

Analysis of Level of Service F in the Highway Capacity Manual and Beyond

Erik Ruehr, VRPA Technologies, Inc.

ITE Western District Annual Meeting

July 15, 2013



Outline

- › Introduction
- › Operations Versus Planning Applications
- › 2010 HCM: Operations
- › 2010 HCM: Planning
- › Evaluation of the State of the Art
- › Beyond the 2010 HCM
- › Conclusion

Introduction

- › What is Level of Service (LOS) F?
- › The Old Way: If it's at LOS F, how do we fix it?
- › The New Way: If it's at LOS F, how bad is it?
- › What's Changed
 - *Funding Limitations*
 - *Right-of-Way*
 - *Environmental Impacts*
 - *Local Opposition*
 - *Emphasis on Alternative Modes, Complete Streets, etc.*

Introduction (cont.)

› Applications of More Detailed LOS F Analysis

- *If all alternatives are at LOS F, which is the “best” LOS F?*
- *If the base case is LOS F and my project makes it worse, is it significantly worse?*
- *If we are expecting LOS F, can we live with it?*
- *If we are expecting LOS F, is there an alternative transportation mode available?*

Operations Versus Planning Applications

- › Operations: Emphasis on queuing, delay, multiple-period analysis
- › Planning: Emphasis on level of severity, alternate routes, alternate travel behavior



2010 HCM Operations Analysis

- › Conduct peak hour analysis
- › Determine whether multi-period analysis is appropriate
- › Analyze for multiple periods
- › Sum measures of effectiveness for each period analyzed

2010 HCM Planning Analysis

- › Use default values, where appropriate
- › Use of volume to capacity ratio or similar measures of effectiveness is supported



Evaluation of the state of the art: How Do We Report LOS F Conditions?

- › Volume to Capacity Ratio
- › Average Delay
- › Maximum Queue Length
- › Additional Letters (LOS G, LOS H, ect.)
- › Lack of Consistency

Beyond the 2010 HCM

- › NCHRP 7-22: Planning and Preliminary Applications Guide to the HCM
- › Traffic Simulation / Dynamic Traffic Assignment
- › Integrated Corridor Management



Conclusion

- › Reporting of congested conditions (LOS F) is an important topic in today's environment
- › Research and new applications are ongoing
- › For now there is much interest, but not much consistency in the profession