

## Assignment 5: Divided Highways

The City of Seattle, King County, and the State of Washington faced a critical decision earlier this year: how best to replace the Alaskan Way Viaduct section of SR 99 along Seattle's Central Waterfront. The Viaduct is a major north-south route through the city and carries 20 to 25 percent of the traffic traveling through downtown, according to the Washington State Department of Transportation. It was damaged in the 2001 Nisqually earthquake and could collapse in a future earthquake, which makes replacement necessary. Replacement options were grouped into three basic categories: a new elevated structure, a tunnel, or a surface boulevard with additional investments in transit and transportation demand management. Traditionally, transportation alternatives have been evaluated using technical metrics, such as cost and capacity, but there are other important issues to consider when evaluating investments. These include social, environmental, and urban form considerations. Each alternative had its own positives and negatives, and there was no perfect option. Ultimately, Greg Nickels (mayor of Seattle), Ron Sims (former King County Executive), and Christine Gregoire (Governor of Washington) chose the deep-bore tunnel option to replace the existing viaduct. The deep-bore tunnel is the best option when considering social and urban form issues, and it offers some environmental advantages as well.

Highway construction has many social implications, but the most significant implication on a local scale has been the displacement and disruption caused by highway construction. Cities already existed when significant highway construction began in the 1950s and 1960s, so space had to be cleared to accommodate the new roads. This meant the destruction of homes, businesses, and other buildings, and the displacement of the people who owned or rented them. Areas that were not destroyed but were close by were affected by the construction, which created a noisy, dirty environment and restricted access to businesses and homes. None of the options to replace the Viaduct would displace many residents, as they would use existing right of way or tunnel under the city. The elevated and surface options, however, would create significant disruptions during construction. Under all three options, the removal of the existing viaduct would disrupt local residents and businesses. The construction of a new elevated structure would create additional disruptions along the alignment of the current viaduct. Under the surface option, the modification of existing streets to create more capacity could make them impassable for periods of time. The construction of a deep bore tunnel would create disruptions at the entrance and exit points and possibly on some surface streets, but overall it would affect far fewer people and businesses than the other options. Thus, the deep bore tunnel is preferable to the other options in terms of disruption to the area.

Impact to the environment is an important consideration with any construction project, and the issue of climate change has gained importance in the past decade. Highway construction in the United States has helped contribute to climate change by making it possible for people to drive longer distances in shorter amounts of time. As trip lengths increase, so do greenhouse gas emissions. The elevated and tunnel options would have approximately the same capacity as the current viaduct, so greenhouse gas levels would not change significantly. The surface option would restrict capacity and add transit service,

which would likely lead to fewer miles traveled and lower emissions. This effect makes a surface boulevard the best option in terms of environmental concerns. The deep bore tunnel does have one environmental advantage, however. Emissions within the tunnel could be captured and filtered, which could improve air quality.

Highways have had an enormous effect on the urban form of central cities. In Seattle, Interstate 5 has created a barrier between the east and west sides of the city, impeding east-west transportation. Some areas near the interstate have suffered because automobile traffic makes it unpleasant to be close by. In downtown Seattle, the Viaduct has created a barrier between the downtown core and the central waterfront. People walking from an area like Pike Place Market have to cross under the Viaduct to reach the waterfront, which is an unpleasant experience. Walking along the Alaskan Way surface street can be unpleasant as well, because the Viaduct is so close. A new elevated structure would maintain the status quo and the waterfront would continue to be disconnected from downtown. The surface option would likely be better, as it would carry fewer vehicles and be less noisy, but it would also divide downtown and the waterfront. The surface boulevard would likely be designed to accommodate as many vehicles as possible, making it difficult for pedestrians to cross. In contrast, constructing a tunnel would allow the city to reclaim its waterfront from the automobile. Most automobiles would travel underground, reducing noise and traffic above ground. Pedestrians would be able to travel from downtown to the waterfront without noticing the effects of a state highway. In addition, the land where the Viaduct currently sits could be used for something else, such as public open space. The end result would be a more vibrant and pleasant waterfront for the city.

In summary, the deep-bore tunnel is the best option when considering social and environmental factors and the urban form. Constructing a tunnel would reduce disruption from construction, allow for the filtration of emissions, and allow the city to create a vibrant space along the waterfront. The elected officials responsible for the decision made the best choice.