Addendum #1

Task 5: Modeling and Simulations

Evacuation modeling is an essential tool for wildfire evacuation planning and decision making. The project will model fire, traffic, communication, and as necessary, other potential elements such as water supply and human behavior, and then perform simulations of the interaction of those elements to design strategies for managing wildfire evacuation preparedness in the Greater Placerville area. However, modeling those five elements dynamically and the numerous possibilities that might arise in time is beyond the scope of the project budget. Therefore, the project will use static modeling, looking at the interaction of traffic, communication, and other elements as needed, at a particular point in time. For example, modeling the elements collectively or individually at 100% of operational capability, 50%, and 0% could demonstrate how the evacuation rate would respond under each scenario at a particular point in time. Because wildfire fire behavior is becoming increasingly dynamic and the number and location of potential ignition points in the project area is almost limitless, the intent of the modeling is not to be predictive but to illustrate the potential impact on the evacuation rate due to the reduced capacity of any or all of the elements being modeled.

Traffic modeling will include but not be limited to modeling existing traffic volumes, including Peak AM and Peak PM volumes, on the segments of U.S. Highway 50, State Route 49, State Route 193, and the principal and minor arterials and major and minor collectors in the project area. Traffic modeling will also include the impact on evacuation time of contraflow or "all-lanes-out" conditions and the impact the number of vehicles used per household has on evacuation time.

Communication modeling will model the communication network operating at the information flow rate necessary to allow agencies to successfully coordinate response to a wildfire and for the community to get timely, life-saving evacuation information about a fast-moving wildfire. It will then model it at reduced percentages of operating capacity to demonstrate the impact of loss of communication on evacuation rate. The communication network includes agency radio communication, CodeRED messages, cell phone, internet, Neighborhood Radio Watch (Ham Radio), and door-to-door. Communication infrastructure will be modeled at various operating efficiencies, including but not limited to 100%, 50%, 0%.

Water network modeling will include modeling El Dorado Irrigation District's (EID) water network supply at different flow rates during a wildfire and the impact various flow rates have on the ability of agencies and the public to respond to a wildfire. If necessary, water network modeling will also include modeling of the Sacramento Municipal Utility District's (SMUD) water supply network that is relevant to EID maintaining its water supply during a wildfire. Water network flow rate will be modeled at various operating efficiencies, including but not limited to 100%, 50%, and 0%.

Human behavior during a wildfire evacuation is a key factor; what people do, and when they do it. The project will model departure times, including decision time delay, and destination selection based on various factors, including proximity to the wildfire. Accurately modeling the behavioral patterns of a population during a wildfire evacuation is challenging, so the project will use several approaches to do so, including but not limited to: using the data from past wildfire evacuations, conducting in-person or online surveys to identify people's intended actions during an evacuation, estimating departure times by understanding how rapidly warning information spreads throughout the community, and basing departure times on the judgement of wildfire evacuation planners and agency experts familiar with wildfire evacuation. The information and data generated will be used to inform traffic modeling

volumes during different combined scenarios and will also be a useful educational tool to demonstrate the importance of wildfire evacuation preparedness and the need to make decisions in a timely manner.

Modeling the interactions of fire, traffic, communication, water supply, and human behavior will provide insights into the role each of those dynamic factors play during a wildfire evacuation and will provide the information needed to educate the public about the need for wildfire evacuation preparedness. The EDCTC project manager will direct and monitor the consultant's delivery of Task 5.

Task Deliverables
Modeling Report that includes: Results of modeling fire, traffic, communication, water supply, and human behavior. Results of static modeling the interaction of fire, traffic, communication, water supply, and human behavior and the impacts on route selection and evacuation time.