



April 5, 2021

To: Regional Planning and Highways Committee

From: Darrell E. Johnson, Chief Executive Officer

Subject: Consultant Selection for the Interstate 405 TransModeler Simulation Model Development

Overview

Consultant services are needed to develop a traffic simulation model for Interstate 405 using the TransModeler software program. Board of Directors' approval is requested to execute an agreement to perform the required work.

Recommendations

- A. Approve the selection of Fehr and Peers as the firm to develop a traffic simulation model for the Interstate 405 using the TransModeler software platform.
- B. Authorize the Chief Executive Officer to negotiate and execute Agreement No. C-0-2558 between the Orange County Transportation Authority and Fehr and Peers, in the amount of \$399,887, to develop a traffic simulation model for Interstate 405 using the TransModeler software platform.

Discussion

The Orange County Transportation Authority (OCTA) needs to develop a traffic simulation model for Interstate 405 (I-405) using the TransModeler software platform. The traffic simulation will include both the I-405 general purpose lanes and future express lanes between Interstate 5 (I-5) to the Los Angeles County line. The purpose of the model is to provide OCTA staff with a tool to evaluate and understand future traffic operations of this corridor following the completion of the I-405 Improvement Project. OCTA has developed a similar traffic simulation model in TransModeler for the State Route 91 (SR-91).

Procurement Approach

This procurement was handled in accordance with OCTA Board of Directors-approved procedures for professional and technical services. In addition to cost, many other factors are considered in an award for professional and technical services. Award is recommended to the firm offering the most comprehensive overall proposal considering such factors as project organization and staffing, prior experience with similar projects, work plan, as well as cost and price.

On November 5, 2020, Request for Proposals (RFP) 0-2558 was issued electronically on CAMM NET. The project was advertised in a newspaper of general circulation on November 8 and November 15, 2020. A pre-proposal conference was held on November 12, 2020, with eight attendees representing five firms. Two addenda were issued to provide a copy of the pre-proposal registration sheet and to respond to questions related to the RFP.

On December 3, 2020, four proposals were received. An evaluation committee consisting of OCTA staff from Contracts Administration and Materials Management and Planning departments, as well as an external representative from the County of Orange met to review all proposals received. The proposals were evaluated based on the following evaluation criteria and weightings:

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| • Qualifications of the Firm | 25 percent |
| • Staffing and Project Organization | 30 percent |
| • Work Plan | 25 percent |
| • Cost and Price | 20 percent |

Several factors were considered in developing the criteria weightings. Qualifications of the firm was weighted at 25 percent as the firm had to demonstrate relevant experience developing similar traffic simulation projects, including modeling complex toll operations. Staffing and project organization was weighted at 30 percent to ensure the proposed project team had the required skills and expertise needed to perform the work. Work plan was weighted at 25 percent, as the firm had to demonstrate its understanding of the key issues related to developing a traffic simulation model along the I-405 corridor, including properly modeling the variable pricing system based on the time of day. Cost and price were weighted at 20 percent to ensure the services are provided at competitive rates.

On December 10, 2020, the evaluation committee reviewed all proposals received based on the evaluation criteria and interviewed all proposing firms. The four proposing firms are listed below in alphabetical order:

Firm and Location

Cambridge Systematics (Cambridge)
Los Angeles, California

CLR Analytics, Inc. (CLR)
Irvine, California

Fehr and Peers (F&P)
Irvine, California

TJKM Transportation Consultants (TJKM)
Pleasanton, California

On December 17, 2020, the evaluation committee interviewed the four firms. The interviews consisted of a presentation to demonstrate the firms' understanding of OCTA's requirements for this project. Specifically, the firms were requested to describe their approach to developing the traffic simulation model, including identifying the greatest issues related to the project, such as toll operations, traffic data collection, traffic changes, key operational issues along the project corridor, and any recommendations to help address these issues.

The firms' project managers and key team members had an opportunity to present qualifications and respond to the evaluation committee's questions. Questions were asked relative to the firms' experience performing similar services, recommendations for traffic simulation approaches, enhancements to the scope of work, and quality control procedures. Finally, firms were asked specific clarification questions related to each firm's proposal.

After considering the responses to the questions asked during the interviews, the evaluation committee reviewed the preliminary rankings and made adjustments to individual scores. The overall ranking of the firms did not change as a result of the interviews.

Based on the evaluation of the written proposals, information obtained from the interviews, as well as cost and price, the evaluation committee recommends F&P for consideration of the award. The following is a brief summary of the proposal evaluation results.

Qualifications of the Firm

The four firms are qualified to provide the required scope of work with each having extensive experience providing simulation models for various transit agencies.

F&P was founded in 1985 and has over 306 employees. The firm is located in the City of Irvine. F&P demonstrated relevant experience by preparing simulation models, including traffic operations analysis report for the Interstate 15 (I-15) Express Lanes southern extension for the Riverside County Transportation Commission. F&P also completed the Interstate 90 (I-90) Front Street Interchange Improvement Program for the Washington State Department of Transportation. The I-90 is similar to the I-405 project, as the model includes multiple routes available for drivers and design alternatives. In addition, F&P created the TransModeler model for the SR-91 simulation for OCTA, which required a complete conversion of the FREQ simulation model to the TransModeler model.

F&P proposed Jacobs Engineering Group, Inc., (Jacobs) as a subcontractor to advise F&P in managed lane operations and potential improvement recommendations to the I-405 corridor. Jacobs' recent managed lanes projects include the I-5 Managed Lanes Project Study Report for the California Department of Transportation (Caltrans) District 12 and the Managed Lanes Network Study for Orange County and Caltrans.

Cambridge was established in 1972 and has 230 employees. Cambridge has 12 locations with a local office in the City of Los Angeles. The firm's recent relevant experience includes the development of a simulation model for the I-405 corridor for Caltrans, the Gateway Cities Strategic Transportation Plan and Mesoscopic Simulation Model for the Los Angeles Metropolitan Transportation Authority (LA Metro), and a TransModeler-based walkability study traffic modeling for the City of Des Moines, Iowa. Cambridge did not propose any subcontractors for this project.

CLR was established in 2007 and has five employees. The firm has an office in the City of Los Angeles. CLR's recent experience includes multiple model development projects associated with the Southern California Corridor System Management Plan for Caltrans and the Southern California Association of Governments (SCAG). The firm also developed the travel demand modeling simulation for the Metro Regional Transportation System Operations Analysis for LA Metro. In addition, CLR completed the I-15 Express Lane VISSIM Model Review for Caltrans and the SR-91 Improvements Project Approval and Environmental Document (PA/ED) for OCTA. CLR proposed Systems Metrics Group (SMG) as a subcontractor to operate as a dual project management structure. CLR proposed to lead the modeling tasks while SMG is proposed to lead the quality assurance/quality control (QA/QC) and strategy tasks of the project.

TJKM was established in 1974 and has 40 employees. The firm has three locations and has its headquarters in the City of Pleasanton. TJKM developed traffic modeling for the Interstate 80 (I-80)/ Gilman Street Interchange Improvement PA/ED Project for Alameda County and the Greater Ukiah Area Microsimulation Model for Mendocino County. In addition, the firm is currently working on the SR-91 TransModeler Microsimulation Model Toll Operation Upgrade for OCTA. TJKM did not propose any subcontractors for this project.

Staffing and Project Organization

F&P proposed qualified staff with direct experience performing TransModeler simulation or related work. The proposed project manager has been with the firm for 17 years and has direct experience related to TransModeler development and simulations, including being the project manager for OCTA's FREQ to TransModeler Conversion and the SR-91 Implementation Plan TransModeler support currently in process. Additionally, F&P's key personnel proposed over 40 percent availability on average to perform work on this project, with availability increasing as many of their existing F&P projects are near completion. During the interview, the project team members discussed their roles and approach to develop the I-405 TransModeler Simulation Model. All of the individuals present for the interview responded to the evaluation committee's questions. F&P project team's responses included examples of previous TransModeler experience, key issues of the project, as well as noted strategies used, and lessons learned from prior projects. Additionally, the project team's responses demonstrated an understanding of the technical challenges of developing a simulation model. Furthermore, the project team emphasized that they were also familiar with various data collection efforts including Orange County Transportation-Model (OCTAM), street light data, and Caltrans' Freeway Performance Measurement System (PeMS).

Cambridge proposed a project manager that has been with Cambridge for six years and has over 35 years of experience in tolling and managing simulation models. The proposed project manager for Cambridge has direct simulation model development experience working on the development of simulation models for the express lane projects along I-405 in Los Angeles County, Interstate 10 (I-10) and I-80. The proposal included conflicting information regarding staff availability for the project; however, this was clarified during the interview and all key personnel will have at least 50 percent availability.

CLR proposed a dual project manager structure. The CLR project manager responsible for modeling tasks has over 20 years of experience applying traffic simulation tools, traffic control and management, and was a professor/researcher of traffic simulation courses at the University of California, Berkley and University of California, Irvine. The SMG project manager responsible for the QA/QC has over 30 years of experience in managed lanes

analysis, transportation systems management and operations, and simulation. The SMG project manager is currently working on multiple assignments for other agencies including SCAG, San Diego Association of Governments, and Caltrans. Both proposed project managers have experience with simulation, which is a key component to this project. CLR did not provide specific details of their key personnel's experience with simulation projects.

TJKM proposed a project manager with over 12 years of experience leading various California-based modeling projects and is currently working on the SR-91 TransModeler Microsimulation Model Toll Operation Upgrade for OCTA, as well as the Toll Collection System and Toll Services for the I-10 Corridor Dynamic Pricing Simulation Modeling for the San Bernardino Transportation Authority. TJKM proposed no additional support from a subcontracting firm; however, they anticipate using data collection vendors for real-time data and historical data. The proposed project team has worked together on previous projects related to simulation development such as the SR-91 Transmodeler Microsimulation Model Toll Operation and the Greater Ukiah Area Microsimulation Model. During the interview, the project team discussed its roles and approach to develop the TransModeler simulation. However, responses to the evaluation committee's questions were general in nature and did not discuss specific examples.

Work Plan

F&P presented a comprehensive work plan that addressed all the elements of the scope of work. The firm discussed its approach to develop the simulation model. F&P also provided an appropriate work plan outlining all tasks and sub-tasks. The firm also explained the rationale behind the proposed allocation of resources identified in their proposal and allotted for an additional three months of ongoing support as an enhancement after the completion of the project. The firm further discussed in depth how they plan to use the external data sources to supplement possible inconsistencies of the data collected as part of their QA/QC approach. During the interview, F&P detailed their approach to completing the scope of work by taking into consideration the construction activities under the I-405 corridor. F&P proposed using Streetlight data to analyze historic I-405 traffic and new travel patterns. F&P also expanded on the detail discussing stress tests for ingress and egress points throughout the freeway.

Cambridge presented a work plan that addressed all of the key elements of the scope of work. The firm included signaling and ramp metering components and identified hotspots and potential problems along the I-405 corridor where congestion may occur. Cambridge also proposed creating technical tools to automate many key components of the traffic simulation. Using data from existing tools such as the PeMS and OCTAM may lead to an enhanced

conclusion of the simulation model. Cambridge stated during the interview these tools will improve the consistency of the simulation and allow the development of future models to be developed faster.

CLR's work plan addressed several elements of the scope of work. The firm's work plan addressed possible issues that may arise with signaling and ramp metering but did not explain how those issues would be resolved. CLR provided a summary of their approach but included limited details on the simulation model. The firm also provided a generic schedule for the simulation development tool.

TJKM demonstrated a clear understanding of the project requirements and proposed a work plan that addressed the requirements in the scope of work. TJKM outlined the approach to completing each task. The firm also proposed three potential alternatives for this project, as well as a QA/QC review program. The firm proposed an 11-month schedule but did not identify additional sources for data collection as required. TJKM stated they would manually collect vehicle counts without the assistance of subconsultants.

Cost and Price

Pricing scores were based on a formula which assigned the highest score to the firm with the lowest firm-fixed price and scored the other proposals' firm-fixed price based on their relation to the lowest firm-fixed price. F&P proposed a competitive firm-fixed price to develop the simulation model and was also lower than the OCTA project manager's independent cost estimate. Therefore, F&P's proposed firm-fixed price was deemed fair and reasonable.

Procurement Summary

Based on the evaluation of written proposals, the firms' qualifications, information obtained from the interviews, and pricing, the evaluation committee recommends the selection of F&P as the top-ranked firm to develop a traffic simulation model for I-405 using the TransModeler software platform. F&P delivered a comprehensive proposal and interview that was responsive to the requirements of the RFP.

Fiscal Impact

The project was approved in OCTA's Fiscal Year 2020-21 Budget, Planning Division, Account No. 0017-7519-M0201-P2U, and is funded with local funds from Measure M2 sales tax revenues.

Summary

Staff is recommending the Board of Directors authorize the Chief Executive Officer to negotiate and execute Agreement No. C-0-2558 with Fehr and Peers, in the amount of \$399,887, to develop a traffic simulation model for Interstate 405 using the TransModeler software platform.

Attachments

- A. Review of Proposals, RFP 0-2558 Interstate 405 TransModeler Simulation Model Development
- B. Proposal Evaluation Criteria Matrix, RFP 0-2558 Interstate 405 TransModeler Simulation Model Development
- C. Contract History for the Past Two Years, RFP 0-2558 Interstate 405 TransModeler Simulation Model Development

Prepared by:



Anup Kulkarni
Section Manager
Regional Modeling - Traffic Operations
(714) 560-5867

Approved by:



Kia Mortazavi
Executive Director, Planning
(714) 560-5741



Pia Veasapen
Director, Contracts Administration and
Materials Management
(714) 560-5619