

IOWA'S WINTER DATA AND PRODUCTS

ERIC ABRAMS

IOWA DEPARTMENT OF TRANSPORTATION

ERIC.ABRAMS@IOWADOT.US

[HTTPS://DATA.IOWADOT.GOV/PAGES/WINTER](https://data.iowadot.gov/pages/winter)

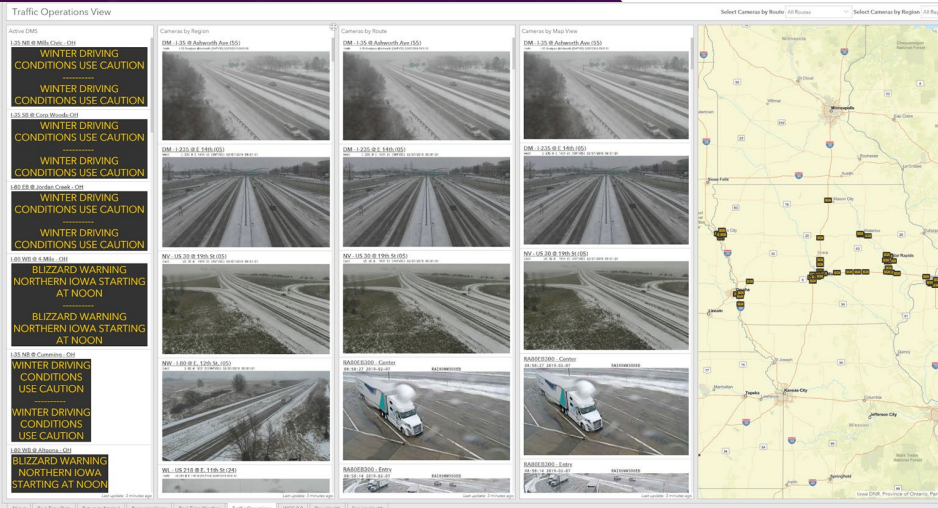
WHERE IS
IOWA?

How To Find KENTUCKY on the Map



WINTER DATA

[HTTPS://DATA.IOWADOT.GOV/PAGES/WINTER](https://data.iowadot.gov/pages/winter)



ITS

Fixed Cameras

Digital Message Signs

Traffic Speeds

WEATHER

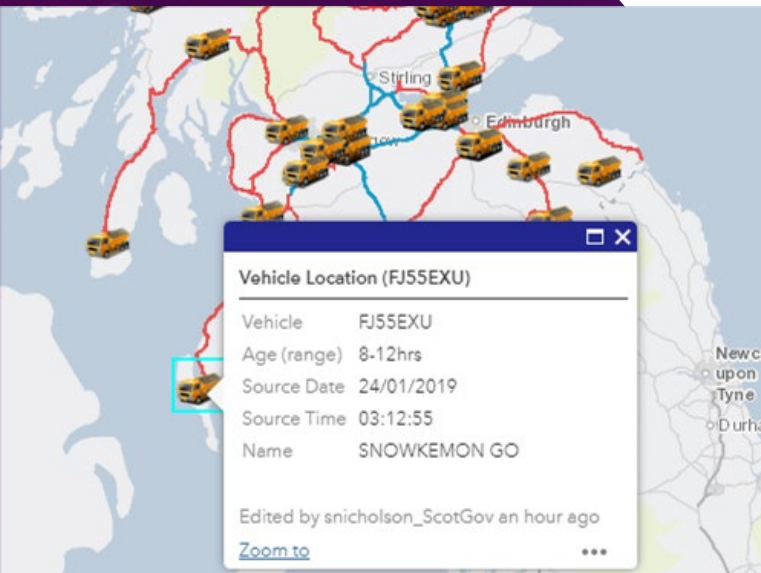
Roadway Weather Information System (RWIS)

Aviation Weather Observation System (AWOS)

NWS watches and warnings

Radar from NWS and Iowa State Mesonet

Predictive snowfall



TRUCKS

Sensors

- Speed
- Material
- Rates
- Location

Images/Dashcam



TRAVELER INFORMATION

511 events

TV Station Integration

Road Conditions

INVESTMENT IN MOBILITY

Segments over time

Material

Labor

Depreciation

Overtime

PRODUCTS

TRACK A PLOW

trackaplow.iowadot.gov

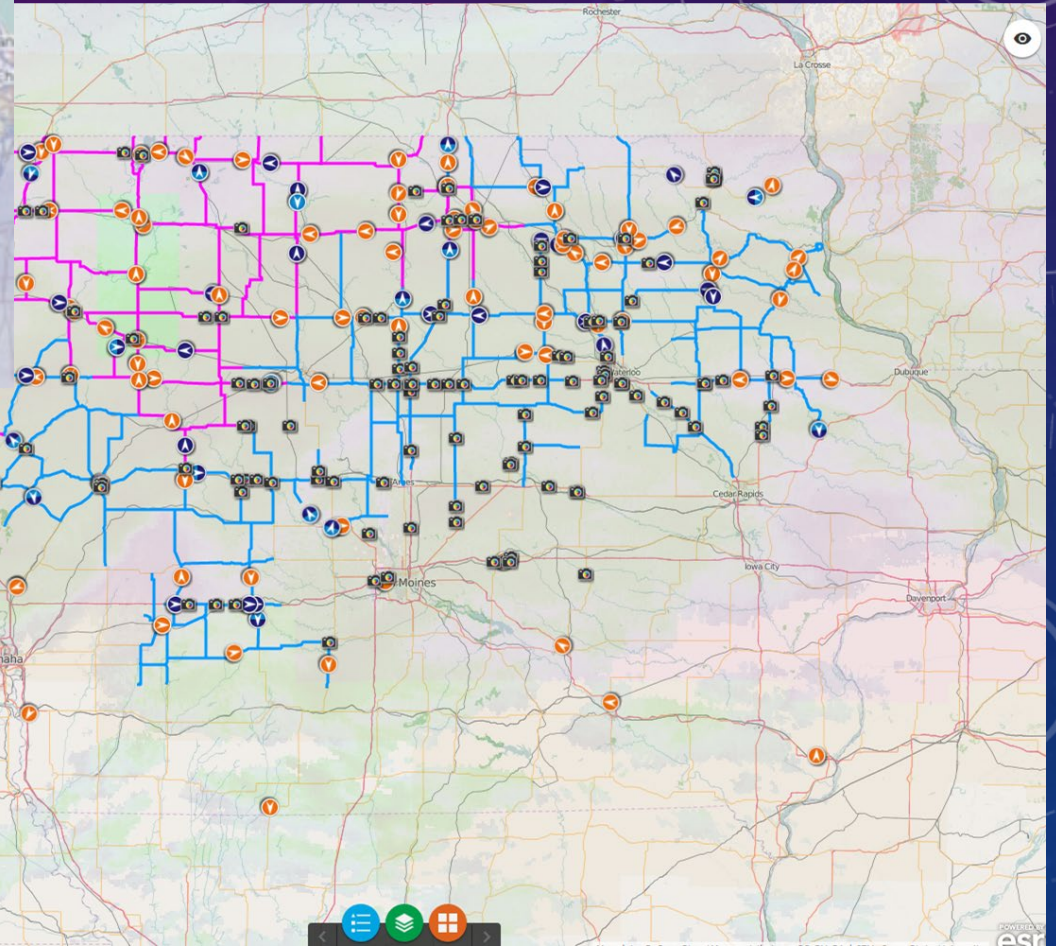
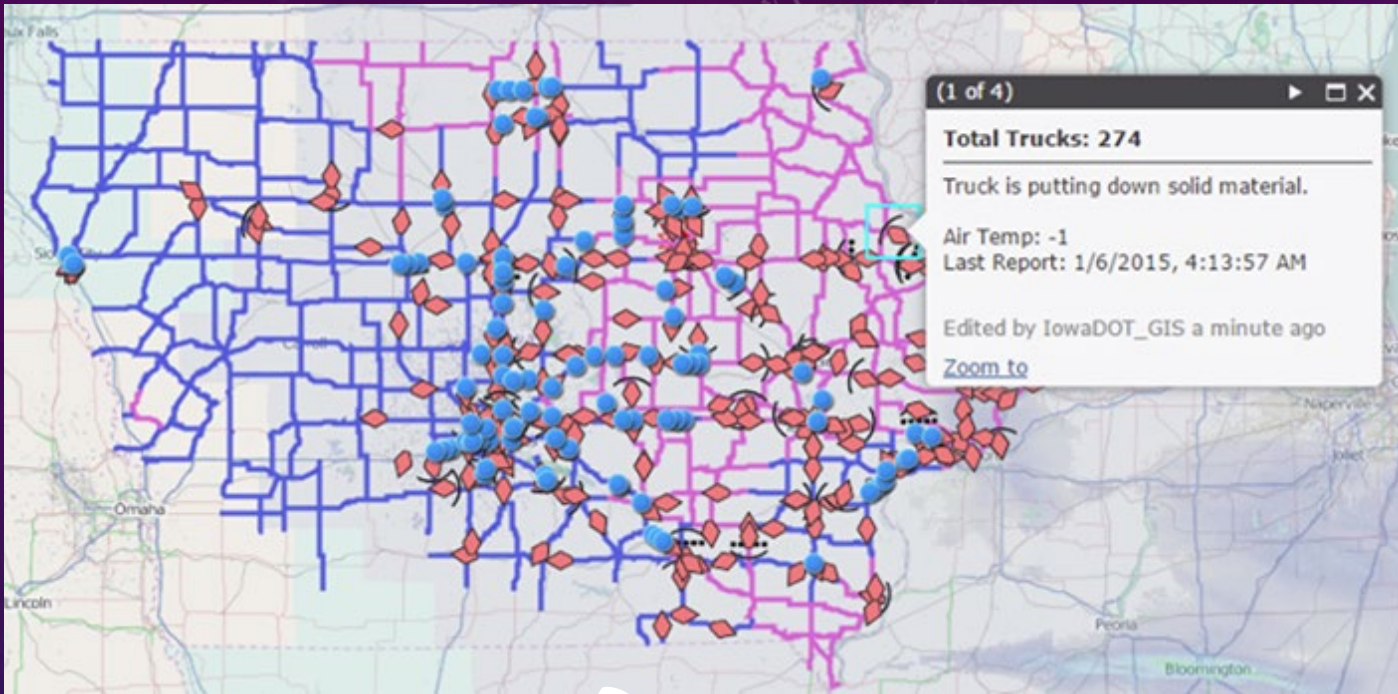
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Flagship product

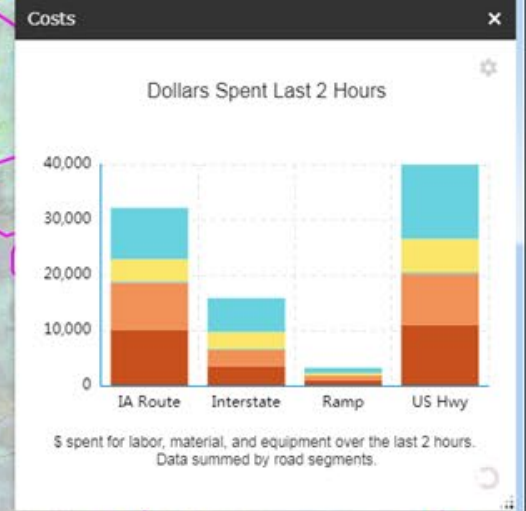
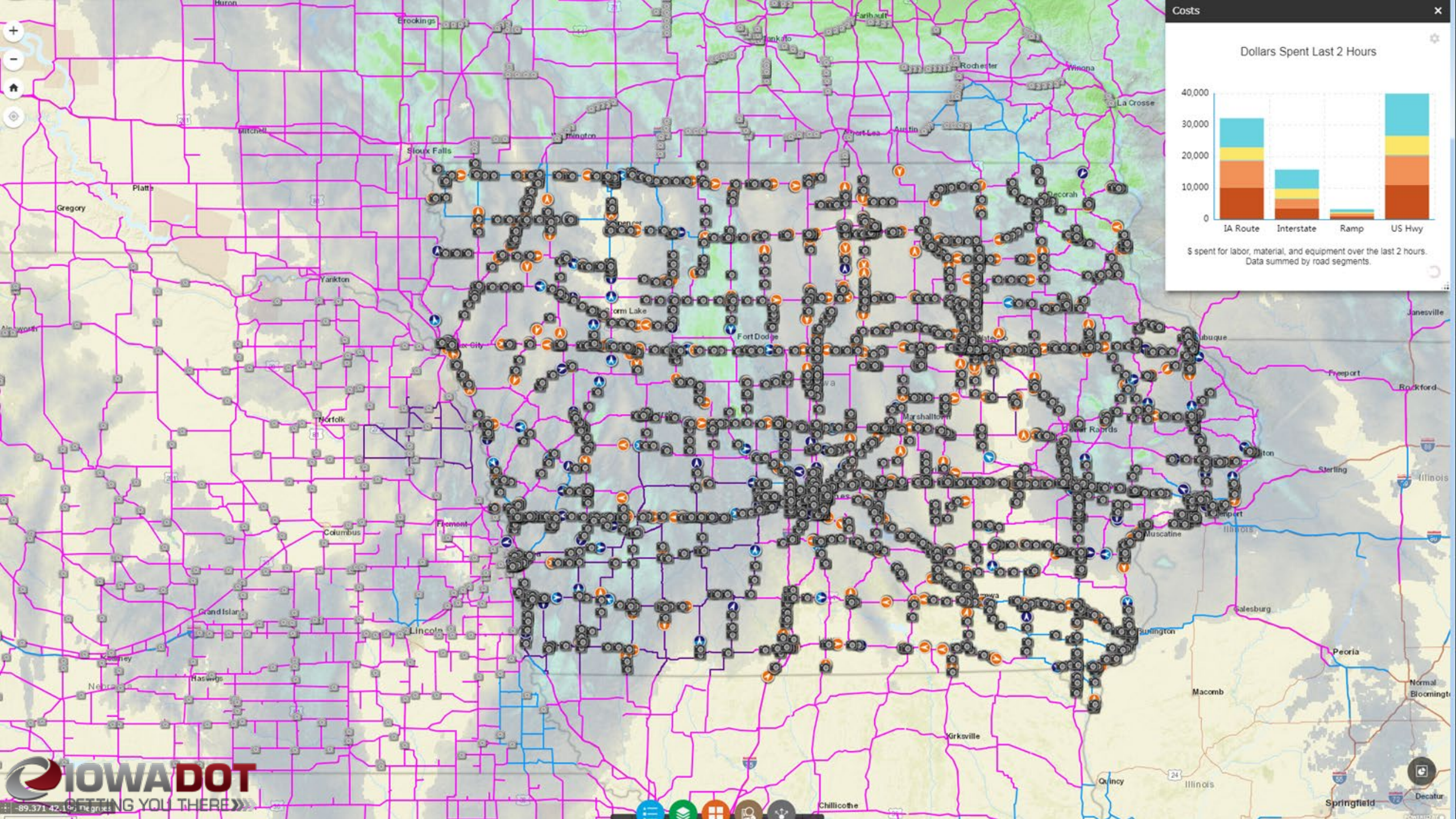
Original purpose was two fold

- Educate the public about operations
- Inform media about how many plows are out to reduce calls.

Shows ITS, Plows, Road Conditions, Radar, Cost Information and Easter Eggs



2015 to 2016



WINTER COST CALCULATOR

wintercostcalculator.iowadot.gov

v

Education Product

Purpose

- Educate the public about operations
- Inform policy makers about how DOT does business.
- Most important was to prove aggregation process is working

Shows costs like labor, depreciation, material usage

Segment A



Segment A

Truck 1 travels on segment A and sends back 4 pings to Iowa DOT. We know the length of the segment (in this example 1 mile) and distance between pings. We also know the distance from the start of the segment to the first ping and end of the segment and last ping. We can calculate time on the segment because we know when the truck entered and exited the segment. For this example let's say 15 minutes for each pass.

Since we have Time on segment, total material applied and type, the diagram above shows the same segment twice. This is because over time trucks will travel the same segment, but ping in different locations.

Each ping gives us data like material being used, rate material being applied, speed, bearing, etc.

In winter cost calculator we run a query to conflate all the segments that have been touched by a truck over a rolling 48 hour period. In this example Segment A had 2 trucks travel over it.

- Total Cost is the sum of the costs.
- Material cost is the total material used. Total solid material+total brine+total prewet. Brine and prewet are 2.2 pounds of salt per gallon at 19 cents per gallon and solid material is \$68.55 per ton
- Labor cost multiplies the time on segment (30 minutes) times an average labor rate of \$45.53 per hour
- Equipment takes the total time on segment (30 minutes) times a factor of \$38.08 per hour
- Salt applied, take the salt total for the segment (granular and brine) and multiply by a \$68.55 per ton
- Labor hours takes the total time on segment

Winter Cost Calculator

48

+

-

🏠

🔍

☰

Map of Iowa showing a network of roads with orange and blue highlights.

Salt Applied (Lbs)

16,964,064

○

○

○

○

●

○

All

Route: IA 7 E
Buena Vista County

LAST PASS: 12/22/2016, 7:12 AM

OF PASSES: 18

OF PASSES WITH MATERIAL: 4

SEGMENT LENGTH: 4.8 Miles

TOTAL COST FOR ROAD SEGMENT: \$3,080

LBS OF SALT: 74,266 | COST: \$3,036

LABOR COST: \$24

EQUIPMENT COST: \$20

NOTE: ALL VALUES ESTIMATED BASED ON BEST-AVAILABLE DATA.

Zoom to

Material Cost (\$)

7,264

Labor Cost (\$)

24



Winter Cost Calculator

511 Track a plow Winter Performance Help

Map of Iowa showing a network of roads with orange and blue highlights.

Total Cost (\$)

317,484

Material Cost (\$)

146,344

Labor Cost (\$)

92,277

Equipment Cost (\$)

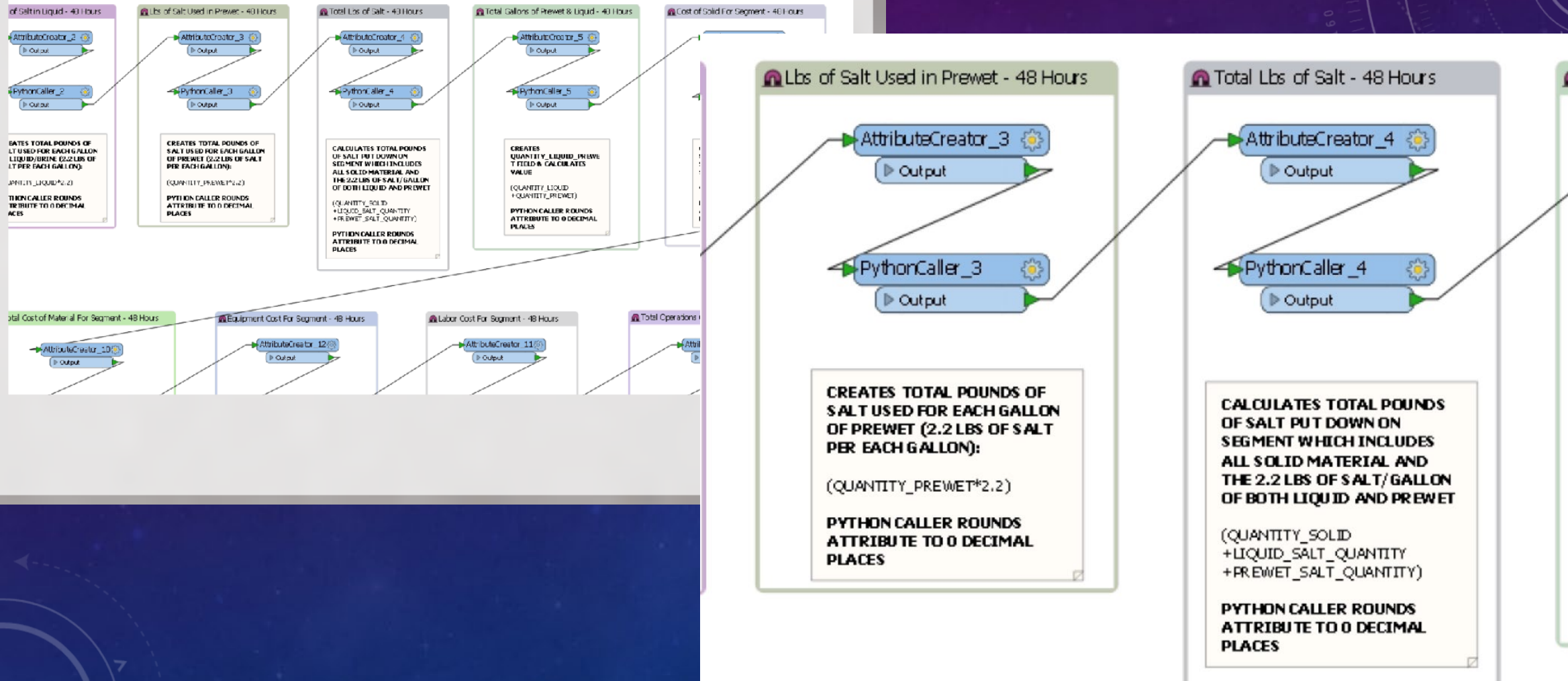
78,863

Past 48 Hours

Filter All

wintercostcalculator.iowadot.go

Calculate values



MARC

MARC.IOWADOT.GOV

R&D Project

Purpose

- Test winter road conditions if they are getting better worse or staying the same
- Tie to imagery
- Give field staff the ability to scroll through pics with ease

Shows picture, location, road condition and indicator



3
Alton
-- All Routes --
Refresh

IA 10 E

IA 10 E - Post: 4.34

Updated: 4/14/2018 6:31:05 PM

Current Road Conditions
Completely Covered - completely covered with mixed snow ice or slush

IA 10 E - Post: 38.04

Updated: 4/14/2018 6:32:55 PM

Current Road Conditions
Completely Covered - completely covered with mixed snow ice or slush

IA 10 E - Post: 41.31

Updated: 4/14/2018 6:27:55 PM

Current Road Conditions
Completely Covered - completely covered with mixed snow ice or slush

IA 12 N

IA 12 N - Post: 45.45

IA 60 N - Post: 57.7

Updated: 3/6/2018 5:58:57 PM

Current Road Conditions
Travel Not Advised - white out

Updated: 3/7/2018 7:51:01 AM

Current Road Conditions
Partially Covered - partially covered with mixed snow ice or slush

Updated: 3/7/2018 8:40:24 AM

Current Road Conditions
Completely Covered - completely covered with mixed snow ice or slush

WINTER DASHBOARD

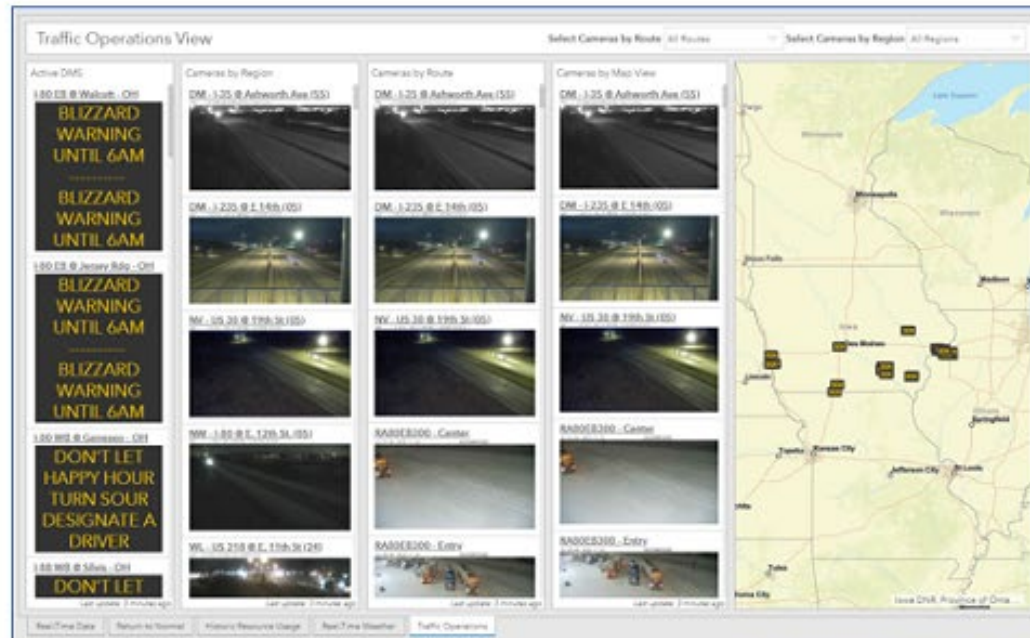
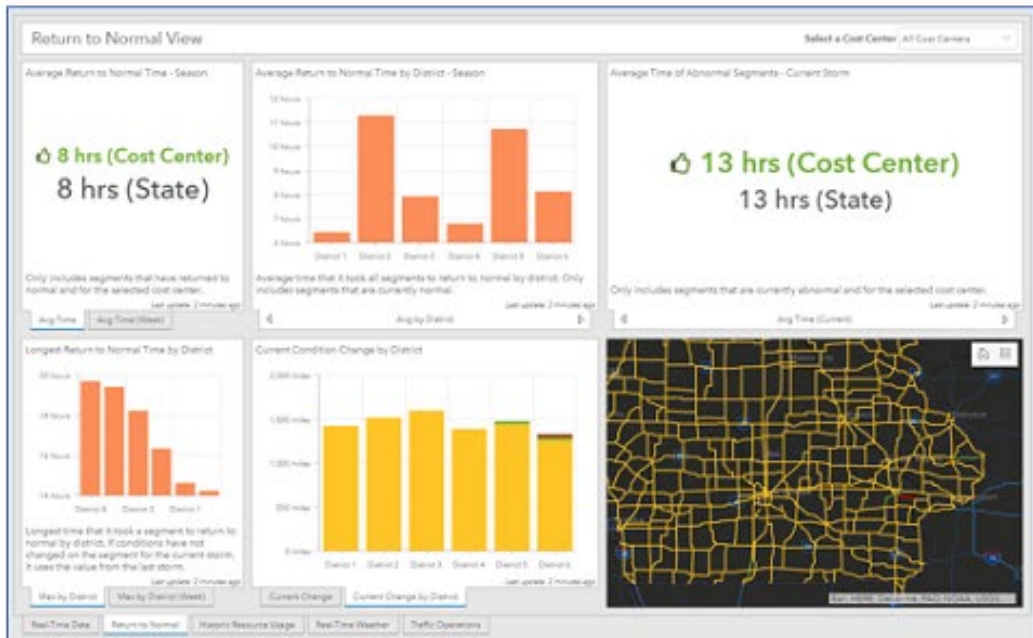
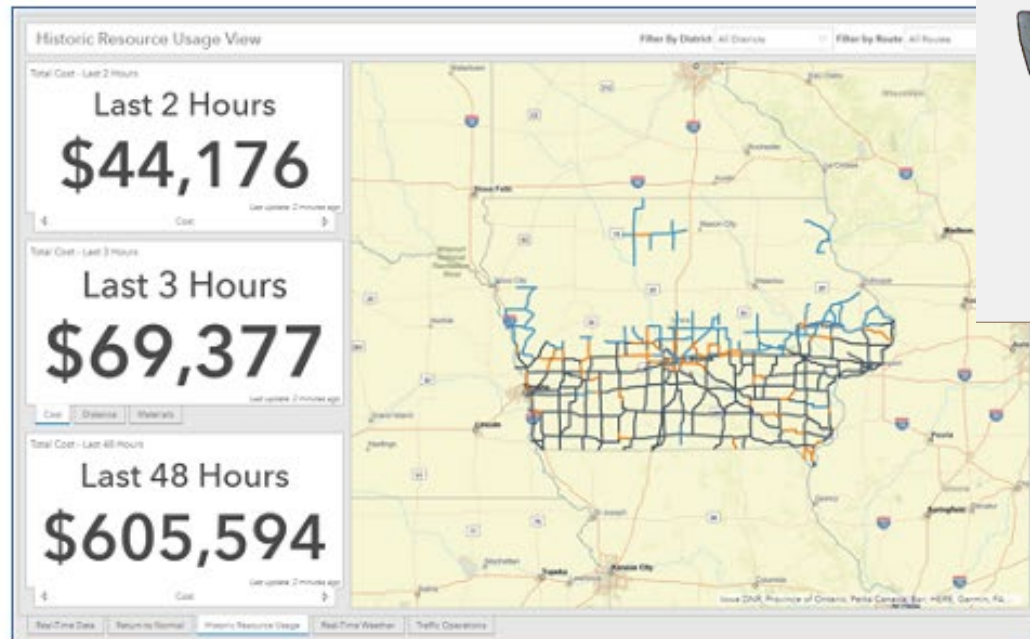
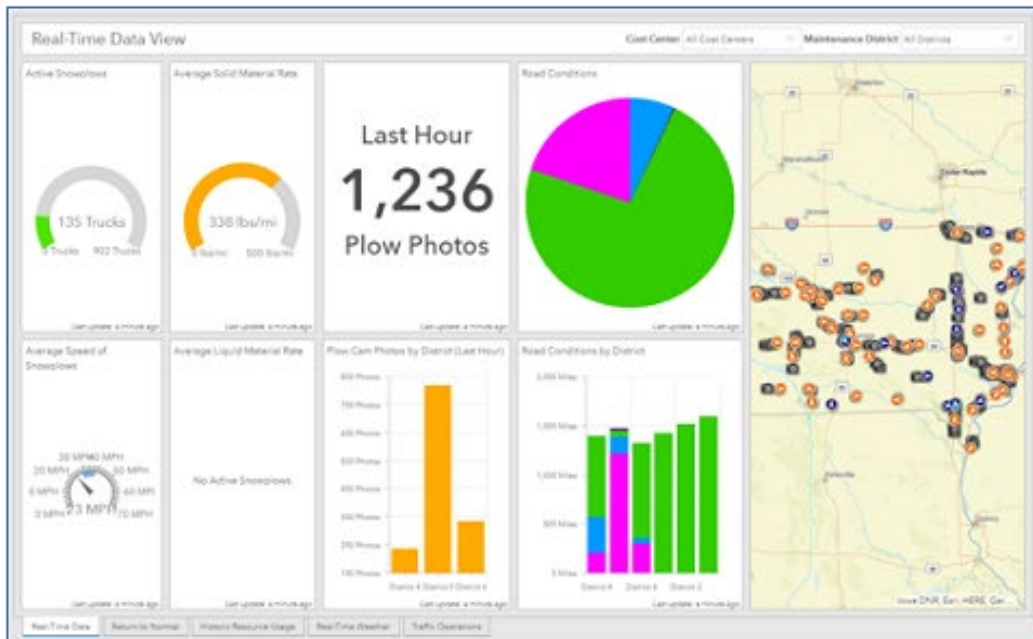
<http://data.iowadot.gov/pages/winter>

Education Product

Purpose

- Educate DOT staff and others about data available for winter operations
- Inform policy makers about how DOT does business.
- Most important was to prove ArcGIS Operation Dashboard

Shows costs like labor, depreciation, material usage



MY SCHOOL TRACK A PLOW

<https://data.iowadot.gov/pages/winter>
<https://myschooltrackaplow.iowadot.gov>
v

Help school administrators

Purpose

- Educate DOT staff and others about data available for winter operations
- Inform policy makers about how DOT does business.
- Most important was to prove ArcGIS Operation Dashboard

Shows costs like labor, depreciation, material usage

IOWA DOT PLOW CAMERA – BY SCHOOL DISTRICT

This application displays photos by selected route and reference post. It combines all of our real-time winter operations data into an easy to view format.



Plow camera images are taken over the last hour. The process for those photos runs every 10 minutes, but is subject to change during high impact events. In general, a photo is snapped every 5-10 minutes while a vehicle is moving.

HOW TO USE THE MAP

Data represented is based on the area of the map shown. Pan around the map to show data for different areas, or zoom out to show data for the entire state.

1. SELECTORS

Select a school district to view photos for that school district, or choose a county forecast.

2. MAP SELECTION TOOL

Use this tool to select an area on the map by using the point, rectangle, lasso, circle, or line tools. The photo list will display the plow cam images from the plow in the selected area.

3. PHOTO LIST

The photo list displays the plow camera images from all the plows currently in the area you have zoomed to on the map. The list is sorted by route name and mile post.

Note: The photos displayed are the most recent photo per mile post within the last hour. The process runs every 10 minutes, but is subject to change during high impact events.

4. SNOWPLOW COUNT

This is the number of snowplows in the area you have panned to on the map.

5. ADDITIONAL INFO TABS

The different tabs include the number of active plows, a pie chart of road conditions, and a road/bridge temperature forecast.

7. MAP TOOLS

BOOKMARKS – Use this to save specific areas and quickly move to a metro area.

LEGEND – Use this to determine what road conditions the colored road segments represent.

Road Conditions (Change)

- BETTER
- UNCHANGED
- WORSE

> Road Condition Change
This feature highlights road segments based on whether conditions have improved or declined over the last two hours.

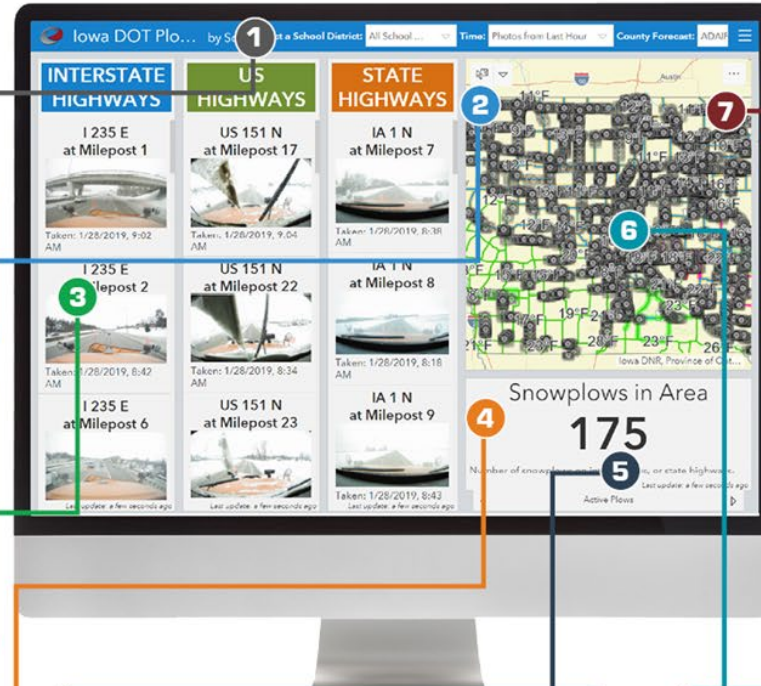
LAYERS – Use this to enable or disable different layers on the map.

BASEMAPS – Use this to change the type of basemap.

6. TEMPERATURES

This feature displays real-time temperatures, similar to traditional weather maps.

Note: there's options to toggle on/off using the layer button (☰) found in the upper right corner.



OPEN DATA



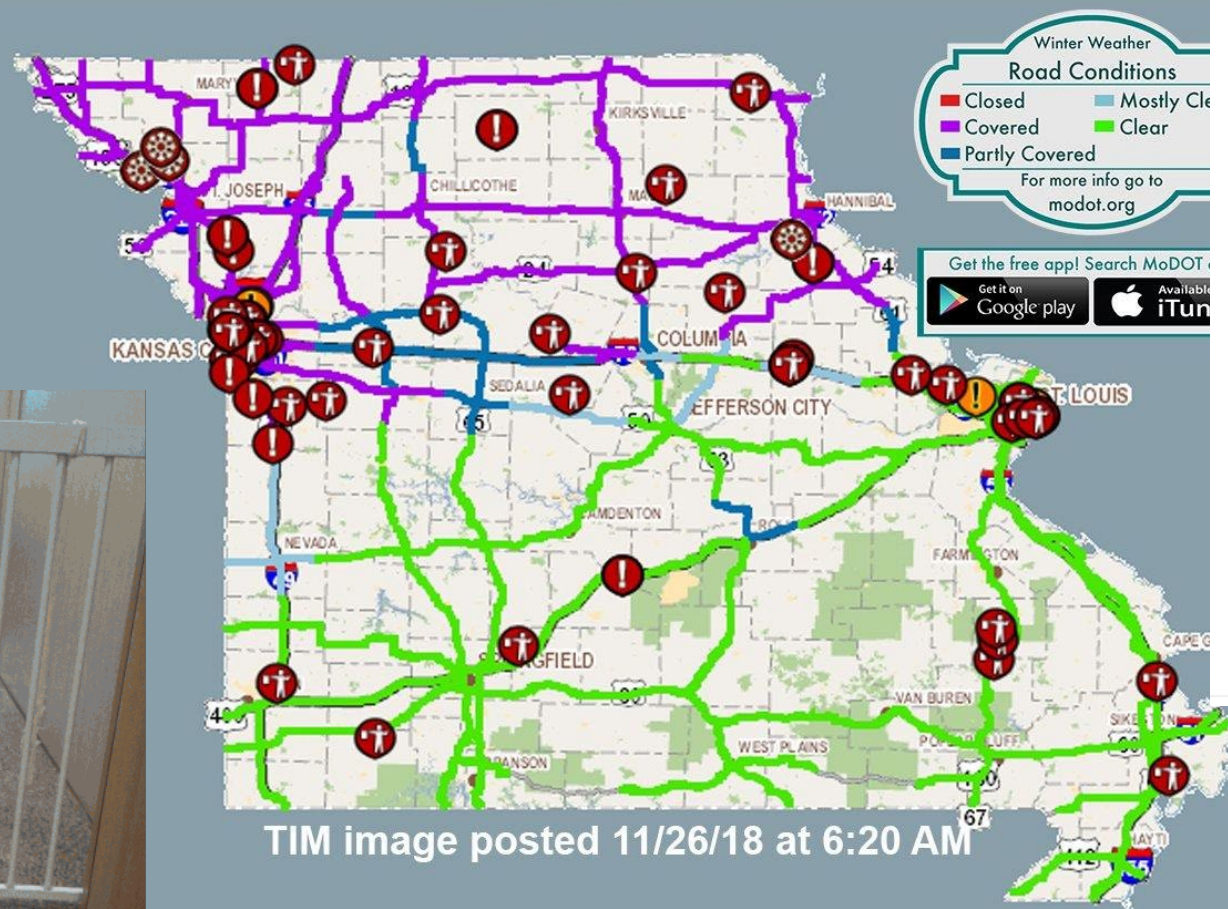
Provide information to DOT systems

Partners can pull data

- NWS
- Emergency Management
- Here

DMS to Costs to Plows to Road
COnditions

CHECK YOUR ROUTE BEFORE YOU GO USING THE TRAVELER INFO MAP ON MODOT.ORG

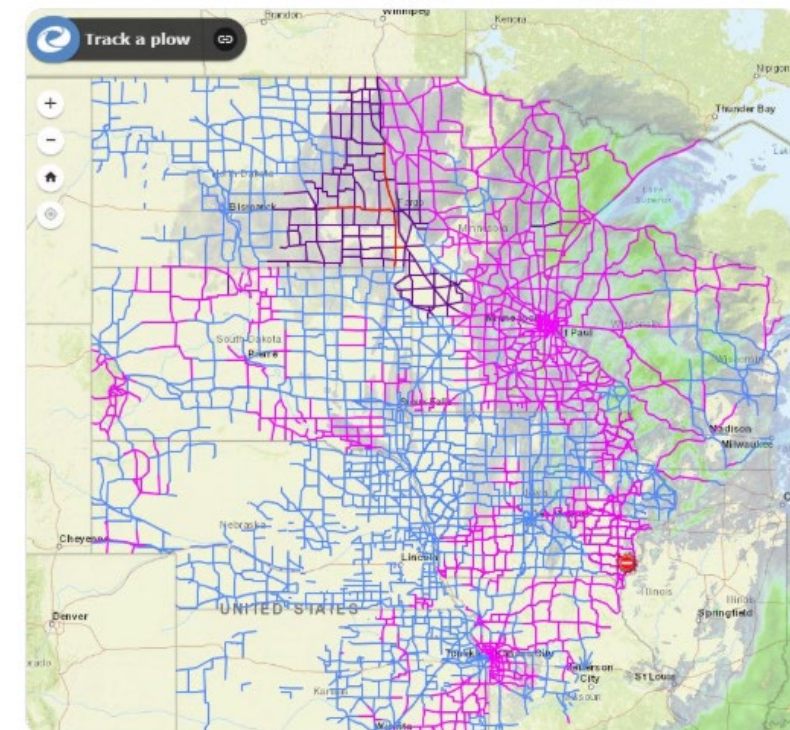


TIM image posted 11/26/18 at 6:20 AM



Iowa DOT @iowadot · 19h

Did you know you can see road conditions from our neighboring states on trackaplow.iowadot.gov? This is a snapshot of conditions on Feb. 7 at 11:320 a.m. If you think we have it bad, look at Minnesota and North Dakota!



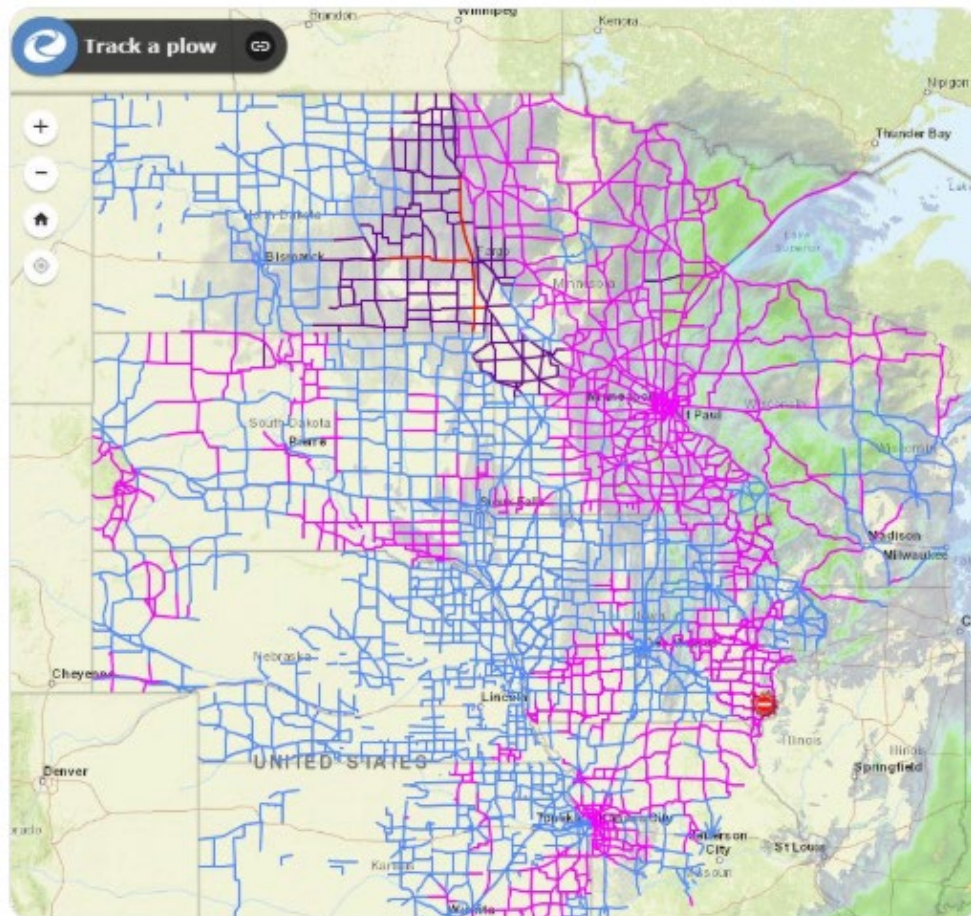
1 3





Iowa DOT @iowadot · 19h

Did you know you can see road conditions from our neighboring states on trackaplow.iowadot.gov? This is a snapshot of conditions on Feb. 7 at 11:320 a.m. If you think we have it bad, look at Minnesota and North Dakota!



1

3



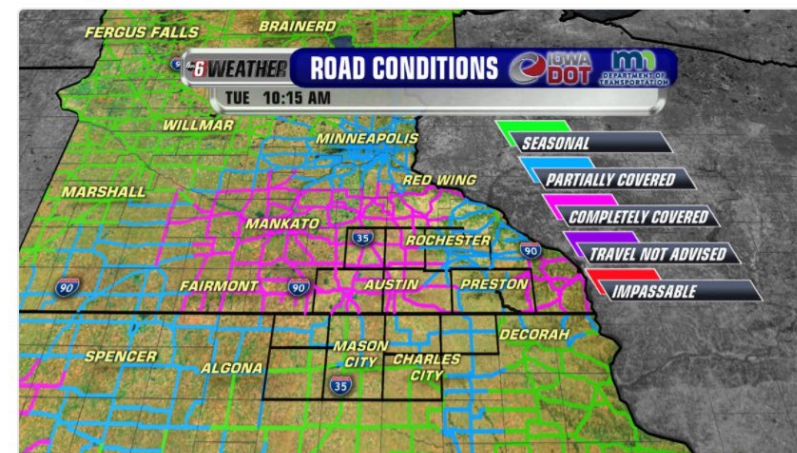
Chris Kuball

@ChrisKuball

Following

Road conditions remain partially to completely covered with compacted ice and snow in SE Minnesota. Roads are much better across north Iowa. Slow improvements will be made throughout the day. #MNWX #IAWX #ABC6WX #ABC6Roads

bit.ly/2ruf7rW



10:18 AM - 23 Jan 2018

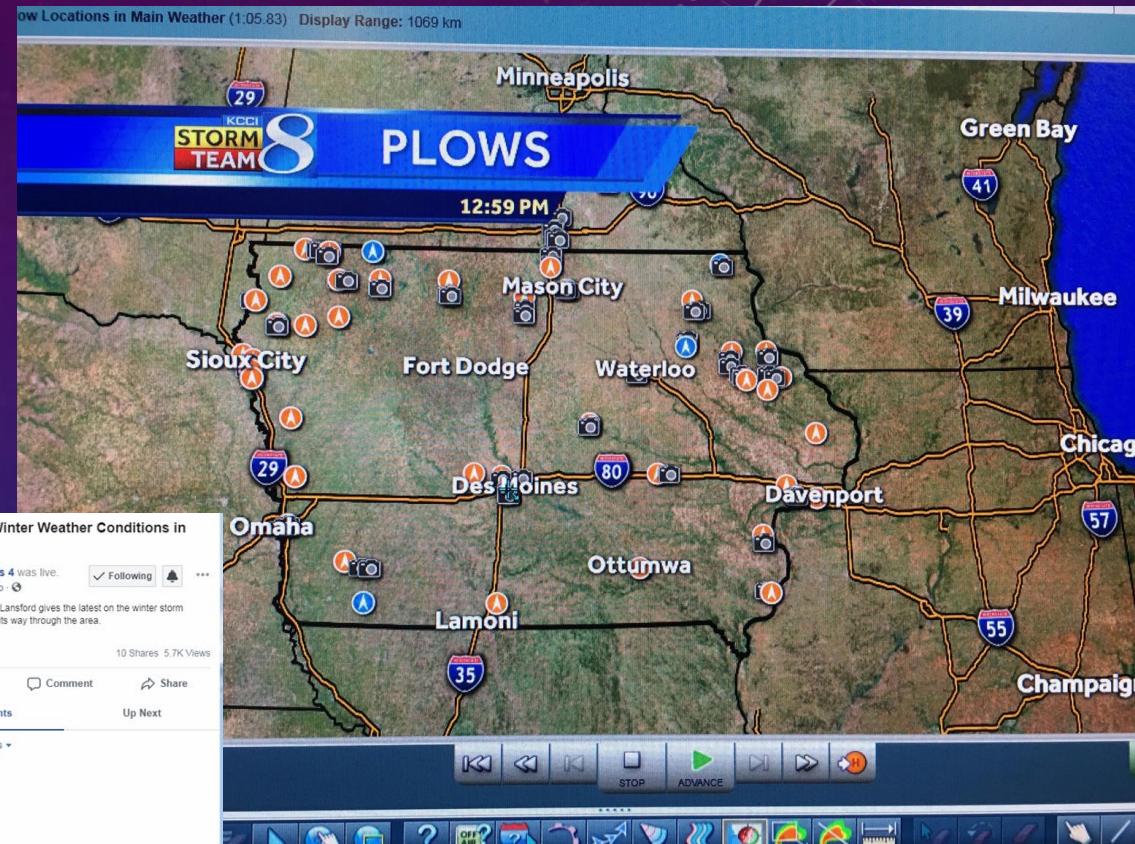
2 Like



1

2





STORM TEAM 4

- Radar
- DMA Temps
- DMA Wind
- Road Conditions**
- Winter Storm ...

Road Conditions

Estherville, Spencer, Orange City, Yankton, Storm Lake, O'Neill, Sioux City, Wayne, Norfolk, Denison, Carroll, Tekamah

[@JaretKTIV4](#) [KTIV News 4](#)

This is a screenshot of a video player showing a live broadcast from Storm Team 4. The interface includes a menu on the left with options like Radar, DMA Temps, DMA Wind, Road Conditions (which is selected), and Winter Storm. A small video inset shows meteorologist Jaret Lansford in the studio. The main map displays road conditions for a smaller area in central Iowa, with various cities labeled. Social media handles for @JaretKTIV4 and KTIV News 4 are shown at the bottom.

Update on Winter Weather Conditions in Siouxland

KTIV News 4 was live. 20 hours ago

Meteorologist Jaret Lansford gives the latest on the winter storm continuing to make its way through the area.

39 10 Shares 5.7K Views

Like Comment Share

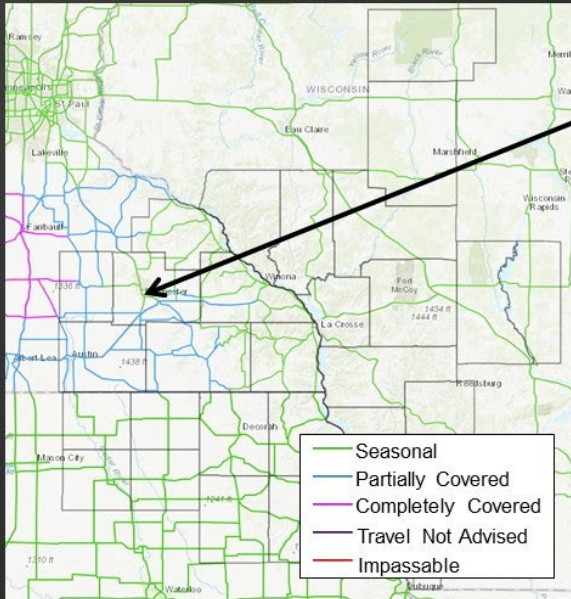
Comments Up Next

Realtime Comments

- Kay Semple** · 6:34 Also getting windy. Like · Reply · 20h
- Rita Baez** · 6:59 Roads are getting slick in some parts in Sioux City. Like · Reply · 20h
- Lindsay Alvarez** · 7:12 I have to drive a hour away to get to work by 6... Like · Reply · 20h
- Harvey Faith** · 7:28 How much snow will Yankton get? Like · Reply · 20h
- Harvey Faith** · 7:39 Will Yankton be upgraded to a blizzard warning? Like · Reply · 20h

This block shows a Facebook post from KTIV News 4 titled "Update on Winter Weather Conditions in Siouxland". The post includes a video thumbnail and a brief description of the weather update. Below the post, there are engagement metrics (39 likes, 10 shares, 5.7K views) and a list of comments from viewers. The comments express concerns about windy conditions, slick roads, and snow accumulation in the area.

Slippery Road Conditions



210567 1 Lat: 43.9740 Lon: -92.4494 Time: 2018-12-26 19:33:42
RP46.505-RP51.904, I90-JCT US63

Road Conditions as of 7:45 p.m.

Take it slow tonight!

Allow road crews time and space to clean things up!

We Are IOWA.com

TALE OF TWO CITIES

COURTESY: IOWA DOT

We Are IOWA's
MOST ACCURATE
FORECAST

WEST DES MOINES

MARTENSDALE

North I-35 Overpass Center @ Mills Civic (DMTV50) 11/25/2018 14:28:01



ONLY 16 MILES APART

Nick Stewart
@NStewCBS2 · 23h

A lot of progress has been made on area roadways after last night's snow. Right now 380 @iowadot plows are on the roads as about 75% of highways in Iowa are at least partially covered with snow. (Photo of I-380 near Brandon) #IAwx

1

2

David Runneals
@RunnealsGIS · 16h

Nice app you have up there Nick! @EricAbramsDOT

1

1

Nick Stewart
@NStewCBS2

Following

Replying to @RunnealsGIS @EricAbramsDOT

Great for tracking plows and reporting real-time info on the number that are out and percentages of roadways that are dealing with snow cover! I use it for every winter weather event we have :)

semi

road/white abyss

snowplow

Iowa DOT snowplow dash camera image
I-35 near Osceola (Nov. 25, 2018 @ 9 a.m.)

Visit: **511ia.org**
for current conditions

Sarah Beckman
@SarahBeckman3

Following

According to the @iowadot Winter Cost Calculator, more than 2 million pounds of salt has been applied to the metro roads in the past 48 hours...and DOT workers have spent more than 1,000 hours working. #iawx
iowadot.maps.arcgis.com/apps/webappvie ...

8:58 AM - 6 Feb 2018

1 Like

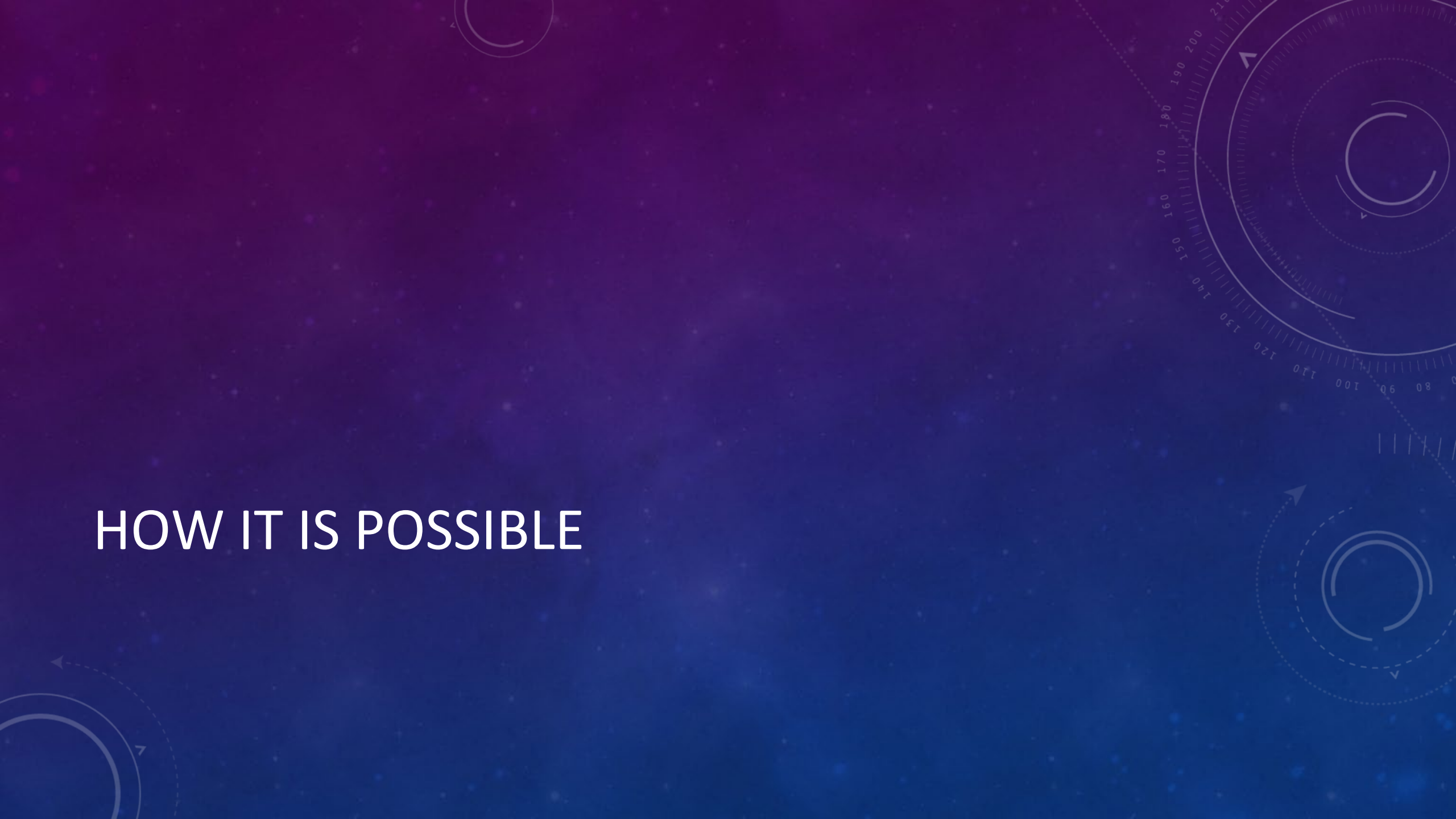
Adam Erickson
@adame233

Replying to @iowadot

Basically...

4:53 PM - 5 Feb 2018

HOW IT IS POSSIBLE

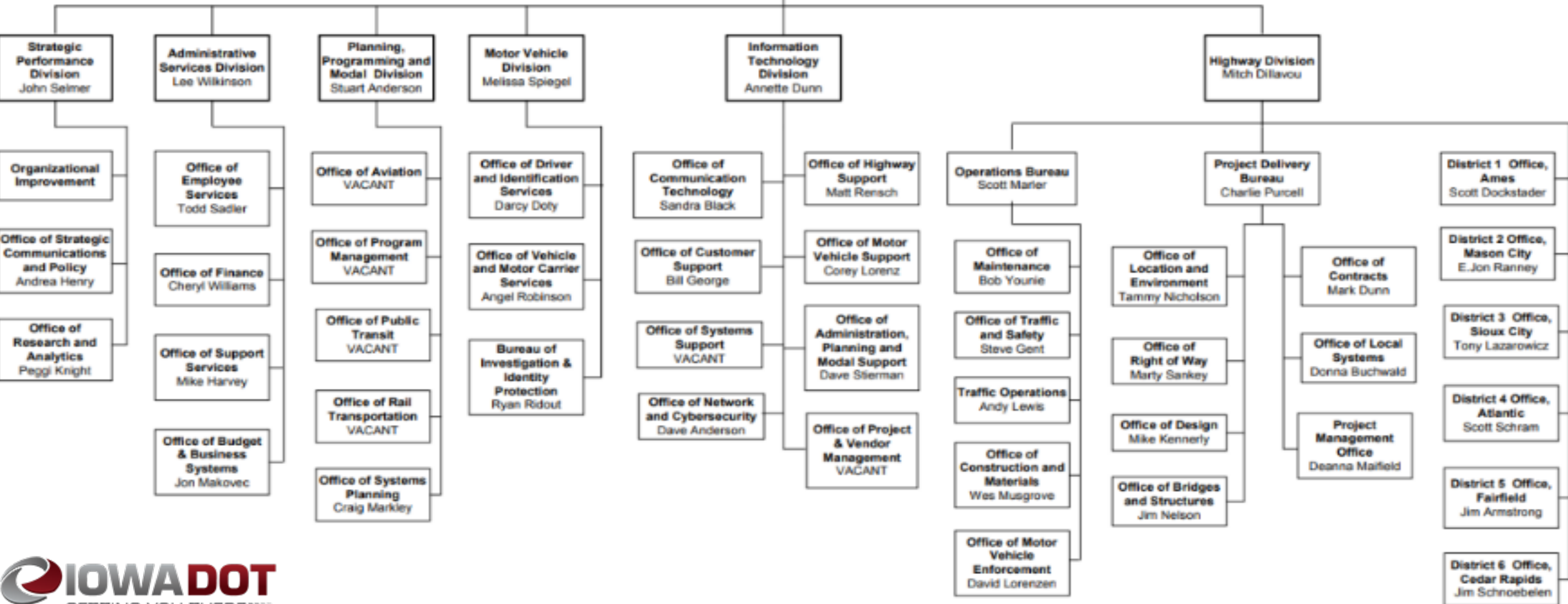


Governor
Kim Reynolds

Transportation Commissioners
Kathy Fehrman, Chair
Tom Rielly, Vice Chair
Nancy Maher
Kraig Paulsen
John Putney
David Rose
Charese Yanney

Director
Mark Lowe

General Counsel
David Gorham



SUCCESSFUL PEOPLE

UNSUCCESSFUL PEOPLE



 **GIVE OTHER PEOPLE CREDIT FOR THEIR VICTORIES**
 **EXUDE JOY**
 **SHARE INFORMATION AND DATA**
 **HAVE A SENSE OF GRATITUDE**
 **CONTINUOUSLY LEARN**
 **EMBRACE CHANGE**
 **KEEP A JOURNAL**
 **FORGIVE OTHERS**
 **KEEP A "TO-DO/PROJECT" LIST**
 **KEEP A "TO-BE" LIST**
 **TALK ABOUT IDEAS**
 **READ EVERYDAY**
 **SET GOALS AND DEVELOP LIFE PLANS**
 **ACCEPT RESPONSIBILITY**
 **WANT OTHERS TO SUCCEED**
 **OPERATE FROM A TRANSFORMATIONAL PERSPECTIVE**



 **SECRETLY HOPE OTHERS TO FAIL**
 **DON'T KNOW WHAT THEY WANT TO BE**
 **NEVER SET GOALS**
 **HAVE A SENSE OF ENTITLEMENT**
 **CRITICIZE**
 **FEAR CHANGE**
 **THINK THEY KNOW IT ALL**
 **SAY THEY KEEP A JOURNAL BUT REALLY DON'T**
 **BLAME OTHERS FOR THEIR FAILURES**
 **HOLD A GRUDGE**
 **TALK ABOUT PEOPLE**
 **FLY BY THEIR SEAT OF THEIR PANTS**
 **TAKE ALL THE CREDIT OF THEIR VICTORIES**
 **OPERATE FROM A TRANSACTIONAL PERSPECTIVE**
 **HORDE INFORMATION AND DATA**
 **EXUDE ANGER**



OPEN SYSTEMS

- Open APIs
 - Skyfire
- Databases
 - Ability to read authoritative
- Feeds
 - REST Services
 - XML, etc
- Open Data philosophy



PROPER TOOLS IN THE BELT

- FME
 - Server
 - Desktop
- AGOL
 - Operations Dashboard
 - Web App Builder
 - M1/M2
- Oracle/SQL Server
- Proper data processes



PROPER MANAGEMENT STRUCTURE

- Right people in the right place
- Ability to try new things
- Stay current

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AC Adapter, UL listed. 273-1653 19.95


Mobile Mounting Kit
Mounts 17-602 in Your Car **24⁹⁵**
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Handsfree Interface
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- Linked in Eric Abrams