

# **IBTTA 2015 Summit on All-Electric Tolling, Managed Lanes & Interoperability**

Managing Transit & Passenger Vehicle Traffic  
on Managed Lanes

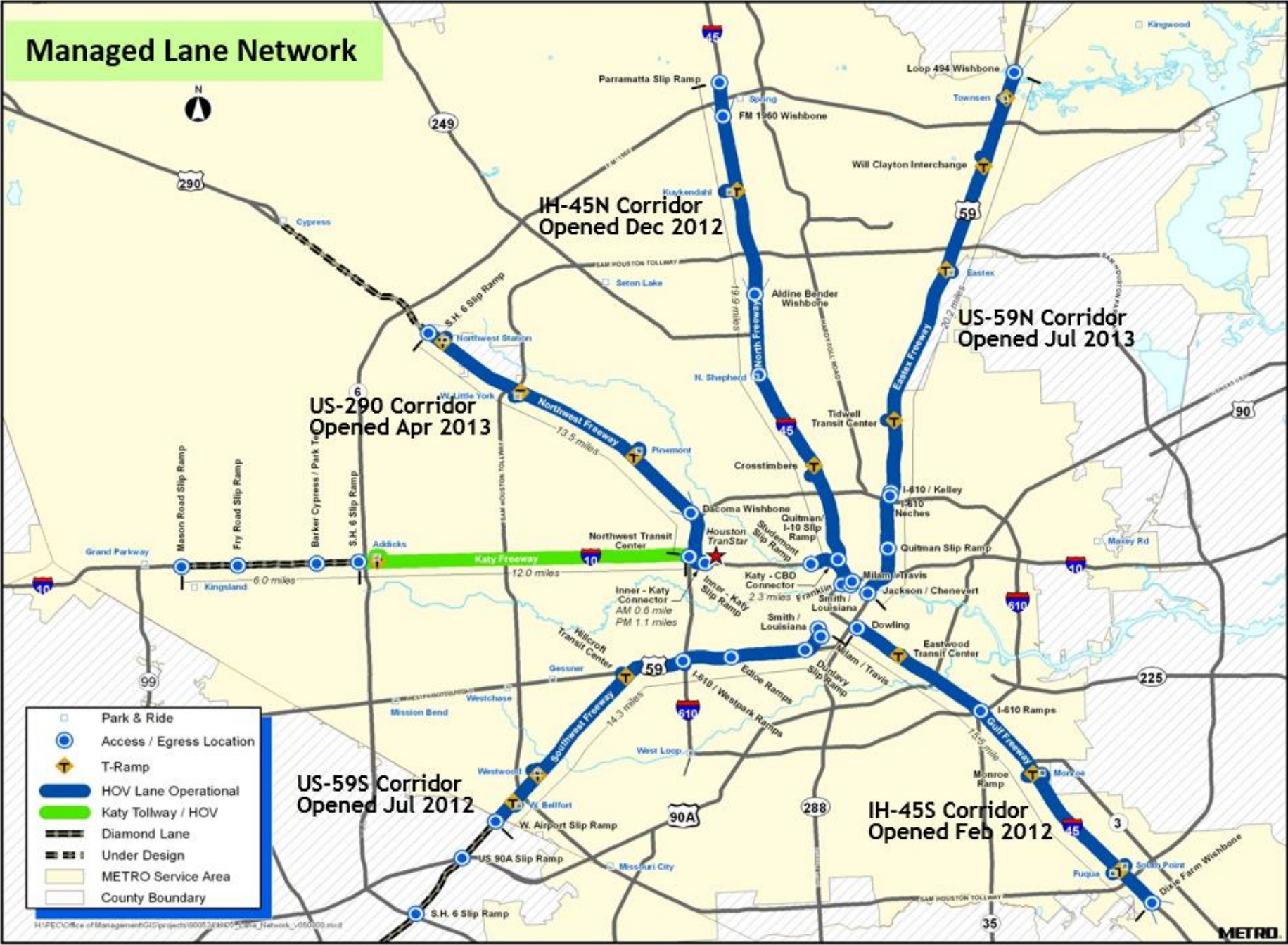
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Lisa Castañeda, P.E.

# Managed Lanes / Express Lanes???

- In this presentation, Managed Lanes are facilities that allow capacity for
  - Toll paying customers
  - Eligible HOVs
  - Transit
- Provide transportation solution by maximizing volume of people through the facility and charging the lowest possible toll for a reliable trip

# Managed Lanes in Houston








# Two Agency Operators in Houston

- Harris County Toll Road Authority (HCTRA) – County run tolling agency, funded by tolls.
- METRO – Houston region's transit agency governed by board (appointed by cities and Harris County) funded by sales tax and other traditional funding sources.

# HCTRA Operating Concept

- HCTRA's facility – IH10 Katy Toll Road was new construction that was implemented in 2009 with the widening of the Katy Freeway. **Funded through tolls.**
  - Before the widening: one, reversible, hard barrier separated, HOV lane open during HOV hours in peak direction with limited access.
  - After: 2 lanes in each direction, separated with pylons, open 24/7/365 offering discount to HOV during HOV hours. Goal is to maintain level of service C.
  - **Always a toll road allowing capacity for HOV**

# HCTRA Operating Concept cont'd

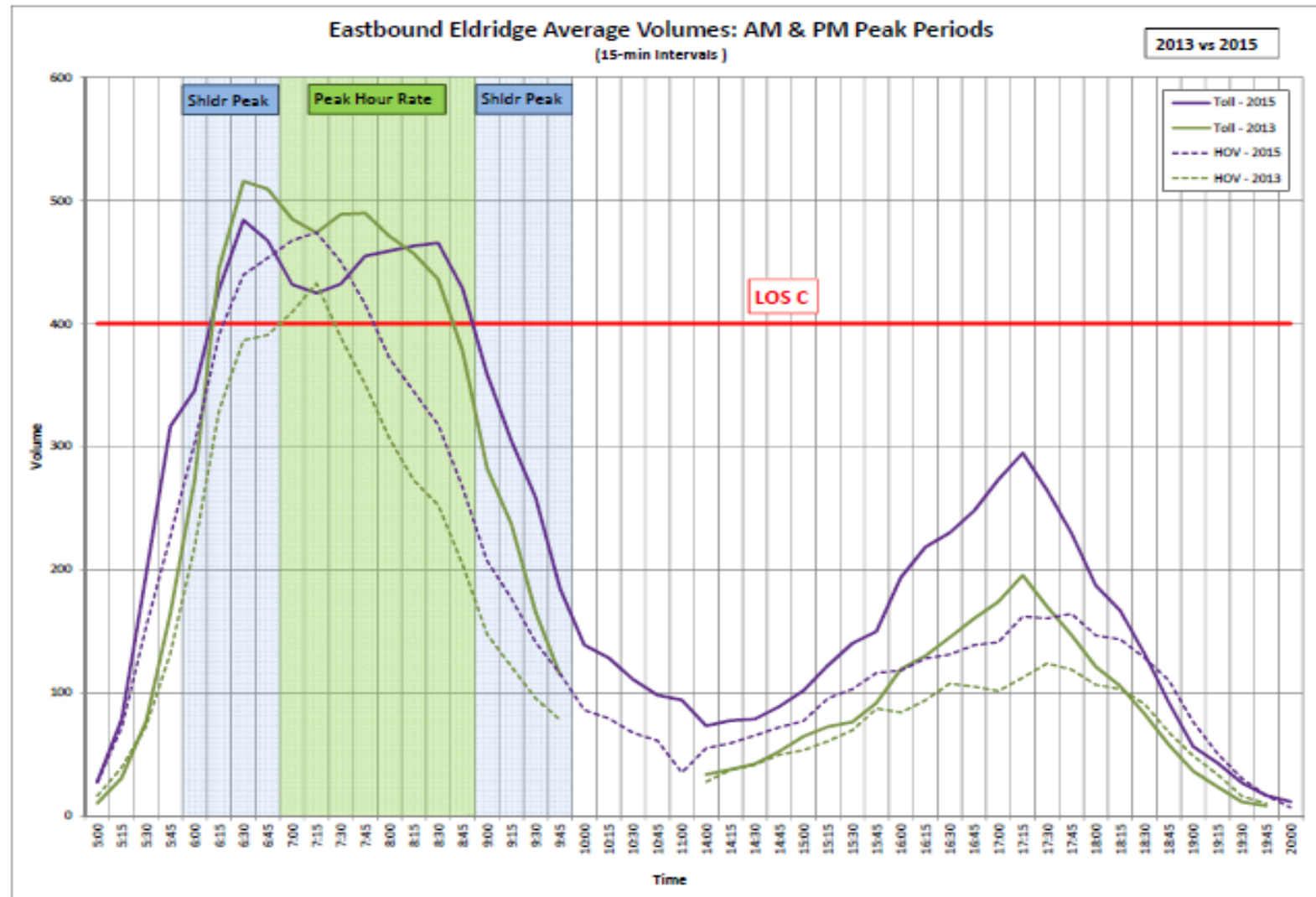
VEHICLE TYPE	MONDAY - FRIDAY HOV HOURS 5 am - 11 am	MONDAY - FRIDAY HOV HOURS 2 pm - 8 pm	ALL OTHER TIMES INCLUDING WEEKENDS
 <p><b>EXEMPT VEHICLES</b> METRO buses and school buses</p>	Free	Free	Free
 <p><b>MOTORCYCLES</b></p>	Free	Free	\$0.30 to \$0.40 per tolling plaza
 <p><b>HOV</b> car, truck, van or SUV</p>	Free	Free	\$0.30 to \$0.40 per tolling plaza
 <p><b>SOV</b> car, truck, van or SUV</p>	\$0.30 to \$3.20 per tolling plaza	\$0.30 to \$3.20 per tolling plaza	\$0.30 to \$0.40 per tolling plaza
 <p><b>3+ AXLES</b> commercial vehicles or vehicles towing trailers</p>	\$7.00 per tolling plaza	\$7.00 per tolling plaza	\$7.00 per tolling plaza

# HCTRA Operating Concept cont'd

- Toll users must have transponder and account, facility available 24/7/365, drive under dynamic signs indicating “toll lane”, time of day pricing.
- HOV presently do not need transponder/account, facility available during posted HOV hours, drive under dynamic signs indicating “HOV lane”
- Presently HOV requirement is HOV 2
- Visual HOV enforcement



# HCTRA Measuring Capacity on Katy



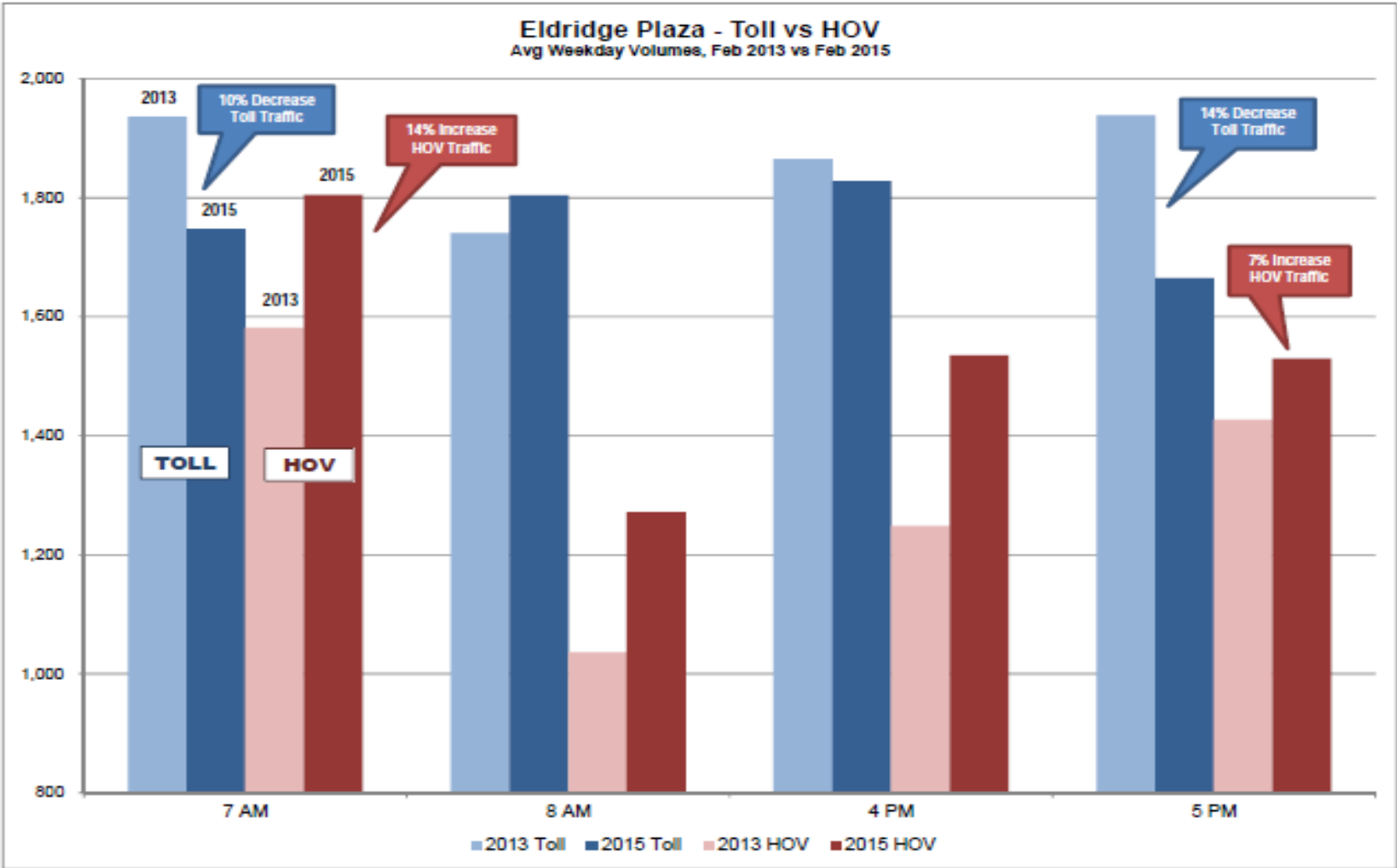


# HCTRA

## Managing Capacity

- The only tool HCTRA has triggered to manage capacity is adjusting the toll rate.
- Toll rate has been adjusted 2 times since opening in 2009.
- Results?
  - Successfully reduces volume of toll user.
  - The honest customer pays larger toll.
  - Increase in HOV use??? Or rather, more transactions in the HOV lane.

# HCTRA Results of Toll Rate Increase



# METRO Operating Concept

- METRO's facilities – converted the 5 existing HOV lanes to HOT lanes. **80% federal funds, 20% local through sales tax.**
- One reversible lane, hard barrier separated, opened in HOV hours.
- Always HOV facilities that allow toll paying customers in the lane during when capacity is available.



## METRO Operating Concept (Cont.)

- Toll users must have transponder and account, facility available as posted, drive under dynamic signs indicating “toll lane”, time of day pricing.
- HOV presently do not need transponder/account, facility available during posted HOV hours, drive under dynamic signs indicating “HOV lane”
- Visual enforcement
- All lanes are HOV 2+ except US-290 which is HOV 3+ during morning peak hour.
- Toll paying vehicles are currently excluded from some corridors during the morning commute from 6:30 am to 8:00 am.

# METRO

## Measuring Capacity on HOT Lanes

- METRO's goal is minimum of 50 mph at all times (FTA goal is 45 mph in peak hour 90% of the time for 180 days).
- Average corridor traffic speeds recorded in 15 minute increments during all operating hours.

Partial speed table used to track and report average corridor speed during peak hour.

	<b>Daily Average Speed 2015</b>			
	7:00 to 8:00 <b>IH45S</b>	7:00 to 8:00 <b>US290</b>	7:00 to 8:00 <b>US-59SW</b>	7:00 to 8:00 <b>US-59N</b>
9/12/2014	52	60	50	63
9/15/2014	55	59	45	60
9/16/2014	45	59	46	61
9/17/2014	55	58	48	61
5/21/2015	48	60	53	62
5/22/2015	56	59	54	64
5/27/2015	57	49	43	52
5/28/2015	55	58	54	61
5/29/2015	56	58	52	61
# Days	180	180	180	180
# > =45 mph	171	180	159	179
% > =45 mph	95%	100%	88%	99%

# METRO

## Managing Capacity on HOT Lanes

- Actions METRO is taking to maintain average corridor speeds in the peak hour:
  - Beginning Aug. 1 toll paying vehicles will be excluded from some corridors during the afternoon commute from 4:30 pm to 6:00 pm.
  - Increased the number of police officers enforcing the lanes.
- Considering increasing occupancy to HOV 3+ on some corridors during morning and/or afternoon peak hour if above actions do not result in improved performance.

# What works? Overall it does work

- For HCTRA Katy
  - Average time savings is 10 minutes in the morning peak direction and 19 minutes in the evening peak.
  - Financially, slightly ahead of “break even” when considering both capital and O&M costs.
- For METRO HOT
  - Continuing to balance amount of SOV capacity with SOV demand. Having to limit in order to maintain speed for transit.



# What doesn't?

- Enforcement of the Occupancy Violator
- Does any agency really know how many legitimate HOV's they have on their facility? and how many OV?
  - How much HOV capacity do you need to provide if only legitimate HOV 2 using the facility?

# Occupancy Violator (OV)

## The Achilles Heel of Managed Lanes

- Cheats the system in 2 ways
  - Not contributing to the expense of the facility
  - More importantly using the capacity
- Everyone suffers because of the OV
  - Limiting available capacity for those willing to pay toll and/or raise the toll
  - Limiting capacity for legitimate HOV population
    - HOV 3? Now HOV2 can't use or have to pay toll
    - Only open when enforcement is on site

# Enforcement of OV

- Both HCTRA and METRO have law enforcement officers included in agency organization.
- In designing the operations, the officers were not given a fighting chance. Just not practical and very expensive.
  - High speed
  - Tinted windows
  - Babies in the back seat
  - Dark hours of operations
  - Slowing down the rest of the traffic
  - Safety of the officers
  - While pulling over one OV, how many others pass through?

# Enforcement of OV

- 2 approaches to address the OV
  - Limit the HOV capacity available. The “honor system.”
    - Raise to HOV 3?
    - Register HOV users?
    - Limit available hours to toll payers?
    - Raise tolls?
  - Solve the problem
    - Improve the enforcement concept
      - Require HOV to have a transponder and enter at slow speed visual inspection validation points off the system in order to receive free toll.
    - Technology for occupancy?

# In Conclusion

- Managed Lanes can be “managed”
- Good public communication and supportive political will are very helpful
- Solve the problem of occupancy violator, and the managed lane concept could be a practical, effective transportation tool where roadway capacity is limited.

# Questions?

**Lisa Castañeda, P.E.**  
**Deputy Director**  
**Harris County Toll Road Authority**