



United States  
Department of  
Agriculture

Forest  
Service



**Economic and Social Report**  
**Warm Recovery EIS Project**  
**North Kaibab Ranger District**  
**Kaibab National Forest**

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## Introduction

The Warm Fire was started by lightning on June 8, 2006. The fire met the criteria for wildland fire use, and was consistent with the Kaibab National Forest Plan, Kaibab Fire Management Plan, and the Federal Wildland Fire Management Policy. The Warm Fire was managed as a wildland fire use fire for approximately 2 ½ weeks, during which time, approximately 19,000 acres were treated. On June 25, winds pushed the fire south, outside the Maximum Manageable Area (MMA). Approximately 39,000 acres burned between June 25 and July 4 while the fire was managed under a wildfire suppression strategy, much of which burned at high intensity and resulted in severe fire effects. The Warm Fire Recovery Project addresses the portion of the Warm fire that was managed as a wildfire.

A summary of the purpose and need for the Warm Fire Recovery Project is to:

- Recover the economic value from burned timber.
- Reforest burned conifer stands and move toward longer-term desired conditions.
- Break up fuel continuity in the burned area.

Recovery of some of the economic value of burned timber could occur before the commercial value of the wood is lost to deterioration in a few years. Jobs supported from the sale of salvage material could provide positive benefits to the local community. Salvage harvest would also help reduce the costs associated with meeting desired fuel conditions in portions of the burned area through removal of some of the large fuels. Revenues from the sale of wood products could also be applied to defray some of the costs of needed fire restoration work, such as reforestation.

## Methodology

### Jobs and Income

Estimates of the economic contribution of Forest programs and activities were developed through the use of IMPLAN, using data for 2004. IMPLAN is an economic modeling program originally developed by the Forest Service in cooperation with the Federal Emergency Management Agency and the Bureau of Land Management. IMPLAN has since been privatized and is now provided by Minnesota IMPLAN Group (MIG). IMPLAN utilizes a database of basic economic statistics constructed by MIG. Information for this database was obtained from major government sources such as the Bureau of Economic Analysis, County Business Patterns, REIS, Bureau of Labor Statistics, U.S. Census, etc., and converted to a consistent format using widely accepted methodologies.

To estimate job and labor income impacts of current Forest Service activities, an IMPLAN model was used to estimate “response coefficients,” or rates of economic activity for the following project related activities:

- Timber: Economic activity per thousand cubic feet of stumpage flowing through logging companies and sawmills.
- Restoration and Stewardship Activities (planting and mastication): Economic activity per acre of treatment flowing into the local economy

- Payments to States: Returns to counties under the “Secure Rural Schools Act” can foster significant economic activity at the local level. This response coefficient is a prediction of the local economic activity per million dollars returned to the counties.
- Forest Service salary and non-salary expenditures: Economic activity per million dollars of wages (disposable income spent locally by Forest Service employees, and economic activity per million dollars spent locally on materials, contracts, and services by the Forest Service.

These response coefficients, as well as baseline economic data, were exported from IMPLAN models and read into “FEAST,” a spreadsheet designed to pair IMPLAN response coefficients with resource data to generate an economic contribution report. The following data was used in “FEAST” to generate an estimate of the Forest’s economic contribution to the local economy.

- Timber:
  - Direct effects response coefficients came from Timber Mill Survey from Chuck Keegan at the University of Montana (Direct jobs and income per thousand cubic feet of stumpage harvested) (Keegan 2003).
  - Indirect and induced employment and income effects come from the IMPLAN model.
- Planting and Mastication Activities:
  - Average costs per acre were obtained from the Forest (J. Drury 2007).
  - Indirect and induced employment and income effects come from the IMPLAN model.
- Forest Service salary and non-salary expenditures:
  - Budget expenditure data were obtained from the USDA National Finance Center (USDA 2006b).
  - The data were split into salary and non-salary expenditures.
    - Non-salary information was bridged to IMPLAN economic sectors.
    - Estimated salary expenditures were converted to disposable income.

### *Financial Efficiency*

Present net value is defined as the value of discounted benefits (or revenues) minus discounted costs. A present net value analysis includes all outputs to which monetary values are assigned. In deriving PNV figures, costs are subtracted from benefits to yield a net value. “Future values” (i.e., benefits received in the future) are discounted using an appropriate discount rate to obtain a “present value.” The present net value of a given alternative is the discounted sum of all benefits minus the sum of all costs associated with that alternative. Present net value estimates attempt to condense a large amount of information into a single value. This value must be used with caution.

## Affected Environment

The economic and social aspects analyzed include cost efficiency and potential job and income impacts to the local economy. In addition to these aspects, some non-quantified values and costs are evaluated. The region is sparsely populated and is separated from the remainder of Arizona by the Grand Canyon and the Colorado River. The analysis area considered for economic effects is all of Kane, Washington, and Garfield Counties in Utah and the zip code areas for Fredonia, Marble Canyon within Coconino County; and Colorado City, Arizona within Mohave County. This region was chosen in order to examine a contiguous, functional economic area. The closest mill for processing of harvested wood products is located within Garfield County, UT. The closest full-service communities to the analysis area are Kanab and St. George, UT, within Kane and Washington Counties.

### *Management Direction*

The Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (88 Stat. 476; 16 U.S.C. 1600-1614) states that harvesting systems should not be selected primarily because they will give the greatest dollar return or the greatest unit output of timber.

The Kaibab National Forest Land and Resource Management Plan (Forest Plan) identifies appropriate uses and management practices by designation of Ecosystem Management Areas (EMA). The majority of the Warm Fire Recovery Project falls within EMA 13 (36,041 acres), with a lesser amount in EMA 16 (3,069 acres). There is an existing memorandum of understanding (MOU 04-MU-11046000-060) between the USDA Forest Service, Southwestern and Intermountain Regions, and the State of Utah for building “the capacity to accomplish restoration projects” and encouraging “local employment in order to benefit the management of the national forests and communities of the Central Colorado Plateau and Great Basin.”

Thousands of acres of suitable timberland burned in the Warm Fire area are now occupied by dead and dying trees. The Kaibab Forest Plan includes the goal to “manage suitable timberland to provide a sustained level of timber outputs to support local dependent industries.” The Kaibab Forest Plan includes a guideline for EMA 13 to “salvage stands, or parts thereof, that are severely damaged by dwarf mistletoe, insects, fires, or windthrow.”

There are no Forest Plan thresholds for economic consideration.

### *Jobs and Income*

An analysis of IMPLAN data for the analysis area for 2006 provides an estimate of 73,512 jobs within the local economy (IMPLAN 2007). The breakdown by industry is displayed in Table 1 below. The sectors presented in the table are aggregated totals to simplify the display. Within each sector listed are a number of smaller industries. The sectors containing wood products processing and forest restoration industries are Agriculture, Forestry, Fish & Hunting and Manufacturing. Wood products processing and forest restoration industries are estimated to support 1 percent of area employment, or approximately 569 jobs. Employment estimates include all full-time, part-time, and intermittent jobs (IMPLAN 2007).

Estimated labor income in 2006 was \$2,420 million (IMPLAN 2007). Labor income by industry is also displayed in Table 1. As with employment, labor income for wood products processing and forest restoration represents 1 percent of labor income, or \$14 million within the analysis area (IMPLAN 2007).

**Table 1. Analysis area employment and labor income by industry (IMPLAN 2007).**

Sector	Employment		Labor Income	
	Jobs	Percentage	Million Dollars	Percentage
Agriculture, Forestry, Fish, & Hunting	1,004	1.4%	\$7	0.3%
Mining	189	0.3%	\$11	0.4%
Utilities	151	0.2%	\$12	0.5%
Construction	10,548	14.3%	\$418	17.3%
Manufacturing	3,315	4.5%	\$136	5.6%
Wood Products Processing and Forest Restoration	569	0.8%	\$14	0.6%
Wholesale Trade	1,372	1.9%	\$56	2.3%
Trans & Warehousing	2,922	4.0%	\$127	5.2%
Retail Trade	9,517	12.9%	\$266	11.0%
Information	1,057	1.4%	\$41	1.7%
Finance & Insurance	3,341	4.5%	\$104	4.3%
Real Estate & Rental	3,555	4.8%	\$65	2.7%
Professional, Scientific & Tech Services	3,086	4.2%	\$128	5.3%
Mgmt of Companies	124	0.2%	\$3	0.1%
Admin. & Waste Services	2,623	3.6%	\$58	2.4%
Educational Services	730	1.0%	\$8	0.3%
Health & Social Services	8,130	11.1%	\$306	12.6%
Arts, Entertainment, & Recreation	1,823	2.5%	\$32	1.3%
Accommodation & Food Services	7,440	10.1%	\$130	5.4%
Other Services	3,839	5.2%	\$136	5.6%
Government & non-NAICs	8,176	11.1%	\$363	15.0%
<b>Total</b>	<b>73,512</b>	<b>100.0%</b>	<b>\$2,420</b>	<b>100.0%</b>

However, neither of the above tables represents an accurate reflection of each segment's total effect on the economy. They do not display all of the impacts that ripple through the economy as a result of a given sector's existence and level of production. In addition to direct impacts, each sector produces indirect and induced effects, in varying degrees, depending on the spending patterns within each industry. A sector's total economic impact is made up of its direct, indirect and induced effects, as well as other factors.

In response to the demand for goods and services, a sector such as Timber responds by producing an appropriate level of output to meet the demand. The output produced and the employment required to produce that level of output are the direct effects of that sector on the economy. In order to produce the output included in the direct effects, the Timber sector must purchase supplies and services from other industries. The output and employment stimulated in other

sectors by these purchases are the indirect effects of the Timber sector. In addition to the direct and indirect effects, induced effects represent the output and employment stimulated throughout the local economy as a result of the expenditure of new household income generated by direct and indirect employment.

Another factor considered when estimating economic impacts of various sectors is commonly referred to as leakage. Part of the monies spent by businesses and individuals is spent within the local economy, while a portion of those monies is spent outside of the local economy. The money expended outside the local economy is referred to as leakage and occurs when goods or services are imported from outside the local area, with the result that the money used to purchase these items is spent outside the local economy. By the same token, economic activity is introduced when good or services are exported to those from outside the area thereby introducing new money into the local economy.

IMPLAN attempts to estimate these complex economic relationships in order to approximate the effect on each sector on the economy as a whole. Multipliers are developed as a means to estimate the change in direct, indirect, and induced effects as a result of an adjustment in the level of final demand for the goods or services provided by a given sector of the economy. These multipliers also take into account the effects of leakage (imports) and exports. Some sectors may have a large multiplier, while others may have a very small one. The size of a sector's multiplier, however, is not a direct indicator of the significance of its economic impact.

## Economic Analysis

The indicators for economics are:

- Jobs,
- Labor Income,
- Present Net Value, and
- Benefit Cost Ratio.

The no action (Alternative 1) and three action alternatives (Alternatives 2, 3, and 4) were analyzed in detail for the Warm Fire Recovery project and for this analysis. Additional alternatives were considered, but eliminated from detailed analysis when determined it would not meet Forest Plan direction nor the project purpose and need.

## Jobs and Income

Employment and labor income opportunities potentially supported under the alternatives are displayed in the following table based on the gross material removed. Impacts are shown as though they all occur in one year; in actuality, they would occur over the life of the project, approximately seven years. These effects include direct, indirect, and induced impacts. The employment estimated includes full-time, part-time, and intermittent jobs. The projected effects represent the jobs potentially supported by implementation of each alternative; they do not necessarily represent new jobs introduced into the local economy.

**Table 2. Estimated direct, indirect, and induced job and income impacts by alternative (IMPLAN 2007).**

<b>Alternative</b>	<b>Number of Jobs Supported*</b>	<b>Income (\$1,000's)</b>
Alternative 1 (No Action)	0	\$0.0
Alternative 2	1,402	\$39,378.6
Alternative 3	1,004	\$28,065.6
Alternative 4	801	\$22,601.5

\* Includes full-time, part-time, and intermittent jobs.

The estimated job impacts by industry are displayed in Table 3. Estimated labor income impacts are displayed in

Table 4.

**Table 3. Estimated employment supported over the life of the project by alternative (IMPLAN 2007).**

Sector	Employment (Number of Jobs*)			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Agriculture	0	490	350	279
Mining	0	0	0	0
Utilities	0	3	2	2
Construction	0	7	5	4
Manufacturing	0	475	342	270
Wholesale Trade	0	42	30	24
Transportation & Warehousing	0	46	33	26
Retail Trade	0	52	37	30
Information	0	7	5	4
Finance & Insurance	0	43	30	24
Real Estate & Rental & Leasing	0	28	20	16
Prof, Scientific, & Tech Services	0	34	24	19
Mngt of Companies	0	2	2	1
Admin, Waste Mngt & Rem Serv	0	18	13	10
Educational Services	0	5	3	3
Health Care & Social Assistance	0	52	37	30
Arts, Entertainment, and Rec	0	10	7	6
Accommodation & Food Services	0	44	32	25
Other Services	0	35	25	20
Government	0	11	8	7
<b>Total</b>	<b>0</b>	<b>1,402</b>	<b>1,004</b>	<b>801</b>

\* Includes all full-time, part-time, and intermittent jobs over the life of the project.

**Table 4. Estimated labor income by industry over the life of the project (IMPLAN 2007).**

Sector	Labor Income (\$1,000)			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Agriculture	\$0.0	\$9,712.5	\$6,944.0	\$5,534.2
Mining	\$0.0	\$82.3	\$59.0	\$46.8
Utilities	\$0.0	\$299.3	\$214.6	\$170.6
Construction	\$0.0	\$294.6	\$207.5	\$173.9
Manufacturing	\$0.0	\$10,819.2	\$7,779.8	\$6,144.8
Wholesale Trade	\$0.0	\$2,036.1	\$1,461.8	\$1,159.3
Transportation & Warehousing	\$0.0	\$2,800.0	\$2,010.5	\$1,593.7
Retail Trade	\$0.0	\$1,555.6	\$1,107.4	\$894.4
Information	\$0.0	\$343.2	\$245.3	\$196.5
Finance & Insurance	\$0.0	\$1,678.1	\$1,202.3	\$957.7
Real Estate & Rental & Leasing	\$0.0	\$601.6	\$429.9	\$344.4
Prof, Scientific, & Tech Services	\$0.0	\$1,557.7	\$1,114.1	\$893.9
Mngt of Companies	\$0.0	\$68.1	\$48.9	\$38.8
Admin, Waste Mngt & Rem Serv	\$0.0	\$471.9	\$337.6	\$269.9
Educational Services	\$0.0	\$59.7	\$42.6	\$34.2
Health Care & Social Assistance	\$0.0	\$2,191.3	\$1,560.8	\$1,258.6
Arts, Entertainment, and Rec	\$0.0	\$195.5	\$139.6	\$112.2
Accommodation & Food Services	\$0.0	\$877.5	\$626.6	\$502.7
Other Services	\$0.0	\$1,181.6	\$845.7	\$675.0
Government	\$0.0	\$2,552.8	\$1,687.7	\$1,600.0
<b>Total</b>	<b>\$0.0</b>	<b>\$39,378.6</b>	<b>\$28,065.6</b>	<b>\$22,601.5</b>

## Cumulative effects

Tourism is the main industry in the area with destinations including the North Rim of the Grand Canyon, the Grand Staircase-Escalante National Monument as well as Zion National Park. Tourism related industries (e.g. lodging, restaurants, shops, tours) have increased in the area with active construction of additional lodging. If non-local employment occurs (e.g. through contracting) there would be a temporary increase to the local community industries. The jobs and income for outfitter guides may be enhanced by the ongoing hazard tree removal project that is clearing the Arizona trail and main Forest Service roads in the Warm Fire area. This project would further contribute to the restoration of the area, which is anticipated to have a beneficial effect on area jobs and income.

## Financial Efficiency

Financial efficiency (present net value) examines revenue and cost implications from the perspective of the Forest Service. It could also be said that this is the perspective of the tax payer. Only those revenues and costs that are recorded in financial records are included in this analysis.

When considering quantitative issues, financial efficiency analysis offers a consistent measure in dollars for comparison of alternatives. This type of analysis does not account for non-market benefits, opportunity costs, individual values, or other values, benefits and costs that are not easily quantifiable. This is not to imply that such values are not significant or important, but to recognize that non-market values are difficult to represent with appropriate dollar figures. The values that are not included in this part of the analysis are often at the center of disagreements and interests people have in forest resource projects. Therefore, present net value should not be viewed as a complete answer, but as one tool the decision maker may use to gain information about resources, alternatives, and trade-offs between costs and benefits.

### *Benefits*

#### Timber Volumes

Timber volumes per acre were calculated by the logging specialist based on removal of dead trees greater than 14 inches in diameter average volumes per acre by forest type. The intent of this analysis was to offer a consistent and reasonable comparison of costs, benefits, and cash flows, based on past experience. The initial volume estimates for salvage under the action alternatives used available district stand information and defect rates experienced in the Hidden Salvage. The volumes for the final analysis were adjusted to reflect defect rates based on Region 3 information currently used (USDA Forest Service 2007).

**Table 5 Volume by Alternative**

Product	Alternative 2	Alternative 3	Alternative 4
Mixed conifer* sawtimber	22,112 CCF	17,343 CCF	6,067 CCF
Ponderosa pine sawtimber	49,217 CCF	36,186 CCF	38,875 CCF

\* White fir, Douglas fir and Engelmann spruce.

#### Timber Values

Timber values used in this analysis were based on the Region 3 T.E.A. Appraisal Bulletin No. 04 for calendar year 2008. The following values were used by product group:

**Table 6 R3 Base Rate for Timber Values by Species and Product Category**

Product	Value/unit
Mixed confers*	\$6.00/CCF
Ponderosa pine pulp	\$10.00/CCF

\*Includes white fir, Douglas fir and Engelmann spruce.

## *Costs*

Costs and benefit values were derived from local realized costs, Region 3 TIM and FACTS data and the R3 T.E.A. Appraisal Bulletin No. 04 for calendar year 2008. Information on the values used for this analysis is located in Appendix A.

## *Analysis*

The scope of this incremental analysis was limited to consistent general comparisons. An financial efficiency analysis was completed using the Forest Service Quick-Silver Program (USDA Forest Service 2003). The analysis included the incremental benefits and costs for which the Forest Service has values. The benefits and costs are those directly associated with this project.

Other non-market benefits may be realized under the different alternatives, but quantitative differences and monetary values are not available for this analysis (e.g. temporary changes in recreational use, changes to visual appearance of reforested areas, reforestation rate to conifers in areas lacking adequate conifer seed sources). This analysis assumes non-market values would not be adversely impacted measurably over the analysis period. Given local use and past experience, this is a reasonable assumption. Recreation in the project area is mainly hunting, riding, hiking, and sight-seeing. The activities proposed in this project have occurred in the other areas on the district over the past decade and have not resulted in specific concerns regarding non-market losses in the past.

Economic costs are those incurred by the Forest for items such as planting, reforestation surveys and road work costs. The cost of the environmental analysis is viewed as a fixed sunk cost. This cost would be the same across all alternatives and it is difficult to obtain an accurate estimate of the final cost. Since this analysis is an incremental analysis of the economic efficiency of implementation of the project, these costs were not included. Ten years was used as the analysis period since that is the estimated timeframe of activities to be completed (e.g. third year regeneration surveys after planting).

The outcome of the analysis is displayed in Table 7. Analysis results are expressed as present net value in thousands of 2006 dollars for all project actions and also displayed for only those actions related to the timber salvage operations. (See project record for the Quick-Silver program output information.) All action alternatives would result in a below-cost timber sale; some wood products would be supplied to a variety of users if the sale was purchased. Reforestation efforts may be accomplished with Knutson-Vandenberg (K-V) funds generated by the salvage sale, if stumpage prices were higher than estimated.

**Table 7. Economic Consequences for all Project Activities and Timber Salvage Operations Only**

Perspective	Alt 1 (No Action)	Alt 2	Alt 3	Alt 4
Values For All Proposed Project Activities				
Present Net Value	0	-\$2,021,756	-\$1,530,732	-\$1,571,098
Present Value Benefits	0	\$589,256	\$439,383	\$400,938
Present Value Costs	0	\$2,611,011	\$1,970,115	\$1,972,036
Benefit/Cost Ratio	0	0.23	.22	0.20
Values Related to Timber Salvage Operations Only				
Present Net Value	0	-\$992,108	-\$559,332	-\$560,589
Present Value Benefits	0	\$589,256	\$439,383	\$400,938
Present Value Costs	0	-\$1,581,364	-\$998,715	-\$961,527
Benefit/Cost Ratio	0	0.37	0.44	0.42

### *Summary of Effects*

All action alternatives support the memorandum of understanding (MOU 04-MU-11046000-060) between the USDA Forest Service, Southwestern and Intermountain Regions, and the State of Utah by building “the capacity to accomplish restoration projects” and encouraging “local employment in order to benefit the management of the national forests and communities of the Central Colorado Plateau and Great Basin.” Alternative 2 provides the highest level of support. Alternatives 3 and 4 support the memorandum of understanding to a lesser extent than alternative 2 due to less volume removed. Ninety percent of the stumps value from the salvage would be contributed back into the project for planting (J.Drury 2008 personal communication).

All action alternatives also support the goal of the Kaibab Forest Plan to “manage suitable timberland to provide a sustained level of timber outputs to support local dependent industries.” As above, Alternative provides the highest level of support, followed by Alternatives 3 and 4.

Although negative, alternative 3 provides the highest present net value among the action alternatives at -\$559,332, followed by alternatives 4 and 2 when considering the salvage value. Net public benefit is an important concept in the current regulations for carrying forest management activities (benefits minus all the associated Forest Service inputs and negative effects (costs), whether they can be quantitatively valued or not). Thus, net public benefits, conceptually are the sum of this economic analysis plus the net value of non-priced outputs and costs. It is not the result of economic analysis alone. Many relevant factors cannot be quantified or expressed in monetary terms. The agency endeavors to maximize net public benefit through public participation in the planning process. Seeking public input, designing alternatives and mitigation measures to achieve the desired future condition while minimizing adverse effects and analyzing effects relative to the issues and concerns raised is the agency’s primary mechanism for achieving the maximum net public benefit. This economic analysis is but one element of that process and must be considered together with the analyses of other resources. This concept is the basis upon which the Deciding Official selects an alternative for implementation.

# Social

## Environmental Justice

### *Affected Environment*

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations.

CEQ guidance for the consideration of environmental justice provides the following definition:

- “Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis... “ (CEQ 1997).

Table 8 displays the racial/ethnic composition of the analysis area population.

**Table 8. Racial/Ethnic Composition of County and State Populations by Percentage, 2000 Census.**

Race/Ethnicity	Coconino County, AZ	Mohave County, AZ	Kane County, UT	Washington County, UT	Garfield County, UT	Arizona	Utah
American Indian or Alaska Native	28.51%	2.41%	1.55%	1.47%	1.84%	4.99%	1.33%
Asian or Pacific Islander	0.88%	0.78%	0.26%	0.87%	0.40%	1.93%	2.34%
African American or Black	1.04%	0.54%	0.03%	0.21%	0.17%	3.10%	0.79%
Multiple Races	6.49%	6.13%	2.15%	3.88%	2.64%	14.49%	6.30%
White	63.09%	90.06%	96.00%	93.57%	94.95%	75.50%	89.24%
Percent-Non-white	36.91%	9.94%	4.00%	6.43%	5.05%	24.5%	10.78%
Hispanic	10.94%	11.08%	2.32%	5.23%	2.87%	25.25%	9.03%

Source: University of Arizona School of Natural Resources. 2005 and US Census 2000a and 2000b.

Census bureau statistics cited above suggest that none of the counties in the analysis area have populations that meet either environmental justice population criterion.

Table 9 displays the poverty levels within the analysis area by county.

**Table 9. Poverty levels by County, 2000 Census.**

Location	Percent below Poverty Level
Arizona	13.9%
Utah	9.4%

Coconino Co., AZ	18.2%
Mohave Co., AZ	13.8%
Kane Co., UT	7.9%
Washington Co., UT	11.2%
Garfield Co., UT	8.1%

Source: US Census 2000c.

### *Effects Analysis*

All federal actions are required by Executive Order 12898 to address questions of equity and fairness in resource decision making. The immediate populations were considered for this analysis. Alternatives were reviewed to determine whether proposed actions would disproportionately impact minority or low income populations.

The alternatives do not differ from one another in their effects on minorities, Native Americans, women or the civil liberties of any American citizen. Any significant cultural properties identified by Native American groups will be protected. There is no indication that the Warm Fire Recovery project would adversely or disproportionately affect American Indians, other racial minorities, or low-income groups.

The action alternatives may provide additional job opportunities in the analysis area economy. The District would offer salvaged timber for bid and the salvaging and wood processing could create economic and job-related opportunities potentially benefiting low income populations. The indirect and induced effects of salvaging and processing wood product would stimulate labor income throughout the local and regional economy. Even wood processed at locations far from Fredonia, Arizona and Kanab, Utah could be expected to provide jobs and stimulus to the local economy, such as the purchase of food and fuel and the possibility that the work might be subcontracted to a local operator.

## References

- Council on Environmental Quality (CEQ). 1997. Environmental Justice: Guidance Under the National Environmental Policy Act.
- Drury, Jerry. Personal communication October 4, 2007 email.
- Drury, Jerry. Personal communication March 7, 2008.
- Federal Register Vol. 71, No. 15 pp. 3848-3849 January 24, 2006.
- Hannemann, Michael; Hillskotter, Jack. Personal communication, email, January 30, 2009.
- Minnesota IMPLAN Group. 1999. User's Guide: IMPLAN Professional Version 2.0.
- University of Arizona School of Natural Resources. 2005. Socio-Economic Assessment for the Kaibab National Forest.
- US Census Bureau. 2000a. P3. 2000 Census, Race, Garfield County, Utah.
- US Census Bureau. 2000b. P8. 2000 Census, Hispanic or Latino by Race, Garfield County, UT.
- US Census Bureau. 2000c. P87. 2000 Census, Poverty Status in 1999.
- USDA Forest Service. 1988. Kaibab National Land and Resource Management Plan, As Amended 6/96 and 11/04. Williams, AZ.
- USDA Forest Service. 2000. Quick-Silver NRIS - Humans Dimension Module. East Lansing, MI.
- USDA Forest Service. 2006. Dry Park - Knutson-Vandenberg (K-V) project calculations. Fredonia, AZ.
- USDA Forest Service. 2006. R3 TSPIRS
- USDA Forest Service. 2007. Region 3 general fire-kill defect progression white paper.
- USDA Forest Service. 2008. Region 3 T.E.A. Appraisal Bulletin No. 04 for calendar year 2008.

## Appendix A

### Experienced Costs

The R3 TEA cost sheet and district experienced costs were used for many costs. Other values were obtained from forest personnel based on known local values.

Table A-1 Forest Service Costs

Cost Items - FS	category	frequency	activity year(s)	value \$	unit	cost year (update in QS)	Info source	Alt 1	Alt 2	Alt 3	Alt 4
General Program overhead	timber management	annual	1-2	170	ac	2006	J.Drury	0	73426	52806	41985
Fuels treatment reduction	fuels	one time	3	300	ac	2006	J.Drury	0	283	73	241
Brush disposal	Fuels	annual	1-2	180	ac	2006	J.Drury	0	4557	2878	2771
Rd ML1	Roads	one time	1	400	miles	2006	Kolle	0	94.62	65.21	72.29
Rd ML2	Roads	annual	1-2	.1617	CCF	2006	Kolle	0	73426	52806	41985
Rd ML3	roads	one time	2	.1661	CCF	2006	Kolle	0	146853	105612	83971
Silv Exam	timber	annual	2-3	4	ac	2006	J.Drury	0	4557	2878	2771
Planting conifers	timber management	one time	3	940	thousand	2008	J.Drury	0	898	898	898

Cost Items - FS	category	frequency	activity year(s)	value \$	unit	cost year (update in QS)	Info source	Alt 1	Alt 2	Alt 3	Alt 4
Stocking survey	timber management	Periodic, step 2	6-8	10	ac	2006	J.Drury	0	9978	9978	9978
Discing	Soil	annual	5	100	ac	2008	M.Hannemann, J. Hillskotter	0	274	173	166

Table A-2 Forest Service Benefits R3 TEA Values 2006

Benefit items-	frequency	activity year(s)	value \$	unit	Alt 1	Alt 2	Alt 3	Alt 4
Mixed Conifer	annual	1-2	6.00	CCF	0	11,056 CCF/yr	8,671.5 CCF/yr	3,033.5 CCF/yr
Ponderosa Pine	annual	1-2	10.00	CCF	0	24,608.5 CCF/yr	18,093 CCF/yr	19,437.5 CCF/yr

\*assumptions: Half of the volume harvested in each year over a two year period. Values from R3 TEA base values.