



Wildland Fire and Fuels Professional Certification Guidebook

Updated June 2021 by Professional Certification Subcommittee

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INTRODUCTION

The Association for Fire Ecology (AFE) developed a Wildland Fire Professional Certification program to further promote ecologically-based science and management in wildland fire and fuels through accredited professionals. This guidebook shares information for applicants about certification pathways and levels and describes the criteria that the Professional Certification Committee uses to evaluate applicants.

The overarching goal of the AFE professional certification program is:

To formally identify wildland fire and fuels careers as vital professions; to set standards for the preparation of future fire and fuels professionals; and to certify members of the wildland fire and fuels professions based on their education, experience, and training qualifications.

All applicants that receive certification must agree to follow the AFE Code of Ethics (<https://fireecology.org/code-of-ethics>) once certified, and those certified professionals who fail to follow the code risk losing their certification. AFE created a re-certification program in 2020. While any certification award by AFE lasts for an entire career, it is strongly advised that certified individuals be recertified every **five** years to keep their certification relevant.

Applicants need not be AFE members when they apply for certification, but, if they are certified, they will automatically become members as part of their certification fee. Attending conferences and partaking in AFE educational offerings as part of membership is one way showing continued engagement in the field of fire ecology and fire management. Therefore, it is expected that membership will be maintained to stay certified. Any certified individual whose membership has lapsed for five years or more will be placed in an inactive category. If maintaining membership represents a financial hardship, please contact AFE to apply for a fee waiver.

APPLICATION PROCESS

Individuals applying for professional certification or re-certification need to provide evidence and documentation demonstrating that they have attained the minimum requirements for education and experience for the certification level for which they are applying.

Applications and the application fee should be submitted by September 1 using the online submission form at this link: <https://fireecology.org/wildland-fire-professional-certification>. After submission, applicants will be directed to an online payment webpage to pay application fees or be given the option to send the payment by mail. Application fees are non-refundable and non-transferrable. Applicants will NOT be evaluated if the fee is unpaid. Applicants will receive notification of the evaluation results by December 1 and their names will be announced at our Congress or regional conference.

All certified individuals receive a certificate and letter from the AFE President, have their name listed on the AFE website, are recognized at an AFE conference or event following their certification.

Review and Decision

Each application is evaluated by a panel of reviewers from the Professional Certification Subcommittee, which includes representatives from the AFE Certification Committee and the AFE Board of Directors. The Professional Certification Subcommittee evaluates all submitted material and

provides a preliminary recommendation to the AFE Board of Directors. The AFE Board of Directors makes the final certification decision in time to notify applicants by December 1.

If the review panel or AFE board decide that there is insufficient information provided in the application, they may ask the applicant for additional information during the review process or return the application for revision and another chance for evaluation at no cost.

Appealing a Decision

If an applicant is not granted certification, they have 90 days after the notification is sent to respond in writing with any grievances about the decision. Grievances should provide additional information that addresses specific areas identified as unsatisfactory and clearly communicates why the evaluation of the program should be reconsidered. All grievances should be sent to AFE's Administrative Director (office@fireecology.net), who will work with the Professional Certification Subcommittee, the AFE Certification Committee, and the AFE Board to resolve the grievance in a timely manner.

CERTIFICATION TYPES

AFE offers a total of 11 certifications: 3 initial certifications, 4 certifications focused on management, and 4 certifications focused on science. Each certification requires varying requirements for education and experience, and an applicant can apply for more than one certification at the same time.

- Initial Certifications
 - AFE Wildland Fire Technician
 - AFE Wildland Fire Practitioner
 - AFE Wildland Fuels Technician
- Management Pathway Certifications
 - AFE Wildland Fire Manager
 - AFE Senior Wildland Fire Manager
 - AFE Wildland Fuels Manager
 - AFE Senior Wildland Fuels Manager
- Science Pathway Certifications
 - AFE Wildland Fire Ecologist
 - AFE Senior Wildland Fire Ecologist
 - AFE Wildland Fuels Scientist
 - AFE Senior Wildland Fuels Scientist

Table 1 provides an overview of the minimum qualifications for each certification. Detailed information for education, experience, and substantial contributions is provided in the next section, [Evaluation Criteria and Procedure](#).

Table 1: Certification Types and Minimum Qualifications

Certification Types		<u>Minimum Education and/or Core Competencies</u>	<u>Minimum Related Experience</u>	<u>Substantial Contribution</u>	Application Fee (USD)
Initial Certifications	AFE Wildland Fire Technician	2 or 4-year degree with a focus on Wildland Fire	None	No	\$60
	AFE Wildland Fire Practitioner	BS	2 years	No	\$60
	AFE Wildland Fuels Technician	Demonstration of meeting the listed Core Competencies for this level or 4-year degree with a focus on Wildland Fire used in lieu of Core Competencies	1 year	No	\$60
Management Pathway	AFE Wildland Fire Manager	BS or MS or PhD in Fire Management or related field	8 years (BS) 5 years (MS) 3 years (PhD)	No	\$60
	AFE Senior Wildland Fire Manager	BS or MS or PhD in Fire Management or related field	20 years (BS) 10 years (MS or PhD)	Yes	\$150
	AFE Wildland Fuels Manager	Demonstration of meeting the listed Core Competencies for this level or 4-year degree with a focus on Wildland Fire used in lieu of Core Competencies	5 years	No	\$60
	AFE Senior Wildland Fuels Manager	Demonstration of meeting the listed Core Competencies for this level or 4-year degree with a focus on Wildland Fire used in lieu of Core Competencies	10 years	Yes	\$150
Science Pathway	AFE Wildland Fire Ecologist	BS or MS or PhD in Fire Ecology/Science or related field	8 years (BS) 5 years (MS) 3 years (PhD)	No	\$60
	AFE Senior Wildland Fire Ecologist	MS or PhD in Fire Ecology/Science or related field	10 years (MS or PhD)	Yes	\$150
	AFE Wildland Fuels Scientist	Demonstration of meeting the listed Core Competencies for this level	1 year (MS or PhD)	No	\$60
	AFE Senior Wildland Fuels Scientist	and MS or PhD in Fire Science or related field	10 years (MS or PhD)	Yes	\$150

EVALUATION CRITERIA AND PROCEDURE

Reviewers will evaluate the applicant's qualifications in the areas of education and experience independently. A score will be assigned to each category used in these two evaluation areas. The score is based on a **four point ordinal scale** where **zero** indicates that the applicant has NONE of the criteria, **1** means that some of the criteria are met but not enough to be satisfactory, **2** indicates the applicant sufficiently meets the criteria but there is some question about whether all the criteria are actually met, and **the highest score of 3** indicates that the applicant fully meets all specified criteria. The applicant **MUST** score an average of 2 to receive a passing evaluation **AND** the applicant cannot have any zero scores.

For those applying for wildland fuels certifications, a set of core competencies can be used in lieu of the academic degree for the Fuels Technician and Fuels Management certifications. For the Fuels Scientist certifications, both education and core competencies are required and will be assessed by the evaluator. Core competencies for each fuels certification are provided in [Appendix A](#).

For senior level certifications, the applicant's substantial contribution will also be assessed. Substantial contributions are long-lasting, highly influential, and eminent contributions to the fields of wildland fire science and management.

Education

Fire Ecology, Fire Management, Fuels Management, and Fuels Science are relatively new, developing academic areas and individuals working in these fields often have degrees in a wide range of disciplines. In addition, college degrees will differ in design and title between campuses. For this reason, several options are listed for degree requirements. Meeting any of the options listed will satisfy the minimum degree requirement for that certificate. Completion of degree requirements must be supported by attached transcripts.

For certificates requiring a BS degree, applicants should have completed coursework in the Seven Core Areas of Study *or* have a Bachelor of Science (BS) from an AFE Certified Wildland Fire Academic Program.

Graduate level degrees (MS or PhD) can be in a closely related field with a completed thesis or dissertation that immersed the candidate in Fire Ecology or Fire Science. The Professional Certification Subcommittee will determine whether years in graduate school reduce experience to the lower minimum shown in Table 1. Candidates are encouraged to provide enough supporting material to allow Professional Certification Subcommittee to assess this (e.g., title, abstracts, citations of publications, recommendations from AFE Certified Fire Ecologists or Wildland Fire Managers).

AFE CERTIFIED ACADEMIC PROGRAM

If the applicant has received a Bachelor of Science degree from an AFE Certified Academic Program, they are given a high score of 21 for the educational requirement and the evaluator proceeds to the experience category. However, if the applicant is NOT from a certified program or if the applicant graduated from the academic program before it was certified by AFE, then the evaluator will review the information submitted for the seven required core areas of study. A listing of the certified

programs and the year they were certified is available at <https://fireecology.org/afe-certified-academic-programs/>.

SEVEN REQUIRED AREAS OF STUDY

If the applicant did not graduate from a certified academic program, they will be evaluated in seven required core areas of study. At least three college credits are required in each area of study, and the evaluator will score each area from 0-3 based on the information provided by the applicant. The applicant must receive an average of 2 for the seven required categories, and they must have at least a score of one for any given category (they must have at least taken a course in that area); applicant cannot have a 0 in any one educational topic (i.e., not meet education requirements for one of the seven areas), and the applicant must score at least a score of 2 in two of the core subject areas: 1) Fire Ecology and 2) Fire Science and Management.

Seven Required Core Areas of Study (at least 3 college credits in each area required)

1. Fire Ecology: This is a core education requirement.
2. Fire Science & Management: This is a core education requirement.
3. General Ecology
4. Statistics
5. Advanced Ecology & Biology: Upper division (300+) courses in ecology, botany, entomology, forestry, pathology, zoology and related fields
6. Measurement & Analysis: Remote sensing, GIS, modeling, sampling, monitoring, and related fields
7. Environmental Sciences: Meteorology, forestry, soils, geology, hydrology, physical geography, and related fields

All college credits represent semester credits. For the purposes of this certification process, we will use the following: One semester credit = 1.5 quarter credit OR One quarter credit = 2/3 semester credit. The AFE Professional Certification Committee will review courses that are not categorized above, as needed, to assess equivalency to academic courses. Courses with a minimum of 3 hours per week for 14 weeks of fire ecology or science and management will meet that requirement even if there is not fire science or management in the title. Several NWCG courses can be used for partial credit to help meet the requirements for the seven required core areas of study. Please see [Appendix B: NWCG Crosswalk for Educational Requirements](#).

Where the applicant has served as an instructor for a course, they must submit a brief description of the course and this will meet the requirement for attending that course. Serving as a teaching assistant does not meet the requirement. Thesis and dissertation credits count toward fire ecology and fire management requirements if the thesis, or dissertation, include those two topics. Please provide a brief description of how fire ecology and management are incorporated into the thesis/dissertation if it is not clear from the title. If applicants have more than 3 semester credits of advanced ecology but no general ecology, the extra advanced ecology credits can be used to partially or fully meet the general ecology requirement. Technical Fire Management (TFM) credits will be counted as academic credits if provided on an academic transcript. If transcripts are not provided, submit confirmation that the TFM courses were completed, and how many credits that they were given if university credits were purchased. The committee will also review other advanced quantitative courses (e.g., FARSITE, advanced statistics, monitoring/sampling, stand exam, forestry courses), social science and PFTC, CEFM, and other programs for equivalent credit.

COLLEGE EQUIVALENCY ALTERNATIVE FOR FIRE ECOLOGY AND FIRE SCIENCE AND MANAGEMENT

As a distinct discipline, fire ecology is a relatively new field. Many practitioners within this broad field have a myriad of academic backgrounds from numerous older disciplines (e.g., forestry, wildlife, range, geography). Moreover, many university and college systems outside of the US may not offer formal coursework in the fire science fields. And furthermore, as with any rapidly evolving discipline, more and more fields are being integrated into fire ecology and management. In recognition of this relative newness, AFE offers an alternative pathway of equal academic rigor to satisfy the Fire Ecology and/or the Fire Science and Management core areas of study requirements. This "equivalency" pathway is in recognition that, whereas core areas of study 3-7 are somewhat ubiquitous and most academic institutions provide them, some academic institutions do not provide the coursework needed to meet the fire ecology and/or the fire science and management requirements. AFE recognizes that additional learning opportunities in these subject areas exist, many of which aren't reflected on an academic transcript.

As of 2021, applicants can substitute continuing education for formal academic coursework in the fire ecology and fire science and management core areas of study. Similar to the AFE recertification program (see last section in this guidebook), the applicant will provide information in a table within a comprehensive letter that documents all continued education, coursework, and professional improvement that may satisfy the fire ecology and fire science and management requirements. The applicant's continuing education activities must be equivalent to at least 3 college credits, and the applicant must receive least a score of 2 in the subject areas for 1) Fire Ecology and/or 2) Fire Science and Management. The entire procedure is detailed in [Appendix D](#).

Experience

Qualifying experience is the amount of time working within the fields of fire ecology, fire management, fuels management, or fuels science. It is vital that the applicant document how much of each job (percent of time to nearest 10 percent) was spent working directly on tasks and assignments related to the certification type for which they are applying. To prove experience qualification requirements, the applicant must submit the following with their application:

- A curriculum vitae CV or resume to document related qualifying experience.
- Documentation of "Related Experience" that may consist of a combination of land stewardship, fire suppression, policy development, and/or research employment/volunteer and other work involving ecologically-based fire management or wildland fuels management.

If the applicant's duties were split between fire ecology, fire management, fuels management, or fuels science—or only partially related to fire—then the applicant must estimate the percent of time that is spent working within the relevant topic area(s) for their certification type. If more than 70 percent of the time was spent in the relevant area, then all the time can be counted as qualifying experience.

Assistantships (research, teaching, and graduate) do not count toward experiential time when they lead to a degree. Teaching college level courses can be used to meet experience requirements. A total of 18 semester credits are considered full time teaching. Teaching credit can be calculated as in the following example: two 3-credit classes each year for each of 8 years, $(6/18)*8=2.4$ years of experience.

Positions where wildland fire suppression is the primary duty do NOT directly qualify for experience. However, these suppression jobs are considered equivalent to 1/3 of actual time spent in the job, and the applicant must provide specific detail justifying inclusion.

Each position listed by the applicant is rated by two attributes. First, the proportion of time spent in the job doing fire ecology, fire management, fuels management, or fuels science work is estimated as a percent and those percent estimates are then multiplied by the length of the job in years to compute the actual time served as a fire ecologist, fire manager, fuels manager, or fuels scientist. Next, the job is scored (0-3) as to its fit to fire ecology, fire management, fuels management, or fuels science. The applicant MUST meet both the time requirement for work experience AND they must average a score of 2 for each position. Therefore, it is critical that the applicant include an estimate of the percent of time in each job that was spent performing related tasks.

Core Competencies (Wildland Fuels Certifications Only)

Due to the diversity of degrees and backgrounds for those working in wildland fuels, the Certification Committee will also consider a set of core competencies for the wildland fuels certifications. [Appendix A](#) lists the fuels management related competencies for all 5 wildland fuels certifications. For those applying for wildland fuels certifications, a set of core competencies can be used in lieu of the academic degree for the Fuels Technician and Fuels Management certifications. For the Fuels Scientist certifications, both education and core competencies are required and will be assessed by the evaluator.

There are 14 competencies required for the Fuels Technician, 28 for the Fuels Manager and the Senior Fuels Manager, 18 for the Fuels Scientist, and 19 for the Senior Fuels Scientist. Applicants will be evaluated based on the narrative they provide to describe how they meet each competency. Evaluators will give applicants a score of 1 for each met competency, and a 0 for unmet competencies. To receive a passing score, applicants must demonstrate knowledge, skills, and experience in at least 80% of the required competency areas for their chosen certification level. The certification committee sets the 80% threshold to be 11, 22, 14, and 15 competencies, respectively.

Substantial and Lasting Contribution (Senior Level Certification Only)

Those applying for the senior level certifications must demonstrate that they have made a substantial and lasting contribution to the field. The bullets below provide guidance on the types of contributions that are expected for each senior level certification.

- **Senior Wildland Fire Manager:** Applicants should demonstrate an exemplary record of achievement in ecologically-based fire management or fire policy. Senior Wildland Fire Managers are leaders in the wildland fire management profession who have made substantial and lasting contributions to the field, which could include holding a position of leadership in a national organization focused on fire ecology and management, or great influence in incorporating fire ecology into fire management. This also could be demonstrated by a diversity of complex fire management responsibilities, especially if these are in multiple ecosystems; leading development and implementation of a fire management plan(s) based on ecological principles; modeling of fire behavior and effects based on ecological principles; breadth of experience and demonstrated influence on incorporating fire ecology into management practices (e.g., through publication and training; or equivalent demonstration of long-term commitment to integrating ecology into fire management).

- **Senior Wildland Fire Ecologist:** Applicants are leaders in the fire science profession who have made substantial and lasting contributions to the field. Applicants should demonstrate an exemplary record of achievement in fire ecology or fire science research and education. Exemplary achievement for the Senior Wildland Fire Ecologist could include holding a position of leadership in a national organization where work is focused on fire ecology and fire management, or author or coauthor of publication(s) that are notable for their influence.
- **Senior Wildland Fuels Manager:** Applicants should demonstrate an exemplary record of achievement in wildland fuels management as a wildland fuels management program leader. Senior Wildland Fuels Managers are seen by their peers as leaders in the wildland fire/wildland fuels management profession and have made substantial and lasting contributions to the profession. This could include holding a position of leadership within a land management agency, peer group, national organization focused on fire/wildland fuels management, involvement with large cooperative efforts, or other similar tasking. This also could be demonstrated by a diversity of complex fire management responsibilities, especially if these are in multiple ecosystems; leading development and implementation of a fire management plan(s) based on ecological principles; modeling of fire behavior and effects based on ecological principles; breadth of experience and demonstrated influence on incorporating fire ecology into management practices (e.g., through publication and training; or equivalent demonstration of long-term commitment to integrating ecology into fire management).
- **Senior Wildland Fuels Scientist:** Applicants are leaders in the science profession who have made substantial and lasting contributions to subjects specifically related to wildland fuels research and management topics such as mechanical wildland fuels reduction, prescribed fire, and/or wildland fire use. Applicants should demonstrate an exemplary record of achievement in science research and education specific to wildland fuels management techniques and/or strategy. Exemplary achievement for the Senior Wildland Fuels Scientist could include holding a position of leadership in a national organization where work is focused on fire and wildland fuels management, or author or coauthor of publication(s) that are notable for their influence.

RE-CERTIFICATION PROGRAM

To maintain the highest professional certification standards, AFE is now offering a new voluntary re-certification program. Currently, all AFE professional certifications for all pathways last for the entirety of a career in fire science. However, many employers and previously certified fire professionals have questioned the integrity of a certification that was awarded ten years ago because of the great advancement in research, technology, and information each year. Therefore, AFE has developed an easy, new program to have your certification “freshened” at least every five years throughout your career in fire. This re-certification will provide employers, collaborators, and evaluators the valuable information on the time relevance of the certification. Now, AFE will post the year of recertification along with the year of the original certification at the certification website (<https://fireecology.org/certified-professionals>). AFE does not require re-certification; however, AFE encourages people to be re-certified because their re-certification will strengthen their standing and relevance as an AFE certified professional. Applicants can only be re-certified in the same pathway and position that they were previously certified. If an applicant wishes to enhance their certification,

such as be certified in a different pathway or go for the senior level, they MUST apply as a new certification.

Any previously certified individual that wants to become re-certified must prepare a letter (see example in Appendix C) that details any continued education, coursework, and professional improvement that has been completed since their last certification. Specifically, the AFE re-certification will use the following point system to evaluate continuing education events:

1. Full attendance at symposia, conferences, and workshops is given one point. Partial attendance is not given any points; Applicants must document the name, date, and host of each one of the conferences and detail any role they played at the conference.
2. Full attendance of eight seminars or webinars is given one point. Applicants must document the date, presenter, and the title of all attended webinars.
3. Presentation of four seminars or webinars is given one point; Applicants must document the dates and titles of their given webinars and the host of the webinar and any web link for a recording of the webinar
4. Completed University courses are given one point per credit hour. Year of completion, name of course, and the institution or university that hosted the course is needed here. Transcripts are not required but they are gladly accepted.
5. Taught University courses are given one point per credit hour. Year of completion, name of course, and the institution or university that hosted the course is needed here.
6. Completed NWCG courses will be given one point per credit hour using the certification crosswalk table (Appendix B). Year of completion, name of course, and the institution that hosted the course is needed here.
7. Taught NWCG courses will be given one point per credit hour using the certification crosswalk table (Appendix B) in the certification guide. Year of completion, name of course, and the institution that hosted the course is needed here.
8. Published papers will be given one point each but only if applicant is senior author. A half of a point is given for junior authors. Full citation is all that is needed for documentation and a link to the paper on the publisher's website.

The minimum requirement for re-certification is one point per each year since the last certification or re-certification. For example, if it has been five years since certification, the applicant needs at least five points to be re-certified. The letter is submitted to AFE via the current certification applicant process as a special option on the Wuhoo website by September 1st of any year. The Professional Certification Committee will then evaluate these submissions by a set of general criteria that attempt rate the extent of continuing education achieved by the applicant. There will be a filing and evaluation fee of 50% of the certification cost for re-certification.

APPENDIX A: DEMONSTRABLE CORE COMPETENCIES REQUIRED FOR WILDLAND FUELS CERTIFICATIONS

The table below lists the core competencies for the wildland fuels certifications, with the required competencies for each certification indicated by a "1" in the competency row.

There are 14 competencies required for the Fuels Technician, 28 for the Fuels Manager and the Senior Fuels Manager, 18 for the Fuels Scientist, and 19 for the Senior Fuels Scientist. Applicants will be evaluated based on the narrative they provide to describe how they meet each competency. Evaluators will give applicants a score of 1 for each met competency, and a 0 for unmet competencies. To receive a passing score, applicants must demonstrate knowledge, skills, and experience in at least 80% of the required competency areas for their chosen certification level. The certification committee sets the 80% threshold to be 11, 22, 14, and 15 competencies, respectively.

Core Competencies		Wildland Fuels Technician	Wildland Fuels Manager	Senior Wildland Fuels Manager	Wildland Fuels Scientist	Senior Wildland Fuels Scientist
1. Sampling and Monitoring						
1.1	Measure fuel loading: Use of common fuel loading methodologies including Planar Intercept, Photoload, ocular estimation and comparison to fuel loading photoguides.	1	1	1	1	1
1.2	Measure canopy fuels: Ability to determine canopy bulk densities, canopy height, as well as other attributes leading to third dimension fire conditions.	1	1	1	1	1
1.3	Species identification: Correct identification of locally relevant and common species	1	1	1	1	1
1.4	Dendrochronology: Understand use of tree growth patterns and meaning for management. Using an increment borer; Interpreting fire return intervals, growth patterns and stand age determination; Stump interpretation.		1	1	1	1
1.5	Local-Unit Specific Measurements: Local thresholds of concern; measurements relevant to the local ecology; custom fuel models; locally significant factors		1	1		

Core Competencies		Wildland Fuels Technician	Wildland Fuels Manager	Senior Wildland Fuels Manager	Wildland Fuels Scientist	Senior Wildland Fuels Scientist
	affecting fuel management projects.					
1.6	Fire Behavior Fuel Models: Understanding of the standard 13 and 40 fuel models, as well as locally derived fuel models.	1	1	1	1	1
1.7	Fuel moisture sampling: Ability to implement and report fuel moisture sampling through oven-weight or other methodologies.	1	1	1		
1.8	Implementing Sampling Protocols: Field-level vegetation/project objective monitoring; fuel moisture data collection; fuel model inputs; transects/intercept protocols; canopy loading protocols.	1	1	1	1	1
1.9	Design & Manage Sampling Protocols: Work with specialists' to determine monitoring needs; design sampling protocols grounded in scientific literature; design implementable sampling designs.		1	1	1	1
1.10	Interpret and Report Collected Data: Demonstrate understanding of collected data and it's meaning for operational considerations. Report the information in databases and internal/external communication routes.		1	1	1	1
2. Fuels Management Fundamentals						
2.1	Fuel manipulation techniques: Demonstrated knowledge of standard fuels manipulation techniques such as thinning, chipping, piling, prescribed fire, etc.	1	1	1	1	1

Core Competencies		Wildland Fuels Technician	Wildland Fuels Manager	Senior Wildland Fuels Manager	Wildland Fuels Scientist	Senior Wildland Fuels Scientist
2.2	Implement the Fuels Project Plan: Follow the implementation document to ensure consistency with project objectives, design features, mitigation measures. Be able to communicate that to contractors, staff, and/or cooperators.	1	1	1		
2.3	Design and Implement a Fuels Project: Participate in the planning and analysis phases of project design. Demonstrate ability to migrate intent from planning/analysis documents into implementable actions.		1	1		
2.4	Participate in Prescribed Burning: Show participation in prescribed fire activities in an operational, monitoring, or command capacity.	1	1	1		
2.5	Manage a Prescribed Fire Program: Demonstrate oversight function for a prescribed fire program including planning, implementing, monitoring, and participation.		1	1		
2.6	Evaluate the success/failure of objectives: Ability to identify objectives before and after fuels treatments and compare them to planning document standards.	1	1	1	1	1
3. Fire Ecology						
3.1	Application of Fire Ecology: Demonstrate practical experience with incorporating fire ecology principles into project planning, implementation, and monitoring. Project consistency with known fire regimes, fire attributes, and ecosystem processes.	1	1	1	1	1
3.2	Fire Effects: Demonstrate understanding of first and second order fire effects and it's application within fuels management.	1	1	1	1	1

Core Competencies		Wildland Fuels Technician	Wildland Fuels Manager	Senior Wildland Fuels Manager	Wildland Fuels Scientist	Senior Wildland Fuels Scientist
3.3	Applied Fire Regime Management: Demonstrate managing for a fire regime within current and projected-climate fire regime constraints.		1	1	1	1
3.4	Local Fire Ecology: Incorporate locally-significant fire ecology drivers into the fuels management program. Incorporate known plant responses to fire and mechanical manipulation into project design.		1	1		
4. Fuels Program Management						
4.1	Wildfire & Fuels Mgmt Policies: Proficient understanding of local/state/territory/federal policies that affect the applicant's sphere of fuels management operations.		1	1	1	1
4.2	Land Management Planning: Provide input to and/or participate in the interdisciplinary process of land management planning for fire and fuels management purposes.	1	1	1		
4.3	Involvement with Environmental Analysis: Direct involvement in the analyzation of proposed land management actions through writing a specialist report or other contributory technical documents.		1	1		1
4.4	Communicate clearly orally: Ability to verbally translate intent into action		1	1	1	1
4.5	Communicate clearly in writing: Ability to translate intent into action through writing		1	1	1	1
4.6	Leadership Principles: Demonstrate leadership principles by modeling professionalism in fire & fuels management through actions	1	1	1	1	1

Core Competencies		Wildland Fuels Technician	Wildland Fuels Manager	Senior Wildland Fuels Manager	Wildland Fuels Scientist	Senior Wildland Fuels Scientist
	rooted in operational and scientific integrity.					
4.7	Fuels Program Budget: Oversee expenditures associated with project planning and/or implementation. Ensure that available funding is leveraged efficiently and appropriately to reduce waste and maximize the public benefit.		1	1		
4.8	Cross-Discipline Coordination: Demonstrate an integrated process for conducting fuels management work, showing sensitivity and awareness of other ecosystem resources such as habitat, water, air quality, etc.		1	1	1	1
Total Number of Competencies		14	28	28	18	19
80% Threshold (required minimum score to pass competency section of application)		11	22	22	14	15

APPENDIX B: NWCG CROSSWALK FOR EDUCATIONAL REQUIREMENTS



There are many NWCG training courses that supports position performance for personnel mobilized to wildland fires and other all-hazard incidents. Some of these courses have fire ecology content and may be used to include in meeting the academic requirements for professional certification. The following is a table that presents a “Proposed AFE Credit” for each course offered by NWCG. Those credits can be added to other academic credits to meet the coursework requirements for professional certification. Blank Comments cells indicate no fire ecology content.

Course #	Title	Primary Committee	Maintained By	Proposed AFE Credit	Comments
D-110	Expanded Dispatch Recorder	NCSC	NCSC	No	
D-310	Expanded Dispatch Support Dispatcher	NCSC	NCSC	No	
D-311	Initial Attack Dispatcher	NCSC	NCSC	No	
D-312	Aircraft Dispatcher	NCSC	NCSC	No	
D-510	Expanded Dispatch Supervisory Dispatcher	NCSC	NCSC	No	
FI-110	Wildland Fire Observations & Origin Scene Protection for First Responders	CEPC	WFISC	No	
FI-210	Wildland Fire Origin & Cause Determination	CEPC	WFISC	No	
FI-310	Wildland Fire Investigation: Case Development	CEPC	WFISC	No	
G-131	Wildland Training (FFT1) for Structural Firefighters	OTC	IOSC	No	
G-231	Wildland Training (ENGB) for Structural Firefighters	OTC	IOSC	No	
G-330	Wildland Training (STEN) for Structural Firefighters	OTC	IOSC	No	
L-180	Human Factors in the Wildland Fire Service	OTC	LSC	No	
L-280	Followership to Leadership	OTC	LSC	0.25	2 ½ Day course
L-380	Fireline Leadership	OTC	LSC	NO	No specific course packet
L-381	Incident Leadership	OTC	LSC	NO	Curriculum not available for leadership courses
L-480	Organizational Leadership in the Wildland Fire Service	OTC	LSC	NO	“
L-481	Advanced Leadership for Command and General Staff	OTC	LSC	NO	“

Course #	Title	Primary Committee	Maintained By	Proposed AFE Credit	Comments
L-580	Leadership is Action	OTC	LSC	NO	"
M-410	Facilitative Instructor	OTC	OTC	1	36 HRS OF COURSE WORK
M-580	Fire in Ecosystem Management	FMC	FMC	1	40 HOURS OF COURSE WORK (NAFRI)
M-581	Fire Program Management	OTC	OTC	1	32-36 HRS OF COURSE WORK
P-101	Fire Prevention Education 1	CEPC	CEPC	NO	
P-301	Fire Prevention Education 2	CEPC	CEPC	NO	
P-310	Fire Prevention Education Team Member	CEPC	CEPC	NO	
P-410	Fire Prevention Education Team Leader	CEPC	CEPC	NO	
RT-130	Annual Fireline Safety Refresher Training	OTC	IOSC	NO	
RX-301	Prescribed Fire Implementation	FMC	FMC	NO	
RX-310	Introduction to Fire Effects	FMC	FMC	1.0	32-36 HRS Coursework
RX-341	Prescribed Fire Plan Preparation	FMC	FMC	NO	
RX-410	Smoke Management Techniques	SmoC	SmoC	0.5	
RX-510	Advanced Fire Effects	FMC	FMC	1	40 HRS Coursework
S-110	Basic Wildland Fire Orientation	OTC	IOSC	NO	
S-130	Firefighter Training	OTC	IOSC	0.25	
S-131	Firefighter Type 1 Training	OTC	IOSC	0.25	
S-190	Introduction to Wildland Fire Behavior	FENC	FBCU	0.25	
S-200	Initial Attack Incident Commander	OTC	OTC	NO	
S-203	Introduction to Incident Information	CEPC	PIOSC	NO	
S-211	Portable Pumps and Water Use	OTC	IOSC	NO	
S-212	Wildland Fire Chain Saws	RMC	IOSC	NO	
S-215	Fire Operations in the Wildland/Urban Interface	OTC	IOSC	0.25	16-24 HRS COURSEWORK
S-219	Firing Operations	FMC	FMC	0.25	18-24 HRS COURSEWORK
S-230	Crew Boss (Single Resource)	OTC	IOSC	NO	
S-231	Engine Boss (Single Resource)	OTC	IOSC	NO	
S-236	Heavy Equipment Boss (Single Resource)	OTC	IOSC	NO	
S-244	Field Observer	OTC	IPSC	0.5	28 HRS COURSEWORK

Course #	Title	Primary Committee	Maintained By	Proposed AFE Credit	Comments
S-245	Display Processor	OTC	IPSC	NO	
S-248	Status/Check-in Recorder	OTC	IPSC	NO	
S-258	Incident Communications Technician	ETC	NLSC	NO	
S-260	Interagency Incident Business Management	IBC	IBC	NO	
S-261	Applied Interagency Incident Business Management	IBC	IBC	NO	
S-262	Incident Contractor Project Inspector	IBC	IBC	NO	
S-270	Basic Air Operations	NIAC	NIAC	NO	
S-271	Helicopter Crewmember	NIAC	NIAC	NO	
S-273	Single Engine Airtanker Manager	NIAC	NIAC	NO	
S-290	Intermediate Wildland Fire Behavior	FENC	FBCU	0.5	37 HRS COURSEWORK
S-300	Extended Attack Incident Commander	OTC	OTC	0.25	22 HRS COURSEWORK
S-330	Task Force/Strike Team Leader	OTC	IOSC	0.25	21 HRS COURSEWORK
S-339	Division/Group Supervisor	OTC	IOSC	0.25	22 HRS COURSEWORK
S-340	Human Resource Specialist	OTC	IPSC	NO	
S-341	GIS Specialist for Incident Management	DMC	GTU	1-2	72-92 HRS COURSEWORK
S-354	Facilities Unit Leader	ETC	NLSC	NO	
S-355	Ground Support Unit Leader	ETC	NLSC	NO	
S-357	Food Unit Leader	ETC	NLSC	NO	
S-358	Communications Unit Leader	ETC	NLSC	NO	
S-359	Medical Unit Leader	RMC	IEMS	NO	
S-371	Helibase Manager	NIAC	NIAC	NO	
S-372	Helicopter Management	NIAC	NIAC	NO	
S-375	Air Support Group Supervisor	NIAC	NIAC	NO	
S-378	Aerial Supervision	NIAC	NIAC	NO	
S-390	Introduction to Wildland Fire Behavior Calculations	FENC	FBCU	1	42 HRS COURSEWORK
S-404	Safety Officer	RMC	RMC	NO	
S-420	Command & General Staff	OTC	OTC	0.5	38 HRS COURSEWORK
S-430	Operations Section Chief	OTC	IOSC	0.25	24 HRS COURSEWORK
S-440	Planning Section Chief	OTC	IPSC	0.25	21 HRS COURSEWORK
S-443	Infrared Interpreter for Incident Management	DMC	GSC	0.5	36 HRS COURSEWORK
S-445	Incident Training Specialist	OTC	IPSC	NO	17 HRS COURSEWORK

Course #	Title	Primary Committee	Maintained By	Proposed AFE Credit	Comments
S-470	Air Operations Branch Director	NIAC	NIAC	NO	
S-481	Incident Business Advisor	IBC	IBC	NO	
S-482	Strategic Operational Planning	FMC	FMC	NO	
S-490	Advanced Fire Behavior Calculations	FENC	FBCU	1	44-47 HRS COURSEWORK
S-491	Intermediate National Fire Danger Rating System	FENC	FENC	0.5	25 HRS
S-495	Geospatial Fire Analysis, Interpretation and Application	FENC	FENC	4	164 HRS INTENSIVE COURSEWORK
S-520	Advanced Incident Management	OTC	OTC	2	REQUIRES 60 HRS OF CLASSROOM WORK (NAFRI)
S-590	Advanced Fire Behavior Interpretation	FENC	FENC	3	REQUIRES 80 HRS OF CLASSROOM WORK (NAFRI) – 1 SEMESTER COLLEGE CLASS= 48 HRS
S-620	Area Command	OTC	OTC	1	REQUIRES 36 HRS OF CLASSROOM WORK (NAFRI)
X-900	Investigation of Powerline Caused Wildland Fires	CEPC	WFISC	NO	

APPENDIX C. SAMPLE LETTER FOR RE-CERTIFICATION

To whom it may concern:

I wish to become re-certified under the new AFE re-certification program. I was certified as a Senior Fire Ecologist in 2013 under the name Smokey T. Bear and would like to be re-certified in that same position. It has been over 7 years since I was certified. During that time, I have completed the following continuing education activities:

2013

- Webinar Attendance – J. Bezoss. How Amazon can help firefighting. Hosted by Northern Rockies Fire learning Network
- Webinar Given – S. Bear, Fire prevention in the 21st Century. Sponsored by IAWF. 15 attendees. www.iawf/seminars

2014

- University Course – Fire Ecology at University of Idaho, Fire Ecology taught by Penny Morgan (3 credits)
- NWCG Course – RX310 Fire Effects, NRTC Missoula MT (1 credit)
- Publication – Bear, ST. 2016. Spatiotemporal Variability of Wildland Fuels in US Northern Rocky Mountain Forests. *myForests* 7:129.

2015

- University Course – University of Montana, Wildland Fire Management by Carl Seilstat (3 credits)

2016

- Nothing

2017

- NWCG course – RX510, Advanced Fire Effects, NARTC, Tucson Arizona (1 credit)

From the above, I estimate that over the last seven years I have achieved 9 points or at least one point per year which fulfills the re-certification requirement as specified in the Guidebook. I did not record all continuing education activities in the table above so if there is a problem I can supply more documentation of my activities since 2013. I acknowledge that I will pay \$60 (50% of the \$120 certification fee) for a Senior Fire Ecologist. Remember, only you can prevent forest fires, but I've learned now that not all fires are bad.

I look forward to your decision.

With Warm Regards

Smokey T. Bear
Fire Ecologist
US Forest Service
Washington DC, USA
Email: stb@fs.fed.us

APPENDIX D. COLLEGE EQUIVALENCY ALTERNATIVE FOR FIRE ECOLOGY AND FIRE SCIENCE AND MANAGEMENT

As of 2021, applicants can substitute continuing education for formal academic coursework in fire ecology and fire science and management. Similar to the AFE recertification program, the applicant will provide a table within a letter that documents all continued education, coursework, and professional improvement that may satisfy the fire ecology and fire science and management requirements.

Specifically, the following system will be used to decide the worth of continuing education activities:

1. Attendance at major symposia, conferences, and workshops will be given one credit each providing the applicant attended the entire event
2. Attendance of at least eight seminars or webinars get one credit
3. Completed NWCG courses get the number of credits given in the crosswalk table (Appendix B in the certification guide)
4. Each paper published a senior author is worth one credit and each paper as a junior author is worth 0.5 credits

Candidates must articulate their learning in the above categories, illustrating how this scholarship covers the criteria listed below. They will have to provide details and proof of their participation and passage of these learning opportunities (rolls, transcripts, certificates, instructor contact, etc.) and make the argument as to why this is equivalent to collegiate credit.

1. For all individual learning, a minimum of 50% must be specifically focused on matters of either fire ecology or fire science and management (whichever professional certification is being sought).
2. A minimum of 50% of all hours require demonstrations of active learning (active as opposed to merely passive learning). Example: listening to lectures is passive (though preparing one would be active) unless there were tests or exercises. Tests and exercises make these hours of lecture active learning events.

The applicant's continuing education activities must be equivalent to at least 3 college credits, and the applicant must receive least a score of 2 in the subject areas for 1) Fire Ecology and/or 2) Fire Science and Management.

The following is a list of EXAMPLES developed by the certification committee to help people gauge the collegiate credit worthiness of SOME experiences. These are only examples and would not constitute an exhaustive list. This would only be to help a candidate gauge their experience it is not a guarantee of acceptability nor would it cover all possible acceptable experiences. Further the existing continuing education criteria and cross walk could be modified to help folks gauge experiences.

Example 1: For a graduate program when course work included thesis hours or "special problems/independent study" credits as part of a research project in a subset of either fire ecology or fire science and management the applicant would have to provide transcripts, thesis/dissertation title and abstract as well as a "executive summary" of how those credits relate to either fire ecology or fire science and management.

Example 2: Attendance at an AFE International Fire Ecology and Management Congress. The applicant attended the entire conference and presented on a fire ecology or fire science and management topic. This would satisfy the active learning criteria and the need for majority focus

(>50%) on the core education requirements related to fire ecology and fire management. This example would qualify the candidate for one credit in either the fire ecology or fire science and management core area of study.

Example 3: An applicant demonstrates attendance and completion of two NWCG courses for proposed AFE credit. The first course is M-580 Fire in Ecosystem Management and the proposed AFE credit is one. The second course is RX-510 Advanced Fire Effects and the proposed AFE credit is one. In the table, the applicant would need to specify which core area of study each credit would apply for either course. These courses could both be considered applicable to the fire ecology core area of study and would give a total of 2 credits for this area, leaving a need for one more credit to satisfy the full requirement specific to fire ecology.

Example 4: A total of eight webinars and eight seminars were attended and documented by an applicant. All these events required active participation through breakout groups, exercises and/or exams and quizzes. Half of these events were solely focused on fire ecology; the other half involved an equal mix of fire ecology and other resource disciplines. In this example, all is specific to the fire ecology core area of study and criteria is met. This would be equal to two of the three required credits needed for this core area of study.

Required Collegiate Equivalency Table:

Core Area of Study	Desired Credit/s	Continuing Education Category	Date	Place	Name/Title	Organization	Contact
Example Fire Ecology	1	Ex. Conference	2001	San Antonio, TX	Crossing Borders	AFE	Joe Smith P: xxx-xxx-xxxx
I attended this entire conference. I attended 15 talks that were directly concerned with fire ecology and over 12 talks that concerned fire management. I attended a fuels workshop to learn the FCCS system.							
Example Fire Science/ Management	0.5	Ex. NWCG course	2002	Missoula, MT	Rx410-Smoke Management	USFS	Jane Doe Email: xxxx@usda.gov
I attend this class in January of 2002 and passed. The entire course was held at the Northern Rockies Training Center in Missoula, MT. The course leader was Reba McEntire.							
Example Fire Ecology	1	Ex. Senior author	2021	NA	Fire ecology and a changing climate	<i>Forest Ecology and Management</i>	Attach publication or citation
I was the senior author on a <i>Forest Ecology and Management</i> publication entitled: Fire ecology and a changing climate.							
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