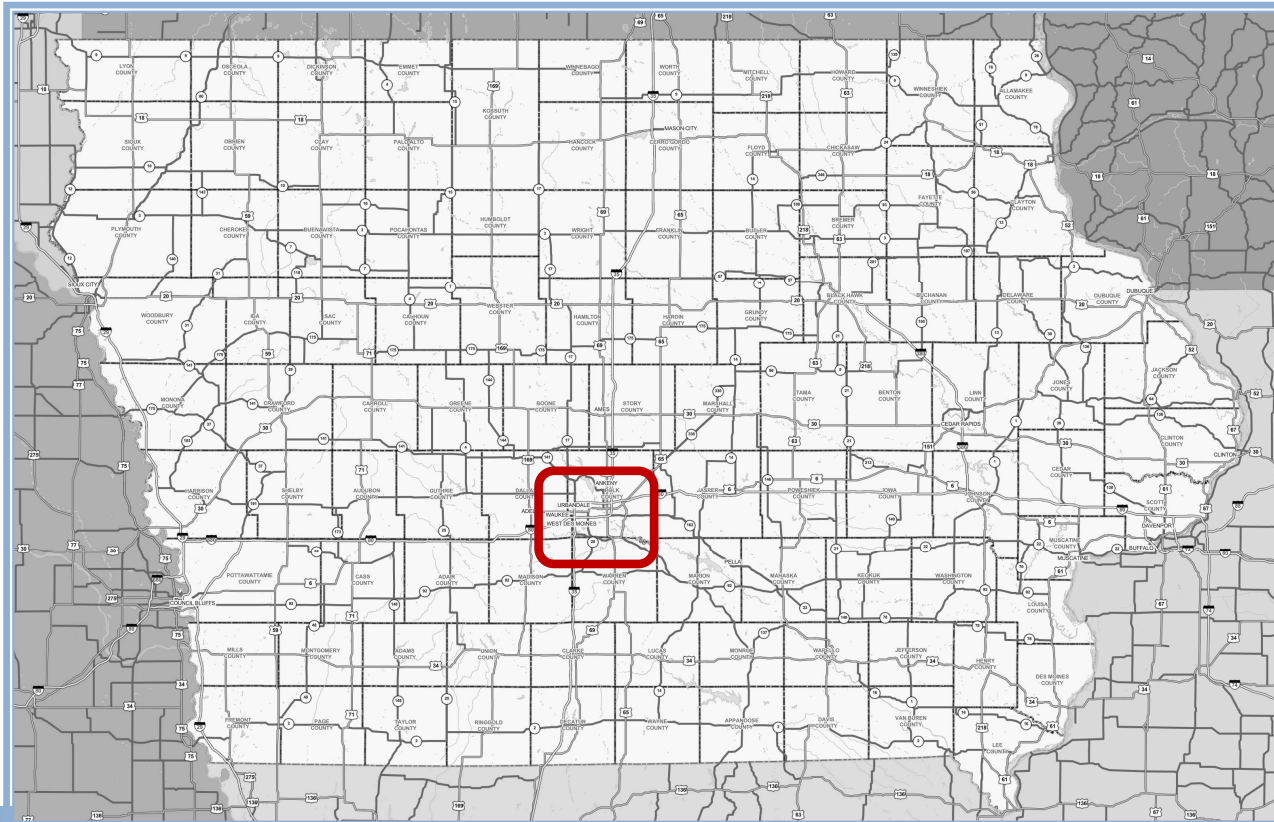
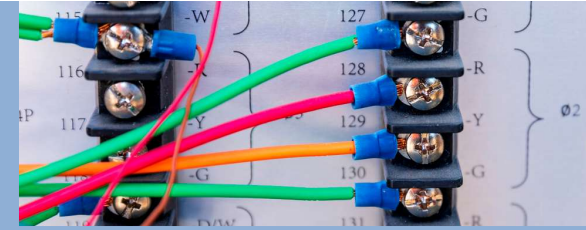


BIG DATA, BIG IMPACT: Des Moines' Traffic Operations

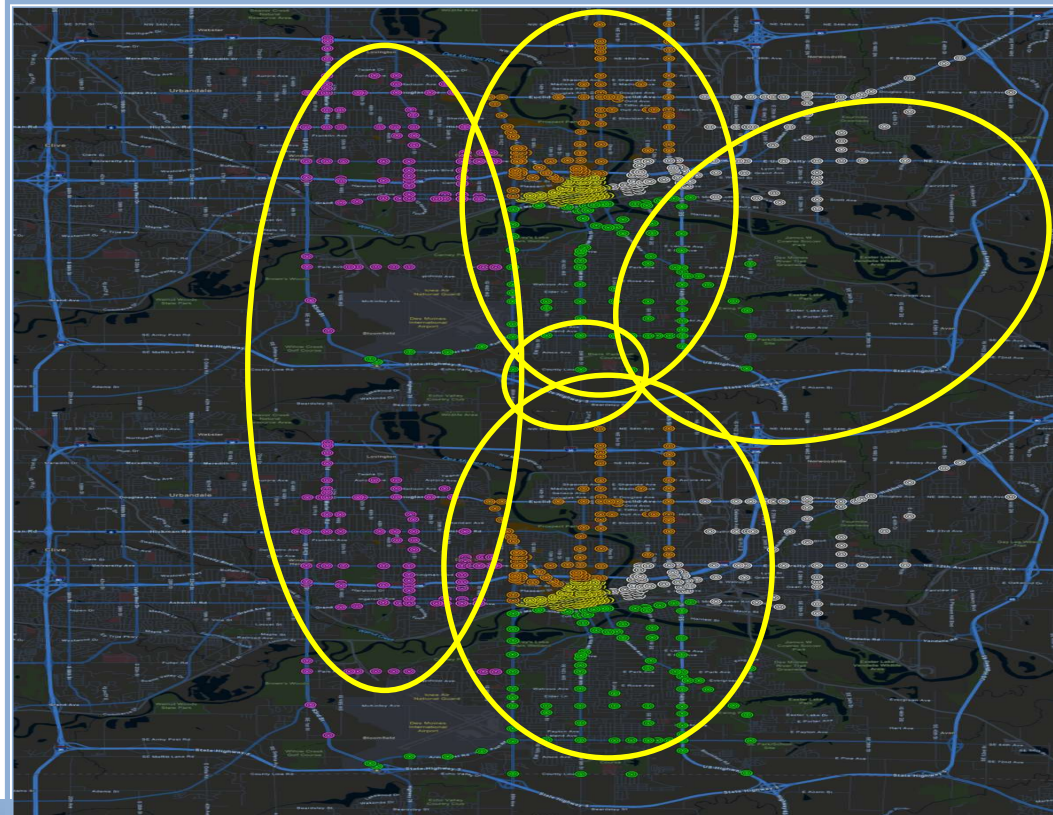
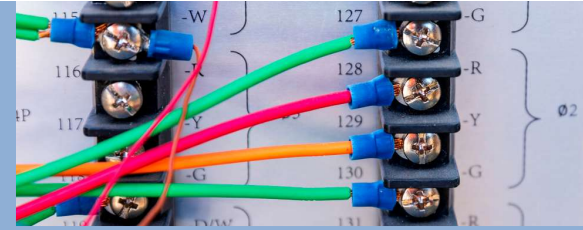
Molly Long, PE, PTOE
Principal Traffic Engineer



WHERE ARE WE?



WHAT DO WE HAVE?



PROJECT PROGRESSION

Phase 1: 84 Signals, Spring 2019

Phase 2: 86 Signals, Spring 2021

Phase 3: 85 Signals, Spring 2022

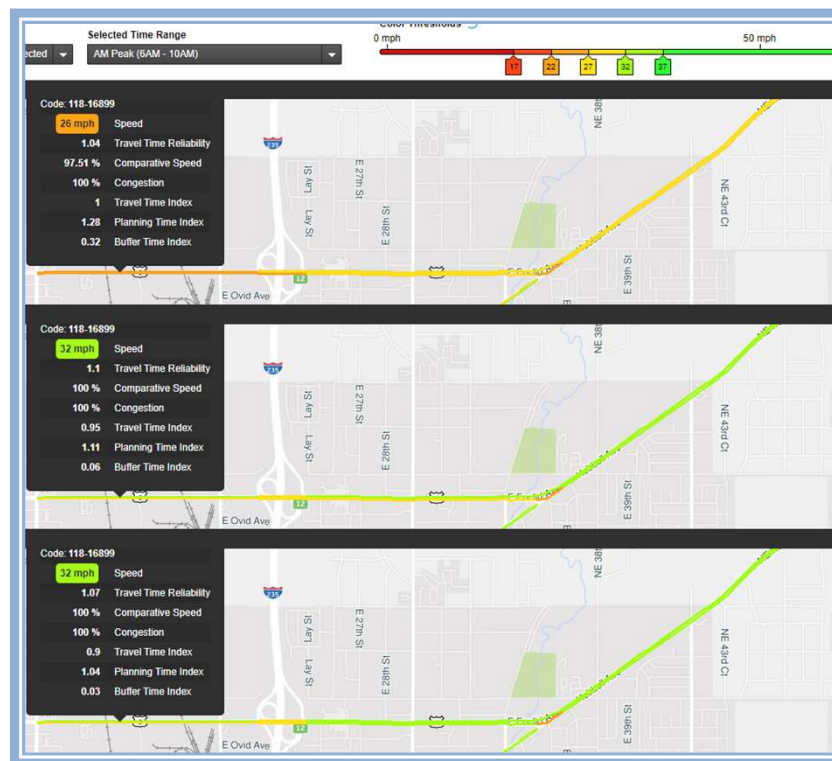
Phase 4: 83 Signals, Fall 2022

Phase 5: 89 Signals, Fall 2023



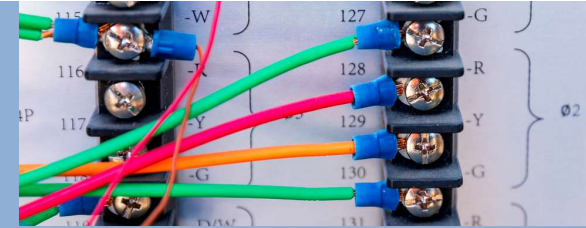


HOW IT STARTED VS HOW IT'S GOING



DOWNTOWN RESULTS

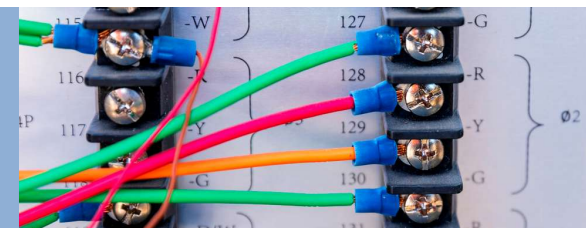
In-Depth Dive



Performance Summaries for XD_P4_MLK/19th_Ingersoll-Washington(Merge)_NB-Only and XD_P4_MLK/19th_Ingersoll-Washin
2019 vs 2021

	Speed (mph)						Travel time (minutes)						Travel time (seconds)					Speed (mph) Percent Change				
	12:00 AM - 6:00 AM	6:00 AM - 9:00 AM	9:00 AM - 3:00 PM	3:00 PM - 6:00 PM	6:00 PM - 12:00 AM		12:00 AM - 6:00 AM	6:00 AM - 9:00 AM	9:00 AM - 3:00 PM	3:00 PM - 6:00 PM	6:00 PM - 12:00 AM		12:00 AM - 6:00 AM	6:00 AM - 9:00 AM	9:00 AM - 3:00 PM	3:00 PM - 6:00 PM	6:00 PM - 12:00 AM	12:00 AM - 6:00 AM	6:00 AM - 9:00 AM	9:00 AM - 3:00 PM	3:00 PM - 6:00 PM	6:00 PM - 12:00 AM
	6:00 AM	9:00 AM	3:00 PM	6:00 PM	12:00 AM		6:00 AM	9:00 AM	3:00 PM	6:00 PM	12:00 AM		6:00 AM	9:00 AM	3:00 PM	6:00 PM	12:00 AM	6:00 AM	9:00 AM	3:00 PM	6:00 PM	12:00 AM
Mon	-1.1	3.4	2.7	3.7	2.5	0 0	0.17	-0.54	-0.46	-0.66	-0.34	0 0	10.0	-32.2	-27.4	-39.4	-20.4	-4%	15%	12%	17%	10%
Tue	2.2	2.7	2.7	3.4	2.1	0 0	-0.29	-0.42	-0.46	-0.61	-0.29	0 0	-17.4	-25.2	-27.6	-36.8	-17.6	8%	11%	12%	16%	8%
Wed	-0.1	2.6	2.6	4.8	2.3	0 0	0.01	-0.40	-0.44	-0.90	-0.33	0 0	0.8	-24.0	-26.6	-53.8	-20.0	0%	11%	11%	23%	9%
Thu	1.9	3.2	3.1	4.2	1.6	0 0	-0.22	-0.51	-0.54	-0.85	-0.24	0 0	-13.0	-30.8	-32.2	-50.8	-14.2	7%	14%	14%	21%	6%
Fri	0.5	2.0	2.5	3.5	0.6	0 0	-0.06	-0.30	-0.41	-0.62	-0.06	0 0	-3.4	-18.0	-24.8	-37.2	-3.8	2%	8%	11%	16%	2%
Weekdays	0.7	2.7	2.7	4.0	1.8	0 0	-0.08	-0.43	-0.46	-0.72	-0.26	0 0	-4.6	-26.0	-27.8	-43.4	-15.6	2%	11%	12%	19%	7%
Sat	-0.5	2.2	3.4	2.9	2.6	0 0	0.07	-0.25	-0.50	-0.45	-0.36	0 0	4.0	-15.2	-30.0	-27.2	-21.4	-2%	8%	14%	12%	10%
Sun	0.4	2.1	3.9	3.2	2.7	0 0	-0.04	-0.25	-0.56	-0.49	-0.34	0 0	-2.6	-14.8	-33.8	-29.4	-20.6	1%	7%	16%	13%	10%
Weekends	-0.1	2.1	3.6	3.0	2.6	0 0	0.01	-0.25	-0.53	-0.47	-0.36	0 0	0.6	-15.0	-31.6	-28.4	-21.4	0%	8%	15%	13%	10%
All Days	0.5	2.7	2.9	3.7	2.0	0 0	-0.05	-0.38	-0.48	-0.65	-0.28	0 0	-3.0	-22.8	-28.8	-39.2	-17.0	2%	11%	13%	17%	8%

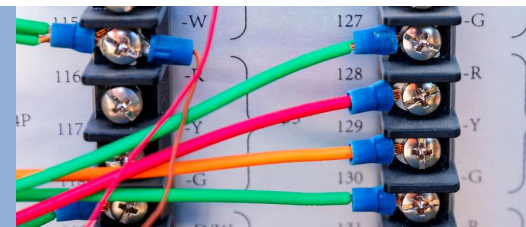
DOWNTOWN RESULTS



Travel Time (minutes)					
Time Period	12:00 AM - 6:00 AM	6:00 AM - 9:00 AM	9:00 AM - 3:00 PM	3:00 PM - 6:00 PM	6:00 PM - 12:00 AM
Northbound/Eastbound					
Before	10.80	11.86	12.00	12.90	11.42
After	10.04	9.89	10.16	10.49	10.14
Difference	-0.76	-1.97	-1.84	-2.41	-1.28
Percent Change	-7%	-17%	-15%	-19%	-11%
Southbound/Westbound					
Before	13.97	14.24	14.27	15.49	13.88
After	12.66	12.43	12.79	13.31	12.59
Difference	-1.31	-1.81	-1.48	-2.18	-1.29
Percent Change	-9%	-13%	-10%	-14%	-9%
Total Combined System					
Before	24.77	26.10	26.27	28.39	25.30
After	22.70	22.32	22.95	23.80	22.73
Difference	-2.07	-3.78	-3.32	-4.59	-2.57
Percent Change	-8%	-14%	-13%	-16%	-10%

Speed (mph)					
Time Period	12:00 AM - 6:00 AM	6:00 AM - 9:00 AM	9:00 AM - 3:00 PM	3:00 PM - 6:00 PM	6:00 PM - 12:00 AM
Northbound/Eastbound					
Before	19.70	18.03	17.75	16.70	18.43
After	20.55	20.58	20.00	19.38	20.05
Difference	0.85	2.55	2.25	2.68	1.63
Percent Change	4%	14%	13%	16%	9%
Southbound/Westbound					
Before	18.20	17.80	17.78	16.22	18.18
After	20.22	20.32	19.76	18.90	20.12
Difference	2.02	2.52	1.98	2.68	1.94
Percent Change	11%	14%	11%	17%	11%
Total Combined System					
Before	18.95	17.91	17.77	16.46	18.30
After	20.39	20.45	19.88	19.14	20.09
Difference	1.44	2.54	2.12	2.68	1.78
Percent Change	8%	14%	12%	16%	10%

DOWNTOWN CONGESTION



BEFORE															AFTER														
2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	6:00 PM	6:15 PM	6:30 PM	6:45 PM	7:00 PM	7:15 PM	7:30 PM	7:45 PM	8:00 PM	8:15 PM	8:30 PM	8:45 PM	9:00 PM				
100	100	100	100	100	99.96	99.9	99.78	99.47	96.08	95.76	93.65	86.13	82.44	95.24	93.79	90.11	87.38	84.16	82.16	87.68	89.27	82.16	87.68	89.27	82.16	87.68			
82.58	84.55	84.83	92.09	88.88	87.71	92.21	95.3	96.3	96.38	88.62	94.28	85.58	84.93	88.11	82.16	87.68	89.27	82.16	87.68	89.27	82.16	87.68	89.27	82.16	87.68	89.27			
99.6	100	100	100	100	86.66	91.25	99.08	94.37	91.54	93.8	90.79	90.31	93.57	89.27	93.34	97.24	97.87	93.34	97.24	97.87	93.34	97.24	97.87	93.34	97.24	97.87			
82.32	86.16	89.52	90.56	87.4	77.83	82.63	84.66	77.05	74.13	69.44	72.95	80.74	82.59	81.75	83.65	92.62	90.73	82.59	81.75	83.65	92.62	90.73	82.59	81.75	83.65	92.62			
100	100	100	100	100	100	97.83	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
74.76	74.18	75.85	80.87	80.11	65.4	66.4	70.14	68.86	70.14	68.86	70.14	68.86	70.14	68.86	70.14	68.86	70.14	68.86	70.14	68.86	70.14	68.86	70.14	68.86	70.14	68.86			
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
76.53	76.52	80.32	79.27	74.47	65.46	69.07	68.11	64.33	68.11	64.33	68.11	64.33	68.11	64.33	68.11	64.33	68.11	64.33	68.11	64.33	68.11	64.33	68.11	64.33	68.11	64.33			
89.35	84.16	82.11	92.09	89.4	92.48	92.5	92.9	96.09	92.9	96.09	92.9	96.09	92.9	96.09	92.9	96.09	92.9	96.09	92.9	96.09	92.9	96.09	92.9	96.09	92.9	96.09			
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
89.81	84.59	89.3	88.3	89.79	91.37	86.57	88.47	86.24	86.72	89.63	84.52	84.89	80.61	91.76	87.8	87.62	86.12	81.4	80.61	83.08	89.91	92.76	98.01	93.19	96.88	100			
95.29	96.71	99.27	95.54	93.33	91.69	96.25	95.35	94.66	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
75.35	72.47	80.1	73.35	75.54	79.36	74.89	75.25	73.58	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
88.81	88.38	96.63	90.79	93.88	96.11	99.55	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
68.05	70.29	77.15	67.41	69.09	73.79	70.04	68.38	67.44	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
76.94	79.71	79.71	69.92	71.52	74.63	71.87	67.9	67.83	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
70.96	74.69	80.13	69.94	69.56	73	70.97	67.47	68.22	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
100	99.44	98.48	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
72.15	66.38	73.35	73.16	76.3	80.98	77.23	83.08	85.35	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
73.67	75.25	72.22	66.68	72.97	72.86	67.82	66.14	65.59	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
63.68	70.72	71.16	66.07	69.79	74.23	68.6	73.09	67.96	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
64.93	68.06	68.46	63.09	70.12	70.87	63.85	67.21	64.58	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
74.18	83.21	82.58	74.26	75.7	69.31	68.79	77.52	74.52	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
97.18	95.73	97.88	88.52	81.12	71.96	71.83	68.99	73.83	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
60.04	70.3	71.16	65.18	69.32	61.58	63.64	69.21	65.45	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
65.75	73.52	73.24	66.73	63.35	56.47	58.65	59.29	58.08	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
70.96	74.09	80.73	69.94	69.36	69.78	70.37	69.47	68.22	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
100	99.44	98.48	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
72.15	66.38	73.35	73.16	76.3	80.98	77.23	83.08	85.35	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
73.67	75.25	72.22	66.68	72.97	72.86	67.82	66.14	65.59	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
63.68	70.72	71.16	66.07	69.79	74.23	68.6	73.09	67.96	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
64.93	68.06	68.46	63.09	70.12	70.87	63.85	67.21	64.58	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
74.18	83.21	82.58	74.26	75.7	69.31	68.79	77.52	74.52	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
97.18	95.73	97.88	88.52	81.12	71.96	71.83	68.99	73.83	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
60.04	70.3	71.16	65.18	69.32	61.58	63.64	69.21	65.45	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
65.75	73.52	73.24	66.73	63.35	56.47	58.65	59.29	58.08	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
70.96	74.09	80.73	69.94	69.36	69.78	70.37	69.47	68.22	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
100	99.44	98.48	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
72.15	66.38	73.35	73.16	76.3	80.98	77.23	83.08	85.35	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
73.67	75.25	72.22	66.68	72.97	72.86	67.82	66.14	65.59	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
63.68	70.72	71.16	66.07	69.79	74.23	68.6	73.09	67.96	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
64.93	68.06	68.46	63.09	70.12	70.87	63.85	67.21	64.58	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
74.18	83.21	82.58	74.26	75.7	69.31	68.79	77.52	74.52	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
97.18	95.73	97.88	88.52	81.12	71.96	71.83	68.99	73.83	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
60.04	70.3	71.16	65.18	69.32	61.58	63.64	69.21	65.45	100	100	100	100	100	100	100	100	100	100	100	100	100								

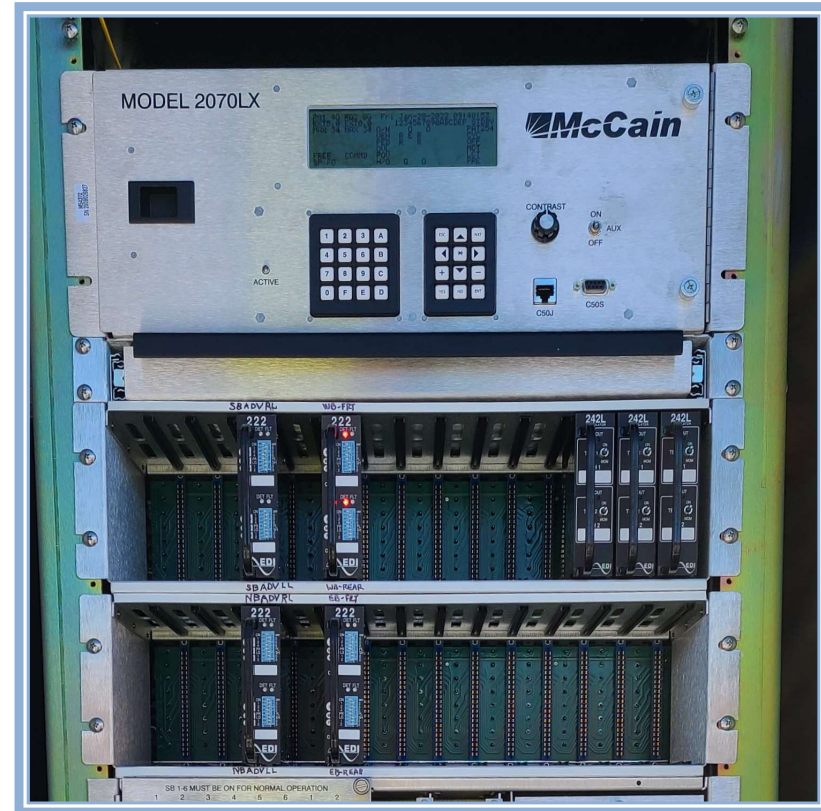


REAL RESULTS FOR LEADERSHIP AND PUBLIC BUY IN

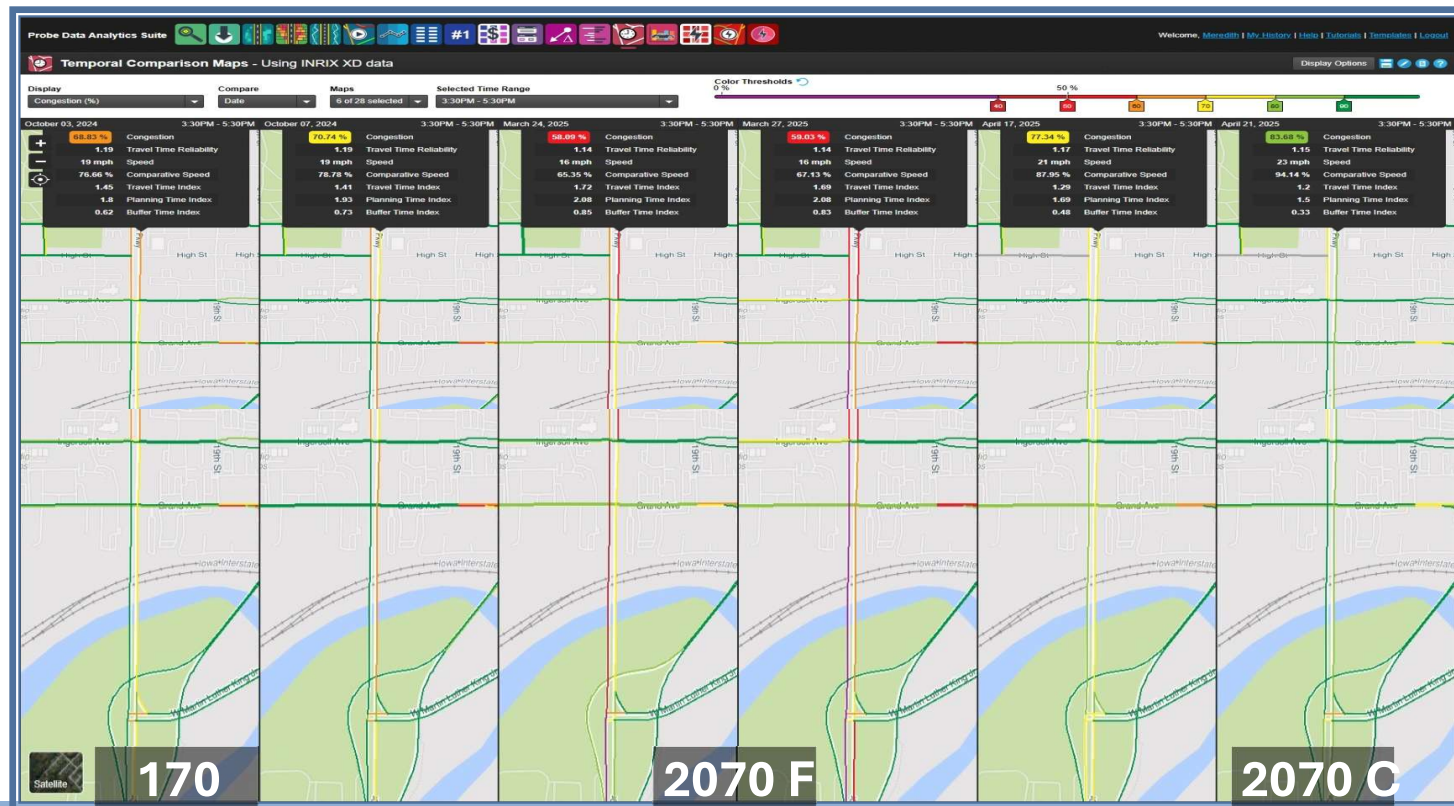
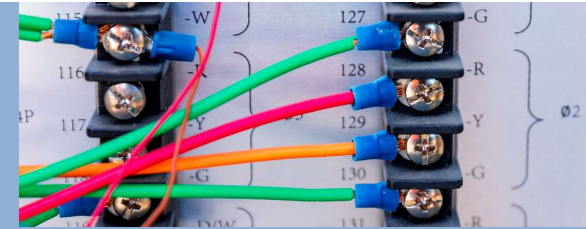
Phase 3

"From a 24-hour weekday, the overall travel time saving was 12 percent or 7,000 vehicle hours, 2,070 minutes, or 34.5 hours, which is a significant saving for the 300 people who use the phase 3 corridor. It will save 61 hours less on this corridor each year."

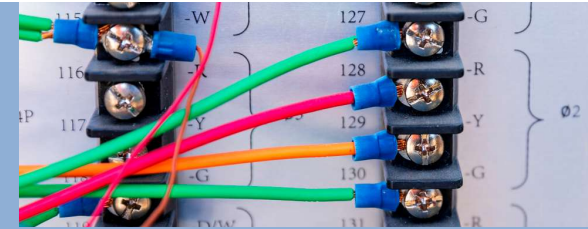
HOW IT STARTED VS HOW IT'S GOING



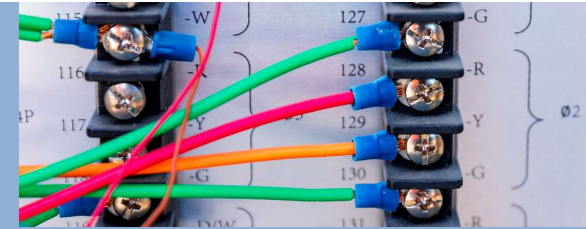
VISUAL VALIDATIONS



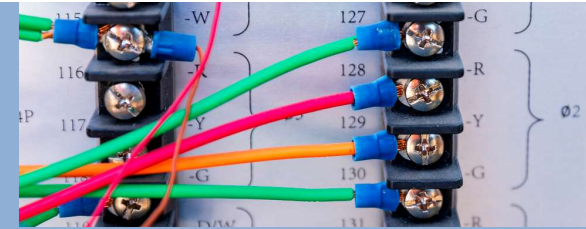
CONGESTION COMPARE



SPEED COMPARE



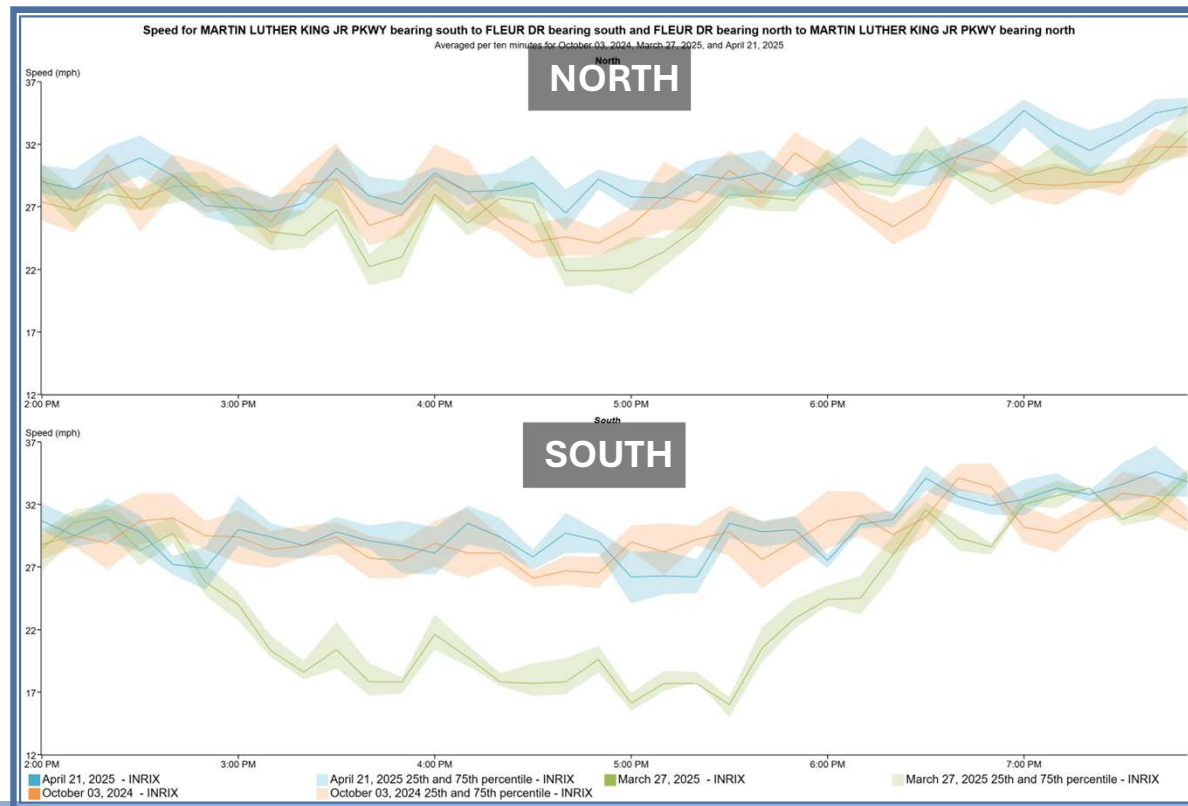
SPEED COMPARE



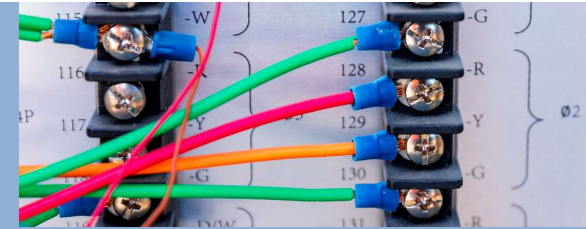
October 3,
2024

March 27,
2025

April 21, 2025



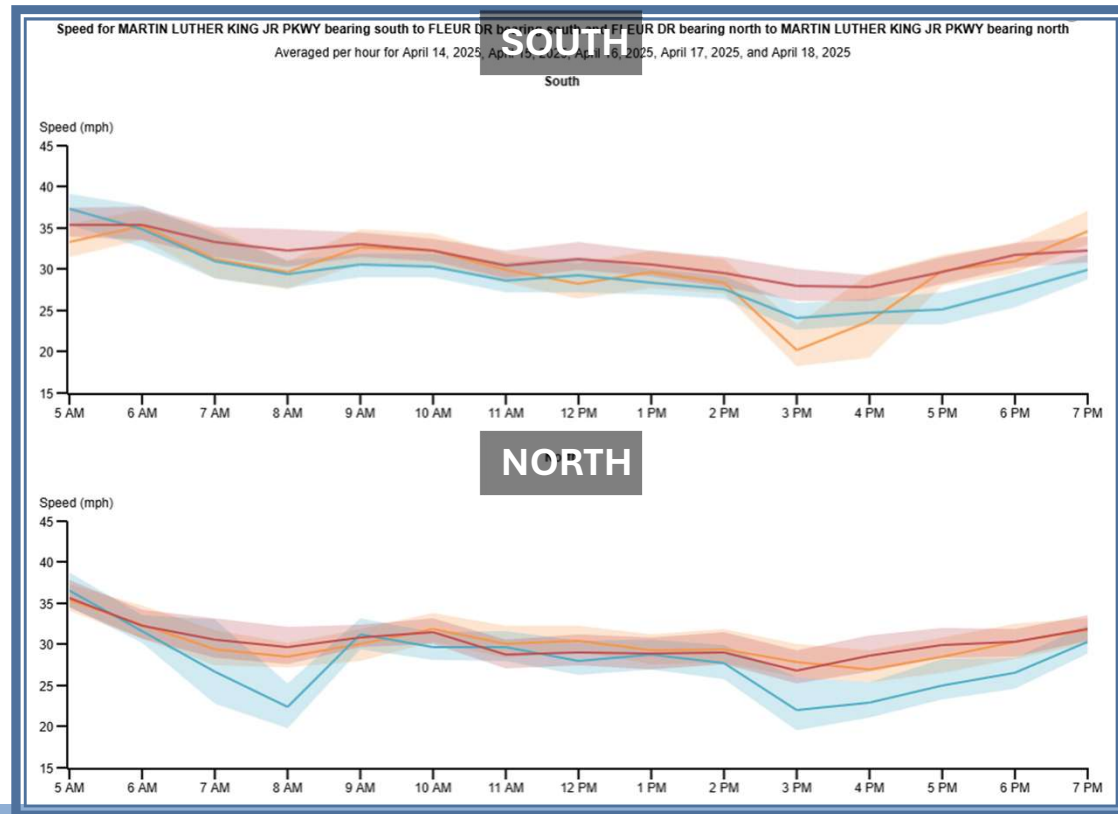
SPEED COMPARE



April 14

April 16

April 18



Dashboard

MLK-Fleur Corridor

Speed and Travel Time Table

Corridor

MARTIN LUTHER KING JR PKWY be

FLEUR DR bearing north to MARTIN

Data source: INRIX XD

Reliability during the AM Peak (8-9am)

	Location
1	FLEUR DR bea...
2	MARTIN LUTH...

Data source: INRIX

Reliability during the PM Peak (5-6pm)

	Location
1	FLEUR DR bea...
2	MARTIN LUTH...

Data source: INRIX

115

-W

127

-G

-R

-Y

-G

R

Ø2

Add New Dashboard

Add Widget

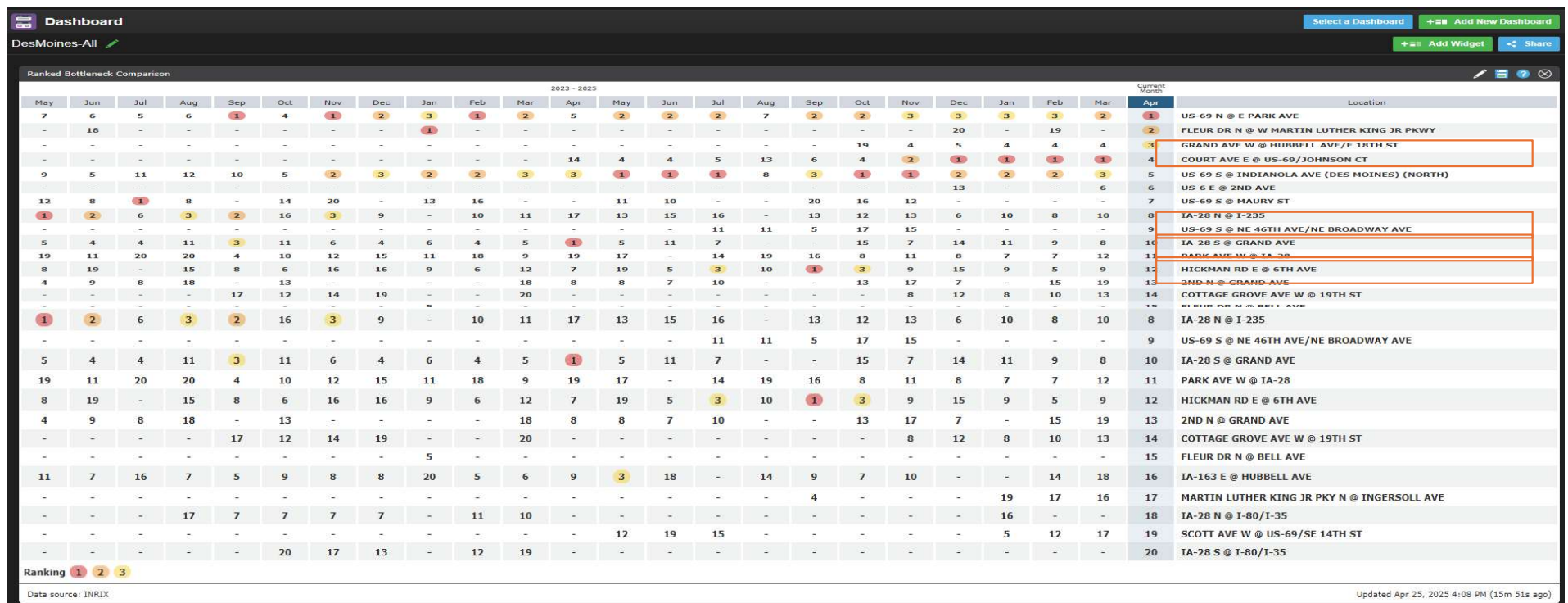
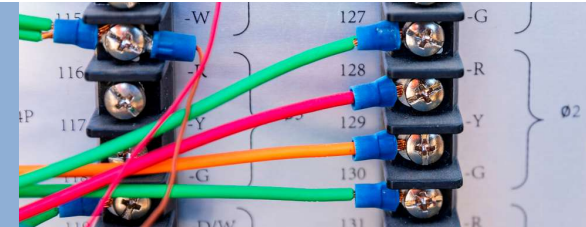
Share

MARTIN LUTHER KING JR

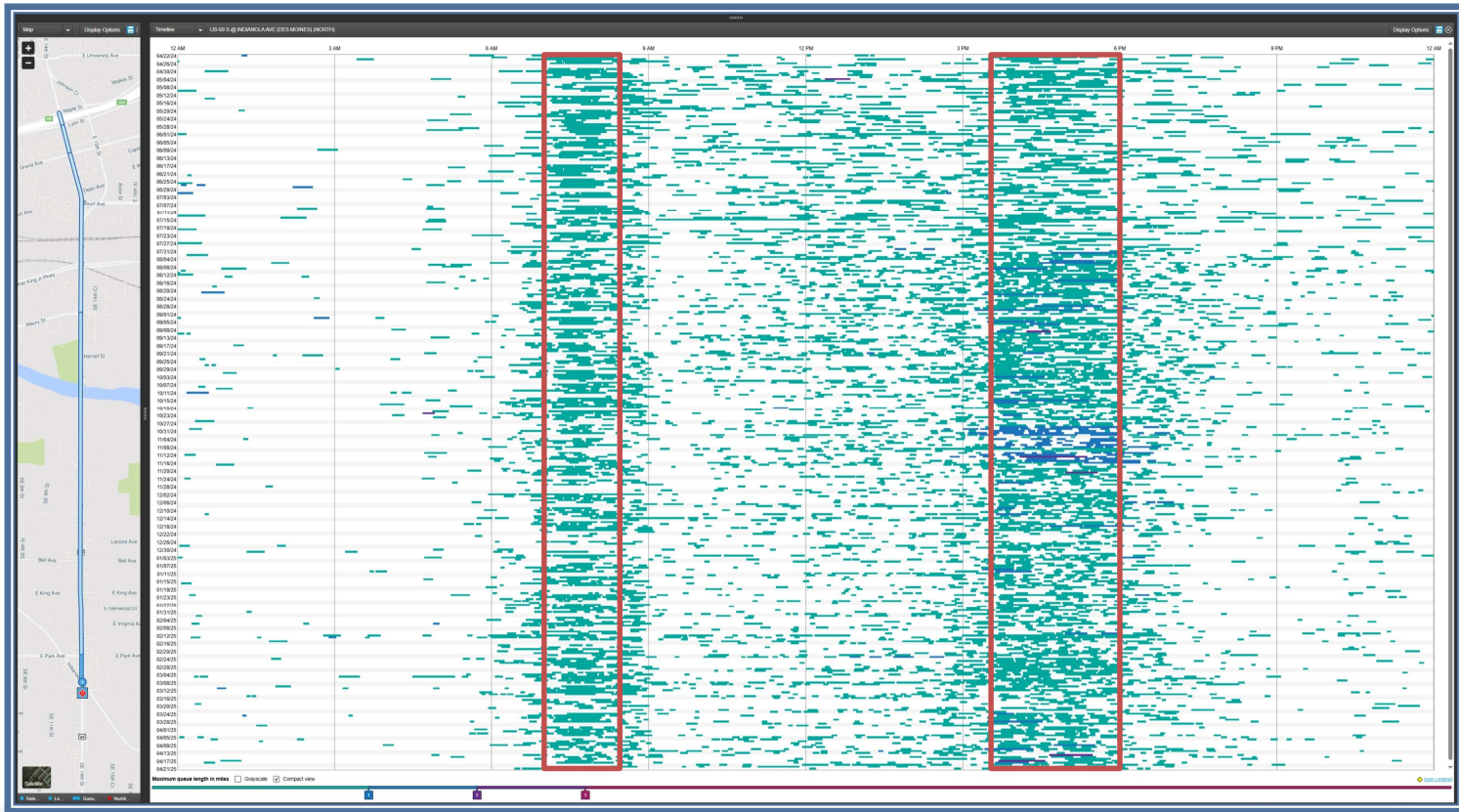
Dec	Annual Total
	-
\$83.6K	\$1.5M
\$129.2K	\$1.1M
\$20.1K	\$414.4K

24, 2025 2:36 PM (16m 2s ago)

DASHBOARD QUICK CHECKS

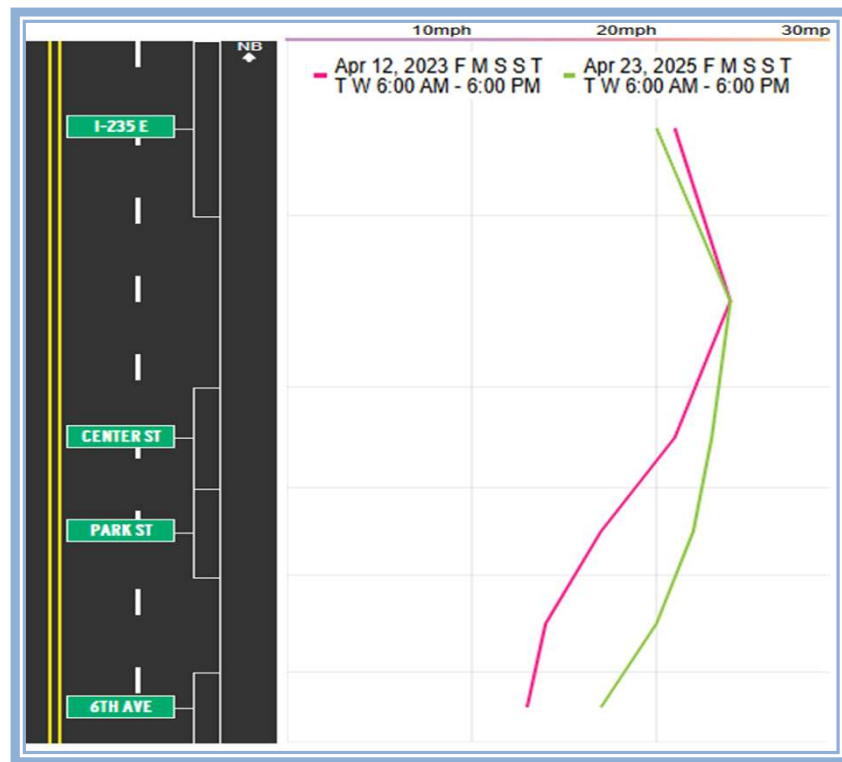


BOTTLENECKS OF A FULL YEAR: SE 14th SB @ Indianola

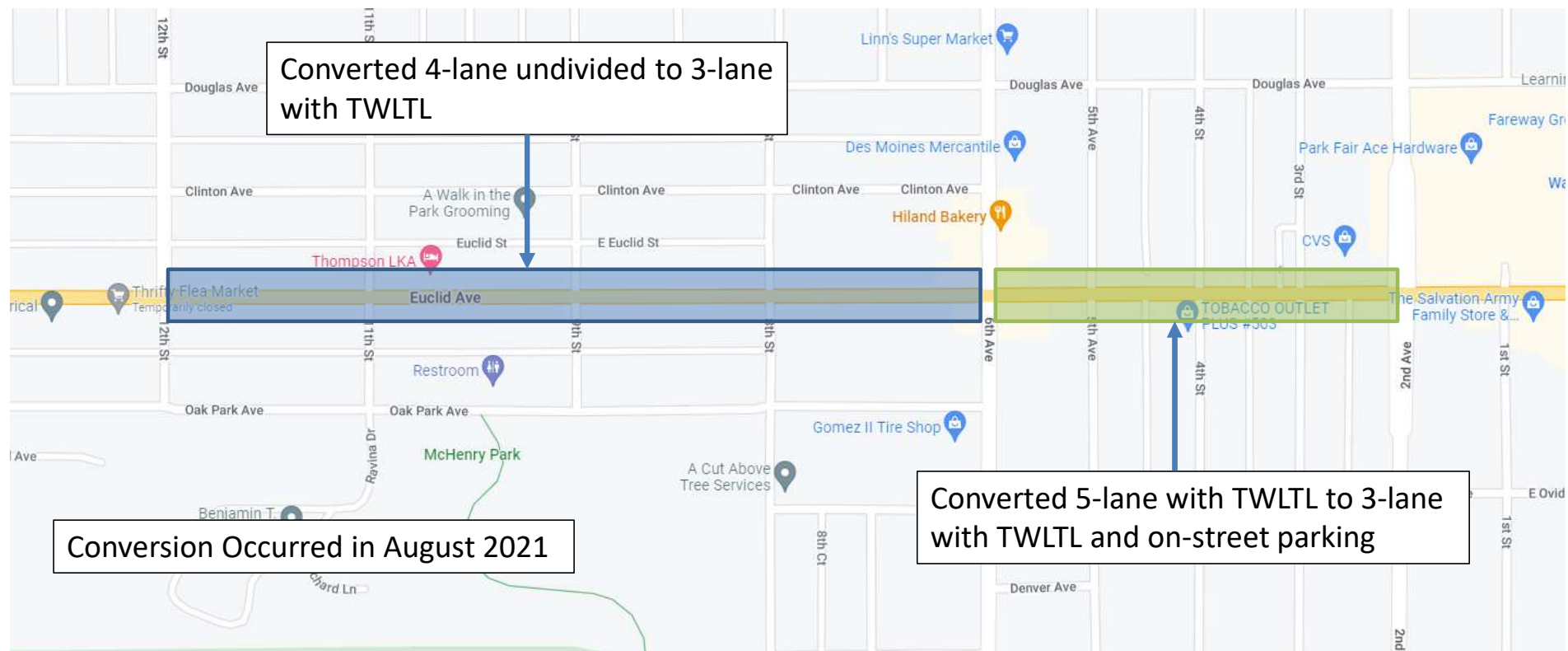




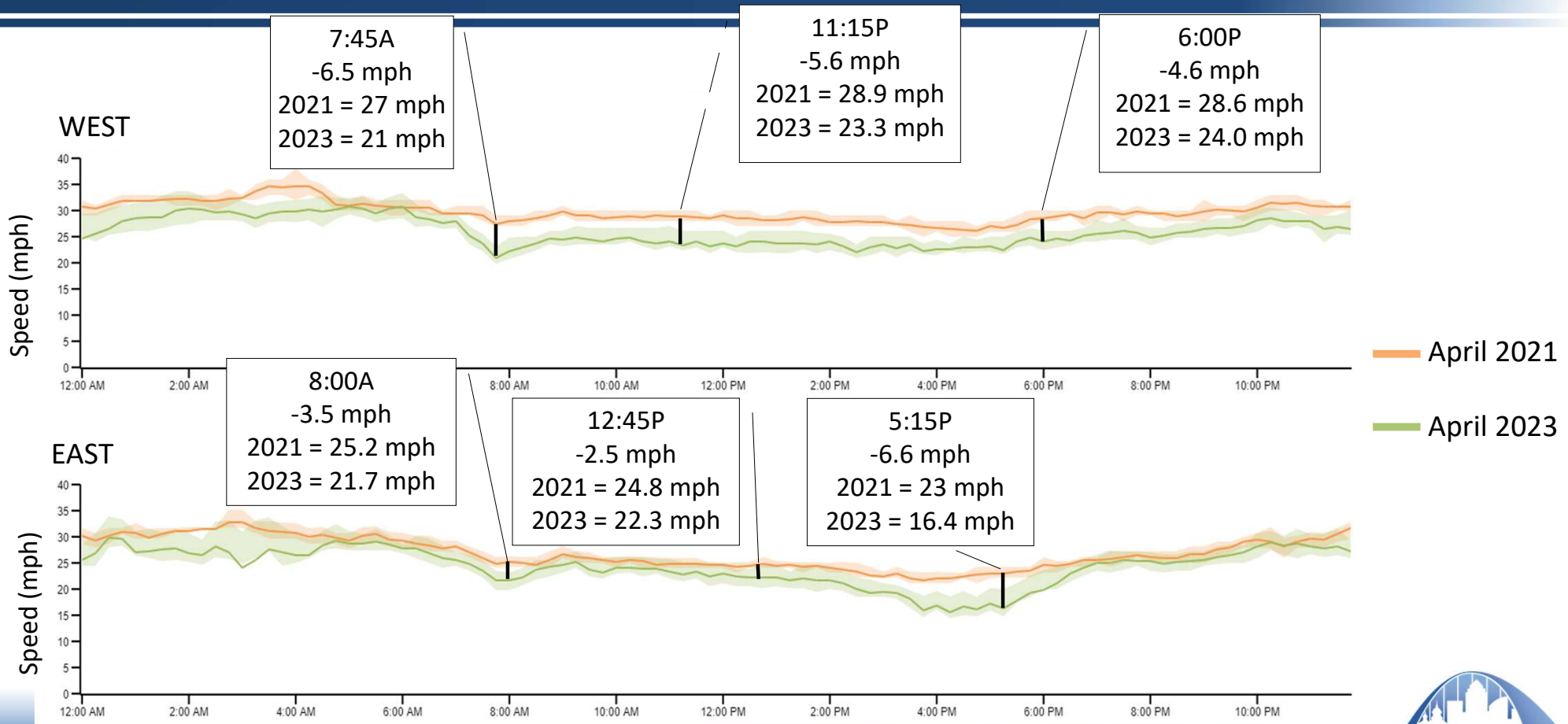
LEADING PEDESTRIAN INTERVALS



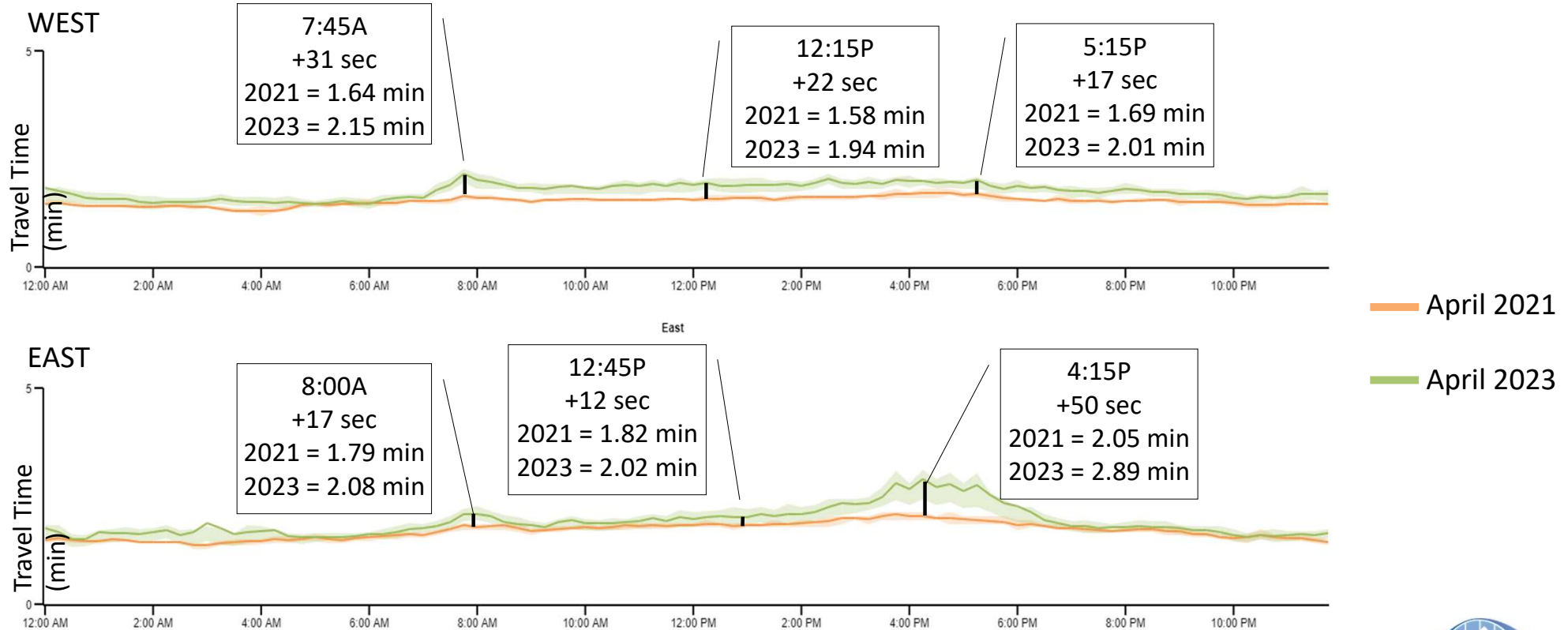
EUCLID AVENUE TEMPORARY ROAD DIET



AVERAGE SPEED COMPARISON: 2nd Ave to 12th St



AVERAGE TRAVEL TIME COMPARISON: 2nd Ave to 12th St



PROJECT VALUE



Before/After Evaluation

Easy before/after performance evaluation of corridors for project effectiveness.

Data-Driven Signal Retiming Program

Match resources to measured biggest needs across an area.

Proactive Traffic Management

Monitor for operational changes through dashboards for quick response.

Congestion Analysis

Easy query of data for analysis or visual representation.

Model/Simulation Calibration

Speed, travel time, delay and other metrics to calibrate existing conditions model/simulation to measured reality.

Prioritized Troubleshooting

Determine highest increase in delay, indicating a location to troubleshoot.

Signal Control Evaluation

Determine candidates for responsive or adaptive signal control.



THANK YOU!

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