



152nd Avenue NE Corridor Study

Travel Demand Modeling and Intersection Analysis

Final Technical Memorandum

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Executive Summary

Introduction and Background

The 152nd Avenue NE Corridor Study is being conducted to help develop and guide implementation of the vision established for the 152nd Avenue NE Corridor during previous Neighborhood Planning studies. This vision is summarized in The Overlake Master Plan and Implementation Strategy as strategy L-1, “Develop a lively, walkable, retail street on 152nd Avenue NE”. Work on the 152nd Avenue NE Corridor Study began in December 2009 and has resulted in the following outcomes to date:

1. A preferred light rail alignment and station platform located adjacent to the SR-520 corridor instead of within the 152nd Avenue NE right-of-way;
2. A preferred street grid concept for the area bounded by SR-520 on the north, NE 24th Street on the south, 148th Avenue NE on the west and 152nd Avenue NE on the east;
3. A preferred plan for ground-floor retail uses;
4. City agreement on a proposed infrastructure concept within the study area.

Purpose of Traffic Analysis

The traffic analysis work for the 152nd Avenue NE Corridor Study contains two key components: 1) a travel demand modeling component, and 2) an intersection operations analysis component. The purpose of the travel demand modeling is to forecast reasonably accurate traffic volumes during the study’s 2030 design year. The purpose of the intersection analysis is to evaluate how the preferred street grid might operate with 152nd Avenue NE channelized as a 3-lane cross section as described in the Overlake Master Plan and Redmond Community Development Guide (RCDG) 20C.45.40-070, dated July 15, 2009.

Previous Studies

The Overlake Neighborhood Plan Update and Implementation Project began in 2005 and resulted in the adoption of updated policies and regulations in December 2007. A second phase is nearly complete and consists of a variety of early implementation actions including the 152nd Avenue NE Corridor Study.

The Group Health Eastside Campus (GHC) is currently the subject of a proposed master plan. As part of the application and permitting process, GHC has been evaluating traffic impacts and needs associated with their development.

Redmond Travel Demand Model Update

The Redmond Travel Demand Model update included the following work to help generate more accurate traffic volume forecasts for the 2030 design year:

1. ***Base Year (2006) Travel Demand Model Validation*** - HDR coordinated with the City on splitting traffic analysis zones (TAZs) into several subzones with detailed land use in order to improve the accuracy of forecasted traffic volumes on existing and future intersections for the proposed street grid.
2. ***Future Year (2030) Build-out Land Use*** - The City provided 2030 build-out land use data based on the refined TAZs noted above. This data was used in the 2030 Redmond model to forecast 2030 traffic volumes.
3. ***2030 Travel Demand Modeling Assumptions*** - City, WSDOT, and HDR staff met to discuss and agree on regional, Redmond area and Bellevue area modeling assumptions to include in the future 2030 Redmond model to more accurately represent the regional and local land use and transportation system plans.

2030 Build-out Travel Demand Modeling Results

Factors Influencing Model Results

By using a travel demand model to develop 2030 traffic volumes in the Overlake Village area, analysts are able to consider how an assortment of roadway, land use, mode choices, and travel pattern changes can affect the overall forecasted traffic volumes. For instance, if transit is one of the travel modes people can select when deciding how to get to a destination, the travel demand model can be adjusted to account for this shift from roadway to transit. This would reduce the number of vehicles forecasted to use the roadway network.

With this in mind, the traffic volumes for the Overlake Village area in the 2030 travel demand model are influenced by the following factors:

1. Land use densities in Overlake Village will increase and include a mix of commercial, office and residential uses. This will tend to increase traffic volumes;
2. Enhanced and additional transit services (BRT and LRT) will be constructed which will tend to decrease traffic volumes;
3. Improved and additional non-motorized facilities will be constructed which will tend to decrease traffic volumes;
4. The Overlake access ramp and street grid system will be constructed and help disperse traffic within the grid. This will tend to improve mobility within the grid and reduce volumes on 152nd Avenue NE;
5. SR 520 tolling will be implemented which will tend to decrease traffic volumes;
6. PM peak period traffic will spread to multiple hours, reducing peak congestion.

Due to the aggregate affect of the many factors that could influence the model, forecasted traffic volumes produced by the model may not match intuitive expectations for the specific Overlake Village location.

Overall Traffic Change Trends

Compared with 2007 traffic counts, total traffic volumes on the north/south streets of 150th Avenue NE, 151st Avenue NE, and 152nd Avenue NE will increase by approximately 42% during the 2030 PM peak hour and by approximately 60% during the 2030 AM peak hour. Total traffic volumes on the east/west streets of NE 24th Street, NE 26th Street, NE 27th Street, NE 28th Street, and the Overlake Access Ramp will increase by approximately 56% during the 2030 PM peak hour and by approximately 64% during the AM peak hour compared to the historical peak count.

Intersection Analysis

The intersection analysis for this study was conducted to determine if the proposed street grid system, including channelization recommendations, could result in desired operational characteristics for each street, particularly along 152nd Avenue NE. The desired operational characteristics promote pedestrian and bicycle mobility and a lower intersection LOS for motor vehicles. A desirable intersection LOS for this study is LOS E for vehicular traffic, without creating excessively long queues that could result in gridlock within the proposed street grid.

Findings

The traffic analysis conducted for this report shows that the proposed street grid and channelization concept for the Overlake Village study area, including a 3-lane cross section along 152nd Avenue NE, can accommodate projected 2030 traffic volumes and achieve desired operational objectives to support a vibrant multi-modal retail main street on 152nd Avenue NE.