Proactive by Design: Advancing Traffic Operations in Cranberry Township

CRANBERRY TOWNSHIP
built for you

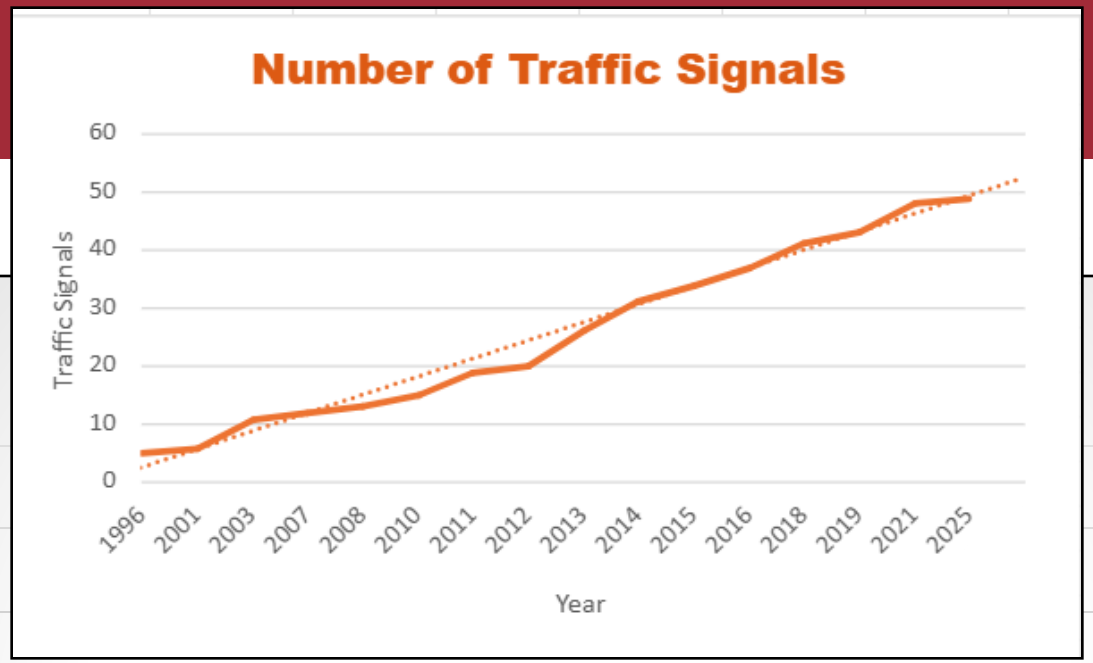
April 17, 2026

WRA

Cranberry Township

- Located in Western Pennsylvania
- 25 miles north of Pittsburgh
- 23 square mile area
- Crossroads of I-79 & PA Turnpike (I-76)
- Construction of I-279 to Pittsburgh in 1990
  - Population: 15,000 in 1990
  - Population: 33,000 in 2025

Growth



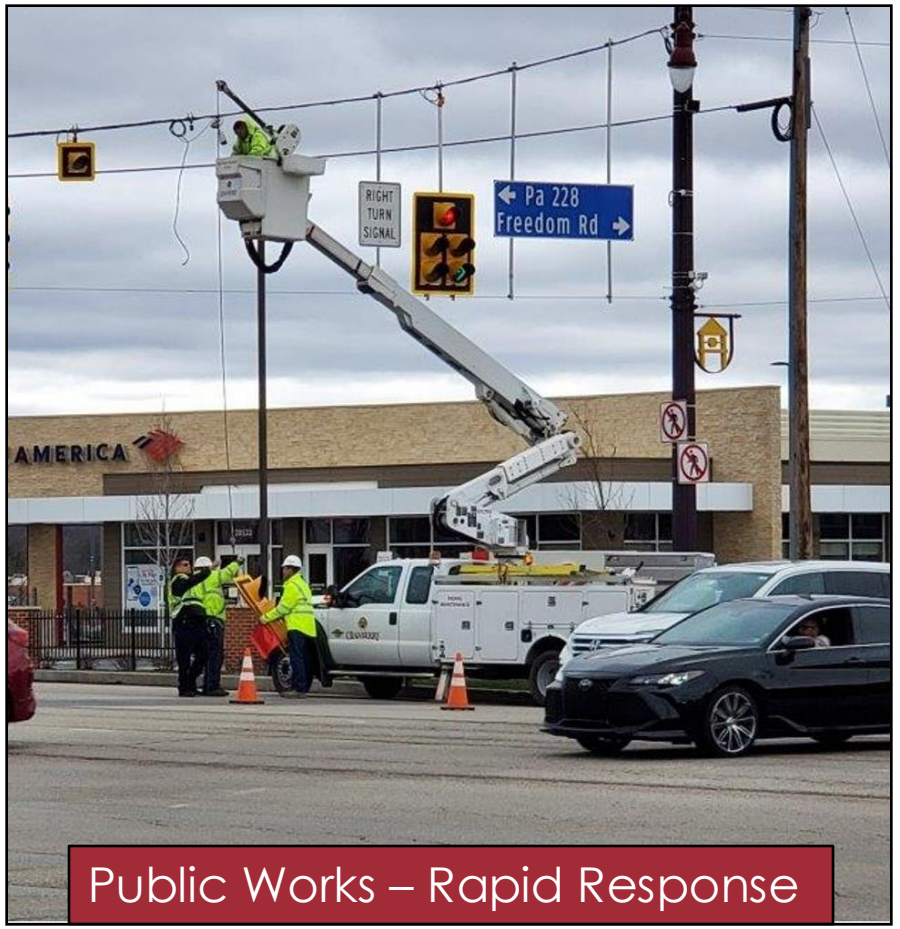
Population

45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040

Tools of Success

An Integrated Operations Ecosystem

- People & Partnerships
- Traffic Operations Center
- Technology
- Data
- Deployment Partner
- Continuous Coordination



Public Works – Rapid Response

The Foundation: People & Partnerships

Cranberry Twp Department of Public Works

- Provides oversight and asset management related infrastructure operations in Four Operating Divisions: Street/Fleet, Grounds, Traffic, and Facilities
- Staff is comprised of four Division Managers, three administration staff and 27 employees in Teamster Union No. 538
- The Department Budget is broken into the following cost centers:

Department Divisions:	2026 Staffing:		2026 Operating Budget:
	Full Time	Part Time	
Snow Removal	25*	0	$ 612,750
Traffic Signals Maintenance	4	1	$ 737,909
Storm Water Maintenance	2	0	$1,286,573
Street Maintenance	7	4	$ 1,387,768
Facility Maintenance	5	0	$1,021,720
Fleet Maintenance	4	0	$413,019
Grounds Maintenance	7	16	$ 1,599,951
PW Administration	3	0	$ 852552
Total	31	17	$ 7,912,250

* Snow removal is performed by full time staff of each division

Dept. of Public Works

The Foundation: People & Partnerships

Traffic Operations Center Project Partners

- WRA (Traffic Engineer Consultant)
- PennDOT District 10
- PennDOT Central Office - BOMO
- Pathmaster Inc. (Twinsburg, Ohio)
- Econonlite Control Products
- Carnegie-Mellon University and Traffic 21
- Southwestern Pennsylvania Commission (MPO)
- Pennsylvania Turnpike Commission
- Community Development Corp. Butler County (CDC)
- Westinghouse Electric Co.
- Neighboring Municipalities and Butler County, PA

Routine Maintenance

Over the past 10 years, the Township has leveraged over $10 million in State Grant Funding for traffic signal upgrades.

Traffic Operations Center (TOC)

Cranberry Township Public Works:

- Kelly Maurer, PE – Director
- Traffic Division
  - Shane Wokutch – Manager, Traffic Operations
  - 3 In-House Traffic Technicians

Cranberry Township operates the largest municipal TOC in Pennsylvania.

- Staffed Weekdays
- Remote Monitoring Off-Peak / Weekends

The TOC utilizes Econolite Centracs Mobility Advance Transportation Management System (ATMS) and monitors 30+ CCTV through Genetec.

Responsible for coordination and maintenance of 54 traffic signals:

- 43 signals in Cranberry Township
- 11signals in four neighboring Municipalities


TOC


CCTV at US 19 / SR 228

Traffic Signal Management

Onsite Timing Tools

- Econolite Mobility and ATSPMs
- Coordination Plans
- Adaptive (Edaptive)
- Synchro
- PTV Flows

Genetec CCTV / Video Detection

- Confirms congestion and incidents visually
- Faster diagnosis and response
- Reduces operational guesswork

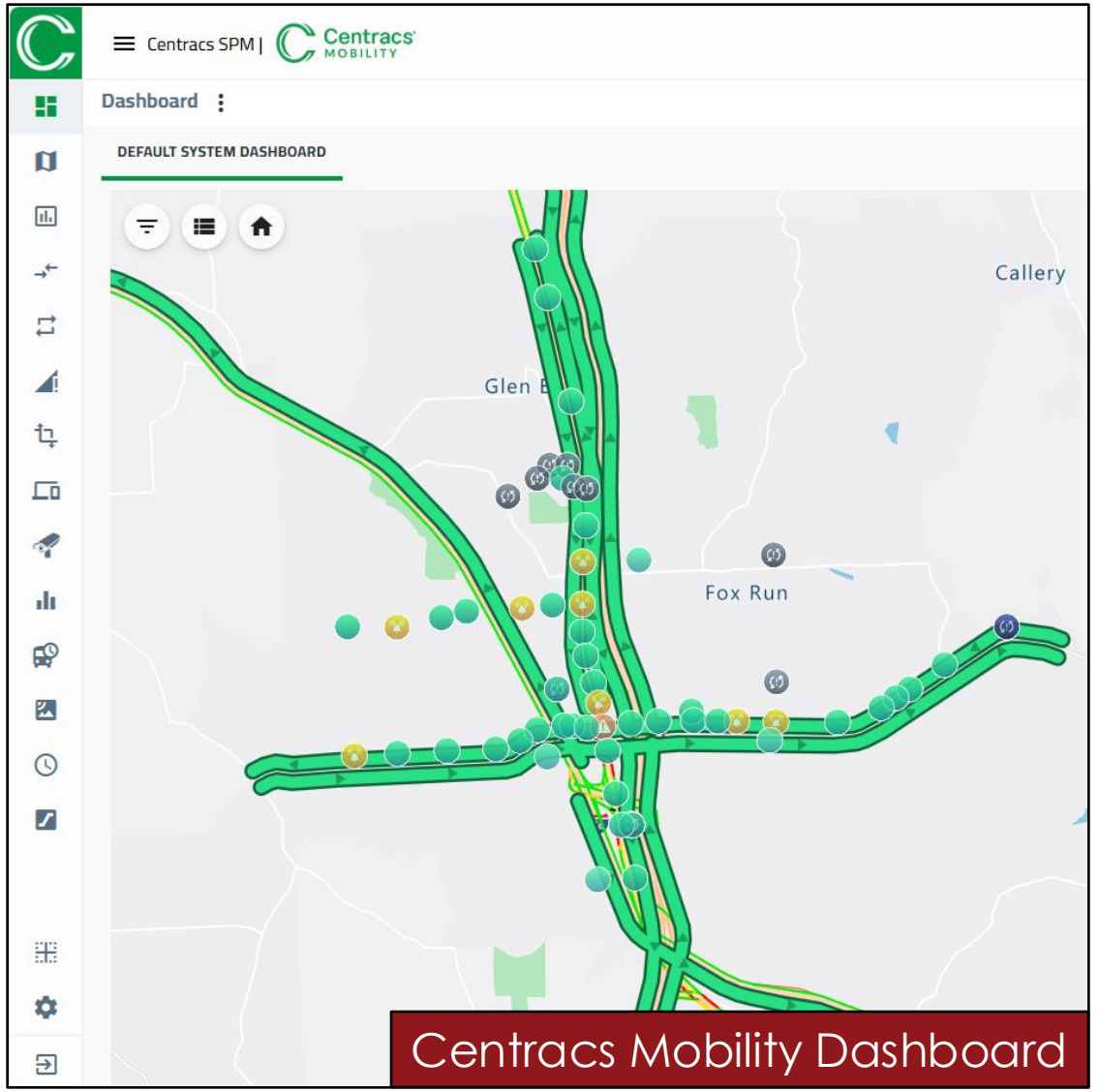
The Operational Backbone

Centracs Mobility ATMS

- Centralized monitoring and control
- Real-time system awareness
- Rapid or automated implementation of targeted changes (*integrated with PTV Flows*)

Timing Strategies

- Variable sequences by time of day
- Protected-only left turns by time of day
- Peak and shoulder coordination plans for 7 coordination signal groups
- School and park-flush timing plans
- Holiday shopping timing plans
- I-79 and I-76 incident diversion timing plans
- Snow event timing plan



Centracs Mobility Dashboard

Adaptive & Performance-Based Operations

Centracs Edaptive (33 intersections)

- Adjusts base coordination timing plans
- Increase/decrease cycle length based on mainline volume and capacity thresholds
  - Adjust splits (up or down) based on near-real time demand
  - Offset adjustments
- Local and global settings to control Edaptive operations
- Performance metrics to measure effectiveness

Edaptive Sample

Edaptive | Centracs MOBILITY

03/27/2026 10:50 AM	5	Control	Edaptive Completed Successfully
03/27/2026 10:34 AM	5	Control	Edaptive Completed Successfully
03/27/2026 10:19 AM	5	Control	Edaptive Completed Successfully

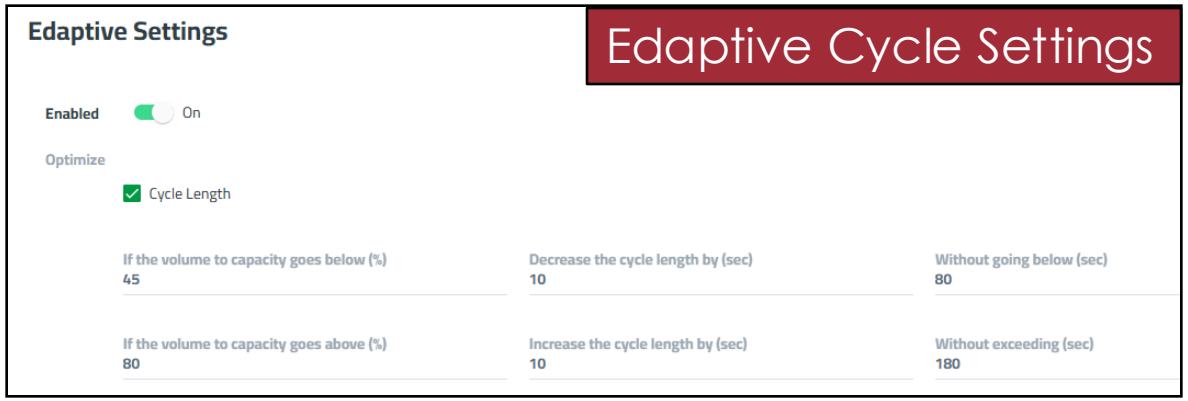
SIGNAL	PATTERN	CYCLE LENGTH	OFFSET	SPLITS
17 - SR 228 @ Franklin Rd	5	110 → 110	48 → 47	Φ2 56 → 56; Φ1 20 → 20; Φ3 13 → 16; Φ4 21 → 18; Φ5 26 → 28; Φ6 50 → 48; Φ7 14 → 14; Φ8 20 → 20
18 - SR 228 @ Kristoffer Dr	5	110 → 110	68 → 67	Φ1 13 → 13; Φ2 57 → 61; Φ3 22 → 18; Φ4 18 → 18; Φ6 57 → 59; Φ5 13 → 15; Φ7 26 → 22; Φ8 14 → 14
19 - SR 228 @ Cranberry Commons Dr	5	110 → 110	70 → 69	Φ1 27 → 27; Φ2 68 → 68; Φ6 95 → 95; Φ8 15 → 15
20 RT 228@ Cranberry Woods	5	110 → 110	27 → 26	Φ2 43 → 46; Φ1 32 → 28; Φ3 18 → 19; Φ4 17 → 17; Φ5 16 → 16; Φ6 59 → 58; Φ7 20 → 21; Φ8 15 → 15
21 - SR 228 @ NB I 79 Ramps	5	110 → 110	20 → 17	Φ2 64 → 68; Φ6 64 → 68; Φ8 46 → 42
22 - Rt 228 @ SB 79	5	110 → 110	26 → 26	Φ6 77 → 77; Φ2 77 → 77; Φ4 33 → 33

Making Adaptive Work

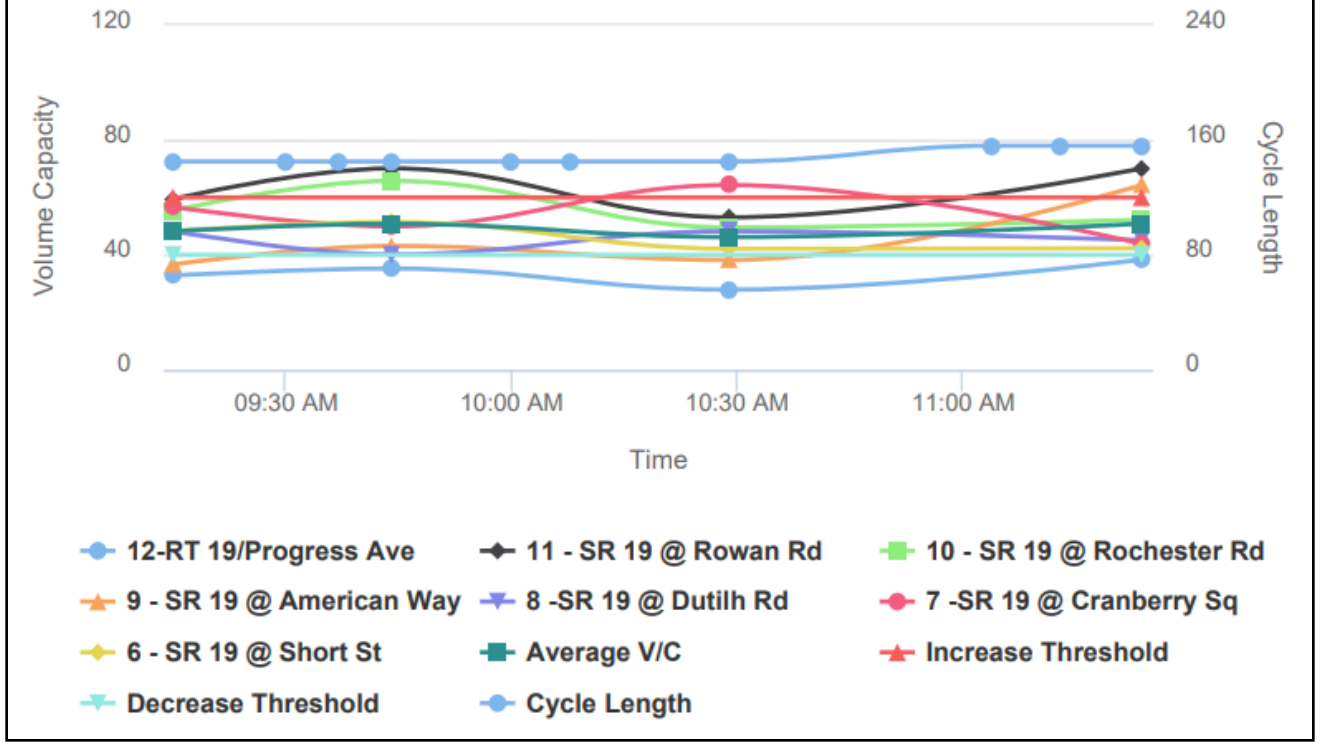
Calibration & Monitoring of Edaptive

- Worked closely with Econolite to understand Edaptive logic
- Adjusted capacity assumptions used by the algorithm
- Calibrated intersections individually to meet Cranberry Twp expectations
- Hone in operations based on specific needs/wants

Edaptive Cycle Settings



Volume/Capacity Thresholds – Cycle Length

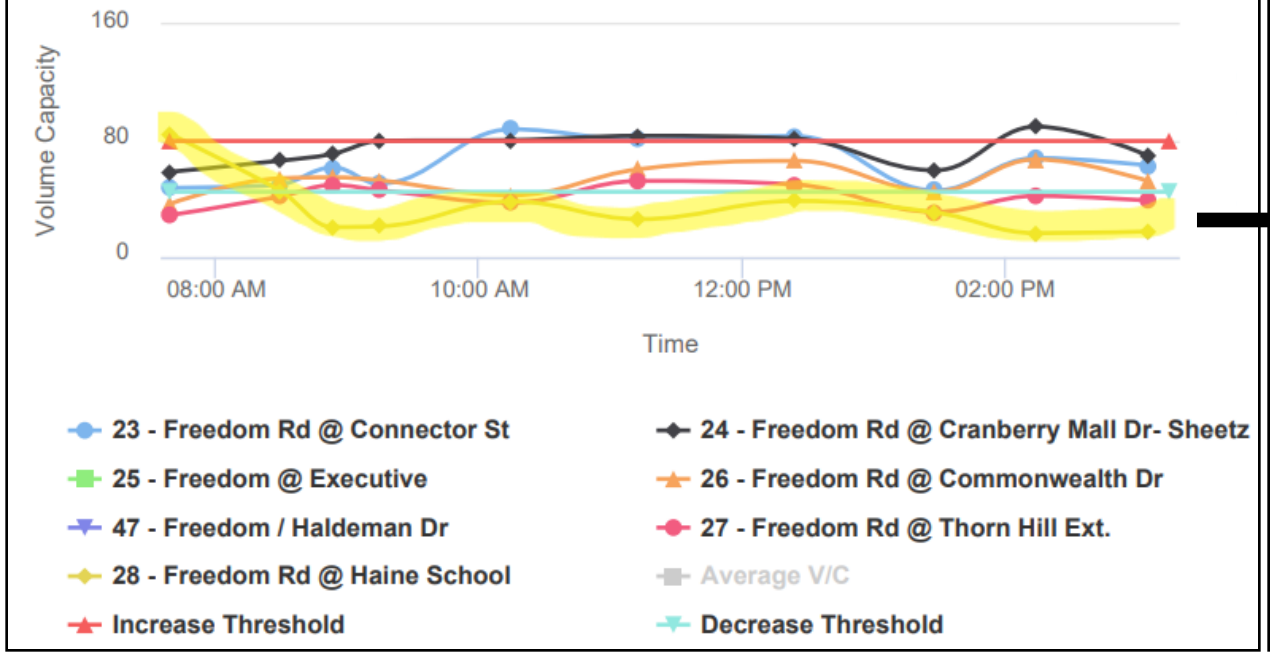


Protecting Adaptive Performance

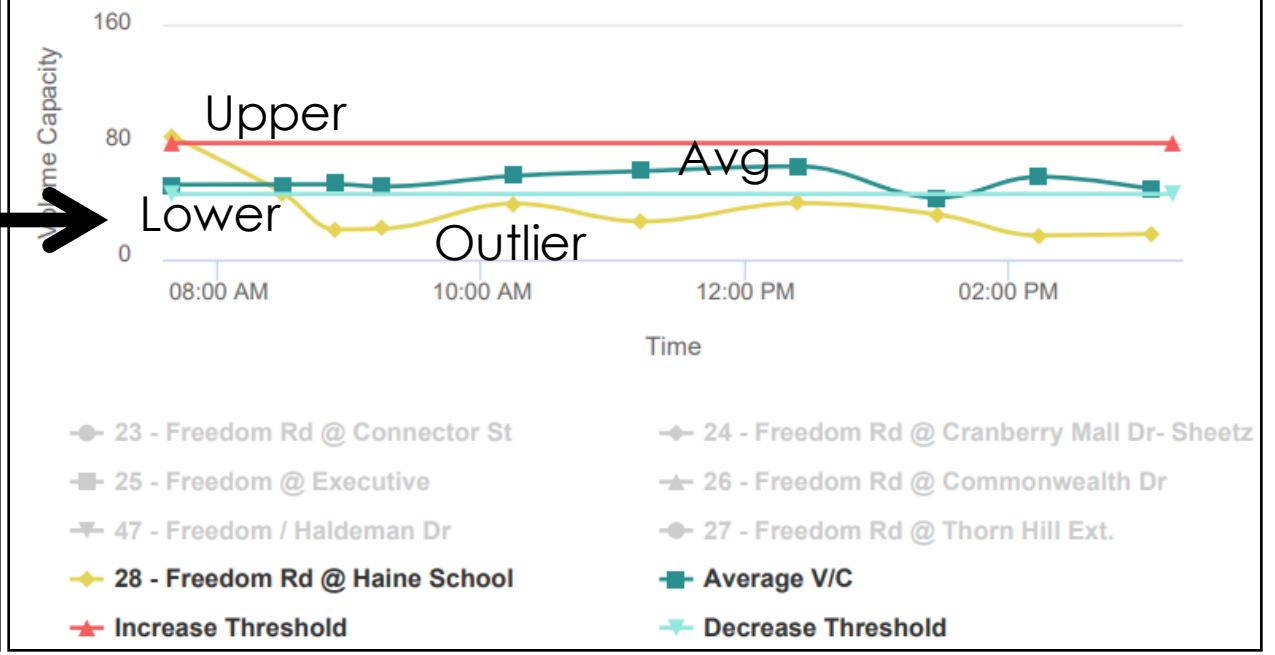
Detection Health Matters

- Review of detector counts and trends
- Early identification of detection faults or degradation
- Prevents bad data from driving adaptive decisions

Volume/Capacity Thresholds – Outlier



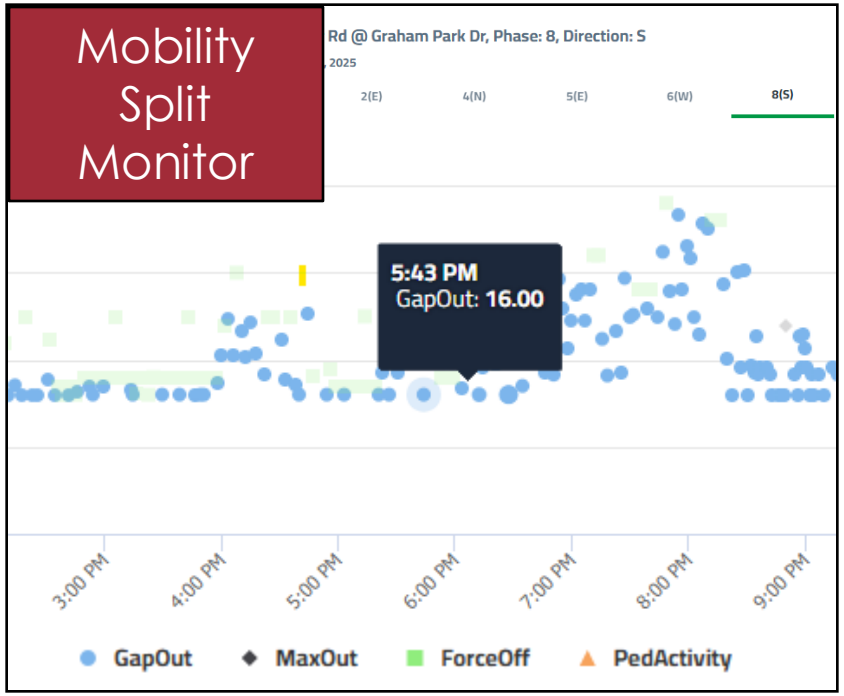
Outlier Isolated

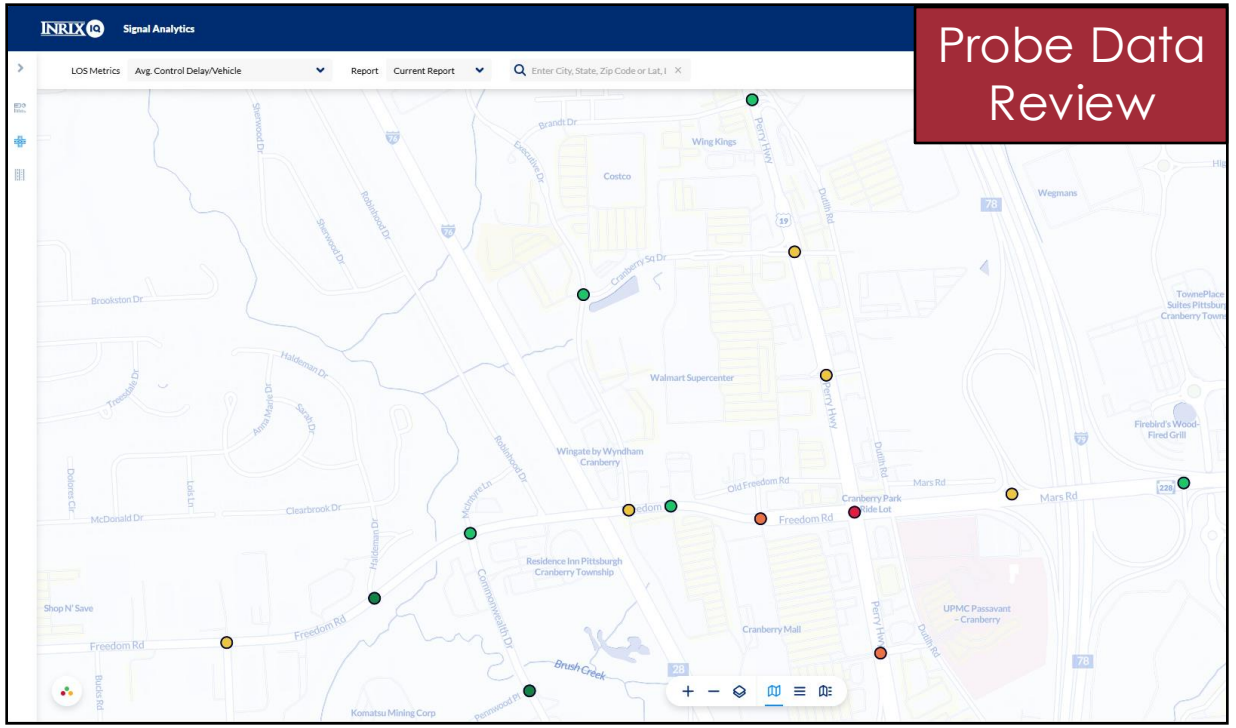


Seeing the Driver Experience Through Data

ATSPMs and Probe Data Monitoring

- Confirms whether changes improve real-world performance
  - Mobility Performance Metrics
  - RITIS Speed & INRIX IQ
  - SteetLight / RITIS Trip Analytics

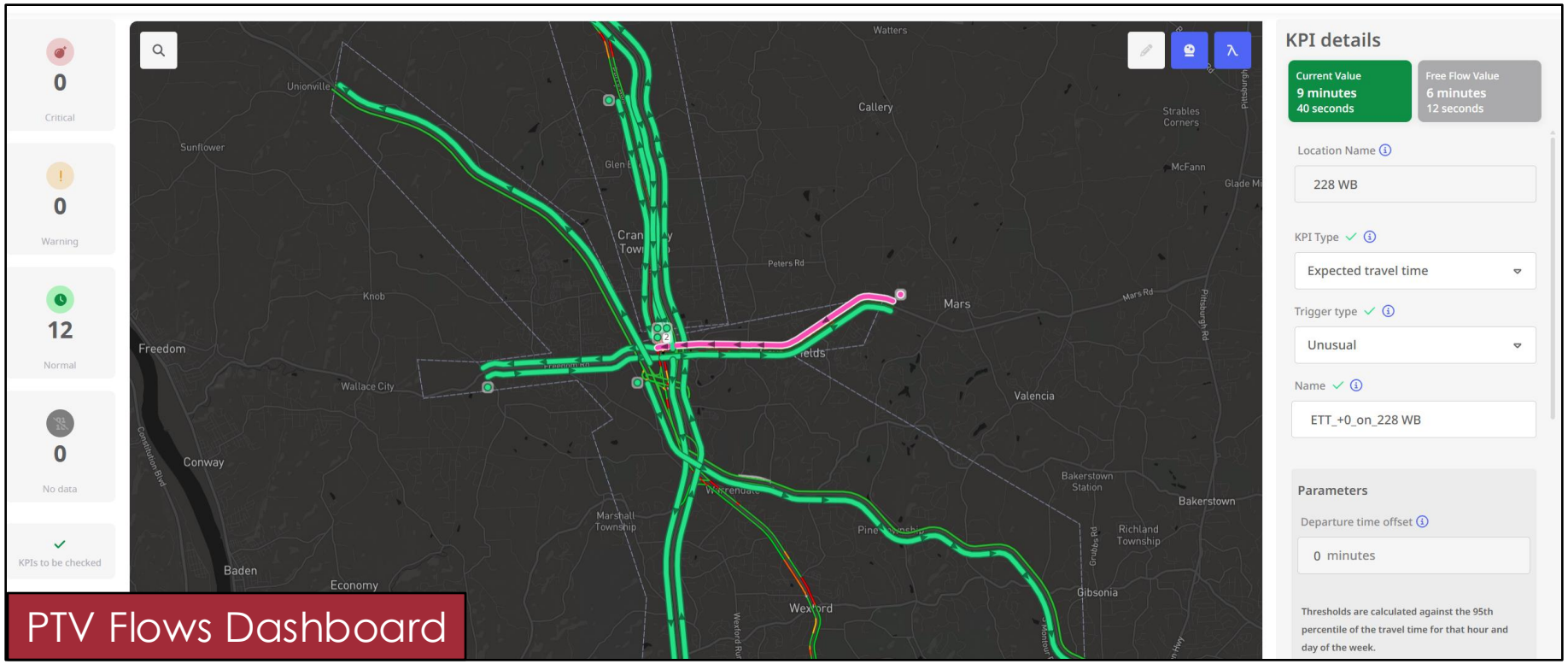




Planning for Disruptions

PTV Flows and Incident Timing Plans

- Real-time speed monitoring and short-term forecasting of arterials, I-79 and I-76
- System will automatically engage pre-developed incident and diversion timings once I-79 or I-76 drop below a specific speed threshold
  - Speed thresholds were calibrated based on location and diversion routes
- With predictions up to 10 minutes ahead, the township can proactively manage traffic flow



PTV Flows Dashboard

Targeted, Timing Adjustments

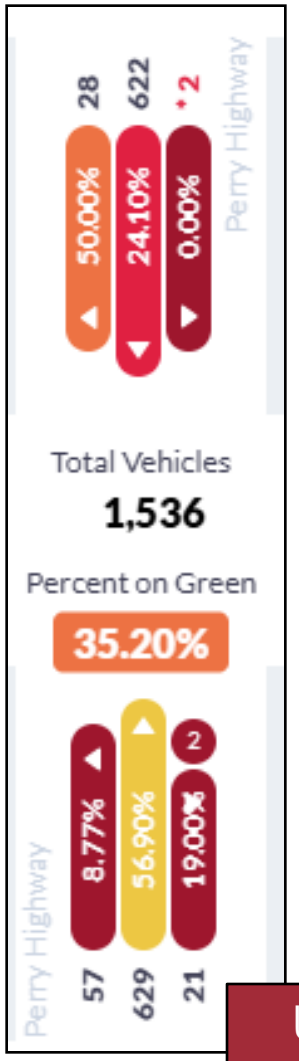
Right Change, Right Place, Right Time

- Matured signal timings allow for a focus on adjustments instead of systemwide re-timing
- Prevents recurring problems
- Maintains reliability over time

Targeted, Timing Adjustments

Southbound US 19 PM Peak Progression Degradation

- **Issue:** During the PM peak, southbound queues spilled back and blocked side-street vehicles from exiting. This occurred during the highest-demand "peak of the peak" period
- **Analysis:** Recent land-use changes degraded progression. A low Percent on Green confirmed poor southbound progression
- **Solution:** Adjusting offset settings was recommended to improve southbound coordination, enhance progression, and reduce queue spillback

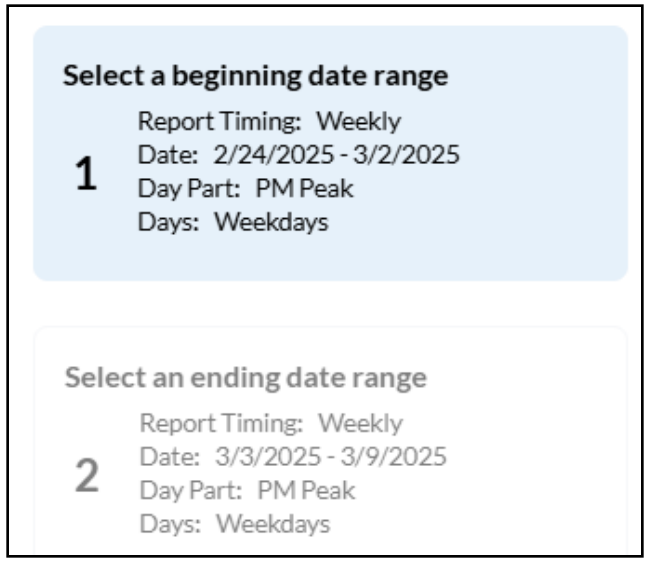


US 19 at Short St

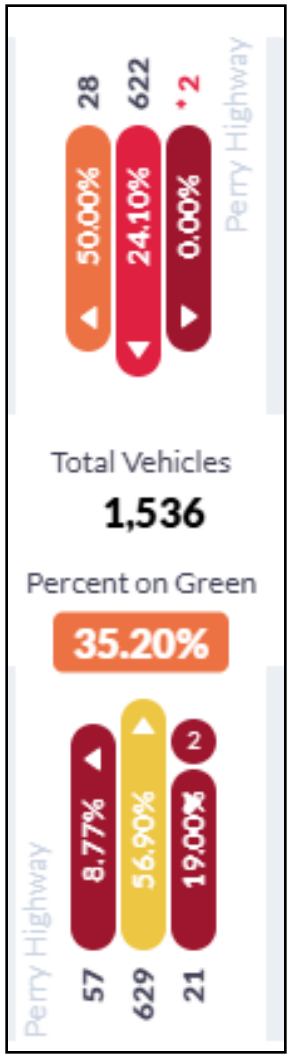
Targeted, Timing Adjustments

Adjusted Signal Programming

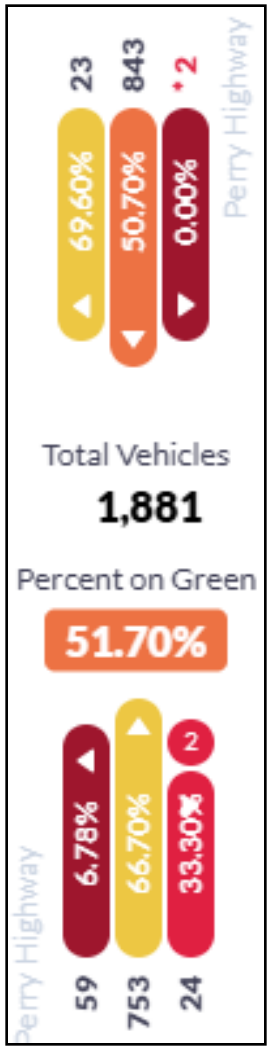
- Implemented an offset adjustment focused on improving southbound PM peak progression



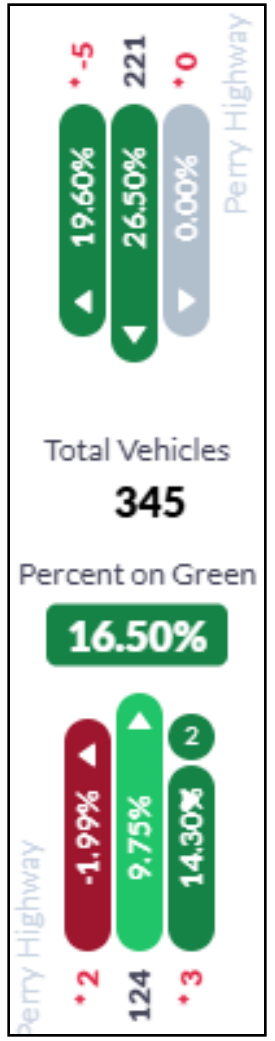
Before



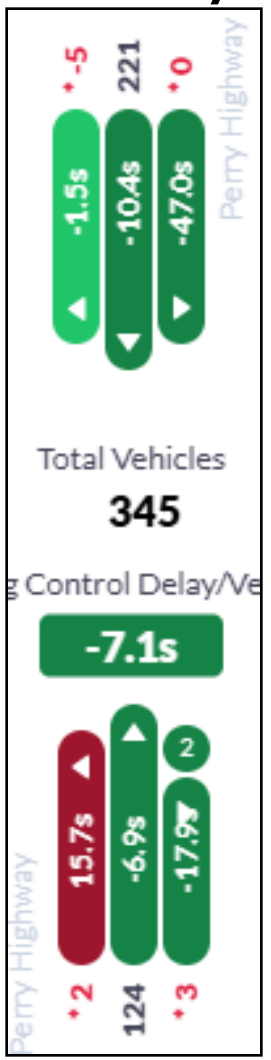
After



Change



Change in Delay



Mobility as a Customer Service

- Reliable operations reduce surprises and build trust
- Consistent performance improves the user experience
- Proactive, data-driven operations identify issues faster
- Fewer recurring complaints and higher confidence in system performance
- Partnerships turn insights into results

Lessons Learned

- Prompt and Effective Traffic Management
- Shift from Reactive to Proactive
- Reduces Congestion & Increases Safety
- AI Saves Money & Time
- Try New Technologies
- Be a Deployment Partner
- Share Success