Multi-agency Coordination for Direct Storm Management with Limited Resources

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Overview:

• **Moving Washington** – Operating our systems efficiently using ITS is a critical component for WSDOT

• **Western Washington State** – Typical Winter Weather

• **Olympic Region Statistics**

• **Limited Resources** – At the Traffic Management Center, In the Maintenance Division

• **The Storm Management Center (SMC) Concept**

• **Activating and Operating the SMC**

• **Conclusions**
Moving Washington – Operating our systems efficiently is a critical focus for WSDOT

Strategies for Success:

✓ Traffic Management Centers (TMC) Efficiently Managing Intelligent Transportation Systems (ITS)

✓ Ongoing Traffic Incident Management (TIM) Training & Coordination
  - Washington State Patrol (WSP)
  - WSDOT Incident Response Team (IRT) & Maintenance Forces
  - Fire, EMS, Ecology, Local Law Enforcement, Transit, Towing etc.

✓ Joint Operations Policy Statement (JOPS) with WSP
Western Washington State – Typical Winter Weather

• We Get Almost All Kinds!
  – Flooding, Slides, Snow & Ice, Wind, Tornados, Tsunami, Potential for Major Earthquakes

• Often 2 or 3 Major Events Each Year

• Difficult to Predict Severity
  – New Coastal Doppler Radar Helps
  – Information Coming in From 100 Miles Offshore

• Planning for winter is a year-round activity in Western Washington
Western Washington State – Typical Winter Weather

- Atmospheric Rivers – The “Pineapple Express”
  - More Frequent in Neutral Years
- El Niño
  - Warmer and Drier Winters
- La Niña
  - Cooler and wetter winter than normal
  - Increased storminess
  - Increased precipitation
  - Increased frequency of significant cold-air outbreaks
  - Considerable month-to-month variations in temperature, rainfall and storminess.
TMC Controlled ITS Equipment:

- 97 CCTV cameras (68 PTZ, 26 fixed, 3 portable)
- 95 Data Stations (*Wavetronix / RTMS / Loop / Video*)
- 20 Highway Advisory Radio Fixed Transmitters
- 4 Highway Advisory Radio Portable Transmitters
- 42 Highway Advisory Signs and remotely activated Flashing Beacons
- 23 Permanent Variable Message Signs
- 7 Remote Activated Portable Variable Message Signs
- 21 Ramp meters (and counting)
- 15 RWIS Stations

Covering:

- 2907 Miles of State Highways (344 Miles of Interstate 5)
- 3120 Miles Pierce County Roads, Signs, & Signals*
- 459 Miles of City of Lakewood Roadways*

*Paid WSDOT FTE by Local Agency partnership for After Hours Calls
Limited Resources – At the Traffic Management Center, In the Maintenance Division

Typical TMC staffing for our 24/7 Operation

- Two operators, One Supervisor 5 AM to 9 PM Weekdays
- Two operators nights and weekends
- 2011 Olympic Region TMC Radio Log:
  - 14,257 initial calls
  - 42,741 subsequent actions
- When big storms hit, the TMC is a very busy place and easy to get overwhelmed
- Limited staffing means calling others in, extended shifts (12 on, 12 off)

Maintenance forces and equipment are not funded at optimum levels for major storm response

- Must balance the funding each year to meet year-round needs
- Dual use of equipment to save dollars

Solution: Develop a concept to prioritize multiple high-priority incidents to maximize efficiency
The Storm Management Center (SMC) Concept

- Actively prioritizes and manages incidents
- Is scalable
- Multi-agency management physically working together (Includes Utility Companies)
- Aligned chains of command
- Works well when typical resources are overwhelmed
- Allows TMC staff to focus on ITS systems and improved public information
The Storm Management Center (SMC) Concept

- Storm and Incident Events through other sources (Utility Companies, Internal WSDOT, Local Agency Law Enforcement, Fire, EMS Public, etc.) - All Priority Levels
- Routine External Communication Outputs such as:
  * ROADS (511/Internet)
  * ITS devices (VMS/HAR, etc.)
  * WSDOT PIO/Media

- WSP District Communications Center
- WSDOT Olympic Region Traffic Management Center (TMC)
- WSDOT Olympic Region Emergency Operations Center (EOC)
- WSDOT Maintenance Forces
- EMD - Camp Murray

Routine Winter Communications and Operations

Washington State Department of Transportation
Activating and Operating the SMC

Some Ground Rules: A Priority Response System

- **Priority 1**: WSDOT will respond immediately

- **Priority 2**: WSDOT will respond as soon as possible, taking into consideration any Priority 1 calls first

- **Priority 3**: WSDOT will respond as soon as possible, taking into consideration any Priority 1 or 2 calls first
Activating and Operating the SMC

Comm. Protocols Change to Reduce Telephone & Radio Traffic

Low-Tech Solution: “Subject Line Only” Email

- 911 Calls Come In
  - WSP Communications Leads/Develops Initial “Subject Line” Email

- Calls to TMC or Other Locations
  - Forwarded to WSP/SMC for Triage

- Email Subject Line Coded by WSP

- Sent to Appropriate Email Distribution Group
  - to Include WSP, SMC, and TMC Staff

- Field Crews Directed by SMC

- WSP Troopers Directed by WSP Command Staff

- SMC Tracks/Returns Email When Clear

- TMC Staff Updates WSDOT Systems/Notifies WSP
Activating and Operating the SMC

- “Subject Line Only” Email: Intentionally Limited to 29 Characters

- I II IIII DDDD RRR MP XXX.X CCCC*
- Definitions:
- I = Incident Type
- Examples:
  - PR (Priority Response, snow & ice event) WATER (Water over the roadway)
  - TREES (Tree(s) down only & blocking) PWR (Power lines down only & blocking)
  - TRPWR (Tree(s) & power lines down blocking) SLIDE (Landslide, mudslide, debris blocking)
- DD = Cardinal direction (NB, SB, EB, WB, Both, Ramp)
- RRR = State Route
- MP = Milepost
- XXX.X = Milepost to the nearest tenth of a mile as reported
- CCCC = Last four digits of the WSP CAD log for the incident
- * = More information on the incident can be found within the CAD log
Activating and Operating the SMC

Examples with literal interpretation:

• “Subject Line Only” Email: PR1 NB 5 MP 120.5 1234* would mean – “A priority response is needed relative to snow/ice conditions for a collision on northbound I-5 at milepost 120.5. Reference CAD log #1234. More information can be found on this incident within the CAD log entry.”

• “Subject Line Only” Email: TRPWR Both 101 MP 261.2 5678 would mean – “Trees and power lines are down blocking both directions of US 101 at milepost 261.2. Reference CAD log #5678 for more information.”
Activating and Operating the SMC
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WSDOT Operations AVL Page

- Most of Fleet Outfitted with GPS/Materials Tracking Equipment
- Roadway Treatment Status Uploaded to the WSDOT Operations AVL Page
- Near Real-time Location
- Manages Asset Deployment
- Incident Response Team (IRT) Trucks Outfitted
  - Provides field responders “on-scene” information

Inside the Activated SMC

NOAA Weather Radar Layer “On”
Activating and Operating the SMC
Activating and Operating the SMC

The “Bumble Bee” Fleet

- **Mission**: Get Traffic Moving so Larger Equipment Can Treat the Area

- **Dual-use Vehicles**: Sander/Hoppers on Flatbeds

- **Assigned in Urban Areas** to Work with WSP Field Troopers

- **Outfitted with WSP Radios/Laptops**

- **Designed to Attack Spot Locations**

![Typical “Bumble Bee”](image_url)
Activating and Operating the SMC

Recap: Typical Chain of Events

• Normal Operations, Forecasts Indicate Severe Weather Soon
• Managers Meet/Determine SMC Activation as Appropriate
• Strategically Locate Staff & Equipment
  • Utility Companies & Hood Canal Bridge
  • Congestion Hot Spots
• Activation Must Be Declared - Communications Protocols Change
• SMC/Communications Hub Staffed
• Triage/Prioritize/Clear
• Communicate with TMC/Provide Enhanced Use of ITS & Traveler Information Tools
• Deactivation Declared - Return to Normal Operations
Conclusions

• SMC’s /Communications Hubs Provide a Central Location for Active Storm/Incident Management

• SMC’s Are a Great Tool to Augment Limited Staffing at TMC’s When Overwhelming Circumstances Occur.

• The SMC Concept Takes TMC Staff Out of the Middle/ Places Response Prioritization Responsibility with the Decision Makers in Charge

• SMC Activations Allow TMC Staff to Focus on More Efficient, Timely, and Accurate ITS Deployment and Traveler Information
Thank You!

Any Questions?

Photo courtesy of Trooper Guy Gill – WSP District 1