

Maintenance Decision Support System (MDSS) Statewide Implementation: Change and Progress



SIRWEC 2010: 15th International Road Weather Conference
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Melody A. Coleman, Tony McClellan & Paul Boone - INDOT
Presented by Curt Pape, Minnesota DOT



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MDSS: What is it?

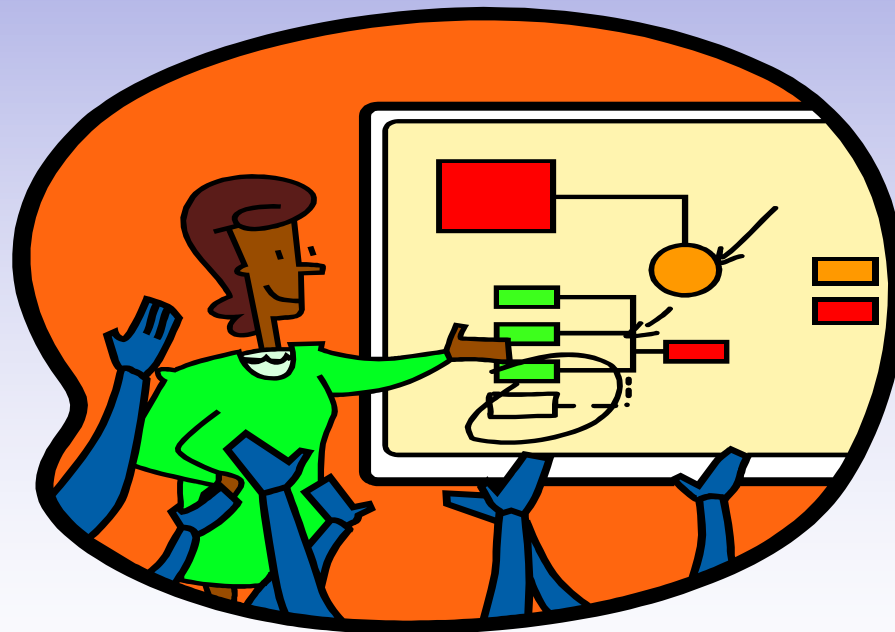
- An automated tool for providing decision support to winter road maintenance managers
- A multi-layered information system that provides forecasts, predictions, reports on observed weather and road conditions, serves as a training tool, and becomes a management support system that can be utilized year round



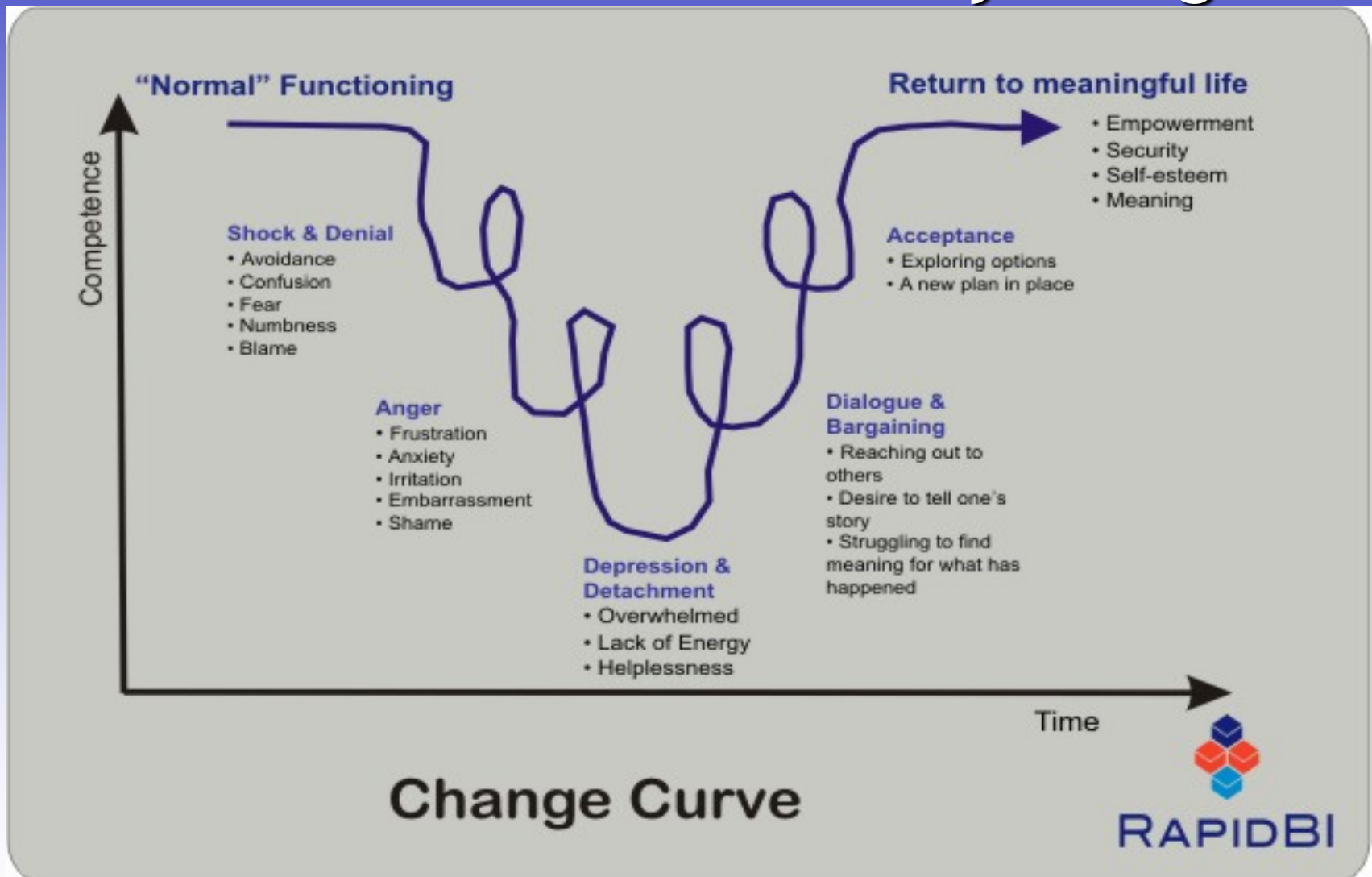
Organizational Change - It's Cultural

“There are two basic rules of life: Change is inevitable and everybody resists change”

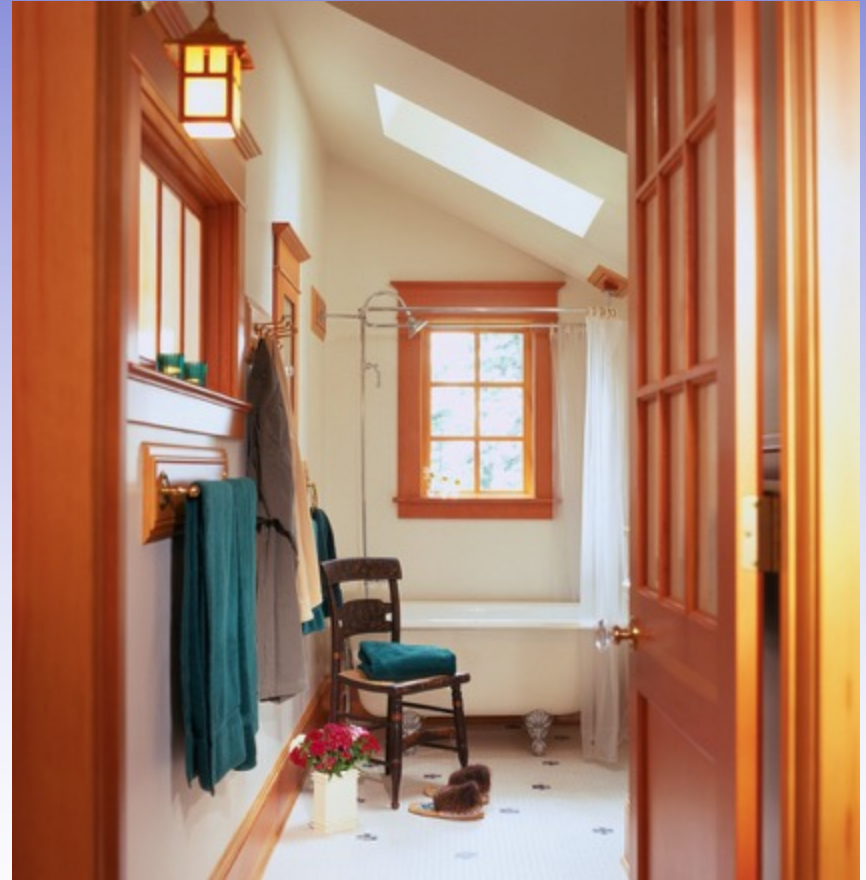
- *Author Roger Von Oech*



How is our work affected by change?



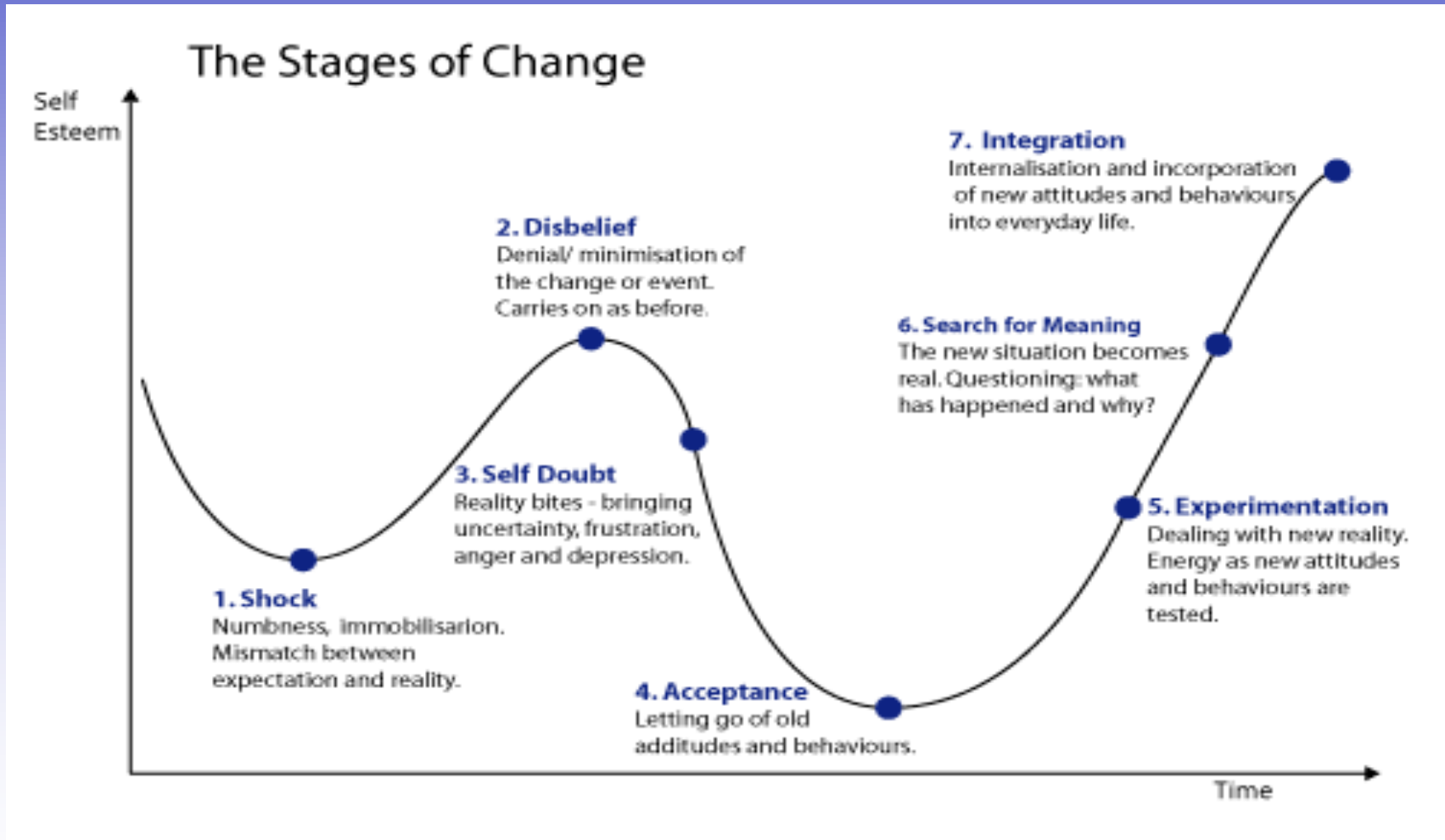
Let's Remember...not all change is bad!



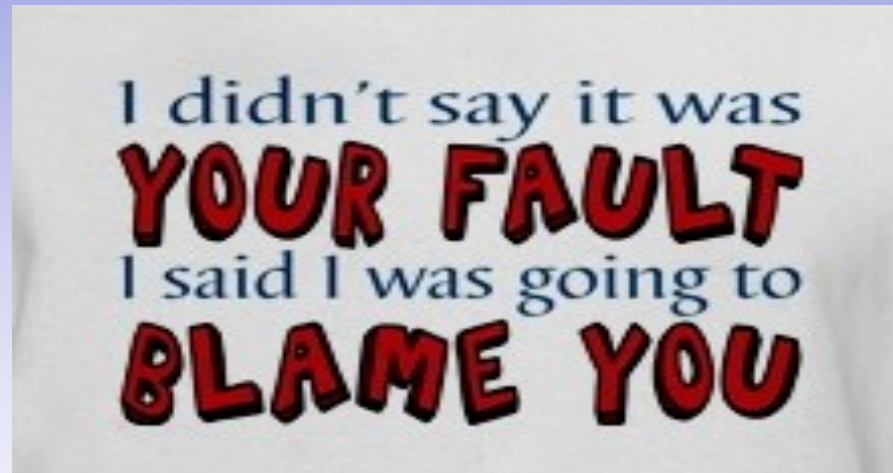
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How does change affect the way we view ourselves & our jobs?



Executive support and employee buy-in is key in initial and ongoing success with the changes that MDSS present



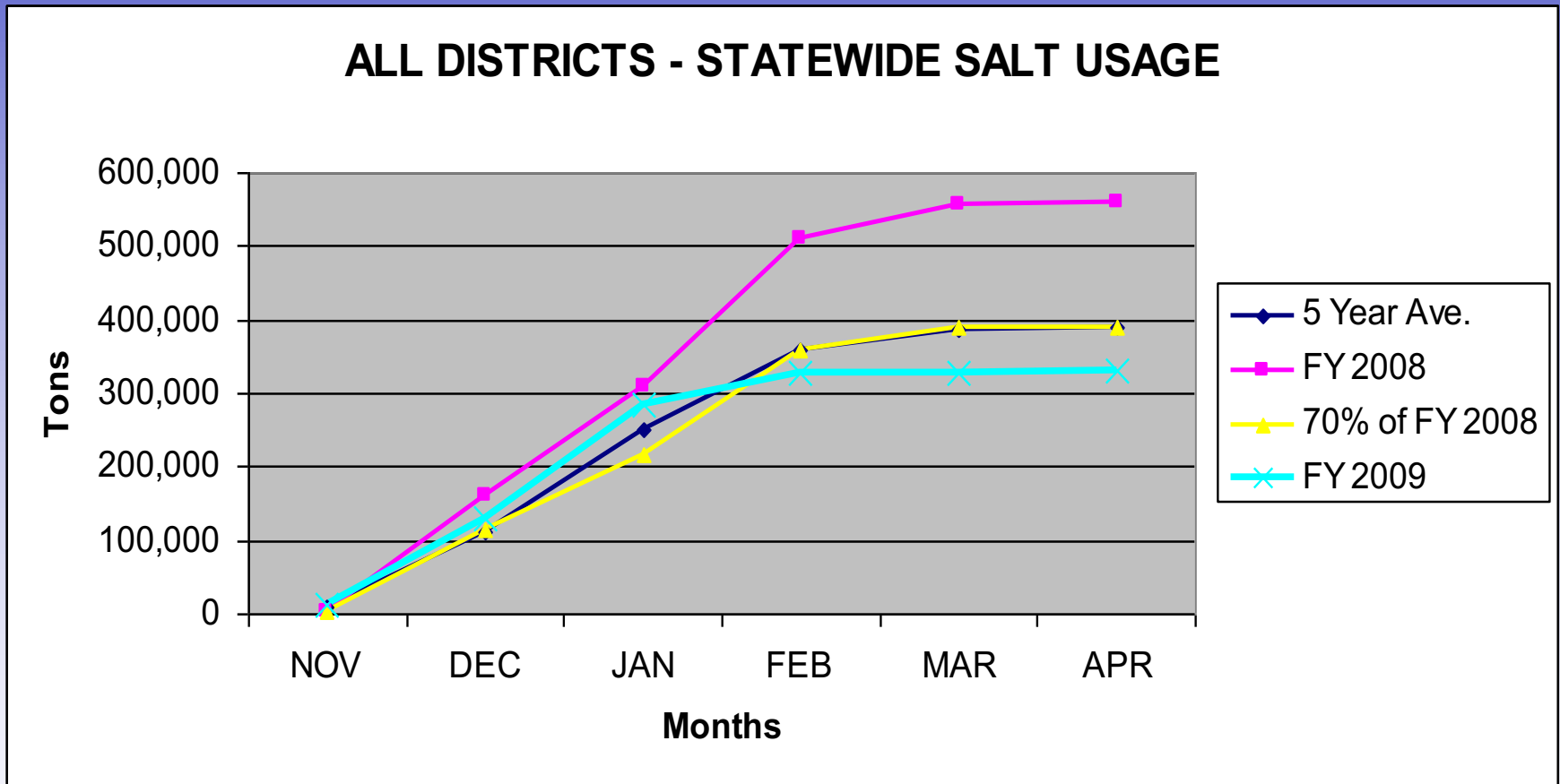
Turning Change and Planning into Results

	FY 08 Through February	FY 09 Through February
Observed SN/FZRN Hours	1,324	1,359
Tons of Salt Used	511,328	327,364
Dollars of Salt	\$27,100,384	\$17,350,292

Similar conditions resulted in a very different outcome by using technology and managing resources



Salt Usage - All Districts



Salt Usage

	Salt Usage (Nov - Apr)							
	3 Year Ave.	5 Year Ave.	10 Year Ave.	FY 08	FY 09	Variation 3 yr ave to 09	Variation 10 yr ave to 09	Variation from 08 to 09
Crawfordsville	58,313	58,324	51,484	95,318	41,402	-29.0%	-19.6%	-56.6%
Fort Wayne	70,389	71,946	66,993	100,762	71,674	1.8%	7.0%	-28.9%
Greenfield	74,067	74,886	78,863	110,670	60,686	-18.1%	-23.0%	-45.2%
LaPorte	86,387	98,830	103,021	132,039	89,546	3.7%	-13.1%	-32.2%
Seymour	62,212	53,174	45,398	66,726	40,250	-35.3%	-11.3%	-39.7%
Vincennes	35,355	32,997	29,059	52,759	26,246	-25.8%	-9.7%	-50.3%
All Districts	386,723	390,157	374,818	558,274	329,804	-14.7%	-12.0%	-40.9%



Diesel Fuel Usage

	Diesel Fuel Usage (Nov - Apr)		
	FY 08	FY 09	Variation from 08 to 09
Crawfordsville	348,252	257,265	-26.1%
Fort Wayne	374,262	325,324	-13.1%
Greenfield	441,017	338,783	-23.2%
LaPorte	422,230	388,931	-7.9%
Seymour	248,040	237,950	-4.1%
Vincennes	156,679	170,089	8.6%
All Districts	1,990,480	1,718,342	-13.7%



Overtime Hours - Snow & Ice

	OVT Hours - Snow and Ice (Nov - Apr)		
	FY 08	FY 09	Variation from 08 to 09
Crawfordsville	38,240	17,971	-53.0%
Fort Wayne	44,896	35,603	-20.7%
Greenfield	36,614	32,074	-12.4%
LaPorte	50,961	51,743	1.5%
Seymour	33,240	19,027	-42.8%
Vincennes	22,533	11,792	-47.7%
All Districts	226,484	168,210	-25.7%



Tons of Salt per Hr of Snow/Freezing Rain

	Tons/Sn Hour 3 Year Ave	Tons/Sn Hour 08	Ton/SnHr 09	Diff from 3 Yr Ave	Diff from 08
Crawfordsville	192	244	124	-35.4%	-49.3%
Fort Wayne	168	201	145	-13.8%	-28.2%
Greenfield	244	284	182	-25.4%	-36.0%
LaPorte	328	401	226	-31.2%	-43.7%
Seymour	523	412	314	-39.9%	-23.7%
Vincennes	453	436	380	-16.1%	-12.8%
All Districts	260	295	188	-27.8%	-36.4%



\$AVING\$ - Overtime

An effort has been made to try to normalize the data using the observed hours of snow and freezing rain. In order to compare savings to FY 08, which had 7.2% more observed hours of snow and freezing rain than FY 09, the FY 08 salt usage and overtime hours have been reduced by 7.2%. This reduction normalizes the winters.

Overtime Hours				
	FY 08 (Reduced by 7.2%)	FY 09	Difference (Hours)	Savings @ \$23.33/hour
All Districts	210,177	168,210	41,967	\$979,136





Did you know?

- One load of salt is approximately \$600 (in Indiana for FY 10) in materials.
- There are over 1100 Snow Trucks in the INDOT fleet.
- One extra trip per event is over \$600,000 in material. One trip saved could result in significant reductions in salt usage.



\$AVING\$ - Salt Usage

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Salt Usage (Tons)				
	FY 08 (Reduced by 7.2%)	FY 09	Difference (Tons)	Savings @ \$53/Ton
All Districts	518,078	329,804	188,274	\$9,978,536



QA/QC and Communications

- Provides a two way street where all levels within the organization can communicate how the system is working



- Strategic Rather than Tactical Approach



QA/QC Should be Easy and Automated

MDSS Quality Control - Windows Internet Explorer provided by State of Indiana

http://intranet/mdssqa/Default.aspx

IOT HelpDesk | Access Indiana | INDOT Internet

Indiana Department of Transportation

MDSS Quality Assurance

Central Office | District | **Sub Dist.** | Driver | Reports | Admin

Storm Event GUI Post Storm GUI IWAPI Storm Event
 Review storm event Review post storm Review iwapi storm event

All information must be completed in its entirety.

Name: Position:
Location: Date:
Time: :

View Boxes

MDSS routes viewed with (Check all that apply)

Tabular View Graph View

REMEMBER TO VIEW ALL MDSS ROUTES

Route treatment recommendations are consistent with what is expected?

YES NO NOT CHECKED

Select why answer above is No

If "No" was problem reported?

YES NO

Reported to (Check all that apply)

MERIDIAN District Champion Sub District Manager

Select multiple routes using the shift or ctrl keys

Done

Local intranet 100%

Start | MDSS 09/10 in ... | 2 Microsoft Of ... | MDSS Quality ... | Search Desktop | 10:33 AM



Communications Should be Timely and Informative

- Give credit when/where credit it is due
- Admit real problems and failures & make plans to correct them
- QA/QC provides a structured feedback for two-way communication



Something to Talk About

The screenshot displays the Maintenance Decision Support System (MDSS) interface, version 6.10, running on a Windows operating system. The main window shows a weather radar map of Indiana, with various weather conditions and road data overlaid. The interface includes a menu bar (File, Report, Data, Sync, Options, Region, Update, Help) and a toolbar with various view and data options. On the left side, there are several control panels for alerts and map views, including 'Alerts Next 24 Hours' and 'Map Views'. A status bar at the bottom shows the current time and playback controls. An inset window in the top right corner shows a camera view of a road, labeled 'IN-61748 (Camera 0) 10:45AM Mon Jan 25...', with a timestamp indicating the image is 4 minutes and 49 seconds old.

Maintenance Decision Support System - Meridian Environmental Technology v6.10

File Report Data Sync Options Region Update Help

Message Center (tmcclellan@indot.in.gov)

Alerts Next 24 Hours: State View Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

MDSS Maintenance Actions

NWS Alerts

10AM 4PM 10PM 4AM 10AM

Map Views: None go

MDSS Route Views: IN-54-04-02: SR60, Jct SR5 go

FAA/NWS Views: None go

RWIS/ESS Views: None go

Web Browser Links: Last Selected go

Total (Recv): 28.89 MB
Files Sync'd: 2556/6711 (38%)
Server (Recv): 28.89 MB
Peers (Recv): ---
Peers (Sent): ---
Peer Count: ---

Current Time: Mon Jan 25, 2010 10:50AM EST Selected Time: Mon Jan 25, 2010 10:50AM EST

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

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

Meridian Environmental Technology

IN-61748 (Camera 0) 10:45AM Mon Jan 25...

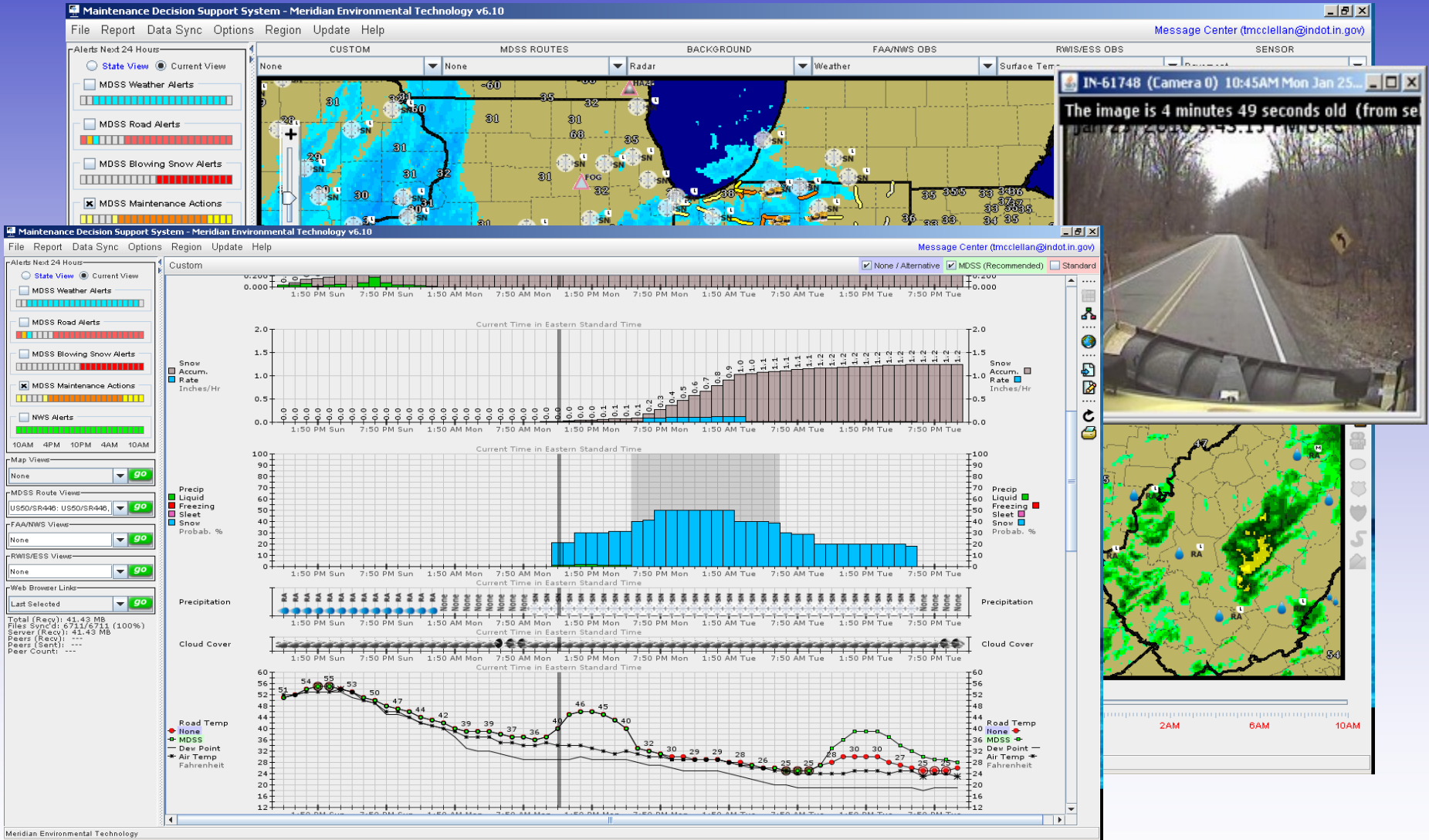
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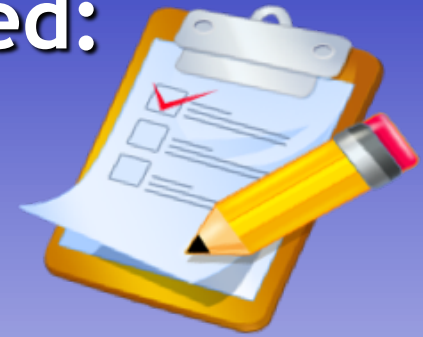
Something to Talk About



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To Implement MDSS You Need:



- Strong Executive Support
- Organizational Change Management Plan
- Comprehensive Training Plan
- Equipment and Software Super Users strategically located in your areas
- A good Communication plan - QA/QC is an excellent way to make this happen
- A good project management team





Maintenance Decision Support System (MDSS):

Indiana Department of Transportation (INDOT)

Statewide Implementation



Prepared by:

Tony McClellan, P.E., Project Manager

Paul Boone, P.E.

Melody A. Coleman



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Questions ?

For further information, contact:

Tony McClellan, MDSS Project Manager
tmcclellan@indot.in.gov

Melody Coleman, MDSS QA/QC Project Manager
mcoleman@indot.in.gov

Paul Boone, MDSS Implementation Team
pboone@indot.in.gov

