Auto Occupancy Detection Technology Rewards Program and Tolled Managed Lane Policy

Regional Transportation Council Workshop

September 13, 2018

Regional Transportation Council

North Central Texas Council of Governments

Project History

2012 - NCTCOG
Regional Transportation Council instructed staff to replace manual enforcement with more advanced technology verification equipment.

2012 – NCTCOG
Technology Approaches to HOV Occupancy Declaration and Verification, Texas A&M Transportation Institute (TTI)
Request for Information (RFI) for IH 30 Managed Lane Technology Occupancy detection and verification
- Dynamic tracking of vehicles

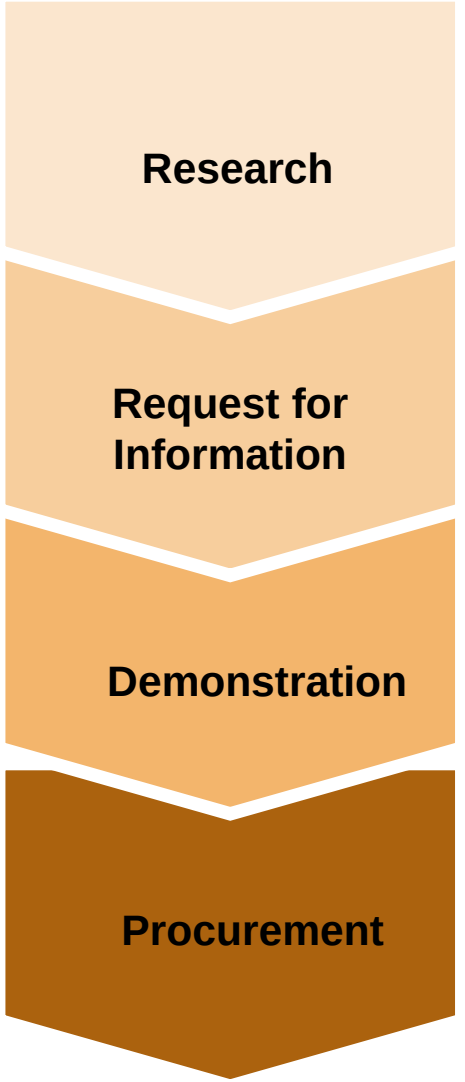
2013 – NCTCOG
Reissue RFI with demonstration component

2014 – NCTCOG
TTI Update to White Paper and Proof of Concept Testing of In-Vehicle Technology

2014 – TxDOT/ P3
Drive on TEXPRESS application

2015 – TxDOT Lead/NCTCOG Partner
Request for Offer - Automated Vehicle Occupancy Detection Solution

2016 – NCTCOG Lead/TxDOT Partner
TxDOT Requested NCTCOG to Take the Lead
Request for Proposals - Auto Occupancy Detection and Verification Technology



Activities Implementing New Technology

July 2017

Issued Notice to Proceed with Carma Technology Corporation

August – December 2017

Pilot Test on DFW Connector Corridor

- 98.4% exact match in reported occupancy
- 1.6% indicate an “over count”

January – March 2018

Shared pilot results and worked with partners on back office integration

March – June 2018

Developed draft violation process and continued to work with partners on back office integration

July 2018

Met with TxDOT management on statewide interest

August 2018

Discussed rewards approach with partners

Current HOV Enforcement

Register

Pre-Declare Every Trip

Occupancy Declaration Sent to Field

Officers Watch for Red Light

Violation: Legal Process

Toll Collected

NTTA Back Office System for Billing

HOV Verification

Register

Pre-Declare Every Trip

Occupancy Declaration Sent to Field

Officers Watch for Red Light

Violation: Legal Process

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NTTA Back Office System for Billing

HOV Rewards Program

Register

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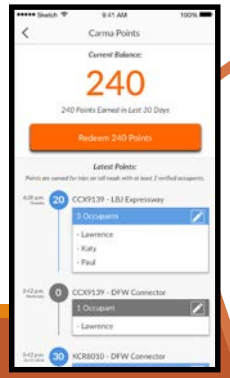
Toll Collected



HOV Clearinghouse

Receive Transaction File(s)
Carma Active Tags/Plates API
Select Carma User Transactions
Carma Occupancy API
Send Differential File(s)

User Story

Sample flow...

1. **Get the Carma Points app**

- Name change

2. **User registration**

3. **Car registration**

- With / without toll tag

4. **Beacon Setup**

5. **Take a trip**

6. **Transaction Identification**

- Table of target road segments
- Determine when a car likely passed a segment
- At least 2 GPS points required
- Directionality important
- Calculate reward based on HOV rules per segment

7. **Reward Notification**

- Email (per transaction / day?)

8. **View Rewards**

- New menu item
- New statement screen
- Display points balance
- Display all transactions
  - = timestamp
  - = road segment
  - = occupancy
  - = occupants
- User can query occupancy
- Redeem process (TBD)

New Approach – Rewarding HOV

Phase 1 – Managed Lane Rewards

- HOV Points = 50% of actual toll transaction
- Support for all 8 managed lanes in DFW (Cintra & TransCore operated roads)

Phase 2 – US 75 Technology Lane

Phase 3 and Beyond – Corridor & Event Rewards

- HOV Points for HOV travel on specific road segments for any event purpose
- Support for any road segment (including toll roads), any day of week and 24/7/365, any area
- Support for other modes (transit, bicycles, pedestrians)
- Cash-out options and gamified tiers (e.g. Amazon e-credit, Visa cards, check, cash)
- Integrate with other rewards applications (e.g. Try Parking It)

DFW Expected Program Costs – 10 Years

Phase	Year	Technology*	Marketing	Integration	Total
Development/ Pilot Testing	2016-2018	$ 3,150,000		$850,000	$4,000,000
Implementation (10 Years)	2019-2028	$16,000,000	$3,000,000	$1,000,000	$20,000,000
Total		**$19,150,000**	**$3,000,000**	**$1,850,000**	**$24,000,000**

*Technology includes system hardware, user beacons, app maintenance, and system operation. The cost might change.

Direct Cost Comparison

Estimated Direct Costs with Existing System (10 Years)*	
Manual Enforcement	$15,245,452
Enhancement to TEXPress Application	$5,927,285
Marketing and Education	$2,000,000
Total	**$23,172,737**
Expected Total Cost for New System (10 years)	
New Technology Operating and Marketing Cost	**$20,000,000**

*Does not include indirect benefits such as safety, traffic flow, and legal savings.

Indirect Benefits

Automated Vehicle Occupancy Verification

- Safety
- Reliability / Compliance
- Easy to Use
- Air Quality/Congestion Benefits
- Privacy Protection
- Expandability
- Return on Investment
- Legal/Court

HOV Subsidy Reimbursement by Corridor

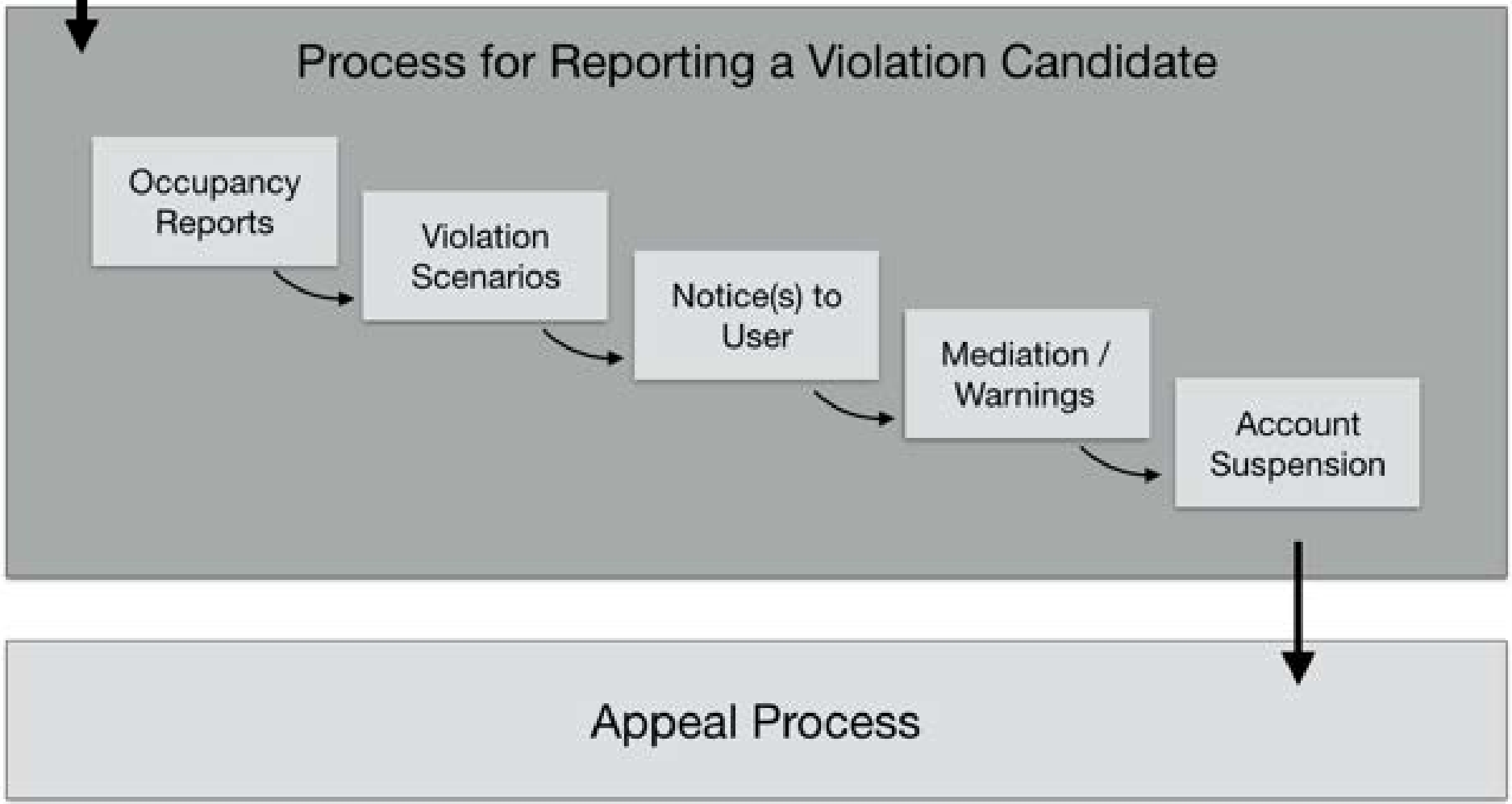
Corridor	Current Program	Proposed Program
P3 Operated		
LBJ	RTC Funded	RTC Funded
NTE	RTC Funded	RTC Funded
TxDOT Operated		
IH 635 East	N/A	TxDOT Passthru*
DFW Connector	N/A	TxDOT Passthru*
IH 30	N/A	TxDOT Passthru*
IH 35E	N/A	TxDOT Passthru*
Midtown Express	N/A	TxDOT Passthru*
Future Facilities	N/A	TxDOT Passthru*

*Rewards paid through toll revenue.

HOV Subsidy Reimbursement and HOV Declarations by Corridor

Corridor	Total Annual Program Cost	Total Annual HOV Declarations
P3 Operated		
LBJ	$770,814	482,773
NTE	$300,857	190,583
TxDOT Operated		
IH 635 East (24 hours)		928,177
DFW Connector		12,971
IH 30		41,592
IH 35E		200,466
Midtown Express		36,387
Future Facilities		TBD

Violation Process Policy (Different from Toll Road)



Possible Violation Scenarios

#	Title	Description
1	2nd Account	A user creates a second account using a different email address/phone number/name.
2	2nd Smartphone Left in Car	A user leaves a 2nd smartphone in the car at all times to ensure HOV status is achieved even on SOV trips.
3	Occupant Beacon Left in Car	A user leaves an Occupant Beacon in the car at all times to ensure HOV2 status is achieved even on SOV trips.
4	2nd Smartphone Carried	A user carries a second smartphone at all times to ensure HOV2 status is achieved even on SOV trips.
5	2nd Occupant Beacon Carried	A user carries an Occupant Beacon at all times, in addition to another occupant device, to ensure that HOV2 status is achieved even on SOV trips.
6	2 Cars Together	2 single occupancy cars are next to each other in traffic so that each car momentarily achieves a HOV 2 status.

Auto Occupancy Detection Technology and Rewards Program Communications

Proposed Key Messaging

Download App to get your HOV rewards

Easy to use

Mobile phone based

Messaging to existing Drive on TEXpress customers

Refine messages from what we learn from Focus Groups/Partner Agency Input

Auto Occupancy Detection Technology and Rewards Program Communications

Potential Communication Approaches

Branding (e.g., logo, device, packaging, partner logos, distribution)

Website, Social Media, Newsletters

Launch Event, Media Relations, Community Events

Work with Partner Agencies and Elected Officials to Distribute Messages

Targeted Emails, In-App Messaging to Existing Drive On TEXpress Customers

Customer Service Training for Partner Agencies

Educational Brochures, Videos

Auto Occupancy Detection Technology and Rewards Program Communications

Potential Communication Approaches – Continued

Paid Advertising

Digital Billboards

Search Engine Optimization

Publications/Print Advertising

Radio Spots/Streaming Audio

Online Ads

Direct Mail

Paid Social Media Ads

Paid Event Sponsorship

Possible Adjustments to Tolled Managed Lane and Express Lane/HOV Policies

Replacing Subsidy with Rewards

Transition from Manual Enforcement to Automated Verification

- Eliminating the Court System

Draft Schedule

August/September 2018 - Surface Transportation Technical Committee

September - Regional Transportation Council Workshop

September/October 2018 - Regional Transportation Council

Fall 2018 - TxDOT Endorsement for Application for DFW and Statewide

Soft Launch; **December 2018**, 10-15 regular users for each managed lane

Full Launch; **February 2019**, all managed lanes in DFW