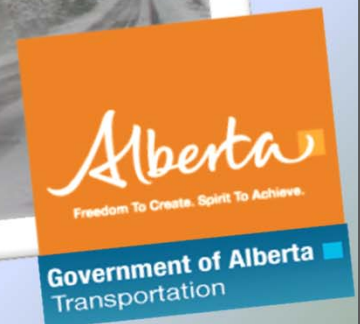


Winter Road Condition Mobile Data Collection System

In Support of Alberta's Traveller
Information Services



Melinda Tracey
IBI GROUP

1



NRITS August 28-31, 2011



Government of Alberta
Transportation

Presentation Overview

- *Project Background, Traveller Information Services & Providers*
- *Project Goals & Stakeholders*
- *System Functionality, Development and Implementation*
- *Usage, Interface and Statistics*
- *Successes and Lessons Learned*

2

Project Background and Services

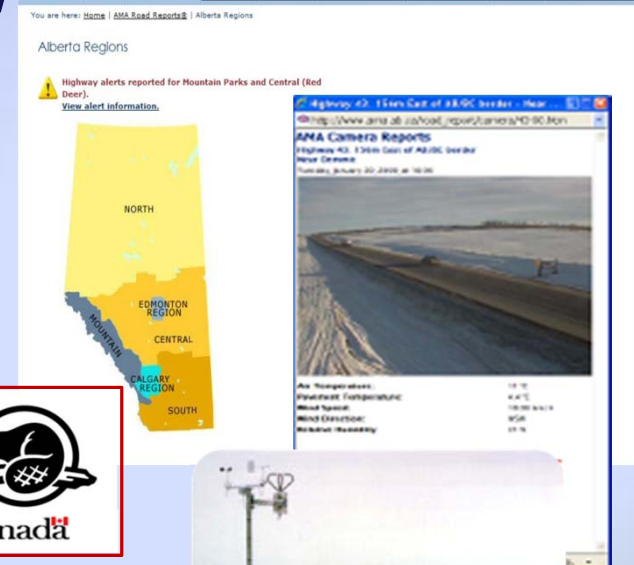
*In the province of **Alberta**, winter road condition information is made available to the public by the **Alberta Motor Association***



3

Alberta Transportation's
unique private/public partnership with
Alberta Motor Association
facilitates winter road condition
information submissions from
Provincial contractors;

- **AT Highway Maintenance Contractors,**
- **Parks Canada** contractors,
- **Road Weather Information System** providers.



During Winter months Contractors are responsible for;

- *Inspecting and maintaining **Provincial 1 and 2 digit** paved highways,*
- *Collecting highway information on **466** segments totaling ~**15,000** kilometres,*
- *Providing highway conditions daily by **6:00 am** and **update** information as conditions change,*
- *Submit to AMA observed **Driving, Visibility, Lane** and **Weather** conditions.*

5

Reported Conditions

Driving and Visibility

Good or Fair or Poor

Shoulder

Snow & Ice or Bare

Driving Lane

*Bare & Dry, Bare & Wet, Bare Wheel
Paths, Drifting Snow, Icy Sections,
Snow Covered*

Weather

Fog, Freezing Rain, Snowing, Strong Winds

Conditions for Northern Alberta

Highway 2

Legal to Clyde

Report submitted: Aug 23 at 12:07 AM

Driving Lane: Bare and Dry Visibility: Good

Shoulders: Bare

Driving: Good

Condition:

Clyde to Rochester

Report submitted: Aug 23 at 12:07 AM

Driving Lane: Bare and Dry Visibility: Good

Shoulders: Bare

Driving: Good

Condition:

Rochester to

Report submitted

Driving Lane:

Shoulders:

Driving

Condition:



You are here: [Home](#) | [AMA Road Reports](#) | Mountain Parks Region

Highway alert: For road condition and road closure information on British Columbia highways please call Drive BC at 1-800-550-4997. [View highway alerts for all regions.](#)

Road Conditions Legend
Poor Fair Good
Road Closed Construction Unknown



AMA Road Reports®

Provides reported Winter Road Conditions and RWIS information to public through web and toll-free phone services.

www.
ama.ab.ca

1-877
AMA-HWYS



Experience
AMA

Membership Travel Auto & Driving Registries Insurance

You are here: [Home](#) | [AMA Road Reports®](#) | Mountain Parks Region

Mountain Parks Region

 Highway alert: For road condition and road closure information on British Columbia highways please call Drive BC at 1-800-550-4997. [View highway alerts for all regions.](#)

Road Conditions Legend

Poor	Fair	Good
Road Closed	Construction	Unknown



Images are displayed from North to South (Edmonton to Calgary):

- 
Highway 2 South of Hwy 2A Overpass Near Leduc
- 
Highway 2 South of Hwy 13 Overpass Near Wetaskiwin
- 
Highway 2 North of Morningside Overpass Near Ponoka
- 
Highway 2 North of Hwy 11A Overpass

Edmonton City Forecast

Today 10/5°C

Red Deer Forecast

Today 7/1°C

Calgary Forecast

Today 5/1°C

City Traffic Conditions

Driving through Edmonton or Calgary? Find out what the traffic conditions are like in both cities:

- [Calgary cameras and conditions](#)
- [Edmonton traffic cameras](#)

Road Reports for Calgary to Edmonton

Check detailed AMA Road Reports for the Calgary to Edmonton popular route.

Project Goals

Provide operational improvements



Replace the fax-based reporting system,

Reduce errors and improve quality of data,

Facilitate real-time submissions and updates,

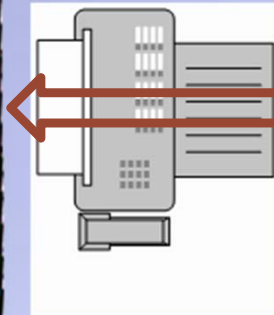
Support increased frequency of reporting,

Maintain data for review and analysis of reported winter road conditions.

Improve safety on Alberta highways.

8

Replace Problematic Paper Fax System



TELEform Verifier - [AMA Road Condition Report-Let (25757)]

File - Correction View - Options Utilities - Window Help

Fill Horizontally

000-888-4888

Date Jan 9/03 CRA# 0004

Shop# Hines CREE

AMA ID	Time	Hwy	Location	Dist	Day	Time	Temp	Wind	Humid	Cloud	Visib	Drivg Lane	Shoulder	Clear	Weather	Action Taken	Drivg Conditions	Visib
000	12:55	60	JCT. HWY. 729 TO JCT. HWY. 64	0														
010	2:10	60	JCT. HWY. 729 TO JCT. HWY. 757	0														
070	4:10	717	BC BORDER TO JCT. HWY. 64	0														
000	5:30	726	JCT. HWY. 64 TO WORSLEY	0														
000	12:30	728	JCT. HWY. 662 TO JCT. HWY. 665	0														
000	6:10	728	JCT. HWY. 64 TO EUREKA RIVER	0														
000	6:45	722	FARMVIEW TO JCT. HWY. 665	0														
000	1:45	735	WOLFELBY TO JCT. HWY. 665	0														

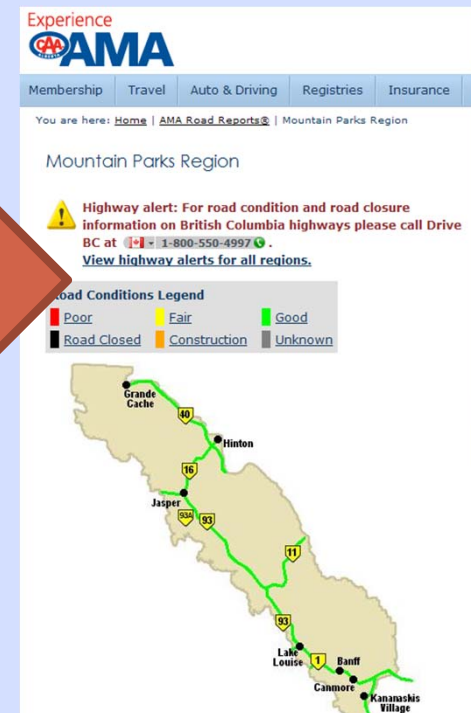
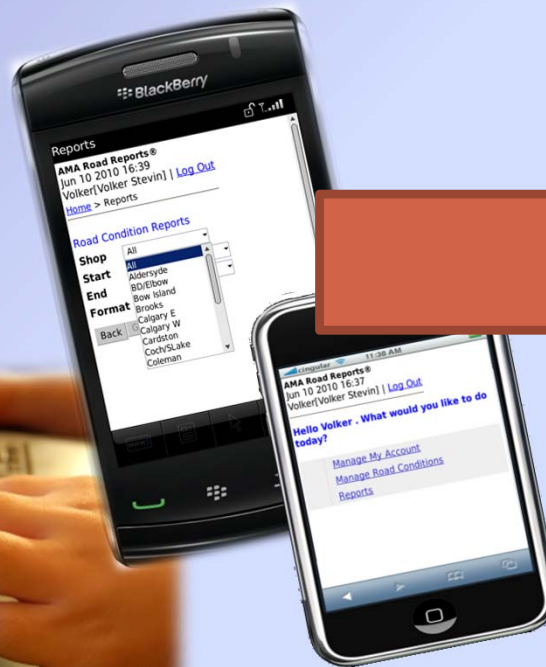
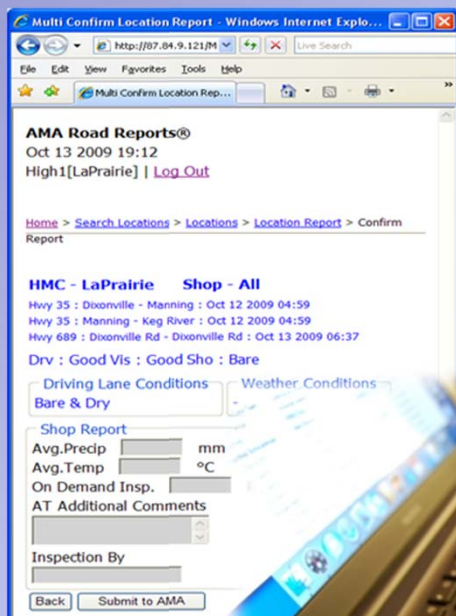
1 Remaining Shoulder_3 Indefinite mark

Start

6:43 AM

Deploy a web-based collection and submission service for Road Reports

- Submissions from Mobile devices & Workstations*
- Data accessible for updating, review & analysis*



Project Stakeholders

Alberta Transportation



- *AT Maintenance Contractor Inspectors*
- *AT Highway Maintenance Contractors*

Parks Canada

- *Maintenance Contractors*

Alberta Motor Association

- *AMA Road Reports Coordinator*
- *AMA IT staff*

11

System Functionality

Secure

- *Hosted & managed database & web service,*
- *Defined Agency & Contractor hierarchy,*
- *Password protected User interface.*

Quality Control

- *Data entry pick-lists & checkboxes,*
- *Single or multi-segment submissions,*
- *Data retention for review & updates,*
- *Data validation & final submission confirmation,*
- *Report generation tools.*

12

Identified Concerns

System design

*Interface compatible with existing AMA service,
TMDD compliant for future provincial ATIS,
Data retention for updates & report generation.*

System acceptance

*Compatible with pre-defined mobile devices,
New technology & 'Old' users*

System operations

Connectivity, connectivity, connectivity!

13

System Development 2009

Define business rules, develop data collection, reporting and management interface

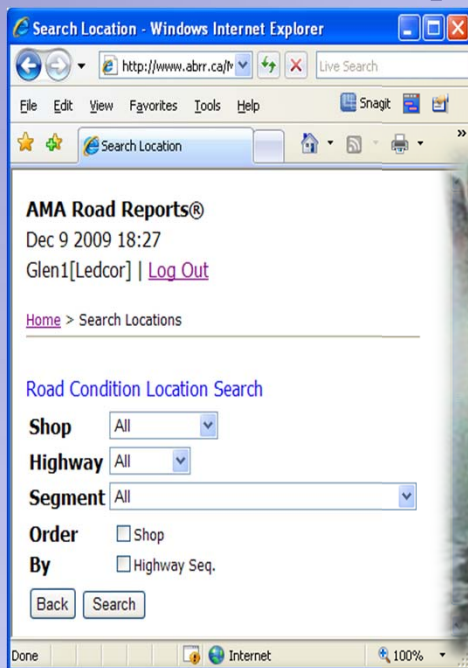
- *Confirm User hierarchy & responsibilities,*
- *Define Shops & associated reported segments for highways,*
- *Streamline work flow processes & provide updating efficiencies,*
- *Develop web, mobile & database interfaces,*
- *Implement system support, training & manuals,*
- *Deployment for major highways in Fall 2009.*

14

"ABRR.CA"

Initial Implementation February 2, 2009

Expanded Highway Deployment October 15, 2009



15

System Usage 2009 - 2010

Oct. 15, 2009 to Apr. 30, 2010

466 Highway segments

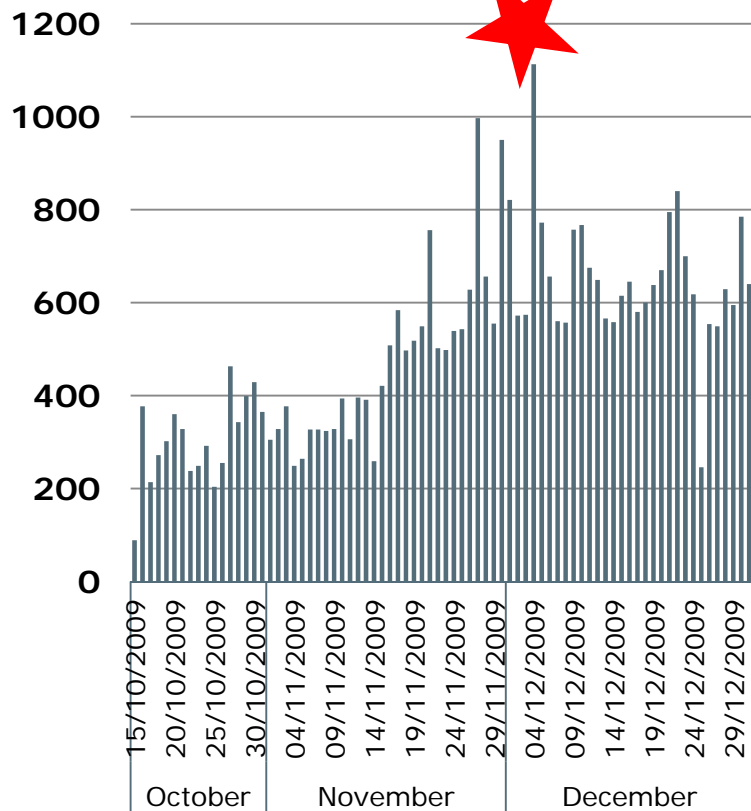
over 85,000 submissions

2009-2010 SEASON	ROAD CONDITION REPORTS SUBMITTED						
MONTH	AMA	HMC-1	HMC-2	HMC-3	HMC-4	HMC-5	TOTAL
October	1,997	292	328	466	704	1,094	4,881
November	2,003	1,664	2,804	903	3,121	2,491	12,986
December	2,035	3,174	4,494	1,065	3,454	4,487	18,709
January	1,782	2,737	4,689	1,015	3,368	3,785	17,376
February	1,060	2,322	4,232	831	2,811	3,516	14,772
March	1,365	1,604	3,663	995	2,293	2,409	12,329
April	292	419	1,308	402	719	1,289	4,429
TOTAL	10,534	12,212	21,518	5,677	16,470	19,071	85,482

16

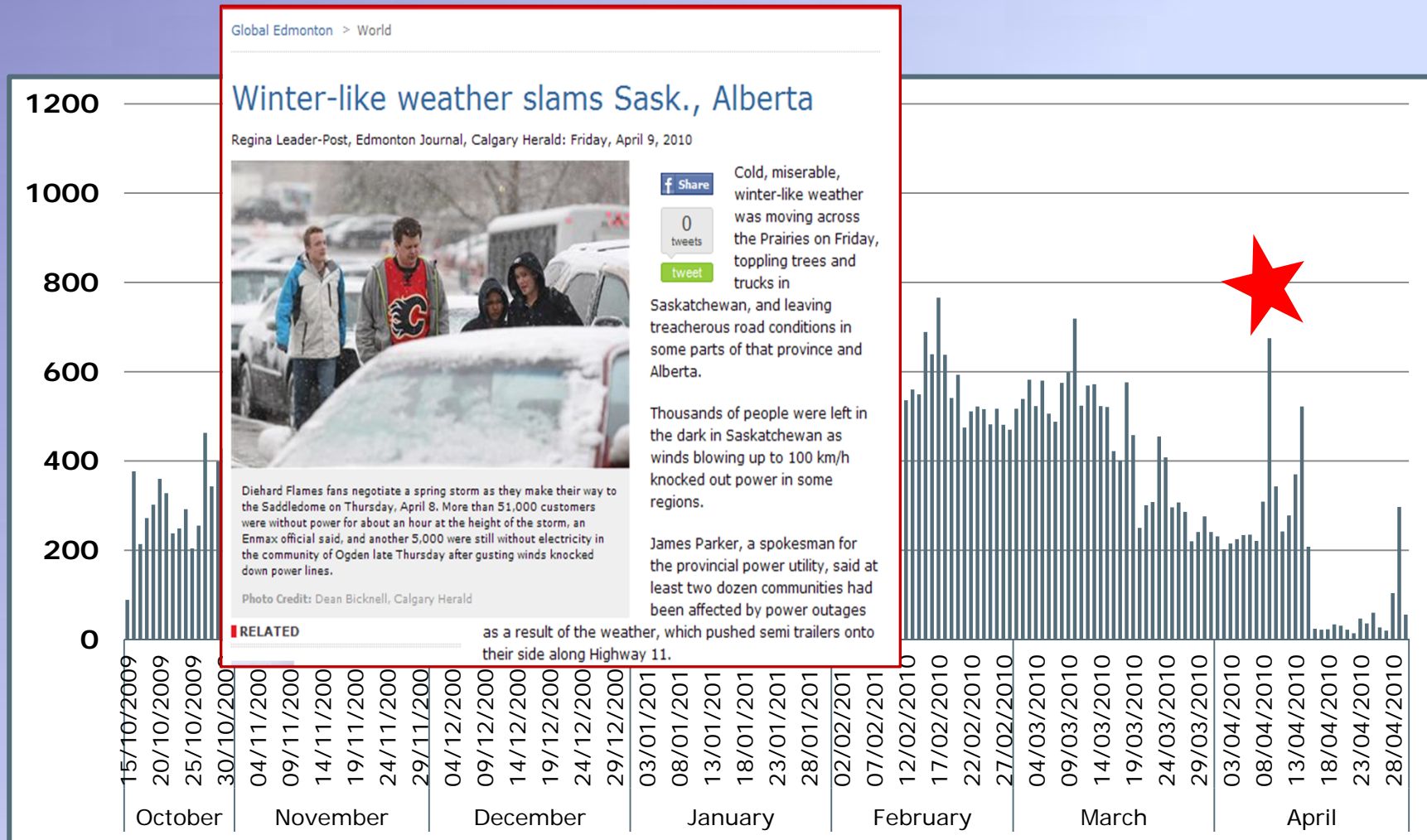
Peak Reporting During Storm Days

HMC Reporting Volume



A school bus that veered off the road due to weather conditions, sits in a ditch outside Calgary, on Friday, Dec. 4, 2009.

Continuation of Reporting after Season



Province-wide Deployment

October 1, 2010

On-line Reporting and Review of 446 Highway segments submitted through the mobile data collection system

Accessible to;

AMA & 30 Contract Maintenance Areas

- 11 Alberta Transportation Districts; Ops Managers, Engineers & Inspectors*
- 7 Highway Maintenance Contractor Companies*
- Parks Canada Dispatch Centres*

19

System Usage 2010 - 2011

Oct 1, 2010 to Apr 30, 2011

- 100 Shops reporting daily*
- 7 Highway Contractors reporting*
- Provincial 1, 2 & 3 digit highways*

*Banff and Jasper Parks Canada
Dispatch Centers*

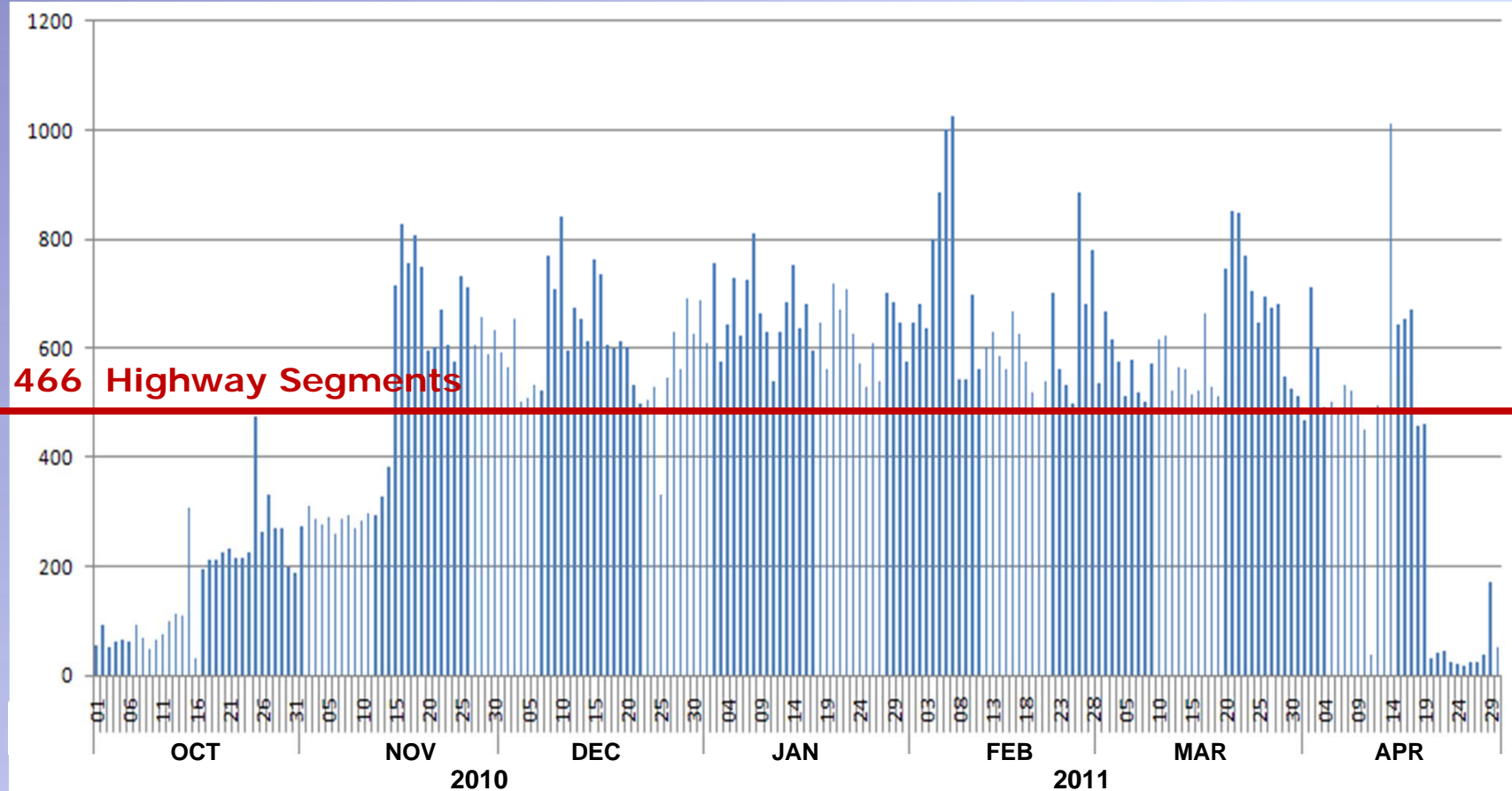
*City of Calgary and Edmonton
Ring road Contractors*

Over 107,000 real-time submissions



20

Reporting Frequency



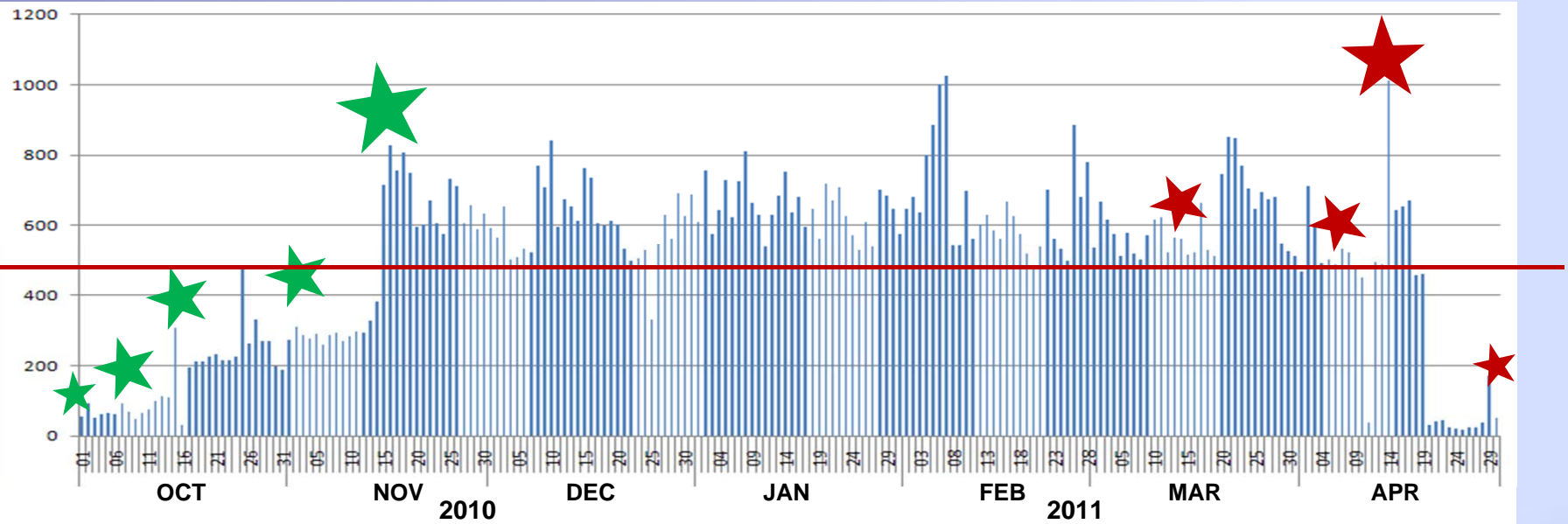
Volume of Road Condition Reports Submitted by Date

Total Segments to be Reported on Daily = 446

Total Number of Submissions = 107,014 October to April

21

Regional Reporting Dates



HMC Reporting Start Dates	Hwy Segments	% of Total Segments	HMC Reporting End Dates	Hwy Segments	% of Total Segments
1-Oct-10	42	9 %	15-Mar-11	249	56 %
10-Oct-10	21	5 %	10-Apr-11	21	5 %
15-Oct-10	147	33 %	14-Apr-11	36	8 %
1-Nov-10	43	10 %	15-Apr-11	140	31 %
15-Nov-10	193	43 %	30-Apr-11		
TOTAL	446	100 %	TOTAL	446	100 %

System Analytics

Usage and Diversity

These mobile devices sent 200 visits via 4 operating systems

Site Usage

Goal Set 1

Visits

200

% of Site Total: 0.82%

Pages/Visit

6.48

Site Avg: 14.49 (-55.31%)

Avg. Time on Site

00:03:23

Site Avg: 00:04:39 (-27.40%)

Visits

24,449

% of Site Total: 100.00%

Pages/Visit

14.49

Site Avg: 14.49 (0.00%)

	Browser	Visits
1.	Internet Explorer	23,792
2.	Firefox	320
3.	Safari	157
4.	BlackBerry9630	67
5.	Netscape	56
6.	Chrome	47
7.	BlackBerry8900	5
8.	BlackBerry8230	1
9.	BlackBerry8350i	1
10.	BlackBerry9700	1

24,449 visits used 6 connection speeds

Site Usage

Goal Set 1

Visits

24,449

% of Site Total: 100.00%

Pages/Visit

14.49

Site Avg: 14.49 (0.00%)

Avg. Time on Site

00:04:39

Site Avg: 00:04:39 (0.00%)

	Connection Speed	Visits
1.	DSL	11,069
2.	Unknown	10,923
3.	Dialup	1,186
4.	Cable	1,135
5.	ISDN	102
6.	T1	34

Filter Connection Speed:

containing

Go

Advanced Filter

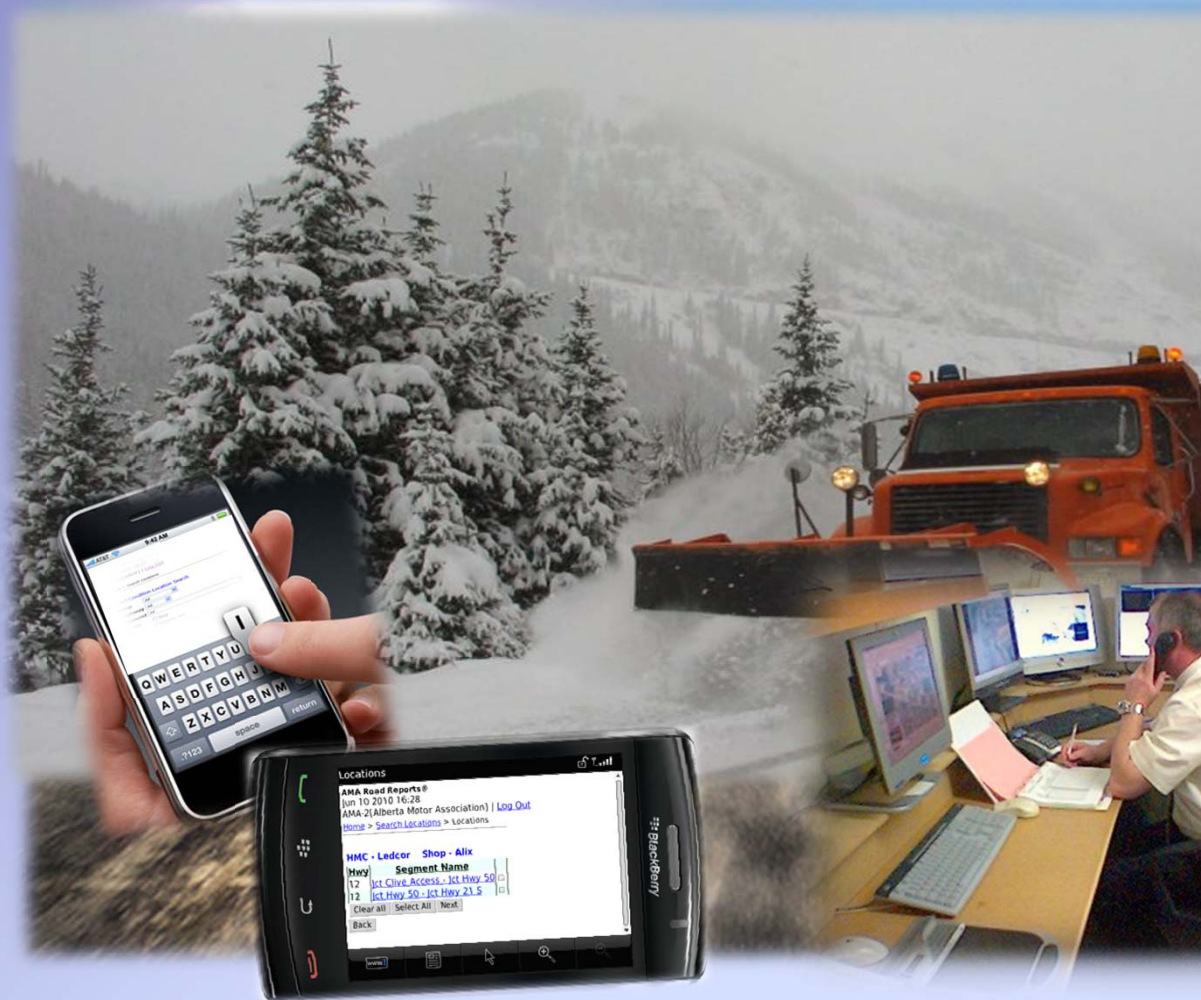
System Operations

Hello Winter



24

Maintenance & Reporting



Multi Confirm Location Report - Windows Internet Ex...
http://87.84.9.121/M... Live Search

File Edit View Favorites Tools Help

Multi Confirm Location Rep...

AMA Road Reports®
Oct 13 2009 19:15
High1[LaPrairie] | [Log Out](#)

[Home](#) > [Search Locations](#) > [Locations](#) > [Location Report](#) > Confirm Report

HMC - LaPrairie Shop - All

Hwy 35 : Dixonville - Manning : Oct 12 2009 04:59
Hwy 35 : Manning - Keg River : Oct 12 2009 04:59
Hwy 689 : Dixonville Rd - Dixonville Rd : Oct 13 2009 06:37

Drv : Good Vis : Good Sho : Bare

Driving Lane Conditions: Bare & Dry Weather Conditions: -

Shop Report

Avg.Precip 2.5 mm
Avg.Temp -2 °C
On Demand Insp. 212 kms
AT Additional Comments
Elk migrating

Inspection By
Tom W

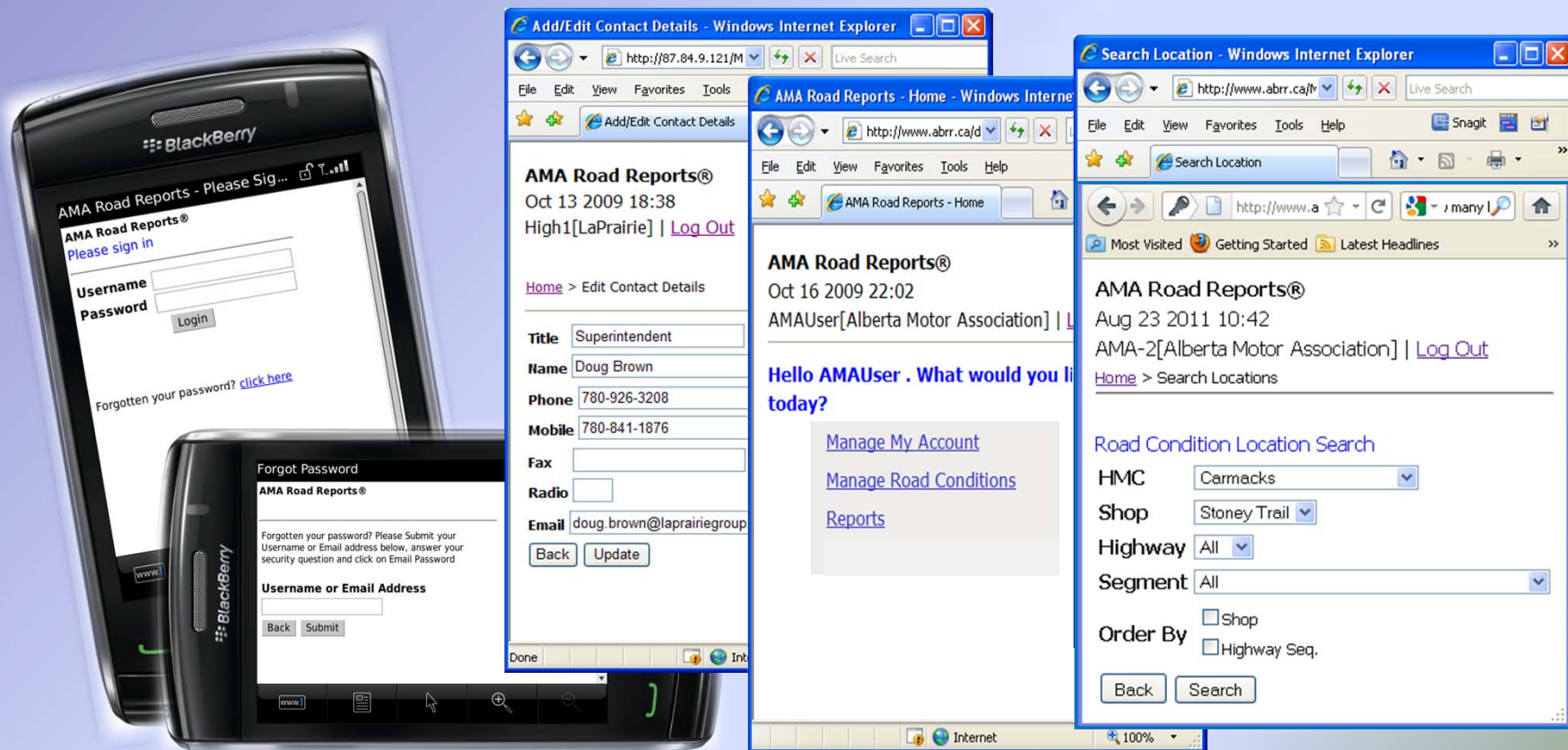
Back Submit to AMA

Done Internet 100%

25

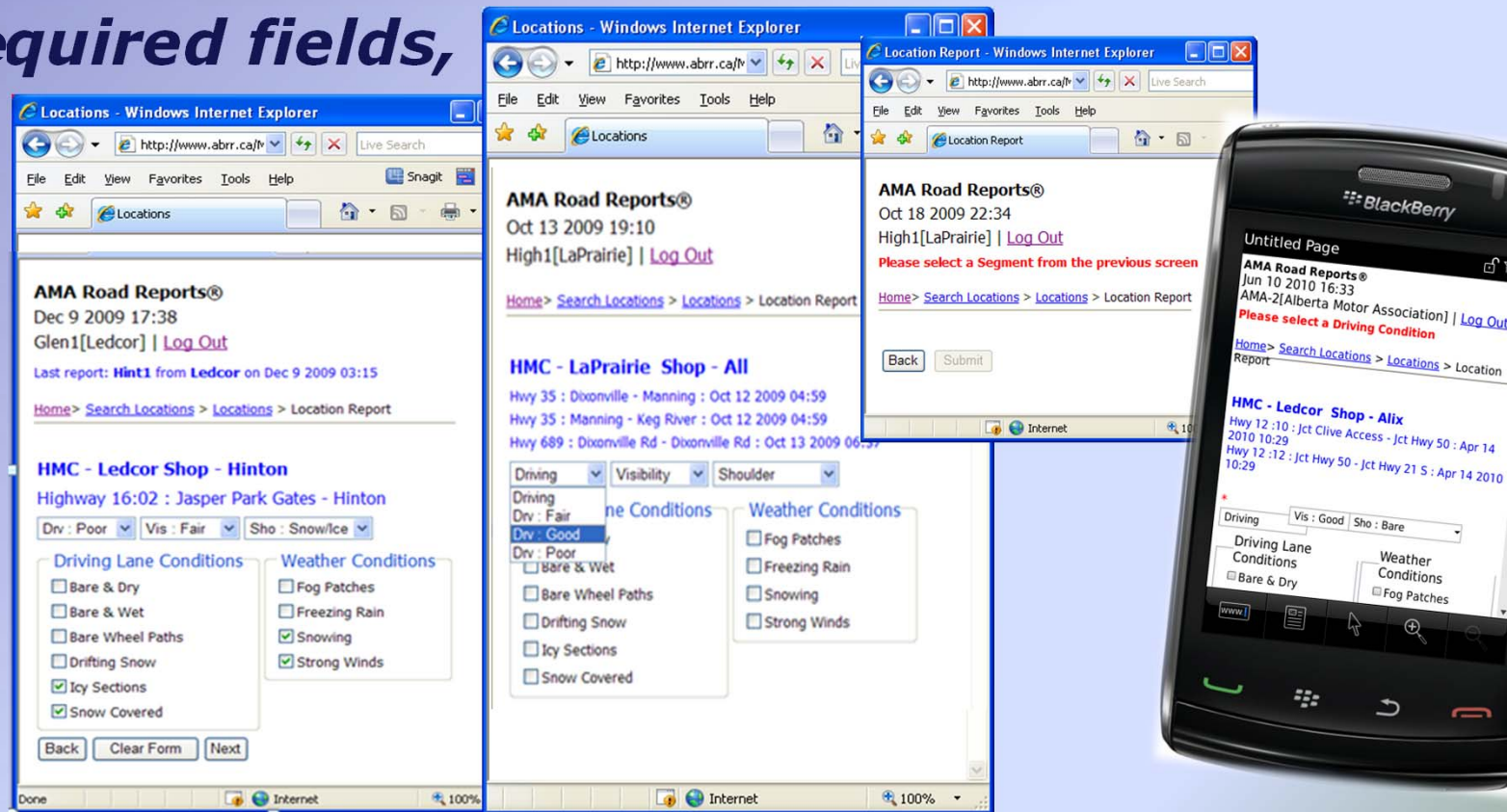
Mobile Collection Interface

- *Secure User log-in & account information,*
- *Specific Shop & highway segment pick-lists*



26

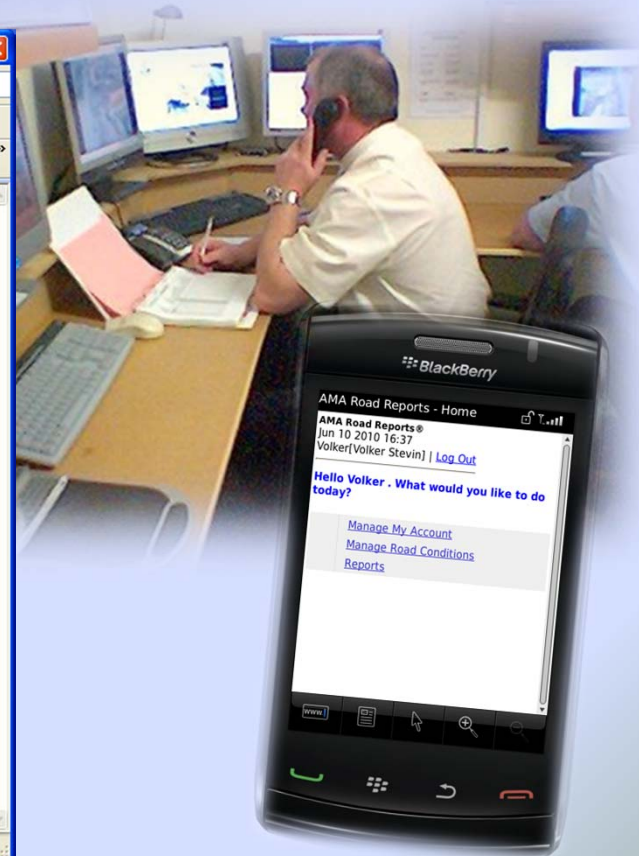
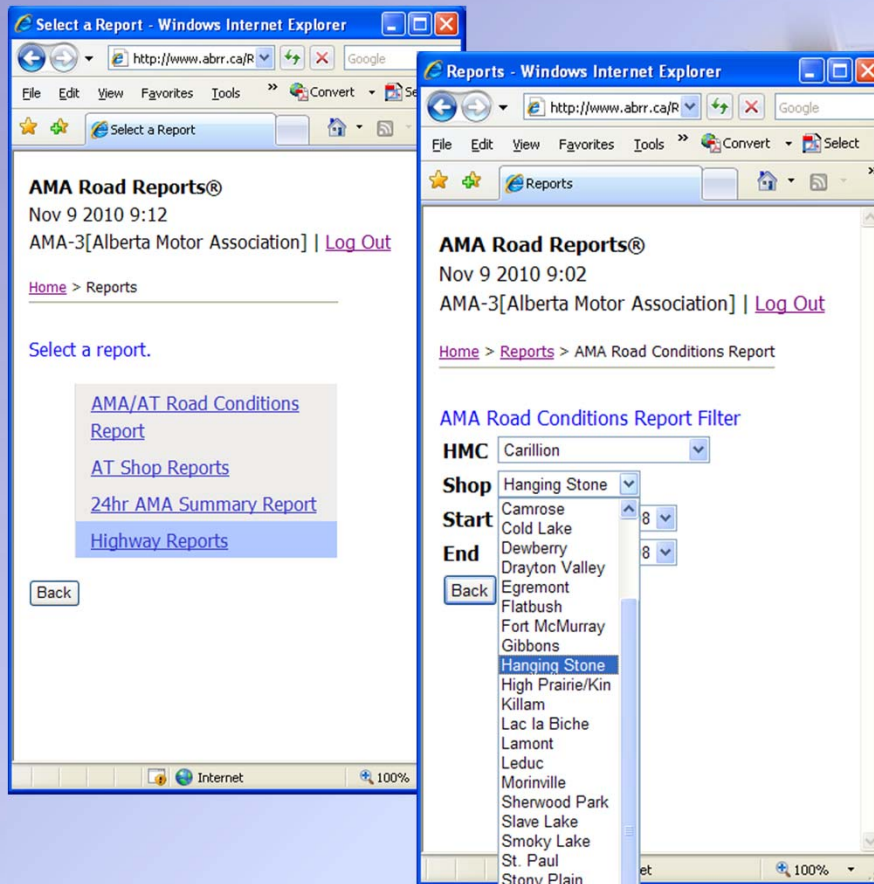
- *Efficient single or multi-segment reporting*
- *Retention of previous road conditions,*
- *Data entry validation & confirmation for required fields,*



27

Review and Analysis

Daily Performance Monitoring Reports



28

Management Documentation

Daily Reports by Shop or Highway

AMA Road Reports®
Nov 9 2010 9:10
AMA-3[Alberta Motor Association] | [Log Out](#)

Home > Reports > AMA 24hr Summary Report > Results

Alberta Transportation
HMC: LaPrairie, All Shops
Date: Tuesday, November 09, 2010
Report Generated: 11/9/2010 9:10:32 AM

ID#	Hwy Segments Description (From-To)	Hwy#-Sub#	Time Submitted	HMC	Shop
51	Kathleen-Donnelly Corner	2-56	11/9/2010 6:31:35 AM	LaPrairie	Donnelly
52	Donnelly Corner-Reno Road	2-58	11/9/2010 6:31:35 AM	LaPrairie	Donnelly
53	Whitelaw-Fairview	2-66	11/9/2010 6:18:53 AM	LaPrairie	Hines Creek
70	Fairview-Dunvegan Bridge	2-66-68	11/9/2010 6:18:54 AM	LaPrairie	Hines Creek
44	Grimshaw-Whitelaw	2	11/9/2010 6:37:48 AM	LaPrairie	Peace River
48	Reno Road-Peace River	2	11/8/2010 6:25:03 AM	LaPrairie	Peace River
49	Peace River-Grimshaw	2	11/9/2010 1:01:41 AM	LaPrairie	Peace River

[Back](#)

AMA Road Reports®
Oct 16 2009 21:56
Melinda[IBI Group] | [Log Out](#)

Home > Reports > Search Result

Alberta Transportation
HMC:LaPrairie, Shop: Manning
Start Date: 2009-10-16, End Date: 2009-10-16
Report Generated: 10/16/2009 9:56:58 PM

ID#	Hwy Segments Description (From-To)	Hwy#-Hwy-sub#	Time	Submitted By	Condition	Driving Lane Conditions										Weather Conditions				
						Shoulders Condition	Visibility	Bare & Wet	Bare & Dry	Icy	Covered	Snow	Bare Wheel Paths	Drifting Snow	Freezing Rain	Fog Patches	Strong Winds			
254	Dixonville to Manning	33	10/16/2009 6:42:24 AM	153 submitted	Good	Bare	Good	Yes	No	No	No	No	No	No	No	No	No	No		
257	Manning to Vase River	33	10/16/2009 6:42:24 AM	153 submitted	Good	Bare	Good	Yes	No	No	No	No	No	No	No	No	No			
153 submitted				153 submitted	Good	Bare	Good	Yes	No	No	No	No	No	No	No	No	No			
153 submitted				153 submitted	Good	Bare	Good	Yes	No	No	No	No	No	No	No	No	No			
153 submitted				153 submitted	Good	Bare	Good	Yes	No	No	No	No	No	No	No	No	No			
153 submitted				153 submitted	Good	Bare	Good	Yes	No	No	No	No	No	No	No	No	No			

The information on this report is based upon the last "known" conditions submitted through www.abn.ca website. Actual conditions may change from the time of which this report was generated.

AMA Road Reports®
Nov 22 2010 12:59
Melinda[IBI Group] | [Log Out](#)

Home > Reports > 24hr AMA Highway Report

Highway: 88

Alberta Transportation

ID#	Hwy Segments Description (From-To)	Hwy#-Sub#	Time Submitted	HMC	Shop	Submitted By	Driving Lane Conditions										Weather Conditions				
							Condition	Visibility	Shoulders Condition	Bare & Wet	Bare & Dry	Icy	Covered	Snow	Bare Wheel Paths	Drifting Snow	Freezing Rain	Fog Patches	Strong Winds		
388	Slave Lake-Hwy 754	88	11/22/2010 5:33:14 AM	Carlillon	Slave Lake	Slav	Fair	Good	Snow/Ice	-	-	YES	-	-	-	-	-	-			
402	Hwy 754-Nipiss Airstrip Rd	88	11/22/2010 5:33:14 AM	Carlillon	Slave Lake	Slav	Fair	Good	Snow/Ice	-	-	YES	-	-	-	-	-				
387	Nipiss-Red Earth Creek	88	11/22/2010 7:06:27 AM	LaPrairie	Red Earth Creek	Redt	Good	Good	Snow/Ice	-	-	YES	-	-	-	-	-				

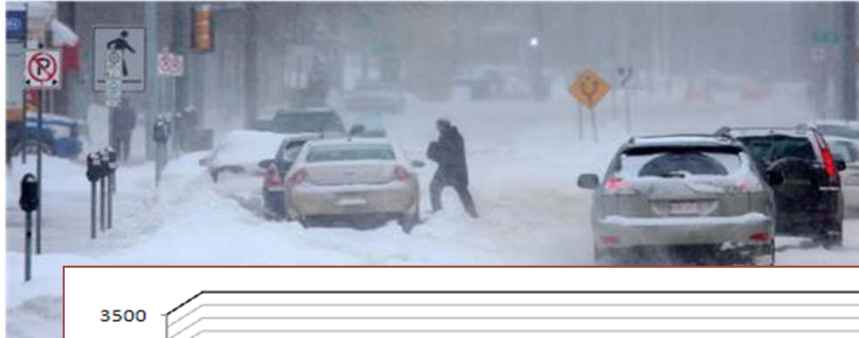
Reported Road Conditions Review

Winter Wallop Closes Some Southern Alberta Schools

Monday, February 7th 2011 07:15

This latest blast from Old Man Winter has closed a number of Southern Alberta schools.

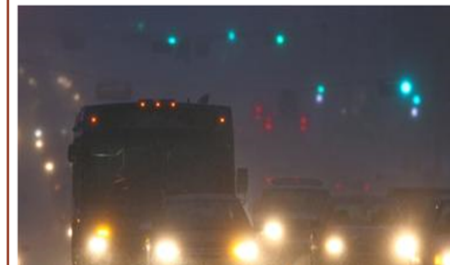
Global
NEWS



Highways and city roads in rough shape as winter storm hits

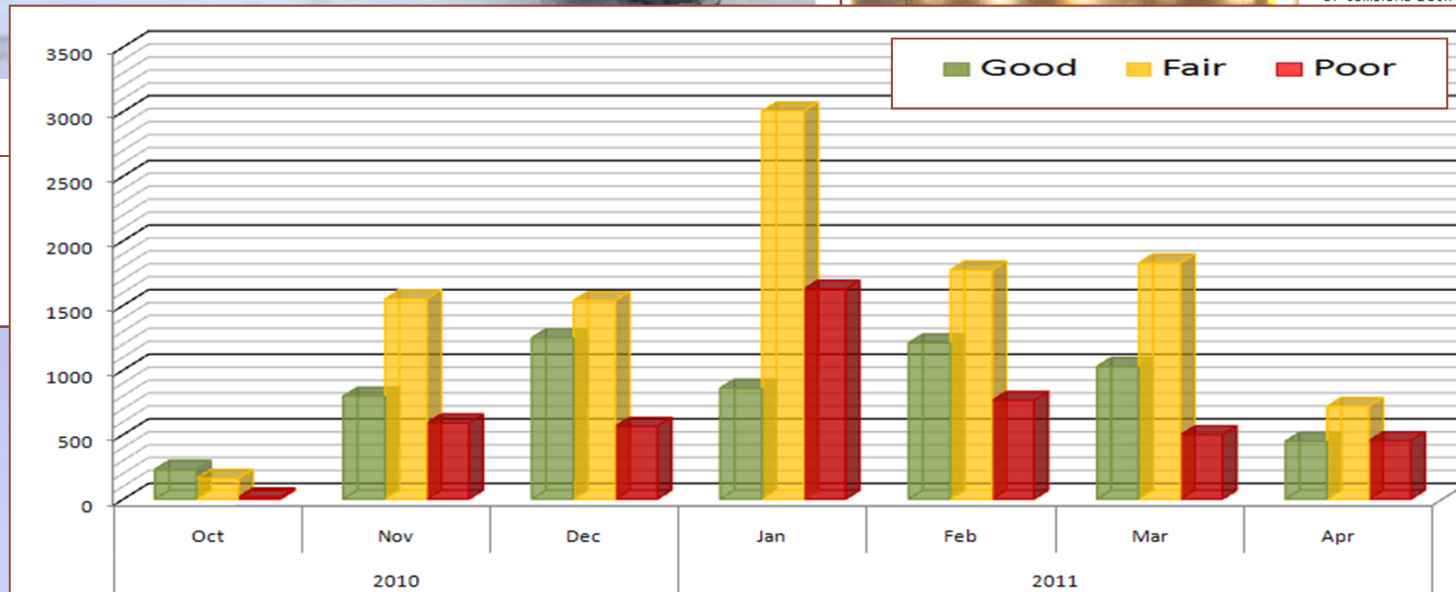
Karyn Mulcahy, Global News: Wednesday, December 15, 2010

[Recommend](#) [Sign Up to see what your friends recommend.](#)



RCMP have now reopened Highway 16 after closing it on Wednesday morning due to icy conditions that forced multiple vehicles into the ditch. RCMP says conditions are still poor and are not recommended.

In the city, Edmonton police reported that they responded to 67 collisions between 6:30 am and



30

Project Successes



- *'Champions' from Contractors who encourage additional enhancements,*
- *Able to easily accommodate **early Fall & late Spring** reporting needs,*
- ***Increase in reporting** frequency & in accuracy of information,*
- *Archived **data accessible** for review & analysis,*
- *System compliant for future **ATIS**.*

31

Lessons Learned

-Staged deployment

- *Provided time for Contractors to become comfortable with technology,*

-HMCs require alternatives for reporting during initial start-up and peak times

- *Dedicated phone line for Road Condition reports,*
- *Train Contractor support staff to take field calls,*

-Resources for IT support

- *Clearly define troubleshooting procedures and escalation process for IT & connectivity problems.*

32

Acknowledgements



- Alberta Motor Association*
- Alberta Transportation*
- Transport Canada*
- NRITS*

Thank you

33