Methodology for Identifying Shasta County's Top Five Transportation Assets

In order to adopt climate change adaptation strategies specific to the region of Shasta County, it is important to first identify the region's top transportation assets, so it may be determined how they might be affected and the most appropriate strategies to adopt. Identifying these transportation assets involves the complex process of assigning them socioeconomic value. In the absence of resources to conduct studies that might identify the county's top transportation assets through detailed analysis, the following simple methodology was adopted with the goal of measuring climate change impacts to Shasta County's transportation assets for site specific adaptation strategies in the future:

1) According to FEMA, critical transportation facilities include: highways, railways, light rail, bus systems, ports, ferry systems, and airports. These transportation assets were weighted equally as long as the facility provides transportation for a significant number of both people **and** goods. Shasta County has no light rail, ports, or ferry systems. The bus system for the urban core of Shasta County (RABA) does not transport goods, and the airports' volumes of passengers do not constitute a significant number of people being transported. Highways and railways transport a lot of freight through Shasta County, but Amtrak moves far fewer people than any of the highways on an average day. Therefore, the scope of possible transportation assets was narrowed to just highways. There are six state highways (36, 44, 89, 151, 273, and 299) and one interstate highway (I-5) in Shasta County.

2) The following factors have been selected to compare highways in the region and identify the top five:

1. Average daily vehicle volumes for the route. If the route continues through neighboring counties, the vehicle volumes external to the region have not been included in the highway comparison.
2. Average daily truck volumes for the route. For the purposes of this comparison, truck volumes serve to represent the relative freight volumes for each route. If the route continues through neighboring counties, the vehicle volumes external to the region have not been included in the highway comparison.
3. Number of climate change impacts* that could significantly impact the route.
4. Length of the route.

Factors 1 and 2 have been given equal weight and are the primary factors. Factor 3 is the secondary factor, and factor 4 is the tertiary factor.

3) Weighting rationale: Factors 1 and 2 were made the primary factors because critical transportation facilities are vital to the movement of goods and people. These assets serve commuters, supply businesses, and serve as escape routes in cases of a natural disaster. Temporary delays associated with these facilities can result in inconvenience and economic loss while larger failures can lead to disastrous economic and social effects. As it only takes one climate change threat to cause delay to, or failure of, a transportation facility, and all of the transportation assets could be impacted by at least one climate change threat, the threats of climate change were treated as a secondary factor.

Factor 3 was made a secondary factor in order to distinguish which of the top transportation assets are affected by more climate change threats, and are viewed, therefore, as more vulnerable.

Factor 4 was made a tertiary factor in order to distinguish which of the top transportation assets threatened by multiple climate change threats are longer and viewed, therefore, as having more points of weakness.

* = Applying the guidance of the California Climate Adaptation Planning Guide and the Statewide Adaptation Strategy, the greatest hazards to transportation infrastructure in Shasta County have been identified as:

1. Increased frequency of wildfires
2. Flooding from rapid snowmelts and intense rainfall
3. Higher average temperatures and more frequent heat events