

Project Title: Enhancing Western Managers' Knowledge and Use of Available Economic and Financial Biomass Information and Tools

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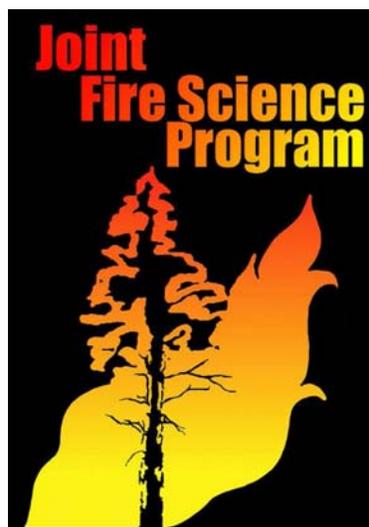
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I. Abstract

The Joint Fire Science Program (JFSP) sponsored this study to enhance the ability of federal land managers to understand and deal with the economic and financial aspects of woody biomass removal as a component of fire hazard reduction treatments. The study objectives were to synthesize the body of economic and financial information and tools currently available to federal land managers in the West, identify managers' information needs and disconnects from available information, and fill the gaps between existing information and tools versus managers' awareness of available information and access to tools.

The methods used for this study included 1) preparing an annotated bibliography of existing information sources and tools, 2) conducting focus groups with federal land managers throughout the West to understand their current knowledge and use of existing information and tools as well as barriers to biomass utilization, and 3) reporting study findings and distributing the bibliography in a format that provided managers with improved access to necessary and useful financial and economic information and tools.

A total of 26 focus groups were conducted in six United States Forest Service (USFS) regional offices, 17 national forests, and two national parks, with a total of 97 agency personnel. On average, participants had 25 years of service with their agency and 6 years in their current position. Focus groups identified several issues and information disconnects in two major areas: the economic and financial analysis process, and the tools and information used for economic and financial analyses.

II. Background and Purpose

Several important issues, including wildfire threats to communities and ecosystems, reliance on imported fossil fuels versus renewable, domestic energy sources, and loss of local employment and capacity to conduct forest management in historically timber-dependent communities have led to increased public and political interest in woody biomass utilization from fire hazard reduction treatments. In response to this growing interest, the JFSP conducted a Biomass Roundtable in 2007 with a group of 24 managers and scientists from partner agencies and stakeholder groups (JFSP 2007, SRA International 2007). These participants shared their thoughts on issues, problems, and research needs related to biomass removal from the perspective of forest fuels management. That group and an additional group of more than 50 stakeholders requested JFSP investigate, among other items, the economic and financial effects of biomass removal for fire hazard reduction.

JFSP Biomass Roundtable participants posed a variety of questions about the finances and economics of biomass removal. Questions covered financial issues (i.e., those that involve cash flow and budgets), as well as economic issues (e.g., potential products, employment, and trade-offs over time among different treatment options). These questions were asked from the perspective of federal land managers, not from that of businesses or community development groups.

Roundtable participants, representing decision-makers and planners in the federal agencies, indicated that they wanted easy-to-use methods to evaluate the costs and revenues of implementing fire hazard reduction treatments that involve the removal of biomass. They wanted to compare costs with treatments that do not remove biomass, and they were concerned about avoided costs, the potential for escaped fire, and the impacts of smoke on the local community. They indicated that they wanted to understand product options available in local areas and what other opportunities existed for disposing of different types of biomass. They also wanted to know how to evaluate landscapes where biomass removal and sale might be financially viable, or at least reduce the costs of treatments, as opposed to places where utilization would increase treatment costs. Finally, roundtable participants were interested in understanding how strategic placement of treatments across the landscape to reduce fire spread or fire effects might influence the financial viability of large scale fire hazard reduction programs that involve biomass removal.

In response to the JFSP Biomass Roundtable and subsequent request for proposals (JFSP 2007), researchers at the University of Montana's Bureau of Business and Economic Research and College of Forestry and Conservation submitted a proposal in conjunction with USFS researchers at the Rocky Mountain Research Station in Missoula, Montana and the Forest Products Laboratory in Madison, Wisconsin. The purpose of this research was to provide a synthesis of information products available to federal land managers to enhance their ability to understand and deal with the economic and financial aspects of woody biomass removal as a component of forest fire hazard reduction treatments.

III. Study Description

To achieve the stated purpose, three primary objectives were determined:

1. synthesize and evaluate the body of financial and economic information and tools related to biomass removal currently available to federal land managers in the US West
2. identify managers' information needs and disconnects from available information
3. fill the gaps between existing information and tools versus managers' awareness of available information and ability to use the tools

Synthesizing currently available information was achieved by developing an annotated bibliography (Loeffler and others 2009). An extensive search of peer-reviewed literature, on-line databases, conference proceedings and symposiums, personal communications, and web-based resources was conducted to identify relevant and available information and tools that could be used by federal land managers during the project planning process to evaluate economic and/or financial aspects of biomass handling and removal. These data, information, and tools were evaluated on their regional (western US) relevance, public accessibility, and potential usefulness to federal land managers, and then compiled into a single document—the annotated bibliography.

The bibliography contains nearly 200 peer-reviewed journal articles, USFS research station publications, white papers, and reports and more than 20 web-based data sources and computer models related to the economics and finances of biomass removal, small-diameter timber harvesting, logging and hauling costs, biomass utilization facilities and locations, plus log and mill residue pricing. Each item in the annotated bibliography contains the citation, a brief description or abstract, author contact information, and geographic area of interest. Links to economic and financial models and other on-line tools are provided with citations for supporting documentation.

In order to identify western forest managers' information needs and disconnects from available information related to financial and economic aspects of biomass removal, a series of focus groups were conducted with federal agency personnel in the western US. Utilizing several contacts from the JFSP Biomass Roundtable, a variety of positions and duties were identified as highly relevant to the biomass removal planning, analysis, and implementation process. The positions identified included silviculturist, contracting officer, economist, budget officer, timber management officer, fuels specialist, stewardship coordinator, and timber sale preparation specialist. Key duties identified included timber or fuels project planning, serving on National Environmental Policy Act inter-disciplinary (NEPA-ID) teams, and administering timber sales or service contracts for biomass removal. It was also noted that information needs and access to available information may be different by agency, geographic location, and functional level within an agency (e.g., at the district, forest, or regional level with the USFS).

In order to generate useful feedback and publishable results from the focus groups, it was decided that a minimum of 18 focus groups would need to be conducted, with at least three in each western USFS region, i.e., Regions One through Six (R1 through R6). The focus groups were organized to take about 1.5 to 2 hours, with a pair of moderators, a 9-slide PowerPoint presentation, and a list of questions that was used for all the focus groups. Each focus group was

video taped, a separate digital audio recording was made, and each focus group was later professionally transcribed for subsequent content analysis. The audio recording enabled the moderators to concentrate on participants' spoken responses and body language while taking minimal notes, allowing for a more relaxed and "conversational" atmosphere in which sincere and "un-pressured" responses could be solicited. The video taping was done to help the transcriber identify (although not by name) individual respondents' comments, particularly if multiple people spoke simultaneously.

Focus groups were divided into five main parts: 1) introductions, 2) discussion regarding the current process used for financial and economic analysis of biomass projects, 3) potential changes or improvements to the process, 4) economic and financial tools and information used, and 5) a wrap-up/closing. Introductions lasted about 10 to 15 minutes, covered who the moderators were, described why the study was being conducted, and allowed introductions of the focus group participants. Following introductions, the moderators asked the discussion questions from the three study areas. Approximately 30 minutes were budgeted for each of the study areas, and 5 to 10 minutes was allowed for the wrap-up/closing.

Prior to introductions, participants were provided with index cards that they filled out with demographic information. The items requested on the cards included:

- Name, position/job title
- Years and months in agency
- Years and months in current position
- Typical geographic scale regularly working in (e.g., district, forest, region)?
- Service on a NEPA-ID team in past three years? If so, the number of times and in what capacity.
- Work on stewardship contract in past three years? If so, the number of times and in what capacity.
- Participation in mechanical fuels treatment training or similar training? If so, when and name of course(s).

Discussions began with questions about the current process used by federal land managers for financial and economic planning, analysis, and implementation of biomass removal. Specific questions and discussion points included:

- Approximately how many acres are treated for fuel reduction annually?
- What proportions are mechanical, prescribed fire, and wildland fire use?
- How and where are treatment targets and budgets determined?
- Describe the financial and economic (F&E) analysis system or process used.
- Describe similarities and differences from the timber "gate system."
- What F&E items are considered?
- How are the F&E items reviewed?
- Who examines the F&E items?
- What is the relative importance of F&E considerations?
- To what extent does F&E analysis influence decision or impact a project?
- Describe any differences in F&E analysis by contract types (timber, service, and stewardship)?

The second set of questions addressed potential changes or improvements to the process federal land managers use for financial and economic planning, analysis, and implementation of biomass removal. Specific questions and discussion points included:

- Identify disconnects you have encountered with current needs and available tools and information.
- What has and has not been working when it comes to the financial and economic aspects of fuel reduction treatments?
- How would you or have you improved the process locally?
- What higher level changes would improve the process?
- Identify disconnects between the agency process and on-the-ground situation.
- What steps or omissions in the planning/analysis/decision process lead to F&E issues being “show stoppers”?
- What information or tools are needed to improve the process and implementation?

The final area of discussion pertained to the financial and economic tools and information participants were familiar with and/or utilized in their biomass removal planning, analysis, and implementation process. Specific questions in this third study area included:

- What tools and information are currently being used for F&E analysis?
 - programs, websites, publications, people
 - national versus local and regional tools and information
- To what extent have you used the following tools:
 - My Fuel Treatment Planner (MyFTP)
 - Web O’ Fire
 - Forest Vegetation Simulator (FVS) Economic Analysis Extension
 - Forest Inventory and Analysis (FIA) BioSum
 - Harvest Cost-Revenue (HCR) Estimator
 - Transaction Evidence Appraisal (TEA) System
 - Region Six Log Cost or Haul Cost programs
 - Other JFSP products, reports, or information
- What tools and information are most and least useful or problematic?
- What information do you need or want that is not available?
- What would the “perfect tool” for biomass F&E analysis do?
- What changes to current tools would make them more useful?
- What can researchers and JFSP do to make your job easier?

During the wrap-up/closing, participants were asked if they had any additional questions or comments, to identify any items that should be discussed but were not, and if they knew any other individuals that should be contacted by the researchers.

A total of 26 focus groups were conducted with 97 participants. Two of the focus groups were held with a total of 12 National Park Service (NPS) employees, and 24 focus groups were conducted with more than 80 National Forest System (NFS) employees in Regions 1 through 6 (Table 1). A couple Bureau of Land Management (BLM) and US Geological Survey (USGS) personnel also participated. Content analysis of the focus groups utilized the 1,470 pages of transcriptions to identify recurring themes as well as unique responses. Each focus group

manuscript was searched to identify responses to individual questions. Responses were then organized by question as well as USFS region and forest or national park for summarization.

Table 1: Location of focus groups by USFS region, state, national forest, and national park

Region 1 – MT & ID	Region 4 – ID, UT & NV
<ul style="list-style-type: none"> • Regional Office • Idaho Panhandle National Forest • Kootenai National Forest 	<ul style="list-style-type: none"> • Regional Office • Bridger-Teton National Forest • Humboldt-Toiyabe National Forest
Region 2 – CO, SD & WY	Region 5 – CA
<ul style="list-style-type: none"> • Regional Office • Arapaho-Roosevelt National Forest • Black Hills National Forest • Medicine Bow National Forest • Pike National Forest 	<ul style="list-style-type: none"> • Regional Office • Klamath National Forest • Lassen National Forest • Tahoe National Forest
Region 3 – AZ & NM	Region 6 – OR & WA
<ul style="list-style-type: none"> • Regional Office • Apache-Sitgreaves National Forest • Cibola National Forest • Coconino National Forest • Kaibab National Forest 	<ul style="list-style-type: none"> • Regional Office* • Umatilla National Forest • Wallowa-Whitman National Forest • Willamette National Forest
	National Parks**
* Participants included BLM personnel.	<ul style="list-style-type: none"> • Sequoia-Kings Canyon National Park
** Participants included USGS personnel.	<ul style="list-style-type: none"> • Yosemite National Park

To achieve the third and final objective of helping to fill the gaps between existing information and tools versus managers' awareness of available information and ability to use the tools, draft versions of the annotated bibliography were released (in advance of its formal research station publication) directly to focus group participants and in publicly accessible web sites that several federal land managers mentioned already using to find related information. The annotated bibliography can be found at the following locations on the World Wide Web:

- The Bureau of Business and Economic Research, The University of Montana
<http://www.bber.umt.edu/pubs/forest/biomass>
- Joint Fire Science Program
http://www.firescience.gov/projects/07-3-3-03/project/07-3-3-03_jfsp_annbib_26102009.pdf
- FRAMES (The Fire Research and Management Exchange System)
<http://frames.nbii.gov/portal/server.pt>

IV. Key Findings

The key findings from this study are reported here by five main categories:

- A. demographics of focus group participants

- B. participant responses related to the current process used by federal land managers for financial and economic planning, analysis, and implementation of biomass removal
- C. participant responses related to potential changes or improvements to the process used for financial and economic planning, analysis, and implementation of biomass removal
- D. participant responses related to the financial and economic tools and information utilized in their biomass removal planning, analysis, and implementation process
- E. content of the annotated bibliography

A. In general, this research found that focus group participants involved with biomass removal as a component of hazardous fuels reduction treatments had significant experience with their agency's budgeting and environmental impacts analysis processes, with on-the-ground forest management activities related to biomass removal, and with the different types of contracts used to accomplish biomass removal.

Focus group participants had an average of 25 years of service with their agency and an average of 6 years in their current position. Slightly less than 70 percent of the participants worked at the forest level, about 20 percent of focus group participants worked at the regional level, just over 10 percent worked at the district level, and only a couple of the individuals worked at a national scale. Slightly more than half (55 percent) of the participants had served on a NEPA-ID team in the past three years, and nearly 60 percent of the participants had worked on stewardship contracts. Just over 30 percent of the focus group participants had been involved in some type of mechanical fuels treatment training within the last three years.

B. Participant responses/perceptions related to the current process used by federal land managers for financial and economic planning, analysis, and implementation of biomass removal echoed six main themes:

1. Financial issues (e.g., annual budgets, treatment costs, and potential revenue) can severely impact successful offering of biomass removal projects. Financial issues and economic impacts, however, are regarded as much less important than resource goals and environmental impacts. Consequently less time and effort is devoted to F&E analysis.
2. Local (district and forest) budgets are rarely/never sufficient to treat the amount of area identified as high priority. The allocation of annual budgets based on achievement of targets (i.e., number of acres of fuels treatment and volume of timber sold) often creates disincentives for treating high-priority areas, which can have very high per-acre treatment costs and little or no merchantable volume.
3. Different F&E information and tools are needed at different steps in project planning. Highly detailed financial analyses are not necessary or desirable early in the project planning process. Providing too much specificity in the F&E analysis (e.g., specifying a particular harvesting system or quantity of biomass to be left on site), particularly before or during NEPA analysis, reduces managers' flexibility to achieve resource outcomes.
4. Different individuals perform F&E analyses at different stages in the planning, analysis, and implementation process. These individuals' familiarity with financial considerations (e.g., costs of activities, potential for revenue) can be highly variable. Absence of individuals with F&E analytical experience and/or knowledge of local market conditions on NEPA-ID teams can lead to proposed actions or alternatives with little chance of financial viability (i.e., projects that will go "no bid").

5. Timber and biomass market conditions can change dramatically during the multi-year time frame required for NEPA analysis and final project approval, rendering earlier financial analyses obsolete by the time projects go out for bid.
6. Economic impacts (e.g., resulting employment, avoided costs, etc.) of proposed actions on communities are frequently not well understood or quantified in NEPA documents. Such impacts are also considered relatively unimportant because they are rarely/never the subject of appeals or litigation.

C. Participant responses/perceptions related to potential changes or improvements to the process federal land managers use for financial and economic planning, analysis, and implementation of biomass removal revealed six key ideas:

1. Transaction Evidence Appraisal (TEA) needs to better reflect local conditions, particularly in large NFS regions with markedly different resource and market areas. Where the number of timber or biomass transactions are quite limited, something other than, or in addition to, TEA needs to be acceptable for determining minimum bids.
2. With the exception of stewardship contracts, revenue from projects does not stay on the district or forest. This makes it more difficult to use revenue from one project (e.g., a timber sale) to help pay for another project (e.g., prescribed burning or biomass removal) that is chronologically, geographically, or administratively separate. Consequently, there are incentives for using stewardship contracts more often or in situations that may not be appropriate.
3. Requiring biomass inventories (i.e., cruises) to be conducted to the same level of precision as traditional timber products (e.g., saw or pulp log) cruises is cost-prohibitive and discourages managers from trying to market biomass as a product. Administrators and the Forest Service Handbook need to recognize the high variability and low value of biomass material and allow more appropriate cruising standards.
4. NEPA-ID teams need to be comprised of individuals that are aware of local timber and biomass market conditions, that understand the financial costs of all proposed activities (e.g., harvesting/removing wood, Rx burning, road construction or decommissioning, culvert replacement, etc.) and that comprehend the importance of successful contract offering for achieving resource objectives.
5. Agency employees may have philosophical, financial, or intra-organizational conflicts with the commercial sale and utilization of wood from federal lands, thus creating internal barriers to accomplishing resource objectives through biomass utilization. For example, selling or otherwise removing and utilizing biomass is sometimes viewed as taking work away from agency employees who were traditionally responsible for prescribed burning or slash disposal.
6. The risk to contractors who remove biomass can be too high when biomass markets are immature or highly volatile. The agency needs to be able to enter into a wood-supply contract with the wood-using facility directly and pay the contractor(s) for project accomplishment (i.e., biomass removal) to reduce the financial risk to the contractor if the price being paid for wood drops below the cost of removal and transport.

D. Participant responses/perceptions related to the financial and economic tools and information with which they were familiar and utilized revealed eight dominant ideas:

1. Knowledge of local timber and biomass market conditions, contractors, and activities on other ownerships is critical and must be kept current. F&E tools are not adequate substitutes for managers' knowledge of local conditions.
2. More F&E analysis or better tools will not make a biomass removal project successful if budgets, contractors, and outlets for biomass material are not sufficient or locally available.
3. Many F&E tools and models are too "data hungry" and "research oriented." The tools require data that are not readily available or do not address practical items that can be readily measured.
4. The tools are often not "scaled" to use at the project size, or do not "fit" the administrative process used. For example, estimates of product value based on a source other than TEA may not always be considered "official" or acceptable.
5. F&E tools developed by researchers do not appear to provide substantially better or different results than locally developed methods. Given managers' time and budget constraints, the effort to switch and learn new methods for the same results is not considered worthwhile.
6. Information overload is possible, with too much information from too many sources for local personnel to sort through given their work loads.
7. Although Transaction Evidence Appraisal (TEA) is mandatory for all NFS regions, lack of comparable local timber or biomass sales data frequently limits the usefulness of TEA or provides results that are not representative of local conditions.
8. F&E tools need to be simple to use, must be kept current, need to be locally applicable or easily adjusted for local conditions, and convenient training must be provided to relevant personnel—preferably on-site using local examples and data.

The following F&E models were indicated as rarely/never used by focus group participants:

- Forest Vegetation Simulator (FVS) Economic Analysis Extension
- My Fuel Treatment Planner (MyFTP)
- Web O' Fire
- Forest Inventory and Analysis (FIA) BioSum
- Harvest Cost-Revenue (HCR) Estimator
- Other JFSP products, reports, or information

The following F&E tools were indicated as occasionally/frequently used, with caveats:

- Transaction Evidence Appraisal (TEA) system
- Region Six Log Cost and Haul Cost programs (on USFS intranet)

All NFS participants indicated that they needed to use TEA for financial evaluation of biomass removal activities that were associated with timber sales, but TEA did not always produce reliable or useful results. FVS was indicated as frequently used by silviculturists, but the Economic Analysis Extension was not used by any participants. The Region Six log and haul cost programs were frequently noted as used by NFS personnel in R2 (CO & WY), R3 (AZ & NM), R5 (CA), and R6 (OR & WA). Three different types of contracts (i.e., timber sale, service, and stewardship) were frequently indicated as F&E "tools" used by NFS personnel to accomplish biomass removal in all regions. Most focus group participants also indicated using

their own spreadsheets or “back-of-the envelope” calculations to analyze financial feasibility (i.e., budget and costs vs. potential revenue) of biomass removal projects.

E. In addition to this report and a journal article, which discuss the key findings of the focus groups, the contents of the annotated bibliography (Loeffler and others 2009) constitute key findings of this project. A brief summary of the major areas of research and themes found among the literature and tools is provided within the bibliography. Delivery of the bibliography was shaped in large part by the input provided during the focus groups. In particular, giving draft versions of the annotated bibliography directly to focus group participants and posting it on web sites that managers mentioned already using were considered the best, low-cost methods of widely distributing the information.

V. Management, Administrative, and Research Implications

The most substantial gaps or disconnects discovered through the focus group process were not gaps in managers’ knowledge about financial and economic (F&E) items *per se*, or even knowledge of F&E tools for analyzing biomass removal treatments. Most, if not all, of the federal land managers that participated in the focus groups were very aware of the information they needed. They understood local timber and biomass market conditions, knew where to find locally relevant information on costs and potential revenue from treatment activities, and used available tools or their own methods for estimating project costs and revenue. Participants were also aware that other tools and information had been developed by researchers, generally knew how to locate these items, and several had formal training with the tools.

Rather, the most prevalent gaps and disconnects appeared to be between managers’ knowledge versus their acceptance and use of F&E tools developed by research entities. As indicated above, there were strong perceptions among the participating managers that many of the F&E tools and models developed by researchers are too complex and “research oriented”; the tools require data that are not readily available to land managers; the tools are not “scaled” to use at the project size; or they do not “fit” the administrative process used. Perhaps more importantly, managers also indicated that F&E tools developed by researchers, while more complex and complicated to use, do not provide substantially better or different results than locally developed methods. And, given managers’ time and budget constraints, the effort to switch tools and learn new methods for virtually the same results was not considered worthwhile.

Because time and budget constraints appeared so important to managers and were closely related to their ability and willingness to use F&E tools developed by researchers, land managers may be best served by agency administrators ensuring that NEPA-ID teams are staffed with personnel that are well-informed of local biomass and timber market conditions, have training and experience with F&E analysis, and understand that projects that go “no bid” represent money that was wasted on analysis. Researchers could further support these efforts by ensuring that necessary local information is available to relevant agency personnel, supporting local cost-collection/estimation efforts and methods, and limiting efforts to “reinvent the wheel” or “build a better mousetrap.” Ideally, research would provide managers with a simple, flexible, locally applicable and readily updatable tool that was also well-documented, administratively acceptable, and worked in conjunction with TEA.

It is not the responsibility of just administrators and researchers to bridge the gaps between managers' knowledge versus acceptance and use of F&E tools. A certain degree of reluctance to go beyond the *status quos* or shift away from business as usual is detectable among the focus group participants' responses. Local land managers must be able to recognize limitations of their current methods, be willing to learn more about F&E analysis, and ultimately adopt other tools or methods when what they are using does not work. Project planning and analysis, whether financial or ecological, cannot be considered ends in and of themselves; planning and analysis need to be viewed as means to achieve desired resource outcomes.

Removing and utilizing woody biomass, rather than burning it, is a relatively new concept for many in federal land management agencies. Agency infrastructure and processes are still largely geared for traditional timber harvesting and brush disposal. It is important for those inside and outside the agencies to understand that the shift to biomass utilization will take time because of internal factors unrelated to wood markets, as well as financial and economic considerations.

VI. Future Work Needed

The focus group findings suggest very strong needs for continually updated local timber and biomass market information; ongoing training of agency personnel with tools and methods currently used for F&E analysis; continued technical support for F&E models and tools currently used; and closer communication and integration with forest management personnel as new F&E tools or administrative processes are developed by researchers and agency directors. As numerous participants indicated, another biomass tool or treatment cost/revenue calculator may not be well-received because of issues with time, budgets, training, ease of use, and local relevance.

Future research may also do well to assess the administrative procedures and processes that are required (or perceived to be required) of land managers. In particular, researchers and agency administrators could examine the real or perceived requirements to:

- inventory and appraise (i.e., cruise) biomass with the same precision as traditional timber
- use the TEA system for setting minimum bids for biomass sales
- use stewardship contracts as the only way to keep project revenue on the forest
- quantify and report economic impacts of treatments in NEPA documents
- meet targets for acres treated or timber volume sold in order to receive adequate budgets

Focus groups suggested that varying degrees of acceptance and different interpretations of these requirements exist within the Forest Service. Consequently, some land managers found these items to be institutional barriers that needed to be worked around in order to accomplish resource objectives. Clarifying these requirements or reconciling these administrative procedures with management practicalities and resource needs would, no doubt, prove useful to biomass utilization on federal forest lands.

Unfortunately, very few BLM and USGS personnel and managers from just two national parks were available to participate in this study. Future research might seek to involve more participants from these and other federal land management agencies (e.g. Fish and Wildlife

Service and Department of Defense). Given differences in the agencies' mandates, administrative rules, and project analysis and implementation processes, somewhat different needs may exist. However, many of the basic information needs related to treatment costs, local outlets for harvested biomass, and availability of local contractors to conduct the work may be quite similar to findings from this study's NFS-dominated group of participants.

VII. Deliverables Cross-Walk

Proposed	Delivered	Status
Readily accessible web-based information on economic and financial aspects of biomass removal	1) http://www.bber.umd.edu/forest/Biomass.asp - This site contains the results of this and other BBER biomass studies, information on prices paid for logs and other woody material, logging costs, haul costs, and mill locations in the western US. 2) http://frames.nbii.gov/portal/server.pt - The FRAMES site is maintained by the University of Idaho. We have provided the annotated bibliography and other information from this study as partners. 3) http://www.srs.fs.usda.gov/econ/data/millcontacts/ - This site is maintained by the USFS SRS. We have provided and maintain information on wood facilities in the western states as partners.	Updated as needed Updated as needed Updated as needed
Series of presentations	1) Poster presented at 2008 SAF National Convention in Reno, NV, November 2008 2) Presentation at Western Forest Economists meeting in Welches, OR, May 2009 3) Poster presented at 2009 SAF National Convention in Orlando, FL, October 2009 4) Presentation at JFSP Biomass Roundtable Meeting in Boise, ID, November 2009	Completed Completed Completed Completed
Manuscript	1) Morgan, T.A., J.P. Brandt, and D. Loeffler (in preparation) Consideration of financial and economic issues related to woody biomass in federal forest management. Western Journal of Applied Forestry	Draft Ms in progress
Annotated Bibliography	1) Available on line at: http://www.bber.umd.edu/pubs/forest/biomass/JFSP_AnnBib_26102009.pdf and http://frames.nbii.gov/portal/server.pt 2) preparing for RMRS station publication	Updated as needed Updated as needed In progress

VIII. Literature Cited

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