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Technical Memorandum

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City of Palo Alto, Office of Transportation

From: Kittelson & Associates, Inc. and Mobycon

CC: Sylvia Star-Lack, City of Palo Alto, Office of Transportation

RE: Palo Alto Bicycle and Pedestrian Transportation Plan Update – Bicycle Friendly Community

BICYCLE FRIENDLY COMMUNITY

This memo provides a review of the criteria for a "Bicycle Friendly Community" as outlined by the League of American Bicyclists and a comparison of the City of Palo Alto (the City) to Gold- and Platinum-rated peer communities. We will also examine the detailed evaluation metrics to identify areas for improvement in Palo Alto and provide suggestions to help Palo Alto improve from a Gold to Platinum-level Bicycle Friendly Community.

The Importance of Walking & Wheeling

Walking (or moving by wheelchair or mobility device) is the most fundamental form of transportation available. Regardless of what mode one chooses, there is a point at the beginning and end of their trip in which they are a pedestrian. Additionally, walking or moving by wheelchair is the one form of transportation available to everyone, regardless of age or ability to drive or ride a bike. Similar to walking, wheeling (by any one of the various means from cycling or scootering to using a wheelchair or mobility device) is, in theory, a widely accessible means of transportation and recreation. In comparison to owning a vehicle or even purchasing a transit pass, using any of the various wheeling devices is a low-cost (and sometimes no-cost) way to travel throughout one's community.

Active modes of travel have a wide variety of benefits for individuals and society as a whole. Walking and wheeling (when requiring human effort), provide users with exercise opportunities that can be incorporated into their daily routine. Exercise has been found to improve both physical and mental health, improving overall public health and wellbeing. This can have significant benefits to the health system and result in economic benefits as well.

This can have significant benefits to public health with one study finding that a moderate increase in active transport (40.5 to 53.4 minutes per person week) – in line with preferred transportation scenarios from the five largest California transportation planning regions – could result in an annual reduction of 909 deaths and 16,084 disability adjusted life years (DALYs) which is the sum of years of life lost due to premature

mortality and years of living with disability. A significantly more ambitious scenario, increasing cycling to 283 mins per person per week could result in 8,543 fewer annual deaths and 194,003 fewer DALYs.[1]

In addition to public health improvements, active transportation provides economic benefits in a variety of ways, from reductions in healthcare costs associated with a healthier population, to increased property values, business revenue, and tourism. Such benefits have been observed across the country with Northwest Arkansas seeing $137 million in economic benefits from investments in cycling[2], Indianapolis generating a $1.01 billion increase in property values adjacent to the Indianapolis Cultural Trail[3], and the Miami Valley in Ohio attracting $13 million worth of goods and services income annually associated with the trails in the region[4].

It is well-known that walking and wheeling by human-powered modes is also much more environmentally friendly than travelling by motor vehicles, whether powered by fossil fuels or electric motors. Achieving higher mode share of zero carbon emission (walking) and low carbon emission (cycling) modes can significantly reduce greenhouse gas emissions and improve air quality, linking back to public health outcomes due to reduced pollution. Motor vehicles also produce a significant amount of environmental microplastic pollution from tire wear, an issue that is of growing concern with larger, heavier vehicles that wear down tires more quickly. This is especially pertinent with the growing number of large vehicles on streets and roads (such as SUVs and pick-up trucks) as well as electric cars (which weigh more than internal combustion vehicles). It is noted that bicycles (both pedal-powered and electric) produce emissions through the logistics and assembly chain, as well as brake and tire particulate during use, however at almost insignificant levels compared to motor vehicles.

Walking and wheeling are also economically more sustainable for communities as walking and wheeling infrastructure tends to be cheaper to provide and maintain, as well as being more space efficient in moving similar numbers of people as car infrastructure. In almost all cases, walking and wheeling are the cheapest forms of transportation even when compared to transit.

Finally, providing well-planned and designed walking and cycling networks ensure residents and visitors have mobility options to safely and comfortably travel within their community. Traditional auto-centric planning and street design has created auto-dependent cities where using sustainable forms of transportation can be uncomfortable and even dangerous. Without access to a car, people can be excluded from opportunities to participate in society. This has manifested within Palo Alto through historical zoning practices relegating non-residential uses to a concentrated location resulting in significant travel distances for day-to-day errands. Providing diverse transportation networks allows people of all ages, abilities, incomes, and ethnic backgrounds to choose what form of transportation is best suited to their needs and desires, contributing to the creation of a more equitable community.

[1] *https://www.sciencedirect.com/science/article/pii/S2214140516302419*

[2] *https://www.waltonfamilyfoundation.org/about-us/newsroom/bicycling-provides-137-million-in-economic-benefits-to-northwest-arkansas*

[3] *https://uli.org/wp-content/uploads/ULI-Documents/Active-Transportation-and-Real-Estate-The-Next-Frontier.pdf*

[4] *https://uli.org/wp-content/uploads/ULI-Documents/Active-Transportation-and-Real-Estate-The-Next-Frontier.pdf*
https://www.mvrpc.org/sites/default/files/2013trailsurveyreport.pdf

Principles of Good Network Design

To create a truly sustainable transportation network, high quality facilities for all road users must be provided. Five key principles are considered for network planning and design. By ensuring all five principles are met within the network, a system of streets and spaces are created that improve access and connectivity while encouraging people to walk and cycle for all kinds of trips, from the work commute to daily errands and beyond, thus serving a wide variety of users.

- Cohesion – A cohesive active transportation network is one that allows users to get from A to B using active modes, with key origins and destinations linked as a cohesive whole that can be easily navigated by bike or on foot. Gaps in sidewalks or cycling facilities undermine cohesion as they present barriers for users to overcome, forcing users into environments that are not suited to them, such as a busy roadway.
- Directness – A direct trip by active means, or any mode for that matter, is one that can be completed quickly and with minimal effort. Since walking and cycling are human-powered modes, it is important that unnecessary detours are avoided. Such detours may require excessive time or energy for the user, presenting a barrier to active modes. Routes that are short and quick for pedestrians and cyclists result in walking and cycling trips that are competitive to other forms of transportation, increasing the likelihood of their use.
- Safety – Safety is a key aspect in an active transportation network. Unsafe conditions, such as mixing active users with vehicles on high speed and volume roadways is a major deterrent to a large proportion of the population. A key aspect of creating a safe environment is minimizing differences in speed and mass. In practice, this means providing dedicated spaces for pedestrians and cyclists in the form of sidewalks and cycle tracks where traffic speeds and volumes are high. In some cases, such as local streets where volumes are low, mixing users can be safe as long as the street is designed to slow vehicles to 20 mph or less, a speed that is safe for vulnerable road users. When creating a safe environment, perceived safety must also be taken into consideration. If an environment feels threatening to active users, even if there is no real danger, that environment will be avoided when possible.
- Comfort – Comfort is an often-overlooked aspect of designing an active transportation network. Frequent stops at stop signs and red lights can negatively impact user comfort as this increases the physical exertion required of cyclists when starting from a stop and can be irritating for pedestrians. Other aspects that can negatively influence comfort include bumpy or uneven surfaces and excessive noise from vehicles or other sources. Perceived safety, as mentioned above, can also be linked to comfort as a feeling of being unsafe undermines feelings of comfort.
- Attractiveness – While attractiveness is a personal opinion, there are certain elements that have been found to be widely considered as attractive along an active transportation route. Open spaces with greenery, a well-maintained route, quiet streets, and an aesthetic built environment are generally seen positively while traffic congestion, certain land uses (such as industry), and poorly lit routes are considered unattractive and deter from the use of a route or network.

What Makes a Great Cycling Community?

Since 2003, the League of American Bicyclists' (LAB) Bike-Friendly America program has been evaluating states, communities, businesses, and universities with the aim of rewarding excellence and raising standards and expectations for what constitutes a bicycle-friendly environment. As of May 2023, there were 506 Bicycle Friendly Communities, though nearly 900 have applied.

Communities hoping to be recognized as a Bicycle Friendly Community must complete an extensive application process covering bicycling facilities, maintenance, last-mile connections, education, media presence, data-collection, promotion, regulations, planning, staffing and other conditions. The LAB report

card uses information from the application as well as federally available data to make decisions regarding awards.

The League of American Bicyclists has identified five elements[5] essential to great cycling communities: Equity & Accessibility, Engineering, Education, Encouragement and Evaluation & Planning.

- **Equity** refers to fostering a fair and inclusive planning process and cycling environment that seeks to include all potential users, regardless of background, and re-balance historical inequities by proactively reaching out to and providing extra support for marginalized groups. **Accessibility** means expanding the traditional "cycling" umbrella to include a wider range of mobility options which can open mobility opportunities to those with a range of disabilities.
- **Engineering** means designing, building, and maintaining safe and convenient places to cycle and park. High-quality cycling environments are connected networks of trails, quiet streets, and protected cycle-tracks. They also include a variety of convenient, secure cycle parking options.
- **Education** means providing a wide variety of opportunities for community members to acquire the skills and confidence to ride – from bike classes in elementary schools to accessible courses for beginner adult riders.
- **Encouragement** includes providing a range of incentives and opportunities to get and keep people cycling – from Bike to Work programs to National Bike Month Activities and Open Streets events.
- **Evaluation & Planning** means planning for and evaluating the cycling system to measure current gaps and challenges and plan for future improvements.

League of American Bicyclists – Bicycle Friendly Communities

The most recent publicly available report card for Palo Alto is from spring 2021. The Bicycle Friendly Communities application has been offline for a significant update (discussed in more detail below) but still focuses on the core Five E aspects.

As of 2023, Palo Alto was designated as a Gold-level cycling community. It has been listed as a Bicycle-Friendly Community since 2003 and has been a Gold-level community since 2010. The following table shows awards made to comparable peer communities[6]. Platinum-level communities include Davis, CA; Fort Collins, CO; Boulder, CO and Madison, WI. Peer gold-level communities include Oakland, CA and Santa Cruz, CA.

[5] https://bikeleague.org/bfa/5-es/

[6] https://bikeleague.org/bfa/award-database/#community

Community	Award (2023 spring)	Population	Land Use
Davis, CA	Platinum	69,289	Suburban
Palo Alto, CA	Gold	67,082	Suburban
Santa Cruz	Gold	59,946	Suburban
Boulder, CO	Platinum	108,090	Small town
Santa Monica, CA	Gold	90,401	Urban
Fort Collins, CO	Platinum	174,871	Urban core surrounded by low density suburban areas
Madison, WI	Platinum	258,054	Urbanized area

Benchmarks for Palo Alto

Applicants for the Bicycle Friendly Communities complete an extensive application[7] in order to be evaluated on a series of metrics. Palo Alto submitted an application and was evaluated in spring 2021 by the League of American Bicyclists on these measures relative to the average platinum-level community, as shown in the following table.

	Average Platinum	Palo Alto	Comparison
High Speed Roads with Bike Facilities	36%	80%	**Exceeds average for Platinum communities**
Bicycle Education in Schools	GOOD	VERY GOOD	**Exceeds average for Platinum communities**
Share of Transportation Budget Spent on Bicycling	14%	76%	**Exceeds average for Platinum communities**
Bike Month and Bike to Work Events	VERY GOOD	VERY GOOD	**Meets average for Platinum communities**

[7] https://bikeleague.org/sites/default/files/Guide_to_the_Bicycle_Friendly_Community_Report_Card.pdf

Presence of Active Bicycle Advocacy Group;	YES	YES	**Meets average for Platinum communities**
Active Bicycle Advisory Committee	MEETS AT LEAST MONTHLY	MEETS AT LEAST MONTHLY	**Meets average for Platinum communities**
Bike Plan is Current and is Being Implemented	YES	YES	**Average**
Total Bicycle Network Mileage to Total Road Network Mileage	80%	33%	**Below average for Platinum communities**
Bicycle–Friendly Laws & Ordinances	VERY GOOD	ACCEPTABLE	**Below average for Platinum communities**
Bike Program Staff to Population	1 per 21k	1 per 26.8k	**Below average for Platinum communities**
Cycling Ridership	13.6%	9.19%	**Below average for Platinum communities**
Crashes per 10k bicycle commuters	100	281.05	**Below average for Platinum communities**
Fatalities per 10k bicycle commuters	0.4	0.69	**Below average for Platinum communities**

Palo Alto scores well on the percentage of high-speed roads with bike facilities, bicycle education in schools, and share of transportation budget spent on cycling. However, Palo Alto has a much higher rate of crashes and a lower cycling mode-share than the average Platinum community.

The League of American Bicyclists provides numerous resources[8] to communities aspiring to become Bicycle Friendly Communities or improve their awards. The site includes resources to improve on the Five E's but also guidance on conducting a bicycle parking inventory, organizing bicycle events, and forming a bicycle advisory committee.

[8] *https://bikeleague.org/bfa/community/resources/*

Opportunities for Improvement and 2023 Application Year

Last year, the League of American Bicyclists announced a change in their awards process[9]. The biggest change is the addition of the Equity and Accessibility section as part of the Five E's but the new process also puts emphasis on other criteria. A review of the 2023 application for Bicycle Friendly Communities includes the following additions:

- Understanding community socioeconomic and demographic information including:
    - median age of the community
    - languages other than English spoken at home
    - foreign born population
    - median household income
    - poverty rate
    - bicycle commute by sex
    - percent of household without vehicles
    - disability characteristics
    - racial and ethnicity distribution
- Defining the bicycle network for on-road and off-road cycling facilities and adoption of a Safe System approach to the delivery of the bicycle network.
- Updating bicycle infrastructure to make it more accessible for all ages and abilities, including people with physical and/or cognitive disabilities.
- Network maintenance and use of mechanisms (e.g., 311) for cyclists to identify issues, problems and hazards on the network as well as funding mechanisms for ongoing maintenance.
- Providing bicycle access to transit
- Regional coordination of bicycle facilities to ensure network connectivity and cohesion across municipal boundaries.

The 2023 application increases the emphasis on addressing gaps in the low-stress network with the most recent report card indicating that quiet streets are underutilized in Palo Alto, which could easily become low-stress linkages in the cycling network for a relatively low cost.

Specific opportunities identified for the City of Palo Alto to progress up to "Platinum" level community are as follows (based on the 2021 Report Card and the 2023 application criteria):

- **Increasing the overall mileage of bicycle network** with a specific focus on **addressing gaps** in the low stress cycling network, especially on quiet neighborhood streets where traffic calming can create safe cycling spaces for a relatively low cost. The 2023 application has been adjusted to place a heavier emphasis on building a cohesive low-stress network rather than disjointed pieces of infrastructure, reflecting the Safe Systems Approach[10].
- **Increase high-quality cycle parking**, especially near major activity centers and transit.
- **Expand cycling education** efforts to reach adults, especially women, seniors, under-represented groups, and non-English-speaking communities (noting the large Chinese and Hispanic groups present). Further, the LAB suggests that Palo Alto could offer bicycle-friendly training to motorists, particularly commercial drivers and fleet operators (such as delivery drivers).
- Creating a bicycle-friendly environment through laws & ordinances:
    - The BFC application asks about the following **Bike-Friendly policies:**
        - Banning parking in bike lanes and harassing cyclists

[9] *https://bikeleague.org/change-coming-bicycle-friendly-community-awards/*

[10] *https://safety.fhwa.dot.gov/zerodeaths/docs/FHWA_SafeSystem_Brochure_V9_508_200717.pdf*

        - Banning cell phone use while driving and harassing cyclists (now enacted statewide)
        - Penalties for failing to yield to a cyclist when turning, 'dooring' cyclists
        - Vulnerable road user and safe passing distance laws
        - A law that allows cyclists to treat a stop sign as a yield sign (i.e. whether the "Idaho Stop" is legal in your state), a law that allows cyclists to treat an unresponsive red light as a stop sign (i.e. "Dead Red" law) and a law that allows bicyclists to follow pedestrian signals instead of motor vehicle traffic lights at signalized intersections
- The BFC application also asks communities about **bike-unfriendly policies and ordinances**. The City seems to require cyclists to use bike lanes, where available. The City also prohibits riding on sidewalks in the central business district and bans "trick riding". The following are other bike-unfriendly policies the BFC application asks about:
    - **Where Cyclists Can/Must Ride:** Local law requires bicyclists to use side paths and/or bike lanes regardless of their usability, laws requiring cyclists to ride as far to the right of the road as practicable without exceptions, restrictions on sidewalk riding inside and/or outside of the Central Business District, dismount zones/regulations on shared-use paths and the banning of cycles from non-highway roads that are open to vehicles.
    - **What/How Cyclists Can Ride:** Local law restricts usage of electric-assist bicycles, mandatory bike registration and/or helmet use for all ages and bans on exhibition or "trick riding" (e.g. wheelies).
    - **Who Can Ride:** Local or school policies restrict youths from riding to school, "Bicycle safety checks" or other legal or de facto enforcement stops occur.

It is considered that working towards the above suggestions by building a more extensive/robust cycling network, increasing the amount of high-quality cycle parking and access to transit, expanding education efforts across different demographic groups and improving cycle-friendly ordinances through policies could increase cycling mode share from a modest 9 per cent closer to the Platinum-level average of nearly 14 per cent. This would have the added benefit of reducing crash and fatality rates by increasing overall road safety which would also work towards a Platinum-level community designation.