Workshop:
Economic Impact of
Federal Natural Resource Management Decisions

Online class | Course 1610-11 | Sept. 16-19, 2008

Notebook Table of Contents
Economic Impact Analysis Online Workshop
September 16 – 19, 2008

- **Cover Page**

- **Notebook Table of Contents**

- **Tab 1: Introduction**
  - Agenda
  - Description of IMPLAN and FEAST
  - Tab1 PowerPoint slides

- **Tab 2: Why do Economic Analysis?**
  - Tab 2 PowerPoint slides

- **Tab 3: Planning Example**
  - Map of Malta planning area
  - Malta Table 2-24
  - Malta Chapter 3
  - Malta Chapter 4
  - Tab 3 PowerPoint slides

- **Tab 4: Project Example**
  - Shepherd Ah Nei OHV Area Management Plan EA
  - Tab 4 PowerPoint slides

- **Tab 5: FEAST**
  - Malta RMP FEAST Results Tables
  - FEAST data input screens for Malta RMP
    - FEAST Introduction, Resource Data, Financial Data, Economics Data, Budget Object Code, Interface Page
  - Malta RMP data request form
  - FEAST check list
  - FEAST User's Guide
  - Tab 5 PowerPoint slides

- **Tab 6: Response Coefficients**
  - Malta Employment Response Coefficients
  - Malta Labor Income Response Coefficients
  - Tab 6 PowerPoint slides

- **Tab 7: IMPLAN**
  - Tab 7 PowerPoint slides

- **Tab 8: Study Area**
  - Tab 8 PowerPoint slides

- **Tab 9: Lessons Learned**
  - Tab 9 PowerPoint slides

- **Tab 10: Readings and Class Exercises**
  - Understanding your Regional Economy
  - IMPLAN and the Freedom of Information Act
  - IMPLAN and your planning record
  - Economics Briefing Paper

- Impacts of Oil and Gas Development
- Elements of the IMPLAN SAM
- IMPLAN RPCs
- NV4Year
- Tax Impacts Report

Economic Impact Analysis for Planning:
Modeling Tools that Analyze Local/Regional Economic Impacts of Federal Natural Resource Management Decisions

1. **DAY 1: INTRODUCTION.**
    a. Check in at 9:45am, trouble shooting. Class starts at 10:00am MST
    b. Welcome and overview
        i. Instructor intro/bios.
        ii. Role call and introductions. Overview of notebook
        iii. Overview of the class
            1. History of the class: Explain shift in class structure.
            2. Goals and Expectations
            3. Objectives: Provide background necessary to understand to specifics covered in the followup sessions.
            4. FS/BLM contacts
    c. WHY DO ECONOMIC ANALYSIS
        i. Legal, statutory and administrative mandate
            1. NEPA, FLPMA, NFMA
        ii. Public demand for meaningful economic analysis
        iii. NEPA – if raised as an issue, economics should be addressed.
        iv. FLPMA
        v. Standards for credible economic analysis (what we're hearing from attorneys and appellants)
    d. PLANNING EXAMPLE: Malta RMP
    e. PROJECT EXAMPLE. Shepherd Ah Nei
    f. Class dismissed for individual work on class exercises.

2. **DAY 2: FEAST.**
    a. Review Day 1
    b. Entertain questions about previous afternoon's homework. Discuss worksheet.
    c. Introduction to the Excel spreadsheet FEAST (using Malta RMP)
    d. Response Coefficients
    e. FEAST Demonstration
    f. Class dismissed for individual work on class exercise.

3. **DAY 3: IMPLAN.**
    a. Review previous day and answer questions.
    b. Introduction to the IMPLAN software and data package.
    c. Input-Output models
    d. Study Area definition
    e. Lessons Learned.
    f. Class dismissed for individual work on class exercises.

4. **DAY 4: CASE STUDY.** Build Malta RMP from start to finish using FEAST and IMPLAN.

5. Weekly followup sessions on specific resources.
    a. Study area definition
    b. Recreation
    c. Timber and fire
    d. Grazing and minerals
    e. Study area definition
    f. Travel management
    g. Build a model for a student

Workshop
Economic Impact Analysis:
Modeling the Local Impact of Federal Natural Resource Management Decisions

September 16-19, 2008

1

2

Instructors

- Susan Winter (FS): Economics, Planning, Regional Economics
- John Thompson (BLM): MT State office, NEPA coordinator, Planning, Economics
- Doug Smith (FS): Economics, Planning, Application development

3

Putting a Name to a Face……

Susan Winter

Doug Smith

John Thompson

4

Putting a Name to a Face….

Susan

Where's Doug?

John

5

National Training Center

- Elvin Clapp – Training Coordinator

- Genie Ramsden – Instructional Systems Specialist

6

Why Are You Taking This Class?

- It's free and I have nothing better to do.
- Just curious
- My boss is making me
- I need economics skills in my job

7

Let's Look At the Agenda

- **DAY 1: INTRODUCTION.**
  - Check in at 9:45am, trouble shooting. Class starts at 10:00am MST
  - Welcome and overview
    - Instructor intro/bios.
    - Role call and introductions. Overview of notebook
    - Overview of the class
      - History of the class: Explain shift in class structure.
      - Goals and Expectations
      - Objectives: Provide background necessary to understand to specifics covered in the followup sessions.
      - FS/BLM contacts
  - WHY DO ECONOMIC ANALYSIS
    - Legal, statutory and administrative mandate
      - NEPA, FLPMA, NFMA
    - Public demand for meaningful economic analysis
    - NEPA – if raised as an issue, economics should be addressed.
    - FLPMA
    - Standards for credible economic analysis (what we're hearing from attorneys and appellants)
  - PLANNING EXAMPLE: Malta RMP
  - PROJECT EXAMPLE. Shepherd Ah Nei
  - Class dismissed for individual work on class exercises.

8

Agenda

- **DAY 2: FEAST.**
  - Review Day 1
  - Entertain questions about previous afternoon's homework. Discuss worksheet.
  - Introduction to the Excel spreadsheet FEAST (using Malta RMP)
  - Response Coefficients
  - FEAST Demonstration
  - Class dismissed for individual work on class exercise.

9

Agenda

- **DAY 3: IMPLAN.**
  - Review previous day and answer questions.
  - Introduction to the IMPLAN software and data package.
  - Input-Output models
  - Study Area definition
  - Lessons Learned.
  - Class dismissed for individual work on class exercises.

10

Agenda

- **DAY 4: CASE STUDY.** Build Malta RMP from start to finish using FEAST and IMPLAN.
- Weekly followup sessions on specific resources.
  - Study area definition
  - Recreation
  - Timber and fire
  - Grazing and minerals
  - Travel management
  - Build a model for a student

11

How Great is the Demand for Economics Skills in Your Job?

- None
- Occasional
- Growing
- Frequent

12

So… Why are there no FS people in the class?

- Endless soap opera; As the Planning Rule Turns
- BLM planning situation more stable at the moment

13

Class Notebook Overview

- Tab 1: Introduction
- Tab 2: Why Do Economic Analysis
- Tab 3: Planning Example
- Tab 4: Project Example
- Tab 5: FEAST
- Tab 6: Response Coefficients
- Tab 7: IMPLAN
- Tab 8: Study Area
- Tab 9: Lessons Learned
- Tab 10: Reading

14

History of the Class

- Good Ol' Days:
  - Forest economist on almost every forest.
  - Workshops extremely technical.
- Currently:
  - Almost no FS regional economists
  - BLM in a worse situation

15

History.....

- Solution
  - Automate repetitive tasks, calculations and reports.
  - Divide and conquer; clearly define roles
    - Economist
    - Resource specialists

16

History.....

- Solution….
  - Technical Guides and Technical Advice Bulletins
  - Training to support the partnership
    - Course material presented **backwards**
    - Start with output, build understanding of process
    - Class with detailed follow-up sessions

17

Goals

- Learn about economic impact analysis tools (IMPLAN, FEAST)
- Understand the data needed from resource specialists to run FEAST
- Understand appropriate application and limitations of IMPLAN
- Understand the skills needed and time required for IMPLAN and FEAST

18

Expectations

- Planning and Resource Specialists
  - ✓ Issue recognition
  - ✓ Building vocabulary
  - ✓ Recognition of pitfalls
  - ✓ Understanding data and workforce needs
  - ✓ Building a partnership with Agency economists, collaborators, and contactors
- Economists
  - ✓ Skills for building IMPLAN/FEAST models.
  - ✓ Protocol for requesting data from specialists
  - ✓ Contract oversight

19

What Economics Background Do You Have?

- None
- A Little
- A Great Deal

20

Course Objectives

- Objective 1: Help you decide what tool, if any, you need
- Objective 2: Dealing with Human Capital Deficiencies
  - ✓ Divide and conquer – share the work
  - ✓ Protection against “pet economists” and “hired suits”

21

Course Objectives....

- Objective 3: Help you be an educated consumer of economic information
- Objective 4: Guidance on generally accepted practice

22

Services Provided by the Economic Analysis Unit to the Regions and National Forests

- ECONOMIC SOFTWARE SUPPORT
  - ✓ Examples are –
    - ✓ ***IMPLAN***: Regional economic analysis for evaluation and monitoring reports, impact analysis, assessment of the Forest Service' contribution to local economies, regional assessments, SPRA assessments, etc.
    - ✓ ***FEAST***: An electronic "protocol" (Excel workbook) to organize and streamline the use of IMPLAN data/results and resource management information for plan revisions/amendments, evaluation & monitoring reports, assessments, and project level analysis.

23

Services Provided by the Economic Analysis Unit to the Regions and National Forests

- ECONOMIC SOFTWARE SUPPORT
  - ✓ Examples are –
    - ✓ ***QuickSilver***: Efficiency analysis for the comparison of projects using cost/benefit, present net worth, etc.
    - ✓ ***TMECA***: A variant of FEAST designed for travel management analysis.

24

Services Provided by the Economic Analysis Unit to the Regions and National Forests

- ECONOMIC DATABASES
  - ✓ Distributed via FS intranet website
  - ✓ Data in support for Forest Plan Revision/Amendment, Project level NEPA related analysis, monitoring, etc.
    - ✓ Examples are –
      - ✓ IMPLAN county and community level databases
      - ✓ Forest-level Program Expenditures
      - ✓ Recreation Expenditures (NVUM)
      - ✓ PILT & 25% Fund data and key links

25

Services Provided by the Economic Analysis Unit to the Regions and National Forests

- Contacts
  - Susan Winter, economist, (970) 295-5726, swinter@fs.fed.us
  - Doug Smith, economist, FEAST specialist (509) 684-7182, dhsmith@fs.fed.us

26

Services Provided by the Economic Analysis Unit to the Regions and National Forests

- Other Helpful Contacts
  - FS Regional Economists:
    - R1: Keith Stockmann kstockmann@fs.fed.us
    - R2: Julie Schaefers jschaefers@fs.fed.us
    - R6: Dick Phillips rhphillips@fs.fed.us
    - R6: Elisabeth Grinspoon egrinspoon@fs.fed.us
    - R9: Rick Hokans rhokans@fs.fed.us
  - FS TEAMS: Barb Ott, economist/social scientist, bott@fs.fed.us

27

Services Provided by the Economic Analysis Unit to the Regions and National Forests

- Other Helpful Contacts
  - BLM:
    - MT: John Thompson jthompso@mt.blm.gov
    - WY: Roy Allen Roy_Allen@blm.gov
  - University of WY:
    - Tex Taylor ttaylor@uwyo.edu

28

2.1

IMPLAN: The IMPLAN Model is the most flexible, detailed and widely used input-output impact model system in the U.S. It provides users with the ability to define industries, economic relationships and projects to be analyzed. It can be customized for any county, region or state, and used to assess "multiplier effects" caused by increasing or decreasing spending in various parts of the economy. This can be used to assess the economic impacts of resource management decisions, facilities, industries, or changes in their level of activity in a given area.

The Forest Service in the mid-70s developed IMPLAN (IMpact analysis for PLANning) for community impact analysis. The current IMPLAN input-output database and model is maintained and sold by MIG. Inc. (Minnesota IMPLAN Group). Over 1,500 clients across the country use the IMPLAN model, making the results acceptable in inter-agency analysis. Typical applications of regional economic analyses are: affected environment, land use planning, strategic planning and policy analysis.

Forest Economic Analysis Spreadsheet Tool (FEAST) is a modeling tool used to assist in the development of economic impacts. FEAST was designed to streamline data entry and preparation for the generation of economic impact tables that can be used in resource management planning and EISs. The goal for FEAST model is to assist both economists and planning specialists in completing economic impact analyses. FEAST uses a Microsoft Excel workbook as the interface between user inputs and data from an existing IMPLAN model. Individual worksheets contain the formulas that drive the FEAST model while visual basic for applications was used to create the FEAST menu bar and the macros (visual basic procedures and functions) that make FEAST operational.

What does this mean?

- IMPLAN is a professionally accepted, widely used tool (computer model) to predict economic impacts of resource management decisions. It is analytic (40 CFR 1502.2) and it provides evidence that the agency used professional integrity, including scientific integrity, in NEPA analysis (40 CFR 1502.24) concerning the economic impact assessment.
- FEAST streamlines data entry for economic impact tables. FEAST helps clarify the relationship between resource management decisions and the effects on local employment, labor income, agency revenues and payments to counties, and agency related contributions to the area economy.

Why Do Economic Analysis?

Legal Mandates and Public Demands

1

Why Do Economic Analysis?

- …. because these are “pocketbook” issues; jobs and income.
- Listen to a segment from NPR’s Morning Edition: http://www.npr.org/templates/story/story.php?storyId=94304421

2

Why Do Economic Analysis?

……

After introducing himself, Morrow shows off the corner grocery store. About two years ago, the company that owned the store said they were closing down and moving out. For a time, that meant a half-hour drive out of town to shop. That's when the community took over. A group of residents came together to form a co-op and sold $50 shares around town, and the store reopened.

Rick Mills chairs the grocery store's board. He also owns the auto supply store on Main Street. The grocery store, he says, brought in more than $1 million in its first year and has been the engine of the little economy.

"Once the dollars leave, they don't come back," Mills says. "They're gone to the city and that's where they stay. People from the city aren't going to come to Walsh, Colo., to do their grocery shopping — or any other shopping, as far as that goes."

3

Legal, Statutory and Administrative Mandate

- FLPMA:
  - Integrate the physical, biological, economic, and other sciences in developing land use plans. ***(Section 202 (c)(2))***
  - Estimate and display economic effects ***(43CFR1610.4-6)***

4

Legal, Statutory and Administrative Mandate

- Standards for "credible" economic analysis:
  - CEQ requires rigorous and objective analysis that reflects professional integrity
  - A "hard look" doctrine has emerged from case law related to NEPA.
  - Agency Internal Guidance – Appendix D of BLM 1601-1 Handbook
  - Risk of appeal under the APA based on "arbitrary and capricious decisions."

5

CEQ Guidance Relevant to Economic Analyses

- Analyses should:
  - Be analytic, not encyclopedic ***(40 CFR 1502.0)***
  - Include an interdisciplinary approach that integrates use of natural and social sciences ***(40 CFR 1502.6)***
  - Insure professional integrity, including scientific integrity ***(40 CFR1502.24)***
  - Show that the agency made the necessary environmental analyses ***(40 CFR 1502.24)***

6

Planning Example

Malta RMP

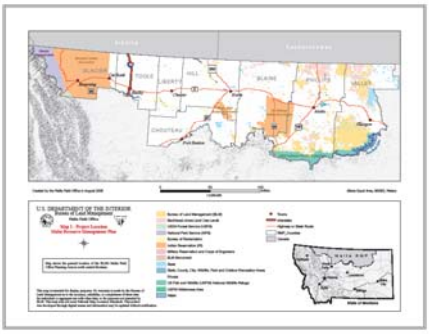
1

Planning Example

- Examples of Plan Documents (found in the class Notebook, Tab 3):
  - Map
  - Table 2-24
  - Chapters 3 and 4

2

Malta RMP Study Area



3

Comparison of Economic Impacts

- Alternatives A-D
  - *Agricultural and Livestock Use*
    - BLM would continue to provide about 17 percent of the total livestock forage needs in the PA and economic dependency of livestock producers on BLM forage would remain unchanged. About 760 operators would continue to have grazing permits on 1,030 allotments. Livestock grazing would support approximately 110 jobs and $2.34 million in labor income (Table 4-8). Farm/ranch related labor income would continue to account for approximately one percent of total income in the eight-county study area and less than three percent of employment (IMPLAN 2006). Annual federal revenues from livestock grazing fees would be about $476,000 annually, of which about $70,000 would be distributed to the counties. The difference between market prices for livestock grazing and the fee charged by the BLM represents an annual consumer surplus to the grazing permittees of an estimated $5.19 million.

4

Comparison of Economic Impacts

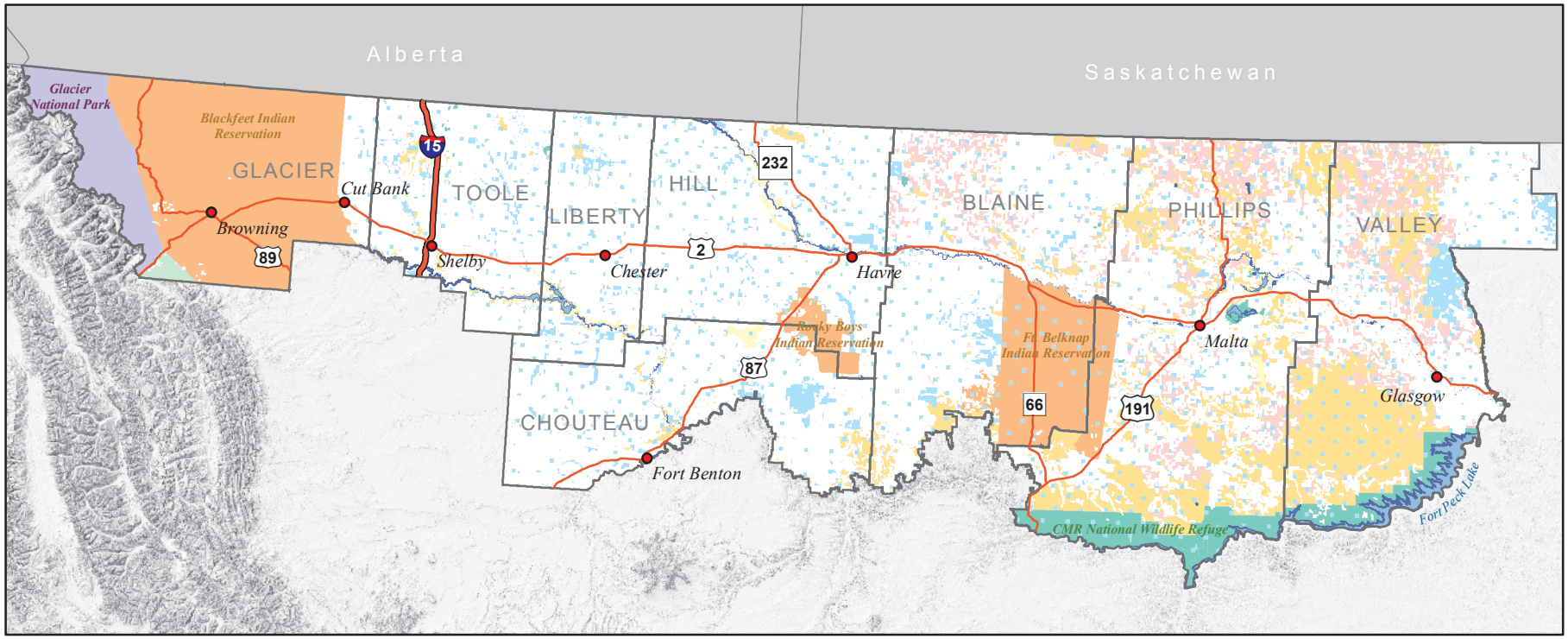
- Alternative A
  - *Ecosystem Restoration*
    - Ecosystem restoration (mine reclamation and water treatment, mechanical treatments and prescribed burning, and invasive species treatments) and timber management would support about 50 jobs and $1.1 million in labor income annually.

5

Comparison of Economic Impacts

- Alternatives B - D
  - *Ecosystem Restoration*
    - Ecosystem restoration (mine reclamation and water treatment, mechanical treatments and prescribed burning, and invasive species treatments) and timber management would support about 60 jobs and $1.5 million in labor income annually.

6



Created by the Malta Field Office in August 2008

0 50 100 Miles

1:2,500,000

Albers Equal Area, NAD83, Meters

U.S. DEPARTMENT OF THE INTERIOR

Bureau of Land Management

Malta Field Office

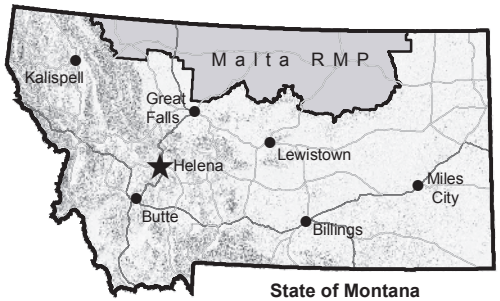
Map 1 - Project Location

Malta Resource Management Plan

Map shows the general location of the BLM's Malta Field Office Planning Area in north central Montana.

- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- USDA Forest Service (USFS)
- National Park Service (NPS)
- Bureau of Reclamation
- Indian Reservation (IR)
- Military Reservation and Corps of Engineers
- BLM Monument
- State
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- US Fish and Wildlife (USFW) National Wildlife Refuge
- USFW Wilderness Area
- Water

- Towns
- Interstate
- Highway or State Route
- RMP_Counties
- Canada



State of Montana

This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completness of these data for individual or aggregate use with other data, or for purposes not intended by BLM. This map may not meet National Map Accuracy Standards. This poduct was developed through digital means and information may be updated without notification.

Table 2. . Summary Comparison of Impacts

Economics				
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**
Agricultural and Livestock Use	BLM would continue to provide about 17 percent of the total livestock forage needs in the PA and economic dependency of livestock producers on BLM forage would remain unchanged. About 760operators would continue to have grazing permits on 1,030 allotments. Livestock grazing would support approximately 110 jobs and $2.34 million in labor and proprietor's income (Table 4-8). Farm/ranch related labor and proprietor's income would continue to account for approximately one percent of total income in the eight-county study area and less than three percent of employment (IMPLAN 2006). Annual federal revenues from livestock grazing fees would be about $476,000 annually, of which about $70,000 would be distributed to the counties. The difference between market prices for livestock grazing and the fee charged by the BLM represents an annual consumer surplus to the grazing permittees of an estimated $5.19 million.			
Minerals Development (common)	Federal minerals leased for oil/gas exploration, development, and production would increase from 1.629 million acres to about 2.178 million acres when areas deferred from leasing are available after RMP revision. Annual leasing revenues would increase from $3.5 million to $4.4 million. About 70 percent of federal natural gas production would occur in Phillips County and almost 70 percent of federal oil production would occur in Toole County. The amount of sand/gravel produced (about 38,500 short tons per year) and associated royalties (about $16,000) would remain unchanged. Minerals related activities would be the largest contributor to local employment and income of all major BLM land/mineral uses.			
Minerals Development	Federal oil/gas production would increase by 3.7 % over current levels. Annual production of 18.93 million MCF of natural gas, 174,000 bbl of oil, 38,500 short tons of sand / gravel, and 65,000 short tons of bentonite would support about 1,020 local jobs and $61.7 million in income. Total annual federal revenues from mineral leasing, production, and sales would be about $28.2 million; of which about $11.9 million would be distributed to the state and counties. Net residential property sales could be reduced by an average of 22% if a well is drilled near the property when it is being sold.	Federal oil/gas production would increase by 3.6 % over current levels. Annual production of 18.91 million MCF of natural gas, 174,000 bbl of oil, 38,500 short tons of sand / gravel, and 65,000 short tons of bentonite would support about 1,020 local jobs and $63.8 million in income. Total annual federal revenues from mineral leasing, production, and sales would be about $28.1 million; of which about $11.8 million would be distributed to the state and counties. Residential property sales would least likely be affected because wells would not be drilled within 0.25 miles of residential property.	Federal oil/gas production would increase by 4.2 % over current levels. Annual production of 19.02 million MCF of natural gas, 175,000 bbl of oil, 38,500 short tons of construction sand / gravel, and 65,000 short tons of bentonite would support about 1,030 local jobs and $64.3 million in income. Total annual federal revenues from mineral leasing, production, and sales would be about $28.3 million; of which about $12.0 million would be distributed to the state and counties. Residential property sales would be affected less than with Alternative A or D because wells would not be drilled within 500 feet of residential property.	Federal oil/gas production would increase by 4.6 % over current levels. Annual production of 19.09 million MCF of natural gas, 175,000 bbl of oil, 38,500 short tons of construction sand / gravel, and 65,000 short tons of bentonite would support about 1,040 local jobs and $64.7 million in income. Total annual federal revenues from mineral leasing, production, and sales would be about $28.4 million; of which about $12.0 million would be distributed to the state and counties. Effects on residential property sales would be similar to Alternative A.

Recreation (common)	Annual revenues from recreation use permits, campground receipts, and outfitter/guide receipts would be about $10,000.			
Recreation	90,200 recreation visits would support about 60 jobs and $1.3 million in labor income. The willingness to pay for recreation opportunities would represent an estimated annual consumer surplus of $4.11 million.	96,100 recreation visits would support about 60 jobs and $1.4 million in labor income. The willingness to pay for recreation opportunities would represent an annual estimated consumer surplus of $4.38 million.	96,300 recreation visits would support about 70 jobs and $1.4 million in labor income. The willingness to pay for recreation opportunities would represent an estimated annual consumer surplus of $4.38 million.	Employment and income effects would be similar to Alternative B. The willingness to pay for recreation opportunities would represent an estimated annual consumer surplus of $4.37 million.
Government	BLM expenditures would support approximately 90 jobs and $3.9 million in labor income.	BLM expenditures would support approximately 90 jobs and $4.0 million in labor income.		
Ecosystem restoration	Ecosystem restoration (mine reclamation and water treatment, mechanical treatments and prescribed burning, and invasive species treatments) and timber management would support about 50 jobs and $1.1 million in total income annually.	Ecosystem restoration (mine reclamation and water treatment, mechanical treatments and prescribed burning, and invasive species treatments) and timber management would support about 60 jobs and $1.5 million in total income annually.		
Land and Realty	Annual use authorizations would generate about $100,000 of federal revenue and annual PILT would be about $1.903 million. Construction of a 50 MW wind energy development would support about 70 local jobs and $1.9 million in labor income during the two-year construction period. Beyond that, the development would support less than 10 jobs and annual labor income of about $500,000 annually. It would generate $95,000 in annual federal revenues. Annual employment associated with maintenance and operation of other lands/realty R-O-Ws would be negligible.			
Combined Effects	The combined effect of this alternative would be about 1,720 jobs and $86.3 million, respectively (about 4.7 % and 7.1 % of total within the local economy for employment and income respectively). Annual program revenues to the federal government would be about $28.8 million; payments to the State/ counties would be about $13.9 million, most of which would be related to oil and gas production and PILT payments.	The combined effect of this alternative would be about 1,740 jobs and $86.9 million, respectively. Annual program revenues to the federal government would be about $28.8 million; payments to the State/ counties would be about $13.9 million, most of which would be related to oil and gas production and PILT payments.	The combined effect of this alternative would be about 1,750 jobs and $87.5 million, respectively. Annual program revenues to the federal government would be about $29.0 million; payments to the State/ counties would be about $13.9 million, most of which would be related to oil and gas production and PILT payments.	The combined effect of this alternative would be about 1,750 jobs and $87.9 million, respectively. Annual program revenues to the federal government would be about $29.0 million; payments to the State/ counties would be about $14.0 million, most of which would be related to oil and gas production and PILT payments.
Other	Total economic impacts to the local economy would be small, e.g. none of the alternatives would cause changes in total local employment or			

Combined Effects	income greater than 0.1 percent of current levels. BLM management that would generate the most employment and income would be mineral development (mostly oil and gas development) and payments to state/counties. The industry sectors that would be most influenced by BLM land and mineral uses would be mining, government, and agriculture. The employment, income, and revenue effects of BLM resource management would be spread unequally among the counties and communities within the PA. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates).
Soil and Water	Economic benefits from soil and water management and costs (from lost agricultural production, additional costs for municipal water treatments, shortened life of dams and reservoirs, additional cost of water for industrial purposes, reduced water recreation use, reduced soil productivity, and water pollution) associated with resource use are unknown.

Economics

The PA consists of approximately 2.7 million surface acres of land distributed across eight contiguous counties: Glacier, Toole, Liberty, Hill, Chouteau (North of the Missouri River), Blaine, Phillips, and Valley. The majority of these surface lands are located in Phillips County (40 percent), Valley County (37 percent), and Blaine County (17 percent). BLM administered lands within the PA accounts for approximately 15 percent of the total land area and BLM mineral estate accounts for 28 percent of the mineral estate in the eight counties (Table 3-29 in Section 3.8.1). Much of the economic activity is confined to these eight counties because the area is remote and no major population or business centers exist near the boundaries to the east, north, or west. Major business centers to the south include Great Falls (approximately 90 miles south of Shelby and 110 miles southwest of Havre), Lewistown (approximately 100 miles southeast of Fort Benton), and Billings (approximately 200 miles south of Malta). Economic activity is further restricted by 1) eight border crossings along the 300 mile border with Canada of which only one is open 24-hours per day; 2) only one major highway (Highway 2) to the West over the Rocky Mountains to Kalispell (approximately 156 miles west of Shelby), 3) one major highway (Highway 2) to the east (approximately 145 miles from Glasgow to Williston, ND (population 12,512) and 229 miles to Bismarck, ND (population 55,532)) and 3) only four highways that cross the Missouri River along the 270-mile southern border.

During the last century, ranching, farming, mining, natural gas development, the railroad and, in Valley County, construction of Fort Peck Dam and the establishment and subsequent closure of Glasgow Air Force Base have all been important factors in the social and economic history of the area. More recently, outdoor recreation, tourism, and the increasing presence of the US Border Patrol have been increasingly important contributors to the local economies. Long-term economic trends are also characterized by gradual population loss.

Agriculture played a dominant role in the region's initial post-European settlement and economic expansion. The development of the railroad across northern Montana in the late 1880's and the subsequent opening of the area to homesteading in the early 20th century ushered in an era of accelerated European settlement. Agriculture and other natural resource production helped spur the development of additional transportation infrastructure and the emergence of Havre, Malta, and Glasgow as regional trade and service centers for north-central Montana. In more recent times, the establishment and subsequent closure of Glasgow Air Force Base, and federal water and wildlife management projects and programs have played pivotal roles in the region's economic development. Mineral and energy resource development, primarily in the form of mining and natural gas, have also shaped the area's economic history. Mining and oil and gas industries have also been important contributors to the regional economic base through their fiscal support for local government and education.

Certain defining features of every area heavily influence and shape the nature of local economic activity. Principal among these are the size of the area's population, the presence of or proximity to large cities or regional population centers, types of longstanding industries such as oil and gas development and agriculture, and predominant land and water features and unique area amenities.

The following section provides a summary of demographic and economic trend information, followed by a description of the key industries in the PA that could be affected by BLM management actions. Area industries/economic sectors most heavily affected by BLM land management policies and programs are: (1) oil and gas exploration, development, and production, (2) travel, tourism and recreation, (3) cattle grazing and production, (4) government, (5) ecosystem restoration, and (6) other mineral exploration, mining, and reclamation. BLM lands provide areas for hunting and fishing, hiking and camping, and general sight-seeing, as well as providing important habitat for area fish and wildlife that spend time both on and off BLM lands.

Potential economic effects associated with the proposed RMP revision include changes in employment, income, public revenues, economic dependency, economic stability, and quality of life. The information contained in this section is presented to help clarify economic issues, describe relevant economic trends, and to provide context for potential changes to economic indicators that may be predicted in the Environmental Impact Statement (EIS) impact analysis.

Demographic and Economic Characteristics and Trends

The eight-county PA had an estimated total population of about 60,300 in 2005, with county populations ranging from 2,003 in Liberty County to 16,304 in Hill County. Havre (population 9,390) is the largest city and the largest business center in the PA. Other smaller business centers include Glasgow (population 3,018), Shelby (population 3,304), Cut Bank (population 3,167), and Malta (population 2,100).

Montana is one of the least densely populated states in the country, with an average population density of 6 persons per square mile compared to a national average of about 80 persons per square mile. The eight-county PA had an average population density of 2 persons per square mile, with county population densities ranging from just 1 person per square mile in Phillips County to 6 per square mile in Hill County where Havre is the center of economic activity.

The population in the PA is declining, i.e., it decreased by 3.8 percent between 1990 and 2005 compared to a 17-percent statewide increase. Population declined in all of the PA counties with the exception of Glacier County, which experienced a net population increase of 11.8 percent between 1990 and 2005 and Chouteau County which increased by less than 1 percent during the same period.

- The Economic Profile System indicates that housing affordability index is 192, which suggests that the median family can afford the median house. The majority of recent job growth has been in wage and salary employment (people who work for someone else); however, job growth in the PA has been slower than those of both the state and national averages. Income growth (1970-2004) in the PA has also been slower than the state and national averages.
- Data (employment, labor income, number of industries, and economic diversity) that summarize economic conditions and activity are shown in Table 3-35. The PA makes up about 19 percent of the state land area; but only about 7 percent of the state's population, 6 percent of the state's employment, and 5 percent of the state's labor income. The PA economy includes only 42 percent of the industries found in the state's economy. Liberty County has the least number of industries and the Chouteau County economy is the least diverse. Hill County has the most industries represented in its economy, and Hill and Valley economies are considered the most diverse.

Table -3-35: General Economic Indicators

County/Area	Employment	Labor Income ($ millions)	Number of Industries	Shannon Weaver Index*
Montana	627,303	21,669	354	0.71
Malta RMP area	35,876	1,152	156	0.64
Blaine	3,738	117	91	0.56
Chouteau	3,025	76	82	0.51
Glacier	6,669	253	99	0.56
Hill	10,165	336	124	0.62
Liberty	1,527	41	73	0.54
Phillips	3,021	74	96	0.59
Toole	3,460	134	93	0.57
Valley	4,272	121	106	0.62

*Shannon Weaver Index is one of several diversity indices used to measure diversity in categorical data.

Source: IMPLAN, 2006 data

Table 3.36 summarizes industry output, employment, and labor income (employee compensation plus proprietor income) for the PA by aggregating the industrial sectors by two-digit North American Industry Classification System (NAICS) values. Industry output, as used here, is the value of an industry's total production expressed as a single dollar figure. The data presented in this section were compiled by the Minnesota IMPLAN Group from a number of sources, including Census Bureau economic censuses, Bureau of Economic Analysis output, and employment projections developed by the Bureau of Labor Statistics (IMPLAN, 2006 data).

Table -3-36: Output, Employment, and Income for the Malta Field Office Planning Area

Industry*	Industry Output*	Employment	Employee Compensation and Proprietor Income*
Ag, Forestry, Fish & Hunting	587	6,089	122
Mining	495	1,125	81
Utilities	129	248	25
Construction	153	1,496	45
Manufacturing	161	497	15
Wholesale Trade	81	801	31
Transportation & Warehousing	297	1,661	95
Retail trade	183	3,103	72
Information	92	440	18
Finance and insurance	135	1,119	34
Real estate and rental	218	997	36
Professional- scientific and tech services	78	828	25
Management of companies	1	6	<1
Administrative and waste services	70	1,427	20
Educational services	13	382	6
Health and social services	175	2,548	79
Arts- entertainment & recreation	25	700	8
Accommodation & food services	113	2,516	34
Other services	96	2,028	25
Government & non NAICS	603	7,864	384
Total	3,706	35,876	1,153

*Millions of dollars
IMPLAN 2006 data

Key Industries in the RMP area Affected by BLM Management

Ranching

Ranching is an important part of the history, culture, and economy of the RMP area counties. Grazing is allowed on BLM lands for the purpose of fostering economic development for private ranchers and ranching communities by providing ranchers access to additional forage (GAO, Sept. 2005). BLM's major contribution to the area's livestock industry is largely through providing grazing lands. Livestock grazing on BLM lands is authorized on an annual basis. The established preference limit for grazing on public lands within the PA is 410,814 AUMs. This preference is the maximum number of AUMs that ordinarily could be offered under ideal forage conditions. However, actual use of AUMs varies from year to year due to factors such as drought, wildland fire, financial limitations on operators, and implementation of grazing management to improve range conditions. Across the PA, BLM provides almost one-fifth of the forage needed to support the livestock produced. Data on the number of farms and livestock inventories by county are presented in Table 3.37. Livestock grazing within grazing districts and by land status by county is summarized in Table 3-38**.**

Table 3-37 Livestock Operations by County

County/Area	Number of Farms	Cattle & Calves Inventory*	Sheep & Lamb Inventory	Total Annual AUMs of Feed Needed**	BLM AUMs**	Dependency on BLM (BLM AUMs / Total AUMs)***
MaFO Planning Area	1,779	340,866	22,218	2,098,526	360,801	.17
Blaine	296	63,645	9,161	403,850	49,507	.12
Chouteau	229	33,650	1,003	204,307	11,904	.06
Glacier	241	41,003	535	247,308	261	<.01
Hill	221	22,210	851	135,302	1,545	.01
Liberty	70	13,026	22	78,204	2,801	.04
Phillips	290	71,835	4,072	440,789	158,692	.36
Toole	109	13,645	1,774	86,134	4,275	.05
Valley	323	81,852	4,800	502,632	131,816	.26

Source: 2002 Census of Agriculture.

*Note: Each cow is counted as one unit and each calf is counted as one unit.

** 2006 Actual use level. Source: BJ Rhodes, 1/25/2007

***Total Annual AUMs of Feed Needed = ([Cattle and Calves inventory/2] x 12 months) + [Sheep & Lamb inventory/5] x 12 months)

Table 3-38: AUMs by county and land status across the planning area.

	Section 3		Section 15			
	Public Domain	**Land Utilization**	**Public Domain**	**Land Utilization**	**Bureau of Reclamation**	**Total**

Blaine	37611	30963	177			68751
Chouteau		2539	8877		10	11416
Glacier			266			266
Hill			823		53	876
Liberty			2715		94	2809
Phillips	44197	75022			1582	120801
Pondera			20			20
Toole			4265			4265
Valley	63161	80418	5	391		143975
Total	144969	188942	17148	391	1739	353179

RAS Range Administrative System

BLM issues grazing permits and leases to authorize livestock grazing on public land, within the PA currently consisting of about 760 livestock operators. These operators use 1,030 allotments and are authorized to harvest about 410,814 Animal Unit Months (AUMs) annually. Less than half (approximately 43 percent) of the farm/ranch units in the planning area hold BLM grazing permits/leases. Table 3-38 shows 2006 actual BLM use levels by county. The three-year annual average use level for 2005-2007 was 352,750 AUMs (Zellmer, 2008). The average annual level of use for Section 3 AUMs was 336,333 AUMs and the average annual level of use for Section 15 AUMs was 16,269 AUMs (Zellmer, 2008). Annual revenues to the federal government averaged $476,000 given a BLM grazing fee of $1.35 per AUM.

Cattle are the most prevalent class of livestock, although bison, sheep, and horses also graze some public land in the PA. Livestock operations are primarily cow/calf operations. Most calves are born in late winter through spring on private lands. Cattle are turned out to graze as cow/calf pairs. Calves have historically been weaned in the fall and most leave the region to be grown out and/or fed in other parts of the US. At weaning, most cows have been taken to winter pasture where they remain until they calve the following year. Approximately 1,400 jobs and $17 million in labor and proprietor's income were associated with cattle ranching and livestock production in 2006 (IMPLAN, 2006). The amount of BLM grazing land and the dependency of local livestock operators varies among the counties. Phillips and Valley Counties offer the most grazing land and the highest dependency on BLM land for livestock grazing. Chouteau, Glacier, Hill, Liberty, and Toole Counties offer the least amount of BLM grazing as well as the smallest dependency on BLM for livestock forage needs. In Fiscal Year 2007, livestock grazing on BLM lands involved livestock operators who had 609 Section 3 grazing permits (i.e., grazing on public lands within grazing districts, BLM Manual 1373.12) and 149 Section 15 grazing leases (grazing on public lands outside of grazing districts). Fifty percent of revenues from Section 15 grazing fees on public domain lands are distributed to the state and counties; 12.5 percent of grazing fees from Section 3 leases are distributed to the state and counties. Total annual revenues distributed to the state and counties from the federal government grazing receipts averaged $67,738 ($56,756 for Section 3 grazing permits and $10,982 for Section 15 grazing leases).

The grazing fee BLM charges is established by formula and is generally lower than fees charged by the other federal agencies, state, and private ranchers who set fees to obtain the market value of forage. The formula used to calculate the BLM grazing fee incorporates the ranchers' ability to pay and does not recover the agency's expenditures or capture the fair market value of forage. Livestock operations in the PA often involve large areas of land and ranchers depend on a mix of private and federal lands to graze cattle seasonally. None of the livestock operations are wholly dependent on forage coming from public lands. To qualify for a grazing permit/lease on public land an operator must have land and the capability to accommodate their livestock for a specified period of time on private land owned or controlled (base

property) apart from the public land (43 CFR 4110). The common qualification standard for the region was that the operator needed to accommodate livestock for four months on their base property to qualify to graze the same amount of livestock for eight months on public lands. Therefore an individual operator could not be dependent on more than 68 percent of their forage need coming from public land. Within the PA, it is rare for dependence on public land forage to exceed 50 percent and many operations depend on public land forage for less than 20 percent of their total forage needs. However, many of the BLM livestock operations depend heavily on forage from public lands during a specific season, i.e. many operators graze public land in the spring through fall for 5 – 7 months and winter their livestock on base property.

Although BLM forage comprises a relatively small share of total AUMs in the PA, this forage may be particularly valuable to livestock producers because the grazing fees are very favorable and it is often available during a critical period of the year when forage on private hay fields and meadows is being grown to provide forage for the winter. BLM grazing fees ($1.35/AUM in FY2007, (BLM IM-2007-061)) are considerably lower than the statewide average of $16 per AUM (Montana Agricultural Statistics, National Agricultural Statistics Service) and the 2007 minimum fee charged on Montana State Lands was $7.87 per AUM (Montana Department of Natural Resources and Conservation, Oct. 2, 2006). Access to BLM and Forest Service grazing may be important to area livestock producers even though additional management costs are usually incurred to use these lands. According to a GAO report on livestock grazing, 2005, "fees charged by private ranchers and state land agencies are higher than the BLM and Forest Service fees because, generally, ranchers and state agencies seek to generate grazing revenues by charging a price that represents market value for that land and/or the services provided." In 2004, the average private fee per AUM in Montana was $15.90. Adjusted to 2008 dollars, this would be $16.93. The difference between the statewide average grazing fee ($16.93/AUM) and the BLM fee ($1.35/AUM) represents an estimated consumer surplus to the permittee of up to $15.58 per AUM. The total estimated consumer surplus associated with 333,231 AUMs spread among about 760 operators within the planning area is an estimated $5.19 million.

The response coefficients shown in **Table 3-39** indicate how total employment and total labor income in the local economy respond to changes in levels of livestock grazing, i.e. for every 1,000 HM change in livestock grazing on public lands there is a corresponding change of 0.25 jobs and $5,436 within the local economy.

Table 3-39 Response Coefficients for Resource Uses on BLM Administered Lands

	Units	**Total Employment (jobs/M units)**	**Total Labor Income ($/M units)**
Grazing Management			
• Cattle and Horses	HMs	0.25	5,436
Mineral Production			
• Gas Extraction (Natural Gas)	M Cubic Feet	0.05	2,868
• Oil Production	bbl	0.58	36,643
• Sand and Gravel	Short tons	0.05	2,213
• Clay (Bentonite)	Short tons	0.66	30,429
Recreation Use*			
• Day Use	visits	0.31	7,188

• Non-local Overnight	Visits	1.55	33,342
• Local Overnight	Visits	0.60	19,674
BLM Employment and Non-salary Expenditures			
• BLM Salaries	$	0.01	1,142
• BLM Non-salary Expenditure	$	0.01	286
Ecosystem Restoration			
• Pre-commercial Thinning	Acres	30.56	729,343
• Weed Spraying- non BLM	Acres	8.44	201,463
• Weed Spraying- BLM	Acres	1.44	58,813
• Prescribed burns/mechanical treatments- grasslands	Acres	0.17	7,117
• Prescribed Burning- forests	Acres	6.85	279,342
• Mine Reclamation/water treatment	Project	33.1	801,683
Timber Management			
• Logging	MCF	56.56	1,490

Source: IMPLAN, 2006 data

* Averaged from response coefficients from IMPLAN, 2006 data

Mineral development and production

Mining sector activities include gold mining, oil production, natural gas production, and bentonite mining. Gold mining occurred in the Little Rocky Mountains for more than 100 years and once provided a major economic stimulus to the region and employed dozens of people. However, since the closure of the Zortman-Landusky mine in 1998, the few remaining jobs related to gold mining have been associated with environmental reclamation, water management, and restoration of the mine. The combined site maintenance and water treatment costs will run an estimated $2.5 million per year. A few people were employed in bentonite mining south of Malta until the 1980's when that mine closed.

Jobs in the oil and natural gas development and production account for nearly all of the direct employment reported in the mining sector today. Local oil and gas production also supports jobs in the natural gas pipeline transmission industry. Local contractors, as well as regional firms primarily from the Williston Basin in North Dakota provide contract services to local oil and gas fields. Natural gas production in Phillips County ranked first in the state in 2005 and more than half of the natural gas production from federal mineral estate in Montana comes from the PA (MMS, 2008). Phillips County is also the largest producer of natural gas from federal mineral estate in Montana (MMS, 2008).

Aggregated mining sectors (industry sectors 19-29) support approximately 1,130 total jobs and $80 million in labor income within the PA (IMPLAN, 2006). Almost all of the jobs and labor income are associated with oil and gas production. Most of the oil and gas service companies associated with oil and gas operations in the PA are located within the PA. BLM's major contribution to the area's mineral production is to provide access to federally owned minerals. The amounts of federal minerals and the dependency of

local economies on that production vary among the counties. Table 3-40 displays the acres of federal minerals leased and amount of oil and gas production for each county. Phillips County had the largest amount of federal gas production and Toole County had the largest amount of federal oil production. About 10 percent of the oil produced in the PA comes from federal minerals and about 30 percent of the gas comes from federal minerals. The largest share of total production occurs in Phillips County where about 70 percent of all the gas production comes from federal minerals. Currently, 1,966 federal oil and gas leases exist in the PA. Nearly 1.5 million acres of mineral estate are covered by these leases. An additional 549,000 acres have been nominated but are suspended pending completion of the Malta RMP (Karen Johnson, 2008).

Mineral and energy development is closely linked to fiscal conditions of local governments and school districts through contributions to local property-tax base, oil/gas production taxes, and federal mineral royalty payments on production from public mineral estate. Federal oil and gas leases generate a one-time lease bid as well as an annual rental. The minimum bid is $2.00 per acre; lease rental is $1.50 per acre per year for the first five years and $2.00 per acre per year thereafter.

Oil and gas production in Montana is not subject to ad valorem, or property taxes; rather it is subject to production taxes. Federal oil and gas royalties generally equal 12.5 percent of the value of production. Half of these royalties are distributed to the state, of which 12.5 percent is distributed back to the county of production (personal conversation with Van Charlton, Natural Resources Evaluation Section, Montana Department of Revenue). Fiscal Year 2006 payments to the counties within the planning area amounted to $2.1 million (Montana Department of Revenue, FY 2006).

Table 3-40 County Oil and Gas Leasing and Production

County/Area	2005 Total Oil Production (Barrels)*	2007 Oil Production: Federal Minerals (Barrels)**	2005 Gas Production (MCF) *	2007 Natural Gas Production: Federal Minerals (MCF)**	BLM Leased Acres
MaFO PA	1,251,302	167,687	56,582,088	18,254,938	1,492,130
Blaine	201,668	47,599	13,995,890	3,796,012	300,467
Chouteau			1,731,871	310,577	65,205
Glacier	467,594	4,399	1,699,950	28,401	30,857
Hill	2,281		14,130,071	503446	72,143
Liberty	81,503	4,140	1,986,181	151,056	20,443
Phillips			17,755,513	12,647,147	679,458
Toole	378,707	111,549	4,197,845	318,073	66,361
Valley	119,549		1,084,767	500,226	446,059

Source: * Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, Annual Review 2006

**MMS, 2008

The production equipment, gathering and transmission-system pipelines, ancillary facilities, and some equipment classified as pollution-control equipment are, however, subject to ad valorem property tax. The established assessment rate to established taxable value for Class 4-Commercial and Industrial property is 3.3 percent; the rate for Class 5-Pollution Control Equipment is 3.0 percent; and the rate of Class 9-Pipelines and non-electrical generating property of electrical utilities is 12.0 percent.

Detailed breakdowns of taxable values associated with the natural gas industry are not available. However, Class 9 property, which includes pipelines, is the largest category of taxable value in several of the counties shown and the largest category within the total PA (Table 3-41). Counties and school districts receive revenues from oil and natural gas production taxes and ad valorem property taxes on certain field and pipeline facilities. These revenues allow higher levels of government and/or school district services than would be available without these revenues. In other cases these revenues reduce the tax burden on residential, commercial and industrial property taxpayers within the county. These benefits can be offset by higher service demand associated with oil and gas activities; however, road maintenance appears to be the major function that requires a higher level of service as a result of oil and gas activities.

According to the Bowdoin Natural Gas Development Project Environmental Assessment (January, 2008), the cost of developing a well in an established field ranges from $100,000 to $300,000 including lease acquisition, surveying, cultural/biological clearance, site preparation, drilling, completion, surface facility and gathering system installation. Well production costs can run up to $200 per well per month. Drilling is usually done by a contractor who transports a rig and crew into the area and drills several wells. Drilling occurs continuously until all wells are completed. The rig then moves to its next assignment. Drilling within an area has been done by only one or two companies at a time. The temporary workforce typically includes about 15 drilling-related workers, about 4 workers to cement the well, and a three-person logging crew. A second crew of about 14 will complete the wells drilled during one season. A third crew of 10-15 workers installs gathering lines for all wells drilled within a field during one drilling season. Drilling, completion, gathering system/field infrastructure construction crews are generally non-local and stay in nearby towns on a temporary basis. Some crews hire a few local workers, but non-locals require temporary lodging in motels or recreational vehicles for the duration of their stay. Additional jobs are generated in the lodging, food service, entertainment, and automotive services sectors of the local economies. Field operations are typically performed by a few local employees and local contractors in the oil and gas service and construction industries.

Average income per job ($48,817) in the mining sector is relatively high (Montana state average, 2000, Northwest Economic Associates). The industry supported about four percent of the total local economic output, one percent of the jobs, and three percent of the labor income.

The proximity of oil and gas wells and related facilities can influence residential property sales especially those on split estate land. Landowners who do not own mineral rights may be subject to oil and gas development on their land. Usually, these landowners enter into a surface use agreement and receive compensation, i.e. income, for the use of their land. Estimates of how individual properties are affected by nearby oil and gas development vary from case to case depending on specific location and the exact character and features of a property. Based on research in Colorado, BBC Research and Consulting reported in "Measuring the Impact of Coalbed Methane Wells on Property Values" that surface property owners perceive Coalbed Methane (CBM) activity "as having an adverse, if localized, effect on property values within view or earshot of CBM facilities." In the study, interviewees said they "believe a property is most affected in the event that a well is located directly on it, although the intensity of effect may vary with the size of the property and the opportunities available to maintain separation between the well and the residence or other improvement." BBC Research conducted hedonic Pricing Analysis that included 754 properties and concluded that the location of a well on a property at the time of a residential sale reduced the net value of the residential property by 22 percent. However, the study found that the impact of a well within 550 feet of a property (but not on the property) may be positive if one takes into account spacing orders and setback requirements. The study concluded that this positive effect "is likely attributable to a belief that the property in question would not be drilled because a well had already been drilled in close proximity." GIS analysis indicates that there are currently about 500 residential structures within the PA on lands with federal minerals that have high or moderate potential for oil and gas development (Keefer, 2008).

Other economic activity related to mining includes sand, gravel, and stone mining and quarrying, and support activities for these other mining activities. Currently, the only other mineral production within the planning area is sand and gravel production. There are 37 sites of public minerals spread across five counties. Total average annual production is about 26,000 cubic yards of dry gravel (38,480 short tons). Annual mineral material royalties from sales of federal mineral materials averages about $15,750. None of these royalties go the State or local governments. However, the BLM does make sand and gravel available

Table 3-41 Distribution of Assessed Valuation (Taxable Value) by County, by Property Class, FY 2006 ($1,000)

Property Class	Blaine	Chouteau	Glacier	Hill	Liberty	Phillips	Toole	Valley	Planning Area	% of Total
1. Net Mining Proceeds	0	0	0	0	0	0	0	0	0	0.00%
2. Gross Proceeds	0	0	0	0	0	0	0	0	0	0.00%
3. Ag Land	4,049	8,904	2,642	6,039	3,164	3,744	4,223	4,606	37,372	27.60%
4. Residential	2,133	3,412	3,180	8,025	1,476	1,995	2,758	3,619	26,598	19.64%
4. Commercial	430	556	1,539	2,949	201	561	1,752	1,243	9,231	6.82%
5. Commercial / Industrial	297	314	895	701	173	225	324	431	3,360	2.48%
7. Non-centrally Assessed Utilities	0	0	8	0	0	0	0	0	7,890	0.01%
8. Business Equipment	1,039	1,623	816	2,055	695	826	1,111	1,112	9,278	6.85%
9. Pipelines & Non-electrical Generating Electrical Utilities	3,046	4,303	7,482	4,975	692	5,454	1,989	12,427	40,368	29.81%
10. Forest Land	2	11	4	4	0	1	0	0	23	0.02%
12. Railroads and Airlines	770	309	953	2,282	370	728	1,080	1,076	7,567	5.59%
13. Tele-communications & Electrical Generating Equipment	125	305	304	245	83	212	118	218	1,610	1.19%
TOTAL	11,890	19,738	17,823	27,276	6,853	13,747	13,354	24,732	135,413	100.0%
% of Total by County	8.78%	14.58%	13.16%	20.14%	5.06%	10.15%	9.86%	18.26%	100.00%	
Source: http://mt.gov/maco/pages/04and05TaxableValuesbyCountyBYClass.xls										

to county and local governments through free use permits. Commodity price for sand and gravel sold for commercial purposes averaged $3.68 per short ton in 2004 (USGS Minerals Yearbook, 2004).

Recreation Use

The economic influence of recreation use is related to the amount of recreation use on public lands and related local expenditures such as gasoline, lodging, meals, and supplies. To understand the local/regional economic influence of recreation use, it is important to understand what recreation activities occur on public lands because local/regional expenditures vary depending on the type of activity, whether the recreation use is from local residents or non-local residents, and whether the activity involves overnight stays. Local/regional expenditures related to recreation use support local/regional employment and labor income (standard economic indicators). Generally, employment related to recreation and tourism tends to be seasonal and relatively low paid, with a high portion of the labor force self-employed. The recreation opportunities available in the PA play an important role in the quality of life of many local residents, as well as attracting visitors from elsewhere in the state and region. BLM public lands in the PA received an estimated 90,000 recreation visits in 2007 (BLM, RMIS, 2008). Major recreation activities on BLM lands are hunting (35 percent), OHV use (15 percent), fishing (13 percent), wildlife viewing (8 percent), and camping (7 percent). Estimated recreation visits by activity are shown in Table 3-42. Recreation and tourism is not classified or measured as a standard industrial category. Components of recreation and tourism activities are instead captured in other industrial sectors, primarily the retail sales and services sectors.

It is assumed that day use and overnight use in the PA would be similar to that found in the Dakota Prairie National Grasslands (personal conversation, John Collins, BLM 2008) where an estimated 61 percent is day use; the vast majority of which is local day use. Average spending for day and overnight use on the Dakota Prairie Grasslands is assumed to be representative of daily recreation expenditures on BLM lands within the PA where average spending per recreation visit for day trips was $31 and average spending per overnight visit was $123 (Stynes and White, 2005). Using these data as a proxy of expenditures per recreation visit on BLM land in the PA, it is estimated that average daily expenditures are $73.25 and annual total expenditures are $3.9 million.

Table 3-42 FY 2007 Recreation Visits by Activity and Office

Activity	Malta	Havre	Glasgow	Total	Total (%)
General Recreation					
Backpacking	13		945	958	.01
Bicycling- Mountain	137			137	.002
Camping	2,959	1,930	1,627	6,516	.07
Canoe/Kayaking		225		225	.002
Caving	5	600		605	.01
Driving for Pleasure	275	2,056	1,890	4,221	.05
Environmental Education		248		248	.003
Hiking, walking, running	766	1,549	165	2,480	.03
Horseback riding	293	5	1,028	1,326	.01
Nature Study	4		130	134	.001
OHV- ATV	3,598	1,388	4,193	9,179	.10
OHV- Cars, Trucks, SUVs	2,441	543	1,890	4,874	.05
Photography	385	35	148	568	.01
Picnicking	3,160	266		3,426	.04
Power Boating		168		168	.001
Rock hounding/Mineral	268		189	457	.005
Row, Float, Raft		1,065		1,065	.01
Social	1,303			1,303	.01
Target Practice			378	378	.004

Viewing- Cultural Sites	423	559		982	.01
Viewing- Other	6	75		81	.008
Viewing- Interpretive Exhibit	159			159	.001
Viewing- Scenery/Landscapes		65		65	.0006
SUBTOTAL				**39,555**	**.44**
Fish and Wildlife Related Recreation					
Archery			567	567	.01
Fishing- Freshwater	2,873	3,220	5,329	11,422	.13
Hunting- Big Game	6,964	6,759	9,589	23,312	.26
Hunting- Small Game			945	945	.01
Hunting- Upland Bird	1,284	528	1,890	3,702	.04
Hunting-Waterfowl		978	2,112	3,090	.03
Viewing Wildlife	1,942	2,464	3,242	7,648	.08
SUBTOTAL				**50,686**	**.56**
TOTAL				**90241**	**1.00**

Source: BLM Recreation Management Information System, 3/14/2008

These expenditures would be split among the following economic sectors: lodging, restaurants, groceries, gas/oil, other transportation, activities, admissions/fees, and souvenirs. The response coefficients shown in Table 3.39 estimate how total employment and total labor income respond to changes in recreation use for the economic sectors associated with recreation use.

Government revenues received from the recreation program are associated with recreation use permits issued. In Fiscal Year 2007, 11 Special Recreation Use Permits and 602 other Recreation Use permits were issued. Special Recreation Use permits for commercial activities brought in about $8,600 and other recreation use permits brought in $1,500. Total annual federal revenue associated with recreation use in FY 2007 was about $10,000. None of these revenues from the Malta Field Office are distributed to the state or counties (personal conversation, Christina Miller, 3/31/2008. BLM recreation fee guidance (IM 2005-063) identifies the goal of using fee revenues at sites of collection or within the field office of collection).

Ecosystem Restoration

Major activities associated with ecosystem restoration include treatment of invasive species and pest management, hazardous fuels treatments, and mine reclamation.

Economic effects of invasive species and their treatments are related to their influence on range productivity, wildfire risk, and attractiveness for recreation and ultimately on how these impacts affect local employment, income, and government revenues. There are direct and indirect impacts from treatments of invasive species that vary based on the species being treated and the type of treatment used. **Table 3.43** identifies the average BLM per acre cost of weed treatments and **Table 3-44** identifies the projected annual average BLM acres treated.

The cost of wildland fire suppression within the PA depends on the number and size of fires. Most wildland fires are controlled in the initial attack, when they are relatively small. However, weather conditions, terrain, vegetation, and proximity to populated areas all contribute to the cost of fire suppression. Restoration/fuel reduction efforts in Montana reduce fire hazard, improve ecological conditions of forested areas, and result in economic benefits that exceed the costs of reducing hazardous fuels (Keegan, C.E, C.E. Fiedler, and T.A. Morgan, 2002). Between 2001 and 2008, BLM fuel treatment costs within the PA averaged $182 per acre for pre-commercial thinning of forested areas, $43 per acre for prescribed burning of forested areas, and $355 acre for mechanical treatments and prescribed burning of grass and shrublands (Personal communication, Jennifer Walker, BLM Lewistown F.O. 4/23/08).

Table 3-43 Invasive Species Treatment Average Cost per Acre

	Glasgow	Malta	Havre	Planning Area
Biological- Non Classical	-	-	23	23
Biological Classical *	50		20	30
Chemical – Ground	195	20	221	201
Chemical – Air	200	187	203.5	201.75
Other Treatments		-	525.00	531.25
Average All Treatments	148.33	248.17	198.50	198.33

Table 3-44 Projected Average Annual Invasive Species Treatment

	Glasgow	Malta	Havre	Planning Area
Biological- Non Classical	0	0	110	110
Biological Classical *	50	20	20	90
Chemical – Ground	85	356	254	695
Chemical – Air	285	0	90	375
Other Treatments	0	4	5	9
Totals	**420**	**380**	**479**	**1279**

*Classical Biological Controls represents only releases made in any given year. Established classical biological control treats hundreds of acres each year as they establish and expand their populations. This is not reflected in Tables 3-43 or 3-44.

Source: Kenny Keever, BLM, 04/23/2008.

Timber Management

Timber harvest from BLM lands within the PA is relatively small. The 10-year annual average harvest was 350 thousand board feet (350 MBF or 795 CCF) for sawtimber, firewood, post and poles, and house logs. Christmas trees are also sold. The annual average number of Christmas trees sold over a 10-year period was 76. About five percent of the sawtimber that is harvested comes from salvage sales. Annual timber revenues average $1,190 for all products and $553 for salvage sales. Four percent of the revenue from timber sales on public domain goes to the state, 76 percent to the Bureau of Reclamation, and 20 percent to the US Treasury. Distribution of revenue from salvage sales is different, i.e. 4 percent of revenue from timber sales on public domain goes to the state, and 96 percent goes to BLM.

Lands and Realty Actions

In FY 2007, the BLM issued or renewed 627 rights-of-way for infrastructure in support of economic activities within the PA. FY2007 is representative of the annual BLM rental revenues received for federal rights-of-way. These rights-of-way covered almost 25,000 acres and the BLM received almost $99,000 in rental income. Types of rights-of-way and amount of rental income by type are presented in Table 3.45. The most common types of rights-

of-way were for water facilities, oil and gas pipelines, and powerlines. Powerlines generated the most rental income. None of these revenues are distributed to state, county, or local governments.

Table 3.45 Federal Rights-of-Way Revenues by Type

Type	Rental Income	Number of R-O-W	Total Acres
Powerlines	$32,465.89	105	4,459
Telecommunication	$10,990.62	39	1,509
Roads/Highways	$4,602.21	58	2214
Communication Sites	$26.377.54	38	125
O & G Pipelines	$22,500.44	146	2,704
O & G Roads	$1,332.03	32	160
Material Sites	Exempt	17	189
Water Facilities	$634.53	177	12,839
Railroads	Exempt	15	790
Total	**$98,903**	**627**	**24,989**

Source: Lands & Realty Database (LR2000), September 5, 2007

Direct BLM Contributions to Area Economic Activity

BLM operations and management in the area make a direct contribution to area economic activity by employing people who reside in the area and by expending dollars on other non-personnel needs. Management of BLM lands and resources is carried out by professional and administrative employees who are stationed in BLM offices in Malta, Havre, and Glasgow. In FY 08, the three offices combined had positions for 35 permanent employees and 23 other than permanent. The BLM also has additional employees located in the Great Falls Oil and Gas Field Station (Great Falls), Lewistown Field Office (Lewistown), and the Montana State Office (Billings) who worked on minerals and resource management in the Malta Field Office. In Fiscal Year 2007 (FY07) BLM spent $3.126 million for labor and $2.707 million on operations within the PA. The three communities that have the largest BLM labor income are Malta ($837,560), Havre ($825,555), and Glasgow ($757,180). The BLM Great Falls Oil and Gas Station also had a FY07 operations budget of about $53,000.

BLM land management activities and public land and minerals uses are displayed in Table 3.46. A large source of these payments was payment in lieu of taxes (PILT) and mineral payments. PILT payments are made to counties to compensate for federal lands that are exempt from local property taxes. Payment amounts are based on a complex formula that considers, among other things, revenue sharing from the previous year, county population, and acreage of a county in federal ownership.

Table -3-46 Fiscal Year 2006 Payments to Counties from BLM related land/mineral uses

County/Area	PILT *	Grazing Fees**	Mineral Payments (Public Domain)***	Mineral Payments (Bankhead Jones Lands)****	Other Payments (Bankhead Jones Lands)*****
Montana	$17,186,456	$356,664	$9,535,674		
MaFO PA	$1,902,777	$91,171	$1,646,206	$456,159	$680

Blaine	$339,023	$19,106	$209,731	$179,583	
Chouteau	$191,935	$10,872	$38,923		
Glacier	$572,449	$187	$5,236		
Hill	$26,266	$1,400	$65,126		
Liberty	$30,950	$1,975	$26,005		
Phillips	$276,227	$37,478	$1,156,210	$222,314	$419
Toole	$35,361	$3,155	$44,805		
Valley	$430,566	$32,344	$100,170	$54,262	$261

Source: *USDI Fiscal Year 2007 Payments In Lieu of Taxes

** BLM, 10/25/06

*** Montana Department of Revenue, Allocation of Excess Federal Royalties for FY 2006

****Royalties, mineral leasing, oil and gas rents and bonuses, and mineral materials FY2006

*****Land rent, rights-of-way fees, oil and gas pipeline rights-of-way payments FY2006

The total BLM FY 2007 budget and the budgets for major resource management program areas are displayed in Table 3.47.

Table 3.47: Malta BLM Related Employment, and Income by Major Program Area

Resource/Program Area	BLM-Related Jobs**	BLM-Related Income (1,000)**
General Recreation	14	$284
Recreation related to Wildlife and Fish	18	$378
Grazing	107	$2,340
Timber	4	$118
Minerals	988	$61,705
Ecosystem Restoration	46	$1,130
Payments to States/Counties	402	$13,850
BLM Expenditures	99	$4,703
Total Resource Management	1,677	$84,508
BLM as a Percent of Total	4.67	7.08

Source: FEAST, 2008

Activities occurring on or associated with BLM land and mineral resource uses supported an estimated 1,677 jobs and $84.5 million in labor income (FEAST/IMPLAN, 2006). BLM land/minerals use-related jobs amounted to 4.7 percent of area totals and BLM land/mineral use-related income amounted to 7.1 percent of area totals. The resource

uses generating most of the employment and income are mining (mostly oil and gas development), BLM expenditures and payments to state/local governments and livestock grazing. The economic sectors most affected are mining, government, and agriculture. Table 3-48 displays the current role of BLM-related contributions to the area economy. It is important to recognize that in some counties the contributions are greater (generally where there are more public lands and minerals and resource uses) and in some counties the contributions are less (generally where there are less public lands and minerals and resource uses).

Table 3-48. Current Role of BLM-Related Contributions to the Area Economy

Industry	Employment (jobs)		Labor Income (Thousands of 2008 dollars)	
	Area Totals	BLM-Related	Area Totals	BLM-Related
Agriculture	6,089	98	$126,169	$1,966
Mining	1,136	644	$84,350	$52,919
Utilities	248	7	$25,427	$741
Construction	1,496	2	$47,041	$53
Manufacturing	497	6	$15,346	$177
Wholesale Trade	801	25	$31,642	$997
Transportation & Warehousing	1,661	21	$97,853	$780
Retail Trade	3,103	92	$74,307	$2,126
Information	440	7	$18,970	$289
Finance & Insurance	1,119	27	$34,787	$801
Real Estate & Rental & Leasing	997	20	$36,806	$718
Prof, Scientific, & Tech Services	828	30	$26,036	$901
Mgmt of Companies	6	0	$263	$15
Admin, Waste Mgmt & Rem Serv	1,427	40	$20,222	$748
Educational Services	382	11	$6,224	$169
Health Care & Social Assistance	2,548	79	$81,500	$2,524
Arts, Entertainment, and Rec	700	18	$8,102	$194
Accommodation & Food Services	2,516	84	$35,228	$1,085
Other Services	2,028	52	$26,239	$688
Government	7,864	415	$397,397	$16,617

Total	35,886	1,677	1,193,907	84,508
BLM as Percent of Total	---	4.67%	---	7.08%

The response coefficients shown in Table 3.39 indicate how total local employment and total local labor income respond to a $1000 change in local BLM expenditures.

4.1.1 Economics

Methodology, Assumptions, and Incomplete Information

- The analysis area for the economic analysis consists of the eight Montana counties that include lands managed by the Malta FO: Glacier, Toole, Liberty, Choteau, Hill, Blaine, Phillips, and Valley counties.
- Potential economic impacts are assessed using the Forest Economic Analysis Spreadsheet Tool (FEAST) developed by the USDA Forest Service Inventory and Monitoring Institute (IMI) in Fort Collins, Colorado. This model uses a Microsoft Excel workbook as the interface between user inputs and data generated using the IMPLAN input-output modeling system.
- The FEAST analysis assesses the economic impacts of the resource outputs projected under each alternative. Resource outputs in this context are the amount of a resource (e.g., timber volume, AUMs, recreation visits, etc.) that would be available for use under each alternative. Average annual resource outputs were projected by resource specialists for each alternative for the 20-year planning period based on the best available information and professional judgment. Impacts to economic well-being are measured in terms of employment and labor income.
- Employment and labor income estimates developed for this analysis include direct, indirect, and induced economic effects. Direct employment would, for example, be generated in the logging and sawmill sectors. Additional employment would be generated as the affected logging and sawmill operations purchase services and materials as inputs ("indirect" effects) and employees spend their earnings within the local economy ("induced" effects).
- The benefit transfer method was used to estimate non-market economic values related to recreation opportunities by transferring available information from studies already completed in other locations and/or context. Loomis (2005) summarizes more than 30 years of literature on net economic value of outdoor recreation on public lands. The report provides average net willingness to pay or consumer surplus per pay for 30 recreation activities at the national level.
- Wildland fire suppression costs are not provided by alternative because it is not possible to predict the level of non-prescribed wildland fire that would occur under any of the alternatives.

A number of assumptions were made to facilitate the analysis of the alternative management actions. These assumptions set guidelines and provide reasonably foreseeable levels of development that would occur within the Planning Area over the analysis period (20 years). These assumptions should not be interpreted as constraining or redefining the management objectives and actions proposed for each alternative and described in Chapter 2. If a resource heading does not appear in the following sections, it is because no assumptions were made.

GENERAL ASSUMPTIONS

- Sufficient funding and personnel would be available for implementation of any alternative.
- Implementation of all alternatives would be in compliance with all valid existing rights, federal regulations, bureau policies, and other requirements.
- Appropriate maintenance would maintain the functional capability of all developments.
- The discussion of impacts is based on the best available data. Knowledge of the Planning Area and professional judgment, based on observation and analysis of conditions and responses in similar areas, are used to infer environmental impacts where data is limited.

Resource Assumptions

Demographic and Economic

- The planning area population trends will continue as described in Chapter 3.
- Regional economic impacts are estimated based on the assumption of full implementation of each alternative. The actual changes in the economy would depend on individuals taking advantage of the resource-related opportunities that would be supported by each alternative. If market conditions or trends in resource use were not conducive to developing some opportunities, the impact on the economy would be different than estimated herein.
- Resource specialists projected annual resource outputs are based on the best available information and professional judgment. The purpose of the economic analysis is to compare the relative impacts of the resource management alternatives and should not be viewed as absolute economic values.
- When bison grazing occurs, one AUM for bison is equivalent to one AUM of cattle grazing.
- All sawtimber harvested within the analysis area would be logged by logging contractors, not households. The logs would be processed at mills outside of the PA.
- The ratios of harvest to jobs and income used to assess the impacts of the alternatives are based on statewide ratios developed for Montana by the University of Montana.
- Baseline recreation demand is assumed to increase by 0.5 percent per year.
- Recreation visits are assigned to different user groups based on primary use. This does not account for the fact that recreation visitors may engage in one or more activity as part of a visit. Overnight visitors, who camp on Malta Field Office lands, for example, are identified as camping only even though they may also be pursuing a number of other different recreation activities.
- Projected recreation visits and expenditures are distributed among different types of visitors based on the results of National Visitor Use Monitoring surveys conducted for the Dakota Prairies National Grasslands.

- The ratios of recreation visits to jobs and income used to assess the impacts of the alternatives are based on national ratios developed through the Forest Service's National Visitor Use Monitoring program.
- The economic analysis does not include labor contributions from the BLM employees located in Great Falls, Billings, Lewistown, or Miles City since they do not live in the planning area and very little of their labor income is spent within the planning area economy. However, BLM operations expenditures from these offices for Malta Field Office minerals and resource management related purchases are included in the BLM Malta budget since these dollars would be spent within the planning area economy. Estimated BLM budgets associated with each alternative is listed in Table 4.1.
- The number of permanent and other than permanent BLM employees who would work on minerals and resource management would not vary by alternative.

Anticipated Levels of Use (Basis for Impact Analysis)

Table 4.1 Estimated Annual Livestock Grazing* by Alternative

Glass of Livestock	Current Management**	Alternative A	Alternative B	Alternative C	Alternative D
Cattle and Horses (AUMs)	352,750	352,750	352,750	352,750	352,750
Sheep and Goats (AUMs)	none	none	none	none	none
Section 3 AUMs	336,333	336,333	336,333	336,333	336,333
Section 15 AUMs	16,269	16,269	16,269	16,269	16,269
Total Federal Revenues ($1,000)***	476	476	476	476	476
Total Local Revenues ($1000)****	68	68	68	68	68
Cattle and Horses (HMs)	430,506	430,506	430,506	430,506	430,506
Sheep and Goats (HMs)	none	none	none	none	none
BLM Budget ($1,000)	1,742	1,742	1,742	1,742	1,742

*1 HM (Cattle and Horses) = 0.78 AUMs. Therefore 1.28 x Total AUMs = Total HMs.

1 HM (Sheep and Goats) = 0.2 AUMs. Therefore 5 x Total AUMs = Total HMs.

** Source: Rangeland Administration System: Annual average permitted use (2005-2007) from Steve Zellmer 4/23/08

***Grazing Fee = $1.35/AUM (2008). Total revenue = Total AUMs x $1.35.

****(Sec. 3 AUMs x $1.35 x 0.125) + (Sec. 15 AUMs x $1.35 x 0.5) = Total Local Revenues

Table 4.2 Estimated Annual Federal Mineral Production and Activity by Alternative

Commodity/ Activity	Current Management **	Alt. A	Alt. B	Alt. C	Alt. D
New Leases (Acres)	142,160	549,010	549,010	549,010	549,010
Existing Acres Leased	1,628,635	1,628,635	1,628,635	1,628,635	1,628,635
Natural Gas production (MCF)*	18,254,938	18,930,371	18,912,116	19,021,645	19,094,665
Natural Gas royalties ($1,000) @ $9/MCF	164,294	170,373	170,209	171,195	171,852
Oil production (bbl)*	167,687	173,891	173,724	174,730	175,401
Oil royalties ($1,000) @$115/bbl	19,284	19,998	19,978	20,094	20,171
Oil/Gas Wells (dry holes)	7	7	8	8	9
Oil/Gas Wells (Producers)	50	50	49	57	62
Oil/Gas Budget ($1,000)	70	70	70	70	70
Sand/Gravel produced (short tons)	38,480	38,480	38,480	38,480	38,480
Sand/Gravel Royalties ($1,000) (1/3 is free use to counties)	16	16	16	16	16
Gold produced (short tons)	0	0	0	0	0
(Bentonite) (short tons)	0	65,000	65,000	65,000	65,000
Mining Law Budget ($1,000)**	159	159	159	159	159

*Source: Stacey Brown, MMS, 6/23/08. 2007 federal production was provided by MMS. The oil/gas RFD estimates that BLM would manage 2349 producing wells out of a total 11705 total. BLM manages 20 percent of the total producing wells in the PA. Based on the projected number of producing wells in the RFD for each alternative, the percent change from current levels in the number of producing wells was estimated to be 3.7 % (Alt. A), 3.6 % (Alt. B), 4.2 % (Alt. C), 4.6 % (Alt. D). These percentage changes were multiplied times the 2007 level of production for oil and gas (from Chapter 3 table) to estimate the levels of oil and gas production for each alternative.

**Includes 1310, 1640, 1990

Table 4.3 Estimated Recreation Visits by Alternative

Activity		Alt. A	Alt. B		Alt. C		Alt. D	
	Consumer Surplus per visit*		% change**		% Change **		% Change **	
General Recreation								
Backpacking	$38.53	958	2	977	5	1,006	5	1,006
Bicycling- Mountain	184.48	137	0	137	2	140	2	140
Camping	34.72	6,516	5	6,842	10	7,168	12	7,298
Canoe/Kayaking	67.70	225	0	225	0	225	5	236
Caving	56.35	605	0	605	0	605	0	605
Driving for Pleasure	23.58	4,221	7	4,516	5	4,432	3	4,348
Environmental Education	48.46	248	2	253	2	253	2	253
Hiking, walking, running	38.53	2,480	5	2,604	7	2,654	7	2,654
Horseback riding	48.46	1,326	2	1,353	7	1,419	7	1,419
Nature Study	23.58	134	10	147	5	141	5	141
OHV- ATV	22.81	9,179	2	9,363	10	10,097	12	10,280
OHV- Cars, Trucks, SUVs	69.74	4,874	5	5,118	10	5,361	10	5,361
Photography	23.58	568	10	625	5	596	2	579
Picnicking	28.27	3,426	2	3,495	5	3,597	5	3,597
Power Boating	53.68	168	0	168	0	168	2	171
Rock hounding/Mineral Collection	56.35	457	2	466	5	480	5	480
Row, Float, Raft	67.70	1,065	0	1,065	0	1,065	5	1,118
Social Gathering/Festival/Concert	34.72	1,303	0	1,303	5	1,368	7	1,394
Target Practice	48.55	378	0	378	2	386	2	386
Viewing- Cultural Sites	23.58	982	5	1,031	2	1,001	2	1,002
Viewing- Other	23.58	81	0	81	0	81	0	81
Viewing- Interpretive	23.58	159	0	159	2	162	5	167

Exhibit								
Viewing-Scenery/Landscape	23.58	65	10	72	5	68	5	68
SUBTOTAL		39,555		40,982		42,473		42,784
Fish and Wildlife Related Recreation								
Archery	48.55	567	10	624	7	607	5	595
Fishing- Freshwater	49.57	11,422	5	11,993	5	11,993	7	12,222
Hunting- Big Game	48.55	23,312	10	25,643	7	24,944	5	24,478
Hunting- Small Game	48.55	945	5	992	3	973	2	964
Hunting- Upland Bird	48.55	3,702	10	4,072	7	3,961	5	3,887
Hunting-Waterfowl	48.55	3,090	10	3,399	7	3,306	5	3,245
Viewing Wildlife	37.24	7,648	10	8,413	5	8,030	3	7,877
SUBTOTAL		50,686		55,136		53,814		53,268
TOTAL		90241		96,118		96,287		96,052
Consumer Surplus ($1,000)***		4,108		4,381		4,380		4,365

- Source: Updated Outdoor Recreation Use Values on National Forests and Other Public Lands, John Loomis, 2005
- ** Percent change from current level from all BLM resource management actions and resulting land uses. This does not reflect the 0.5 % per year natural increase expected and discussed in the Draft RMP.
- ***2008 dollars

Table 4.3.1 Percent of Use on National Grasslands

(Nonprimary use added to local day use)

Forest Administrative Unit	Non-Local Segments			Local Segments			Non Primary
	Day	OVN-NF	OVN	Day	OVN-NF	OVN	
Dakota Prairie Grasslands	4	6	14	57	1	18	

Source: Stynes, Daniel J. and Eric M. White, Spending Profiles of National Forest Visitors, NVUM Four Year Report, May 2005, Appendix A-2, pg. 26, 27.

Table 4.3.2 Recreation: FEAST Resource Data Entry

Row	Description	% Use**	A	B	C	D
General Recreation						
	Total *		39,555	40,982	42,473	42,784

32	NL-Day Trips	4	1,582	1,639	1,699	1,711
33	NL-OVN-BLM	6	2,373	2,459	2,548	2,567
34	NL-OVN	14	5,538	5,737	5,946	5,990
35	L- Day trips	57	22,546	23,360	24,210	24,387
36	L-OVN-BLM	1	395	410	425	428
37	L-OVN	18	7,120	7,377	7,645	7,701
Fish and Wildlife Related Recreation						
	Total *		50,686	55,136	53,814	53,268
54	NL-Day Trips	4	2,027	2,205	2,153	2,131
55	NL-OVN-BLM	6	3,041	3,308	3,229	3,196
56	NL-OVN	14	7,096	7,719	7,534	7,458
57	Local Day Trips	57	28,891	31,428	30,674	30,363
58	L-OVN-BLM	1	507	551	538	533
59	L-OVN	18	9,123	9,924	9,687	9,558
60	General hunting data		31,616	34,730	33,791	33,169
65	General fishing data		11,422	11,992	11,993	12,222

*Source: Table R-2

**Source: Table R-4 below

Table 4.3.3Public Revenues from Recreation Related Activities

Row	Description	Current	A	B	C	D
	Special Recreation Permits (SRPs)*	$8,588	$8,588	$8,588	$8,588	$8,588
	Recreation Use Permits (602 RUPs)**	$1,500	$1,500	$1,500	$1,500	$1,500
55	Total Recreation Revenues*	$10,088	$10,088	$10,088	$10,088	$10,088

Source: *BLM, Management Information System, FY2007, March 28, 2008

** Jon Collins, June 4, 2008

Note: Recreation revenues are not distributed to the state or counties

Table 4.4: Anticipated BLM Budget for Each Alternative by Program Area ($1,000)

Resource/Program	FY 2007	Alternative	Alternative	Alternative	Alternative

Area	Budget*	A	B	C	D
General Recreation	126	126	126	126	126
Recreation related to Wildlife and Fish	777	777	777	777	777
Grazing	1,742	1,742	1,742	1,742	1,742
Timber	131	131	281	281	281
Minerals	483	483	483	483	483
Weeds	254	254	254	254	254
Fire/Fuels	260	260	1,192	1,192	1,192
Ecosystem Restoration	2,479	2,479	2,479	2,479	2,479
Payments to States/Counties					
PILT	1,903	1,903	1,903	1,903	1,903
Planning	1,167	70	70	70	70
Soil, Water, Air	540	540	540	540	540
Lands, Realty	147	147	147	147	147
Cultural	123	123	153	153	153
Other (Admin.)	699	699	699	699	699
BLM Expenditures **	6,456	5,359	6,464	6,464	6,464
Total Resource Management					

*Source: BLM, MIS, 2008

**Does not include payments for ecosystem management (mine reclamation and water treatment), Payments to State/Counties, or PILT

BLM categories not in FEAST Table

Table 4.5 BLM Employment by Alternative

Employees	Current (2007)	Alt. A	Alt. B	Alt. C	Alt. D
Permanent	35	35	35	35	35
Other than Permanent	23	23	23	23	23

Table 4.6 Ecosystem Restoration - Annual Treatments by Alternative

Treatment	Current (2007)	Alt. A	Alt. B	Alt. C	Alt. D	Cost/unit
Mechanical Treatments	237	237	391	391	391	$718

(acres)*						
Cost Mechanical Treatments ($1,000)	131 7% BLM	131 7% BLM	281 7% BLM	281 7% BLM	281 7% BLM	
Cost Mechanical Treatments non-BLM ($1,000)	122	122	261	261	261	
Prescribed Burning (forest acres)*	43	43	1,033	1,033	1,033	$942
Cost Prescribed Burning-forest ($1,000)	41 100% BLM	41 100% BLM	973 100% BLM	973 100% BLM	973 100% BLM	
Prescribed Burning and Mechanical (grassland acres)*	355	355	355	355	355	$24
Cost Prescribed Burning/Mechanical-grasslands ($1,000)	9 100% BLM	9 100% BLM	9 100% BLM	9 100% BLM	9 100% BLM	
Invasive Species (acres)**	1,279	1,279	1,279	1,279	1,279	$198/acre
BLM internal Cost Invasive Species Treatments ($1,000)	94	94	94	94	94	
Cost Invasive Species Treatments non-BLM ($1,000)	160	160	160	160	160	
Mine Reclamation and water treatment Cost ($1000)***	$2,479	$2,479	$2,479	$2,479	$2,479	$2,479
Road Decommissioning	0	0	0	0	0	0

Source: *BLM, Jennifer Walker, 5/07/08; **BLM, Kenny Keever, 4/23/08, ***BLM, Christopher Rye, 5/12/08

Table 4.7 Annual timber harvest by Alternative

Treatment	Current (2007)	Alt. A	Alt. B	Alt. C	Alt. D
Sawtimber, fuel wood, post/poles, & house logs, (CCF)	350 MBF= 795 CCF 175 acres	795	1,507	1,507	1,507
Personal use permits(fire wood, Xmas Trees, etc)	138	138	138	138	138
Timber Revenues- all products	$1,190	$1,190	2,300	2,300	2,300

Salvage Sales	$553	$600	600	600	600

*Source: Bruce Reid 5/1/08

Lands and Realty Related Activities

BLM receives about $99,000 in R-O-W rental income under current management and this would continue under Alternative A. It is assumed that annual rental revenues would remain about the same with all alternatives. No new proposals for major powerlines or roads/highways that would cross BLM lands are anticipated.

BLM has received a preliminary application for right-of-way grant for one 36-inch crude oil pipeline running from Canada to Texas. The nearly 1,400 mile crude-oil pipeline is proposed to cross through the planning area, although less than 42 miles are expected on BLM lands in Montana and it is assumed that about half of this would be in the PA. It is assumed that local/regional economic impacts would be mostly related to local expenditures. These would be related to lodging, meals, and maybe some vehicle fuel purchases. Total local expenditures are assumed to be total number of labor days for surveys, inventories, clearances, and construction per miles of pipeline x daily per diem x total number of miles of pipeline on public lands in the PA. Labor expenditures i.e., wages and salaries, would likely be non-local and would not be included in the local input/output analysis. At the time of this analysis specific data are not available for this project and will be included later. Annual R-O-W rentals would amount to an estimated $1,000. This will be analyzed under all alternatives.

The basis for impact analysis also includes the development of one wind farm that would produce 50 MWs of electricity; of which about 80 percent would be on BLM public lands. An estimated 110 workers would be involved in the engineering and design, road and foundation preparation, substation and transmission line construction, wind turbine assembly and erection during the two-year construction period. Construction in the first two years would create an estimated 66 local jobs and local labor income of $1.898 million; after that operation and maintenance would generate 4 local jobs and annual local income of $505,000. Right-of-way rental would amount to an estimated $95,000.

Table 4.8 Estimated Annual Federal, State, and Local Revenues by Alternative ($1,000)

Resource Use	Current Mngt**	Alt. A	Alt. B	Alt. C	Alt. D
Federal					
Livestock grazing	476	476	476	476	476
Oil/gas leasing	3,542	4,355	4,355	4,355	4,355
Oil production	2,411	2,500	2,497	2,512	2,521
Gas production	20,537	21,297	21,276	21,399	21,481
Sand/gravel production	10	10	10	10	10
Special Recreation Permits (SRPs)	9	9	9	9	9
Recreation Use Permits	2	2	2	2	2

(RUPs)					
ROW rents	99	100	100	100	100
Timber sales	2	2	3	3	3
Wind Energy Rent	0	95	95	95	95
Total	27,088	28,846	28,823	28,961	28,952
State/Counties					
Livestock grazing (Sec 3)	58	58	58	58	58
Livestock Grazing (Sec. 15)	11	11	11	11	11
Oil production	1,206	1,250	1,249	1,256	1,261
Gas production	10,269	10,649	10,638	10,700	10,741
PILT	1,903	1,903	1,903	1,903	1,903
Timber sales	<1	<1	<1	<1	<1
Wind Energy		4	4	4	4
Total	13,447	13,875	13,863	13,932	13,978

Analysis

Impacts Common to All Alternatives

The economic analysis assesses the economic effects of the direct use of resources in terms of jobs and income. This type of analysis does not include other types of economic value that may be associated with unique natural resources and protected areas. These types of values, often referred to as non-market values, include natural amenities and quality of life, non-use values, bequest values, and ecosystem services.

Non-Market Values

Natural amenities and quality of life have been increasingly recognized as important factors in the economic prospects of many rural communities in the American West and elsewhere (Rudzitis, 1999). While natural amenities and life quality do not directly generate income in the same sense as, for example, a sawmill or a tourist lodge, they do act to attract and keep residents, and may attract new businesses. Open spaces, scenery, and protected lands are important to residents of Montana and throughout the Rocky Mountain west and may contribute to healthy economies and lifestyles (Sonoran Institute 2003). This relationship is, however, difficult to quantify as is assessing the effects of different management actions on the economic activities that these amenities are believed to indirectly generate.

Non-Use Values

Non-use values, represent the value that individuals assign to a resource independent of the use of that resource. These types of values, which include existence, option, and bequest values, are usually measured via surveys that ask people how much they would be willing to pay to have a particular area preserved or designated as wilderness. These values represent the value that individuals obtain from knowing that a resource exists, knowing that it would be available to use in the future, and knowing that it would be left for future generations. Wilderness has been the subject of numerous non-use studies, usually conducted for specific natural areas, and willingness-to-pay estimates for protection or designation have identified a wide range of values (Krieger 2001; Loomis and Richardson 2001).

Three different methods of ecosystem valuation were used in this analysis. First, market prices were used to gauge revealed willingness to pay for livestock grazing on public lands. The difference between market prices for livestock grazing and the fee charged by the BLM represents an annual consumer surplus to the grazing permittees of an estimated $5.19 million for each alternative. The second method of ecosystem valuation was the benefit transfer method which estimates economic values by transferring existing recreation benefit estimates from studies already completed for another location or issue. Estimated average net willingness to pay, or consumer surplus related to recreation on public lands ranged from $4.1 million (Alternative A) to $4.38 million (Alternative B). Hedonic pricing method was the third method of ecosystem valuation used. This was used to measure the impact of coalbed methane wells on property values. The study concluded that the location of a well at the time of sale influences the selling price. Properties with wells on them had an estimated 22 percent reduction in selling price.

Ecosystem Services

No attempt has been made to assign monetary values to the ecosystem services, eg. benefits associated with watershed processes, soil stabilization and erosion control, improved air quality, climate regulation and carbon sequestration, and biological diversity, that would be provided because these values are difficult to quantify at this analysis level. In addition to the difficulties involved in developing accurate estimates of these values, the impacts of project alternatives are rarely quantified in the type of units that would allow these values to be assigned. However, the fact that no monetary value is assigned to ecosystem services in this document does not lessen their importance in the decision making process.

The potentially affected local economy is characterized for the PA counties in the Affected Environment portion of this document (Chapter 3). None of the alternatives would be expected to affect economic diversity (the number of economic sectors) or economic dependency, which occurs when the local economy is dominated by a limited number of industries. While the alternatives have the potential to affect local businesses and individuals, the contribution of Malta Field Office-related activities to the local economy and the relative differences between the alternatives would not be large enough to have measurable effects on economic diversity or dependency. This is also the case with respect to economic stability, which is typically assessed in terms of seasonal unemployment, sporadic population changes, and fluctuating income growth rates. Malta Field Office-related activities include logging and recreation, which are characterized by seasonal employment, but none of the alternatives would be expected to affect existing trends in these or other industries.

Hazardous fuel treatment costs are included for the purposes of this analysis in the total BLM expenditures identified by alternative (Table 4-6). Projected annual fuel treatment costs range from approximately $181,000 under Alternative A to approximately $1.26 million under Alternatives B, C, and D. Other potential wildland fire-related costs (such as property loss, lost revenues, and increased suppression costs) are difficult to project and are unknown. It is commonly accepted that fire suppression costs and risk to life and property should be less on wildland fires that occur where hazardous fuels have been treated compared to areas where fuels have not been reduced. For example, fires generally burn hotter, flame length is higher, and fires in tree canopies are more likely in non-treated areas.

The alternatives involve different approaches to, and levels of, vegetation treatment, as well as different approaches to wildland fire management. It is anticipated that fuels treatments on public lands within the PA would contribute to fuels conditions that would have less resistance to wildland fire control should an unplanned fire get started in treated areas. This would tend to reduce the threat to life and property. It is not, however, possible to project the level of non-prescribed wildland fire that would occur under any of the alternatives. Based on the level of hazardous fuels treatments for each alternative, total wildland fire suppression costs for fires in the Malta Field Office would be higher for Alternative A and lower for Alternatives B, C, and D.

This section summarizes economic impacts by BLM program area that are unlikely to vary substantially by alternative.

Grazing Management

Livestock grazing on BLM-managed land in the eight-county PA would continue to involve approximately the same number of operators. Less than half of the farms/ranches in the Planning Area would hold grazing permits. The amount of livestock grazing would not change among the alternatives and BLM would continue to provide about 17 percent of the total forage needed to feed livestock in the Planning Area. The dependency on BLM forage for each county would remain relatively unchanged from what is displayed in Table 3.37. The economic dependency of livestock producers on BLM forage would also remain unchanged. However, often BLM forage would continue to provide a critical element of some livestock producers' complement of grazing, forage, and hay production. All alternatives would continue to authorize average annual grazing of approximately 352,750 AUMs and support approximately 110 jobs and $2.34 million in labor and proprietor's income (Table 4.9). Farm/ranch related labor and proprietor's income would continue to account for approximately one percent of total income in the eight-county study area and less than three percent of employment (IMPLAN 2006). Approximately 95 percent of the AUMs sold within the Malta Field Office would continue to be section 3 permits of which 12.5 percent of revenues are distributed to the state and local counties; 5 percent of the AUMs are section 15 permits of which 50 percent of revenues are distributed to state and local counties. Annual federal revenues from livestock grazing fees would continue to be about $476,000 annually, of which about $70,000 would be distributed to the counties. The difference between market prices for livestock grazing and the fee charged by the BLM represents an annual consumer surplus to the grazing permittees of an estimated $5.19 million for each alternative. The employment and labor/proprietor's income response coefficients would remain relatively unchanged, i.e. for every 1,000 HM change in livestock

grazing on public lands there would be a corresponding change of 0.25 jobs and $5,436 in labor/proprietor's income.

Minerals Management

Federal mineral estate leased for oil and gas exploration, development, and production would increase from the current level of over 1,900 federal oil and gas leases covering 1.629 million acres to an estimated 2.178 million acres when those areas that are currently deferred from leasing are made available for leasing upon completion of the RMP revision. Annual revenues from leasing federal minerals for oil and gas development would increase from the current $3.5 million to an estimated $4.4 million. About 70 percent of the natural gas production from federal minerals would continue to occur in Phillips County and almost 70 percent of the oil production from federal minerals would continue to occur in Toole County. The annual amount of sand/gravel produced (about 38,500 short tons per year) and royalties from this production (about $16,000) would remain relatively unchanged. Bentonite production (about 65,000 short tons/year) would start up under all alternatives. Employment and income impacts displayed in tables 4.9 and 4.10 under the minerals program include the effects of sand/gravel and bentonite production. Under all alternatives, minerals related activities on federal minerals would also continue to be the largest contributor to local employment and income of all the major BLM land/minerals uses. The employment and labor/proprietor's income response coefficients would remain relatively unchanged, i.e. for every 1,000 MCF of natural gas production there would be a corresponding change of 0.05 jobs and $2,868 in labor income; for every 1,000 bbl of oil production there would be a corresponding change of 0.58 jobs and $36,642 in labor income; for every 1,000 short tons of sand and gravel production there would be a corresponding change of 0.05 jobs and $2,231 in labor income; for every 1,000 short tons of bentonite production there would be a corresponding change of 0.66 jobs and $30,429 in labor income.

Recreation Use

Revenues from recreation use permits, campground receipts, and outfitter and guide receipts would be similar (approximately $10,000 per year) for all alternatives.

Lands and Realty

Existing use authorizations, e.g. rights-of-way, permits, and lease rentals would continue to generate an estimated $100,000 of revenue annually for the federal government and annual Payments in Lieu of Taxes (PILT) from the federal government to the eight counties would continue to be approximately $1.903 million with all the alternatives. Since no specific major land tenure adjustments within the planning area are pending, it is not possible to determine how PILT and local property taxes might be affected.

It is anticipated that one 50 MW wind energy development would occur, 80 % of which would occur on public lands. This would occur for all alternatives. An estimated 110 workers would be involved in the engineering and design, road and foundation preparation, substation and transmission line construction, wind turbine assembly and erection during the two-year construction period. Construction in the first two years would create an estimated 66 local jobs and local labor income of $1.898 million; Total annual employment associated with the wind energy development would be less than 10 jobs and annual labor income would be about

$500,000. This development would also generate an additional $95,000 annually in federal revenues. Annual employment associated with maintenance and operation of other lands/realty R-O-Ws would be negligible.

BLM has received a preliminary application for right-of-way grant for one 36-inch crude oil pipeline running from Canada to Texas. The nearly 1,400 mile crude-oil pipeline is proposed to cross through the PA, although less than 42 miles are expected on BLM lands in Montana and it is assumed that about half of this would be in the PA. It is assumed that local/regional economic impacts would be mostly related to local expenditures. These would be related to lodging, meals, and maybe some vehicle fuel purchases. Total local expenditures are assumed to be total number of labor days for surveys, inventories, clearances, and construction per miles of pipeline x daily per diem x total number of miles of pipeline on public lands in the PA. Labor expenditures i.e., wages and salaries, would likely be non-local and would not be included in the local input/output analysis. At the time of this analysis specific data are not available for this project and will be included later. Annual R-O-W rentals would amount to an estimated $1,000.

Ecosystem Management

Those elements of ecosystem management that would not change among the alternatives include mine reclamation/water treatments and invasive weed treatments. Annual ecosystem management would continue to include mine reclamation and water treatment costs ($2.479 million). All alternatives would continue to support approximately 33 jobs and $0.8 million in labor and proprietor's income within the local economy. Mine reclamation and water treatment related labor and proprietor's income would continue to account for less than one percent of total employment and income in the eight-county study area. Invasive species treatments would occur on about 1,280 acres per year. About two-thirds of these treatments would be completed through agreements/contracts. These would support about 8 jobs and $200,000 in labor/proprietors income per 1,000 acres treated. The remaining weed treatments would be done by BLM employees. These treatments would support about 1 job and $59,000 in labor income per 1,000 acres treated. Other aspects of ecosystem management would vary by alternative and are addressed below.

Timber and Forest Product Production

Each of the alternatives would continue current federal government revenues, approximately $2,000-3,000 annually, from the product sales within the eight-county area, as 4 percent of non-stewardship timber receipts are returned through the state to the counties where they are generated

Other Impacts

Malta Field Office expenditures for BLM employee salaries and program operations would continue to be about $5.83 million annually. The BLM offices within the planning area would continue to employ about 58 employees (35 permanent and 23 other than permanent). Total labor expenditures for FY 2007 Non-salary expenditures are purchases made in support of resource programs and operations and include items such as contracts, gasoline, diesel, ammunition and explosives, animal feed, computer equipment, and so on. Under all alternatives, economic diversity indicated by the number of economic sectors would remain relatively

unchanged, though shifts in emphasis could occur. Estimated costs to local governments would also remain unchanged, i.e. demand for services and infrastructure would not change.

The dependency of the local economy on livestock industry, timber production, mining, and recreation activities would not be affected by BLM resource management. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates).

BLM management that would generate the most employment and labor/proprietor's income would be mineral development (mostly oil and gas development) and payments to state/counties. The industrial sectors within the local economy that would be most influenced by these BLM land and mineral uses would be mining, government, and agriculture. Employment and labor and proprietor's income by major industry are shown for each alternative in tables 4.8 and 4.9. The employment, income, and revenue effects of BLM resource management would be spread unequally among the counties and communities within the PA.

Global Climate Change

Under all alternatives, the land uses and activities on BLM public lands would contribute an imperceptible amount to Global Climate Change (GCC). However, national/international policies and global policies and practices that contribute to continued growth of emissions would be expected to ultimately cause physical and economic impacts (Congressional Budget Office (CBO), 2003). Similarly, current and future climate changes could influence land uses and resource productivity, e.g. recreation use, livestock grazing, timber harvest, ecosystem restoration, etc. related to water resources, agricultural practices and production, forest health and productivity, disease risk, and ecosystem makeup (EPA, 1997). These changes could directly and indirectly influence economic production, employment, income, wealth, markets, trade, and technologies (Holdren, 2008).

The Congressional Budget Office reports that the potential effects of any particular amount or rate of climate change over the next few centuries are uncertain. Research on the connection between climate and economic well-being yields ambiguous conclusions and is related to such things as world population growth, economic growth, energy and land intensive activities, and how much energy is used for these activities. Generally, policies that deal with GCC inevitably affect the distribution of resources. Inaction benefits people who are alive today while potentially harming future generations. National policy options that include incentive based approaches are generally more cost-effective that direct controls as a means of regulating greenhouse gas emissions (CBO, 2003).

Impacts under Alternative A

Estimates of the levels of employment and labor income that would be supported by Alternative A are based on anticipated land and mineral uses, resource outputs, and projected BLM expenditure levels. Estimated average annual employment and labor/proprietor's income are summarized by resource area in **Table 4-9** and **Table 4-10**, respectively.

Minerals: Annual oil and gas production from federal mineral estate would increase by an estimated 3.7 percent over current levels. Annual federal revenues associated with oil and gas

production related activities on federal minerals would increase from current estimated levels ($22.9 million) to an estimated $23.8 million. From this, revenues distributed to the state and counties would be an estimated $11.9 million. Alternative A would result in the estimated average annual production of 18.930 million MCF of natural gas, 174,000 bbl of oil, 38,500 short tons of construction sand and gravel, and 65,000 short tons of bentonite from federal minerals (Table 4-2). It is estimated that minerals exploration, development, and production on federal minerals would support about 1,020 local jobs and an estimated $61.7 million in local labor and proprietor's income. (Table 4-9 and Table 4-10). Nearly 60 percent of the employment and almost three fourths of the labor/proprietors income supported by BLM land uses in the PA would be directly or indirectly tied to mineral activities. Total annual federal revenues from mineral leasing, production, and sales would be an estimated $28.2 million; of which an estimated total of about $11.9 million would be distributed to the state and counties. GIS analysis indicates that there are currently about 514 residential structures within the PA on lands with federal minerals that have high or moderate potential for oil and gas development (Keefer, 2008). The location of a well near any of these properties at the time of a residential sale could reduce the net value of the residential property by an average of 22 percent.

Recreation: The estimated 90,200 recreation visits, including fish and wildlife-related recreation activities, would account for less than four percent of all the local jobs and less than two percent of the labor income that could be supported by Malta Field Office activities. Alternative A would support approximately 60 jobs and $1.3 million in labor income (**Table 4-9** and **Table 4-10**). The willingness to pay for recreation opportunities would represent an estimated consumer surplus of $4.11 million annually.

Government: BLM expenditures would to support approximately 90 jobs and $3.9 million in labor income (**Table 4-9** and **Table 4-10**) in the local economies.

Ecosystem Management: Annual ecosystem management would continue to include mine reclamation and water treatment costs ($2.479 million), mechanical treatment costs ($131,000), prescribed burning of forested areas ($43,000), mechanical treatments and prescribed burning of grass/shrubs ($9,000), and invasive species treatments ($253,000). Mine reclamation, water treatment, 90 percent of pre-commercial thinning, and 63 percent of invasive species treatments are contracted out or paid for through cooperative agreements. Annual timber harvest performed by private businesses would continue to produce about 795 CCF of sawtimber. About 138 personal use permits (Christmas tree permits, firewood permits, etc.) would also be issued annually. Annual revenues from timber and salvage sales would be an estimated $2,000. Ecosystem management and timber management would continue to support approximately 46 total jobs and $1.1 million in total labor and proprietor's income in the local economy (**Tables 4.9** and **4.10**).

Conclusion: Overall, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor and proprietor's income contributed by BLM land and resource management under Alternative A would be about 1,720 jobs and $86.3 million, respectively (**Tables 4.9** and **4.10**). These would reflect increases of 2.4 percent and 2.1 percent respectively over current levels. The largest employment and labor income effects would occur in the mining and government industry sectors. All program revenues to the federal government would be about $28.8 million per year. Annual payments to the State of Montana and to counties would be approximately $13.9 million, most of which would be related to oil

and gas production and PILT payments. Most of the economic impacts from BLM management and land uses would continue to occur in Phillips, Valley, and Blaine counties where most of the BLM lands and minerals are located. The demographic and economic trends that are described in Chapter 3 to provide context for impacts would be expected to continue.

Table 4.9 Employment by Program by Alternative (Average Annual)

	Total Number of Jobs Contributed					
Resource	Current	Alt A	Alt B	Alt C	Alt D	
Recreation	26	26	26	28	28	
Wildlife and Fish	35	35	38	37	36	
Grazing	107	107	107	107	107	
Timber	4	4	9	9	9	
Minerals	988	1,022	1,021	1,030	1,036	
Ecosystem Restoration	46	46	59	59	59	
Payments to States/Counties	402	415	414	416	418	
BLM Expenditures	99	92	93	93	93	
Total BLM Management	1,677	1,717	1,736	1,747	1,754	
Percent Change from Current	---	2.4%	3.5%	4.1%	4.6%	

Table 4.10. Labor Income by Program by Alternative (Average Annual; $1,000)

	Thousands of 2008 dollars					
Resource	Current	Alt A	Alt B	Alt C	Alt D	
Recreation	561	561	581	602	607	
Wildlife and Fish	755	755	822	802	794	
Grazing	$2,340	$2,340	$2,340	$2,340	$2,340	
Timber	$118	$118	$225	$225	$225	
Minerals	$61,705	$63,870	$63,803	$64,323	$64,676	
Ecosystem Restoration	$1,130	$1,130	$1,548	$1,548	$1,548	
Payments to States/Counties	$13,850	$14,290	$14,278	$14,349	$14,397	
BLM Expenditures	$4,703	$3,886	$4,015	$4,015	$4,015	
Total BLM Management	$84,508	$86,297	$86,915	$87,507	$87,905	
Percent Change from Current	---	2.1%	2.8%	3.5%	4.0%	

Table 4.11. Employment by Major Industry by Alternative (Average Annual)

	Total Number of Jobs Contributed					
Industry	Current	Alt A	Alt B	Alt C	Alt D	
Agriculture	98	98	106	106	106	
Mining	644	666	666	671	674	
Utilities	7	7	7	7	7	
Construction	2	2	2	2	2	
Manufacturing	6	7	7	7	7	
Wholesale Trade	25	26	26	26	27	
Transportation & Warehousing	21	22	22	22	22	
Retail Trade	92	93	95	96	96	
Information	7	7	7	7	7	
Finance & Insurance	27	28	28	28	28	
Real Estate & Rental & Leasing	20	20	20	20	21	
Prof, Scientific, & Tech Services	30	30	31	31	31	
Mngt of Companies	0	0	0	0	0	
Admin, Waste Mngt & Rem Serv	40	40	40	41	41	
Educational Services	11	11	11	11	11	
Health Care & Social Assistance	79	81	81	82	82	
Arts, Entertainment, and Rec	18	18	18	18	18	
Accommodation & Food Services	84	85	88	88	88	
Other Services	52	53	54	55	55	
Government	415	425	427	429	430	
Total BLM Management	1,677	1,717	1,736	1,747	1,754	
Percent Change from Current	---	2.4%	3.5%	4.1%	4.6%	

Table 4.12. Labor Income by Major Industry by Alternative (Average Annual, $1,000)

	Thousands of 2007 dollars					
Industry	Current	Alt A	Alt B	Alt C	Alt D	

Agriculture	$1,966	$1,968	$2,177	$2,177	$2,178	
Mining	$52,919	$54,779	$54,727	$55,148	$55,432	
Utilities	$741	$758	$764	$769	$773	
Construction	$53	$54	$55	$55	$55	
Manufacturing	$177	$181	$183	$185	$186	
Wholesale Trade	$997	$1,014	$1,029	$1,039	$1,047	
Transportation & Warehousing	$780	$791	$804	$813	$819	
Retail Trade	$2,126	$2,160	$2,193	$2,208	$2,218	
Information	$289	$292	$298	$301	$303	
Finance & Insurance	$801	$817	$824	$833	$839	
Real Estate & Rental & Leasing	$718	$723	$743	$748	$751	
Prof, Scientific, & Tech Services	$901	$912	$936	$947	$954	
Mgmt of Companies	$15	$16	$16	$16	$17	
Admin, Waste Mgmt & Rem Serv	$748	$751	$754	$756	$757	
Educational Services	$169	$172	$174	$175	$175.6	
Health Care & Social Assistance	$2,524	$2,578	$2,596	$2,614	$2,626	
Arts, Entertainment, and Rec	$194	$198	$201	$203	$204	
Accommodation & Food Services	$1,085	$1,096	$1,127	$1,134	$1,137	
Other Services	$688	$692	$714	$718	$721	
Government	$16,617	$16,347	$16,603	$16,669	$16,713	
Total BLM Management	$84,508	$86,297	$86,915	$87,507	$87,905	
Percent Change from Current	---	2.1%	2.8%	3.5%	4.0%	

Table 4.13. BLM Revenues and Payments to Counties (Annual Average, $1,000)

	Current	Alt A	Alt B	Alt C	Alt D	
All Program Revenues	27,088	28,846	24,468	28,961	28,952	
Payment to States/Counties	13,447	13,875	13,863	13,932	13,978	

Impacts under Alternative B

Estimates of the levels of employment and labor income that would be supported by Alternative B are based on anticipated land and mineral uses, resource outputs, and projected

BLM expenditure levels. Estimated average annual employment and labor/proprietor's income are summarized by resource area in **Table 4-9** and **Table 4-10**, respectively.

Minerals: Annual oil and gas production from federal mineral estate would increase by an estimated 3.6 percent over current levels. Annual federal revenues associated with oil and gas production related activities on federal minerals would increase from current estimated levels ($22.9 million) to an estimated $23.8 million. From this, revenues distributed to the state and counties would be an estimated $11.9 million. Alternative B would result in the estimated average annual production of 18.9 million MCF of natural gas, 174,000 bbl of oil, 38,500 short tons of construction sand and gravel, and 65,000 short tons of bentonite from federal minerals (Table 4-2). It is estimated that minerals exploration, development, and production on federal minerals would support about 1,020 local jobs and an estimated $63.8 million in local labor and proprietor's income annually. (**Table 4-9** and **Table 4-10**). Total annual federal revenues from mineral leasing, production, and sales would be an estimated $28.1 million; of which an estimated total of about $11.8 million would be distributed to the state and counties. Among all the alternatives, residential property sales would least likely be affected by the exploration, development, and production of federal oil or gas since wells would not be drilled within 0.25 miles of residential buildings.

Recreation: It is estimated that about 96,100 recreation visits, including fish and wildlife-related recreation activities, would account for less than 4 percent of all the local jobs and less than 2 percent of the labor income that could be supported by Malta Field Office activities. Alternative B would support approximately 60 jobs and $1.4 million in labor income (**Table 4-9 and Table 4.10**). The willingness to pay for recreation opportunities would represent an estimated consumer surplus of $4.38 million annually.

Government: BLM expenditures would support approximately 90 jobs and $4.0 million in labor income **(Table 4.9 and Table 4.10)** in the local economy.

Ecosystem Management: Annual ecosystem management would continue to include mine reclamation and water treatment costs ($2.479 million). Other costs would include mechanical treatment ($281,000), prescribed burning of forested areas ($973,000), mechanical treatments and prescribed burning of grass/shrubs ($9,000), and invasive species treatments ($254,000). Mine reclamation, water treatment, as well as 90 percent of mechanical treatments, and 63 percent of invasive species treatments are contracted out or paid for through cooperative agreements. Annual timber harvest performed by private businesses would continue to produce about 1,507 CCF of sawtimber. About 138 personal use permits (Christmas tree permits, firewood permits, etc.) would also be issued annually. Annual revenues from timber and salvage sales would be an estimated $2,000. Ecosystem management and timber management would continue to support approximately 60 total jobs and $1.5 million in total labor and proprietor's income in the local economy-**(Table 4.9 and Table 4.10)**.

Overall, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor and proprietor's income contributed by BLM land and resource management under Alternative B would be about 1,700 jobs and $86.9 million, respectively **(Table 4.9 and Table 4.10)**. These would be increases over current levels of about 3.5 percent and 2.8 percent, respectively. The largest employment and labor income effects would occur in the mining and government industry sectors. All program revenues to the federal government would be about $28.8 million per year. Annual payments to the State of Montana and to counties would be

approximately $13.9 million, most of which would be related to oil and gas production and PILT payments.

Impacts under Alternative C

Estimates of the levels of employment and labor income that would be supported by Alternative C are based on anticipated land and mineral uses, resource outputs, and projected BLM expenditure levels. Estimated average annual employment and labor/proprietor's income are summarized by resource area in **(Table 4.9 and Table 4.10)**, respectively.

Minerals: Annual oil and gas production from federal mineral estate would increase by an estimated 4.2 percent over current levels. Annual federal revenues associated with oil and gas production related activities on federal minerals would increase from current estimated levels ($22.9 million) to an estimated $23.9 million. From this, revenues distributed to the state and counties would be an estimated $12.0 million. Alternative C would result in the estimated average annual production of about 19.0 2 million MCF of natural gas, 175,000 bbl of oil, 38,500 short tons of construction sand and gravel, and 65,000 short tons of bentonite from federal minerals (Table 4-2). It is estimated that minerals exploration, development, and production on federal minerals would support about 1,030 local jobs and an estimated $64.3 million in local labor and proprietor's income annually (Table 4.9 and Table 4.10). Total annual federal revenues from mineral leasing, production, and sales would be an estimated $28.3 million; of which an estimated total of about $12.0 million would be distributed to the state and counties. Residential property sales would likely be affected by the exploration, development, and production of federal oil or gas less than with Alternatives A or D because wells would not be drilled within 500 feet of residential buildings.

Recreation: The estimated 96,300 recreation visits, including fish and wildlife-related recreation activities, would account for less than 4 percent of all the local jobs and less than 2 percent of the labor income that could be supported by Malta Field Office activities. Alternative C would support approximately 70 jobs and $1.4 million in labor income. The willingness to pay for recreation opportunities would represent an estimated consumer surplus of $4.38 million annually.

Government: Economic impacts would be similar for Alternatives B, C, and D.

Ecosystem Management: Economic impacts would be similar for Alternatives B, C, and D.

Conclusion: Overall, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor and proprietor's income contributed by BLM land and resource management under Alternative C would be about 1,747 jobs and $87.5 million, respectively (Table 4.9 and Table 4.10). These would reflect increases of about 4.1 percent and 3.5 percent, respectively over current levels. The largest employment and labor income effects would occur in the mining and government industry sectors. All program revenues to the federal government would be about $29.0 million per year. Annual payments to the State of Montana and to counties would be approximately $13.9 million, most of which would be related to oil and gas production and PILT payments.

Impacts under Alternative D

Estimates of the levels of employment and labor income that would be supported by Alternative D are based on anticipated land and mineral uses, resource outputs, and projected

BLM expenditure levels. Estimated average annual employment and labor/proprietor's income are summarized by resource area in Table 4-9 and Table 4-10 respectively.

Minerals: Annual oil and gas production from federal mineral estate would increase by an estimated 4.6 percent over current levels. Annual federal revenues associated with oil and gas production related activities on federal minerals would increase from current estimated levels ($22.9 million) to an estimated $24.0 million. From this, revenues distributed to the state and counties would be an estimated $12.0 million. Alternative D would result in the estimated average annual production of about 19.095 million MCF of natural gas, 175,000 bbl of oil, 38,500 short tons of construction sand and gravel, and 65,000 short tons of bentonite from federal minerals (**Table 4-2**). It is estimated that minerals exploration, development, and production on federal minerals would support about 1,040 local jobs and an estimated $64.7 million in local labor and proprietor's income annually. (Table 4-9 and Table 4-10). Total annual federal revenues from mineral leasing, production, and sales would be an estimated $28.4 million; of which an estimated total of about $12.0 million would be distributed to the state and counties. Effects on residential property sales would be similar to those described for alternative A.

Recreation: The estimated 96,100 recreation visits, including fish and wildlife-related recreation activities, would account for less than four percent of all the local jobs and less than two percent of the labor income that could be supported by Malta Field Office activities. Alternative C would support approximately 60 jobs and $1.4 million in labor income (Table 4-9 and Table 4-10). The willingness to pay for recreation opportunities would represent an estimated consumer surplus of $4.37 million annually.

Government: Economic impacts would be similar for Alternatives B, C, and D.

Ecosystem Management: Economic impacts would be similar for Alternatives B, C, and D.

Conclusion: Overall, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor and proprietor's income contributed by BLM land and resource management under Alternative D would be about 1,750 jobs and $87.9 million, respectively (Table 4-9 and Table 4-10.). These would reflect increases of about 4.6 percent and 4.0 percent, respectively over current levels. The largest employment and labor income effects would occur in the mining and government industry sectors. All program revenues to the federal government would be about $30.0 million per year. Annual payments to the State of Montana and to counties would be approximately $14.0 million, most of which would be related to oil and gas production and PILT payments.

Cumulative Effects

Table 3.2 Output, Employment, and Income for the Malta Field Office Planning Area addresses economic indicators of all existing economic activity within the PA. This takes into account past actions that eventually evolved to present economic situation. The alternative actions shown in this chapter indicate how the local economy would change from the anticipated land uses with each alternative. Finally, a list of potential future projects and developments were discussed during meetings with the public at the community economic workshops and at internal interdisciplinary team meetings. Insufficient data and detail were available to analyze

the cumulative economic impacts associated with these potential future projects or developments.

Mitigation Measures

Unavoidable Adverse Impacts

None of the economic impacts discussed above would cause or be the result of unavoidable adverse impacts.

Short-Term Uses Versus Long-Term Productivity

Consumptive uses, e.g. mineral production, timber harvest, would be considered short-term uses that may influence and/or reduce long-term productivity of the land and mineral resources for future production. Here too, the development of minerals within the planning analysis period would preclude the use of those minerals in the future.

Irreversible and Irretrievable Impacts

The use of non-renewable resources would eliminate the potential economic uses of those resources in the future for the same or different purposes. This is generally assumed to apply to use of mineral resources.

PROJECT EXAMPLE

Shepherd Ah Nei
OHV Area
Travel Management Plan

1

Shepherd Ah Nei Results

Estimated Local Economic Impacts

	Alternative		
	A	B	C, D, E
Total Employment (jobs)	12	3	12
Total Labor Income	$238,000	$50,000	$256,000
Annual OHV user fees collected	$0	$0	$20,000
BLM labor/operations expenditures	$24,000	$7,000	$44,000

2

Shepherd Ah Nei OHV Area Travel Management Plan EA
Economic Analysis
March 30, 2005

OHV Economic Analysis for the Shepherd Ah Nei Area Travel Management Plan EA MT-010-04-42

Affected Environment:

Estimated OHV use at Shepherd Ah Nei increased by almost 400 percent between 1990 and 2003, based on the increase in the number of registered ATVs and off-highway motorcycles in Montana during the same period (personal conversation with Ray Page, MFWP, 3/23/05). Prior to closing, use was estimated by BLM to be about 10,000 visitors per year; about 98 percent of these are local users. The average number of visits per year per OHV user at Shepard Ah Nei was seven.

Extrapolation of survey data by the Institute for Outdoor Recreation and Tourism Dept. of Forest Resources, Utah State University, in their report entitled "Off Highway Vehicle Uses and Owner Preferences in Utah (Revised), January 18, 2001" provides a basis for understanding some of the characteristics of OHV users and use patterns at Shepherd Ah Nei, prior to closing. These characteristics also form the basis for much of the economic analysis. The average number of OHVs per visit was about 1.5 while the average number of vehicles per household of OHV users was about 1.8. The average number of OHV operators per household among OHV users was 2.5. About 20 percent of the OHV users rode motorcycles and 80 percent rode ATVs. Three-fourths of the motorcycle operators were male. By comparison, about 60 percent of ATV operators were male. Average age of all operators was 43. About 10 percent of the operators belong to an OHV organization or club.

OHV user expenditure patterns were also extrapolated from a study by Colorado State University entitled "Off Highway Vehicles in Colorado: Estimated Recreational Use and Expenditures" (Reed and Haas, 1989). Of nondurable OHV user expenditures at Shephert Ah Nei, it is assumed that 28% were for purchase of gasoline/fuel; 15% were for special clothing; 21% were for vehicle repairs and maintenance; 12% for food and beverages; and 12% for equipment rentals. The remaining 12% of expenditures included insurance, storage sheds/garages, gifts/film, and others. Employment impact and labor income impact coefficients per $1 million dollars of nondurable OHV expenditures in Yellowstone County are about 26 jobs and $545,000 respectively (IMPLAN). Economic effects of OHV use at Shepherd Ah Nei were about 11 local jobs and $238,000 in labor income. Motor vehicle and parts dealers for OHV accessories, OHV trailers, and vehicles to tow or transport OHV would also be affected by changes in durable goods expenditures. Employment impact and labor income impact coefficients per $1 million dollars of durable OHV expenditures in Yellowstone County are about 17 jobs and $608,000 respectively (IMPLAN). The amount attributable to UHV use at Shepherd Ah Nei is unknown. Employment impact and labor income impact coefficients per $1

million dollars of government expenditures in Yellowstone County are about 14 jobs and $4000,000 respectively (IMPLAN). Local economic effects of BLM management (BLM labor and operations expenditures) of OHV use at Shepherd Ah Nei were less than one local job and about $10,000 in labor income. IMPLAN Pro, an input-output modeling system, was used to estimate input-output for Yellowstone County using 2002 economic data, the most recent IMPLAN data available (Minnesota IMPLAN Group, Inc.) Input-output analysis is basically an accounting system that describes dollar or volume flows of commodities between all sectors of the economy.

Data from the Arizona State Parks in their report "Economic Importance of Off-Highway Vehicle Recreation to Arizona, 2003" indicates that of all direct OHV expenditures about 38 percent is for equipment, 34 percent is for vehicle expenses, and 28 percent is for trip expenses.

The Billings/Yellowstone County economy supports about 106,000 jobs and has total personal income of $3.7 billion. It has a Shannon Weaver Diversity index of .657 which indicates a medium to upper medium level of diversity, i.e. there are many (233) industry sectors in the Yellowstone County economy (IMPLAN). The economy is not dominated by one or a few industries; nor does it reflect high levels of instability (e.g. seasonal unemployment, sporadic population changes, or fluctuating income growth). OHV use at Shepherd Ah Nei did not generate government revenues. Estimated related average annual management costs to the BLM were about $24,000. OHV use did not increase demand for other services and infrastructure that affected government costs.

Currently, there are eight private land owners within one mile of the OHV use portion of Shepherd Ah Nei. All of these parcels are vacant except one. This parcel, owned by Brian Biggs, includes approximately 30 acres and contains one dwelling and other buildings. Another parcel adjacent to the OHV use area is owned by Billings Motorcycle Club. Past use has not caused disproportionately high or adverse effects on human health or environmental effects on low-income or minority populations, as provided under Environmental Justice considerations.

Environmental Consequences:

None of the alternatives would cause disproportionately high or adverse effects on human health or environmental effects on low-income or minority populations, as provided under Environmental Justice considerations.

Alternative A: Economic effects of Alternative A would be similar to those described for the affected environment. Many OHV users of Shepherd Ah Nei would feel a sense of relief and would welcome the opportunities for local, convenient, and authorized OHV use. Public comments offered support for this alternative; however, at least one resident within one mile of Shepherd Ah Nei has indicated that he would feel frustration and lack of support of this alternative.

Alternative B: OHV user characteristics would not be expected to change except the average number of local OHV trips would decline. Economic effects would be based on about 2000 OHV users shifting use to other areas, e.g. other government or private land. Local OHV expenditures for equipment, vehicle expenses, and trip expenses would decline. It is estimated that Alternative B use level would support 3 job and annual total labor income of about $50,000 from OHV related expenditures, government labor expenses, and BLM operations expenditures. The diversity, dependency, and stability of the Billings/Yellowstone County economy would not be affected. OHV use would not generate government revenues. Estimated related average annual management costs to the BLM would be about $7,000. Local OHV users would demand OHV use areas on other government land; however, demand for other services and infrastructure would not be affected. Many OHV users of Shepherd Ah Nei would be disappointed and feel a sense of frustration related to lost opportunities for local, convenient, and authorized OHV use. Public comments offered very limited support for this alternative; however at least one resident within one mile of Shepherd Ah Nei has indicated that he would welcome this alternative.

Alternatives C, D, and E: The economic impacts of alternatives C, D, and E would be similar. OHV user characteristics would not be expected to change. OHV use would continue pre-2004 trends, i.e. 10,000 visitors per year. It is estimated that about $20,000 in user fees would be collected by the BLM. Local OHV expenditures for equipment, vehicle expenses, and trip expenses would be similar to Alternative A. Economic effects attributed to OHV use on Shepherd Ah Nei and its management would be an estimated 12 jobs and annual total labor income of about $256,000 from OHV related expenditures for nondurable goods, government labor, and BLM operations expenditures. The diversity, dependency, and stability of the Billings/Yellowstone County economy would not be affected. Estimated related average annual management costs to the BLM would be about $44,000. This reflects an increase of about $20,000 from user fees that would be used managing OHVs at Shepherd Ah Nei. Demand for other government services and infrastructure would not be affected. Employment impact and labor income impacts of durable OHV expenditures in Yellowstone County attributable to UHV use at Shepherd Ah Nei is unknown. Many OHV users of Shepherd Ah Nei would feel a sense of relief related to restored opportunities for local, convenient, and authorized OHV use. Many public comments offered support for allowing OHV use again, even with more management constraints. However, at least one resident within one mile of Shepherd Ah Nei has indicated that he would not support a decision to allow OHV use at Shepherd Ah Nei and that his quality of life is degraded by OHV use of the area.

Conclusion: Estimated local economic impacts of each alternative are summarized and compared below. While individual businesses (especially motor vehicle and parts dealers and gasoline stations) are likely to experience changes in level of sales associated with changes in OHV use at Shepherd Ah Nei, none of the alternatives would cause a significant impact to the Yellowstone County economy in terms of employment, labor income, economic dependency, diversity, or stability. Nor would any of the alternatives cause significant change in the amount of government revenues collected or government

labor and operations expenditures. Public comment generally supported allowing OHV use of Shepherd Ah Nei.

Estimated Local Economic Impacts

	Alternative		
	A	**B**	**C, D, E**
Total Employment (jobs)	12	3	12
Total Labor Income	$238,000	$50,000	$256,000
Annual OHV user fees collected	$0	$0	$20,000
BLM labor/operations expenditures	$24,000	$7,000	$44,000

OHV EA Phone Contacts (March 17-March 29, 2005):

Atkinsson, Anna, WO BLM Transportation Specialist, Washington D. C.

Gildihouse, Jeff, Recreation Specialist, Beartooth Ranger District, Custer National Forest, US Forest Service

Goldhor-Wilcock, Ashley, WO BLM Recreation Economist, Washington DC

Holland, Kevin, Warden, Montana Department of Fish, Wildlife, and Parks, Billings, MT

Niccolucci, Michael, Economist, Region 1, US Forest Service, Missoula MT

Page, Ray, Montana Department of Fish, Wildlife, and Parks, Helena, MT

Placchi, Jack, Travel Management Specialist, BLM Colorado State Office, Denver CO

Winter, Susan, Economist, USFS, Fort Collins, CO

Input and ID discussions with the following BLM ID Specialists:

Lynn Anderson, Recreation Specialist
David Jaynes, Transportation Specialist
Eddie Bateson, Assoc. FO Manager
Chuck Ward, Ranger
Bob Meidinger, Fuels Specialist
Joni Taylor, Budget Specialist

References

Crimmins, Tom. n.d. *"User Experience and Vehicle Use Patterns."* (online), March 22, 2005. <http://www.parks.state.co.us/home/kids/ publications /OHV_Colorado_user_survey.asp>

Arizona State Parks. *Economic Importance of Off-Highway Vehicle Recreation to Arizona.* 2003.

Off Highway Vehicle Uses and Owner Preferences in Utah (Revised). 2001. Utah State University, Department of Forest Resources, Institute for Outdoor Recreation and Tourism: 8-36.

IMPLAN Pro User's Analysis Data Guide. Stillwater: Minnesota IMPLAN Group, Inc., 2000.

Kocis, Susan M.;English, Donald B. K.; Zarnoch, Stanley J.; Arnold, Ross; Warren, Larry. 2003. *National Visitor Use Monitoring Results.* U.S. Department of Agriculture, Forest Service, Region 1, Custer National Forest. 8.

Reed, Patrick; Haas, Glenn. 1989. *Off Highway Vehicles in Colorado: Estimated Recreational Use and Expenditures.* Fort Collins, CO: Colorado State University

Stynes, Daniel J.; White, Eric M. 2004. *Spending Profiles of National Forest Visitors, 2002 Update.* Joint Venture Agreement Between the USDA Forest Service Inventory and Monitoring Institute and Michigan State University:14-15.

United States Department of the Interior, Bureau of Land Management, Montana State Office. *(ROD) Record of Decision Off-Highway Vehicle Environmental Impact Statement and Proposed Plan Amendment for Montana, North Dakota and South Dakota.* 2003.

FEAST

The Economic "So-What" of Federal Natural Resource Management Decisions

1

FEAST

- Given a snapshot of the local economy – how do management decisions support and/or change it?
  - Input 1 – "Response Coefficients"… rate of economic response in terms of jobs and income to a given amount of resource management/use
  - Input 2 – Resource flows; visitor days, PILT, oil and gas extraction, timber harvest, aum's, etc.
  - Output – The effect of Federal govt management decisions on local jobs and income.

2

FEAST

- Focus like a laser beam on
  - Local
  - The effect of Federal management
- We don't care about
  - Economic activity outside the study area affected by Federal management decisions
  - Total economic activity except for comparisons and context

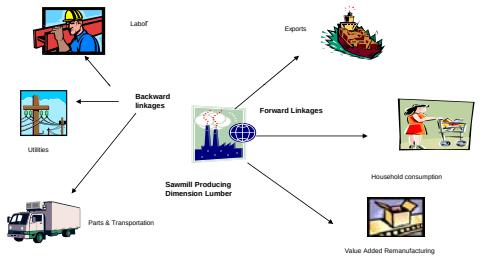
3

FEAST

- Why is that last point so important?

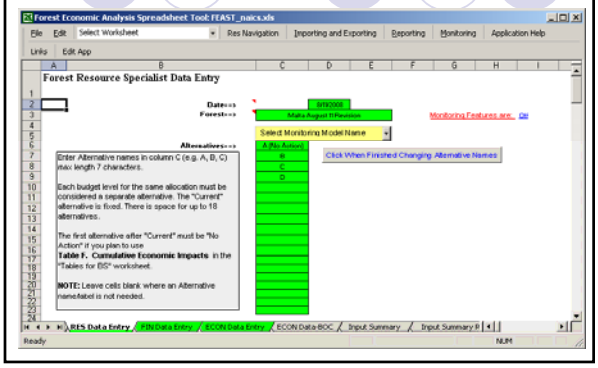
4

Figure 1. Industry and Consumer Backward and Forward Linkages for Sawmill Production

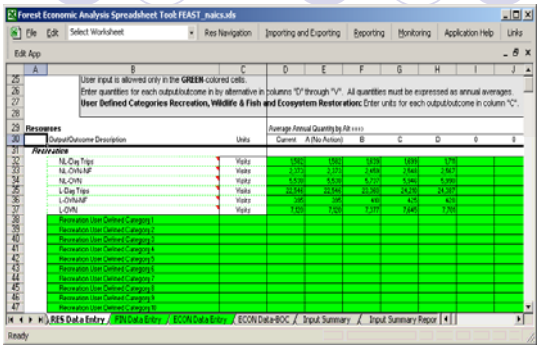


5

Resource Data Entry Page



Resource Data Entry Page….

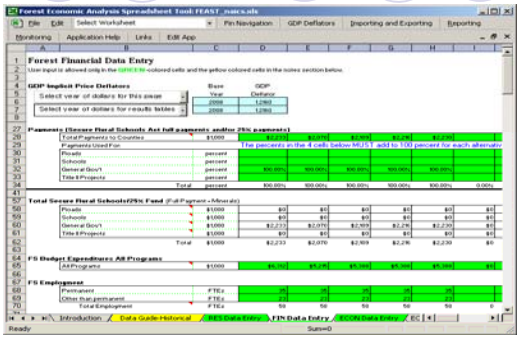


Resource Data Entry Page….

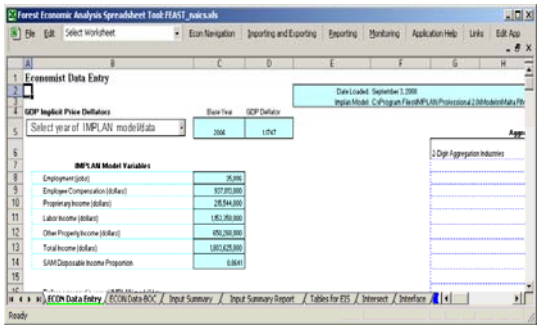
- Data also entered for:
  - Wildlife and Fish (Hunting, Fishing, Watching)
  - Grazing
  - Timber
  - Minerals
  - Ecosystem Restoration

8

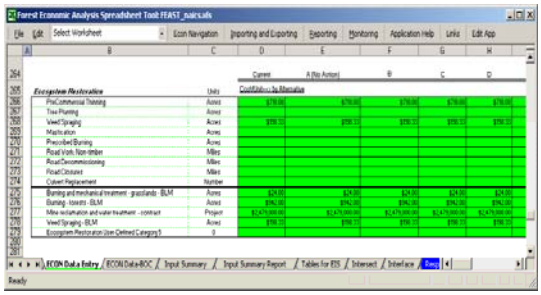
Financial Data Entry Page



Economist Data Entry Page



Economist Data Entry Page….



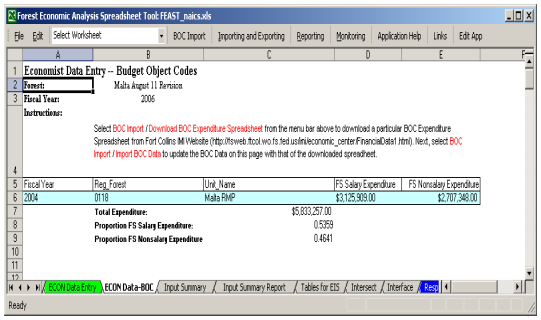
11

Economist Data Entry Page….

- Data also entered for:
  - Recreation,
  - Fish and Wildlife,
  - Grazing,
  - Minerals, and
  - Timber.

12

Econ Budget Object Code Page



Resource Data Request Form

- Get updated form from John

14

FEAST Checklist

- Introduction page
  - Read this page thoroughly
  - Tool Bar
    - Navigation
    - Importing and Exporting
    - Reporting
    - Help
    - Edit Application

15

FEAST Checklist….

- Res Data Entry page (Resource Data Entry page)
  - Read documentation found in upper-left hand corner
  - Enter Date and Forest Name (very important!)
  - Enter alternative names
  - Click button, Click when …
  - Enter data (Note: 1. average annual quantity by alternative, and 2. certain resources need to have units entered.)
  - Enter documentation in yellow section at bottom of page

16

FEAST Checklist….

- Fin Data Entry page
  - Select year of dollars entered on this page – very important (drop down list)
  - Select year of dollars for results – very important (reporting)
  - ONLY IF USING THE "TIMBER RAC METHOD": Enter data by resource (Note: 1) average annual quantity by alternative, and 2) certain resources need to have units entered.)
  - Enter Payments data – <u>only</u> money that is returned to your study area.
  - Enter documentation in yellow section at bottom of page

17

FEAST Checklist….

- Econ Data Entry page
  - Economist enters data on this page
  - Select year of IMPLAN model/data (drop down list)
  - Select method of timber calculations
  - Enter cumulative effects year, employment and labor income (optional)
  - Enter data by resource
  - Remember your documentation in yellow section at bottom of page

18

FEAST Checklist….

- Econ Data-BOC page
  - Budget Object Code data from PAG website
  - Just point and click and data is entered
- Also described, several pages where no data are entered.

19

Tables for Environmental Impact Statement

Malta RMP

Table A. Employment by Program by Alternative (Average Annual, Decade 1)

	Total Number of Jobs Contributed						
Resource	Current	A (No Action)	B	C	D		
Recreation: non-local only	14	14	14	15	15		
Wildlife and Fish: non-local only	18	18	20	19	19		
Grazing	107	107	107	107	107		
Timber	3	3	6	6	6		
Minerals	235	131	155	225	236		
Ecosystem Restoration	46	46	59	59	59		
Payments to States/Counties	67	62	63	66	67		
BLM Expenditures	99	92	93	93	93		
Total BLM Management	588	472	516	590	601	0	0
Percent Change from Current	---	-19.6%	-12.2%	0.3%	2.2%	-100.0%	-100.0%

Table B. Labor Income by Program by Alternative (Average Annual, Decade 1; $1,000)

	Thousands of 2008 dollars						
Resource	Current	A (No Action)	B	C	D		
Recreation: non-local only	$284.2	$284.2	$294.4	$305.1	$307.4		
Wildlife and Fish: non-local only	$378.4	$378.4	$411.6	$401.7	$397.7		
Grazing	$2,340.0	$2,340.0	$2,340.0	$2,340.0	$2,340.0		
Timber	$91.5	$91.5	$173.5	$173.5	$173.5		
Minerals	$13,816.5	$7,238.5	$8,736.8	$13,170.2	$13,833.8		
Ecosystem Restoration	$1,129.7	$1,129.7	$1,548.4	$1,548.4	$1,548.4		
Payments to States/Counties	$2,299.9	$2,132.0	$2,172.1	$2,282.3	$2,296.8		
BLM Expenditures	$4,703.4	$3,886.0	$4,014.9	$4,014.9	$4,014.9		
Total BLM Management	$25,043.6	$17,480.3	$19,691.9	$24,236.3	$24,912.5	$0.0	$0.0
Percent Change from Current	---	-30.2%	-21.4%	-3.2%	-0.5%	-100.0%	-100.0%

Table C. Employment by Major Industry by Alternative (Average Annual, Decade 1)

	Total Number of Jobs Contributed						
Industry	Current	A (No Action)	B	C	D		
Agriculture	94	93	101	101	101		
Mining	152	85	100	146	152		
Utilities	2	2	2	2	2		
Construction	1	1	1	1	1		
Manufacturing	2	2	2	2	2		
Wholesale Trade	11	9	9	11	11		
Transportation & Warehousing	9	8	8	9	10		
Retail Trade	32	24	27	32	33		
Information	3	2	2	3	3		
Finance & Insurance	10	7	8	10	10		
Real Estate & Rental & Leasing	9	8	8	9	9		
Prof, Scientific, & Tech Services	13	11	12	13	14		
Mngt of Companies	0	0	0	0	0		
Admin, Waste Mngt & Rem Serv	31	29	30	31	31		
Educational Services	3	2	3	3	3		
Health Care & Social Assistance	23	16	18	23	23		
Arts, Entertainment, and Rec	8	6	7	8	8		
Accommodation & Food Services	39	33	36	40	40		
Other Services	20	15	18	20	21		
Government	126	120	123	126	127		
Total BLM Management	588	472	516	590	601	0	0
Percent Change from Current	---	-19.6%	-12.2%	0.3%	2.2%	-100.0%	-100.0%

Table D. Labor Income by Major Industry by Alternative (Average Annual, Decade 1; $1,000)

	Thousands of 2008 dollars						
Industry	Current	A (No Action)	B	C	D		
Agriculture	$1,882.8	$1,875.4	$2,062.0	$2,066.4	$2,067.0		
Mining	$11,726.3	$6,067.5	$7,361.2	$11,146.9	$11,699.0		
Utilities	$261.4	$197.1	$217.8	$258.4	$264.7		
Construction	$22.8	$18.7	$20.4	$22.9	$23.3		
Manufacturing	$62.9	$47.7	$53.2	$62.6	$64.2		
Wholesale Trade	$421.5	$343.4	$374.3	$426.2	$436.7		
Transportation & Warehousing	$345.9	$284.1	$310.0	$350.8	$359.3		
Retail Trade	$731.8	$544.2	$615.3	$724.5	$741.3		
Information	$114.7	$90.2	$100.8	$116.0	$118.9		
Finance & Insurance	$283.7	$214.8	$236.6	$282.2	$290.9		
Real Estate & Rental & Leasing	$340.4	$284.2	$314.6	$345.8	$351.1		
Prof, Scientific, & Tech Services	$375.0	$295.0	$334.3	$385.3	$395.9		
Mngt of Companies	$5.7	$4.4	$4.7	$5.9	$6.3		
Admin, Waste Mngt & Rem Serv	$642.6	$627.6	$633.9	$643.2	$644.9		
Educational Services	$51.5	$36.1	$40.6	$49.7	$51.0		
Health Care & Social Assistance	$748.5	$520.4	$588.0	$724.7	$745.0		
Arts, Entertainment, and Rec	$86.8	$72.7	$79.4	$88.5	$90.3		
Accommodation & Food Services	$519.1	$440.0	$486.7	$531.3	$537.5		
Other Services	$276.0	$214.8	$247.6	$280.3	$285.4		
Government	$6,144.3	$5,302.2	$5,610.7	$5,724.5	$5,739.7		
Total BLM Management	$25,043.6	$17,480.3	$19,691.9	$24,236.3	$24,912.5	$0.0	$0.0
Percent Change from Current	---	-30.2%	-21.4%	-3.2%	-0.5%	-100.0%	-100.0%

Table E. BLM Revenues and Payments to Counties (Annual Avg, Decade 1; Thousands of 2008 dollars)

	Current	A (No Action)	B	C	D		
All Program Revenues	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Payment to States/Counties	$2,233.0	$2,070.0	$2,109.0	$2,216.0	$2,230.0	$0.0	$0.0

Table F. Cumulative Economic Impacts in 2008

Economic Indicator	2008		2008						
	Area Totals	Forest Portion	Area Totals	Forest Portion					
				A (No Action)	B	C	D		
Employment									
Total (jobs)	1	588	1	472	516	590	601	0	0
% of Area Totals	100%	58782.9%	100%	47243.4%	51600.2%	58971.3%	60100.8%	0.0%	0.0%
% Change from No Action	---	---	---	0.0%	9.2%	24.8%	27.2%	-100.0%	-100.0%
Labor Income (2008 dollars)									
Total ($ million)	$0.0	$25.0	$0.0	$17.5	$19.7	$24.2	$24.9	$0.0	$0.0
% of Base	100%	25043570.1%	100%	17480258.3%	19691855.5%	24236264.0%	24912549.8%	0.0%	0.0%
% Change from No Action	---	---	---	0.0%	12.7%	38.6%	42.5%	-100.0%	-100.0%

Table G. Current Role of BLM-Related Contributions to the Area Economy

Industry	Employment (jobs)		Labor Income (Thousands of 2008 dollars)	
	Area Totals	BLM-Related	Area Totals	BLM-Related
Agriculture	6,089	94	$126,168.6	$1,883
Mining	1,136	152	$84,349.6	$11,726
Utilities	248	2	$25,426.6	$261
Construction	1,496	1	$47,040.9	$23
Manufacturing	497	2	$15,346.0	$63
Wholesale Trade	801	11	$31,642.0	$421
Transportation & Warehousing	1,661	9	$97,853.2	$346
Retail Trade	3,103	32	$74,306.5	$732
Information	440	3	$18,970.1	$115
Finance & Insurance	1,119	10	$34,786.9	$284
Real Estate & Rental & Leasing	997	9	$36,806.1	$340
Prof, Scientific, & Tech Services	828	13	$26,035.8	$375
Mngt of Companies	6	0	$262.9	$6
Admin, Waste Mngt & Rem Serv	1,427	31	$20,221.7	$643
Educational Services	382	3	$6,223.7	$52
Health Care & Social Assistance	2,548	23	$81,499.9	$749
Arts, Entertainment, and Rec	700	8	$8,102.4	$87
Accommodation & Food Services	2,516	39	$35,227.8	$519
Other Services	2,028	20	$26,239.4	$276
Government	7,864	126	$397,397.3	$6,144
Total	35,886	588	1,193,907	25,044
BLM as Percent of Total	---	1.64%	---	2.10%

Table H. Local Recreation, Fish & Wildlife Employment by Program by Alternative (Average Annual, Decade 1)

Resource	Current	A (No Action)	B	C	D		
Employment	Total Number of Jobs Contributed						
Recreation: local only	12	12	12	13	13		
Wildlife and Fish: local only	17	17	18	18	17		
Income	Thousands of 2008 dollars						
Recreation: local only	277	277	287	297	300		
Wildlife and Fish: local only	377	377	410	400	396		
Total	28	28	30	30	30	0	0
Percent Change from Current	---	0.0%	6.6%	6.7%	6.3%	-100.0%	-100.0%

Forest Economic Analysis Spreadsheet Tool (Database Version 4.0 9/04/2008)

This Excel workbook is designed to streamline data entry and preparation for the generation of economic impact tables placed in Forest Plan Revision EISs or other programmatic analysis documents. This workbook is set up to assist both economists and planning specialists in completing economic impact analysis. It is strongly recommended that a qualified economist define the impact area, build the IMPLAN model, and provide data in the "Economist Worksheets". Once this work has been completed, other ID Team specialists may enter their data, change their data, and run the macros as often as necessary to generate tables for the EIS. It is strongly recommended, again, that an economist be consulted to write or review the interpretation of results for the EIS. The workbook is divided into four sections: Introduction/Help, Forest ID Team worksheets, Economist worksheets, and Calculation worksheets (hidden). Each section is discussed below.

This version of FEAST incorporates the use of a MS Access backend database. This database, "FEAST_v4_be.mdb" can hold multiple FEAST datasets. You can only use one FEAST_naics.xls file. Think of FEAST as being a software program similar to IMPLAN. Do not move FEAST_naics.xls, or any of the supporting files (FEAST_v4_be.mdb or FEASTHelp.chm) from the folder in which it has been installed. Use the "Importing/Exporting" menu button to download or upload FEAST datasets into this FEAST workbook.

This version of FEAST can ONLY BE USED FOR IMPLAN DATA YEARS 2001 AND GREATER!!! IMPLAN data years 2000 and prior are SIC based. This version of FEAST is NAICS based.

Introduction

This "Introduction" worksheet provides general overview, advice, and instructions for the use of this tool. The tabs for worksheets that require data entry are colored **GREEN**. User input is allowed only in the **GREEN**-colored cells and in the **YELLOW**-colored notes section at the bottom of the page. ID Team specialists and economists and/or analysts are strongly encouraged to document assumptions, data sources, etc in the area provided at the bottom of the "data entry" worksheets. The **LIGHT BLUE**-colored cells receive input or data from the various macros (drop-down lists, buttons and menu selections).

There are cell comments throughout FEAST. These comments contain valuable information regarding the use of FEAST, data entry, data sources, etc. Simply move your cursor over cells with comment indicators (red triange in corner of cell) to view the comment.

Forest ID Team Data Entry Worksheets

RES Data Entry

The "Resource Data Entry" worksheet is where alternatives are identified and resource output or use data are entered by ID Team specialists.

FIN Data Entry

The "Financial Data Entry" worksheet is where all relevant expenditure and revenue data are entered by the appropriate ID Team specialist. This information is used primarily for calculating the consequences of payments to states/counties in the traditional manner. The Rec Fee Demo program is not accounted for in handling recreation revenues.

Historical Monitoring Data

Use this worksheet to enter historical data for monitoring purposes.

Economist Data Entry Worksheets

ECON Data Entry

The "Econ Data Entry" worksheet is where all IMPLAN or industry-related data are entered by economists or analysts. Please read section of the Application Help regarding "Economic Data Entry." This is a valuable reference which should be reviewed by economists before starting their work.

Reporting Worksheets

Tables for EIS

The "Tables for EIS" worksheet is where all results are reported out. Seven standardized tables are located in this worksheet. Tables may be generated and published in MS Word format by clicking on the "Reports" command followed the "Build" and "Publish" commands at the top of this workbook. Each one may be copied from this worksheet and pasted into a MS Word or other formated document for inclusion in an EIS. Print margins and landscape orientation are set so that each table will print on one page. **No data is entered in this worksheet.** All input is derived from running the "Build EIS Tables" menu button under "Reports".

Summary and Reference Worksheets

No data is entered in these worksheets.

ECON Data-BOC

The "ECON Data-BOC" worksheet is where Budget Object Code expenditure data, generated by the WOstaff, are imported from other supporting Excel spreadsheets. See "HELP" for assistance in IMPLAN input and output specifications. The **LIGHT BLUE**-colored cells receive BOC data input automatically by using the "BOC Import" / "Import BOC Data" menu button.

intersect

Selecting IMPLAN MODEL and then RETRIEVE MODEL DATA from the menu will import IMPLAN model data into the "Intersect" and "Econ Data Entry" worksheets. This information is used to convert Total Industry Output, TIO, estimates to changes in Final Demand for minerals and range.

Input Summary

The "Input Summary" worksheet is where all previously entered data has been transformed and made ready for linking with calculation worksheets. Data are summarized here so that users may view final data input in one location and to assist in identifying data problems, if needed.

interface

The "Interface" worksheet displays a list of all possible IMPLAN impact tables which can be built for FEAST. A macro which is executed by selecting "Load IMPLAN Coefficients" from the Importing and Exporting menu will load reponse coefficients for those impact table which have been built in IMPLAN. The Interface worksheet displays which response coefficients were loaded.

Calculation Worksheets

These worksheets are used for organizing data, calculating, and storing the results of impact estimates. These worksheets are protected and should not be modified. These worksheets interact with the designated IMPLAN model. Economists and analysts are encouraged to examine the calculations and intermediate results of the calculation worksheets.

Contributors

This Workbook has been prepared with input from the following individuals: WO-- Greg Alward, Mike Niccolucci, Walter Stewart, Susan Winter; RMRS, Missoula -- Krista Gebert; Region 1 -- Fred Stewart, Richard Marshall; Region 2 -- Mike Retzlaff, Julie Schaefers; Region 6 -- Dick Phillips, Doug Smith; Region 8 -- Clair Redmond; Region 9 -- Rickard H. Hokans; Region 10 -- Lisa Crone. Suggestions for improvement may be directed to Susan Winter or Doug Smith.

Forest Resource Specialist Data Entry

Date==> 8/11/2008

Forest==> Malta August 11 Revision

Monitoring Features are: Off

Alternatives==>

Current
A (No Action)
B
C
D

Click When Finished Changing Alternative Names

Enter Alternative names in column C (e.g. A, B, C) max length 7 characters.

Each budget level for the same allocation must be considered a separate alternative. The "Current" alternative is fixed. There is space for up to 18 alternatives.

The first alternative after "Current" must be "No Action" if you plan to use **Table F. Cumulative Economic Impacts** in the "Tables for EIS" worksheet.

NOTE: Leave cells blank where an Alternative name/label is not needed.

User input is allowed only in the **GREEN**-colored cells.
Enter quantities for each output/outcome in by alternative in columns "D" through "V". All quantities must be expressed as annual averages
User Defined Categories Recreation, Wildlife & Fish and Ecosystem Restoration: Enter units for each output/outcome in column "C".

Resources

Output/Outcome Description	Units	Average Annual Quantity by Alt ===> Current	A (No Action)	B	C	D	0	0
Recreation								
NL-Day Trips	Visits	1,582	1,582	1,639	1,699	1,711		
NL-OVN-NF	Visits	2,373	2,373	2,459	2,548	2,567		
NL-OVN	Visits	5,538	5,538	5,737	5,946	5,990		
L-Day Trips	Visits	22,546	22,546	23,360	24,210	24,387		
L-OVN-NF	Visits	395	395	410	425	428		
L-OVN	Visits	7,120	7,120	7,377	7,645	7,701		
Recreation User Defined Category 1								
Recreation User Defined Category 2								
Recreation User Defined Category 3								
Recreation User Defined Category 4								
Recreation User Defined Category 5								
Recreation User Defined Category 6								
Recreation User Defined Category 7								
Recreation User Defined Category 8								
Recreation User Defined Category 9								
Recreation User Defined Category 10								
Range								
Cattle and Horses HM	HMs	430,506	430,506	430,506	430,506	430,506		
Sheep and Goats HM	HMs							
Wildlife & Fish								
NL-Day Trips	Visits	2,027	2,027	2,205	2,153	2,131		
NL-OVN-NF	Visits	3,041	3,041	3,308	3,229	3,196		
NL-OVN	Visits	7,096	7,096	7,719	7,534	7,458		
L-Day Trips	Visits	28,891	28,891	31,428	30,674	30,363		
L-OVN-NF	Visits	507	507	551	538	533		
L-OVN	Visits	9,123	9,123	9,924	9,687	9,558		
General Hunting (enter here if detail below unknown)								
Big Game Hunting								
Small Game Hunting								
Migratory Bird Hunting								
Other Game Hunting								
General Fishing (enter here is detail below unknown)								
Great Lakes Fishing								
Other Fresh Water Fishing								
Salt Water Fishing								
Non-consumptive Fish & Wildlife								
Wildlife & Fish User-Defined Category 1								
Wildlife & Fish User-Defined Category 2								
Wildlife & Fish User-Defined Category 3								
Wildlife & Fish User-Defined Category 4								
Wildlife & Fish User-Defined Category 5								

	A	B	C	D	E	F	G	H	I	J
76	***Timber***									
77		Harvest-Softwood Sawtimber	CCF	795	795	1,507	1,507	1,507		
78		Harvest-Softwood Pulp	CCF							
79		Harvest-Hardwood Sawtimber	CCF							
80		Harvest-Hardwood Pulp	CCF							
81		Poles	CCF							
82		Posts	CCF							
83		Fuelwood	CCF							
84		All Other Products	CCF							
85										
86	***Minerals***									
87		**1.** Oil and Gas Extraction (Sector 19)								
88		Natural Gas: 19	M Cubic Feet	15,328	5,821	7,999	12,043	14,949		
89		Crude Oil: 19	Barrels	288,250	109,450	150,400	266,450	281,100		
90		Natural Gas Liquids: 19	Gallons							
91		Carbon Dioxide: 19	M Cubic Feet							
92		Nitrogen: 19	M Cubic Feet							
93		Sulfur: 19	Long Tons							
94		**2.** Coal Mining (Sector 20)								
95		Coal: 20	Short Tons							
96		**3.** Iron Ore Mining (Sector 21)								
97		Iron Ore: 21	Short Tons							
98		**4.** Copper, Nickel, Lead and Zinc Mining (Sector 22)								
99		Copper: 22	Short Tons							
100		Gold: 22	Troy Ounces							
101		Lead: 22	Short Tons							
102		Molybdenum: 22	Short Tons							
103		Silver: 22	Troy Ounces							
104		Zinc: 22	Short Tons							
105		**5.** Gold, Silver, and Other Metal Ore Mining (Sector 23)								
106		Copper: 23	Short Tons							
107		Gold: 23	Troy Ounces							
108		Molybdenum: 23	Short Tons							
109		Palladium: 23	Troy Ounces							
110		Platinum: 23	Troy Ounces							
111		Silver: 23	Troy Ounces							
112		**6.** Stone Mining and Quarrying (Sector 24)								
113		Crushed Stone (Common Variety): 24	Short Tons							
114		Crushed Stone (High-Purity): 24	Short Tons							
115		Dimension Stone: 24	Short Tons							
116		**7.** Sand, Gravel, Clay, and Refractory Mining (Sector 25)								
117		Construction Sand and Gravel: 25	Short Tons	38,480	38,480	38,480	38,480	38,480		
118		Industrial Sand: 25	Short Tons							
119		Clay: 25	Short Tons	65,000	65,000	65,000	65,000	65,000		
120		Apatite: 25	Short Tons							
121		Ilmenite: 25	Short Tons							
122		Magnetite: 25	Short Tons							
123		**8.** Other Nonmetallic Mineral Mining (Sector 26)								
124		Gypsum: 26	Short Tons							
125		Mica: 26	Short Tons							
126		Phosphate: 26	Short Tons							

	A	B	C	D	E	F	G	H	I	J
127		Perlite: 26	Short Tons							
128		Pumice: 26	Short Tons							
129		Quartz Crystals: 26	Pounds							
130		Specialty Mineral Materials: 26	Short Tons							
131										
132		**Sector 27 Input Options**								
133		☐ Model impacts with a detailed expenditure profile ☑ Model impacts based on allocating expenditures entirely to Sector 27								
134		**9.** Drilling Oil and Gas Wells (Sector 27)-Dry Holes	Number	7	7	8	8	9		
135		**10.** Drilling Oil and Gas Wells (Sector 27)-Producers	Number	50	50	49	57	62		
136										
137		**11.** Support Activities for Oil and Gas Operations (Sector 28)	total $							
138		**12.** Support Activities for Other Mining (Sector 29)	total $							
139		**13.** Water, Sewage, and Other Systems (Sector 32)								
140		Geothermal: 32	Pounds Steam		40	40	40	40		
141		Hot Water: 32	kWh							
142		**14.** Ferroalloy and Related Product Manufacturing (Sector 204)								
143		Molybdenum: 204	Short Tons							
144		**15.** Primary Smelting and Refining of Copper (Sector 214)								
145		Copper: 214	Short Tons							
146		Molybdenum: 214	Short Tons							
147		Silver: 214	Short Tons							
148		**16.** Primary Nonferrous Metal, Except Copper and Aluminum (Sector 215)								
149		Copper: 215	Short Tons							
150		Gold: 215	Troy Ounces							
151		Lead: 215	Short Tons							
152		Zinc: 215	Short Tons							
153		Silver: 215	Troy Ounces							
154		Platinum: 215	Troy Ounces							
155		Palladium: 215	Troy Ounces							
156										
		Ecosystem Restoration project dollars are assumed to come from Stewardship project revenues. However, if the source of funds come from the Forest budget the budget amount on the FIN Data Entry worksheet must be reduced by that amount. Double counting of impacts would occur otherwise.								
157	***Ecosystem Restoration***									
158		PreCommercial Thinning	Acres	169	169	364	364	364		
159		Tree Planting	Acres							
160		Weed Spraying	Acres	806	806	806	806	806		
161		Mastication	Acres							
162		Prescribed Burning	Acres							
163		Road Work: Non-timber	Miles							
164		Road Decommissioning	Miles							
165		Road Closures	Miles							
166		Culvert Replacement	Number							
167		Burning and mechanical treatment - grasslands - BLM	Acres	355	355	355	355	355		

	A	B	C	D	E	F	G	H	I	J
168		Burning - forests - BLM	Acres	43	43	1033	1033	1033		
169		Mine reclamation and water treatment - contract	Project	1	1	1	1	1		
170		Weed Spraying - BLM	Acres	473	473	473	473	473		
171		Ecosystem Restoraton User-Defined Category 5								
172										
173	***User Notes/Documentation***									
174										
175		John has decided that we'll account for govt expenditures for ecosystem restoration on this page so that the report will reflect the economic impact of ecosystem restoration by both								
176		the BLM and by contract. The budget line on the financial data entry page will be reduced appropriately.								
177		Row 140 is actually operation of a wind farm. Construction jobs have been smeared								
178		over the 20 year life of the project.								
179		The units are -								
180										
181										
182										
183										
184										
185										
186										
187										
188										
189										
190										
191										
192										
193										
194										

Forest Financial Data Entry

User input is allowed only in the **GREEN**-colored cells and the yellow colored cells in the notes section below.

The Secure Rural Schools Act has not been renewed for 2007 a
allow different proportions for all alternatives. For example, the C
which Secure Rural School payments were made and thus there
II project allocations. But, all other alternatives may reflect 2007
this case only Roads and Schools allocations should be made.

GDP Implicit Price Deflators

	Base Year	GDP Deflator
Select year of dollars for this page	2008	1.2160
Select year of dollars for results tables	2008	1.2160

	Units	Average Annual $1,000 by Alt ===> Current	A (No Action)	B	C	D	0	0	Average Ann 0
Program Level Collections									
Recreation Revenues	$1,000								
Range Revenues	$1,000								
Timber Revenues									
Softwood Sawtimber Revenues	$1,000								
Softwood Pulp Revenues	$1,000								
Hardwood Sawtimber Revenues	$1,000								
Hardwood Pulp Revenues	$1,000								
Poles Revenues	$1,000								
Posts Revenues	$1,000								
Fuelwood Revenues	$1,000								
All Other Products Revenues	$1,000								
Total Timber Revenues	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
Protection Revenues (Non-Recreation Special Uses)	$1,000								
Mineral Revenues	$1,000								
Total All Program Revenues	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
Payments (Secure Rural Schools Act full payments and/or 25% payments)									
Total Payments to Counties	$1,000	$2,233	$2,070	$2,109	$2,216	$2,230			
Payments Used For:		The percents in the 4 cells below MUST add to 100 percent for each alternative that there is pa							
Roads	percent								
Schools	percent								
General Gov't	percent	100.00%	100.00%	100.00%	100.00%	100.00%			
Title II Projects	percent								
Total	percent	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	0.00%	0.00%

Roads	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
Schools	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
General Gov't	$1,000	$2,233	$2,070	$2,109	$2,216	$2,230	$0	$0	$0
Title II Projects	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
Total	$1,000	$2,233	$2,070	$2,109	$2,216	$2,230	$0	$0	$0

Mineral Payments

25% Fund Payments Not Included Above	$1,000								
Payments Subject to Different (i.e., non-25%) Distribution to Counties	$1,000								
Total	$1,000	$0	$0	$0	$0	$0	$0	$0	$0

Payments Used For: The percents in the 4 cells below MUST add to 100 percent for each alternative that there is pa

Roads	percent								
Schools	percent								
General Gov't	percent								
Total	percent	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Roads	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
Schools	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
General Gov't	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
Total	$1,000	$0	$0	$0	$0	$0	$0	$0	$0

Total Secure Rural Schools/25% Fund (Full Payment + Minerals)

Roads	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
Schools	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
General Gov't	$1,000	$2,233	$2,070	$2,109	$2,216	$2,230	$0	$0	$0
Title II Projects	$1,000	$0	$0	$0	$0	$0	$0	$0	$0
Total	$1,000	$2,233	$2,070	$2,109	$2,216	$2,230	$0	$0	$0

FS Budget Expenditures All Programs

All Programs	$1,000	$6,312	$5,215	$5,388	$5,388	$5,388	$0	$0	$0

FS Employment

Permanent	FTEs	35	35	35	35	35			
Other than permanent	FTEs	23	23	23	23	23			
Total Employment	FTEs	58	58	58	58	58	0	0	0

Economist Data Entry

Date Loaded: September 10, 2008
Implan Model: C:\Program Files\IMPLAN Professional 2.0\Models\Malta RMP 06.iap

GDP Implicit Price Deflators

Select year of IMPLAN model/data	Base Year	GDP Deflator
	2006	1.1747

IMPLAN Model Variables

Employment (jobs)	35,886
Employee Compensation (dollars)	937,813,000
Proprietary Income (dollars)	215,544,000
Labor Income (dollars)	1,153,358,000
Other Property Income (dollars)	650,268,000
Total Income (dollars)	1,803,625,000
SAM Disposable Income Proportion	0.8641

Dollars expressed in year of IMPLAN model/data

Note: The Timber Option controls how timber data is loaded when retrieving model data.

Click Timber Option Is Currently Set to: **Timber Mill Survey Method**

Economic Indicators for Cumulative Effects Table

	Current Year	Future Year
Years to be Compared	2008	2008
Total Area Employment in Referenced Years (jobs)	1	1
Total Area Labor Income in Referenced Years* ($1,000,000)	$0	$0

* expressed in same dollars as stated in "Fin Data Entry!C6"

A

2-Digit Aggregation Industries

Professiona

Managen

A

	A	B	C	D	E	F	G	H
28	**Resources**							
29		***Recreation***						
30			Unit Conversions for Expenditure Studies			Non-Local		
31			One Res Data	= This Number	Expenditure	Percent of	Total Expenditures	
32			Entry Unit	of	Study Units	Total Use	Per Unit	Data Year
33		NL-Day Trips	Visits	0.4348	Party-Trip	100%	$53.76	2001
34		NL-OVN-NF	Visits	0.4000	Party-Trip	100%	$151.33	2001
35		NL-OVN	Visits	0.3704	Party-Trip	100%	$244.46	2001
36		L-Day Trips	Visits	0.4762	Party-Trip	na	na	na
37		L-OVN-NF	Visits	0.4000	Party-Trip	na	na	na
38		L-OVN	Visits	0.4000	Party-Trip	na	na	na
39		Recreation User Defined Category 1	0		--	0%	$0.00	2001
40		Recreation User Defined Category 2	0		--	0%	$0.00	2001
41		Recreation User Defined Category 3	0		--	0%	$0.00	2001
42		Recreation User Defined Category 4	0		--	0%	$0.00	2001
43		Recreation User Defined Category 5	0		--	0%	$0.00	2001
44		Recreation User Defined Category 6	0		--	0%	$0.00	2001
45		Recreation User Defined Category 7	0		--	0%	$0.00	2001
46		Recreation User Defined Category 8	0		--	0%	$0.00	2001
47		Recreation User Defined Category 9	0		--	0%	$0.00	2001
48		Recreation User Defined Category 10	0		--	0%	$0.00	2001
49		***Range***						
50		**Income, Marketings, & Sales Data**		Year of Data	GDP Delfator			
51		Source: State Ag. Stat. Bureau or US Ag Census.		2006	1.1747			
52								
53		County-Level Data	County	Cattle &	Sheep &	County	Cattle &	Sheep &
54			Name	Calves	Lambs	Name	Calves	Lambs
55		Enter County names for impact area and	Model area	41,817		County 11		
56		inventories **(number of animals)** for each type	County 2			County 12		
57		of livestock (animals).	County 3			County 13		
58			County 4			County 14		
59			County 5			County 15		
60			County 6			County 16		
61			County 7			County 17		
62			County 8			County 18		
63			County 9			County 19		
64			County 10			County 20		
65								
66			Area Total	41,817	0			
67								
68		State-Level Data						
69		State	Montana		State 2		State 3	
70			Cattle &	Sheep &	Cattle &	Sheep &	Cattle &	Sheep &
71			Calves	Lambs	Calves	Lambs	Calves	Lambs
72		Total Inventory (animals)	3,967,000					
73		Total Marketings (animals)	1,578,000					
74		Total Gross Income ($1,000)*	$1,117,548					
75		Selling Price per animal	$ 708.21	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
76		* Equals cash receipts plus value of home consumption.						
77								
78		FS Use Data for Same Year as Inventory Data	Cattle &	Sheep &				
79			Calves	Lambs				
80		Head-months	430,506	0				
81								

	A	B	C	D	E	F	G	H
82		***Wildlife & Fish***						
83			Unit Conversions for Expenditure Studies			Non-Local		
84			One Res Data	= This Number	Expenditure	Percent of	Total Expenditures	
85			Entry Unit	of	Study Units	Total Use	Per Unit	Base Year
86		NL-Day Trips	Visits	0.4348	Party-Trip	100%	$40.71	2001
87		NL-OVN-NF	Visits	0.4000	Party-Trip	100%	$203.78	2001
88		NL-OVN	Visits	0.3704	Party-Trip	100%	$249.95	2001
89		L-Day Trips	Visits	0.4762	Party-Trip	na	na	na
90		L-OVN-NF	Visits	0.4000	Party-Trip	na	na	na
91		L-OVN	Visits	0.4000	Party-Trip	na	na	na
92		General Hunting (enter if detail below unknown)	0		--	0%	$0.00	2001
93		Big Game Hunting	0		--	0%	$0.00	2001
94		Small Game Hunting	0		--	0%	$0.00	2001
95		Migratory Bird Hunting	0		--	0%	$0.00	2001
96		Other Game Hunting	0		--	0%	$0.00	2001
97		General Fishing (enter if detail below unknown)	0		--	0%	$0.00	2001
98		Great Lakes Fishing	0		--	0%	$0.00	2001
99		Other Fresh Water Fishing	0		--	0%	$0.00	2001
100		Salt Water Fishing	0		--	0%	$0.00	2001
101		Non-consumptive Fish & Wildlife	0		--	0%	$0.00	2001
102		Wildlife & Fish User-Defined Category 1	0		--	0%	$0.00	2001
103		Wildlife & Fish User-Defined Category 2	0		--	0%	$0.00	2001
104		Wildlife & Fish User-Defined Category 3	0		--	0%	$0.00	2001
105		Wildlife & Fish User-Defined Category 4	0		--	0%	$0.00	2001
106		Wildlife & Fish User-Defined Category 5	0		--	0%	$0.00	2001

	A	B	C	D	E	F	G	H
107	*Timber*							
108		☐ No Timber ☐ Timber Mill Survey Method ☐ Timber RAC Method ☐ Show All (developers only)						
134								
142								
143								
144								
145								
146		**Timber Mill Survey Product Distributions**						
147		***Enter % of Harvest Logged by Those Based in Model Area***						% Distribution
148			Types of	NAICS	IMPLAN	Softwood		
149		Description	Prdts Shipped	Numbers	Number	Sawtimber	Pulp	Sawtimber
150		Logging Camps and Logging Contractors	logs/pulp exported out of area, untreated posts/poles	1133	14	100%		
151		Households	personal use	--	494			
152		Totals -- must be less than or equal to 100%				100%	0%	0%
153								
154		***Enter % of Harvest Processed by Firms Based in Model Area***						% Distribution
155			Types of	NAICS	IMPLAN	Softwood		
156		Description	Prdts Shipped	Numbers	Number	Sawtimber	Pulp	Sawtimber
157		Sawmills and Planing Mills, General	lumber, bolts, woodchips, pallets	321113	112	0%		
158		Wood Preservation (Other Manufacturing)	all treated prdts	321114	113			
159		Reconstituted Wood Products (Residue)	particleboard	321219	114			
160		Veneer and Plywood	veneer, plywood	321211 & 321212	115			
161		Prefabricated Wood Buildings (Other Manufacturing)	residential/farm bldgs, log homes	321992	122			
162		Pulp Mills (Residue)	pulp	32211	124			
163		Paper and Paperboard Mills (Residue)	paper	32212 & 32213	125			
164		Paperboard Container Manufacturing (Residue)	container board, paper boxes	32221	126			
165		Totals -- must be less than or equal to 100%				0%	0%	0%
166								

Northern Rockies

Keegan Timber Method

	Direct	Indirect	Induced	Total
	Logging Camps & Contractors			
Employment (Jobs/MMCF)	23.0	10.5	7.9	41.3
Employee Comp ($M/MMCF)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Labor Inc ($M/MMCF)	644.000	294.934	173.419	1,112.353
Total Inc ($M/MMCF)	1,031.191	496.281	346.647	1,874.119
	Sawmills			
Employment (Jobs/MMCF)	21.0	0.0	0.0	21.0
Employee Comp ($M/MMCF)	714.000	0.000	0.000	714.000
Labor Inc ($M/MMCF)	714.000	0.000	0.000	714.000
Total Inc ($M/MMCF)	714.000	0.000	0.000	714.000
	Plywood			
Employment (Jobs/MMCF)	27.0	0.0	0.0	27.0
Employee Comp ($M/MMCF)	972.000	0.000	0.000	972.000
Labor Inc ($M/MMCF)	972.000	0.000	0.000	972.000
Total Inc ($M/MMCF)	972.000	0.000	0.000	972.000
	Other			
Employment (Jobs/MMCF)	90.0	0.0	0.0	90.0
Employee Comp ($M/MMCF)	1,980.000	0.000	0.000	1,980.000
Labor Inc ($M/MMCF)	1,980.000	0.000	0.000	1,980.000
Total Inc ($M/MMCF)	1,980.000	0.000	0.000	1,980.000
	Residue			
Employment (Jobs/MMCF)	12.0	0.0	0.0	12.0
Employee Comp ($M/MMCF)	612.000	0.000	0.000	612.000
Labor Inc ($M/MMCF)	612.000	0.000	0.000	612.000
Total Inc ($M/MMCF)	612.000	0.000	0.000	612.000

	A	B	C	D	E	F	G	H
199		***Minerals***						
200		Industry/Product Names	Units	Price/Unit				
201		**1. Oil and Gas Extraction (Sector 19)**						
202		Natural Gas: 19	m cubic feet	$ 9.00				
203		Crude Oil: 19	barrel	$ 115.00				
204		Natural Gas Liquids: 19	gallon					
205		Carbon Dioxide: 19	m cubic feet					
206		Nitrogen: 19	m cubic feet					
207		Sulfur: 19	long ton					
208		**2. Coal Mining (Sector 20)**						
209		Coal: 20	short ton					
210		**3. Iron Ore Mining (Sector 21)**						
211		Iron Ore: 21	short ton					
212		**4. Copper, Nickel, Lead and Zinc Mining (Sector 22)**						
213		Copper: 22	pound					
214		Gold: 22	troy ounce					
215		Lead: 22	pound					
216		Molybdenum: 22	pound					
217		Silver: 22	troy ounce					
218		Zinc: 22	pound					
219		**5. Gold, Silver, and Other Metal Ore Mining (Sector 23)**						
220		Copper: 23	pound					
221		Gold: 23	troy ounce					
222		Molybdenum: 23	pound					
223		Palladium: 23	troy ounce					
224		Platinum: 23	troy ounce					
225		Silver: 23	troy ounce					
226		**6. Stone Mining and Quarrying (Sector 24)**						
227		Crushed Stone (Common Variety): 24	short ton					
228		Crushed Stone (High-Purity): 24	short ton					
229		Dimension Stone: 24	short ton					
230		**7. Sand, Gravel, Clay, and Refractory Mining (Sector 25)**						
231		Construction Sand and Gravel: 25	short ton	$ 4.00				
232		Industrial Sand: 25	short ton					
233		Clay: 25	short ton	$ 55.00				
234		Apatite: 25	short ton					
235		Ilmenite: 25	short ton					
236		Magnetite: 25	short ton					
237		**8. Other Nonmetallic Mineral Mining (Sector 26)**						
238		Gypsum: 26	short ton					
239		Mica: 26	short ton					
240		Phosphate: 26	short ton					
241		Perlite: 26	short ton					
242		Pumice: 26	short ton					
243		Quartz Crystals: 26	pound					
244		Specialty Mineral Materials: 26	short ton					
245		**9.** Drilling Oil and Gas Wells (Sector 27)-Dry Hole	$/dry hole/yr	$ 72,000.00				
246		**10.** Drilling Oil and Gas Wells (Sector 27)-Producer	$/producer/yr	$ 120,000.00				
247		**13. Water, Sewage, and Other Systems (Sector 32)**						
248		Geothermal: 32	pound steam	$ 88.500				
249		Hot Water: 32	kWh					
250		**14. Ferroalloy and Related Product Manufacturing (Sector 204)**						
251		Molybdenum: 204	pound					
252		**15. Primary Smelting and Refining of Copper (Sector 214)**						
253		Copper: 214	pound					
254		Molybdenum: 214	pound					
255		Silver: 214	troy ounce					
256		**16. Primary Nonferrous Metal, Except Copper and Aluminum (Sector 215)**						
257		Copper: 215	pound					

Note: To insure that sector expenditures are properly calculated, **minera**
restoration costs entered on this page should be expressed in the **sam**
base year. If IMPLAN base year mineral prices and ecosystem restorati
conversion calculation should be made outside of FEAST using appropri

At least item 9 Dry Holes and/or 10 Producer are required entries

	A	B	C	D	E	F	G	H
258		Gold: 215	troy ounce					
259		Lead: 215	pound					
260		Zinc: 215	pound					
261		Silver: 215	troy ounce					
262		Platinum: 215	troy ounce					
263		Palladium: 215	troy ounce					
264				Current	A (No Action)	B	C	D
265		***Ecosystem Restoration***	Units	Cost/Unit==> by Alternative				
266		PreCommercial Thinning	Acres	$718.00	$718.00	$718.00	$718.00	$718.00
267		Tree Planting	Acres					
268		Weed Spraying	Acres	$198.33	$198.33	$198.33	$198.33	$198.33
269		Mastication	Acres					
270		Prescribed Burning	Acres					
271		Road Work: Non-timber	Miles					
272		Road Decommissioning	Miles					
273		Road Closures	Miles					
274		Culvert Replacement	Number					
275		Burning and mechanical treatment - grasslands - BLM	Acres	$24.00	$24.00	$24.00	$24.00	$24.00
276		Burning - forests - BLM	Acres	$942.00	$942.00	$942.00	$942.00	$942.00
277		Mine reclamation and water treatment - contract	Project	$2,479,000.00	$2,479,000.00	$2,479,000.00	$2,479,000.00	$2,479,000.00
278		Weed Spraying - BLM	Acres	$198.33	$198.33	$198.33	$198.33	$198.33
279		Ecosystem Restoraton User-Defined Category 5	0					

Economist Data Entry -- Budget Object Codes

Forest: Malta August 11 Revision
Fiscal Year: 2006
Instructions:

Select BOC Import / Download BOC Expenditure Spreadsheet from the menu bar ab
Spreadsheet from Fort Collins IMI Website (http://fsweb.ftcol.wo.fs.fed.us/imi/econor
Import / Import BOC Data to update the BOC Data on this page with that of the dowr

Fiscal Year	Reg_Forest	Unit_Name	
2004	0118	Malta RMP	
	Total Expenditure:		$5,833,257.00
	Proportion FS Salary Expenditure:		0.5359
	Proportion FS Nonsalary Expenditure:		0.4641

Multiple Forest Proportions for IMPLAN FS Non-Salary Group Weights

Fiscal Year	Reg_Forest	Unit_Name

IMPLAN Model Used:

C:\Program Files\IMPLAN Professional 2.0\Models\Malta RMP 06.iap

110	Response Coefficient	Aggregate RC Loaded?	Date Loaded	2-Digit RC Loaded?	Date Loaded	Table Name: Do Not Change	Data Exist and No RC Loaded
1	IMT$1MM FS NONSALARY	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM FS NONSALARY	
2	IMT$1MM ROADS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM ROADS	
3	IMT$1MM SCHOOLS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM SCHOOLS	
4	IMT$1MM GENERAL GOVERNMENT	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM GENERAL GOVERNMENT	
5	IMT$1MM TITLE II PROJECTS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM TITLE II PROJECTS	
6	IMT$1MM FS SALARY	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM FS SALARY	
7	IMT$1MM REC NonLocal DAY	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM REC NonLocal DAY	
8	IMT$1MM REC NonLocal Over Night ON NF	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM REC NonLocal Over Night ON NF	
9	IMT$1MM REC NonLocal Over Night OFF NF	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM REC NonLocal Over Night OFF NF	
10	IMT$1MM REC Local DAY	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM REC Local DAY	
11	IMT$1MM REC Local Over Night ON NF	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM REC Local Over Night ON NF	
12	IMT$1MM REC Local Over Night OFF NF	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM REC Local Over Night OFF NF	
13	IMT$1MM NR Recreation User Defined Category 1	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 1	
14	IMT$1MM NR Recreation User Defined Category 2	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 2	
15	IMT$1MM NR Recreation User Defined Category 3	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 3	
16	IMT$1MM NR Recreation User Defined Category 4	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 4	
17	IMT$1MM NR Recreation User Defined Category 5	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 5	
18	IMT$1MM NR Recreation User Defined Category 6	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 6	
19	IMT$1MM NR Recreation User Defined Category 7	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 7	
20	IMT$1MM NR Recreation User Defined Category 8	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 8	
21	IMT$1MM NR Recreation User Defined Category 9	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 9	
22	IMT$1MM NR Recreation User Defined Category 10	No	Table Not Found	No	Table not found	IMT$1MM NR Recreation User Defined Category 10	
23	IMT$1MM RES Recreation User Defined Category 1	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 1	
24	IMT$1MM RES Recreation User Defined Category 2	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 2	
25	IMT$1MM RES Recreation User Defined Category 3	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 3	
26	IMT$1MM RES Recreation User Defined Category 4	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 4	
27	IMT$1MM RES Recreation User Defined Category 5	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 5	
28	IMT$1MM RES Recreation User Defined Category 6	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 6	
29	IMT$1MM RES Recreation User Defined Category 7	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 7	
30	IMT$1MM RES Recreation User Defined Category 8	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 8	
31	IMT$1MM RES Recreation User Defined Category 9	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 9	
32	IMT$1MM RES Recreation User Defined Category 10	No	Table Not Found	No	Table not found	IMT$1MM RES Recreation User Defined Category 10	
33	IMT$1MM LOGGING CAMPS	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM LOGGING CAMPS	
34	IMT$1MM SAWMILLS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM SAWMILLS	
35	IMT$1MM WOOD PRESERVATION	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM WOOD PRESERVATION	
36	IMT$1MM RECONSTITUTED WOOD	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM RECONSTITUTED WOOD	
37	IMT$1MM VENEER AND PLYWOOD	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM VENEER AND PLYWOOD	
38	IMT$1MM ENGINEERED WOOD	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM ENGINEERED WOOD	
39	IMT$1MM WINDOWS AND DOORS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM WINDOWS AND DOORS	
40	IMT$1MM CUT STOCK	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM CUT STOCK	
41	IMT$1MM OTHER MILLWORK	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM OTHER MILLWORK	
42	IMT$1MM CONTAINER AND PALLETS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM CONTAINER AND PALLETS	
43	IMT$1MM PREFAB BUILDINGS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM PREFAB BUILDINGS	
44	IMT$1MM MISC PRODUCTS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM MISC PRODUCTS	
45	IMT$1MM PULP MILLS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM PULP MILLS	
46	IMT$1MM PAPER AND PAPERBOARD MILLS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM PAPER AND PAPERBOARD MILLS	
47	IMT$1MM PAPERBOARD CONTAINER MANUF	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM PAPERBOARD CONTAINER MANUF	
48	IMT$1MM OIL & GAS EXTRACTION	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM OIL & GAS EXTRACTION	
49	IMT$1MM COAL	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM COAL	
50	IMT$1MM IRON ORE	No	Table Not Found	No	Table not found	IMT$1MM IRON ORE	
51	IMT$1MM COPPER NICKEL LEAD & ZINC	No	Table Not Found	No	Table not found	IMT$1MM COPPER NICKEL LEAD & ZINC	
52	IMT$1MM GOLD SILVER & OTHER METALS	No	Table Not Found	No	Table not found	IMT$1MM GOLD SILVER & OTHER METALS	

53	IMT$1MM STONE	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM STONE	
54	IMT$1MM SAND GRAVEL CLAY & REFRACTORY	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM SAND GRAVEL CLAY & REFRACTORY	
55	IMT$1MM OTHER NONMETALLICS	No	Table Not Found	No	Table not found	IMT$1MM OTHER NONMETALLICS	
56	IMT$1MM DRILLING OIL & GAS WELLS	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM DRILLING OIL & GAS WELLS	
57	IMT$1MM SUPPORT OIL & GAS	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM SUPPORT OIL & GAS	
58	IMT$1MM SUPPORT OTHER MINING	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM SUPPORT OTHER MINING	
59	IMT$1MM WATER SEWAGE & OTHER	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM WATER SEWAGE & OTHER	
60	IMT$1MM FERROALLOY PROD	No	Table Not Found	No	Table not found	IMT$1MM FERROALLOY PROD	
61	IMT$1MM PRIMARY COPPER	No	Table Not Found	No	Table not found	IMT$1MM PRIMARY COPPER	
62	IMT$1MM PRIMARY NONFERROUS	No	Table Not Found	No	Table not found	IMT$1MM PRIMARY NONFERROUS	
63	IMT#OIL & GAS-DRY HOLES	Yes	9/10/2008	Yes	9/10/2008	IMT#OIL & GAS-DRY HOLES	
64	IMT#OIL & GAS-PRODUCERS	Yes	9/10/2008	Yes	9/10/2008	IMT#OIL & GAS-PRODUCERS	
65	IMT$1MM CATTLE GRAZING	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM CATTLE GRAZING	
66	IMT$1MM SHEEP GRAZING	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM SHEEP GRAZING	
67	IMT$1MM WL NonLocal DAY	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM WL NonLocal DAY	
68	IMT$1MM WL NonLocal Over Night ON NF	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM WL NonLocal Over Night ON NF	
69	IMT$1MM WL NonLocal Over Night OFF NF	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM WL NonLocal Over Night OFF NF	
70	IMT$1MM WL Local DAY	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM WL Local DAY	
71	IMT$1MM WL Local Over Night ON NF	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM WL Local Over Night ON NF	
72	IMT$1MM WL Local Over Night OFF NF	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM WL Local Over Night OFF NF	
73	IMT$1MM RES GEN HUNTING	No	Table Not Found	No	Table not found	IMT$1MM RES GEN HUNTING	
74	IMT$1MM RES GEN FISHING	No	Table Not Found	No	Table not found	IMT$1MM RES GEN FISHING	
75	IMT$1MM RES NC WILDLIFE	No	Table Not Found	No	Table not found	IMT$1MM RES NC WILDLIFE	
76	IMT$1MM RES BIG GAME HUNTING	No	Table Not Found	No	Table not found	IMT$1MM RES BIG GAME HUNTING	
77	IMT$1MM RES SMALL GAME HUNTING	No	Table Not Found	No	Table not found	IMT$1MM RES SMALL GAME HUNTING	
78	IMT$1MM RES MIGRATORY BIRD	No	Table Not Found	No	Table not found	IMT$1MM RES MIGRATORY BIRD	
79	IMT$1MM RES OTHER GAME	No	Table Not Found	No	Table not found	IMT$1MM RES OTHER GAME	
80	IMT$1MM RES GREAT LAKES FISHING	No	Table Not Found	No	Table not found	IMT$1MM RES GREAT LAKES FISHING	
81	IMT$1MM RES OTHER FRESH WATER	No	Table Not Found	No	Table not found	IMT$1MM RES OTHER FRESH WATER	
82	IMT$1MM RES SALT WATER FISHING	No	Table Not Found	No	Table not found	IMT$1MM RES SALT WATER FISHING	
83	IMT$1MM NR GEN HUNTING	No	Table Not Found	No	Table not found	IMT$1MM NR GEN HUNTING	
84	IMT$1MM NR GEN FISHING	No	Table Not Found	No	Table not found	IMT$1MM NR GEN FISHING	
85	IMT$1MM NR NC WILDLIFE	No	Table Not Found	No	Table not found	IMT$1MM NR NC WILDLIFE	
86	IMT$1MM NR BIG GAME HUNTING	No	Table Not Found	No	Table not found	IMT$1MM NR BIG GAME HUNTING	
87	IMT$1MM NR SMALL GAME HUNTING	No	Table Not Found	No	Table not found	IMT$1MM NR SMALL GAME HUNTING	
88	IMT$1MM NR MIGRATORY BIRD	No	Table Not Found	No	Table not found	IMT$1MM NR MIGRATORY BIRD	
89	IMT$1MM NR OTHER GAME	No	Table Not Found	No	Table not found	IMT$1MM NR OTHER GAME	
90	IMT$1MM NR GREAT LAKES FISHING	No	Table Not Found	No	Table not found	IMT$1MM NR GREAT LAKES FISHING	
91	IMT$1MM NR OTHER FRESH WATER	No	Table Not Found	No	Table not found	IMT$1MM NR OTHER FRESH WATER	
92	IMT$1MM NR SALT WATER FISHING	No	Table Not Found	No	Table not found	IMT$1MM NR SALT WATER FISHING	
93	IMT$1MM NR Wildlife & Fish User-Defined Category 1	No	Table Not Found	No	Table not found	IMT$1MM NR Wildlife & Fish User-Defined Category 1	
94	IMT$1MM NR Wildlife & Fish User-Defined Category 2	No	Table Not Found	No	Table not found	IMT$1MM NR Wildlife & Fish User-Defined Category 2	
95	IMT$1MM NR Wildlife & Fish User-Defined Category 3	No	Table Not Found	No	Table not found	IMT$1MM NR Wildlife & Fish User-Defined Category 3	
96	IMT$1MM NR Wildlife & Fish User-Defined Category 4	No	Table Not Found	No	Table not found	IMT$1MM NR Wildlife & Fish User-Defined Category 4	
97	IMT$1MM NR Wildlife & Fish User-Defined Category 5	No	Table Not Found	No	Table not found	IMT$1MM NR Wildlife & Fish User-Defined Category 5	
98	IMT$1MM RES Wildlife & Fish User-Defined Category 1	No	Table Not Found	No	Table not found	IMT$1MM RES Wildlife & Fish User-Defined Category 1	
99	IMT$1MM RES Wildlife & Fish User-Defined Category 2	No	Table Not Found	No	Table not found	IMT$1MM RES Wildlife & Fish User-Defined Category 2	
100	IMT$1MM RES Wildlife & Fish User-Defined Category 3	No	Table Not Found	No	Table not found	IMT$1MM RES Wildlife & Fish User-Defined Category 3	
101	IMT$1MM RES Wildlife & Fish User-Defined Category 4	No	Table Not Found	No	Table not found	IMT$1MM RES Wildlife & Fish User-Defined Category 4	
102	IMT$1MM RES Wildlife & Fish User-Defined Category 5	No	Table Not Found	No	Table not found	IMT$1MM RES Wildlife & Fish User-Defined Category 5	
103	IMT$1MM ER EcoSystem Forest Services NonRoads	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM ER EcoSystem Forest Services NonRoads	
104	IMT$1MM ER Mastication	No	Table Not Found	No	Table not found	IMT$1MM ER Mastication	
105	IMT$1MM ER Roads	No	Table Not Found	No	Table not found	IMT$1MM ER Roads	
106	IMT$1MM ER Burning and mechanical treatment - grasslands -	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM ER Burning and mechanical treatment - grasslands -	
107	IMT$1MM ER Burning - forests - BLM	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM ER Burning - forests - BLM	
108	IMT$1MM ER Mine reclamation and water treatment - contract	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM ER Mine reclamation and water treatment - contract	
109	IMT$1MM ER Weed Spraying - BLM	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM ER Weed Spraying - BLM	
110	IMT$1MM ER Ecosystem Restoraton User-Defined Category 5	No	Table Not Found	No	Table not found	IMT$1MM ER Ecosystem Restoraton User-Defined Category 5	

No.	Impact Tables Necessary for Mill Survey Method	Aggregate RC Loaded?	Date Loaded	2-Digit RC Loaded?	Date Loaded	Table Name: Do Not Change	MillSurvey Method is Checked
111	IMT$1MM LOGGING CAMPS	Yes	9/10/2008	Yes	9/10/2008	IMT$1MM LOGGING CAMPS	
112	IMT$1MM SAWMILLS	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM SAWMILLS	
113	IMT$1MM OTHER MANUFACTURING	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM OTHER MANUFACTURING	
114	IMT$1MM RESIDUE	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM RESIDUE	
115	IMT$1MM VENEER AND PLYWOOD	No	able Exist: No Da	No	able Exist: No Da	IMT$1MM VENEER AND PLYWOOD	

+Malta RMP Economic Data Request (7/26/06)

Field Office Resource Specialist Data Request: For each alternative the following information should be collected. These data should reflect average annual use levels.

Resources (Output/Outcome Description)

Recreation (not related to fishing/hunting):

1. Non-Local Day Trips (visits) e.g. picnicing
2. Non-Local Overnight on BLM (visits) e.g. camping
3. Non-Local Overnight off BLM (visits) e.g. camping
4. Local Day Trips (visits) e.g. picnicing
5. Local Overnight on BLM (visits) e.g. camping
6. Local Overnight off BLM (visits) e.g. camping

Wildlife and Fish related Recreation:

7. Non-Local Trips (visits) e.g. bird/wildlife viewing
8. Non-Local Overnight on BLM (visits) e.g. bird/wildlife viewing
9. Non-Local Overnight off BLM (visits) e.g. bird/wildlife viewing
10. Local day trips (visits) e.g. bird/wildlife viewing
11. Local Overnight on BLM (visits) e.g. bird/wildlife viewing
12. Local Overnight off BLM (visits) e.g. bird/wildlife viewing
13. General Hunting (visits) (enter here if details below are unknown)
14. Big game hunting (visits)
15. Small game hunting (visits)
16. Migratory Bird hunting (visits)
17. Other Game Hunting (visits)
18. General Fishing (visits) (enter here if details below are unknown)
19. Lake fishing (visits)
20. Stream fishing (visits)
21. Non-consumptive Fish and Wildlife (visits) e.g. antler hunting

Recreation: FEAST Resource Data Entry

Row	Description	Current	A	B	C	D
General Recreation						
32	NL-Day Trips (visits)	1,187	14,840 x 0.08= 1,187			
33	NL-OVN-BLM (visits)	1,039	14,840 x .07 = 1,039			
34	NL-OVN (visits)	2,671	14,840 x .18 = 2,671			
35	L- Day trips (visits)	6,975	14,840 x .47 = 6,975			
36	L-OVN-BLM (visits)	1,070	14,840 x .06 = 1,070			
37	L-OVN (visits)	2,078	14,840 x .14 = 2,078			
Fish and Wildlife Related Recreation						
54	NL-Day Trips (visits)	3,053	38,160 x 0.08 = 3,053			
55	NL-OVN-BLM (visits)	2,671	38,160 x 0.07 = 2,671			
56	NL-OVN (visits)	6,869	38,160 x .18 = 6,869			
57	Local Day Trips (visits)	17,935	38,160 x .47 = 17,935			

58	L-OVN-BLM (visits)	2,290	38,160 x 0.06 = 2,290
59	L-OVN (visits)	5,342	38,160 x .14 = 5,342
60	General hunting data (visits)	22,260	
65	General fishing data (visits)	6,890	

Recreation Assumptions:

1. Assumption: 8 *% of BLM visits are non-local day use visits, 7 % are non-local overnight stays on BLM, 18 % involve overnight stays by non-locals, 47 % involve local day use, 6 % involve local overnight stays on BLM, and 14% involve overnight stays off BLM.* See Table 1. Multiply these percentages times the total estimated BLM recreation use for each alternative. These values will fill in the blanks 1-6 above. Basis for assumption: Recreation use on BLM lands is similar to the average of that which occurs on the Lewis and Clark National Forest and the Dakota Prairie NF (Tables 1 and 2). The average of non-local and local use, day use, overnight stays on the Forests, and overnight stays off the Forests, as well as average expenditures for day trips and overnight trips are reasonable indicators of these characteristics associated with dispersed recreation use on BLM lands in the Malta Field Office.

Table 1. Percent of Use on Forests
(Spreading nonprimary use proportionally among reported use)

Forest	Non-Local Segments			Local Segments			Non Primary
	Day	OVN-NF	OVN	Day	OVN-NF	OVN	
Lewis and Clark NF	12	7	21	40	12	8	0
Dakota Priarie NF	4	7	15	53	1	20	
Average	8	7	18	47	6	14	

Source: Stynes, Daniel J. and Eric M. White, Spending Profiles of National Forest Visitors, NVUM Four Year Report, May 2005, Appendix A-2, pg. 26, 27.

Table 3. Spending Averages by Forest and Day Versus Overnight Trip Segments

Forest	Day Trips	Over night	Overall Average
Lewis and Clark NF	$41	$116	$71
Dakota Prairie NF	31	123	68
Average	36	120	70

Source: Stynes, Daniel J. and Eric M. White, Spending Profiles of National Forest Visitors, NVUM Four Year Report, May 2005, Appendix A-1, pg. 23-25.

Table 3 displays the spending averages by Forest for day use and overnight trip segments for two forests (Lewis and Clark NF and the Dakota Prairie NF) as well as the average spending. The spending for the Lewis and Clark NF falls within the range of average spending on National Forests while the average spending for the Dakota Prairie NF falls

within the range of below-average spending on National Forests. Jon Collins and I discussed this and conclude that the spending pattern for the Malta RMP is probably most like that of Dakota Prairie NF.

2. ~~Assumption: *The primary purpose of 37% of recreation use on BLM lands is wildlife and fish related*. Multiply this percentage (37%) times the total estimated BLM recreation use for each alternative. Also multiply this product times the percentages shown in assumption 1 above to fill in the blanks for number 9-14 above. Basis for assumption: Dispersed recreation use on BLM lands is similar to that which occurs on the Lewis and Clark and Dakota Prairie National Forests. The average of percentage of wildlife-related visits by Forest are reasonable indicators of these characteristics associated with dispersed recreation use on BLM lands in the Malta Field Office.~~

~~Percentage of Wildlife-Related Visits by Forest~~

~~Forest~~		~~Case Weights~~
~~Lewis and Clark NF~~		~~31~~
~~Dakota Prairie NF~~		~~42~~
~~Average~~		~~37~~

~~Source: Stynes, Daniel J. and Eric M. White, Spending Profiles of National Forest Visitors, NVUM Four Year Report, May 2005, Appendix B, Table B-6, pg. 42.~~

Recreation Use, Permitted Outfitters and Guides—Would any alternative affect current outfitter and guide use. Would alternatives vary in terms of fee collections for commercial fishing and floating outfitters who use developed BLM river access sites? Payment of these fees would have different administrative impacts, but the actual costs would likely be passed on to the clients. Will outfitters and guides continue to have the same opportunities under each alternative as they currently do? Will hunting outfitter and guides be able to camp at developed fee sites during hunting season? Are any commercial outfitter and guides using developed fee sites during hunting season. Recreation revenues from recreation use permits, campground receipts, and outfitter and guide receipts would be how much per year?

AMS: Although visitor use information is lacking or incomplete for some areas, the BLM public lands in the Malta RMP area received a minimum of 53,000 recreation visits in 2005. Major recreation activity categories in the area, in order of approximate total use percentage, are reflected below:

- *Hunting (42%) 53000*.42=22,260*
- *Sightseeing, picnicking, watching wildlife (17%) 53000*.17= 9,010*
- *Fishing (13%) 53000*.13= 6,890*
- *Driving for pleasure (12%) 53000*.12= 6,360*
- *Camping (9%) 53000*.09= 4,770*
- *Hiking, horseback riding, bicycling (3%) 53000*.03= 1,590*

- *Winter sports (1%)* *53000*.01=* *530*
- *ORV activities (1%)* *530*
- *Snowmobiling (1%)* *530*
- *Water sports (1%)* *530*

General Recreation		Wildlife and Fish Related Recreation	
Driving pleasure	6,360	Hunting	22,260
Camping	4,770	Wildlife viewing	9,010
Hiking, bicycling	1,590	Fishing	6,890
Winter Sports	530	TOTAL	38,160
ORV	530		
Snowmobiling	530		
Water sports	530		
TOTAL	14,840		

Range:

22. Cattle and horse (head months)
23. Sheep and goats (head months)

Range: FEAST Resource Data Entry

Row	Description	Current	A	B	C	D
50	Cattle and Horse HM	525,840				
51	Sheep and Goats HM					

Range Assumptions:

3. 1 Head Month (cattle) = approximately 0.78 AUMs (cattle). Therefore, 1.28xTotal AUMs=Total headmonths. 1 Head month (sheep and goats) = approximately 0.2 AUMs (sheep and goats). Therefore, 5xTotal AUMs=total headmonths. 410,814 AUMs x 1.28 HM/AUM = 525,840 HM
4. There are 760 livestock operators using 1,030 allotments within the Butte FO. (Source: BLM, Malta AMS, 2007)
5. Range of dependency on BLM for forage for their herds?
6. Average authorized livestock use on BLM lands amount to 410,814 AUMs. Public Land Statistics for FY2006 reported 308,015 cattle/horse AUMs and 214 sheep/goats AUMs. This is inconsistent but probably reflects non-use because of recent drought (personal conversation with BJ Rhodes, 8/6/07). BJ and I discussed this on 8/6/07 and agreed that authorized use would be analyzed. Since

sheep and goats amount to less than one tenth of one percent of livestock use, I will analyze livestock as cattle and horses. Sheep and goats will not be analyzed.

AMS: In Fiscal Year 2005, livestock grazing on BLM lands involved livestock operators who had 609 Section 3 grazing permits (i.e., grazing on public lands within grazing districts, BLM Manual 1373.12) and 149 Section 15 grazing leases (grazing on public lands outside of grazing districts). Fifty percent of revenues from Section 3 grazing fees on public domain lands are distributed to the state and counties; 12.5 percent of grazing fees from Section 15 leases are distributed to the state and counties. The combined total (Section 3 and Section 15) number of active Animal Unit Months (AUMs) in FY05 was 410,814 AUMs.

Timber:

Timber: FEAST Resource Data Entry

Row	Description	Current	A	B	C	D
77	Harvest-Softwood sawtimber (CCF)	7.2				
78	Harvest-Softwood pulp (CCF)	0				
79	Harvest Hardwood Sawtimber (CCF)	0				
80	Harvest Hardwood Pulp (CCF)	0				
81	Harvest post and poles (CCF)	1.3				
82	Harvest firewood (CCF)	102.4				
83	Harvest House Logs (CCF)	6.6				
84	Harvest Christmas Trees (number)	76.3				

24. Harvest-Softwood sawtimber (CCF)
25. Harvest-Softwood pulp (CCF)
26. Harvest Hardwood Sawtimber (CCF)
27. Harvest Hardwood Pulp (CCF)
28. Harvest Aspen (CCF)
29. Harvest firewood (CCF)
30. Harvest post and poles (CCF)
31. Harvest House Logs (CCF)
32. Harvest Christmas Trees (number)
33. Harvest- All other products e.g. grape stakes, fence stays, teepee poles

Timber Assumptions:

1. What percent, if any, of 24-33 above would be salvage sales?
2. What is the conversion of MBF to CCF?
3. Timber Revenues: Vegetation Material Disposal Sales ($1000) (Timber, Christmas trees, firewood, post/poles, Biomass, etc.) ($1000) (4% of sales on PD lands distributed to the State/ 76% to BOR; 20% to US Tresury)

4. Salvage Sales ($1000) (4% of sales on PD to State; 96% to BLM 5900 Subactibivity)
5. What is the current (or annual average) timber program budget? Please clarify if this includes fuels budget to meet timber management objectives.

Timber: 10 year averages for Malta Field Office.....

7.2 CCF per year Harvest-Softwood sawtimber
0 CCF per year Harvest-Softwood pulp
0 CCF per year Harvest Hardwood sawtimber
0 CCF per year Harvest Hardwood pulp
0 CCF per year Harvest Aspen
102.4 CCF per year Harvest Firewood
1.3 CCF per year Harvest post and poles
6.6 CCF per year Harvest House logs
76.3 Christmas trees per year

Percent that is salvage (5900) = 5%

Conversion from CCF to MBF
Fuelwood = 500 board feet = 1 cord = 81.6 CF = .816 CCF
Posts (Average of all types) = 1 post/pole = 5.8 board feet = 1.4 CF = .014 CCF
Sawtimber 1000 board feet (MBF) = 250 CF = 2.5 CCF

Timber Revenues:
$1,190.33 per year (all products)
$553 per year in salvage sales

The data above were provided by Bruce Reid, Lewistown FO forester.

Minerals Production:

Minerals: FEAST Resource Data Entry

Row	Description	Current	A	B	C	D
88	Natural Gas (M. Cubic Feet) $6.9					
89	Crude Oil (Barrels)					
117	Construction Sand and Gravel 41 (Short tons)	75,000				
134	Drilling oil/gas wells: dry holes					
135	Drilling oil/gas wells: producers					

Sources: Wellhead: · 1949-1997—Energy Information Administration (EIA), Natural Gas Annual (NGA) 2000 (November 2001), Table 93. · 1998 forward—EIA, Natural Gas Monthly (NGM) (March 2004), Table 4. City Gate: · 1984-1997—EIA, NGA 2000 (November 2001), Table 96. · 1998 forward—EIA, NGM (March 2004), Table 4. Imports: · 1972 and 1973—Federal Power Commission (FPC), Pipeline Imports and Exports of Natural Gas—Imports and Exports of LNG. · 1974-1976—FPC, United States

Imports and Exports of Natural Gas, annual reports. · 1977-1997—EIA, NGA, annual reports. · 1998 forward—EIA, NGM (March 2004), Tables 5 and 6

34. Production of Copper Ores (Sector 29)
    - Copper 29 (short tons)
    - Molybdenum 29 (short tons)
    - Silver 29 (Troy Ounces)
35. Production from Lead and Zinc Ores (Sector 30)
    - Lead 30 (short tons)
    - Zinc 30 (short tons)
    - Copper 30 (short tons)
    - Silver 30 (troy ounces)
    - Gold 30 (troy ounces)
36. Production of Gold Ores (Sector 31)
    - Gold 31 (troy ounces)
    - Silver 31 (troy ounces)
37. Production of Silver Ores (Sector 32)
    - Silver 32 (Troy ounces)
    - Copper 32 (short tons)
    - Gold (troy ounces)
38. Production of Ferroalloy Ores, Except Vanadium (Sector 33)
    - Molybedenum 33 (short tons)
39. Production of Metal Ores, N.E.C. (Sector 36)
    - Platinum 36 (troy ounces)
    - Palladium 36 (troy ounces)
40. Production of Coal (Sector 37)
    - Coal 37 (short tons)
41. Production of Natural Gas and Crude Petroleum (Sector 38)
    - Natural Gas 38 (M Cubic Feet)
    - Crude Oil 38 (Ballels)
    - Natural Gas Liquids 38 (Gallons)
    - Carbon Dioxide 38 (M Cubic Feet)
    - Nitrogen 38 (M Cubic Feet)
    - Sulfur 38 (Long tons)

Assumptions:

1. Acres of federal minerals leased by alternative?
2. Total number of wells drilled?
3. Type of well, i.e. oil or gas?
4. Conventional gas or CBNG?
5. Total number of wells drilled on BLM/federal minerals?
6. Cost/well to drill?
7. Employment/well to drill?
8. Local companies or non-local companies?
9. Anticipated production per well per year?

10. Anticipated total production by county?
11. Anticipated life of producing wells?
12. Commodity price?

42. Production of Dimension Stone (Sector 40)
    - Crushed Stone (Common Variety) 40 (Short tons)
    - Crushed Stone (High-Purity) 40 (Short tons)
    - Dimension Stone 40 (Short tons)
43. Production of Sand and Gravel (Sector 41)
    - Construction Sand and Gravel 41 (Short tons) 75,000
    - Industrial Sand 41 (Short tons)
    - Apatite 41 (Short tons)
    - Ilmenite 41 (Short tons)
    - Magnetite 41 (Short tons)

Assumptions:

1. Number of mineral material sales/county?
2. Volume of sales/county?
3. Revenue per sale/county?

44. Production of Clay, Ceramic, and Refractory Minerals (Sector 42) (Short tons)
45. Production of Potash, Soda, and Borate Minerals (Sector 43) (Short tons)
46. Production of Phosphate Rock (Sector 44) (Short tons)
47. Chemical and Fertilizer Mineral Mining, N.E.C. (Sector 45) (Short tons)
48. Production of Miscellaneous Nonmetallic Minerals, N.E.C. (Sector 47)
    - Gypsum 47 (Short tons)
    - Mica 47 (Short tons)
    - Perlite 47 (Short tons)
    - Pumice 47 (Short tons)
    - Quartz Crystals 47 (Pounds)
    - Specialty Minerals Materials 47 (Short tons)
49. Production of Electrometallurgical Products, Except Steel (Sector 255)
    - Molybdenum 255 (Short tons)
50. Production of Primary Copper (Sector 260)
    - Copper 260 (Short tons)
    - Molybedenum 260 (Short tons)
    - Silver 260 (Troy Ounces)
51. Production of Primary Nonferrous Metals, N.E.C. (Sector 262)
    - Copper 262 (Short tons)
    - Gold 262 (Troy ounces)
    - Lead 262 (Short tons)
    - Zinc 262 (Short tons)
    - Silver 262 (Troy ounces)
    - Platinum 262 (Troy ounces)

- Palladium 262 (Troy ounces)

52. Sanitary Services and Steam Supply (Sector 446)
    - Geothermal (Pounds Steam)
    - Hot Water (kWh)
53. Oil and Gas Wells Drilled (Dry Holes) (number)
54. Oil and Gas Wells Drilled (Producers) (number)

Financial Data Entry

Recreation Revenues:

55. Total All Recreation Revenues ($1000) Recreation use permits e.g. campground receipts, outfitter/guide receipts

Public Revenues from Recreation Related Activities

Row	Description	Current	A	B	C	D
?	Special Recreation Permits (SRPs)	$8,380				
	Recreation Use Permits (RUPs)	2,200				
	Total Recreation Revenues*	10,580				

Source: BLM, Management Information System, FY2006

Note: Recreation revenues are not distributed to the state or counties

Range Revenues: (50% of revenues from Sec. 3 grazing fees on public domain lands distributed to the State and counties; 12.5 % of revenues from Sec. 15 grazing fees on Bankhead Jones Act lands distributed to the State and counties). Current average annual revenues to the state/counties based on the average annual level of authorized grazing on BLM administered lands is $262,740. See calculations below:

Range Revenue Table

Office	Sec. 3	Sec. 15	Total
Malta AUMs	145,233	505	145,738
Glasgow AUMs	90,910	15,585	106,495
Havre AUMs	55,101	5,074	60,175
TOTAL AUMs	291,244	21,164	312,408
% of total AUMs	.93	.07	1.00
Average Annual Revenue to State/Counties	$1.35/AUM x .93 x 410,814 AUMs x 0.5 = $257,888.	$1.35/AUM x .07 x 410,814 AUMs x 0.125 = $4,852.	$257,888 + 4,852 $262,740

56. Cattle and Horses ($1000)
57. Sheep and goats ($1000)

Timber Revenues:

58. Vegetation Material Disposal Sales ($1000) (Timber, Christmas trees, firewood, post/poles, Biomass, etc.) ($1000) (4% of sales on PD lands distributed to the State/ 76% to BOR; 20% to US Tresury)
59. Salvage Sales ($1000) (4% of sales on PD to State; 96% to BLM 5900 Subactibivity)

Timber Revenues:

$1,190.33 per year (all products). Approximately $50 distributed to the State
$553 per year in salvage sales. Approximately $20 distributed to the State
Approximately $70 total timber revenues distributed to the State

Lands/Realty:

60. Land Disposal ($1000) (Baca Bill)
61. Use Authorization ($1000) (ROW, permits, lease rentals) (See IM 2004-151; Craig Haynes)
62. PILT ($1000)

Public Revenues from Lands and Realty Related Activities ($)

Row	Description	Current	A	B	C	D
?	Rights-of-way rentals	72,000				
62	PILT (8-county total)	1,902,777				

Note: Revenues from ROW rentals are not distributed to the state or counties

Minerals Revenues:

63. Federal Oil and Gas Leases (One-time lease bid= min. $2.00/ac; min. lease rental=$1.50/ac/yr. for 1st 5 years and $2.00/ac/yr thereafter. Generally, 50% of lease revenues go to the State.)
64. Federal Oil and Gas Royalties (12.5 % value of production, ½ distributed to the state, 12.5% of state portion distributed to county of production (Adair et al., 2005))

BLM Oil and Gas Revenues ($1000)

Row	Description	Current	A	B	C	D
	Average annual acres leased*	142,161				
	Annual first time bid (min. $2.00/ac)	$284,322				
	Total acres leased*	1,606,470				
	Min. lease rental $2.00/ac/yr	$3,212,940				
	Total Federal Lease Revenues	$3,497,262				
	Total State Lease Revenue (50% of Federal Lease Revenues)	$1,748,631				

	Natural gas production (M. cubic ft)					
	Federal gas royalties (12.5% of production) Commodity price?					
	Crude oil production (barrels)					
	Federal oil royalties (12.5% of production) Commodity price?					
	Total State Royalties (1/2 of Fed. Oil and Gas Royalties)					
	Total revenues to Counties (12.5% of State Royalties)					

*Source: Karen Johnson, 8/7/07

65. Federal Coal Leases (One-time Bonus Payment to buy lease= $0.10-$0.15/ton of estimated reserves; rental = $3.00/ac./yr. for life of lease. Lease life =20 yrs with 10 year renewal periods. ½ of coal lease payment, one-time bonus payment distributed to state)
66. Federal Coal Royalties (12.5 % of selling price. ½ of coal royalty distributed to the state. Selling price has averaged $8-10/ton over the past 10 years.)
67. Other Federal Coal Revenues (OSM collects reclamation fee of $0.35/ton; Black Lung fee= approx. 4.5-5 % value of production)
68. Federal Locatable Mineral Royalties (none)
69. Salable Minerals

Federal Public Revenues from Salable Minerals Management

Row	Description	Current	A	B	C	D
	Construction Sand and Gravel $1.00/ton*	$75,000				

*Source: Dave Coppock, 8/8/07
Note: Revenues from sale of Federal Salable Minerals are not distributed to the state or counties.

70. Federal Mineral Materials Royalties (See Dave Coppock's Royalty Values by Commodity by Planning Area)
71. Montana Taxes
    - Corporate Income Tax (6.75 % of net income apportioned to MT)
    - Property Taxes (The State of Montana groups property into 11 classes for assessment purposes. Six classes are pertinent to the mining industry.)
    - Local Coal Gross Proceeds Tax (5% of gross value of production)
    - Sales and Use Taxes (Montana has no general sales or use taxes)
    - Metal Mines License Tax (See description)

- Miscellaneous Mineral (Micaceous) Mines License Tax (5.0 cents per ton of concentrates mined, extracted, or produced)
- Resource Indemnity and Ground Water Assessment Tax (RIGWAT) (See description)
- Cement and Gypsum Producers License Tax (22.0 cents per ton)
- Coal Severance Tax (See description)

72. Receipts subject to 25% distribution to counties

BLM Budget Expenditures by Program:

73. Recreation
74. Timber
75. Range
76. Soil, water, air
77. Minerals
78. Wildlife and Fish
79. Protection (including fire)
80. Weed treatment costs $

BLM Employment:

81. Permanent
82. Other than permanent
83. Total

Federal Public Revenues from BLM Program Expenditures and BLM employment*

Row	Description	Current	A	B	C	D
73	Recreation Operations Expenditures					
74	Timber Operations Expenditures					
75	Range Operations Expenditures					
76	Soil, water, air Operations Expenditures					
77	Minerals Operations Expenditures					
78	Fish and Wildlife Operations Expenditures					
79	Fire Operations Expenditures					
80	Weeds Operations Expenditures					
	Total Operations expenditures	3,341,697				
	Total Labor Expenditures	2,483,176				
	Total Labor and Operations Expenditures	5,741,520				
81	Permanent employment	32				
82	Other than permanent employment	21				
83	Total employment	53				

* Expenditure data taken from BLM Management Information System (MIS). Expenditure data represent a five-year average (2002-2006). Employment taken from BLM table of organization as of 9/17/07.

Resources (Average Annual Output/Outcome Description)				
	Alternative			
	A	**B**	**C**	**D**
Recreation (not related to fishing/hunting):				
1. Non-Local Day Trips (1,000 visits) e.g. picnicing				
2. Non-Local Overnight on BLM (1,000 visits) e.g. camping				
3. Non-Local Overnight off BLM (1,000 visits) e.g. camping				
4. Local Day Trips (1,000 visits) e.g. picnicing				
5. Local Overnight on BLM (1,000 visits) e.g. camping				
6. Local Overnight off BLM (1,000 visits)				
Range:				
7. Cattle and horses (head months)				
8. Sheep and goats (head months)				
Wildlife and Fish related Recreation				
9. Non-local trips (1,000 visits)				
10. Non-local overnight on BLM (1,000 visits)				
11. Non-local overnight off BLM (1,000 visits)				
12. Local day trips (1,000 visits)				
13. Local overnight on BLM (1,000 visits)				
14. Local overnight off BLM (1,000 visits)				
15. General hunting (1,000 visits) (enter here if details below are unknown)				
16. Big game hunting (1,000 visits)				
17. Small game hunting (1,000 visits)				
18. Migratory bird hunting (1,000 visits)				
19. Other game hunting (1,000 visits)				
20. General fishing (1,000 visits) (enter here if details below are unknown)				
21. Lake fishing (1,000 visits)				

Resources (Output/Outcome Description)				
	Alternative			
	A	**B**	**C**	**D**
22. Stream fishing (visits)				
23. Non-consumptive fish and wildlife (visits) e.g. antler hunting				
Timber:				
24. Harvest- Softwood sawtimber (CCF)				
25. Harvest- softwood pulp (CCF)				
26. Harvest- hardwood sawtimber (DDF)				
27. Harvest- hardwood pulp (CCF)				
28. Harvest Aspen (CCF)				
29. Harvest firewood (CCF)				
30. Harvest post and poles (CCF)				
31. Harvest house logs (CCF)				
32. Harvest Christmas trees (number)				
33. Harvest all other products, e.g. grape stakes, fence stays, teepee poles covered under small sales permits				
Mineral Production				
34. Copper ores (sector 29) • Copper 29 (short tons) • Molybdenum 29 (short tons) • Silver 29 (troy ounces)				
35. Lead and zinc ores (sector 30) • Lead 30 (short tons) • Zinc 30 (short tons) • Copper 30 (short tons) • Silver 30 (short tons) • Gold 30 (troy ounces)				

Resources (Output/Outcome Description)				
	Alternative			
	A	**B**	**C**	**D**
36. Gold ores (sector 31) • Gold 31 (troy ounces) • Silver 31 (troy ounces)				
37. Silver ores (sector 32) • Silver 32 (troy ounces) • Copper 32 (short tons) • Gold 32 (troy ounces)				
38. Ferroalloy ores, except vanadium (sector 33) • Molybedenum 33 (short tons)				
39. Metal ores, N.E.C. (sector 36) • Platinum 36 (troy ounces) • Palladium 36 (troy ounces)				
40. Coal (sector 37) • Coal 37 (short tons)				
41. Natural gas and crude petroleum (sector 38) • Natural gas 38 (M cubic feet) • Crude oil 38 (barrels) • Natural gas liquids 38 (gallons) • Carbon dioxide 38 (M cubic feet) • Nitrogen 38 (M cubic feet) • Sulfur 38 (Long tons)				
42. Dimension Stone (sector 40) • Crushed stone 40 (common variety) (short tons) • Crushed stone 40 (high purity) (short tons) • Dimension stone 40 (short tons)				

Resources (Output/Outcome Description)				
	Alternative			
	A	**B**	**C**	**D**
43. Sand and Gravel (sector 41) • Construction sand and gravel 41 (short tons) @ $0.371/ton • Industrial sand 41 (short tons) • Apatite 41 (short tons) • Illmenite 41 (short tons) • Magnetite 41 (short tons) •				
44. Clay, ceramic, and refractory mineral (sector 42) (short tons)				
45. Potash, soda, and borate minerals (sector 43) (short tons)				
46. Phosphate (sector 44) (short tons)				
47. Chemical and fertilizer mineral mining, N.E.C. (sector 45) (short tons)				
48. Miscellaneous nonmetallic minerals, N.E.C. (sector 47) • Gypsum 47 (short tons) • Mica 47 (short tons) • Perlite 47 (short tons) • Pumice 47 (short tons) • Quartz crystals 47 (pounds) • Specialty minerals materials 47 (short tons) • Limestone (short tons; 840,000 mined; 365,000 produced)				
49. Electrometallurgical products, except steel (sector 255) • Molybedenum 255 (short tons)				
50. Primary copper (sector 260) • Copper 260 (short tons) • Molybedenum 260 (short tons) • Silver 260 (troy ounces)				

Resources (Output/Outcome Description)				
	Alternative			
	A	**B**	**C**	**D**
51. Primary nonferrous metals, N.E.C. (sector 262) • Copper 262 (short tons) • Gold 262 (troy ounces) • Lead 262 (short tons) • Zinc 262 (short tons) • Silver 262 (troy ounces) • Platinum 262 (troy ounces) • Palladium 262 (troy ounces)				
52. Sanitary services and steam supply (sector 446) • Geothermal (pounds of steam) • Hot water (kWh)				
53. Oil and gas wells drilled (dry holes) (number)				
54. Oil and gas wells drilled (producers) (number)				
54a. Coal bed natural gas wells drilled (producer) (numbers				
Financial Data Entry				
	Alternative			
	A	**B**	**C**	**D**
Recreation Revenues: 55. Total all recreation revenues ($1000) e.g. recreation use permits, campground receipts, outfitter/guide receipts				
Range Revenues: (50% of revenues from Sec. 3 grazing fees on public domain lands distributed to State and counties; 12.5 % of revenues from Sec. 15 grazing fees on Bankhead Jones Act lands distributed to State and counties. 56. Cattle and horses ($1000)				

57. Sheep and goats ($1000)				
Financial Data Entry				
	Alternative			
	A	**B**	**C**	**D**
Timber revenues ($1000): 58. Vegetation materials disposal sales (timber, Christmas trees, firewood, post/poles, biomass, etc.) (4% of sales on PD lands distributed to the State; 76% to BOR; 20% to US Treasury) 59. Salvage sale (4% of sales on PD to State; 96% to BLM 5900 subactivity)				
Lands and realty ($1000): 60. Land disposal (Baca Bill) 61. Use authorizations (ROW, permits, lease rentals) (See Craig Haynes; IM 2004-151) 62. PILT				
Mineral revenues ($1000): 63. Federal oil and gas leases (one-time lease bid=min. $2.00/ac; min. lease rental =$1.50/ac/yr for 1st 5 years and $2.00/ac/yr. thereafter) 64. Federal oil and gas royalties (12.5% value of production, ½ distributed to the state, 12.5% of state portion distributed to county of production) 65. Federal coal lease (one-time bonus payment to buy lease=$0.10-0.15/ton of estimated reserves; rental=$3.00/ac/yr. for life of lease. Lease life = 20 yrs. With 10 year renewal period; ½ of coal lease payment and one-time bonus payment distributed to state) 66. Federal coal royalties (12.5% of selling price, ½ of coal royalty distributed to the state. Selling price averaged $8-10/ton over past 10 years.) 67. Other federal coal revenues (OSM collects reclamation fee of $0.35/ton; Black Lung fee= approximately 4.5-5% of value of production.) 68. Federal locatable mineral royalties (none) 69. Federal mineral materials royalties (See Dave Coppock's royalty values				

by commodity by planning area.) (Butte FO: Sand/gravel $0.50; rip rap $5.50/yrd; building stone $7.50/ton; decorative/facing stone $15-20/ton)				
Financial Data Entry				
	Alternative			
	A	**B**	**C**	**D**
70. Montana taxes ($1000): • Corporate income tax (6.75 % of net income apportioned to MT) • Property tax (the State of MT groups property into 11 classes for assessment purposes. Six classes pertinent to the mining industry) • Local Coal Gross Proceeds Tax (5% of gross value of production) • Sale and use taxes (MT has no general sales or use tax) • Metal mines license tax (See description) • Miscellaneous Mineral (Micaeous) Mines License Tax ($0.05 per ton of concentrates mined, extracted, or produced) • Resource Indemnity and Ground Water Assessment Tax (RIGWAT) (See description) • Cement and Gypsum Producers License Tax ($0.22 per ton) • Coal Severance Tax (See description) • State Income Tax • Net Proceeds 71. Receipts subject to 25% distribution to counties				
BLM budget expenditures by program area ($1000): 72. Recreation 73. Timber 74. Range 75. Soil, water, air 76. Minerals 77. Wildlife and fish 78. Protection (including fire)				

78a.Fuels 79. Weed treatment costs				
BLM employment (jobs) 80. Permanent 81. Other than permanent 82. Total				

What about wind energy development? This would be common among alternatives. Assumptions for all alternatives:

- Site specific testing and monitoring rental: $50 per year for each Meteorological tower or instrumentation facility (IM 2003-020)
- Site specific testing and monitoring rental within project area: $1,000 per year for each Meteorological tower or instrumentation facility or $1 per acre per year, whichever is greater (IM 2003-020)
- ROW rentals for commercial wind energy development minimum rental: $2,365 per megawatt based on anticipated capacity of approved Plan of Development, capacity factor of 30 percent, royalty of 3 percent, and average purchase price of $0.03 per kilowatt hour. (IM 2003-020)
- One 48.6 megawatt wind turbine generation project composed of 27-1.8 MW wind turbines (Application for Transportation and Utility Systems and Facilities on Federal Lands, Plan of Development, Oct. 21, 2002, Whitehall Wind LLC)
- Annual production on site= 164,333 MWh. (Application for Transportation and Utility Systems and Facilities on Federal Lands, Plan of Development, Oct. 21, 2002, Whitehall Wind LLC)
- Construction time: 6-8 months (Application for Transportation and Utility Systems and Facilities on Federal Lands, Plan of Development, Oct. 21, 2002, Whitehall Wind LLC)
- Cost of project: approximately $60 million. Annual maintenance, operations including land leases would cost $925,000. Operation, maintenance, and service would require up to 7 technicians. A 50 MW wind farm typically generates 25 short-term jobs of up to a 1 year in duration, with 5-7 permanent operations and maintenance jobs. (Application for Transportation and Utility Systems and Facilities on Federal Lands, Plan of Development, Oct. 21, 2002, Whitehall Wind LLC)

What about R&PP leases/permits? Assumptions for all alternatives: 2 fire stations ($, 1 park, 1 shooting range, maybe 1 golf course)

Range:

7. 1 Head Month (cattle) = approximately 0.78 AUMs (cattle). Therefore, 1.28xTotal AUMs=Total headmonths. 1 Head month (sheep and goats) = approximately 0.2 AUMs (sheep and goats)
8. There are ____ livestock operators using ____ allotments within the Butte FO. (Source: BLM, Butte FO records, 2005)
9. Average authorized livestock use on BLM lands over the past 10-year period amounted to _____ AUMs.
10.

Forest Economic Analysis Spreadsheet Tool (FEAST)
Check List

I. Introduction page
- ✓ Read this page thoroughly
- ✓ Tool Bar
  - ➢ Navigation
  - ➢ Importing and Exporting
  - ➢ Reporting
  - ➢ Help
  - ➢ Edit Application

II. Res Data Entry page (Resource Data Entry page)
- ✓ Read documentation found in upper-left hand corner
- ✓ Enter Date and Forest Name (very important!)
- ✓ Enter alternative names
- ✓ Click button, Click when …
- ✓ Enter data (Note: 1. average annual quantity by alternative, and 2. certain resources need to have units entered.)
- ✓ Enter documentation in yellow section at bottom of page

III. Fin Data Entry page
- ✓ Select year of dollars entered on this page – very important (drop down list)
- ✓ Select year of dollars for results – very important (reporting)
- ✓ ONLY IF USING THE "TIMBER RAC METHOD": Enter data by resource (Note: 1) average annual quantity by alternative, and 2) certain resources need to have units entered.)
- ✓ Enter Payments data – <u>only</u> money that is returned to your study area.
- ✓ Enter documentation in yellow section at bottom of page

IV. Econ Data Entry page
- ✓ Economist enters data on this page
- ✓ Select year of IMPLAN model/data (drop down list)
- ✓ Select method of timber calculations
- ✓ Enter cumulative effects year, employment and labor income (optional)
- ✓ Enter data by resource
- ✓ Remember your documentation in yellow section at bottom of page

V. Econ Data-BOC page
- ✓ Budget Object Code data from PAG website
- ✓ Just point and click and data is entered
- ✓ Economist uses the proportions at bottom of page for developing resource program response coefficients

VI. Input Summary page

- ✓ No data entry required
- ✓ Just a collection point for the data and a place for FEAST to conduct calculations

VII. Tables for EIS page

- ✓ Blank output (reporting) tables
- ✓ FEAST will fill these in
- ✓ User doesn't do anything here

VIII. Intersect page

- ✓ FEAST will retrieve this data for you when "Retrieve IMPLAN Model Data"
- ✓ Economist will use this information for converting a TIO to FD
- ✓ Economist will print this page out before conducting the IMPLAN analysis
- ✓

IX. Interface page

- ✓ Listing of response coefficient names found in IMPLAN
- ✓ Don't use the "IMT" prefix in your IMPLAN impact file names. Just start with $
- ✓ Economist – print this page out before beginning your IMPLAN analysis or get automatic model setup utility from Susan

USER'S GUIDE:
Forest Economic Analysis Spreadsheet Tool (FEAST)

FEAST Overview

FEAST is a modeling tool used to assist in the development of economic impacts for Forest planning and monitoring. FEAST uses a Microsoft Excel workbook as the interface between user inputs and imported data from an existing IMPLAN model. The individual worksheets contain the formulas that drive the FEAST model while visual basic for applications was used to create the FEAST menu bar and the macros (visual basic procedures and functions) that make FEAST operational. The goal for the FEAST application is to assist both economists and planning specialists in completing economic impact analyses by standardizing and streamlining the modeling process.

Two versions of FEAST currently exist. FEAST_sic was built to use IMPLAN data prior to 2001. IMPLAN data prior to 2001 used the Standard Industrial Classification of industries. FEAST_naics uses IMPLAN data for 2001 and beyond. IMPLAN data for 2001 and beyond uses the North American Industrial Classification System of industries. The remainder of this discussion focuses on FEAST_naics. FEAST_naics will be referred to as simply, FEAST.

FEAST contains four data entry worksheets. Three of the worksheets can be completed by an ID Team specialist. These worksheets include the RES Data Entry, FIN Data Entry, and the Historical Monitoring Data worksheets. The ECON Data Entry worksheet should be completed by a qualified economist. All of the remaining FEAST worksheets are used for calculation, data summary, results summary and reporting purposes.

It is strongly recommended that a qualified economist define the impact area, build the IMPLAN model, and provide data for the *Econ Data Entry* worksheet. Once this work has been completed, other ID Team specialists may enter/edit their data and run the model as often as necessary to generate impact estimates and reports. It is strongly recommended that an economist be consulted to write or review the interpretation of results for an EIS or any other Forest planning document.

FEAST uses a MS Access database, FEAST_v4_BE.mdb, to store FEAST model data. Only one copy/version of FEAST is needed. The backend database can hold multiple FEAST models. The backend database can be renamed to suit the user's needs. For example, when developing FEAST models for monitoring purposes the backend database might be given the name "MonitoringFEAST_v4_BE.mdb.

This portion of the technical guide does not explain how to model impacts for a particular resource activity. This portion of the technical guide explains how to use FEAST with respect to data entry, how to use the various menus to manage the backend database, import data from IMPLAN, building reports, and how to use the new monitoring features.

Using FEAST

Introduction

Select "**Enable Macros**" when the FEAST begins to open. Once FEAST opens, the Introduction worksheet is displayed. The Introduction sheet provides general overview, advice, and instructions for the use of this application. There are four worksheets that require data entry. The RES Data Entry, FIN Data Entry, and Historical Monitoring Data worksheets can be completed by an ID Team specialist. The ECON Data Entry Worksheet should be completed by a qualified economist or analyst.

The tabs for worksheets that require data entry are colored GREEN. User input is allowed only in the GREEN-colored cells and in the YELLOW-colored notes section at the bottom of the page. However, they can only be changed with respect to cell content. No other part of FEAST can or should ever be changed in any way. ID Team specialists and economists and/or analysts are strongly encouraged to document assumptions, data sources, etc in the area provided at the bottom of the "data entry" worksheets. The LIGHT BLUE-colored cells receive input or data from the various macros (drop-down lists, buttons and menu selections).

Deleting Cell Contents

Use the delete key to delete the contents of a data entry cell (GREEN colored or YELLOW colored notes sections). NEVER use the space bar, which seems to be a common habit of some Excel users.

All other worksheets are for data summary, results summary or reporting purposes. Most of the FEAST worksheets are hidden from view. For those economists or analysts wishing to explore the inner workings of FEAST the hidden worksheets can be unhidden.

FEAST now contains features which can be used for monitoring of a proposed action or preferred alternative during Forest plan implementation. These features allow the development of a FEAST model during every year of a Forest plan monitoring cycle (15 years). Historical resource, financial, and economic data can be entered in FEAST as well. Comparisons can then be made between the historical data, each of the monitoring year models, and the proposed action…either in tabular or graphic form.

FEAST Menu Bar

The standard MS Excel menu bar is replaced with a custom menu bar specific to FEAST. Menu bar items are listed and described below. Additional menu items will appear depending on the particular worksheet that is active (being viewed within FEAST).

The 9 menu bar options include File, Edit, Select Worksheet, Importing and Exporting, Reporting, Monitoring, Application Help, Links, and Edit App.

File

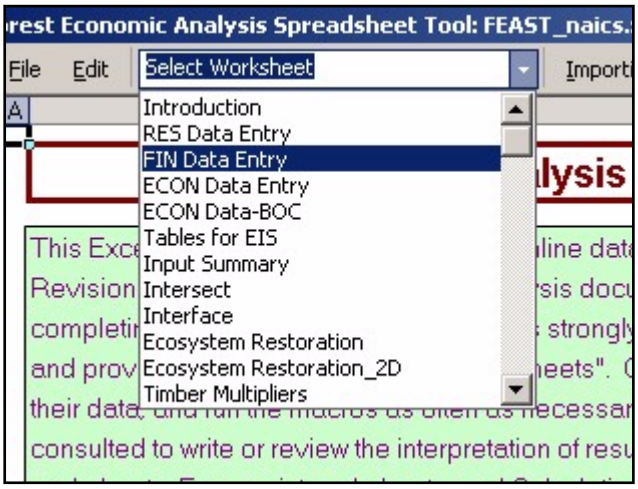
The only options available are Close, Save, the Printing options, and Exit.

Edit

The options available under the Edit menu are Undo, Repeat, Cut, Copy, Office Clipboard, Paste, and Move or Copy Sheet.

Select Worksheet

This button is a drop-down control which provides a fast and convenient way to navigate among the application worksheets rather than using the usual tabs that one sees at the bottom of the worksheet window. If you select any of the data entry worksheets or the Tables for EIS worksheet you will then have navigation options available for moving around within the worksheet itself.



Worksheet Navigation Options

The data entry worksheets and the Tables for EIS worksheet have an additional navigation button that can be used. The navigation buttons are **Res Navigation, Fin Navigation, Econ Navigation** and **EIS Tables Navigation,** respectively**.** Use the navigation button options to move easily around these four worksheets.

Res Navigation	This option appears when the Resource Data Entry worksheet has been selected
Enter Alt Info	Directs you to the Alternative names. Here you can change/edit the alt names.
Enter Resource Outputs	It is often useful to freeze the worksheet panes when entering data in a large table. Selecting Enter Resource Outputs will freeze the row and column headers of the resource output table so that you can still see which row and column you are working in as you move down or across the input table.
Data Entry Finished	Select this to unfreeze the window panes when you are finished entering data or if you want to move the focus back up to the top of the worksheet.
Add Comments	This moves the focus to the designated comment area of the worksheet.
Back to Top	This moves the focus back to the top of the worksheet.

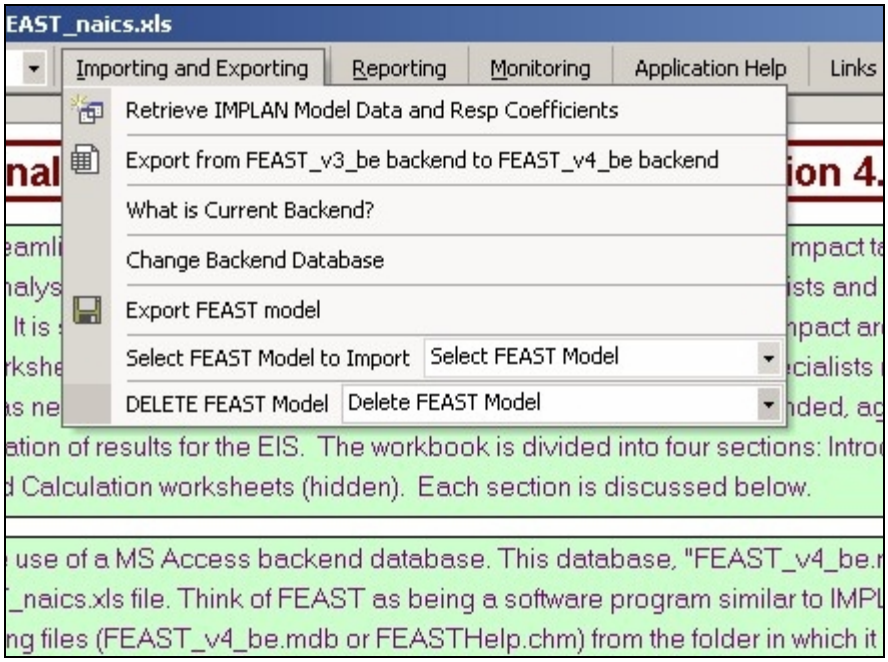
Fin Navigation	Fin Data Entry worksheet navigation. Similar to Res Navigation, but includes 2 more options.

Econ Navigation	Econ Data Entry worksheet navigation options.

EIS Tables Navigation	Tables for EIS worksheet navigation. In this worksheet there are 6 different EIS tables, Table A though Table F.

Importing and Exporting

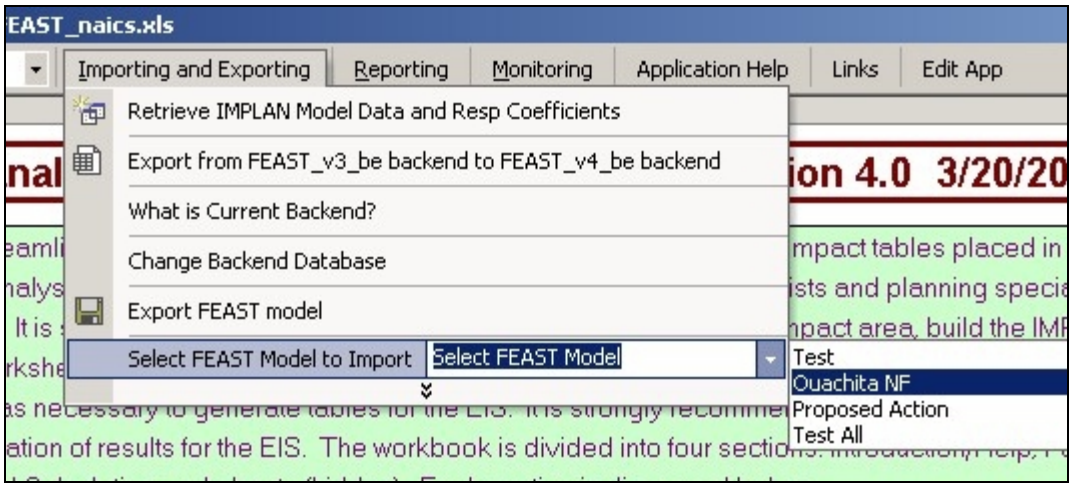
There are seven Importing and Exporting options that include **Retrieve IMPLAN Model Data and Response Coefficients**, **Export from FEAST_v3_be backend to FEAST_v4_be backend, What is Current Backend?**, **Change Backend Database, Export FEAST Model**, **Select FEAST Model to Import,** and **DELETE FEAST Model.**



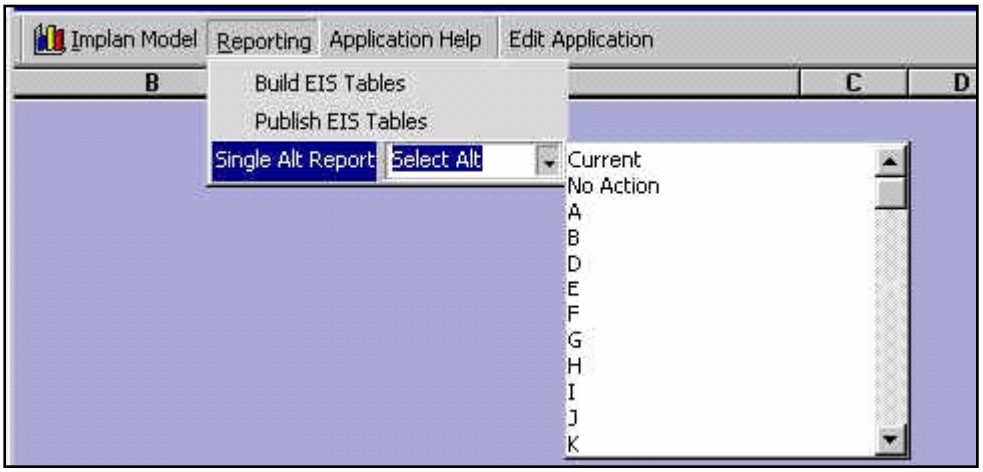
Retrieve IMPLAN Model Data and Resp Coefficients	This menu item is used to retrieve data from the IMPLAN model for the Econ Data Entry, Timber Multipliers, Timber Multipliers_2D, Intersect, the Interface worksheets. IMPLAN model response coefficients are imported into the Access and Access_2D_split worksheets (which are hidden). The Interface worksheet will show which aggregate and 2-digit response coefficients have been loaded and the date they were loaded. IMPLAN model data is placed into the following ranges:
Econ data entry	Base Year: C5 and the deflator for that year D5
	Implan Model Variables: C8 - C14
	Model Industry Jobs and Labor Income: J7 – K26
	RAC from Implan Model: rows 136 to 141
Intersect	IMPLAN cell intersects C7 to C24
Interface	Timber Mill Survey method information: D121 – E125
Timber Multipliers	All blue colored cells
Timber Multipliers 2D	All blue colored cells
What is Current Backend?	Click this button to see what the path and file name is of the current backend database. The default is FEAST_v4_BE.mdb

	which should be located in the same folder as the FEAST spreadsheet.
Change Backend Database	Click this button to select a different backend database to store or import FEAST data.
Export FEAST Model	FEAST uses a MS Access database to store FEAST model data. This FEAST backend database can store multiple FEAST models. If you are developing different scenarios for the same Forest, you need to change the Forest name for each different scenario, e.g., Colville NF_1, Colville NF_2, and so on. Simply select "Export FEAST Model" to export your FEAST model data to the current FEAST backend database.

Select FEAST Model to Import	Select this menu item to load the FEAST application with FEAST model data that has been previously exported using the method above. If there are no models currently stored in the FEAST backend database, the menu button's caption will say "No FEAST Models to Import."
Delete FEAST Model	Use this option to delete a particular FEAST model from the backend database.



Reporting
The Reporting menu bar button provides 3 options.



Build EIS Tables
Click on this to generate the Tables for EIS worksheet. The tables are empty at first. After selecting Build EIS Tables, the information is transferred, alternative by alternative, from the hidden Report worksheet into Tables A through F. If by chance you get an error when running this procedure, click End. **Do not click Debug**. Then run the single Alt Report for your first alternative. This procedure will take you to the Report worksheet. Clues as to why the error occurred can be found here. If you see any #div/0, #error, #name or something like that you know that somewhere along the way you entered or didn't enter something correctly. You can select Edit Application so that the formula bar is visible. From there you can trace your way back through the formulae and the worksheets, looking for something amiss. You will need to unhide all of the calculation worksheets to do this.

Publish EIS Tables
When you are satisfied with the final results from your analysis and you are ready to publish the EIS Tables, clicking this menu option will transfer the information from the Tables for EIS worksheet into a Microsoft Word document.

Single Alt Report

This allows reporting of a single alternative. When an alternative is selected from the drop down list, the reporting information on the Report (hidden) worksheet is developed. This is especially useful for validating the output from a single alternative. As mentioned above, this feature is useful for diagnosing problems associated with building the EIS tables.

Finding Data Errors

If an error occurs during the building of the EIS tables or if the tables are completed as you would expect then you should use the Single Alt Report feature. The Report worksheet will be activated after selecting an alternative for the Single Alt Report. You can see from the example below that there is a problem with recreation data. By tracing this formula back to its roots the error was found to be on the RES Data Entry worksheet. A text character was inadvertently added to the number when hitting the enter key (this actually happened).

	A	B	C	D	E
1	**EMPLOYMENT, INCOME & TAX STATEMENT**				
2	**lez Perce -- Current Condition**	**National Forest**			
3	**FISCAL YEAR**	**2003**			
4	**For Alternative:**	**Current**			
5			**EMPLOYEE**	**EMPLOYEE**	**LABOR**
6		**EMPLOYMENT**	**COMPENSATION**	**COMP / JOB**	**INCOME**
7	**RESOURCE PROGRAMS**	**(Jobs)**	**($Thousands)**	**($)**	**($Thousands)**
8	Recreation Management	#VALUE!	#VALUE!	#VALUE!	#VALUE!
9	Fish & Wildlife Management	235	3,904.370	16,579.499	4,478.381
10	Rangeland Management	14	140.371	9,695.631	171.019
11	Timber Management MillSurvey	381	7,470.134	19,624.578	9,852.784
12	Minerals Management	2	49.678	26,553.399	58.197
13	Payments to States/Counties	54	1,465.377	27,106.639	1,731.926
14	Forest Service Expenditures	559	16,155.936	28,919.325	16,821.898
15	Total Forest Management	#VALUE!	#VALUE!		#VALUE!
16	Forest Total as a % of Total Area	#VALUE!	#VALUE!		#VALUE!

Viewing Direct and Secondary Impacts

The **Report All Impacts** worksheet displays the direct and secondary (indirect plus induced) impacts by resource program. This worksheet also displays the aggregated 2-

digit impacts for each resource program. The difference between the sum of the aggregated 2-digit impacts and the total industry impacts should always be zero.

Response Coeff Unit Worksheet

This worksheet displays response coefficients as per unit of the output/use that is entered on the RES Data Entry worksheet. For example, if you entered 100 ccf for softwood sawtimber volume, the response coefficients reported on this worksheet would be jobs or income per 100 ccf. A word of caution is in order here. DO NOT try to summarize these response coefficients…the end result would be a meaningless number. That is, you can not add the response coefficient for logging camps to the response coefficient for sawmills, other manufacturing, residue, and plywood and expect to have a total response coefficient for timber.

Application Help
The Application Help menu button provides 2 help options that include **Microsoft Excel Help** and **Help with FEAST Application**.

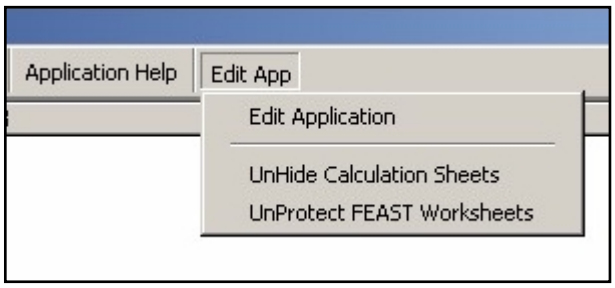
Microsoft Excel Help	Opens the Usual Microsoft Excel Help.
Help With FEAST Application	Opens the FEAST Help for the application.

Links

FEAST Web Site	The FEAST Web Site contains any late breaking news, a list of contacts, the latest versions of the FEAST spreadsheet application and the FEAST Help system.
FEAST Update Log on Web	The FEAST update log can be used to see if there are any new FEAST components (FEAST_naics.xls, FEAST_v3_BE.mdb or FEAST_naics_Help.chm) to download. The log also shows the features that have been corrected or added.
State DOE Links for Schools Financial Data	Dept. of Education links for various states. These sites are useful for obtain information regarding splits between Salary and Non-Salary expenditures for schools. More state links will be provided through time.

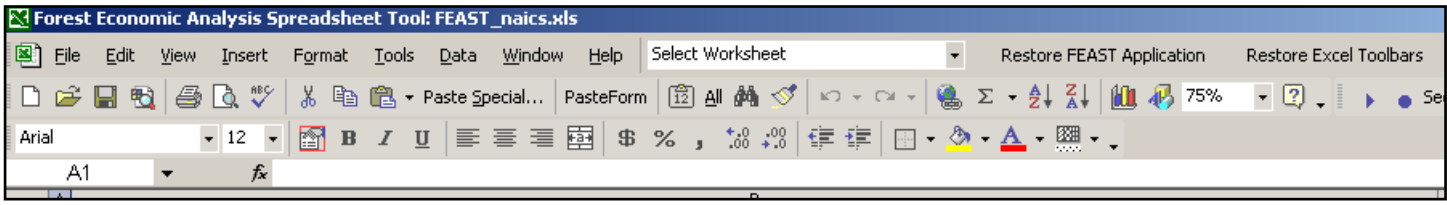
Links
Provides a link to the FEAST website and links to a website which has links to various state Dept. of Education, DOE, websites which are useful for determining the proportion that states spend on school related salaries and benefits. Economists which will be building IMPLAN impacts for Grants and Aid will need to know these proportions.

Edit App
The Edit App menu bar button provides three options that include **Edit Application, UnHide Calculation Sheets**, and **UnProtect FEAST Worksheets**.



Edit Application
Select this menu item if you need to see the standard menu bar and tool bars associated with the usual Excel workbook. This menu item will mostly be useful for workbook or worksheet design enhancements...or those users who prefer to use the tool bar cut and paste buttons and formula bar while entering data.

Restore Application
Select Restore Application to return the application to its normal working state and to view the custom FEAST menu bar.



Restore Excel Toolbars
Occasionally you may encounter an error or bug or something that deletes the "Standard" and "Formatting" toolbars. A quick way to bring those tool bars back is to just click "Restore Excel Toolbars." This is easier than clicking View/Toolbars, etc.

Unhide/Hide Calculation Sheets
Select this menu item to unhide/hide the FEAST calculation worksheets.

UnProtect FEAST Worksheets
The FEAST workbook and worksheets are password protected. The only cells which are not protected are the GREEN colored, data entry, cells. There is no need for the average user to unprotect the FEAST application.

Caution: Do not attempt to edit the design of this application. Changing worksheet names, the location of worksheet items, defined range names, etc., will cause many errors. That is, the visual basic code which runs the menu bars and macros, and imports data from IMPLAN models, will cease to function properly.

Entering Data into the FEAST Worksheets: Forest ID Team Inputs

Data input will be described sequentially in this section, starting with the RES Data Entry worksheet. The Forest ID Team and the economist can input data in the same sequence. User input is allowed only in the GREEN-colored cells and in the YELLOW-colored notes section at the bottom of the page. If it's not colored green or yellow you can not edit it.

Resource Data Entry Worksheet

The RES Data Entry worksheet is where alternatives are identified and resource output or use data are entered by ID Team specialists. ID Team specialists are strongly encouraged to document assumptions, data sources, etc., in the area provided at the bottom of the worksheet.

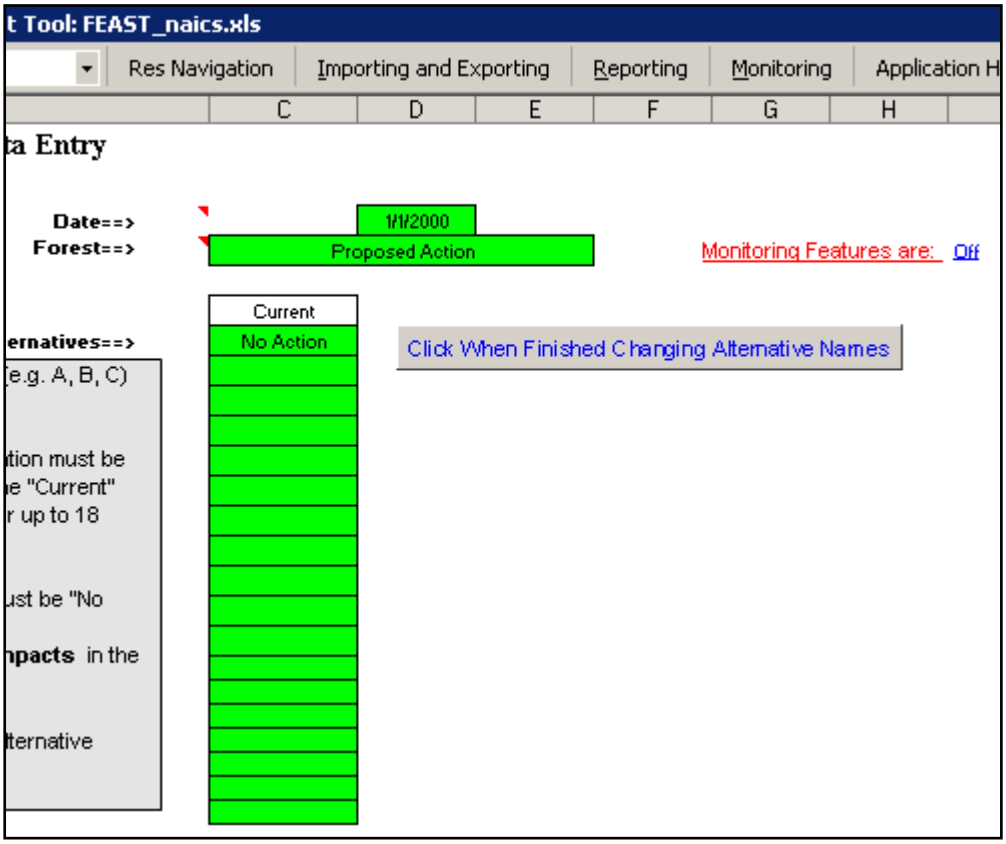
There is a **Monitoring Features** indicator on the RES Data Entry worksheet which indicates if the Monitoring Feature are On or Off.

Data Input Items

- **Date:** Enter the current date in a mm/dd/yy format.

- **Model Name:** Enter a name for the new FEAST model. This can be the name of the Forest(s) being modeled or something else. To have different versions of the same forest for "What-if" scenarios, use a different forest name, e.g., Uinta National Forest_1, Uinta National Forest_2, and so on.

- **Alternative Names:** A maximum of 7 characters is allowed when entering alternative name. The alternative listed directly below the "Current" should be named "No Action" if Table F: Cumulative Economic Impacts on the "Tables for EIS" worksheet is to be used. Each budget level for the same allocation must be considered a separate alternative. The "Current" alternative is fixed. There is space for up to 18 alternatives. Leave cells blank where an Alternative name/label is not needed. After entering new alternative names in column C click the ***Click When Finished Changing Alternative Names*** button. This refreshes the list of alternative names in the drop-down lists of the "Single Alt Report" item on the "Reporting" menu. The cell can not be in edit mode. You must hit return or tab after changing alternative names before you can click the button.



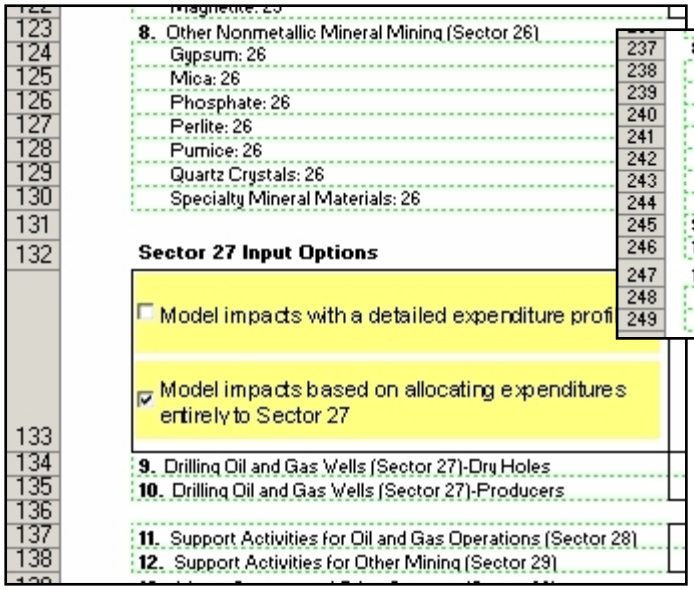
- **Entering Resource Output Data:** After editing the alternative names you are ready to input resource data by resource and by alternative. Select ***Res Navigation*** and then ***Enter Res Outputs*** from the menu and begin. There are 6 resource categories that you can enter output data for. These categories include Recreation, Range, Wildlife and Fish, Timber, Minerals, and Ecosystem Restoration.

Minerals

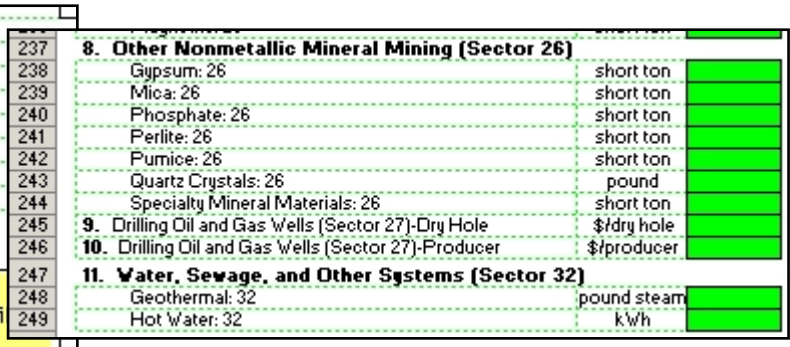
When entering data for “drilling oil and gas wells” under the Minerals category, you will have a choice as to whether you want to model impacts with a detailed expenditure profile or allocate all expenditures to sector 27. You are not required to select either option. If the first option is selected, the corresponding rows for entering prices for Drilling Oil and Gas Wells on the ECON Data Entry worksheet are hidden and not available for data inputs. If the second option is selected, then the corresponding rows for entering prices for Drilling Oil and Gas Wells on the ECON Data Entry worksheet are exposed and at least one of the entries is required. This is explained in further detail under the minerals section of the Impact Guide.

Option	Econ Data Entry worksheet Affect
Model Impacts with a detailed expenditure profile	9. Drilling Oil and Gas Wells-Dry Hole 10. Drilling Oil and Gas Wells-Producer **Entries are hidden**
Model impacts based on allocating expenditures to sector 27 entirely	9. Drilling Oil and Gas Wells-Dry Hole 10. Drilling Oil and Gas Wells-Producer **At least one entry is required**
No option selected	No affect on ECON Data Entry worksheet

RES Data Entry Worksheet



ECON Data Entry Worksheet



- **Null Resource Output Values** If your Forest has no data for a particular resource you can leave those fields blank. You do not have to enter a zero. The application was developed to handle null values.

- **Data Sources and Comments** The ID Team specialists and the economist should document data sources, assumptions, comments etc., in the sections provided at the bottom of the input worksheets.

Financial Data Entry Worksheet

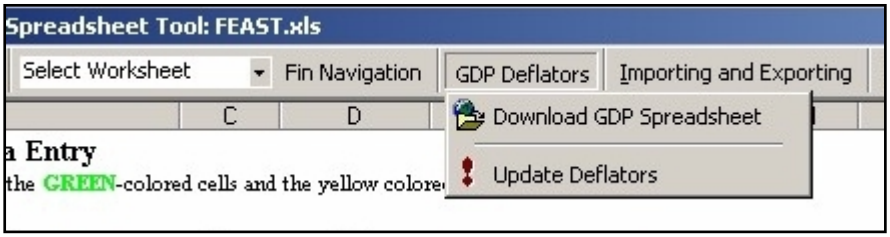
The Fin Data Entry worksheet is where all relevant expenditure, revenue, payments to counties, and FS employment data are entered by the appropriate ID Team specialist. All data should be converted to the same year dollars if the data came from different years. That is, if the timber data came from a 2006 cut and sold report and the recreation revenue data came from a 2005 report, then the data must be converted to the same year before entering it into the FIN Data Entry worksheet. GDP price deflators are used to do this. There is a list of deflators at the bottom of the worksheet. Divide the desired year deflator by the data year deflator and multiply this result by the dollar amount. For example, to convert $100, which are in 2005 dollars, to 2006 dollars the equation would be $100 x (2006 deflator / 2005 deflator).

Data Input Items

- **Select Year Of Dollars For This Worksheet** Use this drop down to select the year of dollars for the data entered in this worksheet. For example, if you are using 2004 data, select 2004.

- **Select Year Of Dollars For Results Tables** Use this drop down to select the year of the dollars for the display of results. If you want your 2004 data converted to 2005 dollars, select the year 2005.

- **Download Latest GDP Deflators From Fort Collins Web** You can download the latest GDP deflators from the Fort Collins web site by selecting "Download GDP Spreadsheet" under the *GDP Deflators* button on the menu bar. After you have saved the downloaded spreadsheet to your hard drive, select "Update Deflators" under the same menu button. Next, a dialog window opens prompting you to browse and select the saved deflator spreadsheet. The FEAST deflators will then be updated.



- **Program Level Collections** Enter the appropriate average annual revenue information, in thousands of dollars, for each output identified on the RES Data Entry worksheet and that is shown on the Fin Data Entry worksheet.

- **Payments to Counties (Secure Rural Schools Act full payments and/or 25% payments)**

The Total Payments to Counties entered into the FIN Data Entry worksheet must be allocated between roads, schools, general government, and Title II projects. The percentage allocations must add to exactly 100%. The Secure Rural Schools Act has been renewed for 2007. Visit the Payment to States web site for further information regarding the Secure Rural Schools Act. If the Act is not renewed, the Total Payment should consist of only the traditional 25% fund payments. At that point, allocation of the total payment can only be between roads and schools. The same goes for Minerals Payments.

- **Minerals Payments**
  Enter the Mineral related payments to counties.

  25% Fund Payments Not Included Above
  An entry is required here if the Secure Rural Schools Act full payment amount is chosen and there are mineral payments based on revenue from leases issued pursuant to the Mineral Leasing Act for Acquired Lands (1947)-30 U.S.C. 351 et seq. Minerals potentially subject to this act include phosphate, oil shale, gilsonite, sodium, sulphur, potassium, oil, natural gas, and coal.

  Payments Subject to Different (i.e., non-25%) Distribution to Counties
  These payments would typically be based upon mineral receipts generated from leases issued on public domain lands. This entry will likely involve contacting the relevant state for the method they use to allocate their 50% share of these receipts.

  Again, you need to specify what these monies were used for by entering proportions in the cells labeled Roads, Schools, and General Gov't. The sum of these proportions MUST add to 100 percent.

- **FS Budget Expenditures by Program** Enter the average annual budget expenditures for each program in thousands of dollars.

- **FS Employment** Enter the average annual Forest Service employment, for your National Forest or unit, for permanent and other than permanent employees.

- **Data Sources and Comments** The ID Team specialists and the economist should document data sources, assumptions, comments etc., in the sections provided at the bottom of the input worksheets.

Note for Economists
When building the impacts for schools salary and non-salary expenditures must be split. Do this by running $1,000,000 through a project in IMPLAN that consists of two weighted groups;
1) Detailed cost function ("SL govt cons exp elementary and secondary public s") and
2) The salary impact (Sector 503).

The detailed cost function can be imported from the backend database, FEAST_v4_be.mdb, when building IMPLAN groups. Import the group from "Model" and select All File types and browse to the location of the backend database. This cost function can all be downloaded from the link below. Download this file 509 - Expanded GOV FD.IAP and import the cost function named "SL govt cons exp elementary and secondary public s."

The weights would be determined by how much the local state/local government spends on salary vs. non-salary. This information is easy to find on State Dept of Education websites.

Economist Inputs

Economic Data Entry Worksheet

The Econ Data Entry worksheet is where all IMPLAN or industry-related data are entered by economists or analysts. Economists and/or analysts are strongly encouraged to document assumptions, data sources, etc in the area provided at the bottom of the worksheet.

Response Coefficients

Response Coefficients (RCs) are calculated according to the information provided by ID Teams. RCs for commodities (range and minerals) are calculated on a production, or Total Industry Output (TIO), basis because field data for these resources are based on sales rather than final demand. The two commodities within FEAST are minerals and range. In contrast, RCs for consumer or government expenditures are calculated on a Final Demand basis. These include timber, recreation, wildlife, FS salaries, FS expenditures, and Grants and Aid. Response coefficients can be found in the Access and Access_2D_split worksheets.

Aggregation Template in IMPLAN

Before executing the "Retrieve IMPLAN Model Data" macro, be sure that the active Aggregation Template in IMPLAN is correct. It should have twenty NAICS 2-digit sectors. If by chance you have imported the wrong Aggregation in your IMPLAN model, FEAST will delete it and add the correct Aggregation scheme. If you don't have an Aggregation scheme in your IMPLAN model, FEAST will give you a warning.

Cumulative Effects: Cells D23-E25

Projections of employment are often available, but this is not the case for labor income. Projections of personal income are sometimes available through state governments. When income is projected, some components of personal income may be provided and not others. Care must be taken to use the same definition of labor income as that used in IMPLAN. To arrive at the IMPLAN definition of labor income, start with "Earnings by place of work" found in BEA personal income tables. This is the sum of "Earnings by Industry" or the sum of "Wage & salary disbursements + Other labor income + Proprietors' income". To this sum, add an estimate of employer contributions for social insurance. This measure is not readily available, but may be estimated by using personal contributions for social insurance. Employer and personal contributions are nearly equivalent and the later measure is found in BEA personal income tables. If earnings have been projected, but contributions for social insurance have not, one method for estimation is to use historical ratios of the two and apply that ratio to earnings projections.

Running IMPLAN for Recreation, Wildlife & Fish:

Non-resident Expenditure Profiles provided by PAG

Recreation and W&F expenditure groups must be imported into the impact area model from another IMPLAN model or library obtained from the PAG web site or Susan Winter, WO-PAG (970-295-5726). Once the expenditure groups have been imported,

each group should be examined to be sure the "% Local" column has been set for model RPCs. In most cases, the % will be less than 100. Model RPCs should be used where the data represent expenditures within a much larger area than the model area. The "% Local" column may be set at "100%" where the model area approximates or includes the expenditure data collection area (such as a state). Each expenditure group is already set up so that the Value column in the Impact window sums to total expenditures per person per day. Click on the "Analyze" button. Highlight each group, then enter into "Level" the result of dividing $1,000,000 by the sum of the Value column from the previous window. This will provide a $1 million change in Final Demand. Enter the appropriate Impact Name as specified on the INTERFACE worksheet (exclude "IMT", start with "$1MM...."). Click on "Run Impact". The response coefficient will be on a "per $1 million of expenditure" or final demand basis.

Non-resident Expenditure Profiles generated from Local Studies

Where local expenditure information is judged to be more representative than expenditure profiles available from PAG, recreation and W&F expenditures must be modeled from scratch. Rather than having an expenditure group for each modeled activity, this procedure requires having one expenditure project for each study to be modeled. PCE groups provide the basic building blocks for modeling the expenditures. PCE groups must be imported from the model library. In a separate workbook, build an expenditure profile from the local study matching study expenditure categories with PCE groups. For lodging, do not use a PCE group, but use Sector 479 (Hotels and motels, including casino hotels) and/or Sector 480 (Other accommodations) on a commodity basis. Convert each expenditure to a proportional share of total expenditures. Make sure PCE plus Sector 479 and/or 480 proportions sum to 1.0. Each PCE group and Sector 479 and/or 480 should be examined to be sure the "% Local" column has been set appropriately. Model RPCs should be used where the study represents expenditures within a much larger area than the model area. Where the model area approximates or completely includes the study area, the "% Local" column may be set at "100%". Because groups are already being used to represent different kinds of expenditures by tourists, the Project feature of IMPLAN must be used. In the Impact window, click on the Project tab. Add a project, then add all relevant groups to that project. Click on the "Analyze" button. Highlight each project, then enter "1,000,000" into "Level". This will provide a $1 million change in Final Demand. Highlight each group in the project and enter the proportion calculated for each in the separate workbook discussed above. Enter the appropriate Impact Name as specified on the INTERFACE worksheet (exclude "IMT", start with "$1MM NR REC USER 1"). Click on "Run Impact". The response coefficient will be on a "per $1 million of expenditure" or final demand basis.

Running IMPLAN for FS Salaries and FS Non-Salaries

FS Salary

One household group must be imported into the impact area model from the Institution list. The household group representing incomes between $50-$70,000 best represents average FS salaries. Once the group has been imported, it should be examined to be sure the "% Local" column has been set for model RPCs (the default setting). The group should already be set up so that the Value column sums to 1.0000. Click on the

"Analyze" button. Highlight the household group and enter "1,000,000" in "Level". Then enter the Impact Name as specified on the INTERFACE worksheet, i.e. "$1MM SALARY" (exclude "IMT"). Click on "Run Impact".

Another option for building the FS Salary impacts is to run $1,000,000 through an IMPLAN Project with the groups and weights shown below. This may provide more accuracy.

Groups	Weights
Household LT10k	.18
Household 10-15k	.12
Household 15-25k	.11
Household 25-35k	.08
Household 35-50k	.14
Household 50-75k	.26
Household 75-100k	.10
Household 100-150k	.01
Total	1.00

FS Non-Salary

Create a FS Non-Salary group in IMPLAN by importing a Budget Object Code (BOC) expenditure function from an IMPLAN holding model. These BOC expenditure functions/profiles can be obtained from the Fort Collins-WO-IMPLAN webpage (BOC Expenditure Functions--IMPLAN holding models) or Susan Winter, WO-PAG (970-295-5726). Be sure to download the Normalized BOC expenditure functions...the Value column sums to 1.0000. Once the expenditure function/profile has been imported into IMPLAN, the group should be examined to be sure the "% Local" column has been set for model RPCs. Run $1,000,000 through the FS Non-Salary group to build an impact table called "$1MM FS NONSALARY."

If your impact area consists of more that one National Forest, then create an IMPLAN Project. The Project will consist of groups, one FS Non-Salary group for each National Forest. Run $1,000,000 through the Project with weights applied to each group. Import BOC expenditure data into FEAST (see **Getting BOC Expenditure Data** below) for the desired Forests to get the weights, which will be shown in column F of the ECON Data-BOC worksheet.

Running IMPLAN for Payments to Counties:

Secure Rural Schools Act full payments and/or 25% payments

The FIN Data Entry worksheet allows the distribution of county payments to four possible activities: Roads, Schools, General Government, and Title II projects. If you have allocated payments to all four activities then you will need to build four response coefficients. The Secure Rural Schools Act has been renewed for 2007. Visit the Payment to States web site for further information regarding the Secure Rural Schools Act. If the Act is not renewed, the Total Payment should consist of only the traditional 25% fund payments.

Roads

One group with a single event must be created. Label the group "$1 in Sector 39", and specify one event with Sector 39 valued at "1" on a commodity basis with RPCs. See Commodity Basis Event above for further explanation.

General Government

One group must be imported into the impact area model from the Institution list, "State/Local Govt Education". Once the group has been imported, it should be examined to be sure the "% Local" column has been set for model RPCs (the default setting). The group should already be set up so that the Value column sums to 1.0000.

Schools

When building the impacts for schools salary and non-salary expenditures must be split. Do this by running $1,000,000 through a project in IMPLAN that consists of two weighted groups;

1) Detailed cost function ("SL govt cons exp elementary and secondary public s") and
2) The salary impact (Sector 503).

The detailed cost function can be imported from the backend database, FEAST_v4_be.mdb, when building IMPLAN groups. Import the group from "Model" and select All File types and browse to the location of the backend database. This cost function can all be downloaded from the link below. Download this file 509 - Expanded GOV FD.IAP and import the cost function named “SL govt cons exp elementary and secondary public s.”

The weights would be determined by how much the local state/local government spends on salary vs. non-salary. This information is easy to find on State Dept of Education websites.

Title II Projects

One group with a single event must be created. Label the group "$1 in Sector 18", and specify one event with Sector 18 valued at "1" on a commodity basis with RPCs. See Commodity Basis Event above for further explanation.

ECON Data Entry: Data Input Items

- **IMPLAN Model Data** IMPLAN model data will be automatically loaded into various ranges within this worksheet when you select *Retrieve IMPLAN Model Data* from the menu bar (see Importing and Exporting above for more detail).

- **Year of IMPLAN Model/Data** The appropriate year and deflator are automatically loaded during the above step. If needed, you can do this manually, by selecting the year of the IMPLAN model data.

- **Economic Indicators for Cumulative Effects Table** See Economist Notes above.

- **Economic Data by Resource**

  Recreation

  If you are only modeling NVUM activities then there are no required inputs for recreation. On the other hand, if you are creating user-defined activities, then you will need to provide additional recreation inputs in rows 39 to 48. For more information about modeling recreation impacts see Recreation Section of Impact Guide.

  Range

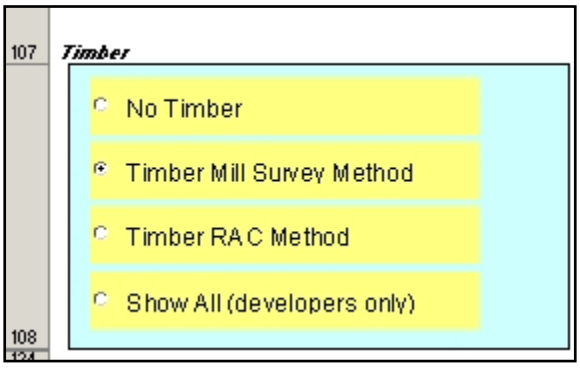
  See Range Section of Impact Guide

  Wildlife & Fish

  Data entry is similar to Recreation. For more information see the Wildlife & Fish section of the Impact Guide.

  Timber

  The first input for timber is a selection of the type of timber impact you are going to use. The blue box in cell 107 has 4 possible choices. Normally, you should select one of the first three options. If you select "No Timber", then all rows of data input pertaining to timber are hidden. If you select "Timber Mill Survey Method", then just the portion of the worksheet pertaining to the Mill Survey Method is exposed. And the same goes for the "Timber RAC Method." However, if you would like to see all of the timber inputs, Mill Survey, and RAC Methods, just click the "Show All" button.



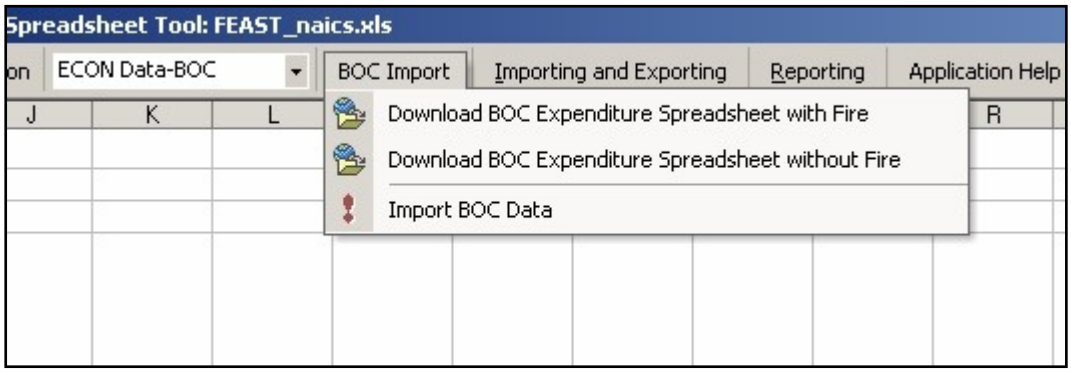
Timber Mill Survey Method
After completing the Timber Mill Survey Product Distributions entries in rows 150 to 164, and after you have imported the IMPLAN Model Data, you need to select a Region and State combination from the drop-down box "Select Region and State."

Timber RAC Method
If you use the Timber RAC method, you will need to enter the appropriate data into the Timber RAC Product Distributions section. The RAC data entries are filled in during the importing of IMPLAN Model Data. Some of the RAC cells may not be loaded. For example, if the coefficient for RAC logging (14) input to pulp mills (124) is zero, then there must not be any pulp mills in your study area.

Minerals and Ecosystem Restoration
To insure that sector expenditures are properly calculated, mineral prices and ecosystem restoration costs entered on this worksheet should be expressed in the same year's dollars as the IMPLAN base year. If IMPLAN base year mineral prices and ecosystem restoration costs are not available, a conversion calculation should be made outside of FEAST using appropriate deflators.

Economic Data-BOC Worksheet

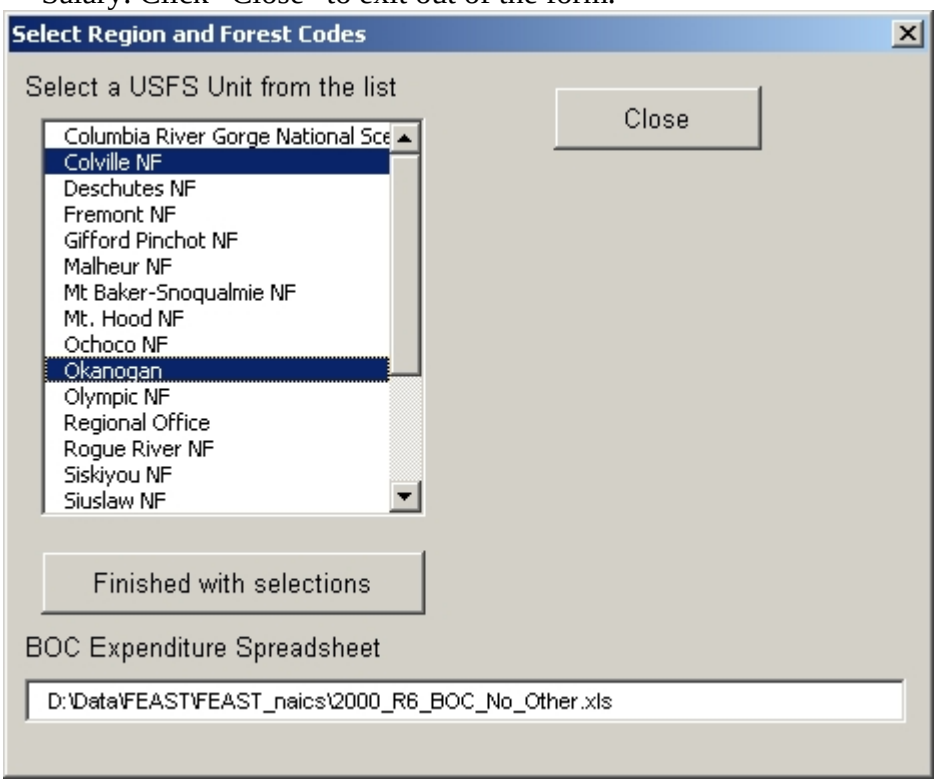
The **Econ Data-BOC** worksheet is where Budget Object Code data generated by Planning Analysis Group of the WO are displayed.



Getting BOC Expenditure Data

- **Download BOC Data:** Budget Object Code data by region and Forest, and with or without fire suppression expenditures, can be obtained from the Fort Collins web site: Financial Information for Forests. Select either *Download BOC Expenditure Spreadsheet with Fire or Download BOC Expenditure Spreadsheet without Fire* from the menu bar. This will open a browser window. Browse to the year that you want the BOC data for or select the 3 year average, and then select the region's data that you want to download. Save the zip file to your hard drive and unzip the enclosed spreadsheet.

- **Import BOC Data into FEAST:** Select *Import BOC Data* from the menu bar to import the expenditure data for one or more Forests into FEAST. A dialog window will open. Browse to the saved BOC spreadsheet, select and click OPEN. Next, pick the Forest/s to import from the list that appears. Clicking the button "Finished with selections" will summarize the data into two categories, FS Salary and FS Non-Salary. Click "Close" to exit out of the form.



The imported data on the ECON Data-BOC worksheet will show FS Salary and FS Non-Salary expenditures and the proportion of each to the total. If you are building an FS Non-Salary impact for multiple forests, FEAST will provide the IMPLAN Group weights necessary for the IMPLAN Project, see FS Non-Salary Economist Notes for more details.

Economist Data Entry -- Budget Object Codes

Forest: Test All

Fiscal Year 2002

Instruction

Select BOC Import / Download BOC Expenditure Spreadsheet from the menu bar above to download a particular BOC Expenditure Spreadsheet from Fort Collins IMI Website (http://fsweb.ftcol.wo.fs.fed.us/imi/economic_center/FinancialData1.html). Next, select BOC Import / Import BOC Data to update the BOC Data on this page with that of the downloaded spreadheet.

Fiscal Year	Reg_Forest	Unit_Name	FS Salary Expenditure	FS Nonsalary Expenditure
2007	Selected	Multiple	$41,426,820.48	$22,063,147.66

Total Expenditure: $63,489,968.14

Proportion FS Salary Expenditure: 0.6525

Proportion FS Nonsalary Expenditure: 0.3475

Multiple Forest Proportions for IMPLAN FS Non-Salary Group Weights

Fiscal Year	Reg_Forest	Unit_Name	FS Salary Expenditure	FS Nonsalary Expenditure	IMPLAN Group Weights
2007	0402	BOISE		$10,767,474.85	0.49
2007	0403	BRIDGER-TETON		$4,702,481.10	0.21
2007	0415	CARIBOU-TARGHEE		$6,593,191.71	0.30

FEAST Summary Information Worksheets

Input Summary Worksheet

The Input Summary worksheet is where all previously entered data has been transformed and made ready for linking with the other worksheets in this application. These data are summarized here so that users may view final data input in one location. No data is entered in this worksheet.

Intersect Worksheet

Selecting *Importing and Exporting* and then *Retrieve IMPLAN Model Data* from the menu will import IMPLAN model data into various worksheets, including the "Intersect" worksheet. Because Range and Minerals (commodities) expenditures represent Total Industry Outputs, TIO, all intermediate demands must be subtracted so that the result is the change in Final Demand. The Intersect worksheet accomplishes this calculation and passes the FD Factor (column G) to the Minerals and Range worksheets. The FD Factor is then multiplied by the TIO to produce the change in Final Demand.

Interface Worksheet

This worksheet lists the possible IMPLAN impacts tables (110 tables total) in column C. Not every IMPLAN model constructed will contain all the impacts tables listed. When an IMPLAN model is selected, with the *Importing and Exporting* / *Load IMPLAN coefficients* from the menu bar, information regarding each table in the model will be placed in columns D through G. “Aggregate RC Loaded?” refers to whether the response coefficients for that table were loaded. If loaded, the date it was loaded is shown in column E. Columns F and G refer to the 2-digit response coefficients in a similar fashion…loaded or not loaded and the date. Column I will show “Need Table” if resource data, financial data, and economic data were entered into FEAST but no response coefficients were loaded.

Impact Tables Necessary for Mill Survey Method

The Interface worksheet also displays the 5 impact tables and corresponding response coefficients needed in order to use the Timber Mill Survey method of calculating impacts. This information is shown in cells D121 to E125.

Producing and Publishing Reports

Producing Outputs

Tables for EIS

The Tables for EIS worksheet is where all results are reported. Several standardized tables are located in this worksheet. The tables are as follows:

Table A. Employment by Program by Alternative (Average Annual, Decade 1)
Table B. Labor Income by Program by Alternative (Average Annual, Decade 1; $1,000,000)
Table C. Employment by Major Industry by Alternative (Average Annual, Decade 1)
Table D. Labor Income by Major Industry by Alternative (Average Annual, Decade 1; $1,000,000)
Table E. Forest Service Revenues and Payments to Counties (Annual Avg, Decade 1; $1,000,000)
Table F. Cumulative Economic Impacts
Table G. Current Role of Forest Service-Related Contributions to the Area Economy
Table H. Local Recreation, Fish & Wildlife Employment by Program by Alternative (Average Annual, Decade 1)

Publishing EIS Tables

Please see Reporting above under section titled “Getting Around the Application” for information regarding building the EIS tables, publishing the tables in a Word document, and looking at the results of a single alternative.

FEAST Monitoring

General Description

The monitoring features in FEAST allow users to create FEAST models, during and after plan revision, and store those models in a backend database. These models are called "Proposed Action", "Monitoring Year 1", etc. to Monitoring Year 15. It is assumed that after year 15 the Forest will be in plan revision mode again and the monitoring cycle starts over with development of a new Proposed Action.

This document does not explain how to build a FEAST model nor does it explain any FEAST features not related to Monitoring

Assumptions/Requirements

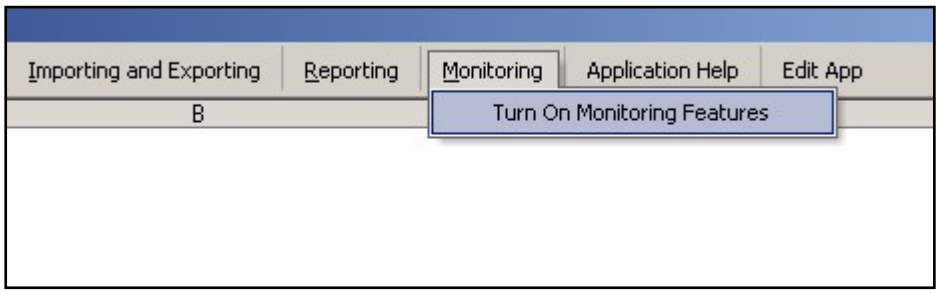
The user should already be familiar with building FEAST models.
The Proposed Action has been built.
The Proposed Action, as well as all other Monitoring Year models, should be developed as the Current alternative.
Only 10 different user-defined categories can be developed for Recreation, Fish & Wildlife, and Ecosystem Restoration over the complete monitoring cycle.

Building FEAST Monitoring Models

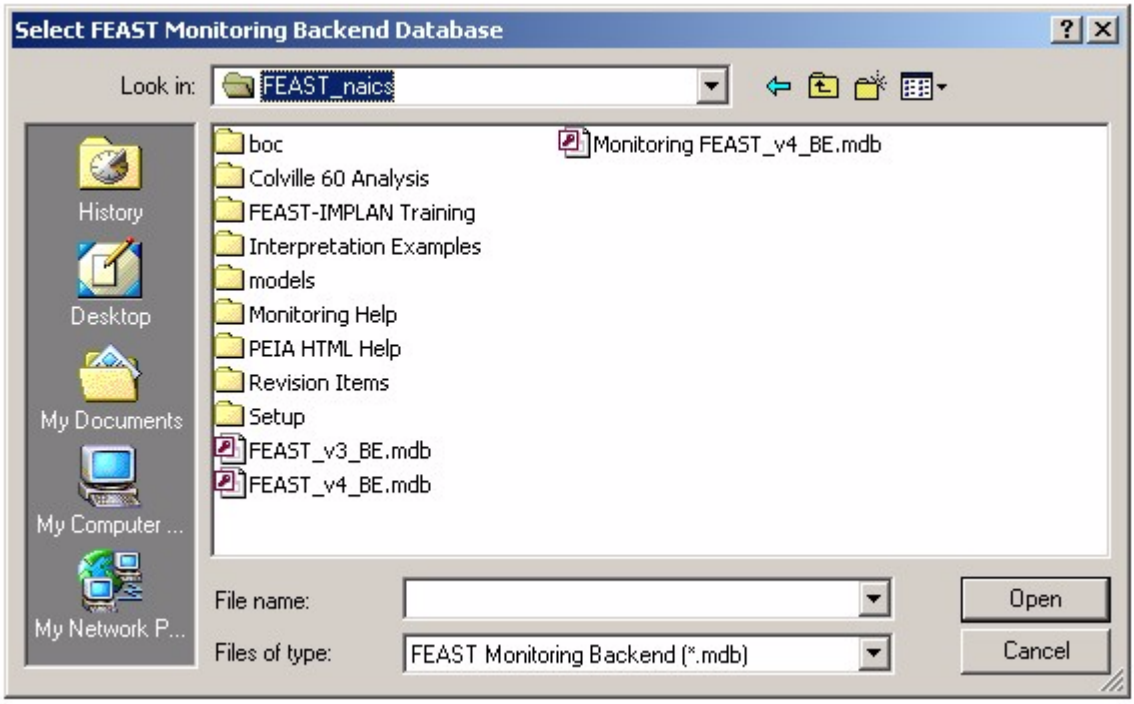
Step 1 Make a copy of the backend database, FEAST_v4_be.mdb, and rename it so that the file name tells you that it is used to store monitoring results, e.g. "monitoring FEAST_v4_BE.mdb".

Step 2 Open FEAST and import the FEAST model that represents the Proposed Action. More than likely this FEAST model is named something other than "Proposed Action."

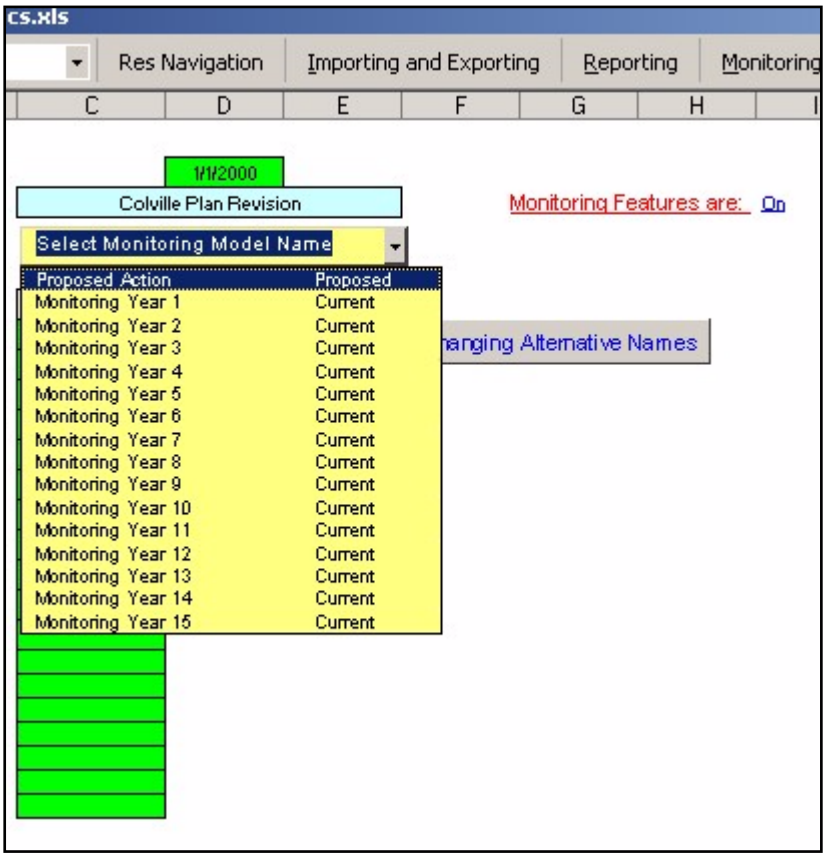
Step 3 Turn on the Monitoring Features by selecting "Turn On Monitoring Features" from the Monitoring menu.



A dialog box will open where you will then be asked to select the backend database that will be used for monitoring.



Step 4 Go to the RES Data Entry worksheet in FEAST and change the name of your plan revision FEAST model to “Proposed Action” by selecting it from the drop down list.



Step 5 Export the Proposed Action to the monitoring backend database (created in Step 1) by selecting “Export FEAST Model” from the Importing and Exporting menu.

Assume that the new Forest Plan is being implemented and one year has passed. It is now time to build another FEAST model. Remember, all FEAST models built for monitoring should be developed in the Current alternative. Failing to do this will cause problems later when developing charts and other reports. This next FEAST model should be called “Monitoring Year 1.” Export the Monitoring Year 1 FEAST model to the monitoring backend database (see Step 5 above). Build another FEAST model for every subsequent year of Forest Plan implementation and name these FEAST models “Monitoring Year 2” and so on.

Step 6 Entering Historical Forest Data

Historical Forest Data should be entered into FEAST soon after the monitoring cycle has begun. The worksheet called "Historical Monitoring Data" is where this data is entered. This worksheet can be easily selected by selecting "Enter Historical Data" from the Monitoring menu. Enter historical data for years 1996 to 2007.

Save the historical data to the backend database by selecting "Export Historical Data" from the Monitoring menu. Any exported historical data can be retrieved by selecting "Import Historical Data" from the Monitoring menu.

Data Guide-Historical Worksheet

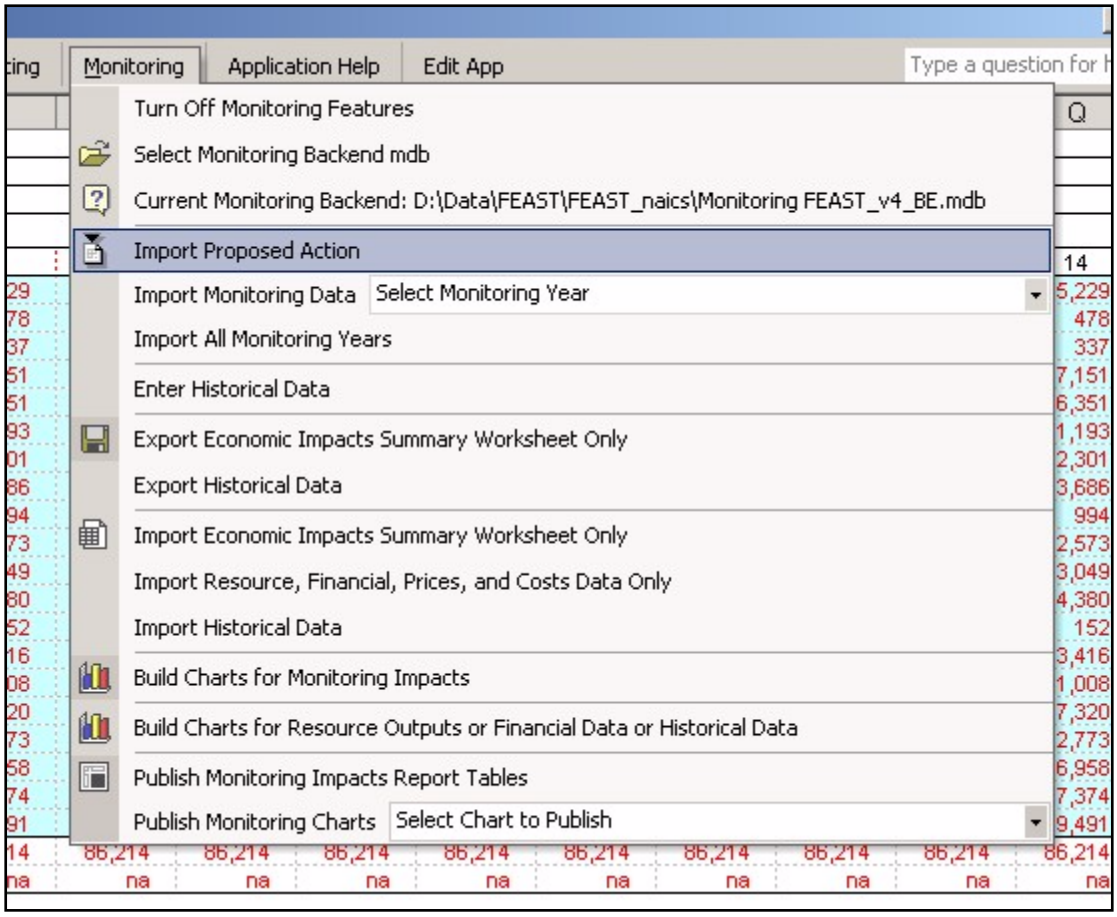
A Data Guide-Historical worksheet has been created which provides access to instructions for obtaining historical data for the "Historical Monitoring Data" worksheet. The data guide worksheet contains information regarding type of data, years that data is available, the type of data series, and web links to various data sources.

Viewing Monitoring Results

Results of the FEAST monitoring can be viewed at any time. There are three categories of results; 1) the economic impacts in terms of jobs and income, 2) the resource, financial, and economic data for each FEAST monitoring model that was entered into the RES Data Entry, FIN Data Entry, and ECON Data Entry worksheets, and 3) the historical data for the Forest.

Economic Impacts: Jobs and Income

A worksheet named "Monitoring Summary" displays the economic impacts for each FEAST monitoring model. Each model must be imported back into FEAST to calculate the impacts and populate this worksheet. This import must be performed by selecting the appropriate import option from the Monitoring menu. The option exist to import a single FEAST monitoring model or to import all existing models at once. Select "Import Proposed Action" to import the Proposed Action. Import a single FEAST monitoring model by selecting "Importing Monitoring Data / Select Monitoring Year". Import all existing FEAST monitoring models to populate the whole worksheet.


Monitoring
Application Help
Edit App
Type a question for
Turn Off Monitoring Features
Select Monitoring Backend mdb
Current Monitoring Backend: D:\Data\FEAST\FEAST_naics\Monitoring FEAST_v4_BE.mdb
Import Proposed Action
Import Monitoring Data
Select Monitoring Year
Import All Monitoring Years
Enter Historical Data
Export Economic Impacts Summary Worksheet Only
Export Historical Data
Import Economic Impacts Summary Worksheet Only
Import Resource, Financial, Prices, and Costs Data Only
Import Historical Data
Build Charts for Monitoring Impacts
Build Charts for Resource Outputs or Financial Data or Historical Data
Publish Monitoring Impacts Report Tables
Publish Monitoring Charts
Select Chart to Publish

The contents of the Monitoring Summary worksheet can be saved to the backend database by selecting “Export Economic Impacts Summary Worksheet Only” from the menu. It is not necessary to import FEAST monitoring models to populate the Monitoring Summary worksheet if the Monitoring Summary worksheet contents have been exported to the backend. Select “Import Economic Impacts Summary Worksheet Only” to re-populate the contents of this worksheet.

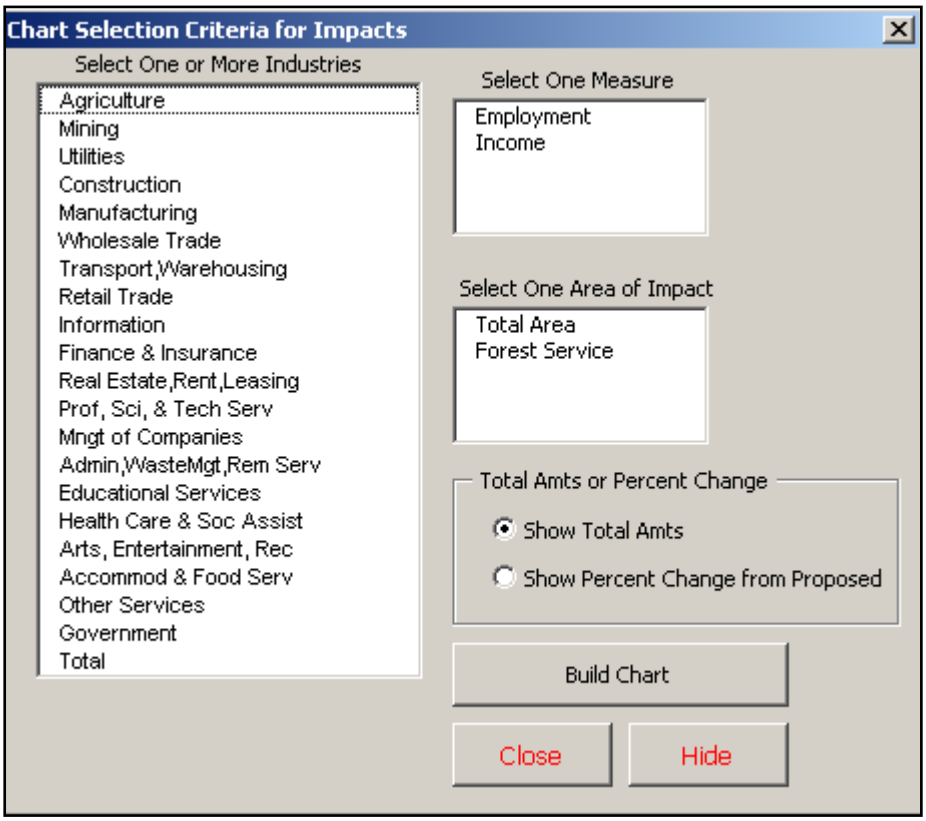
Reports and charts can be built after the Monitoring Summary worksheet has been populated by all existing FEAST monitoring models.

Monitoring Impacts Tables

A worksheet named “Tables for Monitoring” displays all economic impacts, by monitoring year. Table A: Current Role of Forest Service-Related Contributions to the Area Economy can be published in MS Word by selecting “Publish Monitoring Impacts Report Tables” from the Monitoring menu.

Charting Economic Impacts

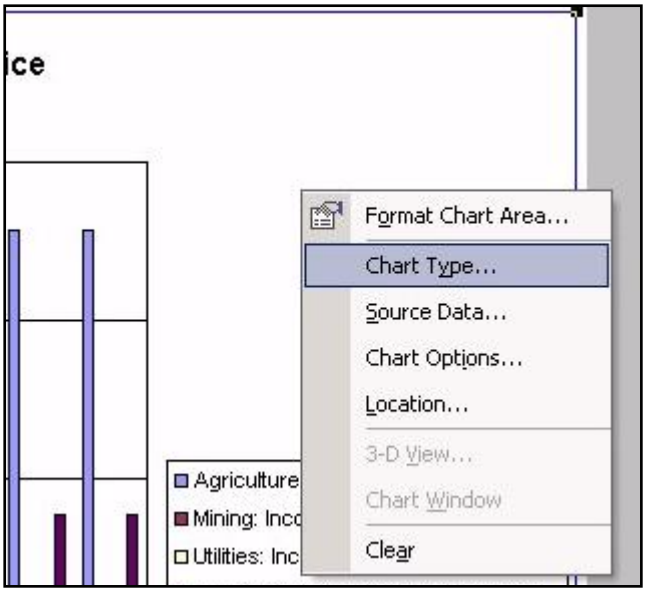
Selecting “Build Charts for Monitoring Impacts” from the “Monitoring” menu will open the chart builder.



Select one or more industries, Employment or Income, Total Area or Forest Service, Show Total Amts or Show Percent Change from Proposed, and then click the Build Chart button. A bar chart with the selected criteria will then be built.

Changing Chart Types

Right click the chart object and select chart type to change to a different chart type.

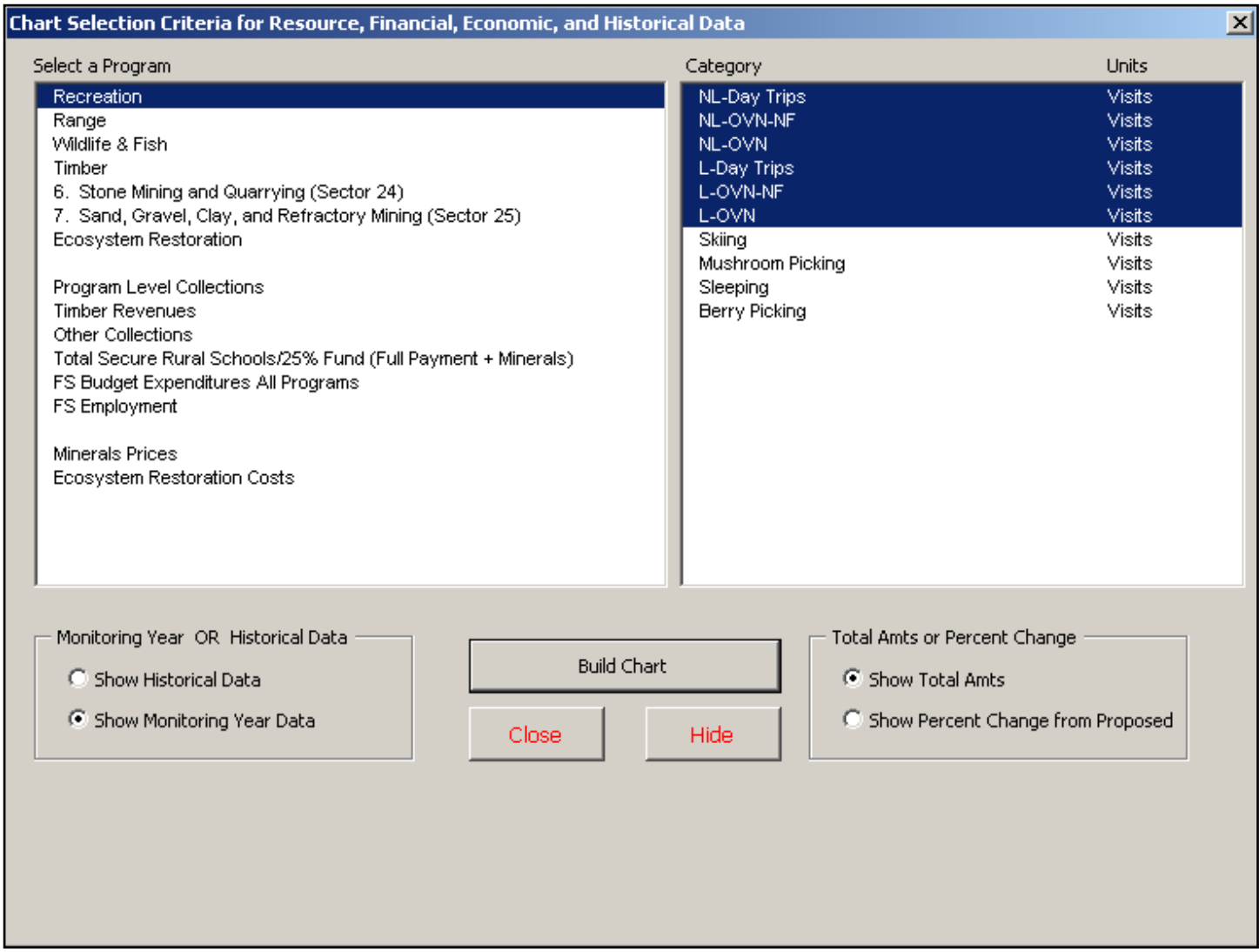


Resource, Financial, Minerals and Ecosystem Costs

A worksheet named "Resource_Financial Monitoring" is used to display all of the data that was entered in the RES Data Entry, FIN Data Entry, and price/cost data that was entered for Minerals and Ecosystem Restoration on the ECON Data Entry worksheets. Populate this worksheet by selecting "Import Resource, Financial, Prices, and Costs Data Only" from the Monitoring menu. There is no export option for the data on this particular worksheet. This data exist in various database tables in the backend database and is saved when the FEAST model itself is exported.

Charting Resource, Financial, Minerals and Ecosystem Costs

Selecting "Build Charts for Resource Outputs or Financial Data or Historical Data" from the "Monitoring" menu will open the chart builder.



First, select whether Historical Data or Monitoring Year Data is desired. Next, select the desired criteria from the Program list on the left and the desired categories from the list on the right. When selecting one or more categories to chart, it only makes sense to select

categories which have similar units. A chart of recreation visits combined with timber volume amounts would make no sense. Select a data option, Show Total Amounts or Show Percent Change from Proposed and then click the Build Chart button.

Historical Data
Follow the procedure above to chart the historical data.

Publishing Charts in MS Word
Select "Publish Monitoring Charts" from the Monitoring menu to publish any of the three monitoring charts in MS Word.

Monitoring Database Tables

Table: Monitoring_Summary
This table contains all of the economic impacts associated with the Proposed Action and all subsequent monitoring year models. This table is populated when the user selects "Export Economic Impacts Summary Worksheet Only" from the Monitoring menu.

Table: Monitoring_Historical_Data
This table contains all of the historical data that is entered in the Historical Monitoring Data worksheet. This table is populated when the user selects "Export Historical Data" from the Monitoring menu.

Table: Monitoring_ResFinDATA_ALL
This table contains all of the data that is entered into the RES Data Entry, FIN Data Entry, and the minerals prices and ecosystem restoration costs entered into the ECON Data Entry worksheets. This data table can be populated by selecting "Import Resource, Financial, Prices, and Costs Data Only" from the Monitoring menu. It can also be populated by opening the backend database and running the queries listed below.

Monitoring_ResFinDATA_ALL_empty
Monitoring_ResFinDATA_ALL_tmp_empty
Monitoring_ResData_ALL
Monitoring_FinData_ALL
Monitoring_Minerals_ALL
Monitoring_EcoRest_ALL
Monitoring_ResFinData_ALL_0 (see Note below)
Monitoring_ResFinData_ALL_1

Note: The query named Monitoring_ResFinData_ALL_0 is run only when building a chart for this data. It is not run when importing the data back to the Resource_Financial Monitoring worksheet. There is the possibility that a particular monitoring year or the proposed action will not have values for one or more items on the RES Data Entry, FIN Data Entry, or ECON Data Entry worksheets. This query gives those years a value of zero so that the chart will

show a complete series of data from the proposed action through the 15th year of monitoring.

PAG Web Site

The FEAST software and related downloads can be obtained by following the FEAST link on the IMPLAN page of the PAG web site (http://fsweb.ftcol.wo.fs.fed.us/imi/imi_implan_center.htm) or by going directly to the FEAST web site (http://fsweb_col.ewz.r6.fs.fed.us/epm/imisupplement/PEIA.htm). From this site you can download FEAST setup files which installs FEAST_naics, FEAST_v4_BE.mdb, and the FEAST html help system (FEAST_naics_Help.chm). If you already have the backend database and the help system installed, you can choose to just download FEAST_naics itself.

Recent changes and revisions can be seen from this web site by clicking "FEAST UPDATES LOG."

Response Coefficients

The engine driving FEAST

1

Response Coefficients

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

2

Response Coefficients

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

3

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

4

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.

5

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.

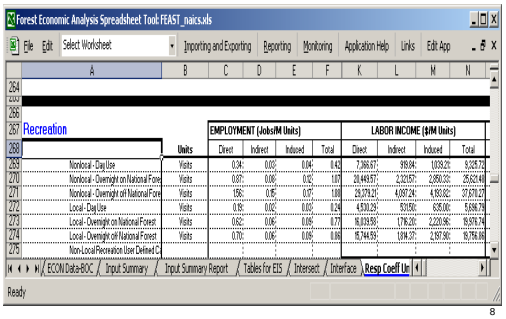
6

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

7

Response Coefficients



8

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
1. Oil and Gas Extraction (Sector 19)					
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				
7. Sand, Gravel, Clay, and Refractory Mining (Sector 25)					
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
9. Drilling Oil and Gas Wells (Sector 27)-Dry Hole	Number	112.15	85.87	57.97	255.99
10. Drilling Oil and Gas Wells (Sector 27)-Producer	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

	Units	EMPLOYMENT (Jobs/M Units)			
		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

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

FS Salaries

	Units	Direct	Indirect & Induced	Total
FS Salaries	$	0.02	0.01	0.03

FS Nonsalary Expenditure

	Units	EMPLOYMENT (Jobs/M Units)			
		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
1. Oil and Gas Extraction (Sector 19)					
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
7. Sand, Gravel, Clay, and Refractory Mining (Sector 25)					
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				
9. Drilling Oil and Gas Wells (Sector 27)-Dry Hole	Number	8,736,642.35	2,553,568.33	1,408,928.26	12,699,138.94
10. Drilling Oil and Gas Wells (Sector 27)-Producer	Number	14,561,070.59	4,255,947.21	2,348,213.77	21,165,231.57
11. Support Activities for Oil and Gas Operations (Sect	total $				
12. Support Activities for Other Mining (Sector 29)	total $				
13. Water, Sewage, and Other Systems (Sector 32)					
Geothermal: 32	Pounds Steam	20,166.54	2,830.46	2,982.09	25,979.09
9. Drilling Oil and Gas Wells (Sector 27)-Dry Hole	**Number**	0.00	0.00	0.00	0.00
10. Drilling Oil and Gas Wells (Sector 27)-Producer	**Number**	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

	Units	LABOR INCOME ($/M Units)			
		Direct	Indirect	Induced	Total
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

	Units	LABOR INCOME ($/M Units)			
		Direct	Indirect	Induced	Total
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

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

FS Salaries

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

FS Nonsalary Expenditure

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

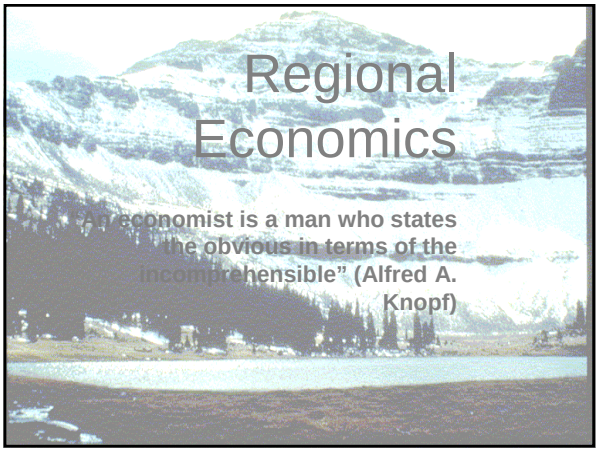
FS Salaries

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

IMPLAN

The Economy as a Web

1



Regional Economics

- Objectives of this Unit:
  - State the obvious…. There are consumers, there are producers, they interact. There are natural resources involved.
  - Highlight what makes this branch of economics different from other, perhaps more familiar, specializations.

3

Regional Economics

- Different from Efficiency Analysis
  - System of complex interactions
  - A Web - disturb one area, impacts felt elsewhere
- Why should we be interested in it?
  - Decisions that influence jobs and income of fundamental interest to many people
  - Scoping, interest groups
  - Remind legislators that we count

4

Regional Economics

- Clear objective:
  - Describe the “ripple” effects on a regional economy of government policies and management actions.

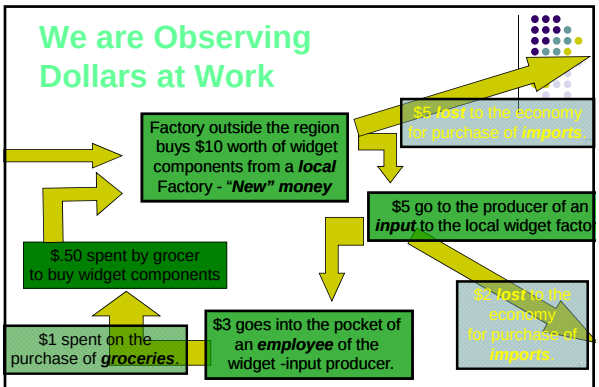
5

Regional Economics

- What do we mean by “ripple” effects?
  - System of complex interactions
  - Different scales
  - Flows between geographically separated systems
  - A Web - disturb one area, impacts felt elsewhere

6

We are Observing Dollars at Work



7

Dollars at Work

- The longer the dollar remains in the economy, the larger the ripple effect (the "Multiplier" effect)
  - Scale
  - Structure
  - Trade
  - Policy
  - Custom
  - History
  - Perception

8

Dollars at Work

- Historically, many policies geared toward delaying the "leakage" of money from an economy as long as possible.
  - Boeing
- Classic problem of urban centers, rural areas with a poorly developed economic base, and developing nations.
  - Mexico

9

Dollars at Work: Units of Measure

- Descriptive Analysis:
  - Structure: #, type, class
  - Export Base
  - Level of interrelatedness: multipliers
  - Contribution analysis: Share of the whole
  - Leakage: flow of money
- Impact Analysis:
  - Total economic response to a change
  - Rate of impact: response coefficients

10

Dollars at Work: Types of Impacts

- Who: Direct, Indirect, and Induced
  - For example, let's say a Forest invests in range improvement. The Forest Service is the consumer.
  - Direct effects are felt by the producers of materials and services purchased by the FS
  - Indirect effects are felt by the producers of materials used by the direct industries to provide goods and services to the FS

11

Dollars at Work: Types of Impacts

- Who: Direct, Indirect, and Induced (continued)
  - Induced effects occur when employees of the directly and indirectly affected industries spend the wages they receive in the process of providing goods and services to the FS Range Program.
- What: Sales ("Output"), Employment, Income

12

Example Questions

- SMALL SCALE (community, county, multi-county):
  - "How much does the local community depend on commodity production off of the National Forest?"
  - "How much does the local community depend on the National Forest to attract tourists?"
  - "How much do Forest Service employees spend in the communities in which they live?"
  - "How dependent is the local economy on National Forest Program expenditures?"

13

Regional Economic Analysis Systems

- Input-Output models:
  - RIMS II (Bureau of Economic Analysis)
    - State and county level
    - User provided multipliers only
  - REMI
  - IMPLAN
    - Zip code level
    - Structure and data editable
    - Descriptive information in addition to multipliers
- Computable General Equilibrium models
  - GAMS

14

Objectives of this Unit:

- History of Regional Economic analysis in the Forest Service
- Overview of the software and data system developed and used by the Forest Service

16

History

- Regulatory triggers
- Spectrum/Forplan incorporated project level analysis (cost/benefit, present net worth, etc.) but prior to 1980, nothing available for regional analysis.

17

History

- IMPLAN developed by the Forest Service to look at the “big picture” - regional economics.
- Software:
  - Built on well accepted theory -”Input-Output” (I-O)
  - I-O developed by Wassily Leontief for which he won the Nobel Prize in economics.

18

History

- Data:
  - Periodic collection of regional economic data for entire Forest Service would have been prohibitively expensive.
  - “Non-survey” data derived from published sources. Methodology original but founded on well accepted ideas.
  - Time lag, ie; most recent data available currently is 2004 (2003 is the latest data set purchased by the FS).

19

History

- Some of the principal uses of IMPLAN:
  - Forest planning; Project level analysis, Contributions to economic systems, Monitoring
  - Policy analysis (ie spotted owl, Chief’s roads policy)
  - RPA/SPRA assessments (minerals, recreation, timber, range, etc.)
  - Resource accounting
    - TSPIRS (Timber Sale Program Information Reporting System)
    - ARR (All Resources Reporting)

20

History

- IMPLAN used extensively outside of the Forest Service by:
  - Other Federal agencies
  - State and local governments
  - Researchers
  - Consultants
- Also used internationally

21

History

- IMPLAN now privatized:
  - Minnesota IMPLAN Group
  - Data sales
  - Software development and maintenance
- We purchase annual site license for software and data
  - Copyright issues
  - Stringent FOIA repercussions.
- www.implan.com

22

Why Use Implan?

- Example: Ski area EIS
  - Basic Statistics on the Local Economy
    - Broad ranking of industries in order of # employees (Chamber of Commerce)
    - Population trends (Consultant study)
    - Housing unit types (Board of Realtors)
    - Employment/unemployment rate (State Dept of Labor)
    - Median household income (State Dept of Labor)
    - Retail sales (State Dept of Revenue)
    - Tax base (County records)
    - Public services(County records)

23

Why Use Implan?

- Example: Ski area EIS
  - Basic Statistics on the Local Economy
    - *Detailed ranking of industries in order of # employees*
    - *Population trends*
    - Housing unit types (Board of Realtors)
    - *Employment rate*
    - Unemployment rate (State Dept of Labor)
    - *Median household income for 3 income brackets*
    - *Retail sales*
    - *Tax base*
    - Public services*(County records)*

24

Why Use Implan?

- Example: Ski Area EIS
  - *PLUS!*
    - *Economic ties to other businesses in the area*
    - *Ripple effects through the economy of:*
      - *wages spent in the area*
      - *government spending in the area*
      - *changes in policy*
      - *changes in the structure of the economy*
      - *leakage of money from the region*
      - *transfer payments*

25

Why Use Implan?

- Saves Time
- Saves Money
- Quantitative support for Qualitative Analyses
- ***IT'S FUN!!!!!***

26

Example Applications

- **Program Expenditures**
  - Question: What effect do non-salary expenditures and employee wage spending have on the area's economy?
  - Data:
    - County data (from IMPLAN)
    - Budget object code data by program by forest (from NFC)
    - Personal consumption expenditure data (from IMPLAN)
  - Initial Change: Expenditures for local materials and services.

27

Example Applications

- **“Stemming-From” Effects**
  - Question: What impacts on local economies result from the provision of outputs and services from the national forests?
  - This is different from Program Expenditures. Here looking at FS as a producer of inputs to the local economy.
  - Outputs most commonly assumed to be of interest to locals are timber, recreation, minerals, grazing, protection, and soil, water, and air.

28

Example Applications

- **“Stemming-From” Effects (cont.):**
  - Data:
    - County data (from Implan)
    - Timber: TSPIRS harvest information, mill flow data.
    - Recreation: Visitor expenditure profiles, visitation estimates.
    - Minerals: Patented vs non-patented claims, extraction volume, industry expenditure profile.

29

Example Applications

- **“Stemming-From” Effects (cont.):**
  - Data (continued):
    - Grazing: Number of permits, Head Months, non-government management expenditures.
    - Protection: Fire really messy because so much interagency cooperation.
  - Initial Change:
    - Change in demand for a national forest commodity.
    - Change in forest use or policy that affects demand.

30

Example Applications

- **Grants-In-Aid (payments to states):**
  - PILT and FS contributions
  - Timber/Recreation 25% Fund payments and payments under Secure Rural Schools:
    - Question: What economic impacts do Grants-In-Aid payments have on local economies?
    - Data: County data (from Implan), amount of payments to states, information on how each state divvies up the money (how much to schools and how much to roads).

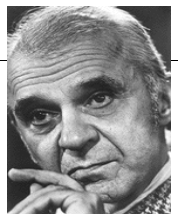
31

Example Applications

- **Grants-In-Aid (payments to states) cont:**
  - Timber/Recreation 25% fund payments (cont):
    - Initial Change: demand for output from the State and Local Govt (education) sector, and roads construction sector.
  - Minerals: Leasable, locatable, reserved
    - State by state variations in distributions

32

Input-Output Models



33

Input-Output Models

"The Royal Swedish Academy of Sciences has awarded the 1973 year's Prize in Economic Science in Memory of Alfred Nobel to

Professor **Wassily Leontief**

for the development of the input-output method and for its application to important economic problems.

Professor Leontief is the sole and unchallenged creator of the input-output technique. This important innovation has given to economic sciences an empirically-useful method to highlight the general interdependence in the production system of a society. In particular, the method provides tools for a systematic analysis of the complicated interindustry transactions in an economy."

34

Input-Output Models

- Objectives of this Unit:
  - Cover the theory – build an understanding of the modeling mechanics
  - Highlight the pros and cons – understand the advantages and pitfalls of using this type of model

35

Input-Output Models

- Elements:
  - Buyers of products and services
  - Sellers of products and services
  - Employment
  - Income

36

Input-Output Models

Transactions Table

	Purchasing Industries				
Producers	Agric	Manuf	Services	Final Demand	Output
Agriculture	10	6	2	20	38
Manufact.	4	4	3	26	37
Services	6	2	1	35	44
Labor	18	25	38	0	81
Total Outlay	38	37	44	81	200

37

Input-Output Models

Direct Requirements Table: (A)

	Purchasing Industries		
Producers	Agriculture	Manufacturing	Services
Agriculture	0.26	0.16	0.05
Manufacturing	0.11	0.11	0.07
Services	0.16	0.05	0.02
Primary Inputs	0.47	0.68	0.86
Total Outlay	1.00	1.00	1.00

38

Input-Output Models

Total Requirements Table: $(I-A)^{-1}$

	Purchasing Industries		
Producers	Agriculture	Manufacturing	Services
Agriculture	1.45	0.27	0.09
Manufacturing	0.20	1.16	0.09
Services	0.26	0.11	1.04
Output Multiplier	1.91	1.54	1.22

39

Input-Output Models

- Predictive Model : $X = (I-A)^{-1} Y$
  - X : Output - what we want to predict
  - $(I-A)^{-1}$: Multipliers
  - Y : Final demand - changes in final demand drive production in the economy up or down
- **"Ripple effects" through the economy are captured**
- **Question: This is an awfully simple model - why do we need Implan?**

40

Input-Output Models

Suppose a foreign country would like to purchase $1 more from the agriculture sector. The ripple effect can be traced using the table of Direct Requirements (A).

Round 1: For agriculture to sell $1 to a foreign country, agriculture buys from:

- Agriculture $0.278 worth of goods
- Manufacturing $0.111 worth of goods
- Services $0.167 worth of goods

41

Input-Output Models

Round 2: For agriculture to sell $0.278 worth of goods to agriculture, agriculture buys from:

- Agriculture $0.077 ($0.278 x .278)
- Manufacturing $0.031 ($0.278 x .111)
- Services $0.046 ($0.278 x .167)

…and, for manufacturing to sell $0.111 worth of goods to agriculture, manufacturing buys:

- Agriculture $0.018 ($0.111 x 0.162)
- Manufacturing $0.012 ($0.111 x 0.108)
- Services $0.060 ($0.111 x 0.054)

42

Input-Output Models

…and, so on, and so on…. ad infinitum

After 2 Rounds, Agriculture has produced for:

Export……..	$1.000
Agriculture (1st round)…… …..	$0.270
Agriculture (2nd round)……..	$0.077
Manufacturing (2nd rnd)……..	$0.018
Services (2nd rnd)……..	$0.008
For a 2nd Round	
total output multiplier of……..	$1.373

43

Input-Output Models

- Followed through all rounds (matrix inversion), this amounts to $1.91 (Type I output multiplier).
- These calculations are further complicated when the effect of wage spending in the economy is included (Type II or III multiplier).
- In addition to the output multipliers, income and employment multipliers must be calculated.

44

Input-Output Models

- Conclusion?

USE IMPLAN!

45

Input-Output Models

- Modeling Objectives
  - Generate regionalized direct coefficients.
  - Account for imports, exports and cross-hauling (leakages).
  - Apply final demand changes.
- Results
  - Snapshot of regional economy.
  - Estimate of impacts on regional economy.

46

Input-Output Models

- Simplifying Assumptions
  - Each industry produces one commodity (or product “bundle”)
  - Industries produce commodities using fixed recipes (production functions) - there is no substitution of ingredients and an increase in ingredients leads to an increase in gross output.
  - Resources (including labor) are unlimited.

47

Input-Output Models

- Simplifying Assumptions (cont)
  - There is no time dimension/seasonality - all changes are assumed to be average annual changes. This assumption implies the following:
    - There is no new technology
    - Trade relationships are static
    - There are no relative price changes except for commodity specific price inflation and deflation
    - There are no structural changes

48

Input-Output Models

- Simplifying Assumptions (cont)
  - Corrections for industry size, technology, or trade relations must be made by the user - ie;
    - Before building the model: Changes in trading patterns, industries present in the model, etc. can be made before estimating the multipliers
    - After building the model: Data on the temporal distribution of sales can be entered as separate alternatives to obtain an approximation of the effects over time.

49

Input-Output Models

- Keep in mind:
  - Snapshot in time
  - Static
  - Shock modeling/Short term impacts
  - Precision / accuracy
  - Not a statistical model: i.e. no error term, no confidence intervals
  - Price change effects imputed

50

Input-Output Models

- SAM : Social Accounting Matrix
  - Conventional I-O matrix plus inter- institutional transfers
  - Examples: dividend payments, income taxes, welfare payments, social security payments, compensation from work outside the region, live outside region where employed.

51

Input-Output Models

- Multipliers (for derivations, see Chapter 15 in the User's Guide)
  - Direct effects
  - Indirect effects
  - Induced effects
- Type I : Direct and indirect effects
- Type II and III: Direct, indirect, and induced effects.

52

Input-Output Models

- Output Multipliers
- Income Multipliers
- Employment Multipliers
- Response Coefficients : Defined, or scaled, per unit effects - ie; employment response per 1000 visitor days

53

Impact Analysis:

54

The Nobel Peace Prize for 2006

"The Norwegian Nobel Committee has decided to award the Nobel Peace Prize for 2006, divided into two equal parts, to **Muhammad Yunus** and **Grameen Bank** for their efforts to create economic and social development from below. Lasting peace can not be achieved unless large population groups find ways in which to break out of poverty. Micro-credit is one such means. Development from below also serves to advance democracy and human rights."

55

Impact Analysis:

Objectives for this Unit:

- Understand the terminology used in impact analysis
- Recognize the ways impact analysis can be misused

56

What Information Do We Need?

- An IMPLAN model requires:
  - Study area data from MIG
  - Any needed changes to the underlying economic structure
    - Technology
    - Missing sectors
    - Adjustments to trade factors such as RPCs
    - Etc.

57

What Information Do We Need?

- Information about a Final Demand Change
  - Remember $X=(I-A)^{-1}Y$
  - Y (Final Demand) is the only way we have to shock the model
  - Remember, the total value of an industry's output (TIO) includes local sales to processors (intermediate demand) plus sales to Final Demand.

58

What Information Do We Need?

- What is Final Demand?
  - Sales to anyone outside of the Study Area
  - Sales to inventory
  - Sales to households inside or outside the Study Area
  - Sales to any person, industry, or government inside or outside of the Study Area who will not be further processing the goods or services in any way.

59

What Information Do We Need?

- Examples of Final Demand
  - Sale of logs by local loggers to sawmills outside of the Study Area.
  - Local expenditures by recreationists.
  - Sale of cattle grazed on the National Forest to buyers outside of the Study Area.
  - 25% Fund returns spent by local governments for roads and schools.

60

Estimating Final Demand Changes

- **WHO** is involved in the transaction?
  - Final consumer? Local factory? Grocery store?
- **WHAT** is being transacted?
  - Traditional I-O, money. “Green” I-O, money and flows of resources.
- **WHERE** does the transaction occur?
  - Outside the area? Export demand? Hither and Yon?
- **WHEN** did the transaction occur?
  - All comparisons made on a base year.

61

Why is this important?

- Provide clarity to the analysis
- Ensure compatibility of the question with the model
- Improve the relationship between the policy question and the model’s answer

62

What is being transacted?

- Money or physical quantity?
  - All impacts must ultimately be monetized
  - Conversion of physical transactions to a monetary basis
    - For marketed products, this is easy
    - For non-market products, such as a recreation experience, a proxy must be found, i.e. recreation expenditures

63

How does the transaction take place?

- Is the purchase made from trade industries like retail and wholesale trade?
  - If so, the "purchaser price" transaction must be bridged back to the producers.
- Is the purchase made directly from the producer of the product?
  - If so, the "producer price" transaction is put directly into IMPLAN

64

How does the transaction take place?

- Producer Price Transactions
  - All transactions utilized by IMPLAN must ultimately be expressed in "producer prices"
  - Producer prices are the expression of product demand placed directly upon the producer of the good or service

65

How does the transaction take place?

- Purchaser Price Transactions
  - Purchaser prices have trade, transportation and insurance markups (margins) included with the product charge in the transaction amount
  - The margins and the product price must be "unbundled" and allocated to the individual producers to arrive at producer prices

66

How does the transaction take place?

- "Unbundling" Purchaser Prices
  - If a transaction is given in purchaser prices, we must "bridge" the expenditures back to the producers of goods and services.
  - For example, a person buying an auto from a dealership is really purchasing an auto plus trucking, insurance, wholesale, and retail services
  - The recreation and wildlife-related expenditure data provided on the PAG website has already been bridged for you.

67

Where does the transaction take place?

- IMPLAN models are spatial economic models - estimates relate to a specific geographic area.
- Changes in the final demand for products must, in fact, be incident upon producers in that economy either directly or indirectly.
- The location of expenditures is particularly important

68

Where does the transaction take place?

- Location of Recreation Spending
  - Consider the impact of ski trip spending on Summit County (location of the ski area):
  - "I spent $25 for gas during my ski trip. I bought it while I was in Breckenridge."
  - "I spent $25 for gas for my ski trip. I filled up before I left Boulder."
  - The two situations have very different effects on the Summit County economy.

69

Where does the transaction take place?

- Local Purchase Coefficients
  - Using a model for Larimer County, and final demand changes representing "people spending money in Colorado", LPCs could be used to indicate what portion was spent in Larimer County
  - Or… you could simply reduce the amount spent locally by hand for the same effect.

70

When did the transaction take place?

- All changes in demand must be expressed in the same relative prices as used in the accounting period (base year) of the model
- IMPLAN provides a "look-up" table of price adjusters (inflators and deflators) to adjust commodity transactions to the base year. You put in data, tell IMPLAN what year they're in, and IMPLAN automatically adjusts them.

71

Pieces of an Impact Analysis

- Event: What money was spent on.
  - Value (transaction): Expenditure.
  - Employment: The direct employment can be entered. Value is derived from this based on the Output per Worker ratio for that industry in the model.

72

Pieces continued….

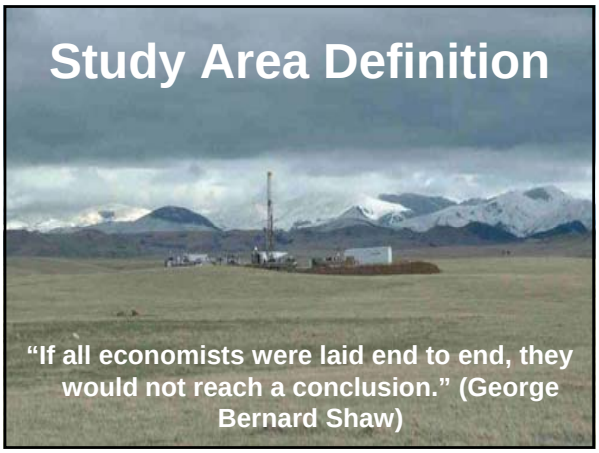
- Group (Activity): Logical grouping of Events.
- Project (Scenario): Logical grouping of Groups.

73

Example:

- Events:
  - Purchase Groceries (Purchaser price)
  - Purchase Equipment (Purchaser price)
  - Purchase Gas (Purchaser price)
- Group:
  - Hikers (purchasing groceries, equipment, etc)
  - Boaters "
  - Hunters "
- Project: Recreation

74



Study Area Definition

- Objectives of this Unit:
  - Understand what constitutes a study area
    - What is a region?
    - Functional economic areas
  - Understand how the study area definition can influence the results of a study

2

Study Area Definition

- So…. What IS a "Region"?
  - World (Leontief's Nobel lecture)
  - Country (U.N., national governments)
  - State or group of states (Appalachia assessment)
  - County or group of counties (Forest, Management Unit)
  - Community (zip code level)

3

Study Area Definition

- So…. What ISN'T a "Region"?
  - Extremely rural
  - Split by a barrier; civil, geographical, physical (Salmon river basin)
  - No data – scale or access problems

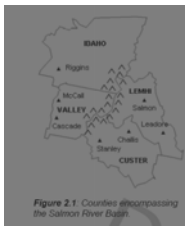


Figure 2.1: Counties encompassing the Salmon River Basin.

4

Study Area Definition

- Why is getting the study area "right" so important?
  - Identifying where the impacts fall (equity questions)
  - Identify differences from "reality" that require modifications to the IMPLAN model
  - Educate yourself and others

5

Study Area Definition

- Problem statement, i.e.;
  - What economic activity is involved?
  - More than one resource?
  - Resources related to same economy?
  - What is best measure of impact?
  - Structural, technology, trade, or final demand change?
  - Time frame?

6

Study Area Definition

- Economic factors
  - Functional economic areas
  - Scale
  - Trade flows
  - Forward and backward linkages

7

Study Area Definition

- Geography
  - Eco regions
  - Central place
  - Physical barriers
  - Infrastructure; roads, rivers, technology

8

Study Area Definition

- Geography (continued)
  - Location of supporting industries
  - Location of labor force
  - Location of consumers
  - Political boundaries
  - Physically separated areas
  - Community level analysis

9

Study Area Definition

- Geography (continued)
  - Physically separated analysis areas
    - Multiple models
    - Regional models
    - Interregional models

10

Study Area Definition

- How do I know if I've gotten it "right"?
  - Describe the existing economy as portrayed in the model, i.e.:
    - Characterize an economy in terms of production, income, and employment
    - Key industries
    - Industrial diversity
    - Export dependence

11

Descriptive Analysis

- Three levels of complexity;
  - Ranking and percentages
    - For example; Shannon-Weaver indices
  - Economic base/Export base
    - For example; Diversity and Dependency queries
  - Contribution analysis
    - Contribution rather than marginal (impact) analysis

12

Descriptive Analysis

- Total Industry Output (TIO)
  - Which industries are present in the region
    - Just what IS an industry????
    - SIC vs NAICS
  - Relative size
  - Export base

13

Descriptive Analysis

- Employment
  - If you compare IMPLAN's numbers with outside sources, make sure you're comparing oranges to oranges!!!!
    - IMPLAN: Annual average employment, including full-time, part-time, and temporary jobs, and the self employed. # of warm breathing people NOT FTE's!

14

Descriptive Analysis

- Employment
  - Comparing oranges to oranges, continued:
    - County Business Patterns: Full and part time employees on March 12 each year (no self employed or partners in unincorporated businesses).
    - BEA REIS data: Very aggregated, but provides info on self employment.
    - BEA Benchmark I-O, NIPA: Employment adjusted by force account (not true in REIS)

15

Descriptive Analysis

- Employment
  - Comparing oranges to oranges, continued:
    - Dept. of Labor ES202: Average annual employment, NOT including self-employed, railway employment, or any firm not participating in the Unemployment Insurance program.

16

Descriptive Analysis

- Employment
  - Comparing oranges to oranges, continued:
    - Dept. of Labor, Current Employment Statistics: Full and part-time employment measured on 12th of every month. Does not include self-employed, farm workers, volunteers, unpaid family workers, employees on leave without pay, domestic workers, and those on strike that pay period.

17

Descriptive Analysis

- Employment
  - Rank industries by # jobs
  - Average salaries (manufacturing vs service is a biggy)
  - Diversity and dependency
    - No consensus on definitions! Document your assumptions and methods!!!!!!
  - Ratios of employment to $mm exports, $mm va, $mm tio

18

Descriptive Analysis

- Value Added (like US GNP)
  - Ranking of industries by value added
  - Employee compensation per job
  - Compare value added to TIO
  - Calculation of Gross Regional Product

19

Descriptive Analysis

- Final Demand
  - Relative amount of consumption by institutional sector
- Institutional Sales
  - Sales by govt sector of commodity 24 vs sales by industry 24.

20

Descriptive Analysis

- Regional Consumption
  - Commodity use by sector
  - Total expenditures by sector for commodities and value added
  - Industries making large sales to, and purchases from, regional industries
  - Compare amount of intermediate vs final consumption of commodities

21

Descriptive Analysis

- Regional Trade
  - Value of exports and imports
  - Competitive vs non-competitive imports
  - Proportion of regional commodity demand met locally (RPCs)

22

Descriptive Analysis

- Non-market transactions (SAM)
  - Receipts and expenditures by each Sam agent
  - Real capital created by investment expenditures
  - Household tax payments
  - Government transfer payments

23

Descriptive Analysis

- Industrial Interdependencies
  - Output multiplier
  - Cautionary tales;
    - Detroit
    - Resorts

24

Descriptive Analysis

- Diversity and Dependency
  - Economic diversity / dependency as defined by TIO, income, and employment
  - Dependency on exports
  - Wildland dependency
- Concentration / specialization of industries in the region

25

1

The Nobel Peace Prize 2004 -
awarded to Wangari Maathai for her contribution to sustainable development, democracy and peace.

- “Maathai combines science, social commitment and active politics. More than simply protecting the existing environment, her strategy is to secure and strengthen the very basis for ecologically sustainable development. She founded the Green Belt Movement where, for nearly thirty years, she has mobilized poor women to plant 30 million trees. Her methods have been adopted by other countries as well. We are all witness to how deforestation and forest loss have led to desertification in Africa and threatened many other regions of the world - in Europe too. Protecting forests against desertification is a vital factor in the struggle to strengthen the living environment of our common Earth.”

2

Lessons Learned

- Objectives of this Unit:
  - Learn to diagnose modeling problems
  - Understand how studies using this modeling technique can have errors
  - Understand that this type of modeling requires unique skills

3

HMMM… This seems funny

- New Natl Park
  - Increased tourism
  - No economic impact
- Northwest
  - Thousands of jobs lost – a real impact
  - Some communities - little evidence in reality
  - Some communities – enormous impact
  - Dynamic vs static model
  - Continuous vs lumpy

4

HMMM… This seems funny

- Northeast
  - Recreation increased significantly between 1991 and 1997
  - Smaller economic impact
- West
  - Recreation spending on hotels large
  - Impact on hotel sector small

5

HMMM… This seems funny

- Economic analysis done on the econ benefit of Forest Products industry in the south east quadrant of a state.
  - Multipliers close to 1
- Large amount of harvesting in a county
  - Logging camps and contractors don't exist in the model

6

HMMM… This seems funny

- National assessment
  - Recreation impacts huge in comparison with commodity production, i.e. timber
- Regional assessments
  - Economic benefit of motorized boating huge
  - All regional production of stumpage exported

7

HMMM… This seems funny

- Contribution of dispersed, motorized winter recreation to local economy
  - Large in a university study
  - Much smaller when I tried to reproduce their results

8

HMMM… This seems funny

- Dueling Multipliers (e.g. employment)
  - 3.5
  - 1.2
  - 144.6
  - ….. And they're ALL correct!

9

HMMM… This seems funny

- Dueling Multipliers
  - 3.5 SAM multiplier
  - 1.2 Direct multiplier
  - 144.6 Response coefficient
  - ….. And they're ALL correct!

10

Criticisms of IMPLAN

- Linear
  - No upper bounds
  - No lower bounds
  - No change in technology or productivity
- Data
  - Lag doesn't reflect structural changes: Forest products for ie
    - Sawmill closings
    - New pulp and paper mills
    - Technology change
      - Productivity per employee
      - Diameter utilization

11

Criticisms of IMPLAN

- Data (continued)
  - Incorrect
    - Employment
    - Structure
    - Trade
  - Probability and risk
    - Confidence intervals
    - Sensitivity analysis
  - RPCs
    - State level
    - Coefficients estimated with old data

12

Criticisms of IMPLAN

- Data (continued)
  - Disclosure
    - Production, employment, and income estimated
  - Not a "green" accounting system
    - "Bad" goods and services contribute to economic growth
    - Monetized accounting system
  - Quality of user provided data
    - Garbage in, garbage out
    - Option, use response coefficients rather than try to calculate total impacts

13

Lessons

- Regional economic analysis **cannot** be a mechanical exercise
  - An understanding of the underlying theory and simplifying assumptions is a must
  - Neither trust, nor produce, naked multipliers

14

Lessons

- Conclusions:
  - Multipliers **must** have context
  - They are **rates of response**, not an absolute measure of relative importance
  - **Other data**, such as the study area data, **must be put in a social context as well**.

15