STAKEHOLDER INVOLVEMENT WITH ENVIRONMENTAL MANAGEMENT: THE COMMUNITY ADVISORY BOARD FOR NEVADA TEST SITE PROGRAMS

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ABSTRACT

The Community Advisory Board (CAB) is a group of citizen volunteers appointed by the United States (US) Department of Energy (DOE), committed to better understanding the role of the DOE at the Nevada Test Site (NTS). The NTS was the site of 921 nuclear weapon detonations. These past activities resulting in radioactive and other forms of contamination require Environmental Management (EM), a division of DOE, to make difficult decisions with respect to the extent of environmental restoration and waste management activities. The purpose of this paper is to examine the extent and quality of stakeholder involvement with EM decisions at NTS given the complex scientific, economic, and political issues of environmental restoration and waste management. NTS CAB participants were invited to complete a survey to assess the quality of EM decisions. Overall the respondents report higher-quality decisions of Environmental Management because of CAB involvement. These findings can be applied to other agencies interested in obtaining public support for controversial environmental projects.

Keywords: public participation, stakeholder involvement, environmental decision making

INTRODUCTION

The Nevada Test Site (NTS) has played a major role in the defense programs of the US through 921 nuclear weapon detonations where 828 were underground atomic tests [i]. Since the nuclear weapons moratorium in 1992, the mission of NTS has diversified to include many other programs such as control of hazardous chemicals, emergency response training, conventional weapons testing, waste management, and environmental technology studies [ii]. While onsite and offsite low level waste (LLW) is disposed at NTS, transuranic (TRU) waste is stored for eventual disposal at Waste Isolation Pilot Plant (WIPP) in New Mexico.

The Community Advisory Board (CAB) is a group of citizen volunteers, appointed by the Department of Energy (DOE), committed to better understanding the role of the DOE at the Nevada Test Site (NTS). The NTS CAB was created ten years ago in response to an Act of Congress authorizing a national DOE initiative fostering interactive public participation [iii]. These citizen volunteers, often called stakeholders, represent diverse communities of southern Nevada, both the Las Vegas metropolitan area and rural communities. Each member brings unique perspectives with respect to environmental interests, local and federal governments, businesses, scientific community, tribal interests, and other civic groups to learn more about DOE programs at the NTS in the areas of Environmental Restoration and Waste Management. These stakeholders have opportunities to provide feedback to the DOE [iv]. Currently there are 12 members of the board with 5 ex officio members. Many of the CAB members simultaneously serve on multiple community boards and actively look for ways to involve other groups either directly or indirectly with the CAB.

Currently, the NTS CAB receives administrative support from both EM DOE and contractor staff. In October, 2003 DOE Headquarters announced a plan that directed all 9 Site-Specific Advisory Boards in Environmental Management (EM) across the country including the NTS CAB to select one of two long term administrative options, either become a non-profit organization or require DOE to fully manage the funds for board support without any support service contracts [v]. Many of the NTS CAB members expressed major

concerns with this mandated change. In response to these expressed concerns by the NTS CAB, EM Nevada requested DOE Headquarters to reinstate the present administrative structure with the long term goal "...to maintain a productive relationship with the CAB [NTS] while keeping operating costs to a minimum [vi] ." Members of numerous other site specific advisory boards across the country also conveyed their respective concerns with a potential change in operations. As a result, in December 2003, DOE-HQ issued revised guidance to provide a third option; i.e., a DOE support services contract with a Section 8(a) Small Business may be executed to provide long-term administrative support to the CABs.

The purpose of this paper is to examine the extent and quality of stakeholder involvement with Environmental Management decisions at NTS. The next section of this paper provides a summary of the literature on public participation in environmental decision making. Based upon NTS CAB background materials and public participation literature, a survey instrument was developed. Next, the collection of data are described and results are reported. Finally a discussion and conclusion follows.

LITERATURE REVIEW ON PUBLIC PARTICIPATION

In the environmental-decision-making literature there are two strategies environmental managers typically use. First, the **technocratic approach** [vii] which relies upon experts (e.g. scientists in the physical and biological sciences, engineers, economists, and others) to provide managers of programs and policymakers advice on the best way to accomplish a goal. The basis for this approach is that the public is best served by professionals who have more technical expertise and experience in making vital environmental decisions. Critics of this approach such as Meadows and Robinson (1985) argue that decisions based on findings by scientists are often poorly communicated to the public, the assumptions and reasoning behind the decision cannot be examined by either the public or policymakers, and the logic is typically unclear to the population affected by the decision [viii]. According to Stave (2002) [ix] other critics refer to this approach as "decide-announce-defend" (DAD). This approach entails agency experts making decisions and then announcing in a public meeting or press release what is "good" for the public. Public involvement with the decision making process is either nonexistent or minimal at best which often leads to weak support for the project [x, xi]. Public relations deteriorate even further when decisions are criticized *ex post facto* by outside experts from diverse disciplines. Newspaper reporters present these contrary findings to the public which may lead to additional frustration with a project and may cause distrust of experts and the decisions made by the agency.

The opposite strategy involves a higher level of public participation called **stakeholder involvement**. Unlike the DAD approach, Walesh (1999) refers to this strategy as "population owns project" (POP). As evidence of the movement toward a higher level of public participation in waste management, the U.S. Department of Energy along with other federal agencies (e.g. Environmental Protection Agency and the Department of Defense) have formed over 200 citizen advisory groups throughout the country to examine environmentally contaminated sites [7, xii]. The basis for this approach is that citizens become part of the decision making process. Critics of this approach argue that citizen involvement in highly technical environmental problems such as radioactive waste cleanup or disposal is untenable, expensive, and unrealistic. It leads to low quality decisions that lack support from the community.

In response to these critics, Bierle (2002) used a case-survey approach to examine 239 published studies of stakeholder involvement in environmental decision making where stakeholders either influenced or made the decisions. He used four conventional criteria to evaluate the quality of stakeholder involvement in environmental decision making [7]. Given similar alternatives and outcomes, stakeholder involvement is considered to be cost effective when decisions appear to be the least cost method. A win-win outcome requires gains for both the agency and the public. Decisions are considered to be innovative when participants are

provided new information or contributed useful analyses. Finally, environmental decisions require access to scientific information and expertise.

METHOD AND DATA

A survey instrument (see **APPENDIX**) was developed to obtain information from the NTS CAB participants, including both members and nonmembers who are currently involved. The survey includes requests for information on the number of years of service, NTS CAB action items, Beirle's 4 criteria, perceptions of the participants, strengths of the NTS CAB, and suggestions for improvement. Many of the questions are designed to evaluate the extent and quality of stakeholder involvement while one question is included as an internal validity test to identify any participants who may not value stakeholder involvement.

After approval by both the UNLV Human Subjects Committee and NTS CAB leadership, the survey was distributed at the NTS CAB December 10, 2003 meeting where 9 members attended. Respondents sent 7 completed surveys over a two week period. These responses are summarized in the next section.

RESULTS

Respondents report an average 3.2 years of service ranging from a minimum of 2 years to a maximum of 6 years (1 missing value or 6/7 responses). Of the 7 respondents, only 5 identified themselves as CAB members while 2 left this question blank.

Table I summarizes descriptive statistics of respondents rating NTS CAB action items where 5 represents strongly agree to 1 represents strongly disagree. Averages range from 4.0 to 5.0 and standard deviations from 0.0 to 1.2. While using extreme caution when interpreting such a small sample it would appear that respondents consider themselves to be very involved with meeting plans for public meetings, budget prioritization, and locating additional monitoring wells. The results show 2 out of 7 expressed some disagreement with respect to plans for emergency preparedness and plans to transport TRU waste to WIPP.

Table I Summary of NTS CAB action items

Action Items	Average	Median	Mode	Standard Deviation	Number of Responses (Percent of Sample)
a. budget prioritization;	4.9	5	5	0.4	7 (100)
b. plans for emergency preparedness and response;	4.1	5	5	1.2	7 (100)
c. plans to accept mixed waste from offsite locations;	4.3	4	4	0.5	7 (100)
d. plans to transport transuranic (TRU) waste to WIPP in Carlsbad, NM;	4.0	4	5	1.2	7 (100)
e. locating additional monitoring well(s);	4.8	5	5	0.4	6 (86)
f. plans for upcoming public meetings;	5.0	5	5	0.0	7 (100)

Table II provides a summary of evaluation statements based on Bierle's 4 criteria in an attempt to evaluate the extent of stakeholder involvement. All 7 respondents rated access to scientific information the highest level. There appears to be similar strong support for win-win situations and innovative ideas. Using extreme caution, there does appear to be some disagreement with respect to the cost effective criteria where 2

respondents rated the NTS CAB stakeholder involvement as unsure (3) or disagree (2). The 5 other respondents evaluated the programs as agree (4) and strongly agree. Again, with such a small sample size it is difficult to make any generalizations with respect to ranking.

Table II Summary of evaluation statements

Evaluation statement	Average	Median	Mode	Standard Deviation	Number of Responses (Percent of Sample)
a. helps the Environmental Management program become more cost effective;	3.9	4	4	1.1	7 (100)
b. leads to win-win situations for both the Environmental Management programs and the community.	4.6	5	5	0.5	7 (100)
c. members contribute innovative ideas, useful analysis or new information to environmental management decisions.	4.6	5	5	0.8	7 (100)
d. members are able to obtain access to scientific information and expertise.	5	5	5	0.0	7 (100)

Table III presents a summary of NTS CAB participant perceptions. In spite of the small sample size, responses overwhelmingly support the hypothesis that NTS CAB participants believe that the level of stakeholder involvement with EM is high. As an internal validity check, statement (f) was used to check to see whether or not a participant values stakeholder involvement. This statement received very low values as expected while other statements (i), (j) and (k) identify different steps of the process stakeholders participate in through NTS CAB. All three of these statements received high evaluations.

Table III Summary of NTS CAB participant perceptions

Statement	Average	Median	Mode	Standard Deviation	Number of Responses (Percent of Sample)
a. when a member from the community attends an NTS CAB meeting he or she leaves with a better understanding of the issues.	4.1	4	4	0.4	7 (100)
b. the process of deliberations for CAB activities is fair	4.6	5	5	0.5	7 (100)
c. the process of deliberations for CAB activities is efficient and timely	4.1	4	4	0.4	7 (100)
d. Environmental Management actions are clear and understandable to the CAB.	4.0	4	4	0.6	7 (100)
e. Environmental Management actions are clear and understandable to the community.	3.4	4	4	0.8	7 (100)
f. successful environmental decisions that are supported by local communities require only the expertise of technical personnel from Environmental Management.	2.0	2	2	0.6	7 (100)
g. CAB members consider proposed initiatives during the annual planning retreat.	4.4	5	5	0.8	7 (100)
h. briefings from Environmental Management project managers on current issues are useful to the CAB.	5.0	5	5	0.0	7 (100)
i. CAB members review and provide feedback on current Environmental Management issues.	5.0	5	5	0.0	7 (100)
j. successful environmental decisions that are supported by local communities require input from technical personnel from Environmental Management, the scientific community as well as involved stakeholders.	4.6	5	5	0.5	7 (100)
k. CAB efforts and input are valued by the management team while making decisions.	4.3	4	4	0.5	7 (100)

Finally, Table IV summarizes strengths and action items identified in two additional pages of open-ended questions. The main strength that most respondents provided was the level of cooperation and ability to work together. With respect to areas to improve, most members emphasized the need to recruit new members and reduce turnover of membership through effective research and/or technical support.

Table IV Summary of strengths and action items from survey

Strengths	Action Items / Areas to improve
Built cooperative work environment with both technical and nontechnical members	Recruit new members
Commitment to serve community by active members	Reduce turnover of membership through a spring workshop and research support
Effective partnering with related community groups	Continue good working relationship between support staff and CAB membership
Excellent communication between CAB, support staff and EM DOE	Continue dialogue with the U.S. Depatment of Energy's Nevada Site Office Environmental Management Program
Use of alternative methods to involve general public i.e. NTS CAB Road Show	Stay on top of issues and respond
Ability to put in effort necessary to learn about and understand technical environmental issues	More outreach to the community.
Access to scientific expertise by both board members and EM scientists	Inventory available research support to NTS CAB

DISCUSSION AND CONCLUSIONS

While the survey was intended for the present members, a former member of the NTS CAB contacted me about my paper and survey. He questioned the extent and effectiveness of stakeholder involvement of NTS CAB. He reported his perception that members are reluctant to provide criticism to DOE EM staff [xiii]. When comparing results of this survey to this criticism, it appears that in the past a tension did exist among some members. Ironically, it appears that at least a few former participants with technical backgrounds did not fully embrace the inclusion of less technically trained stakeholders in the process and were frustrated by the NTS CAB decision mechanism that requires consensus. Several NTS CAB participants believe that this may have caused unnecessary turnover in membership. It is also my understanding that debates in the past between members with technical backgrounds sometimes became contentious where credentials were questioned in the heat of debate. In contrast to these past tensions, during the last 3 monthly meetings of the NTS CAB, both technical and non-technical members appear to work very well together and go out of their way to explain complex scientific, economic and political issues to members with questions during discussions and deliberations.

As discussed in the results section, utilizing a small sample size from current NTS CAB participants severely limits statistical analyses. Keeping this limitation in mind while examining basic descriptive statistics and reviewing the qualitative responses to open-ended questions, overall the respondents report higher-quality

decisions within the EM program given NTS CAB involvement. These findings can be applied to other agencies interested in obtaining public support for controversial environmental projects.

APPENDIX

NTS CAB Survey on Environmental Management Issues at the Nevada Test Site
[Administered 12/10/03]
I. Evaluation of Stakeholder Involvement at NTS
1. Are you a member of the **Nevada Test Site (NTS) Community Advisory Board (CAB)**?
[5] Yes [0] NO [2] MISSING VALUES

2. Approximately how many years have you been involved with the **NTS CAB** ____6 responses_____?

3. The **NTS CAB** members are **involved stakeholders** (representatives from the community) that have **opportunities to provide meaningful input into environmental management decisions** at **NTS** on <insert action item here>. Please check one box in each row.

Action Items*	Strongly Agree (5)	Agree (4)	Unsure (3)	Disagree (2)	Strongly Disagree (1)
a. budget prioritization;	6	1	.	.	.
b. plans for emergency preparedness and response;	4	1	1	1	.
c. plans to accept mixed waste from offsite locations;	2	5	.	.	.
d. plans to transport transuranic (TRU) waste to WIPP in Carlsbad, NM;	3	2	1	1	.
e. locating additional monitoring well(s);	5	1	.	.	.
f. plans for upcoming public meetings;	7	.	.	.	.

*These statements are based on NTS CAB action items identified on internal web site.

4. Overall, the **NTS CAB** <insert evaluation statement here> . Please check one box in each row.

Evaluation statement**	Strongly Agree (5)	Agree (4)	Unsure (3)	Disagree (2)	Strongly Disagree (1)
a. helps the Environmental Management programs become more **cost effective**;	2	3	1	1	.
b. leads to **win-win** situations for **both** the Environmental Management programs and the community.	4	3	.	.	.
c. members contribute **innovative ideas**, **useful analysis** or **new information** to environmental management decisions.	5	1	1	.	.
d. members are able to obtain access to **scientific information** and expertise.	7	.	.	.	.

**These statements are based on questions Thomas C. Beierle 2002 uses to evaluate 239 case studies.

5. It is my perception that <insert statement here>. Please check one box in each row.

Statement	Strongly Agree (5)	Agree (4)	Unsure (3)	Disagree (2)	Strongly Disagree (1)
a. when a member from the community attends an NTS CAB meeting he or she leaves with a better understanding of the issues.	1	6	.	.	.
b. the process of deliberations for CAB activities is fair	4	3	.	.	.
c. the process of deliberations for CAB activities is efficient and timely	1	6	.	.	.
d. Environmental Management actions are clear and understandable to the CAB.	1	5	1	.	.
e. Environmental Management actions are clear and understandable to the community.	.	4	2	1	.
f. successful environmental decisions that are supported by local communities require only the expertise of technical personnel from Environmental Management.	.	.	1	5	1
g. CAB members consider proposed initiatives during the annual planning retreat.	4	2	1	.	.
h. briefings from Environmental Management project managers on current issues are useful to the CAB.	7	.	.	.	.
i. CAB members review and provide feedback on current Environmental Management issues.	7	.	.	.	.
j. successful environmental decisions that are supported by local communities require input from technical personnel from Environmental Management, the scientific community as well as involved stakeholders.	4	3	.	.	.
k. CAB efforts and input are valued by the management team while making decisions.	2	5	.	.	.

Third Page of Survey
(note appears as a full page)

6. What are the strengths of the CAB that other environmental advisory boards may learn from?

Responses

The NTS CAB activities are exemplary and are recognized by US DOE Headquarters as setting the standard all the rest of SSAB should try to achieve. The NTS CAB anticipates problem areas and rectifies them before they become real time problems. The NTS CAB's responsible approach to issues it is considering has lead to a very positive relationship with the US DOE and Nevada Department of Environmental Protection staffs and officials.

Team spirit and a co-operative working environment

We can now work together as a unit without outside interference of hidden agendas, mistrust of DOE, the lack of respect of fellow CAB members, and the lack of respect for the Nye County CAB members.

The meeting norms provide a respectful and constructive forum for discussion and consensus building. Pre-meeting information allows members to arrive prepared for discussion.

Committee members directly meeting with technical experts improves understanding of complex EM issues. The ability to work together to reach consensus on issues; the desire to spend the time and effort necessary to learn about and understand technical environmental issues in order that they can explain them to other stakeholders in terms that are generally understood, provide positive sensible input and recommendations to DOE; the mutual respect that NTSCAB Members hold for one another and the devotion the Board has to represent stakeholders.

Effective partnering and success in highly visible and sensitive projects buys a great deal of public credibility.

7. What recommendations do you have to ensure the CAB's success?

Responses

The CAB should continue to assure the comradery and collegial relationship among board members. This should develop a better means of developing consensus in the decision making process. The positive and efficient relationship that CAB members have with support staff should continue to result in quality assured outputs. The support staff should continue to have a very sensitive and relevant relationship with CAB members to ensure the continued high quality products and communications resulting from their exemplary outputs.

Must have continued and strong support from DOE management

"Those who forget the past are destined to relive it." Do our homework - review our past initiatives so as not to revisit them.

The support staff provides invaluable support to the operation of the CAB. The offer of student assistance in the preparation of data will greatly facilitate the work of committees as they are generally busy people.

To allow the CAB to operate in a manner that does not drive away active or potential Board members (i.e. do not force the CAB into becoming a corporation or change the way the NTSCAB is currently operating). Continue to provide funding for the Cab operations that allow independent administrative support. Allow the open and positive relationship that the CAB has with DOE-EM to continue.

Continuing dialogue with DOE-EM. Enough advance time to develop CAB technical / legal response and outreach programs / public meetings to ensure a large degree of communication and credible exchanges.

8. Do you have any additional recommendations for Environmental Management to improve the understanding of the local community and/or state of Nevada on complex scientific, economic and political issues of environmental restoration and waste management?

Responses

I still continue to believe that all CAB public meetings should be broadcast on some local public broadcasting television station.

We must do more 1 on 1 connections with local stakeholders.

Continue to look at new approaches to connect with the local communities. Strive to build onging relationships with affected communities. Consider Dr. <name> prioritization of an approach to stakeholder participation in EM issues.

Currently DOE EM NV is very good at listening to the CAB and ordinarily provides any training, technical advice (DOE staff and independent) and/or presentations to the public that the CAB requests. I recommend that this current stakeholder relationship be allowed to continue.

Fourth page of Survey

(note appears as a full page)

II. Action Items for research support

9. Are there any research support activities that you recommend that would help new members prepare for CAB meetings? For example, a member of the CAB's support staff recommends creating a handbook for CAB members on the following: NTS background & history, Environmental Management program (national & local), NTS EM individual project descriptions, relevant agreements & regulations that apply to the NTS EM program, basics of health physics & radiation, waste transportation, and glossary (e.g. low level waste, mixed waste, transuranic waste, and many others). Are there any areas you recommend emphasizing?

Responses:

I certainly think that the US DOE should use the existing fact sheets on these project areas rather than reinventing the wheel so to speak. I do think that a generic and as brief as possible fact sheet should be developed on the subject of the budget process, including the three-year cycle that is always involved in that function.

Regulations, risk calculations, uncertainty issues.

Yes - all of the above! I have these topics and more bookmarked on most of my computers either at the office or at home.

Because of the technical complexity of the Underground Test Area (UGTA) program, a special background on its history and key technical issues. A sheet of annual programs issued after budget approval each year.

When the CAB had its own technical advisor that person would, on request, provide one-on-one tutorials with new CAB members. By providing that type of informal tutoring it helped an individual new to the CAB become more familiar with CAB and EM issues and assist in bringing them up to speed. I know that the CAB members that took advantage of the tutoring have stated their appreciation in being afforded that opportunity. It might be an asset to have that type of personal tutoring available once again.

Most past members would not study - they needed to be spoon fed - given very simple presentations with 2 to 3 take away lessons.

10. What CAB committees and/or action items do you recommend require research assistance?

Responses

UGTA, Budget, Waste forms and their contaminant capabilities, updates on risks to the public and closure summaries and their reduction of risk to the public.

UGTA

UGTA - Always needs the best information possible!

UGTA, Waste Transportation

At this point the CAB has been provided any research assistance it has requested on issues within its purview. It is reassuring to know that the additional avenue of research assistance that Dr. Neill and her group are willing to provide and capable of providing is available to the CAB.

Gathering specific data for purposes specified by CAB scientists that result in new pictures / perceptions. Data searches that are time consuming for CAB scientists.

11. Do you recommend any guest speakers or speaker from a particular discipline you would like to give a seminar/lecture? Examples could be a soil scientist, risk expert, hydrologist, geologist, economist, engineer, health physicist, an environmental systems analyst and many more potential experts.

Response

I think that speakers on ethics and safety engineering would be helpful.

1 Hydrologist, # 2 Geologist, # 3 Health Physicist, # 4 The Commissioner who is liaison <name of board omitted <name omitted>.

The type of individual needed is determined as committees progress in their review of the material. It's hard to forecast - we've called in risk experts, hydrologists and geologists recently.

Sometimes it is difficult to determine exactly what expert is necessary for the CAB's particular issues. It would be helpful if the CAB knew more about the available experts. It might benefit all parties if these experts would attend a CAB meeting to introduce themselves and explain their background and the discipline that they're expert in. And as issues are discussed by the CAB, they could provide input about how their expertise could help the CAB through a seminar or lecture.

Risk experts have spoken many times; the public and most CAB members do not understand the concepts, or terms i.e. "1 cancer in 1 x 10^{6}"

12. Do you have any additional suggestions for H. Neill and students to provide support to the CAB?

Response

I do think that any students who are assigned to the CAB should be required to attend all Administrative Committee and/or public meetings and all other specific CAB committee meetings for which they are recruited to support.

Yes -> Let's make up some posters like Dr. <name omitted> did with my <name omitted>. Potential subjects matters (1) Ground water / NTS, Community Environmental Management Program / Desert Research Institute, History / NTS, History/ CAB, Members /CAB.
Not off the top of my head! But I will.

It would be helpful to know just exactly what kind of support Dr. Neill and her students could provide to the CAB. I know that Dr. Neill has attended CAB meetings and is enthusiastic about her role in CAB operations, but I do not know just exactly what type of support her and her group can provide or what their support capabilities are.

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FOOTNOTES

a. This research is funded by a U.S. Department of Energy grant, entitled Community Advisory Board, University of Nevada Las Vegas number 236227494BC. The data, analyses, discussion, and conclusion do not necessarily reflect the views of the DOE, EM, UNLV or individual CAB members either present or past.

b. The author greatly acknowledges Carla Sanda, Stoller-Navarro; Kaye Planamento, Navarro Research and Engineering; Kelly Kozeliski, DOE-NSO EM, Carl Gertz, DOE-NSO EM and NTS CAB leadership and membership for materials and support on this project.

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