December 7, 2005

COST-BENEFIT ANALYSIS

Categorical Exclusions for Oil and Gas Exploration and Development Activities

USDA Forest Service

COST-BENEFIT ANALYSIS
Categorical Exclusions for Oil and Gas Exploration and Development Activities

Executive Summary

This analysis identifies the costs and benefits associated with revision to Forest Service Handbook 1909.15, Chapter 30, which contains directives for implementing the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations. Chapter 30 addresses actions categorically excluded from requirements to prepare environmental impact statements (EISs) or environmental assessments (EAs).

The analysis contained in this paper compares the costs and benefits associated with the current practice of preparing EAs for oil and gas exploration and development on National Forest System land under existing federal leases with a proposed new categorical exclusion (CE).

The primary economic effects of the new CE for oil and gas leases are changes in costs of conducting environmental analysis and preparing NEPA documents. The new CE would reduce agency costs by reducing the documentation requirements for certain oil and gas exploration and development on National Forest system land under existing federal leases.

Effects on local economies and small business entities are expected to be nearly the same using either an EA or a CE for oil and gas exploration and development activities. There is potential for a non significant increase in certain oil and gas exploration and development projects. There is also potential for increased site administration and monitoring.

Total undiscounted costs for the proposed CE were estimated at $8 million with an annual average cost of $0.8 million, while the undiscounted cost for EAs for the same timeframe would be $48 million with an annual average cost of $4.8 million. There is an annual average saving of undiscounted cost of $4 million for the proposed new CE. Comparisons of the discounted costs by using both 7% and 3% discount rates also show the same direction of cost saving for CEs over EAs. An annual average saving of discounted cost of $3 million for CEs is estimated by using a 7% discount rate, and an annual average saving of discounted cost of $3.56 million for

CEs is estimated by using a 3% discount rate. This quantitative assessment indicates a cost savings for using a CE for oil and gas exploration and development projects for the agency.

In addition to the quantified analysis, several non-quantifiable benefits are expected to result from the proposed directive. As summarized in Table 1, the new CE will result in timely environmental analysis and documentation with the potential for increased site administration.

Table 1. Summary of Costs and Benefits of the Categorical Exclusion for Oil and Gas Exploration and Development Activities compared to the Environmental Assessment

Category	Baseline (EAs)	Oil and Gas CE
Agency costs associated with NEPA requirements (For estimation of costs refer to Tables 3 and 4)	Annual average cost is estimated at $4.8 million; ten-year total undiscounted cost at $48 million.	Annual average cost is estimated at $800,000 with an annual savings of $4 million over EAs. Ten-year total undiscounted cost is $8 million, representing a savings of $40 million.
Time for completing environmental analysis and documentation	An EA typically takes 4-6 months or longer to complete environmental analysis and documentation.	A CE usually takes one month or less to complete, representing a time savings of 3-5 months. The new CEs are intended to improve efficiency in planning activities that normally do not have significant environmental effects.
Small Business	The agency is spending 4-6 months to complete the environmental assessment for oil and gas exploration and development activities.	If the agency is able to spend less time and money in preparing documentation through the use of CEs, it may shorten the total time to complete wells for production.
Site Administration	Site administration is constrained by time and money spent on processing EAs	Potential for increased administration and monitoring of sites.
Environmental Effects	No significant environmental effects are anticipated.	No significant environmental effects are anticipated due to the administrative nature of changes.

COST-BENEFIT ANALYSIS
Categorical Exclusion for Limited Oil and Gas
Exploration and Development Activities

Introduction

The CEQ regulations at 40 CFR 1507.3 provide that agencies may, after notice and comment, adopt categories of actions that do not normally have significant impacts on the human environment and do not require preparation of an environmental assessment (EA) or an environmental impact statement (EIS). Current Forest Service procedures for complying with and implementing the National Environmental Policy Act (NEPA) are set out in Forest Service Handbook (FSH) 1909.15. Chapter 30 of FSH 1909.15 establishes two types of categorical exclusions (CEs). The first, set out at section 31.1, consists of categories of actions that are so routine and limited that a record is not required. The second type, set out at section 31.2, consists of categories of routine actions that require a Decision Memo documenting the rationale for not preparing an EA or an EIS.

The Forest Service is proposing a new category to the existing CEs in Chapter 30 of Forest Service Handbook 1909.15, which contains directives for implementing Council on Environmental Quality (CEQ) regulations. The proposed CE is for certain oil and gas exploration and development on National Forest System land under existing federal leases.

This analysis examines the economic costs and benefits associated with the new proposed CE for limited oil and gas exploration and development activities.

Proposed Action

The Forest Service is adding a new CE to its Environmental Policy and Procedures Handbook (FSH 1909.15). This category would appear in section 31.2, Categories of Actions for Which a Project or Case File and Decision Memo Are Required, and would provide a specific, narrow CE for certain oil and gas exploration and development on National Forest system land under existing federal leases. The proposed categorical exclusion applies exclusively to consideration

of the Forest Service's review of an applicant's request for approval of a surface use plan of operations.

The new proposed categorical exclusion (categorical exclusion 17) would allow approval of Surface Use Plan of Operations for oil and natural gas exploration or development activities, so long as the approval will not authorize activities in excess of any of the following totals within an oil or gas field:

a. One mile of new road construction.

b. One mile of road reconstruction.

c. Three miles of pipeline installation.

d. Four drill sites.

To determine whether or not a CE was appropriate, in June 2005 the Deputy Chief for the National Forest System requested field units to monitor oil and gas exploration and development projects that had been assessed in an EA and approved and constructed, or partially constructed in the last five years. As a result 73 projects were monitored. Parameters of the proposed new CE (miles of road construction and pipeline installation, number of drill sites) were selected because they have been found in the review to have no significant impacts on the human environment, not because of any particular associated cost. The rationale for the scope of the category limiting the parameters to 4 drill sites, 1 mile of road construction, 1 mile of road reconstruction, and 3 miles of pipeline is based on the average values from the projects reviewed (refer to Table 2).

Table 2. Average Values from the Projects Reviewed

Road Construction (Miles)	**Road Reconstruction (Miles)**	**Pipeline Construction (Miles)**	**Drill Sites Authorized (Number)**	**Rationale**
1.1 rounded down to 1 mile	1.1 rounded down to 1 mile	2.9 rounded up to 3 miles	4.4 rounded down to 4 drill sites	Based on Average (Mean)

The category would only apply to activities on National Forest System lands that are under federal lease and when there are no extraordinary circumstances, such as adverse effects on threatened and endangered species or their designated critical habitat, wilderness areas, inventoried roadless areas, wetlands, and archeological or historic sites.

Need for the Action

In 2001 President George W. Bush issued Executive Order (E.O.) 13212 to expedite the increased supply and availability of energy to our Nation. E.O. 13212 set forth "For energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections. The agencies shall take such actions to the extent permitted by law and regulation, and where appropriate." In response the National Energy Policy and the Forest Service Energy Implementation plan were developed. These two initiatives call for streamlining the processing of Applications for Permits to Drill and other energy related permits in an environmentally sound manner.

For decades the Forest Service has administered permits for surface use of National Forest System lands for oil and gas exploration and development. As part of the Forest Service Energy Implementation plan process, field personnel indicated that the level of documentation and analysis required for oil and gas exploration and development forced agency personnel to extend timeframes and expend undue resources and funding in order to complete minor exploration and/or development projects. In June 2005, the Deputy Chief of the National Forest System requested field units to monitor oil and gas exploration and development projects that had been analyzed in an EA, and were approved and constructed, or partially constructed, between October 1, 1999 and September 30, 2004 (the 2005 review). Field units collected data on 73 projects. The objective of the review was to determine if surface operations for oil and gas activities approved in site-specific EAs did or did not have cumulatively significant effects on the human environment and therefore could or could not qualify for a CE.

The scope of the proposed new category is consistent with the scope of the 73 projects examined in the 2005 review, each of which had no significant environmental effects. Having considered

the basis for establishing categorical exclusions for oil and natural gas exploration and development activities, the Forest Service believes that the level of effects associated with the proposed new category would also be below the level of significant environmental effects, and the proposed new category would not result in individually and cumulatively significant effects on the human environment.

Based on this review and the agency's extensive experience with oil and gas exploration and development activities including the construction of well sites, pipelines and roads and road reconstruction, the Forest Service proposes to add a new CE to its Environmental Policy and Procedures Handbook (FSH 1909.15). This category would appear in section 31.2, Categories of Actions for Which a Project or Case File and Decision Memo Are Required, and would provide a specific, narrow CE for oil and gas exploration and/or development.

Purpose of the Analysis

This analysis identifies and compares the costs and benefits associated with the current required NEPA procedures - EAs on oil and gas exploration and development activities - with a new CE. It provides quantitative estimates of potential savings to the agency for environmental analysis and documentation for certain oil and gas exploration and development on National Forest System land under existing federal leases. It also discusses some potential beneficial effects that are not readily quantified in financial terms.

The analysis and report were prepared according to the following Office of Management and Budget (OMB) direction:

1. Memorandum M-00-08 Guidelines to Standardize Measures of Costs and Benefits and the Format of Accounting Statements.

2. Office of Information and Regulatory Affairs January 11, 1996, guidance on "Economic Analysis of Federal Regulations under Executive Order 12866."

3. Circular A-4, Regulatory Analysis Guidance, September 17, 2003.

Economic Analysis

This analysis focuses on comparing the Forest Service's financial costs for preparing an EA and costs associated with doing a CE for oil and gas exploration and development activities. Cost changes are measured in terms of time and budget expenditures. Although they are not the purpose of establishing the proposed new CE, potential benefits in terms of site administration and monitoring, local economy and small businesses, and environment are possible. Many of these beneficial effects are not readily quantified in financial terms. These effects will also be discussed.

Quantified Effects

General Assumptions

This analysis compares quantitative differences between the costs involved in doing an EA versus the costs of categorically excluding a project. The baseline, no action alternative is assumed to be the continuation of doing EAs for oil and gas exploration and development projects. Potential effects under the proposed CE are estimated in comparison to the no action alternative.

The agency does not expect the proposed new CE to cause a measurable change in the volume or value of oil and natural gas production in the future.

Costs

The analysis includes annual expenses for interdisciplinary teams working on scoping, environmental analysis, and documentation. There is a significant difference in the cost, time, and workload associated with an EA for oil and gas exploration and development activities and a CE for the same project. An EA typically involves 3-4 members of an interdisciplinary team to develop alternatives, conduct analysis and prepare the documentation. Interdisciplinary teams

conducting environmental analyses for both EAs and CEs generally consist of journey-level resource specialists of similar pay grade agency-wide. Estimating costs associated with environmental analyses is a matter of estimating the amount of staff time involved and multiplying by staff cost per day. A survey of Forest Service Regions shows that an EA typically takes 4-6 months or longer to complete as opposed to a CE, which takes approximately one month or less of staff time to complete the analysis and documentation.

Costs associated with preparation of EAs and CEs vary with the nature and complexity of proposed actions. For example exploration proposals outside an area that has been previously analyzed may require new studies and additional field work. Some areas have factors that increase the complexity including steep slopes, archeological or historic sites, and the presence of endangered species or their habitat. The size of the area encompassed by the proposal and the amount of activity in (e.g. drilling one well or many wells) the proposal do not directly contribute to overall cost of analysis and documentation.

Some field units collect fees to cover the costs of environmental analyses from oil and gas exploration and development proponents. The fees are collected on units which have to process a high number of Applications for Permits to Drill. Other field units in the agency do not collect fees. For this analysis, we assume the agency does not use fees to cover the costs of preparing EAs.

Sources of cost data

Cost information provided by field units for conducting environmental analysis and documentation was used for this analysis. Generally, the field unit employs a representative range of resource specialists engaged in the type of environmental analysis and documentation being compared here. As stated earlier, these specialists are of similar pay grades agency-wide and follow agency environmental analysis procedures.

Because this is a proposed CE for oil and gas exploration and development activities, currently there is very little experienced cost data available for the proposed CE. A cost estimate of $5,000 for carrying out a CE for oil and gas exploration and development activities is used. This

estimate is based on field unit analysts' experience with the tasks of analysis and documentation for a CE.

The modeled cost is consistent to the cost data used for a recent cost benefit analysis for other Forest Service categorical exclusions, which ranged from $2,500 to $7,000 for one month of work to prepare and complete a CE for limited timber harvest projects.

In the cost benefit analysis for the Forest Service categorical exclusions for limited timber harvest, cost data compiled by the Flathead National Forest for environmental analysis and documentation for limited timber sale projects was used for the analysis. According to the Flathead data, costs for analysis and documentation for CEs ranged from $2,500 to $7,000. In 2001, the Forest Service reviewed and examined 154 randomly selected timber harvest projects nation-wide. The cost figures from the Flathead were considered to be similar to other National Forests for conducting CEs for timber harvest activities. An average cost for a CE is assumed to be $5,000 for the analysis.

On the other hand, based on input from field units that have done EAs for oil and gas activities, an EA would cost about $30,000 for 6 months of work. This cost figure represents information obtained from the Medora Ranger District on Dakota Prairies Grassland and the Rifle Ranger District on White River National Forest. The two units reported a range of costs from $15,000 to $45,000 with the variation attributed to the complexity factors discussed above. Although the cost figures represent the best information available, they are of limited precision and changing circumstances can affect the environmental analysis costs. An average cost for an EA is assumed to be $30,000 for the analysis.

Assumptions for number of CEs and timeframe for analysis

Based on a Forest Service Fiscal Year 2005 report prepared by the Mineral and Geology Management Staff, 160 oil and gas leases environmental assessments (EAs) would qualify annually for the CE. It is projected that the Forest Service will receive at least the same number of applications for 'permit to drill' as for fiscal year 2005. The timeframe for the analysis is assumed to be 10 years. The assumption of 160 applications /yr for 10 years is based on the recent increased demand for oil and gas precluding a drop in applications.

The Forest Service may see an increase in the approval of applications for permit to drill as a result of this proposed CE but has limited ability to predict such an outcome due to influences outside its control. These influences include: (1) fluctuations in open market prices of oil and gas, (2) the number of applications submitted by operators, and (3) the rate at which BLM completes the processing of leases and APDs.

The scheduling estimates for the 10-year period begin with 2006. Costs are compiled over the 10-year period and discounted at annual rates of both 7 percent and 3 percent as provided by OMB Circular A-4, Regulatory Analysis Guidance, September 17, 2003. The dollar estimates for the alternative environmental analysis costs associated with EAs and CEs are estimated for the analysis (refer to Tables 3 and 4). The undiscounted and discounted cost comparisons over the 10-year period are also displayed.

The time, cost and scheduling estimates represent the best information available. However, these estimates are of limited precision and changing circumstances could affect the results.

Comparison of Alternatives

The estimation of the environmental analysis costs under the no action alternative (EAs) and the new CE are based on information from the mid-year report for FY 2005 provided by the Forest Service Mineral and Geology Management Staff. Assuming the number of EAs would qualify for the CE remains constant (160) for the 10-year period from 2006 to 2015, the environmental analysis costs under EAs is assumed to be $30,000 per project. The annual cost estimates for 2006 to 2015 were then discounted by using both 7% and 3% discount rates annually as provided by OMB Circular A-4, Regulatory Analysis Guidance, September 17, 2003. The average annual estimated EA cost for the 10-year period for both undiscounted and discounted costs are used to compare with the average annual cost of CE for the same oil and gas projects.

For undiscounted costs, total costs for CEs were estimated at $8 million with an annual average cost of $0.8 million, while the undiscounted cost for EAs for the same timeframe would be $48 million with an annual average cost of $4.8 million. There is an annual average cost saving of $4 million for the proposed CE (refer to Tables 3 and 4). A comparison of the discounted costs also

shows the same direction of cost saving for CEs over EAs. An annual average saving of discounted cost of $3 million for CEs is estimated at a 7% discount rate (refer to Table 3), and an annual average saving of discounted cost of $3.56 million for CEs is estimated at a 3% discount rate (refer to Table 4).

Non-Quantified Effects

This section discusses benefits that are not readily quantified but that also indicate the positive effect of using a CE for oil and gas exploration and development activities. These include timely completion of NEPA documentation, potential benefits to local communities, and potential for increased site administration and monitoring.

Time for Completion

The policy on the proposed CE for oil and gas exploration and development activities is designed to reduce time and cost to complete NEPA documentation. Since an EA typically takes 4-6 months or longer to complete as opposed to a CE, which takes approximately one month or less, the proposed new CE represent a potential savings of 3-5 months of staff time to complete the analysis and documentation. The intended result is to improve efficiency in planning activities that normally do not have significant environmental effects. It would be speculative to state how each forest would apply savings in staff time and funding. Savings could be applied to conducting site administrative and monitoring tasks or to planning other activities.

Small Business

Effects on local economies and small business entities are expected to be nearly the same using either an EA or CE for oil and gas projects. There is potential for an increase in oil and gas production since they would be faster and cheaper to prepare, but the potential is so dependent on local conditions that it cannot be reasonably quantified. Forest Service experience indicates that local communities may benefit from increased oil and gas operation. However, receipts from oil and gas operations under the proposed CE are not expected to vary significantly from preparing EAs for the same oil and gas projects.

Site Administration

It is anticipated that shortening the time to complete NEPA documentation by using the proposed CE for oil and gas projects could potentially enable the agency to increase administration and monitoring of sites by allowing more resources to be used on these activities.

Environmental Effects

This analysis does not and cannot evaluate the environmental effects of future projects that may qualify for a categorical exclusion. Rather, it focuses on the administrative changes that may occur because the new categorical exclusion is adopted. Consequently, no environmental effects are anticipated, due to the administrative nature of the changes (i.e. comparing one type of documentation to another type of documentation).

Conclusions

The cost-benefit analysis focused on analyzing the economic costs and benefits associated with revisions to Forest Service Handbook 1909.15, Chapter 30, which contains direction for implementing the National Environmental Policy Act and Council on Environmental Quality regulations. The proposed action adds a new CE for oil and gas exploration and development activities to the agency's National Environmental Policy Act Handbook.

The primary economic effects of the proposed CE for oil and gas exploration and development projects are savings in costs for conducting environmental analysis and preparing NEPA documentation. Several intangible benefits are expected to result from the proposed directive. Benefits such as preparing the environmental documents in a timely manner, improving efficiency in planning activities, and a possible increase in site administration and monitoring were not readily quantified.

Based on the quantified cost estimates, the average annual cost savings of the proposed new CE are estimated to be $4 million compared with continued use of EAs for oil and gas projects. The

discounted value of the cost savings over a 10-year period is estimated to be $30.06 million at a 7% discount rate (refer to Table 3), and $35.6 million at a 3% discount rate (refer to Table 4). This quantitative assessment indicates a cost savings for using CE for oil and gas exploration and development projects for the agency.

Table 3. Cost of Environmental Assessment vs. Categorical Exclusion for Oil and Gas Exploration and Development Projects Discounted at a 7% Discount Rate

	Environmental Assessment (EA)			Categorical Exclusion (CE)			Cost Savings 1/	
Year	Discount factor @ 7%	Undiscounted costs	Discounted costs	Discount factor @ 7%	Undiscounted costs	Discounted costs	Undiscounted	Discounted
		$	$		$	$	$	$
2006	1	4,800,000	4,800,000	1	800,000	800,000	4,000,000	4,000,000
2007	0.93458	4,800,000	4,485,984	0.93458	800,000	747,664	4,000,000	3,738,320
2008	0.87344	4,800,000	4,192,512	0.87344	800,000	698,752	4,000,000	3,493,760
2009	0.81630	4,800,000	3,918,240	0.81630	800,000	653,040	4,000,000	3,265,200
2010	0.76290	4,800,000	3,661,920	0.76290	800,000	610,320	4,000,000	3,051,600
2011	0.71299	4,800,000	3,422,352	0.71299	800,000	570,392	4,000,000	2,851,960
2012	0.66634	4,800,000	3,198,432	0.66634	800,000	533,072	4,000,000	2,665,360
2013	0.62275	4,800,000	2,989,200	0.62275	800,000	498,200	4,000,000	2,491,000
2014	0.58201	4,800,000	2,793,648	0.58201	800,000	465,608	4,000,000	2,328,040
2015	0.54393	4,800,000	2,610,864	0.54393	800,000	435,144	4,000,000	2,175,720
Total		48,000,000	36,073,152		8,000,000	6,012,192	40,000,000	30,060,960
Average		4,800,000			800,000		4,000,000	

1/ Cost of EA minus cost of CE

Table 4. Cost of Environmental Assessment vs. Categorical Exclusion for Oil and Gas Exploration and Development Projects Discounted at a 3% Discount Rate

	Environmental Assessment (EA)			Categorical Exclusion (CE)			Cost Savings 1/	
Year	Discount factor @ 3%	Undiscounted costs	Discounted costs	Discount factor @ 3%	Undiscounted costs	Discounted costs	Undiscounted	Discounted
		$	$		$	$	$	$
2006	1	4,800,000	4,800,000	1	800,000	800,000	4,000,000	4,000,000
2007	0.97087	4,800,000	4,660,176	0.97087	800,000	776,696	4,000,000	3,883,480
2008	0.94260	4,800,000	4,524,480	0.94260	800,000	754,080	4,000,000	3,770,400
2009	0.91514	4,800,000	4,392,672	0.91514	800,000	732,112	4,000,000	3,660,560
2010	0.99949	4,800,000	4,797,552	0.99949	800,000	799,592	4,000,000	3,997,960
2011	0.86261	4,800,000	4,140,528	0.86261	800,000	690,088	4,000,000	3,450,440
2012	0.83748	4,800,000	4,019,904	0.83748	800,000	669,984	4,000,000	3,349,920
2013	0.81309	4,800,000	3,902,832	0.81309	800,000	650,472	4,000,000	3,252,360
2014	0.78941	4,800,000	3,789,168	0.78941	800,000	631,528	4,000,000	3,157,640
2015	0.76642	4,800,000	3,678,816	0.76642	800,000	613,136	4,000,000	3,065,680
Total		48,000,000	42,706,128		8,000,000	7,117,688	40,000,000	35,588,440
Average		4,800,000			800,000		4,000,000	

1/ Cost of EA minus cost of CE