

# KYTC *Real-Time* Data

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Intelligent Transportation Systems

<http://transportation.ky.gov/realtime>



# Need for Change

- 2014 Title 23 CFR 511.301-315
  - 10/20 Minutes Timeframe
  - Road and/or Lane Closures
  - Roadway Weather and/or Environmental Conditions
  - Travel Times or Speeds
  - Data Accuracy of 85%
  - Data Availability of 90%
- 2014 Winter: \$78mil & Salt Shortage
- 2014 Waze Connected Citizens Program
- 2015 Winter: \$68mil & Record Snowfall



# Software and Data Mashup

- ArcGIS Online
- GeoEvent Processor
- Python Coding
- Spark
- Hadoop
- Waze
- KYTC Snow Plows
- Twitter / Social Media
- HERE Traffic
- NWS Doppler Radar
- KYMesonet Air Temps
- KYTC RWIS Pavement Temps
- CoCoRahs Precipitation

Currently processing 15-20mil records per day.





# CONNECTED CITIZENS

by waze

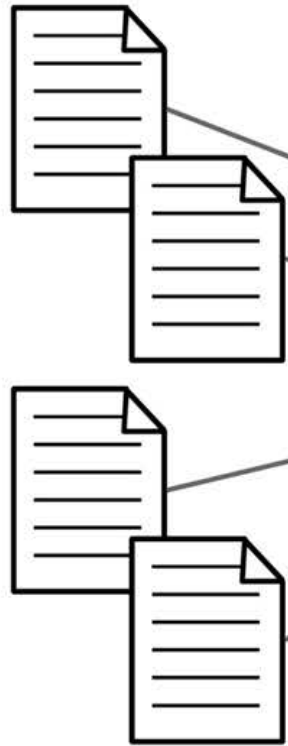
[Video](#)

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# Feed Data Flow

CCP Feed Providers



Fetching:  
every 2-30 mins

Incidents Gateway

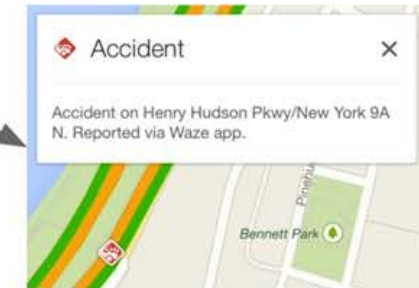


Processing: Geocoding,  
Street lat / lon matching

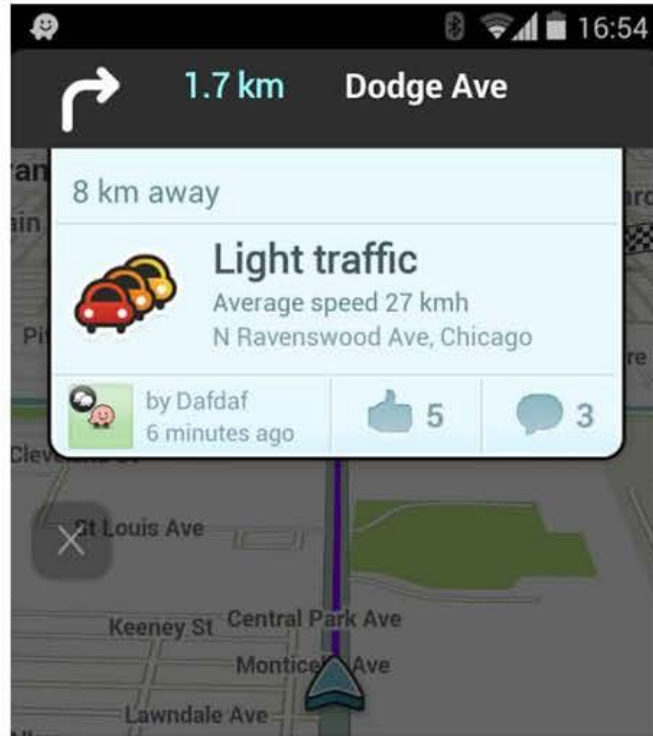
Display in Waze App  
Updated every 2-5  
mins

Display in Google  
Updated every 5-7  
mins

Waze / Google



# WAZE FEED



The Waze feed includes real-time information on:

- **System-generated traffic jams:** identified by analyzing user GPS signals
- **User-reported incidents:** Accidents, traffic jams, hazards, construction, potholes, roadkill, stopped vehicles, objects on road, missing signs

The feed does not include any personal user details

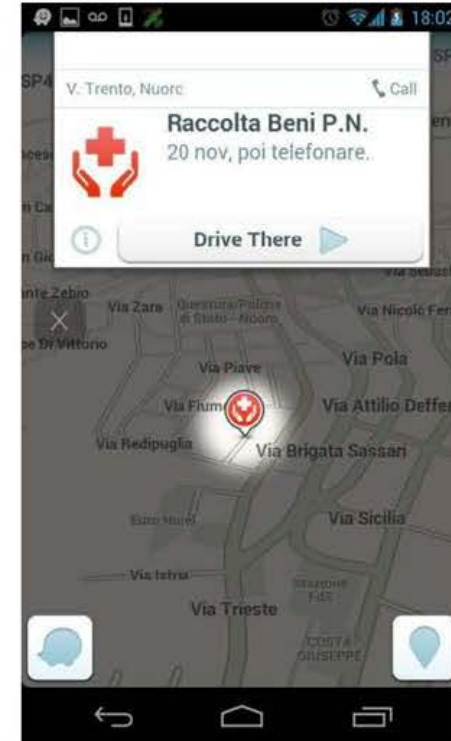


# MAJOR TRAFFIC EVENTS

## PLANNED



## REAL-TIME



# WAZE DATA: RELIABILITY

Confidence Score Metrics



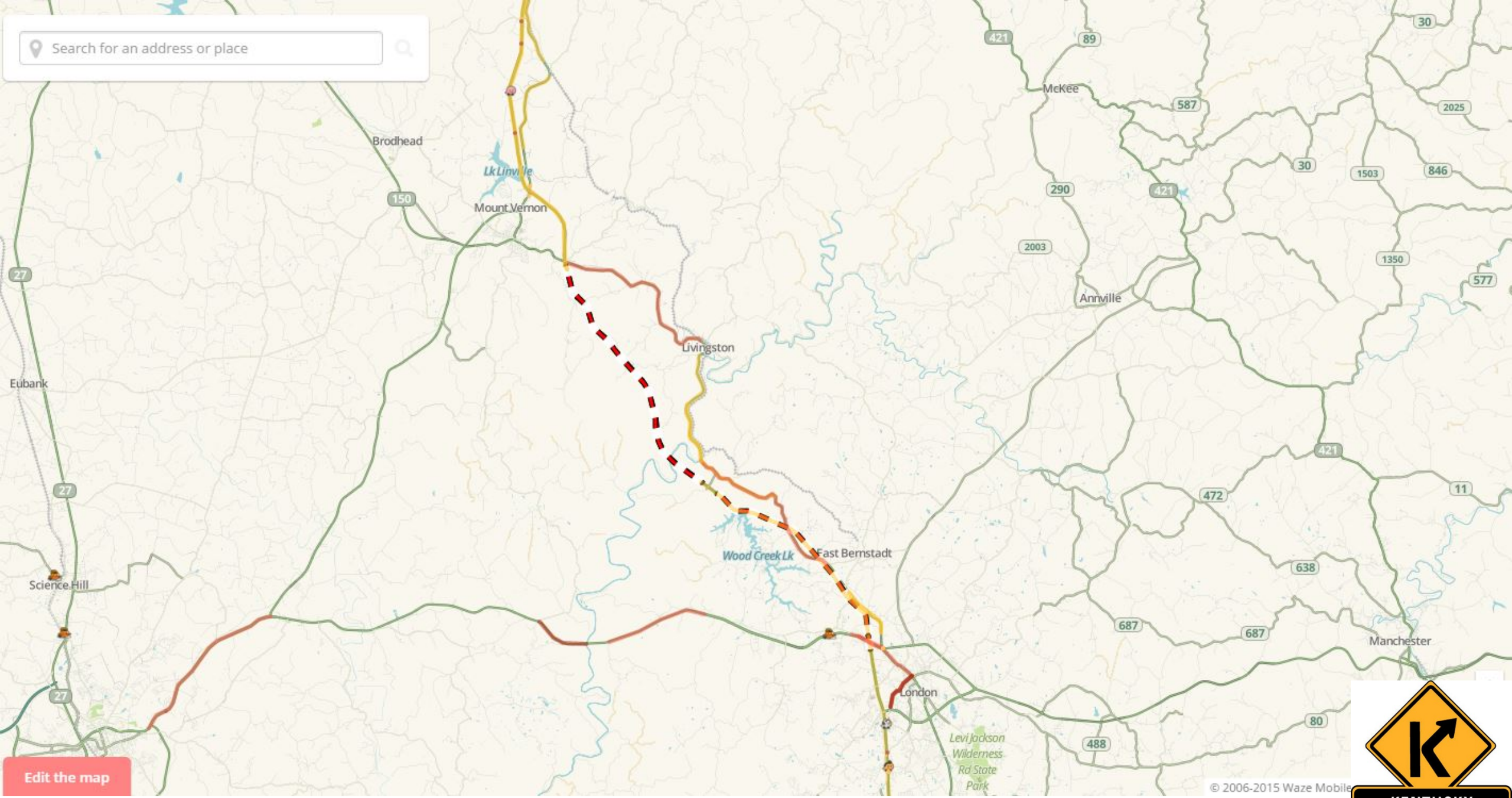
Thumbs  
up/down



User level



Search for an address or place



Edit the map

© 2006-2015 Waze Mobile

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**KENTUCKY  
TRANSPORTATION  
CABINET**

**Flood**  
I-75 N

roads are flooding, be careful!

Reported by Teno1971  
14 min ago

0 0

**Chit-Chat**  
I-75 N

I'm what's going on up north 75

Reported by Biggpoppa1  
59 min ago

11 2

Are you moving  
RKnightSunny 9 min ago

No  
BrianOliverMeow2 8 min ago

**Chit-Chat**  
KY-80

anyone on hwy 80? Is I 75 open back up North bound?

Reported by DveraGreen  
1 h 39 min ago

12 4

Had a chat with 911 , they said it will take 2 to 3 hrs more, but the news say I 75 is open and i can see traffic moving very slow  
AdAdletsroll 3 min ago

**Chit-Chat**  
Reported by Biggpoppa1  
46 min ago

3 2

apparently they got the road cleared of ice, but there's a couple accidents now  
jowees 26 min ago

I'm park Knoxville so what's the road


**Freezing Rain**  
Hal Rogers Pkwy

hazardous driving conditions

Reported by KYTC  
17 h 22 min ago

9 7

don't get on 75 n they are rerouting everyone off to shelter so they can plow  
goingvroomvroom 3 h 49 min ago




**Chit-Chat**  
Melcon Ln

Is I75N moving yet? Im at hwy80. Traffic backed up to get on 75. Post when its moving. Still shows closed on waze map.

Reported by ChristineHop...  
29 min ago

2 0



**Stand Still Traffic Jam**  
stopped

Reported by jowees  
39 min ago

3 5

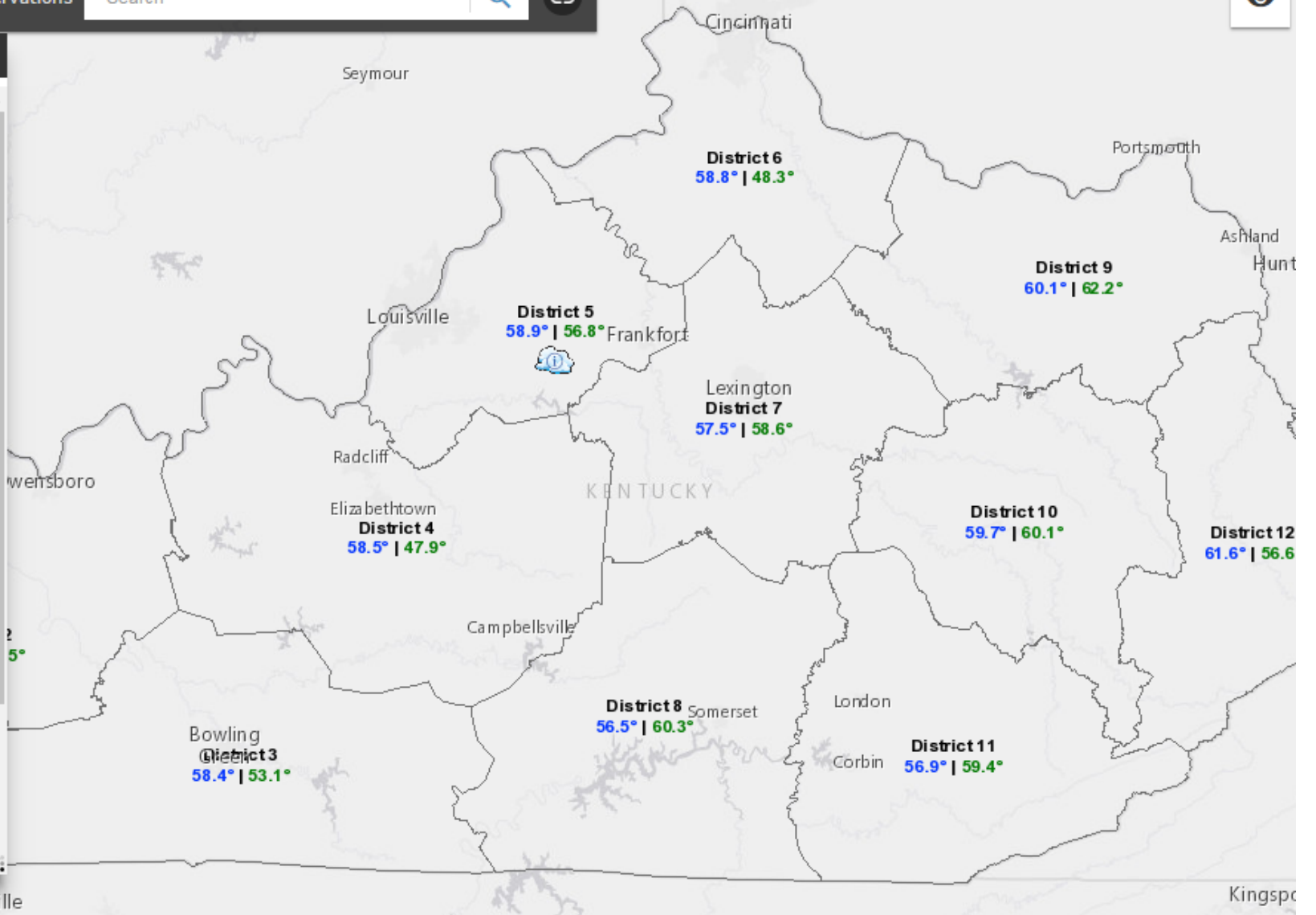




Layer List

Operational Layers

- Snow and Ice Priority Routes (AGOL)
- Traffic Cameras (AGOL)
- KYTC Properties (AGOL)
- Snowfall
- AVL Current (KYTC Service)
- Road Labels (KYTC Service)
- KYTC Status
- Road Treatment
- Waze Alerts (KYTC Service)
- Waze Jams (KYTC Service)
- HERE Jams Current (KYTC Service)
- IEM WMS Service



<http://transportation.ky.gov/realtime>

37.784 -89.462 Degrees

30mi

TENN





**Layer List** - X

- USA Freeway System - USA Freeway System (over 1:500k)
- Road Treatment
- AVL Current (KYTC Service)
- Waze Alerts (KYTC Service)
  - WAZE Weather Alerts and Accidents (Last 15 Minutes)
    - Major Accident; Minor Accident
    - Ice on Road
    - Heavy Snow
    - Freezing Rain
    - Heavy Rain
  - WAZE Weather Alerts and Accidents (Last 12 Hours)
  - WAZE ALL Alerts (Last 12 Hours)
- Waze Jams (KYTC Service)

(1 of 2) ▶ □ X

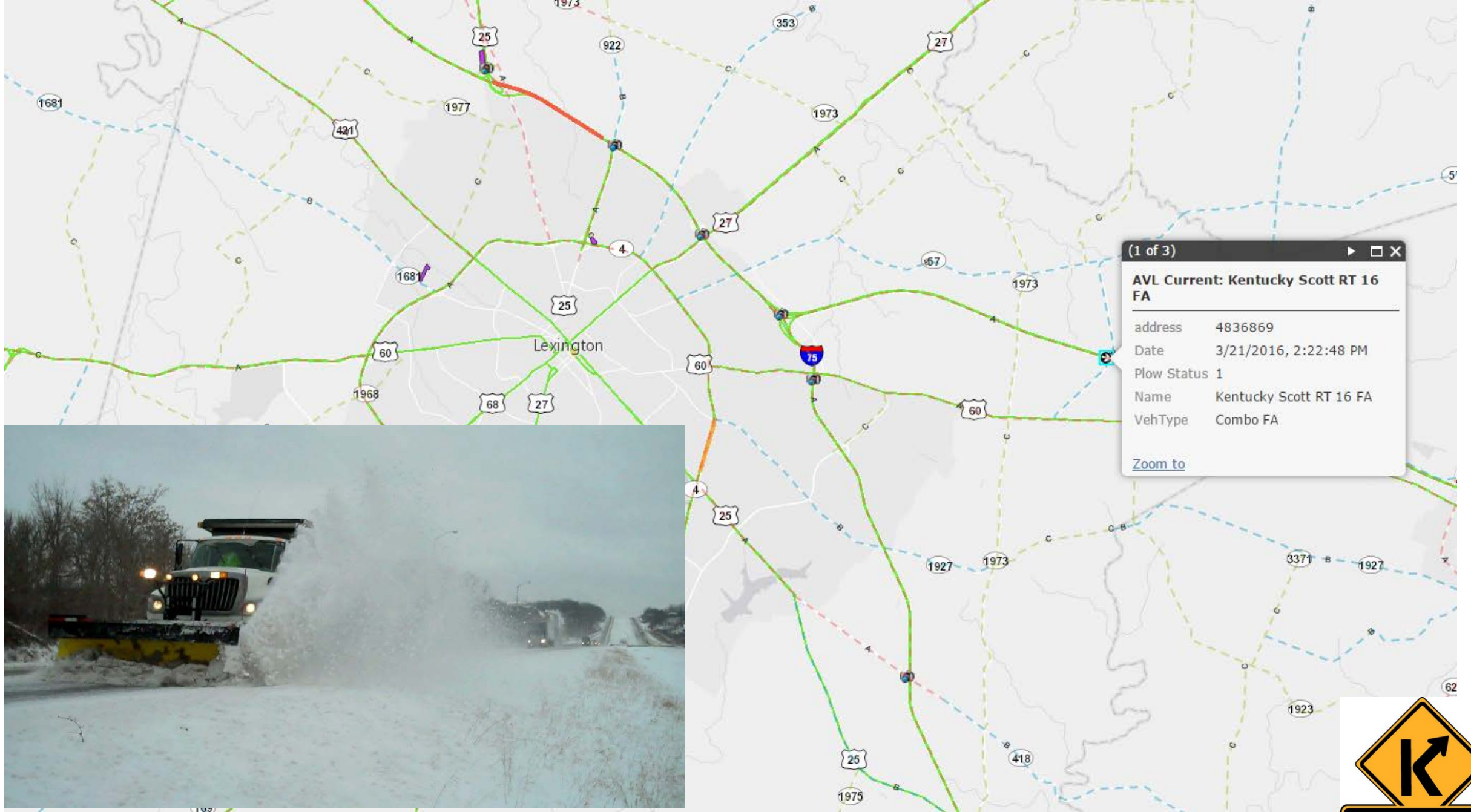
**WAZE Weather Alerts and Accidents (Last 15 Minutes): I-75 N**

---

Date	1/12/2016, 8:34:58 AM
Street	I-75 N
Subtype	Heavy Snow
Reliability	6.00
Report Rating	3.00
Country	US
City	
Report Description	

[Zoom to](#)

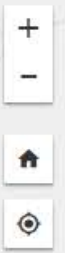






# Roadway Advisory Map

Real-Time Observations



38.133 -83.787 Degrees  
2mi



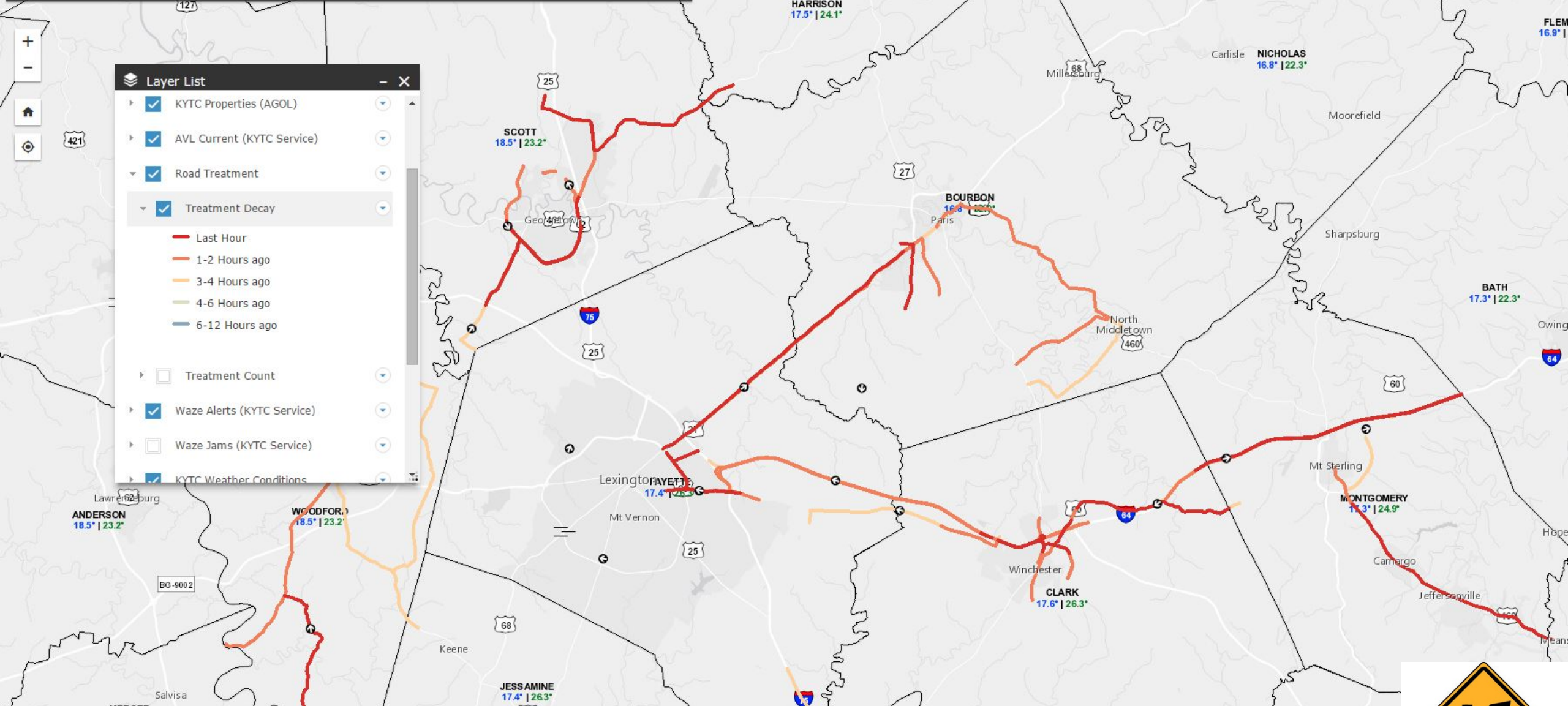
Options Filter by Map Extent Zoom to Clear Selection Refresh

Vaze Jams WAZE Weather Alerts and Accidents (Last 15 Minutes) **WAZE Weather Alerts and Accidents (Last 12 Hours)** WAZE ALL Alerts (Last 12 Hours) Treatment Decay Treatment Count Tornado Warning Severe Thun

Date	Street	Subtype	Reliability	Report Rating	Country	City
3/3/2016, 12:59:49 PM	I-64 W	Ice on Road	5.00	1.00	US	
3/3/2016, 1:20:13 PM	KY-36	Ice on Road	5.00	1.00	US	
3/3/2016, 12:20:23 PM		Ice on Road	5.00	2.00	US	
3/3/2016, 12:51:07 PM	Flemingsburg Rd	Minor Accident	5.00	1.00	US	
3/3/2016, 12:52:20 PM	Flemingsburg Rd	Ice on Road	5.00	1.00	US	
3/3/2016, 1:10:49 PM	I-64 W	Ice on Road	5.00	1.00	US	

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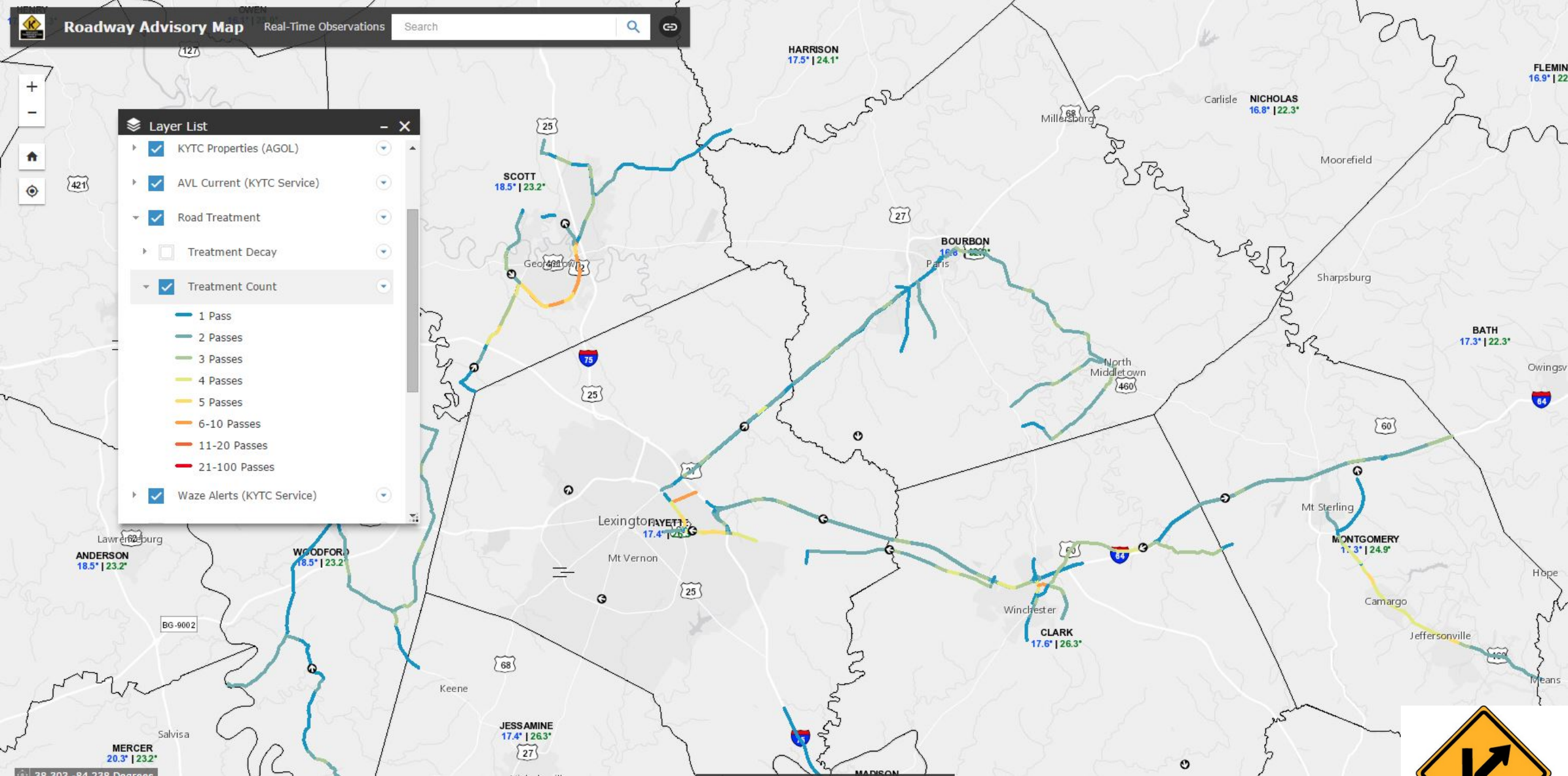
**Layer List**

- KYTC Properties (AGOL)
- AVL Current (KYTC Service)
- Road Treatment
  - Treatment Decay
    - Last Hour
    - 1-2 Hours ago
    - 3-4 Hours ago
    - 4-6 Hours ago
    - 6-12 Hours ago
- Treatment Count
- Waze Alerts (KYTC Service)
- Waze Jams (KYTC Service)
- KYTC Weather Conditions



**Layer List**

- KYTC Properties (AGOL)
- AVL Current (KYTC Service)
- Road Treatment
  - Treatment Decay
- Treatment Count
  - 1 Pass
  - 2 Passes
  - 3 Passes
  - 4 Passes
  - 5 Passes
  - 6-10 Passes
  - 11-20 Passes
  - 21-100 Passes
- Waze Alerts (KYTC Service)



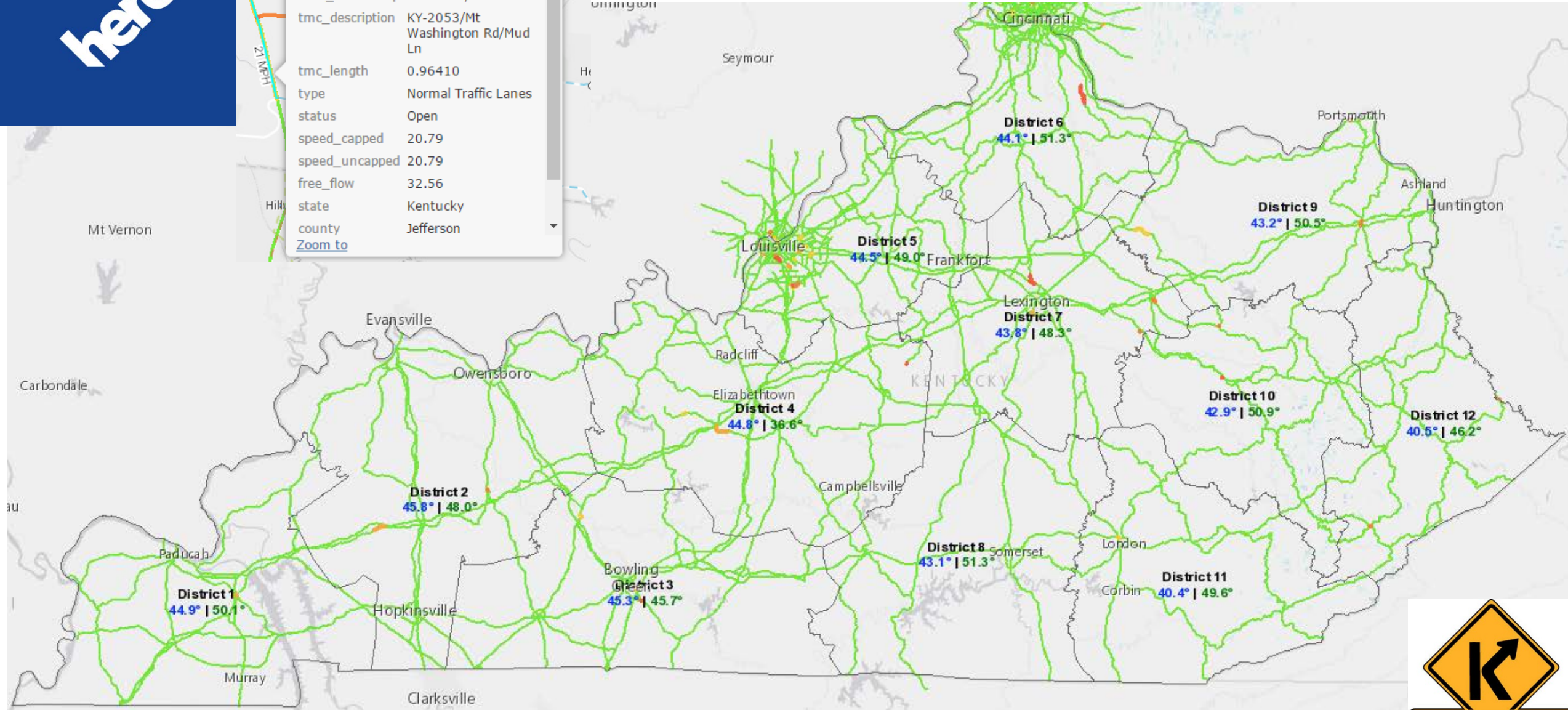


here

(1 of 2)

HERE Jams: 121N07687

roadway_id	121-00599
road_description	KY-61
base_timestamp	March 21, 2016
tmc_description	KY-2053/Mt Washington Rd/Mud Ln
tmc_length	0.96410
type	Normal Traffic Lanes
status	Open
speed_capped	20.79
speed_uncapped	20.79
free_flow	32.56
state	Kentucky
county	Jefferson
<a href="#">Zoom to</a>	



here

The screenshot displays a Waze web application interface. The main map shows a network of roads in Louisville, KY, with various overlays. A blue banner in the top left corner contains the word "here".

**HERE Jams: 121P04268**

roadway_id	121+03004
road_description	I-65
base_timestamp	March 21, 2016
tmc_description	Crittenden Dr
tmc_length	1.44293
type	Normal Traffic Lanes
status	Open
speed_capped	12.12
speed_uncapped	12.12
free_flow	55.30
state	Kentucky
county	Jefferson
direction	NORTHBOUND
<a href="#">Zoom to</a>	

**Layer List**

- Waze Alerts (KYTC Service)
- WAZE Weather Alerts and Accidents (Last 15 Minutes)
  - Major Accident; Minor Accident
  - Ice on Road
  - Heavy Snow
  - Freezing Rain
  - Heavy Rain
- WAZE Weather Alerts and Accidents (Last 12 Hours)
  - Major Accident; Minor Accident
  - Ice on Road
  - Heavy Snow
  - Freezing Rain
  - Heavy Rain
- WAZE ALL Alerts (Last 12 Hours)
- Waze Jams (KYTC Service)
- HERE Jams Current (KYTC Service)
- IEM WMS Service
- Short-Duration Hazards - Warnings
- Short-Duration Hazards - Watches

**WAZE Weather Alerts and Accidents (Last 12 Hours): Breckenridge Ln**

Date	3/21/2016, 11:04:15 AM
Street	Breckenridge Ln
Subtype	Major Accident
Reliability	5.00
Report Rating	1.00
Country	US
City	St. Matthews, KY
Report Description	
<a href="#">Zoom to</a>	





non

Bloomington

Seymour

Cincinnati

Vincennes

Portsmouth

Ashland

Huntington

Louisville

Evansville

Owensboro

Radcliff

Elizabethtown  
**District 4**  
53.7° | 42.8°

**District 9**  
53.4° | 53.0°

**District 10**  
54.1° | 53.4°

**District 12**  
53.3° | 47.1°

Campbellsville

**District 8**  
53.0° | 53.8°

Somerset

London

Corbin

**District 11**  
51.3° | 51.4°

Paducah

**District 1**  
55.9° | 55.0°

Hopkinsville

Bowling Green  
**District 3**  
54.2° | 50.0°

Murray

Clarksville

Kin

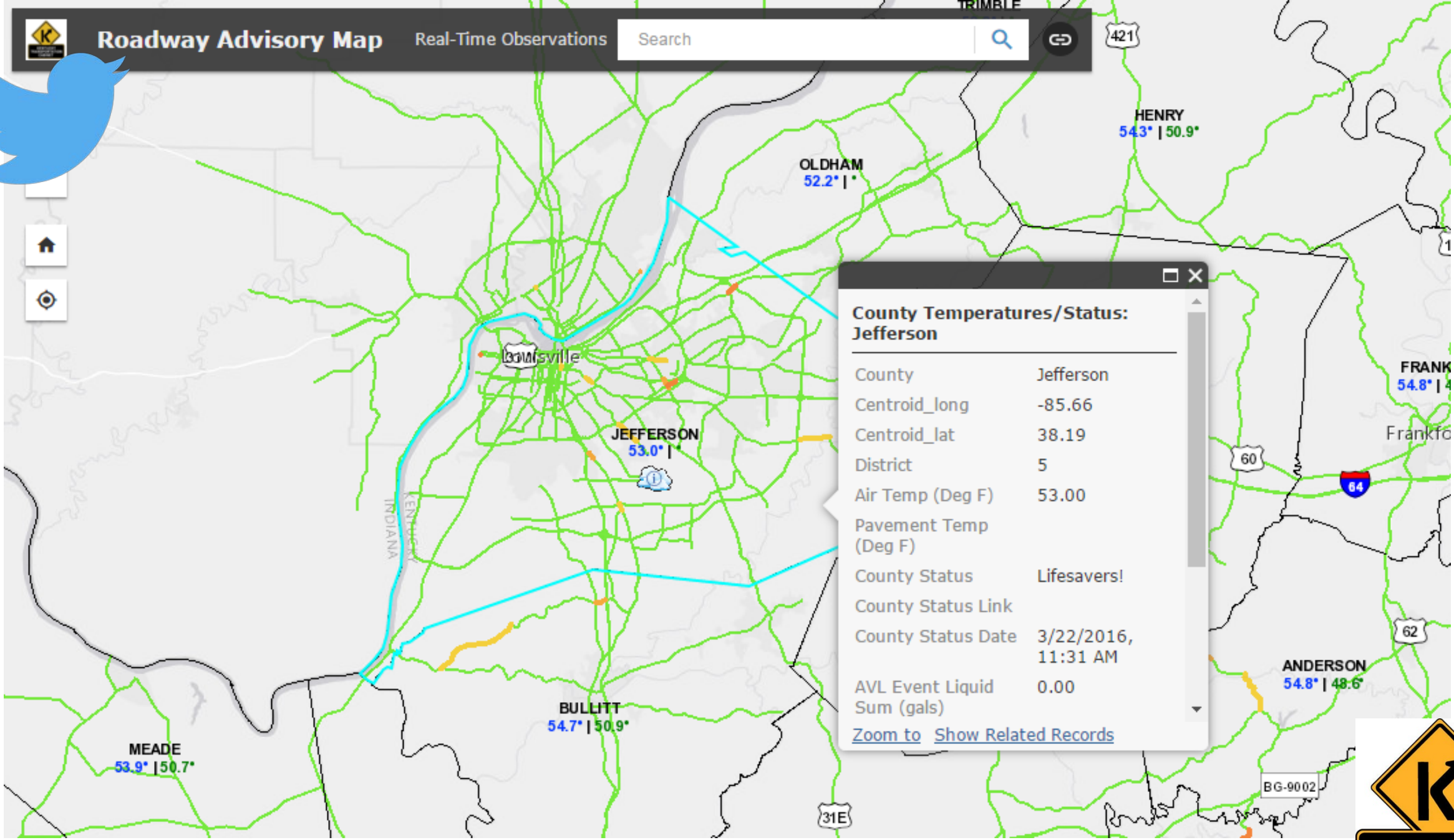
**District 6**

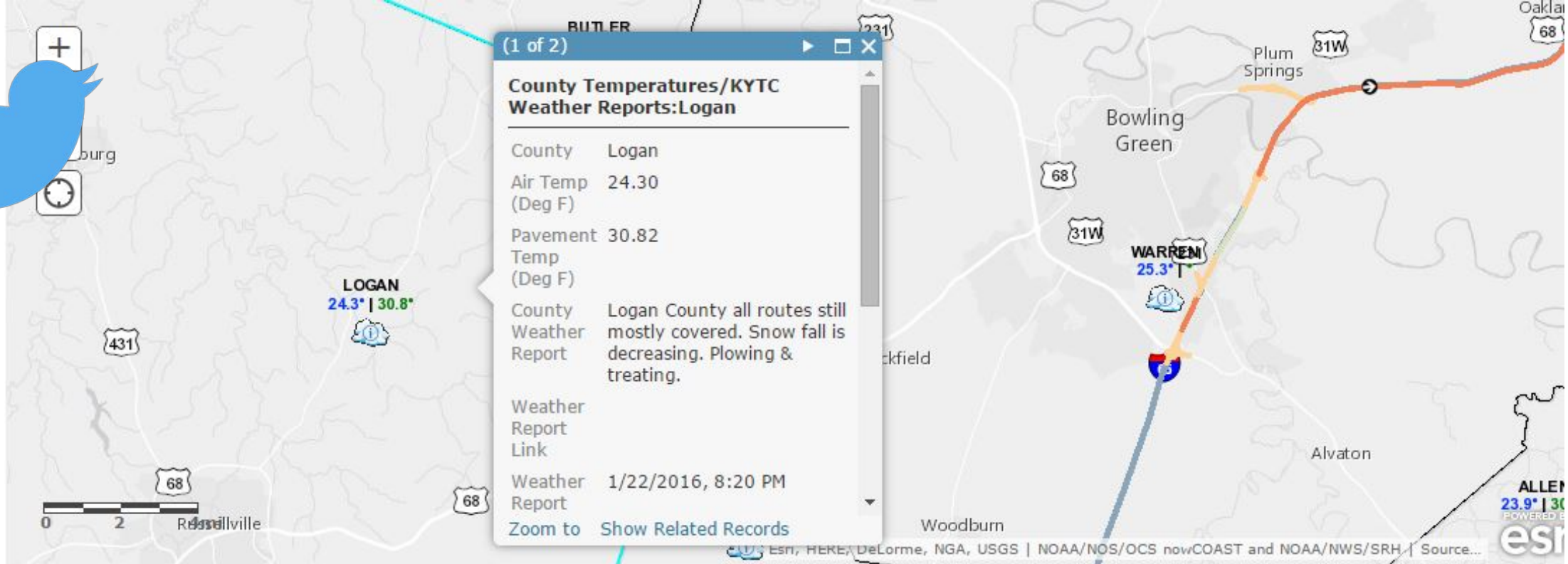
**District Temperatures/Status: 5**

District	5
Average Air Temp (Deg F)	53.40
Average Pavement Temp (Deg F)	50.27
District Status	D05-Lifesavers Conference!
District Status Link	
District Status Date	3/22/2016, 11:31 AM

[Zoom to](#) [Show Related Records](#)







**KYTC Weather Conditions - KYTC Weather Reports (6 features)** Table Options ▾

ID_Str	County	Text	date
690407344719667201	Logan	Weather Update: Logan County - Crews have begun pretreating the roadways.	January 22, 2016
690592842994053121	Logan	Logan County all routes covered. Heavy snow.	January 22, 2016
690619640309936128	Logan	Logan County all routes covered. 7-8" snow so far, Heavy snow continues.	January 22, 2016
690617661223477249	Logan	Logan County all routes covered. Heavy snow continues.	January 22, 2016
690705638935105538	Logan	Logan County all routes still mostly covered. Snow fall is decreasing. Plowing & treating.	January 22, 2016







# I-75 Pilot: District 11


- Press Release
- Tweet closure within 20min
- Tweet opening within 20min


Tweets Tweets & replies


 **KY Lane Closures** @KYLaneClosures · 32m  
Interstate 75 northbound at exit 59 both lanes are now open.

 **KY Lane Closures** @KYLaneClosures · 5h  
Interstate 75 northbound at exit 59 is down to one lane for roadway lighting work.

Tweets Tweets & replies

 **KYTC511** @KYTC511 · 33m  
Interstate 75 northbound at exit 59 both lanes are now open.

 **KYTC511** @KYTC511 · 5h  
Interstate 75 northbound at exit 59 is down to one lane for roadway lighting work.

 **KYTC511** @KYTC511 · 5h  
TRAFFIC ALERT: Left lane of I-75 north in

OBJECTID	Text	Link	Date	ID_Str	UserName	S
9621	Interstate 75 northbound at exit 59 both lanes are now open.		7/21/2015 17:27:11.0000000	623544765297127424	KYLaneClosures	P
9620	Interstate 75 northbound at exit 59 is down to one lane for roadway lightin...		7/21/2015 13:09:20.0000000	623479876343873541	KYLaneClosures	P
8822	Southbound I-75 at exit 59 both land are now open.		7/20/2015 19:38:37.0000000	623215452299337728	KYLaneClosures	P
9220	RT @KYLaneClosures: Interstate I 75 south bound Is shut down to one lane...		7/20/2015 15:15:12.0000000	623149162536808448	KYI65thm	{
8821	RT @KYLaneClosures: Interstate I 75 south bound Is shut down to one lane...		7/20/2015 15:10:56.0000000	623148090015547394	KYTC511	{
8820	Interstate I 75 south bound Is shut down to one lane at exit 59 for road wa...		7/20/2015 13:57:06.0000000	623129507067768832	KYLaneClosures	{



Flickr photos filtered by: rain OR tornado OR blizzard OR ice OR snow



Twitter tweets filtered by: rain OR tornado OR storm OR ice OR blizzard OR wind



YouTube videos filtered by: rain OR tornado OR storm OR ice OR blizzard OR wind



NOAA\_Storm\_Reports

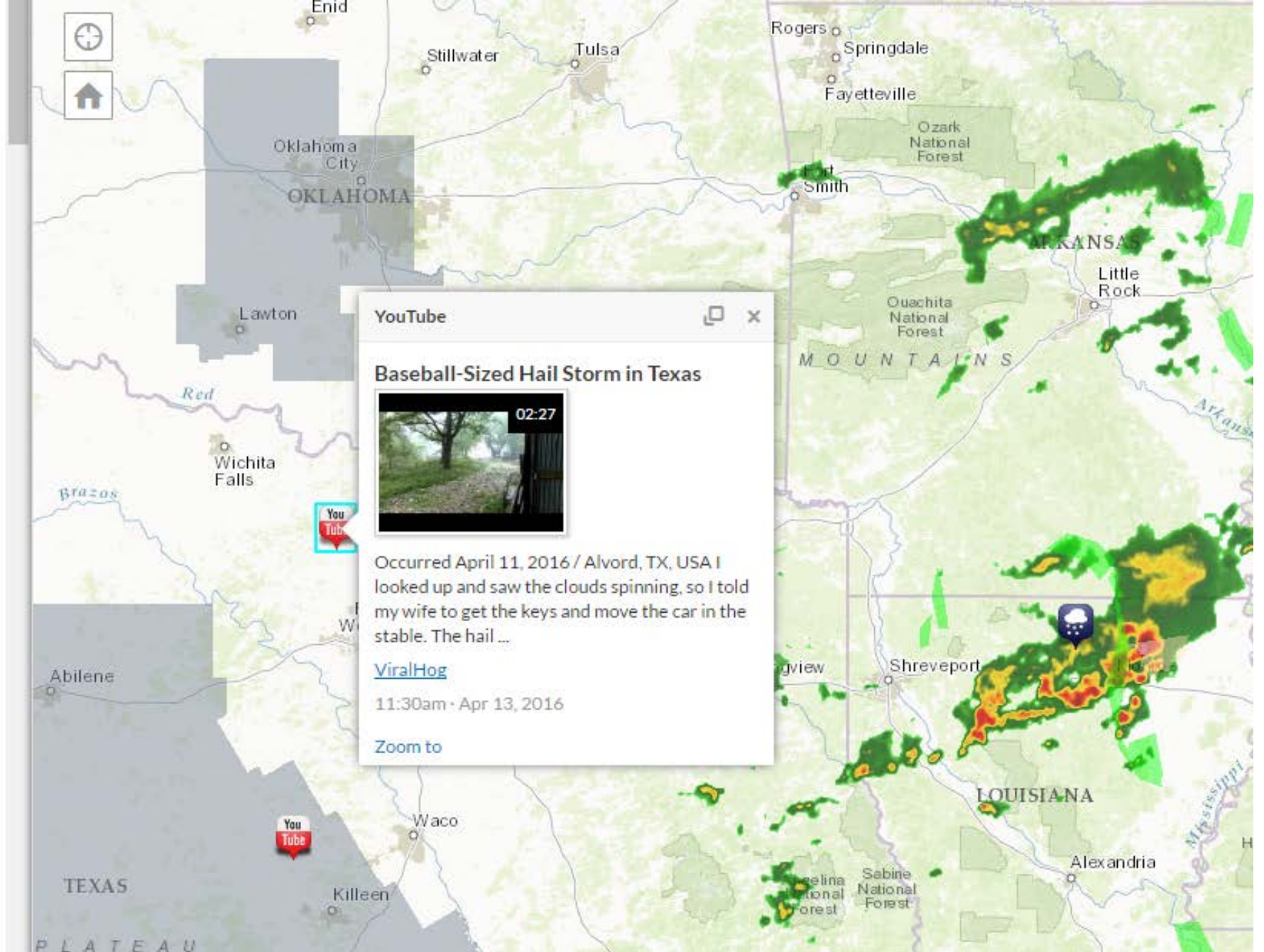
Hail Storm Reports (24 hours)



Tornado Reports (24 hours)



Wind Storm Reports (24 hours)



Flickr photos filtered by: rain OR tornado OR blizzard OR ice OR snow



Twitter tweets filtered by: rain OR tornado OR storm OR ice OR blizzard OR wind



YouTube videos filtered by: rain OR tornado OR storm OR ice OR blizzard OR wind



NOAA\_Storm\_Reports

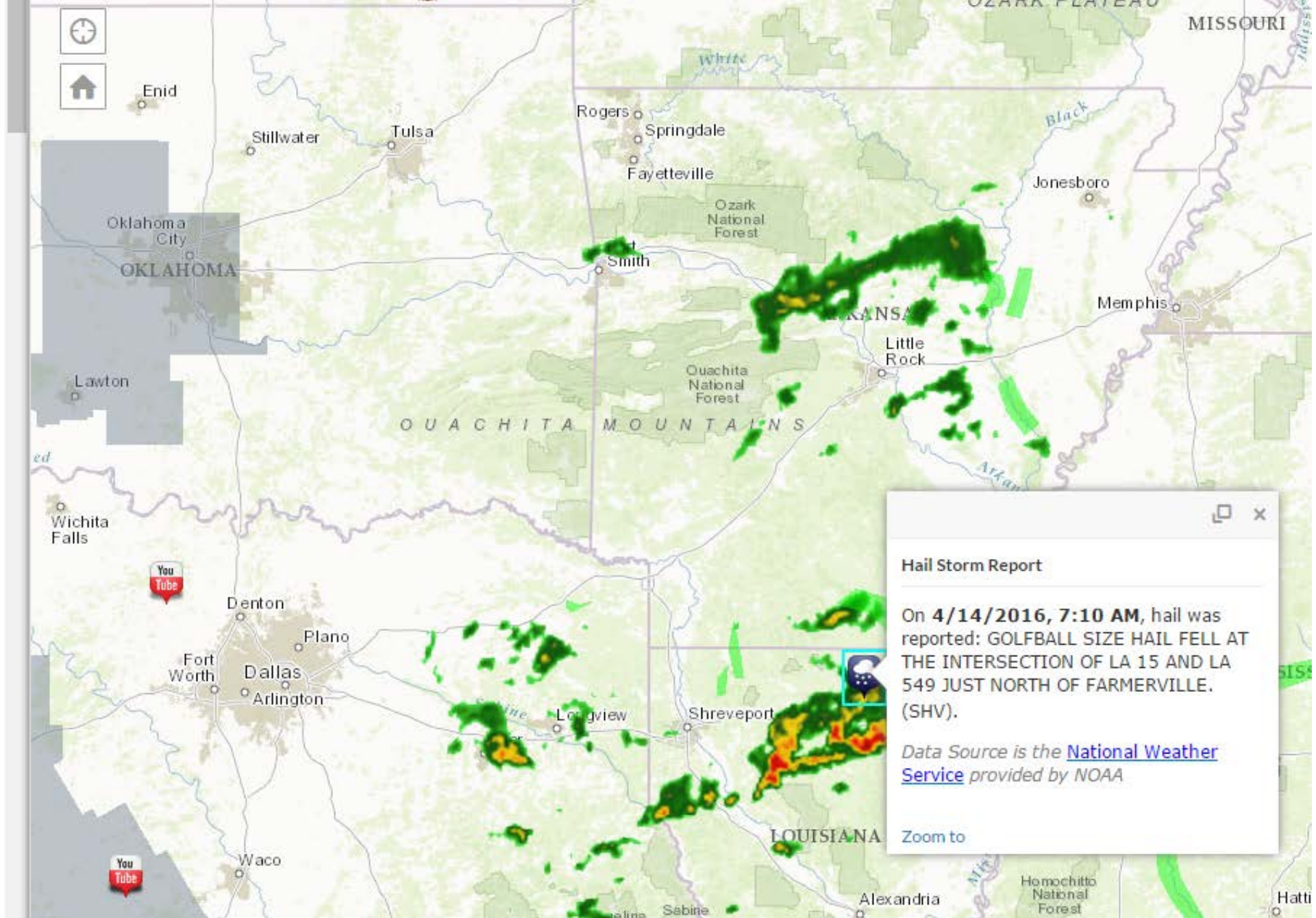
Hail Storm Reports (24 hours)



Tornado Reports (24 hours)



Wind Storm Reports (24 hours)



**Hail Storm Report**

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On **4/14/2016, 7:10 AM**, hail was reported: **GOLFBALL SIZE HAIL FELL AT THE INTERSECTION OF LA 15 AND LA 549 JUST NORTH OF FARMERVILLE. (SHV).**

Data Source is the [National Weather Service](#) provided by NOAA

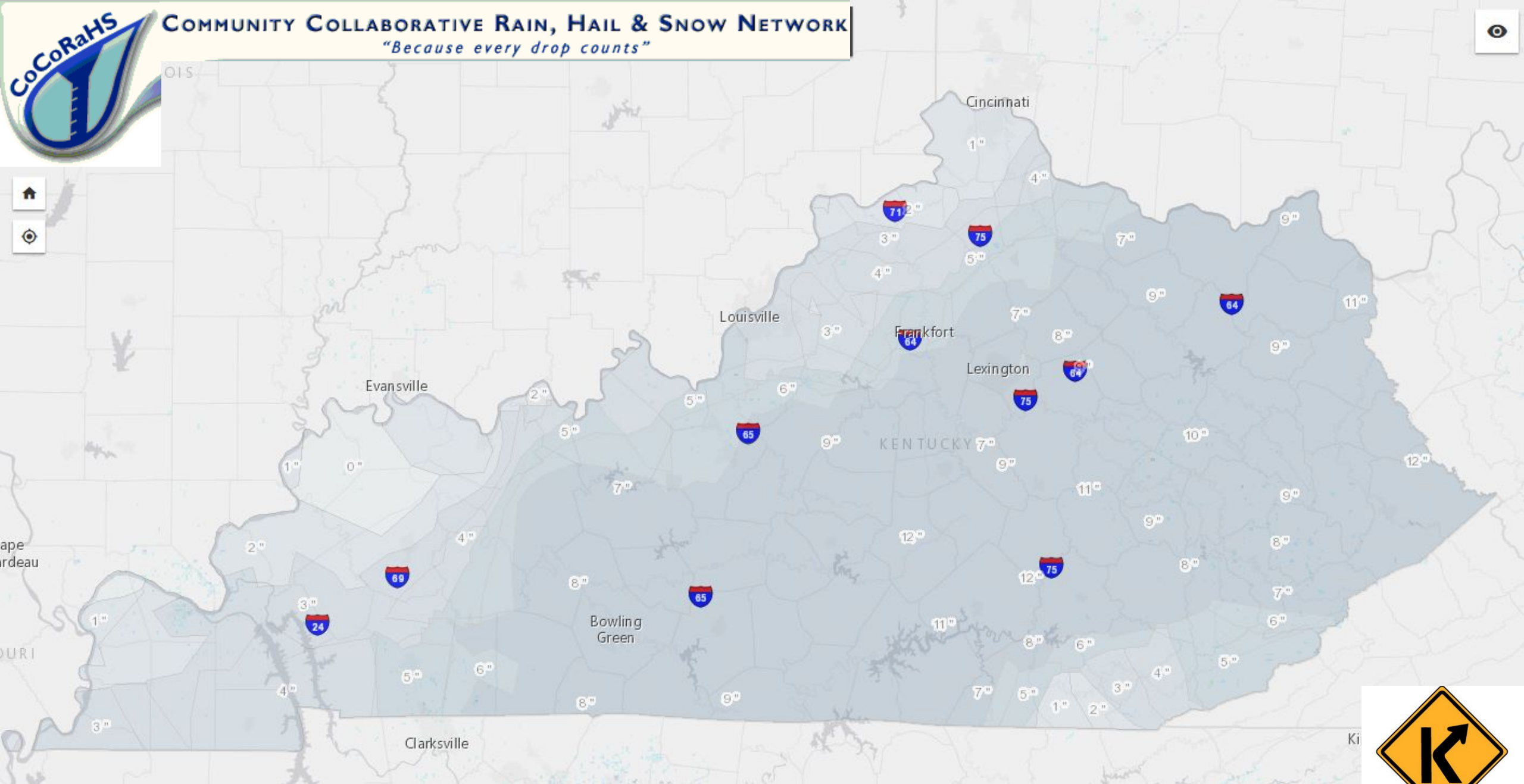
Zoom to

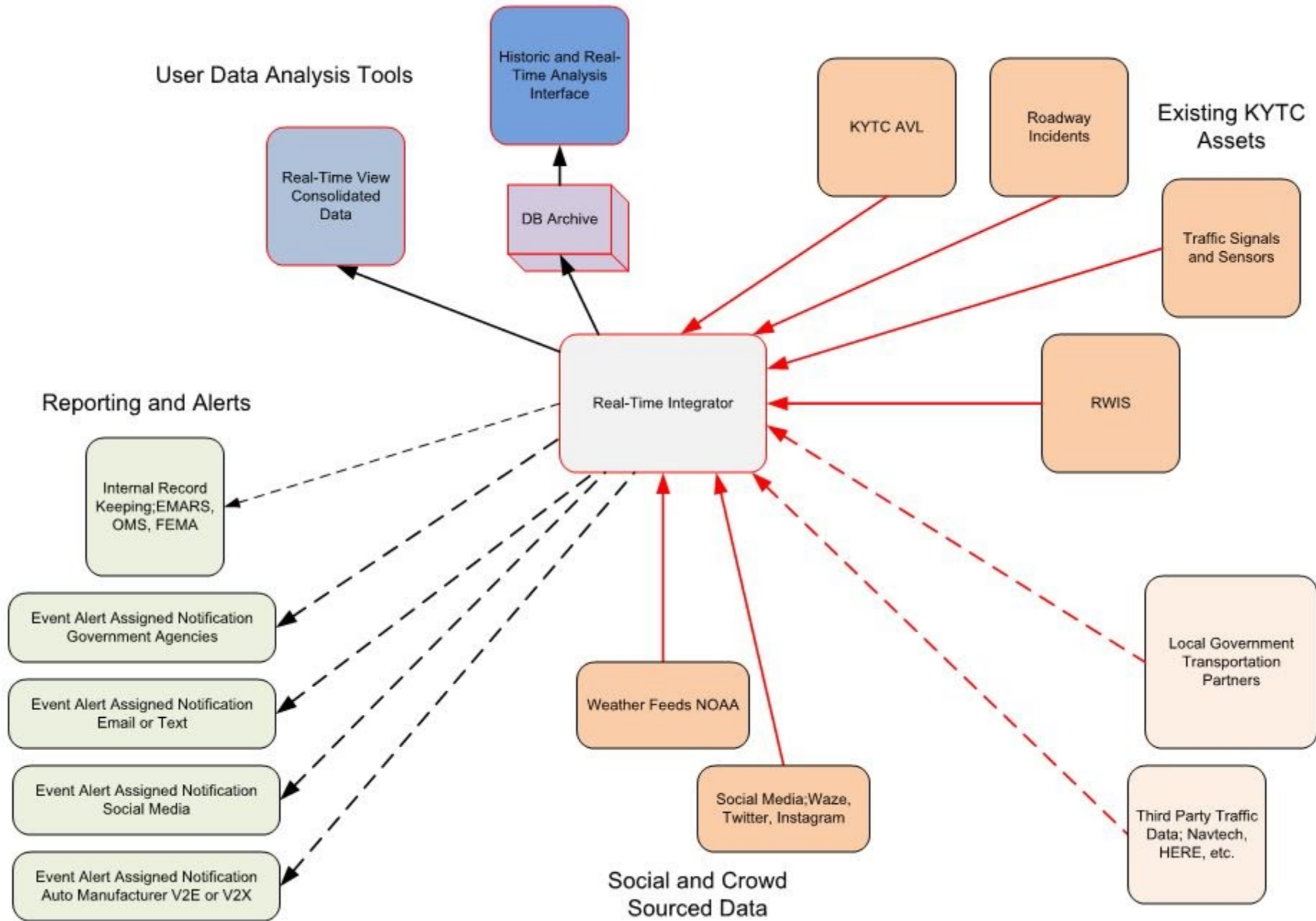




# COMMUNITY COLLABORATIVE RAIN, HAIL & SNOW NETWORK

*"Because every drop counts"*





# Giving Credit!



Real-Time GIS

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“Big Data” Enterprise Architect

[Vineet.Kumar@ky.gov](mailto:Vineet.Kumar@ky.gov)



Just a Pretty Face

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