San Francisco
County Transportation
Authority

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Memorandum

AGENDA ITEM 15

DATE: February 20, 2020

TO: Transportation Authority Board

FROM: Joe Castiglione – Deputy Director for Technology, Data & Analysis

SUBJECT: 02/25/20 Board Meeting: Information on Findings of the Clean Miles Standard

RECOMMENDATION ☒ **Information** ☐ **Action** None. This is an information item. **SUMMARY** This item presents findings from the California Air Resources Board's (CARB's) Clean Miles Standard 2018 Base Year Emissions Inventory Report, which estimates CO2 emissions per-passenger-mile for TNCs pursuant to Senate Bill (SB) 1014. The Emissions Inventory found that TNCs emit 50% more CO2 per-passenger-mile than the statewide passenger vehicle fleet in California, indicating that TNCs are challenging our ability to meet climate goals. The Transportation Authority will continue to advise CARB as it sets emissions reductions targets for the TNC industry.	☐ Fund Allocation ☐ Fund Programming ☒ Policy/Legislation ☐ Plan/Study ☐ Capital Project Oversight/Delivery ☐ Budget/Finance ☐ Contract/Agreement ☐ Other: _____

BACKGROUND

In 2018, Senate Bill (SB) 1014 (Skinner) directed CARB to develop an inventory of CO2 emissions per-passenger-mile of transportation network companies (TNCs) and adopt annual emissions reduction goals and targets for TNCs. SB 1014 directs the California Public Utilities Commission (CPUC) to implement the annual goals and targets. In September 2019, CARB held a workshop where they shared and sought feedback on their draft emissions inventory methodology and findings. Staff from the Transportation Authority and San Francisco Municipal Transportation Agency (SFMTA) attended the workshop and worked with CARB over the following months to provide guidance and feedback.

In December 2019, CARB released the Clean Miles Standard 2018 Base-year Emissions Inventory. This is the first step in a process that will guide the regulation of emissions in the rapidly evolving TNC sector. It is also our first window into the emissions of TNCs, based on

comprehensive data directly from TNC companies. In 2021, CARB will adopt annual goals and targets. In 2023, CPUC will begin implementing annual goals and targets.

DISCUSSION

In September 2019, CARB held a workshop where they shared and sought feedback on their draft emissions inventory methodology and findings. Based on the draft findings, staff from both the Transportation Authority and SFMTA provided detailed feedback to CARB on evaluating baseline emissions, setting goals and targets, and monitoring performance. These comments largely supported CARB's draft methodology and findings, while noting that regulating emissions per-passenger-mile may not be sufficient to reduce total emissions, due to the sector's rapid growth and competition with lower emitting modes such as transit. The full set of comments we and SFMTA provided may be found in Attachment A. This engagement is critical to ensure that CARB's methodology is sound, and that goals and targets are set appropriately to meet California's and San Francisco's climate goals.

Findings.

The 2018 Base Year Emissions Inventory produced key findings, including:

- TNCs emit 50% more CO^2/PMT than the California light-duty vehicle fleet, emitting approximately 301 gCO^2/PMT, compared to 203 gCO^2/PMT.[1]
- Although TNC vehicles are cleaner on average, 38.5% of miles driven by TNCs are without a passenger, a finding that is supported by other studies.[2,3]

Methodology.

CARB staff collected TNC travel records, [4] vehicle characteristics, [5] fuel economy and emissions data,[6] and passenger occupancy data from several sources to estimate CO^2 emissions per-passenger-mile.[7] These sources include data provided by TNC companies, through publicly available sources, and collected by CARB.

Some TNC drivers will drive using multiple TNC platforms at once. To account for this, CARB built complete travel records for each vehicle, using VIN and license plate data to match vehicles. Next, they estimated vehicle occupancy for pooled and non-pooled service from

1 Transportation Authority previously reported 75% from CARB's draft analysis, which was recently adjusted to 50% in their final inventory (CARB Presentation to the Public Workshop for the Clean Miles Standard. September 2019. https://ww2.arb.ca.gov/sites/default/files/2019-09/Clean_Miles_Standard_Workshop_Slides.pdf).
2 Erhardt et. al. Do Transportation Network Companies Decrease or Increase Congestion? Science Advances, Vol. 5 No. 5, May 8, 2019.
3 Fehr & Peers. Estimated TNC share of VMT in six US metropolitan regions. (2019).
4 Detailed trip records of TNC activity, provided by TNC companies, describing their activity while waiting for a trip request (period 1), routing to a pickup location (period 2), and driving passengers to their destination (period 3), including detailed time and location data and the vehicle identification number (VIN)
5 Vehicle characteristics by VIN from the California Department of Motor Vehicles, IHS Markit's VINtelligence
6 Fuel economy data from the U.S. EPA, emissions data from CARB's Vehicle Emissions Database System and the CARB Data Logger Study
7 Occupancy data from the CARB Data Logger Study

data collected through the CARB Data Logger study, applying this data to the appropriate trip types. Finally, they estimated emissions for each trip using vehicle-specific fuel economy and a CO^2 emissions conversion factor, accounting for hybrid electric vehicles that can operate with or without a combustion engine.

Significance of Clean Miles Standard Base Year Emissions Inventory

The 2018 Base Year Emissions Inventory findings demonstrate the value of requiring TNC data in developing statewide policy.

Before now, various parties have tried to estimate the emissions impact of TNCs at a large scale (nationally or statewide). This validates the importance of the Transportation Authority's and SFMTA's advocacy to the CPUC's rulemaking on TNC data, urging that TNC reports are made publicly available. Using TNC-provided data, the Emissions Inventory provides valuable evidence of the performance of the TNC sector in the area of air quality. Clearly, TNC data can also support analyses in other public policy areas of importance as well.

Next Steps.

Now that CARB has completed its 2018 Base Year Emissions Inventory, they will begin developing annual emissions goals and targets for TNCs. Staff from the Transportation Authority and SFMTA will continue to engage with CARB to assist with Clean Miles Standard Implementation.

FINANCIAL IMPACT

None. This is an information item.

CAC POSITION

None. This is an information item.

SUPPLEMENTAL MATERIALS

- Attachment 1 – SFCTA and SFMTA Comments to CARB on the Clean Miles Standard Implementation

Attachment 1

SFCTA and SFMTA Comments to CARB on the Clean Miles Standard Implementation

The following contains comments delivered by San Francisco County Transportation Authority (SFCTA) and San Francisco Municipal Transportation Agency (SFMTA) staff to California Air Resources Board (CARB) staff concerning CARB's Clean Miles Standard draft base year emissions inventory methodology and results.

COMMENTS ON CLEAN MILES STANDARD IMPLEMENTATION

CARB Should Establish a Net Impact Metric

SB 1014 calls for CARB to establish a metric which measures the GHG effects of TNCs on a per-unit basis; this is what we would call an efficiency metric. This can be distinguished from a net impact metric, which measures a total effect. It is possible for an efficiency metric to reflect reduced GHG while net GHG remains static or even increases. As an example, a TNC could double its average occupancy rate and thus drastically cut its emissions per PMT. However, if that TNC triples its operations in that same period, total emissions may increase. The same logic can be applied to other components of the Clean Miles Standard analysis, such as the proportion of drivers with zero-emission vehicles; the proportion of VMT completed by zero-emission vehicles; and gram-per-mile GHG emissions rates.

Research has demonstrated that TNCs reduce transit ridership. By shifting people from low or no emissions modes like walking, biking, and transit, TNCs may generate more total GHG while decreasing GHG per passenger mile. A net impact metric is the most appropriate methodology by which CARB could consider the interactions of TNCs with active and transit modes, and the impact of those interactions. This metric would also reflect growth in the volume of TNC trips statewide and other potential factors, so research should be designed to distinguish these contributing effects.

Recommendation: As part of its "next steps", following the establishment of the required 2018 TNC baseline emissions profile, we urge CARB to also develop not only net impact targets for TNCs reductions in GHG per passenger mile also for the reduction of total TNC net impacts on GHGs.

Active Transportation Assumptions

In the Preliminary 2018 Base Year Emissions Inventory, CARB proposed that grams of CO2 per passenger mile be calculated with the equation below, assuming active and transit PMT to be zero (0):

(Vehicle Miles Traveled (VMT) x Real World Fuel Consumption x Conversion Factor) / ((Passenger Miles Traveled (PMT) x Occupancy) + Active PMT + Transit PMT)

We agree with the assumption of zero active and transit PMT, both now and in any future calculation of this metric. Because of the importance of transit and active transportation trips in reducing GHG emissions it is critical to not misattribute the efficiency of these modes to

TNCs. By assuming active and transit PMT to be zero, the metric will be a true efficiency metric which can be used to compare the efficiency of TNCs to the efficiency of transit, active transportation, or other modes.

We understand that it has been proposed that TNCs are credited for miles taken by walking, biking, transit, or zero-emission modes that precede or follow a TNC trip. For example, if someone takes a TNC to a commuter rail station, and then takes the train, then all miles traveled by train would be included in the denominator of the calculation. This is problematic because:

1. The metric could no longer be used to evaluate the relative efficiency of alternative modes because it would no longer describe the miles taken by a single mode.
2. The metric would misattribute efficiency of other modes to TNCs. Consider a trip from Sacramento to Oakland, during which someone takes a three-mile TNC trip to Amtrak followed by the Capitol Corridor train 80 miles to Oakland. This would result in 3 vehicle miles and 83 passenger miles, but the efficiency is derived entirely from the train segment.
3. The outcomes are not consistent with the spirit of SB 1014 and CARB's mandate. SB 1014 aims to decrease greenhouse gas emissions by requiring TNCs to become more efficient. But allowing them "credit" for miles taken on other modes ignores the complex interactions between these modes, and the net effect of those interactions. Finally, as noted previously, research has established that TNCs reduce total transit ridership, a very worrisome impact, even if some trips connect to transit.

Additionally, we are concerned that active transportation miles generated by TNC owned bikeshare and scooter programs may be incorporated as credits toward their companies' emissions profile. This should not be included, because it does not describe TNC activity or associated emissions. Furthermore, it could allow a TNC company to meet its targets by acquiring an existing bikeshare or scooter share company but making no changes to its TNC operations. Any accounting of bikeshare and scooter share performance should be a separate metric. Additionally, bikeshare and scooter share programs generate non-revenue VMT due to the use of vehicles in maintenance and rebalancing efforts, which would need to be included in any such calculations. Rebalancing means the manual redistribution of devices (i.e. bikes and scooters) to different areas to meet expected demand. As an example, one of the scooter share companies tracked through San Francisco's permit system generated an average of 10,528 VMT per month in the past year of operation. This

demonstrates the need to ensure that the emissions calculations associated with active transportation trips do not frustrate the intent of SB 1014.

Recommendation: For the reasons stated above, we support CARB's current proposal to assume miles taken by transit and active transportation be represented as zero in the calculation of grams of greenhouse gas emissions per passenger mile for TNCs.

Vehicle Occupancy

CARB and/or the CPUC should require TNCs to collect and report actual vehicle occupancy and passenger miles traveled (PMT). For pooled rides, occupancy is already collected by TNC companies, but not reported to the CPUC. TNC companies should be required to collect and report to the CPUC occupancy for both pooled and non-pooled rides. Occupancy data can be collected and reported without use of any personally identifiable information and thus raises no personal privacy concerns. This is the best way to reliably collect comprehensive PMT data.

Recommendation: Require TNCs to collect and report occupancy data for all trips.

Regional Targets

The SFCTA's TNCs Today and TNCs and Congestion reports showed that TNC activity is highly concentrated within San Francisco. We can also see from the TNCs Today report that there is significant variance in activity by location. It is certain that the concentration of activity and impacts throughout California is similarly variable. For this reason, CARB should consider setting targets, monitoring results and enforcing targets by region and/or place-type. It is critical to understand not only statewide efficiency, but which regions are bearing impacts and which regions are leading in efficiency. We believe a statewide emissions standard with no regional enforcement would obscure these differences and potentially lead to unintended consequences as TNCs adapt their business models to the new regulations.

For example: TNCs might rebalance their operations by pulling out of or reducing operations in less dense markets and further concentrating their operations in more dense markets, which would help them to reach statewide PMT emissions targets. The negative impacts of this scenario are twofold: Less dense communities which are already heavily reliant upon automobiles would lose access to one of their few transportation options, and more dense communities like San Francisco would be affected by the negative impacts of increased TNC activity such as congestion and shifting of transit ridership to vehicle travel. Within the framework of a statewide emissions standard, the only sure way to prevent this would be to set a standard that is achievable in TNCs lowest performing markets – and would

likely be well below the threshold of relevance for their very dense markets like San Francisco and Los Angeles.

We understand CARB's hesitation to advance geographically constrained regulations which the agency or the CPUC may be challenged to enforce. We would point towards the ongoing TNC Access For All rulemaking process – which is considering collecting and disbursing money as well as setting accessibility targets at a county-level – as an example of the sort of geography-based regulation we propose.

Recommendation: We suggest that CARB establish the baseline, and then set and enforce targets at the county level. We recommend further engagement with local and regional transportation agencies to support this approach.

Data Validation and Verification

As evidenced by the recent vehicle emissions scandal, transportation companies have shown a willingness to oppose and circumvent local and statewide policies and regulations in order to maintain or expand their business interests and operations. We strongly encourage CARB to validate and verify the data they receive from TNCs as thoroughly as possible. One method of doing this would be cross-referencing it with aggregate data collected separately by the California Public Utilities Commissions (CPUC) to highlight any potential discrepancies. We also recommend CARB utilize its audit and enforcement powers to ensure compliance with the intent of SB 1014. See links cited below for more information.

Recommendation: We recommend that CARB audit the baseline and other compliance related data against TNC business records maintained for other purposes to ensure that they are authentic and to validate and verify all data associated with SB 1014.

Driverless TNCs

Autonomous vehicle technology is being used daily on California streets and many TNC companies are currently testing this technology. It is estimated that AVs generated two million vehicle miles traveled in California during 2018. We recognize that most of these miles were not generated by TNCs but nonetheless note the likely need to consider the role of AV technology in the Clean Miles Standard program in the future.