

Appendix C: Transportation and Land Use

Introduction

Transportation produces more than half of Sonoma County's GHG emissions.¹ Strategies that reduce emissions in this sector are crucial for reaching Sonoma County's climate protection goals. Reducing emissions from transportation would not only improve local air quality, but also stop millions of dollars from bleeding out of the local economy through Sonoma County's tailpipes. Ending Sonoma County's reliance on fossil fuels in the transportation sector and replacing it with a reliance on locally produced clean energy is a bold vision and a difficult path. However, the Community Climate Action Plan issued in 2008 offered many ideas for forging ahead on this path, including:

1. Build the SMART Train
2. Implement the [Comprehensive Transportation Plan](#) (CTP)
3. Strengthen transit-oriented, mixed-use development and use urban growth limits to control sprawl
4. Strengthen zoning laws to protect lands that sequester carbon
5. Institute demand pricing policies (congestion and parking fees)
6. Create an electric car share fleet
7. Encourage business leadership
8. Reduce regulatory barriers (fast track permitting for "green" projects and modify permitting procedures to accommodate siting of renewable energy projects such as solar, wind and geothermal).

Today, the SMART Train is under construction and the rest of the above measures are also in various stages of implementation. These measures were informed by transportation and land use professionals in Sonoma County, and they are supported by research from many respected institutions, including the California Air Pollution Control Officers Association (CAPCOA), the American Council for an Energy-Efficient Economy (ACEEE), and the Urban Land Institute. These institutions have identified key opportunities and strategies for greenhouse gas reductions from transportation and land use, as well as ways to categorize them.

The California Air Pollution Control Officers Association (CAPCOA) sites a list of key opportunities in the circulation element related to GHG reductions.² The most relevant of these for Sonoma County are:

1. Identify and prioritize infrastructure improvements needed to support increased use of alternatives to private vehicle travel, including transit, bicycle, and pedestrian modes;
2. Coordinate with adjacent municipalities, transit providers, and regional transportation planning agencies to develop mutual policies and funding mechanisms to increase the use of alternative transportation;
3. Establish higher priorities for transit funding relative to street and road construction and maintenance;
4. Incorporate "Complete Streets" policies that foster equal access by all users, including pedestrians and bicyclists;
5. Promote linkages between development locations and transportation facilities;
6. Identify appropriate locations for intermodal transportation stations; and
7. Identify opportunities, in cooperation with transit providers, to provide financing for transit operations and maintenance.

Furthermore, in a recent report, the American Council for an Energy-Efficient Economy (ACEEE) scored cities based on a number of transportation metrics. The categories for scoring include:³

1. Location efficiency policies (promoting transit-oriented compact development)
2. Mode shift strategies (discouraging single occupancy vehicle travel in favor of other modes)
3. Public transit policies
4. Efficient vehicle policies (supporting electric vehicles and efficient driving)
5. Freight transportation policies

1 Sonoma County's Carbon Budget: http://www.sctainfo.org/pdf/carbon_budget_and_economic_impact_2010.pdf

2 Page 64 of the CAPCOA Model Policies document: <http://www.ca-ilg.org/document/capcoa-model-policies-greenhouse-gases-general-plans>

3 Page 110 of ACEEE's 2012 City Energy Efficiency Scorecard: <http://aceee.org/node/3078?id=5163>

With the exception of freight transportation policies, the above categories are all covered within the recommendations put forth in this paper. (Freight was never mentioned by any of the surveyed cities as an important part of their GHG reduction strategies). Portland, Boston, Atlanta, San Francisco, and Philadelphia were ranked by ACEEE as having top transportation policies, and measures from each of these cities are discussed in this section.⁴

Another recent study – by the Urban Land Institute – titled “Moving Cooler,” estimates the potential effectiveness of strategies to reduce GHG emissions. The study also groups these strategies into the following categories:

1. Pricing and taxes. Strategies raise the costs associated with the use of the transportation system, including the cost of vehicle miles of travel and fuel consumption. Both local and regional facility-level pricing strategies (e.g., congestion pricing) and economy-wide pricing strategies (e.g., carbon pricing) are considered.
2. Land use and smart growth. Strategies focus on creating more transportation-efficient land use patterns, and by doing so reduce the need to make motor vehicle trips and reduce the length of the motor vehicle trips that are made.
3. Non-motorized transport. Strategies encourage greater levels of walking and bicycling as alternatives to driving.
4. Public transportation improvements. Strategies expand public transportation by subsidizing fares, increasing service on existing routes, or building new infrastructure.
5. Ride-sharing, car-sharing, and other commuting strategies. Strategies expand services and provide incentives to travelers to choose transportation options other than driving alone.
6. Regulatory strategies. Strategies implement regulations that moderate vehicle travel or reduce speeds to achieve higher fuel efficiency.
7. Operational and intelligent transportation system (ITS) strategies. Strategies improve the operation of the transportation system to make better use of the existing capacity; strategies also encourage more efficient driving.
8. Capacity expansion and bottleneck relief. Strategies expand highway capacity to reduce congestion and to improve the efficiency of travel.
9. Multimodal freight sector strategies. Strategies promote more efficient freight movement within and across modes.⁵

Categories 1-7 are addressed by the recommendations of this paper. Category 8, capacity expansion, is being implemented by widening Highway 101, although many studies find that highway widening induces demand and therefore does not reduce congestion and increases emissions.⁶

The recommendations discussed in this paper are informed by the above research and are focused on strategies that are appropriate for Sonoma County. The top priority recommendations are listed first, and the top two recommendations are likely to be the most expedient.

4 Page 2 of ACEEE’s 2012 City Energy Efficiency Scorecard Summary: <http://www.aceee.org/sites/default/files/publications/researchreports/e13g.pdf>

5 Page 13-14 of Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions, by Cambridge Systematics, Inc., July 2009: <http://www.fta.dot.gov/documents/MovingCoolerExecSummaryULI.pdf>

6 <http://www.vtpi.org/gentraf.pdf>

Key Recommendations:

	Recommendation	Communities Employing Recommendation	Sonoma County Status and Applicability
3.1	Accelerate the electrification of the transportation sector; encourage carbon-light fuels and vehicles	Austin, Boston, Chicago, Vancouver, San Francisco, Tennessee	Sonoma County is already relatively EV ready, poised to use Sonoma Clean Power for further EV rollout; Sonoma County could institute an anti-idling ordinance for trucks.
3.2	Expand transportation demand management (TDM) programs.	Berkeley, Boston, Boulder, King County, Montgomery County, San Francisco, Silicon Valley	Sonoma County TDM programs include Safe Routes to School, the Carma Carpooling program, and the ECO2school program for high school students.
3.3	Require that growth in new and existing developments be zero-carbon, i.e., energy efficient and renewable energy generating, city-centered, walkable, bikable, transit-oriented, and mixed-use.	Atlanta, Boston, Chicago, King County, Montgomery County, Philadelphia, Portland, Sacramento, Woodbury	Sonoma County has a mix of sprawl and mixed-use transit-oriented development strategies at play. Progress has been made, but there is room for improvement.
3.4	Prioritize funding for active (non-motorized) modes of transportation.	Minneapolis, Portland, San Francisco, Seattle, Washington, D.C., >500 cities with public bike share programs	Sonoma County's Bicycle and Pedestrian Plan has many good ideas that lack funding.
3.5	Integrate Climate Protection into General Plans	Sonoma County, St. Lucie	Sonoma County's Comprehensive Transportation Plan (CTP) is congruent with the strategies of communities that have seen significant progress in the transportation sector.
3.6	Use Pricing and Taxes	Montgomery County	Pricing and taxes have not been popular in the past in Sonoma County.
3.7	Improve Public Transportation	Alameda County, Multnomah County, Philadelphia, Portland, Seattle, Utah State University	Sonoma County's bus system is mainly used by those who cannot afford cars. To reduce GHG emissions, the bus system must attract people who currently drive cars.
3.8	Optimize Traffic Efficiency	Montgomery County	Traffic signals are already synchronized at some major intersections, but there is probably room for improvement; the City of Cotati has outlawed roundabouts, but the County may want to look at roundabout viability in new developments throughout the County.
3.9	End Investment in Infrastructure that Increases Emissions from Transportation		Sonoma County is still investing significant funds in freeway widening and other projects that increase emissions

3.1 Accelerate the electrification of the transportation sector; encourage carbon-light fuels and vehicles

Background

Sonoma County is already doing a lot to deploy electric vehicles. In June of 2011, The Bay Area Climate Collaborative selected Sonoma County as the “Most EV-Ready Community 2011” for its wide-ranging policies to accelerate widespread electric vehicle adoption and municipal usage of EVs.⁷ As of July 2011, the Electric Vehicle Charging Station (EVCS) Siting Plan consisted of 19 restricted-use chargers for County vehicles at various County offices, 13 public and restricted chargers in the City of Santa Rosa and nine public and restricted chargers at the Sonoma County Water Agency (SCWA) offices on Aviation Blvd. The County also had 6 more chargers ready for installation by the end of 2011, mostly reserved for fleet use. The County, the City of Santa Rosa, and the SCWA had plans to install an additional 31 chargers (mostly for fleet use), and to receive 31 plug-in electric fleet vehicles through an MTC grant by the end of 2011. A second grant from MTC was estimated to provide an additional 25 public chargers on County-owned properties in the southern part of the County by the end of 2012. In addition, it was anticipated that 12 - 20 public chargers will be installed in highway corridors on public and private properties funded by the Northern Sonoma County Air Pollution Control District, and 12 - 20 more public chargers in southern cities funded by the federal Charge Point America Program. In summary, approximately 130 chargers were estimated to be in place for fleet and public use throughout the County by the end of 2012.⁸

Strategies to Consider:

- A. Use Sonoma Clean Power to Execute Electric Vehicle and Low-Carbon Vehicle Deployment*
 - B. Offer EV Charging Station Rebates through Sonoma Clean Power*
 - C. Consider Requiring Charging Stations with all new Development*
 - D. Expand the Number of EV Charging Stations and Lead by Example*
 - E. Ask Building and Property Owners to Commit to Installing EV Charging Stations*
 - F. Create Electric Truck Purchase Vouchers*
 - G. Employ Anti-idling Technology at Truck Stops*
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- A. Offer EV Charging Station Rebates through Sonoma Clean Power*

Sonoma Clean Power has the opportunity to play a key role in encouraging EV deployment. SCP has unique access to its customers at the time of billing and can include information about electric vehicles in the bills that go out to customers. Various EV manufacturers can share the cost of this printed collateral as part of their marketing budget.

The City of Austin’s municipal utility, Austin Energy, offers residential customers and PEV owners a rebate of 50 percent of the cost of the purchase and installation of a Level 2 Charging Station. Residents can plug the car into a regular outlet or into a Level 2 station, which provides a faster charge. The maximum rebate amount for a Level 2 (240V station) is \$1,500. To qualify for the rebate, residents must be an Austin Energy customer and use an approved contractor.⁹

⁷ <http://www.baclimate.org/bay-area-climate-collaborative-blog/sonoma-county-recipient-of-most-ev-ready-community-award.html>

⁸ Page 8 of Sonoma County’s EV Guidelines document: http://www.sonoma-county.org/prmd/docs/misc/ev_prog_guidelines.pdf

⁹ <http://www.austinenergy.com/about%20us/Environmental%20Initiatives/Plug-In%20Partners/drivers.htm>

B. *Consider Requiring Charging Stations with all new Development*

Sonoma County should consider requiring charging stations with all new development. Although a large portion of the early adopters of EVs will be able to refuel their cars using a home base charging unit, many users will need to access EV charging stations at publicly available locations.

The City of San Rafael has a solar EV-ready provision requiring all new development to be wired for EVs and solar.¹⁰

The City of Vancouver requires all new developments to provide charging stations for electric vehicles.¹¹ The City has installed 40 electric vehicle charging stations and is working to install 40 more at both City-owned facilities and those owned by private partners. The City has the biggest municipal fleet of electric vehicles in Canada.¹²

C. *Expand the Number of EV Charging Stations and Lead by Example*

As previously mentioned, Sonoma County has done a lot to expand the number of EV charging stations in the County. However, the number of EV drivers is climbing and the need for EV stations is growing.

The City of San Francisco is charged with cleaning up its fleet by replacing older vehicles with alternative fueled vehicles, but also reducing fleet size. With fewer vehicles, more trips by City employees will be taken by transit, walking or biking, and when a vehicle is needed, it will be in a zero-to-low emitting vehicle. To date, the City has the cleanest transit fleet in the nation and approximately 1,000 alternative fueled vehicles and 10 all electric vehicles for City employees.¹³

D. *Ask Building and Property Owners to Commit to Installing EV Charging Stations*

While Sonoma County should consider requiring charging stations with all new development, there will also be a need to address access to charging stations within existing developments.

Boston: In spring 2010, both the Air Pollution Control Commission (APCC), which administers Boston's parking freezes, and the Boston Transportation Department, which develops Transportation Access Plan Agreements (TAPAs) for new projects, began asking building and property owners to make commitments to install charging stations in parking facilities. The first six months of this policy produced commitments for at least 22 charging stations to be installed at four locations by spring 2011.¹⁴

E. *Create Electric Truck Purchase Vouchers*

Diesel trucks create a local air quality issue for Sonoma County, as well as contributing to greenhouse gas emissions. Exploring creative programs such as Chicago's EV truck voucher program, described below, would help to improve local air quality and reduce emissions, and may have the added benefit of attracting green businesses to the region.

Chicago has started an EV truck voucher program. Smith Electric Vehicles, which has been described as one of the world's leading manufacturers of all-electric commercial vehicles, has agreed to open a Chicago plant creating up to 200 new jobs thanks, in part, to a \$15 million city incentive plan designed to boost the market for electric trucks. Smith Electric Vehicles chose Chicago as its third U.S. location after Mayor Rahm Emanuel disclosed plans to use a federal anti-pollution grant to create more customers for the batteries and electric

10 Email from Alex Hinds, May 20, 2014

11 Page 41 of Vancouver's CAP update: <http://vancouver.ca/files/cov/greenest-city-2020-action-plan-2012-2013-implementation-update.pdf>

12 Page 41 of the Vancouver's CAP update: <http://vancouver.ca/files/cov/greenest-city-2020-action-plan-2012-2013-implementation-update.pdf>

13 <http://www.sfenvironment.org/article/fleet-activity/city-fleet-activity>

14 Page 25 of Boston's CAP update: http://www.cityofboston.gov/images_documents/A%20Climate%20of%20Progress%20-%20CAP%20Update%202011_tcm3-25020.pdf

vehicles that Smith Electric plans to manufacture there. Fleets operating in all six Chicago counties — Cook, DuPage, Kane, Lake, McHenry and Will — will be eligible for vouchers that will be applied to the purchase price of a truck at the point of sale, whether at a dealership or through a manufacturer. Voucher size would be based on the size of the truck battery, with the subsidy covering roughly 60 percent of the price differential between cheaper diesel truck and a more expensive electric truck. For a \$75,000 truck with an 80 kilowatt-hour battery, the city voucher would be \$45,000. The Emanuel administration expects to issue roughly 250 vouchers after a spring solicitation.¹⁵

F. *Employ Anti-idling Technology at Truck Stops*

As previously mentioned, diesel trucks create a local air quality issue for Sonoma County, as well as contributing to greenhouse gas emissions. Anti-idling technology could help to improve local air quality and reduce GHG emissions.

Tennessee: According to the U.S. Environmental Protection Agency (EPA), on average, each idling truck produces about 21 tons of carbon dioxide and 0.3 tons of nitrogen oxides annually. In 2009, the Tennessee Department of Transportation (TDOT) received a \$2 million American Reinvestment and Recovery Act (ARRA) grant from the EPA to begin equipping truck stops across the state with truck stop electrification (TSE) technology that powers heating and cooling equipment and electrical appliances without idling the engine. One truck-stop project team, Eco Travel Plaza and East Tennessee Clean Fuels, won a \$580,000 EPA grant to install TSE equipment for all 50 of the site’s truck parking spots. TDOT submitted its own proposal for a competitive grant program for additional truck stops along interstate highways. Their program was approved, and four truck stops were converted to TSE technology, with a total of 110 spaces. The technology is either owned by the truck stop, or technology companies own the equipment and have a revenue sharing arrangement with the truck stop. Three truck stops that TDOT worked with remain open; the fourth is under new ownership and planning to reopen with the technology that was installed with the grant money. Eco Travel Plaza’s owner, Dom Demko, worked with two TSE vendors, AireDock and Shorepower, and took the next step of installing solar panels to offset the electricity the new TSE would use. Money for the 35-kilowatt solar array installation came in part from the Solar Installation Grant Program, sponsored by the Tennessee Solar Institute, and part of Governor Phil Bredesen’s Volunteer State Solar Initiative, also funded by the ARRA. Demko also replaced most of the lighting at the truck stop with LED lighting. With the anti-idling technology in place, Eco Travel Plaza **could reduce carbon dioxide emissions by 21,818 tons over the next 10 years** and reduce nitrogen oxides by 337 tons and particulate matter by 10 tons. TDOT also looked at alternative ways to save costs and energy at the truck stops they were working with. One truck stop in White Pine got approval from the EPA to use refurbished steel for the support structure that holds the HVAC units, and with the savings from using refurbished steel instead of new, the truck stop was able to purchase solar technology. Alan Jones, manager of the Energy Policy Office in the Long Range Planning Division in the Tennessee Department of Transportation thinks it makes sense going forward to focus on the technology vendors and encourage them to make contact with the truck stops. “I think that the best strategy is to work with the technology vendors, [to] get them to work with the truck stops,” said Jones, who acknowledges that these kinds of energy developments are often of little concern to independently owned “mom-and-pop” truck stops with a small staff.¹⁶

3.2 Expand transportation demand management (TDM) programs.

Background

Transportation Demand Management is one of the less expensive approaches to reduce emissions from transportation because it maximizes the use of the existing infrastructure. According to the Victoria Transport Policy Institute,

¹⁵ <http://www.suntimes.com/news/16653952-418/chicago-voucher-plan-lands-electric-vehicle-makers-plant.html>

¹⁶ <http://stateenergyreport.com/2012/11/07/breathing-easier-anti-idling-technology-at-tennessee-truck-stops/>

Transportation Demand Management (TDM) is a general term for strategies that result in more efficient use of transportation resources.¹⁷

Sonoma County has several TDM programs including Safe Routes to School, the Carma Carpooling program, and the ECO2school program for high school students. Because these programs depend on outside funding, sustainable sources of funds must be found for them to continue. The City of Santa Rosa is the only jurisdiction in Sonoma County currently offering a TDM program, named “Free Ride.” The following strategies could be employed in Sonoma County to further maximize existing infrastructure to reduce GHG emissions from transportation.

Strategies to Consider:

- A. *Use Public Parking Facilities for Car Share*
 - B. *Use Transportation Access Plan Agreements (TAPAs)*
 - C. *Partner with Employers to Buy Down the Cost of Transit and Vanpools for Their Employees*
 - D. *Create a Commuter Benefits Ordinance*
 - E. *Create Tax incentives for Employers and Employees who Offer/Accept Compressed Work Weeks*
 - F. *Offer a Universal Transit Pass through Employers*
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A. *Use Public Parking Facilities for Car Share*

Santa Rosa’s downtown may be an especially good location for using public parking for car sharing. Other downtown areas within the County might work as well.

The City of Berkeley has a partnership with City CarShare that makes CarShare vehicles a part of the City fleet during business hours, reverting to public use during non-business hours. The partnership enables the City to retire some City-owned vehicles, save money from maintenance provided by City CarShare. The vehicles are also fuel-efficient, making for a successful partnership.¹⁸

Montgomery County’s Department of Transportation (MCDOT) issued an RFP for use of public parking facilities by car share companies. Two vendors were selected and negotiations regarding terms, conditions, and specific locations of spaces were conducted. Car sharing vendors coordinated with the MCDOT on outreach to the community.¹⁹

B. *Use Transportation Access Plan Agreements (TAPAs)*

A Transportation Access Plan Agreement may be very useful to the cities within Sonoma County. Such an agreement could help cities develop a pedestrian- and biker-friendly streetscape, minimize land gobbled up by parking, expand traffic management tools, and expand the use of transportation demand management (TDM) by businesses and institutions.

The City of Boston Zoning Code (Article 80) requires developers of large projects, greater than 50,000 square feet, to sign Transportation Access Plan Agreements (TAPA) with the Boston Transportation Department. Boston city government has used this tool effectively for many years—and will continue to use it, now in conjunction with Complete Street Guidelines—to develop the streetscape, keep down parking capacity, expand

¹⁷ <http://vtpi.org/tdm/>

¹⁸ Email from Timothy Burroughs, Climate Action Coordinator, 11/1/2013

¹⁹ Page 7 of Montgomery County’s CAP update: <http://www6.montgomerycountymd.gov/content/dep/downloads/air/2010implementationstatus.pdf>

traffic management tools, expand bicycle infrastructure, and expand the use of transportation demand management (TDM) by businesses and institutions.²⁰

C. *Partner with Employers to Buy Down the Cost of Transit and Vanpools for Their Employees*

The County of Sonoma and the cities within it could partner with employers to buy down the cost of transit and vanpools for their employees, thus encouraging lower-carbon commuting.

Montgomery County's Commuter Services Section (CSS) is continuing to develop and implement transportation education and outreach campaigns targeted at businesses in the County with the goal of promoting the use of commuting modes other than the single occupant vehicle (SOV). Through its FareShare and Super FareShare programs, the County partnered for a number of years with employers to buy down the cost of transit and vanpools for their employees, thus encouraging them to use these lower-emission commuting options. While the FareShare and Super FareShare programs have now been suspended due to budget constraints, most of the employers who were participating in them have continued to offer transit benefits to their employees. In addition, CSS continues to conduct outreach to employers to encourage them to offer either direct or pre-tax payroll deduction transit benefits. CSS recently published a brochure designed to promote participation in these benefit programs by employers and employees. The brochure has been posted on the CSS website and will be distributed to businesses and related organizations throughout the County.²¹

Silicon Valley's Valley Transportation Authority (VTA) EcoPass program charges employers between \$7.50 and \$120 per year per employee, instead of the usual \$990 per year for a transit pass. The result has been a 19 percent decrease in parking demand at employers participating in the program. Neighborhood EcoPass programs apply the same principle to residential developments.²²

D. *Create a Commuter Benefits Ordinance*

A commuter benefits ordinance in Sonoma County could go a long way toward reducing carbon emissions from commuting to work. A program for Sonoma County employees is under development and could eventually be used as a model for other programs.

San Francisco's Commuter Benefits Ordinance has seen great success. The second annual report on the San Francisco Commuter Benefits Ordinance confirms the program is successful in reducing the number of single occupancy vehicle commutes to and from San Francisco. The 2012 Annual Report found:²³

- The Ordinance continues to influence the creation of commuter benefits programs, both locally in San Francisco and nationwide
- 34 percent of San Francisco employees are participating in commuter benefits programs at work
- Employers are increasingly offering multiple benefits, such as a combination of a pre-tax deduction benefit and an employer-paid subsidy
- The Ordinance has contributed to an estimated reduction of 455,000 metric tons in carbon emissions from commute traffic in 2011 and 2012

E. *Create Tax incentives for Employers and Employees who Offer/Accept Compressed Work Weeks*

Encouraging a compressed work week could remove a significant number of cars from the road during commute hours in Sonoma County. The County may want to consider working on a program in conjunction with the County of Marin where many Sonoma County residents commute.

20 Page 29 of Boston's CAP update: http://www.cityofboston.gov/images_documents/A%20Climate%20of%20Progress%20-%20CAP%20Update%202011_tcm3-25020.pdf

21 Page 12 of Montgomery's CAP update: <http://www6.montgomerycountymd.gov/content/dep/downloads/air/2010implementationstatus.pdf>

22 <http://www.san-marcos.net/Modules/ShowDocument.aspx?documentid=2009>

23 <http://www.sfenvironment.org/article/sustainable-commuting-programs/commutesmart-reports>

King County Metro, Washington, notes that in downtown Bellevue, FlexPass is responsible in part for a 24 percent drop in drive alone commutes from 1990 to 2000 (81 percent drive alone mode share to 57 percent).²⁴ Compressed workweeks may reduce VMT by as much as 7-10 percent. A compressed workweek may be comprised of four days a week for ten hours per day instead of five days for eight hours. It's important to incentivize employees to take advantage of the offering, as studies indicate that many employees do not.²⁵ A King County Metro FlexPass costs \$65 per year per employee for employers compared to the normal annual cost of \$396-1,584.

F. Offer a Universal Transit Pass through Employers

Sonoma County's bus systems must be well-integrated to create a user-friendly experience for potential bus commuters. Creating a pass that helps to achieve this integration may help attract new riders to commute to work by bus.

The City of Boulder has the "EcoPass," an annual RTD (Regional Transportation District) transit pass for unlimited regional, express, local bus and light rail service throughout the Denver and Boulder regions. Funded by Boulder's energy tax, the EcoPass is purchased by employers for full-time employees, with an option to include part-time employees. The EcoPass is valid every day of the year, through December 31 of the current calendar year. According to the EcoPass website, EcoPass holders are 5-9 times more likely to ride transit than non-EcoPass holders.²⁶ Since the program was implemented, the EcoPass has reduced the drive to work mode share by 36 percent. The EcoPass program alone has also reduced commuter parking demand by 850 spaces, according to Boulder's Downtown Management Commission.²⁷

3.3 Require that growth in new and existing developments be zero-carbon, i.e., energy efficient and renewable energy generating, city-centered, walkable, bikable, transit-oriented, and mixed-use.

Background

Sonoma County has a mix of sprawl and mixed-use transit-oriented development strategies. Progress has been made, but great opportunities for improvement exist.

Strategies to Consider:

- A. Use Smart Codes*
- B. Revitalize Downtown Areas*
- C. Identify Vacant Office Parks and Rezone for Mixed Use*
- D. Employ High-density, Mixed-Use, Transit-Oriented Development*
- E. Commit to Investing in One Transit-Oriented Development Project Every Year*
- F. Take a Comprehensive Approach to Transit-Oriented Development*
- G. Develop A Complete Neighborhoods Ordinance*
- H. Develop A Complete Streets Program*
- I. Institute Mixed-Use Sector (General or Comprehensive) Plans*
- J. Use Parallel Codes*
- K. Create a Transfer of Development Rights (TDR) Program*

²⁴ <http://www.san-marcos.net/Modules/ShowDocument.aspx?documentid=2009>

²⁵ Victoria Transport Policy Institute: <http://www.vtpi.org/tdm/tdm15.htm>

²⁶ <http://boulderecopass.com/overview.html>

²⁷ <http://www.san-marcos.net/Modules/ShowDocument.aspx?documentid=2009>

- L. *Create EcoDistricts*
 - M. *Seek Green Trip Certification for New Developments*
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A. *Use Smart Codes*

Sonoma County can make great strides toward more compact biker- and pedestrian-friendly development by using the SmartCode. The SmartCode, a concise template released in 2003 and continually updated, is a model ordinance flexibly written for towns, cities, regions, and private developments. It requires calibration for local conditions. The SmartCode v9 and Manual was published to aid calibrators and planners and is available from New Urban News. SmartCode Version 10 has a modular structure, making it easier for a jurisdiction to assemble the precise code it needs. The SmartCode differs from some other form-based codes in that its community-scale and block-scale articles are written explicitly for zoning. Zoning reform is essential to allow walkable mixed-use neighborhoods, thereby combatting sprawl, preserving open lands, and reducing energy use and carbon emissions.²⁸

Miami's Miami 21 is a form-based code that incorporates walkability, activation of the pedestrian realm, encourages alternative modes of transportation, and mandates green building for larger buildings. It also encourages mixed-use in the urban core.

Source: survey

One example within Miami's code of how the city will be made more walkable follows:

For sites with three hundred and forty (340) feet Frontage length or more, a cross-Block passage shall be provided as follows: If the Frontage Line of a site is at any point more than three hundred and forty (340) feet from a Thoroughfare intersection, the Building shall provide a cross-Block Pedestrian Passage. If the Frontage Line of a site is at any point six hundred and fifty (650) feet from a Thoroughfare intersection, a vehicular cross-Block passage shall be provided. Such a cross-Block Passage may be covered above the first floor by a maximum of twenty-five percent (25 percent) of its length with Structures connecting Buildings, such as a terrace, pedestrian bridge or vehicular bridge. In T6-36, T6-48, T6-60 and T6-80 a Pedestrian Passage may be roofed and shall be lined with frequent doors and windows.²⁹

Two key goals for the City of Miami are to create walkable neighborhoods by encouraging mixed-use, activated pedestrian frontages and to enhance the City's tree canopy with a goal of a minimum of 30 percent tree canopy coverage, citywide, by 2020. While Luciana Gonzales of Miami's Office of Sustainable Initiatives stated in the survey that there are no trackable mechanisms, she says that one can clearly see the difference by more pedestrian activity, more bicycles on the streets, and increased canopy.³⁰

B. *Revitalize Downtown Areas*

Several of Sonoma County's downtown areas have been revitalized in recent years. However, careful planning will be required to take full advantage of the coming SMART train's transit corridor to maximize green space and make housing and shopping available from the public transportation system.

Atlanta's BeltLine is the most comprehensive revitalization effort ever undertaken in the City of Atlanta and among the largest, most wide-ranging urban redevelopment and mobility projects currently underway in the United States. This sustainable project is providing a network of public parks, multi-use trails and transit by re-using 22-miles of historic railroad corridors circling downtown and connecting 45 neighborhoods directly to

²⁸ <http://www.transect.org/codes.html>

²⁹ v24-25 of Miami21 Code: http://www.miami21.org/PDFs/AsAmended_April2013_Volume1.pdf

³⁰ Survey

each other. The Atlanta BeltLine is transforming the city with a combination of rail, trail, greenspace, housing, and art. It will ultimately connect 45 in-town neighborhoods, provide first and last mile connectivity for regional transportation initiatives, and put Atlanta on a path to 21st century economic growth and sustainability. The beauty of the Atlanta BeltLine is that it offers not only modern conveyances and exciting new development, but it is a living, breathing part of the community; not simply a means of getting somewhere, but a destination unto itself. It offers a chance for Atlanta to redefine what it is to be a neighbor, to be a community, to be a region, and to share all that it has to offer. First conceived as a 1999 master's thesis by Georgia Tech student Ryan Gravel, the Atlanta BeltLine evolved from an idea, to a grassroots campaign of local citizens and civic leaders, into a robust new vision of an Atlanta dedicated to an integrated approach to transportation, land use, greenspace, and sustainable growth. The Atlanta BeltLine utilizes an existing 22-mile historic rail corridor that encircles the City of Atlanta as its foundation. Pedestrian friendly rail transit and 33 miles of multi-use trails will follow this corridor and spur off from it. The completion of the Atlanta BeltLine will bring together 45 in-town neighborhoods and also link them to the entire metropolitan Atlanta region through a collection of transit offerings.³¹

C. *Identify Vacant Office Parks and Rezone for Mixed Use*

Like many communities in the U.S., Sonoma County has a surplus of office space that is lying fallow. One such space is the former State Farm campus in Rohnert Park, which was recently bought by a developer and is expected to become a mixed-use development adjacent to SMART. There are many vacant office parks around the County that could be rezoned for mixed-use, promoting more walkable communities.

In **Woodbury** in Saint Paul, Minnesota, plans for a 100-acre office park—with a vacated State Farm building at the center—were unveiled in October 2013 in Woodbury. Elion, a Miami-based real estate investment company, announced plans to build a hotel, grocery store, office buildings and restaurants around the sprawling State Farm building at Radio Drive and Interstate 94. The site has been vacant for seven years, so the plans to develop it delighted city officials.³²

In **Montgomery County**, the first installment of the new zoning code, the Commercial/Residential (CR) zone has been adopted. This zone allows a mixture of businesses and homes around transit served areas as specified by the master plan. The minimum requirements include open space, shading of parking lots and provision of bike parking and shower facilities. Property owners wishing to build up to the maximum density and height allowed by the master plan will need to provide additional benefits to the environment, connectivity, design and diversity. The draft of the code for residential and agricultural zones is in the formal comment period and the overall use tables and district descriptions are now available. Current drafts include sustainability requirements and have more provisions for distributed energy generation and urban farming.³³

D. *Employ High-density, Mixed-Use, Transit-Oriented Development*

Implementing policies and programs to decrease transportation energy use through location-efficient development and improved access to additional travel mode choices will help to bring down emissions from transportation within Sonoma County. Cities can ensure that major destinations are accessible by more energy-efficient transportation modes through location-efficient zoning and policies that integrate transportation and land use planning. Local governments can expand residents' transportation choices and create neighborhoods that support safe, automobile-independent activities. Cities can implement policies that discourage residents from frequent driving and encourage a switch from driving to other modes of transportation (e.g., public transit, bicycling, walking) through the use of transportation demand management programs and car- and bicycle-sharing efforts.³⁴

31 <http://beltline.org/about/the-atlanta-beltline-project/atlanta-beltline-overview/>

32 http://www.twincities.com/washingtoncounty/ci_24231564/woodbury-plans-unveiled-re-use-vacant-state-farm

33 Survey

34 Page 15 of ACEEE report: <http://www.aceee.org/sites/default/files/publications/researchreports/e13g.pdf>

The Portland region's Urban Growth Boundary (UGB) continues to provide the critical foundation for the region's land use and transportation planning. In place since 1980, the UGB is an essential component of the region's ability to grow efficiently and to integrate housing and jobs with an affordable, low-carbon transportation system. The City and County have advocated for limiting growth of the UGB, and in October 2011, the Metro Council adopted a conservative population forecast with a limited UGB expansion of 1,650 acres for residential land and 330 acres for industrial land.³⁵ "Since 1973, state law has required every city and county in Oregon to have a Comprehensive Plan, which controls land use decisions in that area. Metro, Portland's regional government, together with TriMet, the provider of public transportation for the Portland region, has guided investment in light-rail, mixed-use development and an integrated multi-modal transportation system. These efforts are a large part of local progress to date in reducing emissions and are fundamental to long-term success in achieving the 2050 goal."³⁶ Note that VMT per person in Portland has not decreased.³⁷

This focus on high-density also means less space to heat. Each new person moving into the Portland metro area uses one-fourth the amount of living space that is used by each new person moving into the Washington, D.C. metro area.³⁸

The City of Chicago introduced and passed an ordinance to accelerate denser, less car-dependent development near transit stations. For commercial and mixed-use properties located near transit (either 600' or 1,200'), the ordinance eliminates minimum parking requirements and offers density bonuses, allowing for smaller dwelling units and taller buildings. Studies have shown real estate sales prices in Chicago near transit outperformed the region by 30 percent, demonstrating a clear demand for real estate with easy access to transit.³⁹

Vancouver's goal is that at least 50 percent of trips to be made by foot, bicycle, and public transit. Between 2008 and 2012 there was a 10 percent improvement.⁴⁰

The City of Sacramento also sees mixed-use, transit-oriented development as key to reducing GHGs from transportation and land use. Their strategies include promoting sustainable growth patterns and infill development, creating more complete neighborhoods, encouraging mixed-use development projects, requiring sustainable development practices, ensuring quality development and project design. The City's overall goal in this category is to reduce vehicle miles traveled (VMT) per capita in new development by 35 percent, compared to statewide averages.⁴¹

E. Commit to Investing in One Transit-Oriented Development Project Every Year

Land use changes take decades to happen. One way to expedite this transformation of the built environment in Sonoma County is to make a quantifiable commitment to investing in transit-oriented development. As SMART gets up and running, the County can take steps to make sure that most investment dollars are funneled into projects with close access to SMART, instead of investments in outlying properties that perpetuate sprawl.

Philadelphia's Southeastern Pennsylvania Transportation Authority has a goal of integrating with livable communities in its Sustainability Program Plan. SEPTA has committed to investing in one TOD project every year.⁴²

F. Take a Comprehensive Approach to Transit-Oriented Development

If Sonoma County wants transit-oriented developments to succeed, it must take a comprehensive approach.

According to the Institute for Transportation and Development Policy, "Rezoning a corridor to encourage

35 Page 12 of Portland's CAP update: <http://www.portlandoregon.gov/bps/article/268612>

36 Page 23 of Portland's CAP: <http://www.portlandonline.com/shared/cfm/image.cfm?id=25050>

37 Page 12 of Portland's CAP: <http://www.portlandonline.com/shared/cfm/image.cfm?id=25050>

38 Page 38 of Portland's CAP update: <http://www.portlandoregon.gov/bps/article/268612>

39 Aaron Joseph LEED AP, Deputy Sustainability Officer, Office of the Mayor, City of Chicago

40 Page 5-6 of Vancouver's CAP update: <http://vancouver.ca/files/cov/greenest-city-2020-action-plan-2012-2013-implementation-update.pdf>

41 Page 86 of Sacramento's CAP: http://www.sacgp.org/documents/2_Adopted_CAP_whole.pdf

42 Page 1 of Wayne Junction case study: <http://www.septa.org/sustain/pdf/Wayne%20Junction%20Case%20Study.pdf>

mixed-use development, creating a comprehensive plan for the area, actively reaching out to investors, marketing the program, offering financial incentives — these elements of a strong official involvement directly predicted TOD success. If a government does nothing to support TOD along the transit corridor, there will be no TOD impact.”⁴³

G. *Develop A Complete Neighborhoods Ordinance*

Developing a complete neighborhoods ordinance would bring GHG emissions down by helping to make Sonoma County’s communities more walkable and bikable. It would also bring vitality to the neighborhoods of Sonoma County, as evidenced by some of the downtowns that already exhibit many of the features of a city with a complete neighborhoods ordinance. These cities include Healdsburg, Petaluma, Santa Rosa, Sonoma, and Windsor.

The City of Portland’s draft Plan (released in October 2011 and available at www.pdxplan.com) features the concept of complete neighborhoods, particularly in the proposed Healthy Connected City strategy and the Economic Prosperity and Affordability strategy. Goals, guiding policies, actions and performance measures related to creating complete neighborhoods are found throughout the Portland Plan, and include such topics as neighborhood business vitality, access to housing (including aligning housing and transportation investments), promoting vibrant neighborhood hubs, developing neighborhood greenways, and coordinating planning and investments among public and private entities, among others. Developed by the City in partnership with twenty other partners, the draft Portland Plan includes 12 Citywide Measures of Success, one of which is complete neighborhoods.⁴⁴

H. *Develop A Complete Streets Program*

The County of Sonoma already has a plan to help make streets safer for pedestrians and bicycles. However, the program is not well-funded. The County can re-prioritize funding to make dollars available for things like a complete streets program that would help put pedestrians, bicyclists, and transit users on equal ground with drivers.

The **Boston** Complete Streets program, launched in 2009, aims to put pedestrians, bicyclists, and transit users on equal ground with drivers, and promote a vision of streets which are safe, attractive, and conducive to healthy, active transportation. The Complete Streets Advisory Committee, including City Hall staff, outside experts, and community stakeholders, is developing recommendations to ensure that Boston streets are:

- Multimodal—safe and equally accessible for all modes of transportation and for people of all ages and abilities
- Green—sustainable, energy-efficient, low-maintenance, and vibrant with plantings
- Smart—incorporating innovative technologies to improve efficiency and comfort

As a result of this program, the City of Boston has:⁴⁵

- Approved a narrower minimum width (10 feet instead of 11) for vehicle travel lanes to accommodate wider sidewalks and more bicycle facilities
- Started using permeable pavement and rain gardens in sidewalks to allow storm water to seep directly into the soil
- Issued, or will soon issue, guidelines for on-street parking of bicycles, shared cars, electric vehicles, and scooters
- Established minimum sidewalk widths and clear zones for pedestrians
- Developed a new classification of city streets that makes location and use explicit
- Adopted a new multimodal approach to intersection analysis and design

43 <http://www.theatlanticcities.com/jobs-and-economy/2013/09/surprising-key-making-transit-oriented-development-work/6992/>

44 Page 12 of Portland’s CAP update: <http://www.portlandoregon.gov/bps/article/268612>

45 Page 27-28 of Boston’s CAP update: http://www.cityofboston.gov/images_documents/A%20Climate%20of%20Progress%20-%20CAP%20Update%202011_tcm3-25020.pdf

In addition, in 2003, the City of Boston published a long-term transportation plan, Access Boston, which included important VMT reduction measures, including off-street maximum parking ratios, transportation demand management requirements for new developments, the foundation of a bicycle-lane network, and a slate of public transportation projects for implementation by MassDOT.⁴⁶

I. Institute Mixed-Use Sector (General or Comprehensive) Plans

Sonoma County could try a new type of General Plan – called a Sector Plan – that has fully mixed-use land use designations and uses intensity and location of future mixed-use growth – as an alternative to the use separated traditional version. This type of plan should result in GHG reduction in the built environment as compared to the standard General Plan that separates land uses.⁴⁷

St. Lucie County in Florida has “TVC” – a Comprehensive Plan amendment and Land Development Regulations overlay that applies to the agricultural area of north St. Lucie County. The TVC encourages a pattern of development that preserves rural character while providing for future growth. Using the principles of Traditional Neighborhood Design (TND), the strategy for new settlement in the undeveloped areas requires a sustainable growth pattern characterized by a mix of uses, building types and income levels as well as a pedestrian-friendly block and street network. The TVC preserves a significant amount of public open space, promotes strategies for viable future agriculture, and helps mitigate the environmental impact of new development in the area.⁴⁸

J. Use Parallel Codes

Parallel codes are land use codes that “float above” a piece of property until the landowner is ready to develop the land. At that point in time, the code “drops down” on the piece of property. Such codes have worked well in the American Southwest. Sonoma Mountain Village created a Planned Development district that used this concept effectively as well.⁴⁹ Sonoma County could expand the use of this type of code to other developments.

K. Create a Transfer of Development Rights (TDR) Program

Sonoma County has more roads per capita than any other county in the state. Sonoma County is also the most parcelized county in the state. These two characteristics perpetuate sprawl and create barriers to creating open space.⁵⁰ Source:

To alleviate these issues, the County could institute a TDR program. Landowners in less dense areas of the county could sell their development rights to builders in areas designated for more density. Low-density areas in the outskirts would not be allocated any development rights, and high-density areas toward the center and along urban corridors would be allocated high numbers of development rights. These rights would allow those property owners to build up and/or infill. One of the key components of a successful TDR program is allocating the right number of development rights at the right time. If too many rights are allocated in the urban centers early on, real estate prices will not hold and the program will not work. TDR can also be used to reverse development in flood plains and areas where the climate change impacts are likely to render the land uninhabitable. Some areas might become uninsurable and the County could offer a lifeline to those property owners who are willing to move.⁵¹

County of Montgomery, MD is one of the most successful when it comes to TDRs. They have preserved more than 72,000 acres under protective easements and 52,000 acres of that was from TDRs. This preservation happened in the face of development pressure, as they are contiguous with Washington, D.C.⁵²

46 Ibid

47 Email from Lois Fisher, Fisher Town Designs on September 10, 2013

48 <http://www.stlucieco.gov/planning/tvc.htm>

49 Conversation and email, Lois Fisher, Fisher Town Designs, September 10, 2013. Fisher also named the following communities with exemplary land use planning, ordinances, and smart codes: Hamden, CT; Ventura Smart Code; Hercules, CA; and Miami, FL.

50 Sonoma County Transportation and Land Use Coalition

51 Conversation with Lois Fisher, Fisher Town Designs, November 6, 2013

52 Conversation with Rick Pruetz of Smart Preservation, September 3, 2013

King County in Washington State has also had success with TDRs. They plan to preserve one million acres, despite doubling in population. The local government is not permitted to use redevelopment funds unless they have a TDR program. Affordable housing is typically exempt from this program. Furthermore, King County has a law that helps prevent the allocation of too many TDRs.⁵³

L. *Create EcoDistricts*

The County of Sonoma could designate some neighborhoods as “ecodistricts” and work to attract innovative clean tech companies to those areas, or even partner with EcoDistricts (ecodistricts.org). Sonoma Mountain Village is arguably an attempt to create an ecodistrict, but broke ground right as the real estate market crashed. As the market recovers, the County could find ways to support such districts, including Sonoma Mountain Village.

The City of Austin is partnering with EcoDistricts and applying EcoDistrict tools to benchmark and measure a downtown mixed-use development project. The city is using the EcoDistricts Framework to coordinate activity among major property developers and city agencies to measure neighborhood sustainability performance in an area that will include the repurposed and iconic Seaholm Power Plant, affordable and market-rate housing, retail, a hotel, a new central library, transit, and new green space. Boston, Portland, San Francisco, Seattle, and Washington D.C. are also embarking on projects using EcoDistrict services.⁵⁴

In **New York City**, in the aftermath of the Great Recession and the financial collapse, Mayor Michael Bloomberg and the city's economic development agency realized the need to diversify the economy. A network of stakeholders from across industries agreed that the city needed more tech talent. The resulting Applied Sciences NYC initiative will bring three world-class technology campuses into the city, generating an estimated \$33 billion in potential long-term economic impact from a public investment of only \$130 million.

M. *Seek Green Trip Certification for New Developments*

While existing development represents the vast majority of building stock in Sonoma County, when new development happens, the County has an interesting tool to ensure that the development is as sustainable as possible. The GreenTRIP certification program rewards multi-family, mixed-use projects that apply comprehensive strategies to reduce traffic and greenhouse gas emissions. Projects meeting GreenTRIP certification criteria allocate less land for parking and create incentives for new residents to drive less and own fewer vehicles. With less driving and using less land for parking spaces, space is freed up for services, shops, and more affordable homes. The first five GreenTRIP projects resulted in developers voluntarily offering residents of GreenTRIP buildings free transit and carshare passes.⁵⁵

3.4 Prioritize funding for active (non-motorized) modes of transportation.

Background

Sonoma County has a plan with many good ideas. However, many lack funding to implement them. Moreover, Sonoma County currently has no comprehensive method of tracking transportation funds, especially on an annual basis. Consequently, no comprehensive strategy exists for determining how best to allocate the county's transportation funds. A rough overview of Sonoma County annual transportation funding and allocation sources follows:

- Measure M - major items are allocated as follows:

53 Conversation with Jeremy Criss, County of Montgomery, October 4, 2013

54 <http://ecodistricts.org/projects/profiles/>

55 <http://transformca.org/GreenTRIP>

- 40 percent for Highway 101, equal to about \$8 million
- 20 percent for road maintenance, equal to about \$4 million
- 15 percent for transit, equal to about \$3 million
- Measure R allocated 100 percent to SMART, equal to about \$30 million
- Coordinated Claim for Transit, equal to about \$25 million
- TDA3/TFCA allocated for alternative modes, equal to about \$1 million
- An unknown amount is received by cities and the county from gas tax subventions. It is allocated primarily for basic maintenance such as ditch clearing and minor pothole repair.
- STIP funds are used for local capital projects with regional benefit like Hwy 101 and SMART. About \$15 to \$25 million every two years is expected once the current debt is retired in about 2020.
- Other sources for local roads and active transportation from MTC equal about \$20 to \$25 million every two to three years depending on the program.
- One-time significant funding from state bonds for Hwy 101 expansion was spent, and no more is anticipated. Similarly, SMART received a number of one-time funds in addition to their sales tax revenues.
- Transit receives by far the bulk of the regular funding, a minimum of \$58 million per year, a situation that is unlikely to change appreciably in the near term.⁵⁶

Strategies to Consider:

- A. *Redirect Financial Resources into Implementation of Sonoma County's Bicycle and Pedestrian Plan*
- B. *Promote "Active Transportation"*
- C. *Support Dedicated Bike Paths*
- D. *Launch a Bike Share Program*
- E. *Create a County Fleet of Bikes*
- F. *Incentivize Employers to Install Trip-End Facilities*
- G. *Create a Tenant Bicycle Parking in Existing Commercial Buildings Ordinance*

- A. *Redirect Financial Resources into Implementation of Sonoma County's Bicycle and Pedestrian Plan*

Oakland has made supporting bike paths a priority. The City built 30 miles of bikeways and 1,500 bike parking spaces in 2011 and 2012. Long-range efforts are guided by the [City's Bicycle Master Plan](#) and publicized through the Bicycle Friendly Community program, a national program of the League of American Bicyclists.⁵⁷

- B. *Promote "Active Transportation"*

Sonoma County could focus resources on active transportation, which would support the development of healthy, active communities in the region. Over the last several years, Sonoma County has become somewhat of a cycling Mecca. Creating a bike-friendly network of roads not only creates a safe place to use a bicycle to get around, but also may have added economic benefits with the rise of various cycling races which draw people to the region.

Multnomah County's Communities Putting Prevention to Work (CPPW) grant has provided significant support for active transportation strategies and projects across the region. The CPPW grant has supported the development of an equity framework in the Portland Plan that, once implemented, will help planners understand

⁵⁶ Email from Suzanne Smith, Executive Director, Sonoma County Transportation Authority, July 9, 2014

⁵⁷ Survey

what policy changes and investments are needed to support the development of healthy, active communities in the region. The County is also working with Portland and Gresham to update Transportation System Plans for each city with a policy framework that will provide greater opportunities for active transportation, as well as playing a role on Metro's Climate Smart Communities scenario planning to improve measuring how active transportation choices and investments impact the health of residents by incorporating an equity lens into this work.⁵⁸

C. *Support Dedicated Bike Paths*

Sonoma County could focus more resources on creating dedicated bike paths to help cyclists feel safer and increase the number of people willing to try bike commuting. Dedicated bike paths can cut cycling injuries in half and attract many more people to try cycling to work, school, and other places.⁵⁹

Minneapolis: Midtown Greenway—Minneapolis is often considered the best bike city in America. The Midtown Greenway is a 5.5-mile bicycle highway through the center of town. Following a sunken rail corridor with no major breaks in traffic, this path is almost entirely separate from pedestrian traffic and is busy with commuters year-round (plowed in the winter). The Greenway is also lit at night, so it's functional 24/7, and has emergency call boxes, police patrolling on bike, and its own suspension bridge.

Portland, Oregon: Vera Katz Eastbank Esplanade & Springwater Trail Corridor. Named the country's best biking city by *Bicycling Magazine* in 2012, Portland boasts one of the densest networks of dedicated bike paths, greenways, and "bike boulevards" in the country. The highlight of the 1.5-mile esplanade is a 1,200-foot "floating walkway"—the longest of its kind in the U.S. according to Portland Parks and Rec.⁶⁰

Seattle: Burke-Gilman Trail—This former rail trail is paved 27 miles. One of the most heavily ridden multi-use paths in the country, it's often called the "backbone" of Seattle's cycling infrastructure, and it offers flat terrain, beautiful views, and plentiful access points.

D. *Launch a Bike Share Program*

More than 500 cities around the world have started public bike shares.⁶¹ Many of these cities have more challenging weather than Sonoma County, and yet they have experienced success with their programs. A bike share program in one of Sonoma County's downtown areas could act as a pilot for other downtowns.

Montreal's self-service bike rental program is the largest bike share program in North America with 5,000 bikes and 400 docking stations. After 3.3 million trips in 2010 alone, one percent of bikes had been lost or stolen. The program has expanded to Toronto.⁶²

Chicago's "Divvy" is a bike sharing system with 4,000 bikes and 400 stations across the city. Divvy bikes can be rented from and returned to any station in the system, creating an efficient network with many possible combinations of start and end points. With thousands of bikes at hundreds of stations, Divvy will be available for use 24 hours a day, 365 days a year. The station network will provide twice as many docking points as bicycles, assuring that an available dock to return your bike is always nearby. Divvy is a program of the Chicago Department of Transportation (CDOT), which owns all of the system's bikes, stations and vehicles. Initial funding for the program comes from federal grants for projects that promote economic recovery, reduce traffic congestion and improve air quality, as well as additional funds from the City's Tax Increment Financing program.⁶³ Chicago's "Divvy" is the second largest such program in the country. The Streets for Cycling 2020 plan calls for a 645-mile bikeways network by 2020.⁶⁴

58 Page 12 of Portland's CAP update: <http://www.portlandoregon.gov/bps/article/268612>

59 <http://www.theatlanticcities.com/commute/2012/10/dedicated-bike-lanes-can-cut-cycling-injuries-half/3654/>

60 <http://www.usatoday.com/story/travel/destinations/2013/07/23/best-urban-bike-paths-across-the-usa/2576801/>

61 <http://vancouver.ca/streets-transportation/public-bike-share-system.aspx>

62 <https://montreal.bixi.com/>

63 <http://divvybikes.com/about>

64 <http://www.cityofchicago.org/content/dam/city/depts/cdot/bike/general/ChicagoStreetsforCycling2020.pdf>

“With Chicago’s Complete Streets policy in place, the public way is looking very different in Chicago. It’s exciting to see a visual and physically engaging way to experience sustainability in a city. “

- Aaron Joseph LEED AP, Deputy Sustainability Officer, Office of the Mayor, City of Chicago

In the **Washington, D.C** area, Capital Bikeshare has over 1,800+ bicycles. There are 200+ stations across Washington, D.C., Arlington and Alexandria, VA, and Montgomery County, MD, and bikes can be returned to any station. Citizens can join Capital Bikeshare for a day, 3 days, a month, a year or try a new daily key option, and have access to the fleet of bikes 24 hours a day, 365 days a year. The first 30 minutes of each trip are free. Each additional 30 minutes incurs an additional fee.⁶⁵

Boston's bike sharing system, Hubway, provides over 100 stations and 1,000 bikes available in Boston, Brookline, Cambridge, and Somerville. Citizens can choose between an Annual Membership, Monthly Membership, 3-Day Pass or 24-Hour Pass and access the fleet three seasons per year (the system is shut down in the winter). The cost includes unlimited trips less than 30 minutes in duration; longer rides incur additional usage fees.⁶⁶

New York City has more than doubled bicycle commuting since 2007. During 2012, NYC planned for the launch of Citi Bike, which will be the largest and most ambitious bike share program in the nation. The Citi Bike system was designed by New Yorkers. Since 2011, the City has held hundreds of meetings with stakeholders and all community boards in the program area to get their input, hosting 31 meetings with business improvement districts and other neighborhood and civic groups to gather feedback on station locations. Between January and May 2012, they hosted 14 community-planning workshops where New Yorkers could give additional feedback on which station locations would be most useful and why. They also received more than 10,000 station suggestions and more than 55,000 “supports” for these suggestions through an interactive web portal launched to solicit inputs from New Yorkers. This spring, they began to roll out the first phase of the program, which will consist of 330 station locations and 6,000 bicycles. When memberships went on sale, more than 5,000 annual memberships were sold in less than 36 hours. The entire system is supported without taxpayer subsidy and is expected to create 170 jobs that will generate an estimated \$36 million for the City’s economy each year.⁶⁷

In early 2014, the **City of Vancouver** will launch a network of shared bicycles available for short-term use for a fee. Bikes will be located at secure, easy-to-use, automated docking stations. The PBS system will be privately owned and operated.⁶⁸

In the **Seattle** area, Puget Sound Bike Share (PSBS), a nonprofit partnership of public and private organizations, was formed in June 2012. In April 2013, PSBS selected Portland-based Alta Bicycle Share as its operator/vendor. Alta will work with PSBS to plan, launch, and sustain a regional bike share network beginning with approximately 500 bikes and 50 stations in Seattle. The program is anticipated to launch in 2014.⁶⁹

The City of Portland, Oregon, has a higher percentage of bicycle commuters than any other major U.S. city, with a bicycle commute rate that is eight times the national average. The number of riders crossing bridges into downtown Portland has increased by double-digit percentages in each of the past four years.⁷⁰ The City of Portland has selected Alta Bicycle Share as its bike share contractor. Its first task is to raise funds for the launch and operation of the bike share system. Portland Bike Share is scheduled to open in spring 2014.⁷¹

E. Create a County Fleet of Bikes

65 <http://www.capitalbikeshare.com/>

66 <http://www.thehubway.com/>

67 Page 31 of PlanYC Progress Report: http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_progress_report_2013.pdf

68 <http://vancouver.ca/streets-transportation/public-bike-share-system.aspx>

69 <http://www.seattle.gov/transportation/bikeshare.htm>

70 Page 38 of of Portland’s CAP update: <http://www.portlandoregon.gov/bps/article/268612>

71 <http://www.portlandoregon.gov/transportation/57983>

The County of Sonoma might benefit from a small fleet of bikes near the County Administration Offices to prevent car travel between buildings in this area.

San Francisco's CityCycle allows City and County of San Francisco employees to use the CityCycle fleet to conduct work-related business and help reduce greenhouse gas emissions. The 2012 Annual Report⁷² found the program to:

- Decrease use of motorized vehicles for short trips. Once CityCycle was an available resource, City employees chose to ride a bike with greater frequency. Driving for trips up to three miles decreased by five percent, and driving for trips three to six miles decreased by six percent. Over 32,800 vehicle miles are reduced annually as a result.
- Save money and reduce emissions. 1,360 gasoline gallon equivalents are reduced annually, reducing costs by \$4,366 and CO2 emissions by 35,467 lbs.
- Motivate employees to be healthy. Employees are most encouraged to bike because of the health benefits associated with cycling.

F. Incentivize Employers to Install Trip-End Facilities

Washington, D.C.: According to a 2013 study titled, "Trip-End Facilities at Work and Bicycle Commuting in the Washington, D.C. Region" (funded by the U.S. Department of Transportation as part of the Research Initiatives Program of the Mid-Atlantic University Transportation Center), results of a 2007-2008 survey done in the Washington, D.C. area indicate that bike parking and cyclist showers are related to higher levels of bicycle commuting, even when controlling for other explanatory variables. The odds for cycling to work are greater for employees with access to both cyclist showers and bike parking at work compared to those with just bike parking, but no showers at work. Free car parking at work is associated with a lower likelihood for bike commuting. This analysis is based on commute data of 5,091 workers in the Washington, D.C. area, where commuting accounts for 41% of all bike trips.⁷³

G. Create a Tenant Bicycle Parking in Existing Commercial Buildings Ordinance

Since March 2012, the **San Francisco** Tenant Bicycle Parking in Existing Commercial Buildings Ordinance encourages bicycling to work by requiring commercial property owners to provide secure bicycle parking, or allow tenants to bring their bicycles into the building. Passed in partnership with Supervisor John Avalos, the Building Owners and Managers Association (BOMA), and the San Francisco Bicycle Coalition (SFBC), the legislation assists in attaining the goal of 20 percent of all trips by bicycle by 2020. This is part of the city's larger goal of reducing greenhouse gas emissions by 25 percent below 1990 levels by 2017. The San Francisco Tenant Bicycle Parking in Existing Commercial Buildings Ordinance requires commercial property owners to:

- Allow tenants to bring their bicycles to their leased space, or
- Provide secure bicycle parking on-site, or
- Provide off-site bike parking access for tenants

The Ordinance applies to commercial properties housing tenants that provide goods and/or services to the public, and/or to the business community directly.⁷⁴

3.5 Integrate Climate Protection into General Plans

⁷² <http://www.sfenvironment.org/article/sustainable-commuting-programs/commutesmart-reports>

⁷³ "Trip-End Facilities at Work and Bicycle Commuting in the Washington, DC Region":

<http://katana.hsrc.unc.edu/cms/downloads/DeterminantsofBicycleCommuting.pdf>

⁷⁴ <http://www.sfenvironment.org/article/sustainable-commuting-programs/tenant-bicycle-parking-in-existing-commercial-buildings>

Background

A key component of reducing emissions in the realm of transportation and land use is to integrate climate protection strategies into the General Plans for the County. The California Air Pollution Control Officers Association (CAPCOA) offers guidelines for General Plan development to reduce greenhouse gases. The most relevant of these for Sonoma County are:

- Foster land use intensity near, along with connectivity to retail and employment centers and services to reduce vehicle miles travelled and increase the efficiency of delivery of services through adoption and implementation of smart growth principles and policies;
- Improve the local jobs/housing balance to reduce vehicle miles travelled;
- Zone for appropriate mixed use development to encourage walking and bicycling for short trips, rather than vehicles;
- Link residential and commercial development to transit facilities;
- Reduce parking requirements to facilitate higher density development that fosters access by walking, biking and public transit;
- Identify potential sites for renewable energy facilities and transmission lines;⁷⁵

Many of these strategies are already being used by cities throughout the country and many are referenced below as recommendations.

Strategies in Sonoma County's Comprehensive Transportation Plan (CTP) are congruent with the strategies of communities that have seen significant progress in the transportation sector. The CTP aims to reduce VMT per capita by 10% below 2005 levels by 2035. Furthermore, the CTP recommends the following strategies to reduce VMT: transit-oriented development, transportation investment (density, diversity, design, destinations), infill development and carbon efficient design, address jobs-housing imbalance, encourage smaller neighborhood locations for daily goods and services, housing assistance, Travel Demand Management (TDM), public education/travel choice programs, promote telecommuting, promote school-based TDM, and implement car-sharing programs.

3.6 Use Pricing and Taxes

Background

Pricing and taxes are often not under local control, making them difficult tools for Sonoma County to use to affect change. However, Sonoma County could investigate the viability of a local fuel tax, as well as an ordinance to ensure that vehicle insurance is paid by miles driven. These two approaches would dis-incentivize driving, which could help to bring down emissions. These approaches also make sense from the standpoint that more frequent drivers use and cause more wear and tear on roads and thus, cost local governments more money. The County can also take steps to support this kind of pricing at the state level.

In **Montgomery County**, a fuel tax was established in 1971, essentially as a revenue generating measure. All of the tax revenues go into the County's General Fund, which pays for all of the general services provided by the County government, including police, fire, roads, libraries, health programs, etc. The tax is levied against suppliers of building energy fuels only (electricity, natural gas, fuel oil, etc.) based on the units of fuel used (kWh, therms, gallons, etc.) and is passed onto individuals and businesses by each utility or fuel supplier. In FY14, the total revenues from the energy tax are anticipated to be about \$210 million. The tax provides the County with data that can serve as a readily available surrogate for a GHG inventory.⁷⁶

⁷⁵ Page 62 of CAPCOA's model policies document: <http://www.ca-ilg.org/document/capcoa-model-policies-greenhouse-gases-general-plans>

⁷⁶ Email from Stan Edwards, Montgomery County, Division Chief, Environmental Policy and Compliance, October 7, 2013. Tax rates set each year. FY14 (07/01/13 – 06/30/14) available: http://www.montgomerycountymd.gov/OMB/Resources/Files/omb/pdfs/fy14/psp_pdf/17-774.pdf.

In **Multnomah County** in January and February 2014, the Metro Policy Advisory Committee (MPAC) and Joint Policy Advisory Committee on Transportation (JPACT) agreed several elements should be included in their draft “Preferred Approach” for 2014. One of those elements is supporting vehicle insurance paid by the miles driven using state assumptions for pay-as-you-drive insurance.⁷⁷

3.7 Improve Public Transportation

Background

Sonoma County’s bus system is mainly used by those who cannot afford cars. Displacing ridership in single occupancy vehicles with public transit ridership is key to putting a dent in transportation-related emissions. Investing in public transportation will be crucial to this effort. The North Bay Organizing Project is advocating the following very specific ideas for Public Transit in Sonoma County:⁷⁸

- Coordinate service between all transit operators (Golden Gate Bus, CityBus, Sonoma County Bus, SMART, etc.)
- Give bus passes to students (kindergarten through college)
- Improve Sunday and evening service
- Provide bus passes to people in homeless shelters
- Increase service to provide 15-minute headways
- See the Community Connector Bridge between SRJC and the SMART Station through to completion

The following strategies are informed by the successes of other communities in increasing ridership.

Strategies to Consider:

- A. Track the Carbon Effects of Public Transit Ridership*
 - B. Support SMART for Success*
 - C. Create a Robust Online Presence with Many Tools to Help Transit Riders*
 - D. Make the Bus Experience More User-Friendly*
 - E. Consider Electric Buses When Replacing the Sonoma County Transit Fleet*
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- A. Track the Carbon Effects of Public Transit Ridership*

In **Philadelphia**, Southeastern Pennsylvania Transportation Authority (SEPTA) has been tracking emissions from Philadelphia’s public transportation system. According to a Sustainability Annual Report released in January 2013, the following savings were realized in 2012:⁷⁹

- 69,844,564: Pounds of carbon avoided thanks to ridership growth and congestion reduction
- 15,391,959: Pounds of carbon removed from operation of vehicles and infrastructure
- 84: Average annual trips per capita taken on SEPTA
- 8.23: Pounds of carbon displaced per trip by the average SEPTA rider

⁷⁷ Page 20 of “Shaping The Preferred Approach,” Portland Metropolitan Region, April 2014:

http://www.oregonmetro.gov/sites/default/files/041814_final_disc_guide_web_updated.pdf

⁷⁸ Sonoma County Transportation and Land Use Coalition

⁷⁹ <http://www.septa.org/sustain/blog/2011/01-23.html>

Portland and Multnomah County have achieved considerable success in limiting emissions growth from transportation. Urban form and mobility policies have resulted in almost no increase in emissions from transportation since 1990. TriMet ridership has doubled since 1990, with increases every year. The regional light-rail system continues to expand; it now connects Portland to Clackamas Town Center, coinciding with the new rail loop through downtown Portland along the transit mall.⁸⁰

B. Support SMART for Success

In Sonoma and Marin Counties, Sonoma-Marin Area Rail Transit (SMART) is a passenger train and bicycle and pedestrian pathway project that will serve stations from Cloverdale in Sonoma County to the San Francisco-bound ferry terminal in Larkspur, Marin County. SMART's environmental studies project 5,000 to 6,000 passenger trips per day will be made on the train and 7,000 to 10,000 daily trips will be made on the bicycle/pedestrian pathway. SMART claims that the rail project will take more than 1.4 million car trips off Highway 101 annually and reduce greenhouse gases by at least 124,000 pounds per day.

The SMART rail corridor parallels Highway 101, the only north-south transportation corridor in the North Bay. Traffic congestion along this corridor has increased dramatically in the last decade and it is now ranked by Caltrans as one of the most congested freeways in the Bay Area. More than 80% of all North Bay commercial, residential and educational facilities are located along the SMART corridor.

The stations along the corridor are being designed to accommodate available feeder bus services, shuttle services and, in some suburban locations, park and ride facilities. Stations in the core areas of the three largest cities in the North Bay – Santa Rosa, Petaluma and San Rafael – are being designed with no park and ride facilities, with the idea that they will create more walkable downtowns.⁸¹

Many resources have been poured into SMART to date. Ensuring that SMART realizes the kind of ridership that its advocates predict is the task at hand. Intermodal transportation may be a key piece to ensuring SMART's success, given that many areas will not have park and ride facilities.

C. Create a Robust Online Presence with Many Tools to Help Transit Riders

Sonoma County Transit does have an online presence, but there is much room for improvement.

In Alameda County, AC Transit offers a Clipper pass.⁸² Using a "clipper card" could help make riding the bus easier and make intermodal transit much more fluid and user-friendly.

Sonoma County is currently developing a clipper card. Supporting the clipper card with a user-friendly website would help to encourage robust ridership.

Portland's TriMet has a very expansive and user-friendly website with many tools for riders to help them get where they need to go. The website includes a hub to purchase tickets, maps and schedules, stops and stations, a trip planner, a transit tracker, and service alerts. It also has a section that explains how to use the system, a blog for TriMet fans, and TriMet gear to instill pride in TriMet users.⁸³

D. Make the Bus Experience More User-Friendly

While Sonoma County now has WiFi onboard, additional amenities would greatly enhance the experience of riding the bus and make using the bus for commuting easier.

80 Page 38 of Portland's CAP update: <http://www.portlandoregon.gov/bps/article/268612>

81 http://www2.sonomamarintrain.org/index.php/what_is_smart/

82 <http://www.clippercard.com/ClipperWeb/actransit/faq.do>

83 <http://trimet.org/>

Seattle's RapidRide buses have some key features that make them very user-friendly:⁸⁴

- Inside the bus, the next stop is displayed on illuminated overhead signs
- RapidRide stations have electronic signs that tell how many minutes it will be until the next bus will arrive
- RapidRide stations include large maps of the routes showing all the stops and destinations.

E. Consider Electric Buses When Replacing the Sonoma County Transit Fleet

Sonoma County's current fleet of buses use compressed natural gas. As Sonoma Clean Power gets up and running and local power sources become cleaner, switching to electric buses in Sonoma County will help reduce greenhouse gas emissions as well as improve local air quality.

For nearly a year, **Utah State University** has been operating a first-of-its-kind electric bus that employs inductive charging technology to recharge the vehicle's batteries while it waits at a bus stop. The technology allows for the transfer of energy between two objects. According to Utah State University, the new technology achieved three basic performance metrics: 1. a power level up to 25 kilowatts; 2. greater than 90 percent efficiency between the power grid and the battery; and 3. a maximum misalignment of up to six inches. WAVE, Inc., a Utah State University spin-off company, worked in cooperation with the Utah Science Technology and Research Initiative's Advanced Transportation Institute and hopes to launch its first commercial demonstration of the new bus technology later this year.⁸⁵

3.8 Optimize Traffic Efficiency

Background

In Sonoma County, traffic signals are synchronized at some major intersections to support traffic efficiency and reduce idling times.

Montgomery County's Department of Transportation analyzes roundabouts as an option when conducting traffic studies for modification of intersection traffic controls.⁸⁶ The County of Sonoma may consider something similar, although the City of Cotati has outlawed roundabouts.

3.9 End Investment in Infrastructure that Increases Emissions from Transportation

Sonoma County is still investing significant funds in freeway widening and other projects that increase emissions. Ending investments in infrastructure that increase emissions from transportation and channeling those dollars into low-carbon alternatives such as the ones described above is key to reducing emissions from transportation. Millions of dollars leave the County each year to purchase fossil fuels to power Sonoma County's transportation sector. Sonoma County can stop the outpour of money and start keeping dollars local by transforming the landscape and the fleet of vehicles used to travel across it.

Sustainable Transport Adoption

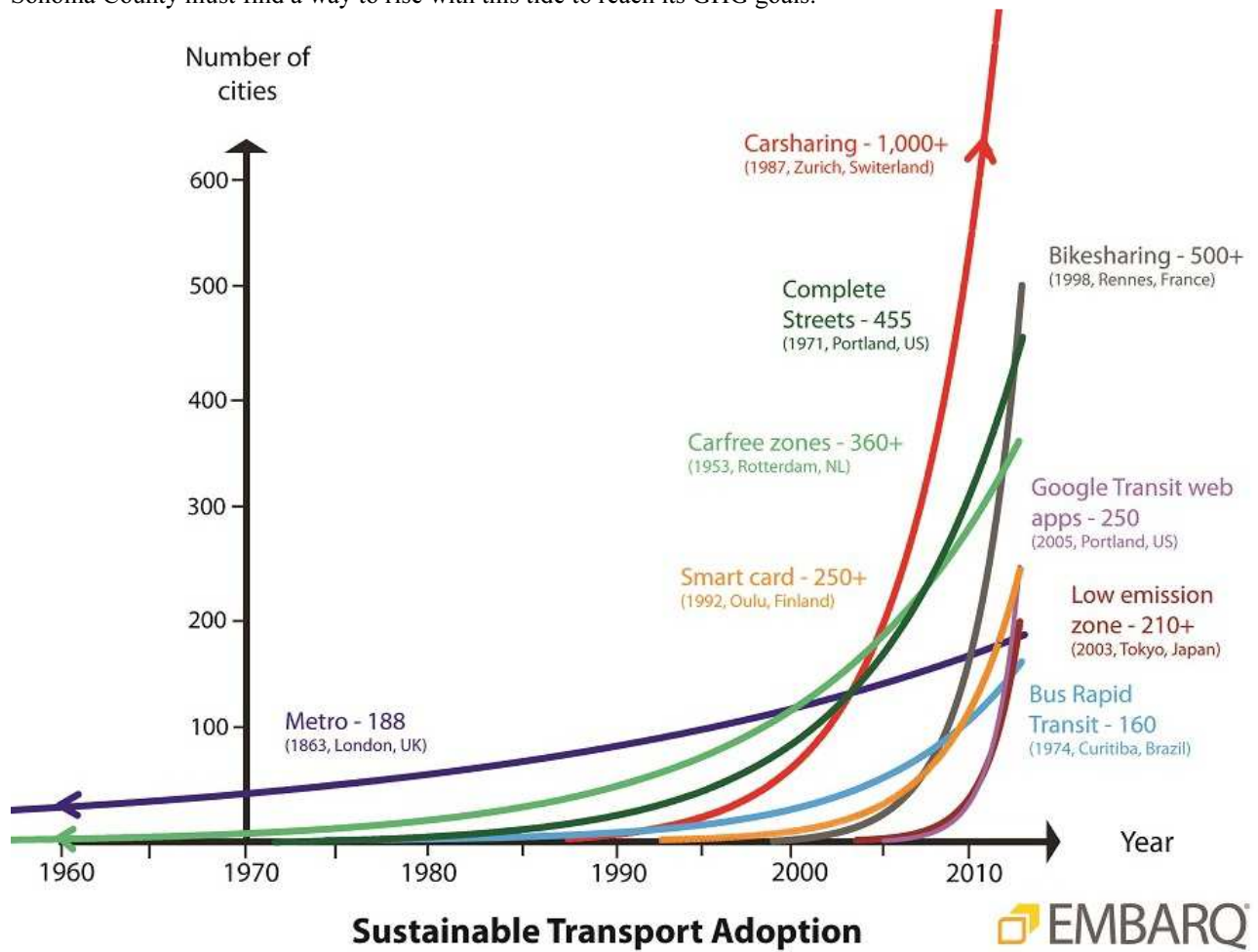
The pace of adoption of sustainable transport systems will determine if Sonoma County can achieve its goals. Below is a graphic from EMBARQ showing the pace of adoption for various sustainable transport approaches.⁸⁷ While not all

⁸⁴ <http://metro.kingcounty.gov/travel-options/bus/rapidride/>

⁸⁵ <http://web1.ctaa.org/webmodules/webarticles/articlefiles/Fall13TransitNotes.pdf>

⁸⁶ Page 10 of Montgomery County's CAP update: <http://www6.montgomerycountymd.gov/content/dep/downloads/air/2010implementationstatus.pdf>

approaches are expressed here, it shows a trend toward precipitous adoption of some of these methods around the world. Sonoma County must find a way to rise with this tide to reach its GHG goals.



87 "On the move: Pushing sustainable transport from concept to tipping point" by Dario Hidalgo and Heshuang Zeng, The City Fix, October 23, 2013: <http://thecityfix.com/blog/on-the-move-pushing-sustainable-transport-concept-tipping-point-dario-hidalgo-heshuang-zeng/>