

# STAFF REPORT



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| <b>MEETING DATE:</b>  | <b>6/25/13</b>                                                                                        |
| <b>SUBJECT:</b>       | <b>Update on Travel Demand Model Development and Regional Geographic Information Systems Platform</b> |
| <b>AGENDA ITEM:</b>   | <b>10</b>                                                                                             |
| <b>STAFF CONTACT:</b> | <b>Sean Tiedgen</b>                                                                                   |

## **SUMMARY:**

Federal and state laws require that Shasta Regional Transportation Agency (SRTA) maintain a travel demand forecasting tool in support of its planning processes, including development of the Regional Transportation Plan (RTP). Staff will provide an update on recent efforts to upgrade technical capabilities in this area. An update will also be provided regarding the regional geographic information systems (GIS) mapping and data platform, now known as 'FarNorCalGIS.'

## **STAFF RECOMMENDATION:**

It is recommended that the board of directors receive an update on development of the:

1. Activity-based travel demand model; and
2. Regional GIS mapping and data platform.

## **DISCUSSION:**

Federal and state laws require that MPOs have the ability to forecast travel on the region's transportation network. SRTA utilizes a travel demand model to generate these forecasts and – in conjunction with GIS analyses – to measure the impact of proposed transportation projects on air quality, transportation network performance, land use, economic development, public health and other key policy areas. Because transportation funding is increasingly being directed to projects having measurable outcomes in these policy areas, it is important that the agency stay current on the following analytical tools and applications.

### **Travel Demand Modeling**

Travel demand models are statistical and algorithmic computerized processes that forecast the impact of growth and development on the region's transportation network. A travel demand model utilizes the relationships between land use, travel behavior, road system capacity and other key factors to model each person's decision-making process of: why, when, where and how to make a trip, and what route to take. Level-of-service (LOS) – a measure of roadway congestion – is used to identify impending bottlenecks and problem areas. Other commonly used outputs include average travel speeds and travel delay.

SRTA's current four-step model was updated in November 2011 to reflect the latest population, housing and employment forecasts. While the agency's four-step model is valid, new and

emerging reporting requirements from federal and state funding and/or regulatory agencies have outgrown the current model's capabilities.

Consistent with prior board of directors' approval, a Proposition 84 grant was acquired and used to develop a state-of-the-art 'activity-based' travel demand model to assist SRTA in meeting these more complex reporting requirements. This new model – which is being prepared for adoption by the board of directors in December – will provide a more realistic assessment of travel behavior because it:

- Provides analyses down to the parcel level (versus generalized outputs based on groupings of parcels known as 'traffic analysis zones');
- Recognizes that people typically plan multiple trip purposes together (known as 'trip chaining'); and
- Is sensitive to specific development projects, demographic variables, and the cost of travel.

Specific examples of near-term applications of the new activity-based travel demand model include, but are not limited to:

- Traffic analysis for 2015 RTP scenarios;
- Development of expanded performance measures for the 2015 RTP;
- Local agency general plan circulation element updates;
- Local traffic impact fee assessments; and
- Local development project review.

Staff will provide a presentation regarding development of the activity-based model; examples of model analysis currently being conducted; and timeline for delivery.

### **Geographic Information Systems (GIS)**

GIS is used to present data via maps and analyze the relationships between different data sets. Land use, the transportation network, and other data layers are also utilized by the travel demand model. Accurate, comprehensive and regionally compatible data is required to produce valid forecasts, analyses, and performance metrics.

The biggest challenge with GIS is acquiring and maintaining the underlying spatial data. To facilitate the aggregation, standardization, and dissemination of regional GIS data, a centralized computer server has been established: Shasta College provides the hardware, physical location, and network access for the server under a memorandum of understanding with SRTA. Members of the Far North Regional GIS Council (<http://www.farnorcalgis.org/fnrgc/>) provide regional leadership and technical support. Proposition 84 grant funds were utilized by SRTA to carry out technical tasks, including the update and merging of core GIS data layers and development of an internet portal ([www.farnorcalgis.org](http://www.farnorcalgis.org)).

The FarNorCalGIS regional platform may be used to:

- Improve public access to and participation in local and regional planning processes;
- Secure future grant funding for local or regional GIS data development and maintenance;

- Reduce local agency GIS staff workload by minimizing duplicative efforts and providing GIS to the public; and
- Facilitate interregional planning with neighboring regions and the 16-county North State Super Region.

Staff's presentation will highlight collaboration efforts among partners and demonstrate the FarNorCalGIS website using actual applications.

**ALTERNATIVES:**

The board of directors may provide further direction regarding travel demand modeling and GIS development, scheduling any actions for a subsequent meeting.

**OTHER AGENCY INVOLVEMENT:**

The cities and county, Redding Area Bus Authority, and Caltrans District 2 staff are members of the travel model technical advisory committee, known as the Shasta Model Users Group (SMUG). GIS professionals from local government, Shasta College and private firms are members of the FarNorCalGIS Management Steering Committee. Members of the North State Super Region may access the FarNorCalGIS platform and upload compatible data from their region.

**FINANCING:**

Funding for development of the new activity-based travel demand model, as well as improvement of the underlying data, was funded with a Proposition 84 modeling enhancement grant (\$400,000). Funding for the regional GIS platform was provided through a Regional Blueprint Planning Grant (\$40,000); portions of SRTA's Proposition 84 Sustainable Communities grants (\$76,000); and cash contributions from Shasta College (\$20,000).

A handwritten signature in black ink, appearing to read 'Dan Little', written over a horizontal line.

Daniel S. Little, AICP, Executive Director