MEETING NOTES
Iowa Advisory Council on Automated Transportation (ATC)
Council Meeting
Wednesday, May 27, 2026
1:30 p.m. - 3:30 p.m. CT

https://iowadrivingav.org/

Attendance – 29 attendees

- Scott Marler – Iowa Department of Transportation (ATC Chair)
- Lee White – Deputy Assistant Secretary for the Office of the Assistant Secretary for Research and Technology at the U.S. Department of Transportation
- Alexander Hansen – Director of Sales, U.S., HOLON
- Anthony (Tony) Armiger II – Country Advisor, U.S., ioki
- Dylan Mullenix – Des Moines Area MPO (Policy & Legislation Chair)
- Colonel Nathan Fulk – Iowa Department of Public Safety, Iowa State Patrol (Public Safety & Enforcement Chair)
- Ashley Nylen – U.S. Department of Transportation, Office of Assistant Secretary for Research and Technology, Highly Automated Systems Safety Center of Excellence
- Stephan Bayens – Iowa Department of Public Safety
- Catherine Lucas – Iowa Department of Public Safety
- Michael Current – Iowa Department of Public Safety, Iowa State Patrol
- Matt Burkey – Iowa Bicycle Coalition
- Jared Kirby – Iowa Department of Insurance & Financial Services
- Travis Grassel – Iowa Department of Insurance & Financial Services
- Beth Townsend – Iowa Workforce Development
- Erin Mullinex – Iowa State University Extension & Outreach - Community & Economic Development Programs
- Andy Warren – Associated General Contractors of Iowa
- Eric Porter – Iowa Communications Network
- Brian Mulcahy – Des Moines International Airport
- Clint Torp – Des Moines International Airport
- Skylar Knickerbocker – Iowa State University, InTrans
- Omar Ahmad, Daniel McGehee, Cherie Roe – University of Iowa, Driving Safety Research Institute (DSRI)
- Deborah Clark, Vanessa Goetz, Wes Musgrove, Daniel Yeh, Matt Miller – Iowa Department of Transportation
- 1 unidentified person

Meeting Summary

The Iowa Advisory Council on Automated Transportation met on May 27 to discuss how emerging technologies such as autonomous vehicles, connected infrastructure, and automated agricultural equipment are shaping the future of mobility in Iowa. The meeting brought together state leaders, federal officials, researchers, and private-sector innovators to share updates and explore opportunities for Iowa communities.

The meeting opened with remarks from Matthew Miller, who provided housekeeping reminders and encouraged participants to use the chat for questions.

1. **Welcome and introductions** – *Scott Marler, Iowa DOT Director, Chair of the ATC*
   A. Scott Marler, Director of the Iowa DOT, welcomed attendees and underscored the council's purpose: keeping Iowa's agencies, researchers, and industry partners aligned on automated transportation developments, strengthening collaboration across public, academic, and private sectors, and helping the state stay ahead of national automation and mobility trends.
   B. Scott recognized the existing members and introduced new members:
      i. Melissa Gillette, Iowa DOT Chief Operating Officer
      ii. Wes Musgrove, System Operations Division Director
      iii. Jesse Thibodeau, District 6 Engineer
      iv. Jody Stephenson, FMCSA State Program Specialist for Iowa & Minnesota
      v. Amanda Baxwhittle, FMCSA Missouri Division Administrator and interim Iowa Division Administrator
   C. Des Moines Area Community College – invitation extended to new president
   D. Scott reviewed the agenda and noted that the U.S. House has passed a version of the next surface transportation bill that includes provisions related to autonomous vehicles, which the council will continue to monitor as it moves through Congress.

2. **Ushering in the Golden Age of Transportation** – *Lee White, Deputy Assistant Secretary, U.S. Department of Transportation (OST-R)*
   A. Scott introduced Lee White, the Deputy Assistant Secretary for the Office of the Assistant Secretary for Research and Technology at the U.S. Department of Transportation (USDOT). Full bio
   B. Lee praised Iowa's leadership and collaboration, highlighting the council's teamwork as a national model and recognizing Scott Marler and Matt Miller for their work on CCAD. He described an approaching "golden age of transportation" driven by AVs, eVTOLs, drones, and other emerging technologies, noting that the next five years of federal action will be crucial for innovation and long-term safety. Despite progress, he pointed to persistent challenges—port delays, freight imbalances, infrastructure needs, and drought-driven shifts in inland waterway freight—and stressed advancing innovation at a "Goldilocks speed" to stay globally competitive. DOT is working to connect scattered AV pilots into real-time data-sharing corridors, supported by stronger leadership, consistent standards, and better coordination among OEMs, suppliers, and fleets.

C. He added that NHTSA will soon release more detailed national AV framework guidance, with Iowa's best practices helping unify approaches across corridors like I-80 and I-35. Looking ahead, he emphasized that improved coordination is essential to avoid past issues where OEMs, suppliers, and fleets blamed one another during early driver-assist deployments—problems he expects to prevent as AVs roll out over the next 12–24 months.

D. Q&A Highlights

i. Role of Government vs. Private Sector in Future Transportation

a. Lee's perspective is that the government, especially USDOT, should provide leadership which means setting expectations, giving guidance, regulating where appropriate, and formalizing multistate AV corridors. He emphasized collaboration through CCAD, AASHTO, TRB, ITS America, and public-private partnerships, including temporary AV launch sites that could later become truck parking. The goal is to bring the right partners together and accelerate solutions to major barriers.

ii. Advancing Rural Agricultural Automation (Slow-Speed AV Tractors)

a. Lee said agriculture is critical and that similar off-road automation already exists, such as autonomous "muscle trucks" hauling sand in the Permian Basin. He noted that mining operations worldwide use autonomous trucks.

b. Lee emphasized that automation will not eliminate trucking jobs and that drivers entering the field today will still be able to retire as drivers. Final-mile tasks will continue to require humans for decades, and autonomy will create new roles such as enhanced inspectors, oversight personnel, and rescue drivers. He also noted that automation has the potential to help correct long-standing wage imbalances between long-haul and local drivers.

iii. Ensuring AV Benefits Reach Rural and Cold-Weather States

a. Lee explained that DOT is already prioritizing rural AV development through two major grants, one focused on rural freight in Oklahoma and another on rural mobility in Wisconsin. He noted that robotaxi economics naturally favor dense urban areas, but autonomous shuttles could expand medical access and improve quality of life in rural communities. He also highlighted two different approaches to automated driving: HD-map-based systems used by companies like Waymo, Aurora, and Kodiak, and vision-based systems used by Tesla and Wave. Both approaches will influence how quickly automation becomes practical in rural regions.

3. The Future of Public Transportation: Autonomous Shuttles Powered by Intelligent Transit Planning – *Alexander Hansen, the Director of Sales, HOLON & Anthony "Tony" Armiger II, Country Advisor at ioki*

A. Matt introduced Alexander Hansen, and Anthony "Tony" Armiger II for their presentations which was presented in two parts.

i. Alexander Hansen is a senior automotive and mobility professional with over 15 years of experience in sales, project management, and key account leadership within the global automotive industry. He currently serves as Director of Sales at **HOLON**, where he leads commercial strategy and customer engagement efforts for autonomous vehicle solutions in the U.S. market.

ii. Anthony (Tony) Armiger II is a German-American mobility and public transportation professional with more than a decade of experience in transit innovation, on-demand mobility, and automated transportation across Europe and North America. After living and working in Germany for 16 years, he recently returned to the United States and now supports the expansion of innovative mobility solutions into the North American market through his work with **ioki** and other transportation partners.

B. Holon focuses on purpose-built autonomous vehicles designed specifically for public transportation rather than robotaxi services. He emphasized that Holon benefits from the deep engineering, manufacturing, and supply-chain expertise of its parent company, Benteler, which has 150 years of experience in industrial and automotive systems. This background, he noted, gives Holon a strong foundation in safety, quality, and reliability as it develops new mobility solutions.

C. Highlights of the **HOLON** Shuttle
   - *i.* Purpose-built Level 4 shuttle engineered specifically for transit, built with steer-by-wire and brake-by-wire systems.
   - *ii.* ADA-compliant features including autonomous wheelchair securement, automated ramp, and accessible interior.
   - *iii.* Passenger-support systems such as onboard displays and two-way audio for operator-free service.
   - *iv.* Mobileye-based autonomy through a close technology partnership.
   - *v.* 37-mph top speed for urban and residential routes.
   - *vi.* Eight-hour battery with fast charging for multi-shift use.
   - *vii.* Capacity for up to 15 passengers seated and standing.
   - *viii.* Supports fixed-route and geo-fenced operations (airports, campuses, planned communities).
   - *ix.* Designed for on-demand and ride-pooling, including rural and paratransit, pending mapping and validation.

D. Holon is also preparing U.S. manufacturing in Jacksonville, Florida and working with NHTSA on required safety exemptions.

E. Tony presented findings from **ioki's** analysis of Iowa City's transit system
   - *i.* Tony explained how ioki Analytics uses demographic, income, travel-time, and transit-network data to understand mobility patterns and identify gaps in service. Their Iowa City analysis compared car and transit travel times, showing that while transit schedules appear aligned with general travel demand, actual service quality and connection times lag behind. They found lower incomes near the city center due to the student population, high bus-stop density that slows trips, and an over-reliance on university-run services.
   - *ii.* Transit access gaps — Iowa City's public transit travel times are significantly longer than car travel, especially from outer neighborhoods and surrounding communities, limiting practical access to the city center.

iii. Demographic patterns shaping mobility — The student-heavy core has lower incomes and shorter transit trips, while higher-income households live farther out with longer, less efficient transit connections.

iv. Service design misalignment — Although transit schedules appear aligned with general mobility demand, high stop density, uneven frequencies, and heavy reliance on university-run services reduce overall connection quality.

v. Opportunities include digital-twin modeling, route redesign, stop consolidation, and potential autonomous-shuttle integration to improve coverage, reduce travel times, and lower long-term operating costs.

vi. Key recommendations center on building a regional digital twin, redesigning routes, reducing unnecessary stops, and integrating AV shuttles.

F. Question that came up later in the meeting: regarding the HON Urban Transit Level 4 units for public transportation, the presentation highlighted manufacturing locations in Michigan, Louisiana, and South Carolina. Have units been deployed in areas across the United States for public transit?

i. The Jacksonville pilot was conducted with Beep, though its current status is unclear and needs confirmation. The team is working with the Jacksonville Transit Authority to establish manufacturing facilities there, which would support future fleet deployment. For now, the focus remains on running pilot projects until the manufacturing phase is ready, and a more precise update will be obtained from Alex.

4. Autonomous Vehicle (AV) Updates – *Matt Miller, Director of New and Emerging Transportation Technologies, Iowa Department of Transportation*

A. CCAD (Connected Corridors for Automated Driving)

i. The CCAD initiative is a five-year, multi-state pooled-fund effort uniting 11 states (California, Nevada, Texas, Oklahoma, Kansas, Nebraska, Missouri, Iowa, Minnesota, Illinois, and Pennsylvania) to modernize operations along major interstate corridors such as I-80 and I-35.

ii. The coalition combines the former I-80 Corridor Coalition and I-35 Advancement Alliance to address a core challenge: while the interstate highway system is physically connected, the digital systems that support real-time operations are fragmented, inconsistent, and often incompatible across state lines.

iii. CCAD aims to create consistent, coordinated, and automation-ready interstate corridor operations by improving how states detect roadway conditions, communicate disruptions, manage incidents, and share data. To address this, CCAD is building a unified data translator that standardizes each state's unique data feeds into one usable stream for agencies and developers, removing the need for custom integrations.

iv. Long-term, the initiative envisions a federated digital infrastructure where states keep their own systems but share interoperable data through common services, supporting FHWA's Everyday Counts program and enabling a transparent digital marketplace for public and commercial users

v. The ultimate goal is seamless, predictable performance across state lines, improving safety, efficiency, and readiness for future automated and connected vehicle technologies.

B. Sabanto Tour
   i. Dozens of members of the Iowa ATC visited Sabanto on March 13, 2026, in Nevada, IA.
   ii. Sabanto, founded in 2018, builds full-stack autonomous farming systems operated through an integrated platform that lets customers plan, run, and monitor missions. Its 36-person team has deployed autonomy across multiple states, with systems running continuously for more than 48 hours.
   iii. The retrofit kit provides the full hardware stack for autonomy: a main control unit (PFM), GNSS, and stereoscopic cameras on all four sides for perception, plus obstacle-detection sensors, an autonomy switch box, and cellular or Starlink communications. Together, these components enable autonomous operation on existing machinery.
   iv. Matt noted that he posted about the visit with a video of the tractor mowing a filed on LinkedIn. The post unexpectedly reached 7,500+ views, far more than anything you've shared before. The strong response suggests that the connection between agriculture and autonomous vehicles really resonated with people.

C. Other tour possibilities
   i. Matt highlighted that the visit was valuable and emphasized the importance of showcasing the autonomous technology work happening in Iowa. In addition to ongoing conversations with **John Deere** about a potential visit to their innovation center or Ankeny facility, he noted several other Iowa-based companies contributing to national autonomy efforts. **Hirschbach** is building refrigerated trailers for Aurora, one of the largest autonomous truck operators in Texas. **Crystal Group** in Hiawatha provides computer hardware used across defense, construction, and autonomous vehicle applications.

5. Slow-Moving Vehicle Detection - *Skyler Knickerbocker, Co-Director of the Real-Time Analytics in Transportation (REACTOR) Laboratory, Iowa State Institute for Transportation*

A. Skyler presented information about a project that aims to improve safety along the Highway 5/65 corridor, an area with frequent slow-moving vehicles, particularly tractors crossing the Des Moines River. The narrow bridge and limited shoulder push farm equipment into the traffic lanes, creating hazards for drivers traveling at highway speeds. This makes it essential to better identify these slow-moving vehicles and provide timely alerts to approaching motorists. The system works by detecting slow-moving vehicles, processing the data through DOT-developed logic, and sending alerts to the public through existing message-sign infrastructure

B. The team is pursuing three data sources to generate these alerts:
   i. Sensor-based detection, currently deployed since last fall, using modified Doppler radar to identify vehicles traveling under 35 mph and trigger dynamic message signs.

ii. John Deere Operations API, a long-term solution that would provide direct location data from farm equipment. This approach is still in development

iii. Samsara data from the DOT fleet, which is being tested as another potential input. This approach is being refined

C. Current alerts rely on dynamic message signs along the corridor, supplemented by temporary signs, with lower-cost beacon-equipped roadside signs and future in-vehicle digital alerts under exploration.

D. Detection is geofenced: when a slow-moving vehicle enters the zone, an upstream sign activates and shuts off once it exits. The same process applies to John Deere and Samsara data, while Doppler radar at the corridor entrance triggers alerts for sensor-detected tractors.

E. Validation has focused on reducing false activations, using National Weather Service data to suppress alerts during precipitation and applying snow-accumulation logic to distinguish snowplows from other slow vehicles.

F. The main challenge is latency. Sensor-based alerts have improved from 60–120 seconds to 30–60 seconds, while John Deere data can lag up to 15 minutes. DOT is working with the company on a lower-latency API expected later this year.

G. Q&A

i. Likelihood of satellite monitoring

a. Matt explained that the biggest challenge is getting real time data. The current John Deere system can lag by about ten minutes, so relying on satellites would be even less practical because they are not always positioned to provide timely information.

b. Skylar added that the best long term solution is to get data directly from the vehicle, since that reduces delays and avoids the need to detect slow moving vehicles from outside sources.

ii. Data sharing – is it opt-in, anonymized, and operator privacy protections

a. The data sharing process is completely opt-in. Equipment owners choose what information they want to share through the John Deere portal, and the system is designed so farmers can control what is shared and what is not. The data is managed by John Deere, and from Skylar's understanding, it is anonymized and filtered so only roadway activity is relevant. The team does not need to know who the operator is, only that a slow moving vehicle is on the road.

b. For testing, the DOT is currently using its own fleet of about 180 pieces of John Deere equipment.

6. ADAS for Bustang Intercity & Regional Bus Transit – *Cheryl Roe, AV Transportation & Outreach Specialist, Driving Safety Research Institute (DSRI), University of Iowa*

A. Cheryl Roe reported on DSRI's partnership with the Colorado DOT to test ADAS-equipped transit buses in mountainous terrain. Three buses outfitted by Perrone Robotics—featuring forward-collision warning, lane-departure warning, blind-spot detection, and adaptive cruise control will be used in a year-long trial with drivers from two transit agencies. Colorado State University is analyzing energy efficiency, while DSRI is developing and evaluating operator training. A key takeaway so far is the need for precise understanding of system capabilities

and strong, consistent communication, especially because this transit system relies on detailed mapping similar to autonomous-vehicle technology.

7. AV Policy Discussion

A. Matt Miller reviewed federal and state proposals related to autonomous vehicles.

B. Expanded Federal Update highlighted The Build America 250 Act which includes:

i. The BUILD America 250 Act is the first major effort to establish a unified national framework for autonomous commercial trucks. It directs USDOT to set performance-based safety standards within two years, formally assigns "driver" responsibility to the manufacturer or automated driving system when automation is active, and preserves human operators for hazmat transport and school buses. It also establishes remote-operator qualifications and replaces today's inconsistent state-by-state rules to enable smoother interstate AV freight movement.

C. Iowa lawmakers have considered addressing bills:

i. Iowa's proposed AV legislation aims to clarify responsibilities for in-state autonomous operation. The bills define the automated driving system as the legal driver when engaged, but unlike the federal approach, they place liability on the vehicle owner rather than the manufacturer. Both prohibit driverless hazardous-materials transport and make unauthorized ADS modifications a source of liability. HF 2375 goes further than SSB 3052 by updating Iowa DOT's enforcement authority and refining technical definitions.

D. Differences

i. The federal bill is broader, focused specifically on trucking, and creates new national safety standards, while Iowa's bills are narrower, apply to all AVs, and do not establish new standards.

ii. The biggest divergence is responsibility: the federal bill assigns it to manufacturers, whereas Iowa places it on vehicle owners.

iii. Both approaches agree that hazardous-materials transport must have a human operator.

iv. The federal bill also addresses remote operation which is an increasingly important area whereas Iowa's bills do not cover.

E. Discussion

i. Matt opened the floor for discussion on the proposed policies, challenges and perspectives.

ii. Daniel McGehee highlighted the rarity of hazardous materials vehicles and suggested forming a panel with industry and government voices to address broader questions including public confidence in automated systems.

iii. Col. Fulk explained that state patrol staff recently trained with an AV company after new autonomous units, **with safety drivers**, were deployed in Omaha and Council Bluffs. He noted that personnel are staying well-prepared as the technology continues to advance. He pointed to rapid industry progress, including a fully autonomous commercial vehicle completing a long run in Texas, and emphasized the need to plan

for Midwest-specific risks such as winter weather while building the infrastructure required to support future deployment.

iv. Beth Townsend explained that although she was initially skeptical about the safety of self-driven trucks, the national shortage of qualified CDL drivers and the risks created by states issuing licenses to unprepared drivers has changed her view. She now believes autonomous trucks could reduce those risks and improve overall roadway safety and is supportive of moving the technology forward.

v. The group discussed the challenges posed when an AV breaks down on a highway, emphasizing the need for clear minimum-risk-condition requirements, coordinated response plans, and first-responder guidance from AV companies. Participants also noted that already understaffed law enforcement agencies cannot become default emergency responders for AV companies, stressing that industry must align with public-sector expectations rather than shifting operational burdens onto police.

F. National Conference of State Legislatures Autonomous Vehicle Legislation Database

i. The NCSL Autonomous Vehicle Legislation Database is a nationwide, continuously updated resource that tracks every autonomous-vehicle-related bill introduced across all 50 states, D.C., and U.S. territories. It covers legislation from 2017 to the present, updating monthly, and includes topics such as AV definitions, licensing and registration, insurance and liability, cybersecurity, infrastructure, data privacy, testing requirements, and rules for operating on public roads. Users can filter by state, topic, bill status, or year, and access full bill texts directly through the database.

8. Meeting Adjourned

A. Matt thanked all presenters and attendees and adjourned the meeting.
B. Meeting survey was shared
C. Next meeting date to be announced
D. To sign up for bi-weekly Automated Transportation Press Clippings

IOWA ADVISORY COUNCIL ON AUTOMATED TRANSPORTATION

Council Meeting

May 27, 2026

HOUSEKEEPING ITEMS

- Please mute your audio!
- If available, encourage the use of video when speaking
- Please use the chat box and raise hand features to ask questions or make a comment

- Recorded Meeting
- Disable Virtual Private Network (VPN) connections

WELCOME

Scott Marler, Director-
Iowa DOT

WELCOME

Council Members

- Iowa Department of Transportation
- Iowa Department of Public Safety
- Iowa Economic Development Authority
- Iowa League of Cities
- Des Moines Area MPO
- Des Moines International Airport
- Iowa Department of Public Safety
- Iowa Motor Truck Association
- Des Moines Area Community College
- Technology Association of Iowa
- Iowa Association of Business and Industry
- Associated General Contractors of Iowa
- Iowa Communications Network
- Iowa Department of Revenue
- Iowa Public Transit Association
- Iowa Bicycle Coalition
- Freight Advisory Council
- Iowa Insurance Division
- Iowa State Association of Counties
- Iowa Department of Agriculture & Land Stewardship
- Iowa Department of Natural Resources
- Driving Safety Research Institute, University of Iowa
- Institute for Transportation, Iowa State University
- American Association of Motor Vehicle Administrators
- Federal Highway Administration, Iowa Division
- Federal Motor Carrier Safety Administration
- National Highway Traffic Safety Administration
- Iowa Senate
- Iowa House of Representatives
- Highly Automated Systems Safety Center of Excellence, USDOT
- Iowa Workforce Development

NEW MEMBERS

- Iowa Department of Transportation
  - Melissa Gillett, Chief Operating Officer
  - Wes Musgrove, Systems Operation Division Director
  - Jesse Tibodeau, District 6 Engineer
- Federal Motor Carrier Safety Administration (FMCSA)
  - Amanda Bax-Whittle - FMCSA Missouri Division Administrator and interim Iowa Division Administrator
  - Jodi Stephensen – State Programs specialist Iowa & Minnesota Division Officer
- Des Moines Area Community College
  - Extend invitation to new President

MEETING AGENDA

1. **Welcome** – Scott Marler, Director, Iowa DOT
2. **Ushering in the Golden Age of Transportation** – Lee White, Deputy Assistant Secretary for the Office of the Assistant Secretary for Research and Technology, United States Department of Transportation
3. **The Future of Public Transportation: Autonomous Shuttles Powered by Intelligent Transit Planning** – Alexander Hanson, Director of Sales, HOLON and Tony Armiger II, Country Advisor – ioki
4. **Autonomous Vehicle Interactions** – Matt Miller, Director of New and Emerging Transportation Technologies, Iowa Department of Transportation
5. **AV Policy Discussion** – Matt Miller, Director of New and Emerging Transportation Technologies, Iowa Department of Transportation
6. **Adjourn**

USHERING IN THE GOLDEN AGE OF TRANSPORTATION

Lee White

Deputy Assistant Secretary for the Office of the Assistant Secretary for Research and Technology, United States Department of Transportation

THE FUTURE OF PUBLIC TRANSPORTATION: AUTONOMOUS SHUTTLES POWERED BY INTELLIGENT TRANSIT PLANNING

Alexander Hanson, Director of Sales, HOLON

and

Tony Armiger II, Country Advisor – ioki

The Future of Public Transportation: Autonomous Shuttles Powered by Intelligent Transit Planning

HOLON IOKI BENTELER MOBILITY

Enabled through our comprehensive industrial capabilities , we successfully transformed into a smart mobility provider

BENTELER makes it happen

1876 Founded

27 Countries

9bn$+ Revenue

27k+ Employees

INDUSTRY & ENERGY

Rooted in steel & tube applications

AUTOMOTIVE

Being a tier-1 automotive supplier

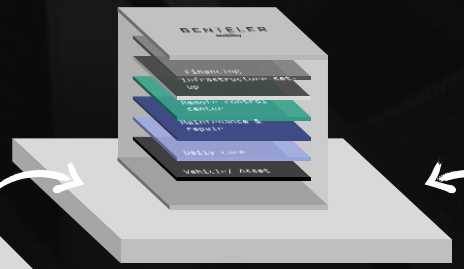
BENTELER EDS[1]

Developed an integrated electric drive system

HOLON

a BENTELER company

Producing an autonomous people mover



BENTELER MOBILITY

Providing required autonomous mobility services

IOKI

a BENTELER company

Mobility analytics and transport management software platform

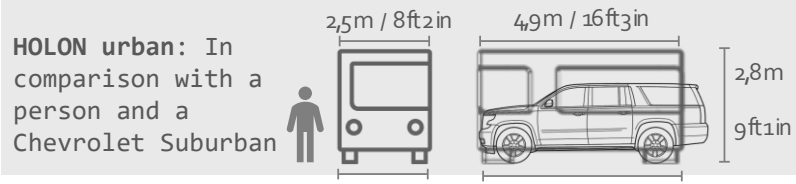
Full-service integrated mobility solution.

200+ Mobility analytics projects

200+ On-demand projects

70 mn Number of passengers

The HOLON urban is built for Level 4 autonomy in Public Transit and beyond



HOLON urban: In comparison with a person and a Chevrolet Suburban

Weight
Gross: 10,582 lbs / 4,800 kg
Curb: 7,055 lbs / 3,200 kg

Autonomy

Leading Level 4 self-driving system by **Mobileye**

Design

Purpose-built for autonomous public transit; ISO cert.

Top Speed

37 mph
Urban & residential environments

Battery Range

8hrs operating time (at 114kWh) & **fast charging**

Cabin

15 PAX with **10.6" step-in height** and **ADA compliant**

US Approvals

Homologated & **Buy-America** compliant

BENTELER MOBILITY IOKI HOLON

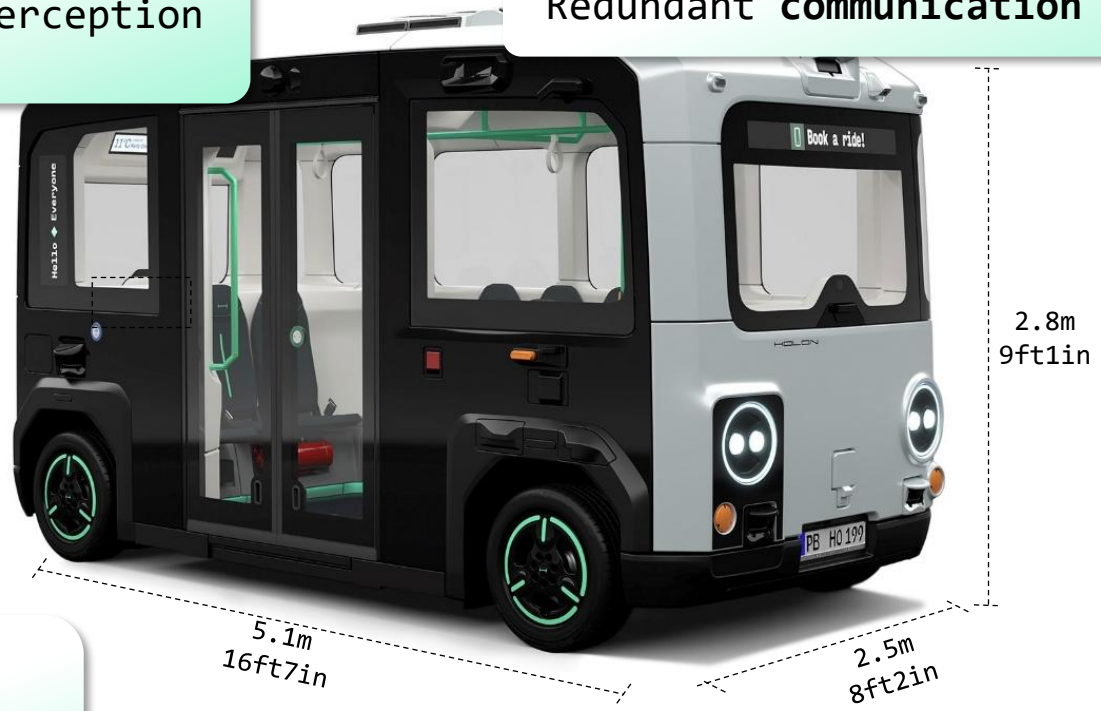
Our series-produced vehicle has highest safety standards for level 4 autonomy

Perception

Redundant perception systems

Communication

Redundant **communication** pathways



Control

Redundant **steering, braking & power** systems

Sensors

Sensor suite includes 13 cameras, 9 LiDARs and 5 radars

mobileye

HOLON urban, powered by mobileye, enables fully driverless SAE L4 operation in defined areas with:

- **Highest safety standards**
- **Automotive-grade** technology
- **360° sensor coverage**
- **Globally scalable** REM mapping
- **Robust** performance in **challenging weather**

BENTELER MOBILITY IOKI HOLON

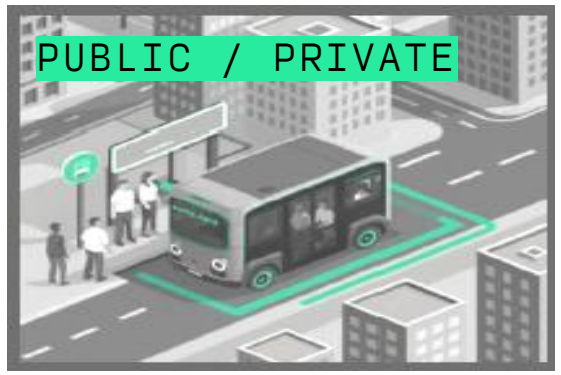
Autonomous shuttle solutions serve where traditional transit fails most

Fixed Line

Open Road Lines

Geofenced Areas

On-Demand



Ride Pooling

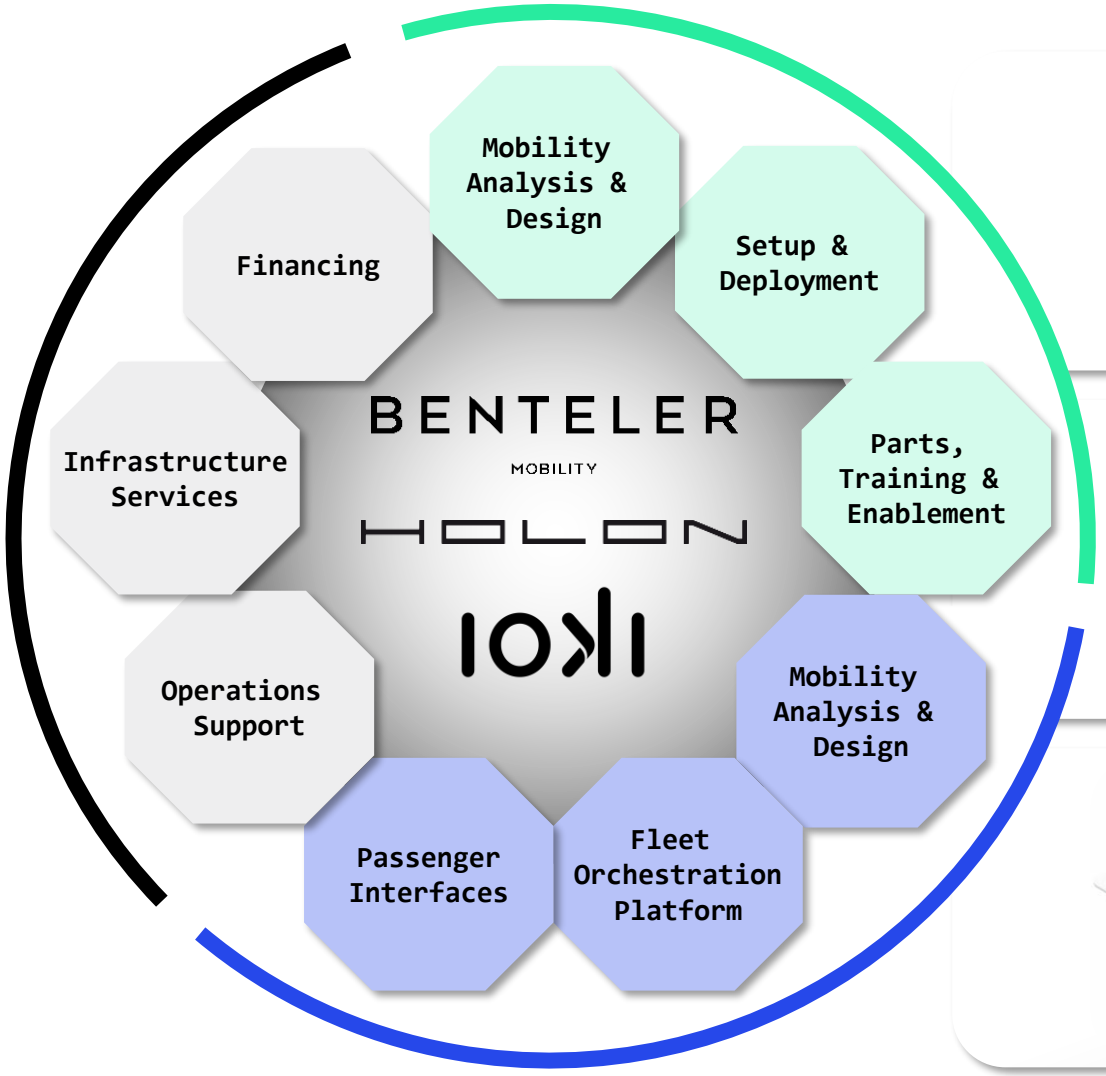
On-Demand Zones

✓ **Connect people & communities at sustainable operating costs**

✓ **Reduce private car dependency and complement existing public transport**

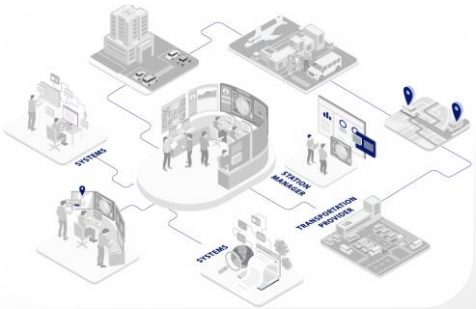
Fixed line & ride-pooling can be combined dynamically, adjusting to demand throughout the day.

We offer a modular 360° solution for shared autonomous mobility



Purpose-built Vehicle

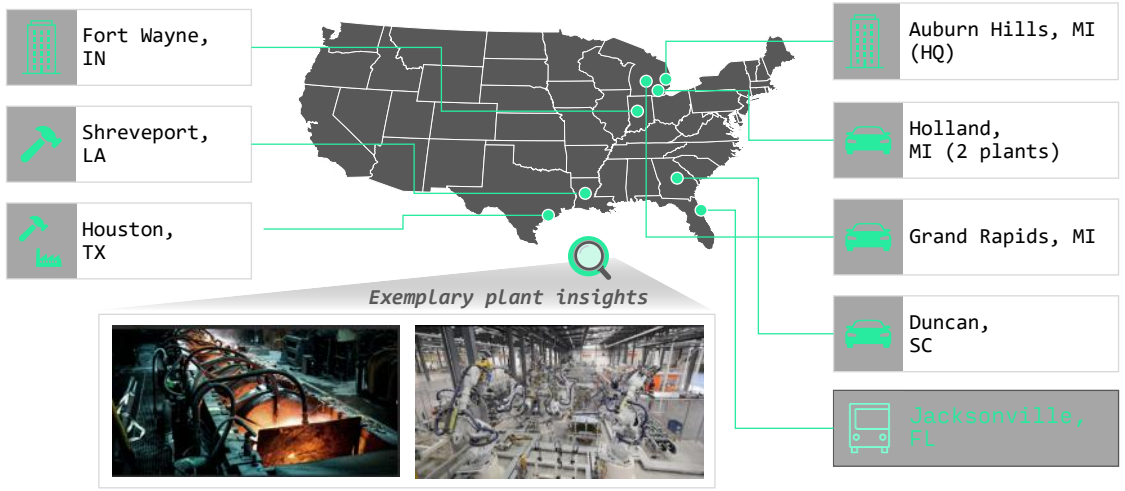
Mobility Design & Software Platform



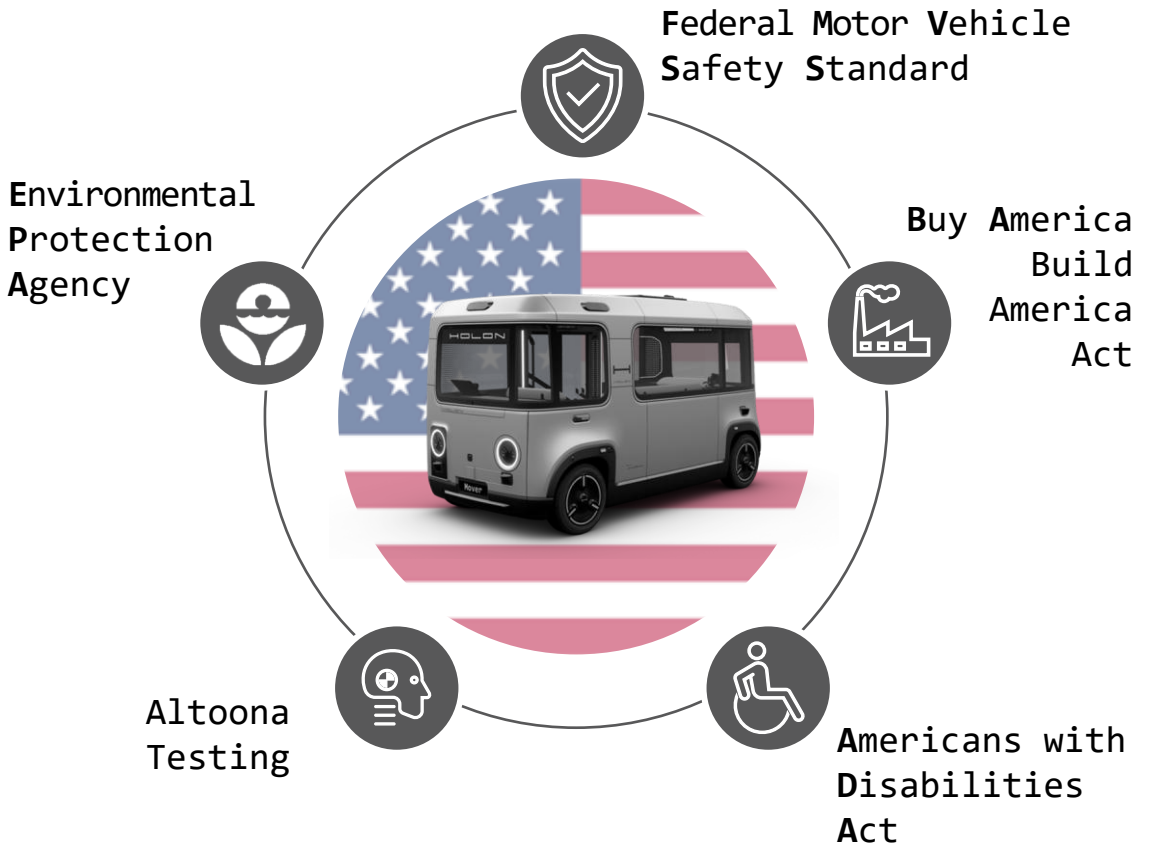
Enabling Turnkey Services

HOLON U.S., Inc. - German Engineered – American Made

Our Heritage



Our Commitment



KEY FACTS

- BENTELER USA founded in 1980
- Established supplier network in the US
- Over 2,000 FTEs at numerous locations
- Nine (9) locations nationwide

Automotive production | Steel/Tube | Glass Processing | Headquarter

Alexander Hansen
Director of Sales, U.S.
a.Hansen@driveholon.com
+1 (678) 576 6861

DIGITAL PUBLIC TRANSPORT

Pre-Analysis USA

Iowa City, Iowa

April 15th

We change the way **public transport** moves.

ioki – at a glance

DIGITAL PUBLIC TRANSPORT

ioki analytics
Mobility analyses and concepts

ioki platform
Demand-responsive and scheduled services

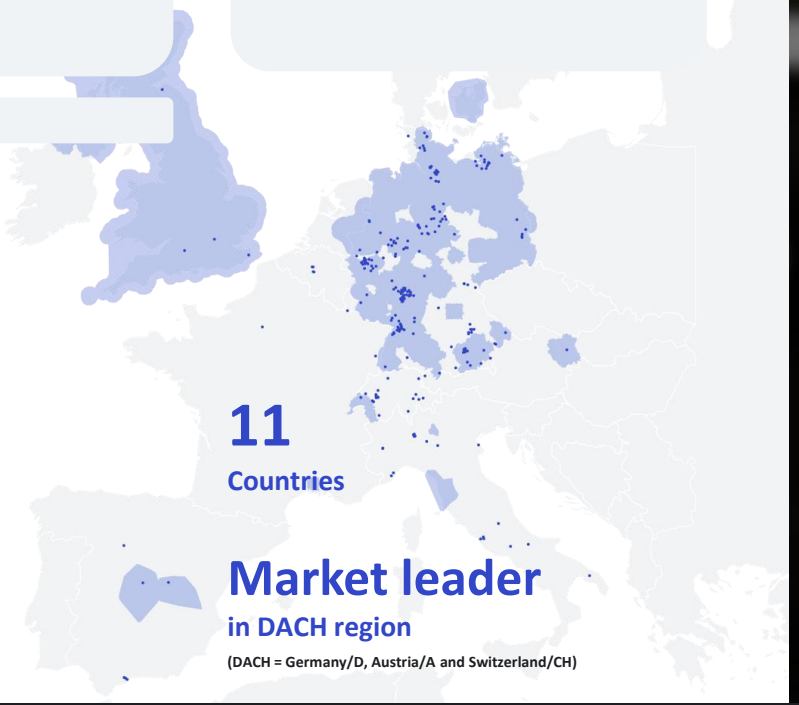
ioki route
Route management and navigation for buses

Autonomous Mobility

Who we are

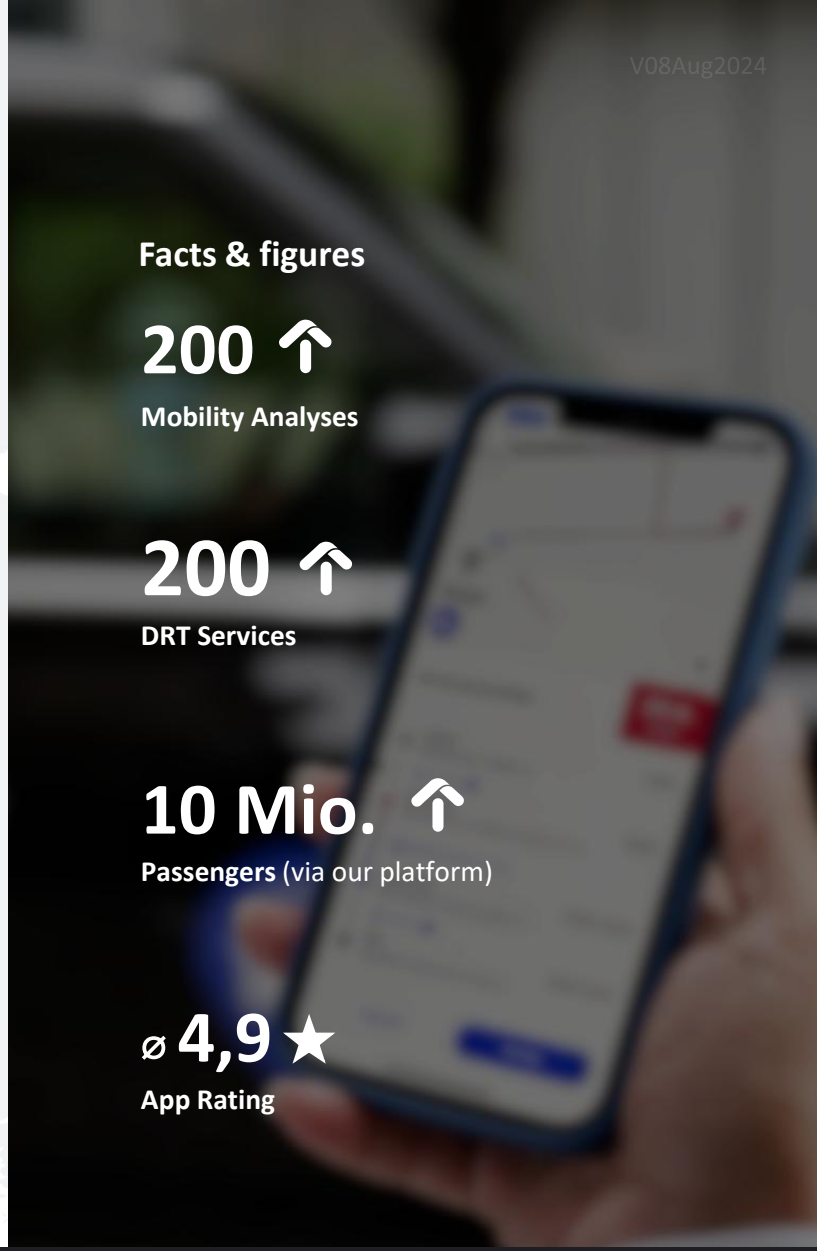
As the leading European technology company for digital mobility and pioneer in autonomous driving in public transport, we offer needs-based and intelligent **digital mobility solutions** for all forms of transport.

Our product portfolio ranges from user-centric mobility analyses and technology for driver-based and autonomous on-demand, mixed and line-based traffic to **software** for route management and navigation of bus services.



11
Countries

Market leader
in DACH region
(DACH = Germany/D, Austria/A and Switzerland/CH)



Facts & figures

200 ↑
Mobility Analyses

200 ↑
DRT Services

10 Mio. ↑
Passengers (via our platform)

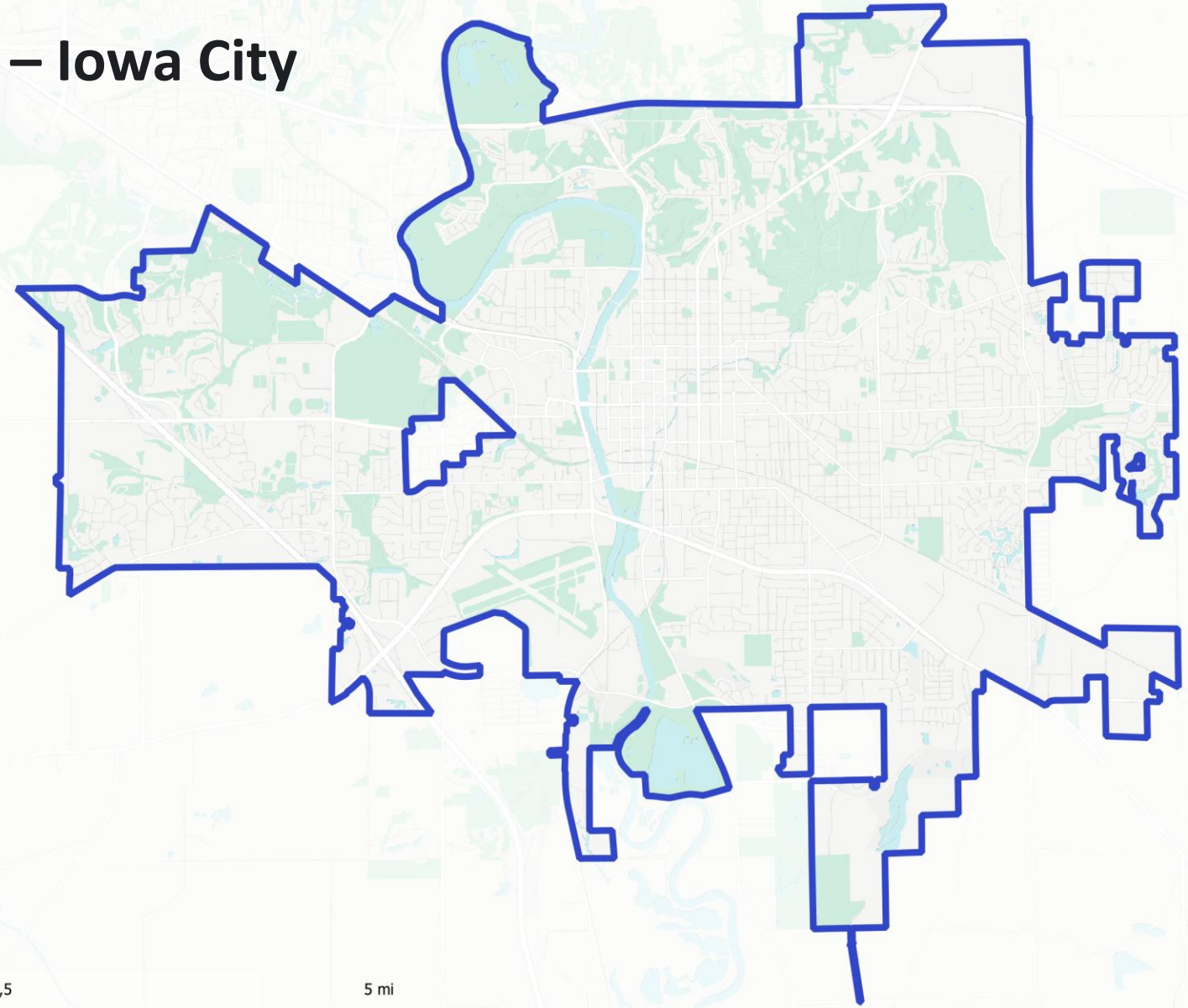
⌀ 4,9 ★
App Rating

ioki GmbH | An der Welle 3 | 60322 Frankfurt am Main
Phone: +49 69 1544879 80 | E-mail: hello@ioki.com | www.ioki.com

arriva RMV NAH.SH Rubiocar

General

Study Area – Iowa City



- Located in Iowa
- 75,000 inhabitants
- 171,000 in metro area
- 32 bus lines (three operators)
- 4.8 million passengers transported annually
- Median annual household income is $58,500 ($83,700 US-wide)

N

0 2,5 5 mi

Iowa City Boundary

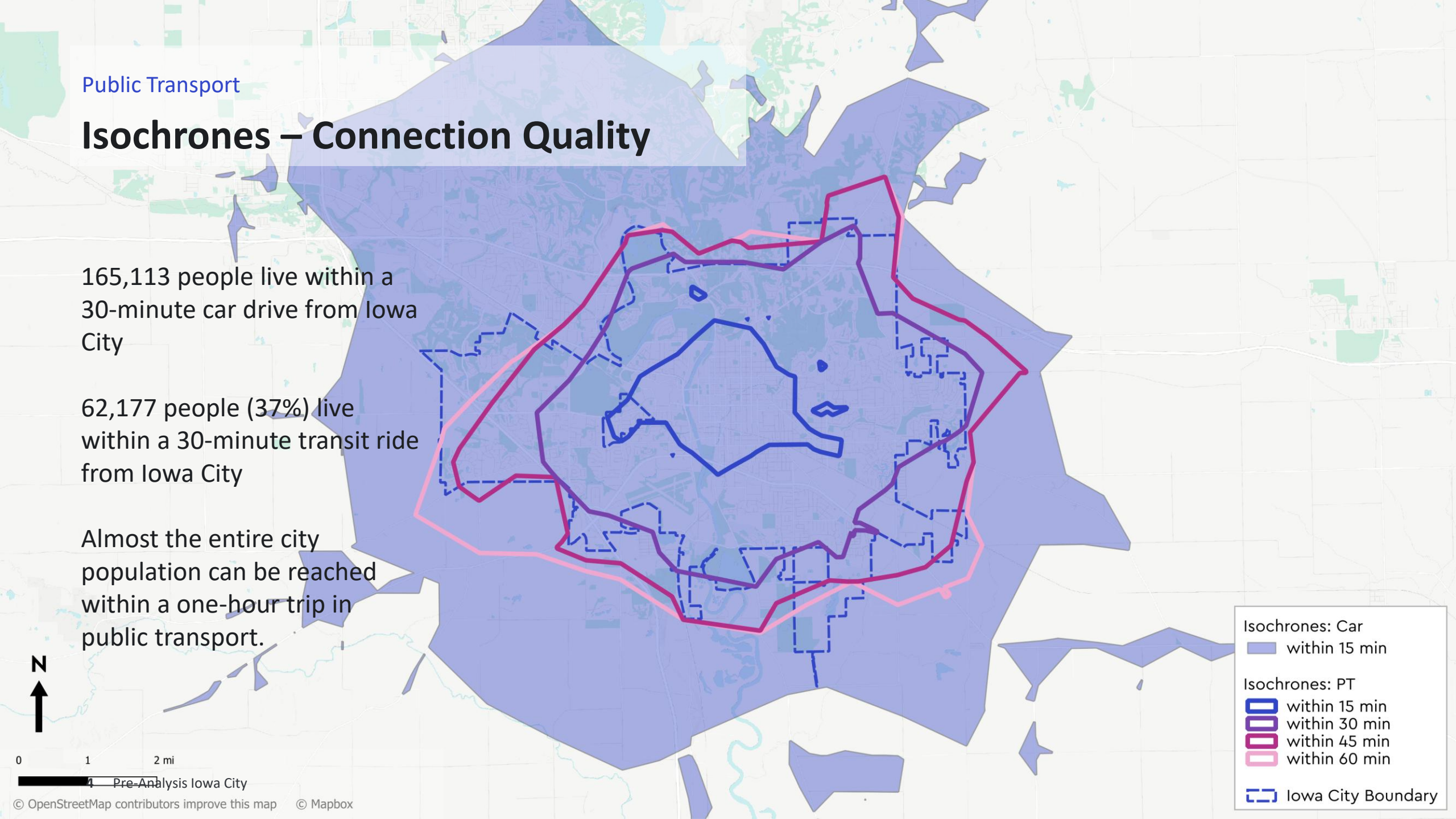
Public Transport

Isochrones – Connection Quality

165,113 people live within a 30-minute car drive from Iowa City

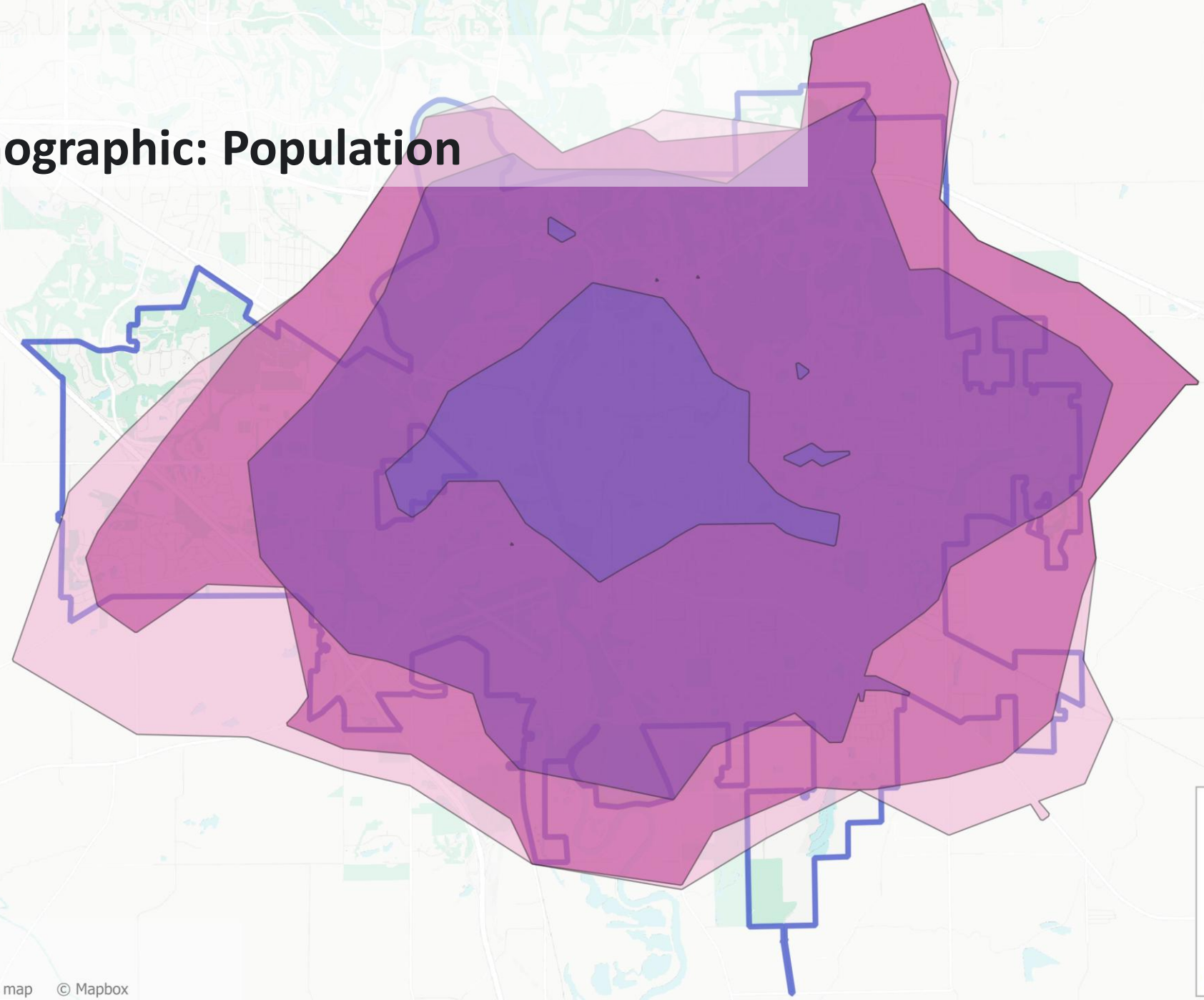
62,177 people (37%) live within a 30-minute transit ride from Iowa City

Almost the entire city population can be reached within a one-hour trip in public transport.



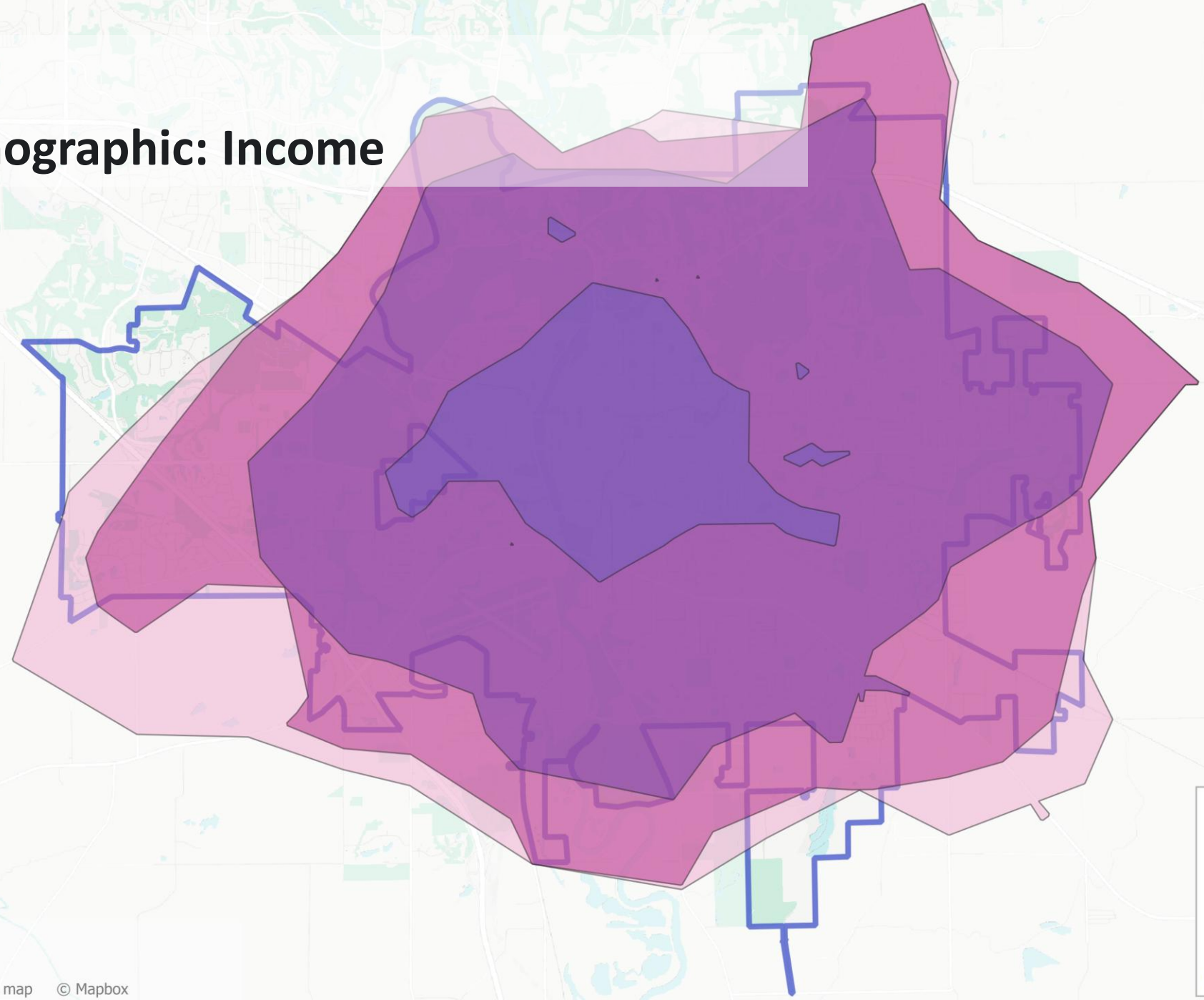
General

Sociodemographic: Population

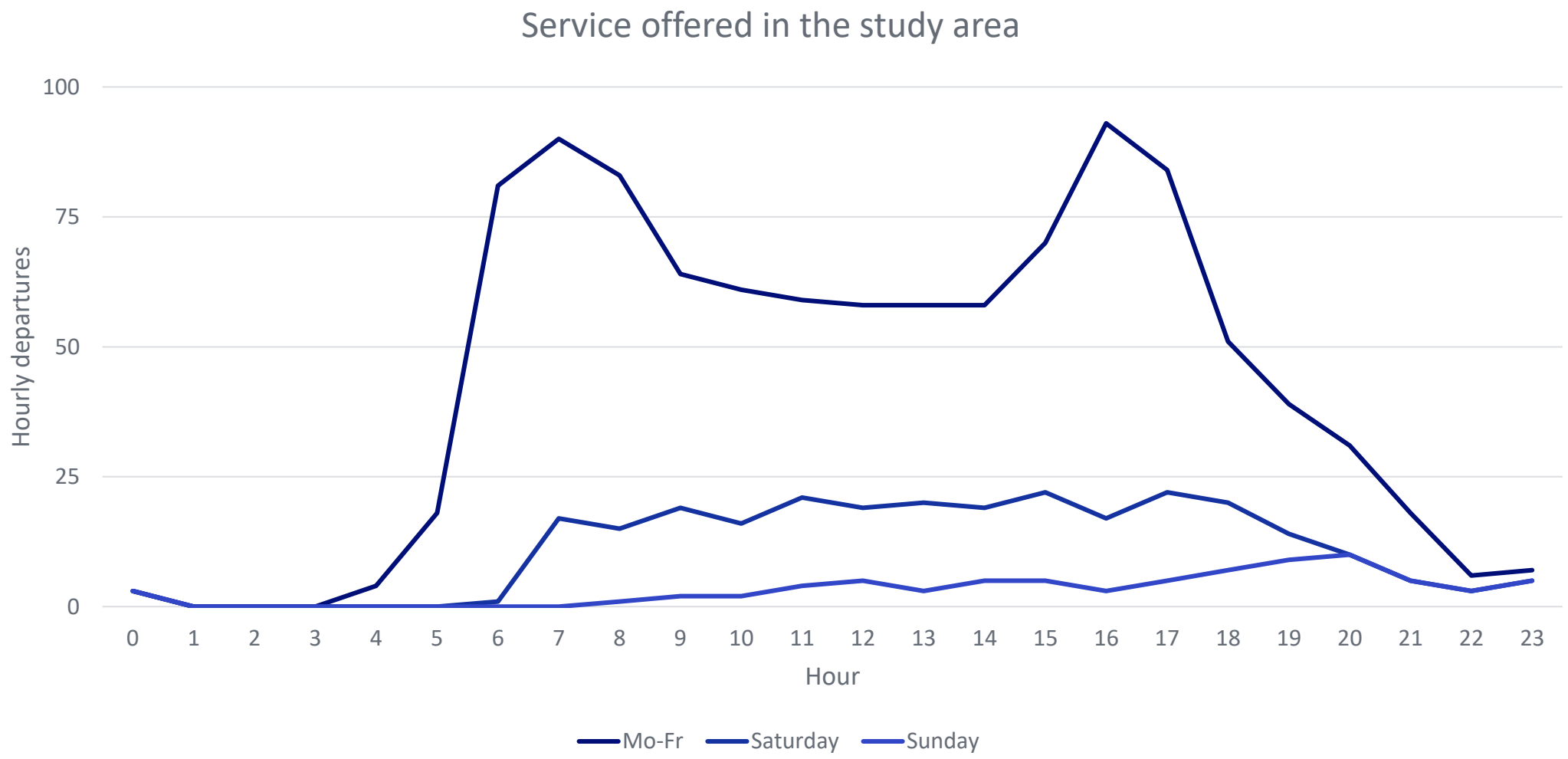


General

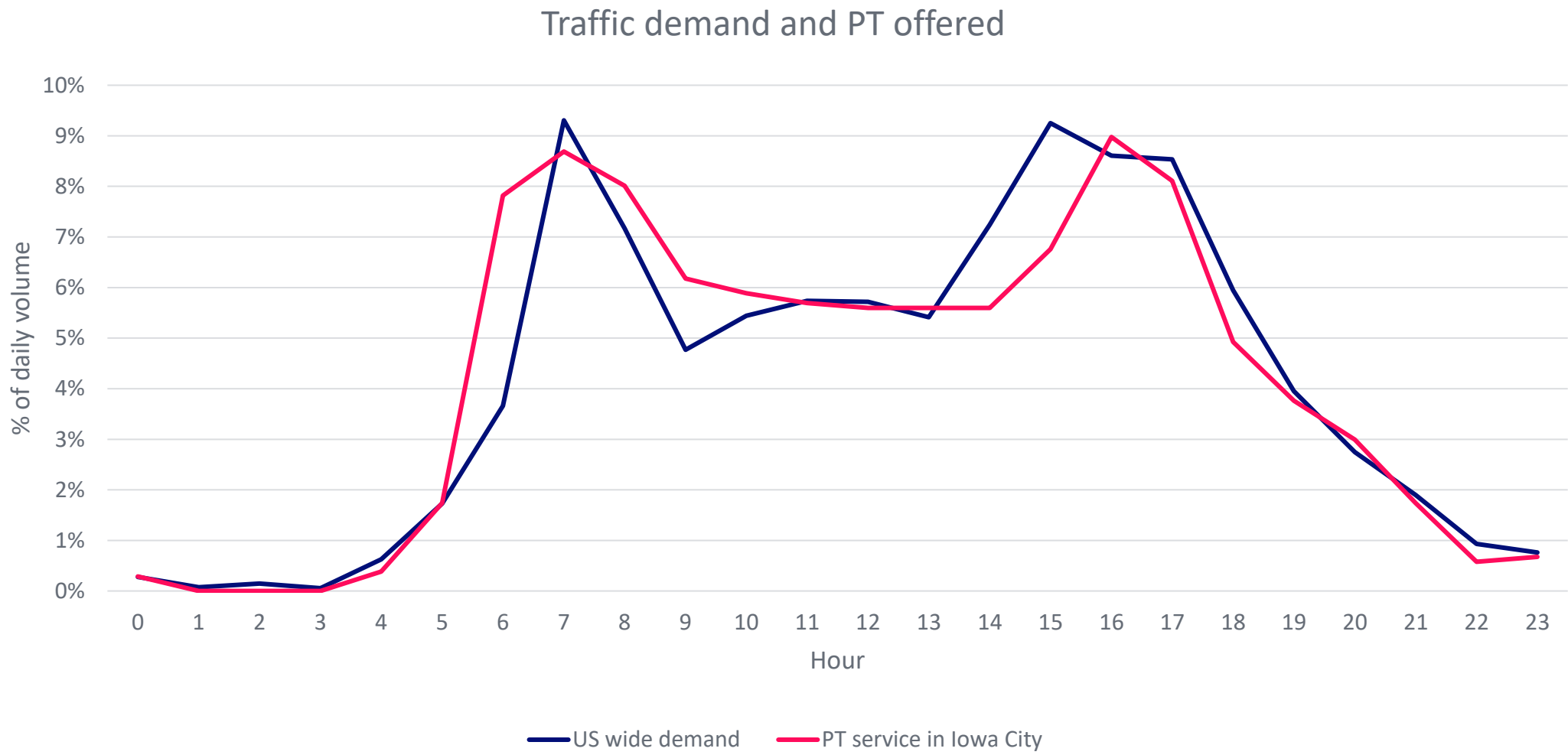
Sociodemographic: Income



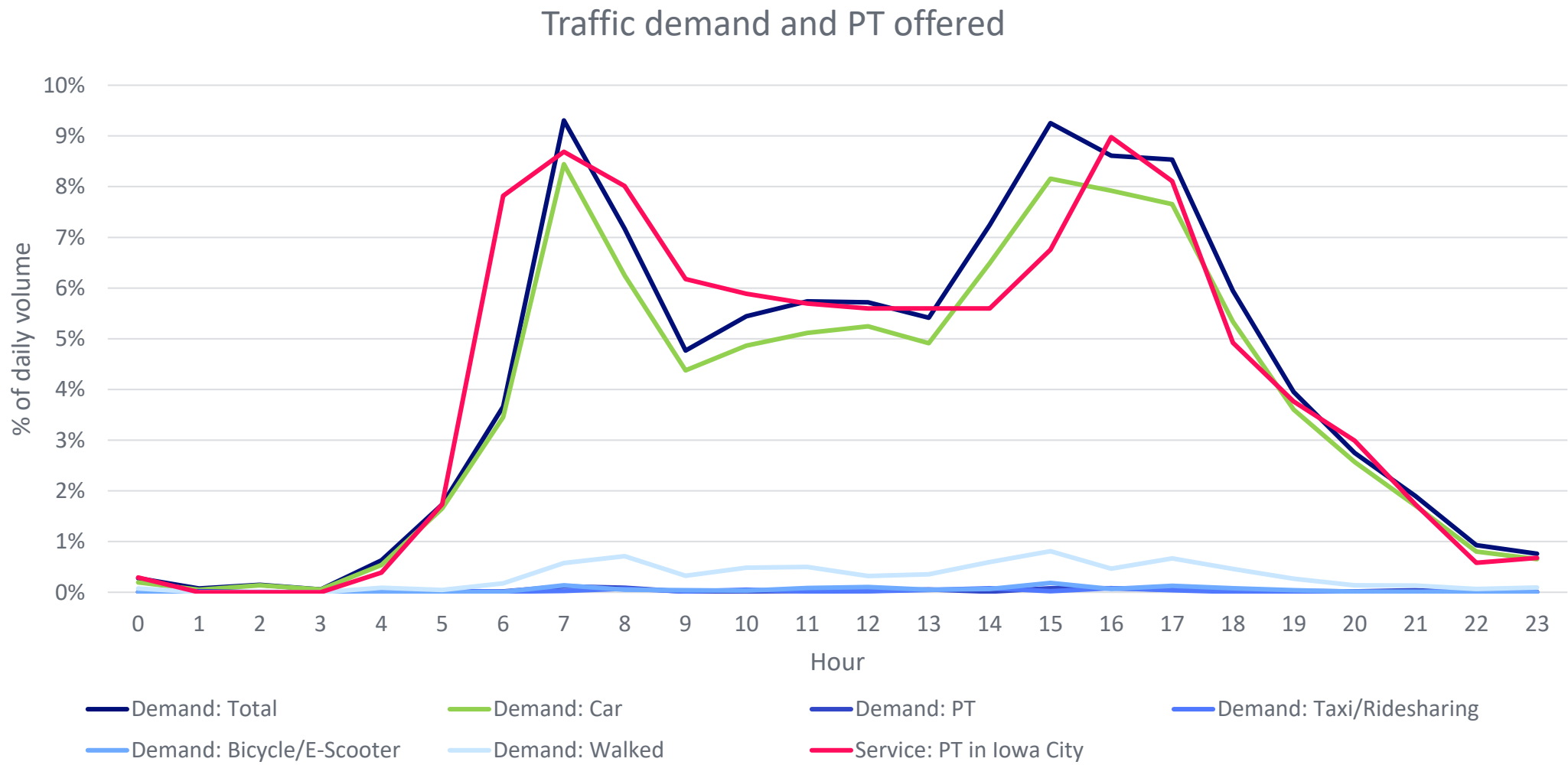
Traffic Analysis



US-wide traffic demand and public transport offered in Iowa City



US-wide Traffic Demand and Public Transport Offered in Iowa City

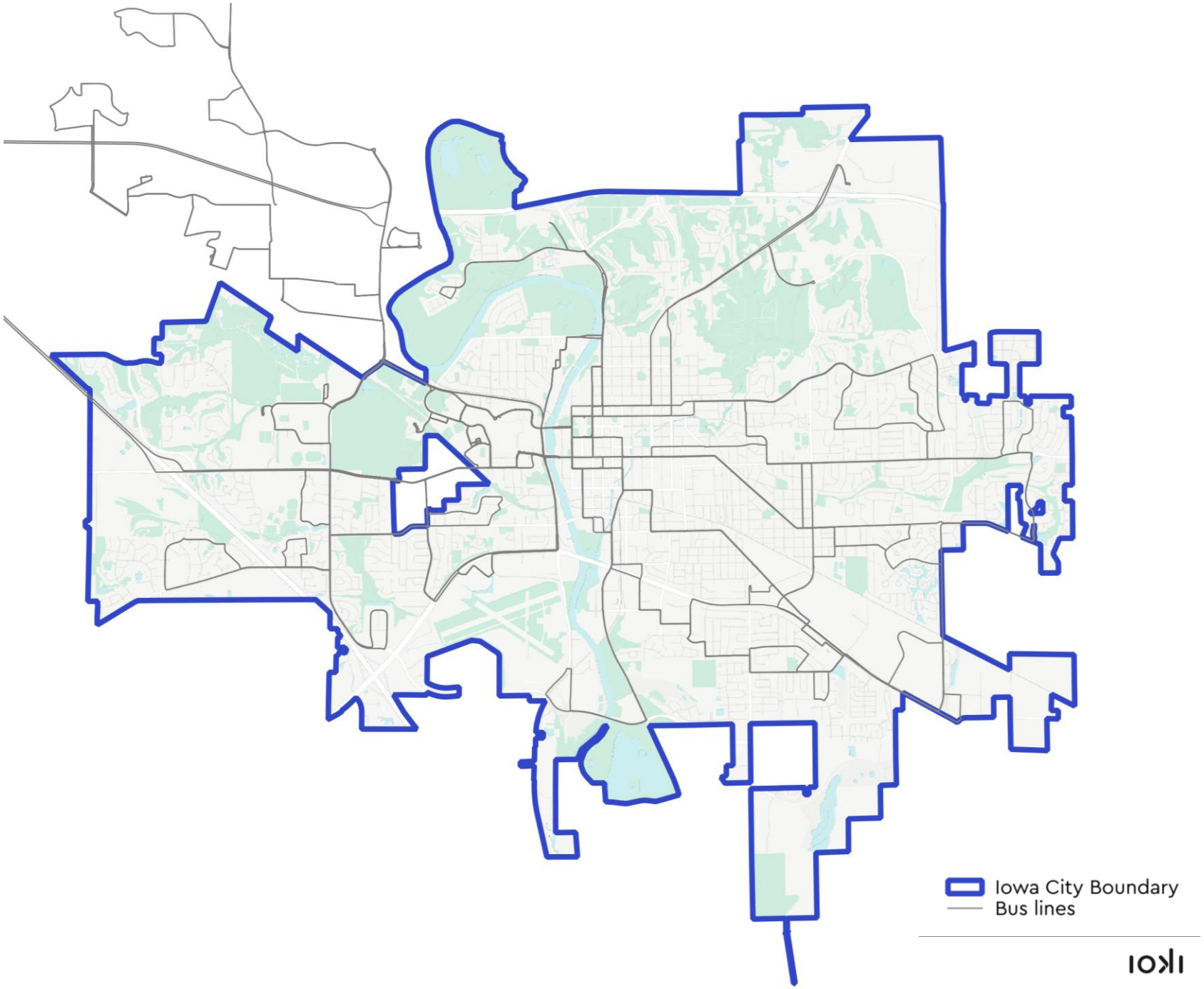


Public Transport

Bus Network

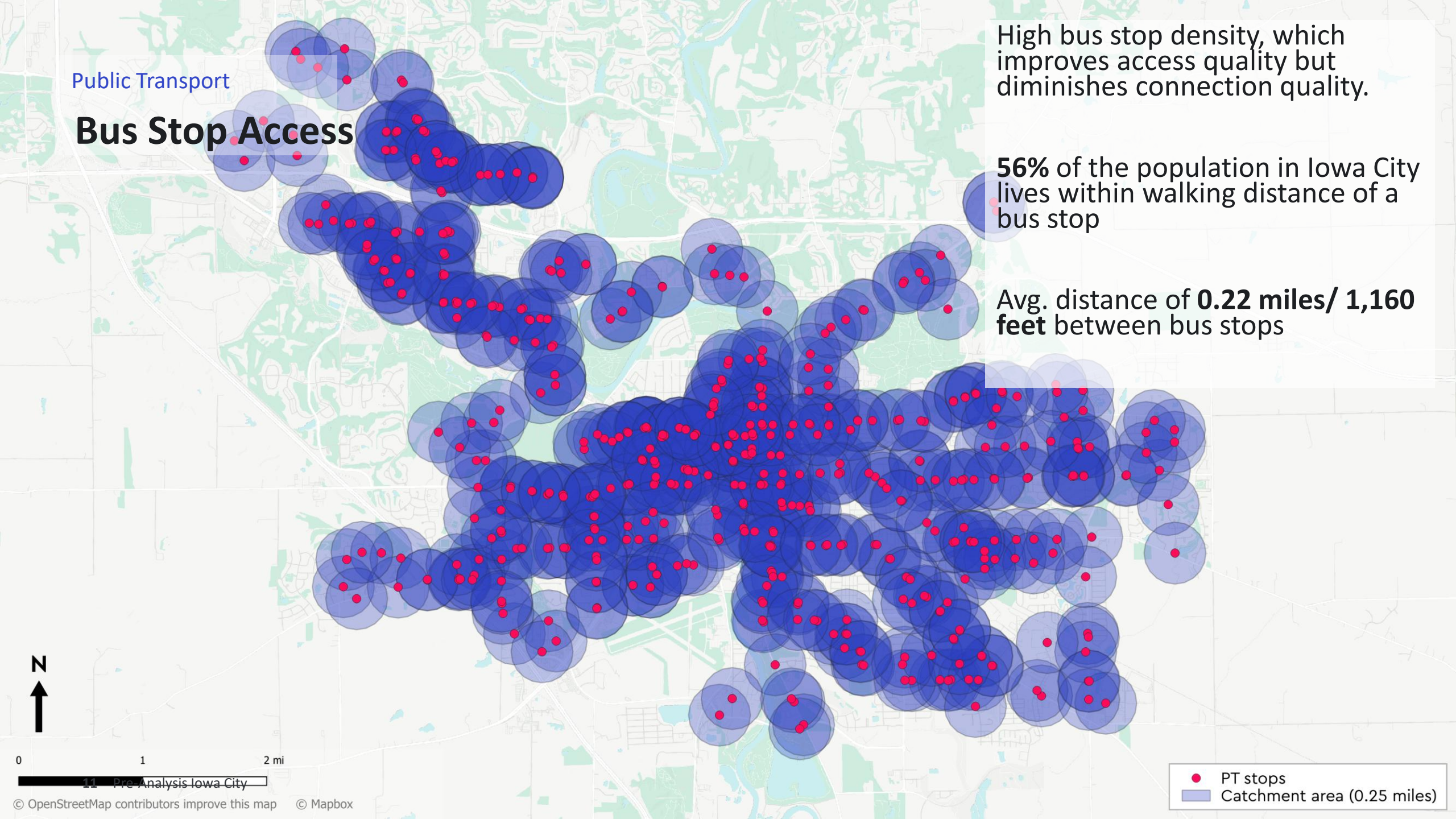
Selected bus lines	Departure frequency workday
51	114 departures/ day
41	83 departures/ day
31	72 departures/ day
32	71 departures/ day
35	70 departures/ day
51	52 departures/ day
42	46 departures/ day
8	46 departures/ day
5	44 departures/ day

5,420 miles driven per day
428 hours driven per day



Public Transport

Bus Stop Access



High bus stop density, which improves access quality but diminishes connection quality.

56% of the population in Iowa City lives within walking distance of a bus stop

Avg. distance of **0.22 miles/ 1,160 feet** between bus stops

Conclusion

Call for Action

Issue

- PT offered does not match the existing demand.
- PT travel time largely exceeds car travel time.
- Cancelled lines and weekend services due to staffing shortages.
- Overreliance on CAMBUS services.

Data-driven Approach

- Creation of a data-based model with a synthetic population to gain knowledge about the actual mobility demand.
- Improvement of coverage quality with new/adjusted lines and services.
- Reduction of travel times by eliminating stops while increasing demand coverage.
- Optimization of lines and frequencies, reducing costs with minimum negative impact on passengers.


08:31:41
Cologne
Bonn
Siegen
Koblenz
Trier
Kaiserslautern
Mannheim
Heidelberg
Würzburg
Nuremberg
Erfurt
Schweinfurt
Bad Kissingen
Bad Neustadt an der Saale
Coburg
Saarbrucken

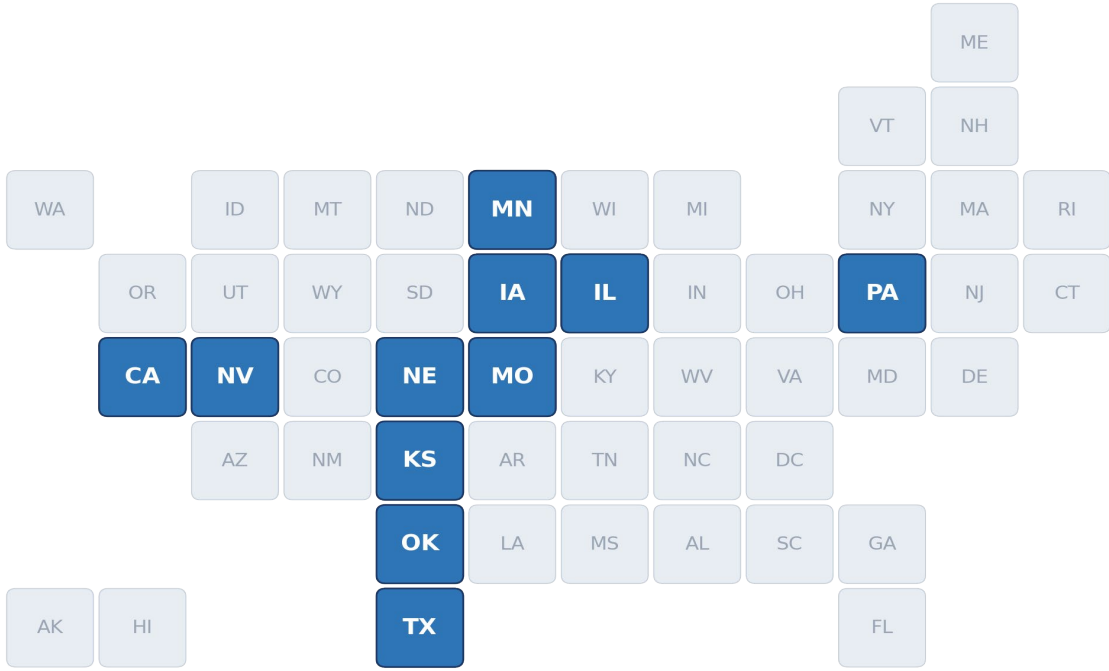
IOWA AV UPDATES

Matt Miller

Director of New and Emerging Transportation Technologies, Iowa Department of Transportation

Connected Corridor Advancement Initiative = “CCAI”

- Transportation Pooled Fund Study
- 11 State Sponsors
- FHWA Technical Support
- Led by Iowa Department of Transportation



TPF NUMBER	DURATION	ANNUAL CONTRIBUTION	TOTAL COMMITMENT
TPF-5(566)	5 years · 2026–2030	$50,000 / state	$2.55M

The Opportunity

THE GAP

The Interstate is connected.

Its digital systems are not, yet.

Real-time traveler information, traffic incident management, work zone coordination, freight data, and truck parking systems still operate within individual states and jurisdictions. As freight demand and operational complexity grow, this fragmentation limits corridor performance and constrains public and private investment.

FEDERAL MOMENTUM

The time to act is now...

- **Connected Corridors** is a focus innovation area in FHWA's **Every Day Counts (EDC-8)** program.
- **USDOT Office of the Secretary of Transportation – Research (OST-R)** has called for a *"Declaration of Innovation"* — accelerating digital infrastructure deployment and corridor coordination across states.
- **CCAI will modernize and improve interstate corridor operations through measurable actions and will be a model for expanded coordination across the US.**

Mission & Vision

MISSION

Consistent multi-state corridor operations.

Coordinate how agencies detect conditions, communicate disruptions, and manage events so that travelers, freight, and emergency responders see predictable performance across state lines.

VISION

A federated Roadway Digital Infrastructure, deployed at scale.

Agency-owned systems that share translated data, common services, and coordinated governance — without requiring uniform technology or surrendering state authority.

Year One: Corridor Connect Phase A

Focus Area: Supply Chain Resiliency

Merges operational data across the I-80 and I-35 corridors to improve trip planning, reduce unsafe truck parking, and demonstrate a repeatable, multi-state operating model.

INPUTS

WZDx + Truck Parking

data feeds from member states and private sector partners

›

TRANSLATOR

Corridor Connect

built on USDOT NODE framework

›

OUTPUT

Digital Marketplace

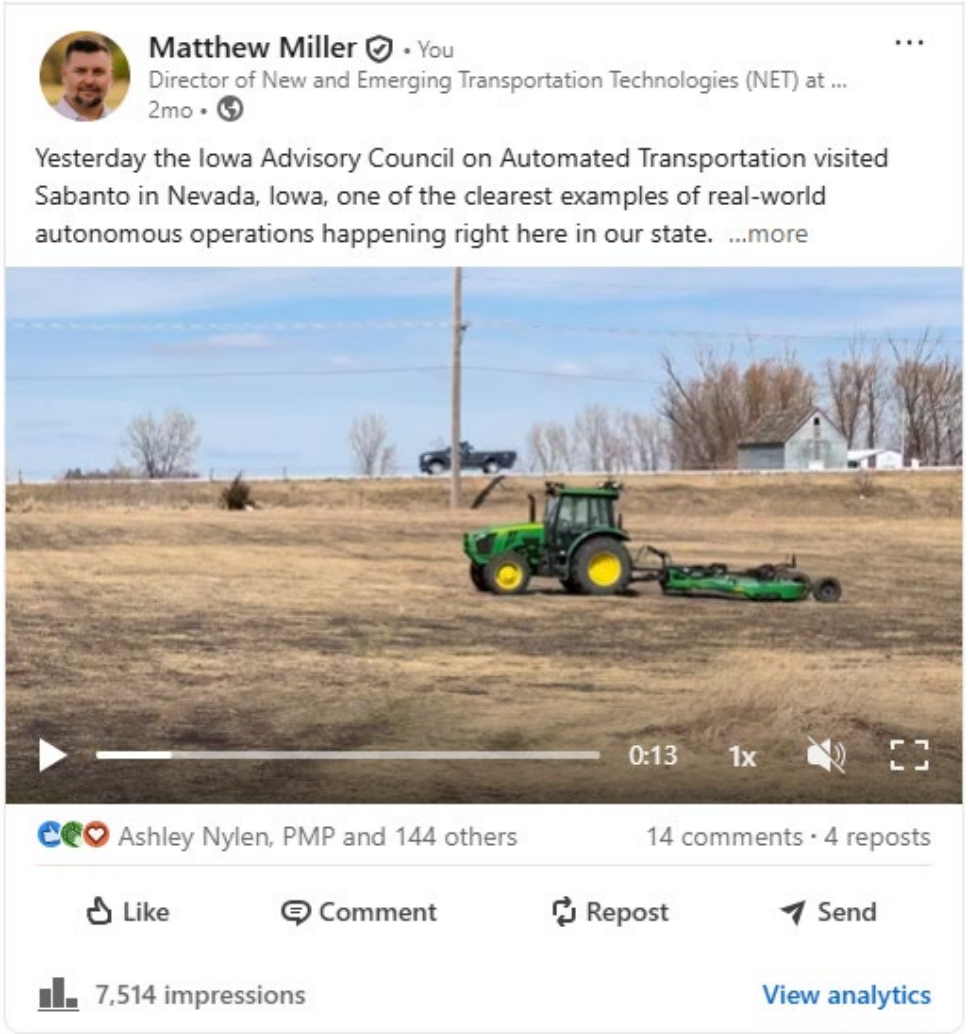
unified services for public and commercial use.

TARGET LAUNCH: National Work Zone Awareness Week · April 2027

SABANTO VISIT

March 13, 2026

- Operations in Ames & Nevada, IA
- Retrofit kit to upgrade existing tractors
- Autonomously tilled, drilled, field cultivated, planted, tine weeded, rotary hoed, cultivated, mowed and applied
- 7514 views



OTHER POTENTIAL VISITS

Autonomous Iowa

- John Deere Innovation Center
- Hirschbach Motor Lines
- The Crystal Group in Hiawatha

SLOW MOVING VEHICLES

Skylar Knickerbocker

Co-Director of the Real-Time Analytics in Transportation (REACTOR) Laboratory, Iowa State Institute for Transportation

ATC – Slow Moving Vehicles
May 27, 2026

Iowa State University
Institute for Transportation

IOWA DOT

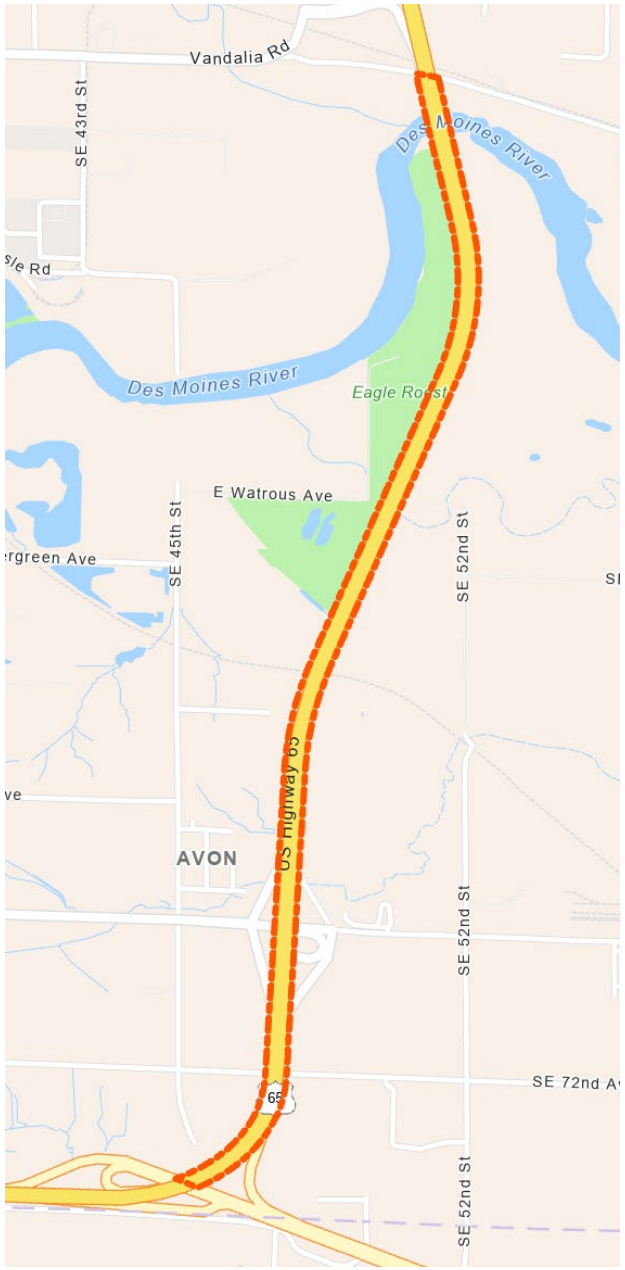
Problem

Tractors and slow-moving vehicles on IA-5/ US-65

Limited widths result in tractors encroaching in traffic lanes.

120+ slow moving vehicle movements were recorded in 2021

How do we notify the traveling public going 65 mph?



Solutions Today and Tomorrow

1) Use sensors to detect slow moving vehicles

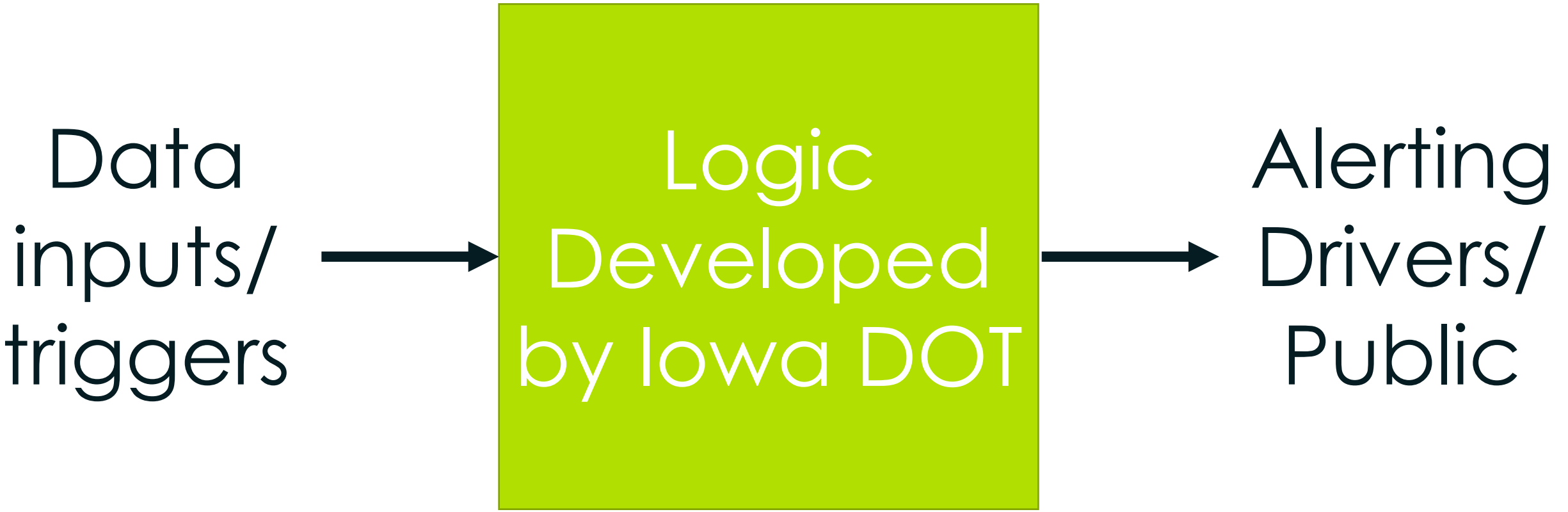
2) Use John Deere Operations API to alert of farm equipment

JOHN DEERE

3) Use Samsara to alert of DC equipment

samsara

Simplified Approach



Simplified Approach

Doppler Radar Coordinated with Houston Radar to detect only vehicles <35mph

Logic Developed by Iowa DOT

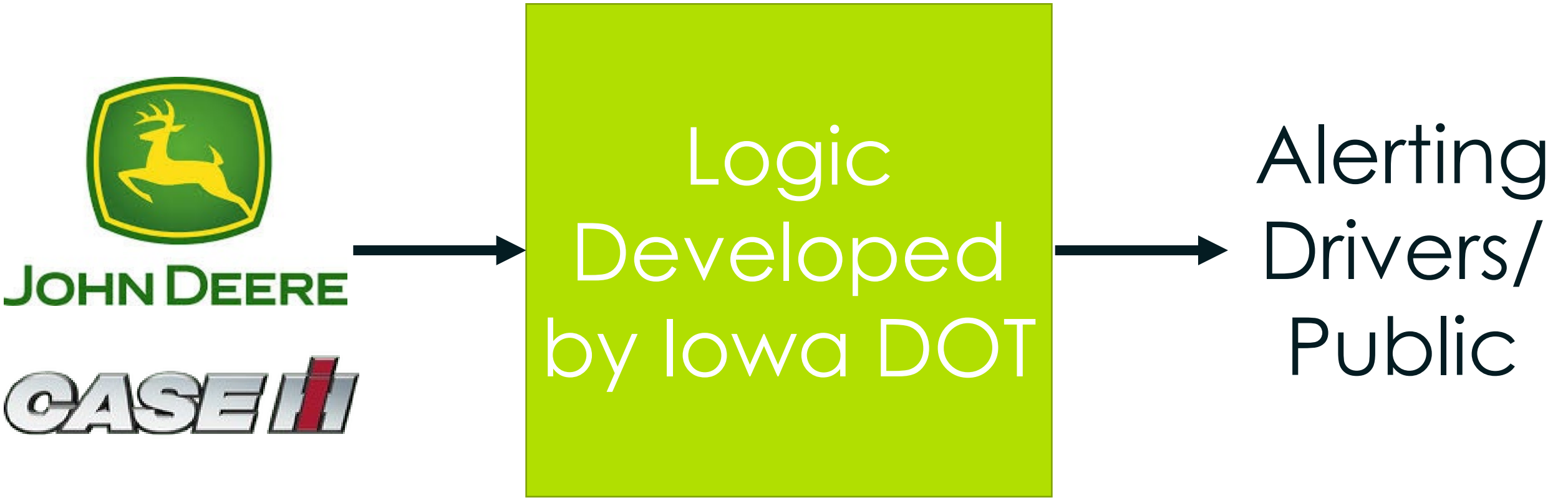
Alerting Drivers/ Public

Simplified Approach

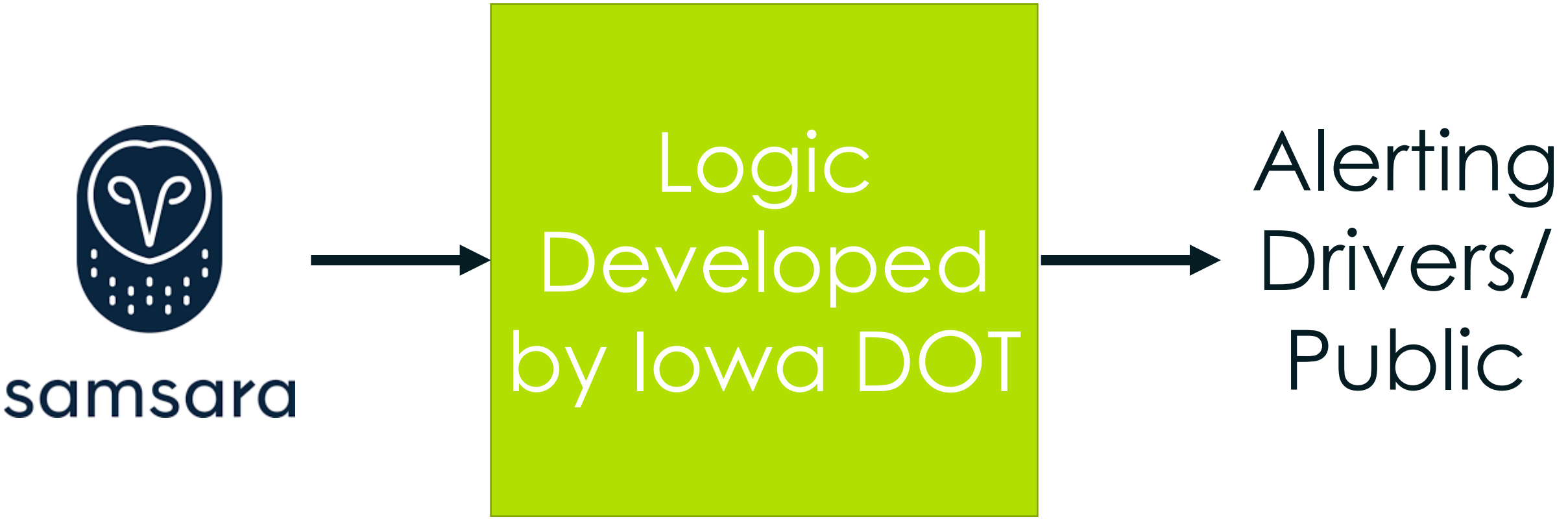
Logic Developed by Iowa DOT

*Not actual message being posted

Simplified Approach



Simplified Approach

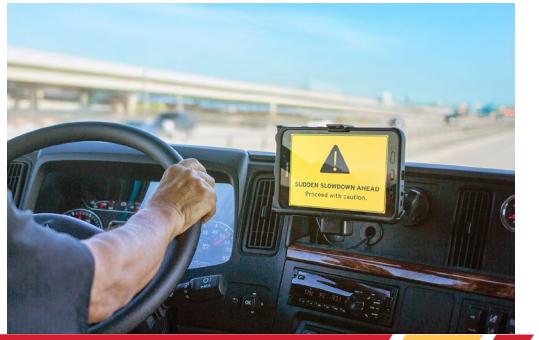


Alerting

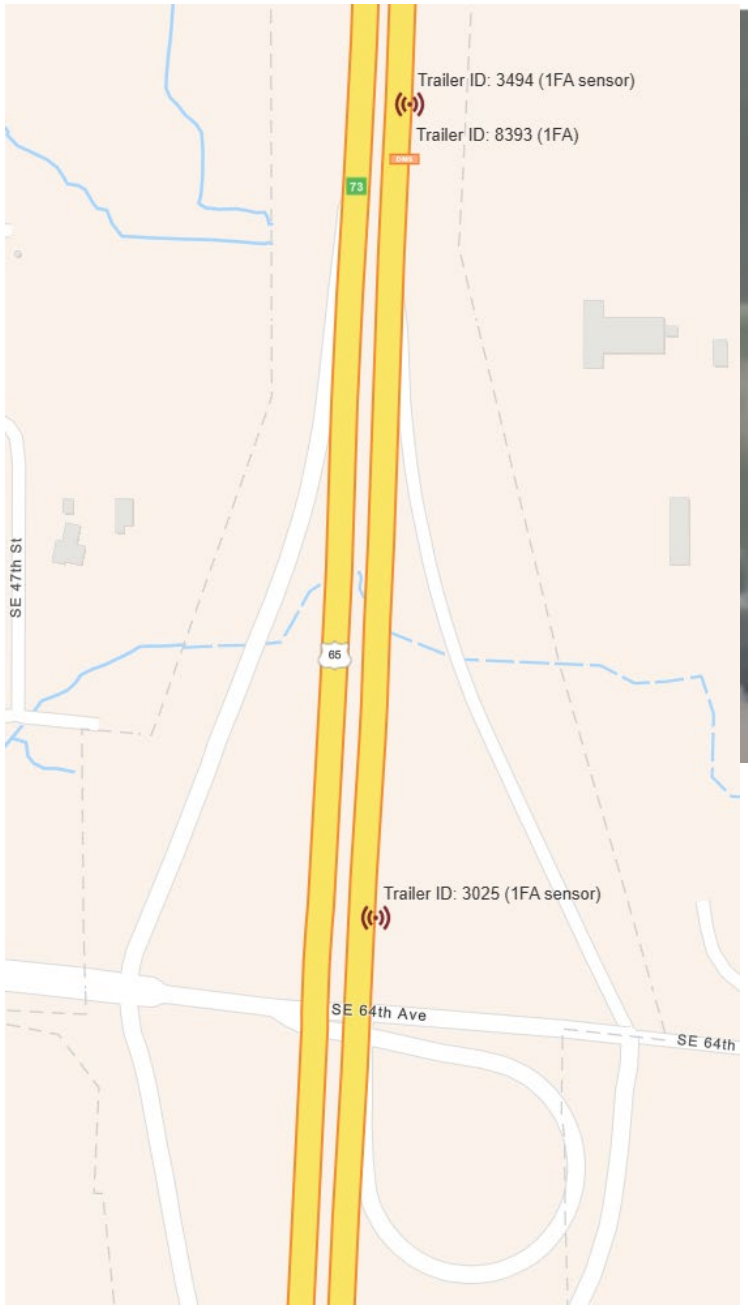
Dynamic Message Signs

Dynamic Signs

Digital Alerts

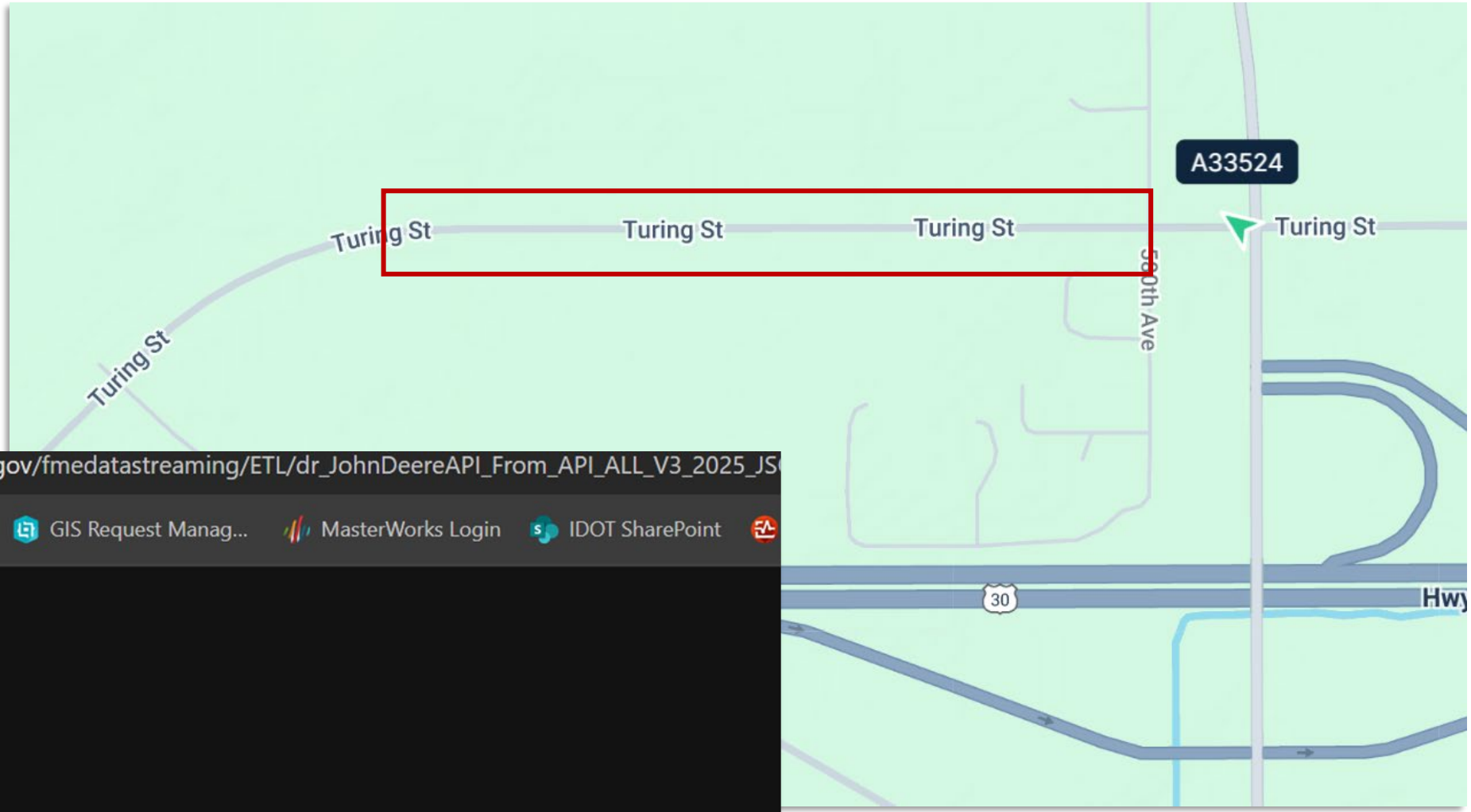


Alerting


Trailer ID: 3494 (1FA sensor)
Trailer ID: 8393 (1FA)
73
SE 47th St
65
Trailer ID: 3025 (1FA sensor)
SE 64th Ave
SE 64th


Sign on for
10 minutes

Implementation



fmetest.iowadot.gov/fmedatastreaming/ETL/dr_JohnDeereAPI_From_API_ALL_V3_2025_JS

Office365 GIS Service Center R... GIS Request Manag... MasterWorks Login IDOT SharePoint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      "type" : "error type",
      "message" : "error message"
   }
}
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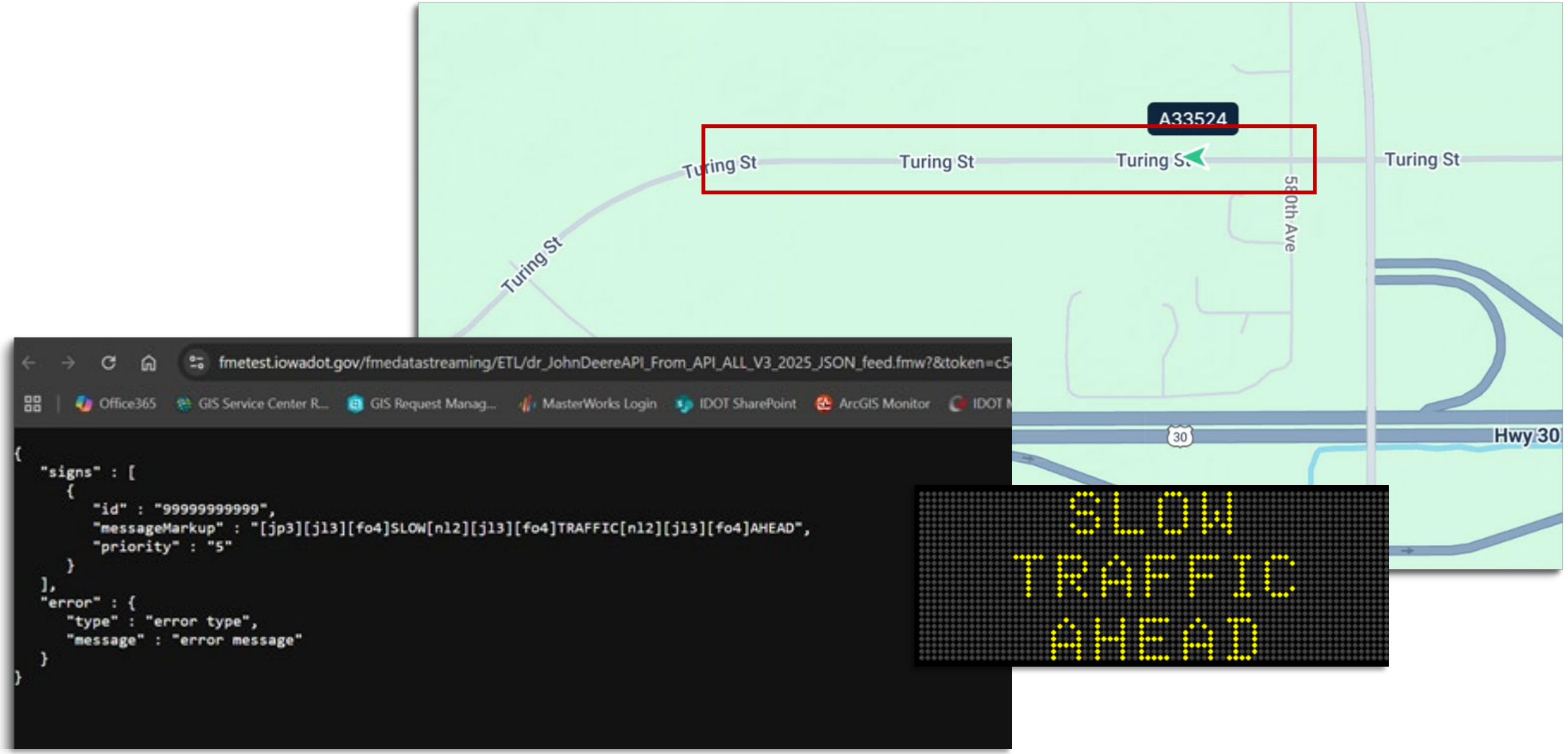
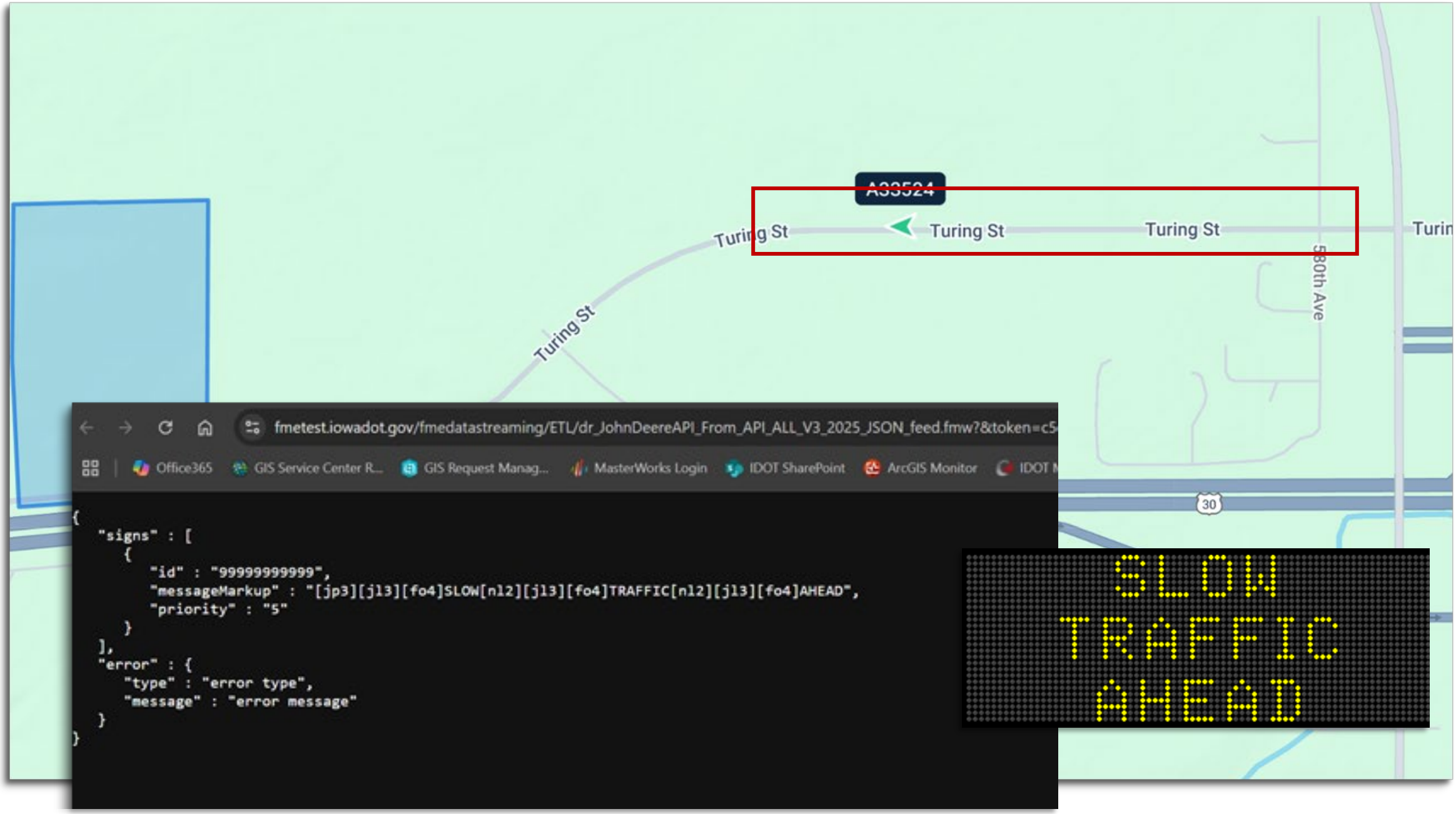

A33524
Turing St
Turing St
Turing St
Turing St
Turing St
580th Ave
30
Hwy 30
fmetest.iowadot.gov/fmedatastreaming/ETL/dr_JohnDeereAPI_From_API_ALL_V3_2025_JSON_feed.fmw?&token=c5
Office365
GIS Service Center R...
GIS Request Manag...
MasterWorks Login
IDOT SharePoint
ArcGIS Monitor
{
"signs" : [
{
"id" : "99999999999",
"messageMarkup" : "[jp3][jl3][fo4]SLOW[nl2][jl3][fo4]TRAFFIC[nl2][jl3][fo4]AHEAD",
"priority" : "5"
}
],
"error" : {
"type" : "error type",
"message" : "error message"
}
}
SLOW
TRAFFIC
AHEAD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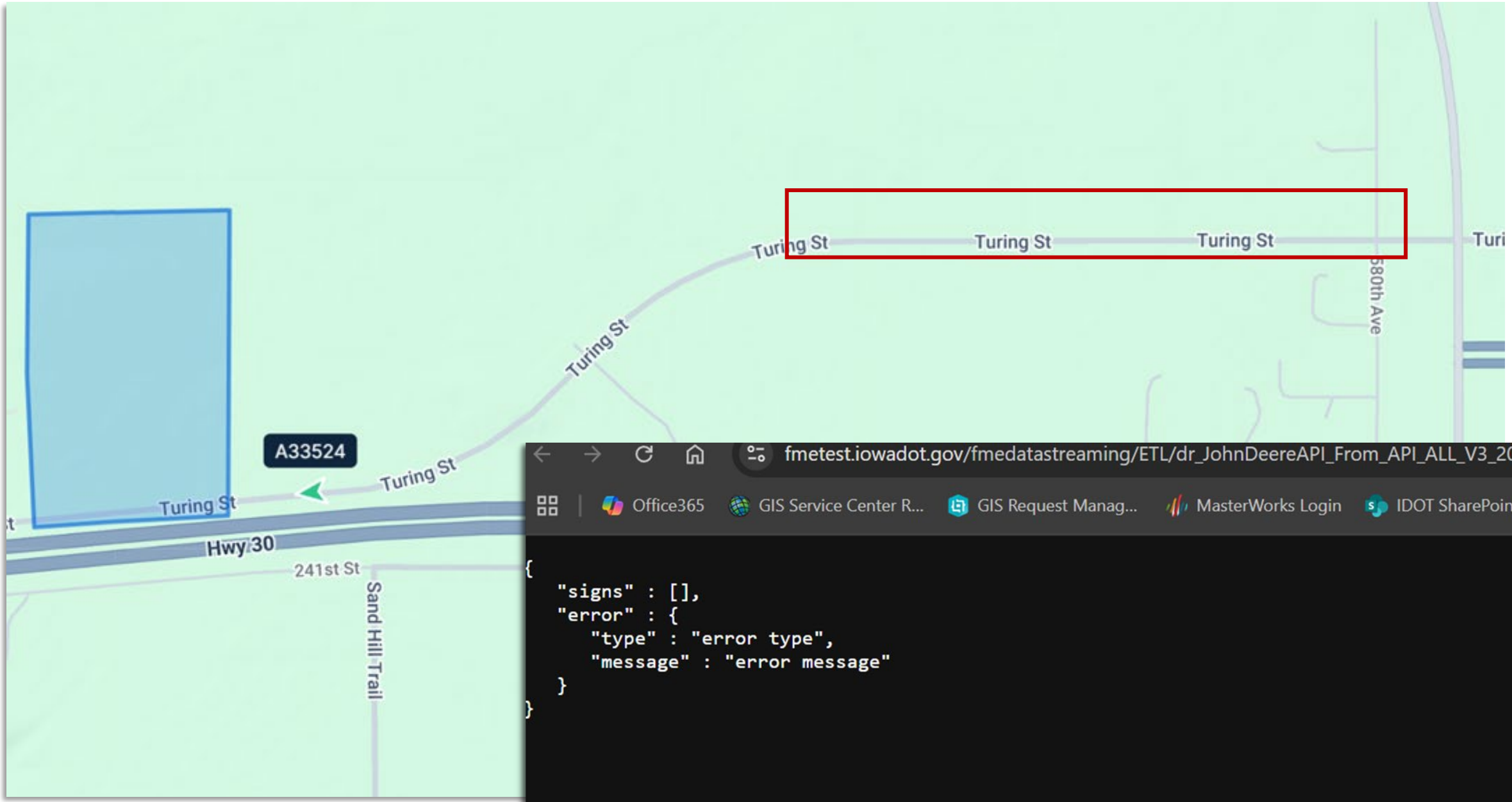
fmetest.iowadot.gov/fmedatastreaming/ETL/dr_JohnDeereAPI_From_API_ALL_V3_2025_JSON_feed.fmw?&token=c5
Office365
GIS Service Center R...
GIS Request Manag...
MasterWorks Login
IDOT SharePoint
ArcGIS Monitor
{
"signs" : [
{
"id" : "99999999999",
"messageMarkup" : "[jp3][jl3][fo4]SLOW[nl2][jl3][fo4]TRAFFIC[nl2][jl3][fo4]AHEAD",
"priority" : "5"
}
],
"error" : {
"type" : "error type",
"message" : "error message"
}
}
SLOW
TRAFFIC
AHEAD


Turing St
Turing St
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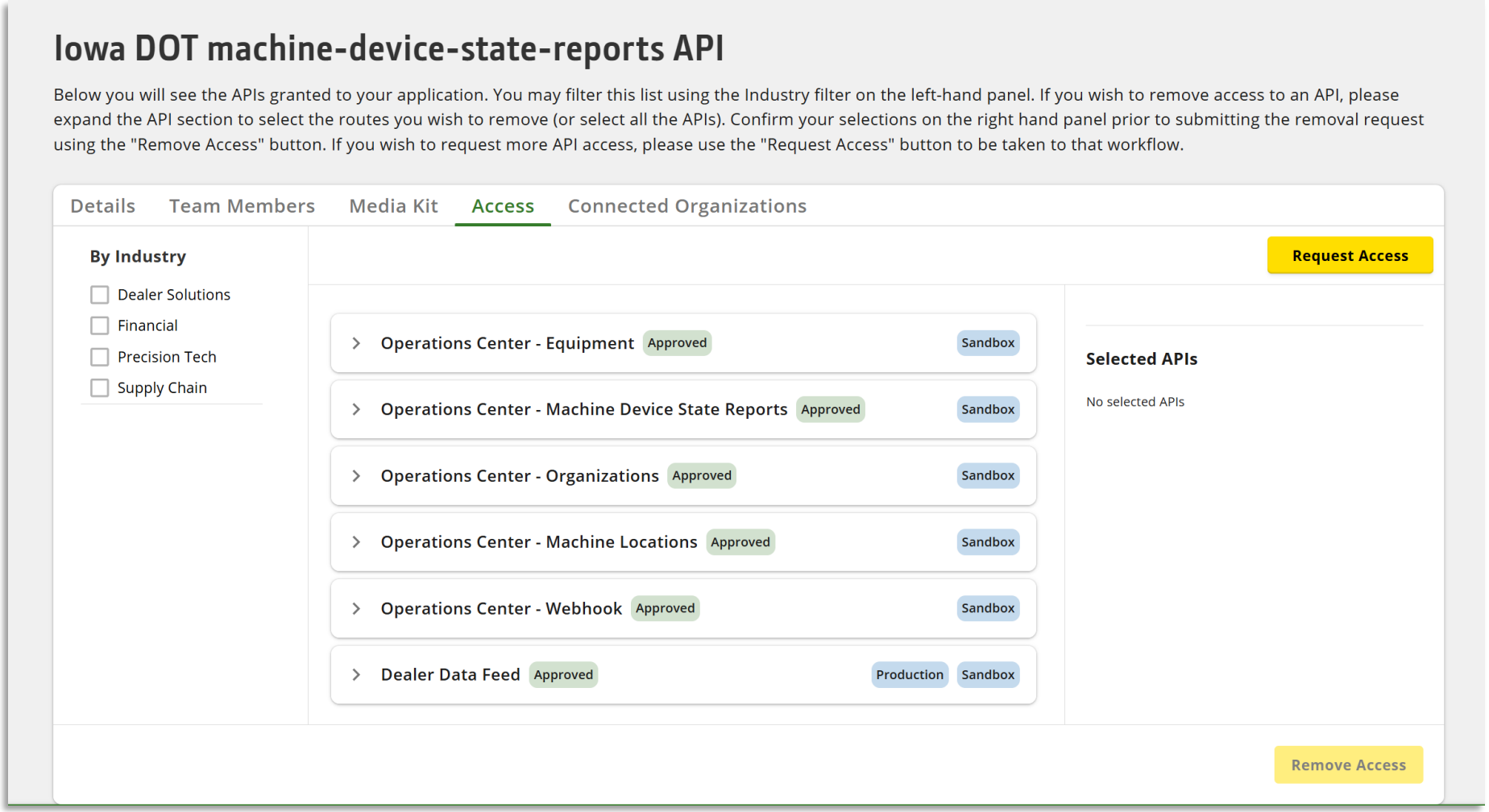
Turing St
Turing St
580th Ave
A33524
Turing St
Hwy 30
241st St
Sand Hill Trail
fmetest.iowadot.gov/fmedatastreaming/ETL/dr_JohnDeereAPI_From_API_ALL_V3_2025_JS
Office365
GIS Service Center R...
GIS Request Manag...
MasterWorks Login
IDOT SharePoint
{
"signs" : [],
"error" : {
"type" : "error type",
"message" : "error message"
}
}

Slow Moving Vehicle Integration



Operations Portal allows any owner to share data

Slow Moving Vehicle Integration

WZDx

WORK ZONE DATA EXCHANGE

Device Feed

Validating

Weather Adaptions

Utilizing public NWS data feeds

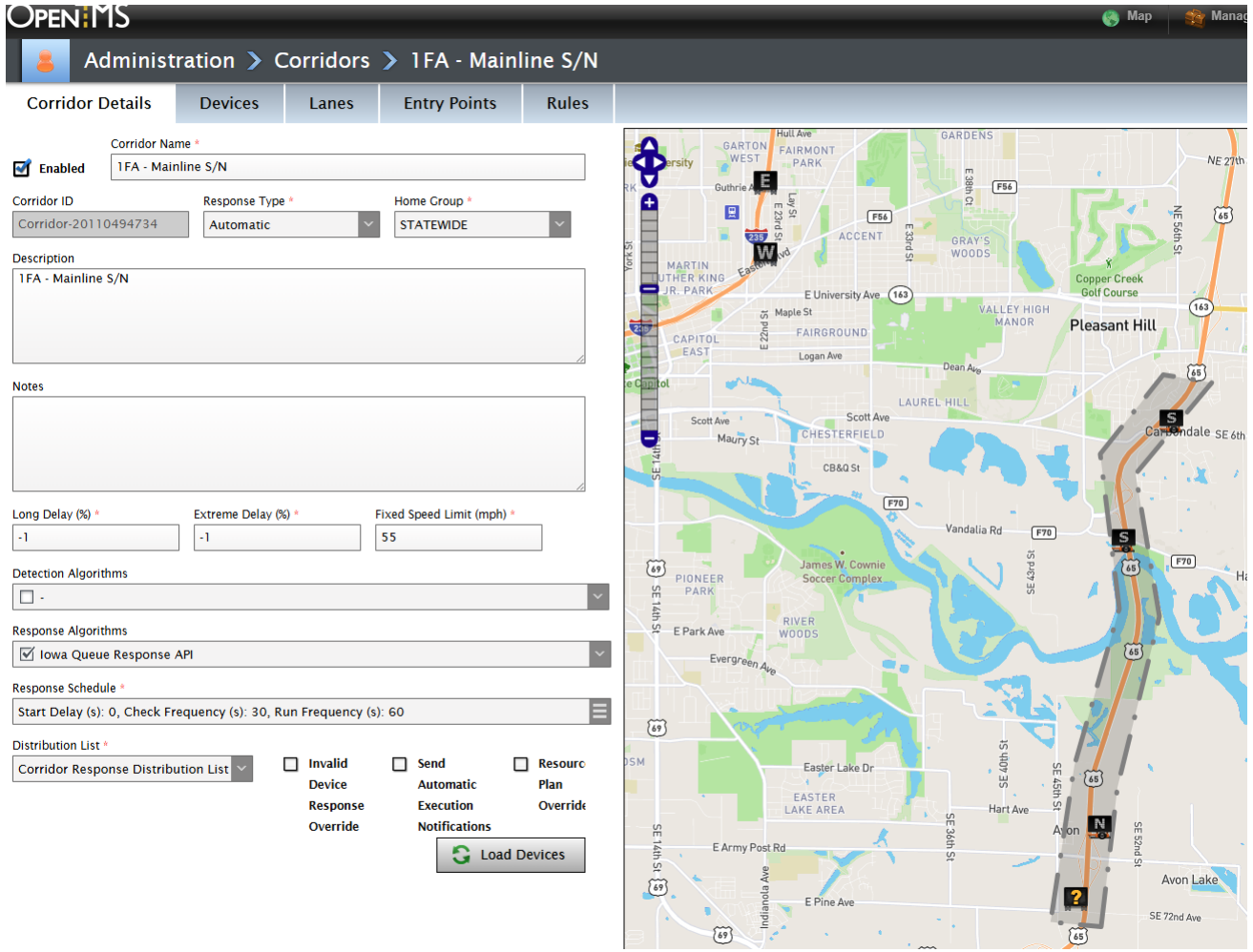
Sensor: Precipitation chance @ DSM Airport over 20%

Samsara: Snow accumulation = snowplow message vs slow moving

#1 Issue

Latency

Sensor Latency



Detection to message:

60-120 seconds in Fall 2025

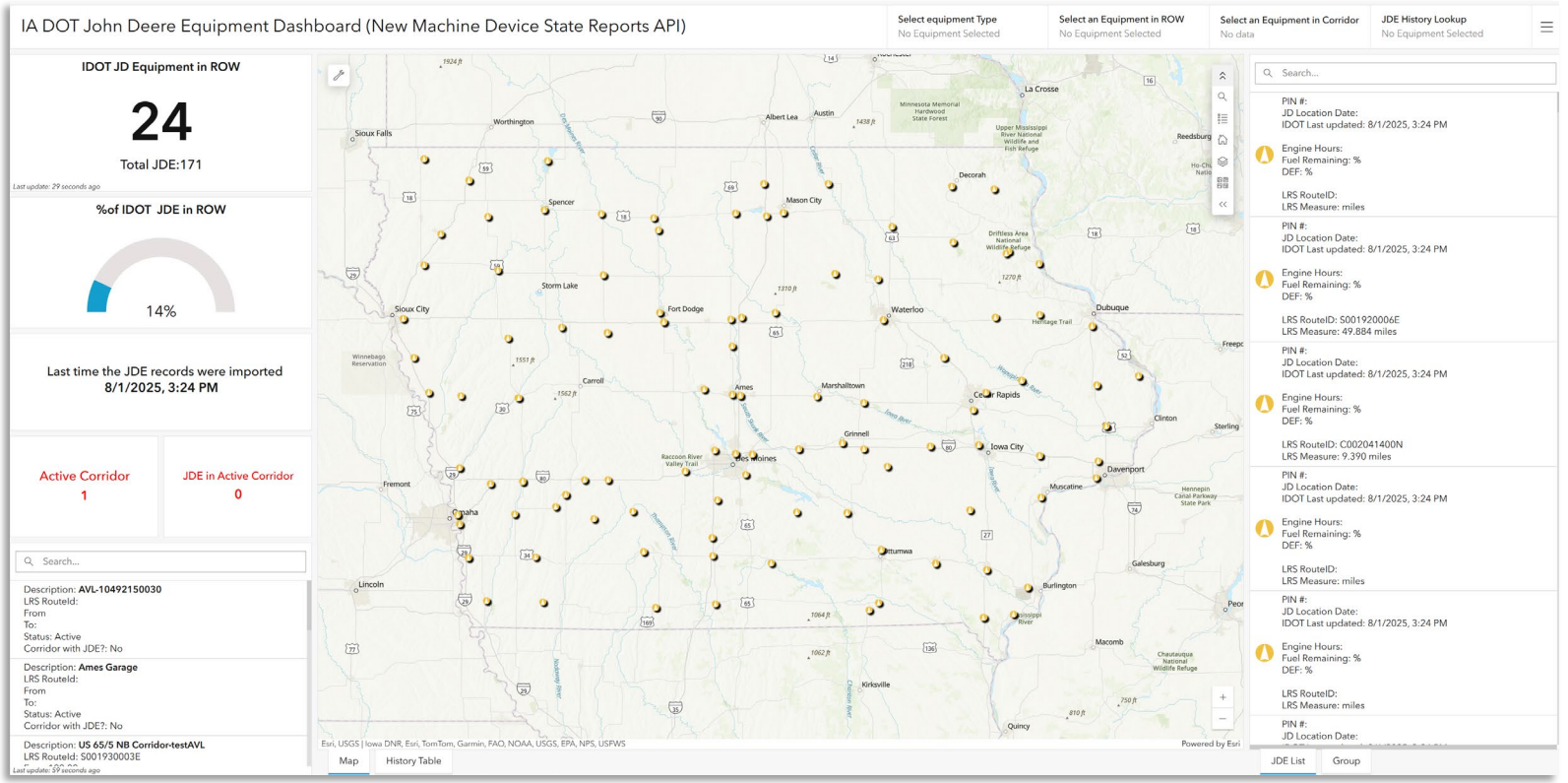
30-60 seconds in Spring 2026

10/10/2025 10:54:22	System	Deactivating Sign [SS1793 - US 65 SB @ MM 77]	
10/10/2025 10:44:19	System	Activating Sign [SS1793 - US 65 SB @ MM 77]	SLOWMOVINGVEHICLE

JD API Latency

Up to 15 minute latency

Coordinating with JD on availability of low latency API



Slow Moving Vehicle Alerting

Matt Miller
Dominic Roberge
Sinclair Stolle
Tina Greenfield
Skylar Knickerbocker

Iowa State University
Institute for Transportation
REACTOR
Real-time Analytics of Transportation Data
IOWA DOT

ADAS FOR BUSTANG INTERCITY & REGIONAL BUS TRANSIT

Cheryl Roe

AV Transportation & Outreach Specialist, Driving Safety Research Institute, University of Iowa

ADAS for Bustang Intercity & Regional Bus Transit

- Iowa – operator training & training evaluation
- Three ADAS-equipped buses
  - Forward Collision
  - Lane Departure
  - Blind Spot Detection
  - Adaptive Cruise Control
- Mountain routes
- Lessons learned

COLORADO Department of Transportation

Colorado State University

IOWA

PERRONE ROBOTICS

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

AV POLICY DISCUSSION

- BUILD America 250 Act
- Iowa AV Legislation
- Discussion

FEDERAL BILL

BUILD AMERICA 250 ACT

- National AV standards for Level 4–5 trucks
- Manufacturer = driver when ADS is active
- Human operator for hazmat and school buses
- Remote operator rules
- USDOT rulemaking timeline

IOWA BILLS

SB 3052 and HF2375

- ADS = legal driver
- Owner liability for violations/crashes
- Human operator for hazmat
- No unauthorized ADS modifications
- DOT authority updates (HF 2375)

SIDE BY SIDE SNAPSHOT

BUILD America 250

- National safety standards
- Manufacturer responsible
- Remote operator rules
- Hazmat operator required

Iowa Bills

- Enforce existing federal standards
- Owner responsible
- No remote-operation framework
- Hazmat operator required

Who should carry legal responsibility — manufacturers, owners, operators, or a mix

How should hazmat rules evolve as AV technology matures?

WHY THIS MATTERS FOR IOWA

Federal rules may override state provisions

Iowa may need to align definitions and enforcement

National consistency could accelerate AV deployment

Workforce, training, and infrastructure planning will be affected hazmat

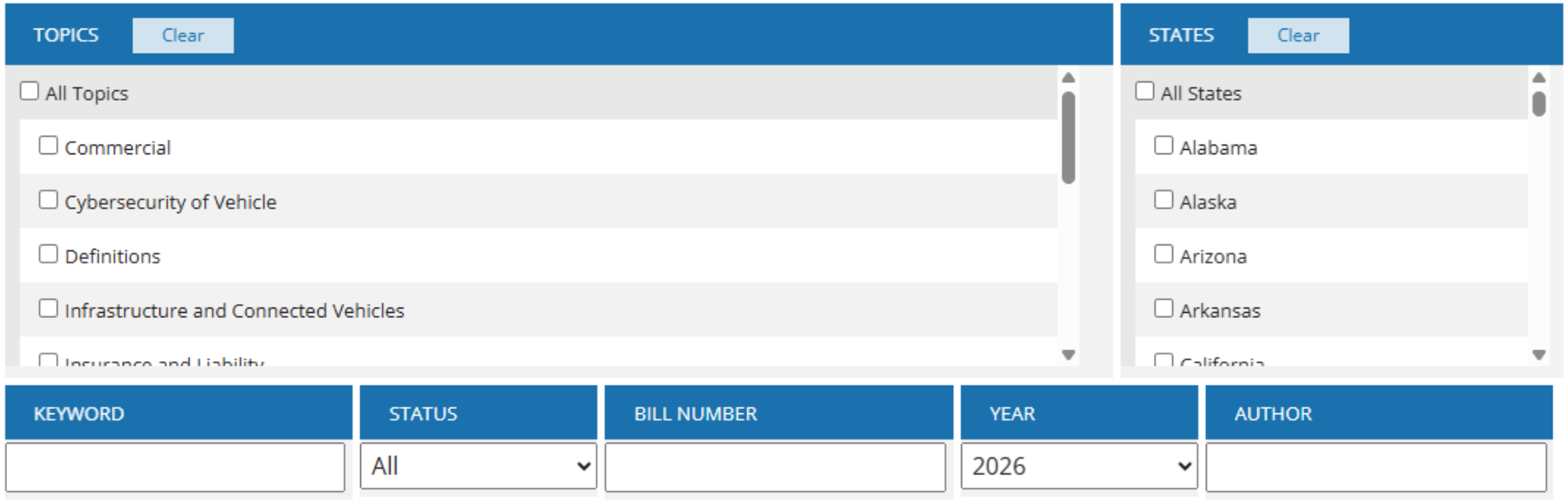
DISCUSSION

- What risks should Iowa plan for now before AV deployment accelerates?
- How should Iowa prioritize investment in AV-ready corridors?
- What steps should Iowa take to build confidence in AVs?
- What information should AV companies be required to share with public?

AUTONOMOUS VEHICLES LEGISLATION DATABASE

National Conference of State Legislatures

- https://www.ncsl.org/transportation/autonomous-vehicles-legislation-database
- 2017 - present
- Updated monthly



WRAP- UP

Announcements & Updates

Next Meetings

Adjourn

THANK YOU

Post meeting survey