



Decision making, procedural compliance, and outcomes definition in U.S. forest service planning processes

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ARTICLE INFO

Article history:

Received 16 November 2010

Accepted 17 January 2011

Available online 21 February 2011

Keywords:

Natural resource management
National Environmental Policy Act

Teams

Public involvement

Risk

Decision making

Forest Service

ABSTRACT

The National Environmental Policy Act (NEPA) dictates a process of analyzing and disclosing the likely impacts of proposed agency actions on the human environment. This study addresses two key questions related to NEPA implementation in the U.S. Forest Service: 1) how do Interdisciplinary (ID) team leaders and decision makers conceptualize the outcomes of NEPA processes? And 2), how does NEPA relate to agency decision making? We address these questions through two separate online surveys that posed questions about recently completed NEPA processes – the first with the ID team leaders tasked with carrying out the processes, and the second with the line officers responsible for making the processes' final decisions. Outcomes of NEPA processes include impacts on public relations, on employee morale and team functioning, on the achievement of agency goals, and on the achievement of NEPA's procedural requirements (disclosure) and substantive intent (minimizing negative environmental impacts). Although both tended to view public relations outcomes as important, decision makers' perceptions of favorable outcomes were more closely linked to the achievement of agency goals and process efficiency than was the case for ID team leaders. While ID team leaders' responses suggest that they see decision making closely integrated with the NEPA process, decision makers more commonly decoupled decision making from the NEPA process. These findings suggest a philosophical difference between ID team leaders and decision makers that may pose challenges for both the implementation and the evaluation of agency NEPA. We discuss the pros and cons of integrating NEPA with decision making or separating the two. We conclude that detaching NEPA from decision making poses greater risks than integrating them.

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1. Introduction

The intent of the National Environmental Policy Act (NEPA), as expressed in Section 101 of the Act, is to improve environmental decision making and to advance “a productive harmony” between “man and nature” (Sec. 101 [42 USC § 4331]). The courts, however, have not enforced this section, and therefore agencies are not required by NEPA to select a course of action that meets this substantive goal. In contrast, section 102 has been vigorously upheld in court (Lindstrom and Smith, 2001; Mandelker, 2008; Rasband et al., 2004); it articulates the means through which the goals of section 101 are to be achieved. Specifically, it outlines an interdisciplinary planning process in which the likely social and environmental effects of proposed actions are analyzed and disclosed to the public (Sec. 102 [42 USC § 4332]).

In the Forest Service, section 102, or the “NEPA process,” is fulfilled similarly for agency actions for which no significant impact is

expected and for those processes with significant expected impacts on the human environment. Both Environmental Assessments (EAs) and Environmental Impact Statements (EISs) are produced by interdisciplinary (ID) teams of staff specialists that bring a variety of expertise to the process, including disciplines like wildlife biology, hydrology, recreation planning, and ecology (Cervený et al., in press; Stern and Mortimer, 2009). An ID team leader is designated to lead the team through scoping, the development of alternatives, analysis of likely impacts for each alternative, writing of documents, and public involvement. Official agency “decision makers,” or “line officers,” are responsible for selecting the final course of action. The amount of decision maker involvement in NEPA may be intensive, incremental, or almost non-existent, ranging from attendance of all ID team meetings to only reviewing final effects analysis near the completion of the process (Stern and Mortimer, 2009).

Although NEPA appears to be simple on its face, implementation has proven to be complex and difficult. In the U.S. Forest Service, NEPA processes have sometimes been inefficient, have in some cases inadequately disclosed environmental effects, and have been frequently appealed and litigated (Keele et al., 2006; Tzoumis, 2007; U.S. Forest Service, 2002). There are numerous theories as to why these

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difficulties persist. Most are related to the administrative guidelines governing NEPA implementation, the nature of judicial review of agency NEPA processes, or the predominately rational-synoptic structure of the NEPA process, which may obfuscate underlying values conflicts about preferred alternatives (Dreyfus and Ingraham, 1976; Innes and Booher, 2004; Predmore et al., 2011; Thrower, 2006; U.S. Forest Service, 2002).

Recent studies have sought to advance our understanding of Forest Service NEPA processes by examining agency NEPA from the inside-out, focusing on agency perceptions of NEPA (Predmore et al., *in press*; Stern et al., 2010a, 2010b). This study builds on these efforts, moving from agency perceptions of NEPA in general to agency perceptions of specific NEPA processes. We address two key questions: 1) how do agency personnel conceptualize and evaluate the outcomes of specific NEPA processes; and 2) how do they relate NEPA with agency decision making? Our results are of practical significance for two reasons. First, this work can function as a starting point for creating an agreed upon framework for assessing NEPA success, which could be used in the future to evaluate and monitor agency NEPA. Second, empirical efforts to date have revealed only limited insights on the relationship between NEPA and agency decision making. This research examines the status of this linkage in the agency and offers some additional insights on its implications.

2. Background

Key players in NEPA implementation, in particular ID team leaders and decision makers, have different beliefs regarding the meaning of NEPA in the Forest Service – its purpose, appropriate measures of success, how to reform NEPA, and the appropriate role of science and public values in NEPA (Predmore et al., *in press-b*; Stern et al., 2010a, 2010b). In a recent survey of over 3000 Forest Service employees, decision makers, relative to ID team leaders and members, tended to emphasize the importance of efficiency in NEPA processes while de-emphasizing the importance of minimizing the negative social and environmental consequences of their actions. Stern et al. (2010a) tentatively connected these views of NEPA to the strong upward accountability felt by decision makers to produce measurable on-the-ground outcomes often dictated by fiscal year targets. Under pressure to deliver outcomes and knowing the potential for NEPA to slow or stop these efforts, decision makers showed a tendency to focus primarily on getting to the implementation of proposed actions as cleanly and efficiently as possible.

ID team members and leaders more commonly emphasized the importance of minimizing environmental impacts and satisfying the public through NEPA, while de-emphasizing process efficiency (Stern et al., 2010a, 2010b). Stern et al. (2010a) hypothesized that ID team leaders and members may tend to feel more balanced pressures from multiple directions. In addition to those placed on them by the decision maker, they may feel additional pressure to satisfy the public due to their personal and sometimes frequent contact with members of the public as well as pressure to conform to peer expectations that scientific effects analysis are used to minimize environmental impacts in NEPA.

Prior research has also uncovered disagreement about the role of NEPA in decision making. Some agency personnel view NEPA as mainly an empty exercise in procedural compliance, while others view NEPA as an integral aspect of agency decision making (Stern and Mortimer, 2009; Stern et al., 2010b). These differences in perceptions pose challenges to effective team functioning and communications both within the agency and with the public (Stern et al., 2010b). In particular, disciplinary specialists that make up ID teams may commonly view the NEPA process as their primary avenue for influencing on-the-ground management (Stern et al., 2010b; Predmore et al., *in review*). If NEPA processes are merely procedural compliance exercises used to document (or justify) pre-made

decisions, the associated disempowerment could have damaging effects on agency morale and functioning (Predmore et al., *in review*; Wright, 2007).

NEPA was designed with pluralist and rational planning philosophies in mind, with the intent of improving environmental decisions through external normative pressure and through the provision of additional relevant information (Dreyfus and Ingraham, 1976; Poisner, 1996). This intent is apparent in the President's Council on Environmental Quality (CEQ) regulations for implementing NEPA. CEQ guidelines state (FR 55990, Sec. 1500.1c):

(I)t is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork – even excellent paperwork – but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

In part due to standards of judicial review, NEPA implementation may sometimes fall short of its intent to improve environmental decision making. The court has been clear that NEPA is a procedural law. The courts review whether or not agencies have been “arbitrary and capricious” with their implementation of the process, but do not require that the agency makes an environmentally friendly decision (Lindstrom and Smith, 2001). As such, as long as agency decisions do not directly contradict NEPA analyses, violate procedural requirements, or appear “uninformed,” the agency may make the decision of its choosing (Robertson, Chief of the Forest Service, et al. v. Methow Valley Citizens Council et al., 490 U.S. 332, 1989). Thus, from a legal standpoint, it is possible to complete the procedural aspects of NEPA outlined by section 102, yet for these analyses to have limited, or no, influence on agency decisions (Lindstrom and Smith, 2001; Mandleker, 2008).

Some prior research has examined the relationship between NEPA and decision-making. Case studies have shown that external political or normative pressure levied through NEPA sometimes alters agency decisions (Espeland, 1994; O'Brien, 1990; Sabatier et al., 1995). Further, there is little doubt that NEPA, by virtue of requiring interdisciplinary analysis of effects, has diversified the information available to the decision makers (Ackerman, 1990; Culhane, 1990; Tipple and Wellman, 1991). These findings, however, do not assure a connection between NEPA and decision making; NEPA may still be treated as merely a set of procedures that must be completed in order to implement agency actions (Stern and Mortimer, 2009; Stern et al., 2009).

Studies of Forest Service public involvement have demonstrated that NEPA and decision making can be, and sometimes are, separated (Germain et al., 2001; Predmore et al., *in press*). Stern and Mortimer (2009) also found evidence of this, and Kaiser (2006) showed that NEPA effects analysis are sometimes used to rationalize or justify pre-made decisions rather than shape agency decisions. Given that connecting decision making with NEPA is not legally enforceable, and it is organizationally feasible to decouple NEPA and agency decision making, the agency is left to answer the normative question of whether NEPA and decision making *should* be separated.

This study directly examines how ID team leaders and decision makers assess the outcomes of the agency's NEPA processes and the relationships between NEPA and agency decision-making. In the absence of a unified vision for agency NEPA, NEPA practitioners may pursue different goals and strategies in NEPA, generating tensions and communications challenges within the agency (Stern et al., 2010b). These differences also make it difficult to reach agreement on how to evaluate Forest Service NEPA processes, complicating agency efforts to learn from its own NEPA experiences. This paper contributes new empirical evidence relevant to these challenges.

3. Methods

Data were collected through two online surveys, one a survey of ID team leaders and the other a survey of decision makers; both were administered with Survey Pro 5 © software. Respondents were invited to participate through an email which specified the name of the NEPA process about which they would respond and the date the NEPA decision was signed. The ID team leader survey was designed to take between 30 and 35 min to complete and included questions about the outcomes of the specified NEPA process and numerous details about the process, including: the process context; internal ID team work styles and interactions; the preferred alternative; team turnover; decision maker involvement in the process; public involvement techniques; public influence on the process; team leaders' values about public involvement; ID team leadership styles; and the pressures and challenges associated with the NEPA process. This paper focuses on outcomes, but also makes use of data on the project's context and the stage of the NEPA process during which the preferred alternative became clear. Future manuscripts will examine the relationships between process characteristics and these outcomes. The survey was open from March 17 to April 9, 2010.

The decision maker survey was a shortened version of the ID team leader survey, designed to take between 10 and 15 min to complete and was open from April 26 to May 15, 2010. The survey included questions about process outcomes that were identical to those included in the ID team leader survey. It also included questions about the decision maker's interactions with the ID team and about the pressures the decision maker faced during the NEPA process. The decision maker survey was less extensive than the ID team leader survey for two main reasons. First, the survey was mainly focused on NEPA outcomes because our main goal was to get a second opinion about the outcomes of each NEPA process. Second, the decision maker survey was shortened because we knew from the literature (see Bear, 2003) and previous experience that decision makers are sometimes not closely involved with the details of the process and cannot reliably answer questions about the day-to-day workings of the NEPA process. As a result, questions that required an intimate knowledge of the process and team interactions were not included.

Building a database from which we drew our sample began with the agency's *Planning Appeals and Litigation System* (PALS database). The PALS database includes contact information for a "project manager" for each NEPA process in the agency, but does not identify or report contact information for the ID team leader. We emailed all 1035 project managers associated with the 1724 NEPA processes resulting in an EA or EIS that were completed on or after January 1, 2007. Adjusting for incorrect email addresses, retirements, and responses that did not specify an ID team leader, we had a response rate of 59% from project managers. These responses allowed us to confirm the identity of 653 ID team leaders for 993 forest or district level NEPA processes. Some served as the leader for more than one NEPA process.

Due to the length of the ID team leader survey, we felt we could only reasonably ask ID team leaders to respond about one NEPA process. For ID team leaders who served as such on multiple processes, we developed a decision tree to select which process would be the focus of the survey. First, we took steps to ensure that our sample had an adequate number of EIS processes, of which there were relatively fewer in our sampling frame compared to EAs. We selected an EIS process over an EA if it was completed fairly recently (after January 1, 2008). In all other cases, we selected the most recently completed NEPA process (EA or EIS). We received valid responses from 489 ID team leaders on 489 different NEPA processes completed between January 1, 2007 and December 18, 2009. Based on an initial solicitation of 653 ID team leaders, our response rate was 75%.

The 489 NEPA processes for which we received responses from ID team leaders formed the initial sampling frame for the decision maker survey. There were 329 unique decision makers associated with these

489 NEPA processes. To limit the burden on respondents, we again took steps to ensure that each decision maker would respond for only one process. Again, recent EISs were selected over EAs. We also favored processes in which the ID team leader had indicated at least some degree of complexity, uncertainty or controversy regarding the process to maximize the potential of understanding agency challenges in complying with NEPA. Finally, more recently completed processes were selected over older ones.

We received valid responses from decision makers on 164 out of the 489 processes for which we received ID team leader responses. Determining valid responses involved confirming matches between survey respondents and the specific projects under question through document review and follow-up phone interviews where other documentation was unavailable. These checks revealed 19 invalid responses in the sample. Adjusting for misidentified decision makers in the initial database, our effective response rate for the decision maker survey was 53%.

The sampled processes roughly mirror the overall distribution of NEPA processes conducted during the period with regard to the numbers of EAs and EISs, project types (subject matter), and region (Table 1). Generally, we received a higher number of completed surveys for the regions of the agency that have been most active in NEPA implementation. Roughly 10% of all agency processes led to EISs during the period, and 11% of our responses from ID team leaders are for NEPA processes where an EIS was completed; we received a slightly lower number (7%) of EIS responses from decision makers (see Table 1).

Our primary analytical techniques include exploratory factor analysis (EFA) and multiple regression. EFA is a statistical technique used to analyze the interrelationships among a number of variables to explain them in terms of their common underlying dimensions. It is commonly used to condense a larger number of variables into a smaller number of latent "factors" which each describe unique concepts within the data (DeVellis, 2003). We use EFA to identify latent factors that describe respondents' perceptions of outcomes of NEPA processes. In doing so, EFA reveals relationships between decision making and procedural compliance, whether respondents perceive these concepts as integrated or separate.

We use the latent factors identified in EFA, along with a measure of perceived process efficiency, in subsequent regression analyses to explore what different respondents believe to constitute an "excellent outcome." Regression analysis reveals the extent to which sets of explanatory variables can explain the variance in a dependent variable. In these analyses, we explore the extent to which each of the explanatory variables contributes to predicting perceptions of an excellent outcome for the sampled NEPA processes.

Although this paper is primarily focused on perceptions of process outcomes, we report results from two additional batteries of questions due to their relevance to our findings. To examine the role of NEPA in decision-making, we asked ID team leaders: "At what point in the process did it become clear what the preferred alternative was going to be." We present these frequencies in relation to different project contexts. We delineated three categories of projects' context based on three questions posed to ID team leaders about that particular NEPA process: 1) How would you characterize the level of complexity of the proposed project (1 = fairly simple; 2 = somewhat complex; 3 = very complex)? 2) How would you characterize the degree of uncertainty of the likely effects of the proposed project at the outset of the process (1 = low uncertainty; 2 = moderate uncertainty; 3 = high uncertainty)? 3) How would you characterize your expectations about the level of public controversy about this specific project before it began (1 = low or none; 2 = moderate; 3 = high)? These three variables are recognized as elements of "messy natural resource planning" contexts (McCool and Guthrie, 2001). Equally weighting and summing each of these 3 variables, we built an index of "messiness." Messiness scores were categorized into three

Table 1

The distribution of NEPA processes for which we received decision maker and ID team leader responses in comparison with the overall population.

Region	Percentage of NEPA processes			Project type	Percentage of NEPA processes		
	ID team leader survey	Decision maker survey	Total population		ID team leader survey	Decision maker survey	Total population
1	9.4	7.9	8.1	Fuels management	11.5	11.0	10.0
2	11.9	13.4	12.0	Species and watershed management	6.5	4.9	5.9
3	7.4	9.8	10.7	Grazing, range allotment	10.4	12.2	13.5
4	12.5	13.4	11.5	Integrative without timber	6.5	4.3	4.7
5	12.1	9.1	13.7	Integrative with timber	23.9	25.6	22.8
6	13.9	12.2	12.7	Minerals and geology	3.7	3.0	4.4
8	15.1	14.6	16.9	Infrastructure and special use	13.9	8.5	15.0
9	14.9	17.1	10.8	Recreation management	10.4	18.3	12.2
10	2.9	2.4	3.5	Forest products	6.1	4.9	5.7
D.C.	0.0	0.0	0.1	Vegetation management—no forest products	7.0	7.3	5.5
				National/regional regulations, orders, Environmental Assessments (EA)	0.0	0	0.4
				Environmental Impact Statements (EIS)	89.2	92.7	89.0
					10.8	7.3	11.0
N	489	164	1724		489	164	1724

groups: low messiness, where the sum of three variables was 3 or 4 (36.2% of the sample); moderate messiness, which includes combined scores of 5 or 6 (45.3% of the sample), and high messiness, including scores of 7, 8, or 9 (18.5% of the sample).

4. Results

4.1. Perceptions of NEPA outcomes and their relations to decision making

ID team leaders and decision makers were asked to rate the extent to which they agreed or disagreed with each statement about NEPA outcomes in Table 2 (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). To identify latent variables underlying

these responses, we ran exploratory factor analysis (with principal components extraction and varimax rotation). Two additional stand-alone outcome statements were included in the survey but not in the factor analysis: “compared to other NEPA processes I have been involved with, this process was efficient” and “the process led to an excellent outcome.” We felt that efficiency represents a stand-alone outcome of interest. The remaining statement represents a subjective judgment that encapsulates the values of the individual relating to their overall perception of the process. We use this as a dependent variable to better understand what drives this perception.

The results of the factor analyses are displayed in Tables 2 and 3. The bolded factor loadings indicate which items were included in each latent

Table 2

Exploratory factor analysis of outcomes responses by ID team leaders.

Outcome statements	Factor 1	Factor 2	Factor 3
	Integrated goals	Public relations	Team outcomes
The final decision minimized adverse environmental impacts	.780	.070	.038
The final decision met the original purpose and need of the project	.674	.142	.220
The process resulted in a well-documented rationale for the final decision	.671	.068	.091
The final decision reflects the mission of the agency	.641	.223	.268
Full disclosure of potential impacts was achieved	.636	.182	.128
The final decision minimized adverse socioeconomic impacts	.602	.243	.053
Public participants were satisfied with the final decision	.213	.854	.067
Public participants were satisfied with the process	.196	.831	.134
The process improved relationships between the agency and public participants in the process	.108	.709	.118
The process damaged relationships between the agency and the public participants in the process (inverse)	.168	.707	.171
The process negatively affected team members' ability/desire to work together on subsequent projects (inverse)	.220	.095	.894
Morale of the ID team was negatively affected by the process (inverse)	.196	.308	.838

Bold and italicized factor loadings indicate which items comprise each latent factor.

Table 3

Exploratory factor analysis of outcomes responses by decision makers.

Outcome statements	Factor 1	Factor 2	Factor 3	Factor 4
	Public relations	Agency goals	NEPA goals	Team outcomes
Public participants were satisfied with the final decision	.823	.138	−.003	.121
Public participants were satisfied with the process	.767	−.042	.112	.121
The process damaged relationships between the agency and the public participants in the process (inverse)	.687	.096	.089	.150
The process improved relationships between the agency and public participants in the process	.646	.170	−.016	−.019
The final decision met the original purpose and need of the project	.051	.793	.080	.195
The process resulted in a well-documented rationale for the final decision	.127	.708	.297	.096
The final decision reflects the mission of the agency	.231	.653	.118	.158
The final decision minimized adverse socioeconomic impacts	.166	.009	.839	.094
The final decision minimized adverse environmental impacts	.061	.249	.822	.126
Full disclosure of potential impacts was achieved	−.106	.401	.581	−.015
Morale of the ID team was negatively affected by the process (inverse)	.170	.130	.094	.858
The process negatively affected team members' ability/desire to work together on subsequent projects (inverse)	.119	.252	.089	.829

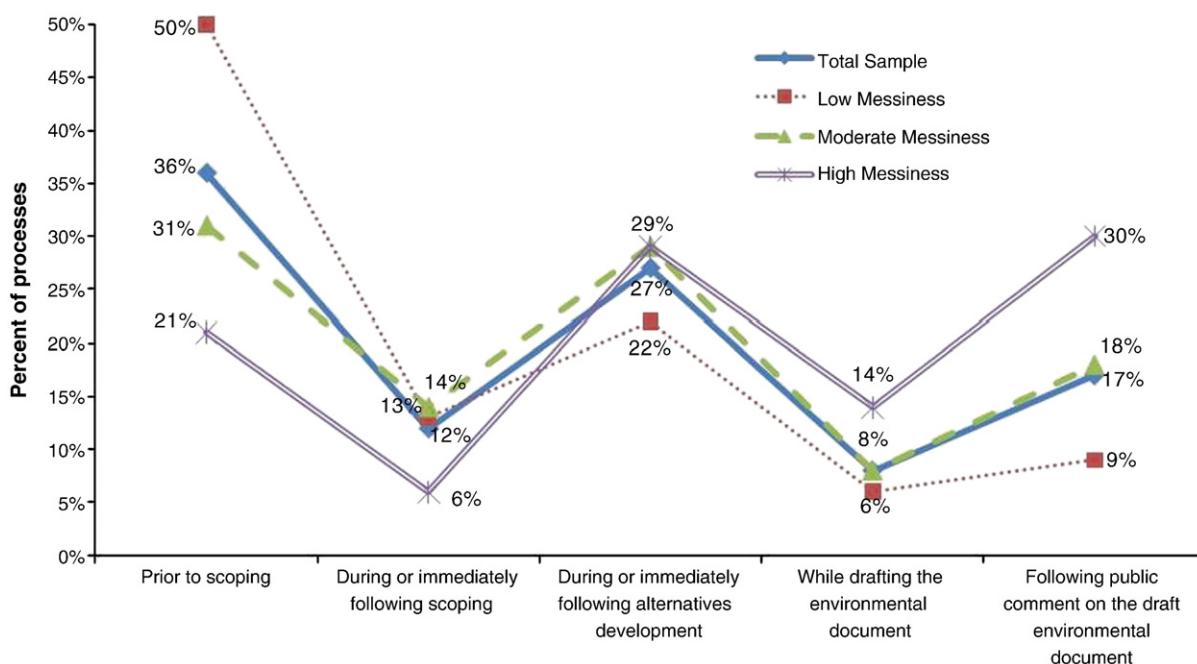


Fig. 1. The point in the NEPA process at which the preferred alternative became clear.

factor. We combined the bolded items into outcome indexes by averaging the responses on the items included in each. This means that we equally weighted each item. We determined the number of factors to extract by examining scree plots and by assessing output factors for their interpretability and coherence as constructs (DeVellis, 2003). Three factors were extracted from the ID team leader data, accounting for 61% of the variance in the data. Four factors were extracted from the decision maker data, accounting for 64% of the variance in the data.

Two factors were made up of identical items in the ID team leader and decision maker datasets. We named one of these shared constructs *public relations*, as it reflects agency perceptions of how the public viewed both the decision and the process and how the process impacted agency–public relationships. The Cronbach's alpha for *public relations* was .818 in the ID team leader data and .746 for the decision maker data, indicating high internal reliability for each. The other common construct we labeled *team outcomes*. It reflects the impact of the NEPA process on team morale and future ID team working relationships, following Hackman (1987). *Team outcomes* also exhibited high internal reliability (ID team leader Cronbach's alpha = .805; Decision maker Cronbach's alpha = .726).

Factor analysis results for the remaining variables revealed some differences in how ID team leaders and decision makers perceive NEPA outcomes. In the decision maker data, remaining variables were grouped into two factors, which we labeled *NEPA goals* (Cronbach's alpha = .695) and *agency goals* (Cronbach's alpha = .678). *NEPA goals* includes the procedural requirement of NEPA to disclose impacts to the public, as well as the intent of NEPA to improve the consideration of environmental and socioeconomic impacts in decision making (Dreyfus and Ingraham, 1976). The construct we named *agency goals* reflects the extent to which respondents feel the NEPA process has contributed to a well-documented rationale for the decision and the extent to which the final decision is compatible with the original purpose and need and the agency's mission. Although most of the factor loadings suggest that decision makers distinguish *agency goals* from *NEPA goals*, the achievement of disclosure cross-loaded somewhat on both factors, suggesting some overlap in the two constructs. Cronbach's alpha diagnostics, however, suggest its appropriate placement in the *NEPA goals* index.

In contrast with decision makers, ID team leaders did not separate *NEPA goals* from *agency goals*. Instead, the variables comprising these

two distinct constructs in the decision maker data statistically aligned to create one underlying factor which we labeled *integrated goals* (Cronbach's alpha = .786) reflecting perceptions among ID team leaders that meeting the procedural and substantive intent of NEPA is generally not separate from achieving *agency goals*. Thus, while decision makers appeared to conceptually separate agency decision making from NEPA, ID team leaders tended to view these as fundamentally linked.

4.2. The timing of decision making

We explored the timing of NEPA decision making to determine whether these philosophical differences regarding NEPA translate into different NEPA practices. In other words, does the agency sometimes disaggregate NEPA and decision making, and if so, how often? To answer this question, we asked ID team leaders to indicate the point in the process when the preferred alternative became clear.

We examined these results in light of project messiness. Our hypothesis was that disaggregating decision making and NEPA might be a relatively common practice for relatively simple, certain, low controversy projects, but less common on “messy” projects in which learning from analyses and public involvement may improve agency decisions.

In roughly 36% of the projects in the sample,² the preferred alternative was apparent before any NEPA-related public involvement or effects analysis had occurred (Fig. 1). While we cannot rule out that some modifications were made to the final course of action as a result of the NEPA process in these cases, we can assume that the primary decision concerning the proposed action was made largely outside of the NEPA process. As hypothesized, this strategy of decoupling NEPA and decision making was more commonly observed on less messy projects, with the preferred alternative becoming clear prior to scoping on 50% of projects with low messiness compared to 21% of highly messy projects. For messier projects, it was more common for

² For 21 NEPA processes in our sample, ID team leaders noted that the preferred alternative became clear at multiple stages in the process. We removed them from our subsequent analysis of timing in decision making.

Table 4

Mean outcomes assessments by ID team leaders and decision makers. Means are reported for both the full ID team leader sample and for the reduced, decision maker sample.

	ID team leader (N = 469)	ID team leader (N = 157–162)	Decision maker (N = 160–164)
Integrated goals	4.20	4.15	–
NEPA goals	4.13	4.10	4.17
Agency goals	4.27	4.21	4.29
Team function	3.93	3.99	4.03
Public relations	3.63	3.61	3.77
Comparative efficiency	3.23	3.23	3.18

the preferred alternative to be selected after some level of NEPA analyses had occurred.

4.3. Defining success and assessing achievement

In addition to conceptualizing outcomes differently, ID team leaders and decision makers also evaluated NEPA outcomes differently. In order to make direct comparisons between ID team leaders and decision makers, we disaggregated ID team leaders' perceptions of integrated goals into the separate agency and NEPA goals perceived by decision makers. Despite responding about the same NEPA process, ID team leader and decision maker assessments of the following outcomes for the same 164 NEPA processes were not correlated: *NEPA goals* (Pearson correlation coefficient ($r = -.008$, $p = .921$); *agency goals* ($r = .126$; $p = .113$); *team outcomes* ($r = .126$, $p = .109$); and *comparative efficiency* ($r = .077$, $p = .337$). The only NEPA outcome that they typically assessed more similarly was *public relations* ($r = .353$, $p < .001$). In short, ID team leaders and decision makers rarely agreed on any NEPA outcomes that are internal to the agency, but they often shared perceptions of how the public might have responded to the NEPA process. Table 4 displays mean scores on each of the outcomes developed through this study for ID team leaders and decision makers.

While a weak correlation existed in overall perceptions of whether the process achieved an "excellent outcome" ($r = .217$; $p = .006$), we found that ID team leaders and decision makers conceptualized what constituted an excellent outcome differently. In order to explore these differences in perceptions, we ran multiple regression analyses with "the process achieved an excellent outcome" as the dependent variable and each of the more specific outcomes discussed above as predictor variables. The first analysis involved the entire sample of NEPA processes for which we received responses from ID team leaders. In order to more directly compare ID team leader perceptions with decision maker perceptions, we also ran regression analyses on ID team leader responses and decision maker responses for only those cases in which both responded (Tables 5 and 6).

The regression models suggest that ID team leaders and decision makers feel somewhat differently about what constitutes an excellent outcome. Decision makers appeared to place greatest emphasis on achieving *agency goals* in evaluating outcomes, with a secondary emphasis on *public relations* and *efficiency*. While decision makers' assessments of the achievement of NEPA goals were significantly

Table 5

Regression on ID team leader perceptions of "an excellent outcome" for all processes in the sample ($N = 469$).

Independent variable	Standardized beta	Significance
Integrated goals index	.357	<.001
Public relations index	.309	<.001
Team outcomes index	.128	.001
Comparative efficiency	.125	.001
Overall model statistics: $R^2 = .487$; F -statistic = 37.7; $p < .001$		

Table 6

Regression on ID team leader perceptions of "an excellent outcome" for only those processes for which decision makers also responded to the survey ($N = 156$). And, regression on decision maker' perception of "an excellent outcome."

ID team leader results		
Independent variable	Standardized beta	Significance
Integrated goals index	.453	<.001
Public relations index	.255	<.001
Team outcomes index	.173	.016
Comparative efficiency	-.026	.681
Overall model statistics: $R^2 = .489$; F -statistic = 111.1; $p < .001$		
Decision maker results		
Agency goals index	.514	<.001
Public relations index	.163	.014
Comparative efficiency	.156	.019
Team outcomes index	.085	.232
NEPA goals index	-.058	.404
Overall model statistics: $R^2 = .442$; F -statistic = 24.1; $p < .001$		

correlated with both the achievement of *agency goals* ($r = .454$; $p < .001$) and perceptions of an excellent outcome ($r = .245$; $0 < p = .002$), they did not provide significant explanation of the variance in the latter relative to the other variables in the equation. ID team leaders appeared to evaluate outcomes based on a wider range of factors, placing greatest emphasis on *integrated goals* and *public relations*, followed by team outcomes and efficiency. Differences are most apparent in the sample of identical processes. Decision makers placed greater emphasis on *efficiency*, while ID team leaders placed greater emphasis on *team outcomes* and *public relations*.

To further explore the comparison between ID team leader and decision maker perceptions, we examined the individual correlations of the items associated with agency goals and NEPA goals with the perception of an excellent outcome (Table 7). When considered as individual items, similar separation exists between agency and NEPA goals for decision makers, with *agency goals* trumping *NEPA goals* in their relationships to outcome perceptions. ID team leaders exhibited a somewhat more balanced view of an excellent outcome compared to decision makers. NEPA goals showed stronger and more consistent relationships to perceptions of excellent outcomes for ID team leaders. While *agency goals* appeared to be more strongly correlated to

Table 7

Correlations between perceptions of achievement of agency and NEPA goals and perceptions of an excellent outcome for both the ID team leader and decision maker data.

Individual items, decision maker data	r	p
<i>Agency goals</i>		
The final decision met the original purpose and need for the project	.444	<.001
The process resulted in a well-documented rationale for the final decision	.469	<.001
The final decision reflects the mission of the agency	.505	<.001
<i>NEPA goals</i>		
Full disclosure of potential impacts was achieved	.279	<.001
The final decision minimized adverse environmental impacts	.198	.011
The final decision minimized adverse socioeconomic impacts	.105	.181
Individual items, ID team leader data	r	p
<i>Agency goals</i>		
The final decision met the original purpose and need for the project	.464	<.001
The process resulted in a well-documented rationale for the final decision	.371	<.001
The final decision reflects the mission of the agency	.544	<.001
<i>NEPA goals</i>		
Full disclosure of potential impacts was achieved	.332	<.001
The final decision minimized adverse environmental impacts	.376	<.001
The final decision minimized adverse socioeconomic impacts	.333	<.001

perceptions of excellent outcomes for ID team leaders as well, this was to a much lesser degree than for decision makers.

5. Discussion and conclusion: choices for future agency NEPA

The results address two key questions critical to understanding and evaluating NEPA processes in the Forest Service and possibly beyond. First, the study examines potential metrics for gauging the outcomes of NEPA processes. As such, it provides plausible dependent variables for studies exploring what may lead to better or worse (or just different) outcomes under different conditions. Studies linking practices with variable outcomes are important not only to agencies like the Forest Service interested in improving their processes, but also to the broader field of natural resource management and planning. Unfortunately, we were unable to triangulate decision maker and ID team leader perceptions of all outcomes. ID team leaders and decision makers typically assessed process impacts on public relations similarly but were rarely on the same page with regard to other outcomes. We are left to conclude that outcome assessments depend on who you ask.

The reasons underlying different perceptions of NEPA outcomes are potentially numerous. One simple explanation is that decision makers experience and participate in NEPA differently than ID team leaders. They are often fairly removed from the inner workings of ID teams (Bear, 2003; Stern et al., 2010b). In some cases, the official decision maker may stay abreast of the NEPA process only through a subordinate staff officer or line officer, rather than through direct involvement. Different outcome assessments may also be attributed to different accountabilities felt within different positions in the agency (Stern et al., 2010a). Decision makers' relative emphasis on agency goals and efficiency is understandable given that they are commonly evaluated based on their abilities to meet pre-determined targets for on-the-ground outputs (Predmore et al., in review; Stern et al., 2010a). Rather than experiencing a dominant accountability, ID team leaders may feel a more equal pull from multiple entities, including local publics with whom they interact, other team members, and scientific peers, in addition to the line officer (Stern et al., 2010a). This serves as a plausible explanation for the broader array of factors that ID team leaders related to outcome assessments.

This study stops short of making definitive claims about whose assessments are more relevant or accurate. However, we posit that each entity may be a better judge of the elements in which they are more deeply engaged as well as the elements they most closely associated with their perceptions of the overall outcome. As such, it seems reasonable to suggest that decision-makers might be the best judges of the achievement of certain agency goals with which they are highly involved, while ID team leaders might be better judges of NEPA-related goals and matters associated with team outcomes.

The second key question addressed by this study involves the role of NEPA in decision making. We found that ID team leaders tended to view *NEPA goals* and *agency goals* as integrated, whereas decision makers tended to view these goals as more distinct, suggesting a general separation between NEPA and decision making for the latter group. Results concerning the selection of the preferred alternative also suggest that the relationship between NEPA and decision making is variable in practice, most likely representing a spectrum from complete detachment in which NEPA processes constitute merely a procedural exercise in compliance, to complete integration, in which the NEPA process and decision making process are one and the same. In the middle of the spectrum would be cases in which a general pathway has been pre-determined, but the details of carrying out the action are heavily informed by analyses taking place during the NEPA process. We briefly discuss potential consequences of each of the ends of this spectrum below.

We first consider the integration of NEPA and decision making. Using the NEPA process to make decisions meets the intent of the Act

– to improve decisions by placing more decision-relevant information in the hands of the decision maker (Dreyfus and Ingraham, 1976). This approach may also have positive effects on relationships with the public, the morale of ID team specialists, and resource management decisions. An integrated approach would be indicative of an authentic decision making process rather than ex post facto rationalization and could enhance the transparency of the agency's decisions. Presumably, this transparency and openness could create a more genuine opportunity for public involvement to influence agency decisions throughout the process. Public influence in decision making processes has been demonstrated as an element of successful agency–public relations in numerous cases (Leach, 2006; Selin and Schuett, 2000; Stern, 2008). Moreover, the public (in its multiple forms) may have substantive input into the process that may actually improve agency action (Leach, 2006; Wengert, 1976). The integrated approach also affords ID team members an opportunity for their work within NEPA processes, which is substantial, to influence agency actions. There is evidence to suggest that a tangible link between work and decisions important to agency mission are critical to the morale of Forest Service specialists who serve on ID teams (Predmore et al., in review; Stern et al., 2010b; Wright, 2007).

At least two potential disadvantages can be associated with the integrated approach. First, managing an unknown process without a pre-determined outcome (preferred alternative) is likely to pose a much greater challenge to those conducting the process. Under pressure to achieve legal compliance in the context of rising public scrutiny, there is the danger that complex integrative planning will lead to increased focus on “process” and a loss of focus on agency mission (Keele et al., 2006). Both in theory and in agency practice, the potential for the process itself to become a dominant focus is well recognized (Merton, 1968; Stern et al., 2009; U.S. Forest Service, 2002). This over-emphasis on process to the detriment of mission (means–ends confusion) may be particularly likely in multiple-use agencies, in which agency objectives are ambiguous and can be essentially redefined in each planning process (Wilson, 1989; Stern et al., 2009).

The second disadvantage concerns relatively “simple” processes in which there is little disagreement (either within or external to the agency) and little uncertainty or complexity. In such cases, the entanglement of NEPA with decision making may be unnecessary and inefficient. In these contexts, detaching NEPA from decision making and focusing primarily on compliance might improve efficiency with relatively few risks; reduced transparency is unlikely to be important when there is a lack of public interest, negative impacts on team morale may be negligible if the outcome is initially accepted by the ID team, and additional analyses are unlikely to improve decisions when there was little uncertainty at the outset. Our results suggest that the agency already employs this logic to some extent.

Separating NEPA from decision making, especially for processes with seemingly low messiness, may therefore be more efficient. However, initial expectations of low controversy and uncertainty may prove incorrect once information is gained through public involvement and effects analyses. Mistakenly plowing ahead with NEPA as only a procedural hoop with no bearing on the decision could be problematic: the agency may be unprepared or unable to demonstrate the rationale for its decision; agency credibility may be damaged if the public recognizes that NEPA has no bearing on the decision; ID team morale may suffer if the decision-relevant information they produce through NEPA is not fully considered by the decision maker; and using the NEPA process to rationalize an already-made decision can preclude the agency from acting on the best available information and potentially increase vulnerability to appeals and litigation.

Without an accurate method of evaluating uncertainty, controversy, complexity, and other contextual factors outside (and within) the agency's control, we suggest that employing an integrated NEPA decision making approach entails less risk in most cases than

disaggregating decisions from NEPA. Integrated NEPA decision making also meets the intent of the Act and reduces the legal risk of making a decision that is not reasonably connected to NEPA analyses. While we have focused on the extremes of the spectrum, there are likely multiple middle-grounds to occupy. We suggest active deliberation on the linkage between NEPA processes and decision making. While future research may be able to further distinguish the specific consequences of each pathway, identifying the appropriate strategy moving forward may ultimately be a normative decision best made by the agency.

Acknowledgments

The research was funded by a grant, PNW 08-JV-11261976-359, from the Focused Science Delivery Program of the Pacific Northwest Research Station of the U.S. Forest Service. We'd also like to thank David Seesholtz, Dale Blahna, Lee Cerveny, Michael Mortimer, James Freeman, and Katie Hoover for their insights on the project.

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