Wyoming Department of Transportation TMC

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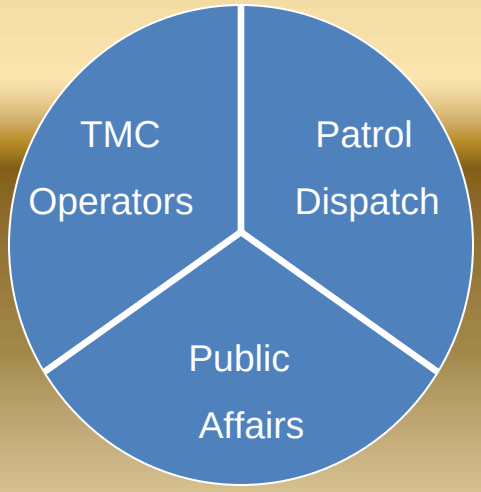
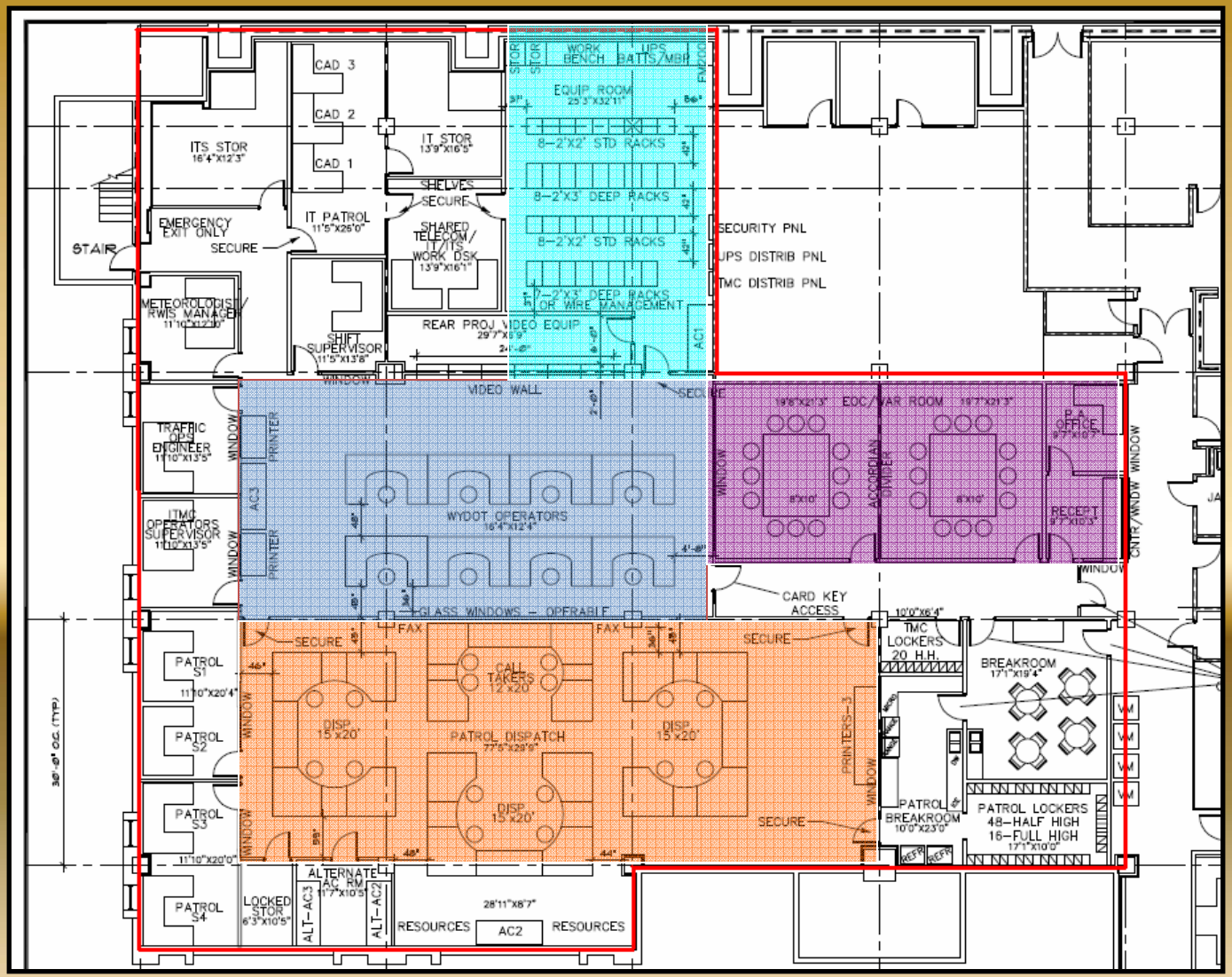
Wyoming TMC
TRANSPORTATION MANAGEMENT CENTER

TMC Background and Setting

- WYDOT's TMC opened in the fall of 2008
- The Wyoming Highway Patrol is a division of WYDOT
- The TMC combines:

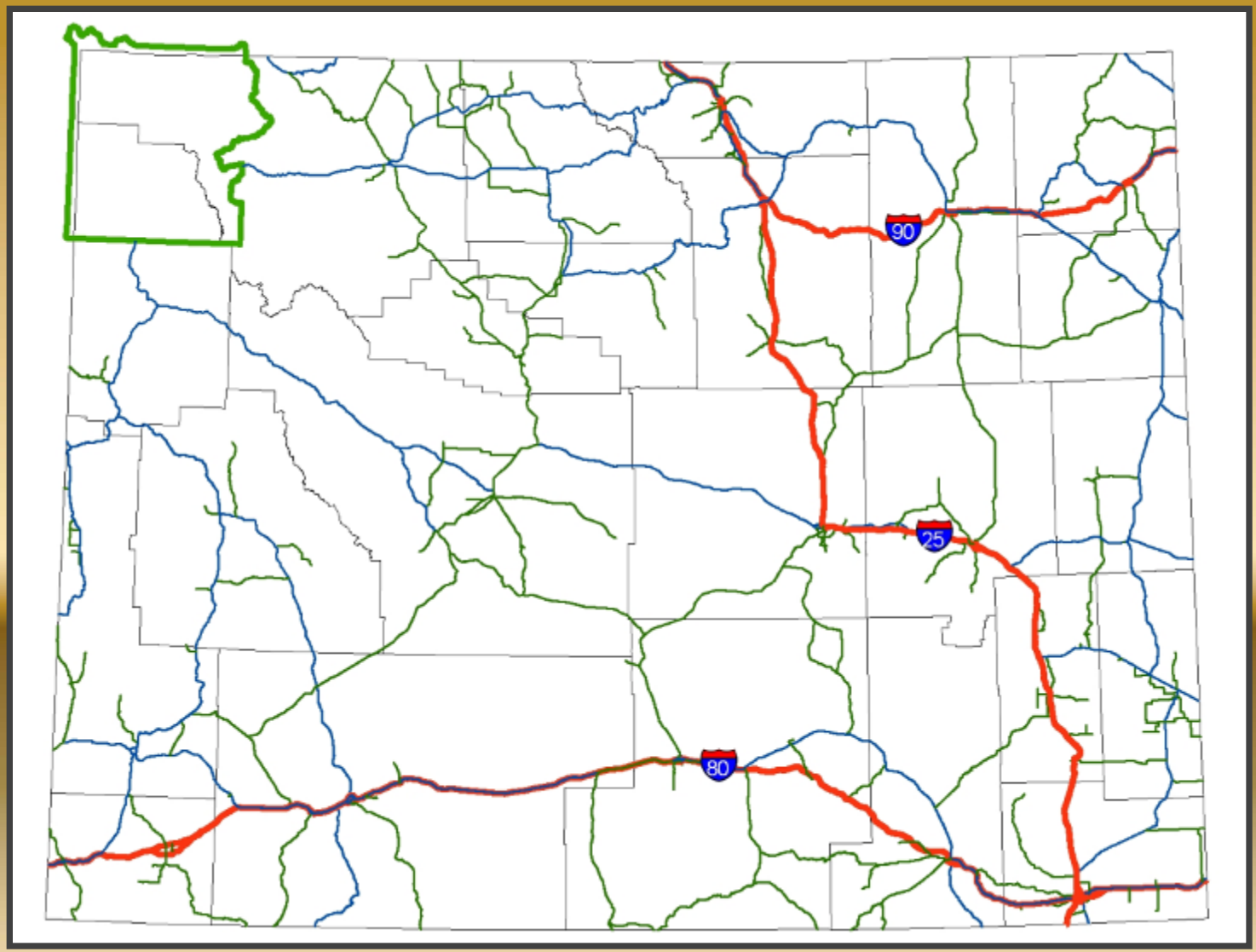


TMC – Main Floor



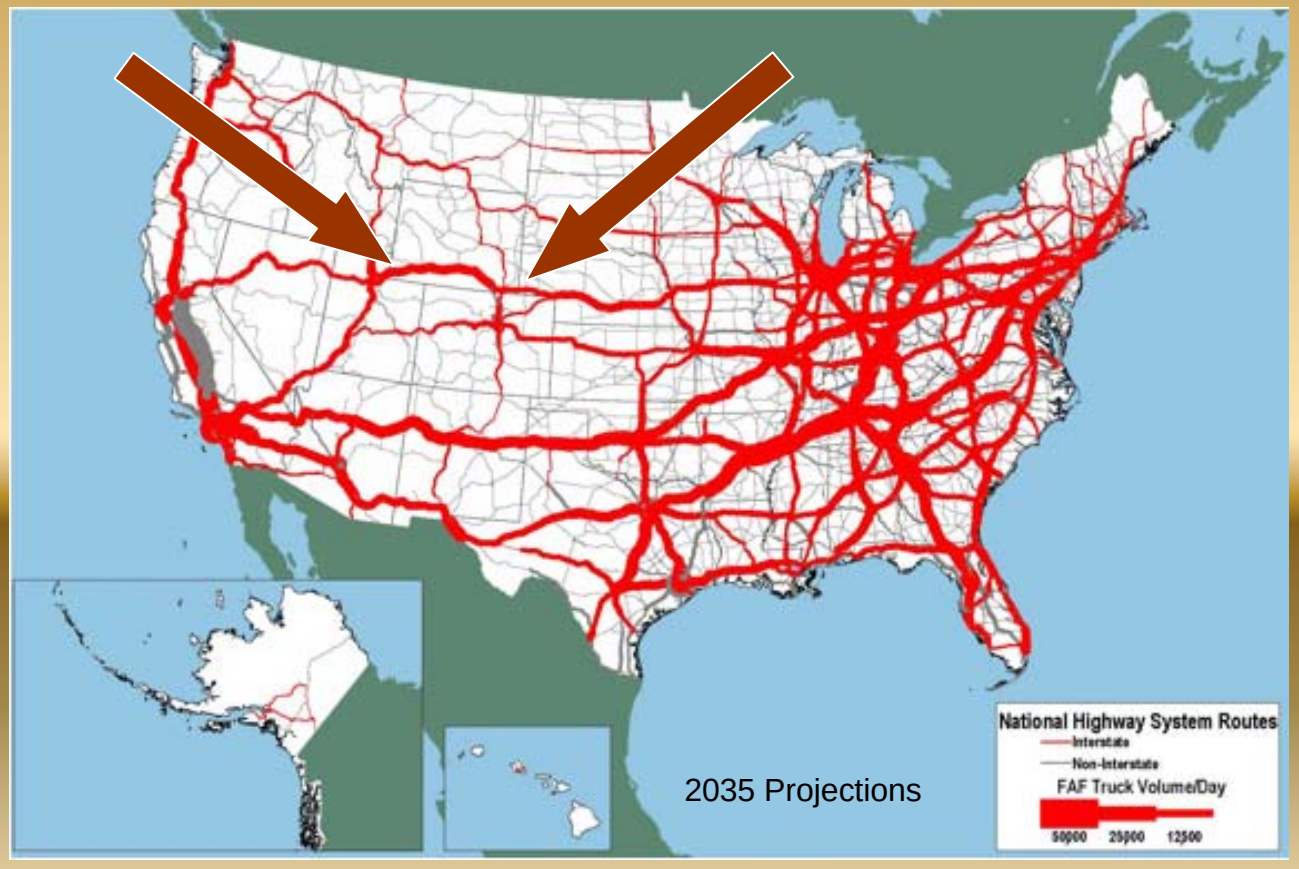
TMC Picture

TMC Jurisdiction - Statewide



Need for Enhanced Weather Integration

- I-80 is a major east-west truck corridor



Source: FHWA Freight Management and Operations Division

Need for Enhanced Weather Integration

- >50% of traffic on I-80 is due to heavy trucks
- Frequent adverse winter weather conditions
  - Heavy Snow
  - Icy Conditions
  - Strong Winds
  - Blowing Snow
    - Drifts
    - Significant visibility problems!

Need for Enhanced Weather Integration

- Frequent closures
  - Inconvenience to travelers
  - Economic impact to trucking community
- Increase in crash rate
- Several high profile multi-vehicle fatalities

General Weather Conditions that Affect TMC Operations

- Summer weather – May to September
  - Severe thunderstorms
  - Hail
  - Significant rain
  - Flooding
- Winter weather – September to May
  - Ice
  - Heavy snow

Blowing Snow

Strong Wind: Video

Public Demand

- Demand for credible information continues to increase
- Quick stats:
  - Wyoming population is about 500,000
  - 511 – Peak month resulted in a million phone calls
  - Website – Peak 32 hour period resulted in 8 million hits

Self-Evaluation: the Process

- Familiarization meeting w/ Weather Integration Team – April 22, 2009
- WYDOT asked to step through process with little outside assistance

Self-Evaluation: the Process

- General Meeting – May 18, 2009

- Involved representatives:
  - National Weather Service
  - WYDOT Winter Research Services
  - WYDOT Maintenance
  - Wyoming Highway Patrol
  - WYDOT GIS/ITS

Self-Evaluation: the Process

- Kevin Cox lead WYDOT's effort – trial run with software prior to meeting – about 2 hours
- Meeting began with personal introductions and an introduction to the process – about 30 min
- Stepped through the process with significant discussion – a little more than 2 hours

Self-Evaluation: the Results

- Involving WHP and NWS proved very valuable
  - WHP offered suggestions to better serve public and law enforcement officials
  - NWS provided insight into Wyoming weather events
- Group determined many strategies could be implemented quickly and with little cost
- Others learned about a few current strategies

Self-Evaluation: the Results

- Longer term strategies identified
- Intermediate strategies suggested by weather integration guide recognized as logical steps to long term goals

Self-Evaluation: the Benefits

- Brought people together
- We've known we needed to conduct such an evaluation but the task was daunting – Process saved months worth of work on our part.
- Long term benefit of integration
- Credibility when approaching budget issues
- Additional benefits yet to be determined

Integtration Item Levels

(existing & proposed)

Item of Integration (Broad Requirement)	Levels of Integration					
	None	Level 1	Level 2	Level 3	Level 4	Level 5
Use of Internal Weather Information Resources	None	Camera imagery	Radar, satellite, ASOS and AWOS data, and general zone-type forecast information	*Level 2 data plus data from RWIS and related networks*	Level 3 data plus data from AVL/MDC sources and internal radio communications	Level 4 data with addition of analyzed fields and transformed data parameters (frost index, wind chill, est. snow, ice, water depth)
Use of External Weather Information Sources	None	General weather information, forecasts, and interpretation provided through media as irregular service (radio and TV weather)	Internet provided, public access general forecasts, weather radar or satellite image or weather-specific broadcast channel	Field observers or probes providing scheduled weather / driving condition information from entire route system	Contractor provided surface transportation weather forecasts targeted at the operational needs of the TMC agencies	Direct connection between private weather information service providers and traffic management software
Availability of Weather Information	None	Cable channel or subscription weather information vendor providing general weather information	Internet provided weather radar or satellite image on video wall	Field observers or ESS network providing scheduled road or driving condition reports	Vendor provided daily surface transportation weather forecasts and observed weather conditions including Level 3	Meteorologist, located within TMC, forecasting and interpreting weather
Frequency of Weather Forecasts	None	Receive information of weather forecasts on a request basis	Receive weather forecast once daily.	Receive periodic forecasts several times a day	Receive hourly updates of weather forecasts several times a day	Receive continuous updates of weather forecasts in real-time
Frequency of Weather/Road Weather Observations	None	Receive information of weather conditions on a request basis	*Receive weather observations once hourly*	Level 2 plus receive weather/road weather observations when predefined thresholds have been exceeded	Receive weather/road weather observations every ten minutes and when predefined thresholds have been exceeded	Receive weather/road weather observations continuously with data above predefined thresholds highlighted
Weather Information Coordination	*None*	Intra-TMC committee tasked with weather information coordination	Identified TMC or maintenance staff member tasked with coordinating weather information at TMC	Dedicated weather operations supervisor	Meteorology staff located within the TMC forecasting and interpreting weather information	Co-location of the EOC/OEM
Extent of Coverage	None	Sparse set of isolated locations	*Network of scattered locations*	Corridor-level	Multiple-corridor/sub-regional	Regional/statewide
Interaction with Meteorologists	None	*Focus group or informal gatherings of local professionals from the transportation management and weather communities*	Develop check list of routine weather awareness activities	Periodic staff meeting that includes a meteorologist to discuss weather information needs and responses	With a meteorologist present conduct post-event debriefing / regular assessment to fine-tune responses	Daily personal briefings and integrated interruptions by meteorology staff within the TMC
Alert Notification	None	Monitor media outlet, Internet page, or data stream for critical events	Telephone call list	*Manual email/paging system*	TMC road weather system (RWIS / ALERT / FEWS) generated specific notifications (Email or page)	Automatic notification through Center-to-Center communications
Decision Support	*None*	Ad-hoc implementation of weather management strategies	Use quick-reference flip cards on operator's workstation to implement predefined response	Response scenarios through software supply potential solutions with projected outcomes based on weather / traffic modeling	Automated condition recognition and advisory or control strategy presented to operator for acceptance into ATMS	Automated condition recognition and advisory or control strategy implemented without operator intervention
Weather/Road Weather Data Acquisition	None	*Media reports*	Internet and/or satellite data sources	Across agency intranet and dedicated phone acquisition	Dedicated communications link to state, federal, private data sources	Dedicated communications link to state, federal, private data sources including vehicle-derived weather data

Next Steps

- Complete Draft Integration Plan
- Review the Draft with “the Team”
- Finalize the Integration Plan
- Implement shorter-term, low cost strategies
- Attempt to persuade WYDOT Executive Staff and Transportation Commission to fund higher- cost strategies