

EXHIBIT A

SCOPE OF WORK Fresno Modeling Development and Support

7-2014

SCOPE OF WORK

The consultant will assist the Fresno Council of Governments staff with continued development of the Fresno 4 step mode choice model and the new Fresno Activity Based Model. The scope of work includes trouble shooting modeling problems, review of modeling assumptions and model refinements, improving model documentation and user guide.

Tasks – Enhance Mode Choice:

1. Improve transit validation and usability
2. Explore expanding the modes in the model and increasing its flexibility for modeling a wider range of accessibility scenarios.

Tasks – Improve Smart Growth Sensitivity

1. Test smart growth sensitivity.
2. Explore possibility of implementing the new Ds Analysis Modules within the Fresno COG model to take advantage of the latest research.
3. Implement Ds analysis with ability to turn them on or off.

Tasks – GIS

1. Continue to integrate GIS usability into the Fresno models.

Tasks – Create script files:

1. Assist COG staff with the development of new or refined model scripts.
2. Research and develop scripts that will help COG use the model more effectively.

Tasks – Trouble shooting modeling problems:

1. Assist COG staff with the development of new or refined methods of extracting data from the model;
2. Trouble shoot major and minor problems related to the model or model related data

Tasks – Review of Modeling data and assumptions:

1. Assist COG staff with the development and updating of land use data;
2. Provide recommendations for improvement in data development and calculation methods

Tasks – Model Refinements:

1. Assist COG staff with network identification and accuracy;
2. Assist staff with the recognition of network links as associated with speed characteristics, geometrics and special circumstances.

3. Assist COG staff with GIS operations in model refinement (such as TAZ updates) and other GIS modeling related tasks.

Tasks – Activity Based Model development:

1. Continue incremental development of Fresno COG’s Activity Based Model
2. Implement GIS functionality in the Activity Based Model so both model systems utilize the same GIS input data.
3. Integrate Envision Tomorrow output with the Activity Based Model population synthesis.

BILLING RATES

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Name	Classification	Hourly Rate
Jerry Walters	Principal	\$102.88
Mike Wallace	Senior Associate	\$60.10
Mackenzie Watten	Sr. Engineer/Planner	\$39.18
Kristen Carnarius	Engineer/Planner	\$31.73
Lorna Angeles	Administrative Assistant IV	\$31.73

Overhead	121.01%
Fringe	<u>26.11%</u>
Total Overhead & Fringe	177.12%
Fee	10%

What is an Activity Based Model?

Currently Fresno COG and all of the San Joaquin Valley MPOs use the traditional 4 step traffic model (also called trip based models). The 4-step model was first developed in the 50s on main frame computers; of course they have been improved greatly since. In fact the current Fresno 4-step model is the very latest cutting edge 4-step model and will be used for several more years until we complete development of our Activity Based Model.

Four Step Models - Also called trip based models.

The four steps of the classic 4-step model are:

1. Trip generation - uses the land use forecasts to determine the number trips produced or attracted in each zone by trip purpose.
2. Trip distribution - distributes the trips created in trip generation from each zone to all other zones.
3. Mode choice - computes the proportion of trips between each zone by the various travel modes. Modes include: auto, transit, walk and bike.
4. Assignment allocates trips between each zone and mode by route.

Four step models are very good and do a good job of predicting the total trips and VMT over a 24 hour period. Trips are then factored and estimated to represent AM and PM peaks.

Activity Based Models

Activity-based models are another class of models that predict for individuals where and when specific activities are conducted. (By time of day)

Activity-based models are so called because they are based on the principle that travel demand is derived from people's daily activity patterns. Activity-based models predict which activities are conducted when, where, for how long, for and with whom and the travel choices they will make to complete them.

Activity-based models offer more opportunities than four-step models to model environmental issues such as emissions and exposure to air pollution. They can therefore be used to establish relationships between health impacts and air quality more precisely. Policy makers can use activity-based models to devise strategies that reduce exposure by changing the time of activity patterns or that target specific groups in the population.

Having this type of detailed model information at their disposal allows modelers and policy makers to evaluate the effect of alternative policies on individuals travel behavior at a high level of temporal and spatial resolution and select the best policy alternative considering a potential wide range of performance indicators.