

Communication & Dispatch Work Group Final Report

REVISED 1/19/10



1951 WCD portable Radio



1953 WCD Dispatch Center - Spooner

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Introduction Narrative

The ability to communicate and the equipment and technology we rely on to communicate are inseparable and are key components of the Division of Forestry Fire Program. Efficient and reliable communications are key elements in any safe and successful operation. In nearly every After Action Review on emergency incidents where a fatality, serious injury or a near miss has occurred, a communication failure of one form or another is at least partly the cause of accident.

The WI DNR Division of Forestry and its predecessor agency the Wisconsin Conservation Department has been successfully providing communication infrastructure in support of the fire program for over 84 years. From the bare wire agency run telephone lines of the 1920's & 30's to today's microwave towers, computer aided dispatch consoles and cellular telephones.

Good communications and reliable equipment to communicate with are a vital tool in successful emergency scene management and the safety of emergency workers and the general public. Structured, consistent means of managing communications resources are necessary, particularly during incidents involving multiple agencies. It is imperative that we as an agency provide the tools for reliable communications and maintain an awareness of new technologies in the communications field and embrace those that prove to be beneficial to the efficient and successful completion of our mission.

Members of the Communication-Dispatch Work Group were:

| | |
|--|--------------------------------|
| Randy Schott (chair) – WCR | John Kelto - NOR |
| John Goldschmidt – NER | Mark Rasmussen – DOT |
| Doug Meier – Bureau of Forest Protection | Jim Gobel (FPAT Liaison) - NOR |

Over the course of the five months the Work Group had to investigate, assess collected data and draft a report, the group met face to face five times and met via conference call / live meetings six times.

Work Group range of topics assigned to assess:

- Dispatch Centers
- Dispatch staffing needs
- Current and future communication capabilities
- Fireline communication equipment

Work Group Charge:

Provide alternatives and make a recommendation to how forest fire communication and dispatching needs can be provided. Explain how this can be provided given changes in what we can invest and at different levels of stratification.

Summary of recommendations

The following list is a brief general summary of the recommendations found in this report:

- Provide for mobile Dispatch capabilities regardless of location
- Maintain Leadership position/role in response to fast changing communication mandates from the federal government.
- Maintain Dispatch staffing similar to current levels with some modification and standardization.
- Although alternatives are discussed, the DNR should maintain nine Dispatch Center locations.
- Several recommendations relating to standardizing and improving Dispatch Center equipment, and capabilities.
- Standardization of a plan for radio replacement.
- Addressing telephone communication problems encountered at ICPs during large events.
- The Department should continue to take a proactive approach and continue to investigate new technologies that improve communication and dispatch efficiencies without compromising operational needs with other agencies.

Work Group Objectives

The objectives given to the Communications – Dispatch Work Group are as follows:

1. Examine present dispatch and communication systems; list the strengths and weaknesses that exist.
2. Examine potential future changes in technology and Federal or State mandates. Describe opportunities or impacts on how these changes will affect the Division.
3. Determine various Dispatcher staffing alternatives and provide a recommendation for the most efficient / effective.
4. Determine various Dispatch Center location alternatives including the impact of stratification and provide a recommendation for the most efficient / effective
5. Determine dispatch center equipment and design alternatives and provide a recommendation for the most efficient / effective.
6. Examine the costs of the current communication equipment procurement, maintenance and replacement, provide alternatives and recommend the most efficient / effective.
7. Provide various options to meet and upgrade fireline communication needs. Ex. Updating of peltor headsets, communication in enclosed cabs, cell phone use.
8. Examine existing IMT communications systems across the state, analyze strengths and weaknesses, design and implementation alternatives.

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Objective 1:

Examine present dispatch and communication systems; list the strengths and weaknesses that exist.

Current Conditions:

Dispatch: For the past four years DNR has been replacing and upgrading its communications infrastructure with new repeaters at all tower sites and new dispatch consoles with statewide capabilities. An individual dispatch site recap follows:

- Dodgeville: Console dispatching, no distance limits, waiting for the second dispatch console position. Recommend a offline Panasonic Toughbook with an aircard to be used for mobile deployment.
- BRF: Console dispatching, no distance limits, waiting for the second dispatch console position which will be off of a Panasonic Toughbook. Should be installed before spring.
- Cumberland: Console dispatching, no distance limits, waiting for the second dispatch console position which will be off of a Panasonic Toughbook. Should be installed before spring.
- Brule: Console ready, waiting for a NW Douglas Co solution, Pattison lookout tower location, Pattison Park maintenance site, Polish Road site, other?
- PKF: Console dispatching, no distance limits, waiting for the second dispatch console position which will be off of a Panasonic Toughbook. Should be installed before spring.
- Woodruff: New tower under construction. Microwave link to Land O,Lakes must be established.
- Peshtigo: Console dispatching, no distance limits, waiting for the second dispatch console position which will be off of a Panasonic Toughbook. Should be installed before spring.
- Waupaca: Waiting construction of Wautoma and Scandinavia. Dispatch moving to Wuatoma.
- WI Rapids: Console dispatching, no distance limits, waiting for the second dispatch console position which will be off of a Panasonic Toughbook. Should be installed before spring.

Specific strengths of the new dispatching system are:

- No more distance limits; each dispatch location has statewide capabilities.
- Select and unselect speakers allow better monitoring of calls.
- Less cross talk between dispatch groups.
- Better sound clarity for dispatcher and field personnel.
- Select, unselect speakers, and recall allow dispatch to receive all calls.
- The old Zetron dispatch system remains in place as a functional backup system.

- Future capabilities will allow mobile dispatching from a Toughbook and air card.
- Infrastructure has been paid for by master lease moneys with little future expense.

Disadvantages to the new system are:

- The base dispatch site has infrastructure that may be very expensive to move.
- There is no audible click or hang noise assuring a repeater is operating. Checks must be done via Zetron, field radio, or internal board mount mobile radio.

The next year, 2010, should see all DNR dispatch centers on Console dispatching. Current Zetron consoles remain active and will be the console backup. In two years we will have mobile dispatching capabilities.

Mobile and Portable radios: As the modernization continues all protective mobile and portable radios will be replaced with P-25 radios. These radios are digital and trunking capable to take advantage of technologies that are being and will be deployed, including the upcoming WISCOM trunking system. Target distribution of radios is prior to the spring 2010 fire season. A digital ID numbering system must still be finalized.

It is notable that even with new radios the communications infrastructure was never designed for portable entry. Ninety five percent mobile entry to the system is the target. Portable radios have always been primarily for tactical communications

Cell Phones: Cellular phones simply constitute a private radio system for one to one communications. Currently cell phones issuance is determined at the Area level. Typically cell phones have been issued down to the Ranger or Forester level although some Areas have issued cell phones to Technicians.

Cell phone options & recommendations are included in Objective 7.

Components / Options Considered:

Dispatch: By or during 2011 dispatchers will have the ability to use retired Panasonic Toughbooks and cellular air cards (budgetary item) that will allow dispatching from any location. This is ideally suited for wide area incident management where multiple radio towers need to be accessed to keep track of a wide area incident. In the Baraboo incident the console operator/dispatcher functioning as a radio operator would have been able to access three tower sites to coordinate distant work groups.

- ***Recommendation: In fiscal year 2010 allocate moneys to outfit one used Toughbook per DG with an air-card and purchase a system entry port to allow secure access to the dispatching system for all hazards incident management. Cost estimate would be less than \$10,000.00 and ongoing air-card costs Cost estimate would be less than \$10,000.00 + Air Card costs of roughly \$400. per DG per year.***

Mobile and Portable radios: As the modernization continues all protective mobile and portable radios will be replaced with P-25 radios. These radios are digital and trunking capable to take advantage of technologies that are being and will be deployed, including the upcoming WISCOM trunking system. Target distribution of radios is prior to the spring 2010 fire season. A digital ID numbering system must still be finalized.

It is notable that even with new radios the communications infrastructure was never designed for portable entry. Ninety five percent mobile entry to the system is the target. Portable radios have always been primarily for tactical communications.

That said, the majority of the state portable entry into the system (able to reach a repeater) is well covered. For those areas that have difficulty with portable entry into the system and it is deemed important to be able to do so for safety reasons, a vehicular repeater can be used to enable the portable radio to talk through the mobile in a vehicle and broadcast into the system with more power (ie: being able to hit a repeater via the mobile radio in a vehicle while talking on a portable). While this system does have limits in that the portable must be within roughly a quarter mile of the mobile radio vehicle so its value may be limited in fireline functionality, use for safety reasons in law enforcement situations it would be very valuable. The addition of a specific frequency into the portables assigned to vehicles with a vehicular repeater would be necessary. Adding this option to a vehicle comes at a cost of roughly \$2000.

- ***Recommendation: Where necessary, install vehicular repeaters in Ranger engines. Note: This is an Area decision. Cost: roughly \$2000. per vehicle it is needed in.***

Changes in investment priorities

- If budget reduced:
 - None - Minimizing communication capability is not in the best interest of firefighter or public safety, nor does it serve our capability to assist all risk incidents.
- If budget increased:
 - Install vehicular repeaters in all initial attack vehicles.
 - WPS cellular package down to the Ranger Level

Objective 1 recommendation synopsis see page 47

Appendix items

- None

Links:

- None

Reference Documents:

- None

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Objective 2:

Examine potential future changes in technology and Federal or State mandates. Describe opportunities or impacts on how these changes will affect the Division.

Current Conditions:

Technology is changing in a consistent manner but for the foreseeable future incident management communications for wildfire will be conducted much as it is today. Simplex channels, local repeaters, DNR repeaters/dispatch towers, MARC repeaters. However, your radio may be working differently with “narrowbanded” frequencies, digital, or talk groups and much more planning will be required. All hazards response will add other levels of technical assets that DNR FR has not used.

With technical changes to the way frequencies are handled Homeland Security guidance is calling for detailed planning related to communications plans (ICS 214 and 205), Statewide Communications Interoperability Plans (SCIP) and Tactical Interoperability Communications Plans (TICPs), details below. Communications at the State, WEM Region, County, and local levels must be pre-planned offering full predictability in how to communicate across agencies and disciplines will take place. Mutual Aid frequencies will be a large part of this planning.

Along with narrowbanding and digital, a statewide trunking system is coming on line by 2011. The WISCOM trunking system presents the opportunity to talk radio to radio(s) over any distance within the State of Wisconsin and seamless roaming. This will bring many advantages for day to day communications. At an All Hazards incident it will function well as a link between agencies or disparate radio systems. Logistics can also call or track resources anywhere statewide.

Related items and links:

FCC DRIVEN: MANDATORY

Key Points About FCC Narrowbanding Requirements

- Most current public safety radio systems use 25 kHz-wide channels.
- The Federal Communications Commission (FCC) has mandated that all non-Federal public safety licensees using 25 kHz radio systems migrate to narrowband 12.5 kHz channels by January 1, 2013.
- Agencies that do not meet the deadline face the loss of communication capabilities.
- Agencies need to start planning now to migrate to narrowband systems by assessing their current radio equipment and applying for new or modified licenses.

<http://www.ojp.usdoj.gov/nij/topics/technology/communication/fcc-narrowbanding.htm>

HOMELAND SECURITY DRIVEN: GUIDANCE

Homeland Security National Emergency Communications Plan July 2008

To realize this national vision and meet these goals, the NECP established the following seven objectives for improving emergency communications for the Nation's Federal, State, local, and tribal emergency responders:

1. Formal decision-making structures and clearly defined leadership roles coordinate emergency communications capabilities.

2. Federal emergency communications programs and initiatives are collaborative across agencies and aligned to achieve national goals.
3. Emergency responders employ common planning and operational protocols to effectively use their resources and personnel.
4. Emerging technologies are integrated with current emergency communications capabilities through standards implementation, research and development, and testing and evaluation.
5. Emergency responders have shared approaches to training and exercises, improved technical expertise, and enhanced response capabilities.
6. All levels of government drive long-term advancements in emergency communications through integrated strategic planning procedures, appropriate resource allocations, and public-private partnerships.
7. The Nation has integrated preparedness, mitigation, response, and recovery capabilities to communicate during significant events.

Find the full document at:

http://www.dhs.gov/xlibrary/assets/national_emergency_communications_plan.pdf

Homeland Security Safecom Interoperability Basics State/Region/Urban Area Tactical Interoperable Communications Plan Template (Future grant opportunities will be tied to having a completed TICP)

The Tactical Interoperable Communications Plan (TICP) is designed to allow urban areas, counties, regions, states/territories, tribes, or Federal departments/agencies to document interoperable communications governance structures, technology assets, and usage policies and procedures. The TICP is used to clearly define the breadth and scope of interoperable assets available in the area; how those assets are shared and how their use is prioritized; and the steps individual agencies should follow to request, activate, use, and deactivate each asset. Completed TICPs were required for all 2005 Urban Area Security Initiative (UASI) sites and are encouraged for newly designated UASI (and non-UASI) cities, counties, multi-county regions, tribes, and states/territories. The TICP Template provides a description of the standard structure of a TICP and the relevant sections to be populated according to the unique needs of an urban area, county, region, state/territory, tribe, or Federal department/agency.

http://www.safecomprogram.gov/SAFEKOM/library/interoperabilitybasics/1510_stateregionurbanarea.htm

Wisconsin SCIP Plan Directed by Homeland Security 2007 Wisconsin Statewide Communications Interoperability Plan

This document provides a comprehensive outline of the strategic direction of Wisconsin's public safety interoperable communication efforts. It establishes the State Communications Interoperability Plan (SCIP) required by the Department of Homeland Security as part of Wisconsin's comprehensive strategic homeland security planning efforts. The SCIP is intended to describe, document and establish the communications interoperability and planning initiatives, timelines, responsibilities, accountabilities and funding available or required by/of the state of Wisconsin to maximize interoperability between public safety/service agencies through 2010.

<http://www.ic.wi.gov/section.asp?linkid=1232&locid=70>

WISCOM

Wisconsin Interoperable System for Communications

WISCOM at a Glance

- Bolsters mutual-aid capacity which is currently inadequate for large-scale emergency response
- Initial build-out will provide 95% statewide mobile radio coverage using state-of-the-art VHF trunking technology
- Efficient use of existing infrastructure will save money now and in the future as local systems are updated
- Bridges the gap between local systems
- Has the support of the State Fire Chiefs, Chiefs of Police Association and the Badger State Sheriff's Association

<http://www.ic.wi.gov/section.asp?linkid=1223&locid=70>

Components / Options Considered

Maintain a leadership position in communications by setting narrowband migration dates, communicating with our partners, and planning. WI DNR FR is arguably the only statewide agency to have widespread influence on public safety policies at the local level. OJA and it's groups are doing a good job working to achieve interoperability, but with FR's influence we can achieve our own goals and be wholly in line with State and Homeland Security objectives. Doing this would consist of following the recommendations below:

- **Recommendation: Migrating DNR FR frequencies to narrowband operations after the spring 2011 fire season. This will be at the same time Mutual Aid frequencies are recommended to be narrowbanded thus encouraging our partners to change concurrently. This will minimize future communications difficulties.**
- **Recommendation: Appoint one person in each DG to routinely check in with Counties and local Fire/EMS to query any upcoming changes in communications.**
- **Recommendation: Appoint a lead person in each DG to facilitate communications planning with all county(s) and local levels of public safety. This relates to HS initiatives to have written communications plans in place. Without coordination, plans may be established without DNR inclusion.**

Wait until December 2012 to migrate to narrow band, which is the last month possible. Failure to comply could result in loss of our FCC licenses and our ability to communicate via radio.

Wait until our responding partner's migrate to narrow band and then make changes one department at a time. Note that with a heavy workload State Patrol Radio Technicians will not be able to respond in a timely manner.

Changes in investment (by priority)

- If reduced budget
 - None
 - The greatest majority of investment moneys has been made, Only minor future investment will be necessary.
- If increased Budget
 - Invest in digital dispatching.

Objective 2 recommendation synopsis see page 47

Appendix Items

- None

Links

- 2007 Wisconsin Statewide Communications Interoperability Plan:
<http://www.ic.wi.gov/section.asp?linkid=1232&locid=70>
- Key Points About FCC Narrowbanding Requirements:
<http://www.ojp.usdoj.gov/nij/topics/technology/communication/fcc-narrowbanding.htm>
- Homeland Security National Emergency Communications Plan July 2008
http://www.dhs.gov/xlibrary/assets/national_emergency_communications_plan.pdf
- Tactical Interoperable Communications Plan Template:
[http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1510_stateregionu
rbanarea.htm](http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1510_stateregionu
rbanarea.htm)
- Wisconsin Interoperable System for Communications:
<http://www.ic.wi.gov/section.asp?linkid=1223&locid=70>

Reference Items

- None

Objective 3:

Determine various Dispatcher staffing alternatives and provide a recommendation for the most efficient/effective.

Current Conditions:

There are currently 9 DNR Dispatch Centers located in Wisconsin, one for each DNR Dispatch Group. Each Dispatch Center is staffed with one full-time year-round DNR Fire Control Dispatcher who essentially manages the day to day functions of the Dispatch Center. Support Dispatchers are also utilized during periods of increased fire occurrence, typically in the spring of the year when fire detection (towers, aircraft) is activated. The type of employees that fill the support dispatch positions vary throughout the state, ranging from seasonal LTEs to full-time permanent employees that have a certain percentage of dispatch duties written into their position descriptions. The Dispatch Center personnel are supervised by the Area Forestry Leader. The AFL position is often but not always based in the same building as the Dispatch Center.

Of note, the Forest Service has developed a stand alone computer program that calculates the number of Dispatchers required to staff a Dispatch Center. Known as FireOrg this program requires a vast number of detailed inputs to calculate the number of FTE Dispatchers needed. While the concept is intriguing, it was determined that this program would not be trusted enough to use DNR data. The effort needed to create a similar program tailored to DNR would be astronomical.

The Dispatcher position is responsible for the transmission, receipt and relay of information concerning public safety and forestry law enforcement, coordinating the activities of forest fire suppression units, aerial and ground detection activities, and managing complex systems and equipment used to predict fire behavior and its occurrence.

Core Duties:

- Assist with the preparation of the Daily Ops Plan, and Evening Ops Plan.
- Ensures Distribution of Ops Plans to Area fire staff, adjacent Area, Regional and Bureau staff as well as key cooperators.
- Update DNR daily fire summary.
- Update daily burning restrictions (web, phone).
- Insure that detection aircraft, lookout tower lookouts, initial attack personnel, fire crews and IMT members are notified and that suppression resources are prepositioned as required by the Daily Ops Plan.
- Direct detection activities of lookout tower personnel and/or detection aircraft.
- Maintain verbal flight following of any air resources utilized.
- Receive reports of fire occurrence from fire towers, aircraft, citizens and other agencies and dispatch the appropriate fire suppression units.
- Maintain close contact with the ICs of ongoing incidents
- Coordinate movement of suppression resources from within and outside of the dispatch area to support ongoing incidents and provide coverage for new ignitions.
- Provide for Operational resource needs and logistical support of initial attack as well as project class fires.
- Maintain accurate documentation of all communications involving detection, reporting and suppression.
- Coordinate with adjacent DNR, federal, state, county and local dispatch centers.
- Initiate and review fire reports

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- Obtain fire weather forecasts (including spot forecasts) and inform staff of current conditions or expected changes.
- Verify daily observations from automated weather stations and ensure the information is entered into WIMS.
- Prepare and submit fire suppression invoices
- Serve as Area Liaison with the National Weather Service.
- Monitor DNR radio communications systems and arrange for service and repairs as needed.
- Maintain or coordinate the maintenance of automated weather stations
- Train and direct Support Dispatchers as needed.
- Issue annual and special burning permits.

Administrative/Other Duties:

- Administer and coordinate the annual update of the Area Fire Action Plan.
- Manage forestry law enforcement contact records.
- Update Area phone lists.
- Support coordination, training and organization of the Area IMT
- Maintain historical files.
- Maintain an accurate dispatch map.
- Coordinate annual radio maintenance checks.
- Issue EFW credentials.
- Submit annual EFW lists to County Boards.
- Coordinate ordering of prevention materials.
- Coordinate and/or support Area level fire and forestry training activities.
- Assist in maintaining and updating Area Incident Qualification System data.

Misc. Duties (not necessarily performed by all Dispatchers):

- Contact Smokey sign cooperators with adjective level changes.
- Forestry field work (marking, recon, scaling).
- Timber sale and misc. forestry data entry.
- Coordinate or assist with training and in-service sessions (DNR, Fire Dept., EFW).
- Coordinate or assist with Area reports and budgets as requested.
- Coordinate out of state resource dispatching.
- Organize meetings.
- Answering walk-in questions from the public.
- Various operation of facilities: mail, take deliveries, answer door when front desk not staffed.
- Collect daily weather data for NWS cooperator program.

Components / Options Considered

No Change to Current Dispatch Staffing. Continue business as usual with the AFL determining staffing levels of the dispatch center. The current system is working but the number and type of employees serving in the support dispatcher positions are not consistent at each dispatch center.

Advantages:

- Changes to the status quo are not necessary.
- Dispatchers available to complete tasks outside of dispatch functions.

Disadvantages:

- It has proven difficult at times to hire and retain highly-qualified individuals in the Support Dispatcher position.
- A third person may not always be available to help in the Dispatch Center on days when a high degree of fire activity is possible.
- Limits flexibility of dispatch function coverage by other areas during times of low fire danger.

Dispatch Staffing Similar to Current Levels with Improvements & Standardization: During periods of low fire potential most dispatch centers are staffed by the full-time Dispatcher only. This is a sufficient staffing level for this time of year. The microwave radio system that is now in place allows a Dispatch Center to communicate with any DNR fire resource anywhere in the state. During periods of low fire potential one Dispatch Center can now cover radio communications in another DG. This situation can, on occasion, allow dispatchers to schedule time off if needed.

A Support / back-up Dispatcher is typically utilized when fire detection is activated. The workload increases with the plotting of tower smokes, increased radio traffic with suppression units, aircraft and increased fire occurrence. These support dispatch positions are essential to the operation of the dispatch center during these busy times. These positions require a person with specific skills and there is a steep learning curve involved. Many of the current dispatch centers rely on LTE's to fill the support positions. Since it is usually seasonal work there can be a high rate of turnover for LTE's in these positions (especially the talented ones). When a support dispatcher leaves, the investment in training is lost and the training of a new person must begin again. In some locations getting any interest in these positions is difficult. To alleviate this situation it is recommended that a FTE with a percentage (up to 20%) of dispatch duties written into their position description to ensure back up support or primary dispatcher is available in all Dispatcher Centers. These positions should be trained to the Expanded Dispatch Recorder (EDRC) level. This will retain the investment in training and provide a well-qualified, reliable person to fill these important positions year after year. Having a fully trained and qualified FTE support / back-up dispatcher also allows for a qualified replacement to give the lead dispatcher a day off during long periods of significant fire danger.

- **Recommendation: An FTE with a percentage (<20%) of dispatch duties written into their position description to ensure availability of a support or primary dispatcher in all Dispatcher Centers. Cost: \$0, but man hours to other work load would be reduced.**

When the fire adjective level is at HIGH or above and potential for an extended attack fire, project fires or increased initial attack incidents exists there is a need for a third person to be working in the dispatch center or at least be available upon very short notice. This person can perform various tasks to lighten the workload placed on the Dispatcher and Support Dispatcher during these very busy days. This third person could be an FTE or LTE and would not need to be trained to the EDRC level. The important point is that one person or a pool of people should be pre-identified to fill this role. These people could be from any function, not just Forestry.

Having a qualified Support Dispatcher and another person who is familiar with the operations of the Dispatch Center can also provide an opportunity for the primary dispatcher to occasionally get some much needed R&R. During extended periods of fire staffing Dispatcher fatigue could potentially become an efficiency or safety issue.

- ***Recommendation:*** *Have a pre-identified third person available to assist in the Dispatch Center when the fire adjective level is at HIGH or above and the potential for extended attack fires or increased chance of multiple initial attack incidents exists. Cost: \$0*
- ***Recommendation:*** *Allow Dispatch Centers to occasionally cover radio communications in another DG during periods of low or moderate fire potential and no detection. Result in reduction of FTE comptime and/or LTE hours.*

Advantages:

- Will insure that a trained, highly-qualified individual is available as a back up or Primary Dispatcher when needed.
- A pre-identified third person is available to assist in dispatch on busy days.

Disadvantages:

- With limited FTE positions a FTE used in dispatch may mean one less FTE that would serve in an initial attack or IMT capacity or other needs.

One Centralized Dispatch Center Serving All DNR Protection Areas: The concept of a single Dispatch center that serves all DNR protection areas was briefly discussed. The microwave radio technology that the DNR is currently implementing allows any one Dispatcher to communicate with any DNR unit in the State. The distance between the Dispatch Center and the field unit is no longer an issue.

Advantages:

- This type of configuration could provide 24/7 dispatching.
- There would be one centralized office for all dispatchers and base radio systems.

Disadvantages:

- There could be a loss of intimate knowledge of the protection area. Dispatchers become aware of local hazards and know the equipment and experience level of those that they are dispatching. This intimate knowledge of the protection area and operation of the organization as a whole is essential when making important and sometimes critical decisions.
- If the size of coverage area increases or the area that a dispatcher is assigned to changes from day to day the dispatcher becomes more disconnected and becomes more like a radio operator than a dispatcher. Also, the likelihood of multiple large incidents also increases. Historically, on larger fires the dispatch center can become a bottleneck that limits information flow in the early stages of a project fire prior to an ICP being set up.
- Currently, Dispatchers are supervised by the Area Forestry Leader. The Dispatcher performs many of the day to day administrative duties critical to area operations. If the Dispatcher is removed from the area, this function would be disrupted.
- To maintain the current span of control, it is likely that the number of dispatcher positions required during fire season would remain at the 9+ level. It is unclear what function these positions would serve when not in fire season if not directly supervised by an Area Forestry Leader. Could some Dispatch positions then become an LTE type of position? This is not recommended for many of the same reasons that were addressed in the discussion of LTE Support Dispatchers. Also, the intimate knowledge of the area and operation of the organization as a whole would be compromised.

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- No redundancy. If communications go down at this facility there is no other dispatch center that can take over.
- 24/7 DNR dispatch is not required. The current practice of utilizing county dispatch to page DNR resources for after hours fires works well.
- If implemented, this configuration would not reduce the number of DNR facilities. Current Dispatch Centers are located in DNR offices that will continue to operate if the Dispatch Center is removed.
- No such office currently exists. The cost of developing a facility capable of housing records, maps, communication equipment and providing enough work space for multiple dispatchers would likely be prohibitive.

Regional Dispatch Centers With Seasonal Satellite Dispatch Centers: The idea of Regional Dispatch Centers with seasonal Satellite Dispatch Centers was explored during the '94 fire study. This concept involved Regional Dispatch Centers that were staffed 24/7. During fire season, additional Satellite Dispatch Centers would be activated in areas of high fire potential. At the end of each working day the Satellite Centers would close and all communications would be taken over by the Regional Centers. The new radio system currently being implemented would allow a Regional Center to cover a very large geographic area.

This dispatch configuration was not supported during the previous fire study and not much has changed to support it at this time.

Advantages:

- 24/7 dispatching
- Could allow Dispatchers to focus on other job duties when Satellite Centers are not activated.
- The Regional Centers could provide another level of backup or support to Satellite Centers on busy days.
- Regional Centers could cover for a Satellite Dispatcher on marginal days during fire season when detection is not activated.

Disadvantages:

- Increases the complexity of AFL and dispatch communication interaction.
- Dispatcher supervision becomes complicated.
- Dispatcher losing incident continuity when more than one dispatcher is trying to follow incidents at different time periods.
- Some AFLs state that having a dispatcher in a different office could cause a loss of situational awareness for the AFL when it comes to resource tracking, radio communication, resource positioning and prioritizing area resource assignments.
- AFL loses position support with administering the Area.
- The Regional Center would cover a large geographic area reducing the intimate knowledge of the dispatch area and local resource agencies and partners.
- This arrangement could be confusing to partners. Contact information for DNR dispatch would change on a seasonal and daily basis.
- Training and proficiency of all Dispatchers would need to be maintained at current levels even though some may not be dispatching for extended periods.

Consolidated DNR/State Patrol Dispatch: Consolidate DNR with State Patrol dispatch at State Patrol Posts. State Patrol Posts are located in Spooner, Eau Claire, Wausau, Tomah, Fond Du Lac, Waukesha and DeForest. The locations of these posts follow the main State and Interstate road system. State Patrol Posts are not Public Service Access Points (PSAP). They take calls from the public but not through the 911 system. The DNR currently does pay a fee to State Patrol for dispatch services for Wardens.

Advantages:

- The communication system is in place. The base radios that are currently (or will be soon) being used in DNR Dispatch Centers use a microwave link to connect into the current State Patrol radio system.
- 24/7 dispatch service could be possible.
- The Technicians that maintain the DNR radio systems are State Patrol employees.

Disadvantages:

- DNR communication equipment is already in place and would incur a cost to remove. The investment in the current DNR Dispatch Centers would be lost.
- The locations of most State Patrol Posts are distant from daily fire operations. State Patrol Posts do not exist in six of the nine DNR Dispatch Groups.
- Posts are not located in the best locations in the fire risk landscape stratifications.
- Full-time Dispatchers would likely cross train on DNR and DOT dispatch duties. There are complexities in sharing FTE's with another agency. Area Forestry Leaders would not have direct supervision of Dispatchers for work planning and administrative work activities.
- Reducing the number of DNR Dispatch Centers from 9 to 6 would exceed span of control of FRUs supported and increase the chances of multiple incidents at each Dispatch Center. Dispatch Group boundaries would need to be changed.

If the Cumberland Dispatch Center were to be moved, one possibility would be to relocate at the State Patrol Post in Spooner.

Consolidate DNR/County Dispatch or turn over all DNR Dispatch to the Counties: The concept of turning over all dispatching to the Counties was addressed during the previous fire study. It was noted that County Dispatch Centers are comfortably busy with "their own" radio traffic. Adding DNR traffic to the existing load would affect the quality of response. County personnel would need to be trained and remain knowledgeable of DNR methods and terminology. The general impression of this concept was that it was not a productive move back then. Not much has changed to support the concept at this time.

Advantages:

- This configuration would serve as a Central location for all dispatching in that county.
- It would provide instant access to 911 system and paging capabilities.
- County dispatch is reliable and it compliments DNR needs after hours or when fire staff is in FDR status.

Disadvantages:

- County communication systems would need to be upgraded with DNR frequencies.
- County administrative areas include a single county whereas DNR Dispatch Groups and many FRUs cover multiple counties.
- Communication systems, policies and services offered are inconsistent from county to county.
- It is not efficient for a county to dispatch DNR resources outside of their paging and service area.
- Counties would undoubtedly require compensation to take on the wildfire dispatching work load.

Consolidate DNR/Federal Agency Dispatch: Combine DNR dispatch with USFS or other Federal or Tribal Agencies. There is one example that exists today, the Interagency Dispatch Center in Woodruff. Both DNR and USFS share the same room. Interviews with staff suggest that there is very little interaction of dispatch duties between the two agencies. Both have direct capability to talk to units of the other agency but this rarely happens and almost never happens on a fire day. Occasionally the other agency will take a call if a dispatcher is out of the room. The noise level can be very distracting on busy days with two separate radio systems and numerous employees in the same room.

The current Woodruff location is the only place in the state where this option is viable.

Combining DNR dispatch at Menomonee Tribal Enterprises in Keshena was also considered. The differences in the way that the two agencies conduct day to day business would not make for a preferred dispatch arrangement at this time.

Contracted Dispatch: The concept of contracted dispatch was brought up by the group. There is no known service that provides contracting for public dispatch services.

Changes in investment (by priority)

- If reduced budget
 - Limit backup/support dispatch positions to DNR employees only (reduce LTE budget)
- If increased Budget
 - Increase the level of training for Dispatchers, Support Dispatchers and those that fill the third person role.

Objective 3 recommendation synopsis see page 47

Appendix Items

- None

Links

- None

Reference Documents

- None

Intentional page break

Objective 4:

Determine various Dispatching Center location alternatives including the impact of stratification and provide a recommendation for the most efficient/effective.

Current conditions

There are currently nine DNR Dispatch Centers. Dispatch Centers have been aligned with Regional and Area administrative boundaries and are typically located at DNR Service Centers and or Area Offices. Dispatchers are directly supervised by an Area Forestry Leader. A dispatch function is provided at the Area level for each Area that has Intensive or Extensive protection lands. Forestry has invested 1.5 million dollars in the communication infrastructure which includes new microwave dispatch consoles and microwave radio towers. The communication infrastructure plan is nearly complete. The Waupaca Dispatch Center in the North East Region is planned to be moved to the Wautoma Ranger Station. The cost of erecting a microwave tower at Hartman State Park and improve office infrastructure was estimated to cost four to five hundred thousand dollars. It has been determined that the best cost savings would be to relocate to Wautoma Ranger station. This dispatch center would have made a full circle since the dispatch services were originally moved from Wautoma to Oshkosh to Waupaca with plans to move back to Wautoma. Currently the Florence FRU (Headwaters Area) is dispatched with daily ops plans provided by the Peshtigo Dispatch Group. It was understood that this arrangement in the reorganization was made because of communication issues at the time. The Florence FRU could now be dispatched from Woodruff with the communication console upgrade, making the Headwaters Dispatch Group whole. However, having Florence dispatched from Peshtigo is working well. The Headwaters AFL, Florence Team Leader, fire personnel and the Peshtigo AFL must communicate well to ensure this arrangement continues to work. In addition Crawford County (WCR) is provided forest fire protection from the Boscobel FRU dispatch services from Dodgeville Dispatch Center.

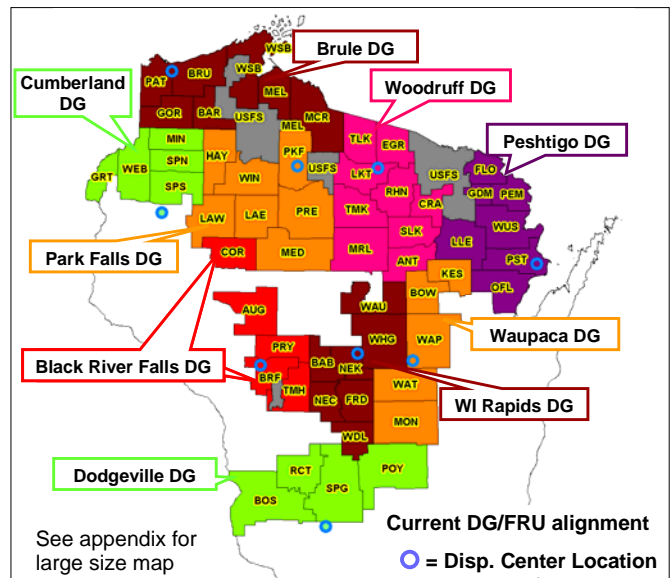
Dispatch Centers are currently located in:
Northern Region

- Brule (Barnes, Brule, Gordon, Washburn, Mellen, Mercer & Pattison FRUs)
- Cumberland (Grantsburg, Minong, N. Spooner, S. Spooner & Webster FRUs)
- Park Falls (Winter, Hayward, E Ladysmith, W Ladysmith, Medford, Prentice & Park Falls FRUs)
- Woodruff (Crandon, Trout Lake, Rhinelander, Tomahawk, Merrill, Summit Lake, Eagle River, Antigo & Lake Tomahawk FRUs)

North East Region

- Peshtigo (Florence, Goodman, Pembine, Wausakee, Oconto Falls, Peshtigo & Langlade FRUs)
- Waupaca (Keshena, Bowler, Waupaca, Wautoma & Montello FRUs)

NOTE: Waupaca Dispatch Center is currently planned to be moved to Wautoma.



West Central Region

- Wisconsin Rapids (Wausau, Whiting, Nekoosa, Babcock, Friendship, Wisconsin Dells & Necedah FRUs)
- Black River Falls (Tomah, Black River Falls, Pray, Augusta & Cornell FRUs)

Southern Region

- Dodgeville (Boscobel, Spring Green, Richland Center & Poynette FRUs)

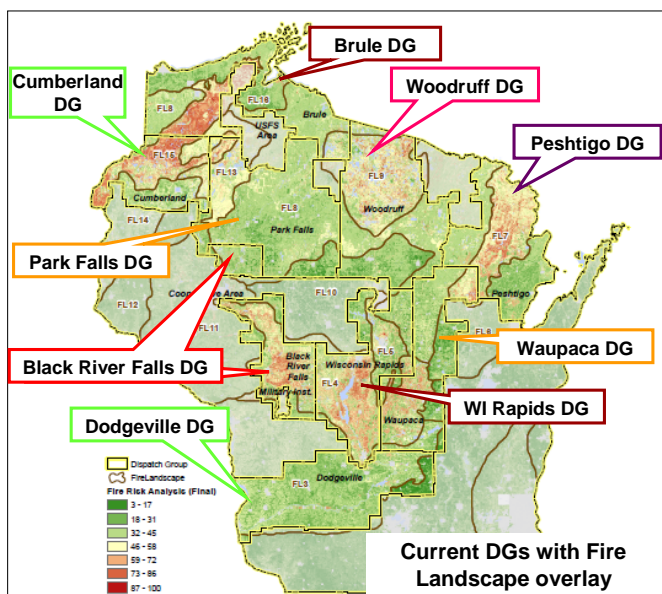
Since the last Fire Study, technological advances in dispatch center communications has improved to the point that dispatch center location is no longer restricted by geographical or technological constraints. Dispatch Groups and Dispatch Centers could be configured in any combination or location to provide dispatch services for fire operations. Scheduling time off for dispatchers and or covering for FRU's in an adjacent Area to meet dispatch services for fire staffing needs is now an option from whichever Dispatch Center location option we choose.

That said, it should also be noted that several factors come together to determine what can be effectively and safely managed by a single dispatch center given the complex communication environment of a Dispatch Center during initial attack of incidents

Several of these factors are:

- Span of control (number of FRUs a dispatch center supports)
- Detection strategies utilized (Use of Lookout Towers significantly impacts the dispatcher workload regardless of initial attack activity)
- Aerial suppression resources assigned to the DC.
- Ability of an individual to gain an intimate knowledge of all local aspects relative to the fire and forestry program in the DC Area.

In the final analysis by FPAT or FLT it should be noted that significant organizational change (realigning Region, Area or FRU administrative boundaries, supervisory structure etc) within the Bureau of Forestry can effect what is the best fit in terms of dispatch center operations. If such changes are to occur the dispatch options should be re-evaluated before making final decisions.



See appendix for large size map

In general the current Dispatch Group areas line up fairly well with the Fire Landscapes developed by the Stratification Work Group. Brule and Cumberland split the more complex FL 15, Black River Falls and Wisconsin Rapids split the more complex FL 4, while Woodruff and Peshtigo each encompass the more complex FL 7 & 9. Park Falls & Dodgeville each cover a larger geographic area in a lesser complex FL 3, 8 & 10. The Waupaca DG is fairly split including a more complex FL 4 as well as a less complex FL 6 & 8. For a full discussion of dispatch from a Fire Landscape perspective please see “Dispatch needs per Fire Landscape” beginning on page XX in the appendix

Components / Options Considered

Maintain current Dispatch Center Locations and alignment. This work group strongly feels that, while technology now allows us to have a Dispatch Center cover any amount of geographic area we wish, the advantages of maintaining dispatch function at the Area level with our current number of Dispatch Centers outweigh any advantages of having less Dispatch Centers that cover larger areas.

Advantages of maintaining Dispatch Function at the Area level with current Dispatch Center Locations.

- Maintains sound Span of Control limits between the DC and FRUs.
 - Reduces the potential for any one center to be responsible for multiple large complex incidents or become overwhelmed with coordinating resources to a multitude of ignitions on any given day. In a complex communication environment exceeding Span of Control creates greater potential for communication breakdowns and can effect firefighter and public safety.
- Limits the number of lookout towers a dispatch center needs to coordinate and communicate with.
 - Increased number of towers reporting to a single dispatch center adds an increased complexity to the dispatch function and provides a greater potential for communication brake down or the dispatch center to become overwhelmed compromising firefighter and public safety.
- Maintains Dispatch center as coordination point for the Area.
- Maintains dedicated administrative support to Area level needs.
- Helps maintain a “Team” connection between all fire staff in an Area.
- Allows a dispatcher to maintain an intimate knowledge of all local aspects related to the fire program within the Area enabling them to make prompt sound decisions without heavy reliance on supporting documentation.

Disadvantages of maintaining Dispatch Function at the Area level with current Dispatch Center Locations (ie: fewer dispatch centers based on a Regional type basis).

- Maintains the need for 9 FTE Dispatchers.
- Maintains the need for 9 Dispatch Centers and associated equipment infrastructure.
- The need to call for resources or assistance from outside the Area (DCs area of responsibility) will be more frequent.

- **Recommendation: Maintain Dispatch Center function at the Area level in their current locations. The current dispatch center locations and assignments are working well. Cost \$0.**
- **Recommendation: Plans for moving the Waupaca Dispatch Center to Wautoma should proceed. Cost: Funds already encumbered.**
- **Recommendation: The Department should continue to look for efficiencies without compromising operational needs with other agencies as program and communication technology continues to evolve. Cost \$0.**

With the intent of finding increases in efficiency and/or reducing the number of dispatch centers, the work group did discuss two potential Dispatch Center Realignment scenarios and the advantages and disadvantages of each.

Alternative 1, 8 Dispatch Group Alignment

The Waupaca Dispatch Center would be decommissioned in this alternative with neighboring Dispatch Centers picking up the former Waupaca FRUs.

Northern Region

- Brule – no change
- Cumberland – Picks up the Hayward FRU from PKF
- Park Falls - Loses the Hayward FRU to CBL, Picks up the Cornell FRU from BRF
- Woodruff - Picks up the Bowler FRU from WAP

North East Region

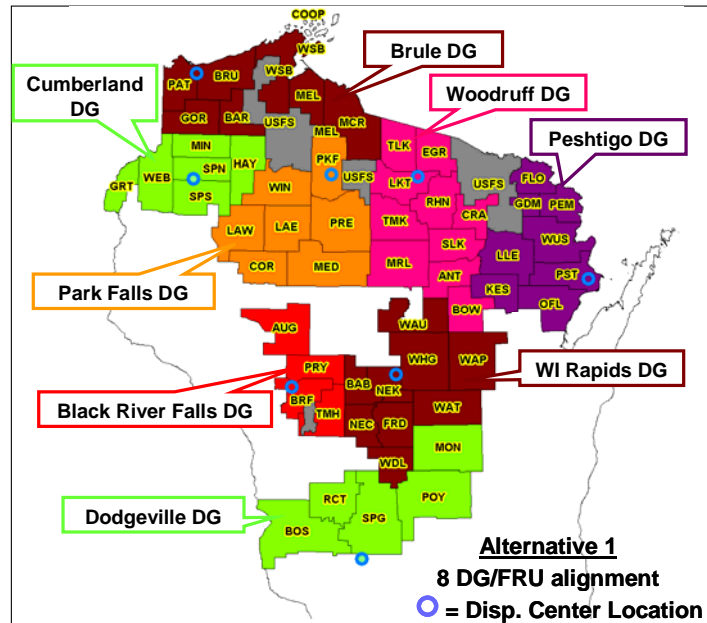
- Peshtigo – Picks up the Keshena FRU from WAP

West Central Region

- Wisconsin Rapids - Picks up the Waupaca and Wautoma FRUs from WAP
- Black River Falls – Loses the Cornell FRU to PKF

Southern Region

- Dodgeville – Picks up the Montello FRU from WAP



Advantages to this realignment include:

- Ranger communicates directly with Dispatch Center where extended resources are most likely to come from
- Eliminates communication steps in requesting extended attack resources from another area
- Reduces one FTE position

Disadvantages to this realignment include:

- Directly conflicts with forestry organizational goal of a forestry integrated program.
- Creates a need for additional dispatch help in some dispatch groups
- Increases the need of a larger local knowledge base for each primary dispatcher and helpers
- Dispatching more than 7 FRU's will cause potential overload for the dispatcher (exceeds Span of Control)
- Critical information and resource order needs could get bogged down during multiple fire IA with added FRU's to a Dispatch Center.
- The number of FRU's assigned to Wisconsin Rapids and Woodruff are beyond the standard span of control and could be overwhelming.
- Field staff are aligned with one dispatch group area for dispatch services while being administered by another Area
- Communication and collaboration must be high between Areas for staffing plans.

Northern Region

- Brule – Loses Mercer FRU to PKF
- Cumberland – Picks up the Hayward FRU from PKF
- Park Falls - Loses the Hayward FRU to CBL, Picks up the Cornell FRU from BRF and the Merrill FRU from WOD.
- Woodruff - Loses the Merrill FRU to PKF.

North East Region

- Peshtigo – Picks up the Keshena FRU from WAP

West Central Region

- Wisconsin Rapids/Waupaca - Picks up the Waupaca and Wautoma FRUs from WAP, Loses the Babcock and Necedah FRUs to BRF.
- Black River Falls – Loses the Cornell FRU to PKF, Picks up the Babcock and Necedah FRUs from WIR

Southern Region

- Dodgeville – Picks up the Montello FRU from WAP

This alternative only makes the impacts described in Alternative One more complex as no consideration was given to current Region, Area or Team boundaries. In addition the following complexities are encountered. Additionally, the Babcock FRU personnel currently work out of the WI Rapids station, there is no longer any DNR facility in Babcock.

Cumberland Dispatch Center:

Relocating the Cumberland Dispatch Center to Spooner Ranger Station in the Cumberland Area is a possibility. However the Department invested thousands of dollars to the Cumberland dispatch Center and would cost thousands more to move it. This move would complete the circle as Spooner was once the site of the dispatcher center in a prior organizational structure.

Advantages to this realignment include:

- Central location within a complex Fire Landscape
- Near major travel routes Hwy 70 and 53
- Foster better day to day communication and working relationship with fire mgt personnel
- Decrease in costs associated with mileage and travel time for the Area Forestry Leader
- Maintains resource pool of potential help during complex incidents via the Regional Service Center in adjacent building.

Disadvantages to this realignment include:

- Cost of moving radio equipment (\$300,000)
- Cost of remodel space at Ranger station
- Impact on personnel moving a work site

- ***Recommendation:*** *When funding allows, relocate the Cumberland Dispatch Center to Spooner Ranger Station Cost, roughly \$100,000.*

Changes in investment (by priority)

- If reduced budget
 - Reduce to 8 dispatch centers by re-aligning BRF, WIR, DOD & WAP into 3 dispatch centers instead of 4.

- If increased Budget
 - When funding allows, relocate the Cumberland Dispatch Center to Spooner Ranger Station

Objective 4 recommendation synopsis see page 47

Appendix Items

- Dispatch per FL
- Current DG/FRU alignment map
- Current DG/Fire Landscape alignment map
- Alternative 1 DG/FRU alignment map
- Alternative 2 DG/FRU alignment map

Links:

- None

Reference Documents

- None

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Objective 5:

Determine dispatch center equipment and design alternatives and provide a recommendation for the most efficient / effective.

Current Conditions

There are many differences in the current nine DNR Dispatch Centers. The Dispatch Centers range in size from 153 square feet up to 270 square feet, varying in shape from elongated rectangles to almost square. They have between two to four work stations. Each Dispatch Center is currently outfitted with two to three multi-line telephones, two to five telephone lines, one fax machine, one to two networked computers, one to four network connections, one non-networked printer, an Eventide communications recorder, two Zetron base radio controls, and one touch screen console at Black River Falls, Cumberland, Dodgeville, Peshtigo, and Park Falls. Wisconsin Rapids currently has 2 touch screen consoles and Brule, Waupaca, and Woodruff are waiting for the rest of their radio system infrastructure to be installed before they will be able to use their console. Each Dispatch Center has a generator for backup power. The type and setup of these generators vary from automatic starting backup generators connected to automatic transfer switches to portable, manual starting, generators permanently mounted near the building with extension cord type connections and manual transfer switches.

Dispatch Center Expenses

- Three telephone lines \$516/year depending on phone company
- Two network connected computers \$2300/year
- Heating / cooling / electric expenses mingled with entire building costs & not evaluated.

Components / Options Considered - Office

Office size. Dispatch Centers should be a minimum of 300 square feet and more square in shape. This size would provide enough space for our current Dispatch Center equipment and file storage needs, along with a little extra room for future technology. By having more of a square shape the office allows multiple people to work and move around without bumping into each other. The office should be setup up with four work positions.

- **Recommendation: Set standard Dispatch Center office size of a minimum of 300 square feet and more square in shape. Cost \$0.**

Dispatcher work stations Four work positions allows from two primary dispatch work stations, a location for a 3rd person to support dispatch during times to multiple fires or a large fire, and a 4th locations for the Regional Leader to conduct regional coordination during a project fire or extra dispatch support.

- **Recommendation: Set Dispatch Center office work station standard of 2 primary work stations and 2 secondary work stations. Cost \$0.**

Heating, Ventilation and Air Conditioning (HVAC) Dispatch Centers should be set up on their own HVAC zone. Dispatchers are often in working on the weekends, and late at night when the building HVAC systems go into unoccupied mode. When this happens the temperature settings automatically go down in heating mode or up in cooling mode and the fans shut down. With the Dispatch Center on its own zone the Dispatch Center staff can control the environment of the office around their non standard schedule.

- **Recommendation:** *Set standard that Dispatch Centers should be set up on their own HVAC zone.*

Backup power. Each Dispatch Center should be connected to a backup generator that is capable of starting automatically and transferring the power source from building power to generator power. This generator should power the entire Dispatch Center, radio equipment room, and HVAC for the dispatch center and radio equipment room. Currently some Dispatch Centers require someone to go outside and start then generator manually if the power were to go out. Once the generator is started they would have to turn switches and/or move plugs to switch over to generator power. All computer and communications equipment should be connected to uninterrupted power supplies. This will prevent loss of operations when there is a momentary outage or between the time the power goes out and the backup generator starts.

- **Recommendation:** *Set standard that each Dispatch Center should be connected to a backup generator that is capable of starting automatically and transferring the power source from building power to generator power. Cost: Retrofitting existing DCs ~\$50,00 ea depending on needs of each.*

Components / Options Considered – Computer Technology

Computer Technology: Each Dispatch center should be equipped with two networked computers. The two computers should be set up with identical software. This will allow both the primary dispatcher and the support dispatcher to perform any of the dispatch functions and also provide a backup in the event one of the computers would fail.

Both computers in the Dispatch Center should be set up with dual monitors. This allows the dispatchers to more efficiently perform multiple tasks on the computer such as monitoring an approaching weather system while preparing fire reports or converting GPS coordinates from the aircraft to legal descriptions. In addition, each computer should have an external hard drive for backing up files and should be hooked up to the Eventide communications logger to recall archived radio traffic.

All dispatch centers should have four data connects, one for each work position. This would allow for both dispatch computers to be connected to the network as well as a regional leader, working regional coordination with his laptop, or an area leader with a laptop to connect to the network while working in dispatch

- **Recommendation:** *Set Standard that ach Dispatch Center should be equipped with two networked computers with identical software, dual monitors and external hard drive. Cost \$1,200 where 2nd computer needed or \$0 if Toughbook recommendation in Objective 1 utilized.*
- **Recommendation:** *Set Standard that each Dispatch Center should be equipped with four network connection points.*

Printers. All dispatch centers should be equipped with a non networked printer. This eliminates the need for the dispatcher to leave the office during active fire times and serves as a backup for when the network goes down.

- **Recommendation:** *Set standard that each Dispatch Center should be equipped with a non-networked printer. Cost \$200 where needed.*

Components / Options Considered - Communications

Touch screen consoles: The dispatch centers should have two identical touch screen radio consoles. If the primary goes down the dispatcher should be able to switch work positions and have the exact same setup.

- **Recommendation: Set standard that each Dispatch Center should have two identical touch screen radio consoles. Cost \$7,000. where needed or minimal cost if Toughbook recommendation in Objective 1 is utilized.**

Wireless technologies: Wireless headsets should be provided with the radio console that can be used for the radio console that can be used for both radio and telephone. This would allow the dispatcher to move around more freely between the computer and maps while still being able to maintain communications. This would also improve communications with the field by eliminate a lot of background noise that the current desktop microphones pick up. When the head sets are hooked up the consoles will still pass the audio through the speakers so everyone in the room will be able to hear the radio traffic.

- **Recommendation: Wireless headsets should be provided with each radio console that can be used for the radio console that can be used for both radio and telephone. Cost: still researching.**

Common Radio channels: DNR Dispatch Centers should have the ability to turn on and off the State MARC 1 repeaters from their radio consoles. MARC repeaters have now been included in most incident communications plans and we need a reliable way of turning on these repeaters when they are needed. Once the MARC repeater has been activated, the Dispatcher should notify the repeater owner and the surrounding counties.

Our radio consoles should be equipped to talk directly with other county and state dispatch centers using the common simplex channel point to point. This alternate means of communication with the county dispatcher centers we frequently work with would serve as a backup to the phone system and save the dispatcher time by allowed them to relay a short message without having to pick up the phone. An alternate or addition to Point to Point would hooking our dispatch centers up to the statewide radio over IP network. This possible could be funded by OJA.

- **Recommendation: DNR Dispatch Centers should have the ability to turn on and off the state MARC 1 repeaters from their radio consoles. Cost \$180 ea.**
- **Recommendation: Pursue OJA funding for Dispatch Center connection to the State radio over IP network. Cost \$0.**
- **Recommendation: DNR Dispatch Centers should have the ability to communicate over the point to point radio channel. Cost \$0.**

Telephone: Telephones are a critical communications link for sending and receiving dispatch information, especially when dealing with external partners. The telephone is often used to relay sensitive information that should not be broadcast over the radio. Telephones are used as a backup to the radio system in areas of poor portable radio coverage.

- **Recommendation: Each Dispatch Center should have a minimum of two telephone lines and the availability to access additional phone lines in the building if needed. Cost, \$170./yr depending on number needed in each DC.**

Changes in investment (by priority)

- If reduced budget
 - None - Minimizing dispatch capability is not in the best interest of firefighter or public safety, nor does it serve our capability to assist all risk incidents.
- If increased Budget
 - Implement all recommendations listed in narrative.

Objective 5 recommendation synopsis see page 47

Appendix Items

- None

Links

- None

Reference Documents:

- None

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Objective 6:

Examine the costs of the current communication equipment procurement, maintenance and replacement, provide alternatives and recommend the most efficient / effective.

Current Conditions:

All FR communications equipment will be new within the past 3 years (base station repeaters) and as advanced as practical. Equipment fielded will have a 8 to 12 year life expectancy barring any unanticipated technology changes. All user radios are P25* capable with base stations being upgradable if to P25 if necessary.

- *Project 25 or APCO-25 refer to a suite of standards for digital radio communications for use by federal, state/province and local public safety agencies in North America, supported by Homeland Security, to enable them to communicate with other agencies and mutual aid response teams in emergencies.

Maintenance of all DNR radios is handled by the State Patrol Bureau of Communications (BOC), the result of a 1998 recommendation by DOA that the DNR Radio Technicians be merged into the State Patrol BOC. Any radio maintenance or repair is usually completed in a timely manner by BOC staff. Annually in the late winter BOC staff visit DNR facilities or Spring Pre-fire Season Meetings and conduct radios checks and update any necessary programming. This is proving to be a daunting task, especially to perform testing and reconditioning of increasingly expensive batteries.

Components / Options considered

Radio equipment replacement. Attached is a graphic from an article on radio purchasing and replacement recommendations from Mission Critical Magazine, October 2009: The full article is provided as a link in the Reference Documents listed at the bottom of this objective detail.

| Equipment | Assigned to Person | Shared |
|-------------------------|--------------------|---------------|
| Base Repeater Stations | — | 15 years |
| Communications Consoles | — | 12 – 13 years |
| Mobile Radios | 10 years | — |
| Portable Radios | 7 years | 5 years |
| Pagers | 7 years | 5 years |

This would call for repeater replacement around 2021, dispatch Consoles around 2018, mobile radios in 2019, and portable radios in 2016. No major costs are anticipated other than Master Lease repayments that have already been obligated.

- **Recommendations:** Radio communication equipment should be on a planned replacement schedule as follows:
 - **Base stations – 15 years**
 - **Dispatch Consoles – 12 years**
 - **Mobile Radios – 10 years**
 - **Portable radios – 7 years**

Cost, This schedule costs roughly \$260,000. annually although funding is appropriated by state legislature and not part of Forestry budget.

| Item: | Year Purchased: | Life Expectancy: | Estimated year to repurchase: | Year to evaluate and plan funding sources: |
|-------------------|-----------------|------------------|-------------------------------|--|
| Base Stations | 2006 | 15 | 2021 | 2015 (early to evaluate digital needs) |
| Dispatch Consoles | 2006 | 12 | 2018 | 2015 |
| Mobile radios | 2009 | 10 | 2019 | 2016 |
| Portable radios | 2009 | 7 | 2016 | 2013 |

Radio equipment maintenance workload. At times State Patrol BOC Radio Technicians become overburdened with all the tasks they are required complete. This is especially true prior to the spring fire season when all fire control radios are given an annual check. Providing additional staff to assist radio technicians during this time with simple tasks such as checking radio batteries and cloning remaining FRU radios when frequencies have been updated would be increase efficiency and reduce workload on Radio techs. Time commitment for this would vary, but in general be less than 40hrs per Technician

- **Recommendations: Assign one or two Forestry Technicians per Area to assist State Patrol BOC radio Technicians with routine maintenance tasks on an as needed basis.**

Changes in investment (by priority)

- If budget reduced:
 - Increase planned rotation age of radio communications equipment.
- If budget increased:
 - none

Objective 6 recommendation synopsis see page

Appendix Items

- None

Links

- Mission Critical Solutions - <http://www.mccmag.com/>

Reference Documents:

- Mission Critical Solutions; Smart Radio Purchases article (Radio purchasing replacement schedule.pdf)

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Objective 7:

Provide various options to meet and upgrade fireline communication needs.

Current Conditions:

The DNR radio system has improved tremendously since the previous fire study. Portable and mobile radios have far more available channels and more repeaters have been installed resulting in improved coverage. New microwave-linked radio consoles allow Dispatchers to talk to any DNR unit in the state, signal quality is improved and “skip” from other Dispatch Groups has been greatly reduced. With current technology the list of communication possibilities are staggering. A lot of “neat” things are possible but the bottom line is that they need to provide a cost effective benefit to Forestry program. New technologies, as they are developed, will continue to improve fireline communications. Many of the options considered for this objective came from input of field personnel.

Components / Options Considered

Install GPS tracking equipment on tractor plows. Mounting a mobile radio and GPS antenna on a tractor plow can allow an IC to locate and monitor progress of tractor plows on an incident in near real time. An additional benefit to this arrangement is that when tracking is not necessary the mobile radio could be utilized if the operator’s portable radio malfunctions or if extra signal strength is required in areas of marginal radio coverage. A pilot program is currently being conducted in the Wisconsin Rapids Area.

Outfit Ranger 4x4s with Toughbook laptop computers and live GPS capability. This option, if appropriate Fgis layers are loaded into the laptop, would provide real-time in the field benefits for both fire and forestry applications.

Examples include:

- Ability to accurately locate your current position on a map or aerial photo
- Ability to identify land ownership in the field
- Ability to graphically show addresses on a map or aerial photo
- Ability to identify address location if actual address identification is destroyed
- Ability to graphically plot lookout tower azimuth reading lines to assist in locating potential wildfires or burning law violations.
- Ability to access email or other intra or inter net applications

While direct access to this type of information would be beneficial, it comes at a substantial price. It currently costs more than \$6,000 to outfit a 4x4 with this capability. The Toughbook laptop, which costs about four times as much as a traditional laptop, would replace the Ranger’s traditional laptop for day to day use, defraying the cost somewhat. There is the potential to utilize retired warden Toughbooks for this purpose, at least on a trial basis.

- **Recommendation: Assign responsibility to continue to investigate equipping Ranger 4x4s with laptops, GPS and GIS technology to the appropriate committee.**

Outfit some Ranger 4x4s with vehicular repeaters. A vehicular repeater takes a signal sent from a portable radio and relays that signal through the repeater over a single pre-selected channel (Green net, Blue net, etc.). This system essentially allows a portable radio to send a signal that is boosted by the repeater in the vehicle. This would be particularly useful in areas that offer poor portable radio coverage. Safety of personnel would be improved during suppression activities as well as during law enforcement contacts in areas of poor

portable coverage. A portable radio can trip the repeater from a few hundred yards or more, depending on terrain. The cost to install is about \$2000 each. This work group is not recommending that every 4x4 in the state be equipped with a repeater. Rather, the justification to outfit a 4x4 with a vehicular repeater should be made at the Area level.

- **Recommendation: Equip Ranger 4x4s with vehicular repeaters where needed. Leave the decision to equip a truck at the Area level. Cost \$2000. where needed**

Provide an ability for hands free radios use in vehicles. Driving with one hand on the steering wheel while holding a radio microphone in the other can be a safety issue. A floor switch activated microphone would allow for hands-free keying of the radio at a relatively low cost. Correct placement of the floor switch is necessary to avoid open microphone situations. Voice activated microphones are available but would not work well in our noisy fire control vehicles.

Explore DNR policy on issuance and use of cell phones. While radios will continue to be the primary mode of communication during suppression activities, cell phones can serve as a valuable tool on the fireline. It is currently an Area decision whether or not to supply cell phones to IA personnel. It is felt that every initial attack Ranger and heavy unit operator should have access to a cell phone.

Input from the field suggested exploring the possibility of reimbursing IA personnel for conducting state business on their personal cell phones. This would eliminate the need for a state-issued phone. DOA currently does not allow the combining of personal and state cell phone accounts.

As stated earlier, cell phones can provide another level of communications on the fireline. However, cell phone use must be limited to situations when a one on one conversation does not need to be heard by anyone else on the fireline. Directing the movement of suppression units, relaying tactical information or identifying safety hazards are obvious examples of times when information needs to be broadcast over the radio. A policy on fireline use of cell phones would need to be developed. A group such as the Safety Committee could address this issue.

- **Recommendation: Provide state-issued cell phones to IA personnel or seek a solution to the current DOA policy and allow reimbursement to IA personnel for conducting state business on their personal cell phone. Cost \$60./yr depending on contract.**
- **Recommendation: Develop a policy on the use of cell phones on the fireline.**

Changes in investment (by priority)

- If reduced budget
 - This work group does not recommend a reduction in fireline communication equipment or capability due to the safety aspect of the topic.
- If increased Budget
 - Equip all Ranger 4x4s and AFL vehicles with Toughbook laptops and live GPS technology.

Objective 7 recommendation synopsis see page 47

Appendix Items:

- none

Links:

- None

Reference Documents:

- None

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Objective 8:

Examine existing IMT communications systems across the state, analyze strengths and weaknesses, design and implementation alternatives.

Current conditions

Currently, each Area or Dispatch Group supports one Type 2 or 3 Incident Management Team (IMT). Accordingly each of these teams maintains an IMT trailer that contains an inventory of communications equipment to assist in supporting the IMT during a deployment. In addition to this, each Area or Dispatch Group has established a number of designated ICP sites. At some of these ICP sites the Department has established infrastructure in the form of communication towers with multiple radio antennas, additional land line telephone jacks etc to decrease the set up time needed to have the site fully functional and ensure the ICP site can support the needs of the Incident. While these designated ICP sites were developed for use on wildfire incidents, they will function for any type of large scale incident.

IMT communication systems relate to both the communication equipment provided by each Dispatch Group or area AND ICP facilities available at a given ICP site.

During a deployment many IMT components require either radio or telephone communications be available to that component for it to function. NOT having these communications components can greatly affect firefighter and public safety as well as inhibit the ability of the IMT to manage the incident. The chart below shows the communication needs of an incident.

| | Radio | | Phone | | Fax* | Electronic means a benefit? (email, text etc) |
|--------------------------------------|---------|---------|---------|---------|------|---|
| | Primary | Back up | Primary | Back up | | |
| WFB to fireline (Div/Grps) | X | | | X | | perhaps |
| OPS/IC to DNR disp | X | | | X | | perhaps |
| OPS/IC to Region / DNR Com Cntr | | | X | | X | |
| SB to fireline (grps/zones) | X | | | X | | unlikely |
| SB to County SO | X | | X | | ? | perhaps |
| LEB to line (evac/rd blocks) | X | | | X | | perhaps |
| LEB to County SO | X | | | X | ? | perhaps |
| SIT Unit to patrol | X | | | | | no |
| SIT Unit to fireline (FOBS/Div/Grps) | X | | | X | | Yes |
| Logistics to dispatch | | | X | | X | Yes |
| Logistics to real world | | | X | | X | Yes |
| Logistics to support drivers | | X | X | | | Yes |
| PIO to media | | | X | | X | Yes |

* 1 fax machine should be able to support entire ICP operations in most instances

At this time all Areas have an adequate radio equipment to support the IMT needs for their area with the exception of the Peshtigo Dispatch Group which needs at least two more ICP radio tower sites.

Depending on the location of the incident in relation to the location of the ICP for a given incident, the use of a portable repeater to provide adequate command net radio coverage to an incident may be necessary. All areas either have established portable repeaters in place or have an action plan to expedite the set up of a portable repeater to support incident communications.

Most designated ICPs have at least 1 active land line telephone utilized, paid for and maintained by the structures owner that is available for an IMT to utilize during an incident. A fully functioning ICP site would need a minimum of 4 or 6 telephone lines. To account for this, selected key ICP sites have had additional phone cable and jacks installed. In the past there have been various agreements with local



telephone companies to activate these additional lines for the spring fire season or at least dedicate numbers to these lines, but they would not be turned on until there is a need. For the majority of ICP sites however, the plan across the state is that when an ICP is going to be activated, fire staff would contact the telephone company, explain the emergency situation and order additional lines activated at the ICP site. In the past although rarely used, this plan worked. Over time with the consolidation of small independent telephone companies into larger corporations the likelihood of having additional telephone lines activated in a timely manner (within a couple hours of notice) to support an incident has proved to be extremely difficult. This situation was proved during the Cottonville Fire of 2005. The alternative option to activating these lines for the spring fire season has been cost prohibitive when taking into consideration the number of ICP sites they would be needed at and the likelihood of them being needed.

Cellular telephone use is another component in IMT operations and has been used successfully. However, while the reliability and coverage of cellular technology has improved tremendously over the past ten years, without additional technology or carrier support there is a justified fear that during emergency situations the proliferation of cell phone use would overload the system to a level that restricts or eliminates its potential use. In addition, the ICP structure itself due to its construction type limits the ability to utilize cell phones from within the building.

Various means of electronic communications at an incident such as email, cellular text messages, data services, GPS tracking, have limited use across the state. The limitations here are knowledge of the technology available as well as ownership of proper equipment or services needed to utilize this technology.

Components / Options considered

Radio: The current radio equipment and capabilities across the state are both sufficient and efficient to meet the need. Returning to a radio configuration where vehicle mounted mobile radios can be removed and utilized within an ICP was discussed, but currently there is no need for additional radios for IMT use and the new radios are not compatible that type of use. Utilizing radios this way would also remove them from use on the fireline where they are needed as well.

- **Recommendation:** *Secure funding for two ICP radio tower sites. Cost \$7,000 ea.*
- **Recommendation:** *As mobile radios are replaced in the field, the old radios should be targeted to update the mobile radios in the Area IMT trailer as appropriate.*
- **Recommendation:** *Area Forestry Leaders should continue to evaluate the needs of ICP sites as well as the infrastructure (radio masts, antennas telephone lines) of these sites in their area and implement improvements or additions as needed.*

Telephone: Reliable telephone communications for core IMT sections during an incident are a must. There is not a viable option to not have or reduce the need for reliable telephone service. There are only two options in this spectrum, traditional land lines and cellular telephone service.

One option could be to share the expense of added live land lines with the ICP owner, however, there are only limited locations where this may be feasible as most advanced ICP sites are volunteer fire halls or rural town halls with only part time or no day to day staff with no incentive or need for additional telephone lines or their cost.

During the course of this assessment it was discovered that there are several federally mandated programs with the NCS, (National Communication Service, a branch of Homeland Security) that specifically address some of the telecommunication problems we have in relation to IMT/ICP needs. These programs will be outlined in the discussions below.

The Telecommunications Service Priority (TSP) program through NCS provides priority provisioning (establishing) and restoration of telecommunication services critical to the maintenance of a state of readiness or in response to and management of any disaster event or crisis. This program directly addresses establishing additional telephone lines at ICP sites or restoring telephone communications at any DNR dispatch center or central office. Under rules of the TSP program, service vendors (telephone companies) are authorized and required to provision and restore services with TSP assignments before services without such assignment. On the provisional side of this program there would be no cost except at the time of need. For restorative situations we would need an agreement with each telephone communication vendor and there may be a set up or agreement costs and possibly a monthly fee. The federal contact person stated that these costs vary widely across the country and are totally dependant on the agreement with each telecommunication vendor. It is conceivable that this type of agreement with telecommunication providers could be made on a statewide interagency basis.

- **Recommendation:** *The department should move forward to secure TSP agreement with each telephone company that provides service in a DNR protected area. This issue is all-risk in scope and perhaps should be procured in cooperation with WEM as an all-risk blanket agreement for all state emergency service agencies. Costs unknown, variable w. each company..*

The Government Emergency Telecommunications Service (GETS) program through NCS provides emergency access and specialized processing in the local and long-distance segments of the public switched telephone network (PSTN) to authorized National Security

and Emergency Preparedness personnel. GETS is accessed through a universal access number using any standard desk set, secure phone, facsimile, or cellular phone. GETS provides a means to overcome telecommunications network congestion due to increased use. In essence, if you can get a dial tone but cannot get a call through due to increased telephone traffic (ie: the Mothers Day phenomenon), utilizing the GETS system receives special treatment, increasing the probability of call completion in damaged or congested networks. Although GETS can be used with cellular phones, it will not give the caller priority in getting cellular access off a tower. The WPS program described below specifically addresses cellular access priority.

There is no other fee or cost for GETS beyond an additional rate of \$0.10 or \$0.074 per minute (depending on carrier) for calls within the US

- **Recommendation: All DNR fire staff down to the Ranger Level, including dispatchers, should have GETS accounts.**

Cellular telephone capabilities and coverage has improved drastically statewide over the last 10-15 years. During emergencies, cellular providers can experience congestion in their networks, severely curtailing the ability to use cellular services. Because of this there is a reluctance to rely on cell phone usage during emergency incidents. However, they should not be ruled out as another communications tool. With the costs of cellular telephones and service through the state contract, it is not impractical to have dedicated cell phones set aside for IMT usage. The problem in this is to ensure that the phones remain charged and are ready for use when needed. A more reliable option may be to set a policy or SOP that agency issued cell phones put in use by an employee during an IMT deployment be dedicated to that function for the duration of the incident and not leave the IMT/ICP when a shift change replaces that individual on the IMT. Both these options for cell phones have the added advantage that DNR dispatch offices will know the cell numbers to contact a specific function of the IMT by who is on their IMT roster.

- **Recommendation: Define a policy or SOP that core IMT section leaders dedicate their agency cell phone to that section of the IMT for the duration of the incident.**

At ICP sites where cell phone use is restricted by the construction material of the building the use of an In-Building Wireless Cellular Amplifier would be of invaluable. This system can be portable and carried with the area IMT trailer to be set up as needed depending on ICP site in use. The cost of an In-Building Wireless Cellular Amplifier set up is in the \$6 - \$700. range.

- **Recommendation: Purchase of an In-Building Wireless Cellular Amplifier for each Area IMT trailer. Cost \$700. each.**

To facilitate completion of critical cellular calls during high usage events the Wireless Priority Service (WPS) through the NCS authorizes emergency personnel priority cellular access before subscribers who do not have WPS service. In addition, WPS is complementary to, and can be used in conjunction with the GETS program. This ensures a high probability of call completion in both the landline and cellular calls

The FCC rules do not require cellular providers to offer WPS; it is a voluntary offering however the FCC has set a cost limit to a one time \$10 set up fee and a monthly fee of \$4.50 per phone. The state contracted cell phone vendors Version and AT&T are both participants in this program.

- **Recommendation:** *At a minimum, Area Forestry Leaders, Area Forestry Staff Assistants, and Team Leaders should have WPS service as part of their cell phone package as well as key IMT personnel as authorized by the Area Forestry Leader. Cost \$60./yr each phone.*
- **Recommendation:** *Include WPS and COLT/COW service in next cellular service contract bid. Cost unknown, variable w/ each contractor.*

Another option to maintain or establish cellular communications between the fireline, ICP and the outside world is to contract for Cow (Cellular on wheels) or / COLT (cellular on light truck service during an incident. Currently both state contract cellular vendors can provide this service which in essence means the cellular provider brings in and puts up a local cell antenna so support your incident. The catch is that there must be a way for the provider to access a DSL or TI connection. Some ICP sites have this and some do not. COW or COLT usage would supplement cell and data circuits during times of increased coverage or failure of cellular towers.

- **Recommendation:** *Investigate agreements with cellular carriers to provide cellular on wheels support for voice and data.*
 - *Include COW .COLT service as part of the next state cell phone contract.*

Electronic: Not enough time available within the scope of the work group allotment to fully investigate these options. Many electronic communication possibilities have been discussed in other objectives.

- **Recommendation:** *Continue to investigate opportunities to utilize other electronic communication technologies that will enhance communication capabilities for IMT operations.*

Changes in investment priorities

- If budget reduced:
 - None - Minimizing communication capability of an IMT is not in the best interest of firefighter or public safety, nor does it serve our capability to assist all risk incidents.
- If budget increased:
 - Purchase cellular amplifier for each IMT where they would be advantageous to have.
 - WPS cellular package down to the Ranger Level

Objective 8 recommendation synopsis see page 47

Appendix items

Independent electronic copies of all appendix documents are located on the central fire drive:
[\\Centralfire\2010_Fire_Program_Assessment\Work_Groups\Communications-Dispatch_WG\C_D_final_report\Appendix_documents](http://Centralfire\2010_Fire_Program_Assessment\Work_Groups\Communications-Dispatch_WG\C_D_final_report\Appendix_documents)

- US Cellular Cow-Colt programs

Links:

- GETS: <http://gets.ncs.gov/> to give your phone priority ability to get through busy circuits.
- WPS: <http://wps.ncs.gov/> to provide priority service with cell phone provider
- TSP: <http://tsp.ncs.gov/> to contract with telephone service providers for priority service in establishing additional land line telephones or bringing damaged lines back into service.
- NIXLE: <http://www.nixle.com/faqs.html> to send public safety notifications by text message to cell phones and computers in any area you may define.
- WIJUS: http://oja.state.wi.us/section_detail.asp?linkcatid=1321&linkid=708&locid=97 to allow

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lookup of potential at risk contacts for personnel in the field.

- NWEM: <http://www.disasterhelp.gov/disastermanagement/dmistools/nwem.shtm> Non Weather Emergency Message to send to all weather radios in a to be defined area.
- Wilson Electric: <http://www.wilsonelectronics.com/////Products.php?Type=B> In building cellular amplifiers vendor

Reference Items:

Electronic copies of all Reference documents are located on the central fire drive:

\\Centralfire\2010_Fire_Program_Assessment\Work_Groups\Communications-Dispatch_WG\C_D_final_report\Reference_documents

- “[GETS.pdf](#)” Government Emergency Telecommunications Service (GETS) informational brochure
- “[WPS Brochure.pdf](#)” - Wireless Priority Service (WPS) informational brochure.
- “[tsp_brochure.pdf](#)” - Telecommunications Service Priority (TSP) informational brochure.
- “[inBuilding cell amplifier 801262.pdf](#)” – Cellular amplifier product information from Wilson Electronics.
- “[ICP data collection.xls](#)” - Excel spread sheet located in Communication-Dispatch final report file. Data regarding each dispatch group IMT communication supplies and advanced ICP location capabilities

Recommendations: All recommendations, listed by objective

Objective 1 recommendations:

- Recommendation: In fiscal year 2010 allocate moneys to outfit one used Toughbook per DG with an air-card and purchase a system entry port to allow secure access to the dispatching system for all hazards incident management. Cost estimate would be less than \$10,000.00 and ongoing air-card costs Cost estimate would be less than \$10,000.00 + Air Card costs of roughly \$400. per DG per year.
- Recommendation: Where necessary, install vehicular repeaters in Ranger engines. Note: This is an Area decision. Cost: roughly \$2000. per vehicle it is needed in.

Objective 2 recommendations:

- Recommendation: Migrating DNR FR frequencies to narrowband operations after the spring 2011 fire season. This will be at the same time Mutual Aid frequencies are recommended to be narrowbanded thus encouraging our partners to change concurrently. This will minimize future communications difficulties.
- Recommendation: Appoint one person in each DG to routinely check in with Counties and local Fire/EMS to query any upcoming changes in communications.
- Recommendation: Appoint a lead person in each DG to facilitate communications planning with all county(s) and local levels of public safety. This relates to HS initiatives to have written communications plans in place. Without coordination, plans may be established without DNR inclusion.

Objective 3 recommendations:

- Recommendation: An FTE with a percentage (<20%) of dispatch duties written into their position description to ensure availability of a support or primary dispatcher in all Dispatcher Centers. Cost: \$0, but man hours to other work load would be reduced.
- Recommendation: Have a pre-identified third person available to assist in the Dispatch Center when the fire adjective level is at HIGH or above and the potential for extended attack fires or increased chance of multiple initial attack incidents exists. Cost: \$0
- Recommendation: Allow Dispatch Centers to occasionally cover radio communications in another DG during periods of low or moderate fire potential and no detection. Result in reduction of FTE comptime and/or LTE hours.

Objective 4 recommendations:

- Recommendation: Maintain Dispatch Center function at the Area level in their current locations. The current dispatch center locations and assignments are working well.
- Recommendation: Plans for moving the Waupaca Dispatch Center to Wautoma should proceed. Cost: Funds already encumbered.
- Recommendation: The Department should continue to look for efficiencies without compromising operational needs with other agencies as program and communication technology continues to evolve.
- Recommendation: When funding allows, relocate the Cumberland Dispatch Center to Spooner Ranger Station Cost, roughly \$100,000.

Objective 5 recommendations:

- Recommendation: Set standard Dispatch Center office size of a minimum of 300 square feet and more square in shape. Cost \$0
- Recommendation: Set Dispatch Center office work station standard of 2 primary work stations and 2 secondary work stations. Cost \$0.
- Recommendation: Set standard that Dispatch Centers should be set up on their own HVAC zone.
- Recommendation: Set standard that each Dispatch Center should be connected to a backup generator that is capable of starting automatically and transferring the power source from building power to generator power. Cost: Retrofitting existing DCs ~\$50,00 ea depending on needs of each.
- Recommendation: Set Standard that each Dispatch Center should be equipped with two networked computers with identical software, dual monitors and external hard drive. Cost \$1,200 where 2nd computer needed or \$0 if Toughbook recommendation in Objective 1 utilized.
- Recommendation: Set Standard that each Dispatch Center should be equipped with four network connection points.
- Recommendation: Set standard that each Dispatch Center should be equipped with a non-networked printer. Cost \$200 where needed
- Recommendation: Set standard that each Dispatch Center should have two identical touch screen radio consoles. Cost \$7,000. where needed or minimal cost if Toughbook recommendation in Objective 1 is utilized.
- Recommendation: Wireless headsets should be provided with each radio console that can be used for the radio console that can be used for both radio and telephone. Cost: still researching.
- Recommendation: DNR Dispatch Centers should have the ability to turn on and off the state MARC 1 repeaters from their radio consoles. Cost \$180 ea.
- Recommendation: Pursue OJA funding for Dispatch Center connection to the State radio over IP network. Cost \$0.
- Recommendation: DNR Dispatch Centers should have the ability to communicate over the point to point radio channel. Cost \$0.
- Recommendation: Each Dispatch Center should have a minimum of two telephone lines and the availability to access additional phone lines in the building if needed. Cost, \$170./yr depending on number needed in each DC.

Objective 6 recommendations:

- Recommendations: Radio communication equipment should be on a planned replacement schedule as follows:
 - Base stations – 15 years
 - Dispatch Consoles – 12 years
 - Mobile Radios – 10 years
 - Portable radios – 7 yearsCost, This schedule costs roughly \$260,000. annually although funding is appropriated by state legislature and not part of Forestry budget.
- Recommendations: Assign one or two Forestry Technicians per Area to assist State Patrol BOC radio Technicians with routine maintenance tasks on an as needed basis.

Objective 7 recommendations:

- Recommendation: Assign responsibility to continue to investigate equipping Ranger 4x4s with laptops, GPS and GIS technology to the appropriate committee.
- Recommendation: Equip Ranger 4x4s with vehicular repeaters where needed. Leave the decision to equip a truck at the Area level. Cost \$2000. where needed
- Recommendation: Provide state-issued cell phones to IA personnel or seek a solution to the current DOA policy and allow reimbursement to IA personnel for conducting state business on their personal cell phone. Cost \$60./yr depending on contract.
- Recommendation: Develop a policy on the use of cell phones on the fireline.

Objective 8 recommendations:

- Recommendation: Secure funding for two ICP radio tower sites. Cost \$7,000 ea.
- Recommendation: As mobile radios are replaced in the field, the old radios should be targeted to update the mobile radios in the Area IMT trailer as appropriate.
- Recommendation: Area Forestry Leaders should continue to evaluate the needs of ICP sites as well as the infrastructure (radio masts, antennas telephone lines) of these sites in their area and implement improvements or additions as needed.
- Recommendation: The department should move forward to secure TSP agreement with each telephone company that provides service in a DNR protected area. This issue is all-risk in scope and perhaps should be procured in cooperation with WEM as an all-risk blanket agreement for all state emergency service agencies. Costs unknown, variable w. each company
- Recommendation: All DNR fire staff down to the Ranger Level, including dispatchers, should have GETS accounts
- Recommendation: Define a policy or SOP that core IMT section leaders dedicate their agency cell phone to that section of the IMT for the duration of the incident
- Recommendation: Purchase of an In-Building Wireless Cellular Amplifier for each Area IMT trailer. Cost \$700. each.
- Recommendation: At a minimum, Area Forestry Leaders, Area Forestry Staff Assistants, and Team Leaders should have WPS service as part of their cell phone package as well as key IMT personnel as authorized by the Area Forestry Leader. Cost \$60./yr each phone.
- Recommendation: Include WPS and COLT/COW service in next cellular service contract bid. Cost unknown, variable w/ each contractor.
- Recommendation: Investigate agreements with cellular carriers to provide cellular on wheels support for voice and data.
 - Include COW .COLT service as part of the next state cell phone contract
- Recommendation: Continue to investigate opportunities to utilize other electronic communication technologies that will enhance communication capabilities for IMT operations.

Changes in Investment

- If budget reduced:
 - Increase planned rotation age of radio communications equipment.
 - Limit backup/support dispatch positions to DNR employees only (reduce LTE budget)
 - This work group does not recommend a reduction in communication equipment & capability, or dispatch equipment & capability due to the safety risk adherent to this type of reductions and the fact that reductions of this type would create a decrease in efficiency and would not serve our capability to accomplish our mission nor assist all risk incidents.

- If budget increased:
 - Install vehicular repeaters in all initial attack vehicles.
 - WPS cellular package down to the Ranger Level
 - Increase the level of training for Dispatchers, Support Dispatchers and those that fill the third person role
 - Equip all Ranger 4x4s and AFL vehicles with Toughbook laptops and live GPS technology.
 - Purchase and install a cellular amplifier for each IMT site where there is a need for such a device.
 - When funding allows, relocate the Cumberland Dispatch Center to Spooner Ranger Station
 - Invest in digital dispatching

Appendix

Independent electronic copies of all appendix documents are located on the central fire drive: \\Central\fire\2010_Fire_Program_Assessment\Work_Groups\Communications-Dispatch_WG\C_D_final_report\Appendix_documents

This narrative attempts to look at and discuss the Dispatch needs unique to each Fire Landscape. In this discussion the Communication and Dispatch WG assumed that: current Initial Attack Resource locations, detection strategies currently used, Regional, Area and FRU boundaries, or areas within DNR fire protection will not change drastically due to the fire assessment.

It should also be noted that the NWCG “Span of Control” guidelines (FRUs/DG), location of aerial suppression resources, Area level detection strategies utilized and the Fire Landscape rank were taken into account to determine the maximum efficient workload of a given dispatch location. As an example, if a FL encompassed 7 FRUs (the maximum span of control), housed an aerial suppression resource, utilized the full spectrum of detection strategies and was in the upper tier of landscape rankings it is likely that the dispatch workload of that landscape exceeds what is most efficient and manageable for a single dispatch location and two dispatch centers would be recommended. Since there are several Fire Landscapes that only have minimal DNR protected lands or are of such small a size that they by themselves do not warrant a dedicated dispatch center there is a fair amount of latitude as to the exact area a given dispatch center will be responsible for.

In the final analysis by FPAT or FLT it should be noted that organizational or administrative change within the Bureau of Forestry can effect what is the best fit in terms of dispatch center operations. If such changes are to occur the dispatch options should be re-evaluated before making final decisions regarding dispatch location, function and coverage area.

| FL | Dispatch options narrative |
|----|---|
| 1 | This landscape is entirely co-op. No DNR dispatch needs within the foreseeable future |
| 2 | <p>The landmass in this landscape is 94% co-op. The remaining 6% of the land mass is under current Extensive protection within the Waupaca and Dodgeville DGs.</p> <p>The small amount of DNR protected lands can be covered with Dispatch functions from adjacent FLs 3, 4 or 6</p> |
| 3 | <p>The majority of this FL is currently under Extensive protection (4% Intensive, 58% Extensive, 38% Co-op). The area within protection encompasses nearly the entire Dodgeville DG and very small portions of BRF, WIR and WAU DGs. This FL has traditionally relied 100% on public reporting for fire detection and has the least number of DNR IA resources, but has one of the highest fire occurrences. This Landscape is in the bottom third of FLs in risk or complexity ranking.</p> <p>Due to the moderate level of complexity & risk, low number of IA resources and lack of utilization of organized detection 1 dispatch location is more than enough to support this landscape and it is feasible to meld the dispatch function into adjoining fire landscapes or for the current Dodgeville DG to take on additional areas of responsibility for dispatch</p> |
| 4 | <p>95% of the landmass of this landscape is within current DNR protection areas (68% Intensive, 25% Extensive & 5% Co-op). It is the 4th largest landscape, and ranks 3rd in complexity and risk. This landscape utilizes the full range of detection resources and typically has two aerial suppression resources assigned to it during the spring fire season. Currently, areas in DNR protection in this landscape are covered by WIR BRF and WAP.</p> <p>Due to the complexity & risk, number of IA resources, utilization of numerous lookout towers for detection and the need to maintain a reasonable span of control it is recommended that this FL be supported by at least two separate dispatch locations.</p> |

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| FL | Dispatch options narrative |
|----|--|
| 5 | <p>88% of the landmass of this landscape is within current DNR protection (15% Intensive, 73% Extensive & 12% Co-op) split between the current WIR and WAU DGs. Typically this landscape relies on aerial and public reporting detection strategies, It does however house 1 active lookout tower. It is the smallest landscape in the state and ranks #8 in complexity and risk.</p> <p>The dispatch need in this landscape is best supported by a dispatch in one of the adjoining fire landscapes.</p> |
| 6 | <p>The landmass of this landscape is split fairly evenly between current DNR protection and Co-op (19% Intensive, 36% Extensive and 45% Co-op). Although aerial and public reporting are the main detection strategies used there are 2 towers in adjacent FLs that look into the northern portion of this landscape. This landscape is on the lower end of the complexity & risk rankings coming in at #12. Currently, areas in DNR protection in this landscape are covered by WAP and PST.</p> <p>This landscape does not warrant a dispatch center of its own and is best supported by centers in adjoining fire landscapes.</p> |
| 7 | <p>94% of the landmass of this landscape is within a current DNR Intensive area (94% Intensive, 4% Extensive & 2% Co-op).This landscape is nearly entirely within the PST DG except for a very small piece on the south end. FL 7 currently utilizes the full spectrum of detection resources and relies on some towers outside of this landscape. At times this FL has aerial suppression resources assigned to it. While this landscape is on the smaller end in regards to landscape size at #11 it is in the upper tier of the complexity and risk scale coming in at #2.</p> <p>This FL needs a dedicated dispatch due to the risk and complexity of the landscape, however due to its smaller size, portions of adjoining landscapes could be covered from the same location.</p> |
| 8 | <p>This FL is by far the largest landscape in the state encompassing nearly 6.5 million acres. This FL has all of FL 9 within its boundaries and has a small area in the NW corner of the state separate from the main body of FL 8. This landscape is predominantly in the current Intensive protection area (94% Intensive, 4% Extensive & 2% Co-op). This landscape currently utilizes the full spectrum of detection resources, but typically does not have any aerial suppression resources assigned to it. This FL is in the middle range of complexity and risk coming it at # 7. Currently, areas in DNR protection in this landscape are covered by PKF,WOD, BRF, WAP WIR and PST</p> <p>Simply due to the size of this landscape a minimum of 2 dispatch centers would be needed to support this FL or portions of it need to be covered by adjacent landscapes.</p> |
| 9 | <p>This landscape falls nearly entirely within the current DNR Intensive protection area (99% Intensive, 0% Extensive & 1% Co-op).and utilizes the full spectrum of detection resources as well as some towers outside of this landscape. This FL typically does not have any aerial suppression resources assigned to it. This landscape is on the small side ranking #9, but it is in the upper tier of the risk and complexity scale coming in at #4. Currently, areas in DNR protection in this landscape are covered by WOD and a small section of BRU.</p> <p>Due to the complexity and risk of this landscape it warrants a dedicated dispatch center, however due to its size portions of adjoining landscapes could be covered from the same location.</p> |

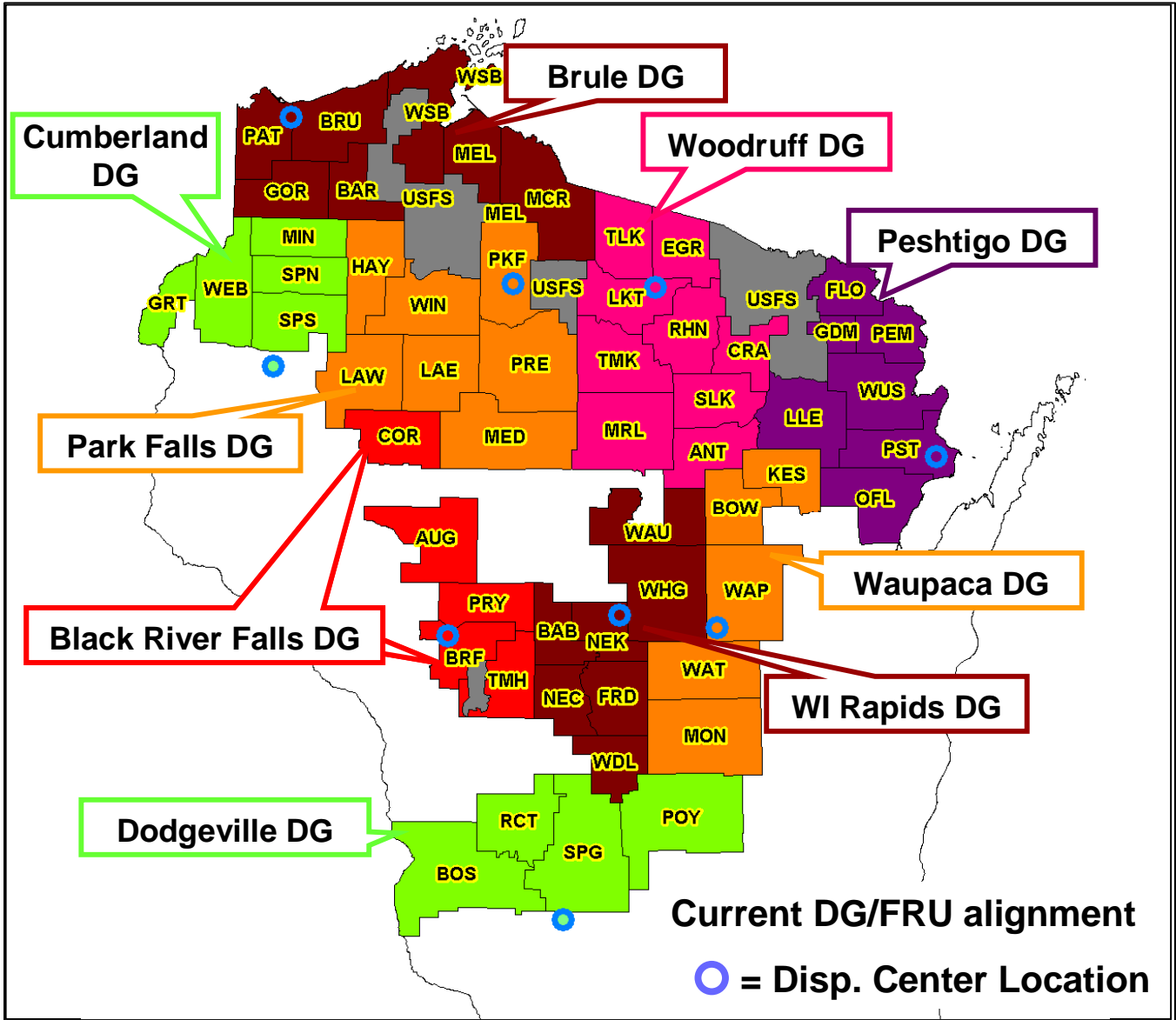
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| FL | Dispatch options narrative |
|-----------|--|
| 10 | <p>The landmass of this landscape is split fairly evenly between current DNR protection and Co-op (46% Intensive, 3% Extensive and 51% Co-op) Tower use is minimal in this FL, with only 2 towers being within the FL boundary. This FL ranks on the lower end of the risk and complexity scale coming in at #13. Currently, areas in DNR protection in this landscape are covered by WOD, PKF, BRF and WIR.</p> <p>The dispatch need in this landscape is best supported by those in adjoining fire landscapes.</p> |
| 11 | <p>This Landscape is nearly all outside of the current DNR protection areas (8% Intensive, 0% Extensive and 92% Co-op) There is one active lookout tower in this landscape that supports FL 8 and is located in the small percentage of Intensive protection area of this landscape. This FL ranks on the lower end of the risk and complexity scale coming in at #11. Currently, the small area of DNR protection is covered by BRF and PKF.</p> <p>The small amount of DNR protected lands in this landscape can be covered with Dispatch functions from adjacent FLs 8 or 4.</p> |
| 12 | <p>This Landscape is nearly all out side of the current DNR protection areas (7% Intensive, 0% Extensive and 93% Co-op) This FL ranks on the lower end of the risk and complexity scale coming in at #14. Currently, areas in DNR protection in this landscape are covered by CBL, and PKF.</p> <p>The small amount of DNR protected lands in this landscape can be covered with Dispatch functions from adjacent FL 15 or 8.</p> |
| 13 | <p>The landmass of this landscape is virtually all within the current DNR Intensive area (less than 1% in Co-op) It is one of the smallest landscapes coming in at #14 but is in the upper tier on the complexity and risk scale coming in at #5. This landscape typically utilizes the full range of detection resources. Currently, areas in DNR protection in this landscape are covered by CBL, BRU and PKF.</p> <p>Simply due to its geographical size, this landscape is best supported by adjacent FLs 15 or 8 for dispatch purposes.</p> |
| 14 | <p>The majority of this FL is outside of current DNR protection area (38% Intensive, 0% Extensive & 62% Co-op). Nearly the entire western boundary of this landscape abuts the MN/WI border. For the area that is within current DNR protection the full range of detection resources are utilized. This landscape is on the small size coming in at # 12, but is in the exact middle in complexity and risk at #8. Currently, areas in DNR protection in this landscape are covered by CBL.</p> <p>The small amount of DNR protected lands in this landscape can be covered with Dispatch functions from the adjacent FL 15</p> |

Communication & Dispatch Work Group – Final Report

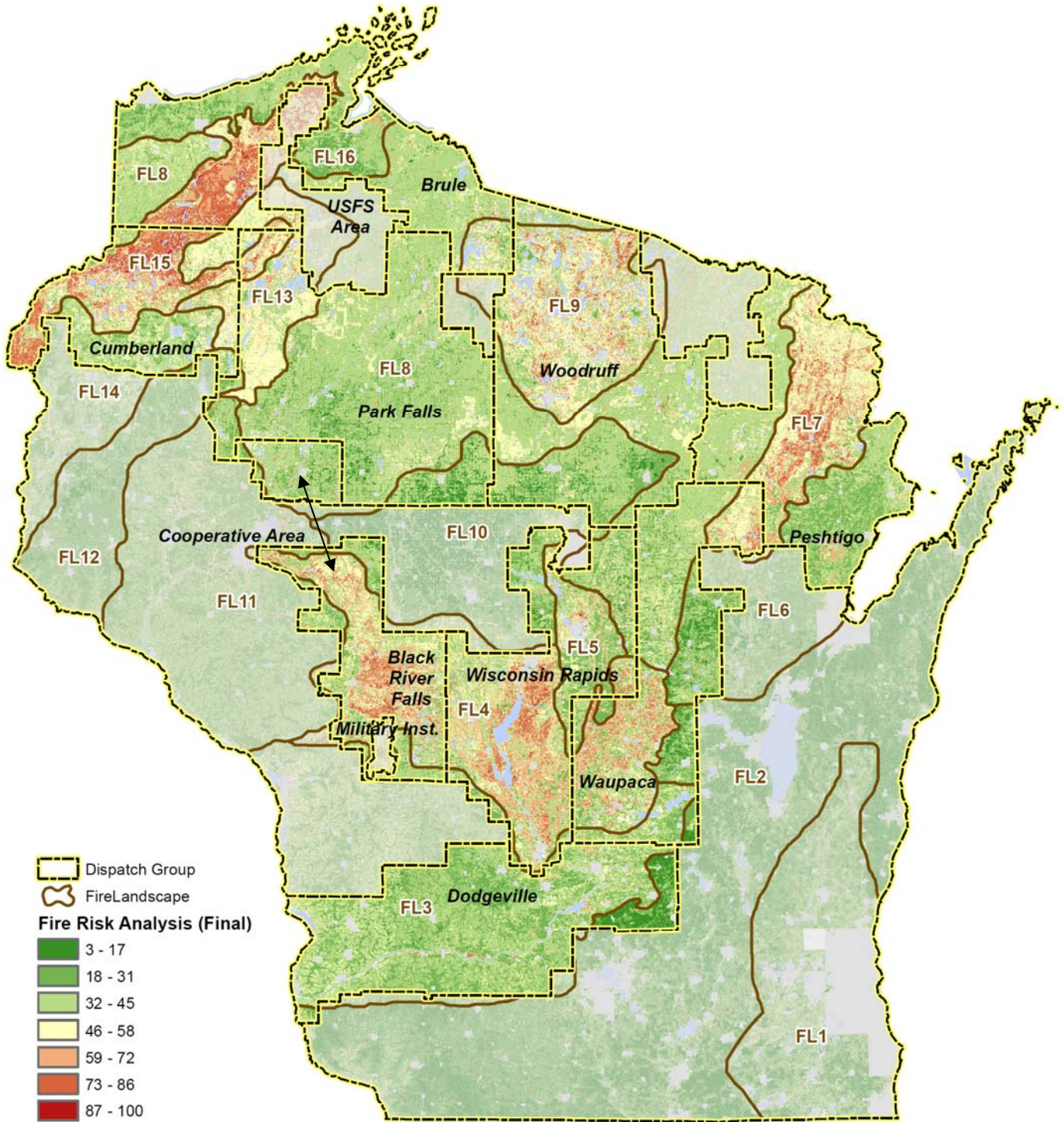
| FL | Dispatch options narrative |
|----|--|
| 15 | <p>The landmass of this landscape is virtually all within current DNR Intensive area (less than 1% in Co-op). The south western boundary of this landscape abuts the MN/WI border This landscape utilizes the full range of detection resources and typically has two aerial suppression resources assigned to it during the spring fire season. It is on the small side geographically coming in at #10, but has the highest risk and complexity ranking in the state. Currently, areas in DNR protection in this landscape are covered by CBL, BRU and a small section of PKF.</p> <p>Due to the complexity and risk of this landscape it warrants a dedicated dispatch center, of its own. However, other factors provide limits on dispatch alternatives. These factors are:</p> <ul style="list-style-type: none"> ■ -The area north of this landscape includes the isolated section of FL 8 and 2/3 of FL 16. North and west of 8 & 16 is the state border or Lake Superior. These two areas do not warrant a dispatch on their own, yet they are under DNR protection and need dispatch support so dispatch support must come from within or from the south or east. ■ The southwestern border of FL 15 is also the WI / MN border. As such there are no dispatch alternatives from the west. ■ To the south are FL 14 and 12 of which only the northern tip of each is under DNR protection and are in need of dispatch support, yet this support must come from the north as the area to the south is entirely Co-op. <p>Putting all of these areas described above (FL 15 & 16, the isolated section of FL 8 and the Protective areas of FL 14 & 12) under a single dispatch center far outstretches sound span of control (currently would be 9 FRUs / 1 dispatch). For this reason and the complex nature of FL 15, it is best suited that 2 dispatch centers support this landscape.</p> |
| 16 | <p>The landmass of this landscape is nearly all within current DNR Intensive area (6% in Co-op). The entire northern boundary of this landscape abuts Lake Superior. This landscape utilizes the full range of detection resources, housing one lookout tower and relying on 4 others in bordering FLs. It is the second smallest FL in the state (#15), and is in the middle of the pack in complexity ranking at #9. Currently, areas in DNR protection in this landscape are covered by BRU.</p> <p>Simply due to its geographical size, this landscape is best supported by adjacent FLs 15 or 8 for dispatch purposes.</p> |

-Current Dispatch Group / FRU Alignment map



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-Current Dispatch Group / Fire Landscape Alignment map

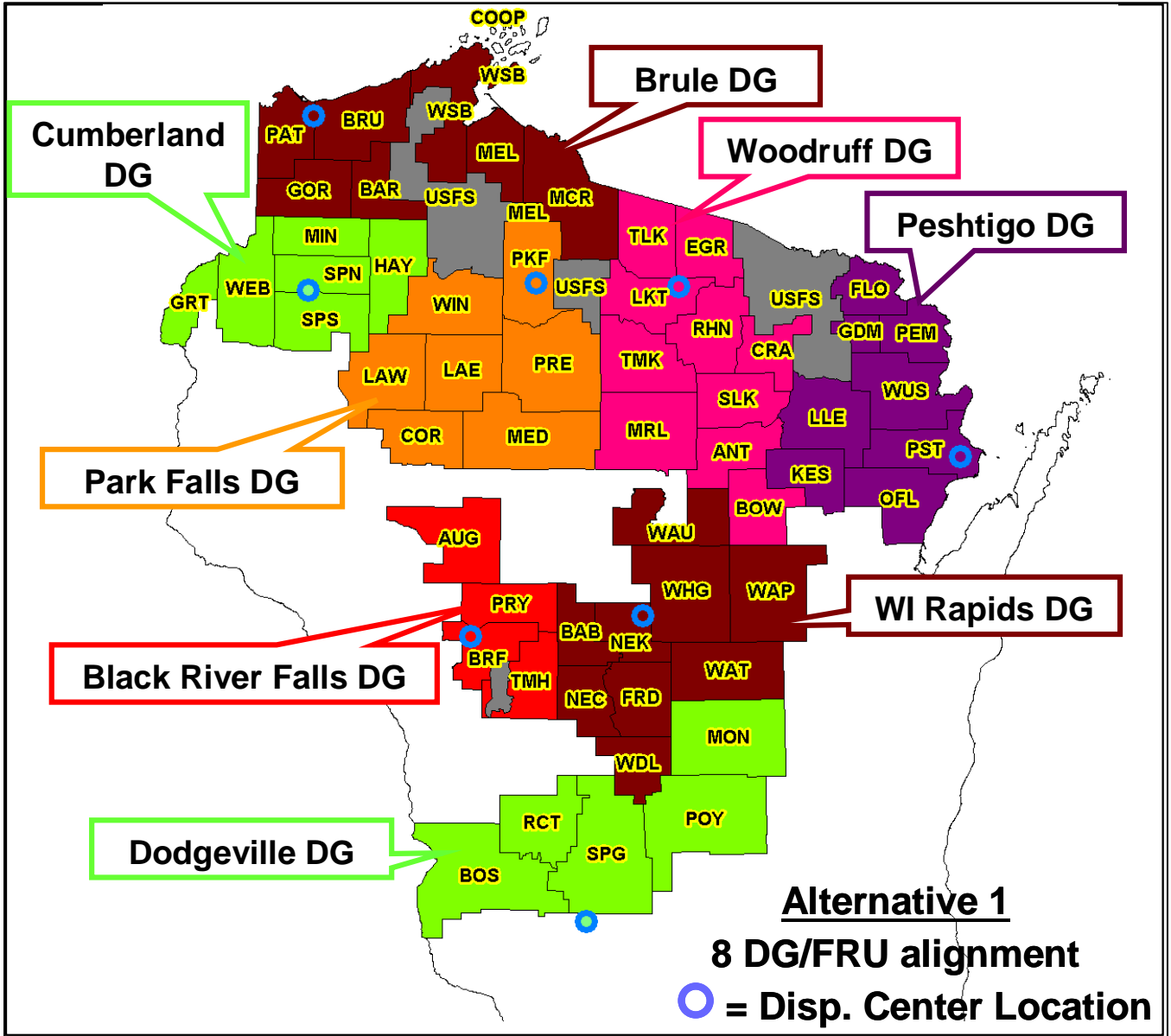


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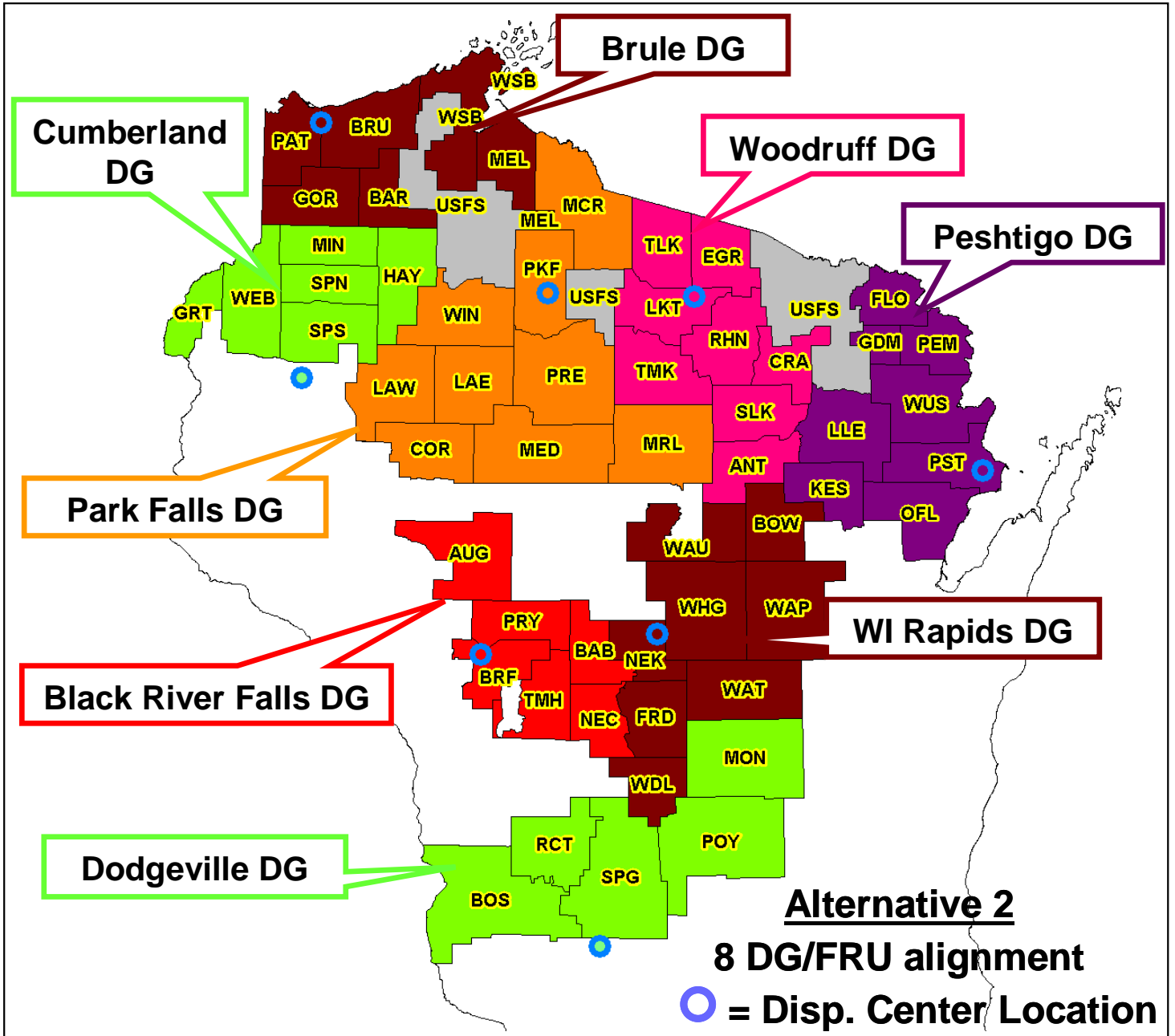
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- Alternative 1 Dispatch Group / FRU alignment map



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- Alternative 2 Dispatch Group / FRU alignment map



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DHFS Emergency On-Scene Cellular Service Enhancement via U. S. Cellular COW / COLT Technology

Brief overview:

- Cellular phone usage is everyday component for communications.
- Cellular service will be used heavily by our Divisions during a deployment, unplanned event, or COOP / COG situation.
- Cellular coverage only supports approximately 15% of customer base.
- WPS (Wireless Priority Service) plans are no guarantee; WPS only allows “front of the line” access to the next open cell. Cellular service will still be overwhelmed.
- U. S. Cellular utilizes COWs (Cell On Wheels) and COLTs (Cell On Light Truck) for planned events to support their marketing efforts. State Fair and SummerFest are examples.
- U. S. Cellular is willing to support DHFS and other State agencies as they respond to unplanned situations.
- U.S. Cellular have these units in locations throughout their coverage area in Wisconsin, these units will support an additional 5,000 to 10,000 users.

Questions to consider:

- Will there be cost involved? If so, will this cost be on-going, “retainer” or other?

Initial inquiries seem to indicate that there would not be a cost to the state but that would have to be verified.

- What other technical issues need to be considered? These units still need a backhaul to the wired phone system at the next closest cell site either via T1 line or microwave link.

Activating microwave link is easier to accomplish than T1 service which is dependant on the local Telco.

- What will the deployment lead time be? RF and microwave (if used) engineering studies need to be done prior to deployment.

The equipment delivery can occur in a couple of hours. Full activation can range from 1 day to 1 month due to outside dependencies.

- If the event is wide spread, what is the U. S. Cellular back up plan?

COWS/COLTS/Staff would be reassigned from other regions and other states as necessary

- How will DHFS be assured of a priority status?

At this point, they would not be. Emergencies do however, take precedence over scheduled events. Any type of agreements would have to be negotiated.

- Coordination needs to be done with the closest E9-1-1 call center. How involved is this?
Can take anywhere from 4 hours to 30 days and will vary from County to County.
- What pandemic planning has USCC done, can they assure a response with 40% of staff out of service?

Staff would be pulled from other regions, and other states.

Moving ahead:

- Should this be pursued from a multiple agency perspective? A multi-state operational communications committee is in process. DOA or WEM would be other good points of contact. The other three state contract cellular providers may have similar programs.

DOA is the contract administrator for the current cellular contract and works closely with the cellular vendors. They are interested in further discussions on this. WEM has not been formally contacted.

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Web Links

OBJ 2

- 2007 Wisconsin Statewide Communications Interoperability Plan:
<http://www.ic.wi.gov/section.asp?linkid=1232&locid=70>
- Key Points About FCC Narrowbanding Requirements:
<http://www.ojp.usdoj.gov/nij/topics/technology/communication/fcc-narrowbanding.htm>
- Homeland Security National Emergency Communications Plan July 2008
http://www.dhs.gov/xlibrary/assets/national_emergency_communications_plan.pdf
- Tactical Interoperable Communications Plan Template:
http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1510_stateregionu_rbanarea.htm
- Wisconsin Interoperable System for Communications:
<http://www.ic.wi.gov/section.asp?linkid=1223&locid=70>

OBJ 6 –

- Mission Critical Solutions - <http://www.mccmaq.com/>

OBJ 8

- GETS: <http://gets.ncs.gov/> to give your phone priority ability to get through busy circuits.
- WPS: <http://wps.ncs.gov/> to provide priority service will cell phone provider
- TSP: <http://tsp.ncs.gov/> to contract with telephone service providers for priority service in
- establishing additional land line telephones or bringing damaged lines back into service.
- NIXLE: <http://www.nixle.com/faqs.html> public safety notifications by text message to cell
- phones and computers in any area you may define.
- WIJUS: http://oja.state.wi.us/section_detail.asp?linkcatid=1321&linkid=708&locid=97 to allow lookup of potential at risk contacts for personnel in the field.
- NWEM: <http://www.disasterhelp.gov/disastermanagement/dmistools/nwem.shtm> Non Weather Emergency Message to send to all weather radios in a to be defined area.
- Wilson Electric: <http://www.wilsonelectronics.com/////Products.php?Type=B> In building
- cellular amplifiers vendor

Reference documents:

Electronic copies of all Reference documents are located on the central fire drive:
\\Centralfire2010_Fire_Program_Assessment\Work_Groups\Communications-Dispatch_WG\C_D_final_report\Reference_documents

OBJ 6

- “[Radio purchasing replacement schedule.pdf](#)” Mission Critical Solutions; *Smart Radio Purchases* article

OBJ 8

- “[inBuilding cell amplifier 801262.pdf](#)” Wireless Cellular Amplifier informational brochure from Wilson electronics.
- “[ICP data collection](#)” excel spread sheet located in Communication-Dispatch final report file. Data regarding each dispatch group IMT communication supplies and advanced ICP location capabilities
- “[Colt deployment.doc](#)” U.S. Cellular document describing COLT deployment process

-End of report-

WHEW!!