



## Response Coefficients

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The engine driving FEAST

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## Response Coefficients

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- Simply, a rate of change.
- Output from IMPLAN used by FEAST to estimate local job and income impacts.

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## Response Coefficients

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- Remember:
  - Focus like a laser beam on
    - Local
    - The effect of Federal management

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### Response Coefficients

- What is the effect on the local economy of a change in a set level of resource management. For example;
  - Change in jobs economy-wide per 1 million dollars of recreation spending (gained or lost)
  - Change in income economy-wide per 1 million dollars of demand for drilling of gas and oil wells (gained or lost)
  - etc

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### Response Coefficients

- Resource Data Entry in terms of physical flows; visits, head-months, ccf's, etc. (FEAST)
- Response Coefficients from economic impact analysis (IMPLAN) in terms of jobs or income effects per million dollars of final demand.
- Hidden FEAST worksheets convert physical flows to dollars and apply response coefficients to get job and income impacts.

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### Response Coefficients

- For example, from the recreation data, we know how much each visitor spent on average.
- We know how many visitors came that year.
- Multiply the two and we have the amount of money spent that year.
- Multiply that by the response coefficients for jobs and income and we have an estimate of economic activity associated with that level of recreation.

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## Response Coefficients

- Why do we use Response Coefficients?
  - Useful when analyzing multiple alternatives for multiple resources
  - Run IMPLAN once, then apply the response coefficients to multiple management scenarios.
  - Many times IMPLAN is run without FEAST for simple analyses
  - FEAST is a big calculator that saves hours and hours of work

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## Response Coefficients

	Units	EMPLOYMENT (Jobs/IM Units)				LABOR INCOME (\$IM Units)			
		Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
267 Recreation									
268									
269									
270	Nonlocal - Day Use	0.04	0.00	0.04	0.08	2,368.87	98.04	1,038.21	3,505.12
271	Nonlocal - Overnight on National Forest	0.07	0.00	0.07	0.14	41,449.57	2,324.57	2,890.00	46,664.14
272	Nonlocal - Overnight off National Forest	1.56	0.05	0.07	1.68	29,373.21	4,687.24	4,933.00	39,093.45
273	Local - Day Use	0.01	0.00	0.01	0.02	4,530.23	931.00	638.00	6,099.23
274	Local - Overnight on National Forest	0.02	0.00	0.02	0.04	8,333.53	178.00	2,231.00	10,742.53
275	Local - Overnight off National Forest	0.70	0.04	0.03	0.77	15,744.00	1,018.00	2,187.00	18,949.00

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**Alternative: Current**  
**Year of Dollars: 2008**

**Ecosystem Restoration**

	Units	EMPLOYMENT (Jobs/M Units)			
		Direct	Indirect	Induced	Total
PreCommercial Thinning	Acres	26.38	0.63	3.55	30.56
Tree Planting	Acres				
Weed Spraying	Acres	7.29	0.17	0.98	8.44
Mastication	Acres				
Prescribed Burning	Acres				
Road Work: Non-timber	Miles				
Road Decommissioning	Miles				
Road Closures	Miles				
Culvert Replacement	Number				
Burning and mechanical treatment - grasslands - BLM	Acres	0.12	0.02	0.03	0.17
Burning - forests - BLM	Acres	4.71	0.86	1.28	6.85
Mine reclamation and water treatment - contract	Project	23,401.39	5,995.75	3,673.89	33,071.03
Weed Spraying - BLM	Acres	0.99	0.18	0.27	1.44
Ecosystem Restoraton User-Defined Category 5					

**Timber: Mill Survey**

	Units	EMPLOYMENT (Jobs/MMCF)			
		Direct	Indirect	Induced	Total
Logging Camps (Sector 14)	CF	23.00	10.47	7.88	41.35
Sawmills (Sector 112)	CF				
Other Manufacturing (113, 122)	CF				
Residue (Sector 114, 124, 125, 126)	CF				
Plywood/Veneer (115)	CF				

## Minerals

	Units	EMPLOYMENT (Jobs/M Units)			
		Direct	Indirect	Induced	Total
<b>1. Oil and Gas Extraction (Sector 19)</b>					
Natural Gas: 19	M Cubic Feet	0.02	0.01	0.01	0.05
Crude Oil: 19	Barrels	0.31	0.10	0.17	0.58
Natural Gas Liquids: 19	Gallons				
Carbon Dioxide: 19	M Cubic Feet				
Nitrogen: 19	M Cubic Feet				
Sulfur: 19	Long Tons				
<b>7. Sand, Gravel, Clay, and Refractory Mining (Sector 25)</b>					
Construction Sand and Gravel: 25	Short Tons	0.03	0.00	0.01	0.05
Industrial Sand: 25	Short Tons				
Clay: 25	Short Tons	0.47	0.06	0.14	0.66
<b>9. Drilling Oil and Gas Wells (Sector 27)-Dry Hole</b>	Number	112.15	85.87	57.97	255.99
<b>10. Drilling Oil and Gas Wells (Sector 27)-Producer</b>	Number	186.91	143.12	96.62	426.65
Geothermal: 32	Pounds Steam	0.17	0.05	0.12	0.35

## Range

	Units	EMPLOYMENT (Jobs/M Units)			
		Direct	Indirect	Induced	Total
Cattle & Horses	HMs	0.11	0.11	0.03	0.25
Sheep & Goats	HMs				

## Recreation

	Units	EMPLOYMENT (Jobs/M Units)			
		Direct	Indirect	Induced	Total
Nonlocal - Day Use	Visits	0.34	0.03	0.04	0.42
Nonlocal - Overnight on National Forest	Visits	0.87	0.08	0.12	1.07
Nonlocal - Overnight off National Forest	Visits	1.56	0.15	0.17	1.88
Local - Day Use	Visits	0.19	0.02	0.03	0.24
Local - Overnight on National Forest	Visits	0.62	0.06	0.09	0.77
Local - Overnight off National Forest	Visits	0.70	0.06	0.09	0.86

**Fish & Wildlife**

		<b>EMPLOYMENT (Jobs/M Units)</b>			
	<b>Units</b>	Direct	Indirect	Induced	Total
Nonlocal - Day Use	Visits	0.22	0.02	0.03	0.27
Nonlocal - Overnight on National Forest	Visits	1.13	0.11	0.15	1.39
Nonlocal - Overnight off National Forest	Visits	1.55	0.15	0.17	1.87
Local - Day Use	Visits	0.26	0.02	0.03	0.32
Local - Overnight on National Forest	Visits	0.76	0.08	0.10	0.94
Local - Overnight off National Forest	Visits	0.62	0.06	0.08	0.76

**Grants & Aid**

		<b>EMPLOYMENT (Jobs/M Units)</b>			
	<b>Units</b>	Direct	Indirect	Induced	Total
Roads	\$				
Schools	\$				
General Government	\$	25.25	0.00	4.65	29.89
Title II Projects	\$				

**FS Salaries**

	<b>Units</b>	Direct	Indirect & Induced	Total
FS Salaries	\$	0.02	0.01	0.03

**FS Nonsalary Expenditure**

		<b>EMPLOYMENT (Jobs/M Units)</b>			
	<b>Units</b>	Direct	Indirect	Induced	Total
FS Nonsalary Expenditure	\$	0.00	0.00	0.00	0.01

**Alternative: Current**  
**Year of Dollars: 2008**

**Ecosystem Restoration**

	Units	LABOR INCOME (\$/M Units)			
		Direct	Indirect	Induced	Total
PreCommercial Thinning	Acres	625,475.31	17,571.63	86,295.68	729,342.62
Tree Planting	Acres				
Weed Spraying	Acres	172,772.31	4,853.73	23,837.08	201,463.12
Mastication	Acres				
Prescribed Burning	Acres				
Road Work: Non-timber	Miles				
Road Decommissioning	Miles				
Road Closures	Miles				
Culvert Replacement	Number				
Burning and mechanical treatment - grasslands - BLM	Acres	5,722.67	601.02	793.30	7,116.99
Burning - forests - BLM	Acres	224,614.69	23,589.98	31,137.19	279,341.86
Mine reclamation and water treatment - contract	Project	543,370,485.03	169,021,775.16	89,291,239.60	801,683,499.78
Weed Spraying - BLM	Acres	47,290.69	4,966.67	6,555.67	58,813.03
Ecosystem Restoraton User-Defined Category 5					

**Timber: Mill Survey**

	Units	LABOR INCOME (M\$/MMCF)			
		Direct	Indirect	Induced	Total
Logging Camps (Sector 14)	CF	666.64	305.30	179.52	1,151.46
Sawmills (Sector 112)	CF				
Other Manufacturing (113, 122)	CF				
Residue (Sector 114, 124, 125, 126)	CF				
Plywood/Veneer (115)	CF				

## Minerals

	Units	LABOR INCOME (\$/M Units)			
		Direct	Indirect	Induced	Total
<b>1. Oil and Gas Extraction (Sector 19)</b>					
Natural Gas: 19	M Cubic Feet	2,034.79	502.23	330.69	2,867.71
Crude Oil: 19	Barrels	26,000.15	6,417.37	4,225.50	36,643.02
<b>7. Sand, Gravel, Clay, and Refractory Mining (Sector 25)</b>					
Construction Sand and Gravel: 25	Short Tons	1,804.11	165.57	243.32	2,213.01
Industrial Sand: 25	Short Tons				
Clay: 25	Short Tons	24,806.55	2,276.65	3,345.69	30,428.89
Apatite: 25	Short Tons				
Ilmenite: 25	Short Tons				
Magnetite: 25	Short Tons				
<b>9. Drilling Oil and Gas Wells (Sector 27)-Dry Hole</b>	Number	8,736,642.35	2,553,568.33	1,408,928.26	12,699,138.94
<b>10. Drilling Oil and Gas Wells (Sector 27)-Producer</b>	Number	14,561,070.59	4,255,947.21	2,348,213.77	21,165,231.57
<b>11. Support Activities for Oil and Gas Operations (Sector 27)</b>	total \$				
<b>12. Support Activities for Other Mining (Sector 29)</b>	total \$				
<b>13. Water, Sewage, and Other Systems (Sector 32)</b>					
Geothermal: 32	Pounds Steam	20,166.54	2,830.46	2,982.09	25,979.09
<b>9. Drilling Oil and Gas Wells (Sector 27)-Dry Hole</b>	<b>Number</b>	0.00	0.00	0.00	0.00
<b>10. Drilling Oil and Gas Wells (Sector 27)-Producer</b>	<b>Number</b>	0.00	0.00	0.00	0.00

## Range

	Units	LABOR INCOME (\$/M Units)			
		Direct	Indirect	Induced	Total
Cattle & Horses	HMs	1,402.07	3,410.81	622.67	5,435.54
Sheep & Goats	HMs				

## Recreation

		LABOR INCOME (\$/M Units)			
		Direct	Indirect	Induced	Total
	Units				
Nonlocal - Day Use	Visits	7,366.67	919.84	1,039.21	9,325.72
Nonlocal - Overnight on National Forest	Visits	20,449.57	2,321.57	2,850.33	25,621.48
Nonlocal - Overnight off National Forest	Visits	29,379.21	4,097.24	4,193.82	37,670.27
Local - Day Use	Visits	4,530.29	531.50	635.00	5,696.79
Local - Overnight on National Forest	Visits	16,039.58	1,716.20	2,220.96	19,976.74
Local - Overnight off National Forest	Visits	15,744.59	1,814.37	2,197.90	19,756.86
Non-Local Recreation User Defined Cat					

## Fish & Wildlife

		LABOR INCOME (\$/M Units)			
		Direct	Indirect	Induced	Total
	Units				
Nonlocal - Day Use	Visits	4,917.45	664.30	701.86	6,283.61
Nonlocal - Overnight on National Forest	Visits	25,772.09	3,069.95	3,617.64	32,459.68
Nonlocal - Overnight off National Forest	Visits	29,292.06	4,135.14	4,189.38	37,616.58
Local - Day Use	Visits	5,880.52	730.07	832.72	7,443.32
Local - Overnight on National Forest	Visits	17,738.11	2,194.70	2,505.86	22,438.66
Local - Overnight off National Forest	Visits	12,856.49	1,817.54	1,847.21	16,521.24

## Grants & Aid

		LABOR INCOME (\$/M Units)			
		Direct	Indirect	Induced	Total
	Units				
Roads	\$				
Schools	\$				
General Government	\$	917,036.75	0.00	112,904.39	1,029,941.14
Title II Projects	\$				

## FS Salaries

		LABOR INCOME (Jobs/M Units)		
		Direct	Indirect & Induced	Total
	Units			
FS Salaries	\$	1,000.00	142.42	1,142.42

## FS Nonsalary Expenditure

		LABOR INCOME (\$/M Units)			
Units		Direct	Indirect	Induced	Total
FS Nonsalary Expenditure	\$	230.35	24.19	31.93	286.47

**FS Salaries**

		LABOR INCOME (Jobs/M Units)			
	Units	Direct	irect & Induced		Total
FS Salaries	\$	1,000.00	142.42		1,142.42