



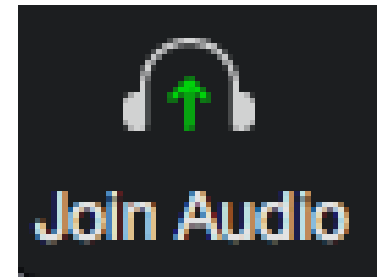
## Meet the Work Zone Data Exchange (WZDx) Project: *How to Get Better Work Zone Data Out to the Traveler*

*September 9, 2021*



# Welcome!

- We are using Zoom **Webinar**
- **AUDIO (Computer):** Use your computer speakers and microphone by clicking the “Join Audio” button at the bottom left of the screen. You will be muted.
- **Alternate Audio (Phone):** Call into the meeting by dialing the phone number based on your location (provided in the confirmation email) and enter the Meeting ID at the prompt. You will be muted.
- **This web meeting is being recorded.**
- **Questions** with the audio or web? Please contact Esther via email ([ekleit@kmjinc.com](mailto:ekleit@kmjinc.com))
- *The **Chatbox** is not available to participants. Please use the **Q&A box** for questions to the presenters.*





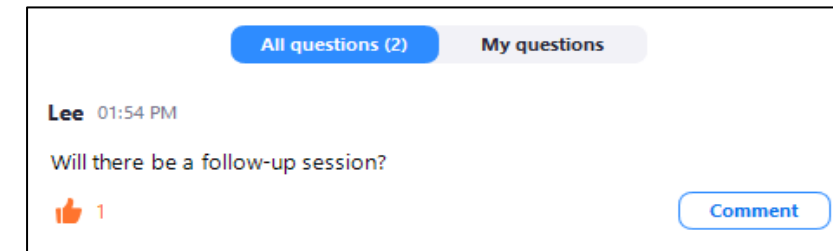
# Asking Questions in the Q&A Box



- Click on the Q&A icon at the bottom of your screen



- The questions in the Q&A box will be monitored and answered either between presentations or at the end of the meeting
- You can keep track of your questions in the “My Questions” tab in the Q&A box





# Asking Questions Verbally



- Please raise your hand (*click on the hand icon at the bottom of the screen*), and a host will unmute you.



- Please give your name and agency before asking your question
- **Please mute yourself when you are finished asking a question**







# Welcome



**Denise Markow**, TSMO Program Director  
The Eastern Transportation Coalition



# Coalition Update



## RECENT

- ✓ **WAZE Technical Bi-Annual Working Group** - June 15, 2021
- ✓ **VPP-Traffic Data Marketplace State POC Meeting** - June 22, 2021
- ✓ **RITIS User Group Web Meeting** - July 15, 2021
- ✓ **The ABC's of Conflation: TMC, LRS, OSM - What Happens When You Muck It Up** - August 19, 2021
- ✓ **Traffic Data Marketplace - RFP Evaluation Meetings** - Aug, Sep 2021 (*member invite only*)

## UPCOMING

- **Traffic Data Marketplace - RFP Evaluation Meetings** - Oct 2021 (*member invite only*)
- **RITIS User Group Web Meeting** - September 30, 2021
- **Travel Info Mapping Technical Meeting** - October 7, 2021 (*member invite only*)
- **TDADS National Webinar** - November 10, 2021
- **WAZE Technical Bi-Annual Working Group** - November 18, 2021 (*member invite only*)
- **VPP-Traffic Data Marketplace State POC Meeting** - December 7, 2021 (*member invite only*)



# Just a reminder: Use the **Q&A box** for questions



- Use the **Q&A box** to ask presenters questions
- Ex. “How accurate is the captured data?”



# Welcome from our TIS Co-Chairs



**Mary Ameen, PE**  
Executive Director  
NJTPA



**Kelly Wells, PE**  
State Traveler Info Engineer  
North Carolina DOT



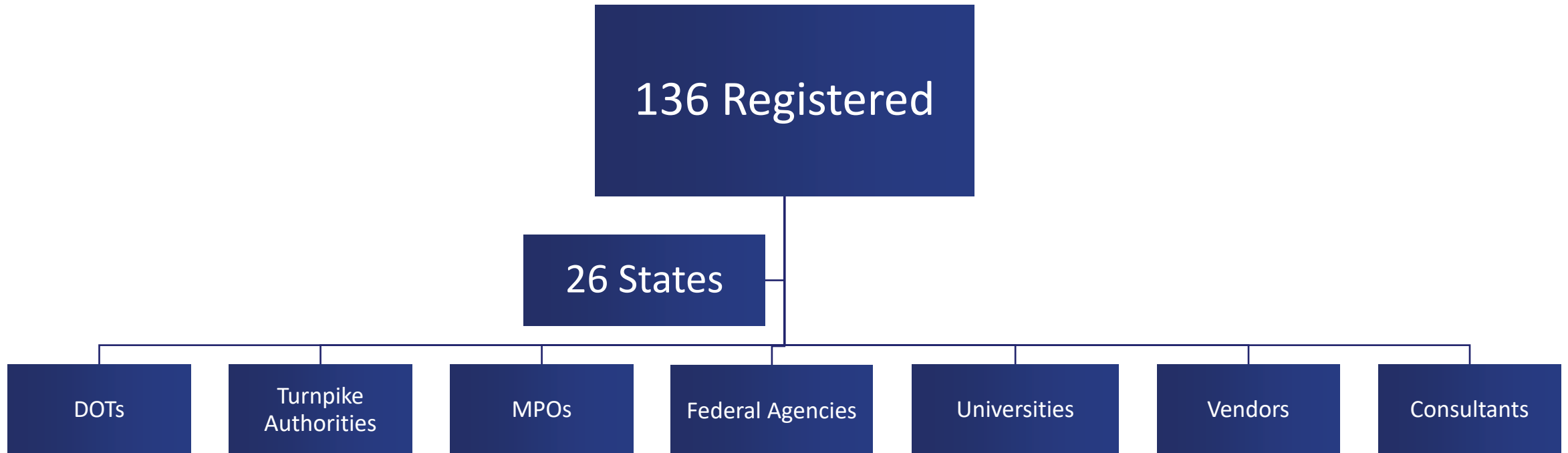


# Agenda

Topic	Speaker
Welcome from the Coalition	Denise Markow, TSMO Program Director, TETC
Introductions	TIS Committee Co-Chairs Mary Ameen, Executive Director, NJTPA Kelly Wells, State Traveler Info Engineer, North Carolina DOT
Background	Stan Young, Chief Data Officer, TETC
Making It Work: Standardizing Road Construction Data Sharing With The Work Zone Data Exchange	David Craig, Chief of Maps, General Motors Nate Deshmukh Towery, Technology Policy Analyst, USDOT Volpe Center
State Agency Roundtable Discussion: How Is Your Agency Sharing Work Zone Data?	Primary Travel Info Agency members Denise Markow
Wrap Up and Remaining Questions	Denise Markow



# The Eastern Transportation Coalition Sponsored Event





# Introductions



**Stan Young**

Chief Data Officer

*The Eastern Transportation Coalition*



**Nate Deshmukh Towery**

Technology Policy Analyst

*USDOT Volpe Center*



**David Craig**

Chief of Maps

*General Motors*



# Background



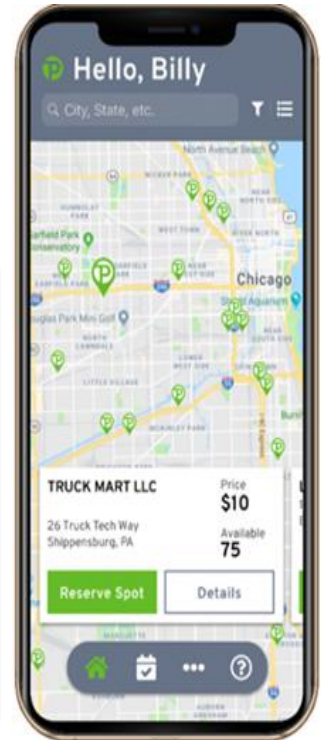
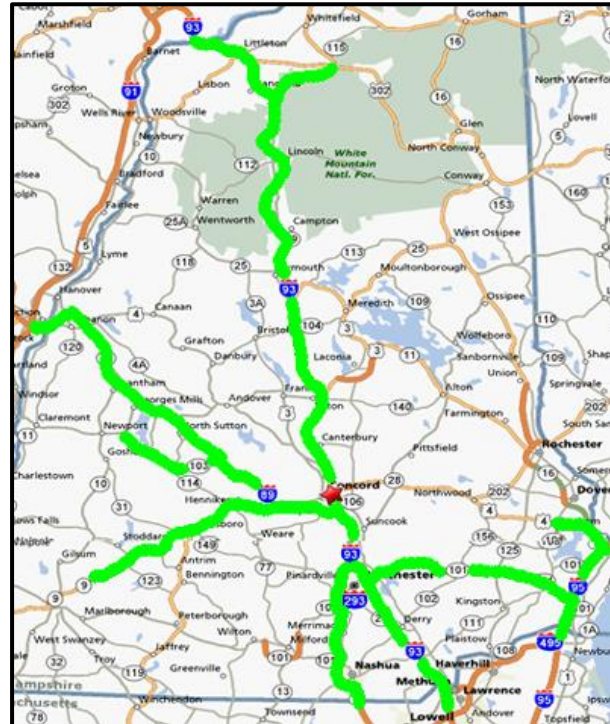
**Stan Young**, Chief Data Officer  
The Eastern Transportation Coalition



# It is the best of times ....

- ❑ Digital Mapping Companies
- ❑ Traffic information disseminated through industry
- ❑ More and better info for DOT's and travelers than we have ever had

# INRIX



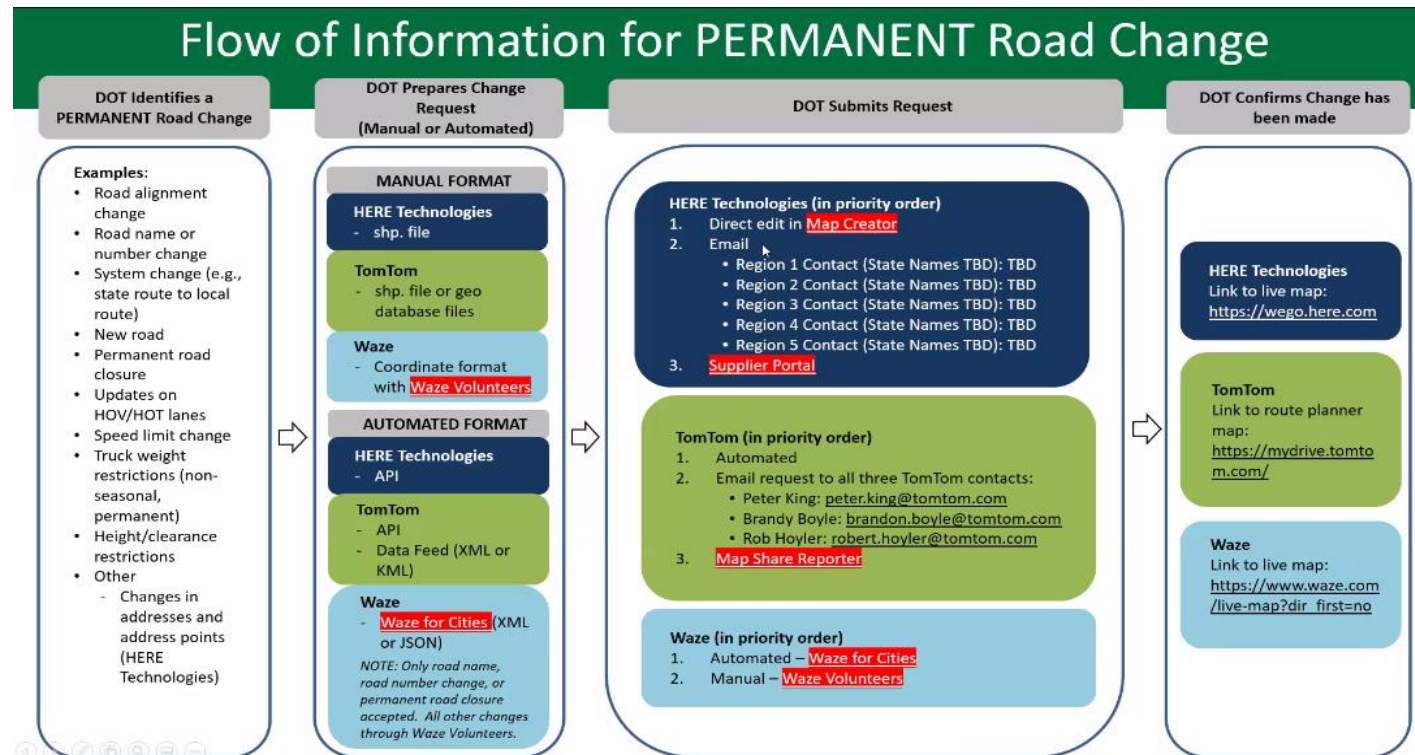




# It is the ~~worst~~ (most challenging) of times ....

a. Just for permanent mapping changes – non-real time

Each maps change requires interaction with each Map Company tool to update changes



Source: Enterprise Pooled Fund Study

How about b. Work Zones (real-time) c. Incidents (real-time) d. Posted bridges e. ????

Each data set currently requires custom, vendor specific interaction



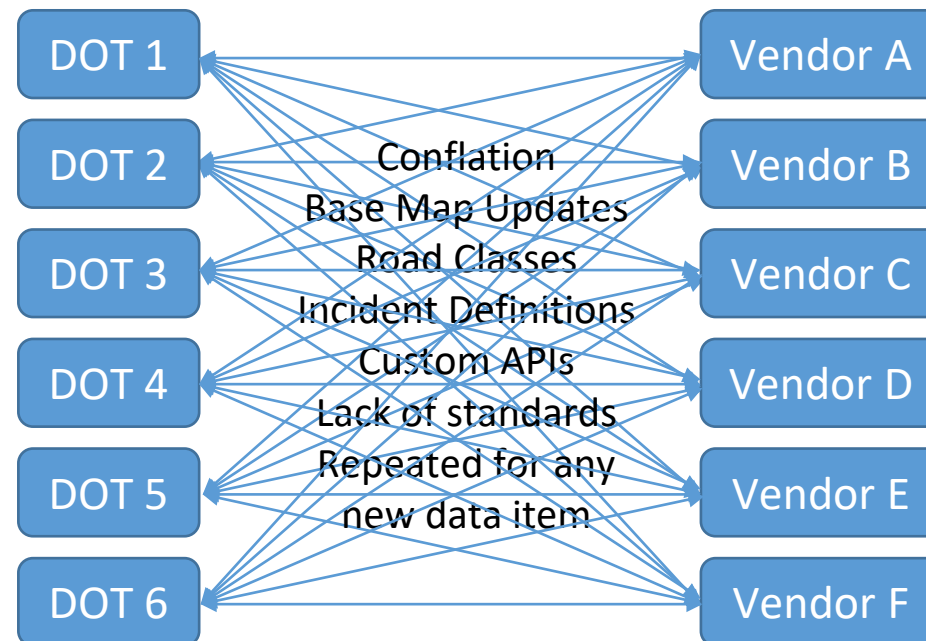
# Common Digital Exchange Formats

- ❑ Our mission is to build effective common data exchange formats and sources so that all mapping companies have one location or portal to pick up the needed information- *“everyone drinking from the same fire hose”*



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Today's World



Complexity = Vendors X Data

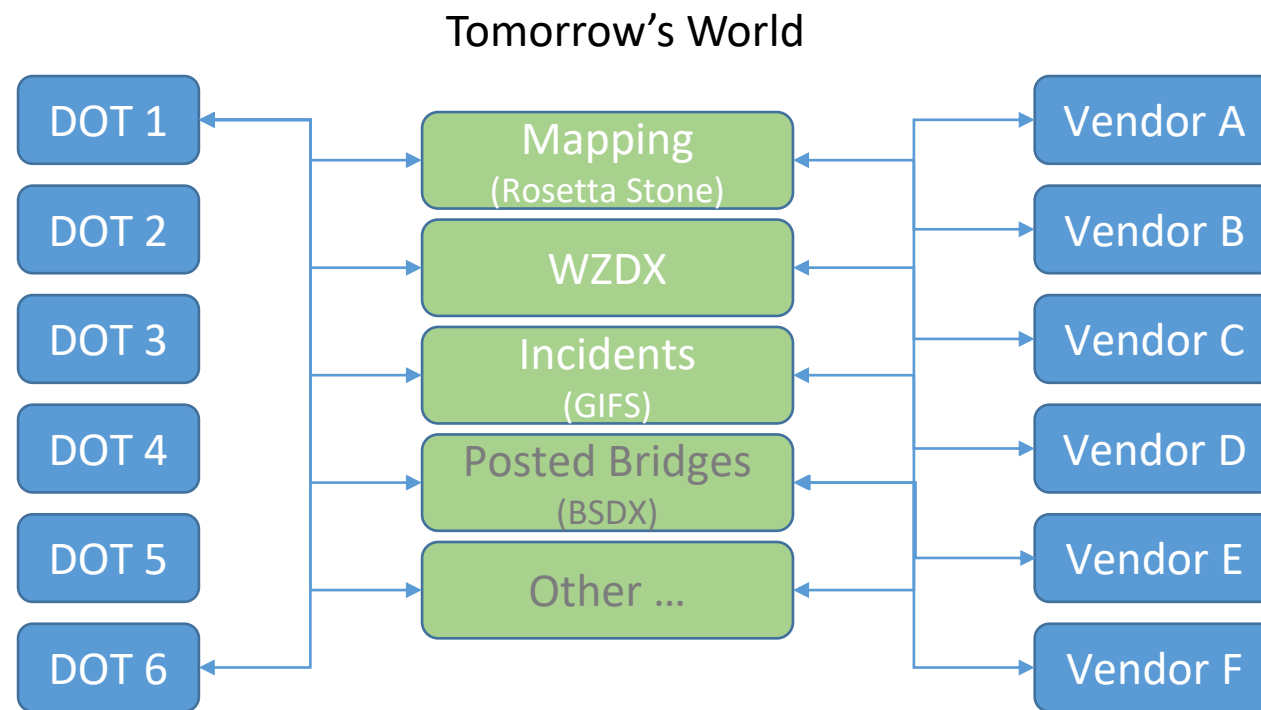


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Complexity = # of Defined Data



# Poll #1

## How familiar are you with the Work Zone Data Exchange specification?

- Very familiar
- Somewhat familiar
- Not familiar





# Making It Work: Standardizing Road Construction Data Sharing With The Work Zone Data Exchange



**Nate Deshmukh Towery**, Technology Policy Analyst  
*USDOT Volpe Center*



**David Craig**, Chief of Maps  
*General Motors*





# Getting Better Data to the Traveler with the Work Zone Data Exchange (WZDx)

September 9, 2021

*David Craig*  
Chief of Maps  
Vehicle Engineering Center  
General Motors

*Nate Deshmukh Towery*  
Technology Policy Analyst  
Volpe Center  
U.S. Department of Transportation



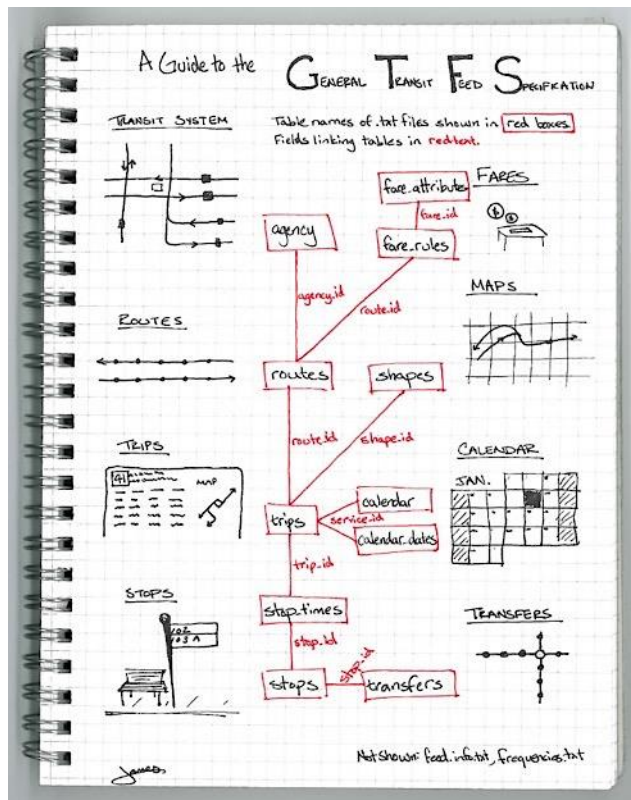
# WZDx is...

A simple, open standard for sharing data about planned and active work zone events.



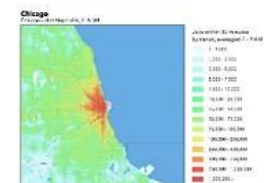
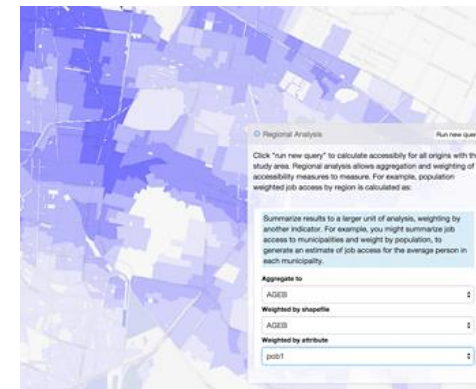
# What can we learn from the open transit data story?

A simple specification...



Source Unknown

...with a wide range of uses



USDOT ITS-JPO



# The Work Zone Data Exchange (WZDx)



USDOT ITS-JPO

# Why WZDx + ETC?



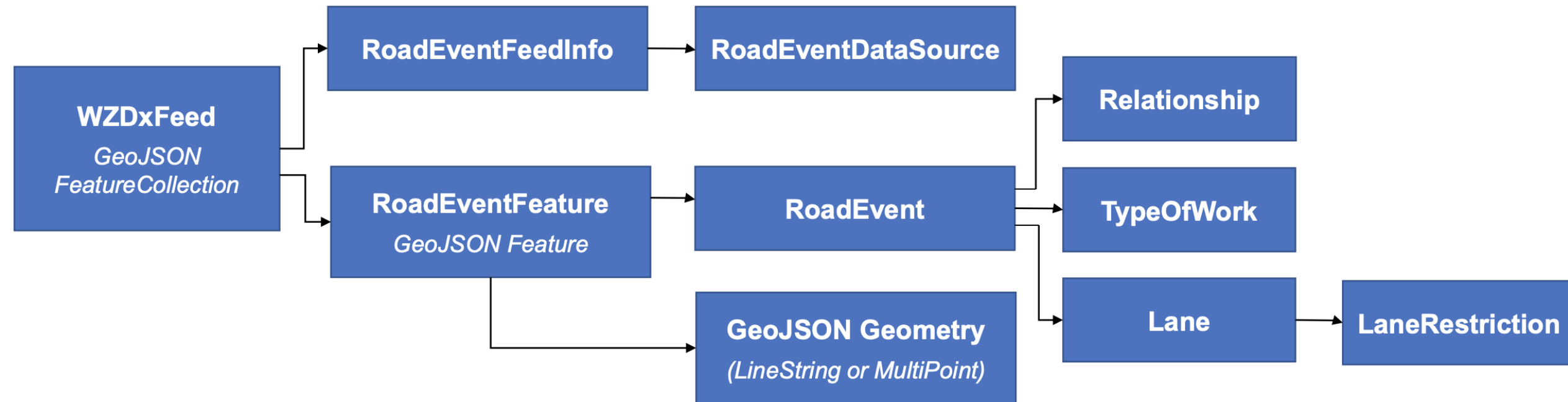
- WZDx aligns with multiple ETC missions:
  - Connecting public agencies across modes of travel to increase safety and efficiency
  - Managing highway incidents – including work zones – that impact travel within and across state lines
- Both WZDx and ETC focus on open development and peer-to-peer information exchange
- Both ETC and WZDx aim to be at the forefront of innovation in transportation, especially on the safe integration of connected and automated vehicles on the roadway





# WZDx Specification Organization — Object Model

- Specification structured in an **object model**
- Uses GeoJSON file format – every feed is a valid GeoJSON file
- Includes JSON Schema (single source of truth)
- Human-readable documentation: object and enumerated type files

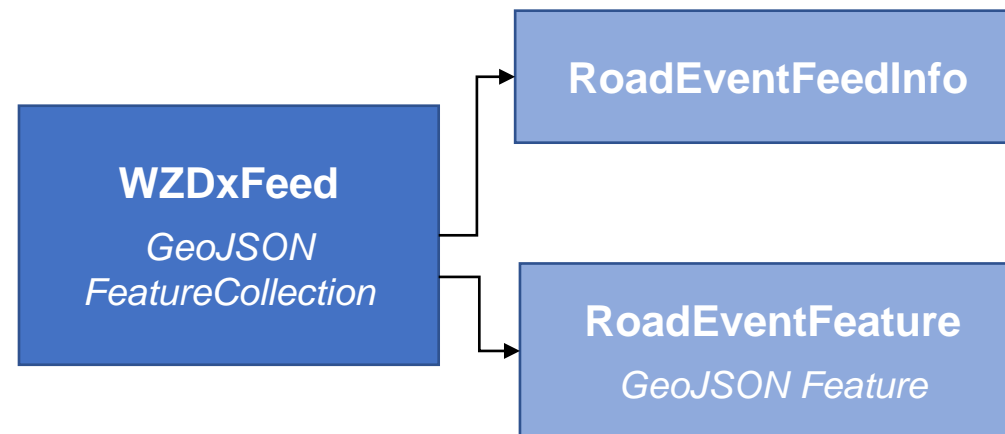


# WZDxFEED Object

- The root (highest level) object of a WZDx feed
- There is one WZDx feed object per WZDx GeoJSON document
- The WZDxFEED is an instance of a [GeoJSON FeatureCollection](#) object.

## Properties

- **road\_event\_feed\_info**
- type
- **features**

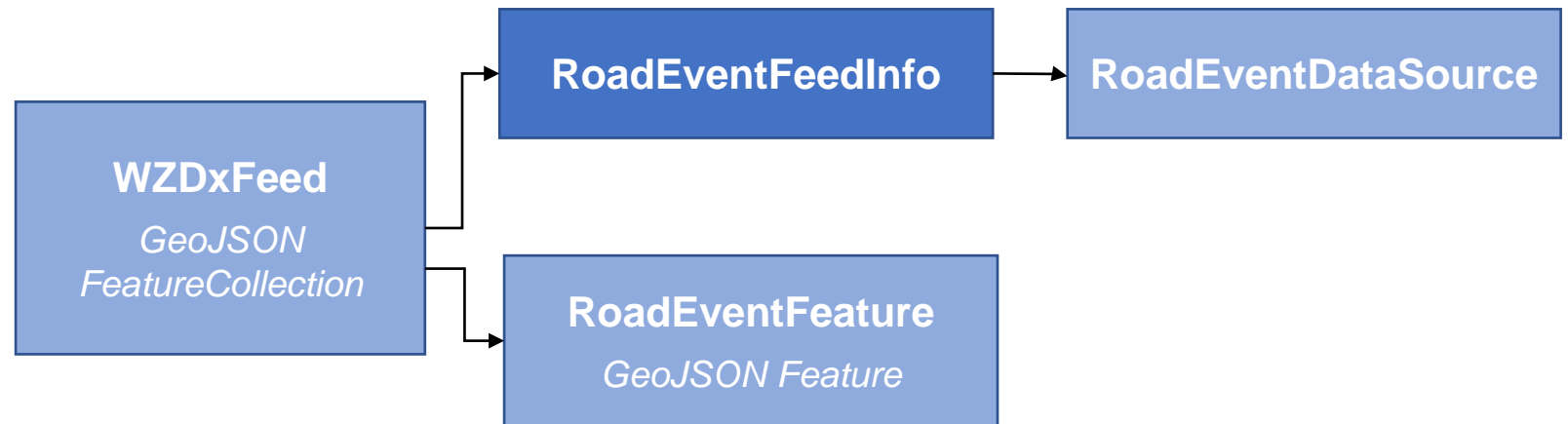


# RoadEventFeedInfo Object

- Describes WZDx feed header information such as metadata, version, contact information, and data sources.
- One RoadEventFeedInfo per WZDx GeoJSON document.

## Properties

- publisher
- version
- **data\_sources**
- update\_date
- update\_frequency
- contact\_name
- contact\_email



# RoadEventDataSource Object

- Describes information about a specific data source used to build a WZDx feed
- A WZDx feed must contain at least one RoadEventDataSource
- The RoadEventDataSource is included as an entry in the data\_sources array of the RoadEventFeedInfo object

## Properties

- data\_source\_id
- organization\_name
- location\_method
- update\_date
- update\_frequency
- contact\_name
- contact\_email
- location\_verify\_method
- lrs\_type
- lrs\_url

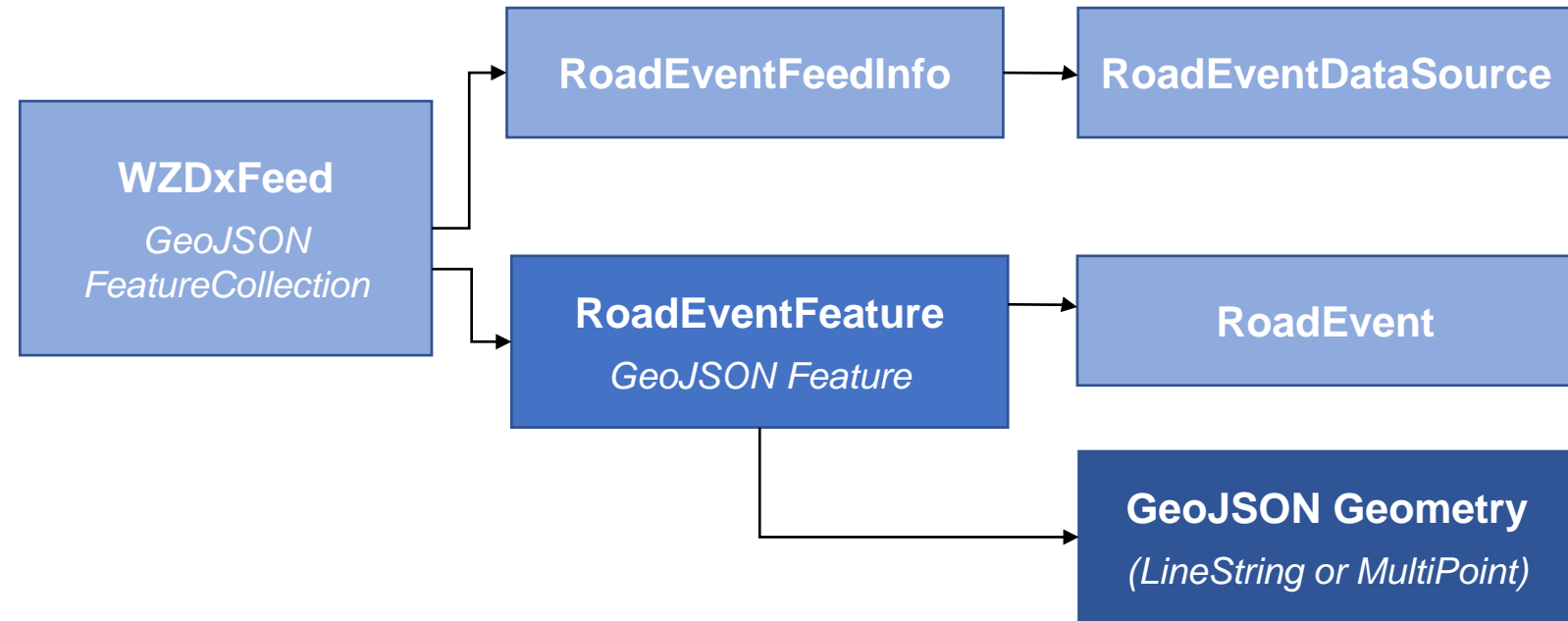


# RoadEventFeature Object

- The container object for a WZDx [RoadEvent](#)
- An instance of a [GeoJSON Feature](#).

## Properties

- type
- **properties**
- **geometry**



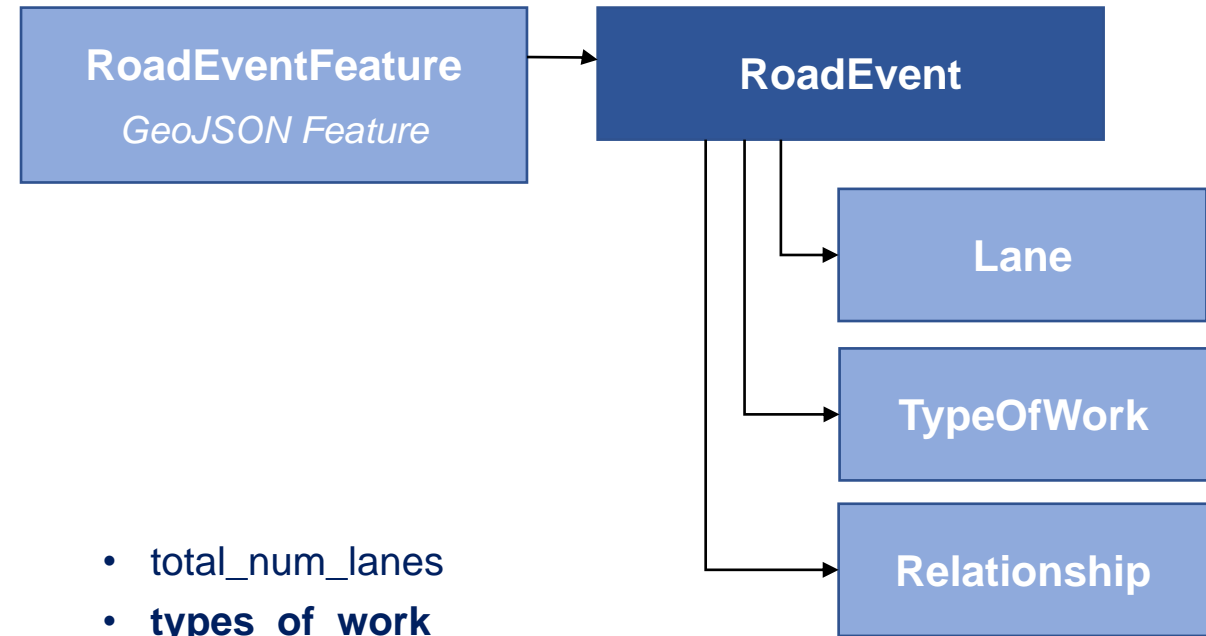


# RoadEvent Object

- The primary WZDx object
- Contains information that describes where, when, and what activity is taking place along a road segment
- The specification currently accommodates **work-zone** and **detour** type road events, specified by the road event's **event\_type** property

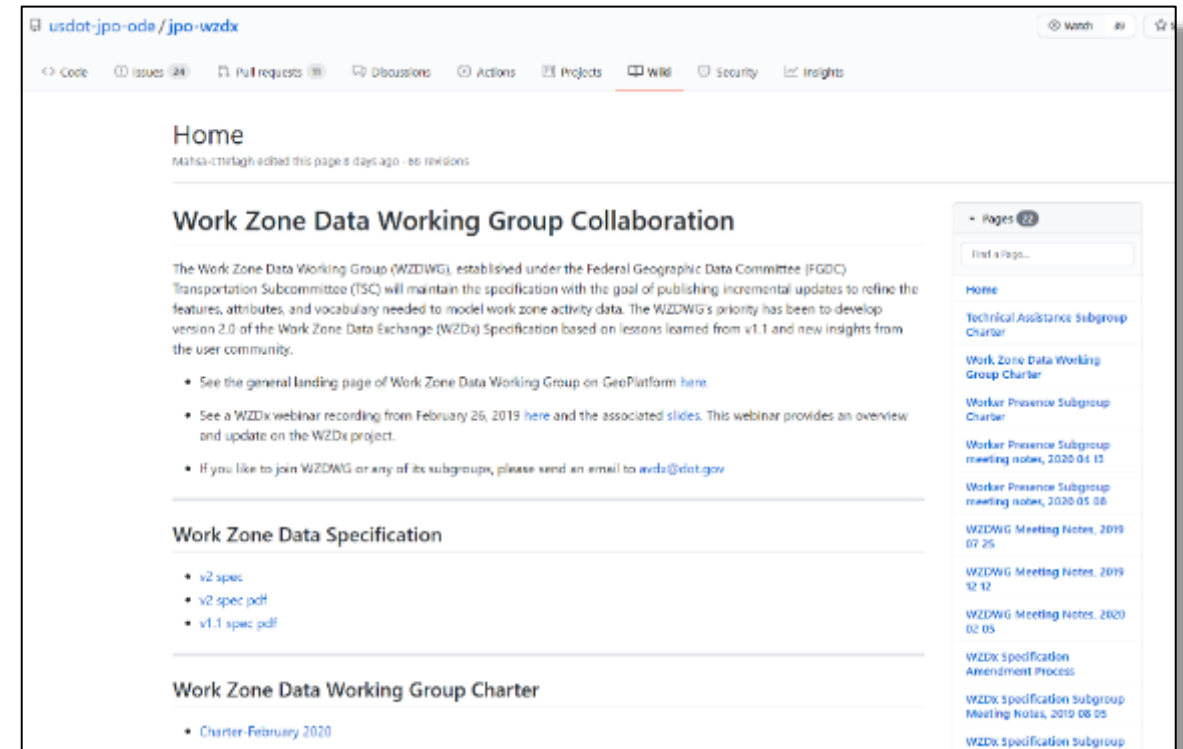
## Properties

- |                       |                          |                        |
|-----------------------|--------------------------|------------------------|
| • road_event_id       | • direction              | • total_num_lanes      |
| • event_type          | • vehicle_impact         | • <b>types_of_work</b> |
| • data_source_id      | • <b>relationship</b>    | • workers_present      |
| • start_date          | • <b>lanes</b>           | • reduced_speed_limit  |
| • end_date            | • road_number            | • restrictions         |
| • start_date_accuracy | • beginning_cross_street | • description          |
| • end_date_accuracy   | • ending_cross_street    | • creation_date        |
| • beginning_accuracy  | • beginning_milepost     | • update_date          |
| • ending_accuracy     | • ending_milepost        |                        |
| • road_name           | • event_status           |                        |



# Work Zone Data Working Group

- Maintains the WZDx Specification
- Champions open development methods to foster community involvement and support
- Promotes best practices for creating, publishing, consuming, mapping, and analyzing work zone event data and the WZDx Specification



<https://github.com/usdot-jpo-ode/wzdx>

- Documents and meeting notes shared via [GitHub](https://github.com/usdot-jpo-ode/wzdx) Wiki page



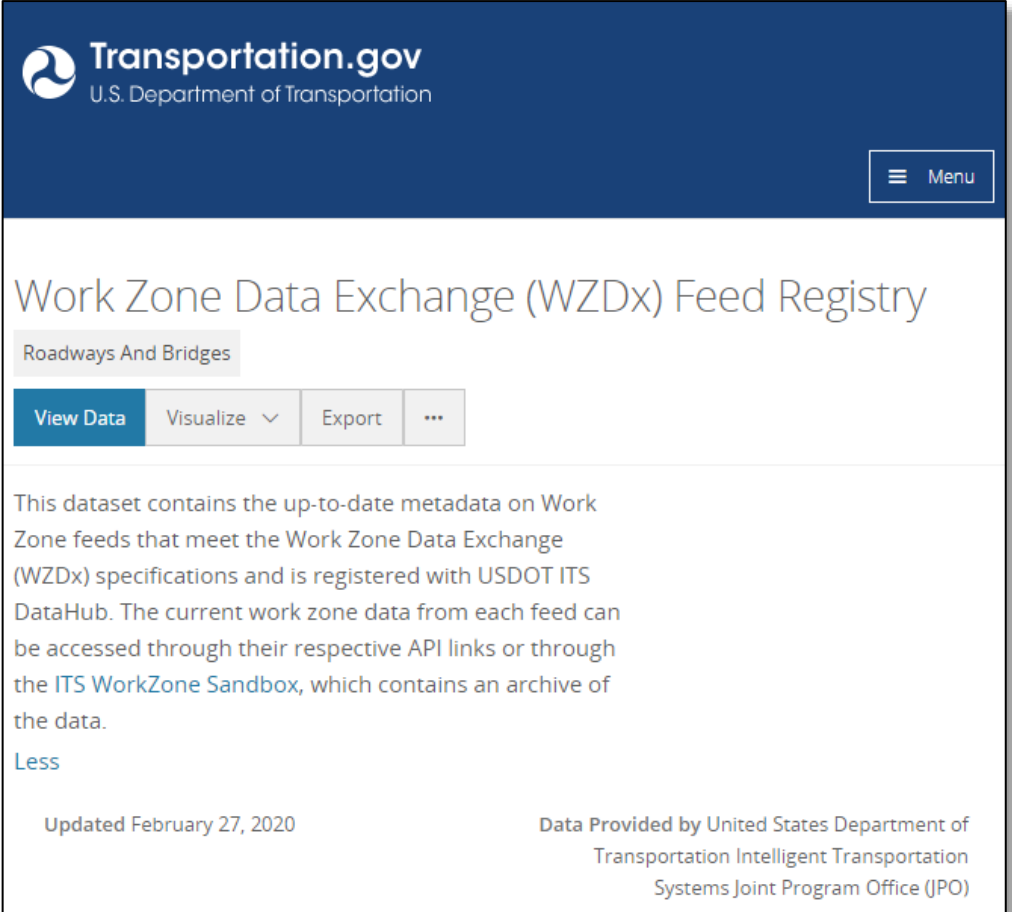
# WZDWG Subgroups Groups

<b>Specification Update Subgroup</b>	Update the WZDx specification
<b>Worker Presence Subgroup</b>	Promote the inclusion of real-time information on the presence of workers in work zones
<b>Technical Assistance Subgroup</b>	Identify best practices in implementing feeds
<b>Smart Work Zone Devices Subgroup</b>	Extend the specification to include real-time data from SWZ devices
<b>Specification Extension Subgroup</b>	Identify and draft extensions to the WZDx specification beyond work zones



# WZDx Feed Registry

- WZDx feeds are published and hosted by state/local roadway owners and operators
- USDOT maintains a directory of feeds so that data consumers can find an up-to-date list of active WZDx feeds



The screenshot shows the 'Work Zone Data Exchange (WZDx) Feed Registry' page on the Transportation.gov website. The header includes the Transportation.gov logo and 'U.S. Department of Transportation'. A 'Menu' button is in the top right. The main title is 'Work Zone Data Exchange (WZDx) Feed Registry'. Below it, a filter 'Roadways And Bridges' is selected. There are buttons for 'View Data', 'Visualize' (with a dropdown arrow), 'Export', and a three-dot menu. The main text describes the dataset: 'This dataset contains the up-to-date metadata on Work Zone feeds that meet the Work Zone Data Exchange (WZDx) specifications and is registered with USDOT ITS DataHub. The current work zone data from each feed can be accessed through their respective API links or through the ITS WorkZone Sandbox, which contains an archive of the data.' A 'Less' link is below this text. At the bottom, it says 'Updated February 27, 2020' and 'Data Provided by United States Department of Transportation Intelligent Transportation Systems Joint Program Office (JPO)'.

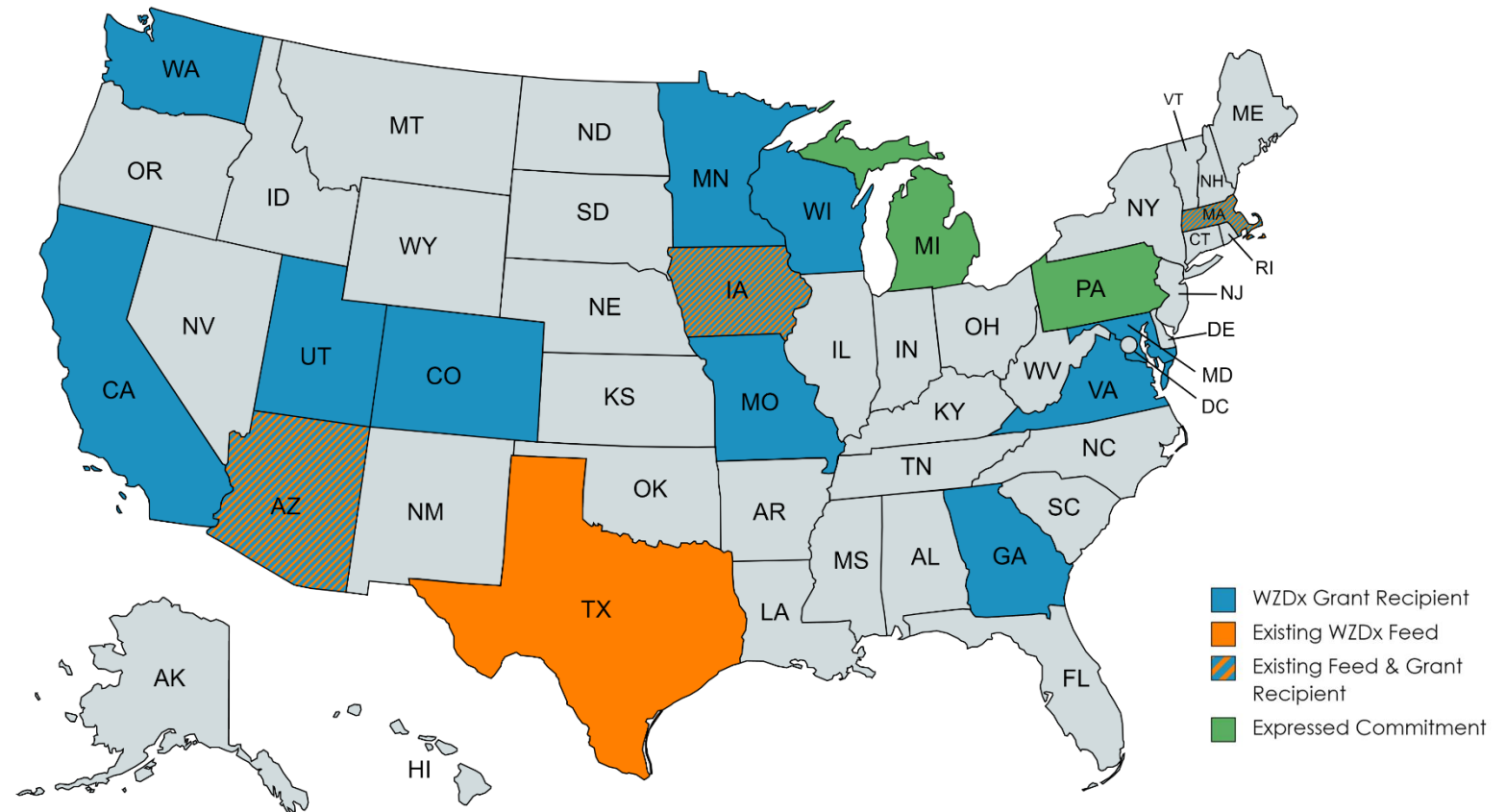
<https://datahub.transportation.gov/Roadways-and-Bridges/Work-Zone-Data-Exchange-WZDx-Feed-Registry/69qe-yiui>



# Work Zone Data Exchange Coverage

USDOT offered a one-time grant opportunity in 2020 for public roadway operators such as state/local agencies to establish WZDx data feeds.

**Find more information at:**  
[https://ops.fhwa.dot.gov/wz/wzdx/demonstration\\_grants.htm](https://ops.fhwa.dot.gov/wz/wzdx/demonstration_grants.htm)



USDOT ITS-JPO

# WZDx Use Case: Truck Operator Notification of Upcoming Work Zone

- Maricopa County (AZ) and Drivewyze demonstrated using WZDx to send work zone alerts to truck drivers via electronic logging devices
- WZDx feeds can include detour routes around a work zone
- Maricopa County and Arizona DOT will expand the scope of their WZDx feed with a WZDx Demonstration grant in 2021



<https://api.mcdot-its.com/WZDx/Activity/Get>



Source:  
Maricopa County





# WZDx Consumer: GM Super Cruise

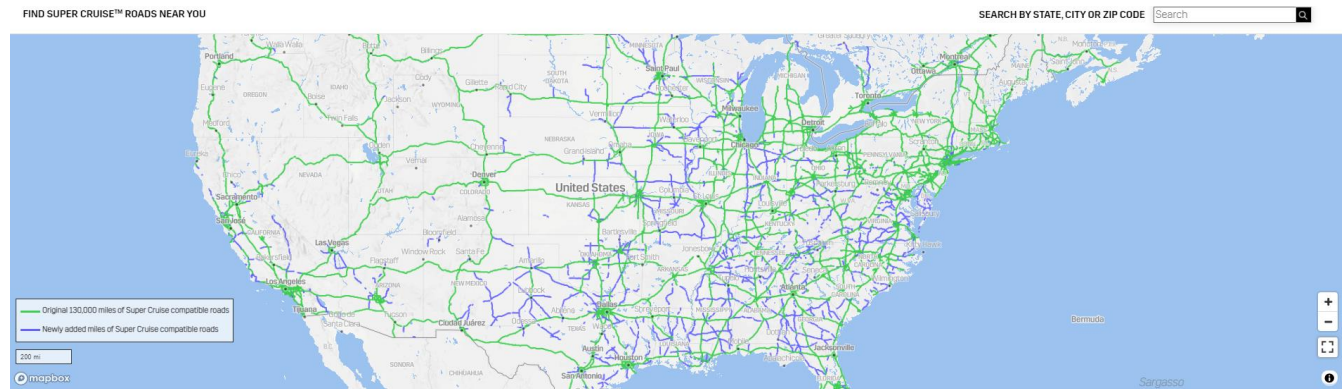
## INNOVATING THE FUTURE OF DRIVING. AGAIN.

GM's legacy of envisioning—and creating—the way forward continues. Offered on the 2018-2020 CT6, 2021 CT4, CT5 and Escalade, and forthcoming 2023 LYRIQ, available Super Cruise is the first true hands-free driving-assistance feature for compatible roads (2021 CT4 and CT5: late availability expected summer 2021). Super Cruise utilizes advanced technologies to provide the ease and convenience of hands-free driving, even while changing lanes, thanks to Lane Change on Demand, offered on 2021 Super Cruise-equipped vehicles. Your commute will never be the same.



<https://www.cadillac.com/world-of-cadillac/innovation/super-cruise/let-go>

Using LiDAR mapping technology, we've mapped over 200,000\* miles in the U.S. and Canada, and counting, of compatible roads. Your daily commute will never be the same. Search the map below to explore the compatible roads in the U.S.



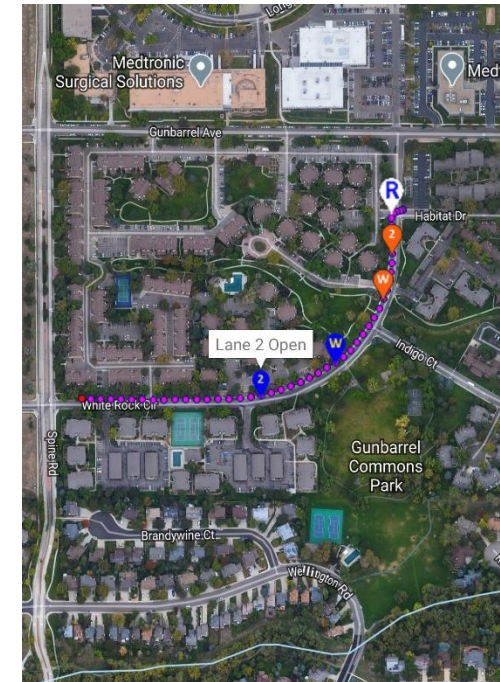
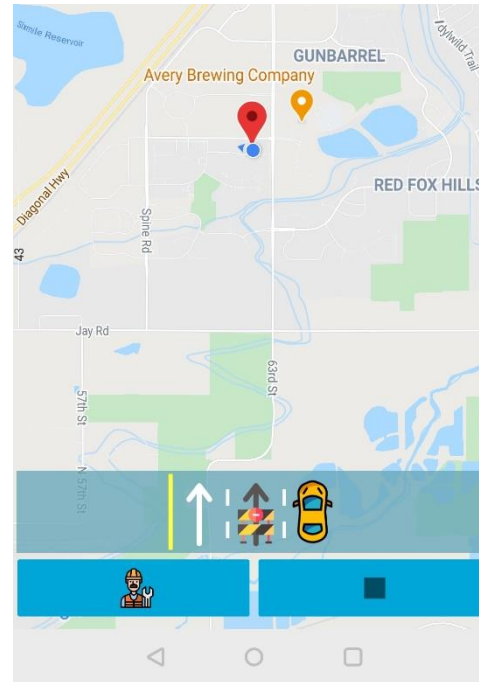
\*Compatible Super Cruise roads for 2020 and 2021 model year Super Cruise-enabled vehicles; dealer-installed software update required for 2018 model year and 2019 model year in order to be compatible with these roads.

<https://www.cadillac.com/world-of-cadillac/innovation/super-cruise>



# Work Zone Data Collection Toolset

- Automatically generate WZDx data feed for a work zone
- Uses a GPS-enabled laptop or Android device driven through a work zone for WZDx feed generation
- Free and open-source; currently being tested by several states



U.S. DOT, FHWA



# Specification Extension Subgroup

- Finds use cases other than work zones
- Maximizes benefit of the WZDx specification through data modeling best practices
- Fosters the specifications efficacy through increased safety and efficiency
- Draws attention to the Work Zone Data Exchange specification by addressing adjacent problems
- E.g., Low Clearances in NY



# Get Involved!

- **Join the WZDWG** – Sign up for our mailing list by emailing [AVDX@dot.gov](mailto:AVDX@dot.gov) to stay up to date on the latest spec updates and working group activities
- **Join a subgroup** – Help guide the development of the specification and drive adoption by participating in subgroup activities
- **Get on GitHub** – Ask questions, submit an issue, or share knowledge with the community



# Questions?



# Resources

**To learn more and access available resources, please visit:**

- [WZDx Version 3.1 Specification](#)
- [WZDx GitHub Wiki](#) (Day-to-Day Subgroup Activities)
- [WZDx Technical Assistance Help Desk](#)
- [WZDx Data Feed Registry](#)
- [FHWA WZDI Data Dictionary and Framework](#)
- [Work Zone Data Collection Toolset](#)

**For more information on the WZDx project or anything else related to the Work Zone Data Working Group, contact [AVDX@dot.gov](mailto:AVDX@dot.gov).**







## Poll #2

**Would you be interested in a deeper dive into the technical details of WZDx?**

- Yes
- No
- Maybe





## Poll #3

**Is your agency planning to (or possibly actively) specifying WZDx in future builds of ATMS or CMS?**

- Yes
- No
- I need more info to answer





# Additional Questions



Meeting information & presentations will be posted to The Eastern Transportation Coalition website.  
Participants will receive a link to the presentations after they are posted.



# THANK YOU!

*For Questions or Additional Information, please contact:*

**Denise Markow, TSMO Director**, 301-789-9088, [dmarkow@tetcoalition.org](mailto:dmarkow@tetcoalition.org)