

# Oil & Natural Gas Technology

## Compilation and Presentation of Existing Data on Oil and Gas Leasing Development in a Manner Useful to the NEPA Process

### Final Scientific/Technical Report

Report Period Beginning August 1, 2004, and Ending November 30, 2008

Principle Authors: Amy Childers, IOGCC and Dave Cornue, ALL Consulting

Report Issued: February 28, 2009

**DOE Award No.: DE-FC26-04NT15541**

Submitted by:  
The Interstate Oil and Gas Compact Commission  
P.O. Box 53127  
Oklahoma City, OK 53127-3127

Prepared for:  
United States Department of Energy  
National Energy Technology Laboratory



This page left blank intentionally

## **DISCLAIMER**

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

## ABSTRACT

In recognition of our nation's increasing energy needs, the George W. Bush Administration's National Energy Policy Development Group report (May 2001) suggested that one way to increase domestic on-shore production of oil and gas is to increase access to undiscovered resources on federal lands. Also recognized is the need to protect and conserve natural resources, which often are located on and around federal lands.

The National Environmental Policy Act (NEPA) was designed to create and maintain conditions under which man and nature can exist in productive harmony. NEPA requires that federal agencies prepare an environmental impact statement (EIS) prior to the approval of any development activities. The NEPA scope is broad, with the process applicable to many situations from the building of highways, barge facilities and water outtake facilities, bridges, and watersheds to other less significant projects. The process often involves cooperation among multiple federal agencies, industry, scientists and consultants, and the surrounding community.

The objective of the project, titled *Compilation and Presentation of Existing Data on Oil and Gas Leasing and Development in a Manner Useful to the NEPA Process*, is to facilitate faster and more comprehensive access to current oil and gas data by land management agencies and operators. This will enable key stakeholders in the NEPA process to make decisions that support access to federal resources while at the same time achieving a legitimate balance between environmental protection and appropriate levels of development.

## TABLE OF CONTENTS

<b>DISCLAIMER</b> .....	3
<b>ABSTRACT</b> .....	4
<b>TABLE OF CONTENTS</b> .....	5
<b>EXECUTIVE SUMMARY</b> .....	6
<b>EXPERIMENTAL</b> .....	7
<b>RESULTS AND DISCUSSION</b> .....	7
<b>CONCLUSION</b> .....	9
<b>REFERENCES</b> .....	10
<b>LISTS OF GRAPHICAL MATERIALS</b> .....	11
<b>BIBLIOGRAPHY</b> .....	11
<b>LISTS OF ACRONYMS AND ABBREVIATIONS</b> .....	11
<b>APPENDICES</b> .....	12
<b>TECHNOLOGY TRANSFER</b> .....	12

## EXECUTIVE SUMMARY

Project research for *Compilation and Presentation of Existing Data on Oil and Gas Leasing and Development in a Manner Useful to the NEPA Process* has focused on (1) Defining technically sound analytical methods; (2) Detailing real-case scenarios for energy industry parameters; and (3) Compiling and presenting nationally assessed data relative to onshore oil and gas leasing and development—all in a manner required for an efficient review process under the National Environmental Policy Act (NEPA).

Project research methodologies included one-on-one interviews, literature reviews, and project case studies. Project researchers have conducted inquiries with more than 250 representatives of various federal and state agencies, local governments, industry, universities, and non-governmental organizations (NGOs). These inquiries, along with independent research, identified dozens of NEPA documents and guidance manuals that address oil and gas development impacts and scenarios. An integral part of this research was conducted in case studies on a targeted coal bed natural gas (CBNG) development in Montana and an oil and gas field within a national wildlife refuge in Alaska.

The results of this study, *Improving Access to Onshore Oil & Gas Resources on Federal Lands*, published in March 2007, outline the methods based on this approach, identification of the parameters considered, and categorization by regional settings. Researchers have evaluated these methods for variations, regional influences, significant environmental parameters affecting impacts, and applicability to resource (oil or gas, conventional or non-traditional) development. This report is available in hard copy and electronic versions.

Interviews with cooperating agencies and operators identified two highly controversial issues that pertain to oil and gas and NEPA: (1) Categorical Exclusion and (2) Adaptive Management. In July 2007, a change of deliverable of the project was submitted and approved to replace the development of a SMART GIS-based analysis tool with research regarding these relevant issues.

The IOGCC and ALL submitted an expanded information dissemination plan and a request to extend the project completion date through November 2008. Approval of the extension request modification was received by the IOGCC in March 2008.

## **REPORT DETAILS**

### **EXPERIMENTAL**

There have been no experimental methods used to date in this project.

### **RESULTS AND DISCUSSION**

The project entitled “Compilation and Presentation of Existing Data on Oil and Gas Leasing and Development in a Manner Useful to the NEPA Process” originally was designed to develop data management tools that provide faster and more comprehensive access to existing data. To accomplish this goal the IOGCC and All Consulting conducted research focused toward improving consistency for decision-makers, defining technically sound analytical methods, detailing real case scenario energy industry parameters, and compiling and presenting nationally assessed data relative to on-shore oil and gas leasing and development in a manner that is requisite for an efficient NEPA review process. These inquiries, along with independent Internet research, identified more than 30 NEPA documents and 11 guidance manuals that address oil and gas development impacts and scenarios. The documents represent some existing DOE studies, BLM Resource Management Plans (RMPs), Environmental Impact Statements (EIS) and Environmental Assessments (EAs). Lack of documented studies increased the emphasis of actual site investigations for known developments being evaluated by the team members’ state agencies.

The data were evaluated for parameter influences, regional conditions, environmental settings, type of resource, and other factors that might lead to the current level of impacts. Field verification/field reconnaissance of various oil and gas development sites was utilized where federal land access was an issue. The researchers visited approximately 50 sites throughout several Rocky Mountain states, as well as sites in Alaska and Oklahoma. Field reconnaissance was conducted at both conventional and unconventional production sites and for both oil and natural gas. In addition, researchers also visited sites not applicable to fluid minerals to gain a further understanding of applicable federal land access issues (e.g., coal mines). The researchers compiled two case studies for detailed analysis.

The first case study was a coal bed natural gas project in the Powder River Basin of Montana where the researchers worked with BLM and the operator as part of an environmental assessment to evaluate predicted versus actual impacts of a development project that had been producing for approximately 24 months. The Swanson River Oil and Gas Field located on the Kenai Peninsula of Alaska near Cook Inlet was the second case study. Researchers worked with the Alaska Oil and Gas Conservation Commission (AOGCC) and operator to evaluate impact analysis methods and to define limitations and regulatory processes that can delay oil and gas development projects on federally protected lands such as National Wildlife Refuges. The data and information from the results of the research were assembled into a manual “Improving Access to Onshore Oil & Gas Resources on Federal Lands”

It was determined that the original task to develop the web-based GIS SMART analytical tool could not be built from the data gathered in this project. While the present research covered the environmental factors most often addressed by NEPA documentation, the research was not exhaustive. For example, researchers looked at wildlife issues in many different basins, but did not assemble a complete list of lease stipulations driven by sage-grouse conditions. This level of detail for many environmental factors would have been an immense task. DOE staff, ALL and IOGCC personnel, and cooperators were consulted and it was determined that the SMART system would not be possible under this project. Therefore, the task was reconfigured to more adequately address NEPA hurdles faced by petroleum operators. Two issues were found to have widespread application: the use of Categorical Exclusions (CX) and Adaptive Management (AM). CX have long been part of NEPA, and the Energy Policy Act of 2005 (EPACT) widened its use through the establishment of the Statutory CX. AM has been used by federal land managers for many years but its use and protocols appear to vary from agency to agency. The researchers surveyed federal field offices, including those offices that make wide use of CX and AM and other offices that make only sparse use of these vehicles to determine the applicability and limits of these tools. Reports were issued under this task that advocate for the expanded use of the tools to help oil and gas development on federal lands.

In January 2008, IOGCC submitted an expanded outreach and education plan and contract extension request through November 2008. The outreach plan incorporated the results of the study into a practical handbook and educational program for use by federal agencies, industry, and consultants in preparing environmental impact statements specifically related to oil and gas exploration and development. This repeatable, sustainable educational program provides end-users with a handbook containing the essential resources necessary for preparation of environmental assessments, environmental impact statements, and categorical exclusions associated with oil and natural gas exploration and development on federal lands or mineral estate.

The handbook, titled *Navigating NEPA*, presents the results of the study in a concise, easy-to-understand format. The corresponding educational program was developed utilizing the proven *Learner First Approach* educational model that includes the identification of audience and learning needs, the creation of learning objectives, exercises and support materials, and the development of a learning evaluation process.

ALL Consulting prepared the initial power point presentation that introduced the Navigating NEPA concept to the Public Lands Committee at the IOGCC Mid-year Summit in Calgary, Alberta, Canada, on May 4, 2008.

IOGCC met with ALL Consulting and established goals for the Navigating NEPA training and developed strategies to attract the target audience. ALL Consulting developed a pre-survey that was sent to the following agencies and offices: U.S. Forest Service, Bureau of Land Management, Fish and Wildlife Service, National Park Service, U.S. DOE, U.S. EPA, state oil and gas agencies, state environmental agencies, state oil and gas directors, state environmental agencies, industry associations, oil and natural gas



companies, consultants, media groups and NGO environmental groups. The survey was evaluated to distinguish the hot-button issues facing the particular region. The information was incorporated into the NEPA training by adding speakers to the agenda to address said issues. The goals set for the NEPA training were: (1) To educate NEPA stakeholders about the unique requirements for oil and natural gas exploration and production on federal lands. (2) To form a basis for uniform criteria and principles regarding NEPA processes for oil and natural gas exploration and production on federal lands. (3) To facilitate cooperation, collaboration, and communication between stakeholders in the NEPA process. (4) To form a basis for continued future planning and communications.

The EPA showed an interest in assisting with the Navigating NEPA training program and provided their expertise where pertinent.

The IOGCC launched its first training session for Navigating NEPA, November 19, 2008, in Santa Fe, NM. Robert Hargrove, Director of EPA NEPA Compliance, presented the morning training section labeled “NEPA 101”, covering basic NEPA principles. The afternoon presentations included “BLM Land Use Planning and Cooperating Agencies Process” given by Mark Spencer, State Planning and Environmental Coordinator of BLM’s New Mexico State Office, Division of Resources; a presentation on “BLM Best Management Practices” by Tony Herrell, Deputy State Director of Minerals; and finally a talk on “Categorical Exclusions” by Dan Arthur, ALL Consulting. The final session of the day was a panel discussion moderated by Bill Hochheiser of ALL Consulting.

The IOGCC is having the document “Improving Access to Onshore Oil & Gas Resources on Federal Lands” reformatted. It will be re-released at upcoming IOGCC events and training sessions. The IOGCC will provide the Navigating NEPA training in areas to be established through further research.

## **CONCLUSION**

A solution to issues that are limiting production of federal resources lies within developing more-consistent impact evaluation methods and analysis techniques for oil and gas development scenarios. Research used existing DOE studies, current Resource Management Plans and Environmental Impact Statements to identify specific methods and management approaches for conventional and unconventional development techniques in various regional settings. The study results, “Improving Access to Oil & Gas Resources on Federal Lands,” published in March 2007, presented guidelines and best practices for evaluating the potential environmental impact associated with oil and natural gas development activities

To communicate this pertinent and crucial information to key stakeholders in the NEPA process, IOGCC developed a practical handbook and educational program for use by federal agencies, industry, scientists, geologists, and consultants in preparing environmental impact statements specifically related to oil and gas leasing and development. The program is based upon the results of the study and supplemental research. This repeatable educational program provides end-users with the essential

resources necessary for preparation of environmental impact statements associated with oil and natural gas leasing and development on federal lands. The training provides decision-makers with a uniform background with which to implement appropriate and consistent decisions regarding oil and gas activities on federal lands.

The use of CXs ultimately fosters more timely and cost effective use of limited agency NEPA resources and in practice should allow the BLM to place a greater emphasis on inspections and enforcement of NEPA land-use regulations.

## **REFERENCES**

### **List of Supporting Documents for DOE NEPA Study**

1. Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, 2003 --National Research Council of the National Academy of Science. (Recommended by Theodore Rockwell, Alaska EPA): "This document is limited to the North Slope and was not specifically designed to compare predictions with actual occurrences but it does lay out a methodology that was employed and discusses effects seen as of 2003 when it was published."
2. Renewal of the Federal Grant for the Trans-Alaska Pipeline System Right-of-Way EIS, U.S. Dept. of Interior, Bureau of Land Management. (Recommended by Theodore Rockwell, Alaska EPA): "Available from BLM. Again, this document is limited in scope and does not specifically compare predictions to occurrences but it should provide information associated with that decision to renew authorization."
3. NEPA-Study of Effectiveness After 25 Years, (general NEPA discussion) Recommended by David Schmidt, EPA Region 9.
4. National Park Service NEPA Guide (general guide).
5. International Petroleum Industry Environmental Conservation Association (IPIECA): A Guide to Social Impact Assessment in the Oil and Gas Industry (Web search), general guideline for social impact assessment prepared by industry.
6. Assessing Impacts of Oil and Gas Development on Mule Deer (Suggested by Wyoming BLM). Evaluation of EIS-level NEPA documents associated with oil and gas development on federal lands in southwest Wyoming, the reference has not been located.
7. Modernizing NEPA Implementation (Web search). Report analyzing "nuts and bolts" of NEPA implementation by focusing on:
  - . Technology and information management and security;.
  - Federal and intergovernmental collaboration;
8. Programmatic analyses and tiering:
  - . Adaptive management and monitoring;
  - . Categorical exclusions; and
  - . Environmental assessments.
9. Federal Leadership Forum Supplemental NEPA Guidelines for Oil and Gas Activities on Public Lands (Web search, 13 pages). "These guidelines are to set a framework for an early, consistent, and effective process by which affected

agencies maximize interaction and exchange information and opinions on issues, questions or concerns; identify and resolve significant issues; and/or develop feasible alternatives to the extent practicable.”

10. Interagency Reference Guide, Reasonable Foreseeable Development Scenarios and Cumulative Effects Analysis for Oil and Gas Activities on Federal Lands in the Greater Rocky Mountain Region (USDA Forest Service suggested, and BLM mandated guidance for RFD development).
11. The “Gold Book”: Surface Operating Standards for Oil and Gas Exploration and Development (Recommended by many, sent by BLM of Wyoming, Kemmerer).

## **LISTS OF GRAPHICAL MATERIALS**

**None**

## **BIBLIOGRAPHY**

None

## **LISTS OF ACRONYMS AND ABBREVIATIONS**

AOGCC Alaska Oil and Gas Conservation Commission  
BLM Bureau of Land Management  
CBNG Coal Bed Natural Gas  
DOE Department of Energy  
EA Environmental Assessments  
EIS Environmental Impact Statement  
EPA Environmental Protection Agency  
FONSI Finding of No Significant Impact  
IAP/EIS Integrated Activity Plan/Environmental Impact Statement  
IOGCC Interstate Oil and Gas Compact Commission  
IPIECA International Petroleum Industry Environmental Conservation Association  
MBOGC Montana Board of Oil and Gas Conservation  
NEPA National Environmental Policy Act  
NETL National Energy Technology Laboratory  
NPS National Park Service  
PAC Project Advisory Committee  
RFD Request for Development  
RMP Resource Management Plans  
USDA United States Department of Agriculture  
USFS United States Forest Service

USFWS United States Fish and Wildlife Service  
WOGCC Wyoming Oil and Gas Conservation Commission

## **APPENDICES**

None

## **TECHNOLOGY TRANSFER**

“Improving Access to Onshore Oil & Gas Resources on Federal Land” is available for download at <http://www.all-llc.com/IOGCC/NEPA/ProjInfo.htm>.

NEPA Training Information: <http://iogcc.publishpath.com/nepa>

## **National Energy Technology Laboratory**

626 Cochrans Mill Road  
P.O. Box 10940  
Pittsburgh, PA 15236-0940

3610 Collins Ferry Road  
P.O. Box 880  
Morgantown, WV 26507-0880

One West Third Street, Suite 1400  
Tulsa, OK 74103-3519

1450 Queen Avenue SW  
Albany, OR 97321-2198

2175 University Ave. South  
Suite 201  
Fairbanks, AK 99709

Visit the NETL website at:  
[www.netl.doe.gov](http://www.netl.doe.gov)

Customer Service:  
1-800-553-7681

