Freeway HOV Lanes
History and Current Status

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Presentation Overview

• Puget Sound HOV system
  – How it was developed and funded
  – Core Freeway HOV Lanes
  – Other HOV Facilities
  – Objectives and Operating Policies

• HOV Performance
  – HOV lanes have accommodated regional growth in person trips
  – Overuse affects performance
  – Current activities to improve speed and reliability

• Next Steps working with PSRC
How and Why we have HOV lanes

- Seattle Transit began “Blue Streak” bus rapid transit in 1970
  - First Park and Ride lot near Northgate
  - HOV lane striped onto I-5 express lanes
  - Metro created to provide regional bus service

- PSRC VISION 2020 (adopted in 1990) strongly emphasizes a regional rapid transit system and a comprehensive freeway and arterial HOV system

- WSDOT implemented HOV lanes as standard feature of Puget Sound interstate highways
  - Added to interstate cost estimate
  - FHWA covered 80-90% of cost
  - Included park and rides in freeway rights of way
WSDOT Core Freeway HOV System

• WSDOT developed initial policy and plans for a **Core Freeway HOV Program** in 1991
  – Approximately 250 lane miles
  – Completing last segments on I-5 in Tacoma
  – Over $2B has been committed, including on non-interstate highways

• The **SR 167 HOT Lane Pilot Project** first demonstrated dynamic tolls to manage traffic demand in 2008

• **I-405 Corridor Program** is adapting HOV lanes into dual-lane express toll facility from Bellevue to Lynnwood
Other HOV Facilities and Services

HOV lanes rely on system of supporting facilities to improve transit service, including:

• Over 40,000 park and ride lot spaces
• Direct access ramps
• Arterial HOV and transit lanes

HOV-related services include:

• Regional express bus routes
• Vanpool programs
• HERO program
• Commute trip reduction programs
Transit and ferry services

Internet Home Page

Ride-sharing Programs

High Occupancy Vehicle Lanes

Park and Ride Lots

Intelligent Transportation Systems

Ramp Meter Bypass Lanes

Public & Private Vanpool Programs

Transit stations

Incident Response Teams

Traffic Management Systems

Programs and facilities to increase average vehicle occupancy

High Occupancy Vehicle (HOV) System

Ramp Metering

Traffic Reports (206-368-4499 or DOHTIWW)

Freeway Closed Circuit TV System

Highway Advisory Radio

Data Accumulation

Freeway Traffic Display

Variable Message Signs

Ramp Metering

Traffic Reports (206-368-4499 or DOHTIWW)

Freeway Closed Circuit TV System

Highway Advisory Radio

Data Accumulation

Freeway Traffic Display

Policy History

• **WSDOT developed comprehensive set of HOV operating policies in 1992**
  – Large multi-agency stakeholder group
  – WSDOT Executive level policy committee

• **Transportation Commission adopted WSDOT operating policies**
  – Added ability to customize policies regionally through MPOs

• **In 2001, WSDOT worked with regional stakeholders to change hours of operation on eastside highways**
Objectives and Operating Policies

• **HOV objectives adopted in 1992:**
  – Improve the capability of congested freeway corridors to move more people by increasing the number of persons per vehicle.
  – Provide travel time savings and a more reliable trip time to high occupancy vehicles that use the facilities.
  – Provide safe travel options for high occupancy vehicles without unduly affecting the safety of the freeway general purpose mainlines.

• **Examples of operating policy areas addressed:**
  – Carpool Definition
  – Inside vs. Outside Lane Placement
  – Hours of Operation
  – General Purpose Lane Conversion to HOV
  – Speed and Reliability
Freeway Person Movement: 1998 vs. 2013
Peak periods (AM and PM), Peak Direction at Selected Locations

Over the past 15 years, HOV lanes have accommodated most of the growth in person-trips on the freeway system

- GP lanes are constrained by vehicle capacity
- HOV lane’s share of total person volume has grown
In most corridors, HOV lanes continue to provide a time advantage

- Travel time in both GP and HOV lanes have increased
- Speed advantage in HOV lanes has been hard to maintain

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<th>Weekday Trips, Peak Hour</th>
<th>HOV Trip Times (min.), 1998 vs. 2013</th>
<th>HOV Time Savings (min.), 1998 vs. 2013</th>
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Challenges to Continued HOV Growth

• HOV Speed and Reliability Standard
  - Average speed of 45 mph or higher
  - At least 90 percent of the time during the peak hour

• Most Puget Sound HOV lanes are not meeting the speed and reliability standard

• As HOV lanes become congested their ability to accommodate growth is limited

• Regional transit service depends on reliable HOV right of way
Causes of HOV Lane Congestion

• Routine Congestion
  – Heavy traffic volumes
  – Merging conflicts
  – Geometry
  – Friction with slow moving vehicles in the general purpose lanes

• Occasional Congestion
  – Incidents
  – Bad weather

• Diversion
  – Construction
  – Arterial Congestion

There is no simple or single universal fix.
Ongoing Work to Address HOV System Reliability

• Regional partnerships on operational connectivity with Sound Transit system expansion

• Targeted implementation of congestion relief actions to improve travel for all users, which benefits HOV lane performance, including
  – Ramp metering
  – Incident response
  – Shoulder lane driving concepts
  – Integrated corridor management (ICM)
  – Continued automation of freeway operational systems

• Explore & implement fundable short-term enhancements that benefit Transit and HOV reliability
  – Initial evaluation by WSDOT & Community Transit for north I-5 segment between Lynnwood & Seattle
  – Additional freeway segments to be evaluated in the future by WSDOT & partners
Emerging Opportunities

• Technologies and Applications
  – Capabilities to convey information to users in real time
  – Dynamic operational applications, lane by lane information and control
  – Connected vehicle innovations
  – All-electronic tolling and congestion pricing capabilities

• Practical Design Applications
  – Narrowing of geometric features to maximize use of existing pavement
  – Shoulder driving applications
Continued HOV and Express Toll Lane Development

• HOV lane construction continues in the Tacoma area
• WSDOT will open I-405 express toll lanes this fall
• Construction to extend the SR 167 HOT Lanes southbound scheduled to open during 2016
Proposed Upcoming WSDOT Presentations

• Full presentation on I-405 Express Toll Lanes
  – Opens Fall 2015
  – Consistent with I-405 Corridor Program adopted in 2002
  – Provides approach to sustainable HOV reliability that’s been endorsed by Eastside and South King County stakeholders

• Potential short-term improvements for transit and HOV travel reliability issues on I-5 between Lynnwood and Seattle
  – Preliminary collaboration and evaluation by Community Transit and WSDOT staff
  – Considering both roadway and operational improvements
  – Future workshops will bring in other agency staff
For questions or further information…

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