Colorado Front Range Collaborative Forest Landscape Restoration Project:

Social and Economic Monitoring Report for 2012

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Executive Summary

Colorado's Front Range landscape holds tremendous social, economic, and ecological value across the region. The Colorado Front Range Collaborative Forest Landscape Restoration Project (FR-CFLRP) intends to protect these values through forest restoration across a 1.5 million-acre collaboratively identified landscape. The FR-CFLRP is overseen by the Front Range Roundtable (FRR), a longstanding forest collaborative, in conjunction with the Arapaho-Roosevelt and Pike-San Isabel National Forests.

This report presents the findings from the social and economic monitoring assessment of the FR-CFLRP for calendar year 2012-2013. This project-level assessment identifies the local economic contributions and summarizes the wood utilization associated with the FR-CFLRP. Outreach mechanisms pertaining to forest management and wildfire mitigation and preparedness being used across the Front Range are identified with recommendations for the FRR to support these efforts.

FR-CFLRP Funding and Accomplishments

Each Regional Forester is required to prepare an annual report describing the work accomplished and the sources of funding of the CFLR projects. This section provides an overview of the information provided in the annual report for FY2012 to provide readers an improved understanding of the funding, as well as the collaborative accomplishments the group has achieved.

The primary source of funding toward the CFLR projects is the Congressional appropriations. A total of $2,945,200 was appropriated to the FR-CFLRP by Congress for FY2012. USFS Chief Tidwell supplemented the $2.9 million appropriated funds with $906,100 carryover funds from the previous year. The resulting $3.8 million total of CFLR funds was used to complete work in the FR-CFLRP project area in FY2012 with over four thousand acres treated.

A total of $4,601,619 in matching funds was also used to complete work for the FR-CFLRP in FY2012. This included: 1) $1,042,900 in USFS matching funds, which were primarily used for USFS salary related to contract preparation associated with the FR-CFLR project; 2) 'Funds contributed through agreements' with partner organizations to implement and monitor efforts within the CFLR project area totaling $3,371,952; 3) 'Partner In-Kind Contributions' that totaled $166,900 and went toward monitoring efforts and collaborative meeting attendance; and 'Service work accomplishment through goods-for services funding…', which are the stewardship credits the contractor submits in return for removing value-added biomass, equal to $19,867 in FY2012.

Additionally, leveraged funds, which are funds used by partners to accomplish restoration activities on non-National Forest System lands associated with the FR-CFLRP project area, were contributed by

three partners: The Colorado State Forest Service, which conducted $2,096,250 worth of work on 3,225 acres; The Coalition for the Upper South Platte, which conducted $375,000 of work on 414 acres; and Denver Water, which completed $379,800 of work on 280 acres associated with the FR-CFLRP area.

Although the annual report identifies over two dozen performance measures for the CFLRPs, three significant accomplishments were identified by the USFS project leaders in addition to the treatment and fund matches identified above:

- 2,181 acres of forest vegetation improvements;
- 9,763 acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions; and
- 5,506 acres of wildland-urban interface high priority hazardous fuels treatment.

Economic Contributions

The opportunity to create jobs and support local economies is a high priority for the FR-CFLRP. A detailed analysis of the contract-level economic contributions in calendar year 2012 was carried out to identify the extent these economic goals had been met. It should be noted that the economic impact estimates in this analysis contrast with the estimates reported in the FY2012 Front Range CFLRP Annual Report (USFS 2013) due to differences in methodologies and data assumptions (outlined in Appendix C).

Seven task orders associated with the FR-CFLRP were initiated in 2012, with five of these task orders fulfilled and two partially completed by the year's end. Five task orders initiated in 2011 were also completed in 2012. In addition, the Rocky Mountain Research Station, Rocky Mountain Tree Ring Research, and the Colorado Forest Restoration Institute received CFLR funding for monitoring and consulting services, and the Arapaho-Roosevelt and Pike-San Isabel National Forests spent approximately $50,000 for common stand exams in the treatments areas.

The economic effects of the restoration activities and monitoring efforts were identified using Input-Output (I-O) modeling of pertinent operational expenditure and labor information obtained from the contractors. Our analysis estimates the restoration and monitoring activities contributed approximately $3.6 million in labor income and $2.4 million in GDP to the local economy (Table 1). These contributions to the local economy were stimulated by the contractors' operation expenditures as well as labor income.

Table 1. Economic Contributions of Front Range CFLR Task Orders and Monitoring in 2012

	Employment (Full- and part-time jobs)	Labor Income	Value Added
FR-CFLRP Task Orders:	70	$3,433,089	$2,066,344
FR-CFLRP Monitoring:	4	$226,812	$350,167
Total:	74	$3,659,901	$2,416,511

In addition, a total of 74 full- and part-time jobs were calculated. All employees reside within Colorado and are able to commute to work. The FR-CFLRP forest contractor subcontracts with other companies to assist with manual forest management operations and to conduct all trucking operations. The FR-CFLRP forest contractor was responsible for 59 percent of the total number of hours billed, with all mechanical work being completed by the contractor and a majority of the manual work (98 percent) completed by out-of-state subcontractors based in Florida and Oregon.

Recommendations for Future Monitoring – Economic Contributions

1. The 2011 and 2012 FR-CFLRP monitoring of local economic impacts used labor and operational expenditures obtained directly from the contractor. We added a similar economic analysis of the monitoring efforts for the 2012 report. This analysis adds to the national fiscal year report by providing a more locally-based understanding of the project's social and economic impact. This locally-based analysis should be completed on an annual basis so economic trends can be summarized over time.

Wood Utilization

A total of 4,117 acres were treated under the FR-CFLRP in 2012, with 2,057 acres treated on the Pike-San Isabel National Forest (PSI) and 2,060 acres treated on the Arapaho-Roosevelt National Forest (AR). The majority (81 percent) of the materials removed on the PSI were through mechanical treatments, whereas the majority of the treatments (89 percent) on the AR were completed manually. The material harvested manually was not available for value-added uses, whereas 99 percent of the materials in the mechanized units were. This is due to the types and quality of materials removed and the location of these treatments. These treatment prescriptions were identified to meet the restoration goals outlined by the FR-CFLR collaborative and the Pike & San Isabel and Arapaho & Roosevelt National Forest plans.

Twelve businesses purchased the available value-added materials from the FR-CFLRP treatments in calendar year 2012. The purchasers included ten Colorado businesses, either in the same county or a county near where the work was being done, and two out-of-state businesses located in Wyoming and New Mexico. A large portion of the biomass from both forests went to wood chips used for post-fire rehabilitation efforts. The value-added materials included sawtimber, small diameter timber, firewood, and bark fines. Materials from the Pike & San Isabel National forests were turned into an assortment of products with the largest portion (54 percent) going to landscaping materials and four percent going to high-value dimensional lumber. The majority of value-added materials (20 percent) from the Arapaho & Roosevelt National Forest went to dimensional lumber, followed by posts/poles (15 percent) and pallets & crates (6 percent).

Recommendations for Future Monitoring – Wood Utilization

1. We collected green ton numbers for the 2011 and 2012 reports, which prevented us from fully calculating the economic effects of wood utilization. We recommend identifying accurate conversion numbers for green tons to CCF or dry ton numbers to calculate additional local economic effects of wood utilization.

Public Outreach

There has been extensive social science research on social perceptions toward forest management techniques. The Front Range Collaborative Forest Landscape Project (FR-CFLRP) social and economic monitoring report for 2011 summarized national research findings on public perceptions toward prescribed fire and forest management. One of the key conclusions was that public outreach is important for public understanding and potential acceptance of forest management, including prescribed fire.

We began to identify effective public outreach mechanisms for the Front Range, in addition to recommendations for the Front Range Roundtable to support such outreach efforts by holding four focus group meetings with eighteen forest management public outreach experts from across the Front Range. The focus group participants identified four primary recommendations for the Front Range Roundtable to support outreach efforts across Front Range communities:

1. Support and organize opportunities for outreach experts and organizations to meet
2. Lobby for, support and/or organize statewide outreach campaigns

3. Organize and support resource sharing for communities and outreach specialists
4. Promote consistent messages across state and local groups

The focus group participants identified a number of effective outreach approaches, resulting in four primary themes. First, participants emphasized the most effective outreach is tailored to both the local ecosystem and the community members. The second theme participants emphasized was to prepare community members for what to expect from forest restoration and wildfire mitigation efforts. The third theme that emerged from the focus group discussions was the usefulness of interactive outreach methods, including one-on-one discussions, neighbor-to-neighbor information sharing, workshops with hands-on activities, and field tours. The fourth theme for effective outreach was the importance of coordination between local community organizations and the public land agencies.

Recommendations for Future Monitoring – Public Outreach

1. A study and/or a literature review on social perceptions specific to the FR-CFLRP project region should be conducted for the 2013 report. This should include both peer-review and popular press articles.
2. The information identified on factors influencing public perceptions and effective methods for public outreach should be used to develop and implement a plan for public outreach to improve public understanding and discussion of the FR-CFLRP project.

Collaboration

Collaboration is a key component of the Front Range Roundtable. A baseline measure of collaboration was established through key informant interviews conducted by the Colorado Forest Restoration Institute for a 2012 collaboration case study. Additional interviews with key informants will be conducted every 3-5 years to track the challenges, achievements, and lessons learned associated with the FR-CFLRP collaborative process.

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Goals and Indicators

The Colorado Front Range Collaborative Landscape Restoration Project (FR-CFLRP) is one of 23 projects funded nationally under the Collaborative Forest Landscape Restoration program of the USDA Forest Service (USFS). It is intended to accelerate ongoing forest restoration treatments that provide long-lasting ecological, social and economic benefits across a 1.5 million-acre landscape covering parts of the Arapaho-Roosevelt and Pike-San Isabel National Forests in Colorado. This project will facilitate additional treatment of approximately 32,000 high-priority acres on National Forest System (NFS) lands within the Front Range Roundtable's designated 800,000-acre restoration zone and will be enhanced by existing and future treatments on adjacent federal and non-federal lands. A large portion of the 800,000 acre restoration zone is within the wildland-urban interface and will be the focus of the 32,000 acres of treatment.

More than 70 percent of the forests (both federal and non-federal) within this proposed area exhibit a high to very high degree of ecological departure from historic norms and are susceptible to uncharacteristic high intensity wildfire and insect and disease infestations. These conditions increasingly threaten human health and well-being, as well as critical ecosystem services throughout the region. Through strategic placement of treatments, the FR-CFLRP plans to restore historic fire regimes, including low intensity wildland fires, with a goal of reducing risks to the ecosystem and communities and lowering suppression costs. Much of the area is deemed critical for protecting communities and municipal watersheds (which supply drinking water to over 75 percent of Colorado's population) from the impacts of uncharacteristic fire.

Project treatments will be strategically placed to maximize timely implementation and benefits on the ground. The first three years of treatment will focus on areas within the Roundtable's restoration zone where: 1) National Environmental Policy Act (NEPA) review is complete; 2) complementary work

has already occurred or is underway and can be leveraged for a larger-scale outcome; 3) both ecological and community protection priorities can be simultaneously addressed; 4) work by non-federal partners on adjacent lands will complement management on federal lands; and/or 5) opportunity exists to create jobs and support local economies.

Opportunities for job creation, business support and development, and meaningful biomass utilization are emphasized in the design and implementation of treatments. The goal of the socioeconomic monitoring for 2012-2013 was to measure the social and economic contributions of the FR-CFLRP project study area and to further develop a baseline measure for future monitoring efforts. The socioeconomic monitoring plan was established upon: 1) topics and indicators identified by the FR-CFLRP monitoring group, and 2) national CFLR program monitoring outcomes and indicators. The monitoring plan identifies three key objectives for the 2012 socioeconomic assessment:

1. Determine the economic contributions associated with the FR-CFLRP project funded task orders and monitoring efforts.
2. Measure the types and amounts of wood utilization that occurred as a result of these funded task orders;
3. Identify effective outreach methods for forest management treatments and prescribed fire and ways the Front Range Roundtable can support outreach efforts.

The remainder of this report presents the findings associated with each of the three objectives. Subsequent appendices provide background information to the Collaborative Forest Landscape Restoration program and the Front Range Roundtable, as well as the methods used to obtain this data.

Findings

The following subsections describe the FR-CFLRP funding and accomplishments, and outline the the economic contributions and wood utilization associated with the FR-CFLRP, as well as the current outreach mechanisms occurring across the Front Range communities.

FR-CFLRP Funding and Accomplishments

This section provides an overview of the sources of funding and key accomplishments identified in the USFS "Colorado Front Range CFLRP Annual Report" for Fiscal Year 2012 (USDA Forest Service, 2013). Every Regional Forester is required to prepare an annual report describing the work accomplished and an evaluation of progress for each CFLR project within their region. The annual report records the sources of funding and the accomplishments of the CFLR projects.[1] Each CFLRP has six funding sources documented in the report, including appropriated funding, four types of matching funds, and leveraged funds.

Collaborative Forest Landscape Restoration Funds

The Collaborative Forest Landscape Restoration (CFLR) funds are designated by Congress on an annual basis to each of the CFLR projects. A total of $2,945,200 was appropriated to the Front Range CFLRP (FR-CFLRP) by Congress for FY2012. USFS Chief Tidwell supplemented the $2.9 million appropriated funds with $906,100 carryover funds from the previous year. The resulting $3.8 million total of CFLR funds funded task orders to complete forest management efforts in the FR-CFLRP project area in FY2012 with over four thousand acres treated.

[1] The annual report records: the sources of funding; how the CFLR work has contributed toward meeting performance measures outlined in the USFS 10 year Comprehensive Strategy Implementation Plan (2006); the assumptions used to generate numbers and/or percentages entered into the TREAT model; A description of other community benefits achieved; a description of the multiparty monitoring efforts; the Fiscal Year accomplishments; a description of the total acres treated during the CFLRP process; the fire management activities which have occurred in the project area; a description of challenges associated with implementing the CFLRP; and anticipated management activities for the following fiscal year.

Matching Funds

The matching funds are defined as any non-CFLR funds from within the USFS and/or external partners used to conduct work on national forest system lands associated with the CFLR project. A total of $4,601,619 in matching funds was recorded for FY2012. There are four types of matching funds reported in the annual report. The first are USFS matching funds, which are defined as any non-CFLR funds that are used to complete work in the CFLR project area. In FY2012 the FR-CFLRP used a total of $1,042,900 USFS matching funds. These funds were primarily used for USFS salary related to contract preparation associated with the FR-CFLR project.

The second type of matching funds reported are 'Funds contributed through agreements' with partner organizations to implement and monitor efforts within the CFLR project area. So far all of these contributions have been on the Pike National Forest. The total amount of funds contributed through agreements to the FR-CFLRP was $3,371,952 in FY2012. The partner contributions included:

- Denver Water donated $1,069,977 for work completed on the Pike National Forest which neighbors Denver Water's property and/or affects their infrastructure;
- The CO Department of Corrections and the Mile High Youth Corp. contributed funding for work on the Waldo Trail ($3,572 and $6,258, respectively);
- The Coalition for the Upper South Platte (CUSP) contributed $4,675 of restoration work completed in 11 Mile Canyon; and
- CUSP, the National Forest Foundation, Vail, and Arbor Day contributed a total of $2,287,470 to Hayman Fire Restoration efforts.

The third type of matching funds reported is 'Partner In-Kind Contributions,' which totaled $166,900 in FY2012. These are primarily through in-kind contributions but also include cash donations through agreements. The majority of the partner funds contributed in FY2012 was related to monitoring efforts. The Colorado Forest Restoration Institute contributed $30,800 of in-kind contributions, the Southern Rockies LCC contributed $41,000 through a monitoring grant received by the Rocky Mountain Research Station (RMRS), and the Rocky Mountain Tree-Ring Research contributed $22,500 to historic range of

variability monitoring in association with the RMRS. The Front Range Roundtable Members also contributed $50,600 in-kind through their monitoring activities and roundtable meeting attendance. This was calculated from attendance records and associated estimates of hours, averaging between $40 and $50 per hour for each member. In addition, CUSP contributed $22,000 to the FR-CFLP through a collection agreement with the Pike & San Isabel National Forests for the financial oversight and management of the FR-CFLRP, primarily funding Beh Management Consulting for the facilitation and coordination of the CFLRP monitoring.

The fourth type of matching funds reported are 'Service work accomplishments through goods-for-services funding within a stewardship contract.' These funds are the stewardship credits a contractor receives for completing service agreement work within a stewardship contract. The matching fund amount recorded equals the amount of stewardship credits the contractor reimburses the national forests for in return for timber product removal (i.e. trading goods for services). In FY2012 the stewardship credits reimbursed totaled $19,867 for four stewardship contract task orders – Redfeather 1, Buffalo Creek 1, Catamount 1, and Long John.

Leveraged Funds

Leveraged funds are those funds used by partners to accomplish restoration activities on non-National Forest System lands associated with the FR-CFLRP project area. This category of funding was first added in the FY2012 annual reporting. Leveraged funds were contributed to the FR-CFLRP by three partners in FY2012. This information was obtained from partner organization representatives through a request for the number of acres treated and treatment costs in areas associated with the FR-CFLRP.

The leveraged funds in FY2012 included:

- The Colorado State Forest Service, which conducted $2,096,250 worth of work on 3,225 acres;
- The Coalition for the Upper South Platte, which conducted $375,000 of work on 414 acres; and
- Denver Water, which completed $379,800 of work on 280 acres associated with the FR-CFLRP area.

FY2012 Accomplishments

The "Colorado Front Range CFLRP Annual Report" for FY2012 provides a detailed review of the FR-CFLRP accomplishments through 26 performance measures (USDA Forest Service, 2013, pp. 8-10). The accomplishments reported include all work completed by the USFS and partner organizations on the national forests within the FR-CFLRP area. It therefore includes work funded through each of the categories identified above except for leveraged funding. In addition to the treatment and funding accomplishments identified above, interviews with the USFS project team leaders indicate the FR-CFLRP's significant accomplishments for FY2012 include:

- 2,181 acres of forest vegetation improvements;
- 9,763 acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions; and
- 5,506 acres of wildland-urban interface high priority hazardous fuels treatment.

The USFS project team leaders identified two limitations of the performance measures listed in the annual report. First, a standardized protocol for tracking total treatment costs has not been developed. As a result, the two forests used different methods to calculate the performance measures. The Pike-San Isabel NFs quantified the actual implementation costs (i.e. cost/acre), whereas the Arapaho-Roosevelt NFs measured the total contract and agreement costs. While both approaches are suitable for tracking performance measures, this could create difficulties for detailed comparisons of accomplishments across the forests, as well as CFLR projects. Second, several of the accomplishment numbers are double-counted. For example, the row identifying 'acres of forest vegetation improved' includes information from several additional performance measures listed, including 'volume of timber sold,' 'green tons from small diameter and low value trees …,' and 'acres of hazardous fuels.'[2] Resolving these challenges would improve the ability to measure the national CFLRP program accomplishments.

[2] It is important to note that although an overlap occurs within the accomplishments table, all of the total treatment cost numbers are captured correctly in the "total funds expended" category in Table 1 of the Annual Report.

Economic Contributions: Treatments

The CFLR program funding proposal requirements sent to Regional Foresters identified multiple topics to be addressed. The investments section specifically asks: "Will jobs be created? If so, what kind, how many, and for how long?" The following analysis estimates the economic effects resulting from the implementation of CFLR program funded restoration treatments on the Pike-San Isabel and the Arapaho-Roosevelt National Forests in 2012.

The FR-CFLRP contractor worked on eleven task orders associated with this project in 2012. Six task orders associated with the FR-CFLRP were initiated in 2012, with four of these task orders fulfilled and two partially completed by the year's end. Five projects initiated in 2011 were also completed in 2012. A separate contractor was issued and completed a single CFLR task order in 2012 to masticate slash piles the AR was unable to burn due to fire restrictions.

The economic effects of these restoration activities were identified using IMPLAN® (IMpact analysis for PLANing), a regional economic impact analysis system commonly used by the USFS to model pertinent operational expenditure and labor information obtained from the contractor. This analysis estimated the restoration activities contributed approximately $3.4 million in labor income and $2.0 million in value-added (i.e. Gross Domestic Product or GDP) contributions to the local economy in 2012 (Table 2). These contributions to the local economy were stimulated by the contractors' operation expenditures as well as labor income.

Labor income includes all forms of employment income (wages, benefits, and proprietor income). The value-added contributions consist of: (1) employee compensation – wages and salaries plus benefits paid by local industries; (2) proprietor income – income from self-employment; (3) other property income – corporate income, rental income, interest and corporate transfer payments; and (4) indirect business taxes – sales, excise, fees, licenses and other taxes paid, including non-income based payments to the government.

Table 2. Economic Contributions of Front Range CFLR Task Orders in 2011 and 2012

	2011	2012
Employment (Full and part time jobs)	38	70
Labor Income (2012 USD)	$1,994,960	$3,433,089
Value Added (2012 USD)	$1,702,522	$2,066,344

Additionally, a total of 70 full- and part-time jobs were calculated. Jobs reported in IMPLAN are annual averages of both full- and part-time total wage and salary employees, as well as self-employed jobs. This method of counting employment is a standard convention and consistent with methods used by the U.S. Bureau of Labor Statistics. However, one cannot discern the number of hours worked or the proportion of work that is full-time time vs. part-time. It is also important to reiterate the employment contributions calculated are reported simply as jobs, not full time equivalents (FTEs). The impacts include both full- and part-time employment; therefore a person with more than one job could show up more than once in the data. This prohibits comparisons to population data and inferences about the effect on unemployment rates. It is also important to note that IMPLAN is a static model representing a snapshot in time.

In addition to the economic contributions data, the contractor also supplied information concerning the location of their employees and subcontractors. The company employees all reside within Colorado and are able to commute to work on a daily or weekly basis (some crews prefer to live on site during the week). The initial long-term stewardship contract awarded in 2009 (prior to the FR-CFLRP project being funded) allowed the contractor to hire additional permanent employees, from both in- and out-of-state locations.

The contractor implements most of the contract work but does subcontract with other companies to complete some of the manual forest management operations. The majority of the

trucking operations are managed by a separate company that hires independent truck drivers. In 2012 the contractor was responsible for 59 percent of the total number of hours billed (both mechanical and manual labor). The majority of mechanical work was completed by the Colorado-based contractor; however they did hire one subcontractor for mechanical work on the Walker Black task order. The majority of the FRCFLRP project's manual work (98 percent) was completed by subcontractors based out of Florida and Oregon.

Economic Contributions: Monitoring

In addition to monitoring the economic impacts of the FR-CFLRP task orders a more detailed analysis of the FR-CFLRP's monitoring efforts was conducted. There has been strong interest from the FR-CFLRP collaborative to identify additional economic impacts of the FR-CRLR projects outside of the task orders. The ability to identify additional economic impacts is complicated by ever-changing forest and regional budgets, as well as USFS funding codes. The social and economic monitoring team decided to measure the monitoring funding associated with the FR-CFLRP for two primary reasons. First, the funds associated with monitoring provide an identifiable category of expenses. Second, the monitoring funds expended would not have been spent without the CFLRP (i.e. there would not have been post-treatment monitoring or social-economic monitoring, or detailed common stand exams).

Approximately five percent of the FR-CFLRP budget is allocated toward monitoring, approximately $190,000 in FY2012. Two sources of information were used to measure the additional impacts related to monitoring: 1) identifying the amount of funding the Arapaho-Roosevelt and the Pike-San Isabel National Forests spent on common stand exams associated with the FR-CFLRP; and 2) conducting an economic analysis of common stand exams and the funding provided to partner organizations to conduct social-economic and ecological monitoring efforts.

The amount of monitoring funding expended on common stand exams by the USFS provides an accurate assessment of additional economic impact as this monitoring would not have occurred without

the FR-CFLRP. The Arapaho-Roosevelt and the Pike-San Isabel National Forests both spent $25,000 in FY2012 for common stand exams related to work completed in the FR-CFLRP area. The common stand exam is a type of monitoring conducted by the USFS before and after forest treatments used to determine how well the treatment has met the intended objectives or prescription. Over 400 monitoring plots were used on the two national forests to measure over 2,900 acres of treatment areas in 2012.

The FR-CFLRP collaborative monitoring group conducted social, economic, and ecological monitoring in addition to the USFS common stand exams. An analysis of these monitoring efforts provides additional insight toward the economic impacts of the FR-CFLRP. Monitoring contracts, totaling $155,600 were established with three partner organizations: The Rocky Mountain Research Station, Rocky Mountain Tree Ring Research, and the Colorado Forest Restoration Institute each received CFLR funding for monitoring and consulting services in 2012. The Colorado Forest Restoration Institute (CFRI) at Colorado State University contracted with the USFS to conduct social, economic and ecological monitoring for $78,600. The USFS Rocky Mountain Research Station (RMRS) and Rocky Mountain Tree Ring Research contracted with the USFS to conduct ecological and historic range of variability monitoring for $77,000.

Our economic analysis estimated monitoring activities conducted by the USFS and its partners contributed approximately $226,812 in labor income and $350,167 in value-added (i.e. Gross Domestic Product or GDP) contributions to the local economy in 2012, with a total of 3.6 full- and part-time jobs calculated (Table 3). These contributions to the local economy were stimulated by the monitoring expenditures as well as labor income.

Table 3. Economic contributions of Front Range CFLRP monitoring efforts in 2012

Employment (Full- and part-time jobs)	Labor Income	Value Added
3.6	$226,812	$350,167

Wood Utilization

The following section reports the number of acres treated by treatment type, the types of materials sold, the products produced from those materials, and the number and location of the businesses to which the materials were sold.

A total of 4,117 acres were treated under FR-CFLRP task orders in 2012, with 2,057 acres treated on the Pike-San Isabel National Forest (PSI) and 2,060 acres treated on the Arapaho-Roosevelt National Forest (AR) (Table 4). The amount of material available for wood utilization largely depends upon the type of forest treatment used – mechanical and manual. Mechanical treatments involve the use of heavy machinery and are less cost prohibitive and less labor intensive than the manual treatments which involve individual sawyers removing trees and brush designated by the USFS prescription. Manual treatments are often used in areas that are inaccessible to mechanical treatments due to steep and/or rocky terrain. The majority (81 percent) of the materials removed on the PSI were through mechanical treatments, whereas 89 percent of the treatments on the AR were completed manually.

There is a large difference in the availability of value-added materials based upon whether the treatments are mechanical or manual. Although manual treatments have a lower initial environmental impact, none of the material harvested manually was available for value-added use and 99 percent of this material was piled and burned (not as prescribed burns). This is due to the location of the treatments, as well as the types and quality of materials removed through these treatments. These treatment prescriptions were identified to meet the restoration goals outlined by the FR-CFLR collaborative and the Pike & San Isabel and Arapaho & Roosevelt National Forest plans.

There was a much higher level of utilization in mechanized units with 99 percent of the material mechanically harvested being available for value-added uses such as sawtimber, small diameter wood products, and bark fines. The remaining 1 percent was piled and burned. It was estimated that approximately 5-10 tons/ acre were left for wildlife habitat for both types of treatments.

Table 4. Number of acres treated in 2012 by treatment type and task order

			Treatment Acres	
National Forest	**Task Order**	**Location (County)**	**Mechanical**	**Manual**
Pike – San Isabel	Phantom Creek 2[3]	Teller	0	0
	Phantom Creek 3	Teller	656	0
	Long John	Teller	305	0
	Ryan Quinlan 1	Teller	356	0
	Phantom Creek 4	Teller	0	389
	Catamount 1	Teller	351	0
Total:			*1668*	*389*
Arapaho–Roosevelt	South Zone Chipping[4]	Boulder	0	0
	Estes Valley 5/ Walker Black	Larimer	221	619
	Thompson River 2	Larimer	0	49
	Walker Red	Boulder	0	636
	Boulder Heights	Boulder	0	115
	Red Feather 1	Larimer	0	400
Total:			*221*	*1839*

[3] All logging was completed in 2011 but the task order was finished in 2012 when the contractor chipped slash piles.
[4] The USFS issued a chipping contract to a second contractor to chip slash piles the ARNF was unable to burn.

What types of materials were sold?

The types of wood materials sold from the FR-CFLRP include sawtimber, small diameter timber, and products other than logs (Table 3).

Table 3. Types of materials sold

National Forest	Material	Green Tons	
		2011	2012
Pike-San Isabel	Sawtimber and small diameter timber	7,641	(7,776)
	Sawtimber	n/a	1,566
	Small diameter timber	n/a	6,210
	Products other than Logs (POL)	11,475	30,241
	Total:	*19,116*	*38,017*
Arapaho-Roosevelt	Sawtimber	n/a	513
	Small Diameter timber	170	513
	Blue Stain	155	0
	Products other than Logs (POL)	1,268	1,465
	Limbs/ Brush	1,134	0
	Total:	*2,727*	*2,491*

Who purchased these materials?

A total of twelve businesses purchased the available value-added materials from the FR-CFLRP treatments in 2012. Seven businesses purchased materials from the PSI contract work, five businesses purchased materials from the AR, and two additional businesses purchased materials coming from both forests. The majority of the value-added materials removed from these forests through the FR-CFLRP were purchased by ten Colorado businesses. These businesses were located within or near the counties where work was completed – Adams, El Paso, Fremont, Larimer, Pueblo, Teller, and Weld Counties. The two out-of-state purchasers were located in Wyoming and New Mexico.

What was created from these materials?

Assessments of the types of products developed from these materials were provided by the contractor (Table 4). A large portion of the biomass removed from both forests went to produce wood shreds used for post-fire rehabilitation efforts (59% from AR and 23% from PSI) in 2012. The majority of the materials from the PSI went toward mulch, followed by pallets and crates, and other landscape materials and firewood. Materials from the AR also went to the development of a variety of products, with the majority going toward the production dimensional lumber, followed by posts and poles, and pallets and crates.

Table 4. Products created in 2012

National Forest	Products created	Product Value	Percent of total material sold	
			2011	2012
Pike - San Isabel	Wood shreds (for post fire restoration)	Low	0	23
	Dimensional lumber	High	2	4
	Mulch	Medium	23	36
	Pallets & Crates	Medium	38	16
	Compost	Medium	14	10
	Wood chips	Low	21	0
	Bark Fines (Landscaping)	Low	0	8
	Firewood	Low	1	3
	Soil Fertilizer/ Biochar	Low	1	0
				100%
Arapaho - Roosevelt	Wood shreds (for post fire restoration)	Low	0	59
	Dimensional lumber	High	0	20
	Posts/ poles	Medium		15
	Pallets & Crates	Medium	17	6
	Playground/ landscaping material	Low	71	0
	Firewood	Low	7	0
	Wood fuel pellets	Low	5	0
				100%

Public Outreach

There has been extensive social science research on social perceptions toward forest management techniques. The Front Range Collaborative Forest Landscape Project (FR-CFLRP) social and economic monitoring report for 2011 summarized national research findings on public perceptions toward prescribed fire and forest management. One of the key conclusions was that public outreach is important for public understanding and potential acceptance of forest management, including prescribed fire. The Front Range Roundtable brought up two key questions as a result of these findings:

1) What types of outreach are most effective across Colorado's Front Range for raising awareness about forest management and prescribed fire?
2) How can the Roundtable support outreach efforts pertaining to forest management and prescribed fire in the FR-CFLRP project area?

To address these questions the social and economic monitoring team first invited Sarah McCaffrey, Research Social Scientist from the USDA Forest Service's Northern Research Station, to present her research on public perceptions toward wildfire mitigation and forest management at a Front Range Roundtable meeting and at Colorado State University in March 2013. She confirmed the findings of our literature review for the 2011 monitoring report and provided many additional insights to understand public perceptions and successful outreach mechanisms.

We also began to address these questions by organizing four focus group meetings with eighteen forest management public outreach experts from across the Front Range. Participants were asked to discuss:

- Who do you work with? What is the goal of your outreach? Where is this outreach used?
- What are the most effective approaches you have found? How do we know what is effective?
- What are the best ways for the Front Range Roundtable to support outreach efforts across the Front Range?

The remainder of this section outlines their recommendations for the Front Range Roundtable to support outreach efforts followed with summaries from the focus group discussions.

Recommendations for the Front Range Roundtable to support outreach efforts

The focus groups identified four primary recommendations for the Front Range Roundtable (FRR) to support outreach efforts across Front Range communities.

1. Support and organize opportunities for outreach experts and organizations to meet.

Each of the focus groups discussed the importance of information sharing, training, and coordination across outreach specialists and groups. Each group of experts found the focus group meetings to be very informative and helpful for developing new, fresh ideas and approaches for sharing information. The FRR could support outreach efforts on the Front Range by organizing additional locally-based focus group meetings on a regular basis (i.e. annually or biannually) because they provide a good opportunity for experts to share ideas and resources such as brochures, videos and presentations. The FRR could also support outreach efforts by coordinating a half-day workshop for outreach organizations and experts from across the Front Range. Within this workshop, each expert or organization could present their success stories and useful resources, which could then be compiled on a jump drive or website. Finally, there was strong support for the development of a statewide "Colorado Wildfire Mitigation Conference" that would involve outreach experts from across the state. This could include community leaders, fire departments, special districts, USDA Forest Service, Colorado Council of Governments (COGS) groups, Colorado Counties Inc., the Fire Marshalls (FMAC), Colorado State Forest Service, and the Governor's office.

2. Support, lobby for, or organize statewide outreach campaigns.

Public outreach and education campaigns are also an important action the participants recommended pursuing. One suggestion was a marketing and public relations effort through radio, television, and/or internet to encourage people to talk with their local experts. This could include the

local CO State Forester, USFS District Ranger's office, fire department, homeowner's association, or county experts. Some participants suggested the campaign could designate a time period (i.e. April to October), where FRR partners could each sponsor a month of outreach. The FRR could also work with the Governor's task force on insurance to develop a statewide program on wildfire awareness that would help coordinate and fund outreach.

Additionally, participants recommended the FRR could pool resources to create a regular information sharing segment – e.g. "fire tip of the week" for a local newspaper, radio or TV broadcast; or the creation of short videos for YouTube that could then be used in outreach programs. Participants also suggested the FRR partners could work with water providers to include informational flyers on wildfire mitigation and forest restoration on public and private lands, to be distributed along with water bills.

3. Organize and support resource sharing for communities and outreach specialists.

3.1. Resources for communities

One of the challenges identified was that local citizens are often unsure of who to contact for information about forest restoration or wildfire mitigation projects. The focus group participants emphasized the importance of identifying local experts and communicating to the public who those experts were. Participants suggested having clearly identifiable signs or kiosks with contact information and material about the FR-CFLRP forest management projects being implemented on public land. Participants also suggested the FRR could develop a template for identifying local experts for forest management on both public and private lands. Since these experts will vary by community, it is important to identify the categories of experts and organizations local citizens can contact.

Focus group participants also discussed how a list of potential financial resources for private landowners and local governments would be useful. All focus group participants agreed that most homeowners do not have sufficient resources (i.e. money, time, knowledge, or equipment) to do wildfire mitigation work and it would useful to identify resources to help people get started. They have

found that when projects are implemented community members' interest and related discussions about forest restoration and mitigation efforts increase. This helps them to identify and better understand the need for wildfire mitigation and preparedness efforts.

3.2. Resources for outreach specialists

Participants discussed the difficulty they had identifying resources for developing and conducting outreach. Since financial resources for outreach are limited the Front Range Roundtable could develop a list of potential sources of assistance for printing and distributing information, as well as facilitating workshops and outreach activities, would be helpful. Participants encouraged the FRR to coordinate with partners across the state to create a larger statewide effort to share information, resources, and outreach mechanisms at a larger scale. A statewide catalog of existing outreach resources would be helpful as would additional focus group interactions.

Some participants were frustrated that relevant research on outreach and public perceptions rarely filters down to managers on the ground in a useable form. The FRR could identify relevant research on outreach mechanisms and studies on perceptions related to wildfire mitigation and outreach. Technical journals are often not applicable or useful to managers but summaries or abstracts would be helpful. Participants also noted there seems to be a lot of duplication of outreach resource development efforts. Participants suggested the FRR could potentially work with the Southern Rockies Fire Science network to catalog existing outreach resources and create a database with links or copies of information to share.

4. <u>Promote consistent messages across state and local groups.</u>

Focus group participants identified inconsistent messages regarding forest management and wildfire mitigation efforts as a challenge. Some noted there has been a tremendous increase in the number of watershed restoration groups since the recent wildfires, some of which may be sharing inaccurate information with the public. Consistent outreach messages need to be identified and communicated to new and existing groups that are associated with wildfire mitigation and preparedness efforts.

Participants recommended the FRR could assist in identifying these resources (e.g. USDA Forest Service, Colorado State Forest Service, National Fire Protection Association materials) and could develop a handout or webpage with a list of outreach information with a consistent message. They recommended the FRR could share this information with partners across the Front Range, including water providers and fire districts, to incorporate messages about fuels and the role of forest management in the health of watersheds. Finally, the groups discussed a need to train the outreach groups and outreach specialists in effective messages and key lessons for forest management and wildfire mitigation. These train-the-trainer sessions could ensure that consistent messages are being distributed to other groups and the public.

Summary from the focus group discussions

1. *Who do you work with? What is the goal of your outreach? Where is this outreach used?*

The focus group participants represented a diversity of county and national level organizations who work with a broad variety of stakeholder interests across the Front Range and/ or statewide. These stakeholders include full- and part-time landowners, local citizens, out-of-state visitors, second homeowners, teachers and schoolchildren, realtors and developers, fire departments, local government, elected officials and homeowners groups. Several participants have worked closely with private landowners and communities to develop and implement community wildfire protection plans (CWPPs) and/or Firewise communities. Some have worked in communities which border public lands and have had successful projects across public and private lands where national forests and/ or national parks neighbor wildland-urban-interface communities.

The outreach goal of each of the organizations represented was to increase awareness and support for forest restoration efforts on public land and/or to promote wildfire mitigation and forest restoration efforts on private lands. The focus group participants work closely with partner organizations to increase the effectiveness of their outreach.

2. What are the most effective approaches you have found?

Four primary themes regarding effective outreach emerged from the focus group discussions. First, participants emphasized the most *effective outreach is tailored to both the local ecosystem and community*. They emphasized different regions, counties, communities, and neighborhoods can vary drastically in their understanding and acceptance of forest management efforts. It is important to take into account the type of forest, the community dynamics, and the goals of the community members. As a result, information is best received when it is context specific and provided by someone who is knowledgeable about local conditions and community dynamics.

Many of the participants have found using positive outreach messages are an effective way to tailor the outreach to community members. For example, rather than talking about cutting trees down for fire mitigation it is more effective to talk about forest health and other positive aspects of forest management. This may be in the form of "selling a 'new aesthetic'" (i.e. a managed forest), framing the message in a way that makes sense to the audience (e.g. incorporating their concerns for wildlife with your message), or sharing with them how they can take care of the forest by supporting or assisting with forest management and mitigation. Many people have a perception of fire as a negative occurrence and so fire (e.g. prescribed and/or wild fire) should be framed as an important part of the ecosystem with information provided to the public about the benefits of fire (e.g. wildlife habitat, reduced fuel).

Another way to tailor the outreach to community members is to use a values approach where the organizers help the community members identify what they value about the area (e.g. trees, wildlife, and privacy) and then discuss with them how fire mitigation and forest restoration would help to protect those values. Participants suggested it is helpful to start the conversation through educational opportunities to raise awareness, while also identifying what community members have identified as critical issues. The community members' concerns can then be incorporated with the forest

management needs you have identified. This is an important approach to take because many people believe the current state of the forest is natural.

Another effective approach for tailoring the message to the local community is to use a variety of outreach mechanisms because people will respond to different types of outreach methods. For instance, the Colorado State Forest Service uses a variety of tools including publications, website tools, workshops, working with individual homeowners and neighborhoods, and sharing information in community newsletters. It is important for these outreach mechanisms to share consistent, factual messages and for all outreach mechanisms to fit together to work effectively. Messages can also be tailored to the local community by inserting announcements and information in community newsletters and other community outreach tools (e.g. websites). Regular forums with the local fire departments are also effective.

The second theme participants emphasized for effective outreach was to *prepare community members for what to expect from forest restoration and wildfire mitigation efforts*. They have found this provides an opportunity to manage people's expectations about how the forest will look, how the treatments will be implemented, how long the forest management effort will take, and what the recommended treatments are intended to accomplish. Effective methods for conveying this message include demonstration sites, community workshops, as well as having information on restoration and wildfire mitigation included in local community newsletters and newspapers. Although demonstration sites are a useful approach these are expensive to implement and maintain. Participants suggested an alternative is to use pictures showing the progression toward management objectives on previously treated areas. Pictures taken before, during, and after the treatments are effective for helping people understand what to expect from forest treatments and fire mitigation efforts. For private landowners they have found the use of pictures of houses within the community as examples of what works or doesn't work for fuels mitigation is helpful. Some focus group participants also described how science

videos and social media are effective methods for conveying what to expect from forest treatments, as well as to teach people about defensible space measures. Examples include YouTube videos on fire behavior from Jack Cohen and the "Forestry in Action" videos which discuss management objectives and show the progression and outcomes of management efforts.

The focus group participants also emphasized the importance of managing public perceptions of the time it takes to conduct forest management and wildfire mitigation. Citizens are often concerned about the pace of restoration efforts on public lands if they do not understand what the process entails. Likewise, private landowners may lose motivation if they do not think they can accomplish everything that needs to be done on their property in a short amount of time. One participant brought up the "100/0 rule" where if we ask landowners to do 100% then 0% may get accomplished because they will become overwhelmed by the amount of work that needs to be done.

Focus group participants also highlighted that messages about forest management and wildfire mitigation need to be consistent. The recent wildfires have provided an opportunity to increase public awareness on how both urban and rural areas can be directly and indirectly affected by wildfire. It has also increased the number of watershed restoration organizations and businesses sharing information about forest restoration and wildfire mitigation. Outreach efforts to these groups need to be developed so the correct messages are being spread to the public and informed actions are being used. Participants recommended the development of 'best management practices' that could be distributed to these organizations to increase their understanding, as well as a wider distribution of information about the objectives of forest management and the impacts of wildfire.

The third theme that emerged from the focus group discussions was the *usefulness of interactive outreach methods*. Participants emphasized that interactive methods are much more effective for reaching the public then handouts or references to information alone. The interactive methods they

identified included one-on-one discussions, neighbor-to-neighbor information sharing, workshops with hands-on activities, field tours, and social media.

Many participants identified one-on-one outreach as an effective approach. This can occur by meeting with landowners adjacent to work being planned on public lands, having experts available to discuss planned treatments (e.g. phone, email, or in-person), or through local community outreach events. For example, one participant coordinates a free slash collection program for a community, during which they provide information and have community members sign up for future involvement. Some participants provide free site visits to community members homes to identify areas of concern for wildfire mitigation. They have found this to be very effective for engaging people and gaining their interest, and oftentimes their neighbors' interest.

Related to this interactive outreach, everyone found that word-of-mouth was extremely effect for spreading the message about wildfire mitigation needs. Participants explained that oftentimes the most effective outreach is from neighbor to neighbor because there is a much higher level of acceptance when people share information they've learned at workshops or other events with other people in their neighborhood. These interactions can be promoted by identifying and communicating with key contacts within the community (i.e. homeowner association leaders, fire chiefs), sharing information through regular community newsletters or email lists and by encouraging meeting participants to share information with their neighbors to raise awareness about forest management. Lastly, participants agreed it was important to incorporate community members in the entire education process. When community members are involved they are more likely to take ownership of the project, share information with their neighbors and other neighborhoods, and move the project forward.

The fourth theme to emerge from the focus group discussions was *the importance of coordination between local community organizations and the public land agencies*. All of the focus group participants work closely with local community organizations and/or public agencies to coordinate efforts and pool

resources for conducting outreach. Doing so provides legitimacy and establishes working relations, resulting in numerous forest management and/or community wildfire planning projects moving forward successfully. This also provides an opportunity to coordinate efforts across multiple jurisdictions and to provide information to local residents and interested citizens.

The participants identified outreach through local community events as an effective method for coordinating across organizations and reaching out to the public. They agreed that sharing information at community meetings, including homeowner's association meetings and community picnics, were more realistic and efficient than one-on-one interactions because of limited time and resources. Other suggestions for raising awareness through agency and community organizations include, but are not limited to, conducting workshops with the local fire district, neighborhood coffee club meetings, safety fairs with the local police and fire departments, and working with a community-wide book club to incorporate wildfire readings and field trips. Participants have found that coordinating chipping days and community slash sites with the local fire departments and community organizations have been useful. In addition, working with neighborhoods and communities to develop community wildfire protection plans and Firewise community status are effective ways to coordinate across organizations.

3. How do we know what is effective?

The "how do we know it is effective" question remains to be answered. Some ideas focus group participants mentioned include:

- identifying the number of people signing up for workshops or email lists
- the number of people requesting site assessments
- the number of CWPPs or Firewise communities established
- identifying and making available relevant research and studies

Appendix A – The Collaborative Forest Landscape Restoration Program

The Collaborative Forest Landscape Restoration (CFLR) Program was established by Congress under Title IV of the Omnibus Public Land Management Act of 2009. The primary purpose of the CFLR program is to support collaborative science-based restoration of priority forest landscapes, while encouraging ecological, social, and economic sustainability. It provides a mechanism to promote wood utilization as a way to offset treatment costs and to benefit local rural economies while improving forest health. It also promotes the reduction of wildfire management costs by reducing the risk of uncharacteristic wildfire and re-establishing natural fire regimes. This is meant to be accomplished by leveraging local, national and private resources. For additional information on the CFLR program see: http://www.fs.fed.us/restoration/CFLRP.

Appendix B – The Front Range Roundtable

The Front Range Roundtable is a coalition of state and federal agencies, local governments, environmental and conservation organizations, the academic and scientific communities, industry, and user groups. The convening force of this coalition is a commitment to forest health and fire risk mitigation along Colorado's Front Range. The Roundtable's focus area encompasses 10 Front Range counties: Boulder, Clear Creek, Douglas, El Paso, Gilpin, Grand, Jefferson, Larimer, Park and Teller Counties.

The Front Range Roundtable convened for the first time in May 2004. This precedent-setting meeting included representatives from 30 diverse organizations who wanted to engage communities and foster support for the implementation of forest management goals that help protect communities and restore forest health across all jurisdictions. Roundtable members also cultivated support for the work of the Front Range Fuels Treatment Partnership, an interagency partnership with the goal of reducing wildland fire risks through sustained fuels treatment. The Front Range Fuels Treatment Partnership was formed following the extensive 2002 fire season. During its first year, the Roundtable supported the Partnership by sharing information about accomplishments with important constituent groups and decision-makers.

A major collaborative accomplishment of the Front Range Roundtable was the development of the "Living with Fire: Protecting Communities and Restoring Forests" Vision Document in 2006. The Roundtable established four working groups with groups focused on community engagement, ecology, economics and policy. These groups developed information and data to foster discussion and support for the adoption and implementation of a Front Range vision focused on community protection and forest health. This vision document was the result of a rigorous, science-based process during which the FRR identified a 1.5 million acre area for treatment on Colorado's Front Range. This area consists of 400,000 acres where treatment is needed to both protect communities and restore forest ecosystems,

700,000 acres of treatment primarily for community protection and 800,000 acres in need of treatment to restore ecological conditions. Since the publication of this document the Front Range Roundtable has focused its efforts on promoting treatment on these collaboratively identified areas in need of treatment and on pursuing additional policy and economic solutions to ensure our goals can be accomplished.

After the Collaborative Forest Landscape Restoration Program was established under the Omnibus Public Land Management Act of 2009 the FRR partners were introduced to this opportunity and agreed to submit a proposal. A small sub-group of the FRR developed a draft proposal for the CFLRP using the 2006 vision document. The proposal was circulated to the full FRR for revisions and submitted by the Pike-San Isabel and Arapaho-Roosevelt National Forests. The Colorado Front Range Landscape Restoration Initiative was one of the first collaborative groups to receive a CFLR projects awarded in 2010. For additional information on the Front Range Roundtable see: http://frontrangeroundtable.org.

Appendix C – Methods

A key component of the FR-CFLRP proposal was to measure the socioeconomic impacts associated with the Front Range project. The socioeconomic monitoring component of the FR-CFLRP project was further developed through a multi-party monitoring effort after the proposal was accepted.

The initial multi-party monitoring plan identified five potential key goals of the socioeconomic monitoring: 1) enhance community sustainability; 2) improve local restoration business and workforce skills; 3) improve or maintain local quality of life; 4) improve capacity for collaboration; and 5) build support for forest restoration. Objectives related to these goals were later refined by the multi-party monitoring team to further develop the goals and indicators previously outlined. Implementation of the socioeconomic monitoring has been conducted by a collaborative team from the Forest Service's Rocky Mountain Regional Office (Julie Schaefers) and Washington Office (Kawa Ng) and the Colorado Forest Restoration Institute (Tony Cheng, Torsten Lund Snee, and Kathie Mattor).

The following sections outline the methods used by the socioeconomic monitoring team to measure the economic contributions, the levels of wood utilization, and effective outreach methods related to the FR-CFLRP project.

Economic Contributions Analysis

The annual report, which records the sources of funding and the accomplishments of the CFLR projects, provided information for the economic narrative. Additional detail and insight on the FR-CFLRP funding, accomplishments, and the annual reporting were obtained through interviews with the USFS FR-CFLRP representatives: Hal Gibbs, Ecosystem Group Leader, Arapaho and Roosevelt National Forests; Sara Mayben, Renewable Resource Staff Officer, Pike & San Isabel National Forests; and Jeff Underhill, Timber Program Manager/Forest Silviculturist, Pike & San Isabel National Forests.

The overall economic contributions analysis estimated the economic effects resulting from the implementation of CFRLP funded vegetation restoration treatments and monitoring efforts on the Pike-San Isabel and the Arapaho-Roosevelt National Forests in 2012. The economic contributions to the regional economy in terms of employment, labor income and value added are estimated with an Input-Output model using primary data provided by the contractor. The following paragraphs briefly describe the estimation methodology and results.

Economic effects of the FR-CFLRP were analyzed in terms of employment, labor income and value-added resulting from vegetation restoration treatment activities and monitoring efforts on National Forest system lands. It was therefore important to model these effects from the amount of expenditures and labor actually required to carry out the task orders[5] during the 2011 calendar year, instead of relying on the amount of funding distributed[6]. Pertinent operational expenditure and labor information was collected from the contractor to appropriately model the economic contributions using an Input-Output model. The contractors were provided with a list of questions, which were reviewed with the team and the contractor before and after providing expenditure and labor information (See Appendix D). These reviews helped the contractor better understand what information the team was requesting and how the results would be used, as well as helping the team understand how the contractor interpreted the questions and reported the information. Since the FR-CFLRP only utilized a single contractor to carry out vegetation treatment task orders, the results in this report have been aggregated to not disclose any

[5] "A 'Task order contract' means a contract for services that does not procure or specify a firm quantity of services (other than a minimum or maximum quantity) and that provides for the issuance of orders for the performance of tasks during the period of the contract." (U.S. Federal Acquisition Regulation (FAR), https://www.acquisition.gov/far/).

[6] Unlike the Colorado Front Range FY2011 report compiled by the National CFLRP team (available at: http://www.fs.fed.us/restoration/CFLRP/results.shtml#annualreports), which estimates the economic impact based upon the funding distributed, our analysis focused on detailed expenditure and operational data obtained from the contractor. Our analysis therefore focuses on just one component of the distribution of FR-CFLR funding. The calendar year was used because this is the method used by the contractors we obtained information from.

detailed or sensitive information collected during the modeling process. Rather than assuming all expenditures for a project are incurred in the same location, the pertinent information collected to model inputs included the location (county) where task orders are performed, where operational expenses are incurred, and where labor hours and costs required for each task orders as well as non-labor expenses such as equipment and fuel are incurred.

The Input-Output Model

This analysis used Input-Output (I-O) modeling in order to estimate the economic effects of restoration activities. The U.S. Forest Service routinely uses I-O models to estimate local economic contributions of agency activities as part of the social and economic impact assessment in the environmental impact assessment required by NEPA. The I-O model used in this analysis is built using IMPLAN® software and its 2010 county-level data. IMPLAN® (IMpact analysis for PLANing, Minnesota IMPLAN Group, Inc.) is a regional economic impact analysis system. It is capable of determining the extent to which a given activity such as logging, contributes to the local economy in terms of jobs, income, output and value-added. The model accomplishes this by tracing interactions among different sectors within the local economy and calculates the economic effects resulting from a direct impact on the economy. In this analysis, the direct impacts refer to both labor and non-labor operation expenditures incurred by the contractor.

Study Area

The first step in building the I-O model is to select the counties to be included (i.e. the Study Area). The relative size of the economy plays an important role in the estimate of contributions on jobs and income; include too many counties and the results may be washed out, include too few counties and the full impact of the activity may not be accounted for in the model area. The study area for this analysis

includes only counties that were identified by the contractor as locations where vegetation treatment task orders/expenditures have occurred. This includes eleven counties in Colorado[7]:

Adams	Delta	Jefferson	Larimer
Boulder	El Paso	Fremont	Teller
Broomfield	Grand	Jackson	Weld

Calculating economic effects with the IMPLAN model

In order to estimate the economic effects of contractor expenditures, IMPLAN is used to generate "response coefficients" for a range of expenditure categories. Response coefficients, or more intuitively 'the rates of economic activity', represent how that activity would ripple through the economy and impact employment and income levels. They are expressed in term of the impacts to jobs, income and value-added per a specified unit of an activity (for example the dollar amounts in final demand). Based on data collected from the contractor, twelve categories[8] of response coefficients were generated[9]:

1. commercial and industrial machinery equipment (including repair and maintenance service),
2. petroleum refineries,
3. agriculture and forestry support activities (edited Industry Spending Pattern),
4. broadcast and wireless communications equipment manufacturing,
5. retail stores,

[7] Delta county was also included via a method call MRIO (Multi-Regional Input-Output analysis), which allowed for linkage among non-contiguous counties in the same model.

[8] The categories correspond to IMPLAN sectors which are based on NAISC (North American Industry Classification System) sectoring.

[9] Based on information collected from the contractor, additional adjustments have been made by editing the activities in IMPLAN in order to further refine the model. For example, if only a proportion of the expenditure occurred in the study area, the LPP (local purchase percentage) in the IMPLAN model is adjusted accordingly.

6. hand tool,
7. other crop farming products,
8. lodging,
9. car rental and leasing,
10. printing and publishing,
11. other educational services, and
12. commercial trucking.

In addition to the industry sector coefficients, four separate groups of response coefficients representing different household income groups were also generated using IMPLAN. These response coefficients are used to track how direct labor income (paychecks received by laborers hired by contractor) can be re-circulated through the household spending patterns causing further local economic activity. The groups are based on the estimated annual salaries for different types of workers in the contractor's firm, including office administration, project manager, forester, mechanic, trucking, manual hand crew, and equipment operator. Similar designations were made to distinguish between salary types for workers employed in monitoring activities. Direct labor hour requirements for the task orders were also collected from the contractor, and were used to calculate the total direct jobs.

The Colorado Model

It should be noted that the economic impact estimates in this analysis contrasted with the estimates reported in the FY2012 CFLRP Annual Report (USFS 2013) due to differences in methodologies and data assumptions.

The FY2012 CFLRP Annual report employed an Excel-based tool called 'Treatments for Restoration Economic Analysis Tool' (*TREAT*) for its analysis of all CFLR projects (USFS 2010). The Excel tool *TREAT* relies on existing response coefficients from IMPLAN and therefore is also able to estimate jobs and income. *TREAT* was designed to streamline data entry and preparation for the generation of economic impact tables to be used in the CFLRP proposals. The goal for this tool is to assist teams with estimating

the economic impacts of restoration activities while providing a standard approach during the development of CFLR project proposals (USFS 2010).

Since this social-economic analysis aims to serve as part of a monitoring reporting effort, *TREAT* was not used to complete this analysis. Instead, a customized IMPLAN model was built using data inputs from the contractors. This customized IMPLAN model will be referred to as *'The Colorado model'* henceforth. The following section highlights the major dissimilarities between *TREAT* and *The Front Range model*.

IMPLAN model study area: *The Colorado Model* was built using counties where contractor expenditures have occurred, with linkage to the county where office operation expenditures occurred via the Multi-Regional Input-Output (MRIO) modeling technique. *TREAT*, on the other hand, used counties where task orders are proposed to occur (excluding the contractor's home office county).

Model / data year: *The Front Range Model* is based on IMPLAN data from calendar year 2011 (the latest available), using contractor's expenditure information from calendar year 2012 as inputs. All figures adjusted with GDP deflator. *TREAT* is based on IMPLAN data from calendar year 2009, while using the total awarded funding amount from fiscal year 2012 as inputs.

Economic impacts from matching funds and USFS employee salaries: *The Colorado Model* focused exclusively on impacts derived from CFLR funded task orders. *TREAT* on the other hand, included impacts derived from matching funds, as well as induced effects from USFS force salary by assuming a fairly substantial Forest Service FTEs allocated to CFLR responsibilities.

Modeling restoration activities: *The Colorado Model* obtained detailed expenditure and operational data from the contractor. These include the dollar amounts spent on various non-labor expenditures such as equipment maintenance or daily use rates, gasoline, office, tools, seeds and other operation costs. For

labor, information on salaries and hours worked for different types of workers in the contractor's firm were collected, including office administration, project manager, forester, mechanic, trucking, manual hand crew, and equipment operator. Next, using the above information, analysis-by-parts modeling method was used to estimate impacts from various IMPLAN sectors. The *TREAT* model begins with the total awarded funding amount, and then estimates the impacts to the logging and supporting forestry sectors, by proportioning a percentage of the award that is going to be used for contracted work by Regional firm(s).

Impacts from Wood utilization: A detailed account on the amount and types of materials removed by task orders, as well as the number and location of businesses purchasing these forest product materials was provided in this report (see the 'Wood Utilization Analysis' section). Since we were unable to obtain data on the volume of timber harvested in terms of CCF/MBF/dry ton for calendar year 2012, we did not use *The Colorado Model* to identify the economic impacts from forest products. Nevertheless, *TREAT* was able to estimate the jobs and income effects from forest products, by assuming that over 450 tons of biomass and nearly 12,000 CCF (cubic feet) entered the regional economy in 2012.

Conclusion

It is worth noting that both methods utilized IMPLAN at one point during the analytical process and that any multipliers IMPLAN produced are simply projections of impacts from various economic activities based on static models. While a genuine attempt at modeling the impacts from implementation (actual expenditures and labor entering the economy as outlined in this *Colorado Model)* should be taken at the project monitoring stage rather than projecting impacts from the total funds awarded, it is evident that the customized *Colorado Model*, constructed using expenditure data from the contractor, required greater commitments of time and effort. Considering these increased commitments, *TREAT* is by far a more streamlined and easy-to-use tool based out of Excel. *TREAT* is

unquestionably the tool of choice when the extra effort of a customized model (such as *The Colorado Model*) proves unwarranted given the time, budget and expertise constraints being faced.

References

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Wood Utilization Analysis

The goals of the wood utilization analysis were to:

1. Identify the types of materials taken off of the National Forest according to the FR-CFLRP vegetation treatment task orders.
2. Determine the number and location of businesses purchasing these forest product materials.
3. Identify the types and values of wood products produced.

The contractor was provided with another list of questions, which was reviewed with the contractor and the team before and after providing information (See Appendix E). These reviews helped the contractor better understand what information the team was requesting and how the results would be used, as well as helping the team understand how the contractor interpreted the questions and reported the information. The data from the contractor was then compiled and analyzed using basic statistical analyses.

Outreach Focus Groups

Four focus group meetings were held in April and May 2012 with eighteen experts in public outreach associated with forest management and/or wildfire mitigation. Participants were identified by the social and economic monitoring group and reviewed by Landscape Restoration Monitoring Team members. Over 40 potential participants were identified and invited via email and phone calls to participate in a focus group discussion. Focus group meetings were held in Denver, Fort Collins, and Colorado Springs, with an additional meeting conducted over the phone.

During the focus group meetings participants were asked to discuss the following questions:

- Who do you work with? What is the goal of your outreach? Where is this outreach used?
- What are the most effective approaches you have found? How do we know what is effective?
- What are the best ways for the Front Range Roundtable to support outreach efforts across the Front Range?

Notes were taken throughout each of the meetings and used to summarize the recommendations and common themes identified in the report above. Focus group meeting summaries were distributed to all participants to review. These summaries were then compiled for this report.

Organizations represented in the focus group meetings:

- National Fire Protection Association
- Colorado State Forest Service, South Platte District
- Douglas County
- Colorado State University Extension, Gilpin County
- Colorado State Forest Service
- Arapaho-Roosevelt NF and Pawnee Grassland, Canyon Lakes District
- Larimer County Sheriff's Office Emergency Services
- Colorado Tree Farmers
- Estes Valley Fire Protection District
- Larkspur Fire Protection District
- Colorado State University Extension, Summit County
- Pikes Peak Wildfire Protection Partners
- Forestry Consultant
- Black Forest News
- Black Forest Fire Rescue Protection District
- Colorado Springs Fire Department
- US Air Force Academy Fire Department

Appendix D –

Economic Impacts of Restoration: Questions for Contractors

1. **Name of the restoration site and the project(s) you worked on:**
   Please list all task orders associated with CFLR during calendar year 2011
   (if more than one forest, please indicate; add more lines as needed)

Forest 1:_____	Ranger District	County	Mechanical Acres	Manual Acres	Date signed	Date started
Project	*_____Ranger District*		###	###		
____ NF Total			_____	_____		

2. **Check if you are responding for all of the work conducted on the restoration site or for specific site-related project(s) within a restoration site:**

   _____ Entire restoration site
   _____ Site-related restoration project(s)

3. **Site/project(s) and firm location:**
   Use the following table to list the location of the site/project(s) that you worked on and any off-site locations for your firm that worked on ***this restoration site/project(s)***. If there are more than two off-site locations, please choose the top two locations.

Site/Project(s) Location	State	County
Off-site Location 1		
Off-site Location 2		

4. **What type of restoration work did this site/project(s) include *(check all that apply)*:**

_____Ag/grazing	_____Bird habitat/populations
_____Air quality	_____Fish habitat/populations
_____Fresh surface water	_____Mammal habitat/populations
_____Groundwater	_____Reptile/amphibian habitat/populations
_____Sediments	_____Other_____
_____Shoreline	_____Other_____
_____Wetland/marsh	_____Other_____
_____Woodland/forest	_____Other_____

5. **Did the site/project(s) have any chemical disturbance (e.g. oil spill, Superfund site)?**

_____Yes
_____No

6. **Which of the following roles did your firm play in this restoration project *(check all that apply)*:**

_____Project management	_____Other project implementation
_____Management consulting	_____Monitoring
_____Restoration planning/design	_____Product vendor
_____Site Surveying	_____Other_____
_____On-site construction	_____Other_____

7. **Please describe your role in the project:**

8. **Subcontracting:**

   a. **Did you contract out any tasks to subcontractors? Yes_____ No_____**

   b. **If yes, please provide:**
      i. **the name(s) of the subcontractor(s):**
      ii. **a description of the work performed by the sub-contractor(s):**
      iii. **where the sub-contractor(s) are based:**

   c. **If necessary, can we have your permission to contact the subcontractor(s)? If yes, please provide the appropriate contact information.**

9. Direct employment for this project:

Please indicate the total number of labor hours (including employees and managers) that worked on ***this restoration site/project(s)*** in each location (please refer to the locations identified in Question #2)**.**

Task Order	Number of **Acres completed** for this task order:	Number of labor hours for employees working primarily at the **Site/Project(s) Location:**	Number of labor hours for employees working primarily at **Off-Site Location 1:**	**Total** number of labor hours for this restoration project:
				(Sum)
Total:				

a. Do the above labor hours include work done by subcontractors?

_____Yes
_____No

b. If yes, what is the total number of labor hours billed by the subcontractor(s)? _____

10. Overall breakdown of costs:

Use the following table to identify the percent split between labor and non-labor costs for **this restoration site/project(s)**. Labor costs include benefits, wages, and proprietor's income. Non-labor costs include all other expenses including overhead, administration and subcontracting.

Expenditure Category	**% of total site/project(s) cost**
Labor Costs	
Non-Labor Costs	
	100%

11. Breakdown of non-labor costs:

Use the columns in the table below to answer the following two questions about non-labor expenses for ***this restoration site/project(s).*** If you are unable to provide exact percentage breakdowns, please use your professional judgment to provide best-known estimates.

Column 1:	What percentages of total non-labor expenses were spent on the following types of expenses for this project? This column should add to 100%.
Column 2:	What percentages of these non-labor expenses were purchased within the local area surrounding the project location? ***(Note: the local area is defined as a reasonable commuting distance)*.**
***Note:**	Equipment refers to durable goods such as vehicles and machinery. Materials refer to goods purchased as inputs specifically for this project (e.g. gravel, fencing, office supplies, etc.)

Non-Labor Costs	**Column 1** Percentage of total non-labor expenses:	**Column 2** Percentage expended within the local area surrounding the site/project(s) location:
Equipment rental / leasing / daily use rates		
Equipment maintenance and repair		
Materials		
Travel		
Overhead /Administration		
Other (please describe)		
	100%	

12. Breakdown of travel costs:

If you had travel costs for this project, use the columns in the table below to answer the following two questions about travel expenses for ***this restoration site/project(s)***. If you are unable to provide exact percentage breakdowns, please use your professional judgment to provide best-known estimates.

Column 1:	What percentages of total travel costs where spent on the following types of expenses for this project? This column should add to 100%.
Column 2:	What percentages of these non-labor expenses were purchased within the local area surrounding the project location? ***(Note: the local area is defined as a reasonable commuting distance)*.**

Travel Costs	**Column 1** Percentage of total travel costs:	**Column 2** Percentage expended within the local area surrounding the site/project(s) location:
Per diem		
Car/truck rental (for travel)		
Gas (for travel)		
Other (including airfare)		
	100%	

13. Breakdown of materials costs:

Please use the table on the following page to indicate the types of materials used for ***this restoration site/project***. Place a check mark next to all materials that were used in the project. **Please complete columns 1 and 2 *only* for the materials used in the project.**

Column 1: Please indicate the percent of total material costs spent on each material. This column should add to 100%. If you are unable to provide exact percentage breakdowns, please use your professional judgment to provide best-known estimates.

Column 2: Please use the check boxes to indicate if the material was purchased from a retailer.

Materials	**Column 1** Percentage of total materials cost:	**Column 2** Purchased from a retailer? **Yes**	**No**
___General retail merchandise (e.g. food, clothes, work gloves)			
___Office Supplies			
___Gasoline			
___Tools and Parts (for equipment and vehicles)			
___Seeds			
___Communications equipment			
___Other_____			
___Other_____			
___Other_____			
___Other_____			
	100%		

14. **Breakdown of labor costs:**

What percentage of total labor costs (direct wages and non-payroll) typically go to the following types of workers? The column should add to 100%.

Type of Worker	**Percentage of total labor costs that go to labor for the following worker types:**
Project Managers	
Forester/ Biologists/ecologists/other	
Engineers and other planners/designers	
Mechanics	
Administrative Staff	
Machine and equipment operators	
Truck drivers	
Manual laborers	
Technicians	
Others (please describe)	
Others (please describe)	
	100%

Appendix E – Wood Utilization Survey

1. **Name of the restoration site and the project(s) you worked on:**
   Please list all task orders associated with CFLR during calendar year 20___
   (if more than one forest, please indicate; add more lines as needed)

Forest 1:_____	Ranger District	County	Mechanical Acres	Manual Acres	Date signed	Date started
Project	*_____Ranger District*		*###*	*###*		
____ NF Total			**_____**	**_____**		

2. **What percentage of the total amount of material harvested is:**

   ***Manual* (out of 100%)**

   a. Available for value-added use? _____%

   b. Piled and burned (not for prescribed burn) _____%

   c. Left for wildlife habitat? _____% or _____ tons/acre

   ***Mechanical* (out of 100%)**

   a. Available for value-added use? _____% (Sawtimber, POL and biomass)

   b. Piled and burned (not for prescribed burn) _____%

   c. Left for wildlife habitat? _____% or _____ tons/acre

3. **How many businesses purchase material from you (specifically related to this project)?**

Forest 1: _____ (Copy for additional forests)

a. Total businesses: _____

b. Colorado businesses: _____

c. Other states: (please specify state and number of businesses): _____

Overlap?

If there are two or more forests associated with this project, are there any businesses that purchase from multiple forests? If yes, how many businesses? _____

4. **What types of materials did you sell from the restoration site and project(s)? Where did these materials go?**

Forest 1: _____ (Copy table for additional forests)

Materials Sold			**Locations material was sold to:** (please identify locations)		
	Amount (Green Tons)	The county the project was located in	County in CO	State outside of CO	County outside of CO (if available)
Sawtimber *(Specs? _____)*					
Small diameter timber *(Specs? _____)*					
Blue stain					
Products other than logs (POL)					
Limbs/ brush					
Bark Fines					
Other *(please specify):*					
Total:					

5. **What percentage of the materials removed from the site went to each category of products? Where are the purchasers located? What is the value of the product?**

Forest 1: _____ (Copy table for additional forests)

Products created	**Column 1** Percent of total material sold:	**Column 2** Product Value (low, medium, high)	**Column 3** Locations material was sold to: (please specify location and percentage across row)				
			The county where the project was located:	Other county in CO:	State outside of CO:	County outside of CO:	
example: firewood	*10%*	*Low*	*Larimer, 5%*	*Moffat, 2%; Montrose 3%*	*n/a*	*n/a*	*100%*
Wood Fuel Pellets							100%
Biomass Electricity							100%
Firewood							100%
Pallets & Crates							100%
Dimensional lumber							100%
Logs - log homes							100%
Logs - other							100%
Beams & Timbers							100%
Trusses							100%
Posts/ poles							100%

Products created (continued)	**Column 1** Percent of total material sold:	**Column 2** Product Value (low, medium, high)	**Column 3** Locations material was sold to: (please specify **location** and **percentage** across row)				
			The county where the project was located:	Other county in CO:	State outside of CO:	County/ town outside of CO:	
Flooring & Paneling							100%
Doors							100%
Windows							100%
Veneer							100%
Custom Cabinets							100%
Mass produced cabinets							100%
Mass produced furniture							100%
Custom furniture							100%
Siding & Decking							100%
Molding							100%
Holiday trees & transplants							100%
Paper products							100%

Products created (continued)	**Column 1** Percent of total material sold:	**Column 2** Product Value (low, medium, high)	**Column 3** Locations material was sold to: (please specify **location** and **percentage** across row)				
			The county where the project was located:	**Other county in CO:**	**State outside of CO:**	**County outside of CO:**	
Shavings							100%
Soil Fertilizer/ Biochar							100%
Animal Bedding							100%
Landscape ties							100%
Chips							100%
Mulch							100%
Compost							100%
Fencing							100%
Other - specify							100%
	100%						

About the Colorado Forest Restoration Institute

The Colorado Forest Restoration Institute (CFRI) was established in 2005 as an application-oriented program of the Department of Forest & Rangeland Stewardship in Warner College of Natural Resources at Colorado State University in 2005. CFRI's purpose is to develop, synthesize, and apply locally-relevant science-based knowledge to achieve forest restoration and wildfire hazard reduction goals in Colorado and the Interior West. We do this through collaborative partnerships involving researchers, forest land managers, interested and affected stakeholders, and communities. Authorized by Congress through the Southwest Forest Health and Wildfire Prevention Act of 2004, CFRI is one of three Institutes comprising the Southwest Ecological Restoration Institutes, along with centers at Northern Arizona University and New Mexico Highlands University.

The Colorado Forest Restoration Institute at Colorado State University receives financial support through the Cooperative and International Programs of the U.S. Forest Service, Department of Agriculture, under the Southwest Forest Health and Wildfire Prevention Act.