% to 20%

¹ <https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen>

² <https://ww3.arb.ca.gov/cc/greenbuildings/pdf/tcac2018.pdf>

³ https://www.smgov.net/uploadedFiles/Departments/OSE/Categories/Energy/EVAP_Final_Draft_WEB.pdf



- On-street: implement a pilot program to provide EV charging through LED streetlight posts. Where there is not enough electrical capacity to install a 240V Tier 2 charger, 120V outlets can be installed to supply power for e-bikes or overnight vehicle charging

Recommended Regulation

- Residential: Require one (1) EV-ready parking space per unit in buildings required to provide parking
- Commercial: Require 20% of parking spaces to provide Level 2 EV charging

Bicycle and Micromobility Vehicle Parking

The City of Los Angeles updated their bicycle parking regulations under LA City Ordinance 185480, adopted in March 2018⁴. This ordinance allowed for vehicle parking to be replaced by bicycle parking at a ratio of four bicycle parking spaces to one vehicle parking space. In addition, the ordinance allowed for the following:

- Non-residential buildings: up to 20% of required vehicle parking spaces may be replaced by bicycle parking
- Non-residential buildings within 1,500' of a major transit stop: up to 30% of required vehicle parking may be replaced with bicycle parking
- Buildings with fewer than 20 required vehicle parking spaces: up to four (4) vehicle spaces may be replaced by bicycle parking
- Residential buildings, including hotels/motels: up to 10% of required vehicle parking spaces may be replaced with bicycle parking
- Residential buildings within 1,500' of a major transit stop, including hotels/motels: up to 15% of required vehicle parking spaces may be replaced with bicycle parking

The ordinance also states that bicycle share station docks may count toward short-term bicycle parking requirement.

Many cities have also begun incentivizing the provision of bicycle parking corrals to increase the amount of available bicycle and micromobility vehicle parking and to deter parking in locations which impede sidewalk access. Bicycle corrals repurpose an on-street vehicle parking to provide parking for 12 – 16 bicycles (depending on configuration). Generally, cities install bicycle corrals in partnership with a sponsoring property owner and/or business. Cities will provide the corral and fund installation, while sponsors agree to perform minor, regular maintenance of the corral. Among the diverse cities offering bike corral installation programs are Los Angeles, Pittsburgh, Portland (Oregon), and Austin (Texas). The City of Austin allows property and business owners to submit an application for a bicycle parking facility, which is then reviewed by the staff in the Active Transportation and Street Design Division of the Austin Transportation Department.

⁴ <https://planning.lacity.org/ordinances/docs/BicyclePkg/Adopted/QandA.pdf>



Requests are evaluated based on location, need, available street space, bicycle parking demand, and availability of nearby bike parking. Bicycle corrals are installed at no cost to the applicant or business owner. The City provides for on-going maintenance. In Los Angeles, the Los Angeles Department of Transportation requires corral sponsors to provide the on-going maintenance rather than the City. In Portland, bicycle corral installation is free for the applicant unless their business is located in certain areas with metered parking, in which case an installation fee of \$2,600 is assessed.

Recommended Regulation

- Allow replacement/substitution of vehicle parking with bicycle parking
 - Residential up to 15% of spaces
 - Commercial up to 30% of spaces
 - Apply to existing uses, converting/expanding uses in existing buildings, and new development
- Allow bike share dock stations, on-site or adjacent, to count toward short-term bicycle parking requirements
 - If scooter share services are permitted, allow scooter share stations to count toward short-term bicycle parking requirements
- Develop a mechanism for business owners to request installation of bicycle corrals in front of or near their business to accommodate a variety of micromobility modes.



E-Bike Charging Infrastructure

The City of Santa Monica's bicycle parking requirements (Code 9.28.140) were reviewed for best practices regarding e-bike charging infrastructure⁵. The code requires that at least one (1) electric outlet must be provided in each long-term parking area. The city defines long-term parking as structures that allow for parking for more than four (4) hours. E-bikes can utilize either Level 1 or Level 2 charging infrastructure: e-bikes can top up in 10 minutes using a Level 2 charger, but users should refrain from doing so frequently as it reduces overall battery life, and they can charge fully using a Level 1 charger in approximately one hour.



Solar-powered secure e-bike charging in Portland, Oregon on the Oregon Museum of Science and Industry campus, among the first of its kind in the United States.

⁵ <https://www.smgov.net/uploadedFiles/Departments/PCD/Plans/Downtown-Specific-Plan/DCP%20Parking%20Requirements.pdf>



Multi-socket wall outlet for e-bike charging suitable for indoor use, designed by ESL E-Mobility, a German e-mobility company.



Indoor e-bike charging concept by Bosch, piloted in 2018. The concept allows for e-bike users to securely lock up their battery while it charges. Bikes must be parked elsewhere.



Recommended Regulation

- Provide access to charging infrastructure at bicycle parking facilities
 - Long-term = provide one (1) or more outlets
 - Short-term = provide outlets sufficient to accommodate e-bikes in at least 25% of bicycle parking spaces
- Provide Level 2 fast charging at short-term parking locations in commercial developments to allow e-bike charging while shopping, eating, touring, and meeting

Car-Share Vehicle Parking

Best practices regarding the provision of building/development-wide car share vehicles were reviewed from Austin, Texas and Santa Monica, California.

In Austin, City Code 25-6-478 requires one vehicle parking space be provided for each car share vehicle, up to a maximum requirement of twenty (20) spaces, for car share programs that comply with the requirements prescribed by the Director by administrative rule⁶.

In Santa Monica, the Municipal Code Zoning Ordinance states that the site-wide parking requirement is reduced by two (2) spaces for every car-sharing parking space provided, up to a maximum reduction of 25%/not to exceed 10 spaces⁷. A copy of the car-sharing agreement between the property owner and the car-sharing company must be submitted with the building permit.

Recommended Regulation

- Reduce vehicle parking requirements by two (2) spaces for every one (1) electric shared car provided

NEV Parking

Best practices regarding NEV parking were reviewed in the *Western Riverside COG (WRCOG) 4-City Neighborhood Electric Vehicle Transportation Plan*, which requires NEV parking in commercial and public settings, such as retail/commercial, medical facilities, educational facilities, and neighborhood parks⁸.

⁶ https://library.municode.com/tx/austin/codes/code_of_ordinances?nodeId=TIT25LADE_CH25-6TR_ART7OREPALO_DIV1GERE_S25-6-478MOVEREGE

⁷ [https://www.smgov.net/uploadedFiles/Departments/PCD/Zoning/z%20ZO%20Updated%20Final%20Full%20Document%20\(Mar%202017\).pdf](https://www.smgov.net/uploadedFiles/Departments/PCD/Zoning/z%20ZO%20Updated%20Final%20Full%20Document%20(Mar%202017).pdf)

⁸ <http://www.wrcog.cog.ca.us/DocumentCenter/View/191/4-City-NEV-Plan-PDF?bidId=>



A typical NEV parking space measures just 15' by 7', 35% smaller than the 18' x 8.5' required for standard vehicle parking spaces.

Recommended Regulation

- Commercial uses to provide dedicated NEV parking in preferential locations near the building entrance at the following minimum levels by land use (as recommended by WRCOG):
 - Retail/commercial centers = two (2) spaces per 10,000 feet of building area
 - Medical facilities = four (4) spaces
 - Educational facilities = six (6) spaces
 - Neighborhood parks = four (4) spaces
- NEV parking spaces should provide L1 charging access

Memorandum

Date: November 6, 2020
To: Aaron Baum and Wally Siembab, South Bay Cities Council of Governments
From: Rachel Neumann and Jeremy Klop, Fehr & Peers
Subject: **SBCCOG Low Speed Travel Network Parking and Charging Solutions**

LA19-5121

In 2017, The South Bay Cities Council of Governments adopted the South Bay Shared Mobility Action Plan (SMAP). The SMAP identified 11 recommended strategies to leverage shared mobility services to achieve climate action targets, as described below:

- Educating the public about the availability of innovative and shared mobility services;
- Increasing bikeshare ridership and walking through incentive programs and investments in bikesharing, and bicycle and pedestrian infrastructure and safety programs;
- Reducing VMT through the incorporation of shared modes;
- Providing infrastructure to support zero- and low-emission shared mobility vehicles (plug-in electric, hybrid plug-in vehicles);
- Increasing the use of active and shared commute modes with documented increases in vehicle occupancy, reductions in VMT/GHG, or both;
- Expanding the use of shared mobility services by overcoming critical equity challenges;
- Ensuring shared mobility services support the public transit network;
- Reimagining public rights-of-way to prepare for an array of shared mobility and delivery services, including automated transportation systems;
- Leveraging data and applications to foster the growth and development of shared mobility services;
- Managing the transition toward a shared, electric, connected, and automated transportation network; and
- Understanding and mitigating the GHG impacts of e-commerce and urban goods delivery.

This memorandum presents strategies and policy recommendations to support realization of the 11 SMAP goals, and specifically to address and balance the on- or off-street public parking, charging, and curbside access needs of the SBCCOG Low Speed Travel Network (LTN) users with



the needs of all roadway users, including transit riders, pedestrians, automobile drivers, and business owners.

The diverse array of mobility options and delivery services demanding curbside access offers a complex challenge for cities. New micromobility options such as scooters and e-bikes need to be easily accessible and conveniently stored at the end of one's trip, yet these and other new mobility options, including transportation network companies (TNC) offering vehicle rides for hire such as Uber or Lyft, seem to trigger an acute case of the tragedy of the commons, exacerbating challenges of pedestrian safety and curbspace management. In response, the conversation about who controls the curb is quickly shifting, from one driven by business owners prioritizing private vehicle parking to one in which cities proactively manage access to the curb, as well as the congestion driven by demand for that access, as a public asset, defined in policy, and with clear modal priorities for access. Public agencies taking steps to design, measure, price, and manage their curb space must do so in collaboration with numerous other parties, including transit agencies, private mobility operators, tech sector innovators, and key local and governmental stakeholders, including members of the public. This memo provides guidelines and best practice recommendations for doing so, particularly tailored to the diverse community types in the South Bay and accounting for the needs of NEV drivers, all geared toward fostering safe adoption of slow-speed modes. Strategies and recommendations included in this memo address micromobility parking, service area, vehicle distribution, vehicle maintenance, safety, enforcement, fees and pricing, fleet caps, data sharing requirements, equity, and community engagement and education, and NEV parking and charging. Recommendations are based on a review of the Institute of Transportation Engineers' *Curbside Management Practitioner's Guide* (2018), National Association of City Transportation Officials' *Guidelines for Regulating Shared Micromobility, Version 2* (2019), the American Planning Association's *Planning for Equity Policy Guide* (2019), Transportation for America's *Shared Micromobility Playbook* (2018), and Remix's *Micromobility Policy Survey* (2018), as well as a case study evaluation of the micromobility policies and requirements in a number of cities with existing micromobility services, including California cities Santa Monica, Los Angeles, San Francisco, Oakland, San Jose, as well as Seattle, Washington, and Louisville, Kentucky. Other key sources include the California Vehicle Code (CVC), the United States (U.S.) Department of Energy, and the U.S. Consumer Product Safety Commission's bicycle regulations. Best practices from each topic area have been aggregated into the LTN Parking & Charging Best Practice Resource Guide, presented in Appendix A, to be used as a reference by city staff.



Micromobility

Parking

The recommendations in this section cover all micromobility modes, including bicycles, unless specifically noted.

Parked micromobility vehicles should not obstruct pedestrian traffic flow, use of bicycle racks, transit platforms, emergency facilities such as fire hydrants, or driveways, and they should always be parked upright. Cities may implement designate parking zones and/or no-parking zones. Additionally, cities may want to consider setting time limits on the length of time vehicles may be parked in any one location.

Given the diversity of the built environment, population density, location of regional attractions, and employment patterns across the South Bay area of Los Angeles, other elements of low-speed vehicle parking policies should be context-sensitive. Denser areas will be better suited by certain policy choices, while less dense areas will require others. For example, in high-traffic sidewalk areas, micromobility vehicles may need to be parked within a parking space on the street so as not to obstruct an already crowded sidewalk. To support this, cities may install street parking corrals, and/or they may limit the number of vehicles which may park on any one block.



Bicycle Corrals

- *Bicycle corrals replace 1-2 vehicle parking spaces*
- *Provide space for 12-18 bicycles, depending on design and configuration*
- *Elements include the rack itself, paint, signage, and physical dividers to separate the corral area from other ROW uses*
- *Costs = \$3,000*

In less busy areas, parking within the landscape or furniture zone on the sidewalk may work well, and cities may choose to install bicycle racks at regular intervals or at specific destinations based on local zoning codes or on demand. Alternatively, some residential neighborhoods within the South Bay lack sidewalks, and in those neighborhoods, micromobility vehicles should be parked in a safe location that does not impede other street uses or obstruct pedestrians. In any context, user education, both physical and digital, will be key to addressing the potential for micromobility vehicles to block the public right-of-way. Cities should consider including signage stating



micromobility parking rules and regulations at all parking facilities, including racks, corrals, valets, and at information kiosks. Cities should also evaluate the conditions of critical connecting facilities at micromobility parking locations, such as the curb ramp connecting the LTN to a bicycle rack on the sidewalk, to ensure ADA-compliant access is provided. Additionally, cities should consider providing access to charging facilities for e-bikes and electric scooters at designated locations, such as at bike corrals or other areas where secure parking is provided. E-bikes and scooters can utilize either Level 1 or Level 2 charging (described in greater depth later in this memo).



Examples of Level 1 e-bike and scooter charge points in the public right-of-way. From left to right: Florence, Italy; Tel Aviv, Israel; and Monte Carasso, Switzerland.



On-street bicycle parking concept with built-in Level 1 charging by the British designer Turvec.



To ensure the benefits of micromobility are available to all residents, it is critical for cities to consider equity when locating micromobility parking facilities. Cities should ensure bicycle racks and/or corrals are provided equitably to disadvantaged communities, or require that a fixed percentage of bicycle parking facilities be provided to such communities.

Potential micromobility operators should develop and submit parking and fleet management plans that identify the strategies they will utilize to ensure vehicle users follow parking rules, that comply with ADA regulations, and that require coordination with cities relating to parking at special events or during certain times of the year (for example, during beach festival weekends in Hermosa Beach). As states above for all users, parked rental micromobility vehicles should not obstruct pedestrian traffic flow, bicycle racks, transit platforms, emergency facilities such as fire hydrants, or driveways, and they should always be parked upright. Cities may implement no-parking zones and/or designated parking zones specific to rented micromobility vehicles, require use of geofencing (a kind of virtual geographic boundary) to prohibit parking or locking vehicles in specified areas, and/or identify areas where dockless parking is prohibited. Operators should implement parking confirmation and notification systems to reduce poor parking behavior, and cities may require operators to develop on-vehicle technology to prevent riders from ending a ride if the vehicle is not upright. To support this, cities may require operators to designate a minimum number of street parking corrals based on fleet size, and/or they may limit the number of vehicles which may park on any one block. Cities may also want to consider setting time limits on the length of time rental vehicles may be parked in any one location, separate from or in addition to time limits imposed on non-rented vehicles, and the timeframe for operators to respond to parking infringements. User education, both physical and digital, and enforcement will be key to addressing the potential for micromobility vehicles to block the public right-of-way. Best practice suggests cities or jurisdictions establish clear consequences for vendors or operators who fail to enforce parking guidelines, starting with fining vendors for parking non-compliance at an amount sufficient to cover the city's costs required to impound or relocate vehicles up to revoking operating permits for not meeting parking standards.

Service Area and Fleet Distribution

The recommendations which follow apply exclusively to micromobility rental operators (including bike, e-bike, and scooter shares).

The right to operate is usually based on being granted a permit which can be revoked should the operator violate any of requirements or regulations.

Establishment of the service area and approach to distribution of the micromobility fleet will be context-sensitive, much like setting parking guidelines. Equity should be a primary consideration, and is best supported through policies requiring operators to provide service to underserved areas.



Cities can identify service area boundaries by neighborhood or by street, and can require service to be provided or prohibited in specific neighborhoods. Cities can choose to cap the percentage of the fleet located in downtown areas. Santa Monica took this approach by limiting the number of vehicles in the city's Downtown District to one-third of the total fleet, and prohibiting deployment along Ocean Front Walk, the beach bike path, Third Street Promenade, the Pier, and a number of other high-traffic areas. Cities with multiple operators may also choose to split service areas between different operators and allow overlap in downtown areas.

Operators will need to redistribute the fleet to maintain balanced coverage in all service areas. Cities can dictate the maximum number of vehicles allowed to be parked on any one block, set the schedule by which fleet balancing must occur – daily, every 48 hours, etc. – and can require that vehicles which haven't moved within a specific time period (for example, in seven days), must be moved regardless of overall fleet balancing needs. Cities can also require operators to provide incentives to riders to return vehicles to transit stops or other activity centers.

Cities can choose to monitor fleet distribution themselves through spot checks by city employees, or they can rely on citizen/customer complaints to identify problem areas. If cities choose to conduct the monitoring themselves, they should consider including the cost to the city for this service in operator fees (discussed in greater depth below).

Operators will need to secure approval from private property owners for all use of private property.

Equity

The equity recommendations which follow were developed with micromobility rental operators (including bike, e-bike, and scooter shares) in mind. However, the principals behind these recommendations are critical in any planning effort, and should be considered by cities planning active transportation and micromobility networks and/or developing general micromobility regulations that apply to all users, whether riding privately owned or rented vehicles.

To ensure the benefits of micromobility are available to all residents, it is critical for cities to consider equity when developing micromobility policies. Best practice suggests that cities should:

- Require operators to provide equitable access to vehicles and actively reduce barriers to vehicle use in disadvantaged communities
- Establish requirements for fleet distribution in disadvantaged communities, either by
 - o Requiring that a fixed percent of the fleet be located in specific communities
 - o Incentivizing distribution through tiered fees per scooter deployed dependent on location, or
 - o Increasing the overall vehicle cap for operators who deploy a specific number or percentage of vehicles in said communities
- Require operators to implement other programming to reduce barriers to access, including:



- o Discounted memberships/rental fees for low-income individuals
- o Non-credit-based payment options
- o Non-smartphone-based rental access
- o Conducting outreach
- o Employment opportunities for community members
- o Establishing a community advisory board to respond to community concerns
- Include standards for adaptive equipment in micromobility policies
- Require that adaptive scooters be provided
- Explore payment interoperability with other transportation modes, such as how Metro Bikeshare users can pay using their TAP card, to ease the use of one mode to access the other for a complete transit trip

Community Engagement and Education

The community engagement and education recommendations which follow were developed with micromobility rental operators (including bike, e-bike, and scooter shares) in mind. However, the principles behind these recommendations are critical in any planning effort, and should be considered by cities planning active transportation and micromobility networks and/or developing general micromobility regulations that apply to all users, whether riding privately owned or rented vehicles.

Public participation and meaningful outreach to all populations – including renters, lower-income households, people experiencing homelessness, people of color, youth, and families – is a key component of any equity policy to ensure those populations have a voice in both procedural and substantive decision-making processes. Targeted community-specific strategies and partnerships that ensure effective citizen participation such that members have a clear and meaningful voice in decisions and outcomes and community trust is rebuilt are critical to an equitable community engagement plan. Conversely, equity programs are unlikely to be effective without a robust marketing and outreach plan. Strategies for equitable public participation may include:

- Paying community organizers to conduct outreach in underrepresented communities
- Conducting popular education
- Reprioritizing planning efforts to address the immediate social welfare needs in less affluent communities before quality-of-life needs in more affluent communities.

The APA's Planning for Equity Guide provides an effective framework for development of an equitable public participation plan. Metro's Equity Platform is a local example that cities may want to evaluate as they develop their plan.

Cities should consider partnering with established local advocacy organizations, such as Beach Cities Health District, Blue Zones Project, Los Angeles County Bicycle Coalition, South Bay Bicycle Coalition, Thrive Hermosa, Beach Cities Transit, SCAG's Go Human campaign, school districts, and



others, and utilizing regularly schedule community events, such as open streets events, walk to school days, and others, as opportunities to conduct outreach and gather feedback from communities.

In order to reduce the burden on city staff, cities may want to require operators to provide the community engagement and education necessary regarding access, safety, and rules of operation. This is a common micromobility policy requirement in the case study cities examined for this memoranda. Programming should be multilingual to reflect the community fabric. Community engagement events should be planned equitably so all members of the community have an opportunity to participate (e.g. hold multiple events in a range of locations). All vehicles should clearly display customer service contact information. Multilingual customer service should be available 24/7. Operators should clearly post a user "code of conduct" in-app and on their website.

Vehicle Maintenance and Safety

All e-bikes must be labeled with a classification number, top assisted speed, and motor wattage, by the manufacturer. All e-bikes require brakes on at least the rear of the bike. When the brakes are applied, the electric motor must stop functioning or be disengaged. E-bikes must comply with United States Consumer Product Safety Commission (16 C.F.R. 1512.1) regulations for bicycles which state that they must have front and rear wheel brakes, or just rear wheel brakes. Reflectors must be on the front and rear of the bike, on the side of each wheel (visible from both sides of the bike), and on the fronts and backs of each pedal.

All vehicles must be equipped with front and rear lights and a rear reflector, brakes, and a bell. All vehicles should clearly display safe operating instructions consistent with city regulations, including language stating that a helmet is required and that riders must yield to pedestrians, ride on-street, and follow all motor vehicle laws. Operators must provide a helmet to users at the time of rental, or offer a similarly effective alternate approach for helmet distribution.

For rented vehicles, the micromobility operator is responsible for all vehicle maintenance and safety, and for maintaining fleet distribution and location. Cities will want to establish a clear timeframe within which the operator must remedy any issues, such as a damaged vehicle or parking violation. Operators should keep detailed records of incident reports, vehicle malfunctions, and vehicle inspection logs. To support program evaluation, cities should consider working with police departments to update crash report forms to include scooters and other micromobility vehicles in order to track safety statistics.

Cities should limit speeds for micromobility vehicles. Best practice indicates that:

- Scooters should be limited to a speed of 15 miles per hour (mph). They should not ride on the sidewalk, both as a best practice in terms of safety and because the California Vehicle Code prohibits it.



- E-bikes should be limited to a speed of 25 mph in the bike lane or on the roadway, and should never be ridden on the sidewalk.
 - o E-bike pedal assist should be programmed to shut off at speeds greater than 15 mph.
 - o In California, bicycle laws apply to both Class 1 and 2 e-bikes. Class 3 e-bikes are not allowed on Class I bicycle facilities.
 - Class 1: Motor assist that only turns on while rider pedals. Motor assist turns off over 20 mph.
 - Class 2: Motor is turned on with a throttle instead of while the rider pedals. This motor also turns off over 20 mph.
 - Class 3: Same as Class 1, but motor assist continues up to 28 mph.
- Speed limits should be reevaluated on a regular basis, ideally quarterly at first.

Cities may require operators to develop technology to prevent sidewalk riding in areas where it is prohibited.

Fees and Pricing

The recommendations which follow apply exclusively to micromobility rental operators (including bike, e-bike, and scooter shares).

Typical costs to regulate and manage micromobility vehicle operators can run into the hundreds of thousands of dollars annually. Cities should implement permitting fees to fully cover the costs of the necessary city resources. It is recommended that cities conduct a cost analysis study to determine estimated costs. SBCCOG can assist South Bay cities by conducting a COG-wide cost analysis study.

Dynamic pricing fee programs, such as those that collect a fee per trip or daily per vehicle, provide the best return on city costs compared to fixed fee (annual) programs, and may even provide enough revenue to fund micromobility-related infrastructure improvements, such as repairing bicycle lanes or designated parking areas.

Fleet Caps

The recommendations which follow apply exclusively to micromobility rental operators (including bike, e-bike, and scooter shares).

Best practice indicates that cities should establish fleet caps based on performance criteria, rather than implementing a flat cap. If cities plan to allow more than one operator to function, the city should consider the overall fleet size desired rather than implementing specific caps on each operator. Cities may choose to implement a phased approach, allowing more vehicles over time, based on utilization thresholds (rides/bike/day). Cities can incentivize operator behavior, such as



implementing an equity focus or providing adaptive vehicles, by rewarding operators who do with a fleet size bonus.

Data Sharing Agreements

The recommendations which follow apply exclusively to micromobility rental operators (including bike, e-bike, and scooter shares).

Data sharing agreements are a critical element of any contract with a micromobility vehicle operator. To allow cities to monitor fleet operations, enforcement, and plan micromobility-related infrastructure improvements, cities should require operators to share data periodically, either weekly or monthly, in a standardized format applicable to all operators. Receipt of data in a standardized format will allow cities to request aggregated reports on system use and compliance across operators. Two standardized formats available include GBFS (General Bikeshare Feed Specification) and Mobility Data Policy (MDS) formats. GBFS is a current data standard for many bikeshare operators as it allows them to communicate real time information, such as how many and where bicycles are available, to customers. However, a limitation of GBFS data is that it presents a current snapshot only, and does not archive data for historical analysis. MDS data provides both the snapshot provided by GBFS and historical data on both trips and their routes, and is therefore the recommended format in which cities should require data be reported. Best practice indicates that data sharing compliance should be tied closely to the permitting process and cities should retain the right to change data requirements and reporting frequency as needed; failure to comply should be grounds for permit revocation.

Cities should require operators to provide:

- Trip level data, including trip start and end times per ride
- The path of each ride
- A unique ride ID for data analysis purposes
- Data on important performance indicators, including, but not limited to:
 - o Utilization rates
 - o App download rates
 - o Active users
 - o Repeat users
 - o Total trips by day of week and time of day
 - o Origins and destinations
 - o Trips per vehicle by day of week and time of day
 - o Average trip distance
- Anonymized trip data to the public through an API for data analysis purposes, so third-party mobility applications can incorporate data into their applications
- Vehicle maintenance reports
- Incidents of theft and vandalism



- The number of complaints received
- Crash information
- Payment method information
- Vehicle rebalancing data by designated service area
- Outreach activities completed
- The number of free or discounted helmets distributed
- The number of users receiving the low-income discount, and
- The number of discounted rides taken

To augment the data already identified above, cities should require operators to periodically administer user surveys, using questions developed by city staff.

Open Data Considerations

Establishing the right balance between data collection, sharing, privacy, and application is an ongoing challenge for each of the parties involved. This area of practice is evolving rapidly as new legal decisions are handed down, private companies enter and leave the market, customer expectations change, and public agencies work to protect and enhance the public interest through their policies and investments.

Local jurisdictions should be clear about their data policies and consistent in their dealings with private sector in this arena and may benefit from a coordinated regional approach to data tracking, data stewardship, data storage, and data access. At the national level, non-profit organizations such as the [Open Mobility Foundation](#) (OMF) and [Shared Streets.io](#) have also emerged to support city level efforts in this space, both in the governance and in the technical specification arenas. The OMF is governed by participating cities and works to develop and promote technology used in commercial products that either use the right-of-way or that help government entities manage the public right-of-way. Shared Streets is another non-profit example from the Open Transport Partnership to create a shared language for street level data, including open source software and governance structures for public-private collaboration and exchange of transport data. In Southern California, multiple agencies are participating in the OMF, including SANDAG in San Diego, Santa Monica, and Los Angeles.

Neighborhood Electric Vehicles

Travel Restrictions

The California Vehicle Code establishes state standards regarding travel restrictions on NEVs. The California Vehicle Code states that NEVs may not travel on roadways with speed limits over 35 mph but can cross over streets with greater speed limits as long as they start and end on street with a speed limit of 35 mph or less. If cities want to consider adjusting this restriction, this may



be done once an NEV transportation plan is established through action at the State legislature. Local governments can also restrict or prohibit NEVs, if desired.

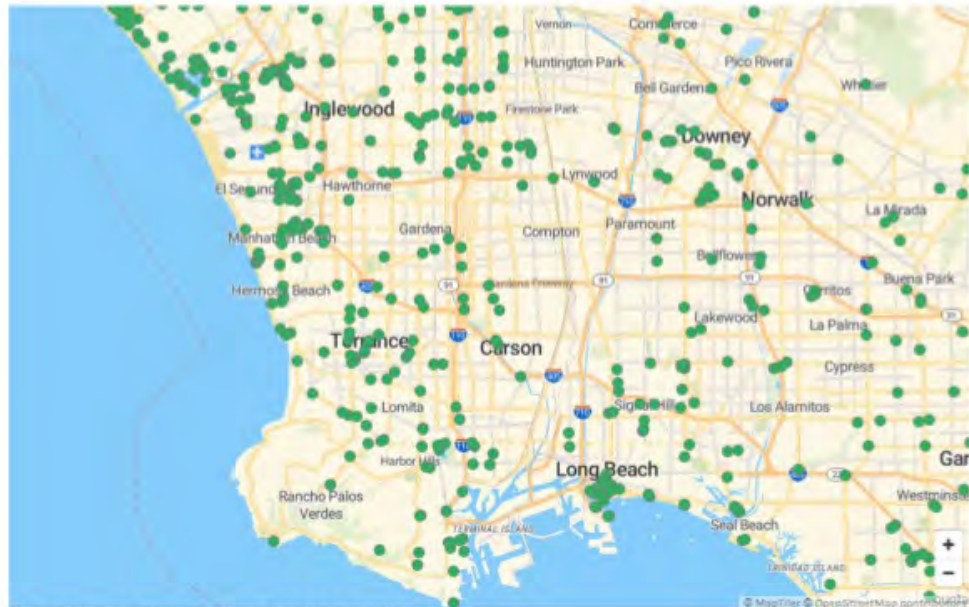
Public Electric Vehicle Charging

According to the US Department of Energy, EV charging infrastructure is commonly categorized into one of three types described below:

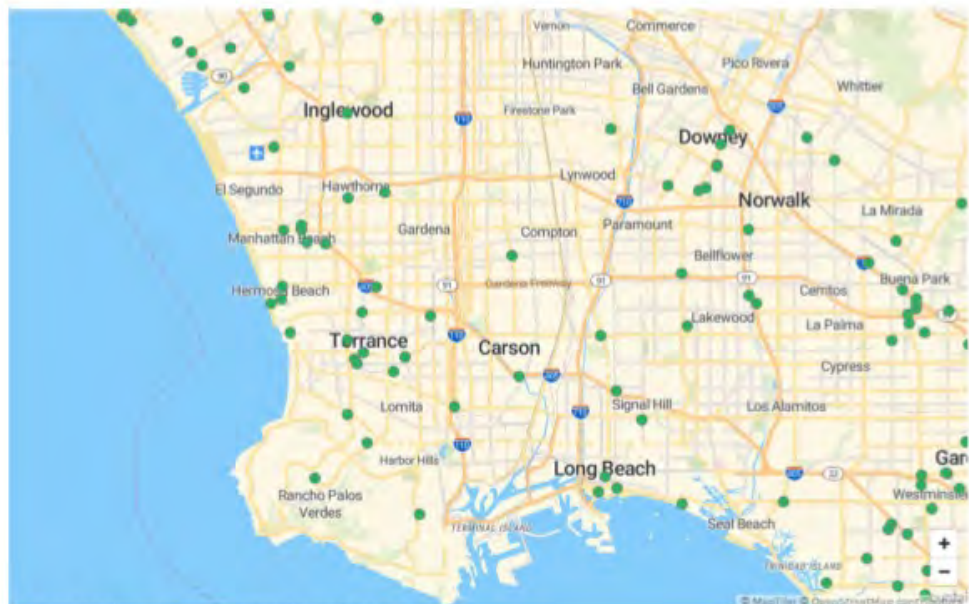
- Level 1 – Generally speaking, Level 1 charging refers to the use of a standard household outlet. Level 1 charging equipment is standard on vehicles and therefore is portable and does not require the installation of charging equipment. On one end of the provided cord is a standard, three-prong household plug. On the other end is a connector, which plugs into the vehicle. Level 1 charging generally takes 8 to 12 hours to completely charge a fully depleted battery. The most common place for Level 1 charging is at the vehicle owner's home and is typically conducted overnight.
- Level 2 – Level 2 charging equipment is compatible with all EVs and plug-in hybrid EVs. Level 2 chargers have a cord that plugs directly into the vehicle in the same connector location used for Level 1 equipment. Level 2 charging generally takes 4 to 6 hours to completely charge a fully depleted battery. Level 2 chargers are commonly found in residential settings, public parking areas, places of employment, and commercial settings.
- Level 3 – Level 3 equipment with CHAdeMO technology, also commonly known as DC fast charging, charges through a 480V, direct-current (DC) plug. Most Level 3 chargers provide an 80% charge in 30 minutes. This type of Level 3 equipment is not compatible with all vehicles, and the charge itself is not accepted by all vehicles. There is currently no industry standard for this level of charging; however, Level 3 chargers are being deployed across the U.S. in public or commercial settings. The Tesla Supercharger, which only works for Tesla vehicles, is also considered a Level 3 charger.

As mapped by the U.S. Department of Energy¹, there are a number of Level 2 and Level 3 (DC Fast) chargers within the SBCCOG region.

¹<https://afdc.energy.gov/fuels/electricity/locations.html#/find/nearest?fuel=ELEC>



Map of Level 2 chargers in the SBCCOG region



Map of DC Fast chargers in the SBCCOG Region



There is no universal benchmark for the number of EVs per public charge point or for determining the geographic density of public charge points by location or built environment. California drivers have access to approximately one public charger per 25-30 EVs, with a majority of publicly accessible charge points located at workplaces and shopping centers², though access to these may be restricted to certain populations (e.g., workers in an office building) or by time of day (garages which close overnight). In Norway, where EVs represent more than a quarter of the private vehicle market, EV drivers have access to approximately one public charge point per 2-7 EVs³.

In a driver survey, California drivers indicated that easy access to public charging stations was a primary concern when deciding whether to purchase an electric vehicle (EV)⁴, and in fact development of public charging infrastructure is three times more effective than subsidizing EV purchases at increasing the EV market saturation rate⁵. Given this, cities participating in the LTN should develop an EV charge point implementation plan to support NEV users and other EV drivers, and should set numeric or percentage-based goals for converting existing parking spaces to EV charge points. Though not directly applicable, CALGreen Section 5.106.5.3.3, requires non-residential private parking facilities providing 201 or more parking spaces to set aside 6% of spaces for EV charging, with a recommendation to increase that percentage to 10% of spaces⁶. These represent achievable goals for cities at a downtown district level. Cities can support their efforts through partnerships with private technology companies or utility providers.

EV charge points should be located in desirable and convenient parking locations to serve as an incentive toward greater EV adoption and use. Charge point locations and other details, including occupancy, charge point type (Level 1 or Level 2), time limits, potential user fees, and restrictions, should be made easily accessible through an app. Additionally, cities should evaluate potential conflicts between EV charging stations and other street uses, particularly those relating to users of the LTN or other bicycle lanes.

² Center for American Progress, "Plug-In Electric Vehicle Policy", 2018.

³ Ibid.

⁴ Consumers Union and Union of Concerned Scientists, "Electric Vehicle Survey Methodology and Assumptions", (2016).

⁵ Yu, Z., Li, S., & Tong, L., *Market dynamics and indirect network effects in electric vehicle diffusion*, Transportation Research Part D: Transport and Environment, 47, 336-356, 2016, <https://doi.org/10.1016/j.trd.2016.06.010>

⁶ California Green Building Standards Code (2016), p. 35, <https://www.ladbs.org/docs/default-source/publications/code-amendments/2016-calgreen-complete.pdf?sfvrsn=6>



The cord connecting an EV to an Level 2 EV charger blocks this protected bicycle lane in Downtown Los Angeles

There is an expanding array of alternative charging solutions cities can consider when planning public, and particularly on-street, EV charging facilities. For example, the City of Los Angeles in 2019 began mounting slim chargers to light poles in order to eliminate additional equipment to be constructed into the sidewalk, and to utilize existing electrical circuitry.



City of Los Angeles streetlight-mounted EV chargers



Additionally, technology has been developed to convert existing light poles into EV charging stations through installation of a socket directly into the pole. Though information on specific costs of this technology were not available, it is billed as economical, and as a tool to enable cities to deploy curbside EV charging more quickly and with less street clutter than other approaches.



Ubitercity's charge points allow EV drivers to plug directly into light poles

Parking

Cities may want to consider providing preferential parking to NEV drivers (and possibly also EV drivers) in public parking facilities, including on-street or in public lots such as at city buildings or parks (NEV and EV parking in private facilities such as shopping centers and residential developments can be addressed through the zoning code and are a separate discussion). Dedicated NEV parking spaces should provide access to L1 charging infrastructure (NEVs can only use L1).

In combination with approval of an NEV Plan by the State legislature, cities may reserve parking for NEVs in the public right-of-way (on-street) utilizing Caltrans-approved signage. NEVs require parking spaces approximately 15' in length and 7' in width, in comparison to 18-20' in length and 8.5-9' feet in width for standard vehicles, equal to reduction in required square footage per space of up to 42%. Cities may choose to adapt standard or compact vehicle spaces to take advantage of the smaller



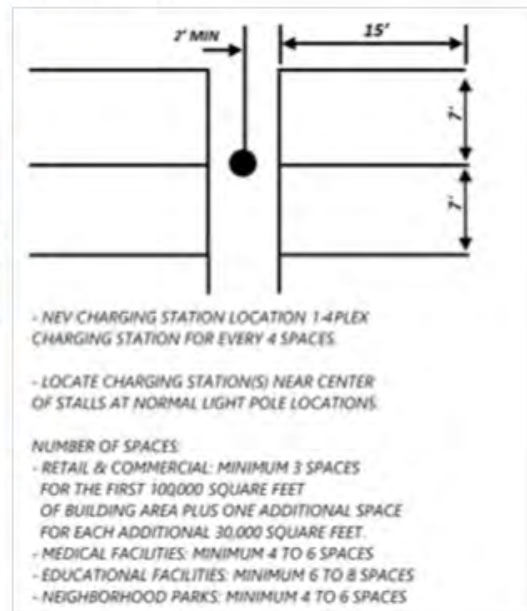


size of NEVs and provide additional parking.



> City of Lincoln NEV parking space standards

< Preferential parking for NEVs provides access to L1 charging and preferential location adjacent to storefronts





Appendix A: LTN Parking & Charging Best Practice Resource Guide

Micromobility Best Practices

Parking

- 1 Cities or jurisdictions should establish clear consequences for vendors or operators who fail to enforce parking guidelines, starting with fining vendors for parking non-compliance at an amount sufficient to cover the city's costs required to impound or relocate vehicles up to revoking operating permits for not meeting parking standards.
- 2 Provide Level 1 or Level 2 charging for e-bikes should be provided at bicycle corrals or other publicly accessible locations, sufficient to supply power to 25% of bicycle parking spaces.

Service Area and Fleet Distribution

- 1 Equity should be a primary consideration, and is best supported through policies requiring operators to provide service to underserved areas.
- 2 Operators will need to redistribute the fleet to maintain balanced coverage in all service areas.
- 3 If cities choose to conduct the monitoring themselves, they should consider including the cost to the city for this service in operator fees.
- 4 Operators will need to secure approval from private property owners for all use of private property.

Equity

- 1 Require operators to provide equitable access to vehicles and actively reduce barriers to vehicle use in disadvantaged communities.
- 2 Establish requirements for fleet distribution in disadvantaged communities, either by
 - o Requiring that a fixed percent of the fleet be located in specific communities
 - o Incentivizing distribution through tiered fees per scooter deployed dependent on location, or
 - o Increasing the overall vehicle cap for operators who deploy a specific number or percentage of vehicles in said communities
- 3 Require operators to implement other programming to reduce barriers to access, including:
 - o Discounted memberships/rental fees for low-income individuals
 - o Non-credit-based payment options
 - o Non-smartphone-based rental access
 - o Conducting outreach
 - o Employment opportunities for community members
 - o Establishing a community advisory board to respond to community concerns
- 4 Include standards for adaptive equipment in micromobility policies
- 5 Require that adaptive scooters be provided
- 6 Explore payment interoperability with other transportation modes, such as how Metro Bikeshare users can pay using their TAP card, to ease the use of one mode to access the other for a complete transit trip



Community Engagement and Education

- 1 Community engagement events should be planned equitably so all members of the community have an opportunity to participate (e.g. hold multiple events in a range of locations).
- 2 All vehicles should clearly display customer service contact information. Multilingual customer service should be available 24/7. Operators should clearly post a user "code of conduct" in-app and on their website.

Vehicle Maintenance and Safety

- 1 Scooters should be limited to a speed of 15 miles per hour (mph). They should not ride on the sidewalk, both as a best practice in terms of safety and because the California Vehicle Code prohibits it.
- 2 E-bikes should be limited to a speed of 25 mph in the bike lane or on the roadway, and should never be ridden on the sidewalk.
 - o E-bike pedal assist should be programmed to shut off at speeds greater than 15 mph.
 - o In California, bicycle laws apply to both Class 1 and 2 e-bikes. Class 3 e-bikes are not allowed on Class I bicycle facilities.
 - Class 1: Motor assist that only turns on while rider pedals. Motor assist turns off over 20 mph.
 - Class 2: Motor is turned on with a throttle instead of while the rider pedals. This motor also turns off over 20 mph.
 - Class 3: Same as Class 1, but motor assist continues up to 28 mph.
- 3 Speed limits should be reevaluated on a regular basis, ideally quarterly at first.

Fees and Pricing

- 1 Cities should conduct a cost analysis study to determine estimated costs.

Fleet Caps

- 1 Best practice indicates that cities should establish fleet caps based on performance criteria, rather than implementing a flat cap. If cities plan to allow more than one operator to function, the city should consider the overall fleet size desired rather than implementing specific caps on each operator.

Data Sharing Agreements

- 1 Best practice indicates that data sharing compliance should be tied closely to the permitting process and cities should retain the right to change data requirements and reporting frequency as needed; failure to comply should be grounds for permit revocation.

Neighborhood Electric Vehicles Best Practices

Travel Restrictions

- 1 The California Vehicle Code states that NEVs may not travel on roadways with speed limits over 35 mph but can cross over streets with greater speed limits as long as they start and end on street with a speed limit of 35 mph or less. If cities want to consider adjusting this restriction, this may be done once an NEV transportation plan is established through action at the State legislature.



Parking

- 1 Cities may want to consider providing preferential parking to NEV drivers (and possibly also EV drivers) in public parking facilities, including on-street or in public lots such as at city buildings or parks.
- 2 Cities may choose to adapt standard or compact vehicle spaces to take advantage of the smaller size of NEVs and provide additional parking.

Public Electric Vehicle Charging

- 1 EV charge points should be located in desirable and convenient parking locations to serve as an incentive toward greater EV adoption and use.
- 2 Cities should evaluate potential conflicts between EV charging stations and other street uses, particularly those relating to users of the LTN or other bicycle lanes.

Source: Fehr & Peers.

NEV Regulatory Signage and Wayfinding Policy Context

Memorandum

Date: October 13, 2020

To: Aaron Baum and Wally Siembab, South Bay Cities Council of Governments

From: Rachel Neumann and Madison Roberts, Fehr & Peers

Subject: NEV Regulatory Signage and Wayfinding Policy Context

LA19-3121

This memorandum provides a summary of neighborhood electric vehicle (NEV) signage and wayfinding policy and serves to provide an overview of the existing regulatory framework governing non-standard regulatory signage and wayfinding in the South Bay, including relevant local, state, and MUTCD policies.

This memo reviews and summarizes the following:

- Signage permitted by Caltrans to be used for jurisdictions with NEV plans
- Legislation governing NEV Plans in California
- Signage permitted for areas without NEV plans

Permitted NEV Signage and Wayfinding

Currently Caltrans permits the use of signage with the word "NEV" on it only in jurisdictions that have an approved NEV plan. Caltrans approved signage is presented below.



To designate a Class III NEV – Bike Route



To designate a Class III NEV Route

Choose an item...



To designate a hybrid Class II NEV – Bike Lane

As previously stated, Caltrans requires an adopted NEV plan for use of any signs that indicate NEV use. An NEV plan outlines the design of Class I (Path), Class II (Lane), Class III (Route), and Class IV (Separated Lane) NEV facilities and where within the study area these would be located. (The definitions for each of the foregoing classes is the same for NEVs as it is for bicycle facilities, only those facilities are 3 feet wider than bicycle facilities to accommodate the larger vehicle size.) Other items, such as legislature review, may be provided but are subsequent to the NEV classifications.

In a multi-jurisdictional area, like the SBCCOG area, all member jurisdictions and SBCCOG and the Caltrans' California Traffic Control Devices Committee (CTCDC) must adopt the NEV plan in order for use of NEV signage to be approved.

In 2019, the Newhall Ranch, a large-scale residential project in Los Angeles County, requested Caltrans approval to install NEV signage without the adoption of an NEV plan. This request was rejected by Caltrans. Following this rejection, Los Angeles County attempted to use a request to experiment to utilize the signs without adopting a NEV plan and this request was also rejected by Caltrans' California Traffic Control Devices Committee (CTCDC). Ultimately, a NEV plan is required for any NEV-related signs.

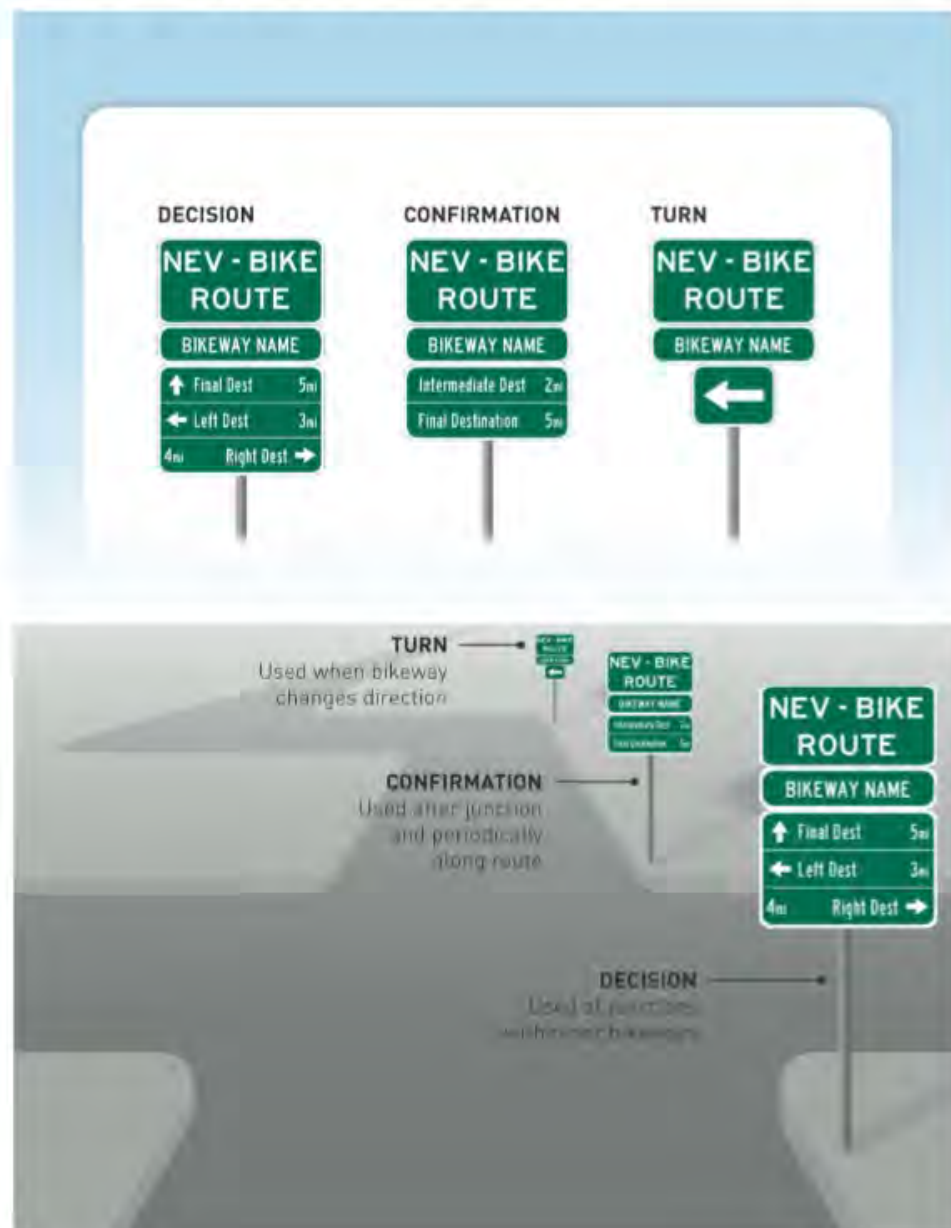
Jurisdictions in California with existing NEV plans include:

- Placer County and the Cities of Lincoln and Rocklin (adopted in 2004)
- Orange County (2007)
- City of Palm Desert (2009)
- Amador County and the Cities of Jackson, Sutter Creek, and Amador City (2010)
- City of Fresno (2010)
- Riverside County and any city in Riverside County (2011)
- City of San Diego and the Ranch in Orange County (2018)

Should SBCCOG adopt an NEV plan, regulatory signage can be used in concert with wayfinding signage. Signage may be green or any other desired color, and can include a branded enhancement



marker. MUTCD-approved transportation-related symbols may be used on the signage. There is currently no approved symbol for NEVs. Experimental symbology can be utilized following application/approval at the federal level by the FHWA. Examples of how this combination regulatory/wayfinding signage might look are presented below.







NEV-Related Legislation

Multiple pieces of legislation regulate the use of NEVs and NEV plans throughout the State of California. These pieces of legislation are summarized below.

Federal Register: 49 CFR 571.500, 1998

In 1998, the National Highway Transportation Safety Administration (NHTSA) created a new standard to establish a category for low speed vehicles (LSVs). This new Federal Motor Vehicle Safety Standard (FMVSS-500) defined LSVs as "small, 4-wheeled vehicles with top speeds of 20-25 mph." 49 CFR 571.500 establishes consistent treatment of LSVs at national, state, and local levels.

California Assembly Bill no. 61, Chapter 170, 2011

AB-61 allows the County of Riverside and any of its jurisdictions to develop an NEV Transportation Plan. This assembly bill provides definitions of NEV Lanes, including signage, striping, roadway crossings, intermodal connections, and charging stations. It also amends the California State Vehicle Code language to allow LSVs to operate on roadways with speeds in excess of 35 mph.

AB-61 required NEV transportation plans to be submitted for review and approval by Caltrans in order for jurisdictions to use signage and other items defined under this legislature.

California Streets and Highway Code

The California Streets and Highways Code defines a NEV as a low-speed vehicle as defined by Section 385.5 of the Vehicle Code (see below).

California Vehicle Code

The California Streets and Highways Code Section 385.5 defines a NEV as a "slow speed vehicle" that have (1) four wheels, (2) a maximum speed of 20-25 mph on a paved level surface, and (3) a maximum gross vehicle weight of 3,000 pounds. All NEV drivers must carry a valid drivers license and follow the California State Vehicle Code while operating on roadways.

NEVs can only operate on roadways with posted speed limits of 35 mph and under. If a Class II NEV striped lane is present on a street with posted speed limits above 50 mph, NEVs are permitted to operate within the lane.

Signage Permitted Without an NEV Plan

As signage including the word "NEV" is not permitted without an NEV plan, jurisdictions that provide physical network improvements that would allow for NEV use are limited in the wayfinding options that they are permitted to use.

There are no standard signs/markings available for roadways with posted speed limits of 35mph and under (where the vehicles are legally allowed) in areas that have not established a formal plan.



One option is to use Community Wayfinding Signs (MUTCD 2D.50¹) which can provide branded wayfinding for the LTN without the mention of NEVs. MUTCD defines Community Wayfinding Signs as a coordinated and continuous system of signs that direct road users and tourists to key civic, cultural, visitor, and recreational attractions and other destinations within a defined area. They share a common color and/or identification enhancement marker for destinations within an overall wayfinding guide sign plan for an area. Community wayfinding signage may only be utilized to orient roadway users to destinations, and they may not utilize standard MUTCD symbols or drawings, or other mode-specific symbology, nor may they be used to provide regulatory guidance.

The MUTCD provides the following standards and guidance for this type of signage:

These informational guide signs shall have a white legend and border on a green background and shall have a design and shall be consistent with the basic design principles for guide signs. Community wayfinding guide signs may use background colors other than green in order to provide a color identification for the wayfinding destinations by geographical area within the overall wayfinding guide signing system.

Community Wayfinding Signage Standards:

Use

The use of community wayfinding guide signs shall be limited to conventional roads. Community wayfinding guide signs shall not be installed on freeway or expressway mainlines or ramps.

The standards for Community Wayfinding Signs apply to vehicular signage only and do not apply to those signs that are intended only to provide information or direction to pedestrians or other users of a sidewalk or roadside area.

Lettering

The minimum specific ratio of letter height to legibility distance shall comply with the provisions of Section 2A.13 (Word Messages). The size of lettering used for destination and directional legends on community wayfinding signs shall comply with the provisions of minimum letter heights as provided in Section 2D.06 (Size of Lettering).

¹ <https://mutcd.fhwa.dot.gov/html/2009/part2/part2d.htm>



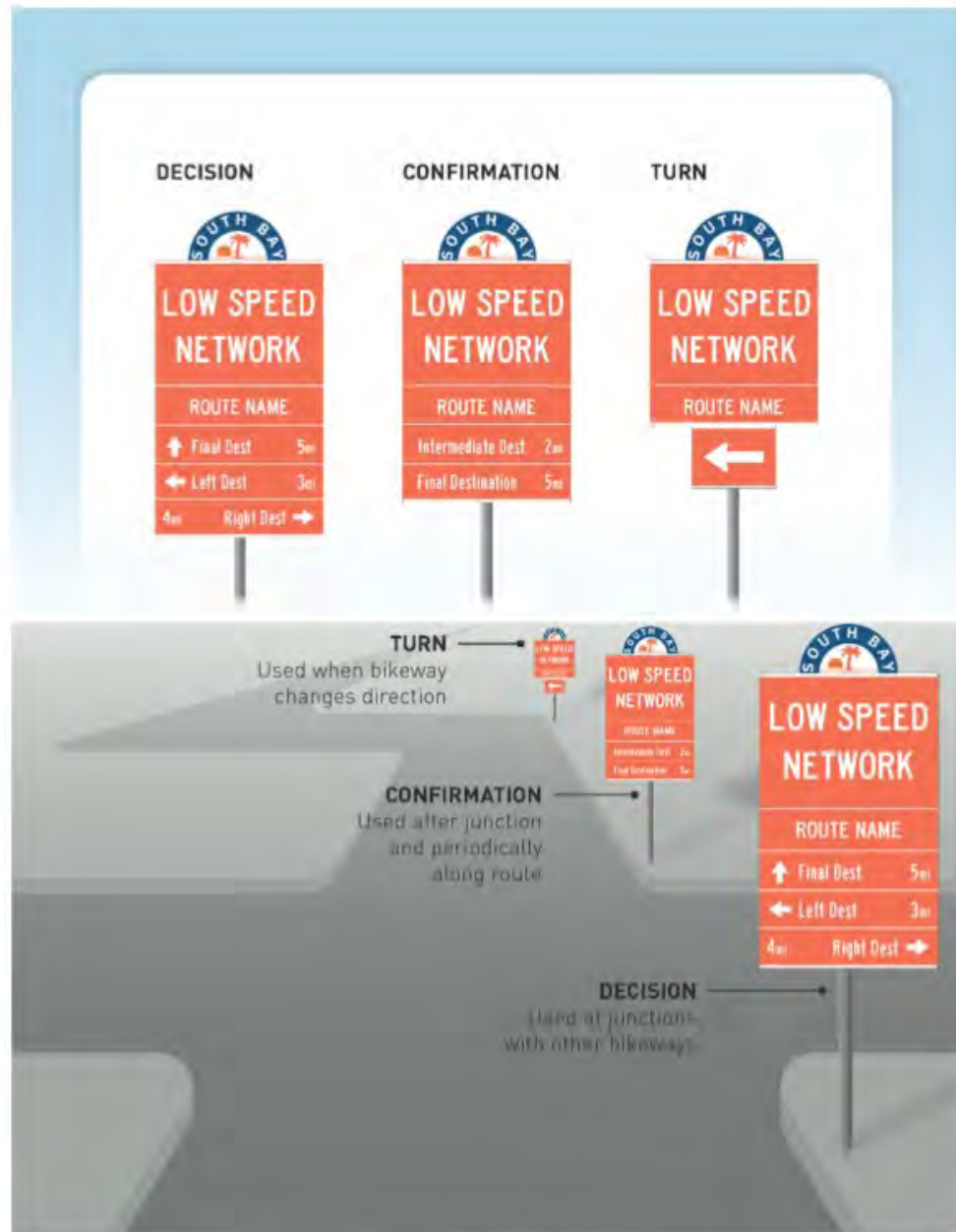
Legend	<p>The principal legend on guide signs shall be in letters and numerals at least 6 inches in height for all upper-case letters, or a combination of 6 inches in height for upper-case letters and 4.5 inches in height for lower-case letters.</p> <p>On low-volume roads (as defined in Section 5A.01) with speeds of 25 mph or less, and on urban streets with speeds of 25 mph or less, the principal legend shall be in letters at least 4 inches in height for all upper-case letters, or a combination of 4 inches in height for upper-case letters and 3 inches in height for lower-case letters.</p> <p>These informational guide signs shall have a white legend and border on a green background and shall have a design and shall be consistent with the basic design principles for guide signs.</p>
Background Color	Community wayfinding guide signs may use background colors other than green in order to provide a color identification for the wayfinding destinations by geographical area within the overall wayfinding guide signing system.

Further information on standards and guidance can be found in *California Manual on Uniform Traffic Control Devices, 2014 Edition Revision 5*, Section 2D.50.

An example of Community Wayfinding Signs utilizing an enhancement marker – a semi-circular graphical sign atop the wayfinding sign with a community logo – from the MUTCD is presented below.



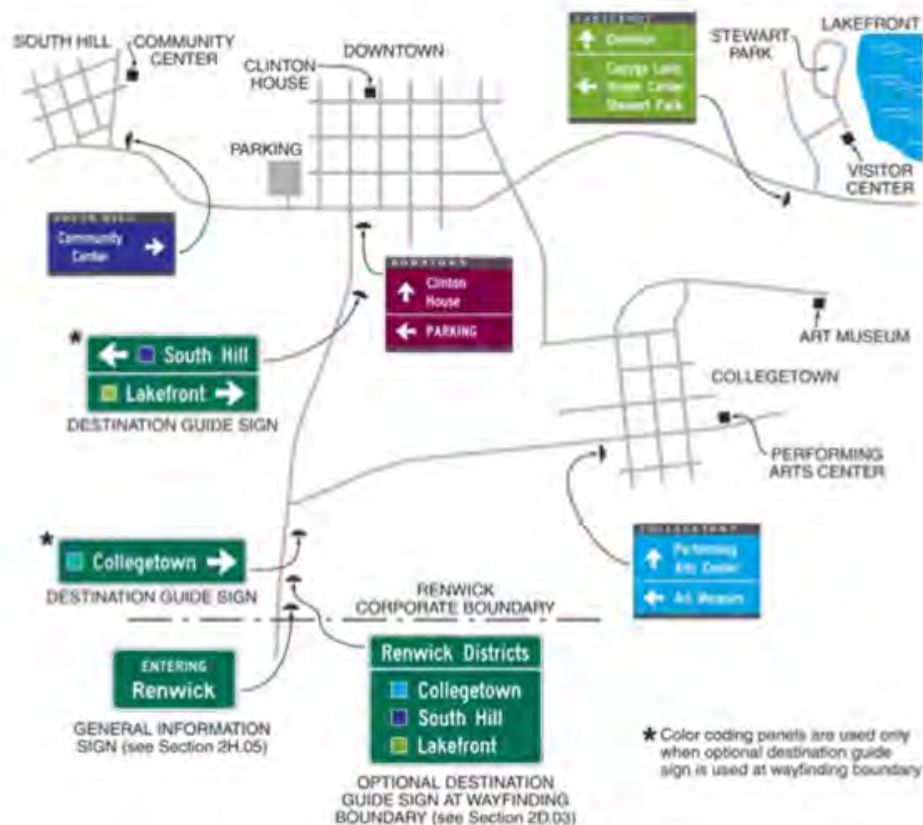
The LTN could feature similar community wayfinding signage utilizing an enhancement marker, as illustrated below.



Another MUTCD-approved variation on community wayfinding signage utilizes color coding to identify various districts. Color coding could be one way for the SBCCOG to differentiate branded



signage for each COG member city. An example of color-coded community wayfinding signage is presented below.

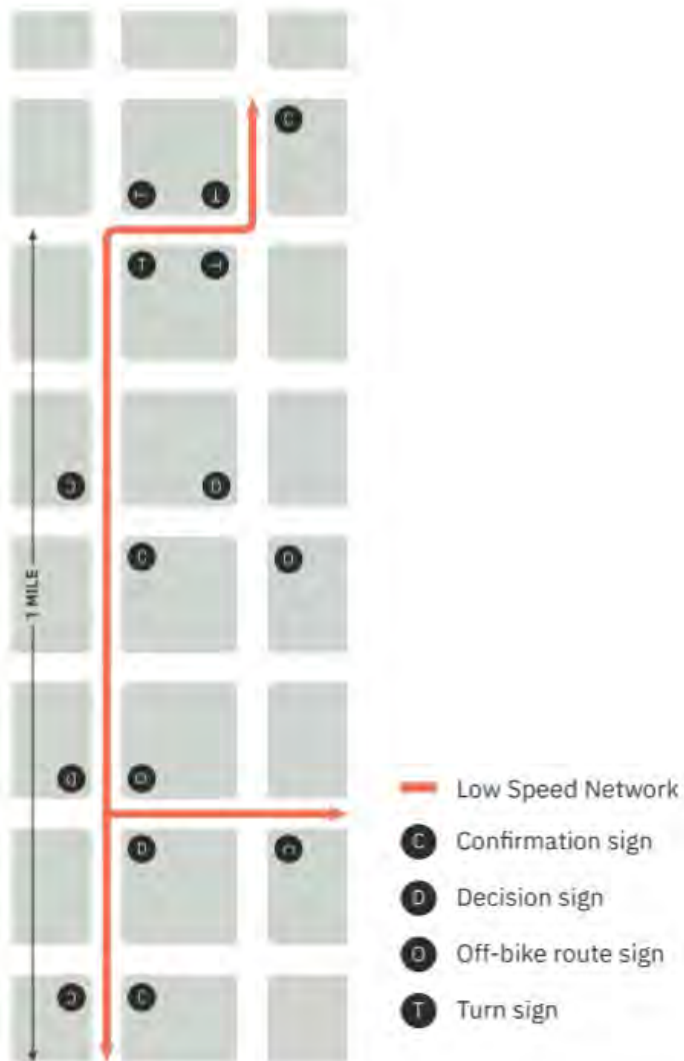


Without an adopted NEV plan, SBCCOG would not be permitted to utilize Caltrans-approved NEV signage or include reference to NEVs in any wayfinding signage. If a NEV plan was prepared for the LTN, this plan would need approval from all SBCCOG member agencies, the governing body of SBCCOG and Caltrans CTCDC in order for the use of NEV signage to be permitted. A template of the legislative language needed to develop an NEV Plan is included in Appendix A.



Wayfinding Signage Placement

Wayfinding signage should be placed at locations along the route where users are turning, joining the network from other streets, continuing along the network, and/or deciding how to navigate to their destination. Example locations on the network for each type of sign are shown in the graphic below.



APPENDIX A

Choose an item.

LEGISLATIVE COUNSEL'S DIGEST

AB/SB XXX, _____. Neighborhood electric vehicles.

Existing law defines "low-speed vehicle" for purposes of the Vehicle Code as a motor vehicle, other than a motor truck, with 4 wheels that is capable of a minimum speed of 20 miles per hour and a maximum speed of 25 miles per hour on a paved level surface and that has a gross vehicle weight rating of less than 3,000 pounds. Existing law imposes certain restrictions on the use of low-speed vehicles on public streets and highways, and generally requires an operator of a low-speed vehicle to have a driver's license. A low-speed vehicle is also known as a neighborhood electric vehicle (NEV). A violation of the Vehicle Code is an infraction, unless otherwise specified.

Existing law authorizes certain local agencies to establish a NEV transportation plan subject to certain requirements. A person operating a NEV in a plan area in violation of certain provisions is guilty of an infraction punishable by a fine not exceeding \$100.

This bill would authorize the South Bay Cities Council of Governments to establish a similar NEV transportation plan for the South Bay Cities Plan area, encompassing the Cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Manhattan Beach, Palos Verdes Estates, Torrance, as well as the Harbor City/San Pedro/Wilmington communities of the City of Los Angeles and the unincorporated areas of the County of Los Angeles District 2 and District 4, subject to the same penalties. The bill would require the plan to be submitted to the department for review and approval. The bill would require a report to the Legislature by _____ date _____, if the South Bay Cities Council of Governments adopts a plan. The bill would repeal these provisions on _____ date _____. Because the bill would create a new crime, it would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

DIGEST KEY

Vote: majority Appropriation: no Fiscal Committee: yes Local Program: yes

BILL TEXT

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS
FOLLOWS:

SECTION 1.

Chapter 6.2 (commencing with Section 1962) is added to Division 2.5 of the Streets and Highways Code, to read:

CHAPTER 6.2. Neighborhood Electric Vehicle Transportation Plan for the South Bay Cities Council of Governments Area, encompassing the Cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Manhattan Beach, Palos Verdes Estates, Torrance, as well as the Harbor City/San Pedro/Wilmington communities of the City of Los Angeles and the unincorporated areas of the County of Los Angeles District 2 and District 4

1962.

It is the intent of the Legislature, in enacting this chapter, to authorize the South Bay Cities Council of Governments, a joint powers authority for the Cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Manhattan Beach, Palos Verdes Estates, Torrance, as well as the Harbor City/San Pedro/Wilmington communities of the City of Los Angeles and the unincorporated areas of the County of Los Angeles District 2 and District 4 to establish a neighborhood electric vehicle (NEV) transportation plan. The purpose of this NEV transportation plan is to further the vision of creating a sustainable development that reduces gasoline demand and vehicle emissions by offering a cleaner, more economical means of local transportation within the plan area. It is the further intent of the Legislature that this NEV transportation plan be designed and developed to best serve the functional travel needs of the plan area, to have the physical safety of the NEV driver's person and property as a major planning component, and to have the capacity to accommodate NEV drivers of every legal age and range of skills.

1962.1.

The following definitions apply to this chapter:

(a) "Plan area" means any portion of the South Bay Cities area, encompassing the Cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Manhattan Beach, Palos Verdes Estates, Torrance, as well as the Harbor City/San Pedro/Wilmington communities of the City of Los Angeles and the unincorporated areas of the County of Los Angeles District 2 and District 4 that together make up the South Bay Cities Council of Governments area, and any streets and roads in the Plan area, to the extent the South Bay Cities Council of Governments has adopted a NEV transportation plan pursuant to Section 1962.2, including the privately owned land of any owner that consents to its inclusion in the plan.

(b) "Neighborhood electric vehicle" or "NEV" means a low-speed vehicle as defined by Section 385.5 of the Vehicle Code.

(c) "NEV lanes" means all publicly or privately owned facilities that provide for NEV travel, including roadways designated by signs or permanent markings that are shared with pedestrians, bicyclists, and other motorists in the plan area.

1962.2.

(a) The South Bay Cities Council of Governments or any city therein may, by ordinance or resolution, adopt a NEV transportation plan for the plan area within its jurisdiction. Two or more jurisdictions may jointly adopt a NEV transportation plan for all or a portion of the territory under their respective jurisdictions.

(b) The transportation plan shall have received a prior review and the comments of Los Angeles County and any agency having traffic law enforcement responsibilities in an entity included in the plan area.

(c) The transportation plan may include the use of a state highway, or any crossing of the highway, subject to the approval of the Department of Transportation.

1962.3.

The transportation plan shall include, but need not be limited to, all of the following elements:

(a) Route selection, which includes a finding that the route will accommodate NEVs without an adverse impact upon traffic safety and will consider, among other things, the travel needs of commuters and other users.

(b) Transportation interfacing, which shall include, but not be limited to, coordination with other modes of transportation so that a NEV driver may employ multiple modes of transportation in reaching a destination in the plan area.

(c) Provision for NEV-related facilities, including, but not limited to, special access points, special NEV turnouts, and NEV crossings.

(d) Provisions for parking facilities at destination locations, including, but not limited to, community commercial centers, golf courses, public areas, and parks.

(e) Provisions for special paving, road markings, signage, and striping for NEV travel lanes, road crossings, parking, and circulation, as appropriate.

(f) Provisions for NEV electrical charging stations.

(g) NEV lanes for the purposes of the transportation plan shall be classified as follows:

(1) Class I NEV routes provide for a completely separate right-of-way for the use of NEVs.

(2) Class II NEV routes provide for a separate striped lane adjacent to roadways with speed limits of 55 miles per hour or less.

(3) Class III NEV routes provide for shared use by NEVs with conventional vehicle traffic on streets with speed limits of 35 miles per hour or less.

1962.4.

If the South Bay Cities Council of Governments or any city therein adopts a NEV transportation plan for the plan area pursuant to Section 1962.2, it shall do all of the following:

(a) Establish minimum general design criteria for the development, planning, and construction of separated NEV lanes, including, but not limited to, the design speed of the facility, the space requirements of the NEV, and roadway design criteria, if the plan envisions separated NEV lanes.

(b) In cooperation with the Department of Transportation, establish uniform specifications and symbols for signs, markers, and traffic control devices to control NEV traffic; to warn of dangerous conditions, obstacles, or hazards; to designate the right-of-way as between NEVs, other vehicles, and bicycles, as may be applicable; to state the nature and destination of the NEV lane; and to warn pedestrians, bicyclists, and motorists of the presence of NEV traffic.

(c) Submit the transportation plan to the director of the Department of Transportation for approval following a review and recommendation by the California Traffic Control Devices Committee.

1962.5.

If the South Bay Cities Council of Governments or any city therein adopts a NEV transportation plan for the plan area pursuant to this chapter, it shall also adopt all of the following as part of the plan:

(a) NEVs eligible to use NEV lanes shall meet the safety requirements for low-speed vehicles as set forth in Section 571.500 of Title 49 of the Code of Federal Regulations.

(b) Minimum safety criteria for NEV operators, including, but not limited to, requirements relating to NEV maintenance and NEV safety. Operators shall be required to possess a valid California driver's license and to comply with the financial responsibility requirements established pursuant to Chapter 1 (commencing with Section 16000) of Division 7 of the Vehicle Code.

(c) (1) Restrictions limiting the operation of NEVs to NEV routes identified in the transportation plan, and allowing only those NEVs that meet the safety equipment requirements specified in the plan to be operated on those routes.

(2) Any person operating a NEV in the plan area in violation of this subdivision is guilty of an infraction punishable by a fine not exceeding one hundred dollars (\$100).

1962.7.

(a) If the South Bay Cities Council of Governments or any city therein adopts a NEV transportation plan for the plan area pursuant to this chapter, the South Bay Cities Council of Governments shall submit a report to the Legislature on or before ____date____, in consultation with the Department of Transportation, the Department of the California Highway Patrol, and any applicable local law enforcement agency.

(b) The report shall include all of the following:

(1) A description of the NEV transportation plan and its elements that have been authorized up to that time.

(2) An evaluation of the effectiveness of the NEV transportation plan, including its impact on traffic flows and safety.

(3) A recommendation as to whether this chapter should be terminated, continued in effect, or expanded statewide.

1962.8.

This chapter shall remain in effect only until date, and as of that date is repealed, unless a later enacted statute, that is enacted before date, deletes or extends that date.

SEC. 2.

Section 21251 of the Vehicle Code is amended to read:

21251.

Except as provided in Chapter 6.2 (commencing with Section 1962), Chapter 7 (commencing with Section 1963), Chapter 7.1 (commencing with Section 1964), Chapter 8 (commencing with Section 1965), and Chapter 8.1 (commencing with Section 1966) of Division 2.5 of the Streets and Highways Code, and Sections 4023, 21115, and 21115.1, a low-speed vehicle is subject to all the provisions applicable to a motor vehicle, and the driver of a low-speed vehicle is subject to all the provisions applicable to the driver of a motor vehicle or other vehicle, when applicable, by this code or another code, with the exception of those provisions that, by their very nature, can have no application.

SEC. 3.

Section 21260 of the Vehicle Code is amended to read:

21260.

(a) Except as provided in paragraph (1) of subdivision (b), or in an area where a neighborhood electric vehicle transportation plan has been adopted pursuant to Chapter 6.2 (commencing with Section 1962), Chapter 7 (commencing with Section 1963), Chapter 7.1 (commencing with Section 1964), Chapter 8 (commencing with Section 1965), or Chapter 8.1 (commencing with Section 1966) of Division 2.5 of the Streets and Highways Code, the operator of a low-speed vehicle shall not operate the vehicle on any roadway with a speed limit in excess of 35 miles per hour.

(b) (1) The operator of a low-speed vehicle may cross a roadway with a speed limit in excess of 35 miles per hour if the crossing begins and ends on a roadway with a speed limit of 35 miles per hour or less and occurs at an intersection of approximately 90 degrees.

(2) Notwithstanding paragraph (1), the operator of a low-speed vehicle shall not traverse an uncontrolled intersection with any state highway unless that intersection has been approved and authorized by the agency having primary traffic enforcement responsibilities for that crossing by a low-speed vehicle.

SEC. 4.

No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or

changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

Memorandum

Date: November 6, 2020
To: Aaron Baum and Wally Siembab, South Bay Cities Council of Governments
From: Chelsea Richer and Rachel Neumann, Fehr & Peers
Subject: **Local Transportation Network (LTN) Measure M Funding Opportunities**

LA19-5121

Background

As part of the refinement study for the South Bay Council of Governments Local Transportation Network (LTN), the project team examined regional and state funding sources, focusing on Los Angeles Metro Measure M related funding opportunities and select programs at the state level. This memorandum includes an overview of the funding structure, agency eligibility, evaluation criteria, and relevant timelines for the program elements most relevant to ongoing implementation of the LTN.

Many of the funding sources described in this memo focus on active transportation strategies in order to reduce vehicle miles traveled (VMT) and the associated greenhouse gas (GHG) emissions from those VMT. Although some zero-emissions vehicles (ZEV) do not reduce VMT (e.g. trips taken in a NEV are still considered to be a vehicle trip), they emit fewer GHG emissions than their conventional counterparts, and therefore are an important strategy in helping California meet its GHG reduction goals. Over time, some of the funding sources described in this memo, and others that are likely to be developed in the coming years, may broaden their focus to include a wider variety of projects, policies, and programs that reduce GHG emissions through the promotion of ZEV in addition to active transportation.

Table 1 summarizes the programs included in this memo, along with timing and requirements (where details are available).



Table 1: Summary of Funding Sources

Source	Program Name	Timing	General Requirements
LA County Metro – Measure M	Multi-Year Subregional Programs	Updated annually by SBCCOG; programs up to five years of funding	SBCCOG's criteria include improving mobility and accessibility, project readiness, project need and benefits to the transportation system, compatibility with land use and sustainability goals, regional significance, and economic vitality/quality of life.
LA County Metro – Measure M	Active Transportation	Cycles anticipated every 2-5 years; first cycle completed in 2020	Jurisdictions with projects on priority Active Transportation Network and First/Last Mile Station List are invited to submit Letters of Interest
LA County Metro – Measure M	2% System Connectivity – Highway Construction Subfund	Timing and program criteria to be determined.	
LA County Metro – Measure M	2% System Connectivity – Transit Construction Subfund	Timing and program criteria to be determined.	
LA County Metro – Measure M	Visionary Project Seed Funding	Timing and program criteria to be determined.	
LA County Metro – Measure M	Countywide Bus Rapid Transit Expansion	Timing and program criteria to be determined.	
LA County Metro – Measure M	Subregional Equity Program	One-time allocation of funds; SBCCOG Board made recommendation in November 2019 to use Subregional Equity funds for the Centinela Grade Separation project.	
LA County Metro – Measure M	20% Transit Operations	Annual allocation of funds by formula.	
LA County Metro – Measure M	Local Return	Annual allocation of funds by population.	
Mobile Source Air Pollution Reduction Review Committee (MRSC)	Clean Transportation Funding	"Last Mile" Goods Movement program announced September 2020	\$10m match program aimed at clean truck infrastructure and vehicles; program criteria not yet announced.



Table 1: Summary of Funding Sources

California Transportation Commission	Active Transportation Program	Call for applications every 1-2 years	Program funds infrastructure, non-infrastructure, and plan development related to active transportation projects
California Climate Investments	Clean Mobility Options	Application window opened on October 2020, and project funds will be awarded on a first-come, first-served basis until funds are expended	Program funds projects which pilot innovative clean transportation projects that test "shared" and "on-demand" mobility services.

Measure M

Overview

In 2016, the Metro Board of Directors approved the Los Angeles County Traffic Improvement Plan Ordinance, known as Measure M. Measure M was approved by over 71% of voters in the November, 2016 election. Measure M includes many projects and programs in the Expenditure Plan of the Ordinance, detailed in the Measure M Final Guidelines (2017). The following programs are relevant to the South Bay Subregion and development of the LTN:

- Multi-Year Subregional Programs
- Metro Active Transportation (2%)
- 2% System Connectivity Projects (Highway Construction Subfund)
- 2% System Connectivity Projects (Transit Construction Subfund)
- Visionary Project Seed Funding
- Countywide Bus Rapid Transit (BRT) Expansion
- Subregional Equity Program
- 20% Transit Operations
- Local Return

Each of these programs is described further in the sections that follow.

During the current COVID-19 pandemic conditions, Measure M sales tax returns have seen a precipitous decline. In turn, Metro's adopted [Fiscal Year \(FY\) 21 budget](#) reflects a 16.5% reduction



from the FY20 budget.¹ The adopted budget reports a 10.9% decline in revenues from Measure M sales tax, specifically. These revenue projections are based on an economic analysis of the COVID-19 pandemic's impact on taxable sales and Metro's internal evaluation. The 10.9% reduction is equally borne across the various programs described below. While the cashflow projections associated with the programs described in this memo have not been updated yet (they are anticipated in October, 2020), they will likely see declines in funding availability.

The [third \(and most recent\) report](#) from the Metro Measure M Recovery Task Force identifies 18 early action items that Metro can pursue to address the ongoing mobility needs across the county.² The goals of the LTN are aligned with several of the recommendations in this report, including (2) Safer Streets for All, (11) More Biking, (13) Faster Buses, (16) New Mobility for the Way Forward, and (17) Reimagining Projects. As budget conditions continue to develop over time, articulating the benefits of the LTN in the context of these recommendations may help to demonstrate the value of projects funded by Measure M and other Metro funding sources.

Multi-Year Subregional Program (MSP)

The administrative process for programming Measure M Subregional funds is established in Measure M Administrative Procedures: IX Multi-Year Subregional Programs (MSP) 5-Year Plan Process (2018). The process consists of six steps, summarized below:

- **Step 1: Five Year Forecast.** Metro provides a five-year Measure M programming funding forecast for each Multi-Year Subregional Program, based on the amounts provided in the Measure M Expenditure Plan. Metro has provided updated funding estimates each fall for the subsequent fiscal year of funding for each MSP.
- **Step 2: Preliminary List of Project & Five-Year Plan.** Subregional entities will develop a preliminary list of subregional projects for inclusion in a five-year plan, coordinating with Metro to ensure project eligibility under each MSP. The plan development will include public participation and analysis of the projects listed in the South Bay Mobility Matrix (2015). Project eligibility will be determined through establishment of a nexus between the project and the MSP category, aligning with the definitions set forth in the Measure M Guidelines. The final list of projects will be included in the five-year programming plans.
- **Step 3: Subregional Entity Adoption.** For each MSP, the subregional entity adopts a five-year project development and implementation plan for adoption by the Metro Board. The plan will identify specific projects and phasing; allocated and anticipated funding amounts, and project timing. Following subregional adoption, Metro staff will review the

¹ FY21 Adopted Budget, Los Angeles County Metropolitan Transportation Authority. Available at <https://media.metro.net/2020/FY21-Adopted-Budget.pdf>.

² Metro's Recovery Task Force, A Path Forward: Progress Report 3, August 10, 2020, Available at <http://media.metro.net/2020/Metro-Recovery-Report-3.pdf>



proposed 5-year program of projects for consistency with the Measure M Ordinance, Guidelines, and Administrative Procedures, providing a response within 60 days.

- **Step 4: Metro Board Approval.** Following Metro staff review, they will use information from steps 1-3 to prepare a recommendation for the Metro Board. The Metro Board may accept the program of projects as recommended by staff, or it may request additional information. Following Metro Board approval, Metro staff will begin executing funding agreements with project lead agencies.
- **Step 5: Annual Update.** Subregional entities may update or amend the five-year programming plans on an annual basis. Updates can consist of project modifications, deletions, or additions, subject to the process defined in prior steps. As described above, Metro releases updated funding estimates with additional funds available for a new fiscal year, each fall. The annual five-year programming plan update may program those additional funds.
- **Step 6: Communication.** Following Metro approval of projects, project sponsor(s) and Metro include the subregional entity in all communications regarding project development and delivery. Reporting requirements will be defined in the project's funding agreement. Changes to project scope, schedule, or funding must be coordinated with Metro and the subregional entity.

Resources to support this process can be drawn from the MSP, not to exceed 0.5% of the amounts for any single year. Additional resources to support this process can be drawn directly from the subregion or its constituent cities.

South Bay's Multi-Year Subregional Programs

The South Bay subregion has three Multi-Year Subregional Programs: the Highway Efficiency Operational Improvement Program (HEOI), the Transportation System Mobility Improvement Program #1 (TSMIP I), and the Transportation Mobility Improvement Program #2 (TSMIP II). The South Bay Cities Council of Governments has established a "call-for-projects" approach to selecting projects to be funded through these programs. Annually, new projects are solicited and submitted by lead agencies, which then undergo an eligibility determination using the [project selection criteria developed by the South Bay COG](https://www.southbaycities.org/sites/default/files/documents/Measure%20M%20MSP%20Project%20Selection%20Criteria%20-%20final.pdf).³

Project criteria for each MSP are summarized in the table that follows.

³South Bay Measure M Multi-Year Sub-Regional Programs – (MSP) Project Selection Criteria for Three South Bay MSPs. Updated 1/8/19. Available at: <https://www.southbaycities.org/sites/default/files/documents/Measure%20M%20MSP%20Project%20Selection%20Criteria%20-%20final.pdf>.



Table 2: South Bay MSP Project Criteria

Assessment Criteria	Measures	Weight
Highway Efficiency Operational Improvement Program		
1. Mobility/Accessibility Improvement	Project relieves congestion; improves travel times; improves effectiveness & reliability for street, highway and freeway users; eliminates trips	25%
2. Project Readiness	Project definition of scope, total budget and proposed funding sources, and Measure M reimbursement schedule sufficient to initiate environmental clearance, Caltrans Project Development documents, or project design. Public outreach process completed by lead agency. City Council resolution or equivalent.	15%
3. Project Need & Benefit to Transportation System	Agencies requesting year 1 or 2 MSP funding reimbursements must be ready to execute a funding agreement with Metro. Requests for funding reimbursements during years 3-5 must document project progress needed to enable signing a funding agreement by year 3.	15%
4. MSP leverage & Cost Effectiveness	Regional or sub-regional mobility benefits integration with goods movement, reduce safety incidents, improve safety, eliminates operational deficiencies	10%
5. Land Use, Environmental Compatibility and Sustainability	Cost per unit of delay reduction, lead agency commitment to life-cycle Operations & Maintenance (O&M) expenses, percentage of cost provided by non-SBHP funding allocated to project. Document good faith effort to secure matching funds. Support costs capped at 10%	10%
6. Regional Significance, Multi-Jurisdictional Effort	Supports local land use, and transportation and environmental policies, vehicle miles traveled (VMT), greenhouse gas (GHG) emissions reduction, improves environmental quality, public health, quality of life. Address consequences of not implementing project.	15%
7. Economic Vitality/Improved Quality of Life	Project crosses jurisdictional boundaries. Shared priority for affected jurisdictions' decision makers. Supports Long Range Transportation Plan (LRTP) or regional program, on Metro's Countywide Strategic Arterial Network (CSAN) or Countywide Strategic Truck Arterial Network (CSTAN), connectivity/gap closure, improves access to activity centers	10%



Table 2: South Bay MSP Project Criteria

Assessment Criteria	Measures	Weight
Transportation System Mobility Improvement Programs		
1. Mobility/Accessibility Improvement	Project increases travel by transit, paratransit, shared transportation programs, bicycle, other local vehicle modes and pedestrian modes; improves travel times. Improves effectiveness & reliability for core riders.	20%
2. Project Readiness	Project definition of scope, total budget and proposed funding sources, and Measure M reimbursement schedule sufficient to initiate environmental clearance, Caltrans Project Development documents, or project design. Public outreach process completed by lead agency. City Council resolution or equivalent.	15%
3. Project Need & Benefit to Transportation System Accessibility	Agencies requesting year 1 or 2 MSP funding reimbursements must be ready to execute a funding agreement with Metro. Requests for funding reimbursements during years 3-5 must document project progress needed to enable signing a funding agreement by year 3.	15%
4. MSP leverage & Cost Effectiveness	For TSMIP I, evidence must be provided that project will be completed by 2032. Sub-regional mobility benefits, VMT reduction, reduced safety incidents, improved personal safety. Improved transportation options; improved service to transit; improved first / last mile connections to transit.	10%
5. Land Use, Environmental Compatibility and Sustainability	Qualitative assessment of project cost versus benefit, lead agency commitment to life-cycle O&M expenses, percentage of cost provided by non-South Bay Highway Program (SBHP) funding allocated to project. Document good faith effort to secure matching funds. Support costs capped at 10%.	10%
6. Regional or Multi-Jurisdictional benefit or effort	Supports local land use and environmental policies, GHG emissions reduction. Address consequences of not implementing project.	10%
	Project crosses boundaries with a shared priority by affected jurisdictions' decision makers. Supports Metro L RTP; project is on Metro's CSAN or CSTAN, project improves connectivity, closes a network gap, and/or improves access to activity centers.	



Table 2: South Bay MSP Project Criteria		
Assessment Criteria	Measures	Weight
7. Economic Vitality	Increases economic output; supports job creation & retention; reduces household transportation costs.	10%
8. Sustainability & Quality of Life	Improves environmental quality; improves public health; improves quality of life.	10%

The assessment criteria are the same for TSMIP I and TSMIP II with the exception of project readiness. TSMIP I requires projects to be completed by 2032; TSMIP II funding does not expire.

The available funding for each of these three MSPs, based on the December, 2019 *Measure M Multi-Year Subregional Programs 5-Year Cashflows*, are as follows:

- South Bay Highway Operational Improvements - \$73,540,519
- Transportation System and Mobility Improvement Program I - \$4,077,159
- Transportation System and Mobility Improvement Program II - \$64,379,660

These balances include available funds through Fiscal Year (FY) 2023-2024, and account for funds that were programmed in 2019 (File #2019-0462, Planning and Programming Committee, September 18, 2019). Additional funds were programmed in 2020 (File #2020-0436, Planning and Programming Committee, August 19, 2020), bringing the total value of programmed funds by MSP as follows:

- South Bay Highway Operational Improvements - \$46,897,999
- Transportation System and Mobility Improvement Program I - \$81,517,857
- Transportation System and Mobility Improvement Program II - \$52,336,502

Updated cashflow balances will be released by Metro in October, 2020, and will reflect the full programmed amounts as described above and remaining available balances.

Metro Active Transportation (2%)

The Measure M Ordinance established the Metro Active Transport, Transit and First/Last Mile (MAT) Program, which is anticipated to fund more than \$857 million in active transportation infrastructure projects throughout the region over the course of 40 years. Funding availability for the MAT Program will be determined by the Measure M Cashflow policy.



Metro has established a competitive process for projects within this program, detailed in the Program's [Administrative Guidelines](#).⁴

The objectives of the MAT Program are improving and growing the active transportation network, expanding the reach of transit, and developing a regional active transportation network to increase travel options as established in the Active Transportation Strategic Plan (ATSP). Eligible uses of the MAT Program funds are comprised of capital expenditures that achieve the program's goals and objectives. The MAT program may be used to fund work preceding the environmental phase, but these expenditures are limited to 0.5% of the overall program funding each cycle. Projects funded by the MAT Program will deliver core active transportation infrastructure such as sidewalks, crosswalks, bicycle lanes/paths, pedestrian/bicycle signal improvements, lighting, and transit amenities. Projects which provide active transportation infrastructure but for which the primary purpose is unrelated (e.g. utility relocation) are considered ineligible.

Each MAT Program cycle will detail project eligibility and readiness criteria. The [first cycle solicitation](#) was open from February 18, 2020 through April 30, 2020, covering five years and \$75 million, and focused on a prioritized list of active transportation corridors and first/last mile priority networks identified in the ATSP.⁵ The process for the first solicitation is shown in the graphic, below.



Specific Cycle 1 goals included:

- Advancing key Metro policies, with a focus on the ATSP, First/Last Mile (FLM) policy, and the Equity Platform Framework;
- Initiating implementation of ATSP-identified first/last mile projects and active transportation corridors;

⁴ Metro Active Transport (MAT) Program Final Administrative Procedures, Adopted September 10, 2019, Available at <https://www.metro.net/projects/metro-active-transport-mat-program/>.

⁵ Metro Active Transport (MAT) Program Final Cycle 1 Solicitation, Adopted January 15, 2020, Available at <http://media.metro.net/2020/UPDATE-PDF-Cycle-1-Solicitation.pdf>.



- Jump-starting action and building momentum for future efforts; creating visible, tangible results; and setting the ground work for implementation at the broad scale envisioned by ATSP;
- Encouraging, testing, and refining project partnerships and innovative delivery approaches; and
- Targeting investments in high need areas.

As described in the Cycle 1 Solicitation guidelines, two categories of projects were eligible for the first cycle: Active Transportation Corridors and First/Last Mile Projects. Based on an evaluation to determine priority projects identified in the ATSP, eligible project sponsors were invited to submit Letters of Interest (LOI) to receive funding for each priority project (detailed in Appendix A of the MAT Cycle 1 Guidelines). Project selection for the first cycle of the MAT Program has not yet been announced.

Active Transportation Corridors Category

Based on the Cycle 1 prioritization process, the top-ranked corridors in the South Bay Cities subregion that were eligible for Cycle 1 MAT Program funds (and their extents) include Avalon Blvd (Imperial Hwy to Harry Bridges Blvd), Alameda (Spring St to the Los Angeles River), Firestone-Manchester (Culver Blvd to the Los Angeles River), Imperial Hwy (Coast to Orange County Line), Redondo Beach Blvd (Flagler Ln to Salt Lake Union Pacific-Pacific Electric Railroad right-of-way), Florence Ave (BNSF Railroad to Alameda St), Western Ave (Imperial Hwy to Anaheim St), Crenshaw-Arden (Highland Ave to Pacific Coast Highway), Hillcrest-Hawthorne (Slauson Blvd to Palos Verdes Dr), and El Segundo Blvd (Coast to Alameda St). There is overlap between the top-ranked corridors and the LTN on Avalon Blvd (Elsmere Dr to Del Amo Blvd) and Redondo Beach Blvd (Grant Ave between Inglewood Ave & Kingsdale Ave). Additional corridors in the South Bay Cities were eligible for Cycle 1 MAT Program funds but were ranked lower on the list of 160 total corridors.

For the Active Transportation Corridors category, LOIs were required to contain the following information:

1. Lead Project Sponsor Contact Information.
2. Any Additional Project Sponsors - Contact Information.
3. Project Description - Project name; project location and extents; project scope, including improvements/components; and any anticipated project goals, objectives, outcomes, and deliverables.
4. Background information. Reference any local plans the project is included in, project history, and any community engagement that has already occurred. Note whether any community-based organizations, business groups, or other associations have demonstrated any support or opposition to the project.



5. **Project Milestone Schedule.** Describe steps to ensure adherence with schedule. Please note any anticipated review/approvals/permit processes and note any anticipated challenges and plans for how they will be addressed. More specifically, note any anticipated right-of-way acquisition or utility relocation, or other known project impediments or complicating factors.
6. **Description of Proposed Partner Roles and Responsibilities.** Identify agencies, organizations, and/or property owners that will be active partners in the project. Indicate how and when their involvement is required in order to implement and/or maintain the project.
7. **Funding -** Note if leveraging is anticipated and include estimate and budget for implementation ready projects.
8. **Letters of Support - Project Partners.** Outline the types of activities each jurisdiction or stakeholder would undertake to support the project. Attach any general letters of support from institutional or community interests.

Selection criteria for the Active Transportation Corridors category are summarized in the table below.

Table 3: Active Transportation Corridors Selection Criteria		
Assessment Criteria	Details	Maximum Points
Active Transportation Corridors		
Project description/clear proposal of project scope and components to achieve program outcomes	<p>Proposal provides a clear description of the project location and includes map of project including existing conditions and proposed improvements. Describe existing conditions and explain how the project improves and/or addresses equity, safety, health, mobility and connectivity to the active transportation network. The Letter of Interest (LOI) Active Transportation (AT) Corridor section requires more detail for the following:</p> <ul style="list-style-type: none"> • Boundaries and elements • Consistency with AT prioritized corridor • Connectivity to AT network, existing transportation facilities, and destinations 	20



Table 3: Active Transportation Corridors Selection Criteria

Assessment Criteria	Details	Maximum Points
Project Support/Partnerships	<p>Proposal provides evidence of support from key decision makers and stakeholders. Proposal includes committed and innovative partnerships with thoughtful description of intended partner roles and responsibilities. Describe if the proposed project is included in or is consistent with an adopted plan as evidence for project support and commitment. The LOI AT Corridor section requires more detail on the following:</p> <ul style="list-style-type: none"> Multi-jurisdictional coordination and partnerships Community support 	20
Process assurances and reasonableness of schedule	Proposal describes any likely/necessary review, approvals, and permit processes, along with a description of steps and assurances to streamline processes. Project describes an overall schedule along with a realistic description of how the schedule can be met and what steps will be taken to mitigate schedule impacts of any unforeseen circumstances.	15
Funding Strategy	Provide project funding strategy, budget, and cost estimates (as applicable) by phase.	10
Other factors	Proposers are encouraged to suggest other considerations as to why their project/project location is particularly compelling or valuable per the program goals and objectives.	5
Equity Focused Communities (EFCs)	Project locations that pass through EFCs will receive up to 5 bonus points.	5

First/Last Mile Projects Category

Based on the Cycle 1 prioritization process, the transit stops in the South Bay Cities subregion that were eligible for MAT Program funds (and their corresponding city) include the El Segundo Green Line Line Station (El Segundo), the Harbor Beacon Park Silver Line Stop (Los Angeles), the Mariposa Green Line Station (El Segundo), the Harbor Freeway Green Line Station (Los Angeles), the Beacon St/1st St Silver Line Stop (Los Angeles), the Vermont/Athens bus stop (Unincorporated LA County), the Douglas Green Line Station (El Segundo), the Hawthorne/Lennox Green Line Station (Hawthorne), and the Vermont/120th bus stop (Unincorporated LA County). The LTN provides a direct connection to the Metro Green Line Douglas Station in El Segundo.

For the First/Last Mile Projects category, LOIs were required to contain the following information:



1. Project Sponsor Contact Information. If project is multi-jurisdictional, include identification of lead entity.
2. Project Description, including: project name; project location and extents; and project scope, including improvements/components. Note: First/Last mile projects were not expected to have a refined scope and budget at the time of submission.
3. Background Information. Reference any project history (including whether its inclusion any existing/adopted plans) and any community engagement that has already occurred. Note whether any community-based organizations, business groups, or other associations have demonstrated any support or opposition to the project.
4. Identification of project size category. (Small - \$500k-\$1m; Medium - \$1m-\$3m; Large - \$3m-\$5m)
5. Project Milestone Schedule. Describe steps to ensure adherence with schedule. Note any anticipated review/approvals/permit processes and any anticipated challenges and plans for how they will be addressed- specifically, any anticipated right-of-way acquisition or utility relocation or other known project impediments or complicating factors.
6. Description of Proposed Partner Roles and Responsibilities. Identify agencies, organizations, and/or property owners that will be active partners in the project. Indicate how and when their involvement is required in order to implement and/or maintain the project. Note the anticipated role for Metro.
7. Letters of Support. General letters of support from institutional or community interests, separate and apart from identification of partners/roles described in #6 above. (Optional)
8. Funding Strategy. Description of any complementary/additive (non-MAT funded) project improvements affecting the project location, including applicable funding sources and timelines. (Optional)

Selection criteria for the First/Last Mile Projects category are summarized in the table that follows.

Table 4: First/Last Mile Project Selection Criteria		
Assessment Criteria	Details	Maximum Points
First/Last Mile Projects		
Clear and compelling project description/ Demonstrated efficacy of proposed project scope components to achieve program outcomes.	Proposal provides a clear description of the project location, extent, and characteristics affecting safety and access for transit riders. The proposal clearly describes the intent of proposed improvements, along with a generalized description of likely project elements pending the project development phase. For proposals covering multiple/adjacent stations, the proposal describes a cohesive scope and access strategy that justifies delivery as a single project.	20



Table 4: First/Last Mile Project Selection Criteria

Assessment Criteria	Details	Maximum Points
Project Support/Partnerships	Proposal provides evidence of support from key decision makers and stakeholders. Proposal includes committed and innovative partnerships with thoughtful description of intended partner roles and responsibilities. The proposed projects inclusion in or consistency with an adopted plan may be used to evidence project support and commitment.	20
Process assurances and reasonableness of schedule	Proposal describes any likely/necessary review, approvals, and permit processes, along with a description of steps and assurances to streamline processes. Project describes an overall schedule along with a realistic description of how the schedule can be met and what steps will be taken to mitigate schedule impacts of any unforeseen circumstances.	15
Leverage	Leverage score to be assigned based on a clear and compelling description of the synergy and value added from complementary investments in the project area (as opposed to scoring by the dollar value of those investments).	10
Other factors	Proposers are encouraged to suggest other considerations as to why their project/project location is particularly compelling or valuable per the program goals and objectives.	5
Equity Focused Communities (EFCs)	Project locations within EFCs (as identified in Attachment A) will receive 5 bonus points.	5

2% System Connectivity Projects (Highway Construction Subfund)

Funding availability for the Highway Systemwide Connectivity program will be determined by the Cashflow policy, which are updated annually with a five-year forecast. Criteria will be developed to establish a competitive process and fund schedule for projects within this program. The I-710 South Phase 1 and 2 and the I-105 ExpressLane Projects are expected to be funded with the Highway 2% System Connectivity program.

In late 2018, Metro initiated the process of developing the foundation for the competitive program and selection of projects for the Highway Construction Subfund. According to January, 2019 Board Report on this item, the process will comply with the [June 2017 motion](#) submitted by Directors Garcia, Bonin, Solís, and Hahn that directed Metro staff to include Active Transportation



and Complete Streets, Innovative Mobility Technology, and Greenways in the guidelines for the Highway Construction Subfund.⁶

The anticipated delivery of the competitive program for this System Connectivity Subfund, including project eligibility criteria, is December 2020.

2% System Connectivity Projects (Transit Construction Subfund)

Funding availability for the Transit Systemwide Connectivity program will be determined by the Cashflow policy, which are updated annually with a five-year forecast. Criteria will be developed to establish a competitive process and fund schedule for projects within this program. Countywide Bus Rapid Transit (BRT) Expansion projects are expected to be funded with the Transit 2% System Connectivity program, along with other specific projects identified in the Measure M Expenditure Plan (including the Airport Metro Connector, Crenshaw/LAX Track Enhancements, and North San Fernando Valley BRT Improvements).

No additional information is available on Metro's website pertaining to the development of this competitive process, project criteria, or timeline.

Visionary Project Seed Funding

Between Fiscal Year (FY) 18 and FY57, Measure M includes \$20 million to be used for Visionary Project Seed Funding, with the goal of identifying and testing "new solutions to old transportation challenges" (Measure M Final Guidelines, 50). Metro will make \$1.5 million available every three years through competitive grant process.

According to the Measure M Administrative Procedures (2018), Metro will enter into a contractual agreement with a consultant(s) for a minimum of three years, to provide research and staff support to program grantees. Annually, Metro will solicit project ideas to provide grant funding, through this program. The Visionary Project Seed Funding program will issue a Notice of Funding Availability following approval by Metro's CEO.

No additional information is available on Metro's website pertaining to the development of this competitive process or timeline.

⁶ Metro Staff Board Report, January 2019, Accessed from http://boardarchives.metro.net/BoardBox/2019/190107_Update_on_the_Goods_Movement_Strategic_Plan_and_the_Measure_M_2%25_System_Connectivity_Projects.pdf



Countywide BRT Expansion

Metro's forthcoming [BRT Vision and Principles Study](#) will provide the foundation for assignment of Measure M funds for the Countywide BRT Expansion program. The Metro Board approved a recommendation to initiate this study in October, 2018.⁷ The study is currently underway, and anticipated to be completed by 2021. The initial groundbreaking date for the first Countywide BRT project funded by Measure M is anticipated between FY2022 and FY2024.

As part of the BRT Vision and Principles Study, Metro released a list of the [top 30 corridors](#) under consideration for advancement to the next phase of work.⁸ In the South Bay Cities, the following corridors were identified in the top 30, with bolded corridors advanced to the top 15:

- Century, from the Airport Metro Connector to the Blue Line 103rd/Watts Station
- La Brea, from Wilshire Blvd to Manchester Ave
- Hawthorne, from Santa Monica Blvd to the Pacific Coast Highway
- Prairie, from the La Brea/Florence Crenshaw Line Station to Redondo Beach Blvd
- **Western, from the Hollywood/Vine Red Line Station to the Crenshaw Green Line Station**
- **Figueroa, from Pico Blvd to the Harbor Freeway Green Line Station**

For BRT corridors in the SBCCOG region that advance to the next stage, there may be opportunities to look for interactions between the LTN and the BRT corridors, applying design principles developed through [Metro's Bus Bike Interface Study](#) to ensure that these corridors can serve as shared use facilities.⁹

Subregional Equity Program

At the June 2016 Board Meeting, Director Fasana introduced an amendment to the expenditure plan to provide funding to all subregions equivalent to the allocation approved by the Board for the San Fernando Valley Transit project. The San Fernando Valley project was identified as \$180 million (FY15\$). A total of \$130 million was allocated to the South Bay subregion.

In November 2019, [SBCCOG staff made a recommendation](#) to the SBCCOG Board to support the City of Inglewood's application requesting Metro to use up to \$130 million in South Bay Sub-Regional Equity Funds for the Centinela Grade Separation project.¹⁰

⁷ http://media.metro.net/projects_studies/brt/report_BRT_VisionandPrinciples_2018-10-17.pdf

⁸ A public input map showing the Top 30 and Top 15 BRT corridors is available here: <https://arellano.maps.arcgis.com/apps/MapSeries/index.html?appid=6904357cc20b476186d3c8b35f3a0ab3>

⁹ For the full text of this study, see <https://www.dropbox.com/s/vxk1y85yqvayysj/Metro%20Bike-Bus%20Interface%20Study%20Full%20Report.pdf?dl=0>

¹⁰ https://www.southbaycities.org/sites/default/files/board_directors/meeting/10_11.19%20Evaluation%20of%20Measure%20M%20&%20R%20Fund%20Transfer%20Memo_Exhibits_Motions_0.pdf



20% Transit Operations

The Measure M Ordinance specifies that 20% of the Measure M funds will be allocated to transit operations, maintenance, and expansion. These funds are annually allocated to Metro and eligible municipal operators by the Formula Allocation Procedure. Eligible South Bay municipal operators include the City of Gardena, Long Beach Transit, the City of Redondo Beach, LADOT, and the City of Torrance.

Local Return

The Measure M Ordinance specifies that every year, funds will be allocated to the Local Return program to be used for transportation purposes, at a level of 17% annually through FY39 and increasing to 20% annually beginning FY40. These funds are apportioned to the 88 cities in LA County based on population and may be reallocated between cities within a subregion if all parties agree. Metro requires that Jurisdictions submit Assurances and Understandings agreements before participating in the Local Return Program.

Local Return funds may be used for the following types of projects:

- Streets and Roads
- Traffic Control Measures
- Active Transportation
- Public Transit Services
- Public Transit Capital
- Transit Oriented Community Investments
- Transportation Marketing
- Planning, Engineering, and/or Study, Congestion Management Program
- Transportation Administration
- Local Funding Contributions

Clean Transportation Funding

The Mobile Source Air Pollution Reduction Review Committee (MRSC) administers periodic Clean Transportation Funding opportunities to support the reduction of air pollution from motor vehicles in the South Coast Air Quality Management District (SCAQMD). Past funding programs have supported clean alternative fuel transit vehicles, the expansion of bicycle facilities, vouchers to purchase e-bikes, installation of fueling stations to support alternative fueled vehicles, and studies to identify issues within the goods movement sector.



In September 2020, the MRSC and the Southern California Association of Governments (SCAG) announced a new match-funding program that would support "last-mile" goods movement vehicle and infrastructure projects. While there are no program criteria developed yet, the program is expected to fund up to \$10m in projects to accelerate clean truck technology and infrastructure.

This opportunity could support very specific components of the LTN including network infrastructure expansion as well as programs to incentivize or even directly purchase clean fuel vehicles and charging infrastructure.

Active Transportation Program

The California Transportation Commission (CTC) implements the Active Transportation Program with the goal of increasing the proportion and safety of trips accomplished by walking and biking. This program consolidates various federal and state funding sources into a single program and distributes them through a competitive process that is, in part, based on jurisdiction size. Per the [2021 ATP Guidelines](#), large MPOs (including SCAG) receive 40% of available funds to distribute competitively, while areas with populations of 200,000 or less receive 10% of funds, distributed competitively by the CTC.¹¹ The remaining 50% of funds are awarded competitively statewide by the CTC. Local match is not required by the CTC.

Eligible projects include infrastructure projects, plans, non-infrastructure projects, or a combination of infrastructure and non-infrastructure components. Applications are screened by the CTC for completeness and eligibility, based on the following criteria:

- Consistency with an adopted regional transportation plan
- Use of appropriate application for the project type
- Supplanting funds – ATP funds cannot be used to supplant other committed funds
- Eligibility – projects must be one of the four types listed above

Projects are then scored based on the following criteria:

- Benefit to Disadvantaged Communities
- Need
- Safety
- Public participation & planning
- Scope and Plan Consistency

¹¹ California Transportation Commission, 2021 Active Transportation Program Guidelines, Adopted March 25, 2020. Available at <https://catc.ca.gov/-/media/ctc-media/documents/programs/atp/workshops/cycle-5/2020325-adopted-2021-atp-guidelines-a11y.pdf>.



- Implementation & Plan Development (Plan category only)
- Context Sensitive & Innovation
- Transformative Projects (Large Infrastructure category only)
- Evaluation and Sustainability (Non-Infrastructure category only)
- Cost Effective (Large Infrastructure category only)
- Leveraging
- Incorporation of the California Conservation Corps
- Past Performance

Cycle 5 of the ATP is expected to include \$440m in project funding, and will program funds through FY24-25. Project applications were due in September 2020 (following an extension due to the COVID-19 pandemic).

Clean Mobility Options

The Clean Mobility Options Program provides voucher-based funding for zero-emission carsharing, carpooling/vanpooling, bikesharing/scooter-sharing, innovative transit services, and ride-on-demand services in California's historically underserved communities. The program has \$20 million available in 2020. The program is funded by state cap-and-trade dollars. The program aims to improve underserved communities' access to clean mobility options that are safe, reliable, convenient, and affordable. The program also seeks to further mobility equity, improve local air quality, increase zero-emission vehicle adoption, reduce vehicle miles traveled, and advance workforce development in clean transportation.

The Clean Mobility Options program is intended to support the piloting of innovative clean transportation projects that test "shared" and "on-demand" mobility services. In the past, it has funded projects including carshare, vanpools, zero emissions mobility programs, paratransit programs, electric vehicle purchases, and mobility hubs. Applications for funding opened on October 20, 2020. The program offers up to three years of funding, for up to \$1m to conduct a shared clean mobility project in an eligible area, which consists of communities in the top 25% of CalEnviroScreen 3.0 scores, eligible tribal lands, and affordable housing properties within AB 1550 designated Low Income Communities. An [interactive map](#) is available to assist in determining project area eligibility.

The application includes the following components:

- Project Team Profile
- Project Narrative
- Community Transportation Needs Assessment
- Project Area Profile



- Proposed Budget and Plan for Financial Sustainability
- Community Resource Contribution
- Community Outreach Plan
- Attestations and Signature

Qualified applications will be approved on a first-come, first-served basis, pending availability of funds. Additional information can be found in the program's [Implementation Manual](#).¹²

Summary

As described in the sections above, local, regional, and state funding sources are available to support the implementation of the LTN. State and regional funding is likely to be more competitive than County funding but could be well aligned to support specific aspects of the LTN such as “last mile” for goods movement, clean transportation pilot programs, or technology innovations.

Measure M creates many funding opportunities that each have distinct program processes, project eligibility, and local influence on how funds are secured and expended. The above programs capture only those programs which have local relevance for South Bay cities; there are several additional funding programs that fund Metro capital projects and operations, which will likely benefit South Bay residents but do not require any action on the part of South Bay jurisdictions to secure or expend the funding. The programs that are most aligned with the Local Transportation Network projects are the MSP programs and the MAT Program. Additional information about those programs, along with detailed information about the above-described programs, can be found in the Measure M Final Guidelines (2017) and Measure M Administrative Procedures (2018).

¹² Clean Mobility Options, Implementation Manual for the Clean Mobility Voucher Pilot Program, Effective September 10, 2020. Available at <https://www.cleanmobilityoptions.org/implementation-manual/>.

Cut Sheets



Glossary of Terms

Term/Abbreviation	Definition
AASHTO	American Association of State Highway and Transportation Officials; a standards-setting body which publishes specifications, test protocols, and guidelines that are used in highway design and construction throughout the United States.
Class I bicycle facility	Bike path, a completely separate right of way for the exclusive use of bicycles and pedestrians, with vehicle and pedestrian crossflows minimized.
Class II bicycle facility	Bike lane, a restricted facility designated for the use of bicycles, with a striped lane on a street or highway.
Class III bicycle facility	Bike route, a facility designated by signs or pavement markings for shared use with pedestrians and motor vehicles.
Class IV bicycle facility	A facility for the exclusive use of bicycles which provides a required separation between the bikeway and vehicular through-traffic.
FHWA	Federal Highway Administration.
LSV	Low-speed vehicles with a maximum capable speed of 25 miles per hour (MPH).
LTN	Low-Speed Travel Network.
MUTCD	Manual on Uniform Traffic Control Devices for Streets and Highways; defines the standards governing all traffic control devices, used by road managers nationwide to ensure uniformity of traffic control devices. Updated decennially.
Micromobility Vehicle	A range of small, lightweight vehicles (< 100 pounds) operating at speeds typically below 20 MPH, such as e-scooters.
NACTO	National Association of City Transportation Officials; a coalition of city transportation officials from departments of transportation from across North America.
NEV	Neighborhood Electric Vehicle, a designation for battery-electric vehicles with a top speed of 25 MPH and a maximum loaded weight of 3,000 pounds.
Sharrow	Shared-lane roadway markings, indicating a shared-lane environment for multiple modes.
Two-Stage Crossing	A secondary crosswalk, usually colored green, at the intersection of multilane roadways to allow for the safe turning by LSVs.

Glossary of Mobility

The Local Slow Speed Network (Low-Speed Travel Network, "LTN") is designed to accommodate low-speed (25 MPH or less) human-powered or zero emission electric/battery-powered rolling personal mobility devices. This includes bicycles, e-bicycles, kick scooters, e-scooters, roller skates and roller blades, skateboards, e-skateboards, neighborhood electric vehicles, gyroscopic devices (e.g. Segways), and adaptive personal mobility devices.



Source: Metro First Last Mile Strategic Plan, 2014.

Neighborhood Accessibility Concept Designs

182nd Street Corridor

JURISDICTIONS: Redondo Beach, Torrance, Los Angeles

The conceptual network design of the LTN along the 182nd Street corridor includes a new north-south connection on Van Ness Avenue between the 190th Street corridor and 154th Street, providing access to Manhattan Beach Boulevard shopping destinations. Where Van Ness Avenue intersects the Dominguez Channel, a new Class I facility provides off-street access to a signalized driveway into El Camino College and Alondra Park. On Casimir Street, a new facility exclusively for bikes and micromobility-vehicles (no access for NEVs between W. 176th Street and W. 177th Street) provides a connection to potential future off-street facilities in the Edison Right-of-Way. It also includes a new route on W. 178th Street, providing a low-speed east-west alternative to traveling along 182nd Street and direct access to Guenser Park.



Conceptual Design Treatments

Advancing the conceptual design of the LTN in this location would include further concept development for the following network treatments: new **signal** (182nd Street & Casimir Street), new **Class I pathway** (Dominguez Channel), a new **trail crossing** (Van Ness Avenue at Dominguez Channel), **Class II facility** (Van Ness Avenue), **two-stage left-turn crossing** (Van Ness Avenue at 190th Street and Manhattan Beach Boulevard), and common elements such as **wayfinding signage**, **signal detection** in the LTN lane, and **upgraded curb ramps** (throughout the network).

NOTE: Due to scale of study area, treatments identified above represent a subset of all treatments required for implementation.



New Signal



Class I Bike Path



Trail Crossing



Wayfinding



Two-Stage LTN Crossing



Class II Facility



Signal Detection in LTN lane



Upgraded Curb Ramps

Redondo Beach Boulevard

JURISDICTION: Gardena

The conceptual network design of the LTN near Redondo Beach Boulevard includes a new Class II facility on Van Ness Avenue, which provides a signal-controlled crossing across Redondo Beach Boulevard, where side-street stop-controlled crossings are not possible due to the volume of traffic on the arterial, and north-south connectivity between major commercial centers at 154th Street and 190th Street. A new Class II facility on Manhattan Beach Boulevard from Van Ness Avenue to Lemoli Avenue provides a new point of access to El Camino College. A Class III facility on W. 157th Street behind the Target provides slower-speed access into the residential neighborhood to the east.



Conceptual Design Treatments

Advancing the conceptual design of the LTN in this location would include further concept development for the following network treatments: **Class II facilities** (Van Ness Avenue, Manhattan Beach Boulevard), **restriped crosswalks** and **two-stage left-turn crossing** (Manhattan Beach Boulevard & Van Ness and Manhattan Beach Boulevard & Lemoli Avenue), **protected left-turn signal** (Manhattan Beach Boulevard & Van Ness Avenue and Manhattan Beach Boulevard & Lemoli Avenue), and common elements such as **wayfinding signage**, **signal detection** in the LTN lane, and **upgraded curb ramps** (throughout the network).

NOTE: Due to scale of study area, treatments identified above represent a subset of all treatments required for implementation.



Permissive to Protected Lefts



Mixing Zones



Restripe Crosswalk



Wayfinding



Two-Stage LTN Crossing



Class II Facility



Signal Detection in LTN lane



Upgraded Curb Ramps

Tozai Shopping Center

JURISDICTION: Gardena

The conceptual network design of the LTN adjacent to the **Tozai Shopping Center** provides a **controlled crossing** of Western Avenue by diverting up to the existing signal at W. 153rd Street. Direct access to the shopping center is provided through the parking lot of the adjacent plaza from 154th Place. This connection is via private property and will require easements to utilize it. Wayfinding is critical to the success of this concept.



Conceptual Design Treatments

Advancing the conceptual design of the LTN in this location would include further concept development for the following network treatments: new **Class III facilities** (St. Andrews Place, W. 153rd Street, Harvard Avenue), **signal detection** (W. 153rd Street at Western Avenue), and common elements such as **wayfinding signage** and **upgraded curb ramps** (throughout the network).

NOTE: Due to scale of study area, treatments identified above represent a subset of all treatments required for implementation.



Class III Shared Facility



Sharrowed Markings



Wayfinding



Signal Detection in LTN Lane



Upgraded Curb Ramps

South Bay Pavilion & Dominguez Hills

JURISDICTION: Carson

The conceptual network design of the LTN adjacent to the **South Bay Pavilion** and the **Dominguez Hills** neighborhood includes a new connection on East Dominguez Street between the existing doglegged, couplet Class II facilities on Leapwood Avenue and Chico Street. A Class II facility on **Del Amo Boulevard** provides connections to the **Dominguez Hills** neighborhood at **Leapwood Avenue** and **E. Turmont Street**. The Carson Bicycle Master Plan contains extensive and major improvements to the bicycle network in this area, including colored/buffered bicycle lanes on **Avalon Boulevard** with a road diet, buffered bicycle lanes on **Del Amo Boulevard**. The conceptual improvements included for the LTN in this area will position it to connect with planned facilities on Avalon Boulevard and Del Amo Boulevard when they come online.



Conceptual Design Treatments

Advancing the conceptual design of the LTN in this location would include further concept development for the following network treatments: new **signal** (E. Dominguez Street & Leapwood Avenue/Chico Street), new **Class II facilities** (E. Dominguez Street & Del Amo Boulevard), **two-stage left-turn crossings** (Del Amo Boulevard & Leapwood Avenue and E. Dominguez Street & Leapwood Avenue/Chico Street), and **wayfinding signage**, **signal detection** in the LTN lane, and common elements such as **upgraded curb ramps** (throughout the network).

NOTE: Due to scale of study area, treatments identified above represent a subset of all treatments required for implementation.



New Signal



Two-Stage LTN Crossing



Bike Ramps



New Crosswalk



Wayfinding



Class II Facility



Signal Detection in LTN Lane



Upgraded Curb Ramps

Walteria Elementary School

JURISDICTION: TORRANCE

The conceptual network design of the LTN in the **Walteria Elementary School** neighborhood include the addition of Class III facilities on Park Street, W. 244th Street, and Cricklewood Street to better distribute traffic during the busy school drop-off and pick-up times. Additional Class III connections are included south of Newton Street to provide direct access to the neighborhood to the south and the shopping/commercial center that includes Truxton's American Bistro.



Conceptual Design Treatments

Advancing the conceptual design of the LTN in this location would include further concept development for the following network treatments: **high visibility crosswalks** (W. 244th Street at Madison Street, Ward Street, and Park Street, Newton Street at Madison Street and Park Street, and Cricklewood Street & Madison Street), **signal detection** (W. 244th Street & Hawthorne Boulevard) and common elements such as **wayfinding signage** and **upgraded curb ramps** (throughout the network).

NOTE: Due to scale of study area, treatments identified above represent a subset of all treatments required for implementation.



High Visibility Crosswalks



Convert 2-Way to All-Way Stop



May Use Full Lane



Wayfinding



Restripe Crosswalk



Upgraded Curb Ramps



Signal Detection in LTN Lane

190th Street Industrial Corridor

JURISDICTIONS: TORRANCE, LOS ANGELES

The conceptual network design of the LTN along the **190th Street corridor** provides direct access to many major employers in the area. A Class II facility on Van Ness Avenue connects to neighborhoods to the north, as well as the LTN facility on 182nd Street. The Van Ness Avenue Class II also facilitates direct access to Honeywell Aerospace and ITT Technical Institute via a Class II stub on 190th Street. South of 190th Street, the Van Ness Avenue Class II continues on to connect to a network of Class III facilities connecting to businesses on 195th Street, Western Way, Francisco Street, Harbortgate Way, and Knox Street. Major employers served by this series of Class III facilities include Toyota, Walmart, and Sketchers. Some connections south of 190th Street are on private property and will require easements to utilize them. Wayfinding is critical to the success of this concept.



Conceptual Design Treatments

Advancing the conceptual design of the LTN in this location would include further concept development for the following network treatments: **Class II facility** (Van Ness Avenue, 190th Street), **two-stage left-turn crossing** (190th Street), **Class III facilities** (within Honeywell Aerospace site and south of 190th Street), **high visibility crosswalks** (at intersections along the Class III route south of 190th Street) and **wayfinding signage**, **signal detection** in the LTN lane, and common elements such as **upgraded curb ramps** (throughout the network).

NOTE: Due to scale of study area, treatments identified above represent a subset of all treatments required for implementation.



Class II Facility



Mixing Zones



Two-Stage LTN Crossing



Bike Ramps



Upgraded Curb Ramps



Wayfinding



Signal Detection in LTN Lane



High Visibility Crosswalks

Torrance Memorial Medical Center

JURISDICTION: TORRANCE

The conceptual network design of the LTN adjacent to the **Torrance Memorial Medical Center** includes Class II facilities on **Lomita Boulevard**, **Skypark Drive**, and **Garnier Street**, and Class III facilities on **Early Avenue**, **Medical Center Drive**, **Camino Del Sol**, **Hospital and Technology Drive**, and **other internal roads** to provide robust connections to the medical center, as well as other major area employers, including **Pelican Products**, **Hughes Aircraft Employees Credit Union**, **Costco**, and **churches**. Connections through some of the internal roads are on private property and will require easements to utilize them. Wayfinding is critical to the success of this concept. On the Torrance Memorial Medical Center campus, internal access between Madison Street and Medical Center Drive will be limited to bicyclists and micromobility vehicle users. A **new signal** at the intersection of Madison Street & Lomita Boulevard facilitates the connection between the Class III facility on Madison Street and busy Lomita Boulevard for those trying to reach Early Avenue.



Conceptual Design Treatments

Advancing the conceptual design of the LTN in this location would include further concept development for the following network treatments: **new signal** (Lomita Boulevard & Madison Street), **two-stage crossings** (Lomita Boulevard at Madison Street and Medical Center Driveway, Skypark Drive at Madison Street, Medical Center Driveway, and Garnier Street), **crosswalks** at Lomita Boulevard & Madison Street, and **wayfinding signage**, **signal detection** in the LTN lane, and common elements such as **upgraded curb ramps** (throughout the network).

NOTE: Due to scale of study area, treatments identified above represent a subset of all treatments required for implementation.



New Signal



Two-Stage LTN Crossing



Mixing Zones



Wayfinding



New Crosswalk



Class II Facility



Signal Detection in LTN lane



Upgraded Curb Ramps

Torrance Boulevard

JURISDICTION: TORRANCE

The conceptual network design of the LTN along **Torrance Boulevard** includes a Class III facility on the south side of **Torrance Boulevard** to connect to Ocean Avenue and Village Lane, providing access to **Village Del Amo** and **Del Amo Crossing**, as well as points east such as the **Del Amo Fashion Center**. This concept utilizes the existing signal at Torrance Boulevard & Earl Street, as well as an existing Class II bicycle facility on the south side of Torrance Boulevard beginning at Ocean Avenue to assist in making the connection.



Conceptual Design Treatments

Advancing the conceptual design of the LTN in this location would include further concept development for the following network treatments: **Class III facility** (Torrance Boulevard, Ocean Avenue), **high visibility crosswalk** (Torrance Boulevard & Earl Street), **signal detection** (Earl Street), and common elements such as **wayfinding signage** and **upgraded curb ramps** (throughout the network).

NOTE: Due to scale of study area, treatments identified above represent a subset of all treatments required for implementation.



Class III Shared Facility



Sharrowed Markings



Wayfinding



Signal Detection in LTN Lane



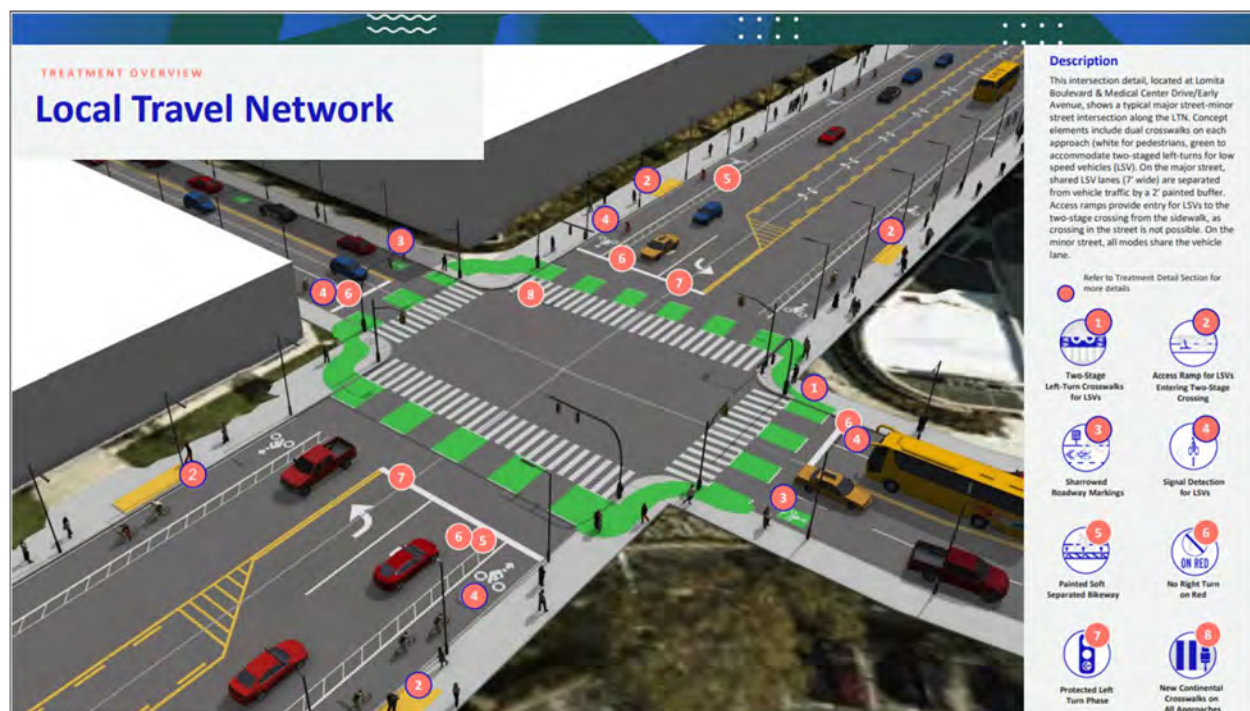
Upgraded Curb Ramps

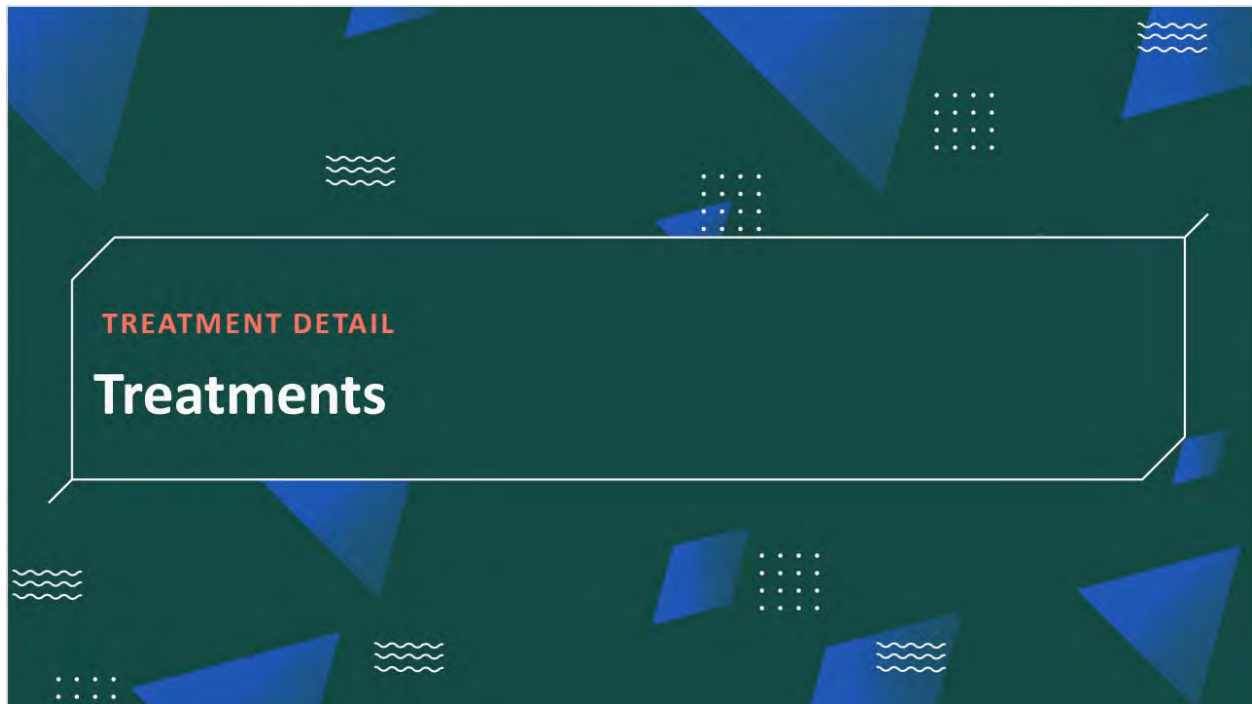
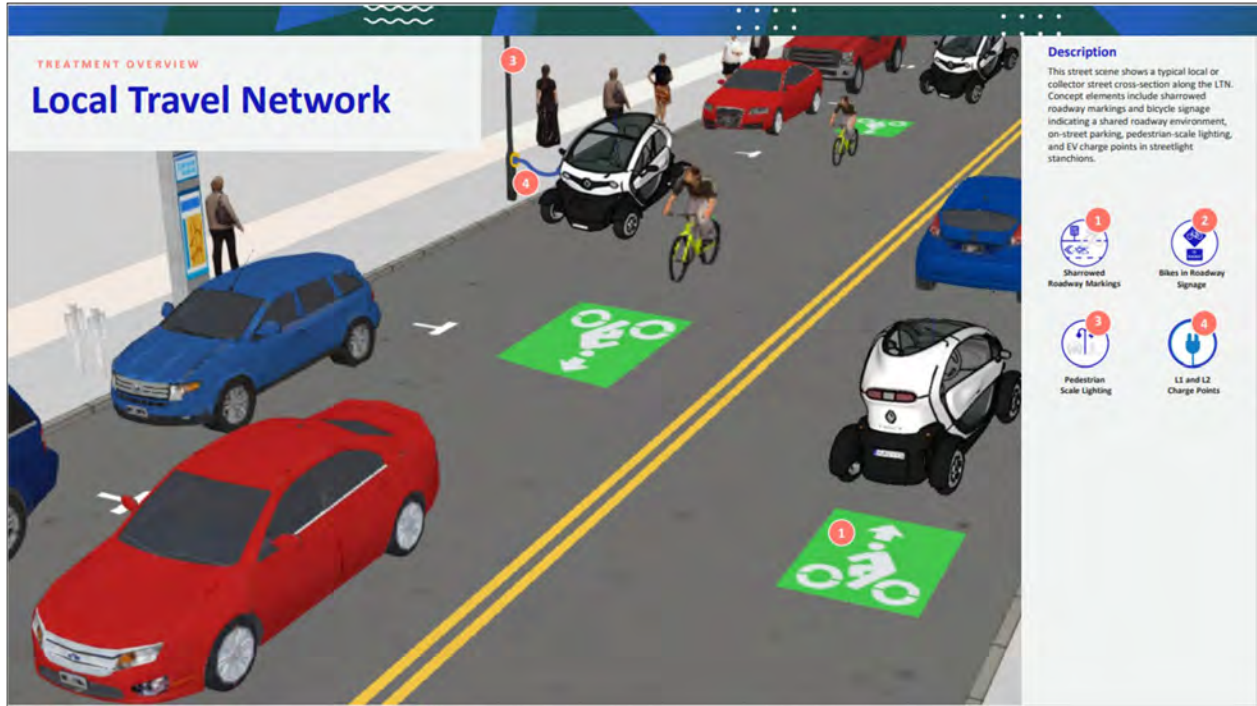


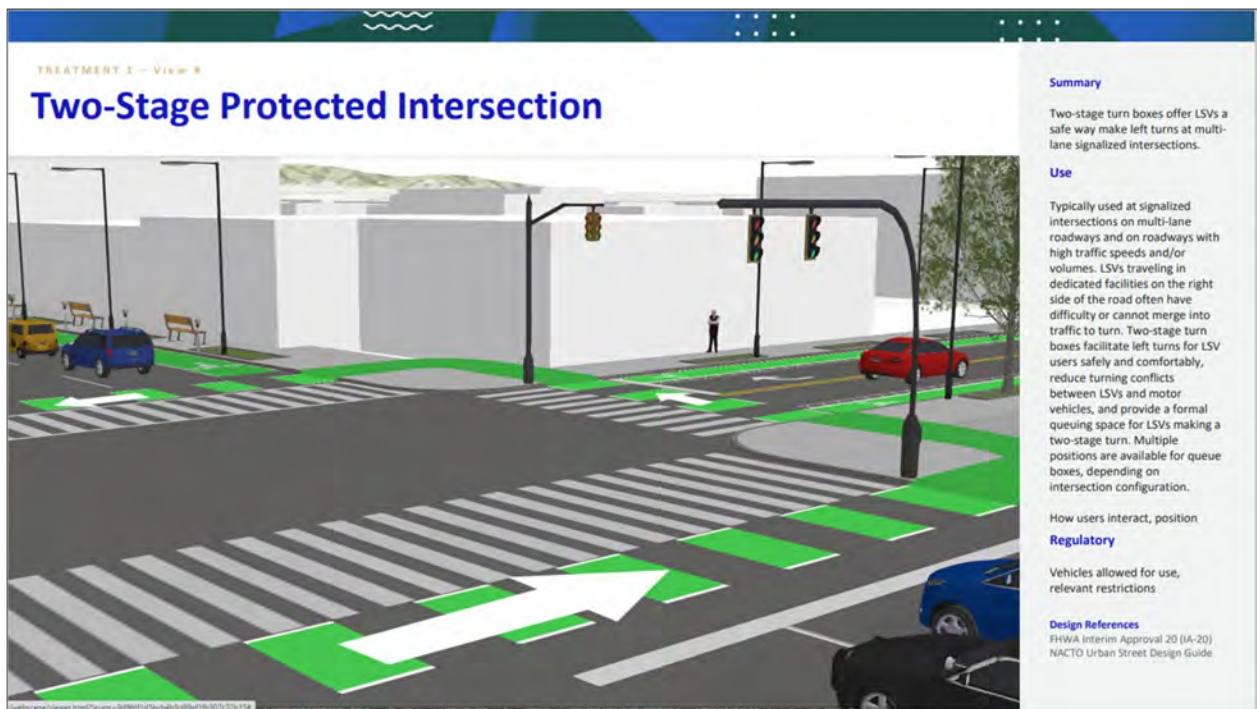
High Visibility Crosswalks

CONCEPT DETAIL

Case Study Intersection







TREATMENT 2

Low Speed Vehicle Ramps



Summary

LSV ramps transition left-turning LSVs from the LSV lane to the sidewalk.

Use

LSV ramps transition LSVs from one facility to another. A common setting for LSV ramps is in constrained locations in order to facilitate safe left turns for vulnerable road users, where the ramps transition from the LSV lane on the street to the sidewalk.

Regulatory

Ramps must provide a minimum 10-foot transition zone for LSVs exiting the roadway to mix with pedestrians. At any location where ramps provide sidewalk access to LSVs, the sidewalk must be 10 feet wide to accommodate pedestrians and bicyclists/micromobility vehicle users, or 13 feet wide to accommodate pedestrians and NEVs. Ramps slopes can be fairly steep, up to 20%.

Design References

CA MUTCD
AASHTO Guide for the Development of Bicycle Facilities

TREATMENT 3

Sharrow Markings



Summary

Shared Lane Markings or "sharrows" indicate a shared lane environment for full-size vehicles, bicycles, micromobility vehicles, and NEVs.

Use

Shared lane markings encourage bicyclists, micromobility users, and NEVs to position themselves safely in lanes too narrow in which to comfortably travel side by side with an automobile, and alert motor vehicle drivers to the potential presence of other mode users. They reinforce the legitimacy of non-automobile modes on the street and may be configured to offer directional and wayfinding guidance.

Regulatory

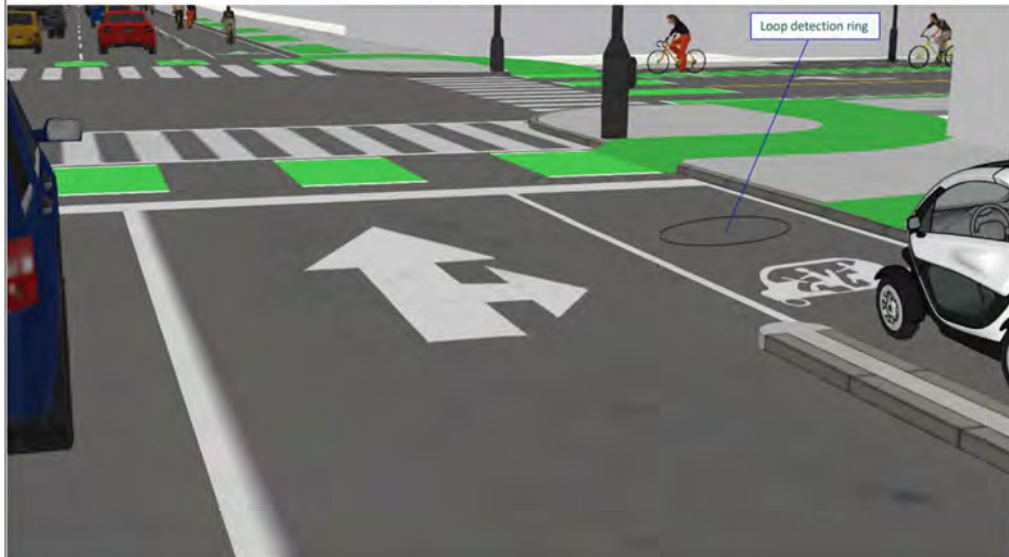
The MUTCD outlines guidance for sharrows in section 9C.07. May be used in conjunction with a "Bicycles May Use Full Lane" sign. Requires no additional street space. Sharrows can be used as a standard element in the development of low speed boulevards.

Design References

2010 CA MUTCD Section 9C.07
NACTO Urban Street Design Guide

TREATMENT 4

Signal Detection for LSVs



Summary

LSV detection is used at actuated signals to alert the signal controller of LSV crossing demand on a particular approach. There are a variety of detection methods, including inductive loops, video, push-button, and microwave.

Use

Signal detection is used to improve efficiency and reduce delay for bicyclists and other LSVs. On roadways with dedicated LSV facilities, if using loop detectors, a separate loop will need to be provided directly in the LSV lane. The area of peak sensitivity shall be marked with MUTCD-compliant bicycle detection stencils if the loop wires have been covered over with pavement.

Regulatory

Section 4D.105 of the 2010 CA MUTCD sets the performance standard for bicycle detection. Demand-actuated traffic signals in California must be designed and adjusted to detect bicycles. Video-based detectors are adjusted to detect a bicyclist using a headlamp at night.

Design References

2010 CA MUTCD Section 4D.105
NACTO Bikeway Design Guide

TREATMENT 5

Right Turns: Shared Through-Right Lane



Summary

At intersections with two-stage turn queue boxes where both roadways are part of the LTN, LSVs operate like pedestrians, with right-turning automobiles yielding to pedestrians, bicyclists, micromobility vehicles, and NEVs.

Use

LSVs are required to utilize the LSV crossing facilities to make all movements through the intersection to obviate the temptation for left-turning LSVs to cross within the intersection (where they won't have room to safely queue). Queue space for LSVs is provided on the sidewalk. Right-turning automobiles in the motor vehicle travel lane are required to look out for and yield to LSVs in crosswalks as they would for pedestrians.

Regulatory

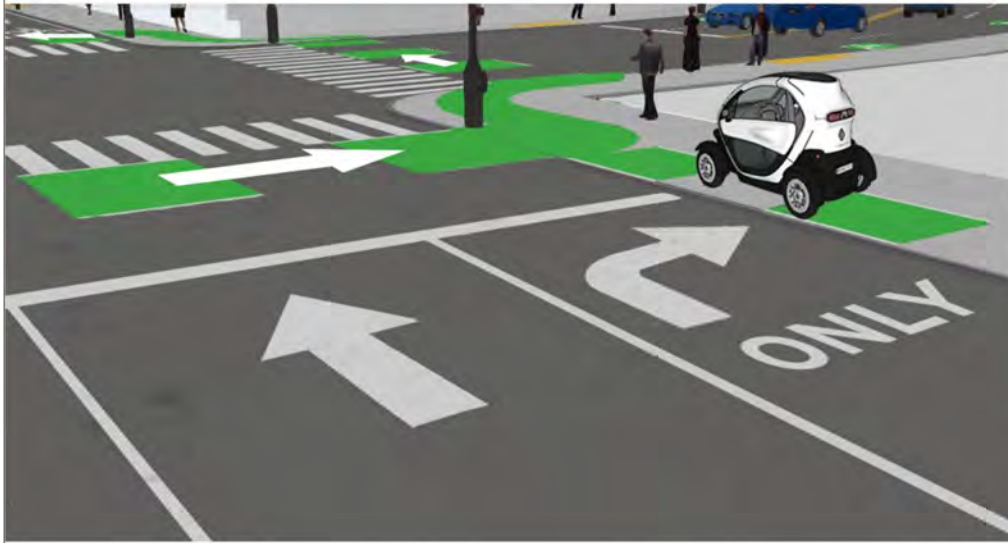
LSVs must exit the roadway and queue on the sidewalk within the green striping. Automobiles must yield to LSVs in the crosswalk.

Design References

FHWA Interim Approval 20 (IA-20)
NACTO Urban Street Design Guide

TREATMENT 6

Right Turns: Dedicated Right Turn Lane



Summary

At intersections with two-stage turn queue boxes where both roadways are part of the LTN, LSVs operate like pedestrians, with right-turning automobiles yielding to pedestrians, bicyclists, micromobility vehicles, and NEVs.

Use

LSVs are required to utilize the LSV crossing facilities to make all movements through the intersection to obviate the temptation for left-turning LSVs to cross within the intersection (where they won't have room to safely queue). Queue space for LSVs is provided on the sidewalk. Right-turning automobiles in the motor vehicle travel lane are required to look out for and yield to LSVs in crosswalks as they would for pedestrians.

Regulatory

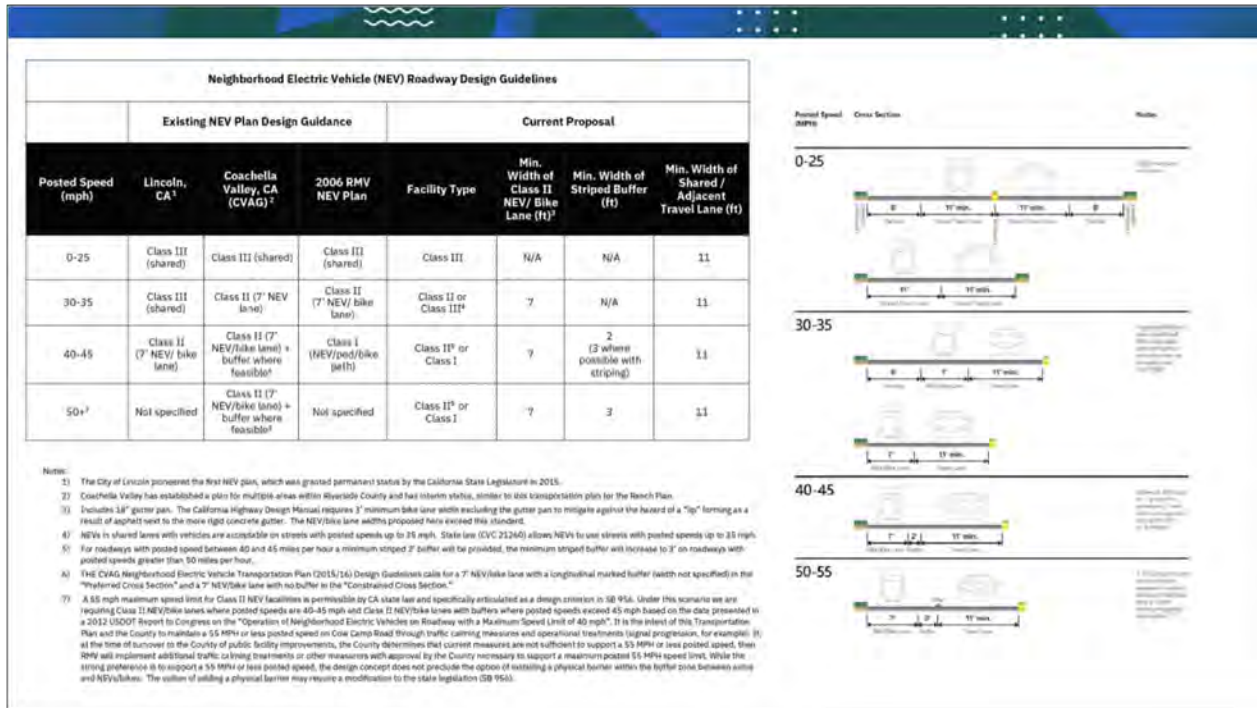
LSVs must exit the roadway and queue on the sidewalk within the green striping. Automobiles must yield to LSVs in the crosswalk.

Design References

FHWA Interim Approval 20 (IA-20)
NACTO Urban Street Design Guide

LTN Materials

Resource Guide



LTN Component Unit Costs

Item	Unit of Measure	Unit Cost
Category		
Signing		
New Sign on New Post	Each	\$750
New Customized Wayfinding Sign on New Post	Each	\$1,200
Striping		
Thermoplastic Bicycle Lane Line (6")	LF	\$5
Channelization Line (8")	LF	\$5
Limit Line/Crosswalk Stripe (12")	LF	\$10
Green Thermoplastic	SF	\$10
Thermoplastic Shoulder Stripe (4")	LF	\$1
Color Epoxy	SF	\$5
Painted Curb	LF	\$5
Thermoplastic Pavement Legend	SF	\$10
Thermoplastic Bicycle Boulevard Legend (@ 51 Sq Ft Each)	SF	\$400
Thermoplastic Bicycle Lane Legend or Sharrow @ 14 Sq Ft each	Each	\$100

LTN Component Unit Costs

Item	Unit of Measure	Unit Cost
Category		
<i>Civil</i>		
Asphalt Patch at New Curb	SF	\$5
Asphalt Path	SF	\$5
DG Shoulder	SF	\$5
Concrete Curb	LF	\$30
Asphalt Curb	LF	\$25
Concrete Curb & Gutter	LF	\$40
Concrete Sidewalk	SF	\$15
ADA Curb Ramp	Each	\$3,500
Raised Intersection	Per Intersection	\$75,000
Raised Crosswalk	Per Crosswalk	\$12,000
Neighborhood Traffic Circle	Per Intersection	\$12,000
Path Curb Ramp	Each	\$6,000

LTN Component Unit Costs

Item	Unit of Measure	Unit Cost
Category		
<i>Other</i>		
Landscape Planter Box (with water reservoir)	Each	\$300
Landscaping - Shrubs & Groundcover only	SF	\$10
Soil Preparation and Fine Grading	SF	\$1
Trees	Each	\$800
Tree Grates	Each	\$2,100
Soft Hit Posts	LF	\$5
<i>Paving/Curb</i>		
Roadway Paving (3" AC/ 8" Class II AB)	SF	\$10
Slurry Seal	SF	\$5
Parking Lot Paving (3" AC/6" Class II AB)	SF	\$5
AC Dike	LF	\$25
Asphalt Concrete Pad	SF	\$10

LTN Component Unit Costs

Item	Unit of Measure	Unit Cost
Category		
<i>Paving/Curb</i>		
Concrete Barrier (Permanent)	LF	\$25
Concrete Bus Pad (10" Conc/6" Class II AB)	SF	\$20
Concrete Curb	LF	\$25
Concrete Curb & Gutter	LF	\$40
Concrete Driveway	SF	\$15
Concrete Sidewalk	SF	\$10
Crack seal concrete repair	SF	\$5
Cross Gutter (SF)	SF	\$5
Curb Ramp	EA	\$3,500
Excavation	CY	\$25

LTN Component Unit Costs

Item	Unit of Measure	Unit Cost
Category		
<i>Signal Modification/Electrical</i>		
Bicycle Detection - Loops	Per Approach	\$1,000
Bicycle Detection - Video	Per Intersection	\$25,000
Bicycle Signal Head	Each	\$1,200
Bike/Ped Push Button	Each	\$400
New Traffic Signal	Per Intersection	\$250,000
Protected Turn Phasing	Per Approach	\$60,000
Ped Head	Each	\$500
Signal foundation for type 1 standard	Each	\$450
Signal type 1 standard (complete w/ flange & bolts)	Each	\$300
Pedestrian Scale Pole, foundation and luminaire w/ Pullbox	Each	\$8,000
Roadway Lighting Pole, Foundation and Luminaire w/ Pullbox	Each	\$6,500
Trenching/Conduit/Conductors for Lighting	LF	\$15
Pedestrian Hybrid Beacon	Each	\$80,000

LTN Component Unit Costs

Item	Unit of Measure	Unit Cost
Category		
<i>Signal Modification/Electrical</i>		
Bicycle Detection - Loops	Per Approach	\$1,000
Bicycle Detection - Video	Per Intersection	\$25,000
Bicycle Signal Head	Each	\$1,200
Bike/Ped Push Button	Each	\$400
New Traffic Signal	Per Intersection	\$250,000
Protected Turn Phasing	Per Approach	\$60,000
Ped Head	Each	\$500
Signal foundation for type 1 standard	Each	\$450
Signal type 1 standard (complete w/ flange & bolts)	Each	\$300
Pedestrian Scale Pole, foundation and luminaire w/ Pullbox	Each	\$8,000
Roadway Lighting Pole, Foundation and Luminaire w/ Pullbox	Each	\$6,500
Trenching/Conduit/Conductors for Lighting	LF	\$15
Pedestrian Hybrid Beacon	Each	\$80,000

LTN Component Unit Costs

Item	Unit of Measure	Unit Cost
Category		
<i>Utilities</i>		
Adjust Water Valve to Grade	Each	\$500
Relocate Water Valve	Each	\$2,000
Relocate Fire Hydrant	Each	\$1,500
Relocate Manhole along Pipe	Each	\$7,500
Adjust Manhole to Grade	Each	\$750
Relocate Utility Vault	Each	\$5,000
Relocate Utility Pull Box	Each	\$1,000
Adjust Gas Valve to Grade	Each	\$500
Relocate Gas Valve	Each	\$5,000
Utility Boxes Adjust to Grade	Each	\$500
Drainage Inlet Relocation Along Pipe	Each	\$7,500
Drainage Inlet Relocation with New Pipe	Each	\$15,000
Traffic Signal Modification	Each	\$75,000

Implementation Appendix

“Back of the Envelope” Cost Scenario of Sharrow System

LTN Sharrow System Estimate (Outside of Capital Improvement Project)

Material costs: "paint for stripping and sharrows" as well as signage are based on “Unit Costs” as described in Fehr and Peers’ Technical “Cut-Out” Report (see Technical Report Appendix)

Costs (without labor):

- Sharrow: \$100 per unit
- New Customized Sign on new post: \$1200 each

Cost Scenario: A 1-mile street segment from the City of Los Angeles Council District 15. This area of the South Bay that has a significantly large bicycle sharrow system. The route segment described points between a local high-school along low-stress (slow-speed streets) through a local neighborhood to a recreational area overlooking the Pacific Ocean.

Sharrow Treatments:

- Low-stress streets.
- Average of four (4) sharrow markings per street.
- Ten (10) blocks = 40 sharrow markings.
- \$16,000 for a mile segment of a sharrow system
- 40 sharrows @ \$100 = \$4,000 per mile
- Total LTN = 243 miles @ \$4,000/mile = \$972,000

Wayfinding:

- Wayfinding Signage Placement @ 4 per mile = 972 new branded signs
- 972 signs @ \$1,200 = \$1,666,000

\$2,638,000 = LTN Costs (without labor or educational materials/programming)

\$2,600,000 = Labor + Educational Costs (estimate)

Local Travel Network Costs

Total = \$5,238,000

Cost per mile = \$21,555

EXAMPLES OF *RESILIENT STREETS* ENGAGEMENT PROJECTS

The following implemented examples of *Resilient Streets* engagement projects that include, Streets for resource delivery, Slow streets, Streets for outdoor dining/retail; Open streets (or commercial street closure).

Resilient Street Projects that promote local economic recovery

Outdoor Dining & Open Streets (Commercial closures for Small Business)

City of Oakland Flex Streets¹⁷: The City of Oakland is exploring how to provide opportunities for economic revitalization and community engagement through creative and flexible uses of sidewalks, parking lanes and streets. The initiative streamlines permitting requirements to provide additional space for Oakland businesses to operate outdoors, on the sidewalk, in the street and on privately



¹⁷ <https://www.oaklandca.gov/resources/business-use-of-streets-and-sidewalks-initiative>

owned parking lots. In order to advance racial equity, the City prioritized applications for vulnerable businesses of color. They also provided additional technical support to these businesses to help with the application process, street design and purchasing of materials. The city released an online survey for businesses and the community to provide feedback on this initiative so that it can continue to evolve based on the needs of the community. There is no fee to participate in this program, but businesses are required to provide general liability insurance to the City. Parking lane closures are determined based on feedback from business owners and community stakeholders. Traffic engineers are developing a roster of potential closures based on that feedback. Funding source unknown.

Photo: Oakland Chinatown Chamber of Commerce – Street Fest Fridays – Credit Ricky Rodas

City of West Hollywood – OUT Zones¹⁸

Outdoor Use Temporary Zones (OUT Zones) provide outdoor space in public rights-of-way for restaurants, shops, and personal care



establishments to operate outside. The program also consists of an online [business directory](#) with links to each business participating in the program. OUT

Zone permits are free for applicants and all parking requirements have been temporarily waived, but each business must provide general liability insurance to the city. Businesses can participate by

¹⁸ <https://www.weho.org/city-government/city-manager/business-development/outzones>

[applying online](#), with a 14 day turnaround for approval. The city provides a webinar with program and application details, and a step by step guide for creating site plans. Locations for activations are driven by business applicants. This program was funded through the City's General Fund. The City of West Hollywood worked closely with the West Hollywood Chamber of Commerce on outreach, to ensure that all businesses were aware of the program opportunities. Note: The City of West Hollywood is under 2 sq miles, making the outreach and engagement process to all businesses in the city more attainable.

Photo from WeHo Times

City of Los Angeles – LA Al Fresco Program¹⁹

The LA Al Fresco Program allows restaurants to expand their dining onto the sidewalk, parklets, parking lanes, parking lots and in the street. The program is conducted through a fee free online application process, allowing businesses to self-certify for sidewalk and parking lot expansions. The City provides traffic control equipment free of charge. Locations are determined



based on applicant need, and Department of Transportation approval. Initial business outreach was done via Council Offices and social media. In the second phase of the program, 55% of program resources will be directed to BIPOC (Black, Indigenous, people of color) businesses or located in areas that have experienced

¹⁹ <https://ladot.lacity.org/coronavirus/apply-al-fresco>

disproportionate job loss due to COVID-19. The City of LA has hired a consultant to do targeted outreach to these groups. The city has also made a concerted effort to include street vendors in this program. To do so, the city is working with a local non-profit that organizes on behalf of LA Street vendors - all permitted street vendors can apply to use the right of way, just as a restaurant would. This program was initially funded with reallocated Transportation and Open Streets dollars, and the Mayor's office will be asking the Los Angeles City Council for additional funds to keep this program going.

City of Long Beach Business Open Streets Initiative ²⁰

The Business Open Streets program temporarily transforms public areas into safe spaces for physically-distanced activities. Businesses including restaurants, salons, and gyms can work with the City to temporarily expand onto the sidewalk or street adjacent to their business with temporary parklets. In addition, the City of Long Beach



implemented several temporary full commercial street closures including in their Downtown area on Pine Street - providing an opportunity for multiple businesses to set up in the street. Businesses can apply for this program [online](#) on their own, or in partnership with a BID. The City has also created a [simple toolkit](#) for businesses to use when developing their site plans. The application is free and the City will provide the necessary traffic equipment.

²⁰ <http://www.longbeach.gov/goactive/b/programs/temporary-open-streets/business-open-streets/pine-avenue-closure-phase-1>
<http://www.longbeach.gov/goactive/b/programs/temporary-open-streets/>

Restaurants are required to provide all other items such as furniture, parklet decks, umbrellas etc. Locations for in street parklets are based on each business application and must be reviewed for safety by the Departments of Public Works, Fire, Police, the Office of Special Events, and the respective City Council offices for approval. CARES Act funding was used to support this program. Equity is at the center of this program, prioritizing areas and populations that have been hit hardest by COVID19²¹. Chambers and Business Districts have helped spread the word about this program.

Photo: Go Active Long Beach Twitter

Resilient Streets Projects that promote safe (space to properly stay physically distanced) active recreation

Slow Streets, Modified Open Streets & Streets for Resource Delivery

City of Oakland Slow Streets²²

The City of Oakland Slow Streets Program is intended to support safe physical activity by creating more space for physical distancing for all Oaklanders by declaring that all Slow Streets with and without soft closure barriers are closed to through traffic so that people can more comfortably use these low-traffic streets for



²¹ <https://www.lbchamber.com/covid-19/>

²² <https://www.oaklandca.gov/projects/oakland-slow-streets>

physically distant walking, wheelchair rolling, jogging, and biking all across the City. The city chose the initial Slow Street locations based on current and proposed neighborhood bike routes that were previously developed with community input. The program was designed to be flexible, and focused on equity to ensure that it was meeting the needs of the community. After the initial launch, the city developed an online survey to get community feedback, and met with community partners and advocates in key neighborhoods. This feedback was critical to the success of the program and led to some key changes – the City stopped choosing the Slow Street locations, and instead only implement new Slow Street corridors that arose from community partnerships. The program also expanded to include the Essential Places program which added quick-build, traffic safety infrastructure near grocery stores, health clinics, and food distribution sites (see more below). The Slow Streets program is self-enforced, with the City providing the necessary traffic equipment. The city has put together an interim findings report on the program offering an overview, data and next steps²³.

Oakland Slow Streets - Photo from City of Oakland website

City of Oakland - Essential Places²⁴

The Essential Places program is an extension of the Oakland Slow Streets Program. After receiving feedback from residents on the Slow Streets program, the City expanded the program to include intersection improvements that support residents' safe access to essential services such as grocery stores, food distribution sites and COVID-19 test sites. These locations overlay with the city's High Injury



²³ <https://cao-94612.s3.amazonaws.com/documents/Oakland-Slow-Streets-Interim-Findings-Report.pdf>

²⁴ <https://www.oaklandca.gov/news/2020/5-22-20-oakland-slow-streets-continues-adapting-to-residents-needs-launches-first-essential-places-installation-in-east-oakland>

Network and high priority neighborhoods according to equity indicators such as race and income²⁵. Quick build safety infrastructure is used in these locations to make the program flexible, effective and inexpensive. Locations were determined based on community need, with equity at the center of this program. Additional details about the initial findings from this program are available [here](#). Funding source unknown.

Photo from City of Oakland website

City of LA Slow Streets²⁶

The Los Angeles Slow Streets program closes residential streets to through traffic as a way to provide residents with more space for recreational activities while continuing to stay physically distant from others. Rather than having the City select the slow street locations, neighborhood and community organizations can apply to participate in the program through an online application process, submitting their preferred routes for LA Department of Transportation (LADOT) approval. LADOT recommends that the slow streets in a neighborhood covers between 10 and 25 intersections or street segments, but no more than 2 miles of streets. Closures of less than 10 blocks are not recommended, as these closures are often too small to facilitate active use. Sponsor organizations coordinate volunteers in each neighborhood slow street to monitor the barricades, ensure that they remain in place, and communicate any issues to the City. Community engagement for this program will be prioritized in low-income communities and communities lacking access to parks and



²⁵ <https://cao-94612.s3.amazonaws.com/documents/Oakland-Slow-Streets-Interim-Findings-Report.pdf>

²⁶ <https://ladot.lacity.org/coronavirus/apply-slow-street-your-neighborhood>

open space. The City developed an online survey to gain community feedback on the program. To date more than 50 miles of Slow Streets have been implemented.

New York City Open Streets²⁷

The city has opened up 100 miles of streets to allow for greater physical distancing and recovery during the pandemic. Their program is broken down into several categories to support different groups and

needs during COVID 19: Open Streets for social distancing (outdoor recreation), open streets restaurants ([outdoor dining](#)), cool streets (for recreation, activating cooling features in certain areas), Outdoor



Learning Streets²⁸ (outdoor classrooms) and play streets (creative play space).²⁹ Despite the wide array of programs, success seems to be varied depending on the location. New York based Transportation Alternatives has put together a detailed progress report³⁰ to

study the outcomes of this program, noting some large issues with the cities equity approach. Open street pop up bike lanes were not distributed equitably to areas with the most need, and many Open

²⁷ <https://www1.nyc.gov/html/dot/html/pedestrians/openstreets.shtml>

²⁸ <https://www1.nyc.gov/html/dot/html/pedestrians/outdoorlearning-streets.shtml>

²⁹ <https://theurbanactivist.com/idea/play-streets-in-new-york-a-safe-haven-designed-to-thrive/>

³⁰ <https://www.transalt.org/open-streets-progress-report>

street recreational locations were implemented near existing parks, not in areas with the most need for additional outdoor space. This program is still evolving, trying to address the wide array of needs in the City.

Photo above Street Lab - A prototype of a newly designed, no-touch obstacle course to support safe, hands-free play for children on the streets. (Photo: Gardiner Anderson/for New York Daily News)

NACTO Streets for pandemic response and recovery - grantees³¹ and resources guide³²

To support cities as they adapt public space to provide health services information to residents, create space for safe mobility, and bolster local economies, NACTO has selected ten community-based projects to receive Streets for Pandemic Response and Recovery funding.

Follow along to see how these projects move forward in the months to come. The grant projects all align with the various *Resilient Street* project types.



NACTO also created a useful Streets for [Pandemic Recovery and Response guide](#) to use as a resource as you rethink the best ways to utilize your street space during these unprecedented times. They break down various street response scenarios (critical response, safe crossings, slow streets etc.) many of which can be implemented

³¹ <https://nacto.org/program/streets-for-pandemic-response-and-recovery-grant-program/>

³² <https://nacto.org/publication/streets-for-pandemic-response-recovery/>

using the *Kit of Parts*. Each strategy outlines best practices for planning, engagement, design/implementation and monitoring.

Photo of NACTO streets for Critical Services design

FUNDING OPPORTUNITIES

Finding resources to implement *Resilient Streets* engagement projects can be challenging, particularly in a time when public resources are shrinking and community needs are growing. However, with some creativity, planning, and resiliency, potential funding partners do exist.

The following are a set of funding resources that may connect to the overall goals and objectives of *Resilient street* projects. The eligibility requirements for each of the funding sources vary and may change given the changes dynamics of COVID-19 pandemics. The links to the respective funding source below will offer the most up-to-date information on eligibility.

	ABOUT	ELIBILITY	LINK
FOUNDATIONS			
S. Mark Taper Foundation	The S. Mark Taper Foundation, founded in 1989, is a private family foundation dedicated to enhancing the quality of people's lives by supporting nonprofit organizations and their work in our communities.	non-profit 501 c (3) organization that provides services in any of the following eight Southern California counties of: Los Angeles; Imperial Orange; Riverside; San Bernardino; San Diego; Santa Barbara; Ventura	http://www.smtfoundation.org/apply.html
California Community Foundation	Systemic solutions addressing the root causes of the most pressing issues facing Los Angeles	Grant applications are considered from 501(c)(3) nonprofits whose work is aligned with their mission and priority areas.	https://www.calfund.org/about-ccf/#www

	ABOUT	ELIBILITY	LINK
	County.	Organizations must be located within, and primarily of service to residents of, Los Angeles County. Exceptions may be made for regional, statewide or national public policy efforts benefiting a substantial portion of the local population.	
CORPORATE SPONSORSHIPS			
Southern California Edison	Using shareholder funds from our parent company, Edison International supports local organizations that help our communities shine bright while tackling tough issues such as improving air quality and reducing our carbon footprint on Earth.	Local organizations that help communities shine bright while tackling tough issues such as improving air quality and reducing our carbon footprint	https://www1.sce.com/nrc/CommunitySponsorshipGrantApp.pdf https://www.sce.com/about-us/community
Sempra Energy	Programs that falls into one of the following priority areas of: Climate Action, Diversity and Inclusion, Economic Prosperity and Local Support	Community-based nonprofit organizations with an IRS tax except status	https://www.sempra.com/corporate-giving https://www.sempra.com/corporate-giving-guidelines-faq
Amgen	Amgen Charitable Donations and Sponsorships are focused on humanitarian, social, education and community	Nonprofit organizations that are recognized by the Internal Revenue Service as tax-exempt public charities under sections 501(c)(3) and 509(a)(1), (2), (3) of the Internal Revenue Code,	https://www.amgen.com/responsibility/grants-and-giving/non-healthcare-donations-and-sponsorships/

	ABOUT	ELIBILITY	LINK
	programs.	organizations qualified as a tax-exempt charitable organizations under section 1101.01(4) of the Puerto Rico Internal Revenue Code, and governmental organizations located in the United States where the purpose of the grant is to support a charitable, educational, scientific or literary purpose will be considered for donations and sponsorships.	
Citi Foundation	The mission of the Citi Foundation is to promote economic progress and improve the lives of people in low-income communities around the world. We invest in efforts that increase financial inclusion; catalyze job opportunities for youth; and reimagine approaches to building economically vibrant communities.	Community groups, nonprofits, and public sector agencies (local governments)	https://www.citigroup.com/citi/foundation/about/2020-Citi-Foundation-Guidelines.pdf
Northrop Grumman	Northrop Grumman seeks to support and strengthen the communities in which our employees work and live. In addition to in-kind and volunteer resources, Northrop Grumman works to make the lives of the people in our communities better.	State and government accredited schools and 501(c)(3) nonprofit organizations	https://www.northropgrumman.com/corporate-responsibility/corporate-citizenship/corporate-contributions-guidelines/

	ABOUT	ELIBILITY	LINK
	safer, and more successful and resilient.		
Anthem	Anthem's community sponsorships support fundraising events, smaller-scale programs and mission priorities that align with and promote our Healthy Generations program.	The organizations that are those classified by the Internal Revenue Service as tax-exempt public charities under section 501(c)(3).	https://www.anthemcorporateresponsibility.com/funding-options
Kaiser Permanente	Kaiser Permanente's grants and event sponsorships are offered to nonprofit organizations, government entities, and academic institutions based on current funding priorities and the location of their programs and services.	Nonprofit organizations and governmental entities	https://community.kp.org/grants-and-volunteering/funding-opportunities
PUBLIC SECTOR			
LA Metro	Metro's Open Streets Program	Cities and counties within LA Metro region	https://www.metro.net/projects/active-transportation/metro-open-streets-grant-program/
Metropolitan Water District	Metropolitan created the Community Partnering Program in 1999. It provides sponsorships for	Local, regional, state and national organizations with a Sec. 501(c) 3 tax status, nonprofit educational institutions and public	http://www.mwdh2o.com/inthecommunity/community-outreach

	ABOUT	ELIBILITY	LINK
	community-based organizations including nonprofit groups, professional associations, educational institutions and public agencies.	agencies may submit a proposal for a sponsorship	
<i>SCAG Go Human Mini-Grants</i>	The Local Community Engagement and Safety Mini-Grants (Mini-Grants) expand the concept of traffic safety amid the efforts to reduce the transmission of the novel coronavirus (COVID-19) and recognize its unprecedented impact on our communities.	Community-based organizations, non-profits, artists, students and creators may propose projects for consideration	http://gohumansocal.org/Pages/Mini-Grants.aspx

Lessons Learned

In this era of the COVID-19 pandemic, it is clear that all communities are impacted by social and economic challenges. While the COVID-19 pandemic leaves no community untouched, we recognize that some communities are more impacted than others. In communities where the impacts of historic inequities of lack of investment due to issues of race and income, the impacts of COVID-19 become even more pronounced. While our current social environment continues to shift on a daily basis, one thing is clear, the progress we have made to make equity a priority in our all of our public decision-making must continue.

At the core of the *Resilient Streets* activation projects is the positive impact on the quality of life of residents. *Resilient Streets* activation projects offer a host of opportunities where residents reimagine and reconnect with each other and with their community. It promotes collaboration towards a collective goal to build stronger and healthier communities. Toward that end, it is important to recognize that successful *Resilient Streets* activation projects are ones that:

- Prioritizes safety, and particularly in our COVID-19 pandemic environment, meets the public safety guidelines of our public health agencies.
- Realizes the priorities of communities and where meaningful community engagement, while challenging at times, also builds trust.
- Makes equity and inclusion the fundamental driver early in the planning process to ensure that both are prioritized in the beginning of any scoping and planning. The outcomes of a project must reflect the needs and wants of the community, while ensuring that equity and inclusion remain central to the project planning.
- Inspires imagination for some potential permanent infrastructure changes defined by the community.