

# Active Traffic Management



**John Cater**  
**FHWA – Colorado Division**



# Active Traffic Management:

Technology, transit, express lanes and telework provide options to commuters for dealing with congestion





# Regional Transportation Management Center

- Shared Operations Center
  - State DOT and State Patrol
- Freeway management system
- Backbone for ATM system





# Dynamic Pricing

- Adjust the toll rate dynamically to encourage or discourage users

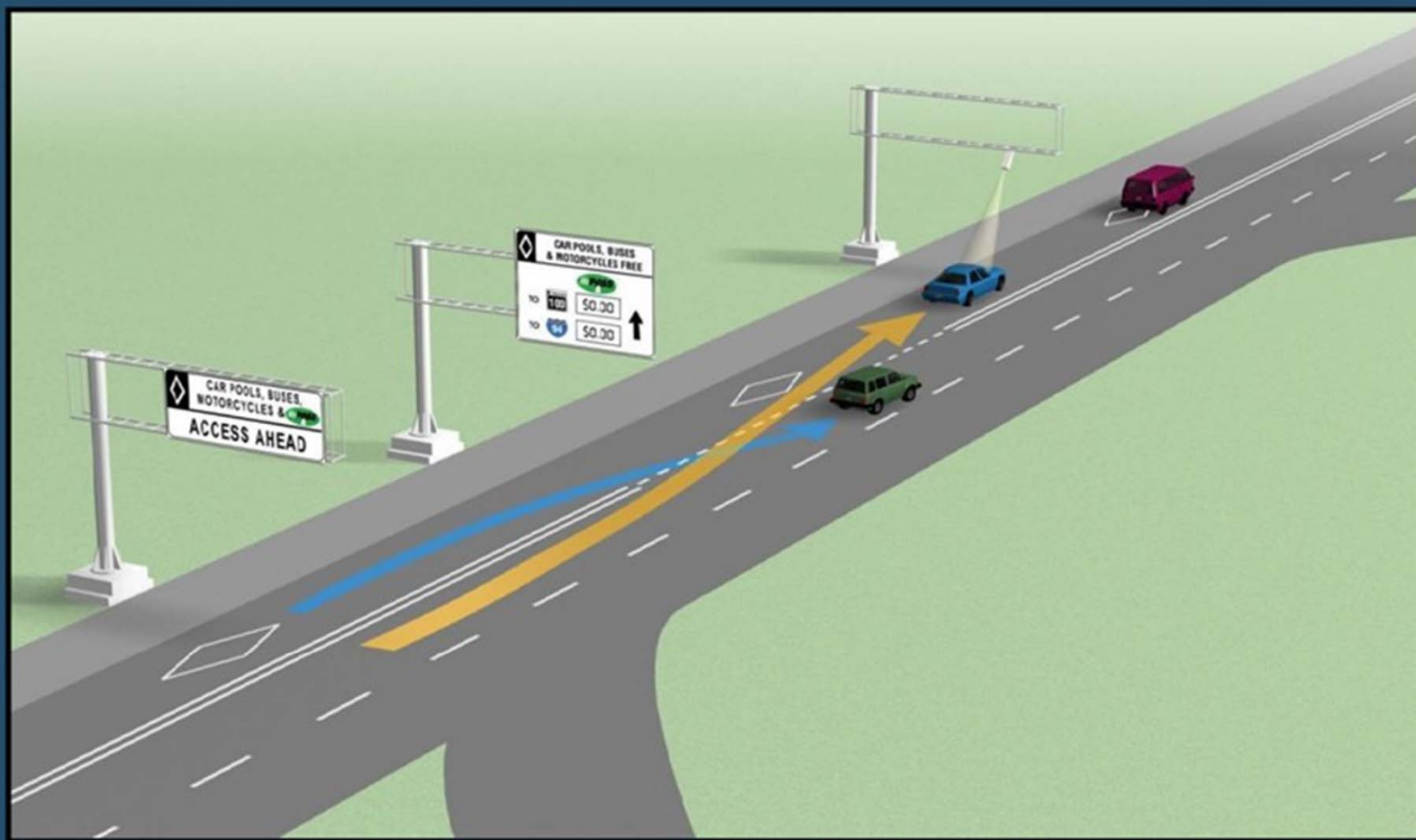
Choose to maximize revenue OR to maintain free flowing traffic in managed (HOT) lane

- Rates determined based on:
  - Number of vehicles in lane
  - Speed of the vehicles
  - Rate of change of traffic conditions





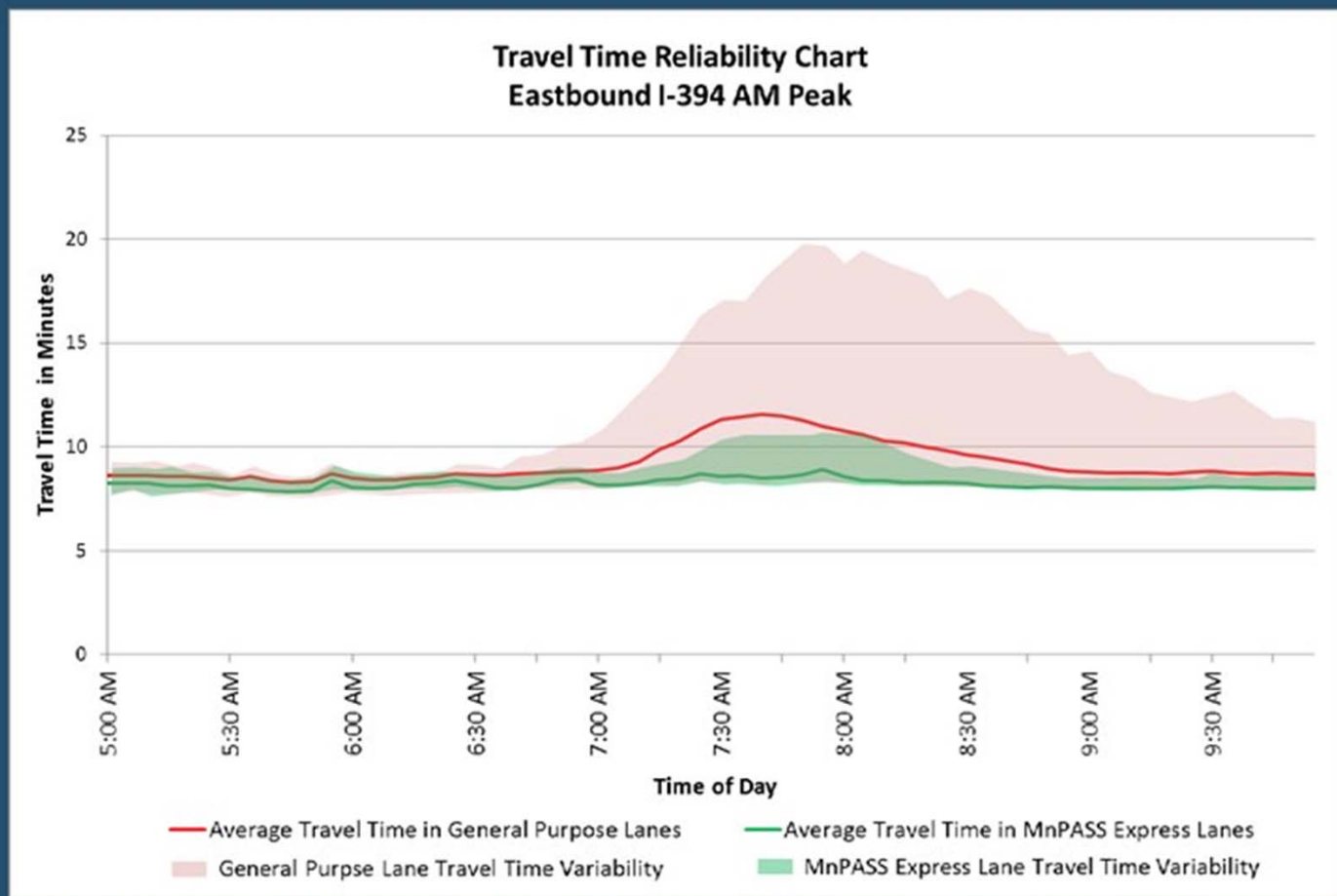
# Minnesota HOT Lane Design







# HOT Lane Reliability





# Intelligent Lane Control Signals (MN)

- ILCS located every ½ mile over every lane.
- ILCS are a 4ft x 5ft full color matrix signs.
- ILCS used for incident management , speed harmonization and priced dynamic shoulder lane.





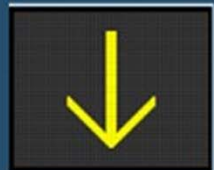
# ILCS Sign Options



Blank - default



Green - Lane Open



Flashing Yellow - Caution



Red X - Closed



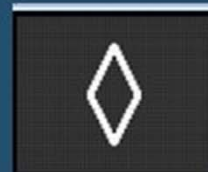
Yellow X - Closed Ahead



Merge



Speed Limit



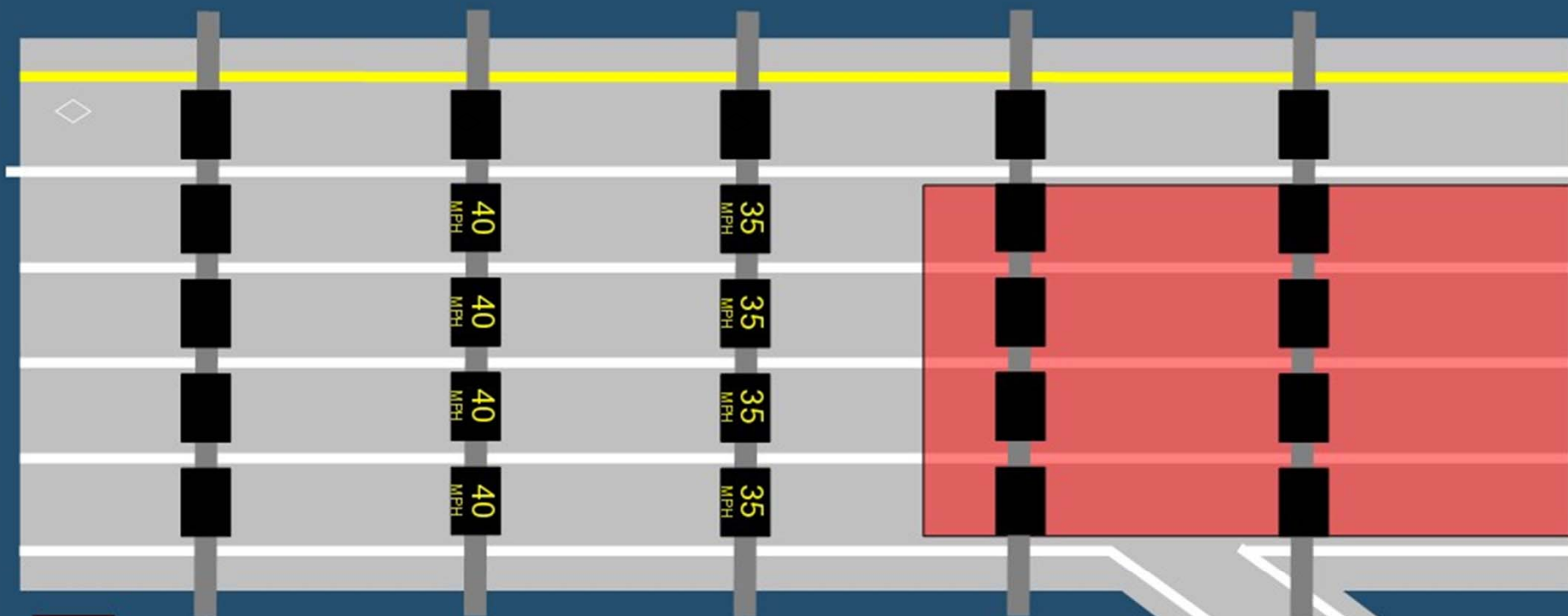
White Diamond







# Advisory Variable Speed Limits

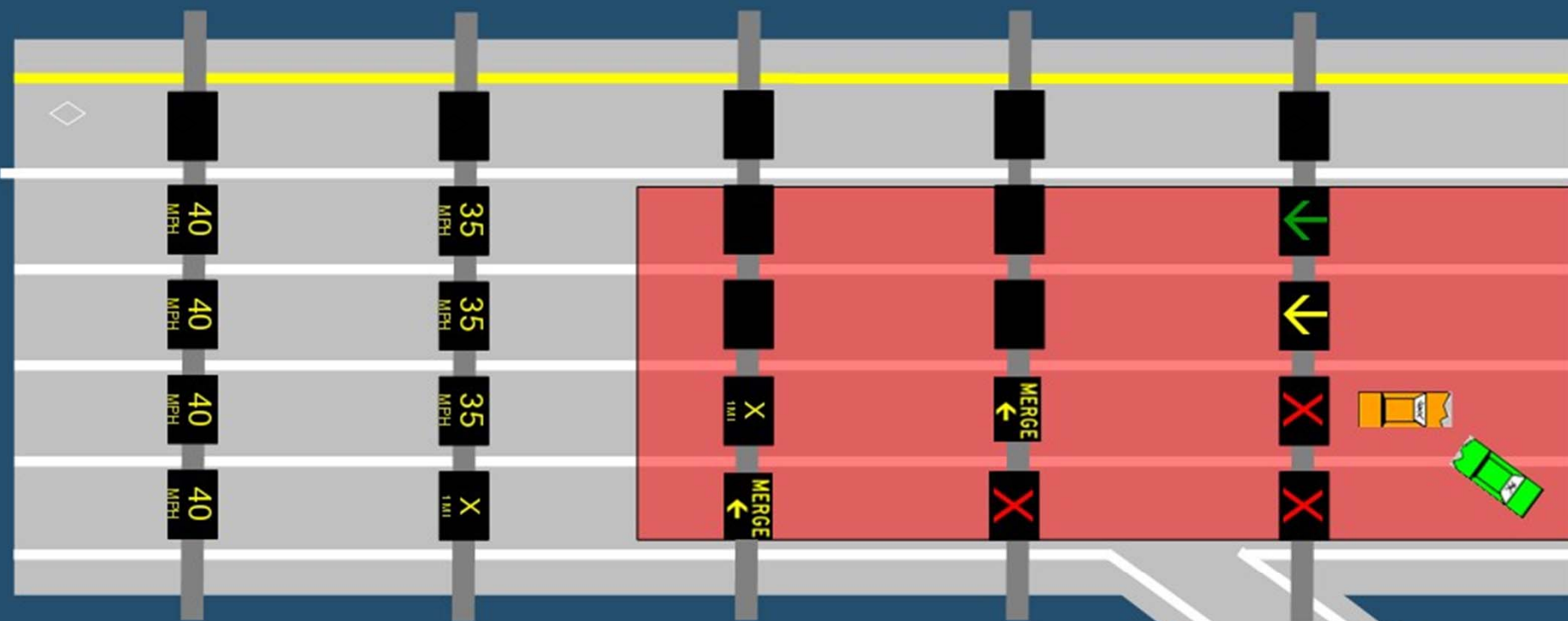


 Congested Traffic





# Use of ILCS During Incidents Right Two Lanes Closed



 Congested Traffic







# Priced Dynamic Shoulder Lane





# I-35W MnPASS: Priced Dynamic Shoulder Lane



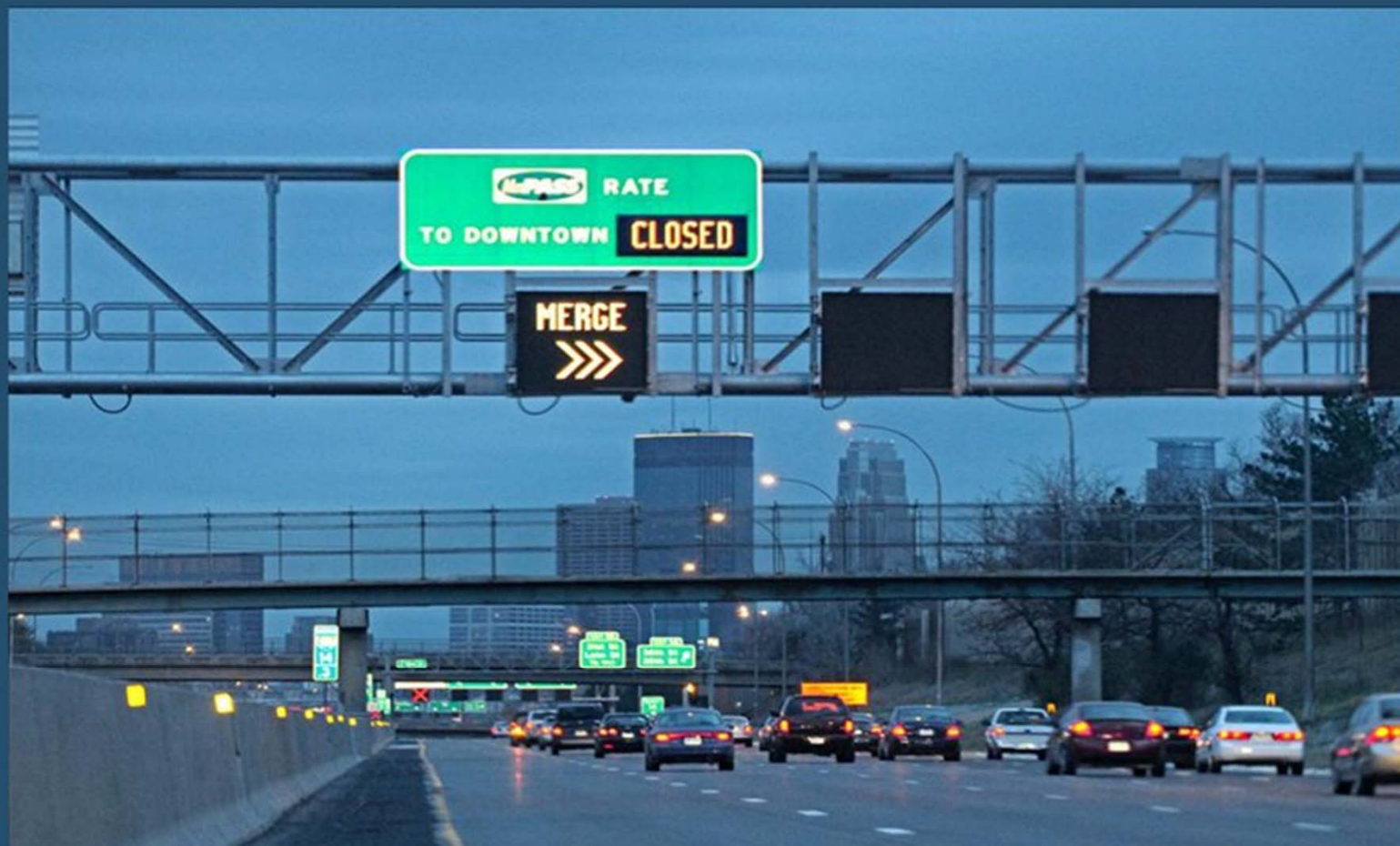
 CAR POOLS, BUSES  
MOTORCYCLES &   
SHOULDER USE  
PERMITTED ON  
GREEN ARROW







# I-35W MnPASS: Active Traffic Management PDSL Closed







# Bus Use of Shoulder

Only when freeway traffic moving slower than 35 mph.

- Buses yield to stopped vehicles

Allows greater reliability for transit schedule

In use over 10 years (Minn) with only one non-injury accident (PDO)

Provide Shoulder thru Technology!





# Emergency Pull-Offs



## Why we have them:

Refuge for disabled vehicles  
and crashes

Enforcement areas

Co-located with Maintenance  
pull-offs



## Design considerations:

Goal to locate every  $\frac{1}{2}$  mile  
14 ft width, min 200 ft long







# I-5 Active Traffic Management





# Hard Shoulder Running

Use the hard (paved) shoulder as an additional travel lane during peak and congested periods to facilitate greater volumes of traffic, minimize congestion and improve trip time reliability

Use of shoulder can be tolled or free





# Netherlands Example







# German Example





# England Example





# England Example Between Interchanges







# Shoulder Striping in England





# Questions

