



SUPPLEMENTAL AGENDA MATERIAL for Supplemental Packet 2

Meeting Date: November 9, 2021

Item Number: 23

Item Description: Budget Referral: Allocate General Fund Revenues to Support “MTRANS” Pilot Program Offering Free AC Transit on Sundays in Berkeley

Original Item Name: Budget Referral: Allocate General Fund Revenues to Support Pilot Program Offering Free AC Transit on Sundays in Berkeley

Submitted by: Councilmember Ben Bartlett

The Item has been amended to include additional recommendation, background, and information to:

- Initiate “MTRANS”, an equity oriented pilot program throughout Berkeley that will incorporate green, safer, multi modal modes of transportation and encourage the use of public transportation
 - Increase accessibility to electric scooters, bicycles, tricycles, minicars, cars, vans, and senior transport shuttles and carts
 - Create a general payment system for all public transportation that simplifies payment method for commuters
- Present additional information on:
 - Individualized barriers to use of public transportation, such as the First Mile/Last Mile problem, long-term costs, and inconvenience
 - An integrated payment system to increase reliance on public transportation
- Offers justification and means for transit system innovation:
 - Environmental implications of transportation
 - Greenhouse gas emissions
 - Pollution and related health effects
 - Bay Area’s environmental issues
 - Increased pedestrian safety
 - Income inequality and transportation
 - MTRANS as a sustainable solution
 - Traffic safety and Walkability Impacts
 - Precedent in Santa Monica
 - Centralized payment technology

To: Honorable Mayor and Members of the City Council

From: Councilmember Ben Bartlett
Subject: "MTRANS": Implementation of an interlocking network of electric vehicle transportation.

RECOMMENDATION

Refer to the November 2021 budget process approximately \$500,000 in General Fund Revenue toward fully subsidizing AC Transit fares originating from Berkeley on Sundays for at least one calendar year and possible contingent on restoration of the suspended Line 80 serving some of Berkeley's lowest income neighborhoods

and refer to the City Manager to recommend funding allocations to fund and implement a pilot program creating an interlocking network of electric transportation and unified by a general payment system administered by a vendor entity. Such an interlocking network would incorporate new forms of zero-emission, micro-mobility transportation such as electric scooters, bicycles, electric tricycles, minicars, cars, vans, and senior transport shuttles and carts. This initiative would reduce transportation emissions, increase accessibility for lower-income commuters, and streamline the commuting process.

ADDITIONAL INFORMATION TO INCLUDE IN CURRENT SITUATION

Climate experts agree that humanity must take drastic steps to reduce the emission of greenhouse gases into the atmosphere. In 2018, Berkeley City Council declared a Climate Emergency and stressed the necessity for full community participation and support. Like many urbanized areas, Berkeley experiences high volumes of vehicular traffic that result in air pollution, traffic congestion, accidents, and transportation inequity. These issues can be alleviated by shifting the public's primary transportation method from personal motor vehicles to more environmentally conscious modes of transportation. The persistent reliance on personal motor vehicles evidences structural barriers, including:

1. The First Mile/Last Mile Problem (FMLM)
2. Long-Term Cost
3. Inconvenience

The FMLM problem refers to the difficulty of getting to and from transit hubs. For many, the nearest bus stop or train station requires a long walk, with the walking portion of a journey from South Berkeley to Downtown totaling about 1 mile. Not everyone is inclined or able to walk these distances. Implementing a network of micro-mobility vehicles--such as scooters and bikes--would help address the FMLM problem by supplementing public transit. Since many micro-mobility transportation options are not tied to a stationary location, they can be easily accessed from one's home or workplace, thus reducing the need for a car.

For some commuters, the lifetime cost of owning a personal vehicle outweighs the long term cost of relying on public transit. As of October 2019, the AC Transit local fare was \$2.35, and the day pass \$5.00.¹ The cost of driving accrues in a pay-per-distance fashion. The inflexibility of AC Transit's payment scheme gives car usage an advantage. While BART fares are more flexible than AC Transit's, driving remains the economical option. If one were to travel from Downtown Berkeley to Downtown Oakland, the BART fare could be more than double the cost of driving.

While AC Transit, BART, and Ford GoBikes are connected through Clipper Card, micro-mobility units are not. This keeps the different transit options disjointed, disrupting the unity of the transportation network. A unified payment method would mitigate this inconvenience, and potentially make commuters more willing to switch from motorized personal vehicles to greener, safer forms of transit.

Commuting by bus is slower than driving because buses must stop frequently. They can also be delayed and unpredictable. If a rider misses a bus, the next one can take too long to arrive. Shared scooter, bike, or cart systems ameliorate these issues by being more readily available than buses and not forcing the rider to make stops. With enough units, it will not be difficult for users to find one and they do not have to wait.

ADDITIONAL INFORMATION TO INCLUDE IN BACKGROUND:

A. Transportation: America's Largest Source of Anthropogenic Greenhouse Gas Emissions

As the Earth continues to warm at an alarming rate, it is imperative that we focus our attention on the root causes of pollution. The Environmental Protection Agency (EPA) estimates that in the United States in 2017, 29% of anthropogenic greenhouse gas emissions (GHG) was attributed to transportation, making it the leading contributor above electricity, industry, agriculture, commercial, and residential. Furthermore, the majority of transportation-based GHG emissions stem from "light-duty-vehicle" usage at 59%.² Light-duty-vehicles are vehicles such as passenger cars and light-duty trucks. Additionally, the Environmental Defense Fund (EDF) reports that on-road vehicles are responsible for one-third of the air pollution that produces smog in the U.S.³

B. Beyond Greenhouse Gas Emissions

Greenhouse gas emissions are far from the only source of pollution. Ozone, nitrous oxide (NO_x), PM_{2.5}, and PM₁₀ are all other detrimental byproducts of transportation. Nitrous oxide, PM_{2.5}, and PM₁₀ fall under the category of criteria air pollutants (CAP), which are commonly found air pollutants known to harm health, the environment, and property.⁴ According to the EPA, the transportation

¹ <http://www.actransit.org/2018/05/21/fare-change-2018/>

² <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100WUHR.pdf>

³ <https://auto.howstuffworks.com/air-pollution-from-cars.htm>

⁴ <https://www.epa.gov/criteria-air-pollutants>

sector is responsible for over 55% of nitrous oxide emissions in the U.S.⁵ This is especially concerning, given that nitrous oxide is a major component of smog.

C. Pollution and Related Health Effects

Negative health effects resulting from small pollution particles like PM_{2.5} and PM₁₀ span from aggravated lung diseases such as asthma, emphysema, and chronic bronchitis to fatal heart and lung disease.⁶ While these negative health effects may be present in any community, pollution disproportionately affects low-income communities, as well as primarily black communities. A study from the American Journal of Public Health found that with respect to PM_{2.5}, those in poverty carried a burden 1.35 times higher than that of the overall population. Additionally, non-Whites had a 1.28 times higher burden, while blacks suffered a burden 1.54 times higher. These disparities are held at the national, state, and county level.⁷

D. The Bay Area: A Similar Story

Despite efforts to combat pollution, the Bay Area is one of the most affected regions, rather than an exception to the national trend. The American Lung Association's 2019 "State of the Air" Report ranked the Bay Area as the 4th worst region in the nation in short-term particle pollution, the 6th worst in year-round particle pollution, and as the 8th most ozone-polluted city.⁸ Furthermore, Alameda County received an "F" for high ozone days (2015-2017), as well as an "F" for high particle pollution days (2015-2017).⁹ While recent wildfires are huge contributors to the Bay Area's poor air quality, they are exacerbators rather than the main source of the problem. An SFGate article asserts that vehicles remain the leading cause of air pollution.

E. Income Inequality and Transportation

In addition to negative ecological and health effects, transportation also faces issues of economic inequality. Transportation consumes a larger portion of household budgets for low-income families regardless of whether they use public transportation or own cars. A Surface Transportation Policy Project report found that in 1998, those in the lowest income quintile spent 36 percent of their household budget on transportation, compared with those in the highest income quintile, who spent only 14 percent on transportation.¹⁰

⁵ <https://www.epa.gov/transportation-air-pollution-and-climate-change/smog-soot-and-local-air-pollution>

⁶ <https://www.epa.gov/mobile-source-pollution/how-mobile-source-pollution-affects-your-health>

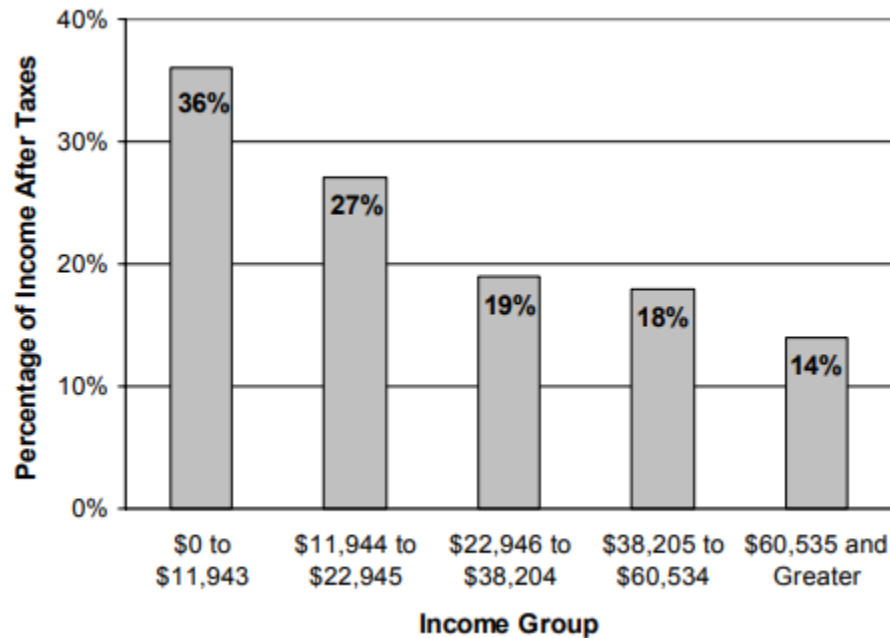
⁷ <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2017.304297>

⁸ <https://www.lung.org/assets/documents/healthy-air/state-of-the-air/sota-2019-full.pdf> (19-21)

⁹ <https://www.lung.org/assets/documents/healthy-air/state-of-the-air/sota-2019-full.pdf>

¹⁰ <https://www.racialequitytools.org/resourcefiles/sanchez-moving-to-equity-transportation-policies.pdf>

Household Transportation Spending, by Income Group



Source: Surface Transportation Policy Project and Center for Neighborhood Technology (2000), Consumer Expenditure Survey 1998.

A 2003 Harvard University reports that not only do low-income households devote a greater proportion of income to transportation but also these costs are increasing at a faster rate for these households. Between 1992 and 2000, households with incomes of less than \$20,000 saw the amount of their income spent on transportation increase by 36.5 percent or more (households with incomes between \$5,000 and \$9,999 spent 57 percent more on transportation than they did in 1992). In comparison, households with incomes of \$70,000 and above only spent 16.8 percent more on transportation expenses than they did in 1992.¹¹

F. Traffic Safety & Walkability Impacts

A policy of encouraging commuters to bike, walk, and use public transit can not only address the FMLM problem but can also result in positive traffic and pedestrian safety. To reduce vehicle collisions with pedestrians, we need to reduce vehicles on the road and provide more convenient multi-modal micro-transit options like bike-sharing, e-bikes, and scooters.

G. MTRANS: The Next Step Forward

Unifying the payment systems for local transit options (such as BART, AC Transit, bike share, and other emergent forms of personal transit) will result in a seamless and efficient transportation network for users. By mitigating barriers

¹¹ Ibid (12)

between modes of non-drive-alone transportation, the commute process becomes a smooth flow from point A to point B -- a viable alternative to driving.

H. Precedent

On June 26, 2018, Santa Monica's city council adopted Ordinance 2578, directing staff to implement a pilot program for shared mobility service companies and technologies.

Some of the stated goals of the pilot program were:

- Diversify mobility options for residents, employees, and visitors to Santa Monica
- Reduce emissions from short trips and connections to transit as well as sidewalk, pathway, and Americans with Disabilities Act (ADA) blockages
- Maximize user awareness of safe and legal behavior for operating shared mobility devices
- Protect public health and safety
- Establish a network for shared mobility services

The pilot program included two e-bike and two e-scooter service options under a maximum of four operators to last approximately 16 months. Operators could adjust the fleet size every two weeks, but there was a maximum of 1,000 e-bikes and 2,000 e-scooters, respectively. To account for changing environments, the initiative contained adjustment procedures providing an open and productive partnership with the City and operators to address community concerns.¹²

In April 2015, a report made by A Better City (ABC) depicted the current payment system utilized by the Boston metropolitan area. They reported that there were 22 payment methods used for publicly provided transportation services. The report then recommended a two-phase approach to reduce risk and better manage implementation for many services and carriers.

Phase 1: Incremental implementation of unified payment

- Creates a single transit account and website in Massachusetts for users to purchase and manage transportation services.
- Uses payment media to make the Charlie Card the state's the preferred and easily-accessible transit payment method on all transit services and increases

Phase 2: Unified payment with NFC phone applications and EMV cards

¹² https://www.smgov.net/uploadedFiles/Departments/PCD/Transportation/SM-AdminGuidelines_04-19-2019_Final.pdf

- Implements open payment for users to compute or process their fares for all participating transit services
- Users would use their NFC enabled smartphones and EMV credit/debit cards at gates and fareboxes
 - This process has been successfully implemented in London, Chicago, and Salt Lake City.

Benefits of the plan include:

1. Single account and website for users to manage their accounts to multiple services and single, available medium for use
2. Improved connectivity of services and higher traveler ability, allowing many more destinations to be reached with the same payment medium, and preferably with joint fares and other innovative pricing. If unified payment is supported by increased integration of schedules across services, the effect is magnified.
3. Consistent and universal transfers across services through a single medium. Increased transfer privileges for commuter rail, boat, and private bus users. Mobile phone users receive integrated transfers.
4. Significant quality-of-life and urban livability benefits: less time in queues at TVMs; increased access to fare types and flexible fare policies; less time managing accounts, fare purchases, and reloads; a single balance in an account; and the ability to travel seamlessly for all general transit and highway services by tapping or displaying a single medium.
 - a. Economics: the greater economic value of more destinations reached by transit through more employment options, etc.
 - b. Environment: benefits for region from increased transit use and increased transit effectiveness, less individual emissions from private vehicles
 - c. Efficiency: faster, more reliable bus trips¹³

I. Centralized Payment Technology

The technology to create a centralized payment system currently exists and is expected to become more prominent in the coming years:

1. Chip-enabled (EMV) credit and debit cards: The switch to chip-enabled cards in the United States payment method in October 2015 allows for contactless payment at gates and farebox readers, which improves the

¹³ <https://www.abettercity.org/docs-new/04.15.2016%20FINAL%20Unified%20Transportation%20Payment%20Media%20report.pdf>

feasibility and efficiency of services. Similar payment systems are in Chicago, Salt Lake City, London, Philadelphia, PA, Washington DC, and Portland, OR, and New York.

2. Smartphones with Near Field Communications (NFC): Using secure payment methods on the phone establishes greater efficiency at gates and fareboxes, less time and expenses in issuing cards, and an accessible medium that most users already use. Through phone payments, the interface allows for easier inspection by transportation personnel and an improved, convenient customer system on their own platform while also utilizing the same service as the contactless payment methods of credit and debit cards.
3. General purpose reloadable (GPR) cards or prepaid cards: GPR cards are an accessible option for individuals who do not have credit/debit cards or NFC phones because they can be purchased in retail stores and reloaded with cash and offer the same utilities as chip-enabled credit or debit cards in the system. This payment method is usually attached with secure networks such as Visa, MasterCard, American Express, or Discover. There are no user fees, but they might include an initial purchase cost so that users do not dispose of them.
4. Personal identity verification (PIV) cards: This card is a federal government ID card standard that can be issued by other government departments and organizations to their respective employees. These cards also employ contactless methods and include transit benefits and pass purchases through an employer account. The PIV cards appeal to large employers because of their inexpensive option, simple administration, and their similar benefits to credit/debit cards and NFC phones.
5. Clipper Card: The clipper card is a reloadable, contactless electronic fare payment card for transit in the San Francisco Bay Area. It includes transit passes, cash, or both, which works on participating transit systems.

ADDITIONAL INFORMATION TO INCLUDE IN REVIEW OF EXISTING PLANS, PROGRAMS, POLICIES, AND LAWS

The vision for a more sustainable Berkeley as outlined in the Climate Action Plan involves making public transit, walking, cycling, and other sustainable mobility modes the primary means of transportation for Berkeley residents and visitors. MTRANS would help the City reach this goal.

Clipper Card is already linked to AC Transit and BART. However, the fares reduce accessibility for some residents, and destinations are limited.

ADDITIONAL INFORMATION TO INCLUDE IN ACTIONS/ALTERNATIVES CONSIDERED

One alternative would be to keep the system as is with an added public transit subsidy for low-income riders. However, determining the subsidy would pose a challenge in itself, and a subsidy could just create more equity issues. Additionally, a transit subsidy does not solve the first mile/last mile problem.

Another alternative would be to supplement the subsidy with the construction of additional bus stops and the implementation of new bus lines. However, the logistical and financial obstacles this would create do not make it a good alternative to MTRANS.

ADDITIONAL INFORMATION TO INCLUDE IN OUTREACH OVERVIEW AND RESULTS

A Clipper Card executive from MTC was consulted and informed us that a similar program may be possible in the future. This process could potentially be expedited if the City pursues MTRANS and collaborates with MTC, AC Transit, and BART.

Electric scooter and bike companies Bird and Jump have expressed interest in being involved in this program, and are eager to expand their operations to Berkeley.

ADDITIONAL INFORMATION TO INCLUDE IN RATIONALE FOR RECOMMENDATION

By diversifying the number of cleaner transportation options within the city and incentivizing their use, Berkeley can reduce the number of carbon-emitting automobiles on the road. As a result, our air will be cleaner and people will be healthier. MTRANS will also increase transportation accessibility because using a single payment provider for multiple transit options is more convenient. Through direct cooperation with and promotion of electric transportation providers such as Bird, Jump, Lime, and Lyft, we can incentivize the use of e-scooters and e-bikes through discounts for Berkeley residents. Increasing affordability and accessibility will increase the benefit-cost ratio of taking more eco-friendly public transportation and rideshare services, thus incentivizing a reduction in auto dependency.

This cost reduction also creates socio-economic benefits such as transportation equity. Many Berkeley residents lack the income to own and operate cars, forcing them to rely on public transit systems such as BART and buses. This inconvenience manifests itself in several ways:

1. The fees for public transit may take up a large portion of commuters' budgets when they are required to travel daily.
2. These systems are also limited in their destinations, thereby limiting job opportunities for people who rely on them.

The proposed network of electric scooters and bikes will alleviate these issues by allowing riders to travel directly to their intended destinations at discounted rates. Commuting via scooter can substitute bus usage for shorter commutes and as a means of getting to BART stations.

Although MTRANS is expected to generate numerous benefits, it is crucial to introduce the system with a pilot program to test logistics, demonstrate value, and analyze obstacles before fully committing funding, staff time, and energy to the project.

ADDITIONAL INFORMATION TO INCLUDE IN IMPLEMENTATION, ADMINISTRATION AND ENFORCEMENT

MTRANS will be implemented through contracts issued by the City of Berkeley to companies. Staff from the City of Berkeley will remain closely linked to the program and check up on it regularly.

ADDITIONAL INFORMATION TO INCLUDE IN FISCAL IMPACTS OF RECOMMENDATION

The MTRANS project will be economically supported by the Climate Action Fund. Although the goal is to find a vendor entity to maintain the universal payment system, there may be associated costs of implementation and staff time.

ADDITIONAL INFORMATION TO INCLUDE IN ENVIRONMENTAL SUSTAINABILITY

MTRANS will help the environment by reducing pollution from non-electric cars and buses by increasing the availability of electric modes of transportation.

ADDITIONAL INFORMATION TO INCLUDE IN OUTCOMES AND EVALUATION

The outcomes are expected to benefit the people of Berkeley and the environment. MTRANS will be evaluated throughout the first year to survey frequency of use and public opinion. It will be updated as needed to fit the demands of people in Berkeley to create a smooth system that paves the way to a more sustainable and equitable transportation network.

Additional CONTACT PERSON(s) regarding MTRANS

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