

STAFF REPORT**AMES AREA METROPOLITAN PLANNING ORGANIZATION
LONG RANGE TRANSPORTATION COMPUTER MODEL**

November 10, 2009

On October 27, 2009, the City Council requested a staff report regarding the capability of the contracted Long Range Transportation Computer Model (referred to as “the model”) and the costs to perform “what-if” scenarios. This report will first outline the basic vernacular used when referring to the building blocks of the model. Next, the report will give a brief overview of the two major steps conducted when using the model. One is the updating and calibration of a base-year model, and the second is the creation of a model to be used twenty-five years into the future for forecasting purposes.

A transportation model like the one used by the Ames Area Metropolitan Planning Organization (AAMPO) is GIS-based and utilizes information such as census data, road network data, and land-use data to create its base layers. AAMPO uses the software package TransCAD by the Caliper Corporation, which is also used by the Iowa DOT and is considered the industry standard for transportation modeling.

Built on top of this base information is a layer of Traffic Analysis Zones (TAZ) which represents areas in the model of similar trip generation volume within the AAMPO planning boundary. The edges of the Traffic Analysis Zones are usually major roadways or natural barriers such as lakes or rivers. Encoded into these Traffic Analysis Zones are all the socioeconomic data which the zone encompasses, such as population, demographics, employment, etc. Also included are their respective numbers of trips generated by the zone, both leaving the zones and those attracted to the zones. Trips must use the transportation network in order to travel from one zone to the next, which is based on the current roadway system.

Once the base information is in place, the model needs to be calibrated to the current base-year. This involves updating any socioeconomic data or transportation network changes that have occurred since the last model calibration. Then the model is run, assigning trips to the network. These trips are validated using ground counts (Average Daily Traffic, ADT) conducted as part of the Iowa DOT count program and those conducted by City of Ames staff. The model is then adjusted until it can accurately reproduce known conditions of the current base year. Once this is complete, the model is ready for step two, which is forecasting traffic 25 years into the future.

Step two begins with how the region is planned to develop over the next twenty-five years. The Federal Highway Administration requires the use of approved comprehensive plans such as the City’s Land Use Policy Plan and Urban Fringe Plan. This future vision is reflected in the Traffic Analysis Zones of the model, essentially changing the amount of traffic in each respective zone. At this point, the model is run

again in order to assign those future trips to the network. The transportation network during this run uses the existing roadway system plus committed projects that are shown in AAMPO's five-year Transportation Improvement Program (TIP). **While the model does not identify possible solutions, it does flag those areas of the network in which there are deficiencies based upon established performance standards.**

At this point, extensive public involvement is used to determine solutions acceptable to the community for resolving these deficiencies. Solutions can come in numerous forms that include, but are not limited to, changes in mode share (increased transit ridership), additional capacity (traffic lanes), additional links (new roadways, such as the Grand Avenue extension), or intersection improvements. **Once a group of solutions is set, they are then encoded into the model and the model is run to see what deficiencies remain. Iterations of this process will continue until all deficiencies have been met using reasonable and fiscally constrained methods.**

In summary, **the transportation model for the region can be run for various growth scenarios.** However, it should be understood that the model does not generate proposed projects, but does identify different sets of network deficiencies. This is where extensive public involvement is vital in providing solutions that are acceptable to the community in resolving the network deficiencies.

The actual computer model resides with the Department of Transportation. Given our lack of staff expertise to operate this model, we rely on DOT staff to assist with the implementation of this model. **There will be no cost to the City to run various growth scenarios, although there might be delays as we have to wait for the availability of DOT staff time.**