AGENDA

Strategies through Our Regional Context
- Operational History
- Major Urban Phases
- MnPASS Congestion Strategy
- Linkage to Rural ITS
OUR ITS CONTEXT

- Metro population about 3M
- Growing- clear linkage to regional centers
- Very large state highway network that competes for funds
- Efficient transit network with dedicated funding to expand LRT network
- Minimal freight related issues
- A political environment that continually challenges our operational strategies
- A DOT that actively seeks operational, multi-modal and technology solutions first, and geometric solutions second
IN THE BEGINNING

- 1972
- Ramp meters, sensors, changeable message signs, traffic management center
- Original Goal: move more cars in the peak period
- Many of our systems are now on fourth or fifth generation
- Early challenges were around technology and infrastructure capabilities, recent challenges are around stakeholder support
OUR OPERATIONAL PHASES OVER 40+ YEARS

1. **The beginning**: one road
2. **Expansion of the same**: replicate to viable highways, about one per year until built out in 2009
3. **Add systems**: cameras, FM radio, traveler information, fiber network, work zones
4. **Add field operations**: Service patrols, formal incident management programs, construction timing, agency integration
5. **Focus on Vehicle occupancy**: car pool lanes, parking systems, ramp meter by-passes, transit operations
OUR OPERATIONAL PHASES OVER 40+ YEARS

6. **Transit priority**: bus shoulders, express bus with mega park and rides

7. **Choice**: tolling, telework, multi-modal

8. **Geometric shift**: low/cost high benefit projects, performance based designs, shoulder repurposing, Towards Zero Death systems

9. **Manage by lane**: MnPASS HOT lanes, Active Traffic Management, peak period shoulder operations

10. **Next**: systems integration, state wide ITS network, MnPASS network, vehicle – infrastructure integration, other?
OUR APPROACH TO OPERATIONAL STRATEGIES

Systems Philosophy
• Pilot it
• Improve it
• Expand it
• Institutionalize it
• Plan the strategy’s next generation
• Repeat for next strategy

Changing goals over time show evolution of strategy:
  - Move more cars → Move more people
  - Inform all drivers → Inform individual drivers
  - Encourage mode shift → Provide Choice (and revenue)
  - Expand (traditional large projects) → Many small projects
  - Safety via Engineering → Zero Fatalities via TZD 4E’s (RURAL focus, ITS priority)
CAPITAL INVESTMENT STRATEGIES

- Regional shift in mobility investments from major capital projects for mobility improvement to lower cost/high benefit projects and technology solutions.
- Shift occurred due to lack of funding for major projects AND because a series of small projects regionally distributed provided more system benefits than a single large project.
- Shift made MnPASS the expansion/congestion strategy.
- Lower Cost/High benefit examples:
  - Auxiliary lanes
  - Multi-lane ramps
  - Non-traditional interchanges
  - Shoulder use for buses and peak period HOT lanes
- Both a Corridor and a Regional Strategy.
- Both MnSHIP and TFAC reflect these investment strategies.
WHAT IS MNPASS?

I-35E MnPASS in St. Paul

- Carpools, buses and motorcycles can still use the lane for free.
- Solo drivers must have a MnPASS transponder and a valid MnPASS account to use the lane during peak rush hour periods.
- Fees are based on the amount of traffic in the MnPASS lanes.
- Enter and exit the MnPASS lanes at the designated places.
- Do not cross the double white lines.

An overhead antenna reads your MnPASS transponder and automatically deducts your fee from a prepaid MnPASS account.

A second sign will tell you the current fee to downtown.

Signs will alert you to the entry and exit points for MnPASS lanes.
MNPASS SYSTEM LAYER

- MnPASS enabled by underlying systems
MNPASS = EXISTING SYSTEM AND NEW LAYER

Existing Tech (in-source)
- Communication network
- Traffic Sensors
- Dynamic Message Signs
- Cameras
- Gates for Reversible Road
- Traffic Management Center/Systems
- Incident Mgmt. Systems

New Technology (out-source)
- Toll Systems
  - Transponders
  - Pricing Signs
  - Toll Readers
  - Communications
- Back office
  - Transactions
  - Customer Service
  - Monitoring
- Enforcement
OUR MNPASS STRATEGY

• Phase 1: Convert HOV lanes (2005 to 2009)
• Phase 2: Make shoulders HOT lanes (2010)
• Phase 3: Regional network: All expansion projects are HOT lanes (2011+)
• Goals:
  – Make congestion a choice for customer
  – Set pricing to manage performance long term, not to maximize revenue
  – Coordinate transit investments with MnPASS investments
• Outcome: MNPASS lane carries 2x people of general lane in peak hour
PROS AND CONS OF MNPASS LANES

PROs
– The only sustainable way to protect congestion investments
  • Variable pricing manages performance for long term
  • Reduces need for future investments
– User makes the choice
– MnPASS lanes are multi-modal
– Technology allows many options in how lanes operate
– Transit prefers a MnPASS lane to Bus shoulder
– MnPASS lanes provide some revenue
– Customers really like MnPASS lanes

• CONs
– HOT lanes are substantially harder to implement then traditional lane
– Freight industry has strong opinions on MnPASS lanes
THE PLAN: REGIONAL MNPASS NETWORK

- MnPASS – MN’s congestion pricing brand name/HOT lane
- Operates during peak weekday AM & PM rush hours – free and open to all during non-peak
- Buses, carpools (2+) & motorcycles use for free – solo drivers can choose to use for a fee avg. $1.25-$1.50
CHALLENGES FACING MNPASS EXPANSION

• The next corridors have urban/semi-rural boundaries
  – Reoccurring congestion on the edge is limited
  – Traveler profile is a harder to reach market for transponders
    • Varied Destinations
    • Recreational
    • Freight
  – Multi-modal benefits are limited
• The next corridors are long and thus have high cost
• Concept adoption will present new challenges with local communities
CONCLUSIONS

- Corridors and strategies evolve
- Multiple and integrated strategies are needed
- Lower cost options have higher ROI
- Pricing is key to long term congestion issues
- Technology presents many opportunities to meet goals
- Link ITS strategies to regional plans to secure investment
- Operational strategies are complex and have unique stakeholder and funding challenges
- Many of these URBAN Conclusions mirror our approaches for our RURAL ITS Strategies
WHAT’S NEXT – RURAL MN ITS
SIMILAR PHILOSOPHY TO URBAN, DIFFERENT SCALE/STAGE/INTEGRATION

• Rural Conflict Warning Systems
  – Pilot it ✔
  – Improve it ✔
  – Expand it ✔
  – Institutionalize it (State, County, City)
  – Plan the strategy’s next generation
• High Accuracy Mapping
  – Potential TZD strategy
  – Early pilot stage
• Integrated Statewide ITS Operations
  – Technology is ahead of the Operational Concept
• Automated Enforcement