San Francisco County Transportation Authority

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Memorandum

AGENDA ITEM 7

DATE: 3/16/2023

TO: Transportation Authority Board

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

SUBJECT: 4/11/23 Board Meeting: Authorize the Executive Director to Enter into a Funding Agreement with the Metropolitan Transportation Commission for a Total Amount Not to Exceed $270,000 for San Francisco Travel Diary Survey Data Collection

RECOMMENDATION   ☐ Information   ☒ Action

- Authorize the Executive Director to enter a funding agreement with the Metropolitan Transportation Commission (MTC) for $270,000 for San Francisco Travel Diary Survey data collection.

- Authorize the Executive Director to negotiate agreement payment terms and non-material agreement terms and conditions.

SUMMARY

We are the lead for three efforts – the Transportation Demand Management (TDM) Market Analysis Study; the Transportation Sustainability Program (TSP) Evaluation Tool Design and Implementation project; and our San Francisco Congestion Management Agency activities – all of which require the use of household travel diary data. The budgets for each effort include funding for supplemental travel diary surveying as part of the MTC Bay Area Travel Survey (Survey) effort. The Survey is a partnership between our agency, MTC and the Santa Clara Valley Transportation Authority to collect individual-level travel behavior data on a biannual basis. A total of $270,000 in funding will increase the number of survey responses collected by MTC in under-sampled areas of San Francisco. We will use the results of the data collection effort for analysis efforts in the TDM Travel Market Analysis Study and TSP Evaluation Tool project, to support SF-CHAMP travel demand forecasting model development and calibration, and to support the 2023 Congestion Management Program update. We expect data to be collected in Spring and Fall of 2023.

☐ Fund Allocation

☐ Fund Programming

☐ Policy/Legislation

☐ Plan/Study

☐ Capital Project Oversight/Delivery

☐ Budget/Finance

☒ Contract/Agreement

☐ Other: _____

BACKGROUND

We are leading the TDM Travel Market Analysis Study (Study), which will identify travel markets that are best suited for TDM investments due to factors such as trip types, travel distance, transit effectiveness, land uses, or variation in transportation supply and network conditions.   The Study will identify travel markets where TDM programs are expected to best support travel needs and have the biggest opportunity to shift travel choices; develop an updated TDM toolbox; and establish evaluation guidelines for TDM projects that can inform prioritization and design of TDM strategies in the city. The Study will be funded by a Prop K appropriation of $406,000, anticipated to be approved at the March 21, 2023 Board meeting.

We have also been leading the TSP Evaluation Tool Design and Implementation project, a multi-year effort to develop statistical models and a web-based tool to quantify the effectiveness of the TDM strategies included in San Francisco's TDM Program in reducing vehicle miles traveled by promoting sustainable travel options. The TSP Evaluation Tool Design and Implementation project is funded by a previously approved Prop K appropriation of $152,684.

Finally, as the Congestion Management Agency for San Francisco County, we are responsible for maintaining a data base on traffic impacts for use in a countywide transportation computer model, and for preparing and adopting a biennial congestion management program.

These three efforts, all of which require the use of household travel diary data, include a combined budget of $270,000 to augment planned data collection through the MTC Household Travel Diary Survey effort, a partnership between our agency, MTC, and the Santa Clara Valley Transportation Authority. This effort will collect household-level travel behavior data on a biannual basis, and the additional survey responses collected through this effort will help ensure a sufficient sample is collected to develop travel profiles for four San Francisco super districts and citywide, to provide detailed information on traveler responses to different TDM strategies, to support travel demand model updates including the use of emerging modes, and to report on changes mode usage in San Francisco.

DISCUSSION

Data Collection. In 2018 and 2019, we partnered with MTC to collect individual travel behavior data through the joint "Bay Area Travel Survey" effort. Both agencies plan to initiate another travel diary survey effort in 2023 to collect updated travel information for the region and San Francisco to support the three aforementioned efforts. The TDM Travel Market Analysis project budget includes $130,000 to supplement this effort to assemble demographic and travel diary survey data for San Francisco residents. The data will support an analysis to understand TDM propensity—where TDM investments will have the greatest impact—based on demographics, land uses, and transportation supply / network conditions. The TSP Evaluation Tool Design and Implementation project includes $40,000 to collect data required to implement the tool. The 2023 Congestion Management Program update and travel demand model project budgets are complemented by $100,000 in funding from the Traffic Congestion Mitigation Tax. Data collection will occur in the nine-county San Francisco

Bay Area in spring and fall of 2023. MTC is leading this regional effort, and has selected and procured the services of a consultant team to complete the work after an extensive survey instrument evaluation process.

The data collection effort will involve traditional travel diary surveying in order to gather complete travel information on all trips made by travelers including origin, destination, mode, purpose, party size, travel times, travel costs, traveler demographics, and trip path details in order to support transferable model estimation. The data will be collected for all members of a household and will be designed to ensure that disadvantaged and hard-to-reach populations are adequately captured in the sample of people surveyed. Surveys will implemented in English, Spanish and Chinese.

This year's survey will augment the traditional travel diary survey to collect some stated preference-type information from travelers. This may include information on induced travel, mode shift, or sensitivities to price and travel times. For example, the survey will collect data from TNC users about what travel models they might have used were a TNC unavailable or unaffordable and may collect information on preferences regarding use of autonomous vehicles.

Participant data will be collected for a one-week period. We anticipate that the sample size target for the planned data collection in San Francisco will be approximately 1,350 – 1,590 surveys. The data collection scope of work is included in Attachment 1.

FINANCIAL IMPACT

Budget for services identified in this agreement will be provided by Prop K appropriations and Traffic Congestion Mitigation Tax administration funds. The adopted Fiscal Year 2022/23 Budget and Work Program includes funding for a portion of the data collection. Sufficient funds will be included in future budgets to cover the remaining cost of the agreement.

CAC POSITION

The Community Advisory Committee will consider this item at its March 22, 2023 meeting.

SUPPLEMENTAL MATERIALS

Attachment 1 – Scope of Work

ATTACHMENT 1
Scope Of Work
Outline of Services

All services under the Agreement shall be authorized by Task Order, initiated and developed according to the detailed task order process described in Attachment A-1, Task Order Process, attached hereto and incorporated herein by this reference. Task Orders shall include, at a minimum, a detailed description of the work to be performed, a completion date for performance, a maximum payment amount, payment terms (deliverables-based or time and materials) and subconsultant participation (if any), in a completed form as shown in Attachment A-2, Task Order Form, attached hereto and incorporated herein by this reference.

Examples of some of the services to be performed by CONSULTANT are:

PHASE 1: Trial Test of Bench Apps

In Phase 1, firms selected for award onto the Bench will be expected to perform the following Task 1: Smartphone Application Demonstration with Bay Area Travel/Transit Modes. Firms shall customize their apps and perform a Trial Test of their apps with up to 50 MTC-provided participant households. MTC shall gather user feedback at the conclusion of the Trial Test period. Adjustments to Trial test will be made if Covid protocols impact testing. Changes to Trial test must be approved by MTC. Firms shall be compensated for their efforts on a firm-fixed basis, with payment due upon MTC acceptance of satisfactory deliverables.

TASK 1: Smartphone Application Demonstration with Bay Area Travel/Transit Modes

In this task, MTC and partnering agencies will evaluate each firm's smartphone travel diary data collection app.

Task 1.1 – App Customization

Each firm shall customize its travel diary App so that it shall function in the San Francisco Bay Area and include Bay Area-specific travel/transit mode response options. The App must be able to collect components of person travel, including GPS-enabled trip traces and milestone locations, such as origins, destinations, and any transit boarding, alighting, and transfer locations. Access and egress modes to/from transit should also be able to be recorded, especially walk and drive access/egress. The smartphone travel diaries must work on both iPhone and Android operating systems, and across a variety of smartphone vintages. The App must be available for download on the App Store for iOS devices and Google Play. For Task 1, survey instruments will only be needed in English. But please note that the final selected firm (Consultant) shall be required to translate the App to Spanish, Simplified Chinese, and Traditional Chinese, and possibly other languages as well for the full field data collection in Task 3, Step 2 below.

The Project Team would like to see each firm's best work to date, but this exercise should not require extensive reprogramming of current tools. Only minor customizations are anticipated. More significant customizations will be developed with the firm selected for final award of the full Project in Task 3, Survey Methodology and Instrument Refinements below.

Task 1.2 – Trial Test of App

Following approval of the customized App, each firm shall make the smartphone App travel diary survey available for pilot testing by up to 50 individual devices over a two-week period. Trial Test participants will be provided by MTC. Each firm shall coordinate implementation of the Trial Test with MTC and its partners. Each firm shall collect the data from the Trial Test and provide the Trial Test dataset to MTC. MTC and its partners will evaluate the app for such characteristics as ease of use/user interface, accuracy of trip detection, accuracy of data collection, consistency between user responses and trip traces, battery use/efficiency, and perhaps other criteria to be defined with MTC.

Deliverables:
1.1   App Customizations
1.2   Trial Test of App, including Trial Test dataset

The remaining scope is subject to full award of the project.

PHASE 2: Project Implementation

In Phase 2, the firm selected for final award (Consultant) shall develop and administer a Travel Diary Survey Program (Project) wherein the Consultant would:
1. Review and refine MTC's existing travel survey questionnaire for ongoing use in data collection.
2. Implement the instrument via more than one survey mode for reaching different Bay Area target populations. Survey modes anticipated include a customized smartphone application ("App") and CATI and/or Internet survey modes to collect information about a user's travel behavior.
3. Develop and administer an incentive program to reward and encourage participation.
4. Recruit survey participants from all around the San Francisco Bay Area.
5. Administer the survey program approximately once every two years.
6. Apply real-time and post processing QA/QC and inference/imputation procedures to ensure data integrity and consistency.
7. Organize survey program data for reporting to MTC

This Project will be for an initial four-year period, with the option to extend for up to six additional years depending on the Project's success. Additionally, MTC anticipates partnering with other Bay Area regional agencies for additional data collection within their jurisdictions.

A preliminary scope of work is listed below. Consultant shall perform the following tasks:

TASK 2: Project Management

Consultant shall host a Project Kick-off Meeting with the MTC Project Team to refine the scope, schedule, and budget for the Project. Consultant shall finalize the scope, schedule, and budget in a Project Workplan to be submitted to MTC for approval. Consultant shall then provide ongoing, day-to-day oversight, guidance, and coordination for the Project. This includes facilitating discussions and coordinating work with MTC and partnering agencies, reviewing work products, providing survey methodology suggestions, and documenting work.

Deliverables:
2.1   Project Kick-Off Meeting
2.2   Project Workplan
2.3   Ongoing Project Management

TASK 3: Survey Methodology and Instrument Refinements

While MTC anticipates using a travel diary App as the primary means of collecting participant travel behavior, Consultant shall develop additional survey modes to increase survey representativeness of Bay Area target populations.

Building on the work accomplished for Task 1, Consultant shall work with MTC and partnering agencies to refine the travel diary App survey instrument and to develop secondary data retrieval methods – i.e., Internet and/or Computer Assisted Telephone Interviewing (CATI). It will be important for Consultant to address any challenges they foresee translating the Task 1 survey instrument into Internet and/or CATI implementations.

Consultant must design instruments that are attractive, intuitive to complete, and encourage completion by participants. Once field-ready survey instruments are developed, consultant shall make additional changes throughout the life of the project, both to improve data collection and to respond to evolving stakeholder data needs. Examples of additional questions that have already been discussed at MTC include those about high occupancy/toll lane usage and household tenure/relocation behavior.

It is particularly noteworthy for this task that Consultant discuss how it intends to capture proxy-reported travel of other household members, particularly children, within the survey instrument. Relevant California privacy law as it relates to this task should be discussed, and any challenges and responses to those challenges described.

Please also address the benefits and drawbacks of including stated preference questions within the survey.

For representativeness of data collection, instrument translations to Spanish, Simplified Chinese, and Traditional Chinese are anticipated, and possibly other languages as well.

Deliverables:
3.1   Survey methodology and finalized instrument(s) for each survey cycle

TASK 4: Survey Pretest and Fee Schedule

Implement survey pretest of instruments developed and updated in Tasks 1 and 3. Evaluate effectiveness of participant recruitment strategies, data retrieval methods, use of incentives to encourage the participation of targeted population groups, non-response issues for often problematic survey questions (e.g., household income, race/ethnicity, etc.), and the quality of any geographic data collected. Work with MTC and partners to define what constitutes a completed survey. Summarize findings in a pretest report and make recommendations for final survey instruments and survey approach. Working with MTC and partners, update survey methods and materials based on lessons learned in the Survey Pretest.

Consultant shall develop pricing information for completed surveys ("Fee Schedule") based on results of the pretest and finalized survey scope. The Fee Schedule will include a marginal cost for surveys that both MTC and partnering agencies can use to develop a data collection budget. MTC and partnering agencies will work with Consultant to consider flexible approaches to the fee schedule, including considerations such as person- vs. household-based surveying, possible combined person-day completion targets, and development of appropriate standards for designating a survey complete.

Deliverables:
4.1 - Technical memorandum: Pretest Plan and Evaluation Criteria
4.2 - Technical memorandum: Survey Pretest Results and Recommendations
4.3 - Survey Pretest Data Files
4.4 - Fee Schedule for completed surveys

TASK 5: Develop Sampling Plans and Participant Recruitment Approach

Work with MTC and partnering agencies to develop sampling frequency and representative sampling plans. Items for consideration:

- Survey frequency (i.e., annually, biennially, or some other frequency)
- Sampling methods, including specific approaches to probability- and non-probability-based sampling
- Sample size recommendations, including potential oversampling in jurisdictions of MTC partnering agencies
- Suggestions for stratifying sample frame (e.g., household- vs. person-based sampling frame, geographic areas, household size, household income, age of householder, race/ethnicity of householder, special travel markets such as transit or TNCs, etc.)
- Weeklong (or beyond) vs. shorter (e.g., one or two days of data collection)

Based on internal discussion and outreach with other MPOs, MTC has tentatively decided that biennial data collection is likely more manageable than true continuous data collection. Consultant shall provide recommendations based on applied experience for different sampling frequencies.

MTC and its partnering agencies are open as to whether the sampling frame is household- or person-based and would like help in evaluating ease of data collection, cost, and data quality tradeoffs. Survey participant recruitment strategies should include approaches for representative sampling of "hard-to-reach" populations such as racial/ethnic minorities, non-English speakers, and low-income populations. MTC would like to hear suggestions about participant recruitment strategies (and pilot ideas that may lead to new such strategies) that can scale up to the size of anticipated regional data collection, or at least make a substantial contribution to overall sampling goals. These should include traditional address-based sampling, but also address the feasibility of non-probability ("convenience") surveying approaches. Related to this, MTC may be interested in pursuing multi-year "panel" surveying to better understand year-over-year changes within the same household. Please provide insights into the challenges and opportunities of such surveying.

Deliverables:
5.1 - Technical memorandum: Sampling Plan for Each Survey Cycle

TASK 6: Communications and Outreach

Assist with the development of numerous communication exercises, including the design and maintenance of a project website, potential use of social media, survey promotional materials, and technical papers related to the survey development and deployment.

Deliverables:
6.1 – Outreach will be specified by task order

TASK 7: Administer Bay Area Travel Diary Survey

Collect travel diary surveys using the work produced in Tasks 1-6 above as guidance. Work with MTC and partnering staff to determine the proper sampling rate and deployment of different survey modes, depending on respective data needs and survey budgets.

Consultant shall need to discuss the tradeoffs and implications on sample size of single day vs. multi-day data collection (as discussed in Task 5, above), and whether they recommend any passive data collection (via the smartphone app).

Deliverables:
7.1 - Technical memorandum: Quality Control and Procedures Plan
7.2 - Regular progress reports
7.3 - Draft survey data files for review

TASK 8: Data Review, Cleaning, and Imputation

Work with MTC and its partnering agencies to determine the best way to review data records for logic and completeness, how to address any coding errors, if/when to discard data records, and if/when to implement any data imputation procedures. This task may also include regular survey progress reports and sharing of preliminary data records to ensure expectations for final data deliverables are being met. Please describe your capabilities related to the below survey record cleaning and evaluation tasks:

- Trip trace visualization for logic review
- Survey item logic testing steps, including real-time data checks for internal consistency of survey records
- Imputation strategies
- Documenting data cleaning procedures, including provision of any scripts used on a code management repository. Given the ongoing nature of this project, and a desire to archive and refine QA/QC processes, MTC is requesting that any data cleaning, imputation, and trace visualization tools be logged (committed) to our GitHub repository.

MTC and its partners will work with Consultant to define what constitutes a useable sample for the travel diary survey.

Deliverables:
8.1 - Technical memorandum: Plan for Data Review, Cleaning, and Imputation
8.2 - QA/QC tools and scripts delivered to MTC's GitHub repository

TASK 9: Data Weighting and Expansion

Assist with and/or complete survey data weighting and expansion. Work with MTC and its partners to determine the control target datasets and approach used for survey data weighting and expansion. Like Task 8, above, Consultant shall need to anticipate documenting and scripting weighting/expansion methods and committing such scripts to the MTC GitHub repository for ongoing use and development.

Deliverables:
9.1 - Technical memorandum: Travel Diary Survey Data Weighting and Expansion Methods
9.2 - Household and person weighting and expansion factors
9.3 - Weighting/expansion scripts delivered to MTC's Github repository

Task 10: Deliver Weighted and Expanded Datasets

Deliver cleaned datasets with any necessary data deletions, recodes, and/or imputation work. Work with MTC and its partnering agencies to determine the format of dataset deliverables. Example files that might be included in such a deliverable are the following: household, person, trip, activity, location, vehicle, and GPS records. For this task, the Consultant shall be reimbursed per the agreed-upon Fee Schedule described above in Task 4.

Proposers should describe how they will comply with the special provisions related to the protection (in collection, storage, and transmission) of personally identifiable information set forth in Attachment F, Special Conditions Relating to Personally Identifiable Information of *Appendix D-1*, MTC Standard Consultant Contract.

Deliverables:
10.1 - Household, person, trip, vehicle, GPS trace survey records, and other data files as necessary
10.2 - Survey codebook for interpreting files and variables

TASK 11: Report Materials

Provide reporting materials as requested. These include status and methodology reporting, and may include interim and/or final reports that document each element of the project and summarizes survey findings.

Deliverables:
11.1 - Technical memorandum: Interim Summary Report
11.2 - Technical memorandum: Final Summary Report