



**Metro**

Los Angeles County  
Metropolitan Transportation Authority

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**PLANNING & PROGRAMMING COMMITTEE**  
**March 18, 2009**

**SUBJECT: SYSTEM-WIDE ON-BOARD ORIGIN-DESTINATION SURVEY**

**ACTION: AWARD A CONTRACT TO NUSTATS, INC. FOR PROFESSIONAL SERVICES**

**RECOMMENDATION**

- A. Authorize the Chief Executive Officer to execute a firm fixed price contract to NuStats, Inc. to conduct a system-wide on-board origin-destination survey, consisting of a test of survey research methods to advance the state of the practice, and an on-board survey making use of the test results, for a period of fifteen months in the amount not to exceed \$1,247,709.
- B. Authorize the Chief Executive Officer to execute contract modifications up to \$200,000 to cover the cost of any potentially unforeseen issues that may arise during the term of the project.

**ISSUE**

The Federal Transit Administration (FTA) requires that agencies in pursuit of New Starts funding conduct customer on-board origin-destination surveys every five years, in order to provide accurate data for demand forecasting. The last system-wide on-board survey was conducted in Fall of 2001. Since the last on-board survey, Metro has eliminated free transfers and introduced new transit routes and services. These service changes require a new origin-destination survey. In addition, FTA wishes to improve the state of practice for on-board surveys, and has provided a Section 5339 Grant to Metro to research improvements in survey methods.

**POLICY IMPLICATIONS**

Metro has a long-standing policy of conducting periodic on-board origin-destination surveys to facilitate service enhancement and demand forecasting. Previous system-wide surveys were conducted in 2001 and 1996. This project is necessary to satisfy FTA New Starts requirements and to conduct accurate travel demand modeling for New Starts projects.

**OPTIONS**

The Board could decide to not conduct the survey. This is not recommended because this option would impede Metro's ability to update the existing travel demand model to meet the latest modeling standards stipulated by the FTA. This would affect

Metro's ability to compete for New Starts funding for future transit corridors proposed in Metro's Long Range Transportation Plan.

### **FINANCIAL IMPACT**

Funding of \$100,000 is included in the FY09 Budget in Cost Center 4230, Project Number 405511, task 03.01 funded with Prop C Admin Funds. Since this is a multi-year contract it will be the responsibility of the cost center manager and the Chief Planning Officer to budget funds in out years. In addition, the FTA has provided \$500,000 in Section 5339 Grant Funds to assist with the survey in FY10.

### **BACKGROUND**

Metro periodically conducts on-board origin-destination studies of its passengers for transportation demand modeling and service enhancement purposes. The origin-destination surveys are different from customer satisfaction surveys. The origin-destination survey focuses on where the customers are coming from and going to, how they access/egress the system, what routes were taken throughout the trip, car ownership, income level, and purpose of trip. Detailed geographic information about customer travel behavior is gathered as well. Metro's last system-wide survey was conducted in Fall of 2001.

Metro has conducted small scale origin-destination surveys in 2006 and 2007 for the Metro Orange Line and Metro Rapid lines. Those survey results were used to update specific subcomponents of Metro travel demand model to meet specific FTA model improvement requests. The proposed origin-destination survey will be a comprehensive, system-wide survey.

### **NEXT STEPS**

Upon Board approval, staff will issue a Notice to Proceed to the Contractor, with work to begin in April 2009 and end June 2010.

Prepared by: John Stesney, Transportation Planning Manager III  
Chaushie Chu, Deputy Executive Officer, Long Range Planning

### **ATTACHMENTS**

- A. Procurement Summary
- B. System-wide On-Board Origin Destination Study Statement of Work



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Carol Inge  
Chief Planning Officer  
Countywide Planning & Development



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Roger Snoble  
Chief Executive Officer

**BOARD REPORT ATTACHMENT A  
PROCUREMENT SUMMARY**

**System-Wide On-Board Origin-Destination Survey**

1.	Contract Number: PS4230-2295		
2.	Recommended Vendor: NuStats LLC		
3.	Cost/Price Analysis Information:		
	A. Bid/Proposed Price: \$1,338,143	Recommended Price: Not-To-Exceed (NTE) \$1,247,709	
	B. Details of Significant Variances are in Attachment A-1.D		
4.	Contract Type: Firm-Fixed Price		
5.	Procurement Dates:		
	A. Issued: 11/21/08		
	B. Advertised: 11/24/08 and 12/01/08		
	C. Pre-proposal Conference: 12/10/08		
	D. Proposals Due: 12/29/08		
	E. Pre-Qualification Completed: 01/28/09		
	F. Conflict of Interest Form Submitted to Ethics: 01/28/09		
6.	Small Business Participation:		
	A. Bid/Proposal Goal: DALP of 20%	Date Evaluation Completed: 03/06/09 (ECD)	
	B. Disadvantaged Business Enterprise Anticipated Level of Participation (DALP) established for this RFP: twenty percent (20%). Details are in Attachment A-2. NuStats LLC has proposed to utilize three (3) DBE firms for a DALP participation level of 41.38%		
7.	Invitation for Bid/Request for Proposal Data:		
	Notifications Sent: 121	Bids/Proposals Picked up: 66	Bids/Proposals Received: 4
8.	Evaluation Information:		
	A. Bidders/Proposers Names:	Bid/Proposal Amount:	Best and Final Offer Amount:
	1. Abt SRBI	\$1,886,961.00	-----
	2. Action Research, Inc.	\$ 740,770.91	-----
	3. Applied Management & Planning Group (AMPG)	\$1,200,852.67	-----
	4. NuStats LLC	\$1,338,143.00	NTE \$1,247,709
	C. Evaluation Methodology: Technical Qualifications and Cost Analysis Details are in Attachment A-1.C		
9.	Protest Information:		
	A. Protest Period End Date: March 24, 2009		
	B. Protest Receipt Date: N/A		
	C. Disposition of Protest Date: N/A		
10.	Contract Administrator: Santee Scott	Telephone Number: 213-922-4114	
11.	Project Manager: John Stesney	Telephone Number: 213-922-6893	

**BOARD REPORT ATTACHMENT A-1  
PROCUREMENT HISTORY**

**System-Wide On-Board Origin-Destination Survey**

**A. Background on Contractor**

NuStats LLC  
206 Wild Basin Road  
Building A, Suite 300  
Austin, TX 78746

NuStats has been in the transportation research business for 25 years, with its specialization in regional on-board transit studies. NuStats is familiar with the Los Angeles region and the region's existing transit operations, having conducted many transportation studies in the region, including the 2006-2007 Metro Rapid Bus and Orange Line Survey, the 2006 Gold Line Survey, and the 1997 Planning Market Research Study (SPMRS), which included an on-board survey.

Within the past five years, NuStats has completed on-board studies in Baltimore, Washington, D.C., Denver, Charlotte (Phase I), Phoenix, Salt Lake City, San Francisco, Sacramento, Santa Clara Valley, Honolulu, Reno, Memphis, Nashville, San Jose, and Raleigh-Durham. Currently, NuStats is in field for on-board transit surveys in Columbus, Fort Worth, U.S. Virgin Islands, and Charlotte (Phase II).

**B. Procurement Background**

This procurement is to collect information on origins-destinations (OD), trip purposes, and demographics of Metro's customers. This data will enable Metro to understand the existing customer profile, travel market, and travel patterns. The data will also enable the creation of observed transit trip tables for use in the Metro travel forecasting model.

This is a negotiated, competitive, Firm-Fixed Price procurement and is in accordance with Metro's Procurement Policy Manual.

The Diversity and Economic Opportunity Department (DEOD) recommended a 20% Disadvantaged Business Enterprise Anticipated Level of Participation (DALP) goal. DALP is a level of participation that is encouraged by Metro, but is not a condition of contract award.

**C. Evaluation of Proposals**

A Source Selection Committee was convened and a comprehensive technical evaluation was conducted for all four proposals based on the evaluation criteria provided in the solicitation package. Each proposal was considered responsive to the project and submittal requirements. Oral interviews were also held with all prospective contractors. Based on the evaluation

criteria stipulated in the RFP package, NuStats LLC received the highest ranking by the Source Selection Committee.

D. Cost/Price Analysis Explanation of Variances

The recommended price has been determined to be fair and reasonable based upon Management Audit Services (MAS) pre-award audit, a cost analysis, independent cost estimates, an extensive technical review, fact finding, and negotiations with NuStats LLC.

**BOARD REPORT ATTACHMENT A-2  
LIST OF SUBCONTRACTORS**

**System-Wide On-Board Origin-Destination Survey**

**PRIME CONTRACTOR – NuStats LLC**

<u>DBE Participation</u>		<u>Other Subcontractors</u>
Maroon Society	20.49%	DataSource
Michael R. Kodama Planning Consultants	0.8%	GeoStats
T.E.M.P.S., Inc.	20.09%	Norman Emerson
Total Commitment	<u>41.38%</u>	

## **Board Report Attachment B: Statement of Work**

### **OBJECTIVES**

The overall objective of this project is to collect information on origins-destinations (OD), trip purposes, and demographics of Metro's customers. This data will enable Metro to understand the existing customer profile, travel market, and travel patterns. The data will also enable the creation of observed transit trip tables for use in the Metro travel forecasting model. The mode choice step of travel forecasting model at Metro contains four trip purposes (home-work, home-university, home-other, and non-home-based), two time periods (peak and off-peak), seven transit modes (commuter rail, urban rail, bus rapid transit, transit way bus, express bus, Metro Rapid bus, and local bus), and two access modes (walk and auto). The home-work model further splits all trips into low, medium and high income submarkets.

The specific objective of Phase I of this data collection effort is to test a series of techniques designed to encourage greater survey participation, increase survey response rates and improve data quality. The objective of Phase II is to utilize the results of Phase I to collect data more accurately, effectively, and efficiently.

### **SCOPE OF WORK**

#### **PHASE I: RESEARCH PHASE**

Phase I constitutes a research phase to experiment with techniques designed to improve data quality and enhance response rates. Specifically, Metro requires tests that will correct issues encountered in past survey efforts. These issues include poor responses to origin-destination questions, a bias towards long trips, incorrect geocoding, and a lack of adequate incentives. The following tests shall be performed:

#### Test A - Survey Symphony

Three mutually-exclusive sub-tests shall be performed.

- A-1. On-board interviewer-mediated.
- A-2. Interviewer-mediated telephone surveyor. (Recruitment not necessarily by telephone)
- A-3. Graphical written survey

Hypotheses to be tested:

- 1. Interviewer-mediate surveys will decrease item nonresponse and increase response rates relative to traditional methods.
- 2. Graphical surveys will have a higher accurate data capture rate.

#### Test B - Expansion Method

Tests shall compare the collection of control counts for iterative proportional fitting with using a GIS transit network to disaggregate a linked trip into unlinked trips for expansion purposes.

Hypothesis to be tested: Disaggregating linked trips for use in iterative proportional fitting is an improvement over current control total method.

### Test C - Survey Incentives

Research and test various incentives in the on-board survey environment with the objective of increasing response rates.

Hypothesis to be tested: larger incentives in the same context as the on-the-spot one-ride ticket incentive elicit a larger response among a broader population.

### Test D - Telephone Follow-Up

Test the effectiveness of making follow-up telephone calls to increase the number of survey completes.

Hypothesis to be tested: telephone follow-up will increase costs, increase response rates, but not reduce bias.

### Test E – Interviewer Attitude

In addition, the Contractor shall test their additional proposed treatment, Interviewer Attitude, to investigate the impact on response rates of personality-based selection of interviewers employing a formal interviewer assessment.

Hypothesis to be tested: interviewers who score high on the attitude index will elicit higher survey response rates than interviewers with lower scores.

The following tasks shall be performed for each of the Tests A through E:

#### Task 1 - Background

- Provide background research and related experience on previous uses of the technique to be tested.
- Develop a research hypothesis outlining the expected benefits and outcomes of each test.
- Develop a work plan and schedule for each test.

*Task 1 Deliverable:* Technical memo summarizing the background research, detailing the research hypothesis, and provision of a work plan and schedule for each test. This technical memo must be submitted to Metro staff for approval prior to conducting the tests.

#### Task 2 - Sampling Plan/Instrument Design

- Select a sampling frame appropriate for each test.
- Develop a sampling plan for each test. The sampling plan must adequately test each hypothesis and provide reliable conclusions on the impact of the tested technique on data quality and/or response rates.
- Design survey instruments as needed for each test. Tests shall be conducted in English and Spanish. Survey instruments shall anticipate the type and number of questions that will be asked in Phase II.

*Task 2 Deliverable:* Technical memo describing the sampling plan and providing the survey instrument, if applicable, for each test.

### Task 3 - Survey Administration

- Engage and train survey field staff.
- Conduct pre-test of survey instrument and procedures associated with each test as appropriate. Make revisions to the instrument and/or procedures as needed.
- Perform quality control measures regarding consistency checks, editing, and survey distribution/processing.

*Task 3 Deliverable:* Training materials, pre-test results, and summary of the quality control procedures and methods employed in the survey administration process.

### Task 4 - Data Collection and Analysis

- Conduct test(s) within approved sampling frame.
- Perform data verification, data processing and geocoding consistent with a full on-board survey.
- Conduct analysis to determine the outcome of each test.
- Detail the outcomes of each test noting the probable reasons for success or failure.

*Task 4 Deliverable:* Technical memo describing the data analysis processes, the accuracy of any geocoding conducted, and detailing the results of each test.

### Task 5 - Phase I Report

- Summarize results of Tasks 1 through 4.
- Provide copies of all analyses performed and the spreadsheets or data files used to perform them. This may include survey data in a SPSS-readable dataset, shape files, and geographic data in Arc-GIS format.
- Recommend actions and techniques for implementation in Phase II.
- Prepare detailed work program to incorporate recommended techniques into Phase II.

*Task 5 Deliverable:* Phase I report, copies of analysis and datasets, and work plan for Phase II.

## PHASE II - SYSTEM-WIDE SURVEY

Phase II involves the conduct of a system-wide survey to obtain origin-destinations, trip purposes, and market demographics for Metro customers. Results of Phase I will be incorporated into Phase II to improve data quality and response rates. Phase II will include data collection at up to seven transit operators including Metro. A minimum of 35,000 surveys shall be collected. A survey shall be considered complete if origins-destinations are correctly geocoded, trip purpose is identified, time of day is established, the travel path is identified, the access/egress mode(s) are known, and the number of transfers is identified. Upon the results of Phase I this definition may be modified by mutual agreement between Metro and the Contractor.

### Task 6 - Instrument Design and Sampling Plan

- Develop a sampling plan and sufficient sample sizes to provide reliable results regarding origins-destinations, trip purposes and markets by peak and off-peak time periods.
- Design the survey instrument(s) to obtain, at a minimum, origin-destination, trip purpose, access/egress mode(s), park and ride location, vehicle availability, number of vehicles in household, number of workers in household, possession of driver's license, route path of linked trips, number of transfers, fare type, and household income. Note that dependent

upon the results of Phase I research, every data item listed in the previous sentence may not necessarily need to be collected with one survey instrument.

*Task 6 Deliverable:* A technical memo describing the sampling plan and weighting strategy, and a final version of the survey instrument(s).

#### Task 7 - Survey Administration

- Engage and train survey field staff. Fifty percent of the survey staff in the field at any one time must be bilingual in Spanish. Prepare training manual and conduct training sessions. Supervise survey staff throughout the survey period to ensure that staff is following proper methods and procedures.
- Conduct a pre-test of the survey instrument(s) and procedures. Make any necessary revisions to the survey instrument(s), methods or procedures.
- The survey shall be administered on weekdays on all Metro buses and trains in English and in Spanish. Survey hours are between approximately 4 a.m. and 10 p.m.
- The Metro vehicle fleet of over 2,000 buses includes 389 articulated vehicles equipped with three doors.
- Develop methods to ensure quality control of the entire survey process, including consistency checks, survey distribution methods, data editing and data processing.

*Task 7 Deliverable:* Training materials, a summary of the pre-test results, and a summary of quality control procedures and methods employed in the survey administration process.

#### Task 8 - Data Collection and Analysis

- Perform data collection using the survey instrument designed in Task 6 and the administration procedures identified in Task 7.
- Process the survey responses and geocode the origins and destinations. The geocode process must begin immediately upon receipt of returned surveys. Completed geocodes and the associated survey response shall be presented daily to Metro staff immediately upon completion. Metro staff will sample the geocodes for accuracy. If more than 10% of the sample is found inaccurate, the entire daily submission will be returned for correction.
- Perform logic tests to ensure that the survey responses are reasonable. Checks will include vendor's TrueRoute processing.
- Utilize the weighting strategy developed in Task 6 to expand the origin-destination responses to represent the population and to account for under-sampling of short trips. All data needed to re-weight the sample based on corrections performed after survey collection shall be included in the dataset provided under Task 10.
- Perform statistical analysis to summarize customer profile, travel behavior by mode and trip purpose.
- Build trip tables for each purpose and mode by peak and off-peak time periods.

*Task 8 Deliverable:* A technical memo describing the geocode process, summarizing the travel behavior by mode and trip purpose, and providing trip tables by purpose, mode and peak/off-peak.

#### Task 9 - Phase II Report

- Summarize the survey methodology and include descriptions of the sampling plan, instrument design, survey administration, quality control methods, and data analysis.
- Document the survey results by describing the spatial distribution of trips, the distribution of trips by trip purpose, and Metro markets.
- Provide a discussion of challenges encountered during the survey process, and discuss any limitations associated with the data.
- The Phase II report shall be submitted as a draft to Metro staff. Upon approval of the draft, the consultant will submit ten printed copies of the final report as well as an Adobe PDF file to reproduce additional copies.

*Task 9 Deliverable:* A Phase II report including the survey methodology, sampling plan, survey instrument(s), survey results, challenges encountered, data limitations, survey administration procedures, quality control methods and data analysis.

#### Task 10 - Provide Dataset

- The Contractor shall provide a SPSS-readable dataset of all survey data, and a full data description including all variables collected or created. A permanent SPSS dataset is preferred. Geographic data shall be compatible with Arc-GIS mapping software.
- Provide copies of all analyses performed and the spreadsheets or data files used to perform them.

*Task 10 Deliverable:* A complete SPSS-readable dataset and a full data description.

## PROJECT SCHEDULE

Due Date	Phase/ Task	Deliverable
April 1, 2009	Phase I	Start of Phase I
April 25, 2009	Task 1	Technical memo summarizing the background research, detailing the research hypothesis, and provision of a work plan and schedule for each test. This technical memo must be submitted to Metro staff for approval prior to conducting the tests.
May 15, 2009	Task 2	Technical memo describing the sampling plan and providing the survey instrument, if applicable, for each test.
June 5, 2009	Task 3	Training materials, pre-test results, and summary of the quality control procedures and methods employed in the survey administration process.
July 1, 2009	Task 4	Technical memo describing the data analysis processes, the accuracy of any geocoding conducted, and detailing the results of each test.
July 30, 2009	Task 5	Phase I report, copies of analysis and datasets, and work plan for Phase II.

Proceeding with Phase II will be contingent upon the successful completion of Phase I. It is anticipated that Phase II will be initiated in August 2009 with data collection during the months of September through mid-November. Upon mutual agreement between Metro and the Contractor, Phase II data collection may be conducted in Spring of 2010. Survey analysis and report preparation shall be completed by June 30, 2010.

Due Date	Phase/ Task	Deliverable
August 1, 2009	Phase II	Start of Phase II
August 14, 2009	Task 6	A technical memo describing the sampling plan and weighting strategy, and a final version of the survey instrument(s).
August 31, 2009	Task 7	Training materials, a summary of the pre-test results, and a summary of quality control procedures and methods employed in the survey administration process.
September 1, 2009	Task 8	Data collection starts
November 20, 2009	Task 8	Data collection ends
February 1, 2010	Task 8	A technical memo describing the geocode process, summarizing the travel behavior by mode and trip purpose, and providing trip tables by purpose, mode and peak/off-peak.
March 1, 2010	Task 9	A Phase II report including the survey methodology, sampling plan, survey instrument(s), survey results, challenges encountered, data limitations, survey administration procedures, quality control methods and data analysis.
March 15, 2010	Task 10	A complete SPSS-readable dataset and a full data description.