

# ***Holland Tunnel Exit in NJ***

## **Using Operational Changes to Enhance Tunnel Throughput**

### *IBTTA Maintenance & Operations Workshop*

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# Holland Tunnel

**Opened for service in  
1927**

**Average Daily Traffic:  
88,500 vehicles**

## **Vehicle Mix:**

<b>Auto:</b>	<b>96%</b>
<b>Bus:</b>	<b>1%</b>
<b>Truck:</b>	<b>3%</b>



- In-tunnel lane widths are 10 ft with significant curves by portals.
- Tunnel approach lanes are urban streets with signalized intersections in both NJ and NYC

# Holland Tunnel



- Vital link to the financial and business services in lower Manhattan
- Serves a goods movement niche with nearly one of every three trucks carrying food
- New development on the NY and NJ sides has created new challenges for facility access and pedestrian safety
- Paired arterials in NJ, 12<sup>th</sup> St and 14<sup>th</sup> St, provide access to/from the tunnel with signalized intersections controlled by PA

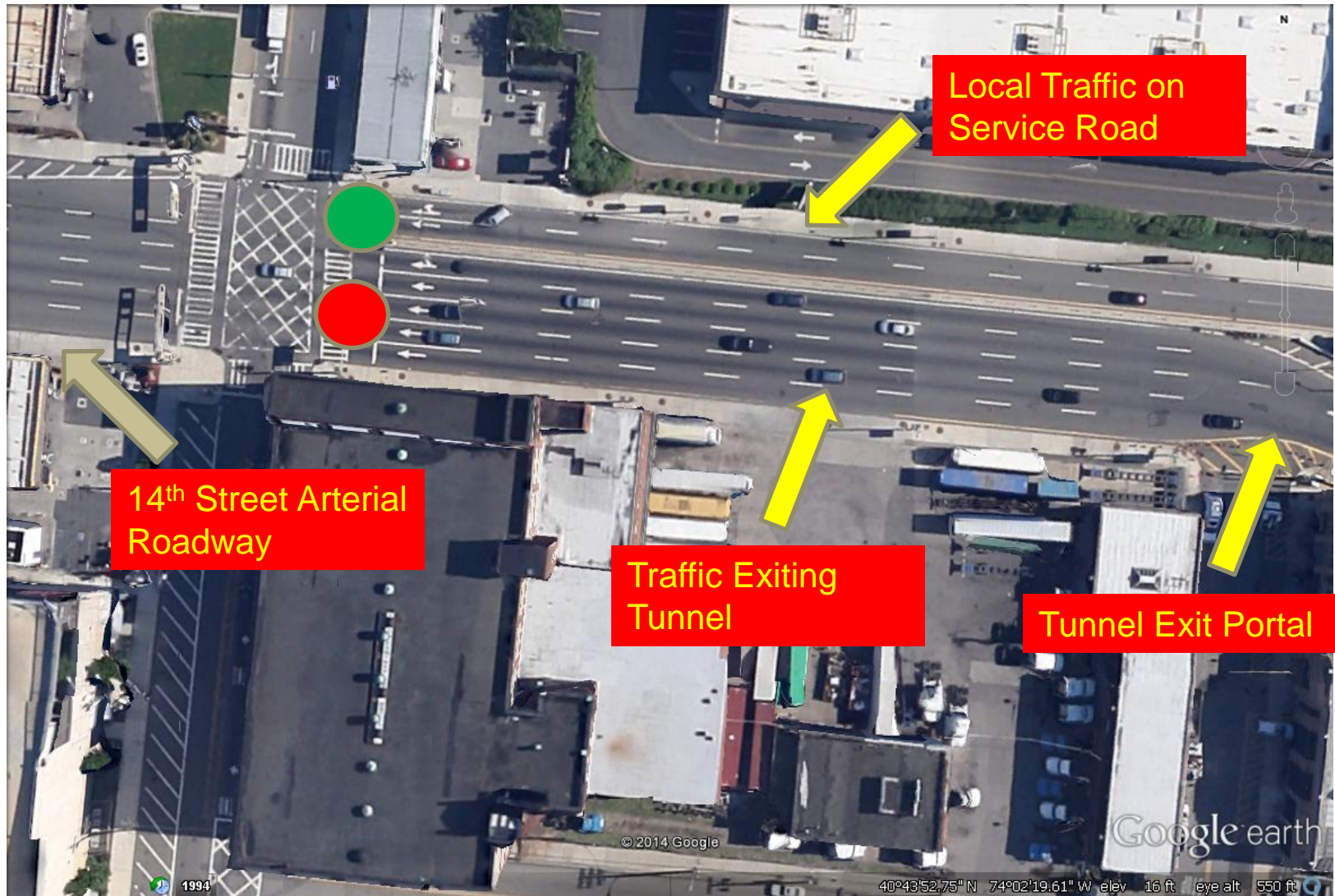


# 14<sup>th</sup> Street Corridor





# Marin Blvd Intersection



# Marin Blvd Intersection





# INITIAL PROPOSAL: Limit Marin Blvd Intersection



## *Preliminary Analysis Conducted In-house*

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Preliminary Analysis included the following:

- Multiple site visits during peak periods to observe traffic conditions
- Initial peak period turning counts at intersections along 14<sup>th</sup> Street prior to implementation of Pulaski Closure.
- HCS analysis of Jersey Ave intersection to assess impact of diverted right turns
  - Marin Blvd intersection too complicated for simple analysis
  - Would have required use of SYNCHRO for multiple intersections
- October 2014 Westbound Counts included peak period turning counts along 14<sup>th</sup> Street



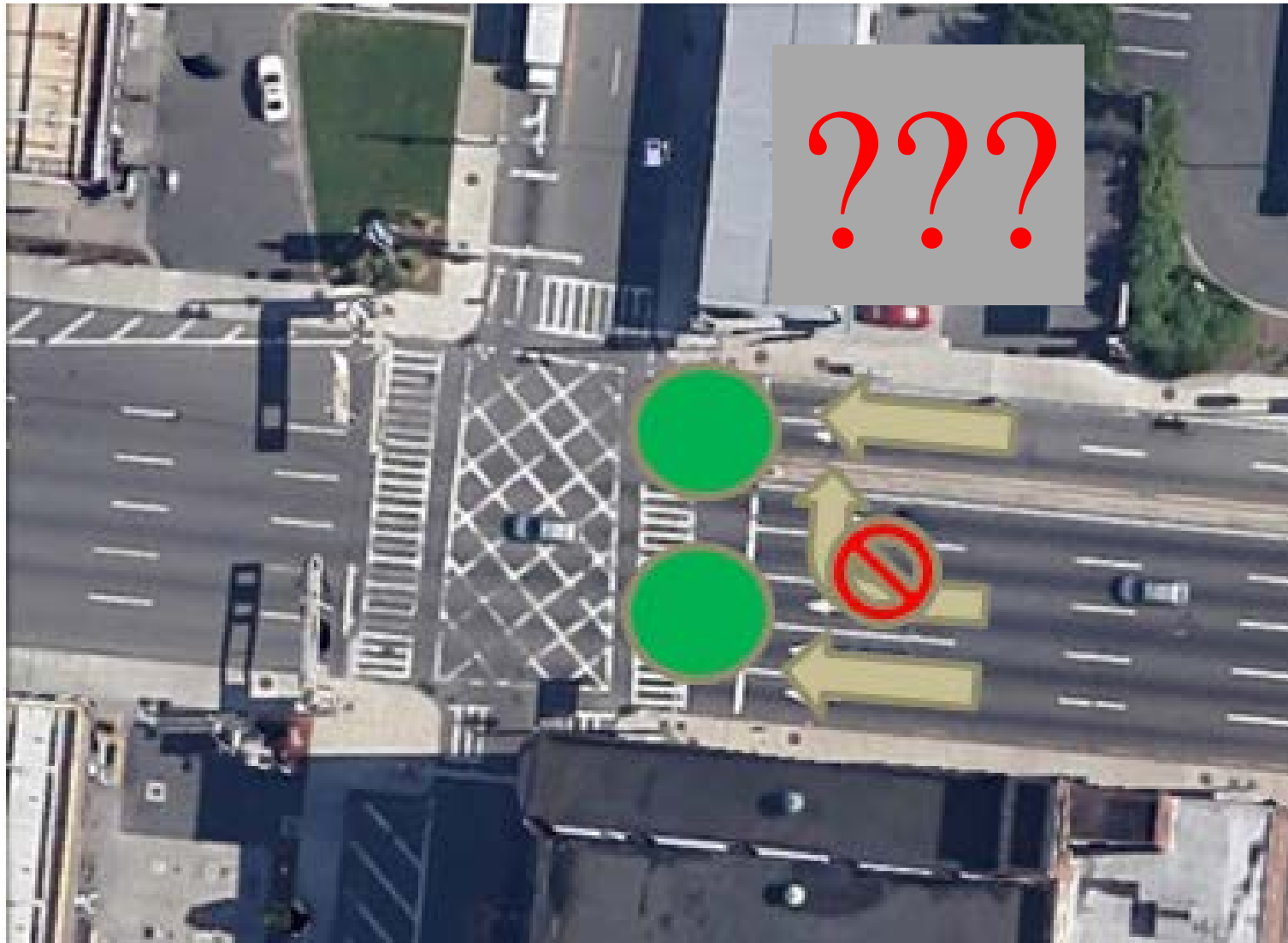
## *Inter-departmental Collaboration*

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Post-preliminary analysis, inter-departmental feedback :

- Where were the right-turning vehicles going?
- To what location would these vehicles divert? Would this exacerbate an issue “down-the-road”?
- Would there be safety impacts from additional vehicles diverted to the Jersey Avenue intersection?
- Would the changes address the misuse of the left-turn lane on 14<sup>th</sup> Street to “jump” congestion?

# Where Were These Turning Vehicles Going?



## *Aerial Review of Traffic Patterns*

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A new technique to track vehicle origins and destinations within a fixed study area:

- A SKYCOMP aerial film of the 14<sup>th</sup> Street corridor had already been produced for NJDOT (pre-Pulaski closure)
- Supplemented by 1-second, wide-area photography acquired from a hovering helicopter
- Allowed Vehicles to be “traced” through the study area to a final exit



# Aerial Review of Traffic Patterns



# Aerial Review of Traffic Patterns



# Aerial Review of Traffic Patterns

<b>Tracing Assignment:</b>	<b>Holland Tunnel approach, right-turns only at Marin Blvd. (AL-51 / Origin 95), forward only</b>		
<b>Day and Date of Sample:</b>	<b>Thursday</b>	<b>10/24/2013</b>	
<b>Time of Sample:</b>	<b>4:00 to 6:00 p.m.</b>		
<b>Origin</b>	<b>Destination</b>	<b>Sampled Volume</b>	<b>% of Total Sampled Volume</b>
95	20	54	48%
95	31	12	11%
95	32	1	1%
95	52	2	2%
95	76	1	1%
95	82	2	2%
95	83	19	17%
95	84	5	4%
95	105	1	1%
95	109	13	12%
95	110	2	2%
<b>Total</b>		<b>112</b>	<b>100%</b>
95	GAS	19	
95	LOST	22	



## Secondary Analysis

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Secondary Analysis discovered the following:

- Destinations for right-turns at Marin at points north; elimination would result in lengthy diversions
- Few right-turns were involved in re-fueling
- Left-turns from Marin Blvd onto 14<sup>th</sup> Street were critical
- Insufficient space for service road traffic to merge w/tunnel traffic
- *Simpler signal re-timing, with longer cycles, would result in similar levels of benefit to earlier proposal of restricting turns*

# Revised 14<sup>th</sup> Street Signal Timing Improvements



## *End Result*

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- Improved operations at Holland Tunnel during PM peak
- Reduced travel time from tunnel portal to highway ramps
- 20% increase in vehicle throughput along corridor
- Side-street queues not substantially changed
- Reduced queuing back into tunnel



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# ***THANK YOU!***

## ***Questions?***

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