

Kentucky Transportation Cabinet Best Practices

Maintenance Decision Support System (MDSS) Weather
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Maintenance Decision Support System (MDSS)

- Currently, 14 states participating in the PFS
CO, KY, MD, MI, MN, NE, NH, NY, ND, SD, PA, VA, WI, WY
- 2013 will be Kentucky's 5th year as a member
- PFS began in October, 2002
- As a PFS member state, Kentucky has been able to practice the technology as it develops
- This will be the 2nd year of a statewide deployment effort
- PFS will soon be nearing an end, as it is going on 10 years in practice
- Once the PFS concludes, states and other agencies will have the opportunity to solicit weather services with the MDSS technology

MDSS

- A 'Grass Roots' program with design and development led by DOT members
- Iteris (Meridian Environmental) has been the PFS contractor providing the weather forecasting and technology development
- Utilizes a route specific weather forecast
- Recommendations are given for each route
- In Kentucky, primary use has been to plan for an approaching weather event

MDSS Concept

- A forecast is provided for a designated route
- Program utilizes forecast, radar, RWIS and NWS observations
- User reports are necessary for forecast accuracy

Reports generated by individual on site, or

Reports generated by AVL equipment, or

Reports generated by truck driver

Some Info About KY



Population: 4.38 million,
51.8% urban

Maintained Centerline
Miles
27,572 state (~60,000 lane-
miles)

Average Winter weather –
temp 36 degrees (Jan 33
degrees), 12 in snowfall
(10-20 in), FEMA declared
ice storms (2003, 2009)

Wet Pavement Policy

- Provide **bare pavement** or adequate traction on road surfaces
- Keep traffic moving in a safe and uninterrupted manner
- Provide statewide uniformity of pavement conditions within each snow and ice control priority system
- Consider economic and environmental factors while achieving safe driving conditions

Wet Pavement Policy – Why?



Weather Prediction

- Guess?
- Woolly Worm
- Farmer's Almanac
- Pawpaw or Persimmon Seeds
- DTN Sentry (aka Meteorlogix,
- Telvent, Sneider Electric)
- Local Television
- NWS
- MDSS (Meridian by Iteris)



In case you haven't seen it...



District 7 - Lexington



12 counties (120 in the state)

Population: 685,271 (16% of state)

Maintenance Centerline Miles: 2,178 (5,285 lane-miles)



Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

NWS Alerts

2PM 8PM 2AM 8AM 2PM

Map Views

None go

MDSS Route Views

None go

FAA/NWS Views

None go

RWIS/ESS Views

None go

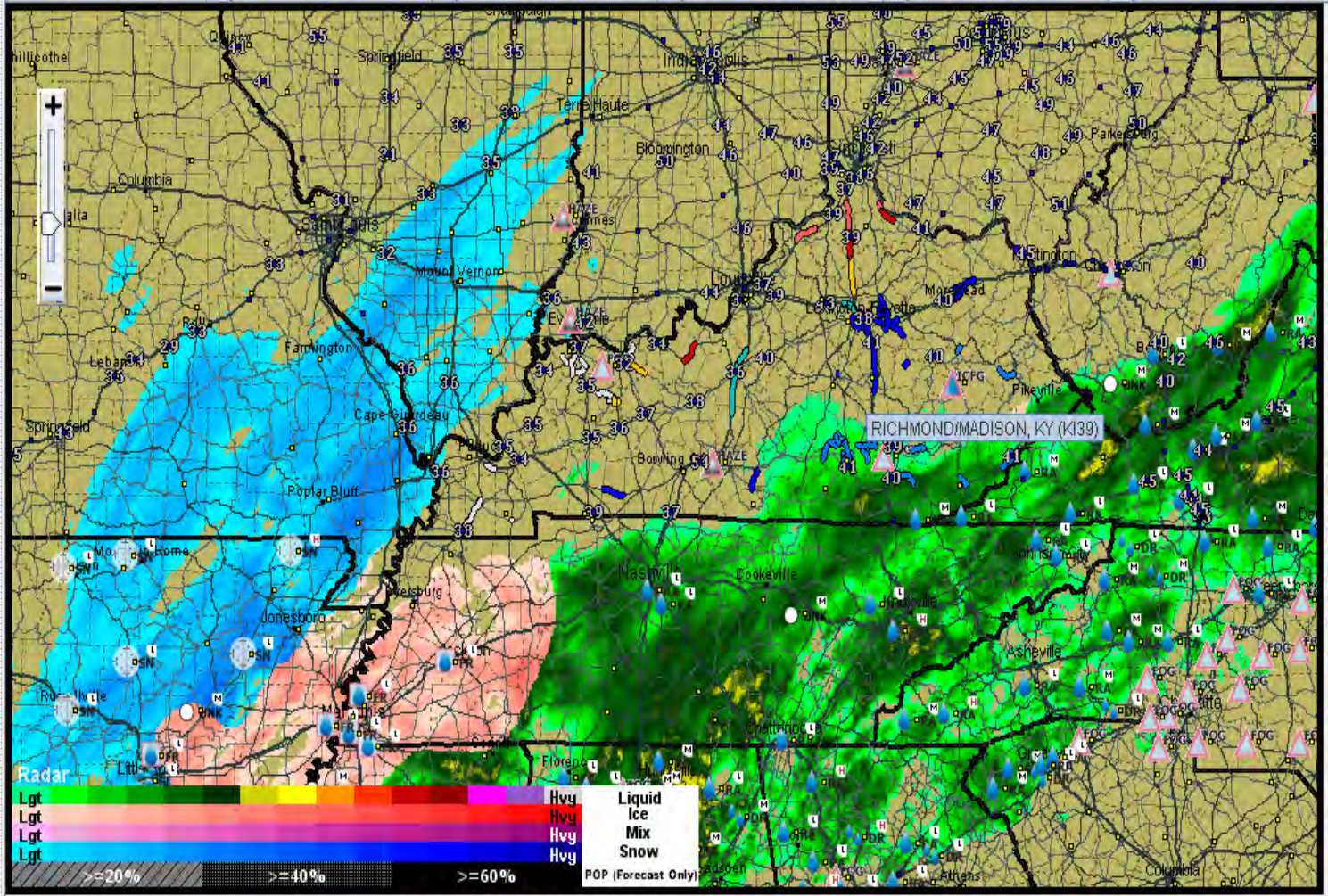
Web Browser Links

Last Selected go

Total (Recv): 106.69 MB
 Files Sync'd: 732/7464 (10%)
 Server (Recv): 106.69 MB
 Peers (Recv): ---
 Peers (Sent): ---
 Peer Count: ---

CUSTOM MDSS ROUTES BACKGROUND FAA/NWS OBS RWIS/ESS OBS STATIC LAYERS

None None Radar Weather Surface Temp None



Current Time: Tue Jan 15, 2013 2:00PM EST Selected Time: Tue Jan 15, 2013 2:00PM EST

2PM 6PM 10PM 2AM 6AM 10AM 2PM 6PM 10PM 2AM 6AM 10AM

Speed: 1.0x

10 Min. 20 Min. 30 Min. 60 Min. Loop

Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

NV Precautionary Recommendation

Tuesday 6PM

2PM 8PM 2AM 8AM 2PM

Map Views

None

MDSS Route Views

None

FAA/NWS Views

None

RWIS/ESS Views

None

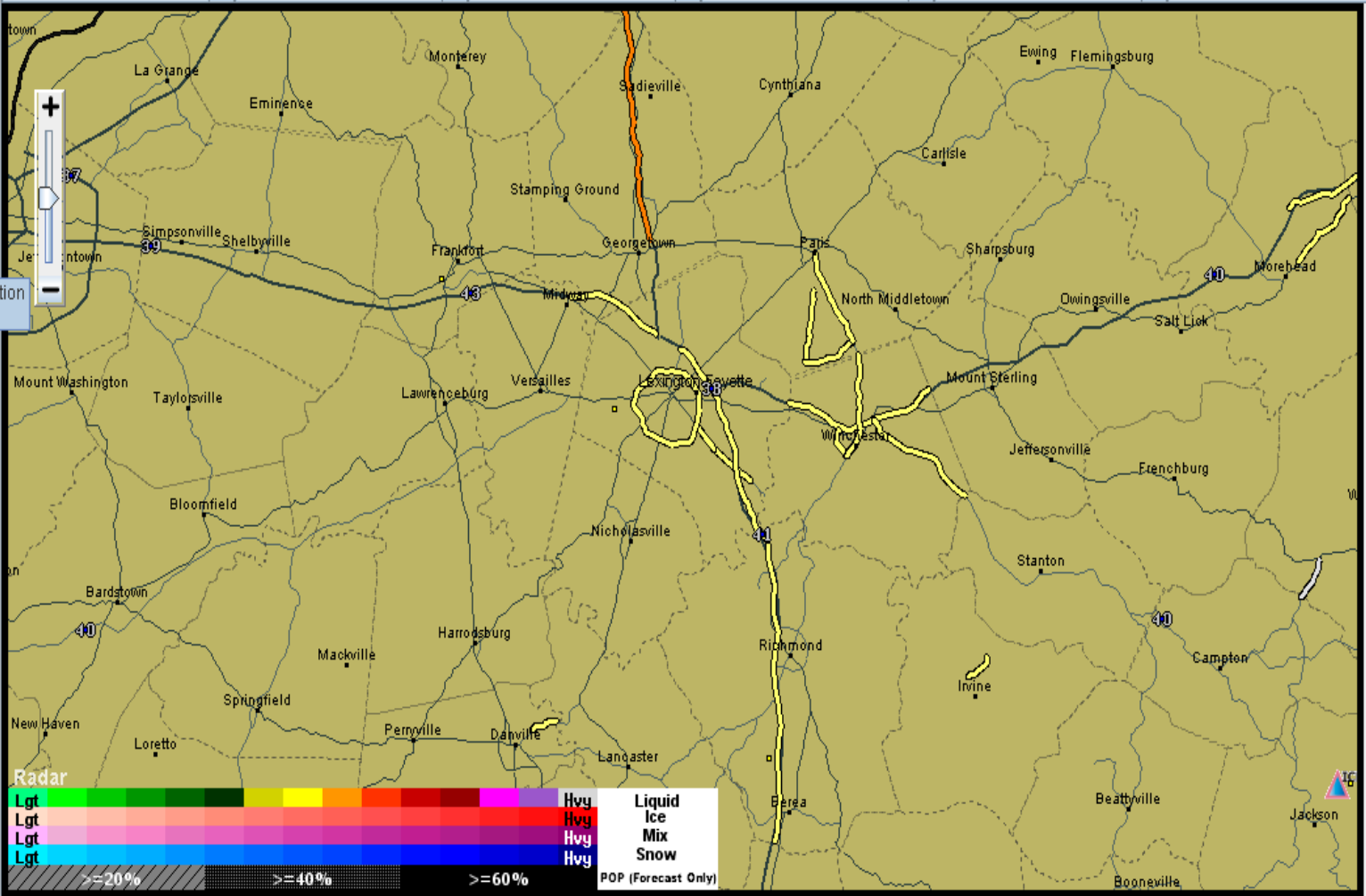
Web Browser Links

Last Selected

Total (Recv): 80.24 MB
 Files Sync'd: 39/7977 (0%)
 Server (Recv): 80.24 MB
 Peers (Recv): ---
 Peers (Sent): ---
 Peer Count: ---

CUSTOM MDSS ROUTES BACKGROUND FAA/NWS OBS RWIS/ESS OBS STATIC LAYERS

None None Radar Weather Surface Temp None



Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

Lightly Icy Low Alerts

Tuesday 9PM

MDSS Maintenance Actions

NWS Alerts

6PM 12AM 6AM 12PM 6PM

Map Views: None

MDSS Route Views: None

FAA/NWS Views: None

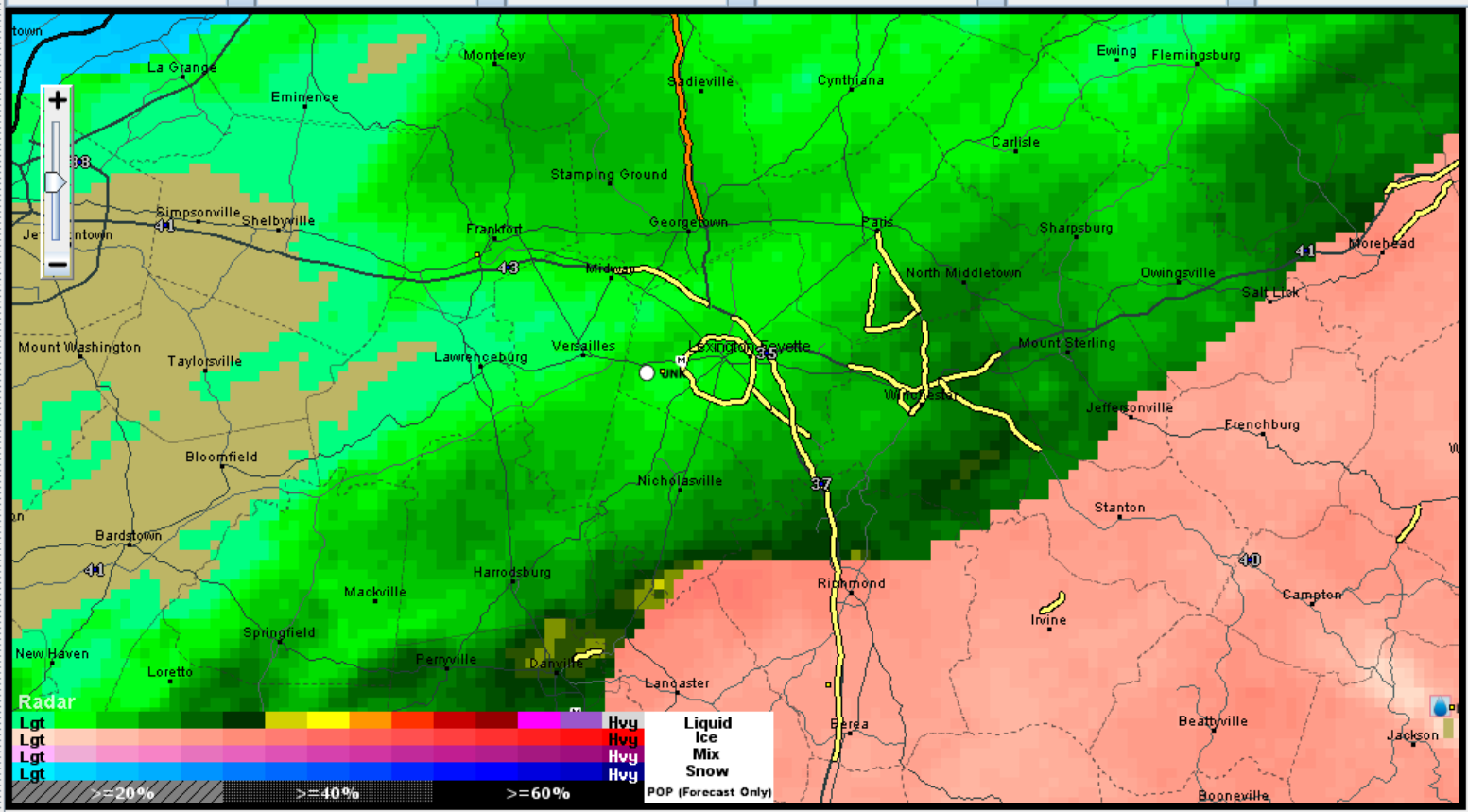
RWIS/ESS Views: None

Web Browser Links: Last Selected

Total (Recv): 84.37 MB
Files Sync'd: 91/7960 (1%)
Server (Recv): 84.37 MB
Peers (Recv): ---
Peers (Sent): ---
Peer Count: ---

CUSTOM MDSS ROUTES BACKGROUND FAA/NWS OBS RWIS/ESS OBS STATIC LAYERS

None None Radar Weather Surface Temp None



Current Time: Tue Jan 15, 2013 6:00PM EST Selected Time: Tue Jan 15, 2013 6:00PM EST

6PM 10PM 2AM 6AM 10AM 2PM 6PM 10PM 2AM 6AM 10AM 2PM

Speed: 1.0x

10 Min. 20 Min. 30 Min. 60 Min. Loop

Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

Wet Near Freezing Alerts
Tuesday 9PM

MDSS Maintenance Actions

NWS Alerts

9PM 3AM 9AM 3PM 9PM

Map Views: None

MDSS Route Views: None

FAA/NWS Views: None

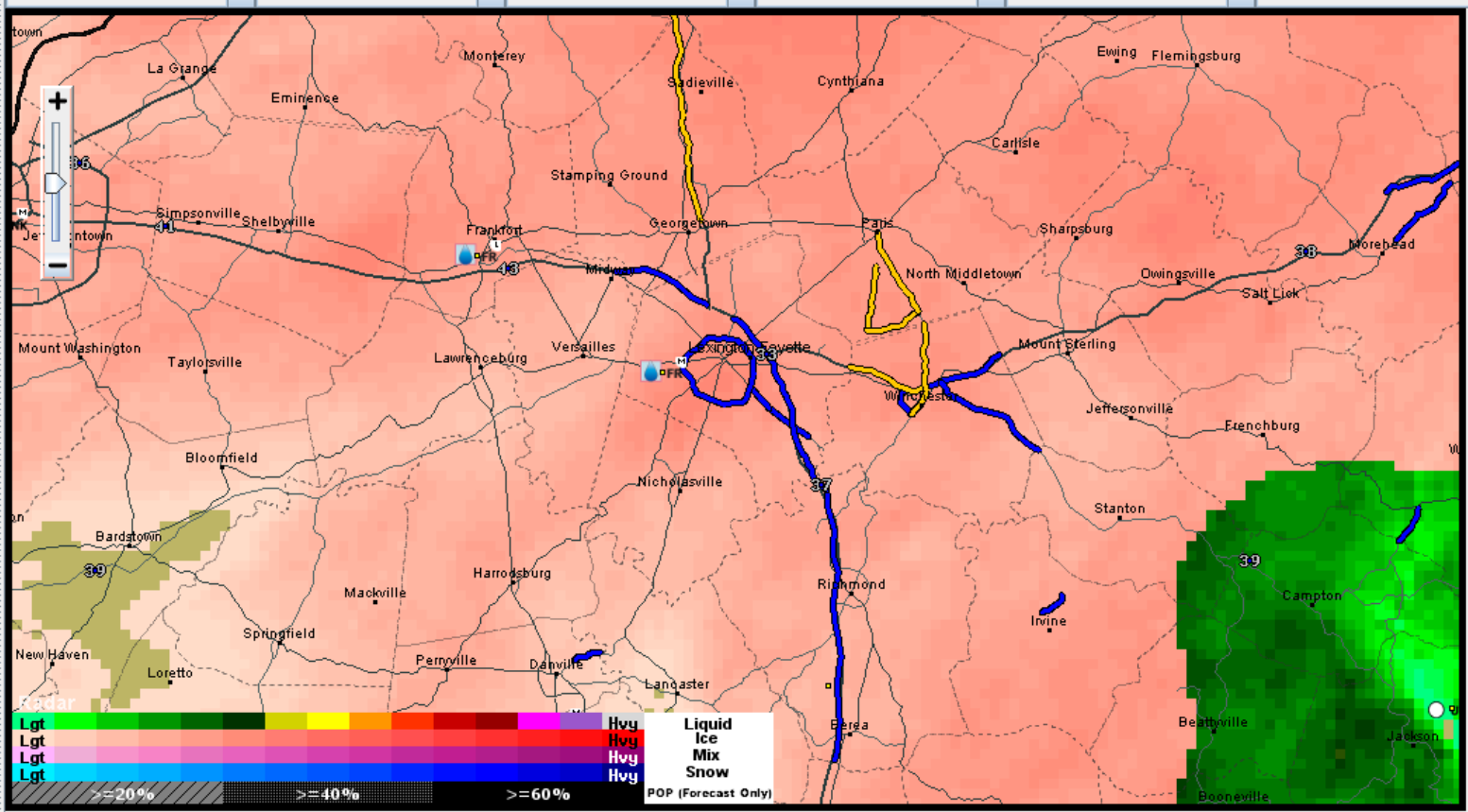
RWIS/ESS Views: None

Web Browser Links: Last Selected

Total (Recv): 90.22 MB
Files Sync'd: 285/7835 (4%)
Server (Recv): 90.22 MB
Peers (Recv): ---
Peers (Sent): ---
Peer Count: ---

CUSTOM MDSS ROUTES BACKGROUND FAA/NWS OBS RWIS/ESS OBS STATIC LAYERS

None None Radar Weather Surface Temp None



Current Time: Tue Jan 15, 2013 9:00PM EST Selected Time: Tue Jan 15, 2013 9:00PM EST

9PM 1AM 5AM 9AM 1PM 5PM 9PM 1AM 5AM 9AM 1PM 5PM

Speed: 1.0x 10 Min. 20 Min. 30 Min. 60 Min. Loop

Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

NWS Alerts

12PM 8PM 12AM 6AM 12PM

Map Views

None

MDSS Route Views

I-75: MP 125.528 (US-62) to

FAA/NWS Views

None

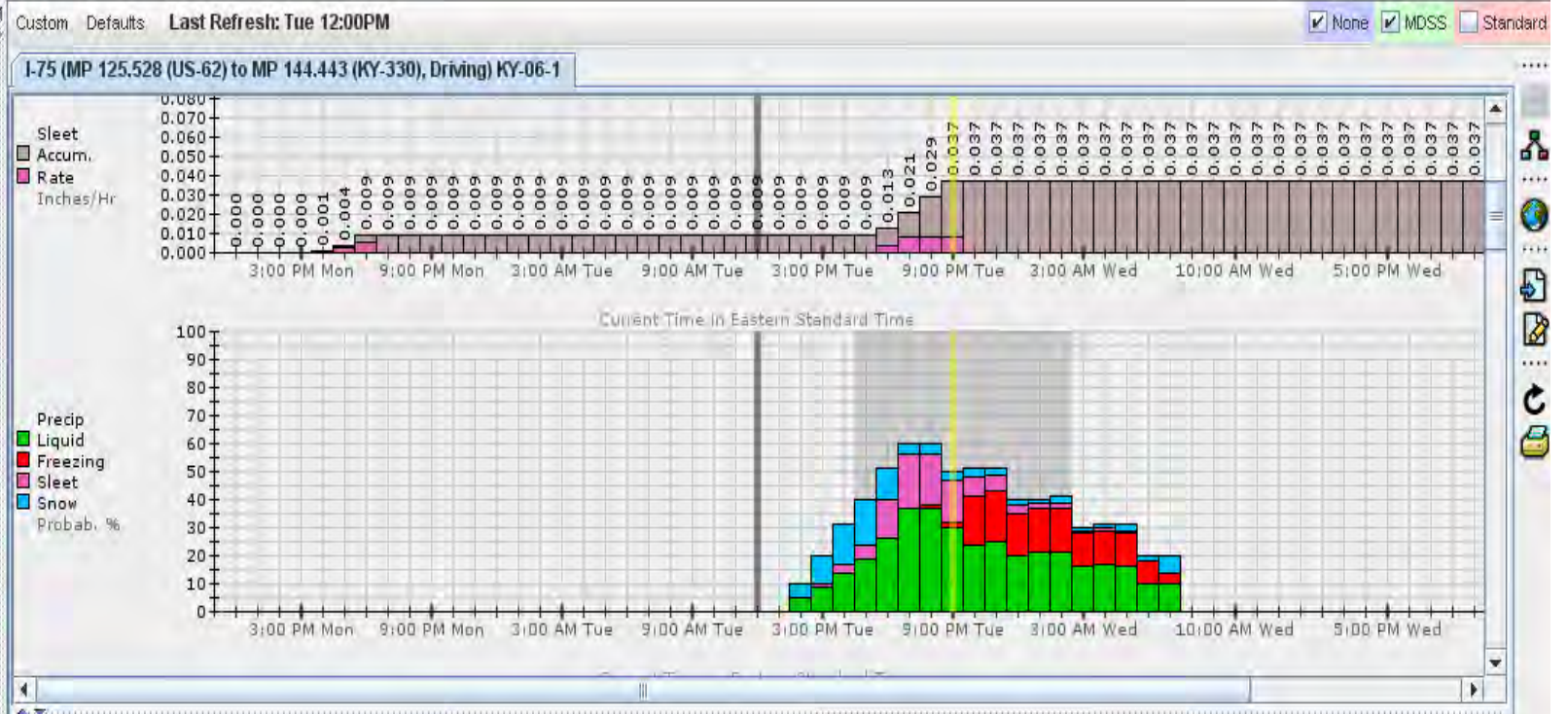
RWIS/ESS Views

None

Web Browser Links

Last Selected

Total (Recv): 7.98 MB
 Files Sync'd: 1674/1674 (100%)
 Server (Recv): 7.98 MB
 Peers (Recv): ---
 Peers (Sent): ---
 Peer Count: ---



Atmospheric

Air Temp 32 °F
 Dew Pt 27 °F
 Wind Dir / Spd 8G17 mph ↖ NE
 Cloud Cover
 Precip Type RA

Roadway

Road Cond Slush
 Road Temp 32 °F
 Percent Ice 48 %

Conditions at: Tue Jan 15 9:00 PM 2013 EST

MDSS

Reset Time

Last Recommended Maint. Action = NaCl 250 @ Tue Jan 15 21:00:00 EST 2013

Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

Plow & Chemicals Recommended

Thursday 9PM

7PM 1AM 7AM 1PM 7PM

Map Views

None

MDSS Route Views

None

FAA/NWS Views

None

RWIS/ESS Views

None

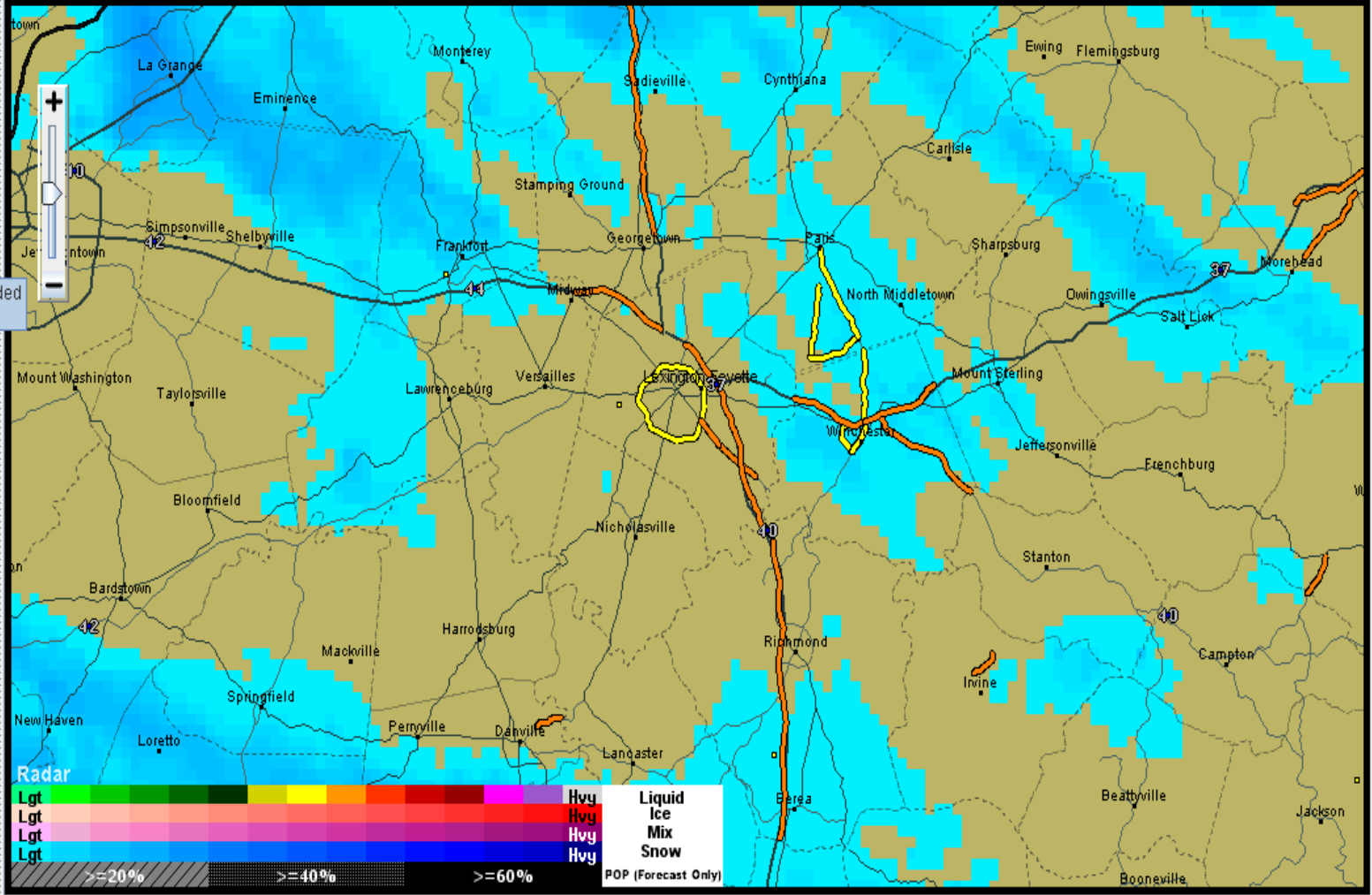
Web Browser Links

Last Selected

Total (Recv): 61.37 MB
 Files Syncd: 148/7927 (2%)
 Server (Recv): 61.37 MB
 Peers (Recv): ---
 Peers (Sent): ---
 Peer Count: ---

CUSTOM MDSS ROUTES BACKGROUND FAA/NWS OBS RWIS/ESS OBS STATIC LAYERS

None None Radar Weather Surface Temp None



Current Time: Thu Jan 31, 2013 7:00PM EST Selected Time: Thu Jan 31, 2013 7:00PM EST

7PM 11PM 3AM 7AM 11AM 3PM 7PM 11PM 3AM 7AM 11AM 3PM

Speed: 1.0x 10 Min. 20 Min. 30 Min. 60 Min. Loop

Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

NWS Alerts

9PM 3AM 9AM 3PM 9PM

Map Views

None

MDSS Route Views

None

FAA/NWS Views

None

RWIS/ESS Views

None

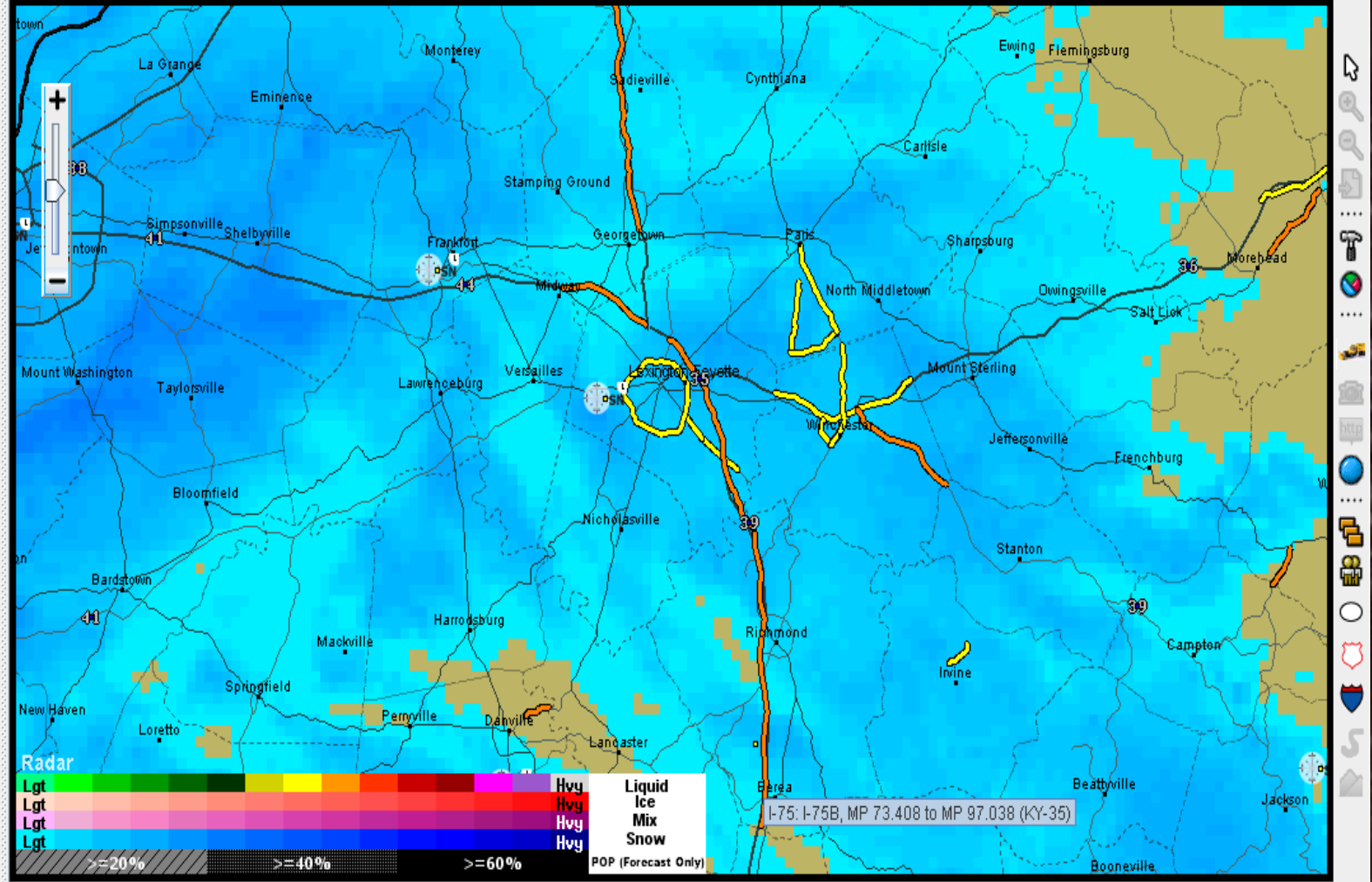
Web Browser Links

Last Selected

Total (Recv): 65.42 MB
 Files Sync'd: 211/7873 (3%)
 Server (Recv): 65.42 MB
 Peers (Sent): ---
 Peer Count: ---

CUSTOM MDSS ROUTES BACKGROUND FAA/NWS OBS RWIS/ESS OBS STATIC LAYERS

None None Radar Weather Surface Temp None



Current Time: Thu Jan 31, 2013 9:00PM EST Selected Time: Thu Jan 31, 2013 9:00PM EST

9PM 1AM 5AM 9AM 1PM 5PM 9PM 1AM 5AM 9AM 1PM 5PM

Speed: 1.0x 10 Min. 20 Min. 30 Min. 60 Min. Loop

Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

NWS Alerts

6AM 12PM 6PM 12AM 6AM

Map Views

None

MDSS Route Views

I-75: MP 125.528 (US-62) to

FAA/NWS Views

None

RWIS/ESS Views

None

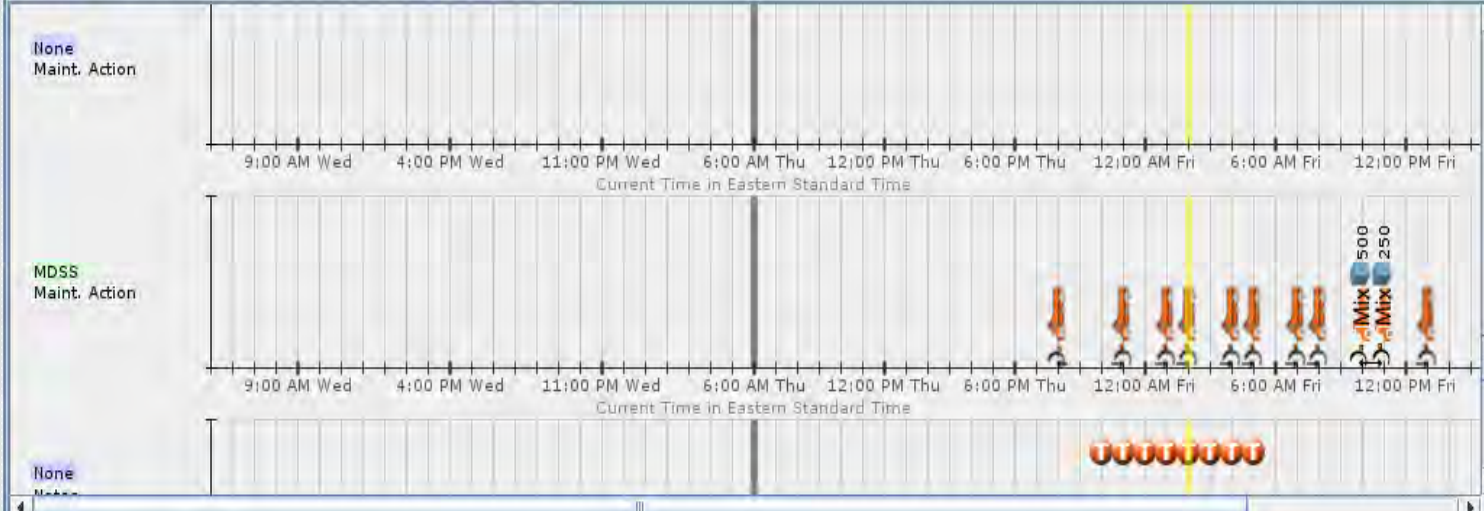
Web Browser Links

Last Selected

Total (Recv): 7.15 MB
 Files Sync'd: 1674/1674 (100%)
 Server (Recv): 7.15 MB
 Peers (Recv): ---
 Peers (Sent): ---
 Peer Count: ---

Custom Defaults Last Refresh: Thu 06:00AM

I-75 (MP 125.528 (US-62) to MP 144.443 (KY-330), Driving) KY-06-1

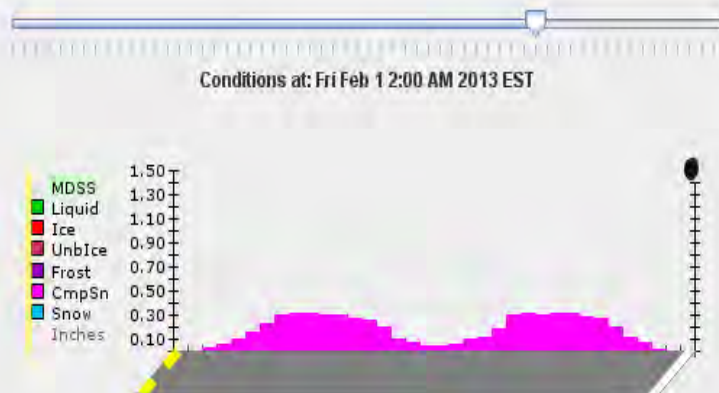


Atmospheric

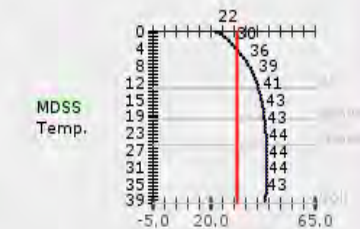
Air Temp 19 °F
 Dew Pt 9 °F
 Wind Dir / Spd 17G38 mph→W
 Cloud Cover ☁
 Precip Type SN

Roadway

Road Cond CmpSn
 Road Temp 22 °F
 Percent Ice 100 %



MDSS



Last Recommended Maint. Action = @ Fri Feb 01 02:00:00 EST 2013

Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

NWS Alerts

6AM 12PM 6PM 12AM 6AM

Map Views: None

MDSS Route Views: None

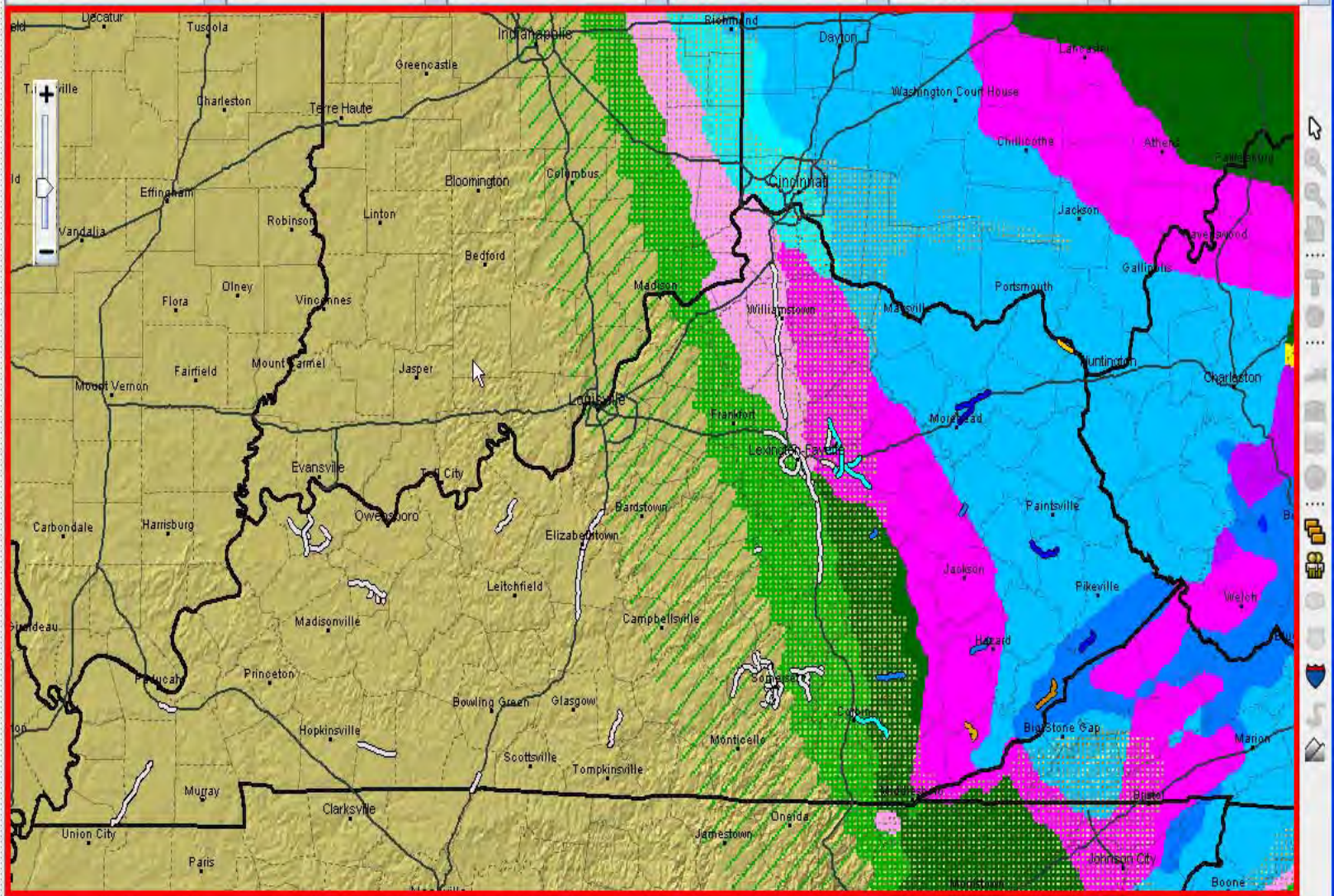
FAA/NWS Views: None

RWIS/ESS Views: None

Web Browser Links: Last Selected

CUSTOM MDSS ROUTES BACKGROUND FAA/NWS OBS RWIS/ESS OBS STATIC LAYERS

None None Radar Weather Surface Temp None



Total (Recv): 13.83 MB
 Files Sync'd: 451/7648 (6%)
 Server (Recv): 13.83 MB
 Peers (Recv): ---
 Peers (Sent): ---
 Peer Count: ---

Current Time: Tue Oct 30, 2012 6:30AM EDT Selected Time: Tue Oct 30, 2012 8:30AM EDT

6AM 10AM 2PM 6PM 10PM 2AM 6AM 10AM 2PM 6PM 10PM 2AM 6AM

Speed: 1.0x 10 Min. 20 Min. 30 Min. 60 Min. Loop

Alerts Next 24 Hours

State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

NWS Alerts

8AM 2PM 8PM 2AM 8AM

Map Views

None

MDSS Route Views

I-75: I-75B, MP 73.408 to MI

FAA/NWS Views

None

RWIS/ESS Views

None

Web Browser Links

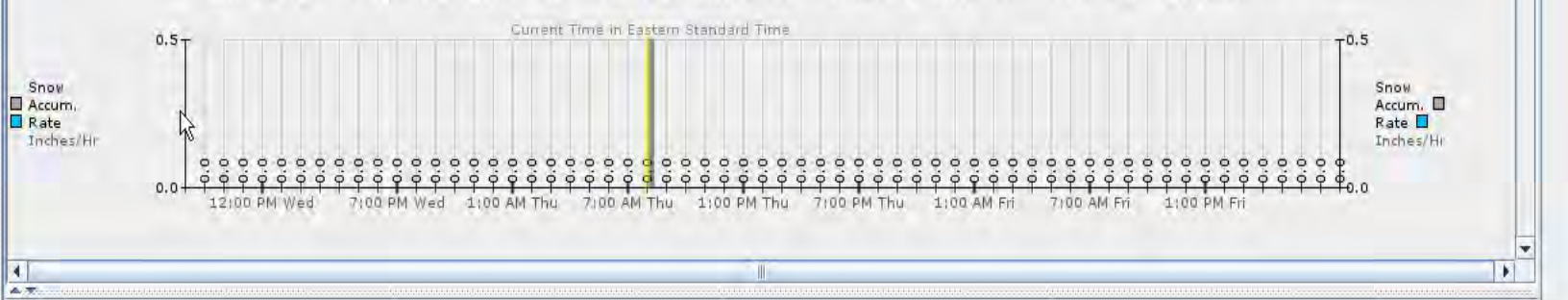
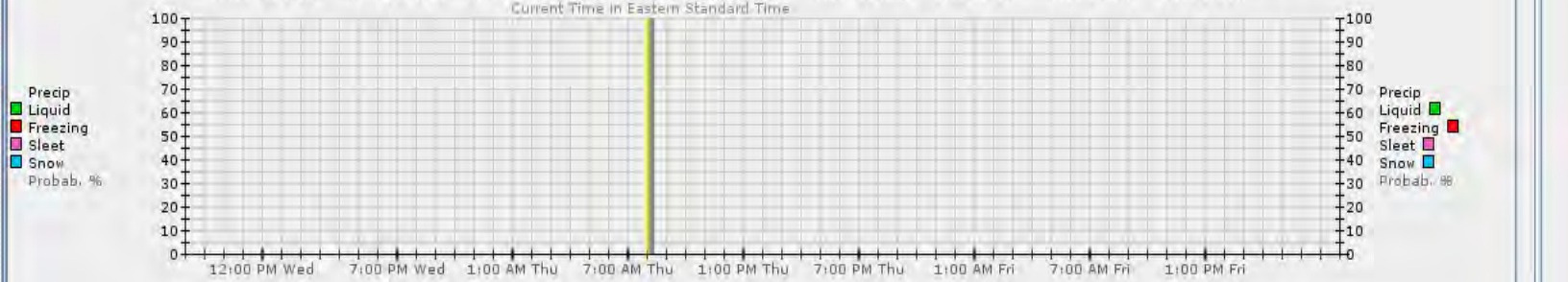
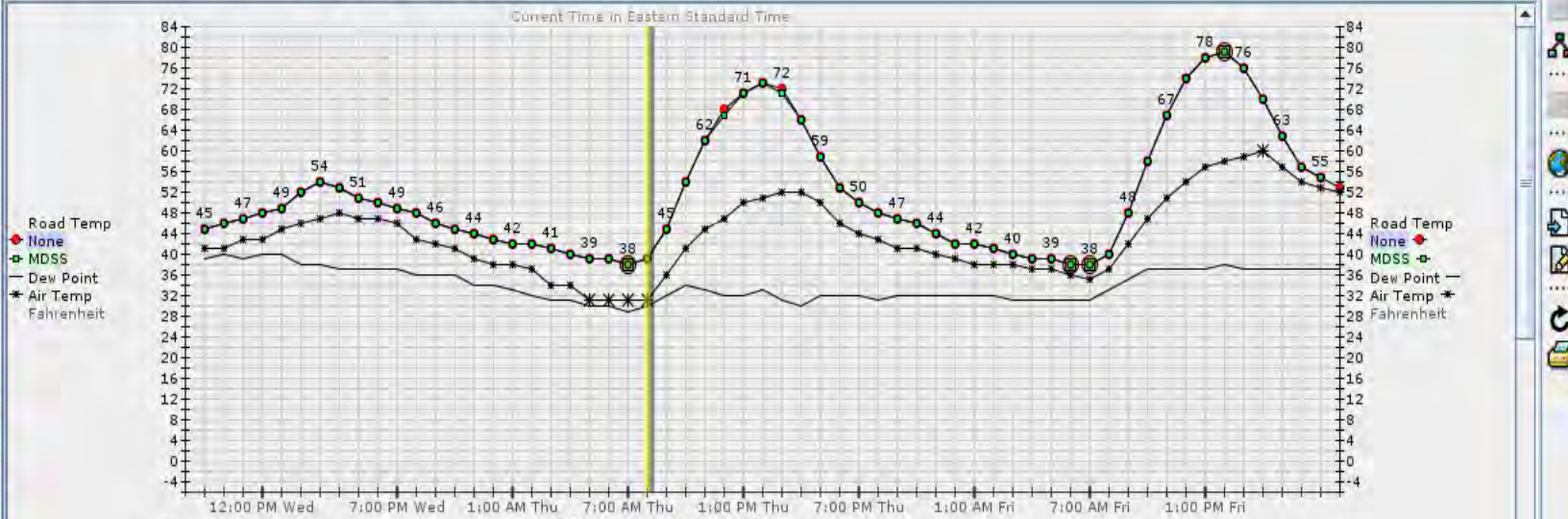
Last Selected

Total (Recv): 358.03 MB
 Files Sync'd: 655/7490 (9%)
 Server (Recv): 356.03 MB
 Peers (Recv): ---
 Peers (Sent): ---
 Peer Count: ---

Custom Defaults Last Refresh: Thu 08:11AM

None MDSS Standard

I-75B (MP 73.408 (RockCastle Co. line) to MP 97.038 (US 25)) KY-35-1



Report Maintenance Action Form

New Tab If frequently reporting for more than one route you may find it useful to set up reporting tabs for each route. To do so, click "New Tab", then right-click on the "Tab: X" title to give the tab a more meaningful title. The contents of each tab will be remembered until either the individual tab is closed or the MDSS GUI is shut down.

- Clark County - I64 West
- Clark County - I64 East
- Clark County - KY 627 Bypass
- I-75: South MP 115-97
- US 25/KY 418
- I-75 MP 144 - 156 Grant
- I-75 MP 156 - 171 Grant
- I-75: North MP 125-144
- KY 627 - Bourbon County
- I-64: Northern Split to Midway
- KY 4: New Circle Road

Activities and Observations Reporting Interface

Please provide a report date, truck id, and route before submitting. Report types are provided in the following sections. Selecting a report type will enable the options beneath it. Likewise, deselecting a report type will disable and clear its' associated options. Drag and drop a route from the selectable tree to the selected tree to add a route to the selection and vice versa to remove a route from the selection.

Date / Time: 03:15 PM EDT, Mon 2012-10-15

Truck Identifier: OTHER

- Selectable Routes/Segments
- 041C01: I-75, Exit 156 to Exit 171 (KY-01)
 - 041C02: I-75, MP 144.443 (KY-330) to exit 156 (KY-02)
 - I-24: I-24, MP 11.035 (KY 1954 Overpass) to MP 17.32 (McCracken-Mars)
 - I-64 East: I-64E, Exit 96 to Montgomery Co. Line (KY-07)
 - I-64 West: I-64W, Fayette Co. Line to Exit 96 (KY-12)
 - I-64: I-64, MP 143 to MP 156 (KY-41)
 - I-64: MP 74.729 (I-75 Interchange NB) to MP 65.770 (KY 311) (KY-09)

- Selected Routes/Segments
- KY 627/KY 1958: KY 627, MP 9.040-15.017 and KY 1958, MP 0.000-2.372

Change Truck Configuration

Set truck for plow down

Set truck to apply grit (sand)

Grit Rate: (Pounds per Lane Mile)

Set truck to apply chemical

Chemical Form: Dry Prewet Brine

Chemical:

Chemical Rate:

Prewet Chemical:

Prewet Rate: (Gallons per Ton)

Make a Road Condition Report

Dry pavement

Snow

Ice

Wet pavement

Compacted snow

Frost

Slush

Drifted snow

Make a Weather Condition Report

Rain

Sleet

Fog

Snow

Blowing Snow

No precipitation

Freezing Rain

Drizzle

Make a Maintenance Action Report

Beginning of maintenance action

Midpoint of maintenance action

End of maintenance action

Submit Report
Clear Form
Cancel

Add an optional comment here or leave blank

Now what?



Kentucky likes the program.

When Pooled Fund Study Ends?
Another 2 more years...

Problems? Technology, Patents,
Lawsuits....

Cost?

Apple/Android App

Fun Kentucky Facts!

- ~155,000 horses
- \$1.75 billion worth of horses bought and sold each year in KY
- Bourbon production is a \$2 billion industry in KY
- There are 4.7 million barrels of bourbon currently being stored in KY (more than there are people)
- KY ranks 3rd in vehicle production in the US (behind Michigan and Ohio) ~ 1 million veh's
- Coolest of those: Chevy Corvette

Questions?



Hardin County



Russell County



Franklin County