

Claremont Colleges Scholarship @ Claremont

CMC Senior Theses

CMC Student Scholarship

2014

An Analysis of the Substantive Effectiveness of the National Environmental Policy Act: Lessons from Ivanpah

Stephanie C. Oehler
Claremont McKenna College

Recommended Citation

Oehler, Stephanie C., "An Analysis of the Substantive Effectiveness of the National Environmental Policy Act: Lessons from Ivanpah" (2014). *CMC Senior Theses*. Paper 943.
http://scholarship.claremont.edu/cmc_theses/943

This Open Access Senior Thesis is brought to you by Scholarship@Claremont. It has been accepted for inclusion in this collection by an authorized administrator. For more information, please contact scholarship@cuc.claremont.edu.

CLAREMONT McKENNA COLLEGE

**An Analysis of the Substantive Effectiveness of the National
Environmental Policy Act: Lessons from Ivanpah**

SUBMITTED TO

PROFESSOR EMIL MORHARDT

AND

PROFESSOR WILLIAM CHRISTIAN

AND

DEAN NICHOLAS WARNER

BY

STEPHANIE CAITLIN OEHLER

FOR

SENIOR THESIS

SPRING 2014

APRIL 28, 2014

Acknowledgements

First, I would like to express the utmost gratitude to my faculty readers, Professors Emil Morhardt and Bill Christian. With their guidance, generosity, and expertise, I was able to tackle this intriguing topic. I want to acknowledge Bill Christian and Tom McHenry, who first introduced me to NEPA in their Environmental Law course. The class not only sparked my fascination with this landmark piece of legislation, but drew me into the field of environmental law and policy more generally. I would also like to thank Professor Morhardt for serving as my academic advisor throughout my years at CMC, and for helping me navigate the Environment, Economics, and Politics program that attracted me to the school from the beginning.

Additionally, I would like to thank my parents, who have given me every opportunity to pursue my interests with endless support, both academically and otherwise. They have been an excellent sounding board, calming force, and source of inspiration during my academic career. And to my grandparents, who have so generously and wholeheartedly supported my education and always inspire me to work hard and follow my dreams. Finally, I would like to thank my incredible friends for their unwavering encouragement and entertainment.

Table of Contents

Abstract	3
Glossary of Acronyms	4
Chapter 1: Introduction	6
Chapter 2: Creating a Federal Policy for the Environment	9
Framing the Issue	9
Development of a Comprehensive Federal Environmental Policy	11
Characteristics of NEPA	15
Executive Branch Implementation	17
Congressional Oversight	20
The Role of the Courts	21
Stakeholder Influence	22
Funding NEPA	22
Chapter 3: Evaluating the Intent and Effectiveness of NEPA	24
Overview	24
NEPA’s Intent	24
Defining and Evaluating Effectiveness	32
The NEPA and Decision-Making Nexus	34
Chapter 4: NEPA on the Ground: Ivanpah Solar Electric Generating System Project	37
Overview	37
Renewable Energy Sector and Green Tension	38
Ivanpah Solar Electric Generating System	39
Examining Ivanpah’s NEPA Process	43
Evaluating Effectiveness	52
Strategic planning	53
Public information and input	55

Interagency coordination	57
Interdisciplinary place-based approach to decision-making	59
Science-based and flexible management approaches.....	60
What if the EIS had not been required?	62
Overall effectiveness	63
Chapter 5. Conclusion	66
Bibliography	72

Abstract

Nearly 45 years ago, the National Environmental Policy Act (NEPA) was signed into law to become the first national policy for the environment of the United States. As it has evolved over time through implementation and litigation, numerous countries and states around the world have emulated NEPA with similar environmental impact assessment requirements. Many scholars have evaluated the success of the legislation in accomplishing its lofty goals. Most commonly, however, these studies address the procedural performance of agencies through the creation of environmental impact statements. This thesis examines the effectiveness of NEPA in accomplishing its substantive, rather than procedural, goals by identifying a set of values essential to meeting the fundamental intent of the Act. The values are then evaluated in the context of the Ivanpah Solar Electric Generating System Project to determine whether or not the NEPA process was effective in this case and to derive lessons for its future implementation.

Glossary of Acronyms

BLM: Bureau of Land Management

BO: Biological Opinion

CARB: California Air Resources Board

CDCA: California Desert Conservation Area

CEC: California Energy Commission

CEQ: Council on Environmental Quality

CEQA: California Environmental Quality Act

CPUC: California Public Utilities Commission

DOE: Department of Energy

DOI: Department of the Interior

EC-2: Environmental Concerns-Insufficient Information

EIA: Environmental Impact Assessment

EIS: Environmental Impact Statement

EPA: Environmental Protection Agency

ESA: Endangered Species Act

FEIS: Final Environmental Impact Statement

FLPMA: Federal Land Policy and Management Act

FWS: Fish and Wildlife Service

ISEGS: Ivanpah Solar Electric Generating System

MW: Megawatt

NEPA: National Environmental Policy Act

NOI: Notice of Intent

ROD: Record of Decision

ROW: Right of Way

RPS: Renewable Portfolio Standard

SB: Senate Bill

Chapter 1: Introduction

While the National Environmental Policy Act (NEPA) is nearly half a century old, it remains one of the most significant pieces of environmental legislation in the world. While other values—economic, human health, and property rights, for example—historically were accorded priority, environmental values often remained overlooked. NEPA changed this. Its monumental adoption not only asserted a national position on the importance of the environment, but introduced a new value paradigm to be incorporated into federal decision-making processes. NEPA supporter Eva Hanks explained that, “In form, the National Environmental Policy Act is a statute; in spirit a constitution: ‘...It establishes priorities and gives expression to our national goals and aspirations. It serves a constitutional function in that people may refer to it for guidance in making decisions where environmental values are found to be in conflict with other values,’”¹ And yet, regardless of the fact that science has confirmed countless connections between human activity and environmental impacts, the public remains split in their interests in advancing environmental protection when it contends with other values. NEPA requires decision-makers to consider the environmental impacts of actions in which the federal government has a role, regardless of the mission of the agency or the personal beliefs of officials.

Rooted partially in the precautionary principle, the statute requires agencies to conduct comprehensive environmental evaluations of project impacts prior to making

¹ Eva Hanks and John Hanks, “An environmental bill of rights: the citizen suit and the National Environmental Policy Act of 1969,” *Rutgers L. Rev* 24 (1970): 230.

decisions on permits or other actions. However, it is only partially aligned with this policy orientation because as it has been interpreted by the courts, NEPA does not require that decisions maximize environmental values. Nonetheless, NEPA seeks to “foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”²

While NEPA procedures were undoubtedly intended to support the ambitious environmental goals it outlines, the statute lacks an action-forcing mechanism to do so. Rather, it relies on rational decision-makers taking the environmental assessment fully into account when balancing different sets of values on a project-by-project basis. Environmentally sub-optimal decisions are often made that result in real harm to ecological and other resources. As a result, scholars have long questioned the effectiveness of the Act in accomplishing its lofty substantive goals.

Most studies that have explored NEPA have assessed procedural compliance—whether, for example EIS analyses have been complete and unbiased—and used it as an indicator of overall NEPA performance. While this approach reveals whether agencies have thoroughly evaluated impacts, it does not ultimately reflect the degree to which information is incorporated into decision-making. This thesis seeks rather to identify measures that evaluate NEPA’s effectiveness in accomplishing its stated substantive

² National Environmental Policy Act, 42 U.S.C. § 4321-4347 (1970).

goals, using as an example the decision in a recent case that approved a utility scale solar renewable energy development in the Mojave Desert.

The Ivanpah Solar Electric Generating System (ISEGS) Project, located in the Ivanpah Valley of the Mojave Desert, provides a particularly interesting case for evaluating NEPA's effectiveness as it involved endangered species management and strongly conflicting environmental and energy policy values. As society's environmental awareness is increasing, projects that seek to alleviate one environmental issue while compromising another have become more prevalent. NEPA's environmental impact assessment process provided the framework within which these conflicting values were addressed by decision-makers. This thesis examines, in light of NEPA's goals, whether or not the decision makers used the NEPA assessment properly in approving the project and then proceeds to extract lessons and recommendations for future application of NEPA.

Chapter 2: Creating a Federal Policy for the Environment

Framing the Issue

It was not until the 1970s that attributing appropriate value to the environment became a significant area of concern for the federal government and the public. In prior decades, conservationists and preservationists fought to conserve and protect natural resources through, for example, the National Park Service, but tended to refrain from challenging the predominance of economic drivers in the nation's resource allocations. As the 1950s and 1960s passed, environmental issues were brought to the forefront of national attention.³ People that had previously disregarded the importance of their natural surroundings began to see the environment as a complicated and dynamic ecosystem on which society relies for subsistence and health.⁴ High profile matters, including, for example, Cuyahoga River fires, bad urban air quality, and the ecological impacts of pesticides like dichlorodiphenyltrichloroethane (DDT), turned national attention to the declining state of the environment. Meanwhile, the consequences of industrialization and urbanization became much more apparent in everyday life in the form of air and water

³ Peter Dykstra, "History of environmental movement full of twists, turns," *CNN*, December 5, 2008, <http://www.cnn.com/2008/TECH/science/12/10/history.environmental.movement/index.html?iref=nextin>.

⁴ Lynton K Caldwell, "Implementing policy through procedure: impact assessment and the National Environmental Policy Act (NEPA)." *Environmental Methods Review: Retooling Impact Assessment for the New Century*. *The Press Club, Fargo* (1998): 8-14.

pollution, waste mismanagement, toxic material spills, and the disappearance of open spaces.⁵

As public concern grew, scientists were researching and confirming the unintended consequences of human actions on the natural environment and connecting current issues to the abuse of natural resources.⁶ Organizations that served as forums for environmental issues led to a broader movement that began to fight for the protection of various aspects of the environment. Many of these organizations developed wide support bases and continue to exist today, including the Environmental Defense Fund and the Natural Resources Defense Council.⁷

While Congress had addressed specific environmental issues prior to the 1970s, it had never articulated a cohesive or overarching policy on the environment for the nation. Conflicting uses, overuse, and a general disregard for natural resources that grew as the country continued to develop plagued citizens. Increased public awareness of these issues increased the pressure on the legislature to address environmental policy on a broader scale. NEPA, which was introduced in the Senate in 1969, passed through Congress later that year, and was signed by President Nixon on the first day of 1970. NEPA declared the importance of environmental values, outlined an environmental review process that would require federal agencies to incorporate these values into their decision-making

⁵ Philip Shabecoff, *A fierce green fire: The American environmental movement*. (Island Press, 2003).

⁶ Paul S. Weiland, "Amending the National Environmental Policy Act: Federal Environmental Protection in the Twenty-First Century." *J. Land Use & Envtl. L.* 12 (1996): 275-302.

⁷ Dykstra, "History of environmental movement full of twists, turns."

procedures, and created the Council on Environmental Quality (CEQ) to provide oversight and guidance for NEPA compliance and a periodic assessment of the state of the nation's environment.⁸ The passage of NEPA marked the beginning of what would become the most significant decade in the nation's history for environmental legislation and policymaking. NEPA's enactment was rapidly followed by the creation of the Environmental Protection Agency (EPA), the passage of the Clean Water Act, the Clean Air Act, and the Endangered Species Act (ESA), as well as other statutory schemes that persist today. NEPA has survived largely in its initial form for nearly half a century, continuing to require the assessment and encourage the integration of environmental values in federal decision-making.

Development of a Comprehensive Federal Environmental Policy

Congress evaluated the need for a national policy on the environment for nearly a decade prior to NEPA. Given the events of the 1950s and 1960s, which resulted in a growing social movement built around protecting the health of the national environment, lawmakers saw the need to grant agency officials the ability (and to require them) to consider environmental values in decision-making. Economic values had long been the predominant factor in agency decision-making. While environmental factors were often inherently (and sometimes obviously) as or more important in making the right decision

⁸ Linda G. Luther, "The National Environmental Policy Act: Background and Implementation." Congressional Research Service, Library of Congress, 2005.

on projects, there was no formal process that encouraged or forced agencies to evaluate environmental impacts.

Many in Congress recognized that environmental impacts were diverse and far-reaching. Bills were written to establish a single agency to manage the variety of environmentally-oriented programs and policies, but the Department of Natural Resources never came to fruition.⁹ However, by the mid 1960's, members of Congress and federal government officials were coming to recognize the need for legislation to require adequate consideration and protection of the environment at the national level, including a supporting advisory body and "action-forcing" requirements to ensure agency compliance.

This new legislative push was partially modeled on an initial unsuccessful effort by Senator James Murray (D, Mont.), who proposed the Resources and Conservation Act of 1959. That bill proposed a national stance on the environment, an executive branch office tasked with advising the President on environmental affairs, and an annual report on the status of the environment. These features were included in NEPA nearly a decade later when lawmakers used this bill for guidance.¹⁰

Interestingly, Sen. Murray's proposed CEQ was modeled on the structure and purpose of the Council of Economic Advisers, an executive branch office set up by the

⁹ Luther, "The National Environmental Policy Act: Background and Implementation."

¹⁰ "Environmental law—threshold determinations under the National Environmental Policy Act of 1969. *Hanly v Kleindeinst.*" *Rutgers Camden Law Journal* 5 (1973): 380-398. http://heinonline.org/HOL/Page?handle=hein.journals/rutlj5&div=30&g_sent=1&collection=journals#396.

Employment Act of 1946.¹¹ In 1965, Murray's concepts gained additional weight in a bill introduced by Senator Gaylord Nelson (D, Wisc.) entitled the "Ecological Research and Surveys Bill," which proposed to require better management of environmental information and facilitate its incorporation into federal agency procedures.¹² These unsuccessful bills, which contained many of the concepts and provisions that later appeared in NEPA, illustrate the usual pattern and course of successful legislation, which often follows on a heritage of past attempts which have explored and tested new concepts.

In 1968, the House of Representatives and the Senate hosted a colloquium to script a formal national environmental policy. Nearly a year later, Senator Scoop Jackson (D, Wash.) proposed Senate Bill (SB) 1075. SB 1075 was similar to Murray's Resources and Conservation Act and was passed quickly by the Senate. Meanwhile, Congressman John Dingell (D, Mich.) introduced a similar piece of legislation, the House Bill, H.R. 6750. The two proposals differed primarily by catering heavily to individual congressional committees; in the conference bill, all environmentally focused committees were given a role.¹³

Prior to going to conference for reconciliation of the House and Senate Bills, several Senators proposed significant amendments to the legislation. Hearings had

¹¹ Daniel A. Dreyfus and Helen M. Ingram, "The National Environmental Policy Act: A View of Intent and Practice." *Nat. Resources J.* 16 (1976): 243-262.

¹² Ray E. Clark and Larry W. Canter, eds, *Environmental policy and NEPA: Past, present, and future.* (CRC Press, 1997), 29.

¹³ Dreyfus and Ingram, "The National Environmental Policy Act: A View of Intent and Practice."

revealed that the effectiveness of the proposed legislation would be minimized if the administration in office was less environmentally-conscious. Thus, amendments were offered to install an action-forcing measure to hold federal agencies accountable to complying with the new national policy, regardless of politics. The House Interior and Public Works Committees eventually agreed on how to structure this mechanism, which incorporated the environmental impact statement (EIS) process. This new mechanism provided oversight of the adequacy and completeness of the EIS document by other agencies and the public through an external review proceeding that would ensure compliance with the spirit of the law.¹⁴ While the House of Representatives' version initially lacked the environmental impact assessment requirement, it agreed to its inclusion during conference. Each house of Congress agreed to the joint bill within several days after the conference report appeared. President Nixon then signed NEPA into law on January 1, 1970, formally declaring a national policy toward the environment. The new law outlined strong goals, created CEQ, and established an environmental review process for decisions on all significant federal projects, actions, and policies.¹⁵

Perhaps due in part to the quick timeline on which Congress proposed and agreed upon NEPA, the legislation is short but broadly framed, leaving CEQ, agency officials, the courts, and other stakeholders to decipher the spirit of the requirements. Some argue that Congress left NEPA intentionally vague in order to broaden its scope, realizing that

¹⁴ Luther, "The National Environmental Policy Act: Background and Implementation."

¹⁵ Dreyfus and Ingram, "The National Environmental Policy Act: A View of Intent and Practice."

procedures would have to vary among agencies, and that guidance would best be produced by CEQ and the courts.¹⁶

Characteristics of NEPA

NEPA is a concise law, consisting of only two sections. The first asserts the newly established national significance of environmental protection and provides an overview of the environmental impact assessment process, requiring federal agencies to incorporate precautionary consideration of the environment into their existing decision-making processes.¹⁷ Congress' statement of a national environmental policy in Sec. 101 summarized the findings of scientists and environmentalists over the past several decades and articulated a proactive stance it wanted the nation to take on sustainability in order to accomplish six specific goals laid out in Sec. 101 (b):

The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with

¹⁶ Kenneth M. Murchison, "Does NEPA Matter-An Analysis of the Historical Development and Contemporary Significance of the National Environmental Policy Act." *U. Rich. L. Rev.* 18 (1983): 557-614.

¹⁷ National Environmental Policy Act, 42 U.S.C. § 4321-4347 (1970).

State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. Sec. 101 (a) [42 USC § 4331]¹⁸

The requirements of Sec. 102 are similarly straightforward and comprehensive in scope, however, methods for implementation of the assessment process are not detailed or explicit. In this section, Congress tasks all federal agencies with integrating environmental values into all relevant decision-making processes. In doing so, the lawmakers hoped to “insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations,” (previously regarded as the sole or principal determining factors) Sec. 102 (B) [42 USC § 4332]. NEPA specifies that it applies to all “proposals for legislation and other major Federal actions” that may impact the environment, and requires thorough reporting of specific impacts both in the near term and in the future, possible alternatives, and permanent impacts caused by the legislation or project.¹⁹ To ensure the reports are comprehensive, Congress also requires agencies to seek feedback on assessments from relevant stakeholders, including other agencies, the White House,

¹⁸ National Environmental Policy Act, 42 U.S.C. § 4321-4347 (1970).

¹⁹ Ibid.

and the public. This section details the action-forcing aspect of the statute that gets at the heart of what NEPA seeks to accomplish.

The second major section of NEPA creates CEQ to serve as an advisory body to the President on environmental issues and a guide to agencies and the public on NEPA procedures and compliance. CEQ is tasked with preparing an annual Environmental Quality Report for Congress, which is to brief lawmakers on the state of the environment and to provide suggestions for actions that would lead to environmental improvement. There are to be at least three members of CEQ, who are appointed by the President and approved by the Senate, and other staff may be hired as needed. Due to the extensive amount of information CEQ is tasked with gathering and research it is expected to conduct, CEQ collaborates and instructs other organizations.²⁰

Executive Branch Implementation

CEQ, as a creation of NEPA, was intended to serve as a primary implementer of the legislation for the executive branch. The statute tasks the Council with assessing and managing the state of the nation's environment, which includes creating policy solutions for identified shortcomings and greening governmental processes.²¹ Several months after President Nixon signed NEPA, he clarified and expanded the duties of CEQ in Executive Order 11514 to include additional responsibilities in the shaping of national

²⁰ National Environmental Policy Act, 42 U.S.C. § 4321-4347 (1970).

²¹ Ibid.

environmental policy.²² CEQ's main role in carrying out NEPA has been to prepare guidance documents and serve as a consultant to agencies as they encounter obstacles in the environmental assessment process. While CEQ's role is in some sense similar to that of the EPA, CEQ is the primary source of authority on the administration of NEPA. As Congress anticipated, each president has changed the staffing of CEQ to reflect different opinions on the importance of environmental policy.²³ Nonetheless, its influence on the implementation of NEPA has remained intact throughout the years due to the support of Congress and agencies.²⁴

Several months after NEPA was signed into law, Congress began hearings to consider the creation of a new agency—the EPA—and approved its formation later that year. As proposed by President Nixon, the agency assumed responsibilities for environmental quality previously distributed among other agencies and offices, centralizing, integrating, and advancing national environmental efforts.²⁵ Not long after its creation, Congress tasked EPA with reviewing all draft EISs created under NEPA in Section 309 in the Clean Air Act.²⁶ As the overarching environmental-focused agency, EPA serves as the primary reviewer of EISs and flags concerns or inadequate

²² Exec. Order No. 11,514, 3 CFR 902 (1970).

²³ Christopher Wood, *Environmental Impact Assessment: A Comparative Review*. (London: Peason Education Limited, Prentice Hall, 1995).

²⁴ *Ibid.*

²⁵ “The Guardian: Origins of the EPA,” *United States Environmental Protection Agency*, 1992, <http://www2.epa.gov/aboutepa/guardian-origins-epa#agency>.

²⁶ Alvin Alm, “NEPA: Past, Present, and Future,” *United States Environmental Protection Agency*, January 1988, <http://www2.epa.gov/aboutepa/nepa-past-present-and-future>.

assessments for further review by CEQ.²⁷ EPA Comment Letters are provided after extensive “negotiation and consultation” with federal agencies and are publicly available documents.²⁸

NEPA provides a universal environmental policy for the entire nation, and while CEQ has clarified its intent and the EPA has ensured that it has been implemented correctly, the statute is primarily implemented by the executive branch agencies since it targets their decision-making, requiring them to incorporate environmental values into planning processes. All federal agencies are required to comply with NEPA, regardless of the degree of relevance of environmental concerns to their primary missions. The statute requires all agencies to establish unique procedures that include environmental assessments in their planning processes and to ensure that these findings are considered prior to determining outcomes.²⁹ In the initial years following the passage of NEPA, agencies finalized environmental assessment procedures that continue to be updated as needed, typically as a result of court rulings or CEQ-issued guidance. NEPA implementation at the agency level has varied considerably in approach depending on the existing mission structure and procedures of each agency, as well as existing leadership, politics, stakeholder interests, and numerous other factors.³⁰ NEPA inherently increased

²⁷ Alvin Alm, “NEPA: Past, Present, and Future.”

²⁸ Richard E. Sanderson, "EPA and NEPA: Cases in Point." *EPA J.* 14 (1988): 25.

²⁹ Wichelman, Allan F. "Administrative agency implementation of the National Environmental Policy Act of 1969: a conceptual framework for explaining differential response." *Nat. Resources J.* 16 (1976): 263-300.

³⁰ *Ibid.*

the responsibilities of all federal agencies by requiring them to conduct additional reviews and alter values considered in decision-making.³¹

Over the past half-century, a number of additional Executive Orders have been issued defining the scope of NEPA and the responsibilities of CEQ.³² In general, Presidents have targeted specific environmental issues or industries in these guidelines. CEQ has reacted by adjusting these guidelines and Federal agencies continue to adapt their environmental assessment procedures as necessary.

Congressional Oversight

While the statute has been amended several times, the NEPA in effect today is substantively almost exactly the same as the one Congress passed nearly 45 years ago. Amendments have little affected the operation of the Act. The first amendment to the Act was passed in 1975 and adjusted the appropriations for CEQ.³³ Later that year, Congress attempted to identify conditions under which the environmental review process is adequate as performed by state governmental agencies.³⁴ Finally, in 1982 a bill was passed that required additional changes to be made in the budgeting processes of

³¹ Hanks and Hanks, "An environmental bill of rights: the citizen suit and the National Environmental Policy Act of 1969."

³² NEPAnet Executive Orders, *United States Department of Energy*, <http://ceq.hss.doe.gov/nepa/regs/executiveorders.htm>.

³³ "Bill Summary and Status 94th Congress H.R. 6054 CRS Summary," *The Library of Congress Thomas*, May 19, 1975, <http://thomas.loc.gov/cgi-bin/bdquery/z?d094:HR06054:@@D&summ2=m&>.

³⁴ "Bill Summary and Status 94th Congress H.R. 3130 CRS Summary," *The Library of Congress Thomas*, July 24, 1975, <http://thomas.loc.gov/cgi-bin/bdquery/z?d094:HR03130:@@D&summ2=m&>.

NEPA.³⁵ Nonetheless, Congressional amendments have done little to transform the stated intent of the Act.

The Role of the Courts

Judicial review of specific NEPA cases has been critical in the development of NEPA and its procedures over the past 50 years. Given the brevity and ambiguity of the statute, much of its interpretation was handled by the courts from early in its implementation. Many observers believe that Congress intended for the courts to play a significant role in the implementation of NEPA, since courts are in theory unbiased and have well-established experience ensuring compliance with the spirit and letter of laws.³⁶ The United States Supreme Court has provided key interpretations of the intent of Congress in NEPA in an extensive history of case law, which has included decisions on the technical requirements of environmental assessments and NEPA's applicability to different types of proposals.³⁷

Judicial review, through challenges brought under the Administrative Procedures Act, has permitted stakeholders to challenge agency processes or decisions that they do not believe comply with NEPA. Agencies have an incentive to involve all interested parties in environmental review processes and to produce thorough EIS assessments in

³⁵ Luther, "The National Environmental Policy Act: Background and Implementation."

³⁶ Harold Leventhal, "Environmental Decisionmaking and the Role of the Courts." *University of Pennsylvania Law Review* (1974): 509-555.

³⁷ Luther, "The National Environmental Policy Act: Background and Implementation."

order to reduce their risk of entering into costly and drawn-out litigation. CEQ suggests that the best way to do so is to maintain open and constant lines of communication with interested parties.³⁸ Inevitably, however, these challenges continue to arise.

Stakeholder Influence

At the heart of NEPA is its articulation of a national ideal to maintain high environmental quality and protect natural resources for the well-being and enjoyment of the American public. The environmental impact assessment process thus requires that interests affected by proposed projects and policies of the Federal government are able to voice their opinions regarding proposals before they are decided upon.³⁹ When CEQ conducted a study to evaluate the effectiveness of NEPA after 25 years in existence, most respondents concluded that the single greatest accomplishment of NEPA has been its inclusion of a greater number of interested parties in its decision-making processes.⁴⁰

Funding NEPA

Since NEPA is a predominantly procedural law in terms of enforceable requirements, in contrast to other environmental regulatory statutes, the appropriations authorized in NEPA itself are limited in scope. Title I alters the decision-making processes of federal agencies, and while this increases their costs, Congress did not

³⁸ Luther, "The National Environmental Policy Act: Background and Implementation."

³⁹ National Environmental Policy Act, 42 U.S.C. § 4321-4347 (1970).

⁴⁰ Council on Environmental Quality, "The National Environmental Policy Act: A Study of Its Effectiveness After Twenty-five Years," *Executive Office of the President*, January 1997.

specifically account for this through an increase in funding of federal agencies in NEPA. Title II does authorize appropriations to support the functioning of the newly created CEQ.⁴¹

While a funding process is not included in the legislation, the implementation costs of Title I of NEPA in most cases are far from trivial. From conducting the necessary research, to requesting comments from relevant agencies, considering opinions of various other stakeholders, and assessing alternatives, the environmental assessment process can be quite time and resource intensive depending on the scope of the proposed legislation, project, or policy.⁴² Other costs of NEPA can also be significantly high, particularly when judicial review is requested by external stakeholders. Suing an agency for an inadequate environmental assessment or noncompliance with specific requirements of the statute leads to costly delays of proposals which officials seek to avoid. As agencies developed NEPA offices, they were forced to adjust their budgets to account for increased expenditures on environmental assessments, which has impacted the amount they request from Congress each year.⁴³

⁴¹ National Environmental Policy Act, 42 U.S.C. § 4321-4347 (1970).

⁴² Peter Offringa, "Creating a user-friendly NEPA," in *Environmental Policy and NEPA: Past, Present, and Future* edited by E. Ray Clark and Larry W. Canter, Boca Raton, FL: St. Lucie Press, 1997.

⁴³ Wichelman, "Administrative agency implementation of the National Environmental Policy Act of 1969: a conceptual framework for explaining differential response."

Chapter 3: Evaluating the Intent and Effectiveness of NEPA

Overview

In order to identify a framework for evaluating the success of NEPA, this chapter will outline the purposes of the statute, as well as review corresponding elements of effectiveness proposed by CEQ and scholars of environmental impact assessment and environmental policy. Existing studies identify various strategies that have been used to judge the effectiveness of environmental impact assessment over time. The chapter will conclude by selecting a framework through which to evaluate the effectiveness of the NEPA process, with a particular focus on its effectiveness in influencing substantive decision-making.

NEPA's Intent

While NEPA straightforwardly asserts a strong and broad national environmental policy, implementation of that policy is less explicit. NEPA's stated purposes are: "To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality."⁴⁴ Given the brevity of the

⁴⁴ National Environmental Policy Act, 42 U.S.C. § 4321-4347 (1970).

statute itself and the broad statement of policy in the absence of adequately specific implementation provisions, the intent of the Act has been explicated over the past decades by agencies, courts, and interested parties, in a variety of contexts. While authors attribute varying weights to different components of NEPA, they mostly agree that the central purposes of the statute are to integrate environmental impact assessments into decision-making procedures, require acceptance of environmental values across the federal government, initiate the formation of stakeholder alliances, and understand and reduce human impacts on the environment.

Prior to NEPA's enactment, environmental values did not explicitly factor into federal project and policy proposals. Instead, economic principles drove most decision-making and non-economic costs and harms were predominantly overlooked. When it became apparent that this decision-making methodology was taking a large toll on the natural environment, Congress addressed this problem through NEPA by restructuring the way in which federal agencies considered projects, providing them a mandatory process to incorporate environmental perspectives.⁴⁵⁴⁶

Dreyfus et al. argue that NEPA provides a more thoughtful process for agency distribution of rights to natural resources, noting that "there are more actions proposed than federal agencies can possibly undertake, and at each stage of the bureaucratic decision process there is a need to eliminate some proposals. Decision makers need

⁴⁵ Roger C. Cramton and Richard K. Berg, "On Leading a Horse to Water: NEPA and the Federal Bureaucracy," *Mich. L. Rev.* 71 (1972): 511-536.

⁴⁶ Sewell and Korrick, "The Fate of EIS Projects: A Retrospective Study," in *Improving Impact Assessment: Increasing the Relevance and Utilization of Scientific and Technical Information* edited by Hart, Enk, and Hornick, Boulder, Colorado: Westview Press, 1984, 372.

criteria to eliminate requests, and it was NEPA's action-forcing intent in part to introduce new criteria."⁴⁷ Environmental impact assessment, which often results in the production of a thoroughly analyzed EIS, is this "action-forcing" measure. Other commentators are quick to point out that the assessment is much more than a document-producing procedure.⁴⁸ The decision-making component is intended to encourage rational choices driven by the results of environmental information, and to change usual decisional calculus of agencies to force the integration of environmental values.⁴⁹ By targeting the decision-making process, rather than the decision itself, lawmakers intentionally limited NEPA to encourage precautionary thinking, but apparently not to determine outcomes explicitly.⁵⁰

In one regard, the choice of Congress in opting for a focus on procedure rather than on substantive results reflects the vast array of agencies with differing missions intended to be covered by the legislation, as well as the diversity of proposals that were to be impacted.⁵¹ Additionally, decisional expertise lies within the agencies and the experts working on the assessments, and not in Congress. For this reason, Jain et al. thus argue that "the spirit of the law is founded on the premise that to utilize resources in an

⁴⁷ Dreyfus and Ingram, "The National Environmental Policy Act: A View of Intent and Practice," 254.

⁴⁸ Paul Erickson, *Environmental Impact Assessment: Principles and Application* (Academic Press Inc., 1979), 359.

⁴⁹ Lynton Caldwell, "Analysis-assessment-decision: the anatomy of rational policymaking," *Impact Assessment* 9, no. 4 (1991): 81-92.

⁵⁰ Joel Tickner, *Precaution, Environmental Science, and Preventative Public Policy* (Washington, D.C.: Island Press, 2003).

⁵¹ Dreyfus and Ingram, "The National Environmental Policy Act: A View of Intent and Practice."

environmentally compatible way, and to protect and enhance the environment, it is necessary to know how activities will affect the environment, and to consider these effects early enough so that changes in plans can be made if the potential impacts warrant them.”⁵² The decision-making component of NEPA then serves as a precautionary effort to adjust or reexamine projects and policies that may pose a threat to the health of the natural environment as revealed through a comprehensive assessment of environmental factors. This is arguably the most prominent intention of the framers of NEPA.⁵³

Congress assigned the federal government to oversee the environmental impact assessment process in order to drive extensive change within the nation. Given that most large-scale projects and policies filter through the agencies in the executive branch, where decision-making takes place, the lawmakers commanded a significant audience for their legislation. In order to ensure educated decision-making, NEPA requires agencies to incorporate environmental impact assessment procedures into their existing processes and everyday performance of their missions. Cramton et al. view NEPA compliance as “an important step in the national reordering of priorities...The isolation and parochialism that characterize some governmental agencies—the tendency to be totally absorbed in the agency’s special mission or with its special constituencies—are partially displaced.”⁵⁴

One aspect of agency responsibility under NEPA is procedural, that is evaluating

⁵² R. Ravinder Kumar Jain, Lloyd V. Urban, and G. Gary S. Stacey, *Environmental Impact Analysis: A New Dimension in Decision-Making*, (Van Nostrand Reinhold Company, 1981), 20-21.

⁵³ Charles Eccleston, *The NEPA Planning Process: A Comprehensive Guide with Emphasis on Efficiency*, (New York: John Wiley & Sons, Inc., 1999), 36.

⁵⁴ Cramton and Berg, "On Leading a Horse to Water: NEPA and the Federal Bureaucracy."

proposals, determining whether or not the assessment process is required, and conducting the corresponding evaluation. Another is the incorporation of findings into their decision-making. According to CEQ, two primary goals of NEPA are acceptance of environmental values across the federal government and elimination or modification of policies that conflict with these goals.⁵⁵ Jain et al. put the role of agencies into perspective, arguing that the environmental impact assessment process, including the multiplicity of parties involved, points to the fact that “an important and intended consequence of this disclosure is to build into an agency’s decision making process a continuing consciousness of environmental considerations.”⁵⁶ While agency compliance with NEPA appears mainly procedural on the surface, scholars agree that it was Congress’ intent for them to adopt a new framework through which to consider proposals with the environment in mind. As Cramton et al. explain, NEPA provides a method for “leading the bureaucratic horses to environmental waters...In time, the agency will develop an institutional viewpoint more sympathetic to environmental, as opposed to purely programmatic, values.”⁵⁷ Whether or not this has been accomplished across federal agencies is debated in the literature.

While Congress hoped that agencies would willingly accept this mandatory shift in how they evaluated their projects, it also required consultation with other stakeholders to ensure that assessments would be well-rounded and comprehensive. Agencies are

⁵⁵ Council on Environmental Quality, “The National Environmental Policy Act: A Study of Its Effectiveness After Twenty-five Years.”

⁵⁶ Jain, Urban, Stacey *Environmental Impact Analysis: A New Dimension in Decision-Making*, 20.

⁵⁷ Cramton and Berg, "On Leading a Horse to Water: NEPA and the Federal Bureaucracy," 515-516.

dedicated to their missions, but their actions involve and influence a number of other parties and values. When deciding to incorporate an information gathering phase in NEPA's environmental impact assessment requirements, lawmakers added an opportunity for other sources to provide additional overview of the issues to better inform agency decisions and to reduce bias that could arise from only considering agency sources. As opposed to processes in existence prior to NEPA, agencies were to be much more open to providing information about the status and details of projects, inviting public comment from interested parties and involving them in dialogue to shape decisions. In addition to resulting in better project proposals, involving a variety of stakeholders early and often will likely result in less opposition, including litigation, in the future as the project or policy is put into action.⁵⁸ Whether or not this has been accomplished successfully is disputed.⁵⁹ In short, involving the public and other stakeholders broadens the points of view incorporated within an environmental assessment and, when agencies are inclined to listen, contributes to more informed decision-making.⁶⁰

While much of NEPA's intent is to alter the current decision-making procedures of the federal agencies, its overall purpose is to increase widespread understanding of human impacts on the environment and to reduce the occurrence of harmful activities.

⁵⁸ Eccleston, *The NEPA Planning Process: A Comprehensive Guide with Emphasis on Efficiency*, 59

⁵⁹ Judith Hendry, "Decide, Announce, Defend: Turning the NEPA Process into an Advocacy Tool Rather than a Decision-Making Tool," in *Communication and Public Participation in Environmental Decision Making*, ed. Stephen Depoe et. al (New York: SUNY Press, 2004), 100.

⁶⁰ National Research Council, *Public Participation in Environmental Assessment and Decision Making*, (Washington, D.C.: The National Academies Press, 2008), 39.

The educational aspect of NEPA is facilitated primarily through environmental impact assessment documentation. Jain et al. summarizes this, asserting that “NEPA, in setting forth national policy on restoration and protection of environmental quality, has declared that it is a continuing policy of this government...to create and maintain conditions under which man and nature can exist in productive harmony and fulfill social, economic, and other requirements of present and future generations of Americans.”⁶¹ For this reason, it is crucial that environmental analysis be comprehensive and detailed. This allows agencies and developers to take advantage of this knowledge and apply it to projects in the planning stage, rather than attempting to mitigate for impacts after the fact, thereby minimizing environmental impacts in a precautionary fashion.⁶² Caldwell insists that NEPA fills a gap that long existed in the nation’s founding laws which overlooked the government’s role in environmental protection. He states, “the Constitution contains no specific protection for the environment. The enforcement of NEPA and other environmental statutes is derived from implied powers or indirectly from other provisions of the Constitution...In this respect the environmental legislation differs from statutes governing civil rights.”⁶³ Others have asserted that NEPA is so vast in its intentions for

⁶¹ Jain et al., *Environmental Impact Analysis: A New Dimension in Decision-Making*, 12.

⁶² John Glasson, Riki Therivel, and Andrew Chadwick, *Introduction to Environmental Impact Assessment*, 3rd edition, (New York: Routledge of the Taylor & Francis Group, 2005), 8.

⁶³ Caldwell, "Analysis-assessment-decision: the anatomy of rational policymaking," 91.

natural resource management that it serves as a land-use planning mechanism, enforcing smarter and more sustainable relationships with the environment.⁶⁴

NEPA's intent can more or less be viewed as three levels of impact that range in time and scope. The first, and perhaps the most variable, is the integration of environmental values into decision-making. The success of this goal is most accurately measured on a case-by-case basis. Contributing factors to the quality of the environmental impact assessment, and consequently the likelihood that its findings will be incorporated in decision-making, include the integration of environmental considerations into agency processes and the formation of stakeholder relationships, which comprise the second level. While these aspects take time to implement within each agency and community, lawmakers viewed them as crucial steps in building a comprehensive understanding of environmental impacts. These processes contribute to the third level, which is the overarching and longer lasting intention of NEPA to improve environmental mindfulness on a national scale. While NEPA does not force project leadership to choose a certain proposal over others, it does provide a framework which allows environmental values to carry as much weight as economic factors and ensures that they are fully understood and considered prior to proposal implementation. Over time, NEPA is intended to positively impact more sustainable projects on the local level, as well as human interactions with the environment at the national and global levels.

⁶⁴ Michael Greenberg, *The Environmental Impact Statement after Two Generations: Managing environmental power*, (New York: Routledge of Taylor & Francis Group, 2012).

Defining and Evaluating Effectiveness

The fact that NEPA has existed for nearly half a century with few amendments is evident of its status as a critically important and influential environmental statute. Similar programs mandating environmental impact assessment have been adopted in US states and countries around the world. Despite its longevity and wide-spread influence, NEPA's success continues to be debated. While NEPA's procedural processes and intent are now more or less agreed upon, whether it has been effective in eliciting better and less environmentally harmful decisions is less clear. NEPA's unique purpose and structure sets it apart from other environmental legislation, making it less straightforward and more difficult to evaluate resulting progress. Lynton Caldwell, who worked with Senator Jackson to write the legislation, categorizes these differences as its policy-oriented rather than regulatory nature, the general lack of specific enforcement mechanisms provided within the legislation, its comprehensive approach to consideration of problem areas and conflicting values, and forward-looking anticipation of long-term impacts.⁶⁵ Various studies have sought to characterize and assess the effectiveness of NEPA both with regards to specific aspects and overall influence.

The most comprehensive NEPA effectiveness study done to date was performed by CEQ itself in 1997.⁶⁶ Through an expansive survey of NEPA stakeholders, the study was able to distinguish aspects and approaches in the environmental impact assessment

⁶⁵ Lynton K. Caldwell, "Beyond NEPA: Future Significance of the National Environmental Policy Act." *Harv. Envtl. L. Rev.* 22 (1998): 204.

⁶⁶ Council on Environmental Quality, "The National Environmental Policy Act: A Study of Its Effectiveness After Twenty-five Years."

process that garnered efficient results corresponding with the purpose of the statute. The study concluded that five areas relate to effectiveness: strategic planning, public information and input, interagency coordination, interdisciplinary place-based approach to decision-making, and science-based and flexible management approaches.⁶⁷ This evaluation by CEQ, the primary authority on NEPA matters, fits our purposes well and is supported by a large portion of the environmental assessment literature, so we will adopt these principles as the primary measures of effectiveness.

The first condition is strategic planning, which judges whether NEPA's intent is taken into consideration throughout the development of a project. The second criterion, effective public information and input, is characterized by relationship building between involved agencies and project stakeholders, to foster understanding of various points of view and incorporate them into decisions. The third measure, successful interagency coordination, requires agency collaboration, depending on the project. The fourth criterion, interdisciplinary place-based approach to decision-making, requires a unique and comprehensive consideration of local information. The fifth, science-based and flexible management approaches, require implementation after a project is decided upon in order to maintain effectiveness into the future.⁶⁸

⁶⁷ Council on Environmental Quality, "The National Environmental Policy Act: A Study of Its Effectiveness After Twenty-five Years," ix.

⁶⁸ *Ibid.*, ix.

Another effectiveness criterion was proposed by Greenberg, asking: “what would have happened to this project if there had not been an EIS process?”⁶⁹ While next to impossible to infer, historical information can likely provide a counterfactual benchmark against which to compare post-NEPA project outcomes with outcomes in the absence of NEPA.

This paper seeks to evaluate the results of the CEQ effectiveness study by exploring aspects of NEPA’s performance within more recent years, but examines them in a different manner by observing actual outcomes of a NEPA process rather than relying on subjective opinions of individuals involved in the process. The process through which CEQ evaluated the success of each of these aspects was subjective on the part of survey participants. While they were indisputably highly experienced and respected in regard to NEPA, their responses did not always pertain to specific projects, nor did they grapple with tangible impacts in actual assessments. Using the effectiveness criteria CEQ established, this paper will use a case study approach in order to examine each area to extract the concrete changes made to proposals as a result of the NEPA process.

The NEPA and Decision-Making Nexus

Given the difficulty associated with quantifying NEPA’s influence, scholars have often focused on the procedural requirements of the environmental impact assessment in order to draw conclusions about the degree of impact of the legislation. Erickson claims, however, that “all the effort spent on improving assessment teams, on upgrading and

⁶⁹ Greenberg, *The Environmental Impact Statement after Two Generations: Managing environmental power*, 23.

streamlining reports, on involving the public in the assessment effort—all this effort is an absolute waste of time if decision-makers persist in making believe that they can go about their business as usual.”⁷⁰ This view enforces the importance behind observing the connection between the procedural requirements and their intended impacts on the decision-making aspect, in addition to the CEQ criteria, which do not expressly consider substantive results. Cashmore et al. discovered that most research that has been done regarding the effectiveness of NEPA has focused on the procedural aspect due to its more easily measurable qualities, mentioning that “it can be argued, therefore, that one of the central paradoxes of EIA is that the issue of effectiveness has been, at best, only partially addressed by the research community.”⁷¹ Meanwhile, other authors point to the “substantive” aspect of environmental impact assessment, that is, whether it actually effects decision-making and encourages widespread adoption of environmental values, as the most significant, and yet problematic to study.⁷² Historically, substantive reviews of environmental impact assessment have only specifically evaluated European programs.⁷³

This paper addresses the progress that has been made in achieving NEPA’s substantive goals through an examination of these specific CEQ criteria, thereby elaborating upon studies that have focused solely on procedural compliance with the statute by entering the substantive realm. By looking at the substantive results, this

⁷⁰ Erickson, *Environmental Impact Assessment: Principles and Application*, 359.

⁷¹ Matthew Cashmore et al., "The interminable issue of effectiveness: substantive purposes, outcomes and research challenges in the advancement of environmental impact assessment theory." *Impact Assessment and Project Appraisal* 22, no. 4 (2004): 296.

⁷² Ibid.

⁷³ Ibid.

method allows consideration of factors that may result in an agency complying with the “paperwork” side of NEPA, while simultaneously circumventing the internalization of such findings in the decision and thus disregarding the stated goals and spirit of the law. The following chapter introduces the role of NEPA in the renewable energy sector and analyzes a recent case involving solar development in the Mojave Desert that went through an extensive NEPA process prior to receiving approval.

Chapter 4: NEPA on the Ground: Ivanpah Solar Electric Generating System Project

Overview

In theory, NEPA provides for a comprehensive review of environmental issues that is then carefully considered by decision-makers, in conjunction with other values, prior to project approval. Whether this occurs in reality, and to what degree decisions have incorporated environmental values has long been debated. The previous chapters described the intent of NEPA through legislative analysis and stakeholder interpretation, and identified a framework for evaluating its effectiveness in accomplishing these substantive goals. This chapter applies this evaluative framework to a project that recently navigated the NEPA process, providing an assessment of the effectiveness of the legislation in an important renewable energy project.

One issue that has recently arisen in considering renewable energy projects is the dilemma of conflicting causes. As concerns over climate change have grown, renewable energy projects have been proposed and subsidized by the government. These developments span various industries, including energy production and transportation, and involve a variety of federal agencies. While alternative energy sources offer significant carbon emission reductions, they can occupy vast areas of land, posing a threat to sensitive ecosystems, and imposing high demands on other precious natural resources. In considering these projects, regulators are often forced to evaluate the conflicting environmental values of climate change and habitat protection, and choose

which to prioritize. As a review of the Ivanpah Solar Electric Generating System (ISEGS) project will reveal, while NEPA remains crucial and relevant as a comprehensive planning tool for federal projects, its effectiveness has been affected by other environmental regulations and agendas. The effectiveness framework outlined in the previous chapter will be applied to the ISEGS NEPA process in order to evaluate NEPA's success in balancing multiple environmental values in the agency decision-making process.

Renewable Energy Sector and Green Tension

Not all projects that require NEPA review are easily classified as positive or negative in terms of their overall environmental impacts. In fact, as society has become increasingly focused on environmental protection efforts, many federally reviewed project proposals seek to utilize newer technologies and approaches to provide necessary services while minimizing negative environmental impacts. Energy projects have long been the subject of environmental impact assessments, but within recent years this area has grown increasingly complicated in terms of costs and benefits as renewable energy has entered the mix. Inevitably, these emission-reducing proposals come with their own environmental impacts, forcing decision-makers to choose which environmental services to protect and which to sacrifice. This introduces a new and unique dilemma for NEPA that some refer to as the "green vs. green conflict."⁷⁴

⁷⁴ Trevor Salter, "NEPA and Renewable Energy: Realizing the Most Environmental Benefit in the Quickest Time," *Environs: Envtl. L. & Pol'y J.* 34 (2010): 174.

Ivanpah Solar Electric Generating System

According to Mills College biologist Bruce Pavlik, writing for the *Los Angeles Times*, over 180 permit applications for California renewable energy projects had been received by the federal Bureau of Land Management (BLM) by early 2009.⁷⁵ BLM, housed within the Department of the Interior (DOI), is the federal agency responsible for managing public lands which must satisfy a variety of uses.⁷⁶ While the public lands of the Mojave Desert are often targeted for renewable energy projects since they are mostly free of development, they are home to a plethora of native plant and animal species that suffer when the environment is altered.⁷⁷

BrightSource Energy's solar development project planned for the Ivanpah Valley came at the front of this wave of proposals. BrightSource was one of the first companies involved in large-scale solar development and is known for its unique power tower concentrated solar thermal technology, proposed for the Ivanpah Valley site.⁷⁸ Concentrated solar thermal systems involve using solar power, directed by an array of mirrors, to produce steam. The steam is used to power a turbine, similarly as in other forms of fossil energy production. BrightSource's design maximizes solar power potential through extensive control over the tilt of each mirror panel as the position of the

⁷⁵ Bruce Pavlik, "Could green kill the desert," *The Los Angeles Times*, February 15, 2009, <http://www.latimes.com/opinion/la-oe-pavlik15-2009feb15,0,3168558.story#axzz2yjsoms1c>.

⁷⁶ Bureau of Land Management, "Decision Support, Planning, and NEPA," *United States Department of the Interior*, December 3, 2013, <http://www.blm.gov/wo/st/en.html>.

⁷⁷ Pavlik, "Could green kill the desert."

⁷⁸ BrightSource Energy, "Company," 2014, <http://www.brightsourceenergy.com/company#.U0ohDfm-1cY>.

sun changes.⁷⁹ The proposal called for three towers, with mirrors spread across 3,500 acres for an estimated net power production of 377 MW each day.⁸⁰ At this size, Ivanpah is the single largest solar thermal system of its type in existence.⁸¹ In addition to the power-producing systems themselves, the project required transmission lines to transport energy to customers, some of which already existed and some that required building.

On one hand, BrightSource's project appeared to be a progressive approach to scaling back the energy industry's greenhouse gas emissions. On the other hand, many recognized that the proposal also posed a significant threat to the countless species of flora and fauna that call the Ivanpah Valley home. Conflicts with the federal and state ESAs, which protect the desert tortoise and various other creatures in the region, highlighted this issue before construction began. The NEPA process identified impacts to the federally threatened desert tortoise, which required translocating all tortoises encountered during construction to an offsite location.⁸² Biological experts argued that many tortoises would end up being killed in the construction phase and those moved to other areas would not thrive.⁸³ Meanwhile, the ESA is intended to protect threatened and endangered species from man-made threats to their survival. Conservation-minded

⁷⁹ BrightSource Energy, "Ivanpah Project Facts," *Ivanpah Solar Electric Generating System*, 2013, <http://ivanpahsolar.com/about>.

⁸⁰ *Ibid.*

⁸¹ BrightSource Energy, "Ivanpah Project Overview," 2014, http://www.brightsourceenergy.com/ivanpah-solar-project#.U1t-k_ldV8F.

⁸² Courtney Sexton, "It's all adding up in Ivanpah," *Defenders of Wildlife*, Nov 12, 2013, <http://www.defendersblog.org/2013/11/adding-ivanpah/>.

⁸³ *Ibid.*

environmentalists argued that a project of this nature directly contradicted this responsibility. Additionally, given that the project was the first of its type, a variety of negative impacts to wildlife were not discovered until the plant was up and running.

While the project faced opposition from conservationists from the beginning, it also promised clean energy and jobs. Local officials voiced concerns early on in the development process on behalf of their constituents, but the project was supported by powerful investors and the state and federal governments.⁸⁴ The Ivanpah Solar project was the first of its kind to receive approval from the supportive Obama Administration.⁸⁵ Federal support for increasing the American renewable energy industry began with the National Energy Policy Act of 2005. In addition to mandating energy efficiency improvements, the Act requires usage of renewable energy sources in federal agencies to rise from three percent from 2007 to 2009, to seven and a half percent by 2013.⁸⁶ Similarly, the 2007 Energy Independence and Security Act supports renewable energy goals by requiring agencies to reduce their reliance on fossil fuels through hot water equipment requirements and standards for new construction.⁸⁷ The Ivanpah project also found support from the American Recovery and Reinvestment Act, which identifies

⁸⁴ Steve Clow, "Supervisor opposes massive solar project in San Bernardino County," *The Los Angeles Times*, Nov 13, 2009, <http://latimesblogs.latimes.com/greenspace/2009/11/supervisor-opposes-massive-solar-project-in-san-bernardino-county.html>.

⁸⁵ Sexton, "It's all adding up in Ivanpah."

⁸⁶ Office of Energy Efficiency & Renewable Energy, "Energy Policy Act of 2005," *United States Department of Energy*, <http://energy.gov/eere/femp/energy-policy-act-2005>.

⁸⁷ Office of Energy Efficiency & Renewable Energy, "Federal Requirements for Renewable Energy," *United States Department of Energy*, <http://energy.gov/eere/femp/federal-requirements-renewable-energy>.

renewable energy as an industry that can provide jobs and other opportunities to strengthen the American economy, and offers financial support for qualifying proposals.⁸⁸ With various drivers ranging from energy security and climate change to the economy, the federal government has made a substantial effort to support renewables in recent years. The Department of Energy (DOE) credits its programs for encouraging and supporting projects like ISEGS, and helping to make them realities. In the case of Ivanpah, the agency provided \$1.6 billion of investments to support the effort, which probably would have not had enough financing to continue otherwise.⁸⁹ DOE provides financial support for a wide variety of renewable technologies and projects that have the potential to advance their policy goals.⁹⁰

Renewable energy is also a priority of state governments, particularly in California. The California Energy Commission (CEC)'s Renewable Energy Program began in 1998 to support large and small scale renewable energy projects through a variety of incentive-driven and education-based programs.⁹¹ The California Renewable Portfolio Standard (RPS), established in 2002, sets goals for renewable energy supplies throughout the state. The program has accelerated its goals over time, and currently seeks

⁸⁸ BrightSource Energy, "Ivanpah Project Facts."

⁸⁹ Peter Davidson, "Celebrating the Completion of the World's Largest Concentrating Solar Power Plant," *United States Department of Energy*, February 13, 2014, <http://www.energy.gov/articles/celebrating-completion-worlds-largest-concentrating-solar-power-plant>.

⁹⁰ Ibid.

⁹¹ California Energy Commission, "California Renewable Energy Overview and Programs," www.energy.ca.gov, April 10, 2013, <http://www.energy.ca.gov/renewables/>.

to reach 33 percent renewables by 2020, after receiving pressure from multiple Executive Orders from Governor Schwarzenegger, the California Air Resources Board (CARB), and Governor Brown.⁹²

The federal and state agencies currently driving energy reform have also collaborated in an effort to synchronize their goals and requirements. In 2009, the Department of the Interior (DOI) and the state of California initiated an effort involving BLM and the CEC, among other agencies, which sought to streamline the permitting process for renewable projects that support both federal and state goals.⁹³ While the accommodating regulatory climate and funding assistance did not exempt ISEGS from the NEPA process, it certainly played a role in agency decision-making surrounding the project.

Examining Ivanpah's NEPA Process

The NEPA process for the ISEGS officially began on November 6, 2007, when BLM published its Notice of Intent (NOI) in the Federal Register to initiate the environmental impact assessment in conjunction with the CEC (the state agency tasked with overseeing the California Environmental Quality Act (CEQA) process for this

⁹² California Energy Commission, "California Renewable Energy Overview and Programs."

⁹³ Bureau of Land Management, "BrightSource Energy Ivanpah Solar Electric Generating System," [www.blm.gov](http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pa/energy/factsheets.Par.81531.File.dat/Ivanpah-Fact-Sheet.pdf), <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pa/energy/factsheets.Par.81531.File.dat/Ivanpah-Fact-Sheet.pdf>.

project).⁹⁴ Although project developers conducted research and constructed plans for the proposal prior to the NOI publication, this step commenced the fielding of public scoping comments for 30 days prior to the BLM's compilation of a draft EIS for the proposed actions on specific public lands.⁹⁵ According to the NOI, the developers (Solar Partners LLC, also known as BrightSource Energy) requested a right-of-way (ROW) that would encompass 3,400 acres on which they would construct "three concentrating solar-powered steam/electricity generating plants and related facilities."⁹⁶ It would also require changes be made to the 1980 California Desert Conservation Area (CDCA) Plan.⁹⁷

Unlike other public lands overseen by BLM, the CDCA required a specific management plan that supported a variety of uses as mandated by Congress through the Federal Land Policy and Management Act (FLPMA) in 1976.⁹⁸ The Plan identifies four different use levels, including controlled, limited use, moderate use, and intensive use. About eight million acres were split between controlled and limited uses, and the

⁹⁴ "Notice of Intent to Prepare a Joint Environmental Impact Statement and Final Staff Assessment, and Amend the California Desert Conservation Area Plan; California; Notice of Intent," 72 Federal Register 214 (November 6, 2007) 62671-62672.

⁹⁵ Bureau of Land Management, "BLM Announces Intent to Prepare Environmental Impact Statement for Solar Energy Project," *United States Department of the Interior*, November 6, 2007, http://www.blm.gov/ca/st/en/info/newsroom/2007/november/CDDnews0808_ivanpah_solar.html.

⁹⁶ "Notice of Intent to Prepare a Joint Environmental Impact Statement and Final Staff Assessment, and Amend the California Desert Conservation Area Plan; California; Notice of Intent," 72 Federal Register 214 (November 6, 2007) 62671-62672.

⁹⁷ *Ibid.*

⁹⁸ Bureau of Land Management, "The California Desert Conservation Act (CDCA)," *United States Department of the Interior*, September 19, 2012, http://www.blm.gov/ca/st/en/fo/cdd/cdca_q_a.html.

remaining roughly two million acres were dedicated to moderate and intensive uses.⁹⁹

BLM acknowledges the diversity of uses it must accommodate in the CDCA, stating that the “11 million acres of public lands provide critical space for survival of wildlife and plant resources and protection of cultural and scenic values, while also providing access for recreation, power lines, renewable energy, and other important public uses and projects.”¹⁰⁰ Their crucial task, however, is designating areas appropriately to maximize each competing use for the benefit of the public. The location that BrightSource chose for ISEGS has been contested by environmental groups and local interests due to its seemingly incompatible use of land serving as very high quality habitat for the desert tortoise.¹⁰¹

Almost exactly two years following the publication of the NOI for ISEGS, the CEC and BLM each posted the draft joint EIS/EIR (the EIR, the state environmental assessment documents, is referred to as the Final Staff Assessment by the state agency) that their offices worked together to create in the Federal Register.¹⁰² The 90-day public comment period began following the release, and all comments gathered were to be used to make adjustments prior to the release of the final EIS. Public comments on the draft

⁹⁹ Bureau of Land Management, “The California Desert Conservation Act (CDCA).”

¹⁰⁰ National Landscape Conservation System, “California Desert Conservation Area 30th Anniversary 1976-2006,” *Bureau of Land Management*, 2006, <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/caso/publications.Par.67970.File.dat/CDCA.pdf>.

¹⁰¹ Michael Puttre, “Environmental Group Takes A Shot at 392 MW Ivanpah CSP Facility,” *Solar Industry*, July 2, 2013, http://www.solarindustrymag.com/e107_plugins/content/content.php?content.12917.

¹⁰² California Energy Commission, “News Release: Ivanpah Solar Thermal Project Staff Assessment/Environmental Impact Statement Now Available,” November 4, 2009, http://www.energy.ca.gov/releases/2009_releases/2009-10-30_ivanhah_fsa.html.

EIS were compiled and made publicly available online in a document that is more than 250 pages in length.¹⁰³ Commenters included environmental groups, such as Greenpeace, Californians for Renewable Energy, Inc., the Center for Biological Diversity, the California Native Plant Society, and more, as well as a variety of local interests, like the nearby Las Vegas McCarran International Airport and individual residents.¹⁰⁴ Many commenters offered support for the project and were hopeful that it would be approved in order to kick start California's increasing reliance on renewable energy.¹⁰⁵ Others voiced fears of harmful impacts of developing these specific lands on desert habitat.¹⁰⁶ Those that were particularly concerned about the consideration of alternatives protested amending the CDCA Plan that seemed to relax typical requirements that called for the evaluation of other possible sites for the project.¹⁰⁷ Many asked for more information regarding various aspects of the project and potential impacts, suggesting that the final EIS should be more comprehensive and that additional factors should go into the agency's final decision-making.¹⁰⁸

¹⁰³ Bureau of Land Management, "Public Comments: Ivanpah Solar Electric Generating System-FSA and Draft Environmental Impacts Statement and Draft California Desert Conservation Area Plan Amendment," http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/needles/lands_solar.Par.33102.File.dat/ISEGS%20FEIS%20comments.pdf.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

In response to EPA comments, the agencies released a supplemental draft EIS several months after the initial public comment period closed. The supplement included additional impact assessment of specific alternatives to the plan, including a smaller overall impact and a location change for a section of the development.¹⁰⁹ Similarly, this was open for public review.

As is required by Section 309 of the Clean Air Act, the EPA also offered comments on the draft and supplementary draft EISs, as well as a score representing their informational completeness, both of which were made available to the public.¹¹⁰ While the agency expressed its support for renewable energy projects, it also stressed the importance of choosing appropriate locations, technologies, and scales such that they do not do excessive harm to existing ecosystems.¹¹¹ Ultimately, the EPA assigned the initial draft EIS an “Environmental Concerns--Insufficient Information (EC-2)” rating, citing concerns such as “1) current justification for the Project purpose, need and independent utility; 2) range of alternatives; 3) impacts to biological and aquatic resources; 4) impacts on air quality; 5) impacts to endangered species and other species of concern; and 6)

¹⁰⁹ Bureau of Land Management, “News Release: Supplemental Draft Environmental Study Available for Proposed Ivanpah Solar Electric Generation System Project,” *BLM California Desert District*, April 16, 2010, http://www.blm.gov/ca/st/en/info/newsroom/2010/april/ivanpah_solar_deis.html.

¹¹⁰ “Environmental Impact Statements; Notice of Availability,” 75 Federal Register 73 (April 16, 2010) 19969.

¹¹¹ Environmental Protection Agency, “Joint Draft Environmental Impact Statement and Final Staff Assessment for the Ivanpah Solar Electric Generating System, San Bernardino County, California [CEQ# 20090386],” *US EPA Region IX*, February 11, 2010, [http://yosemite.epa.gov/oeca/webeis.nsf/\(PDFView\)/20090386/\\$file/20090386.PDF?OpenElement](http://yosemite.epa.gov/oeca/webeis.nsf/(PDFView)/20090386/$file/20090386.PDF?OpenElement).

cumulative impacts from reasonably foreseeable future actions.”¹¹² While the EC-2 rating level is the lowest level of concern on the EPA’s scale, it represents concern nonetheless, and thus resulted in the creation of the supplementary draft EIS. The subsequent comments on the supplementary draft EIS were similar, asking BLM to elaborate more on their additions, and consequently it too received an EC-2 rating.¹¹³ EPA continued to push the agency to include additional and more thoroughly explored alternatives in its final document, suggesting “that the FEIS present the environmental impacts of all alternatives considered in comparative form, sharply defining the issues and providing a clear basis for choice among options for the decision maker and the public (40 CFR 1502.14).”¹¹⁴ Mirroring a selection of public comments, EPA agreed that BLM should further examine the possibility of locating the development in an area that has already been degraded so as to not destroy additional pristine lands.¹¹⁵ Overall, the agency encouraged BLM to better document its thought processes in deciding what to include and withhold from its analysis, and the EPA acknowledged that they made some strides between drafts but did not fully provide everything for which the agency, concerned with environmental protection, would have hoped.

¹¹² Environmental Protection Agency, “Joint Draft Environmental Impact Statement and Final Staff Assessment for the Ivanpah Solar Electric Generating System, San Bernardino County, California [CEQ# 20090386].”

¹¹³ Environmental Protection Agency, “Supplemental Draft Environmental Impact Statement for Ivanpah Solar Electric Generating System [CEQ# 20100132],” *US EPA Region IX*, June 3, 2010, [http://yosemite.epa.gov/oeca/webeis.nsf/\(PDFView\)/20100132/\\$file/20100132.PDF?OpenElement](http://yosemite.epa.gov/oeca/webeis.nsf/(PDFView)/20100132/$file/20100132.PDF?OpenElement).

¹¹⁴ *Ibid.*

¹¹⁵ Environmental Protection Agency, “Supplemental Draft Environmental Impact Statement for Ivanpah Solar Electric Generating System [CEQ# 20100132].”

Weeks before the draft EIS was released, BLM reached out to FWS for advice on biological proceedings related to the ISEGS project. The first biological assessment, however, was conducted by consultants CH2M Hill for BrightSource Energy and made available to the public in December 2009, nearly a month after the draft EIS was released. The information in the report was compiled through fieldwork at the proposed construction and translocation sites during 2007 and 2008.¹¹⁶ According to their surveys, most of which were said to have been performed according to US Fish and Wildlife Service (FWS) standards, the nature of the proposed translocation areas were different than typical tortoise habitat, though the survey reported that a handful of tortoises were spotted in such areas.¹¹⁷ They concluded that low numbers meant that an influx in the population after translocation would not overwhelm the ecosystems, as opposed to considering that tortoises did not and would not do well in these areas.¹¹⁸

After digesting the comments received in hearings and written submissions, BLM and CEC worked together to create the updated and final EIS. The final document detailed a slightly different proposal than the initial plan, featuring a marginal decrease in energy production as a result of accommodations made for environmental protection

¹¹⁶ CH2MHill, "Biological Assessment for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project," *Bureau of Land Management*, December 2009, http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/needles/lands_solar.Par.30845.File.dat/ISEGS_Biological_Assessment_Dec09.pdf.

¹¹⁷ *Ibid.*, 4-6.

¹¹⁸ CH2MHill, "Biological Assessment for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project," 4-6.

purposes.¹¹⁹ Following its publication, the public had 30 days to comment on the final EIS or file a protest against the accompanying required CDCA Plan amendment. Similar comments were received during this period. Despite the fact that BLM's final report had indicated a preferred alternative that would reduce the impact of ISEGS on the land, many were still unsatisfied that BLM had not evaluated additional alternatives in detail.¹²⁰

About a month after the final public comment period closed, BLM announced its decision to amend the CDCA Plan and permit the BrightSource project under the alternative conditions highlighted in the final EIS.¹²¹ With this Record of Decision (ROD), the developers were permitted the ROWs to the land they had set their sights on several years earlier. Secretary of the Interior Ken Salazar praised the project for advancing goals of the federal government, stating that "with this project, we are making great strides toward meeting the President's goals for creating new jobs for American workers, reducing carbon emissions, promoting energy independence, and strengthening our national security."¹²² In the end, "Mitigated Ivanpah 3 Alternative" was chosen. The project was marginally smaller than had initially been proposed, the siting remained the

¹¹⁹ Bureau of Land Management, "News Release: BLM Releases Final Environmental Study for Proposed Ivanpah Solar Electric Generation System Project," *BLM California Desert District*, August 6, 2010, http://www.blm.gov/ca/st/en/info/newsroom/2010/august/CDD1087_ivanpah_feis.html.

¹²⁰ Bureau of Land Management, "Director's Protest Resolution Report: Ivanpah Solar Electric Generating System Project Plan Amendment," October 7, 2010, http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/california.Par.33701.File.pdf/Ivanpah_Solar_Directors_Protest_Resolution_Report_10_07_10.pdf, 9.

¹²¹ Bureau of Land Management, "News Release: Salazar Approves First Power Tower Solar Project," October 7, 2010, http://www.blm.gov/ca/st/en/info/newsroom/2010/october/DOI_1007.html.

¹²² Bureau of Land Management, "News Release: Salazar Approves First Power Tower Solar Project."

same, and mitigation plans were constructed to protect and manage the endangered species present on the public lands.¹²³

Several weeks prior to the announcement of the ROD, the FWS released its Biological Opinion (BO) for the updated version of the project. A draft was sent to BLM and the developers several months prior to its release, allowing for editing to occur before the final position of the FWS was announced.¹²⁴ As is required by Section 7 of the ESA, FWS was required to make a jeopardy determination, essentially deciding whether or not the endangered desert tortoise would be able to survive under the proposed conditions.¹²⁵ Ultimately, FWS decided the project did not put the species in sufficient danger to prevent the project from receiving approval.¹²⁶ Nearly four months later, BLM requested a revised BO from the FWS as a result of the high number of tortoises encountered during initial phases of construction in comparison to the anticipated numbers.¹²⁷ After completing a reevaluation, the FWS once again decided that construction did not pose an extreme threat to the livelihood of the species, thereby prompting BLM to remove the

¹²³ Bureau of Land Management, “News Release: Salazar Approves First Power Tower Solar Project.”

¹²⁴ Fish and Wildlife Service, “Biological Opinion on BrightSource Energy’s Ivanpah Solar Electric Generating System Project, San Bernardino County, California [CACA-48668, 49502, 49503, 49504] (8-8-10-F-24),” *United States Department of the Interior*, October 1, 2010, http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/energy/isegs_bo0.Par.16731.File.dat/FINAL.ISEG.S%20BO.1.pdf.

¹²⁵ *Ibid.*

¹²⁶ *Ibid.*, 54.

¹²⁷ Bureau of Land Management, “Reinitiation of Consultation on BrightSource Energy’s Ivanpah Solar Electric Generating System,” *United States Department of the Interior*, February 24, 2011, http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/needles/lands_solar.Par.79775.File.dat/2.24.2011%20ISEGS%20reinitiation.pdf.

Temporary Suspension of Activities that had been ordered in the meantime.¹²⁸ The mitigation techniques were adjusted given the findings from the first year of construction and were maintained throughout the rest of the project's implementation. Several years later, in December 2013, construction of all components was completed and ISEGS began operating.¹²⁹

Evaluating Effectiveness

Included within the ROD that BLM issued regarding BrightSource's project was a description of their reasoning in deciding to allow development at the conclusion of the NEPA process. According to this "decision rationale," adequate consideration was given to all aspects of the proposal, in collaboration with other agencies and the public, and ultimately there was confidence in the ISEGS project's ability to further renewable energy development while leaving a minimized impact, due to planned mitigation efforts.¹³⁰ Ideally, this means that decision-makers internalized environmental values and honestly weighed them with relevant economic, social, cultural, and numerous other project-specific factors. In reality, this sometimes means simply thoroughly documenting

¹²⁸ Fish and Wildlife Service, "Service Issues Biological Opinion for Ivanpah Solar Electric Project; BLM Lifts Suspension of Activities Order," *USFWS Pacific Southwest Region*, June 10, 2011, <http://www.fws.gov/cno/press/release.cfm?rid=239>.

¹²⁹ BrightSource Energy, "Ivanpah Project Facts."

¹³⁰ Bureau of Land Management, "Record of Decision for the Ivanpah Solar Electric Generating System Project and Associated Amendment to the California Desert Conservation Area Plan," *United States Department of the Interior*, October 2010, http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/needles/lands_solar.Par.68027.File.dat/FinalRODIvanpahSolarProject.pdf, 5.

environmental reviews and including it in their final EIS. As a decision-making tool, NEPA does not by any means require that the most environmentally-preferred alternative be chosen. It does, however, seek to ensure that such alternatives are both identified and given sufficient and fair consideration. Whether or not the latter occurs in practice is difficult to determine, particularly since external factors such as politics and costs certainly play a role behind the scenes.

In the case of Ivanpah, the BLM followed the procedural requirements of NEPA adequately and in a timely manner. However, given the significant opposition from members of the public and various environmental groups regarding the protection of desert tortoises and pristine desert habitats, in particular, their controversial decision has been called into question. To answer the question of whether or not environmental information exposed through the environmental assessment process was considered adequately and earnestly in decision-making processes, each of CEQ's effectiveness elements will be examined.

Strategic planning

By the time the NEPA process began for the ISEGS project, BrightSource had already invested considerable time and energy into siting and planning the development. The fact that BrightSource's consultants produced a finalized assessment around the time the draft EIS was released is indicative of the lack of collaboration in the early phases. BrightSource had already determined its ideal location, conducted surveys of the site, and suggested mitigation efforts before the regulators had adequate time to evaluate the

project and before the public had officially heard about it. As a result, the constructive input BLM received from the public and other agencies was largely mentioned in their documentation but not thoroughly considered. Had NEPA began earlier, BLM, EPA, and FWS could have assisted BrightSource in identifying land that was more suitable for renewable development, saving them the time and money that they spent evaluating their chosen site. The approach that developers and agency officials took in this case, introducing the idea to the public without having consulted them first, caused widespread disapproval of outside companies entering the desert with little regard for the special ecosystems that they seemingly planned to destroy. Undoubtedly, beginning the NEPA process earlier in this case would have allowed for a more serious consideration of alternatives, particularly to the location of the project, better relationships with the public and environmental groups, and costs savings for developers, both in their initial planning and in their mitigation costs during and after construction. Instead, the decision seemed to have been made before BLM embarked on the environmental assessment process, and their speedy timeline, lack of adequate consideration of alternatives, and rejection of EPA's suggestion to consider other less vulnerable lands seem to reinforce this theory. Instead, it seems that the decision was all but determined before the NEPA process began and the assessment served as a planning process to address the issue of mitigation instead.

Public information and input

The Ivanpah NEPA process undeniably made informative documents publicly available and incorporated the required public comment periods into its timeline. BLM even documented the fact that it replied to the protests that it received following the final EIS release.¹³¹ The fielding of public opinions, predominantly from local and regional individuals and environmental groups, revealed the dichotomy that often exists with renewable projects of this sort. Some individuals and environmentalists proved extremely supportive of the progressive, large-scale solar project that offered considerable energy production with minimal carbon emissions in comparison to more traditional power production methods.¹³² Others were very much of the opposite opinion, pleading for the BLM to take into consideration the dramatically negative impact that development of this pristine land would have on threatened and endangered desert flora and fauna.¹³³

To what degree the agency considered and incorporated these views has been questioned. The conservation advocates felt particularly overlooked when it came to decision-making. As a result of pressure from the EPA and the public, BLM did settle on an alternative measure that reduced the size of the project slightly, thus reducing its environmental impact. This alternative, however, did not address the concerns of those that fought for consideration of another location more appropriately suited for

¹³¹ Bureau of Land Management, "Director's Protest Resolution Report: Ivanpah Solar Electric Generating System Project Plan Amendment."

¹³² Ibid.

¹³³ Ibid.

development altogether. Public involvement in the early planning stages may have helped to avoid this dilemma.

One area in which the public received little information was in the determination of a mitigation plan to ensure compliance with the ESA. The resulting mitigation plan was created with clearly inadequate scientific research into the impacts of the proposed actions on the desert tortoise population, as observed in the unanticipated high number of tortoises encountered during construction. Many of the members of the public giving input had expertise in dealing with the desert tortoise and could have offered productive input regarding the appropriate and successful mitigation methods. Once again, it appeared that the BLM and BrightSource Energy had made up their minds and did not want to address alternative proposals. Their preferred mitigation plan involved acquiring many small parcels of land far removed from the project site and other sites to which they would transport tortoises encountered during construction.¹³⁴ Environmentalists later objected, pointing out that tortoises thrive in contiguous habitats composed of certain plants, neither of which this plan offered.¹³⁵ Historically, translocated tortoises have been shown to be worse off after being moved than they would have been had they been able to stay put, as was the case during the construction of the Fort Irwin military base.¹³⁶ Regardless, the FWS also stood behind the plan on two occasions, once prior to

¹³⁴ Todd Woody, "For the desert tortoise, a threat and an opportunity," *The New York Times*, November 17, 2010, http://green.blogs.nytimes.com/2010/11/17/for-the-desert-tortoise-a-threat-and-an-opportunity/?_php=true&_type=blogs&_r=0.

¹³⁵ Ibid.

¹³⁶ Ibid.

construction and the second after more tortoises were found than expected. The nature of this process reveals a seemingly deliberate exclusion of public opinion and a single-minded determination to advance federal and state renewable energy goals regardless of local impacts.

Interagency coordination

Given that it was the first time a project of this type was permitted, many agencies were consulted in the process. BLM served as the lead agency and worked closely with the CEC to collaborate with the developers, produce EISs and other documents, and field public comments. Additionally, DOE was involved due to its funding program that extended necessary loans to BrightSource that made ISEGS' completion possible.

The EPA became involved following the publication of the draft EIS during the fulfillment of its Clean Air Act obligation of reviewing the document, rating its completeness, and offering suggestions for considerations in the final EIS.¹³⁷ While EPA's involvement met the NEPA procedural requirements, the BLM hardly acted on its recommendations as the spirit of the law suggests. One of EPA's primary concerns was the siting of the project, thereby offering further support for public concern.¹³⁸ It offered several sources for further exploration of this option, but BLM responded by altering the

¹³⁷ Environmental Protection Agency, "Joint Draft Environmental Impact Statement and Final Staff Assessment for the Ivanpah Solar Electric Generating System, San Bernardino County, California [CEQ# 20090386]."

¹³⁸ Ibid.

project size within the same location instead.¹³⁹ Given that EPA's mission is to further environmental protection efforts, BLM should have accepted its expert advice in weighing land uses and determining the best use of America's public lands.

The FWS was also consulted, but its involvement was similarly delayed. While BLM reached out for a BO shortly before the draft EIS was released, it did not release its final position until after the ROD was released. The FWS acknowledged the potential threats to the desert tortoise population in its BO but ultimately decided the threat was not great enough to kill the project.¹⁴⁰ It also supported the mitigation methods proposed by the developer, even though these ended up being substantially inadequate. Once this was uncovered and the FWS had another chance to limit the project, it refrained again and allowed for continuation of construction with mild modifications to their handling of the tortoises.¹⁴¹ Had better surveys been conducted, a better mitigation plan likely would have been generated, saving time, money, and tortoises.

While several federal and state agencies were involved in the environmental impact assessment process for the ISEGS, their coordination was not effective in terms of facilitating a transfer of knowledge that would promote modifications in plans. Instead, the BLM seemed to reach out to these agencies strictly out of procedural necessity.

¹³⁹ Environmental Protection Agency, "Joint Draft Environmental Impact Statement and Final Staff Assessment for the Ivanpah Solar Electric Generating System, San Bernardino County, California [CEQ# 20090386]."

¹⁴⁰ Fish and Wildlife Service, "Biological Opinion on BrightSource Energy's Invapah Solar Electric Generating System Project, San Bernardino County, California [CACA-48668, 49502, 49503, 49504] (8-8-10-F-24)."

¹⁴¹ Fish and Wildlife Service, "Service Issues Biological Opinion for Ivanpah Solar Electric Project; BLM Lifts Suspension of Activities Order."

Interdisciplinary place-based approach to decision-making

The single most detrimental aspect of the Ivanpah NEPA process was its lack of informed decision-making following the assessment. Given that the BLM closely followed NEPA's procedural requirements, the agency had a plethora of commentary from local experts and environmental organizations.¹⁴² While a project of this nature had not previously been developed, the scientific information that was available regarding the impacts of the proposal on various aspects of the natural environment it was posed to disturb provided reason for concern. The agency conducted information gathering activities and collected a variety of worthwhile and informative data, but it stopped one step short of integrating it into its decision-making processes.

It appears that the lack of a place-based approach in this instance was largely driven by the overwhelming political pressure to quickly permit projects of this nature. As an office within an executive branch department, BLM felt obliged to meet the ambitious renewable energy goals of the Administration. The partnering state agency, CEC, had similar pressures from its higher ups to push solar projects along. As a result, the decision-making appeared to be occurring in Washington and Sacramento, with little regard for the local impacts. Consequently, these decisions did not consider community concerns or site-specific impacts to the degree that NEPA encourages. Had the BLM seriously considered other sites for the project in an effort to minimize habitat destruction, for example, more time and resources would have been required. This did not

¹⁴² Bureau of Land Management, "Public Comments: Ivanpah Solar Electric Generating System-FSA and Draft Environmental Impacts Statement and Draft California Desert Conservation Area Plan Amendment."

fit into the fast-tracked process that aligned with guiding political goals of getting the project permitted as quickly as possible, not only so that it would become operational and contribute to renewable energy production numbers, but also to send a message to other developers that regulators were not standing in the way of such projects.

Science-based and flexible management approaches

While CEQ argues that science-based decision-making is crucial, it also recognizes that predicting environmental impacts is inevitably inaccurate in many cases and believes that active monitoring of impacts and consequent adjustment of mitigation efforts is critical to successful NEPA implementation.¹⁴³ Monitoring was imperative in the Ivanpah case, particularly due to its ESA obligations. Biologists' estimates of the number of tortoises on site were inaccurate, which was revealed as construction began.¹⁴⁴ Even though it became clear that the number was more than 400 percent larger than originally estimated, the project continued to move forward due to the perceived adequacy of the developer's mitigation plan, after a few amendments, approved by the USFWS.¹⁴⁵ The take limit initially established was quickly met and another BO from FWS was required in order to readjust the management plan so as to prevent an ESA violation. Developers were allowed to gather, transport, and release tortoises they came

¹⁴³ Council on Environmental Quality, "The National Environmental Policy Act: A Study of Its Effectiveness After Twenty-five Years."

¹⁴⁴ Todd Woody, "For the desert tortoise, a threat and an opportunity."

¹⁴⁵ Todd Woody, "Sierra Club, NRDC sue Feds to stop big California solar power project," *Forbes*, March 27, 2012, <http://www.forbes.com/sites/toddwoody/2012/03/27/sierra-club-nrdc-sue-feds-to-stop-big-california-solar-power-project/>.

across during construction, but the viability of the sites to which they were translocated has been contested.¹⁴⁶ Local experts who have long studied the desert tortoise were not confident that the species would thrive under this arrangement.¹⁴⁷ Had additional surveys of tortoise presence been conducted prior to BLM issuing the ROWs, there may have been more support for FWS to reject the proposal due to the potential harm it would pose to a threatened species. Additionally, the initial FWS assessment relied heavily on surveys that had been conducted by consultants of the developers, when it may have been wise for the agency to conduct confirmatory surveys of its own.¹⁴⁸

Flexible management approaches were crucial during the construction phase of ISEGS, but they were also useful after unexpected environmental impacts arose when the plant began operating. Since this technology had not previously been implemented, many parties expected surprise impacts to arise. One unanticipated impact has been the bird killings that occur around the towers to which the sunlight is reflected by the mirrors.¹⁴⁹ Scientists are still investigating the cause and methods for minimizing this effect, but such occurrences demonstrate the limited accuracy of scientific analyses in advance of implementation. Ivanpah, similarly to other projects, has had its fair share of unanticipated impacts that have been actively managed and mitigated.

¹⁴⁶ Todd Woody, “For the desert tortoise, a threat and an opportunity.”

¹⁴⁷ Ibid.

¹⁴⁸ Fish and Wildlife Service, “Biological Opinion on BrightSource Energy’s Ivanpah Solar Electric Generating System Project, San Bernardino County, California [CACA-48668, 49502, 49503, 49504] (8-8-10-F-24).”

¹⁴⁹ Chris Clarke, “Bird deaths continue at Ivanpah solar,” *KCET*, April 22, 2014, <http://www.kcet.org/news/rewire/solar/concentrating-solar/bird-deaths-continue-at-ivanpah-solar.html>.

What if the EIS had not been required?

While an examination of these various aspects of the Ivanpah NEPA process reveal that it was not as effective as it should have been, they also point out that it was still a valuable planning tool that resulted in productive alterations to the proposed project. Had the EIS not been required, public participation and agency coordination likely would not have occurred at all. As a result, the public would not have been informed of the project and alternatives would not have been addressed. In the end, BLM settled on an alternative that reduced the size of the project and its resulting environmental impacts. While other alternatives may have been preferred by conservationists, particularly those that involved relocating the project altogether, this selection was indicative of the agency's internalization of some of the information gathered through the environmental impact assessment process. The EIS process not only requires public access to the process, but it puts pressure on the lead agency and developers to take actions to foster a positive relationship with the local community and other stakeholders.

That being said, had the results of the NEPA assessment been more influential, the outcome of this project would undoubtedly have been different. BLM's support for the proposal from the beginning, combined with the leniency of environmentally minded agencies such as the EPA and FWS in their assessments, made it easy for more environmentally protective alternatives to be rejected without substantial justification. The federal agencies seemed rushed to get the project approved, but NEPA does not

necessarily provide for a speedy process when appropriately implemented. Conducting an adequate examination of the environmental impacts of a project of this scale is often time and resource intensive. BLM's rejection of more appropriate sites, in addition to the inaccurate tortoise survey results, resulted in faster permitting but also increased the costs to the developers. Mitigation efforts required for the selected site were considerably more expensive than they would have been on other proposed lands, particularly because BrightSource Energy had to agree to specific procedures when dealing with creatures protected under the ESA, which ended up costing them around \$56 million.¹⁵⁰ Abiding by the spirit of NEPA in the creation of the EIS for ISEGS may have led to different results, but omitting the environmental review requirement would have undoubtedly led to a more environmentally destructive final development.

Overall effectiveness

Given the above analysis of various aspects of effectiveness, did decision-makers ultimately incorporate environmental values when making their final decision? In this case, the answer is difficult to decipher given the tradeoff they faced between varying environmental values. In one regard, they permitted a project that will produce a considerable amount of energy with relatively low carbon emissions. At the same time, the developers sought to utilize land that was critical to the survival of an threatened species despite the availability of viable alternatives.

¹⁵⁰ Kevin Delaney, "Considerations before selecting a solar project site," *Law 360*, April 3, 2014, <http://www.law360.com/articles/522983/considerations-before-selecting-a-solar-project-site>.

What can be examined is whether or not BLM gave conservation values adequate consideration, given the considerable concern of the public and experts in other federal agencies, when weighed against the reductions in carbon emissions and overall benefits to climate change mitigation. This tension turns into a somewhat local versus global conflict in that the negative impacts of conservation conflicts are primarily felt by the surrounding communities and regional environment, while the benefits of the project extend across the state by means of additional power supply and globally in terms of low-emission energy production. In the end, the decision-making largely took place outside of the local context, causing the site-specific impacts to be mostly overlooked in an effort to meet political goals.

In many regards, the potential of the NEPA process was not maximized in the Ivanpah case. The process was initiated after the plan had more or less been determined, public comments were received but prompted little change, opinions of other agencies were similarly aligned with political goals and did not provide limitations on the scope of the project, and thus decision-makers offered their support to a project similar to the initial proposal while giving little regard to the information uncovered during the environmental impact assessment process. The approved plan was accompanied by a mitigation plan that was created out of a similar process, primarily based on surveys conducted for the developers. As a result, the plan had to be updated when unanticipated obstacles arose during construction and after the plant began operating.

This case raises many concerns with regards to NEPA's applicability and effectiveness in situations where different environmental values are being considered. Since NEPA simply requires that environmental impacts be taken into consideration, it does not provide a framework that ensures that conflicting values within this realm are appropriately addressed. That being said, had the developers followed the spirit of the law, each side would have been thoroughly examined and considered prior to making the final decision. To this effect, NEPA's lack of enforceability in the substantive decision-making realm makes it simpler for developers and agencies to make decisions inspired by political goals without adequate consideration of more local impacts.

Chapter 5. Conclusion

Since its creation, NEPA has stood apart from other legislation. Not only was it the first major environmental policy of the United States, but it introduced a precautionary approach to regulation that had not previously been applied in other fields. Without specifically stating which actions it sought to prevent and which to permit, the statute provided a method for conducting thorough preliminary research in order to influence better agency decision-making. Its widely accepted intention is to incorporate environmental values into agency decision-making for individual federal projects, and on a broader level it seeks to raise environmental awareness by making visible the connections between people's actions and their subsequent environmental impacts. Its effectiveness can be evaluated in narrow or general terms. Some authors have evaluated NEPA's success strictly in terms of procedural compliance with the processes that CEQ has outlined for agencies. While procedural violations are typically at the heart of NEPA-based court challenges, the adequacy of a project's NEPA review is not solely a function of the lead agency's ability to follow the environmental impact assessment practices. An evaluation of the substantive effectiveness of NEPA, that is, its success in inducing the integration of environmental values into decision-making, was defined and evaluated for the ISEGS project for this thesis. Analyzing the performance of the substantive aspect of NEPA in this case revealed factors that limited the maximization of the environmental review process, illuminating areas of critical consideration for the future of the statute.

When the details of the ISEGS project were examined in the framework of the CEQ effectiveness requirements, areas for improvements were identified within each of the categories. First, strategic planning was not optimized due to the fact that BrightSource had performed extensive research and development on its proposed project before presenting it to the BLM and initiating the NEPA process. With a plan already established, one can imagine that the developers and the lead agency were hesitant to consider any major adjustments due to the time and money they had already invested, regardless of the issues that would emerge in public and agency comments. Second, BLM did a sufficient job of supplying the public with information and allowing time for comments, but did not integrate the resulting feedback. An examination of its initial and final proposals, given the suggestions of the public, leads one to conclude that the prevalent concerns of the public regarding the ISEGS project were not adequately addressed. Thirdly, agency coordination was performed but not fully incorporated in decision-making, similarly to BLM's management of public input. Federal agencies including the DOE, EPA, and FWS contributed recommendations in their respective fields of expertise, but BLM did not seem to adopt most of these suggestions. For example, the EPA suggested that BLM evaluate the viability of a less sensitive, previously disturbed site to minimize habitat destruction, but the agency did not appear to take steps to seriously consider alternative sites. Additionally, other federal agencies appeared to hesitate in stopping the project despite their concerns. EPA had the option of submitting the proposal to CEQ for review and FWS could have issued a BO that decided the project would pose too large of a threat to threatened species on the site, but neither

agency executed these powers. Agency knowledge that the Obama Administration supported ISEGS' development may have been one factor that resulted in these conclusions. The fourth condition of effectiveness, and the area that BLM seemed to have neglected the most, was that of comprehensive and locally-based decision making. While a truly place-based consideration may have led to development of a different site, the underlying political pressures brought about by the Obama Administration's ambitious renewable energy goals likely resulted in the general oversight of local concerns. The fifth aspect is science-based management, which was particularly relevant in the Ivanpah case. Given that the proposed technology had not been implemented on this scale in the past, unanticipated environmental impacts inevitably arose after the plant began operating. This appears to be more representative of the boundaries of science, rather than an oversight on the part of the BLM or developers. The formulation and updating of the mitigation plan through the NEPA process, on the other hand, was more controversial due to a very low initial estimate of tortoise populations as compared to the actual counts. Conservationists have raised concerns surrounding details of the mitigation plan, particularly with relation to desert tortoise translocation. A final consideration speculated the outcome of the ISEGS project had there been no EIS requirement. This analysis revealed that the NEPA process was critical in facilitating public and agency feedback and requiring the consideration of alternatives, even though the above results suggest that it was not as effective as it could have been had it more closely considered its findings when it came to making a final decision.

The Ivanpah NEPA process illuminated the negative impacts of politics, high research and development costs, time pressures, and conflicting environmental values on the substantive effectiveness of the legislation. The underlying political pressures to advance renewable energy projects in a timely manner, both by the state and federal governments, undoubtedly led the CEC and BLM to favor the ISEGS project from the beginning. This conflict is also applicable in other situations where there is a discrepancy between local and state or national goals because while the lead agency is supposed to make an interdisciplinary decision, its mission is ultimately determined by the national government. Such pressures have the troubling potential to override local concerns in decision-making. Additionally, high costs are present throughout the NEPA process, but particularly in the examination of alternatives and establishment of mitigation plans. In the Ivanpah case, this was exacerbated by the fact that BrightSource had invested heavily in the initial site they proposed before the environmental impact assessment even began. Similarly, performing extensive surveys and evaluating all possible environmental impacts to prepare for in mitigation plans is cost intensive. Cost saving mechanisms, however, may lead to inaccuracies in results. For example, the initial FWS opinion was based primarily off of surveys conducted by a consultant who had been hired by the developers. Additional surveys may have provided a more accurate count of tortoises present at the site and could have prevented the construction delays, subsequent surveys, and second BO that resulted. While NEPA is an inherently costly process in many cases, it has the potential to save considerable costs in the long-term. For instance, had the BLM considered alternative sites more seriously, BrightSource may have had considerably

lower mitigation costs that would have made the additional initial costs worthwhile. Time pressures played a similarly prohibitive role in the effectiveness of this environmental review. A combination of political pressure and eagerness on the part of the developer created pressure on the BLM to expedite the NEPA process, even though it may have been environmentally beneficial in the long run to do a more extensive review or take the time to react to public and agency comments. Finally, the overarching conflict revealed through this case is the dilemma of contradictory sets of environmental priorities and NEPA's ability to account for them. Ivanpah, and renewable projects more generally, draw considerable support from the environmental community for their low carbon emissions. On the other hand, they tend to be sited in areas that are otherwise untouched wilderness, which is controversial amongst conservationists. In this case, those in favor of renewable energy had the support of state and federal policies that incentivized development of renewables, while environmental concerns were generally overlooked, particularly in terms of siting. Had the lead agency been an unbiased party in the conflict over environmental benefits and concerns, NEPA would have allowed for a more comprehensive weighing of the costs and benefits.

While the ISEGS NEPA process was largely ineffective in incorporating environmental concerns into decision-making, this may be an indication of improper performance on the part of the agency rather than a flaw in the legislation itself. When followed correctly, NEPA provides a framework under which environmental information is made available to agencies and they are left to make an informed decision. In the case of Ivanpah, this decision was skewed by political pressures. It also demonstrates,

however, that it is challenging to identify the source of flaws in the substantive effectiveness of the NEPA process. To some degree, NEPA is effective in accomplishing its substantive goals by simply giving agencies the requirement of creating an EIS, a process by which they will acquire the information they need to make rational decisions that adequately incorporate environmental values, but whether or not they do so is beyond the action-forcing scope of the statute.

Bibliography

- “Bill Summary and Status 94th Congress H.R. 3130 CRS Summary.” *The Library of Congress Thomas*. July 24, 1975. <http://thomas.loc.gov/cgi-bin/bdquery/z?d094:HR03130:@@D&summ2=m&>.
- “Bill Summary and Status 94th Congress H.R. 6054 CRS Summary.” *The Library of Congress Thomas*. May 19, 1975. <http://thomas.loc.gov/cgi-bin/bdquery/z?d094:HR06054:@@D&summ2=m&>.
- “The Guardian: Origins of the EPA.” *United States Environmental Protection Agency*. 1992, <http://www2.epa.gov/aboutepa/guardian-origins-epa#agency>.
- “Environmental Impact Statements; Notice of Availability,” 75 Federal Register 73 (April 16, 2010) 19969.
- “Environmental law—threshold determinations under the National Environmental Policy Act of 1969. *Hanly v Kleindeinst*.” *Rutgers Camden Law Journal* 5 (1973): 380-398.
http://heinonline.org/HOL/Page?handle=hein.journals/rutlj5&div=30&g_sent=1&collection=journals#396.
- “Notice of Intent to Prepare a Joint Environmental Impact Statement and Final Staff Assessment, and Amend the California Desert Conservation Area Plan; California; Notice of Intent,” 72 Federal Register 214 (November 6, 2007) 62671-62672.
- Alm, Alvin. “NEPA: Past, Present, and Future,” *United States Environmental Protection Agency*, January 1988, <http://www2.epa.gov/aboutepa/nepa-past-present-and-future>.
- BrightSource Energy. “Company.” 2014.
<http://www.brightsourceenergy.com/company#.U0ohDfm-1cY>.
- BrightSource Energy. “Ivanpah Project Facts.” *Ivanpah Solar Electric Generating System*, 2013. <http://ivanpahsolar.com/about>.
- BrightSource Energy. “Ivanpah Project Overview.” 2014.
http://www.brightsourceenergy.com/ivanpah-solar-project#.U1t-k_ldV8F.

- Bureau of Land Management. "BLM Announces Intent to Prepare Environmental Impact Statement for Solar Energy Project." *United States Department of the Interior*. November 6, 2007.
http://www.blm.gov/ca/st/en/info/newsroom/2007/november/CDDnews0808_ivanpah_solar.html.
- Bureau of Land Management. "BrightSource Energy Ivanpah Solar Electric Generating System." www.blm.gov.
<http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pa/energy/factsheets.Par.81531.File.dat/Ivanpah-Fact-Sheet.pdf>.
- Bureau of Land Management. "The California Desert Conservation Act (CDCA)." *United States Department of the Interior*. September 19, 2012.
http://www.blm.gov/ca/st/en/fo/cdd/cdca_q_a.html.
- Bureau of Land Management. "Decision Support, Planning, and NEPA." *United States Department of the Interior*. December 3, 2013.
<http://www.blm.gov/wo/st/en.html>.
- Bureau of Land Management. "Director's Protest Resolution Report: Ivanpah Solar Electric Generating System Project Plan Amendment." October 7, 2010.
http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/california.Par.33701.File.pdf/Ivanpah_Solar_Directors_Protest_Resolution_Report_10_07_10.pdf.
- Bureau of Land Management. "News Release: BLM Releases Final Environmental Study for Proposed Ivanpah Solar Electric Generation System Project." *BLM California Desert District*. August 6, 2010.
http://www.blm.gov/ca/st/en/info/newsroom/2010/august/CDD1087_ivanpah_feis.html.
- Bureau of Land Management. "News Release: Salazar Approves First Power Tower Solar Project." October 7, 2010.
http://www.blm.gov/ca/st/en/info/newsroom/2010/october/DOI_1007.html.
- Bureau of Land Management. "News Release: Supplemental Draft Environmental Study Available for Proposed Ivanpah Solar Electric Generation System Project." *BLM California Desert District*. April 16, 2010.
http://www.blm.gov/ca/st/en/info/newsroom/2010/april/ivanpah_solar_deis.html.

- Bureau of Land Management. "Public Comments: Ivanpah Solar Electric Generating System-FSA and Draft Environmental Impacts Statement and Draft California Desert Conservation Area Plan Amendment."
http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/needles/lands_solar.Par.33102.File.dat/ISEGS%20FEIS%20comments.pdf.
- Bureau of Land Management. "Record of Decision for the Ivanpah Solar Electric Generating System Project and Associated Amendment to the California Desert Conservation Area Plan." *United States Department of the Interior*. October 2010.
http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/needles/lands_solar.Par.68027.File.dat/FinalRODIvanpahSolarProject.pdf.
- Bureau of Land Management. "Reinitiation of Consultation on BrightSource Energy's Ivanpah Solar Electric Generating System." *United States Department of the Interior*. February 24, 2011.
http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/needles/lands_solar.Par.79775.File.dat/2.24.2011%20ISEGS%20reinitiation.pdf.
- Caldwell, Lynton K. "Analysis-assessment-decision: the anatomy of rational policymaking." *Impact Assessment* 9, no. 4 (1991): 81-92.
- Caldwell, Lynton K. "Beyond NEPA: Future Significance of the National Environmental Policy Act." *Harv. Envtl. L. Rev.* 22 (1998): 203-240.
- Caldwell, Lynton K. "Implementing policy through procedure: impact assessment and the National Environmental Policy Act (NEPA)." *Environmental Methods Review: Retooling Impact Assessment for the New Century*. The Press Club, Fargo (1998): 8-14.
- California Energy Commission. "California Renewable Energy Overview and Programs." www.energy.ca.gov. April 10, 2013. <http://www.energy.ca.gov/renewables/>.
- California Energy Commission. "News Release: Ivanpah Solar Thermal Project Staff Assessment/Environmental Impact Statement Now Available." November 4, 2009. http://www.energy.ca.gov/releases/2009_releases/2009-10-30_ivanpah_fsa.html.
- Cashmore, Matthew, Richard Gwilliam, Richard Morgan, Dick Cobb, and Alan Bond. "The interminable issue of effectiveness: substantive purposes, outcomes and research challenges in the advancement of environmental impact assessment theory." *Impact Assessment and Project Appraisal* 22, no. 4 (2004): 295-310.

- CH2MHill. "Biological Assessment for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project." *Bureau of Land Management*. December 2009.
http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/needles/lands_solar.Par.30845.File.dat/ISEGS_Biological_Assessment_Dec09.pdf.
- Clark, E. Ray and Larry W. Canter, eds. *Environmental policy and NEPA: Past, present, and future*. CRC Press, 1997.
- Clarke, Chris. "Bird deaths continue at Ivanpah solar." *KCET*. April 22, 2014.
<http://www.kcet.org/news/rewire/solar/concentrating-solar/bird-deaths-continue-at-ivanpah-solar.html>.
- Clow, Steve. "Supervisor opposes massive solar project in San Bernardino County." *The Los Angeles Times*. Nov 13, 2009.
<http://latimesblogs.latimes.com/greenspace/2009/11/supervisor-opposes-massive-solar-project-in-san-bernardino-county.html>.
- Council on Environmental Quality. "The National Environmental Policy Act: A Study of Its Effectiveness After Twenty-five Years." *Executive Office of the President*. January 1997.
- Cramton, Roger C. and Richard K. Berg. "On Leading a Horse to Water: NEPA and the Federal Bureaucracy." *Mich. L. Rev.* 71 (1972): 511-536.
- Davidson, Peter. "Celebrating the Completion of the World's Largest Concentrating Solar Power Plan." *United States Department of Energy*. February 13, 2014.
<http://www.energy.gov/articles/celebrating-completion-worlds-largest-concentrating-solar-power-plant>.
- Delaney, Kevin. "Considerations before selecting a solar project site." *Law 360*. April 3, 2014. <http://www.law360.com/articles/522983/considerations-before-selecting-a-solar-project-site>.
- Dreyfus, Daniel A. and Helen M. Ingram. "The National Environmental Policy Act: A View of Intent and Practice." *Nat. Resources J.* 16 (1976): 243-262.
- Dykstra, Peter. "History of environmental movement full of twists, turns," *CNN*, December 5, 2008.
<http://www.cnn.com/2008/TECH/science/12/10/history.environmental.movement/index.html?iref=nextin>.
- Eccleston, Charles. *The NEPA Planning Process: A Comprehensive Guide with Emphasis on Efficiency*. New York: John Wiley & Sons, Inc., 1999.

- Environmental Protection Agency, “Joint Draft Environmental Impact Statement and Final Staff Assessment for the Ivanpah Solar Electric Generating System, San Bernardino County, California [CEQ# 20090386],” *US EPA Region IX*, February 11, 2010,
[http://yosemite.epa.gov/oeca/webeis.nsf/\(PDFView\)/20090386/\\$file/20090386.PDF?OpenElement](http://yosemite.epa.gov/oeca/webeis.nsf/(PDFView)/20090386/$file/20090386.PDF?OpenElement).
- Environmental Protection Agency. “Supplemental Draft Environmental Impact Statement for Ivanpah Solar Electric Generating System [CEQ# 20100132].” *US EPA Region IX*. June 3, 2010.
[http://yosemite.epa.gov/oeca/webeis.nsf/\(PDFView\)/20100132/\\$file/20100132.PDF?OpenElement](http://yosemite.epa.gov/oeca/webeis.nsf/(PDFView)/20100132/$file/20100132.PDF?OpenElement).
- Erickson, Paul. *Environmental Impact Assessment: Principles and Application*. Academic Press Inc., 1979.
- Executive Order No. 11,514, 3 CFR 902 (1970).
- Fish and Wildlife Service. “Biological Opinion on BrightSource Energy’s Ivanpah Solar Electric Generating System Project, San Bernardino County, California [CACA-48668, 49502, 49503, 49504] (8-8-10-F-24).” *United States Department of the Interior*. October 1, 2010.
http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/energy/isegs_bo0.Par.16731.File.dat/FINAL.ISEGS%20BO.1.pdf.
- Fish and Wildlife Service. “Service Issues Biological Opinion for Ivanpah Solar Electric Project; BLM Lifts Suspension of Activities Order.” *USFWS Pacific Southwest Region*. June 10, 2011. <http://www.fws.gov/cno/press/release.cfm?rid=239>.
- Glasson, John, Riki Therivel, and Andrew Chadwick. *Introduction to Environmental Impact Assessment, 3rd edition*. New York: Routledge of the Taylor & Francis Group, 2005.
- Greenberg, Michael. *The Environmental Impact Statement after Two Generations: Managing environmental power*. New York: Routledge of Taylor & Francis Group, 2012.
- Hanks, Eva H., and John L. Hanks. "An environmental bill of rights: the citizen suit and the National Environmental Policy Act of 1969." *Rutgers L. Rev.* 24 (1969): 230-272.
- Hendry, Judith. “Decide, Announce, Defend: Turning the NEPA Process into an Advocacy Tool Rather than a Decision-Making Tool,” in *Communication and Public Participation in Environmental Decision Making*, edited by Stephen Depoe et al. New York: SUNY Press, 2004.

- Jain, R. Ravinder Kumar, Lloyd V. Urban, and G. Gary S. Stacey. *Environmental Impact Analysis: A New Dimension in Decision-Making*. Van Nostrand Reinhold Company, 1981.
- Leventhal, Harold. "Environmental Decisionmaking and the Role of the Courts." *University of Pennsylvania Law Review* (1974): 509-555.
- Luther, Linda G. "The National Environmental Policy Act: Background and Implementation." Congressional Research Service, Library of Congress, 2005.
- Murchison, Kenneth M. "Does NEPA Matter-An Analysis of the Historical Development and Contemporary Significance of the National Environmental Policy Act." *U. Rich. L. Rev.* 18 (1983): 557-614.
- National Environmental Policy Act, 42 U.S.C. § 4321-4347 (1970).
- National Landscape Conservation System. "California Desert Conservation Area 30th Anniversary 1976-2006." *Bureau of Land Management*. 2006.
<http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/caso/publications.Par.67970.File.dat/CDCA.pdf>.
- National Research Council. *Public Participation in Environmental Assessment and Decision Making*. Washington, D.C.: The National Academies Press, 2008.
- NEPAnet Executive Orders, *United States Department of Energy*,
<http://ceq.hss.doe.gov/nepa/regs/executiveorders.htm>.
- Office of Energy Efficiency & Renewable Energy. "Energy Policy Act of 2005." *United States Department of Energy*. <http://energy.gov/eere/femp/energy-policy-act-2005>.
- Office of Energy Efficiency & Renewable Energy. "Federal Requirements for Renewable Energy." *United States Department of Energy*.
<http://energy.gov/eere/femp/federal-requirements-renewable-energy>.
- Office of Energy Efficiency & Renewable Energy. "Purchasing Renewable Power." *United States Department of Energy*. <http://energy.gov/eere/femp/purchasing-renewable-power>.
- Offringa, Peter. "Creating a user-friendly NEPA," in *Environmental Policy and NEPA: Past, Present, and Future* edited by E. Ray Clark and Larry W. Canter, 289-298. Boca Raton, FL: St. Lucie Press, 1997.
- Pavlik, Bruce. "Could green kill the desert." *The Los Angeles Times*. February 15, 2009.
<http://www.latimes.com/opinion/la-oe-pavlik15-2009feb15,0,3168558.story#axzz2yjsoms1c>.

- Puttre, Michael. "Environmental Group Takes A Shot at 392 MW Ivanpah CSP Facility." *Solar Industry*. July 2, 2013.
http://www.solarindustrymag.com/e107_plugins/content/content.php?content.12917.
- Salter, Trevor. "NEPA and Renewable Energy: Realizing the Most Environmental Benefit in the Quickest Time." *Environs: Env't. L. & Pol'y J.* 34 (2010): 173-188.
- Sanderson, Richard E. "EPA and NEPA: Cases in Point." *EPA J.* 14 (1988): 25.
- Sewell and Korrick. "The Fate of EIS Projects: A Retrospective Study," in *Improving Impact Assessment: Increasing the Relevance and Utilization of Scientific and Technical Information* edited by Hart, Enk, and Hornick. Boulder, Colorado: Westview Press, 1984.
- Sexton, Courtney. "It's all adding up in Ivanpah." *Defenders of Wildlife*. Nov 12, 2013.
<http://www.defendersblog.org/2013/11/adding-ivanpah/>.
- Shabecoff, Philip. *A fierce green fire: The American environmental movement*. Island Press, 2003.
- Tickner, Joel. *Precaution, Environmental Science, and Preventative Public Policy*. Washington, D.C.: Island Press, 2003.
- Weiland, Paul S. "Amending the National Environmental Policy Act: Federal Environmental Protection in the Twenty-First Century." *J. Land Use & Env't. L.* 12 (1996): 275-302.
- Wichelman, Allan F. "Administrative agency implementation of the National Environmental Policy Act of 1969: a conceptual framework for explaining differential response." *Nat. Resources J.* 16 (1976): 263-300.
- Wood, Christopher. *Environmental Impact Assessment: A Comparative Review*. London: Peason Education Limited, Prentice Hall, 1995.
- Woody, Todd. "For the desert tortoise, a threat and an opportunity." *The New YorkTimes*. November 17, 2010. http://green.blogs.nytimes.com/2010/11/17/for-the-desert-tortoise-a-threat-and-an-opportunity/?_php=true&_type=blogs&_r=0.
- Woody, Todd. "Sierra Club, NRDC sue Feds to stop big California solar power project." *Forbes*. March 27, 2012.
<http://www.forbes.com/sites/toddwoody/2012/03/27/sierra-club-nrdc-sue-feds-to-stop-big-california-solar-power-project/>.