Appendix C: Land Use and Transportation Measures and Methodology

South Bay Cities Climate Action Plans
December 2017

SOUTH BAY CITIES
COUNCIL OF GOVERNMENTS

Appendix C. Land Use and Transportation (LUT) Measures and Methodology - November 2017

Introduction

Transportation emissions can account for 50% or more of total emissions for a city or a region.[1] Reductions in greenhouse gas (GHG) emissions will require significant changes to how people travel. The following list of land use and transportation (LUT) emission-reduction strategies has been developed and compiled through city input, review of existing climate action plans (CAPs), and through previous work by the South Bay Cities Council of Governments in developing strategies tailored to suburban communities called: Sustainable South Bay Strategies (SSBS).

The GHG reduction potential for each LUT strategy has been developed by Fehr and Peers using methodologies from a handbook published by the California Air Pollution Control Officers Association (CAPCOA)[2] and other sources. LUT strategies are organized into 9 broad categories each with implementable sub-strategies. At the end of each category section, a table is presented listing the actions cities can take to implement the strategies and the action's respective GHG reduction potential along with a source for the emission reduction.

Strategy Categories:

- A. Accelerate the market for electric vehicles
- B. Encourage ride-sharing (ride-hailing, ride-sharing, car-sharing, bike-sharing)
- C. Encourage transit usage
- D. Adopt active transportation initiatives
- E. Implement parking strategies
- F. Organizational strategies
- G. Land use strategies
- H. Digital technology strategies

A. Accelerate the market for Electric Vehicles EVs (PHEV, BEV, or NEV)

Gasoline-fueled vehicles have been the primary source of household mobility for decades. The most direct way to reduce carbon emissions will be for households to replace their gasoline-fueled vehicles with electric vehicles (EVs) as EVs can emit up to 80% less CO_2.[3] The EV market has several segments – plug-in hybrid electric vehicles (PHEV), full-battery electric vehicles (BEV) and neighborhood electric vehicles (NEV).

Cities can incentivize EV vehicle purchases and usage by facilitating the convenience of owning an EV through offering free or reduced parking and charging stations within public facilities such as parking lots and civic centers. Cities can also encourage the private sector to provide charging infrastructure. Educating the public about EV ownership and connecting the public to resources is an instrumental role cities can assume.

The NEV is a specialized vehicle, similar in looks to a golf cart, for short range travel at speeds of 25 MPH or less and has greater limitations than a full-battery electric vehicle. They provide benefits over full-battery electric vehicles because they are cheaper to purchase and maintain and smaller (convenient to park and charge). NEVs also represent a growing class of short-range, slow-speed, less expensive personal mobility options that include electric skateboards, e-bikes, Segways and so forth. Since NEVs are limited to slower speed streets, their usability is restricted to local

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1 For example, in the South Bay transportation emissions account for 57% of total emissions in Lawndale and on the lower end, 18% in Carson

[2] "Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Governments to Assess Emission Reductions from Greenhouse Gas Mitigation Measures (2010)."

[3] https://www.afdc.energy.gov/vehicles/electric_emissions.php

streets. Cities can aid the NEV market by providing "complete" streets amenable to all modes including short-range, slow speed vehicles and bicycles which could be 12 to 15 different zero-emissions personal mobility vehicles as well as bicycles.

A1   EV Parking Policies

EV parking policies include changing current parking policies as well as creating incentives in future parking agreements. Regulatory policy changes include granting new and existing businesses lower parking minimums in exchange for EV preferential parking, especially NEVs and other slow-speed vehicles, as smaller parking dimensions can also lead to more efficient use of space and smaller parking areas.

A2   EV Charging Policies

EV charging policies incentivize the use of such vehicles by making it easier to charge EVs. These opportunities range from on- the-ground implementation of charging stations to adopting development standards that enable EV charging. Charging stations can be level 1, 2, or DC 3. Level 1 is a household 120-volt Outlet; it is the slowest method of charging. Level 2 is a 240-volt outlet; it is approximately twice as fast to charge versus a Level 1 EV charger. A DC 3 or "Fast Charger" provides 480 volts and is designed to recharge an EV up to 80% of capacity in approximately 20 minutes.

A3   EV Administrative Readiness

Administrative readiness refers to what cities can do within city hall to incentivize EV adoption. Actions span from expediting inspection times for the installation of EV charging to streamlining panel upgrades.

A4   Public information programs

EV Public information programs aim to promote EV usage and adoption by educating the public. These programs usually take the form of an advertisement or marketing campaign through social media, or providing information directly to the public through municipal offices, community centers, businesses, events, and online platforms.

A5   Multi-modal complete streets

Strategies for multi-modal streets provide infrastructure that supports the safe integration of EVs and other alternative, zero-emission slower transportation options on city streets. Slow speed networks are designed to accommodate Neighborhood Electric Vehicles that travel at speeds of 25 miles per hour or less, either by accommodating them on high-speed streets or integrating them with other slow-speed infrastructure such as protected bike lanes.

For reference, Portland and Berkeley have developed useful guidance documents:

City of Portland – EV Strategy
City of Berkeley EV policies

For examples of multimodal NEV plans see:

Coachella Valley: The Coachella Valley Association of Governments NEV Plan
City of Lincoln: NEV Transportation Plan

EV City Strategies and GHG Emission Reductions

City Action	Maximum GHG Emission Reduction	Source
A1 EV Parking Policies		
Offer free parking to EVs	2.75	Fehr & Peers
Offer reduced-price parking	1.38	Fehr & Peers
Lower parking minimums for developments providing EV parking	12.5	CAPCOA
A2 EV Charging Policies		
Install level 1, 2, and DC 3 charging in city-owned parking lots	3.25%	SB 375 Policy Brief
Install charging at city-owned facilities	3.25%	SB 375 Policy Brief
Provide on-street level 1 and 2 charging	6.5%	SB 375 Policy Brief
Adopt charging standards beyond CalGreen 2016 requirements	1.3%	SB 375 Policy Brief
Create policies that encourage facility owners to provide level 1 charging	No Reduction Calculated	
Cooperate with regional agencies to expand charging networks	No Reduction Calculated	
A3 EV Administrative Readiness		
Reduce costs of electric permits for service upgrades	No Reduction Calculated	
Offer on-line permitting to streamline the application process	No Reduction Calculated	
Minimize time to complete inspection	No Reduction Calculated	
Offer inspection within 24 hours of request	No Reduction Calculated	
Streamline electrical panel upgrade	No Reduction Calculated	
A4 Public Information Programs		
Publicize EV programs through a variety of media	No Reduction Calculated	
A5 Multi-modal Complete Streets		
Publicize city charging and parking policies	No Reduction Calculated	
Implement "off-ramps" to connect NEV backbone to local activity centers	6.35%	CAPCOA
Implement South Bay slow speed backbone network plan	12.7%	CAPCOA
Provide signage, maps, and information for slow speed vehicles	No Reduction Calculated	

B. Encourage Ride-Sharing (ride-hailing, ride-sharing, car-sharing, bike-sharing)

Ride-hailing refers to single-ride taxi services provided by traditional taxi companies and new businesses such as Uber and Lyft. Ride-sharing refers to carpool services provided by Uber and Lyft such as LyftLine and uberPOOL. Via is a new carpool service in New York which offers carpool rides on fixed-routes through SUVs. Car and bike-sharing refers to shared rentals such as Car2Go, Zipcar and city bike-share programs. Both ride-hailing and the various ride-sharing services have the potential to reduce the number of vehicles owned by families, make trips more efficient by carrying more people per ride and provide a safety net for a household that chooses to rely on one or more short range vehicles.

Cities can facilitate ride-hailing and ride-sharing by providing drop off and pickup sites for these vehicles, aiding vendors in securing funds and considering service interoperability and the optimum customer experience for residents. In terms of bike-sharing, cities can create programs or extend existing ones.

Private and Public Mobility Services City Strategies and GHG Emission Reductions

City Action	Maximum GHG Emission Reduction	Source
B1 Facilitate private and public mobility services (ride-hailing, ride-sharing, car-sharing, bike-sharing)		
Facilitate private mobility services	No Reduction Calculated	
Facilitate Bike-sharing	< 1%	Fishman, Elliot, Washington, Simon, & Haworth, Narelle (2014) Bike share's impact on car use: evidence from the United States, Great Britain, and Australia. Transportation Research Part D: Transport and Environment, 31, pp, 13-20
Facilitate Car-sharing	1%	Within the table (Millard-Ball, 2005 and (Cambridge Systematics, 2009)
Facilitate Ride-hailing and Ride-sharing	No Reduction Calculated	
Remove barriers to private sector bike and car-sharing	No Reduction Calculated	
Assist private sector organizations to secure funding	No Reduction Calculated	
Conduct a ride/bike sharing study or plan	No Reduction Calculated	

C. Encourage transit usage

Increasing transit service, frequency and speed incentivizes transit usage and offers individuals with more mobility options. Transit can shrink the number of vehicles needed for commuting, resulting in lower CO2 emissions.

C1   Provide a Bus Rapid Transit System

This strategy encourages the provision of Bus Rapid Transit (BRT) systems. Typical characteristics of a BRT system include frequent high-capacity service, modal integration, and high-quality vehicles that are quiet, clean, and easy to board.

C2   Expand Transit Network

This strategy focuses on expanding the local transit network by adding or modifying existing transit service through adding and expanding routes, providing local shuttles or other connectors, as well as first/last mile connections.

This strategy will reduce transit-passenger travel time through increasing frequency of service, speed, and reliability. Increasing transit frequency has been shown to increase the appeal and use of transit.

Transit City Strategies and GHG Emission Reductions

City Action	Maximum GHG Emission Reduction	Source
C1 Provide a Bus Rapid Transit System		
Provide a Bus Rapid Transit System	3.3%	CAPCOA
Work with Transit Agency to implement a Bus Rapid Transit System	No Reduction Calculated	
Work with Transit Agency to add additional bus rapid transit routes	No Reduction Calculated	
Collaborate with neighboring cities/SBCCOG on regional transit	No Reduction Calculated	
C2 Expand Transit Network		
Expand Transit Network	8.5%	CAPCOA
Work with Transit Agency to expand bus or rail transit network	No Reduction Calculated	
Work with Transit Agency to improve transit connectivity	No Reduction Calculated	
Collaborate with a range of agencies to expand funding for transit	No Reduction Calculated	
Work with Transit Agency to improve transit amenities	No Reduction Calculated	
Work with Transit Agency to better accommodate bicycles	No Reduction Calculated	
Prioritize funding around transit to encourage walking and biking	No Reduction Calculated	
Implement first/last mile improvements at stations/destinations	1%	CAPCOA
Introduce a fixed-route transit service in the jurisdiction	2.1%	CAPCOA
Provide/expand local shuttle services	2.1%	CAPCOA
Explore programs to offer discounted transit passes	No Reduction Calculated	
Fund transit services for the elderly and handicap	No Reduction Calculated	
C3 Increase Transit Service Frequency and Speed		
Increase transit frequency and speed	2.6%	CAPCOA
Work with Transit Agency to increase service frequency and speed	No Reduction Calculated	
Provide transit buses with signal prioritization devices	1.3%	CAPCOA

D. Adopt active transportation initiatives

Active transportation initiatives are components of slow speed multi-modalism. The land use strategies of the SSBS specifically support more walking and cycles of all sorts (mono-, bi-, tri- and quad-cycles).

D1   Provide Traffic Calming Measures

Traffic calming measures create streets that are friendly to users of alternative mobility options, such as bicyclists, pedestrians and those using public transit or ridesharing. These strategies include the design of roadways to reduce motor vehicle speeds and encouraging pedestrian and bicycle trips with traffic calming features. Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.

These strategies include creating and enhancing pedestrian or bike networks that internally link all uses and connects pedestrians and cyclists to all streets and facilities. The city can also minimize barriers to pedestrian and/or bike access and interconnectivity and incorporate bike lanes, bike parking and other bike facilities.

These strategies require design elements to enhance walkability and connectivity within new or proposed developments.

Active Transportation Strategies and GHG Emission Reductions

City Action	Maximum GHG Emission Reduction	Source
D1 Provide Traffic Calming Measures		
Conduct pedestrian/bicycle study	No Reduction Calculated	
Use traffic calming measures on a minimum of 25% streets	1%	CAPCOA
Implement traffic calming measures in existing and future developments	No Reduction Calculated	
Promote traffic calming methods such as landscaped medians and traffic circles	No Reduction Calculated	
D2 Provide Pedestrian/Bicycle Networks		
Provide pedestrian/bicycle networks	2%	CAPCOA
D3 Improve Design of Development		
Improve Design of Development for pedestrian/bike access	21.3%	
Amend the Bicycle or Pedestrian Master Plan	No Reduction Calculated	
Require Bicycle parking through Zoning Code or other implementation documents	Within: Improve Design of Development: 0.48%	CAPCOA
Require new developments to provide pedestrian, bicycle, and transit amenities	Within: Improve Design of Development: 0.72%	CAPCOA
Amend zoning ordinance to require shower facilities and dressing areas for new developments	Within: Improve Design of Development: 0.64%	CAPCOA
Require commercial and multi-family residential projects to provide permanent bicycle parking facilities	Within: Improve Design of Development: 0.80%	CAPCOA
Provide short and long-term bicycle parking near key areas	Within: Improve Design of Development: 0.56%	CAPCOA
Develop Class I or Class IV bike facilities on streets with greater than 7,000 average daily trips or average speeds over 30mph	Within: Improve Design of Development: 1.04%	CAPCOA
Develop appropriate bicycle infrastructure for high traffic intersections and corridors	Within: Improve Design of Development: 0.96%	CAPCOA
Develop appropriate infrastructure within pedestrian sheds (defined area for walking i.e approximately a 5-minute walk) of key areas	Within: Improve Design of Development: 0.16%	CAPCOA
Retrofit bicycle racks and parking facilities in underserved areas	Within: Improve Design of Development: 0.40%	CAPCOA
Create bicycle lanes, routes, and shared-use paths into street systems, subdivisions, and large developments	Within: Improve Design of Development: 0.88%	CAPCOA
Improve active transportation networks (identify gaps/deficiencies and implement projects to address them)	Within: Improve Design of Development: 0.24%	CAPCOA

Construct or improve pedestrian infrastructure around transit	Within: Improve Design of Development: 0.80%	CAPCOA
Develop active transportation networks for Transit-Oriented District station area plans	Within: Improve Design of Development: 0.08%	CAPCOA
Implement policies to minimize conflicts between pedestrian and motorists. Identify pedestrian collision hot spots.	Within: Improve Design of Development: 0.32%	CAPCOA

E. Parking Strategies

Parking strategies are one of the most effective ways to reduce or modify vehicle trips. Parking strategies also can affect the number of vehicles owned per household in combination with other mobility service choices.

E1   Limit Parking Supply

This strategy reduces parking supply through the creation of parking maximums, minimums, and parking benefit districts.

E2   Unbundle Parking Costs from Property Cost

Unbundling separates parking from property costs, allowing individual who wish to purchase parking spaces to do so and those that don't, to save money. Parking can be priced separately from home rents/purchase prices or office leases. This measure can help reduce the number of vehicles per household.

E3   Implement On-street Market Price Parking

Excessive GHG emissions are created when cruising for parking spaces. Pricing on-street parking to reflect a market rate reduces emissions related to excessive driving for seeking a parking space and encourages the use of alternative modes and carpooling.

E4   Require Residential Area Parking Permits

Permits reduce the impact of spillover parking in residential areas adjacent to commercial areas, transit stations, or other locations where parking may be limited and/or priced.

Parking Strategies and GHG Emission Reductions

City Action	Maximum GHG Emission Reduction	Source
E1 Limit Parking Supply		
Create parking benefit districts which invest meter revenue in other public amenities	No Reduction Calculated	
Reduce/eliminate parking minimums for new developments	12.5%	CAPCOA
Reduce/eliminate parking minimums for mixed-use, pedestrian, and transit-oriented development	Within E1.02: 9.4%	CAPCOA
Implement parking pricing to a downtown area	Within E1.02: 6.3%	CAPCOA
Institute parking pricing at peak-times	Within E1.03: 6.3%	CAPCOA
E2 Unbundle Parking Costs from Property Costs		
Unbundle parking costs from property costs	13%	CAPCOA
Adopt a comprehensive parking policy to unbundle the true costs of providing parking	No Reduction Calculated	CAPCOA
Encourage developers of new development to unbundle parking and eliminate the assignment of specific stalls	No Reduction Calculated	
E3 Implement On-street Market Pricing		

Implement on-street parking pricing	5.5%	CAPCOA
Change policies to disincentive parking within downtown	Within E3.00: 1.4%	CAPCOA
E4 Require residential area parking permits		
Institute residential parking programs	No Reduction Calculated	
Institute residential permit parking	0.24%	CAPCOA

F. Organizational strategies

Cities and other organizations within a city can implement telecommuting and alternative work schedule policies to reduce the VMT generated by employees. They can also expand and facilitate commute programs such as vanpools and carpooling to reduce employee-generated VMT. Many jobs within cities are in the private sectors and cities can implement telecommuting policies and ordinances to reduce commuting-related VMT.

F1   Encourage Telecommuting and Alternative Work Schedules
Alternative work schedules take the form of staggered starting times, flexible schedules, or compressed work weeks. Another option to working at home (or telecommuting) is to implement alternative workplace programs. Some organizations may prefer their employees work in an office closer to the home. Cities can offer workplace programs at neighborhood centers, available space in government offices, public shared-work facilities, or commercial executive suites.

F2   Implement Commute Trip Reduction Program – Required or Voluntary
This measure establishes a Commute Trip Reduction (CTR) Ordinance.

F3   Provide Car-Sharing Programs
Car-sharing programs can be promoted through designating a certain percentage of parking spaces for car sharing vehicles, designating adequate passenger loading and unloading and waiting areas for car-sharing vehicles, and providing a web site or message board for coordination.

Organizational Strategies and GHG Emission Reductions

City Action	Maximum GHG Emission Reduction	Source
F1 Encourage Telecommuting and Alternative Work Schedules		
Encourage municipal telecommuting and alternative work schedules (voluntary)	2.8% of work VMT	CAPCOA
Enforce municipal telecommuting and alternative work schedules (mandatory)	5.5% of work VMT	CAPCOA
Encourage local employers to implement telecommuting and alternative work schedules	No Reduction Calculated	CAPCOA
F2 Implement a Commute Trip Reduction Program		
Establish a commute trip reduction marketing campaign	4% of work VMT	CAPCOA
Work with local employers encouraging subsidized or discounted transit programs	20% of work VMT	CAPCOA
Work with local employers to increase carpooling	No Reduction Calculated	CAPCOA
Encourage employers to provide vanpools or shuttles from major stations	10.7% of work VMT	CAPCOA

Establish a program to require employer-paid transit passes for new developments	No Reduction Calculated	
Implement a (voluntary) commute trip reduction program	6.2% of work VMT	CAPCOA
Implement a (mandatory) commute trip reduction program	21% of work VMT	CAPCOA
Implement an employee education program	No Reduction Calculated	CAPCOA
F3 Provide Car-sharing Programs		
Implement a car-sharing program	No Reduction Calculated	

G. Land use strategies

Land Use strategies for changing the built environment have the potential to eliminate trips or reduce trip length. This is the principle underlying the legislation Senate Bill 375, which sets carbon emissions targets for regions that can be met only through land use changes in each region's cities and counties.

The development pattern that the state has targeted for change is the "automobile suburb."   Auto suburbs grew substantially in the immediate post-war period and their resulting land use pattern is optimized for high levels of personal vehicle use. There are essentially 2 alternatives to the auto suburban development pattern: Transit Oriented Development (TOD) and Neighborhood Oriented Development (NOD).

TOD is a strategy that has been growing in popularity within the planning profession and the development community over the last 30 years or so. TOD addresses the inefficiencies of the auto suburb strategy essentially by urbanizing the suburbs with increased housing density and mixed-use around public transit (preferably fixed rail). Theoretically this will decrease auto usage by replacing some trips with walking and transit. TOD, as its name implies, requires some form of high quality public transit to be most effective.

Transit Oriented Development (TOD)

G1   Increase Density
Design projects with increased densities, where allowed by the General Plan and/or Zoning Ordinance. Density is usually measured in terms of persons, jobs, or dwellings per unit area.

G2   Increase Diversity
These strategies encourage projects to mix uses such as office, commercial, institutional, and residential within the same development. Residential units should be within ¼-mile of parks, schools, or other civic uses. Suburban projects should have at least three of the following on site and/or offsite within ¼-mile: residential development, retail development, park, open space, or office.

G3   Increase Destination Accessibility
These strategies encourage projects to be located in areas with high accessibility to destinations. Destination accessibility is measured in terms of distance to downtowns reachable within a given travel time, which tends to be highest at central locations and lowest at peripheral ones.

G4   Increase Transit Accessibility
These measures focus on projects that have a transit station/stop with high-quality, high-frequency bus service and/or a rail station located within a five- to ten-minute walk (or roughly ¼ mile from stop to edge of development),.

G5   Integrate Affordable and Below Market Rate Housing
These strategies allow the city to accommodate below market rate housing for infill and transit-oriented sites within a given building footprint and height limit. Residential development projects of five or more dwelling units will provide

a deed-restricted low-income housing component on-site. This reduces the amount of vehicle travel into the city by service employees who may not otherwise be able to afford living nearby.

Neighborhood Oriented Development (NOD)

NOD is a new strategy based on research conducted by the South Bay Cities Council of Governments for the South Bay. NOD addresses the inefficiencies of the auto suburb by re-locating as many destinations as possible as close as possible to each residential neighborhood so that destinations are in walking distance of most households. The clusters would be at regular intervals so that each household can access multiple centers within a few miles.

This should increase walking, cycling, and use of mobility services and local use vehicles to cover the short distances to final destinations. Public transit plays a minor supporting role.   The findings are supported by the research that the SBCCOG and others have conducted.

Center development is complemented by gradual re-development of commercial strip arterials, characteristic of auto suburbs, to residential. Housing at densities as low as the market will allow should replace the low density, mid-century commercial buildings.

G6   Integrate NOD planning principles

This strategy focuses on the implementation of a Neighborhood Oriented Development (NOD) plan which includes amending the zoning code or general plan to increase business densities and create maximums for business size. Plans would include designations of NOD centers.

For a more in-depth review of the NOD concept and strategies and guide on how to implement please see the South Bay Subregional Climate Action Plan.

Land Use Strategies and GHG Emission Reductions

City Action	Maximum GHG Emission Reduction	Source
G1 Increase Density		
Increase density	30%	CAPCOA
Encourage higher density through general plan	No Reduction Calculated	
Encourage higher density through zoning code	No Reduction Calculated	
Increase housing density near transit	Within G1.00: 15%	CAPCOA
G2 Increase Diversity		
Increase Diversity	30%	CAPCOA
Update mixed-use policies in General Plan	No Reduction Calculated	
Encourage mixed-use policies through Zoning Code	No Reduction Calculated	
Encourage transitions from single-family to higher intensity mixed-uses	No Reduction Calculated	
Encourage mixed-use and infill development projects in key in-fill areas	No Reduction Calculated	
Revise development standards that act as barriers to mixed-use projects	No Reduction Calculated	

Conduct land use/market analysis to identify sites that that could support new or expanded neighborhood centers	No Reduction Calculated	
Encourage new mixed-use development near transit	No Reduction Calculated	
G3 Increase Destination Accessibility		
Increase destination accessibility	20%	CAPCOA
G Increase Transit Accessibility		
Increase transit accessibility	25.5%	CAPCOA
Encourage transit accessibility through general plan	No Reduction Calculated	
Encourage transit accessibility through zoning code	No Reduction Calculated	
Update travel demand ordinance	No Reduction Calculated	
Conduct a public transit gap study	No Reduction Calculated	
Provide a shuttle service connecting areas	Within G4: 2.1%	CAPCOA
Establish commuter shuttles linking business districts with transit	No Reduction Calculated	
G5 Integrate Affordable and Below Market Rate Housing		
Encourage policies that promote efficient land use	No Reduction Calculated	
Institute a below market rate housing ordinance	1.2%	CAPCOA
G6 Develop a NOD Plan		
Amend zoning code or general plan to encourage higher density and smaller scale Business Establishment Density	No Reduction Calculated	
Establish NOD centers in zoning code	No Reduction Calculated	
Support higher business establishment density within NOD centers	No Reduction Calculated	
Encourage business establishment mix that promote walking	No Reduction Calculated	

H. Digital technology strategies

A new concept that is unique to NOD is the development and deployment of digital technologies as a GHG emission reduction strategy. The central premise is that services provided by cities and those available at NODs will be delivered in part through digital technologies. Digital mediums lessen the need to travel to seek and deliver services Providing infrastructure to support digital technology applications can be undertaken by cities and involves collaboration to construct a state-of-the-art broadband network infrastructure that will deliver network connectivity.

H1 Collaborate on and Implement the South Bay Cities Digital Master Plan
First two years, 2017 and 2018

- Collaborate with other South Bay cities to implement the master plan for the South Bay Net, an initiative being led by the SBWIB and the SBCCOG to create a connected broadband network throughout the South Bay.

- Implement e-government initiatives – where information and services are migrated from city hall or other physical facility to the Web. In many cases, this also enables opportunities for service co-production with constituents.
- Develop city-wide wide area networks to connect public facilities and other key buildings to each other, and to link with South Bay Net.

Two to five years, 2019 to 2021

Assuming the initiative is developed by the SBCCOG and/or the SBWIB and funding becomes available, develop the prototype "public technology suite" (detailed in the Implementation Guidelines) in at least one of the evolving neighborhood centers.

Digital Technology Strategies and GHG Emission Reductions

City Action	Maximum GHG Emission Reduction	Source
H1 Collaborate on and implement the South Bay Cities Digital Master Plan		
Implement the South Bay Digital Master Plan "South Bay Net"	No Reduction Calculated	
Develop a prototype Public Technology Suite in an evolving neighborhood center	No Reduction Calculated	
Implement e-government initiatives	No Reduction Calculated	
Develop city-wide area networks to connect public facilities and other key buildings with each other and the South Bay Net	No Reduction Calculated	

References:

[1] Millard-Ball, Adam. "Car-Sharing: Where and How it Succeeds," (2005) Transit
Cooperative Research Program (108). P. 4-22
[2] Cambridge Systematics (2009). Moving Cooler: An Analysis of Transportation Strategies for
Reducing Greenhouse Gas Emissions. Technical Appendices. Prepared for the
Urban Land Institute. (p. B-52, Table D.3)

The three references at the end of the document should be in alphabetical order and referenced in the same style. The style used for Fishman is my preference.