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ARCATA, CA 95521

Debbie Egger, Interim Executive Director
Humboldt County Association of Governments
611 I Street, Suite B
Eureka CA 95501

March 26th, 2025

Subject: City of Arcata Local Carbon Reduction Strategy Project 2025

Dear Debbie,

The City of Arcata is requesting **$216,000.00** to be allocated through the Carbon Reduction Program (CRP) via the Infrastructure Investment and Jobs Act (IIJA) for the City’s bikeshare program.

The 2023 Caltrans Carbon Reduction Strategy stated that “Nearly 62% of California’s total vehicle miles traveled (VMT) occurs on the state highway system” leaving the remaining 38% VMT occurring on local and rural roads (California Department of Transportation 2023). The underlying goal of this project is to provide an alternative to driving in-town and reduce vehicle miles traveled on both the highway and local roads in an equitable way. This project embodies two of the “three pillars” outlined in Caltrans’ Carbon Reduction Strategy through its emphasis on VMT reduction and active transportation.

Figure 1: Photo of bike share station at Arcata Plaza

The City of Arcata has had its current bike share partnership with Cal Poly Humboldt since May 2021. There are currently 40 bicycles between 8 stations throughout Arcata with most of the bike share stations being prioritized near high-density residential housing and adjacent to Class II bike paths. Figure 2 below provides an overview of the current bike share stations with respect to the City's bike network.

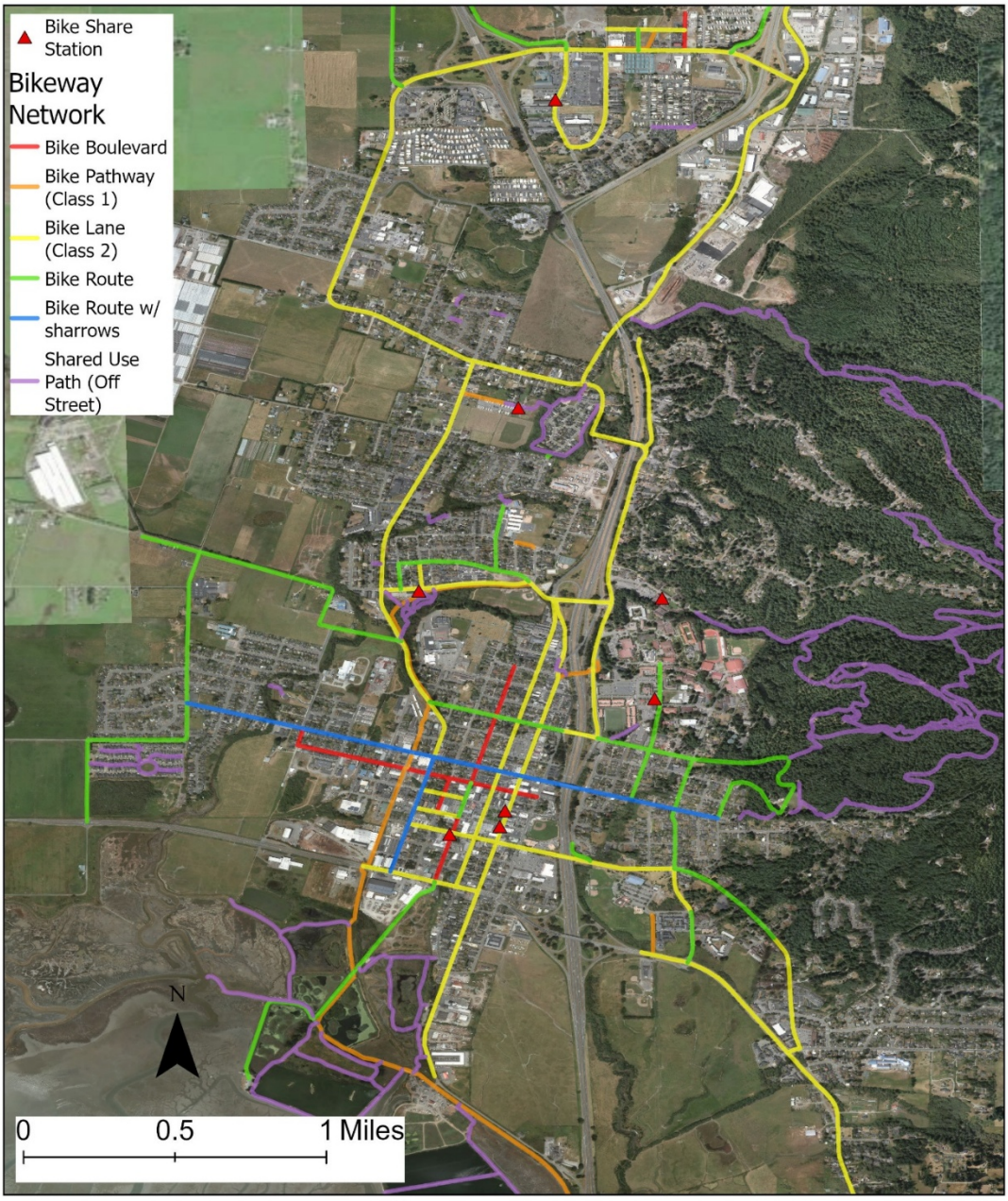

Figure 2: Map of Current Bike Share Stations in Arcata, CA

The program has experienced a 25.5% increase in use from 2021 to 2022, a 79.5% increase from 2022 to 2023 and remained somewhat consistent with only a 2% increase from 2023 to 2024. 2025

appears to already have increased ridership in comparison to the months of January and February in 2024, see Figure 3 below. There have been 8,088 rentals through the bike share program since its revival, with an annual breakdown provided in Figure 4 below. The total rentals nearly doubled between 2023 and 2024. Figures 3 and 4 below illustrate that the bikeshare program has had an upward trend in ridership since its revitalization in 2021 with a positive percent change in rentals when comparing between the same month each year.

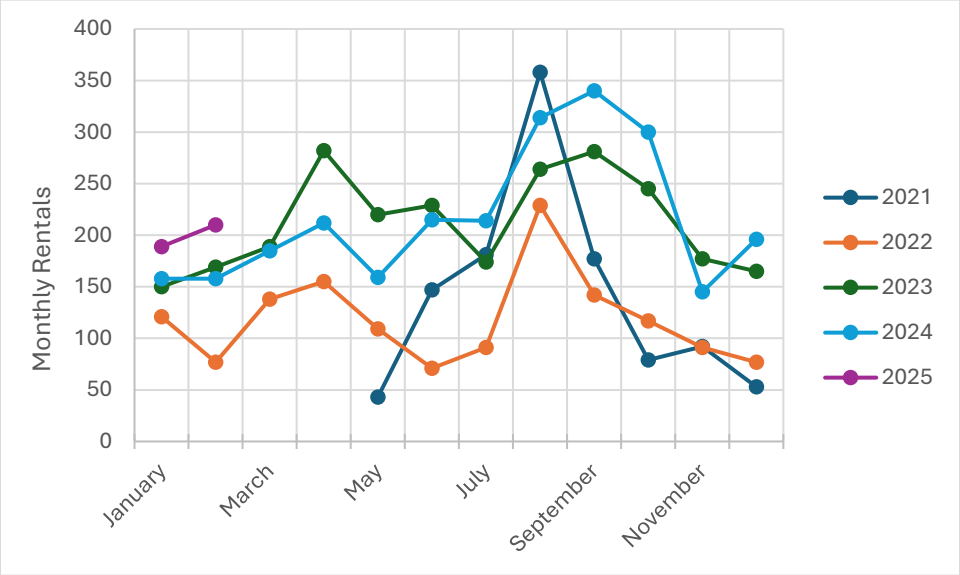

Figure 3: Monthly Rentals

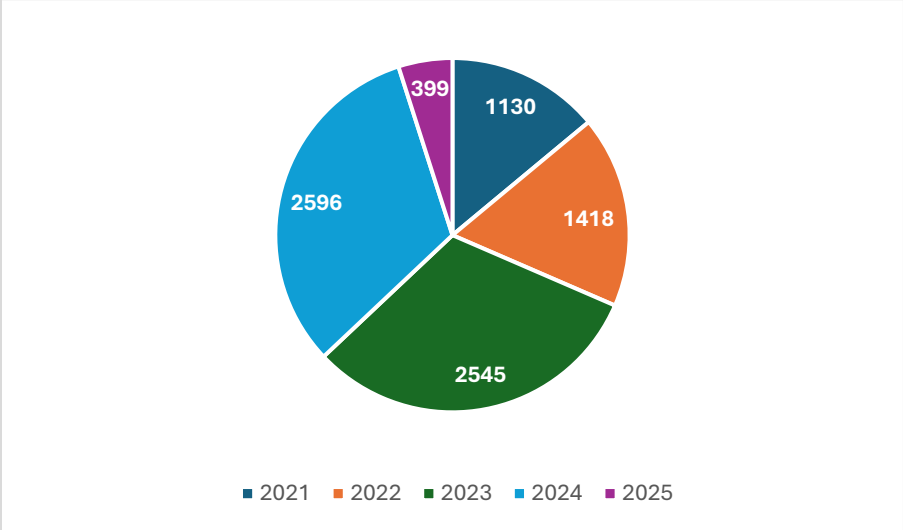

Figure 4: Total Rentals Per Year

Percentage changes between months on an annual basis were used to estimate an average trend for bike rentals from 2025 to 2028. Cal Poly Humboldt is currently under construction for the

Craftsman Mall Student Housing Project which will add approximately 900 new residents at that location. Cal Poly Humboldt is planning to add new stations and more bicycles to the fleet at the student housing project site which will contribute to a positive trend for monthly bicycle rentals. With these projected additional stations and increased residential density because of the student housing project, the bikeshare program should experience a proportional gain in ridership in coming years. The future connection of the Annie & Mary Trail with the Humboldt Bay Trail North will also boost ridership within our community. Figure 5 below provides the projected bicycle rentals per month for the next four years.

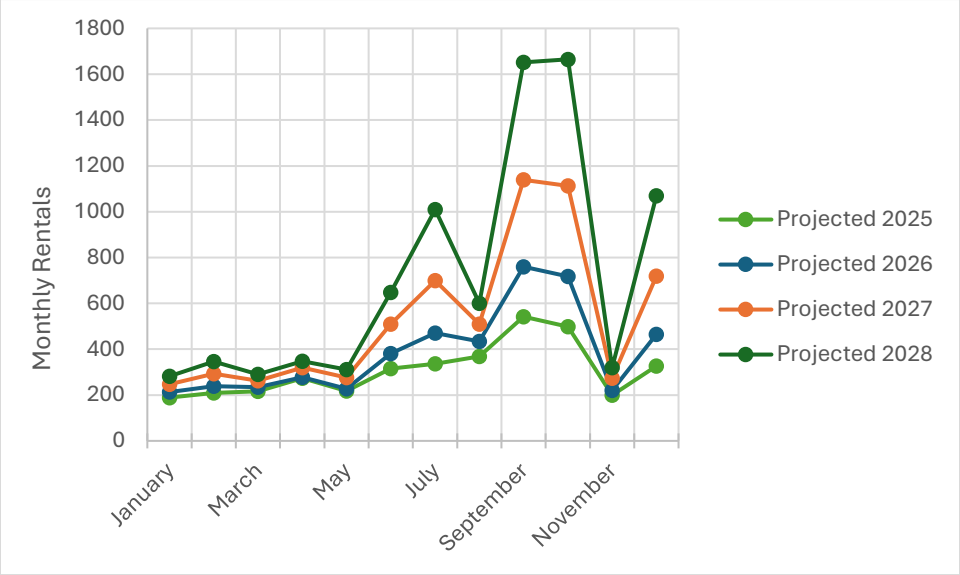

Figure 5: Projected Monthly Bike Rentals

The California Air Pollution Control Officers Association (CAPCOA) provides guidelines for local governments to approach determining greenhouse gas (GHG) emission reductions in their report, *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*.

$$GHG\ Emissions = [source\ metric] * [emission\ factor] * [Global\ Warming\ Potential\ (GWP)]$$

The City of Arcata's bike share program is facilitated through its contract with Tandem Mobility. Tandem Mobility's online user interface allows the City to keep track of bike rental activity including tracking routes and bike rental duration. Bike rental data is tracked through a global positioning system that collects data as a series of points that provides a rough approximation of routes traveled during each rental. These routes can be exported into ArcGIS Pro where further analysis can provide an estimated length of each route traveled during a rental. The rental routes

can then be used to represent the distance that would otherwise have been traveled by a vehicle and provide a source metric of vehicle miles traveled reduced. Based on the average monthly rental route distance for the year 2024, and assuming at least 50% of the distance generated through analysis is valid, an average of 44,694 miles are traveled using the City's bike share program per year. Figure 6 below provides a heatmap representation of the February 2024 route dataset, using kepler.gl to produce the image.

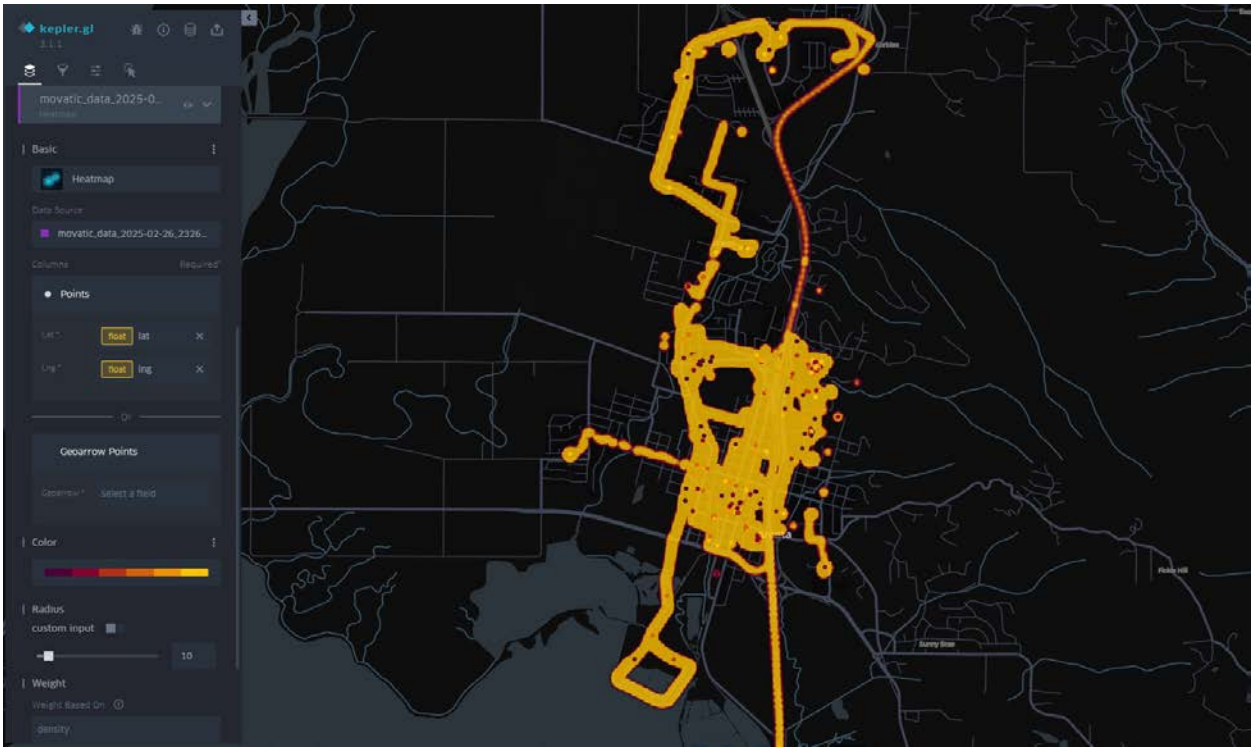

Figure 6: Heatmap of Rental Routes - February 2024 (Produced Using Kepler)

The U.S. Environmental Protection Agency (EPA) recommends using an average 400 grams per mile of CO_2 emitted per passenger vehicle for a reference emission factor. According to guidelines provided under the EPA's *Understanding Global Warming Potentials*, CO_2 emissions would incorporate a global warming potential (GWP) factor of 1 when calculating GHGs.

Based on the above assumptions, the City's bike share program provides an estimated annual GHG reduction of approximately 17.88 metric tons as CO_2, or the equivalent of removing four average passenger vehicles from the road annually.

The same approach was used to determine NO_x, PM_{10}, $PM_{2.5}$, and volatile organic compound (VOC) emissions that could be reduced when applying their respective emission factors to the estimated VMT reduction from the bike share program. Table 1 below provides the estimated GHG reduction for additional constituents of concern.

Table 1: Estimated GHG Reduction Per Year (Currey et al 2015, California Air Resources Board 2023)

Parameter	Emission Factor (gram/VMT)	Reduction (kg/year)
NO_x	0.272	12.16
$PM_{2.5}$	0.088	3.93
PM_{10}	0.587	26.22
VOC	0.114	5.08

Aside from GHG reductions, bike share programs and other programs that provide VMT reductions also provide benefits to public health. Providing non-vehicular modes of transportation has the potential for reducing vehicle on vehicle collisions by reducing the number of vehicles active on the road. Active transportation options can also increase physical activity and health of a community. Vehicular driving has also been linked to stress and elevated blood pressure which can lead to decreases to mental health (Currey et al 2015).

It currently costs the City of Arcata $1,800.00 per bicycle for operation, maintenance, repairs, and administration of the bike share program. The total annual cost of running the bike share program with the current fleet of 40 bicycles costs $72,000.00 per year. Additional funding was previously procured through an Affordable Housing and Sustainable Communities (AHSC) grant, however, funding through this source will be ending this year. The City of Arcata is requesting **$216,000.00** to support this project up to fiscal year 28-29.

This project does not require any additional planning or consultant assistance for project implementation. The City's bikeshare program is fully developed and ready for continued implementation upon receiving funding.

Environmental Review

The California Environmental Quality Act (CEQA) determination for the project is a categorical exemption pursuant to CEQA Guidelines Section 15301(c), existing highways and streets, sidewalks, gutters, bicycle and pedestrian trails, and similar facilities (this includes road grading for the purpose of public safety), and other alterations such as the addition of bicycle facilities, including but not limited to bicycle parking, bicycle-share facilities and bicycle lanes, transit improvements such as bus lanes, pedestrian crossings, street trees, and other similar alterations that do not create additional automobile lanes).

Sources

1. Association of Environmental Professionals. “2025 CEQA California Environmental Quality Act Statute & Guidelines Association of Environmental Professionals.” (2025). *Statute and Guidelines* , Association of Environmental Professionals, <https://www.califaep.org/statute_and_guidelines.php> (Mar. 26, 2025).

2. California Air Resources Board. (2023). “Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan.” *Federal Register :: Request Access*, Sacramento Regional NAAQS, <https://www.federalregister.gov/documents/2023/12/19/2023-27513/air-quality-implementation-plans-california-san-diego-county-2008-and-2015-8-hour-ozone> (Mar. 24, 2025).

3. California Department of Transportation (2023). “California Transportation Carbon Reduction Strategy.” *Carbon Reduction Strategy | Caltrans*, California Department of Transportation, <https://dot.ca.gov/programs/esta/carbon-reduction/crs> (Mar. 19, 2025).

4. Currey, Ganson, Miller, and Fesler. (2015). “Vehicle-miles traveled (VMT) impacts on the environment, ...” *Vehicle-Miles Traveled (VMT) Impacts on the Environment, Human Health, and Fiscal Health*, State Smart Transportation Institute, <https://ssti.us/wp-content/uploads/sites/1303/2015/06/Ganson-VMT-Impacts-on-the-Environment-Human-Health-and-Fiscal-Health-Working-Paper-1.pdf> (Mar. 24, 2025).

5. “Greenhouse Gas Emissions from a Typical Passenger Vehicle.” (2024). *Green Vehicle Guide*, Environmental Protection Agency, https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle (Feb. 27, 2025).

6. Lee, B. (2010). “CAPCOA quantifying greenhouse gas mitigation measures.” *Quantifying Greenhouse Gas Mitigation Measures A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*, California Air Pollution Control Officers Association (CAPCOA), <http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoa-quantifying-greenhouse-gas-mitigation-measures.pdf> (Mar. 20, 2025).