



The Future is Now: Cashless Tolling on the Pennsylvania Turnpike

Penn State Traffic & Safety Conference | December 12, 2019

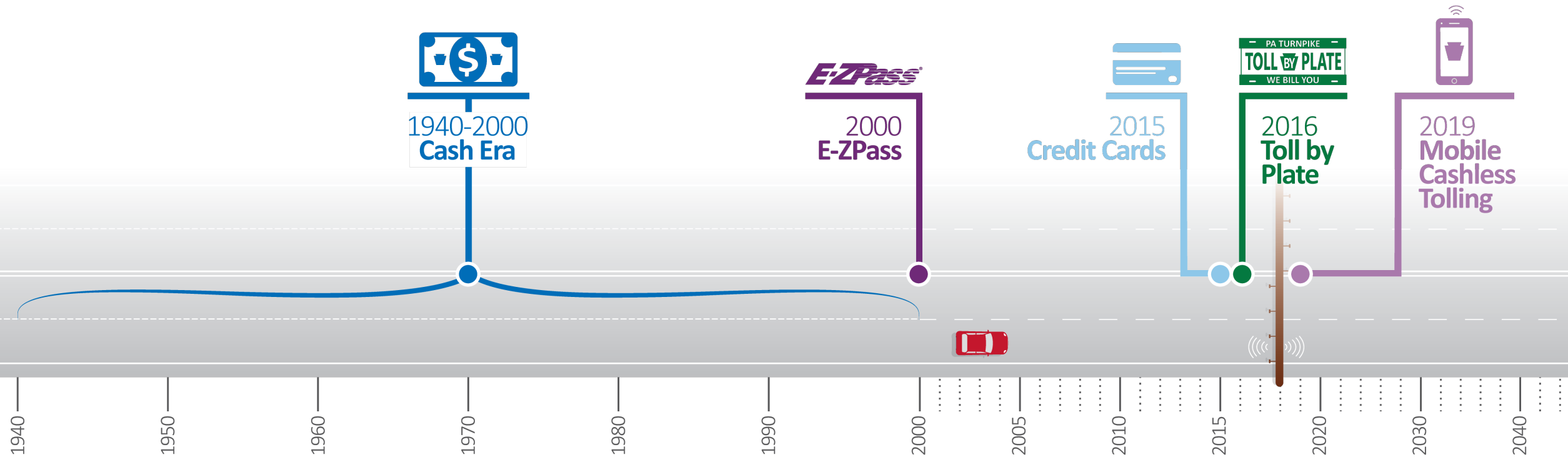
NO CASH

NO STOPPING

NO WORRIES



Evolution of Tolling on PA Turnpike



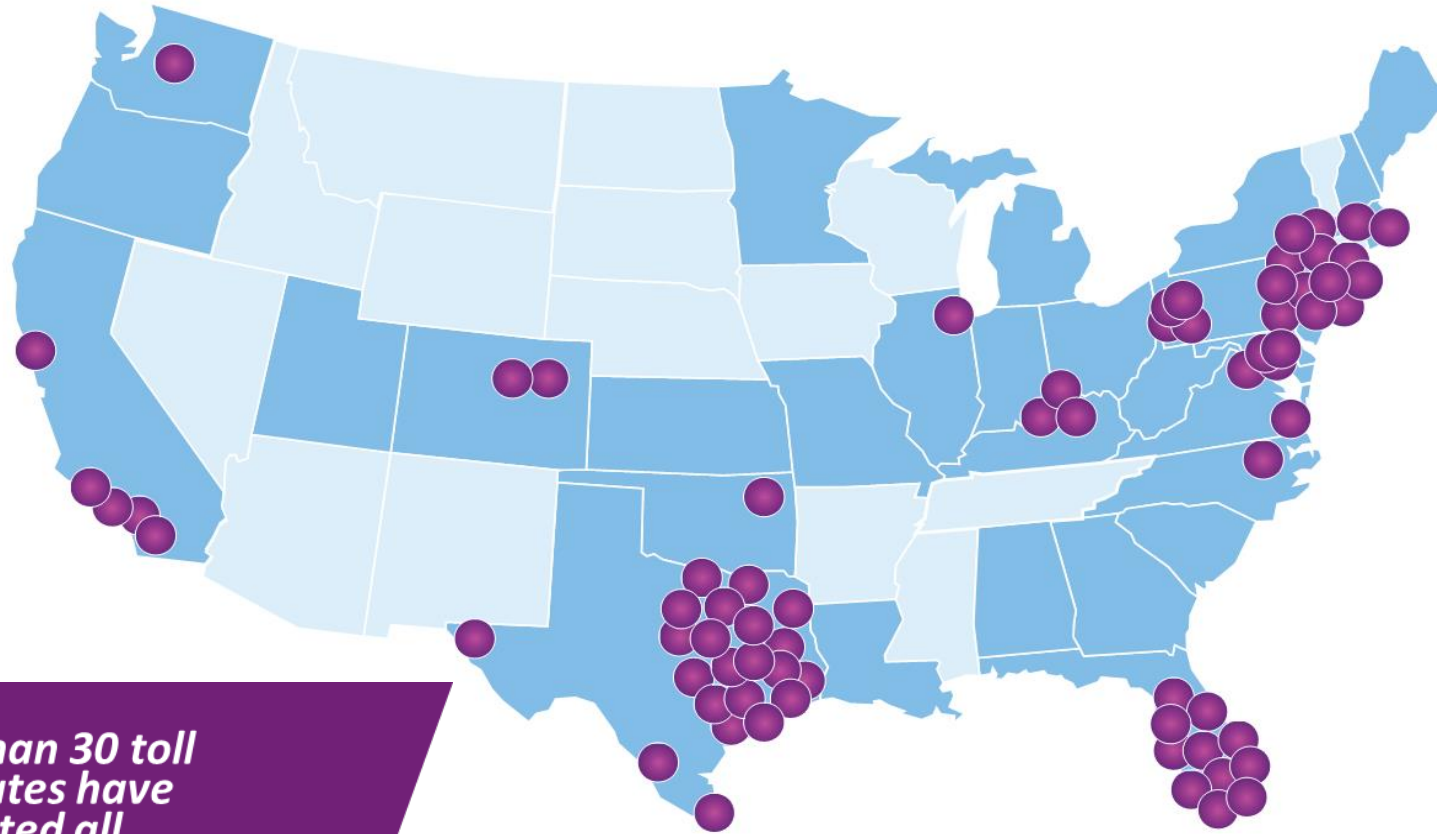
NO CASH

NO STOPPING

NO WORRIES



Cashless Tolling in 2019



Together, more than 30 toll agencies in 14 states have successfully adopted all electronic tolling systems.

NO CASH

NO STOPPING

NO WORRIES



WHY?

NO CASH

NO STOPPING

NO WORRIES

SAFETY



“Toll authorities nationwide experience rear-end collision rates that exceed other types of collisions, in part because toll plazas interrupt the flow of high-speed traffic to intermittently collect tolls.”

- National Transportation Safety Board

NO CASH

NO STOPPING

NO WORRIES



REDUCED CONGESTION & TRAVEL TIMES



NO CASH

NO STOPPING

NO WORRIES

ENVIRONMENTAL BENEFITS



*Carlisle Interchange
Existing Condition*



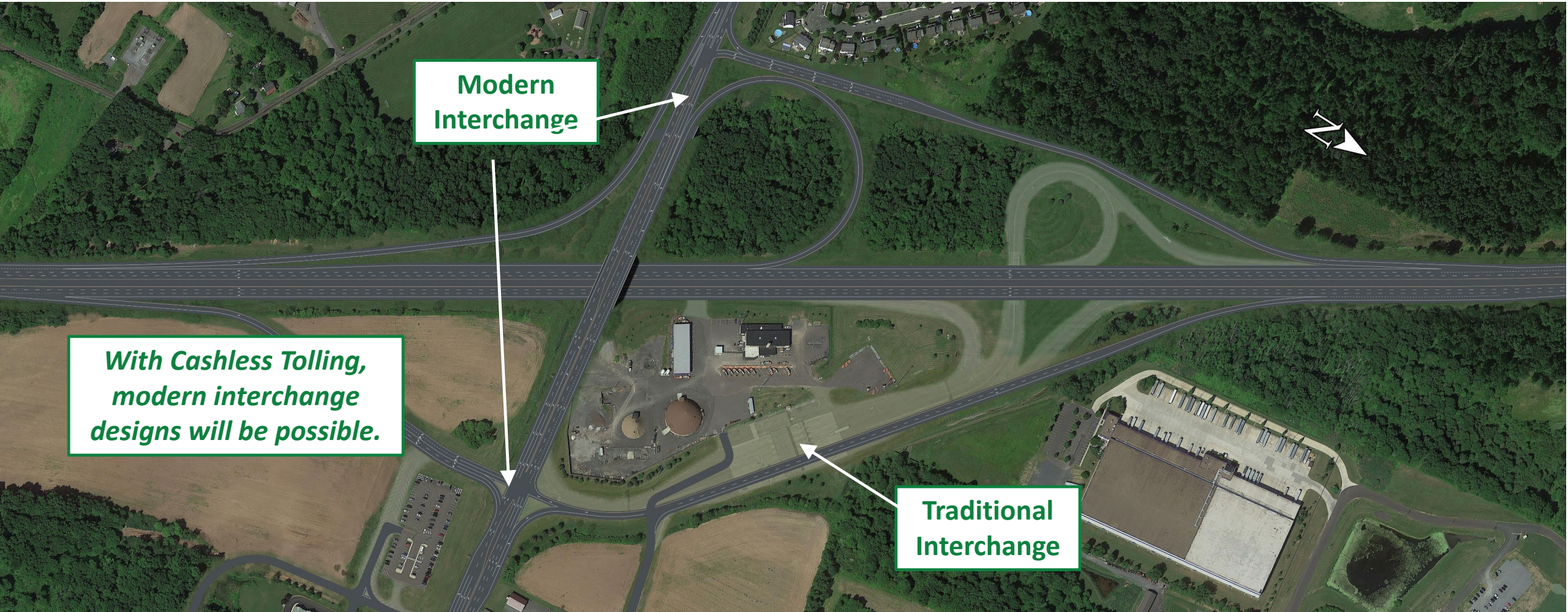
*Carlisle Interchange
Proposed Post-Conversion*

NO CASH

NO STOPPING

NO WORRIES

EXPANDED INTERCHANGE OPTIONS



Modern Interchange

With Cashless Tolling, modern interchange designs will be possible.

Traditional Interchange

NO CASH

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NO WORRIES

SYSTEM ACCESS & EXPANSION

- *Virginia Drive Slip Ramps*
- *Street Road Slip Ramps*
- *Lansdale Slip Ramps*
- *State Route 29 Interchange*
- *State Route 903 Interchange*
- *Lafayette Street Interchange (future)*



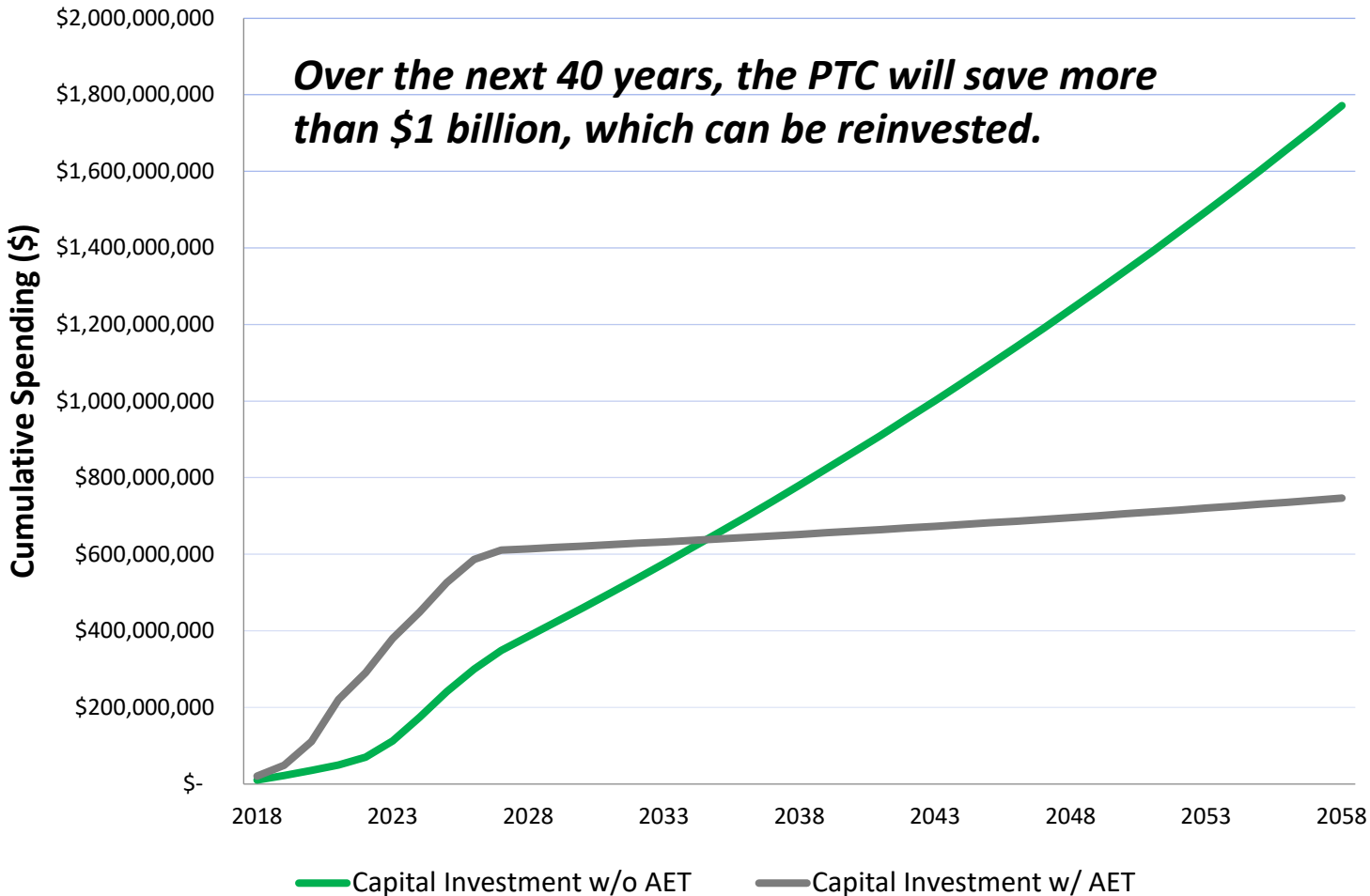
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LOWER LONG-TERM CAPITAL COSTS



Neshaminy Falls Toll Plaza cost \$88 million (above) vs. Findlay Connector Gantries cost \$5 million (below)



NO CASH

NO STOPPING

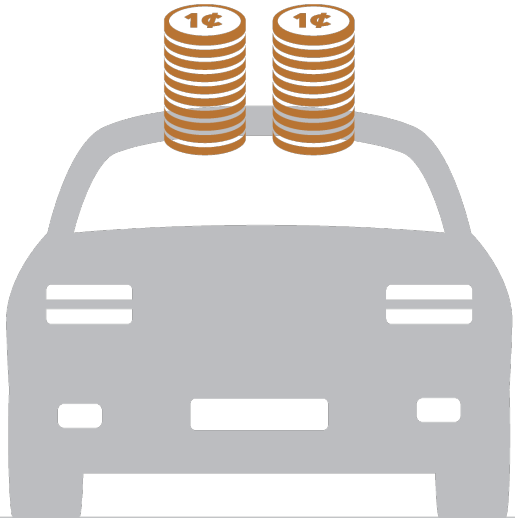
NO WORRIES



Cost Per Transaction

E-ZPass

= about \$.20

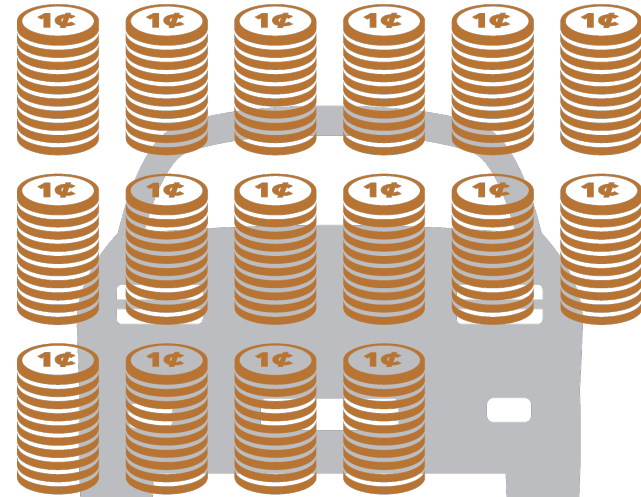


vs.

*BEFORE CONVERSION
TO CASHLESS TOLLING*

CASH

= about \$1.60



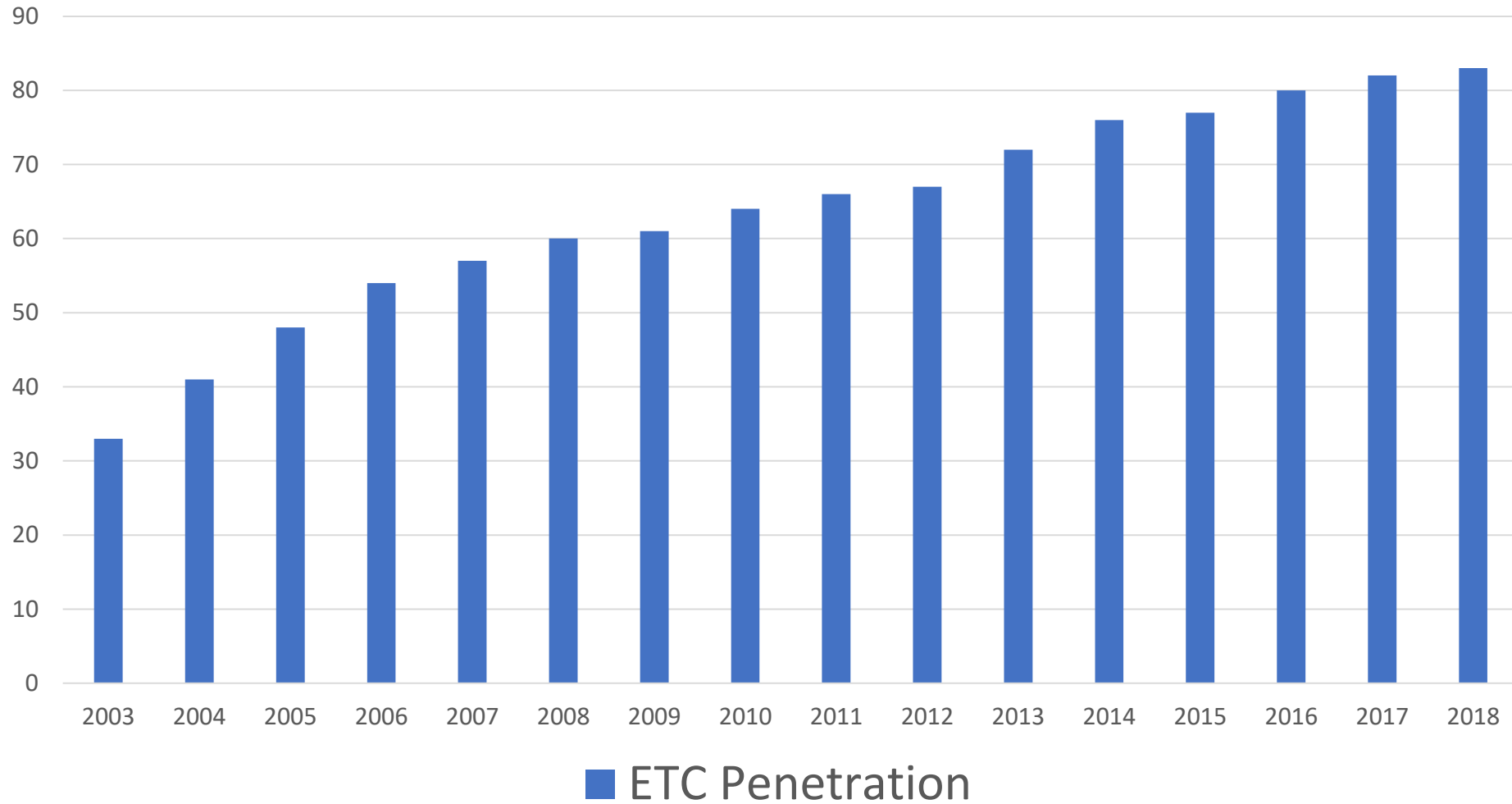
NO CASH

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CUSTOMER EXPECTATIONS



NO CASH

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How Does Cashless Tolling Work?



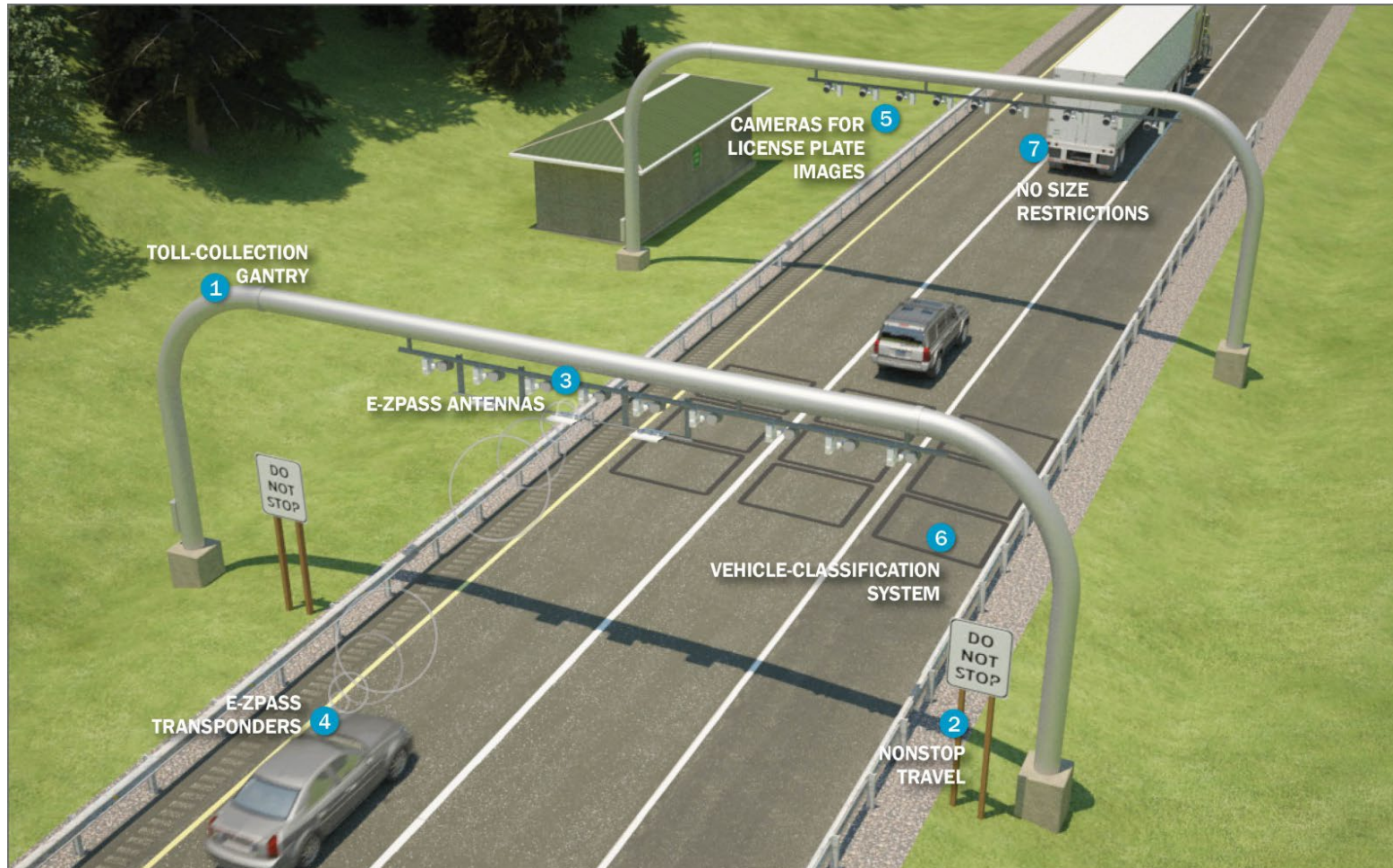
AET In Place

NO CASH

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NO WORRIES

How Does Cashless Tolling Work?



Highway Speed –Open Road Tolling

NO CASH

NO STOPPING

NO WORRIES



How Does Cashless Tolling Work?



Open Road Tolling
(ORT)

NO CASH

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NO WORRIES



Roadside Toll System

- VES Cameras – capture images for video billing
- Scanners – detect & separate transactions and measure vehicle dimensions
- Roadway Sensors – loops, treadles, scales
- Antennae – read transponders for ETC (E-ZPass) transactions
- DVAS Cameras – independent audit

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NO WORRIES



Delaware River Bridge

Converted January 2016



NO CASH

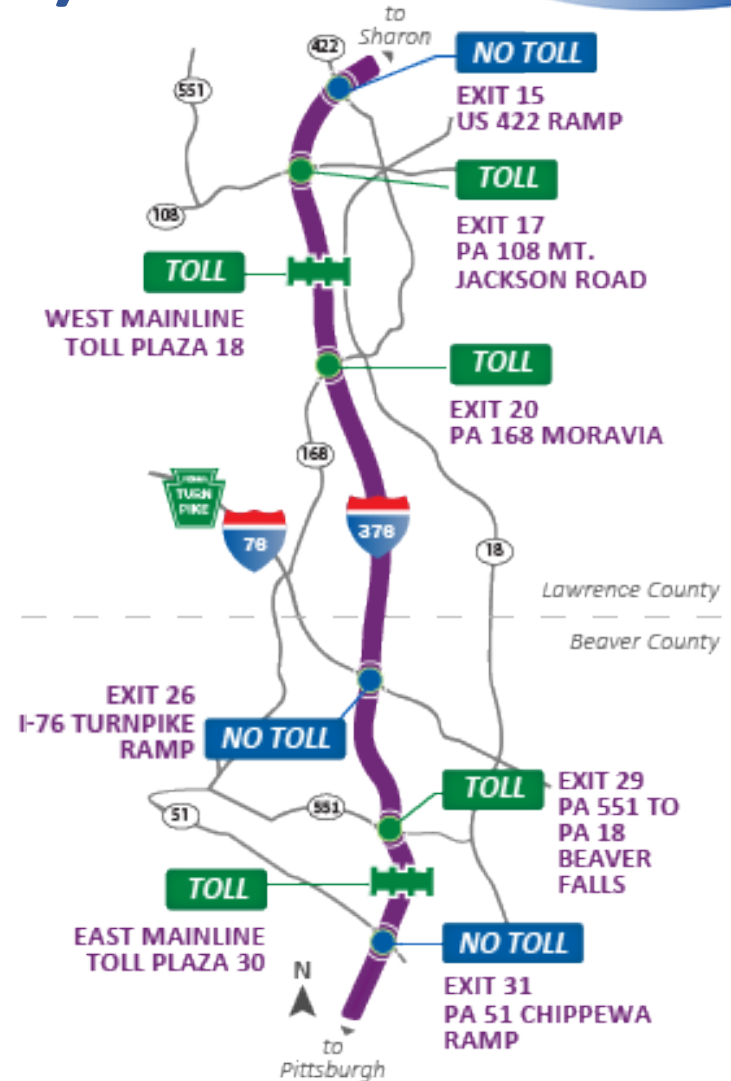
NO STOPPING

NO WORRIES



Beaver Valley Expressway (Toll 376)

Converted April 2017



NO CASH

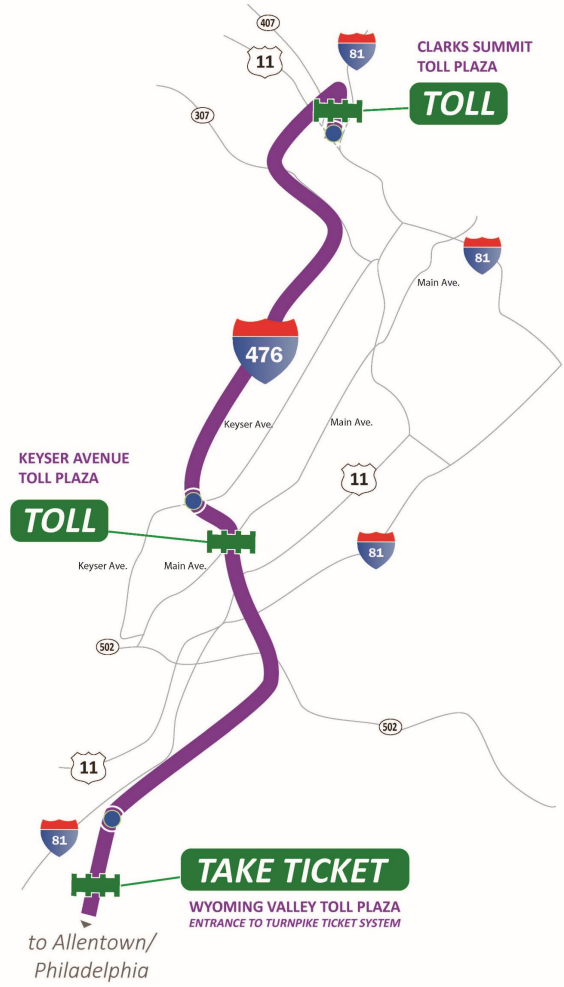
NO STOPPING

NO WORRIES



Clarks Summit & Keyser Avenue

Converted April 2018



NO CASH NO STOPPING NO WORRIES

Findlay Connector (Toll 576)

Converted June 2018



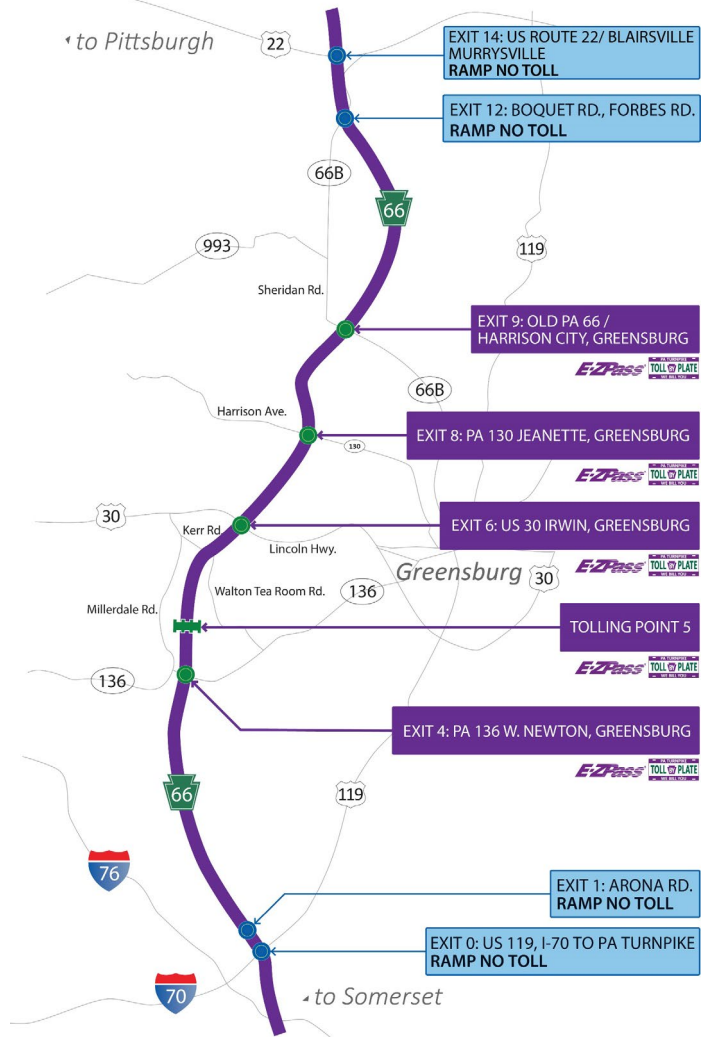
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Turnpike 66 (Greensburg Bypass) Converted October 2019

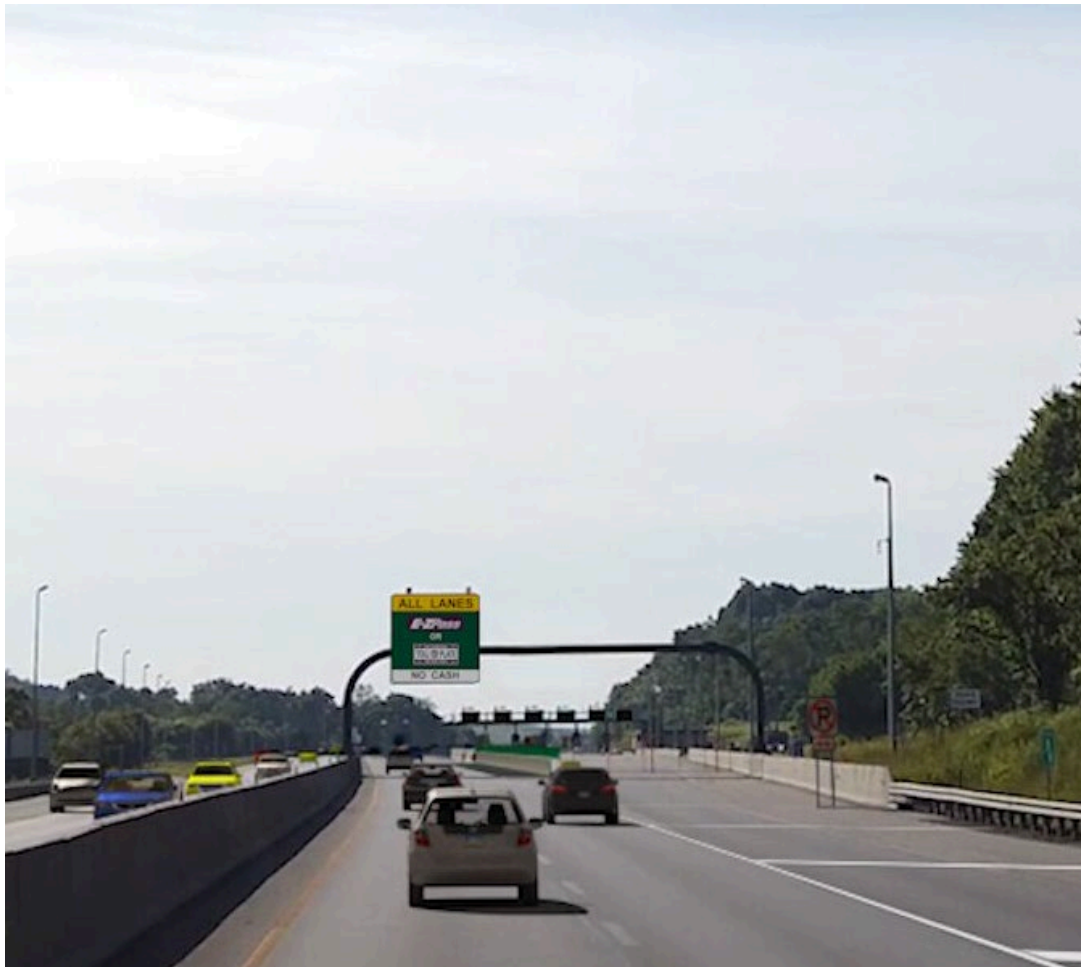


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Gateway — Open Road Tolling



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NO WORRIES

Future ORT Gantry and Building

Prototype built at Milepost 123.4 on the NE Extension



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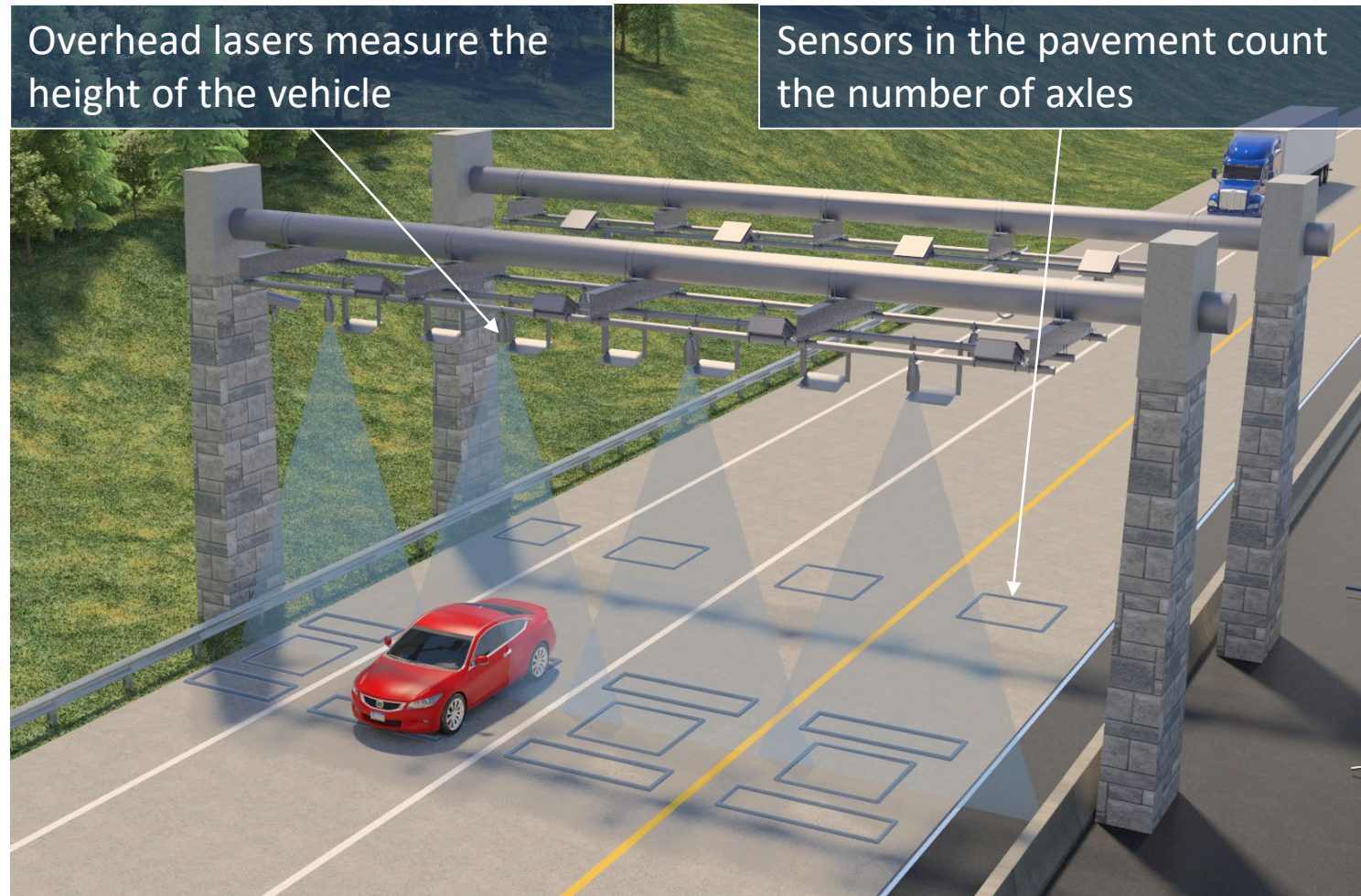


Automated Vehicle Classification

1	2 axle, low profile	Car (2-axle: motorcycle, sport utility, minivan, van, pick-up)	
2	3 axle, low profile	Class 1 with 1-axle trailer	
3	4 axle, low profile	Class 1 with 2-axle trailer	
4	5 axle, low profile	Class 1 with 3-axle trailer	
5	6+ axle, low profile	Class 1 with 4+ axle trailer	
6	2 axle, high profile 2 axle, high profile 2 axle, high profile 2 axle, high profile	2-axle motor home 2-axle transit bus 2-axle conventional school bus 2-axle single unit truck	
7	3 axle, high profile 3 axle, high profile 3 axle, high profile 3 axle, high profile 3 axle, high profile	3-axle motor home/trailer combination 3-axle coach bus (i.e. intercity bus) 3-axle single unit truck 3-axle trailer truck 3-axle articulated bus	
8	4 axle, high profile 4 axle, high profile 4 axle, high profile	4-axle motor home/trailer combination 4-axle single unit truck 4-axle single trailer truck	
9	5 axle, high profile 5 axle, high profile 5 axle, high profile	5-axle motor home/trailer combination 5-axle single trailer truck 5-axle multi-trailer truck	
10	6 axle, high profile 6 axle, high profile 6 axle, high profile	6-axle motor home/trailer combination 6+ axle single unit truck 6-axle multi-trailer truck	
11	7+ axle, high profile 7+ axle, high profile	7+ axle motor home/trailer combination 7+ axle multi-trailer truck	

Overhead lasers measure the height of the vehicle

Sensors in the pavement count the number of axles



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Pilot Project Performance



83.4% of Transactions

Lowest Toll Rates

Lowest Cost to PTC

Proven Effective for Almost 20 Years

Very Low Collection Risk

E-ZPASS: ON TARGET
virtually 100% collected

83.4%



16.6% of Transactions

E-ZPass Alternative for Nonstop Travel

Higher Toll Rate for Customer Convenience
(when they prefer not to have E-ZPass)

Higher Collection Risk = **MORE MITIGATION**

Connecting Travel to Customers

- ✓ Latest Technology to Photograph License Plates
- ✓ Match License Plates to E-ZPass
- ✓ Agreements with Other DMVs to Identify Non-E-ZPass Customers
- ✓ Third-Party Data Providers when DMV Agreement not yet Established

Encouraging Payment

- ✓ Invoice and Payment Options
- ✓ Late Fees to Promote Early Invoice Payment
- ✓ Collections Agency, if Needed
- ✓ Enforcement and Legal Options

16.6%

TBP: ON TARGET
50-60% collected

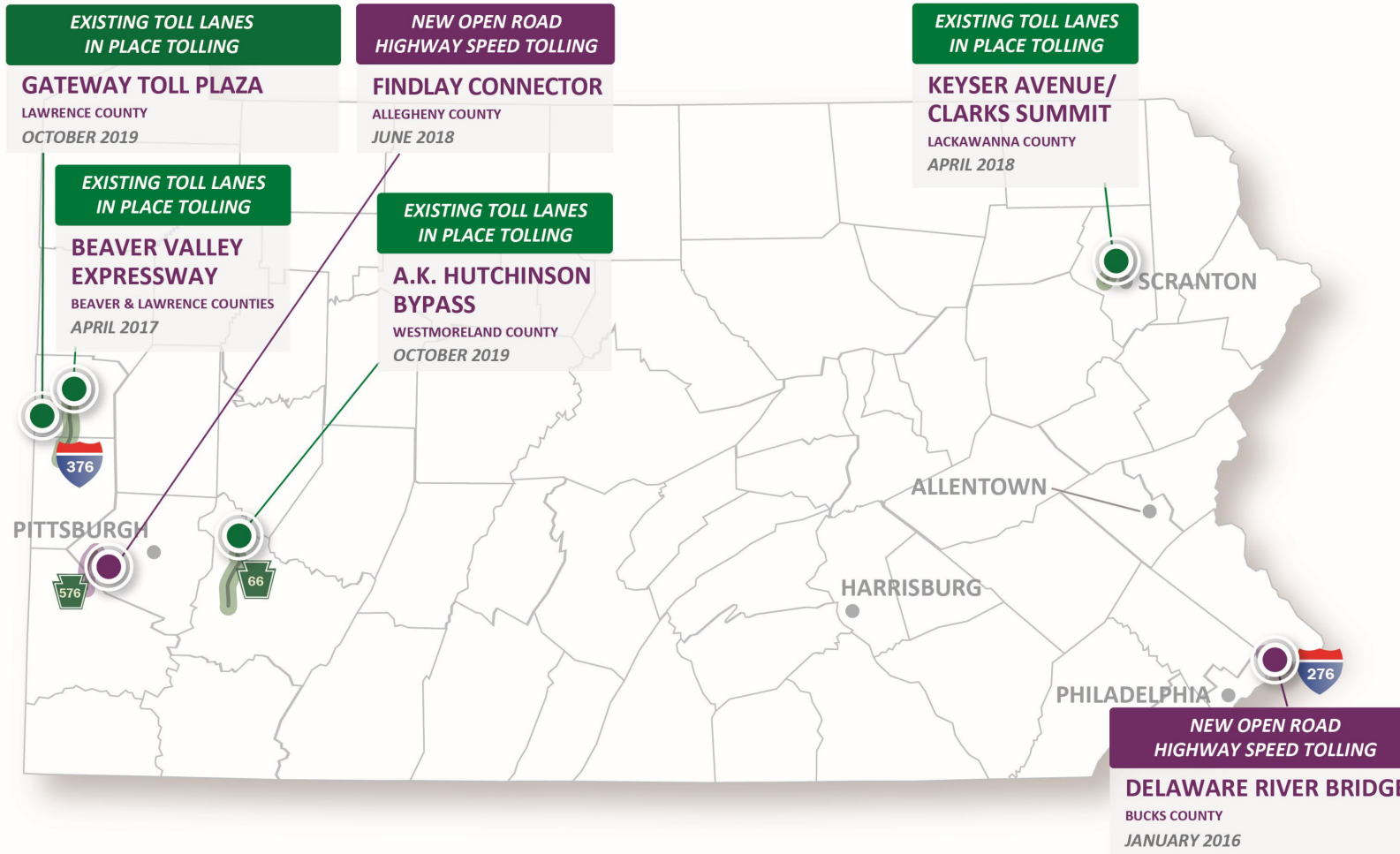
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PTC Cashless Tolling: Current Locations



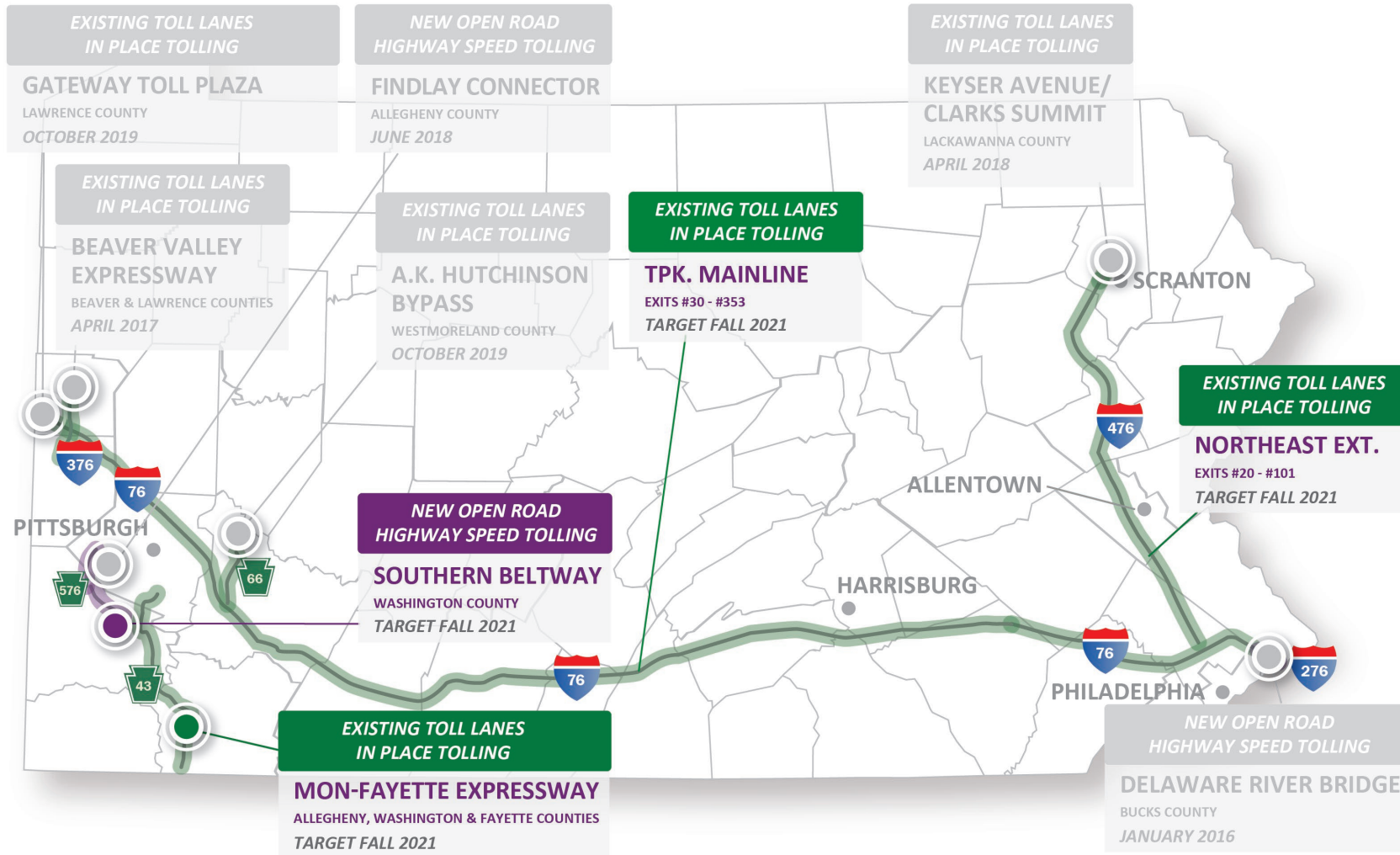
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PTC Cashless Tolling: 2021 Conversion Schedule



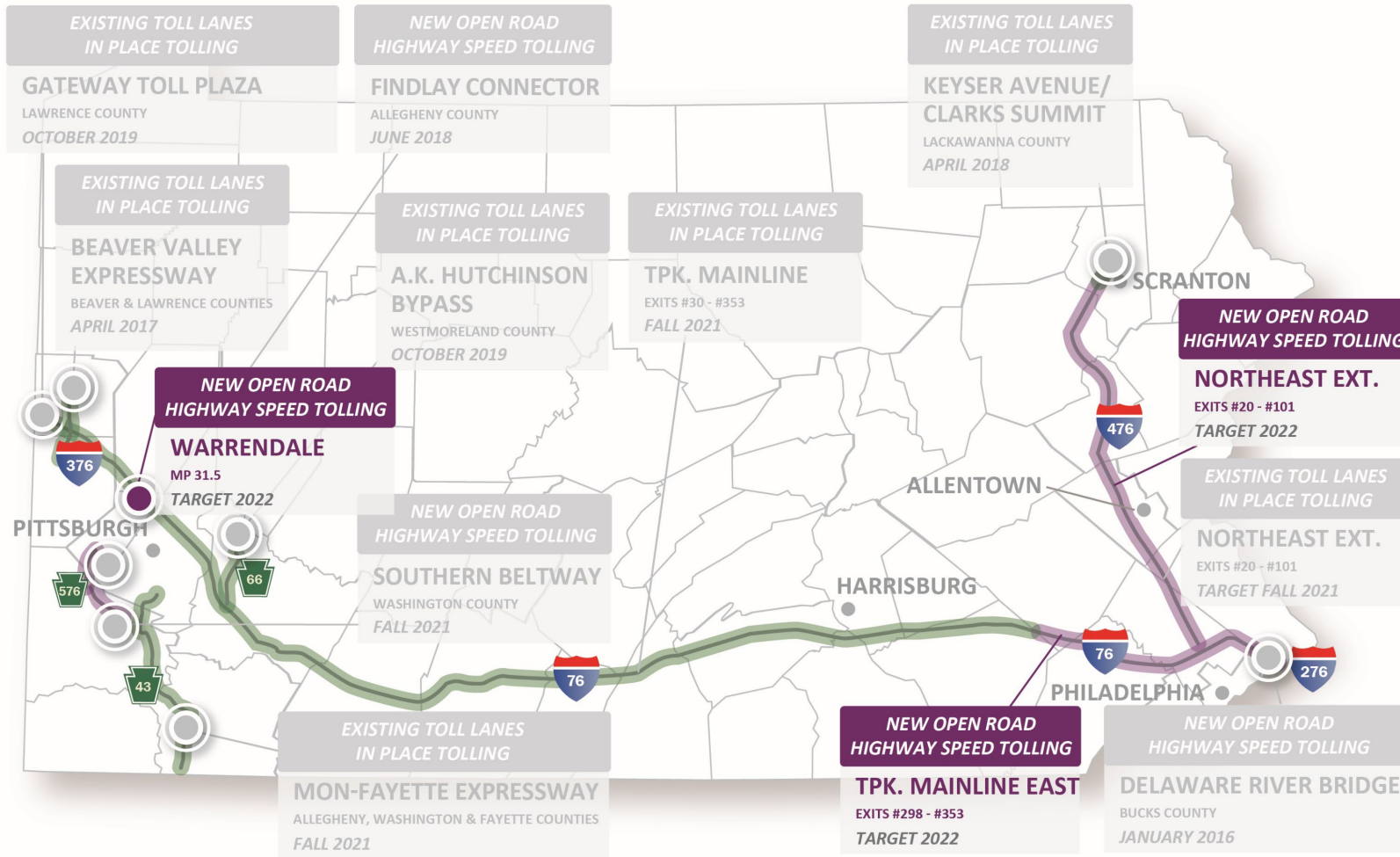
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PTC Cashless Tolling: 2022 Conversion Schedule



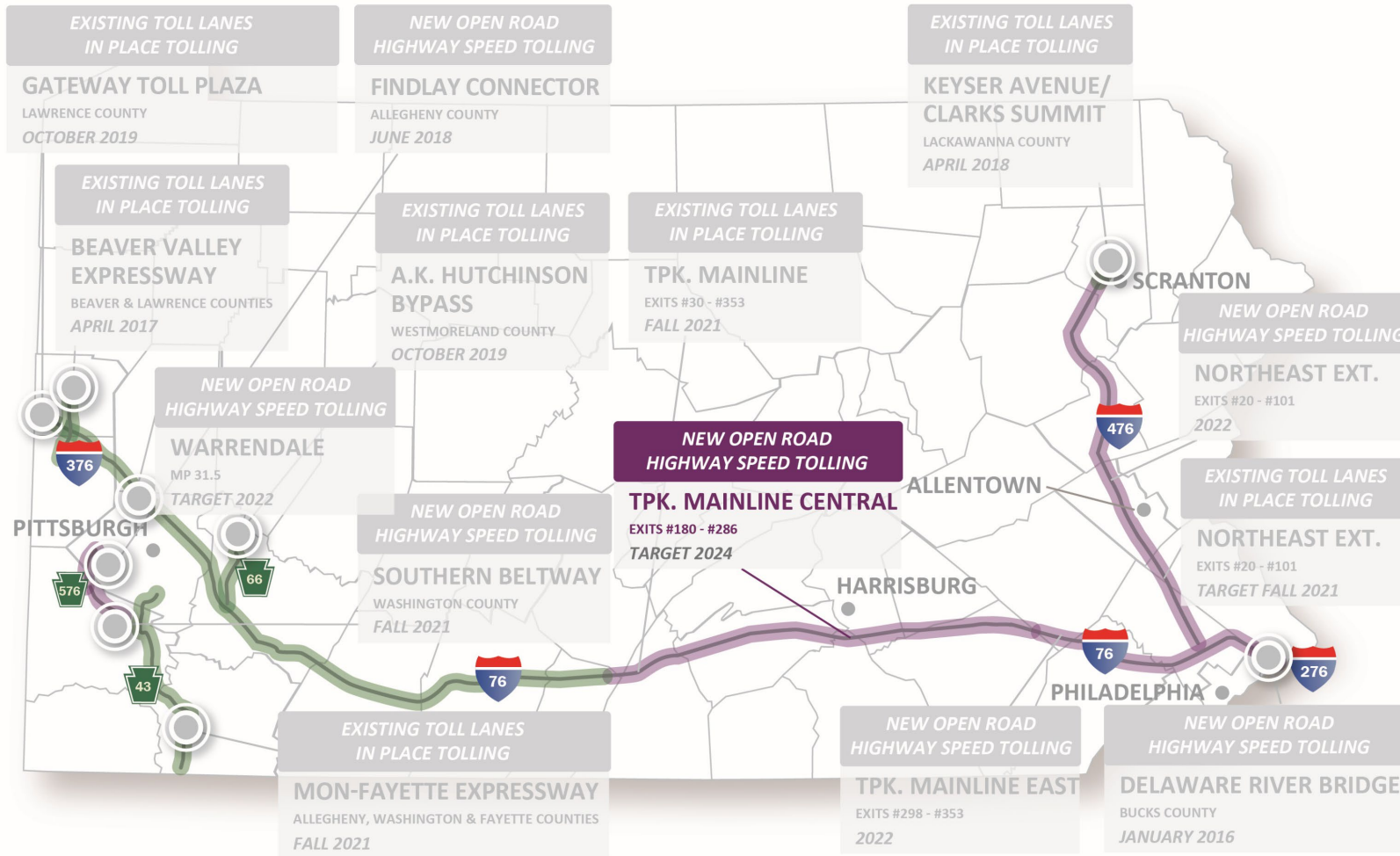
NO CASH

NO STOPPING

NO WORRIES



PTC Cashless Tolling: 2024 Conversion Schedule



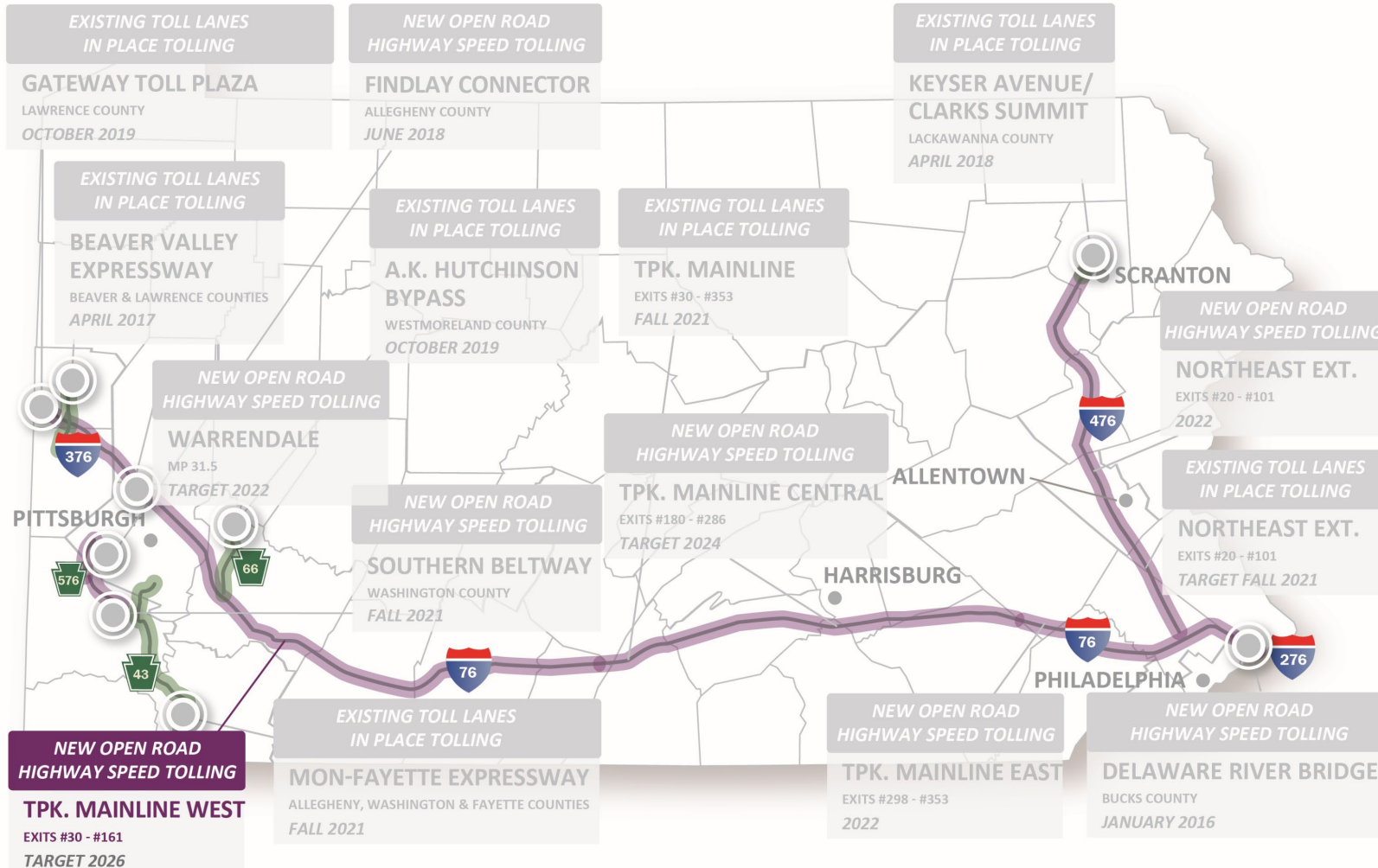
NO CASH

NO STOPPING

NO WORRIES



PTC Cashless Tolling: 2026 Conversion Schedule



NO CASH

NO STOPPING

NO WORRIES



QUESTIONS?

NO CASH

NO STOPPING

NO WORRIES