



REVIEW OF NWCG WORKFORCE DEVELOPMENT INITIATIVES FOR PRESCRIBED FIRE/FUELS SPECIALISTS AND RECOMMENDATIONS FOR FUTURE ACTION

Report to the NWCG Fuels Management Committee

By

The Fuels Workforce Development Task Team:

Task Team Deliverable #2 OF 3

April 3, 2014

Table of Contents

Executive Summary:..... 1

Background: 2

Task Team Process: 3

Task Team Schedule of Activities:..... 4

Workshop Findings - October 2013 5

 Workshop Discussion – Workforce Trends and Demographics..... 5

 Workshop Discussion - Communication 7

 Workshop - Conclusion 8

Recommendations: 8

Next Steps: 12

APPENDIX A: 2014 FUELS WORKFORCE DEVELOPMENT TASK TEAM ACTION PLAN..... 13

Executive Summary:

Early in 2003, the National Interagency Fuels Coordinating Group (NIFCG), a working group within the parent National Wildfire Coordinating Group (NWCG), identified the need for a dedicated rapid-paced fuels and prescribed fire specialist development program in order to keep up with the increased demand for the national interagency fuels program. The development effort needed to be tied to the Interagency Fire Program Management Qualifications Standards & Guide (IFPM) which described the competencies for the Prescribed Fire/Fuels Specialist positions. The result of this effort was the Prescribed Fire/Fuels Specialist Development Project Report completed in 2005, known by the more familiar name of the “Range Report”. This report is described as a recipe for how to develop a Fuels Specialist from entry level development through Journeyman and Expert over the course of a career.

In 2007, the NIFCG commissioned a second study to build on the Range report aimed at the question of how do we build a workforce of Prescribed Fire/Fuels Specialists? A contractor was selected to conduct an assessment of the interagency fuels management workforce, make recommendations on aligning the fuels management training academies, and develop a career path framework for the fuels management workforce. The resulting document called the “NWCG Fuels Management Workforce Development Plan” was completed in 2008 and is known as “The Bonner Report” after the lead author. This report made a number of recommendations for management action to improve the overall training system with the goal of producing the quality and quantity of Prescribed Fire/Fuels Specialists needed to meet interagency demands.

In 2012, the NWCG Fuels Management Committee, the successor to the NIFCG, established an interagency task team to evaluate the progress made in implementing those actions proposed in the 2005 & 2008 reports and make recommendations for continued action in the area of workforce development for fuels and prescribed fire specialists. The status of those actions proposed in earlier reports has been provided in a separate report from the Task Team (March 21, 2014). This report represents completion of the second task which is to make recommendations for continued and future action related to workforce development in prescribed fire and fuels.

The Task Team recommends a number of actions all of which fall within three broad categories. The first is to develop a Center of Practice for fuels and fire science. The Task Team proposes a Center of Practice be established within the National Fire Training Center’s organization that would identify and organize fuels related information, assist in training development and delivery, and serve as a focal point for practicing fire and fuels managers seeking fuels management and fire ecology related information.

The second recommendation is to explore the idea of professional certification programs as a means of advancing the fuels management profession. The potential benefit of a certification program is that it may allow the federal agencies to better communicate to internal and external parties an acceptable minimum standard for the fuels profession. This could provide individuals a clear understanding of what skills they need to develop and informs internal and external training programs on expectations for performance so that educational and training programs can be designed to teach to those standards, eliminating confusion and inefficiencies in the various programs. The Task Team proposes to do more research into the various forms of certification programs along with advantages and disadvantages of formally recognizing some form of professional fuels certification and report back to the FMC with a more refined recommendation.

The third and final recommendation is to take action to develop training materials aimed specifically at several of the most troublesome and persistent knowledge gaps in the fuels workforce. Previous reports as well as the Task Team identified a number of recurring knowledge gaps that are not addressed by our current training programs. The Task Team does not propose to address all, rather to take positive steps to address at least one or two which have been the most persistently troublesome in recent years. In addition, the Task Team will endeavor to initiate a framework for individual skills progression identifying skills that are necessary to perform at various stages in one's fuels career. This could aid as a tool for monitoring recurring as well as emerging gaps in our workforce development programs.

Background:

Following the South Canyon Fire in 1994, an interagency team was formed to investigate the fatalities and contributing factors. The subsequent 1995 Federal Wildland Fire Policy and Program Review, signed by both Secretaries of Agriculture and the Interior, directed Federal wildland fire agencies to establish fire management qualifications standards to improve firefighter safety and increase professionalism in fire management programs. This included establishment of standards for Prescribed Fire/Fuels Specialists.

Patterns of increasingly severe wildfires and resource loss lead to rapid growth in public and political demand for more effective and proactive management of fuels. This pressure culminated with the implementation of the National Fire Plan in the year 2000 which now forms the basis for our present day hazardous fuels programs. The purpose of fuels management programs within the Department of the Interior (DOI) and the US Forest Service (USFS) is to reduce hazardous fuels, reduce risks to communities, and improve the overall condition of public lands by promoting the role of wildland fire as an essential ecological process.

Significant increases in funding and expected outputs which followed the National Fire Plan found the existing workforce and administrative processes of the agencies somewhat unprepared. For much of the twentieth century, fuels management activities had been conducted as a collateral function of a primarily suppression based fire management organization or as a collateral function of other program areas (range, timber, wildlife, biology, etc.). The emergence of fuels management and fire ecology as a professional discipline that placed fire and fuels management in a leadership rather than support role in the federal land management agencies suggested a need for change in the skill set sought for those positions and in how the agencies recruit, train, and develop the workforce that will assume this new role.

Two connected efforts in 2005 (Range Report) and 2008 (Bonner Report), sought to analyze fuels management programs and provide tools and suggestions for increased efficiency and effectiveness. Collectively, the two reports suggested there was a need for a more deliberate effort among land management agencies regarding recruitment, training, mentoring, and providing experience opportunities that support professional development for the fuels management workforce. After the release of the Bonner report in 2008, the NWCG Fuels Committee (FMC) began to promote action upon many of the recommendations generated.

In 2012, the NWCG Fuels Management Committee established an interagency Task Team to evaluate fuels workforce development efforts and report on progress since 2008. Specifically, the FMC was

interested in progress on the action plan from the original Bonner report (2008) and requested recommendations to update the action plan to ensure continued improvement in fuels workforce development. A summary excerpt from the written Tasking from FMC to the Task Team and the three Deliverables expected from the Team are found below:

Task Team Goal:

“The overarching goal of this continuing initiative by the FMC is to make it easier for any employee who has fuels management responsibilities to understand what competencies are needed to perform in their current or desired job and where to go in order to gain the requisite knowledge and skills. The end-state is seen as a workforce with a higher overall skill-set and a reduction in the time necessary to reach competency due to a better defined and more focused development program.”

Deliverables:

1. Written report to FMC on the status of the Action Plan from the 2008 NWCG Fuels Management Workforce Development Plan. Proposed Target Date: Spring 2014
2. Written report to FMC with recommendations for action by NWCG partner agencies to advance fuels workforce development having considered 2005 NWCG Report (Range), 2008 NWCG Report (Bonner) along with any other relevant information you may find. Proposed Target Date: Spring 2014
3. Power Point presentation and 1 page Briefing Paper to be used in communicating the findings and recommendations for management action to leadership. Final Deliverables Due: Fall/Winter 2014

A separate report submitted to the FMC dated March 21, 2014 provides a status report on progress made since the 2008 action plan was approved and completes Deliverable #1 above. This report represents fulfillment of Deliverable #2 which was to provide FMC with recommendations for continuing and future actions to ensure continued improvement in fuels workforce development.

Task Team Process:

After the initial tasking document was approved by the FMC to create the Task Team, members were sought out and the team was formed in March 2013. The following individuals make up the core of the Fuels Workforce Development Task Team.

Frankie Romero, FS - NIFC (FMC Liaison & Team Chair)
Sandy Gregory, BLM - Nevada State Office (Fuels/Rx SME)
Marty Cassellius, BIA - Midwest Region (Fuels/Rx SME)
Tessa Nicolet, FS – Southwest Region (Fuels/Fire Ecology SME)
Mike Dueitt, FWS – PFTC (Fuels/Rx/NAFRI SME)
Jim Shultz, NPS – NIFC (Fuels/Rx/Training SME)
Russ Babiak, FWS – NIFC (Training/Qualifications SME)

Additional Support to the Core Team was Provided By:

Kim Ernstrom, NPS - WFRD&A (Support/NIFTT SME)
Alex Viktora, FS – NAFRI/LLC (Support/NAFRI SME)

Task Team Schedule of Activities:

- * May – June, 2013: Advisory Group Weekly Webinar Series
- * July – September, 2013: Monthly Calls
- * October, 2013: Task Team Workshop, Boise, ID
- * January, 2014: Present Initial findings/recommendations to FMC
- * February, 2014: 2nd Workshop to refine recommendations and Create Action Plan
- * March, 2014: Present final recommendations and Action Plan to FMC

In addition to the core Task Team members, an advisory group was also identified. These were individuals or groups who the FMC believed had pertinent knowledge and insight to inform the Task Team on current and future issues related to fuels workforce development. The Task Team reviewed this list and provided additional input and suggestions for seeking out persons or entities that could provide such insight to this process.

The Task Teams work began in May 2013 with initiation of a webinar series where advisory group members presented information on a weekly basis on a variety of related topics. The advisory group consisted of both federal and non-governmental experts who presented information on the following topics:

Table 1. Webinar Series Participants

Expertise, Topic Area(s) for Presentation	Name	Title
Current & Expected Initiatives in the NWCG Training Branch/Wildland Fire Institute Related to Fuels Workforce Development	Mark Cantrell	Instructional Systems Specialist - NWCG
Wildland Fire Research Development and Applications - Current Status of Fuels & Fire Ecology Tools and Expected Future of Fuels Technology Transfer & Support	Kim Ernstrom	Fuels Analyst - WFRD&A
Association for Fire Ecology and The Role of Academia in Educating Fuels Management Professionals - Current Status and Future Outlook	Andi Thode	Associate Professor - N. AZ Univ.
Social Science & Other Research Pertinent To Training and Development for Fuels & Prescribed Fire Specialists	Andi Thode	Associate Professor - N. AZ Univ.
How The Nature Conservancy recruits, trains and develops fuels & prescribed fire specialists	Matt Jackson	Director of Operations - TNC
Current Status and Expected Future of Advanced Fire Behavior Modeling Within NWCG Training and As it Pertains to Fuels Management	Laurie Kurth Tammy Parkinson	Fire Ecologist - USFS WO, FAM Fire Analyst, WFMRD&A
USDA/DOI Qualifications for Fuels/Prescribed Fire Positions: Current and Future Status of IFPM & FS-FPM	Evans Kuo Kevin Conn	Training/Qual. Specialist - USFS, NIFC Training/Qual. Specialist - USFWS, NIFC
Technical Fire Management - What Can We Learn About Providing Effective Training to Fuels Specialists from the TFM Experience	Reid Kenady	Washington Institute
Interagency Fuel Treatment Decision Support System - IFTDSS	Kim Ernstrom	Fire Analyst - WFMRD&A

These webinar series were recorded and posted on a Wildland Fire Lessons Learned Community page so that Task Team members who could not attend could catch up with the material at a later date.

July through September saw limited progress other than monthly conference calls to share information and to coordinate schedules for planned workshop after things calmed down with the western fire season. The lapse in federal funding provided an additional challenge in the first half of October, but all Core Team Members remained committed and met in Boise, ID for a week-long workshop to delve into their task. The following months saw the team develop initial draft reports and presentations to share with the FMC.

Workshop Findings - October 2013

The Fuels Workforce Development Task Team gathered research on contemporary actions related to fuels workforce development and convened a strategic meeting in the fall of 2013. During the meeting, the Task Team triangulated on multiple key findings about the current fuels workforce and associated efforts and found several broad themes:

- * Lack of standardized fundamental fire behavior modeling in current training system
- * Poor progress to date in addressing identified skill gaps and no mechanism to monitor skill gaps that may change over time – not part of the system design
- * No established system for gaining or maintaining currency in emerging technology and information on fuels management
- * A proliferation of tools & information that lacks organization with no "Go To" center for fuels management information
- * Independently working and often disconnected entities with interest and capabilities in fuels management add to the confusion

Workshop Discussion – Workforce Trends and Demographics

Each participating agency gathered demographic data on their current fuels workforce to share at the workshop. Information such as who is doing the work, what positions/series are they in, what grade levels, where are they recruited from, how many of them do you employ, etc.

Data was inconsistent between agencies so comparative or combined analysis was not possible. While data analysis is not possible, the Task Team does offer the following generalities for consideration.

- 1) A very rough estimate is there are around 1,000-1,500 employees of the 5 federal agencies that have fuels related work as a major component of their position – some hold the title of Fuels Specialist but many others do not.
- 2) By and large, the majority of practicing fuels specialists or personnel who engage in fuels management related work, come from a technician background, primarily from a primary fire background. The typical employee from a technician background has valuable field experience and qualifications for implementing projects, particularly prescribed fire. The one drawback however, is the majority lack the education necessary to perform the professional elements of fuels specialist work including application of fire ecology/science to develop and analyze the ecological and long-term fire behavior implications of alternative treatment methods, advanced fire behavior modeling and GIS skills, and communication skills to write effective specialist reports and present information to a variety of audiences.

- 3) A secondary entry path to a fuels management position within the federal government is those employees who have come from colleges and universities with degree programs in fire management, fire ecology, and fire science or other professionals such as foresters or biologists. This group of individuals has a varied and often extensive educational background with sound analytical and communication skills. While a few from this group have managed to accumulate field experience and attain qualifications to oversee field activities including prescribed burning, most have very limited field experience or prescribed fire/suppression qualifications which often disqualifies them from consideration for many mid-level fire or fuels positions in the federal agencies. Most of those with both the education and qualifications expected of a full-performance fuels specialist did so in an era before current IFPM/FS-FPM or 401/301/462 rules were in place.

The challenge identified by the Task Team is that a “one-size fits all” approach does not fit the reality of our present situation. Both of these employee pools are valuable sources of skilled employees, yet each of these two groups must develop what the other group has. This means that two very distinct and separate development paths are required even though the overall goal is to develop all these employees to eventually possess the complete skill set which includes practical field experience and qualifications to conduct prescribed fire and other work in the field as well as the professional and analytical skills necessary to utilize science and perform quality planning and analysis while communicating effectively with internal and external audiences as a program leader and subject matter expert.

In terms of investment by the agencies, it is presumed that it takes roughly the same amount of time to move either a technician or professional through the qualifications system to meet qualification standards, so the investment in time and money to get an individual qualified as a burn boss or similar fireline qualification is presumed to be roughly the same no matter whether the employee's career path originates from the technician or the professional track. The difference in cost to the agencies has and may continue to be in the development of technicians who require additional training from accredited institutions in order to qualify for professional series positions as well as to perform the scientific, analytical, and professional communication functions expected of these positions. Programs that have been developed to meet this need have had varied success (TFM for example) and the return on investment for the agencies appears to be mixed.

Another challenge are the strict rules put in place by OPM and the agency Human Resources shops that make conversion from a technician series position to a professional series position particularly difficult. These rules are largely outside of the land management agencies' purview to change thus we must design our recruitment strategies and career paths to work within the existing OPM framework.

It is the Task Team's thought that a wholesale change to recruit predominantly out of one or the other candidate pool is not a particularly good idea. Technicians bring valuable field experience and provide a hedge against dependence on university programs which may be useful in the future if complicating factors like rising cost of college education or other unforeseen problem with reliability of supply of fire/fuels professionals from the university systems arise. On the other hand, an increase in the current number of college educated professionals in the fuels workforce is likely to result in a higher overall skill set related to science, math, and communications and a reduction in the costs that the agencies must bear to develop those skills in mid-career employees. With a better balance of recruiting between technicians already employed by the agencies and professionals from within the agencies or directly from university programs, we should see a more reliable supply of employees with both professional

and technical skills and will spend less time and money on training employees in areas where the agencies are not subject matter experts (e.g. writing, public speaking, statistics, mathematical modeling, analysis theory, etc.) allowing us to invest more of our time and money in those areas for which we are clearly the subject matter experts (prescribed fire application & planning, fuels treatment design, NEPA process, fire behavior prediction, etc.).

Another barrier is found in the culture and tradition of the agencies that has inadvertently created a number of disincentives for individuals who may have an interest in a fire management career that emphasizes fuels management. The traditional fire organization where fuels management was sub-component of the fire suppression organization in many instances no longer fits the demands and expectations of the current fire and fuels management program. Many organizations continue to organize with a Fire Management Officer who oversees an overall fire program and seek to meet the land management planning work demands with a subordinate Fuels Specialist. In many cases, the FMO is an expert in wildfire response but does not have the background or knowledge necessary to mentor or develop the Fuels Specialist in the area of planning or analysis. This is both a disincentive and barrier to development for Fuel Specialists. This model also has the disincentive of putting the subordinate fuels specialist in a position of inequality when dealing with program leaders from other disciplines on interdisciplinary teams. The Fuels Specialist is often the team leader for hazard fuels projects, yet they are often lower graded than their interdisciplinary team peers not because of their expertise or training, but rather for no other reason than the history and tradition of our fire management organizations.

In terms of succession planning for the fire organization, the qualification standards aimed at enforcing operational excellence has created a situation that inadvertently selects against employees with valuable skills in science, technology, planning, and communications as many of these employees have foregone the opportunity to pursue operational qualifications in pursuit of their professional career aspirations. In the short-term these standards successfully maintain a high-performing incident response organization, however over the long-term, these same standards appear to serve as a barrier to advancement for those employees who possess arguably the strongest organizational and program management skills. This condition that disproportionately selects against employees from the professional career tracks seeking advancement puts our organizations at a disadvantage in decades to come when filling future upper management positions. Candidates will be sought with proven aptitude in communications, planning, and competence with technology and science, vital skills for successful performance at the regional and national office levels of the fire organization, yet many of those candidates that may have excelled in those skill areas were selected against during the earliest parts of their careers.

Workshop Discussion - Communication

Communication related to workforce development in fuels and prescribed fire has been mostly agency specific with very little evident on an interagency basis. Individual agencies provide various levels of information to external and internal audiences, but there has not been any coordinated interagency effort to communicate to the larger fire management workforce regarding what the possible career options and pathways may be for individuals interested in pursuing a career in fuels management.

The interagency fuels management community lacks an effective means to communicate what is going on within the area of workforce development within the agencies. Case in point, the Range report was a significant undertaking and continues to have relevant information, however we are hard pressed to find that it has had any impact on workforce development at the field level. Once these initiatives are revealed, they seem to quickly die out which may be an issue of our culture and communication habits.

The NWCG Interagency Fire Planning Committee (IFPC) is developing a parallel effort to the FMC and this Task Team; there are also parallel or related efforts within the NWCG Training Branch as well as within the Fire Management, Training and HR departments of the individual agencies. Any recommendations or ideals created as a part of this effort must be quickly disseminated to these various entities to enhance communication and reduce duplication of effort or incompatible initiatives.

Workshop - Conclusion

At the conclusion of the workshop, the Task Team consolidated an updated list of workforce related issues and identified potential solutions. The majority of the actionable items pointed to the need for a consistent effort by a single entity focused on fuels workforce development. An outline of a final report was produced and a briefing for the Fuels Management Committee took place in January, 2014. The FMC provided the Task Team with feedback on the draft report including the need to develop a more defined action plan. The Task Team reconvened in February, 2014 to refine the recommendations and complete this report. These recommended actions are discussed in detail below.

Recommendations:

At the conclusion of the workshop, the Task Team had compiled a considerable list of actionable items to recommend that the FMC pursue. In reviewing the list, it was determined that these individual actions generally fit within three overarching categories:

- 1) Develop a Center of Practice for Fuels and Fire Science within the Federal Agencies Training/Workforce Development constructs;***
- 2) Explore the idea of professional certification programs as a means of advancing fuels management as a profession; and***
- 3) Develop courses, workshops, web content, or similar to address a number of key workforce skill and training gaps identified in the Range report and again by this Task Team.***

Appendix A of this report provides a detailed Action Plan for pursuit of these three recommendations. These actions include a series of sub-activities and identify responsible parties, dependencies, expected results, and dates for initiation. The intention is to utilize this action plan as a tracking mechanism to monitor the progress in achieving those activities deemed worth pursuit by FMC, the NWCG Executive Committee and the Directors and Leadership of each of the participating agencies.

Recommendation 1: Develop a Center of Practice for Fuels Management and Fire Science

The central problem for today's Fuels Specialists does not appear to be the lack of tools or information; rather it is the explosion of knowledge, science, and tools that has occurred over the past several decades and the lack of any coherent means to sort through the clutter. We need a central location to get entry level fuels specialists started and to sort information to make it accessible for experienced Fuels Specialists. Right now the proliferation of tools and information too often proves to be overwhelming and considerable time is expended simply searching for information and tools rather than using these resources to help in our planning efforts. We need to build into our organization a focal area where our employees seeking fuels or prescribed fire related information can go to find reliable and consistent information.

The Task Team proposes establishing within the NFTC structure a focal area for the professional practice of Fuels Management & Fire Science. Some pertinent courses are already part of the NAFRI course structure. The Bonner Report recommended that the Southwest Fire Use Training Academy be redesigned to reduce the overlap and redundancy with the deliverables that the Prescribed Fire Training Center provided, and to bring FUTA, PFTC, and the Wildland Fire Apprentice Program all under the NAFRI umbrella to improve coordination and effectiveness of each program. This was accomplished as all three of these entities currently reside under the NAFRI structure, however the FUTA mission was never fully solidified and remained undefined despite the positions and funding to support them having been maintained. The NFTC is in the process of removing reference to FUTA as a viable entity and plans to absorb those positions into the NAFRI structure. The Task Team proposes that the NAFRI structure be modified to create this focal area with their full mission to be defined by a governing body such as a steering committee or board, but their initial charge to include those items on this list.

- Act as a Hub for Fuels and Fire Science Information
 - Coordinate with Other Entities To Organize Information & Tools Already Available That Are Useful To Practicing Fuels Specialists Working on Federal or Tribal Lands
- Develop & Maintain Fuels Resource Web Portal for Fuels Related Science, Tools, & Professional Development Information To Provide a Forum For Sharing Best Practices and Emerging Technologies
- Coordinate National-Level Content Delivery (Workshops, Training Courses, etc.)
 - Similar to current course coordination role; focus on new content aimed at filling identified skill gaps
- Clarify relationships /roles/responsibilities among various entities with Fuels/Fire Science Expertise

Recommendation 2: Explore Opportunities for Professional Certification Program(s)

In the broader context, professional certification programs offer a number of potential benefits including improved skills for entry level employees who can demonstrate a minimum level of competence to gain certification, promoting sustained quality through continued education that maintains competence in rapidly changing fields, and a means for communicating a minimum standard of performance to consumers (employers) as well as producers (universities, schools, training centers, etc.) There are a number of examples of professional certification programs already in existence, some of which are related to the fuels specialist skill-set. Two examples include the program and individual certifications offered by the Association of Fire Ecology; the other is the Silvicultural Certification that many Foresters in various federal agencies undergo.

To be clear, this is not an incident qualification being considered. To the contrary, this has nothing to do with incident support and is focused entirely on an individuals skill set as it relates to their knowledge of fire science, fire/fuels analysis, and fire/fuels planning that occurs outside of any incident response duties. Basically, the certification to be considered is solely related to the practice of fuels management and competence in fire science/ecology and has nothing to do with any roles related to wildfire response.

The actual mechanisms and performance areas and administrative forms of such certification programs will need to be explored and examined in more detail. An example of one initiative already in progress is that currently managed by the Association of Fire Ecology. Other options or areas where certification programs may be useful are in areas such as 1) BehavePlus, 2) Beginning and Intermediate Fuels Analysis with IFTDSS, 3) Advanced Geospatial Modeling Techniques for Fuels Analysis, 4) Fire/Fuels/Air Quality Specialist, etc. Another important feature is that many certification programs have a continuing education requirement whereby practitioners must keep up with the latest developments as part of maintaining their certification. This has been a frequently lamented issue among many FBAN's, LTANS, and Fuels Specialists who after receiving initial training on tools and technologies often find that their skill set is no longer applying the best available science after several years as new information and tools become available.

In particular, such a program would provide an avenue by which universities can tailor their curricula to meet the needs of the interagency community. This would hopefully result in the agencies or certifying body merely having to operate the certification program (testing & maintenance of records) to certify that the individual has demonstrated the skill(s) and the training itself can be accomplished through any variety of internal or external means and can be tailored to the individual student rather than a one-size-fits-all approach to training. If universities teach the skills we say we need, then the result should be a win-win for the agencies as well as for those universities that teach to those standards.

We do not necessarily propose that professional certification be used to restrict anyone's ability to perform a given task or hold a particular job; however this is one option that many professions utilize such as engineers, medical professionals, etc. The most applicable example related to fuels management is found in the requirement by Silviculturists in some agencies that must complete a professional certification program as a condition of their continued employment. The advantages and disadvantages of using professional certification programs in this manner need to be explored further and the Task Team neither promotes nor advises against such use of a program of certification at this time.

At present, there is not any formal recognition by the 5 federal land management agencies as to the value or distinction offered by such certification. The Task Team proposes that it conduct a more in-depth look at the potential benefits as well as the options for what organization might have the capacity to establish and maintain such a program, the anticipated costs to the agencies to participate, and the potential forms that such a program might take and report back to the FMC with findings and a more definitive recommendation as a result of this exploratory work.

Recommendation 3: Focus Development of New Training to Address Known Gaps in Workforce Skills and Knowledge

In 2005 the Range Report identified a number of skills and knowledge gaps for fuels management specialists. As identified by the Task Team in 2014, these gaps have not changed and must be addressed;

- * Basic GIS,
- * Fire Behavior & Fuels Treatment Modeling,

- * Smoke Modeling,
- * Communication Skills - public speaking/technical writing,
- * Basic Fire Ecology and How to Find and Incorporate the Best Available Science
- * NEPA

The following are some observations that support the need to develop training to address these skill and knowledge gaps.

- No formal course in Basic Fire Behavior Modeling – specifically using BehavePlus or FlamMap. BehavePlus is currently the most widely used fire behavior model and proficiency in the use of BehavePlus is listed as a prerequisite for a number of NWCG courses, yet we do not have a formal training course for students to take in order to gain and demonstrate their competence in its use. Course cadres for classes where BehavePlus is used consistently provide feedback that students are ill prepared to utilize the tool. Numerous escape fire reviews reveal that the BehavePlus model is widely used yet the results are often misinterpreted or under-utilized during plan development because of lack of knowledge of the systems capabilities or misunderstanding of the assumptions and limitations of the underlying models. FlamMap was developed to spatially display fire behavior outputs and assist in planning fuel treatment placement; however no formal training has been developed to demonstrate in detail the utility of this tool in the fuels management planning process.
- The S495 Geospatial Analysis course was developed to replace courses that taught skills in RERAP (S492) and FARSITE (S493). It focuses on new fire behavior models that have since replaced these programs (FSPro and Near Term Fire Behavior in WFDSS respectively) This course has had to restrict its focus to the training of LTAN/GSAN due to capacity issues, however this skill set is still needed by fuels specialists who are contemplating various treatments to reduce risk through various fuels treatment options. A course that presents the tools and capabilities found in the S495 course but designed specifically for the fuels/Rx fire analyst in mind is needed to provide this audience the skills they need to perform the work required of them as fuels specialists.
- As a member of an ID Team, the fuels specialist’s key role is to write the fire/fuels and often the air quality section for a NEPA analysis. There have been some regional examples of courses that provide employees with information that will help them redeem this duty, however these have been inconsistent and seldom replicated. A course that provides specialists with some basic information on how to approach such analysis and best practices for producing effective specialist reports would be of great value to the fuels & fire community.
- Smoke modeling is often required to meet regulatory requirements and a variety of tools are available. There are however no formal courses that instruct students how to use the specific models or what the strengths and limitations of each are. NWCG training focuses on understanding of the Clean Air Act and the National Ambient Air Quality Standards and talks

some about the use of some tools, but does not go into enough depth to provide students with practical skills for performing smoke/air quality analysis.

The Task Team recommends that the following actions be taken to reinvigorate progress in addressing known training gaps in our workforce:

- 1) Address the deficiency in basic level fire behavior modeling
 - a. FMC to bring the issue to NWCG Training Committee and Fire Behavior Subcommittee requesting formal course be developed, probably around the use of the BehavePlus family of models, and make the course required for those courses that currently have prerequisite language such as “Proficient in the use of BehavePlus”, or “Proficiency using the latest computerized Fire Modeling System is required.”
- 2) Explore options for adapting the S495 Geospatial Fire Analysis, Interpretation, and Applications course or similar to create a fuels oriented course emphasizing advanced analysis techniques and theories to perform fuels related analysis and project design.
- 3) Attempt to define a logical progression of skills from entry level to expert for fuels management specific training and develop a timeline/trajectory for individuals seeking to advance their skills. Such an exercise would also consider identified gaps in current training and provide recommendations for what training could alleviate these gaps and where on a career continuum such training would be most beneficial.

Next Steps:

The Task Team presents these recommendations to the FMC in partial fulfillment of the January 2013 Tasking. The FMC will provide direction to the Task Team as to their desire to modify and eventually promote these findings and recommendations with other audiences. In particular, it is the expectation that these recommendations will be presented to the NWCG Executive Board for review and approval of any subsequent actions. The Task Team stands ready to act on those activities as described in this document and to support activities as described in the original Tasking until such time as the FMC finalizes and terminates the Tasking.

APPENDIX A: 2014 FUELS WORKFORCE DEVELOPMENT TASK TEAM ACTION PLAN

Action / Intervention	Responsibility	Dependencies	Expected Result	Start	Status
I. Establish Center of Practice for Fuels Management & Fire Ecology					
1. Present Proposal to Establish a Center of Practice to National Fire Training Center Director, NWCG Training Committee, and NWCG Executive Board to seek buy-in & support	NWCG Fuels Management Committee		Coordinated Support for Establishment of a Center of Practice	Spring 2014	Ongoing – presentation to NWCG Executive Board in April. Task Team to Develop one page briefing for wider distribution and communication
2. Enact Change within NFTC/NAFRI structure to create the Center by engaging staff formerly associated with the Fire Use Training Academy	USFS Assistant Director – Workforce Development, NFTC Director	#1 Above Needs Support from NWCG Executive Board & National Fire Directors from participating agencies	Creation of a Center of Practice for Fuels, Fire Science & Ecology	Fall 2014	
3. Establish presence with information sources – Initiate contact with entities to help define the role and responsibility each has within the fuels management & fire ecology applications and identify the Center as the place to go if you want to get your information out to the practitioners in the field	Program/Center Manager with support from NWCG Fuels Management Committee, WFRD&A, and NFTC Director	#2 Above	Basic network of resources with information to share in the fuels/fire ecology domain	Fall/Winter 2014	
4. Develop and Maintain a Fuels & Fire Ecology Resources Web Portal for Federal Agency Related Science, Tools, & Professional Development Information – Organize information and tools already available	Program/Center Manager – WFMIRDA – Fire Planning Committee – Fuels Committee (to become responsibility of the Fuels Center)	#2 Above	A resource to help employees find information related to the practice of fuels management, fire science, ecology, and fire planning	Fall/Winter 2014	In progress; FMC & IFPC started work on initial prototype with support from WFRD&A

<p>5. Establish Steering Committee for assisting Center in annual priority setting for program of work</p>	<p>NWCG Fuels Management Committee in Coordination with Training Committee</p>	<p>#2 Above</p>	<p>An interagency group that can help the Center define its program of work and promote the Center to internal and external audiences</p>	<p>Winter 2014/15</p>	
<p>6. Coordinate with NAFRI staff to assist in delivery of one or more advanced fuels/fire ecology training sessions</p>	<p>NFTC Director & Program/Center Manager</p>	<p>#2 Above and Capabilities/Needs of NAFRI staff for support of courses such as Rx510, M-580, FML, etc.</p>	<p>Establish relationship within NAFRI and role for the Center in supporting training delivery</p>	<p>Winter 2014/15</p>	
<p>7. Work with Lessons Learned Center to develop & maintain fuels learning network or similar forum for sharing best practices and emerging technologies in fuels management</p>	<p>Program/Center Manager</p>	<p>#2 Above</p>	<p>A resource to help managers share information related to the practice of fuels management</p>	<p>Spring 2015</p>	

8. Establish presence with practitioners in the fire, fuels and fire ecology community	Program/Center Manager with support from NWCG Fuels Management Committee, NFTC Director, and Leadership for Participating Agencies	#2 Above	Establish a connection between practicing professionals and the Center as a resource for finding information related to fuels management and fire ecology/science	Spring 2015	
9. Work with an SME group that is developing new course addressing a known skill gap (see Item III. below) and assist them in developing and delivering content through established training delivery avenues such as NWCG Training, NAFRI, WFRD&A, etc.	Program/Center Manager	#2 Above and pursuit of Recommendation # III. Below	Develop relationships between the Center and entities such as NAFRI, NWCG, WFRD&A etc. and establish a role for the Center in supporting training development and technology transfer	Fall 2015	
II. Explore Opportunities Related to Professional Certification Program(s)					
1. FWDTT deliver final recommendation for Professional Certification Program(s) to FMC (see sub-steps below)	FWDTT	See steps 1A-1G for FWDTT to complete Spring '14 – Fall '14	Briefing Paper/Report or Recommendations	Fall 2014	
<i>1A. Understand different certification types and options (education based, competency based, exam, project, etc.)</i>	Workforce Development Task Team		Briefing paper on differences	Spring 2014	
<i>1B. Discuss certification tie to PD's with HR (DOI and USDA) Differences in a required or optional certification</i>			Briefing paper on consequences to HR and PD's of having a certification.	Spring/Fall 2014	

1C. Determine content/competencies for certification. What is required to become certified?					
1D. Determine oversight body for certification (AFE, IAWF, SAF etc.)		Decision to move forward	Agreement with a proposed oversight body with who reviews application and maintains currency of content.		
1E. Determine certification levels (basic, intermediate advanced)					
1F. Determine continuing education needs/requirements.					
1G. If needed, describe transition paths or process, esp. if certifications are proposed to be required for certain positions					
III. Focus Training Development to Address Known Gaps (Additional Steps will be added depending on outcome of Fuels Center of Practice)					
1. FMC to bring basic fire behavior modeling (BEHAVE Plus) "issue" as an example of a GAP to the NWCG Training Committee to move forward as a course to be developed and required (Fire Behavior Subcommittee "90 series re-vamp")	FMC		Formal proposal from FMC/FEC to Training Committee – presented at 3/12 FMC meeting	Spring 2014	
2. Explore options for adapting S495/Fuels Decision Support course for Fuels Management Audience (See Chuck/Brett options)	NFTC/FMC		Formal course/workshop	Spring 2014	
3. FWD Task Team or FCOP to develop a logical progression from entry to expert level curriculum for fuels management	FWDTT/FCOP		Briefing Paper; possibly graphic or text suitable	Fall 2014	

specific training (i.e. develop timeline/trajectory for each of the 6 identified skill gaps)			for web distribution		
----------------------------------------------------------------------------------------------------	--	--	----------------------	--	--