

***The NRC in the 21st Century:**
Report of the Task Force on
NRC Goals and Operations*

*Report to the Governing Board
of the National Research Council*

Presented August 4, 2000

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

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TO: Members, Volunteers and Staff of the National Academies

FROM: Bruce Alberts, Wm. A. Wulf, and Kenneth I. Shine

SUBJECT: Final Report of the Task Force on NRC Goals and Operations

Attached is the final report of the Task Force on NRC Goals and Operations, which was presented to the Governing Board of the National Research Council (NRC) on August 4, 2000. The Governing Board has accepted the report with gratitude, enthusiastically endorsed its recommendations, and directed the NRC leadership to proceed with implementation.

The report provides the NRC with valuable guidance on how to perpetuate the traditional goals of the National Academies in the contemporary setting of the 21st century. The blueprint offered by the Task Force will enable us to oversee and manage the work of the NRC more effectively, as we fulfill our mandate to provide sound advice to the American government and the public.

The Governing Board commissioned this study because of the National Academies' commitment to serve the nation better and to continuously improve our operations. It saw the advantage of making positive changes in the NRC at a time when it is a healthy, widely respected institution. Experts drawn from our own membership organizations were recruited to undertake the first comprehensive review of the NRC operations in many years. We join the Governing Board in expressing our deepest appreciation and gratitude to these members and staff of the Task Force and especially to co-chairs Gerald Dinneen and Purnell Choppin and staff director Jane Griffith. Their superb efforts will have a major impact on the future of the NRC.

We have already begun implementing the Task Force recommendations, which call for strengthening NRC management, restructuring major program units, enhancing staff professional development, improving oversight by Academy members, streamlining operations, and broadening communication with sponsors and other audiences.

We look forward to working closely with all of you to assure the continued success of the National Academies in the years ahead.

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CHAPTER I

INTRODUCTION

The National Research Council's Governing Board established the Task Force on NRC Goals and Operations to help the National Research Council (NRC)¹ meet the challenges of operating in the changing environment of the 21st century. Recognizing the increased pressures created by the interdisciplinary nature of societal issues, rapid technological change, the fast pace of policymaking, the growth in global and state interests in science and technology, and the increased number of organizations offering science and engineering advice to the government, the Governing Board requested a blueprint for enhancing the operation of the NRC. The request specified that the plan should maintain the core strengths of the institution and enhance the NRC's capability to fulfill its mission "to help improve public policy, understanding, and education in matters of science, technology, and health."²

The Task Force was drawn from the memberships of the National Academy of Sciences (NAS), the National Academy of Engineering (NAE), and the Institute of Medicine (IOM) and included experts from academia, industry, government, and not-for-profit organizations. Task Force members also had served extensively at the NRC in a variety of capacities—as members of the Councils of the NAS, NAE, and IOM; the NRC Governing Board; and Commissions, Boards, and standing and ad hoc committees; as participants in report review; and as NRC staff in senior positions. The combination of NRC and Academy service with experience in other organizations provided the Task Force with a unique capacity to assess the alignment of NRC goals and operations in light of the changing external environment and to make recommendations for change. The first meeting of the Task Force was held in May 1999.

Charge to the Task Force

The charge to the Task Force (see Appendix A) reflected awareness that the NRC structure had evolved over time in response to various circumstances and articulated a need to identify changes that would allow the NRC to:

1. Be more flexible, efficient, cost-effective, and timely;
2. Communicate more effectively with clients, peers, and the public and offer a broader spectrum of products;
3. Utilize Academy members and NRC volunteers more effectively;
4. Attract and retain the very best staff and maximize time spent on productive work;
5. Strengthen relations with executive and legislative branches of the federal government;
6. Develop activities within a broader range of sponsors and audiences; and

¹ The Task Force uses the term "NRC" to include all activities of the National Academies that follow National Research Council procedures.

² Articles of Organization of the National Research Council. Approved February 16, 1995.

7. Monitor successes and failures to create a continuously learning and improving organization.

Task Force Activities

The Task Force was asked to make suggestions for improvements that would enable the NRC to continue to serve the nation well in the future. To perform its analysis, the Task Force undertook extensive data gathering, including reviewing all earlier internal studies by visiting committees and staff regarding various NRC operations. The Task Force also deliberated regularly through a combination of four meetings of its entire membership, several working group sessions, more than 35 conference calls, and routine e-mail exchanges. A Task Force Web site provided an additional mechanism for sharing information and maintaining access to documents. In addition to the NAS, NAE, and IOM Presidents and NRC staff, speakers at Task Force meetings included a panel of sponsors and state science and technology policy advisors. The co-chairs had frequent discussions with the NRC leadership, and Task Force members met individually or in small groups with NRC staff on some 25 occasions. Individual Task Force members interviewed more than 30 sponsors and attended meetings of NRC Commissions and other major units. The Task Force also sent a questionnaire to 1,500 members of the National Academies and other pro bono participants in NRC activities and received more than 550 responses. In addition, several Task Force members and staff visited RAND Corporation regarding that organization's recent efforts to make changes in its operations.

Findings

The Task Force examination confirmed that the NRC's reputation for high-quality, independent, and objective work is well recognized. An essential element is the connection with the memberships of the NAS, NAE, and IOM and other pro bono experts who are the intellectual engine driving NRC activities. The consensus reports of NRC committees often are cited as the "gold standard" for analyses of issues requiring expertise in science, engineering, and health. Front-page newspaper stories feature the results of NRC studies and major policy decisions derive from their recommendations. These strengths enable the NRC to help advance public policy; promote the scientific, engineering, and medical disciplines; and serve the public interest. Excellent NRC staff members committed to fostering the goals of the National Academies form a critical partnership with the volunteers in producing significant work that has an impact on society. The current NRC leadership already has leveraged these attributes to make important new contributions in areas such as international cooperation, science and engineering education, and the quality of health care. It is because the NRC holds such a special place as advisors on critical national issues that it is imperative to have the capacity to perform efficiently and effectively and to strategically focus its resources for the future.

The responses to the Task Force's NRC Participant Questionnaire (see Appendix B) provide a view of the NRC that is consistent with what the Task Force also heard in its discussions with sponsors and staff (for summaries, see Appendixes C and D). The responses to the multiple-choice questions affirm the NRC's reputation for excellence,

while the narrative comments point out many specific areas for improvement and serve as reminders that the institution needs to keep striving to maintain that excellence (see the box below).

Summary of Responses to NRC Participant Questionnaire

- Of those responding, 81-92% answered positively about NRC quality, impact, volunteer mix, and committee operation.
- The quality of staff performance was cited most frequently.
- A sense of commitment and pride was reflected in the willingness of 87% of respondents to serve again and in accompanying comments.
- Many suggestions were made for speeding processes, reducing bureaucracy, and streamlining.
- The need for improved project management was emphasized.

Although in the Task Force's information-gathering activities the NRC received praise for its products, stakeholders also voiced many concerns. Sponsors cited problems with the cost and timeliness of the NRC's principal product, study reports, the difficulties of addressing multidisciplinary issues in the current organizational structure, and the annoyance of being approached by multiple NRC Boards to support work on the same topic. NRC participants offered more than 2,400 comments, including suggestions for improving the quality and impact of NRC work, complaints about the bureaucratic and slow NRC structure, and views on the need for more effective project management. The NRC leadership raised concerns about internal organizational stresses and external competition for providing advice to decision makers. Many staff members appeared stressed from working on too many projects simultaneously, frustrated with layers of approvals and processes, and unhappy about too few opportunities for professional or career development.

In large part, these are long-standing issues that have evolved over many years. The current leadership's initiative in addressing them by establishing the Task Force is an important step toward enhancing the operation of the NRC. Throughout the NRC, the Task Force found examples of practices that should be emulated and adopted more broadly; some of these are noted throughout the discussion in the next chapter. The NRC leadership already has taken steps to streamline the organization, establish stronger management, fund institutional priorities, initiate better communication with sponsors, and propose new staff development opportunities.

However, the Task Force believes that more improvements should be made in the four categories highlighted below, based on the specific numbered indicators that follow.

Governance and management of the NRC would benefit from more clearly defined roles and responsibilities.

1. The NRC Governing Board does not consistently execute its designated role in providing policy guidance and performing oversight of the NRC as specified in the NRC Articles of Organization.

2. There has been a growth in quality control mechanisms over time, including some approval processes that do not add significant value.
3. The lines of authority and responsibility are unclear and are distributed widely, contributing to a lack of accountability.
4. Clearly articulated performance measures are not consistently applied, and management lacks critical information to monitor performance and identify key trends.

NRC processes are not as efficient or as cost-effective as they must be in today's environment.

5. Lack of timeliness and high costs are key concerns for sponsors, but an overall plan to respond to these problems has not been developed.
6. There are too many independent units that overlap in scope, some of which consistently lack viable levels of funding and activity.
7. There is a growth in products other than full-length studies; however, institutional processes are geared to consensus studies. Policies and objectives for different products are unclear.
8. The administrative support units are uneven in delivering services to the program units. Major investments in information technology (IT) have not yielded the desired efficiencies, nor have they been successfully leveraged, yet IT costs continue to rise.

Under-investment in staff development and volunteer orientation limits the human resources potential at the NRC.

9. The success of NRC activities is highly dependent on excellent staff, yet there is insufficient support for staff development, training, and mentoring, as well as few mechanisms designed to retain and promote talented individuals, particularly for senior management positions.
10. Reliance on soft money by the program units and the existing Board and Commission structure make it difficult to maintain adequate staffing levels and also inhibit collaboration.
11. The quality of NRC participants is very high, but there is too much reliance on a limited number of known individuals, and more should be done to expand participation by women, minorities, and those at earlier stages in their careers.
12. Participants often do not understand clearly what their roles and responsibilities are when they volunteer for NRC activities, making them less effective and sometimes frustrated.

Strengthening communications with sponsors, interested parties, and the public would have substantial benefit.

13. Dissemination of the results of NRC activities is uneven, in part due to lack of funding and available staff, particularly beyond project conclusion.
14. More regular interaction between senior NRC management and agency officials would be valuable, in addition to ongoing communications between staff and sponsors on project status and program development.

15. Expansion of the sponsor base will require a coordinated and effective program development strategy and investment by the institution.
16. Reaching a wider audience involves expanding the range of products and leveraging the potential of new technology.

Need for Change

Based on these findings, the Task Force concluded that change was essential for several important reasons. Absent clearer lines of authority and accountability, uneven project management will perpetuate the need to salvage problem reports rather than prevent them. Tight federal budgets and sponsors' concerns about funding necessitate that costs be kept under control. At the same time, resources are needed for priority program activities, program development, and dissemination, as well as to mitigate the impact of soft money on the NRC's ability to retain a core of excellent staff. Volunteers must be used effectively to ensure ongoing involvement by current participants and to expand the number of volunteers. Multiple units competing for resources and duplicating efforts have to be consolidated to promote collaboration and better allocate people and dollars. Some aspects of staff turnover and the stresses of being overextended on too many projects jeopardize quality and exacerbate problems with late reports. If these issues are not addressed, sponsors may look elsewhere for advice, and the NRC's future ability to perform important work that makes a positive difference could be reduced. The Task Force determined that improvements in those areas could be accomplished without changes to the existing NAS bylaws.

Goals

The Task Force concurred with the goals articulated in the charge provided by the Governing Board. In particular, the Task Force believes that in order for the NRC to fulfill its role effectively in the years ahead, it must:

- Have the capacity to provide critical advice on major policy issues involving science, technology, and medicine;
- Establish a strategic direction for the NRC program with a shared and expected commitment to achieving common goals;
- Maintain NRC attributes of high quality, independence, and objectivity, while improving timeliness and containing costs;
- Engage pro bono participants effectively in all aspects of NRC work and governance;
- Enhance staff skills, retain a cadre of highly qualified staff, and improve job satisfaction; and
- Increase the impact of NRC work.

Some aspects of the NRC's work will always be difficult to measure, and the impact of its work may often be dependent on external forces beyond the control of the institution. But certain measures of success can be monitored and evaluated on a regular basis.

For example, the NRC should reduce the:

- Number of late reports,
- Over-commitment of staff to multiple projects,
- Ratio of indirect to program expenditures,
- Turnover of staff in certain job categories and units,
- Number of steps in approval processes, and
- Multiple systems for processing the same data.

At the same time, the NRC should increase the:

- Pool and number of pro bono participants,
- Use of common administrative procedures and processes,
- Project milestones completed on time,
- Institutional support for program activities at the Board level, and
- Amount of funding available for dissemination.

While these are only illustrative examples, they may serve as indicators of how the NRC might improve operations and therefore its ability to provide effective scientific, technical, and public health advice to policymakers and the nation. The Governing Board should discuss these goals and others and determine priorities as part of an ongoing strategic planning process.

The major recommendations outlined in Chapter II reflect the consensus of the Task Force on how to improve the way the NRC operates. The Task Force believes that, with the implementation of these recommendations, the unique attributes of the NRC that are valued by sponsors, members of the Academies and other NRC participants, staff, and the broader public can be maintained and strengthened, and that current problems can be addressed. Chapter III discusses each major recommendation in turn and provides further detail on implementation options for the Governing Board to consider. The final chapter provides looks to the future, reflecting on how the Task Force's vision of the NRC will complement other major initiatives under way. Supporting materials, presented as appendixes, include the results of the NRC participant survey, highlights of comments by sponsors, and summaries of meetings with NRC staff.

CHAPTER II

MAJOR RECOMMENDATIONS

1. CLARIFY AND STRENGTHEN GOVERNANCE AND MANAGEMENT OF THE NRC

- Under the leadership of the NAS President as NRC Chair, he and the Presidents of the NAE and IOM should continue to cooperate actively in providing strategic direction for the NRC, developing the program of the NRC, and overseeing specific program areas. The NRC Chair might assign responsibility for overseeing major program and operational areas among himself and the other two Presidents.
- The NRC Chair, in consultation with the Governing Board, should appoint a Chief Management Officer (CMO) whose only responsibility is the management of the NRC and who has authority over all program and administrative units. The CMO will report to the NRC Chair, who will review performance and determine compensation in consultation with the Governing Board.
- The Governing Board should reorganize its operations so that it can effectively execute the powers designated in the NRC Articles of Organization, such as setting NRC policies, approving the NRC budget, and performing strategic oversight of the NRC, and it should actively engage the Chairs of the newly created Divisions in the work of the Governing Board.
- The three Presidents and the Governing Board should initiate a strategic planning process that articulates long-term goals for the NRC. The CMO should prepare annual NRC operating plans with actionable and auditable objectives, to be approved and reviewed by the Governing Board. The CMO and the senior program and administrative unit managers should work closely in producing and implementing the operating plans.

2. STREAMLINE AND ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF NRC OPERATIONS

- Restructure the existing Commission-level program units, including associated volunteer groups, to create six Divisions to reduce overlap, promote collaboration, facilitate adequate staffing, and increase efficiency. The six Division Executives should report to the CMO and be held accountable for meeting established performance standards.
- The Governing Board with the advice of the three Presidents, the CMO, the Division Chairs, and the Division Executives should develop criteria for establishing, retaining, and restructuring boards with the long-term goal of ensuring coverage of key areas, while reducing the number of individual units.
- Where practical, delegate authority and appropriate resources downward in the organization to reduce unnecessary layers of approval. For example, streamline

the approval process for projects, nominations, and review, including articulating criteria for different levels of approvals.

- Enhance the efficiency of administrative services units to more effectively support program activities and reduce costs. The heads of administrative services units should report to the CMO and be held accountable for meeting established performance standards. Develop a goal for cost savings associated with administrative services and program restructuring, and apply available discretionary resources to support program unit staff.

3. DEVELOP THE HUMAN RESOURCES POTENTIAL OF STAFF AND VOLUNTEERS

- Provide institutional resources and develop personnel policies to alleviate the impact of soft money on staffing levels, reduce over-commitment of staff, and establish opportunities for career employment. Develop a strategy for training and professional development to maintain a highly skilled staff.
- Create a service-oriented culture of accountability for on-time and on-budget delivery at the NRC, set goals and measure performance, and develop incentives for both administrative services and program staff who meet performance goals.
- Enlarge the pool of pro bono participants, encouraging participation by women, minorities, and individuals at earlier stages in their careers, and develop an adequate database of current and potential volunteers.
- Clearly delineate the roles and responsibilities of pro bono participation through orientation materials given to all volunteers, acknowledge contributions, and solicit regular feedback from participants in NRC activities.

4. COMMUNICATE MORE EFFECTIVELY WITH SPONSORS AND OTHER AUDIENCES

- Provide a broad range of high-quality products and services that enable the NRC to respond fully to current and potential client needs and that expand the institution's impact on society. Inventory different product types, establish criteria for appropriateness, identify best practices, and develop procedures to maintain quality control while reducing administrative burdens.
- Establish effective, regular, high-level communications between senior management—including the three Presidents and the CMO—and existing and potential major sponsors. Devise a coordinated program development strategy, including designating executive contact for major sponsors as appropriate and providing resources for staff to engage in more strategic program initiatives.
- Make regular communication with sponsors an integral part of project management to keep sponsors apprised of project status and ensure agreement on project deliverables and timetables.
- Strengthen dissemination to increase the impact of NRC work on public policy and to expand public awareness of scientific, engineering, and medical issues.

CHAPTER III

DISCUSSION OF MAJOR RECOMMENDATIONS

1. CLARIFY AND STRENGTHEN GOVERNANCE AND MANAGEMENT OF THE NRC

Effective implementation of the Task Force recommendations is dependent on strengthening management capacity in several key areas. A critical first step involves specifying roles and responsibilities within the NRC structure so that authority and accountability are clear. The chart on page 14 presents the Task Force's view of how the NRC should be organized in the future. The Task Force acknowledges the efforts already undertaken by the NRC leadership and the Governing Board to address several of the issues raised and recognizes that for a variety of reasons, it may take time to evolve to such a structure. However, the Task Force believes that the description below provides a sound approach for managing the NRC in the long term, and every effort should be made to ultimately achieve it.

Collaboration of the NAS, NAE, and IOM Presidents

The President of the NAS serves as the NRC Chair and has final responsibility for the operations of the NRC. The current NRC Chair, Bruce Alberts, has taken substantial steps toward strengthening the relationships among the three membership organizations (the NAS, NAE, and IOM) in directing the work of the NRC. This effective cooperation among the three Presidents has served the NRC well, particularly as the nation confronts issues that are increasingly interdisciplinary in nature. Close collaboration among the Presidents of the NAS, NAE, and IOM should continue to be an important component of NRC operations in the future. The ability to call upon the diverse communities of scientists, engineers, and medical professionals from the three organizations and bring their collective knowledge to bear on pressing national policy debates is a unique attribute of the NRC. The value of having access to the best experts across so many fields will increase in the future, emphasizing the importance of continually strengthening collaboration among the entities of the National Academies.

The NRC Chair exercises a leadership role with the other two Presidents in shaping the overall policies, programs, and strategic directions of the NRC. The three Presidents serve as the essential link between the membership organizations and the NRC staff, and their stature contributes significantly to the reputation of the institution. They also play a critical role in communicating with NRC sponsors and developing new sources of funding for NRC projects. The Task Force encourages the three Presidents to expand their outreach to sponsors and to oversee particular aspects of the NRC program in which their interests and expertise can have a positive influence. The NRC Chair, in consultation with the Presidents of the NAE and the IOM, should determine the respective roles of the three in overseeing important crosscutting areas of work, as well as

specific programmatic and operational activities. Such designations might change over time depending on the backgrounds and interests of the incumbent Presidents.

Currently the three Presidents meet weekly with the NRC Executive Officer and other senior staff as appropriate in what is called the Executive Group. The Task Force believes that regular interaction of this kind provides a strong basis for perpetuating an integrated approach to the work of the NRC and an opportunity to address issues that cut across the NRC and the individual membership organizations. In addition, the Presidents' Committee meets quarterly to allocate discretionary internal funds for special projects or other activities. As the NRC pursues a more strategic approach to its program development and enhances program management, the Presidents should target these resources to support agreed upon priorities and objectives.

Roles and Responsibilities of the Chief Management Officer

The Task Force strongly recommends the appointment of an NRC Chief Management Officer (CMO) whose sole responsibility is the management of the NRC and who reports to the NRC Chair. The CMO must be accountable for the overall operation of the NRC. Development of an annual operating plan with both short-term and long-term goals is a critical element in implementing this management approach. The goals must be actionable and auditable to determine the level of success in achieving them. The NRC Chair and the Governing Board should review the CMO's performance based upon achieving these specified goals.

While the current NRC Executive Officer position has many of the attributes of this job, the Task Force believes that it can be strengthened further if all administrative, financial, and program units report to this individual. As indicated on the proposed NRC organization chart, the Task Force also recognizes the connection between the Chief Financial Officer and the NRC Chair, given that the NAS has fiduciary responsibility for the institution as a whole. Establishing clear reporting lines and accountability is essential in an organization of the size and complexity of the NRC. The NRC leadership also should ensure strong linkages between administrative services and program activities, given the importance of staffing, training, financial management, and information technology to achieving the NRC's goals.

Equally critical to the implementation of the Task Force's recommendations is the need for the NRC's senior managers to operate as a team. If the NRC is to move beyond its current structure of independently operating units and evolve into an organization with an institutional perspective, the heads of the major Divisions must work collectively toward achieving clearly articulated NRC goals. These Division Executives should be viewed, both by themselves and by senior management, not only as advocates for their own units, but also as stakeholders in the effective management of the whole NRC. As such, providing advice and support to the CMO, the Presidents, and the Governing Board should be an important aspect of their jobs, in addition to managing the activities of their program units. With Division Executives working together, it should be possible to break down some of the institutional barriers that hamper collaboration, prevent sharing of

staff, limit the deployment of resources most effectively, and reduce the NRC's ability to respond to evolving sponsor needs. Their job performance goals and rewards should be based, in part, on these factors. This mode of operation also would facilitate sharing of best practices and resolution of jurisdictional issues in a more productive manner.

The Task Force recommends that the Senior Management Team, headed by the CMO and including the senior program and administrative services managers, convene a monthly meeting to review expenditures, consider operational issues affecting the entire organization, and recommend ways to improve efficiencies. Developing common procedures and sharing best practices should be a high priority for the NRC Senior Management Team. Assigning one of the three Presidents the responsibility for overseeing operational activities and working closely with the Senior Management Team should ensure strong connections between the senior staff and the Presidents on financial and administrative matters. After a period of time when the Senior Management Team in collaboration with the Presidents is performing effectively the functions of the current Management Review Committee, that separate group may no longer be necessary.

In addition, the CMO should meet every two weeks with the Division Executives to discuss program-related issues, including program development, staffing, and collaboration across Divisions. This group also should review new project proposals, recommend those to be placed on the consent calendar, and identify which proposals warrant consideration by the Governing Board. Finally, the CMO should meet individually with each Division Executive on a regular basis to review the status of projects, discuss personnel issues, and identify other management issues. This approach should enable recognition of problems early in the process and development of strategies to resolve problems before they become crises.

Currently NRC management lacks adequate data for decision making. It is difficult to track information at the project level or by individual activity. In addition, quantifiable evaluation criteria do not exist for most aspects of the NRC's work. NRC managers should work with the CMO to develop consistent measures for determining project status, evaluating staffing levels, identifying process bottlenecks, and tracking funding trends. Establishing such metrics should go hand in hand with an effective project management process that involves uniform reporting against goals. Division Executives and the managers of the major administrative units must be accountable and responsible for the execution of their programs. The Task Force believes that if management processes, project management, and accountability are strengthened, the number of layers of approval should be reduced while the quality and timeliness of the work should improve.

Governing Board Roles and Operations

The Articles of Organization of the National Research Council assign the Governing Board the following powers:

- Authorize or terminate contracts on behalf of the NAS Council.

- Approve an annual NRC budget for inclusion in the institutional budget approved by the NAS Council.
- Approve appointments on behalf of the NAS Council of such senior staff positions as the Governing Board deems necessary.
- Modify the NRC structure and organization (major changes to be made after consultation with the NAS, NAE, and IOM Councils).
- Determine policy for the NRC.
- Review the NRC program and evaluate its responsiveness to national needs.

The Task Force believes that the above list of powers provides substantial authority for the Governing Board to positively influence the operation of the NRC. A special committee of the Governing Board, which was recently established to recommend changes in Governing Board operations and committee structure, is a positive step toward ensuring that result. The Task Force identified several key issues that merit particular attention.

The NRC Governing Board is different from most corporate or university boards of directors, in part because its membership is derived from the Councils of the NAS, NAE, and IOM. Members are elected to their respective Councils and then may subsequently be asked to serve on the NRC Governing Board. The Presidents should confer and take into account the needs of the NRC and the interests of Council members when considering candidates for service on the Governing Board. In addition, a formal orientation on the roles and responsibilities of the NRC Governing Board and the operations of the NRC should be provided to members prior to their beginning a term of service on the Governing Board.

Because the Governing Board is the mechanism by which the Academies' membership sets policies and direction for the NRC, active engagement of the Division Chairs in Governing Board deliberations is critical. The Task Force believes that some improvements in this situation can be made without changing the current NAS bylaws. For example, as ex officio members, the six Division Chairs would be expected to participate in Governing Board meetings and should serve on its constituent committees. In addition, the Division Chairs should meet as a group in conjunction with Governing Board meetings to identify common concerns and emerging issues to bring to the attention of the Governing Board. Regular interaction among the Division Chairs also should contribute to a more integrated NRC-wide program.

The Task Force believes that many of the responsibilities of the Governing Board should be executed through its standing committees. Because the Governing Board is currently considering how to restructure its committee system, the Task Force focused on the roles and responsibilities of the committees. A key function is oversight of the NRC budget and administrative operations. While routine reviews of these matters will be performed by senior management staff, the appropriate Governing Board committee should receive regular updates on the status of NRC finances; review funding trends; approve the annual budget, indirect allocations, and major new expenditures; and provide guidance on operational issues facing the NRC. The relevant Governing Board committee also should

provide input to the NRC Chair on the performance and compensation of the CMO and other senior NRC managers.

One of the primary responsibilities of the Governing Board is to determine the future direction of the NRC program. Currently the method used for accomplishing this is the approval of individual project proposals by the Governing Board Executive Committee (GBEC). Rather than focus on all projects individually, GBEC could more effectively execute its responsibilities by taking a broader institutional perspective and formally reviewing only projects that are highly sensitive, involve major new initiatives, or have NRC-wide policy implications. That approach would free GBEC to consider major NRC-wide issues, such as personnel policies or organizational changes, including establishing criteria for creating, restructuring, and retaining Boards and standing committees.

Oversight of the NRC program is a key responsibility of the Governing Board. The Task Force recommends that in place of the current review of major unit core and continuing activities, one of the Governing Board committees should conduct a more substantive annual review of each Division, with the Division Chair and the Division Executive presenting their unit's accomplishments, plans, and critical issues. The review should include clear measures to evaluate the Division's overall program and plans for the coming year, including funding and staffing trends and on-time project completion rates. The review also should assess how the work of each Division fits into the overall NRC program and the interface between crosscutting initiatives and Division activities.

The reviews should assist in addressing another major challenge for the overall NRC program—mobilizing the full range of NRC expertise to address crosscutting issues. The Task Force envisions that the Presidents and Division Chairs will bring topics to the Governing Board that they believe require special attention so that the Governing Board can determine priorities. The number of high priority topics at any given time would be very small but would change over time. One of the three Presidents should assume leadership for each crosscutting issue, establishing overall goals and overseeing the direction of work. Working with the CMO, the Presidents would determine the appropriate volunteer and staff mechanisms for providing coordination and program development for crosscutting initiatives, allocate resources among units, and identify the Division to take lead responsibility for conducting the work. The Governing Board should receive an annual report of the progress made toward achieving established goals and determine whether special initiatives should be continued, modified, or ended. In addition to these special initiatives, regular interaction among Divisions on topics that engage multiple units should be reinforced with appropriate incentives and expectations.

To undertake a more strategic approach to managing the direction of the NRC necessitates an ongoing NRC strategic planning process led by the three Presidents and the Governing Board. An important component of this process is an understanding of evolving national needs for advice on issues concerning science, engineering, technology, and health. Such assessments might be provided from activities already conducted by established Academy units and should contribute to determining how best to focus the

PROPOSED NRC ORGANIZATION CHART and Proposed Primary Management Duties

NRC Chair (NAS President)

- Exercise final responsibility for the operation of the NRC
- Work with NAE and IOM Presidents and the GB on NRC strategy and goals
- Oversee goals, performance, and pay of CMO with GB
- Approve committee appointments, delegating as appropriate

Presidents of NAS/NAE/IOM

- Collaborate on strategic and planning direction for NRC with GB
- Oversee crosscutting initiatives and specific program divisions and administrative activities in consultation with CMO
- Communicate regularly with sponsors
- Facilitate program development and coordination
- Review annual reports on goals, and set directions
- Act as resource for NRC senior program and administrative managers

NRC Governing Board

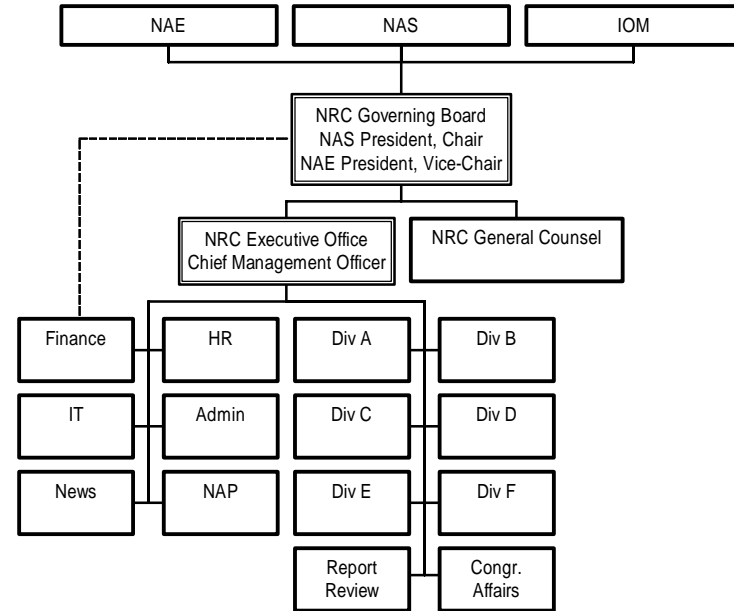
- Conduct strategic planning and articulate long-term goals
- Review/approve annual operating plan proposed by CMO
- Conduct oversight of NRC program and administrative operations
- Through GBEC, give individual consideration to highly sensitive projects, major new initiatives, or proposals with major policy implications
- Determine NRC policy
- Approve NRC budget/major expenditures
- Modify NRC structure, coordinate with NAS/NAE/IOM Councils

Division Committees

- Articulate intellectual and strategic goals
- Ensure quality control of the Division's work
- Provide direction on emerging issues
- Perform strategic review of Boards and approve new Board members
- Strengthen connections between Academies and NRC
- Participate in NRC activities and the review of reports, identify new volunteers, interact with professional communities

Division Committee Chairs

- Serve as ex officio member of GB
- On behalf of the Committee, be accountable for quality control, including project and committee nomination approvals with Division Executive
- Consult with Division Committee and address issues related to volunteers
- Interact with sponsors
- Oversee Boards and standing committees with Division Executive



NRC Chief Management Officer

- Report to the Chair of the NRC GB on NRC activities
- Propose and implement annual operating plan in cooperation with NRC Senior Management Team
- Be accountable for overall management of the NRC program and administrative operations
- Lead NRC Senior Management Team in review of new proposals and coordination among Divisions

Division Executives

- Be accountable for project development, implementation, tracking, and quality control
- Be accountable for Division administration and financial management
- Approve projects and committee nominations with Division Chair
- Ensure effective operation of Boards and standing committees
- Serve on NRC Senior Management Team, interact with other Division Executives, and advise CMO
- Communicate with sponsors as part of program development strategy

work of the NRC. An ongoing strategic planning process, rather than a one-time plan, should provide the framework for the Governing Board to perform more effective oversight of the NRC. It also should serve as the context for the CMO to develop annual operating plans with established metrics for determining success. The planning process must engage both the NRC leadership and the line managers who will need to execute the plans. Senior staff should be assigned to the Governing Board as an additional duty to support the strategic planning process, as well as the Governing Board's committee activities.

2. STREAMLINE AND ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF NRC OPERATIONS

Streamlining operations and improving efficiency and effectiveness are major goals of the Task Force's recommendations. Projects often are slow to start because staff may not be available, advance planning is inadequate, and the processes associated with initiating projects and nominating committees, including acquiring the necessary approvals, are cumbersome. Other problems, such as overcommitted staff, underfunded projects, unresponsive volunteers, inadequate support services, poor project management, and delays in the review process often contribute to the late delivery of products and services.

The Task Force envisions a variety of mechanisms for addressing these problems. Among these are restructuring operating units, streamlining processes, reducing layers of approval, and enhancing administrative support. Restructuring, however, must be accompanied by other actions if it is to achieve the desired goals. These actions include a reduction in the process time required to initiate and conclude projects; allocation of indirect funds to support key program areas; stable program staffing and strong management; accountability geared to clear performance standards; effective oversight of program and administrative activities; strong interaction among Division Executives, heads of administrative units, and the CMO; and positive engagement of pro bono participants in the process.

Division Structure

The Task Force believes that restructuring the existing Commission-level program units into a smaller number of Divisions offers a chance to accomplish several goals. The larger size of the units should result in each Division having the necessary management infrastructure and resources for performing sound financial management, strengthening project tracking, overseeing the development and implementation of the Division's portfolio of work, facilitating report review processes, and ensuring the quality and timeliness of Division products. The critical mass of staff should permit more effective allocation of work to reduce the effects of the uneven flow of new projects and provide opportunities for staff to be shared more easily. Similarly, opportunities for collaboration should be enhanced as groups performing related work operate within the same major unit.

The NRC also must capitalize on the shift to six Divisions by reengineering current processes, developing common procedures, sharing best practices, and establishing strong linkages among the Division Executives. Ultimately, these efforts should result in reduced operating costs and less duplication of effort. While there may be some variations among Divisions, core processes associated with project initiation, project management, and quality control should adhere to common principles and practices. Senior NRC management must provide leadership to ensure an institution-wide commitment to reengineering processes, and users must participate in the development and testing of new procedures and systems.

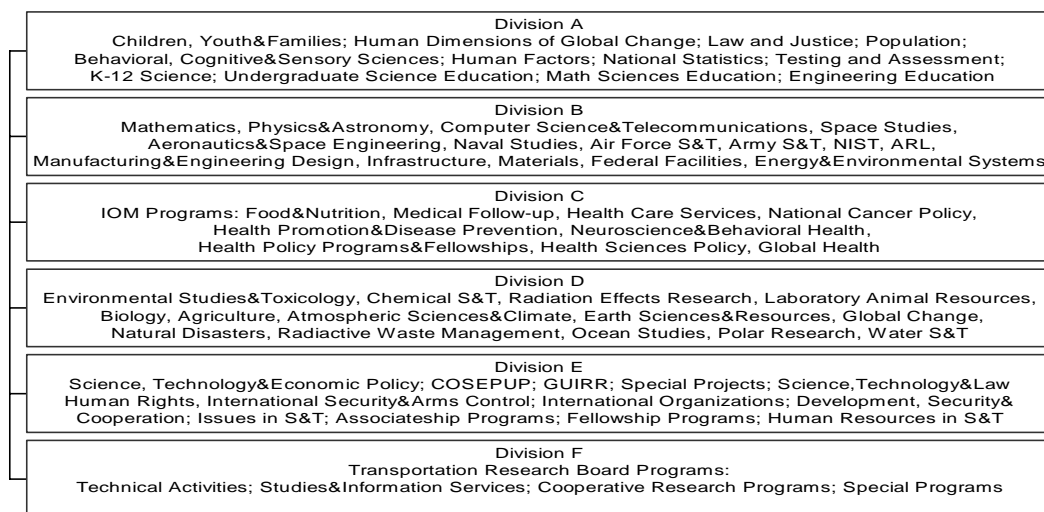
The Divisions should be established according to the following principles:

- Synergy among the disciplines and issue areas;
- Promotion of interaction among science, engineering, medicine, and public policy;
- Appropriate management infrastructure to support effective program development and oversight;
- Critical mass of shared staff and indirect budget allocations;
- Adherence by all units to NRC procedures and processes; and
- Commonality of funding sources.

The chart on page 17 presents one suggestion for structuring the six Divisions based on the above criteria. Although it expects that some minor alterations to this proposal may be made as the NRC leadership implements the reorganization, the Task Force believes that the fundamental structure presented is sound and should be pursued. The endorsement by the NRC Governing Board of the creation of six Divisions has enabled planning for such a new structure to begin prior to the completion of this report. The Task Force recognizes that the portfolio of work varies among Divisions and that some differences in internal organization and Division Committee structure might be appropriate. For example, the number of full-length studies prepared biennially by each Division ranges from 5 to 85 and nonstudy activities constitute a large percentage of the work in two Divisions. However, all Divisions would share the common goals articulated in the NRC's operating plan and adhere to common policies and procedures. The NRC leadership should select consistent descriptive names once the final composition of the Divisions is determined, but this would not preclude the continued use of well-known "brand names" by Division components.

Each Division should have a Division Executive who reports to the Chief Management Officer and is held accountable to established performance standards that promote timely completion of projects of consistent high quality within budget. He/She should be responsible for the effective operation of all Boards and standing committees within the Divisions, for interacting with other Division Executives on issues of common concern, for serving as an active member of the NRC Senior Management Team, and for contributing to the overall program and policies of the NRC.

PROPOSED ORGANIZATION OF NRC DIVISIONS



Effective involvement of volunteers at all levels of the NRC organization is a key goal of the Task Force recommendations. Engaging members of the NAS, NAE, and IOM, as well as other recognized experts from all fields of science, engineering, and medicine, is a core attribute of the NRC that must be reinforced. Making the broadest use of volunteer expertise, however, while also responding to the need to improve efficiency of operations is a major challenge for the NRC.

With the exception of the Transportation Research Board Subcommittee on NRC Oversight and the IOM Council, new Division Committees should be established to replace the Commissions and the various other volunteer committees that currently exist at this level. The responsibilities of Division Committee members should be made explicit to all nominees before they accept an appointment, and orientation to the work of the NRC and the relevant Division should be provided to all new members. Although there might be several different models for how the Division Committees are organized, the Task Force believes that it is most productive for them to focus strategically on Division and Board program areas, rather than on approving individual projects.

The role of these Division Committees, whose membership will be subject to approval by the Governing Board, includes:

- Articulating intellectual and strategic goals for the Division;
- Providing direction on emerging issues and new developments in relevant fields;
- Performing strategic reviews of the underlying Boards and standing committees, including determining ways to establish connections among them and identifying where restructuring should be pursued;
- Reviewing Board composition and approve new Board member nominations;
- Strengthening connections between the Academies and the programs of the NRC;
- and

- Serving as a resource to the staff by participating in NRC activities and the review process, identifying other potential participants, and interacting with relevant professional communities.

Once the Chair of each new Division Committee is approved by the Governing Board, that person should consult with the existing constituent Commissions and the Division Executive to develop a proposal for an appropriate Division Committee structure. The Governing Board should approve these proposals and evaluate their effectiveness after an initial period of operation.

The Task Force deliberated extensively on how best to achieve the multiple objectives of making processes more efficient, enabling the Division Committee to focus on the Division's strategic program direction and on oversight of the Boards, retaining involvement of the Academies' membership in approving program activities, and establishing clear lines of authority and accountability. The Task Force concluded that these objectives could be accomplished most effectively by assigning the Chair of the Division Committee primary authority and responsibility for approving the Division's work in conjunction with the Division Executive. Specifically, the Division Chair and the Division Executive would review and approve all individual project proposals, committee nominations, and reports entering review. In making such decisions, the Chair shall consult with appropriate members of the Division Committee to utilize their expertise in specific areas. However, the Chair would be accountable for exercising the Division Committee's approval authority for all individual program activities. The tradition of selecting Division Chairs from the membership of the NAS, NAE, and IOM should be continued, and with the added responsibilities the Task Force envisions, the option of providing a stipend or administrative support should be available. Division Chairs would serve at the pleasure of the NRC Chair in consultation with the Governing Board.

The Division Chair would thus be responsible for confirming the quality and appropriateness of the work of the Division on behalf of the Committee. The Chair should regularly review the Division's progress against established goals and evaluate the impact of the Division's work. The Chair also would serve as the primary resource for the Division Executive to address issues that may arise with pro bono participants and should interact with sponsors as appropriate. As stated above, Division Chairs would be ex officio members of the Governing Board, should participate actively in Governing Board meetings, and should be present for Governing Board reviews of their Divisions. Meetings of the Division Chairs in conjunction with Governing Board meetings should strengthen relationships among them and facilitate ongoing cooperation across Divisions. Other chairs of special crosscutting advisory committees established by the Governing Board might be invited to attend to better integrate their activities with those of the Divisions.

The Task Force believes that substantial benefits will accrue through consolidating the major units into six Divisions without, for now, altering the current Board structure. The main work of the NRC occurs at the Board level, through its committees, and careful

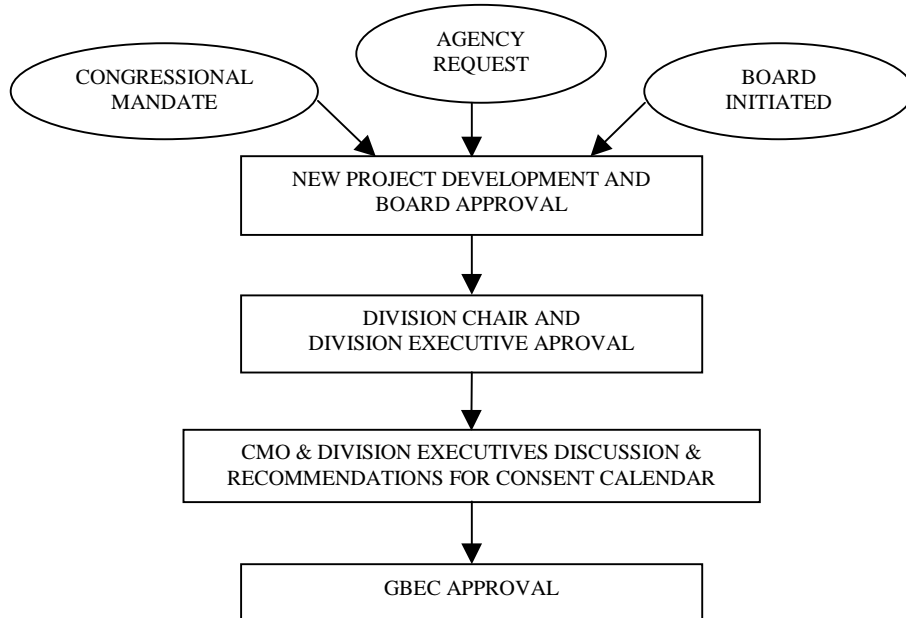
evaluation of those activities should be undertaken before recommending change. Many of the Boards have active and high-quality programs that should be reinforced. Others serve small but important constituencies or provide specialized expertise of value to the NRC. However, systematic evaluation of the Boards by the Division Committee based upon criteria established by the Governing Board needs to be accomplished in the long term to further rationalize the NRC's structure. Changes to the Boards should serve the goals of ensuring coverage of key areas; reducing overlap and competition; providing better support to sponsors; facilitating connections between the discipline-, issue-, and agency-focused Boards; and establishing sounder financial support for programmatic activities.

Streamlining Approval Processes

The NRC has established processes for approving new projects, committee nominations, and release of reports as the primary mechanisms for ensuring high quality and maintaining objectivity. The Task Force believes, however, that these processes often take too long, involve extensive staff and volunteer time, and sometimes contribute less than desired to the final product. Complaints about problematic task statements and committee composition issues that do not surface until very late in the course of a project are an indication that the existence of extensive procedures and the involvement of volunteers at many levels have not always prevented difficulties. The Task Force believes that holding Division Executives and Division Chairs accountable for quality control, streamlining processes, and adding extra approval steps only when warranted will accomplish several goals. Projects will be able to start more quickly, senior management and volunteers will focus their attention on those activities that place the institution most at risk and warrant careful scrutiny, and volunteers at the Division and Governing Board levels can focus on overall program direction and review rather than on individual projects. The NRC also might consider providing a small amount of recoverable discretionary funding to initiate projects prior to final contract awards when the risks are minimal.

The following two charts offer scenarios for processes for new project approvals and committee nominations. The Task Force envisions that Boards would develop and approve new project proposals and forward them for approval by the Division Chair and Division Executive. Other volunteers should be consulted as appropriate, but the Division Chair would have final responsibility for approving the prospectus for the membership. Every two weeks the CMO, the six Division Executives, and the Director of Report Review would meet to review all pending proposals. At their option, the Presidents might wish to participate also.

PROJECT APPROVAL PROCESS

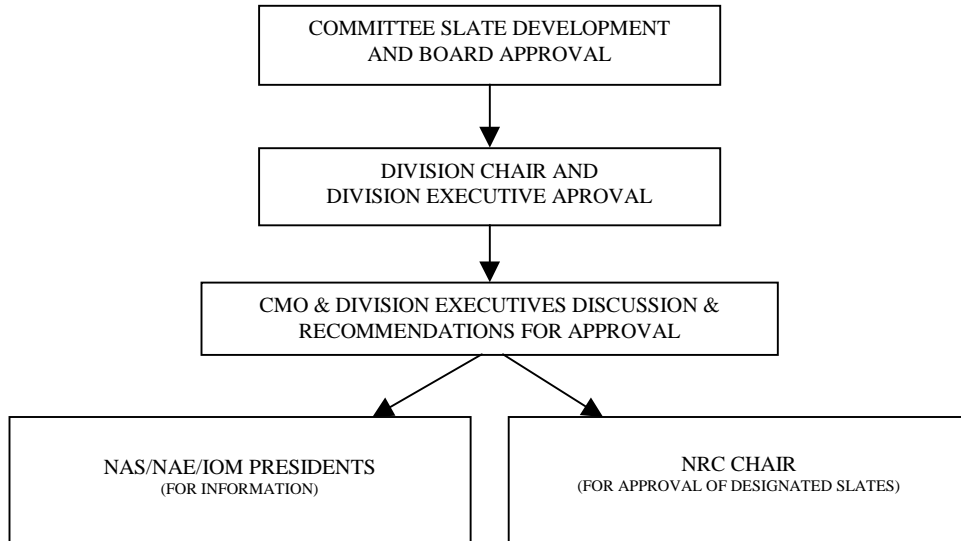


Such a biweekly meeting would provide an opportunity for exchanging new project information among the senior managers, identifying areas in which multiple units have interests, determining the distribution of responsibility, leveraging work more effectively across the institution, developing a more coherent approach to program development, identifying potential problems earlier in the process, sharing best practices, and discussing staffing issues. This group should recommend projects to be placed on the GBEC consent calendar, enabling a faster project start. Although GBEC would retain the option of final approval for all new projects, it is anticipated that only those projects involving controversial or sensitive topics, major new initiatives of a significant size, or NRC policy implications would be deliberated by GBEC. This would reduce substantially the individual items to be reviewed closely by GBEC, allowing GBEC to provide a more substantive review and enabling it to spend more time on broader NRC policy concerns.

In the case of ad hoc committee nominations, slates should be developed based on suggestions from a variety of sources, including Board members, staff, Division Committee members, members of the Academies, and other experts and discussion among Boards and Division staff and Chairs. After approval at the Board level, nomination packages should be forwarded to the Division Chair and Division Executive for review and approval. Again, the Division Chair should consult with other members of the Division Committee or might delegate certain routine approvals to the Division Executive, but would have the final approval responsibility for the Division. The same group of the CMO and Division Executives would recommend which committee slates (e.g. for committees addressing controversial topics or crosscutting issues or those raising specific concerns) should be forwarded to the NRC Chair for final approval. The three

Presidents would receive copies of all nomination packages and could make additional recommendations as warranted. The NRC Chair would retain the option of final approval of any committee.

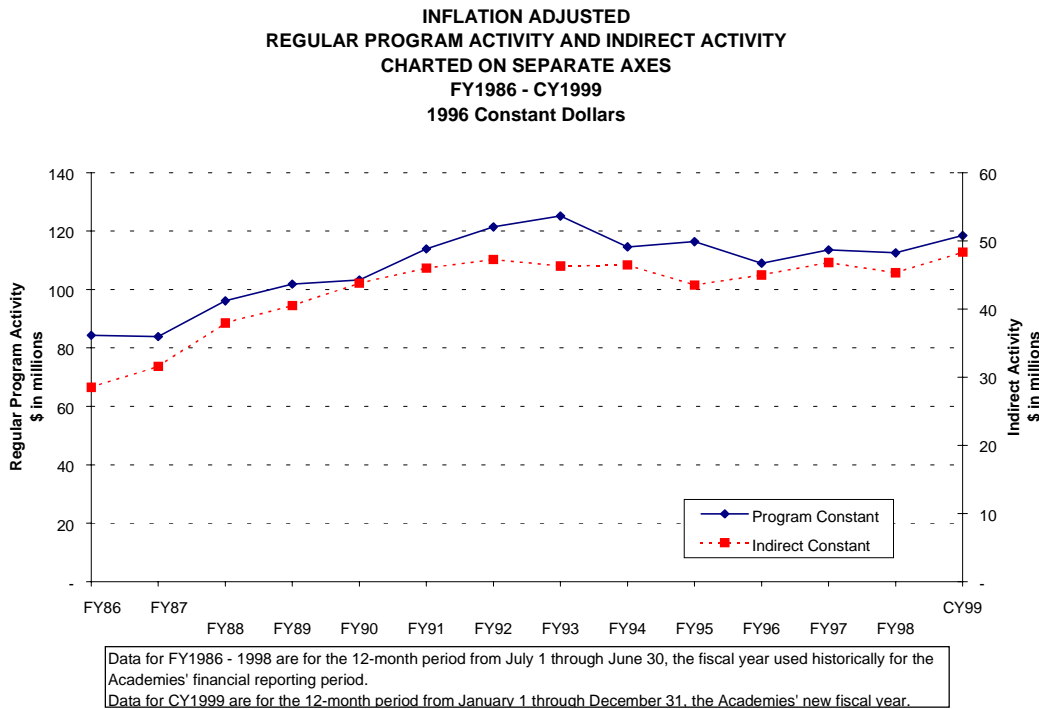
COMMITTEE NOMINATION PROCESS



The other key area where streamlining continues to be an issue is in the report review process. The Report Review Committee (RRC) at its last meeting developed a list of steps for expediting the report review process; the list offers suggestions for reducing difficulties and speeding review. The Task Force believes that in addition, review could be facilitated in two areas. The first is ensuring strong management of the review process at the Division level. Division Chairs and Division Executives would be responsible for approving slates of reviewers, designating a review coordinator for delegated reviews, and ensuring that reviews are completed in a timely fashion and that high quality is maintained. Coordinators might come from the Division Committee, but a broader pool of potential coordinators including former Commission and Board members should be used as appropriate. Each Division should have a senior manager for reports who is assigned to oversee the review process. Responsibilities should include working closely with study directors to advise on review procedures and schedules and to monitor progress, briefing study committees on the review process, providing advice on reviewer slates and the selection of coordinators, inspecting draft reports to ensure that they are ready to enter the review process, assisting coordinators in fulfilling their responsibilities, and meeting regularly with the staff of the Report Review Office and other reports officers to share best practices and discuss issues of common concern. The Task Force also recommends that for reports for which the RRC designates a monitor, a Division coordinator should not be appointed unless the Division Chair and Division Executive recommend it.

Administrative Services and Indirect Resources

As for most organizations, controlling administrative costs and effectively linking service support to programmatic activities present a constant challenge for the NRC. The NRC has taken a number of positive steps to try to reduce costs and improve administrative operations through oversight by the Management Review Committee, regular outside reviews by visiting committees, and efforts such as increasing the number of umbrella contracts with agencies. The chart below indicates an increase in program activity for FY99 with indirect costs moving in parallel. In recent years the overhead rate has declined steadily. This is a positive trend that should be continued. It is essential that the indirect budget be managed carefully so that the proportion of indirect costs to total costs does not rise and optimally is reduced. Because administrative services constitute such a significant percentage of indirect costs, the Task Force believes that special attention should be focused on controlling these costs, as well as ensuring high-quality services.



Bringing the administrative services units within the same reporting structure as the program units is an essential step in accomplishing these dual goals. The heads of all administrative units and financial services units should report to the CMO. Measures for the performance of administrative services must be established to increase the efficiency of these operations, and control of indirect costs should be considered in managers' performance evaluations. The management process for allocating indirect funds needs to be more transparent so that allocations are made more effectively to support NRC priorities and incentives for reducing costs are created. Whatever discretionary resources become available through program and administrative services restructuring efficiencies

should be used to support more stable funding for program units. Formulas for allocating indirect funds to program units should accomplish the goals of encouraging the efficient management of programs, ensuring quality control, providing flexibility to respond to changes in work demands and new opportunities, enabling new important work to be undertaken in the future, and supporting high-priority program activities.

Two administrative areas are of particular importance for the NRC and raised the greatest concerns in Task Force discussions of efficiency and effectiveness—human resources and information technology services. The Task Force understands that the NRC leadership is taking steps to recruit a new Director of Human Resources and to rebuild that office, which has sustained extreme staff turnover in the last few years. The importance of articulating goals for the Office of Human Resources, improving its operations, and establishing strong connections to NRC program management cannot be overstated. Given the critical role quality staff play in the NRC and the need to significantly enhance staff development, the Office of Human Resources needs strong management and should be integrated fully into the organizational structure under the CMO.

Information technology is equally central to the NRC's future due to the growing reliance on IT in performing the institution's work. Like all large organizations the NRC faces rising costs for supporting new applications of IT and the need to maintain an increasingly complex infrastructure. It also must deal with difficulties in recruiting talented staff in today's job market and with growing expectations for technical support and new applications. As this report was being completed a visiting committee was beginning a major review of the NRC's Information Technology Services operation, an effort that the Task Force strongly endorses. It is hoped that the visiting committee will pay particular attention to several issues. One is the increase in IT costs in recent years, which the NRC must address strategically. Another area that deserves emphasis is the importance of understanding and serving IT "customer" needs within the program units. ITS's creation of a new IT advisory committee involving program staff is a positive step and should be strongly reinforced.

Substantial investments have been made in new systems for managing the work of the institution, including a new project management system. An effective, uniformly applied project management system is essential to NRC operations. However, despite significant work by ITS, the goals of simplifying processes, enhancing access to information, and increasing productivity have not been fully achieved. This experience underscores the importance of streamlining procedures before developing new systems, ensuring senior NRC management's commitment to changing current practices, and clearly delineating responsibilities and accountability for major IT investment decisions. The NRC also should pay special attention to integrating its multiple systems to reduce redundant data entry and should ensure that management information systems reduce rather than increase administrative burdens on staff.

Finally, the strategic application of IT offers significant opportunities to develop new products and services, reach broader audiences, and reengineer outdated procedures.

Experiments with collaborative technologies for committee deliberations, Web-based convening activities, public input for workshops and studies, and Webcasting of briefings and lectures already are under way. The NRC should encourage innovative uses of technology (including through funding incentives) but also needs to evaluate the results of these efforts to determine where greater investments should be made and to establish mechanisms for sharing information on successes and failures.

3. DEVELOP THE HUMAN RESOURCES POTENTIAL OF STAFF AND VOLUNTEERS

The role of members of the Academies and other pro bono participants in NRC activities is a unique attribute and cornerstone of the work of the institution. It is a major reason that Congress and executive branch agencies turn to the NRC for advice. However, for this system of volunteer experts to function well requires an equally strong staff capability. Responses to the Task Force questionnaire sent to NRC volunteers recognized the valuable contribution of NRC staff and the quality of their work more than any other single item.

Effective partnerships between participants and staff are critical for NRC activities and must be continually reinforced. The NRC Chair is the pivotal point connecting members and the staff. But interaction between staff and volunteers occurs at several key points in the NRC process. Division Chairs and Division Executives need to forge a strong working relationship in order to undertake the type of shared management responsibility the Task Force envisions for them in the major units' programs. Board Chairs and Board Directors must work together closely to develop new projects and ensure high-quality products. The success of NRC reports is highly dependent on the ability of study committee chairs and study directors to work in a complementary fashion.

Both volunteers and staff contribute to the intellectual work of the institution and the effectiveness of its programs. However, staff members assume primary responsibility and are held accountable for managing programs and projects in a timely and efficient manner, while volunteers focus on providing broad oversight of programs and the substantive content of studies and other projects. The Task Force commends the NRC leadership for preparing a pamphlet for study chairs and for undertaking a companion piece for study directors to provide new volunteers and staff with important information on their responsibilities. This is an excellent example of how best practices learned from veterans of the NRC process can be shared. The Task Force believes that this critical partnership should be strengthened further in several other ways as described below.

Staffing Issues

The effectiveness of NRC staff is essential to the success of the institution. One major concern is the climate created by dependence on soft money and its impact on staff workloads and the stability of staffing. Mitigating the dependence on soft money should be a priority in allocating discretionary institutional resources. Without such support,

staff will continue to commit to more projects than can be completed in the time promised, and the cycle of late reports will be perpetuated. In addition to contributing to late and poor-quality reports, this situation often results in inadequate attention to dissemination, the tendency to accept projects that may be problematic or insufficiently funded, and competition for projects rather than cooperation. Currently, indirect resources primarily support program management at the Commission level. The NRC should explore ways to expand support down to the Board level throughout the institution. It is hoped that restructuring combined with greater efficiency in both program and administrative operations ultimately will result in the ability to reallocate resources for Board staff activities. This year's allocation of \$1 million for program development is a positive step in this direction, providing needed resources for staff activities that have been neglected due to the soft money environment. The Governing Board should assess the results of this initiative to determine how best to apply these resources in the future.

The Task Force also endorses in principle the current proposal to the Governing Board for offering rolling contracts to program staff who have demonstrated the ability to produce high-quality work and who make an important contribution to the NRC. The program should be large enough to have an impact on staffing in the institution and should be implemented in a way that creates incentives rather than disincentives for staff. The Task Force's analysis of employment data indicates that high staff turnover is a problem primarily in certain positions and in specific units, rather than across the entire institution. (See box below.) One area of particular concern is that 37% of program officers and 25% of senior program officers have less than 2 years of NRC experience. Given the importance of maintaining a cadre of experienced, quality staff officers who can produce excellent results, the emphasis on at-will employment with jobs dependent primarily on bringing in the next contract is not productive. It should be altered to create an environment where career employment for top performers is encouraged. Greater attention to developing and promoting managers for senior positions also is needed. In addition, the high turnover of administrative staff in some service units contributes to concerns about the level of service provided to the program units.

Summary of Full-Time Staff Turnover During 1999

- Average overall turnover for exempt program staff, 9%; average overall turnover for non-exempt program staff, 18%
- Average overall turnover for exempt administrative staff, 24%; average overall turnover for non-exempt administrative staff, 23%
- Median years of service for Executive Directors, 4.8 years
- Median years of service for Board Directors, 10 years
- Median years of service for senior program officers, 5.7 years.
- Median years of service for program officers, 2.6 years.
- Non-exempt staff turnover is serious in almost all units, with significant numbers having less than 2 years of service.

Rolling contracts, however, are only one piece of what must be an overall strategy for staffing at the NRC that incorporates training and professional growth. Rather than isolated initiatives, the NRC should have an integrated package of staff development

opportunities that fosters professional growth for individuals based on their jobs and career goals. Managers should be responsible and accountable for ensuring that staff members are properly trained and have opportunities to learn new skills. Career planning should be a part of all performance reviews. A strong emphasis on staff development necessitates a close working relationship between the Office of Human Resources (OHR) and the program side of the institution. OHR must have a firm understanding of the training needs of program staff and must effectively engage staff in the training process. The Task Force recommends that OHR ultimately be integrated into the combined administrative and program reporting structure under the CMO.

Program officers need multiple skills to perform successfully at the NRC. Not only must they have expertise in some aspect of science, engineering, or health, but they also need strong management skills, the capacity to communicate effectively both orally and in writing, and the ability to work well with diverse groups of volunteers. Because not everyone will have strengths in all of these areas, the NRC must enhance training for both new and existing staff. Given the high percentage of new staff officers, in particular, more training is required to prepare them for the job of study director.

Project management, in particular, is deficient at the NRC, and staff would benefit greatly from good training and tools with a proven record of effectiveness in this area. NRC staff consider high quality to be the most important attribute of their work. Other factors, such as timeliness, tend to have a lower priority. The Task Force believes that with appropriate planning and implementation, improvements in completing projects on time and within budget can be achieved without sacrificing quality. The NRC leadership should convey the message that project management is essential and that staff will be rewarded for achieving measurable improvements in this area. A more service-oriented approach by the administrative units similarly should be reinforced through performance measures and recognition of accomplishments. Other types of appropriate staff recognition, such as the recently approved Governing Board resolution providing for staff to be identified in some instances as editors of reports, should be encouraged to reinforce the contribution staff make to the NRC enterprise.

In addition, NRC seasoned veterans should serve as mentors to help develop the skills of newer staff and pass along their knowledge of how to operate successfully in the unique NRC environment. This effort should be funded and performed in a variety of settings, including assigning senior staff to serve as mentors to individuals they do not supervise, providing informal venues for staff to share experiences, and conducting training sessions in which senior staff teach methods for handling specific aspects of NRC work. The NRC should invest in leadership development and provide for succession planning to build a staff capacity that can support the work of the institution in the future.

Holding seminars and “brown bag” meetings as well as supporting ongoing activities focused on specific issue areas also would help to build communities of interest. Providing institutional funding, even in small amounts, can be an important incentive for staff collaboration. Rotating staff into other units or to work on special projects, enabling staff to take temporary assignments in other institutions, and capitalizing on training

opportunities at outside organizations are other mechanisms for developing skills and broadening experiences. It is critical to fund and designate a well-understood annual minimum level of time for all staff to participate in staff development activities.

The CMO and Division Executives routinely should identify opportunities for rotations and sharing staff among different units as they take on a broader institutional perspective in their management roles. Staff will need to be assured, however, that if they pursue such opportunities they will still have jobs at the end of an assignment. Collaboration is difficult under most conditions and should not be forced without a clear benefit to be achieved. However, bringing the best expertise and appropriate balance to NRC projects is essential if the NRC is to respond to sponsor needs and address many of the critical policy issues facing the nation. For this reason, NRC management should pay special attention to developing incentives for collaboration and fostering interaction among staff.

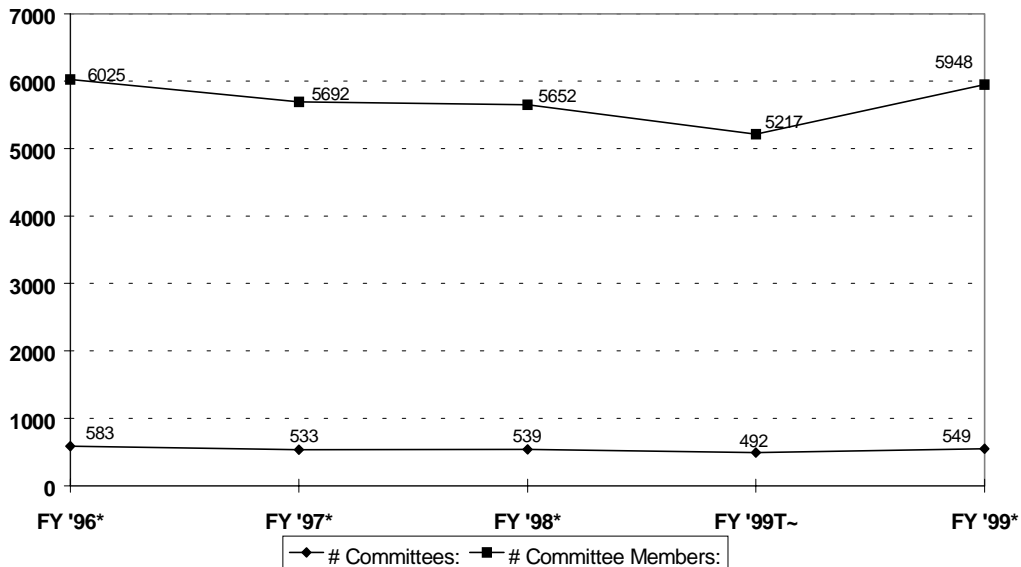
Staff members also should continue to expand their knowledge in their own field, as well as learn new skills. Some support should be provided for staff members to participate in professional development activities and to acquire new knowledge. Familiarity with new research methodologies or understanding of advances in one's field are important assets that enable staff officers to contribute effectively to the work of committees of experts. Exposure to models that other institutions have developed for performing crosscutting work should help the NRC in efforts to develop new approaches to multidisciplinary topics. Interaction with colleagues from other institutions also helps to build the kinds of networks that staff need to reach beyond the existing circle of volunteers.

Pro Bono Participants

NRC volunteers participate in all aspects of NRC activities. They contribute to workshops and study committees; participate in other NRC technical and review committees; serve on Boards, standing committees, and Division Committees; review reports; and form the membership of the Governing Board. The engagement of volunteers reflects the mandate in the original congressional charter for the NAS, which states that the "Academy shall receive no compensation whatever for any services to the Government of the United States." The ability to get the very best scientists and engineers to serve is a hallmark of the NRC. Each year approximately 550 committees engage close to 6,000 pro bono participants in their activities (see figure on page 28).

NUMBER OF NRC/IOM COMMITTEES AND COMMITTEE MEMBERS

FOR THE PERIOD JANUARY 1, 1995 THROUGH DECEMBER 31, 1999



*Excludes OSEP's associateship and fellowship panels and TRB's technical activities.

~FY99T is a transitional fiscal period which includes July 1, 1998 through December 31, 1998. Excludes OSEP's associateship and fellowship panels and TRB's technical activities.

SOURCE: CMIS

The NRC must maximize the use of this unique source of expertise to fulfill its mission and goals. The Task Force heard from both staff and NRC participants that volunteers are increasingly pressed for time, experience growing demands in their careers, and are less available for pro bono activities than they may have been in the past. The NRC should pursue several avenues for ensuring that the time volunteers have to contribute is used most efficiently and that the pool of participants is expanded to limit additional demands on those who already contribute to the work of the NRC. Clearly, administrative and travel support for volunteers, as well as careful project planning, should be maintained at the highest possible levels.

The Task Force received a number of suggestions for expanding the volunteer pool and increasing the number of individuals who might participate. A new committee nomination system, which is under development, should facilitate access to the names of NAS, NAE, and IOM members, other NRC volunteers, participants in various Academy activities, members of scientific organizations, and directories of scientists and engineers. The NRC should make a particular effort to identify and recruit more women, minorities, and experts at earlier stages in their careers to enhance the breadth of skills and perspectives among the volunteers. Awardees of special fellowships and honors from government agencies and scientific groups may be one untapped resource to explore. Outreach to certain communities may be required to attract those who may not have served traditionally in NRC activities. While databases will never replace the personal network used by staff to recruit participants, they should simplify and complement the

process. When designing such systems, the NRC should involve prospective users and ensure linkages with already-existing information systems.

NRC volunteers often are inadequately informed of their responsibilities and of institutional processes that they will have to follow. The booklet “The Roles of the Committee Chair” is one model that may be duplicated to cover the range of activities in which volunteers participate. The NRC should experiment with a variety of other approaches, such as the use of videos or Web sites, for conveying a consistent message about what is expected when an individual agrees to serve on an NRC project. Most importantly, volunteers should be made aware of what is expected of them before they agree to serve so that they can determine if they are able to commit to the work and schedule required.

Developing ways to use volunteer time most efficiently and to speed up the study process should be a high priority. Improvements in project management and staff training should contribute to addressing this problem, particularly if techniques for establishing milestones and tracking progress improve. Sharing best practices and mentoring are particularly important for enhancing staff skills in this area. Prior to all first meetings of committees, information might be made available on secure Web sites that provide a time line for the project, descriptions of what is expected of volunteers, background information about the project and NRC procedures, and an opportunity for members to interact with each other. The NRC also should encourage staff to share experiences with using a variety of low-technology as well as high-technology approaches for facilitating meetings and committee work. Some groups are beginning to experiment with collaboration technologies that enable sharing of documents, online discussions, and virtual meetings. These efforts should be encouraged and assessed to determine where these technologies might have broader applicability.

Volunteers should be consistently acknowledged for their contributions to the work of the NRC. More care should be taken to ensure that pro bono participants receive formal letters of appreciation from the Presidents and thanks from the unit responsible for the project. Sending letters to department chairs or other supervisors, as is done in at least one unit, is another way to acknowledge individual contributions, reinforce the value of participating in NRC activities, and encourage future involvement in activities. Finally, the Task Force received a consistent message from volunteers concerning their interest in providing feedback on their experiences. Many respondents to the questionnaire commented that such inquiries should be made on a regular basis and that volunteers should be contacted after the completion of a project to get their comments. Although comments are sought in some NRC units, the NRC would benefit from a more consistent and systematic approach to receiving feedback from volunteers.

4. COMMUNICATE MORE EFFECTIVELY WITH SPONSORS AND OTHER AUDIENCES

The original congressional charter for the National Academy of Sciences establishes its primary advisory role to government. As the operating arm of the National Academies, the NRC fulfills that obligation to provide advice to government agencies and to contribute to improving public policy and public understanding of issues involving science, engineering, technology, and health.

Mix of Products and Services

The NRC delivers advice through a variety of products and services. Most well known, and generally considered the “premier” product, is the consensus study. While these studies may range from narrowly defined technical reviews to comprehensive assessments of major public policy issues, they all engage a committee of independent experts who contribute to a final report that receives rigorous review. The NRC also brings together groups of experts to assist in overseeing agency programs or research facilities and produces assessments for the requesting agency. Letter reports offer advice on narrowly defined topics, are generally brief, and take less time to complete. The NRC is uniquely positioned to serve in another critical capacity as a neutral forum for convening groups of experts from academia, industry, government, professional organizations, and elsewhere to discuss important topics and frame emerging issues in science, technology, and medicine. These meetings may be specialized workshops, roundtables of stakeholders, or major symposia.

While most individuals are familiar primarily with the NRC’s reports and convening activities, the NRC also engages in a variety of other activities that fulfill its mission. These activities include managing two major cooperative transportation research programs, administering fellowship and associateship programs for government agencies and private foundations, managing a system of NRC-established U.S. National Committees, which participate in the International Council for Science, and publishing a journal of peer-reviewed articles concerning laboratory animal research. These examples demonstrate the range of areas where the NRC plays an important role in promoting the national and international scientific, engineering, and medical enterprise.

In addition to the above activities in which the NRC has engaged for many years, there is a growth in new products and services and variations on existing ones. For example, the NRC has produced several “popular” versions of reports to enhance outreach to the public and to nonspecialists in a field. Some units have distributed software, models, and other tools along with their reports, while others have developed Web-based material and created statistical databases. The growing public audience for NRC work in general and the increasing use of technology create opportunities for the NRC to move beyond its traditional mode of operation and to innovate with new approaches for providing advice or convening groups of experts. The Task Force recommends that the NRC leadership affirm the importance of offering a range of products that respond to varying sponsor needs. The NRC leadership also should endorse exploration of new ways in which the

NRC is uniquely positioned to serve Congress, government agencies, and the public, including providing resources to underwrite pilot efforts that can be evaluated for broader applicability throughout the NRC.

To facilitate understanding of the range of its products and services by staff, volunteers, and sponsors the NRC should develop an inventory of different activities, along with guidance on the advantages, disadvantages, varying costs, and appropriateness of each. Often nonstudy products have significant impact and result in productive synergy with other aspects of the overall NRC program, yet policies and procedures are geared to standard consensus studies or convening activities. To meet the challenges posed by these new types of products, procedures should be developed that provide flexibility, while ensuring quality control.

Responding to requests for fast-track studies poses a particular challenge for the NRC because of its reliance on volunteers, the importance of achieving consensus, and its standards for high quality. Agency sponsors and Congress are requesting more fast-track studies due to the rapid pace of today's policymaking. These requests place considerable pressure on the institution's processes, staff, and volunteers and raise important issues about how the NRC can best respond to the growing need for faster turnaround time. The NRC must establish the capacity and processes for handling fast-track studies on a more routine basis. At the same time, the NRC should carefully evaluate when fast-track reports are appropriate, whether they are adequately funded, and when they cannot either be accomplished expeditiously or result in a valuable product. The NRC also should consider what other options exist for responding more quickly to requests for advice, including the use of existing mechanisms such as roundtables, or what new approaches are possible for delivering advice more rapidly. The Task Force stresses that while it is critical for the NRC to have the capability to positively influence critical public policy decisions in a timely way, high quality and reliance on pro bono participants cannot be sacrificed in the process. The Governing Board and the NRC Senior Management Team should address this challenge explicitly as they consider strategic directions for the NRC.

Strategic Program Development

Currently most program development activities occur at the Board level. Many Boards have strong working relationships with agency sponsors who turn to the NRC because they value the work these Boards have done in the past. The Task Force endorses actions that reinforce these relationships and help perpetuate quality programs for sponsoring agencies. However, the Task Force also concluded that a more comprehensive and strategic approach to program development is warranted to enable the NRC to better serve sponsors and the nation. Too often sponsors are approached from different units within the NRC to support similar work. Sponsors also worry that work performed on the same topic by different units is done in isolation and sometimes are unsure about which group they should contact to do crosscutting analyses.

The NRC Senior Management Team and the three Presidents should work together to determine how their individual efforts can be leveraged more effectively through the

development of more coordinated approaches to sponsors. In some instances a senior contact person should be designated so that agency managers know who is responsible for coordinating work in a particular area. Meetings between the Presidents and major sponsoring agency heads have yielded good ideas for future work, and follow-through is essential for maintaining the momentum created. The importance of hearing directly from the sponsors about concerns and future programmatic directions should be underscored. Ongoing communication should be sustained and linked to strategic planning activities.

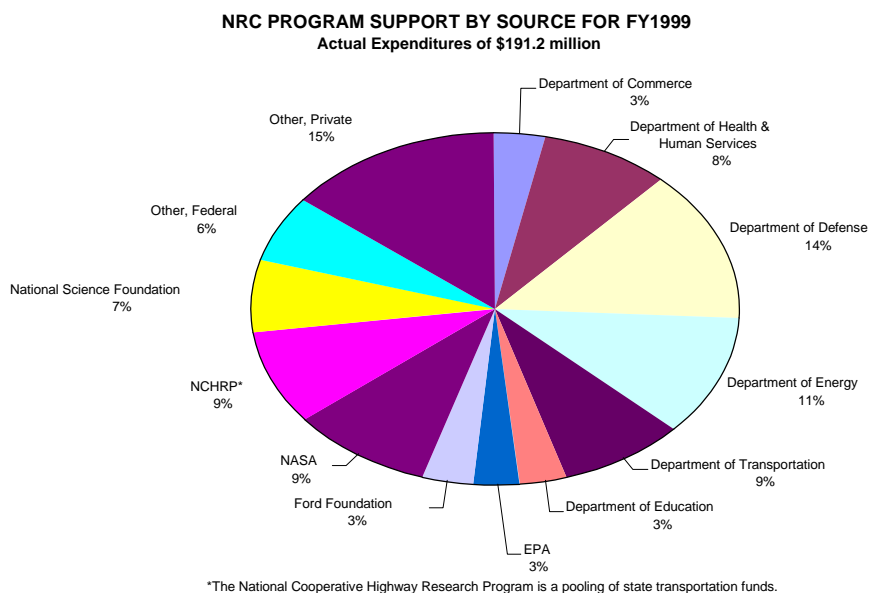
Steady, regular contact with sponsors at all levels is imperative. Agencies should not be surprised to discover that a report will not be delivered when promised or that a report they commissioned fails to meet their needs. In conjunction with project management training, staff should learn to provide effective stewardship of contracts and keep agency sponsors apprised of project status. This can be accomplished without jeopardizing the independence that the NRC must maintain during the study process. Staff should explain to sponsors how the NRC operates and the role sponsors play in the study process. The NRC should consider developing a booklet specifically for sponsors to provide this information. Staff also should solicit systematic feedback from sponsors on their satisfaction with the work performed and areas for further exploration.

The Task Force discussed the challenge of developing broader recognition of the overall NRC program, while also enabling individual units to receive acknowledgment for their products and strengthen connections within their communities. The group reached the consensus that it was important to establish a common identity for all activities that adhere to the procedures of the NRC. The Task Force therefore recommends that the cover of all reports carry the designation “National Research Council” in addition to the name of the individual unit, a practice that the Task Force believes will highlight the NRC’s unique capacity for bringing together experts from all fields of science, engineering, and medicine and for calling on the combined resources of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

There have been a variety of suggestions for broadening the work of the NRC, including expansion to serve more state and international policymakers. Both of these levels of government are growing in importance, and issues involving science, technology, and health are increasingly on state and international agendas. The Task Force believes that there may be opportunities at the state level for new initiatives in certain areas such as health policy or education, but it would take considerable investment and ongoing support to develop such an effort. It may be equally productive to look for opportunities to inform state policymakers through dissemination of NRC studies and to involve them in convening activities. International scientific, technical, and health issues are likely to increase in importance in the coming years. Bruce Alberts’ vision and leadership in building international partnerships already is positioning the NRC to have an important impact globally. In addition to this major initiative, the ongoing work of the NRC is likely to have increasingly global dimensions. Effectively combining the issue and disciplinary expertise resident in the various NRC Divisions with staff and volunteers

engaged in international activities will be critical for responding to the growing international dimension of science, technology, and health topics.

The Task Force concluded that while the sponsor base for the NRC has remained relatively constant over the years, the audience for NRC products has expanded greatly and is likely to continue to increase (see chart below for current sponsor support). In addition, the number of congressionally mandated NRC studies has increased significantly in recent years. These trends create both opportunities and challenges for the NRC. The broader exposure of NRC products increases the institution’s potential to have a major, positive, and widely recognized impact on people’s lives worldwide—a goal expressed by the NRC’s leadership. Yet sponsors are generally reluctant to provide adequate dissemination resources to undertake broader public outreach. Also, as the NRC moves to a more aggressive communications stance, the organization needs to explore the consequences for its relationships with sponsors. For example, sponsors should be informed of study results sufficiently in advance to be prepared to handle the resulting publicity and respond to recommendations.



Dissemination

Improving dissemination, like improving program development, needs to occur at all levels within the NRC. An internal report of the IOM Committee on Dissemination and Impact offers recommendations for enhancing staff skills, involving committee members, and committing resources for dissemination that have applicability across the NRC. Staff should evaluate the particular audience, type of product, and level of dissemination appropriate for each activity at the beginning of a project, and dissemination should be incorporated into initial project planning. For those activities that may have major policy implications or broad public interest, the NRC should make institutional investments and

use external expertise where required for expanding outreach. A variety of mechanisms for dissemination should be exploited, including presentations at professional meetings, agency and congressional briefings and testimony, and popular versions of reports. To enhance dissemination will require the availability of staff to support dissemination activities after a project is completed, as well as balancing dissemination efforts with initiating work on new projects. Evaluating the impact of NRC work is difficult to accomplish, but the Division Committees should assess the effectiveness of dissemination activities as part of their review of Division programs and the work of individual Boards.

Dissemination activities should reflect the primary objective of the NRC's work: to have a positive influence on public policy and to increase public awareness of scientific, technical, and medical issues. The National Academies' leadership has begun a major effort to create an institutional communications strategy for enhancing public outreach. The proposed activity will involve senior communications staff from several units, including the Office of News and Public Information, the National Academy Press, and Information Technology Services. Areas of focus include expanding publishing and public engagement with science and engineering through increasing use of the World Wide Web and community outreach. The Task Force agrees that effective communication deserves priority attention and concurs that exploiting information technology to achieve broader dissemination is important throughout the NRC. Engaging staff with programmatic line responsibility, as well as communications managers, in this endeavor should help to ensure that all units within the NRC benefit from this effort to enhance communication and outreach.

CHAPTER IV

LOOKING TO THE FUTURE

The Task Force spent more than one year conducting its review. The group heard from the NRC leadership; staff working in a variety of positions within different units throughout the institution; Congress and sponsors from multiple agencies and foundations; the Governing Board and the Councils of the NAS, NAE, and IOM; and more than 550 pro bono participants in NRC programs who responded to the Task Force's questionnaire. Deliberations were based on the information gathered from these multiple stakeholders, data about the operations of the NRC, and the expertise of the Task Force members. The Task Force interacted extensively through meetings, conference calls, and e-mail to reach its conclusions and to develop its recommendations.

The Task Force believes that what it has presented is an integrated package of recommendations designed to reinforce the core attributes of the NRC, while providing guidance for positioning the organization to meet the challenges of the future. The Task Force recognizes that to implement some of its recommendations requires further analysis and consultation with stakeholders. Although fully achieving the desired results will take time, it is urgent to begin taking action immediately. The reorganization of major units, already under way, is an important component of what must be done, but the Task Force emphasizes again that creating the six new Divisions is not sufficient to achieve the desired goals. Thus the Task Force requests that the Governing Board review what actions have been taken one year from receipt of this report to assess how rapidly implementation is proceeding and what adjustments should be made.

Several related initiatives are under way at the National Academies that should have a positive influence on the institution's ability to realize the Task Force recommendations. A new building for the NRC is under construction that will bring together all program staff in a single facility. In addition, the building is designed to promote more collegial interaction and to create an atmosphere in which staff can easily work together. It also should provide an opportunity to locate Division staff together and to co-locate groups that collaborate routinely. The Capital Campaign for the National Academies is scheduled for launch in November 2000. Although the implementation of the Task Force recommendations is not dependent on meeting specific fundraising goals, a successful campaign will contribute more discretionary resources for supporting important programmatic initiatives and for fulfilling many of the objectives outlined in this report.

Strengthening connections among the many NRC stakeholders is central to the organization's future success. Actions should be taken to improve internal communication horizontally among Boards and Divisions and vertically between senior management and staff at all levels. External connections to sponsors and the public similarly should be reinforced. Enhancing these ties should facilitate important intellectual linkages among the multiple disciplines involved in the activities of the NRC

and ensure that work produced by NRC committees meets national needs for advice involving science, engineering, and medicine.

The Task Force believes that if the NRC builds those strong connections and implements the operational changes described in this report, it will have the capacity to achieve many important goals. These include the ability to:

- Establish accountability for staff and volunteers;
- Operate efficiently and reduce overhead costs;
- Respond to sponsors with a range of products in a timely way;
- Engage in strategic program development that serves national needs;
- Address important multidisciplinary issues facing the world;
- Increase the NRC's positive impact on public policy and enhance public awareness;
- Attract and retain the best possible staff; and
- Expand the number and diversity of pro bono participants.

As the Task Force deliberated, a vision of the kind of organization the NRC might be in the future emerged. The Task Force concluded that the 21st-century NRC will have the attributes identified below:

- Perpetuation of the unique features of independence, high quality, objectivity, and reliance on pro bono expertise;
- Streamlined organization with shared values and common practices;
- A collegial environment in which collaboration is routine;
- Strong management based on strategic objectives and accountability keyed to performance metrics;
- A more engaged Governing Board with an enhanced capacity to provide direction for NRC programs and policies;
- Core career staff with institutional commitment and ongoing training and professional development;
- Committed pro bono participants whose expertise is effectively used; and
- Recognition as an organization in which staff and volunteers enjoy doing rewarding work.

APPENDIX A

TASK FORCE CHARGE

Adopted by the Governing Board, August 8, 1998

Revised September 9, 1998

We can expect that both the demands on and the opportunities of the Academy Complex for advice and leadership on both national and global issues will increase substantially as we enter the 21st century. Recognizing that our overall goal is to make a major, positive, widely recognized impact on people's lives, worldwide, we wish to examine what can be done to make our organization more effective and efficient, more economical and timely, more agile and flexible, and more accessible in responding to the many demands that are placed upon us—while maintaining the highest quality and objectivity of our products.

In order to examine these issues, the Governing Board has created the Task Force on the Organization of the NRC. During a 12 to 18 month review process overseen by the Governing Board and in consultation with the members of the NAS, NAE, and IOM, the Task Force will seek to determine if particular changes in the current structure and procedures of the NRC could make it:

—more flexible, efficient, cost-effective and timely in dealing with an increasingly broad range of multidisciplinary issues while ensuring appropriate oversight and quality,

—better able to maintain continuous interaction and effective communication with our clients, peers, and the public and to offer them a broader spectrum of products,

—better able to communicate with and to utilize more effectively Academy members and NRC volunteers,

—better able to attract and retain the very best staff and to maximize the time that they spend on truly productive work,

—better able to have strengthened relations with the executive and legislative branches of the federal government, so that the NRC continues to be the primary source for science and technology advice while maintaining its unique capabilities,

—better able to work collaboratively with other organizations,

—better able to develop activities with a broader range of sponsors and audiences (e.g., states, industry, multinational organizations, legal community, etc.), and

—better able to monitor our successes and our failures to create a continuously learning and improving organization.

APPENDIX B

ANALYSIS OF RESPONSES TO NRC PARTICIPANT QUESTIONNAIRE

The Task Force on NRC Goals and Operations mailed a survey questionnaire on January 3, 2000, to 1,487 persons who had served as NRC volunteers in 1998 and 1999. The NRC Participant Questionnaire, provided as an attachment to this analysis, requested input on nine aspects of NRC operations and structure. Five hundred and fifty-five volunteers, 37% of those who received the questionnaire, responded. In addition to answering the multiple-choice questions, respondents made a combined total of 2,438 narrative comments or suggestions.

This staff analysis is organized into four sections. The first section includes a table that summarizes the multiple-choice responses and a brief narrative summary of the overall survey results. The second section provides a detailed reporting of all responses. It includes charts of the multiple-choice responses and a summary of the narrative responses, grouped into 83 categories that were identified by five or more respondents. The language used to describe the categories of responses is the same as or as close as possible to the language used by the respondents. An average of 25 respondents expressed the same or a similar comment for each category. The third section provides a listing of nine broad categories in which respondents commented on the same topic under multiple questions. This section shows the total number of responses for those topics, eliminating duplicates.

Included in the 2,438 narrative responses are 382 other comments or suggestions that did not fit into the 83 categories. Most comments were offered by only one respondent. The fourth and final section of this analysis documents those 382 comments, grouping them under six broad topic areas that correspond to the main subject areas of the survey questions.

The survey questionnaire is shown in the attachment.

It is important to consider the multiple-choice responses and the narrative responses together. The responses to the multiple-choice questions affirm the NRC's reputation for excellence. However, the narrative comments point out specific areas for improvement and serve as reminders that the institution needs to keep striving to maintain that excellence. For example, in the first multiple-choice question, 92% of respondents indicated they are either satisfied or very satisfied with NRC quality. However, in the narrative portion of the same question about quality, 569 comments or suggestions were provided, of which approximately two-thirds suggested areas for improvement.

Section I. Highlights of Responses to NRC Participant Questionnaire

Multiple-Choice Question Responses

The following summary highlights the responses to the multiple-choice questions posed in the NRC Participant Questionnaire (see attachment). Complete details on multiple-choice responses are shown with each question under Section II. The percentages are based on the number of respondents to that question. For example, 92% means that 510 out of a total of 525 respondents selected either “satisfied” or “very satisfied.”

- 92% are satisfied or very satisfied with the quality of NRC work. 4% are not satisfied.
- 81% are satisfied or very satisfied with the impact of NRC work. 14% are not satisfied.
- 92% think the mix of volunteers is adequately or well balanced. 5% think it is not balanced.
- 85% think the volunteer group(s) functioned satisfactorily or very well. 4% think the group(s) did poorly.
- 63% think the NRC structure is helpful or essential. 25% find it neutral. 12% find it a clear impediment or variable.
- 87% would serve again. 4% would not serve again. 9% are willing to serve again depending upon conditions.

Highlights of Narrative Responses

The total narrative supplied by all respondents includes approximately 2,400 comments. Within those 2,400 comments, many individuals expressed the same or nearly the same thoughts. Approximately 600 comments are complimentary of NRC operations but approximately 1,800 comments (75% of the total) are critical and/or suggest improvements.

This summary cites the numbers of respondents for each of the categories of response described below. In cases where an individual provided the same response more than one time (as shown in detail in Section III), redundancy was deleted.

Feelings of ownership and loyalty among volunteers

Survey responses convey a broad and deep sense of volunteers’ personal commitment and pride in the NRC. When asked if they would be willing to serve again in the future, many do not just say “yes.” Many say “Of course,” “Sure!,” or “Certainly.” They are also apt to follow such a response by expressing comments such as pride in serving or stating that the NRC provides the best advice of its kind in the nation and that NRC service is a professional opportunity unmatched by other institutions. Nevertheless, such reactions often come at the end of two pages of notes about how the NRC needs to improve its operations.

High marks for the staff

Under factors that are most helpful to the NRC experience, 217 respondents say that the NRC staff is good to superb, more than nine times the magnitude of the average response for other subtopics. This positive response on staff is more than three times greater than the one citing committee membership as a helpful factor. 267 respondents comment on high quality staff in response to at least one question.

Conversely, under factors that hindered NRC efforts, 39 respondents cited uneven or unsatisfactory staff performance, or 18% of the number that described staff performance in positive terms. 50 respondents express this opinion at least once in the questionnaire.

Main issues for improving quality

Across all questions, 107 respondents noted various aspects of project management that can be improved.

Other major categories include streamlining key aspects of project groundwork to facilitate a fast committee start, a theme that recurs in other questions, and one that 47 respondents cited. 37 think that the primary need is simply to get reports done faster. Another 33 respondents think that report review should be streamlined. Regarding the belief that the NRC should concentrate on doing only “important” projects, 36 respondents think it is an issue and most of them attribute it to the need for protecting staff jobs. 31 respondents say it is important to communicate volunteer responsibilities in advance, possibly even before membership is accepted.

Suggestions for improving the impact of NRC work

The volunteers express only relatively broad suggestions for improving impact. Developing greater expectations, increasing planning with sponsors, and doing more post-project assessments and gathering feedback are the primary messages from 60 respondents. In addition, some respondents say that more funding is needed for dissemination, along with using more outside professional help in publishing and science writing and more outreach to professional societies, libraries, etc.

Key factors that helped NRC activity

In addition to staff and committee membership that were the most frequently cited helpful factors, as noted above, 25 respondents credit the study chair’s leadership.

Key factors that hindered NRC activity

Under this question in particular, 91 respondents suggest improvement is needed in project management. 39 respondents cite inappropriate or uneven staff performance as a hindering factor. 38 respondents cite their own volunteer colleagues as being inappropriate members and/or for inadequate performance. 15 respondents report various problems with sponsors. 18 respondents note marginal leadership by the chair. 34 respondents complain of NRC slowness, including the review process. 30 respondents say that the very limited time available to members is a negative factor.

Roles and responsibilities

The most frequent comment in response to this subject is the need to carefully select the study chair, which was stated by 39 respondents. 29 respondents state that it is important to select members carefully, to get members who will provide balanced participation in the project and do the work as well as have the appropriate expertise. Once again, 24 respondents say the key to clarifying roles and responsibilities is careful planning and communication up front.

Expansion of participation

82 respondents agree that increasing diversity among members is important and say the NRC needs to set higher expectations and broader outreach for nominations. 38 respondents suggest establishing a database of members of the NAS/NAE/IOM, NRC volunteers, members of professional organizations, and others. But 59 respondents say membership is relatively diverse and another 37 advise against compromising expertise to achieve diversity goals.

Structure and processes of the NRC

58 respondents use strong language to express criticism of NRC structure (“arcane, bureaucratic, slow, obstructionist,” etc.). Across all questions, a combined number of 77 respondents express this opinion. However, 41 respondents say it works adequately or well. 37 respondents say the review process must be maintained, but streamlined. The staff scores well again, with 27 respondents volunteering that the staff are helpful and perform satisfactorily or better, while 5 stated that staff performance is uneven or worse.

Suggestions for enhancing crosscutting activities

This question received the lowest number of comments and suggestions. The average number of comments expressed in response to the other parts of the survey, 270, is greater by five to one than the number of comments expressed on this subject. The number of points expressed on the question about NRC quality is greater by nearly 11 to one. This very low response may indicate simply that the problem is very difficult. Suggestions include the possibility of improvement through appropriate committee selection, appropriate selection of study topics, facilitating better communication among committees and units, and changing from a structure that fosters competition.

Suggestions about staffing and administrative and technology support to make better use of volunteers’ time and expertise

Respondents who commented on this subject again cited positive staff performance. Those who said staff performance is good outnumbered respondents who said that it is very mixed by almost three to one, 46 to 13. 38 state that support was adequate or better but 54 ask for improved technology and/or better use of technology. 13 remind the NRC it does not pay them and suggests that more efficient and/or liberal travel support would be appreciated.

Ranking the main subject areas in order of volume of response

The number of responses below represents the total number of comments and suggestions for each main topic by all respondents.

THRUST OF QUESTION	NO. OF RESPONSES
1. Suggestions for improving quality	569
2. Suggestions for expanding NRC participation	363
3. Factors that hindered NRC service	327
4. Factors most helpful to NRC service	321
5. NRC components that should be changed or maintained	289
6. Suggestions on staffing and administrative/technology support	255
7. Suggestions for improving impact of NRC studies	164
8. Suggestions for clarifying roles	106
9. Suggestions for improving ability to do crosscutting work	44
Total	2,438

Section II. Details of Responses To NRC Participant Questionnaire

This section focuses on the nine survey topics that seek narrative response. More than 2,400 comments or suggestions were submitted that have been reduced to 83 categories of responses, where five or more respondents made similar statements. An average of 25 respondents expressed the same or similar comments for the 83 categories. All categories are summarized using terminology that is intended to be broad enough to encompass the thoughts expressed by the groups of respondents and as inclusive of their language as possible. All comments or suggestions that were stated by less than five respondents are aggregated at the end of each question as “other,” of which there are 382. The topics are presented in Section IV.

Each broad area of comment or suggestion is reported as shown by the following example:

Committee membership and performance were good to excellent. 62

In this example, 62 respondents expressed this same or a similar comment.

In many cases, the same or similar comments or suggestions were received in response to two or more questions and all instances are shown in this section. The most significant occurrences of multiple response are shown in Section III.

The following describes the respondents’ membership and type of volunteer service:

Member Type

Total Responses=555

NAS/NAE/IOM	169	30%
NRC	141	25%
Anonymous	245	44%

Please identify on which of the following you have served:

Total Responses=1,235 (Respondents could make multiple selections)

Ad hoc study committee	415	34%
Board	224	18%
Commission	68	6%
Other	256	21%
Roundtable	51	4%
Standing committee	221	18%

Question 1:

How satisfied are you with the quality of the NRC/IOM products that resulted from your involvement?

There were 525 responses to this question. Of those, the breakdown is as follows:

Very satisfied	320	61%
Satisfied	164	31%
Not satisfied	20	4%
Variable	21	4%

What suggestions do you have for improving the quality of NRC work?

There were 569 responses to this question. Of those, the highlights are as follows:

- A. General comments on quality
 - 1. NRC studies are good to excellent. (These narrative comments are in addition to the multiple-choice responses on the subject of quality.) 62
 - 2. NRC reports are so sanitized by the NRC's consensus process and procedures that utility, quality, and creativity are diminished. 6
 - 3. Protect the NRC's authority for expert, unbiased work. Zealously avoid political pressure and pleasing certain groups. 7
- B. Program development
 - 1. Do fewer and/or really important programs, appropriately and clearly focused, possibly less driven by staff security. 36
 - 2. Obtain adequate funding or increase endowment, especially for staff support, collaborative efforts, or more committee meetings. 14
 - 3. Increase the number of NRC originated and funded studies. 7
 - 4. Make the NRC leaner, its costs and overhead are too high, leaving too little support for committee activities and opportunities for new studies. 6
- C. Management and policies
 - 1. Structure, policies, and process are conservative, cumbersome, and turf-conscious. 14
 - 2. Enhance senior NRC management. There is a sense that it does not Adequately connect with program activity, or provide enough guidance to study directors, or practice accountability, or provide enough help to overcome project obstacles with sponsors. 8
- D. Facilitation of staff work
 - 1. Staffing is critical. Find ways to maintain and enhance quality. 38
 - 3. Have project staff who are knowledgeable of the topic and/or trained in science or technology. 10
 - 3. Reduce staff turnover and assignment changes during studies, increase hard money support for staff. 9
 - 4. Move staff among units to address program priorities. Some staff are too comfortable in long-standing roles. 5
 - 5. Increase the numbers of staff. The NRC should also consider greater use of consultants or borrowed personnel from universities or research organizations. 5
- E. Project management and timeliness
 - 1. Streamline and plan carefully critical groundwork, especially including communication with sponsor, tying down funding, clarifying charge and scope of project, collecting and organizing background material, and making tentative decisions on roles and assignments. 47
 - 2. Get reports done faster, don't shrug off delays. 37
 - 3. Streamline report review, limit impact of report review on committee's conclusions, and accelerate the time to publication. 33
 - 4. Communicate member responsibilities in advance, get a commitment to work before membership is accepted. 31
 - 5. Enhance communication among members, among program units, among chairs of related studies, and between committees and sponsors. 15
 - 6. Avoid rush that compromises quality. Some committees need to meet more often. 12

7. Increase vigor, depth of assessment, sense of purpose and urgency and commitment to budget, and avoid last minute actions.	10
8. Facilitate input from all members and improve leadership of occasionally verbose, dilatory, dominating members. Evaluate and track member performance, and establish way to remove members who do not attend meetings or contribute.	10
9. Reduce the number of dog and pony shows and other outside presentations and provide more time for dialogue on the issues.	10
10. Plan adequately to use outside specialists and hands-on experts to obtain, review and provide literature and data.	10
11. Keep sponsors informed and involved, while maintaining independence, and urge sponsors to provide effective, timely, relevant presentations and information. <u>Informal contacts often work best.</u>	<u>6</u>
 Total responses for all categories	 448
Total for all "other" responses, reported in Section IV	<u>121</u>
Combined total responses for "Quality"	569

How satisfied are you with the impact your work had?

There were 488 responses to this question. Of those, the breakdown is as follows:

Very satisfied	125	26%
Satisfied	272	56%
Not satisfied	66	14%
Variable	25	5%

What suggestions do you have for enhancing the impact of NRC work?

There were 164 responses to this question. Of those, the highlights are as follows:

A. Strategy, steps and factors for better impact	
1. Develop greater expectations; increase planning by with sponsors from the beginning, do follow-up after each study, provide feedback to members.	60
2. Disseminate more widely, consider steps such as using a commercial publisher and/or PR firm, use more professional writers, work through professional societies for journal articles and/or regular columns, use libraries, get better press, reach the public.	23
3. Conduct face-to-face briefings with sponsors and/or Congress, preferably by members.	18
4. Consider that impact depends heavily on topic, sponsor, congress, politics, society, etc., factors largely outside NRC control.	18
5. Obtain/provide/reallocate adequate funding, possibly reduce publication cost to increase dissemination.	10
6. <u>Consider that impact depends heavily on timeliness and quality.</u>	<u>9</u>
 Total responses for all categories	 138
Total for all "other" responses, reported in Section IV	<u>26</u>
Combined total responses for "Impact"	164

Question 2:

What were the key factors that helped or hindered your efforts?

Key factors that helped

There were 321 responses to this question. Of those, the highlights are as follows:

- A. Human resources
 - 1. Staff performance is good to excellent 217
 - 2. Membership and performance were good to excellent. 62
 - 3. Leadership by chair is good to excellent. 25
- B. Operational issues
 - 1. Review process and NRC management and support. 17

Total for “factors that helped” 321

“Other” responses on factors that helped are distributed among the other questions, according to the appropriate subject of those questions, and reported under Section IV.

Key factors that hindered

There were 327 responses to this question. Of those, the highlights are as follows:

- A. Human resources
 - 1. Inadequate or inappropriate, uneven staff performance. 39
 - 2. Inadequate committee selection, attendance, personality issues, personal agendas, and/or uneven performance. 38
 - 3. Limited availability of time of members. 30
 - 4. Inadequate or uneven leadership by chair. 18
 - 5. Staff turnover or changes in staff assignments. 16
 - 6. Overloaded staff 10
 - 7. Travel time. 7
- B. NRC rules and process
 - 1. The review process, time to publication, and other slowness/ lateness. 34
 - 2. Complex, overlapping, bureaucratic process and organization. 16
 - 3. Difficulty of NRC consensus process. 13
- C. Project management
 - 1. Inadequate planning, use of milestones, meeting preparation, meeting follow-up, involvement of issues too late in the process, and unrealistic schedules. 37
 - 2. Inadequate timeliness of proposal/approval/funding/defining the charge/ realistic goal setting/meeting assignments/time for feedback to review. 29
 - 3. Inadequate support for writing and editing. Projects should use a professional writer or more staff who are good writers. 25
- D. Sponsor relationships
 - 1. Undue influence, footdragging, inadequate cooperation, manipulation of charge/task, use of study results for show only. 15

Total for “factors that hindered” 327

“Other” responses on factors that hindered are distributed among the other questions, according to the appropriate subject of those questions, and reported under Section IV.

Question 3

Did you find the mix of people in the activity in which you participated to be:

There were 523 responses to this question. Of those, the breakdown is as follows:

Well balanced	349	67%
Adequate	134	26%
Not balanced	26	5%
Variable	14	3%

How well did the committee or other group in which you participated function?

There were 513 responses to this question. Of those, the breakdown is as follows:

Very well	285	56%
Satisfactorily	152	30%
Poorly	19	4%
Variable	57	11%

What suggestions do you have for clarifying participants' roles and responsibilities?

There were 106 responses to this question. Of those, the highlights are as follows:

- A. Assessment
 - 1. These factors were generally well understood. 14
- B. Leadership
 - 1. Select chair carefully, with emphasis on proven energetic leadership, expertise, knowledge of NRC, and time commitment. 39
 - 2. Select members who will work, not just talk, put more effort into subgroups, facilitate broader discussion/participation. 29
 - 3. Provide explicit direction and assignments, expectations, schedules early in the process and then follow-up. 24

Total for "clarifying roles" 106

"Other" responses on clarifying roles are combined with those for expanding participation, below, and are reported in Section IV.

What suggestions do you have for expanding participation, especially among people earlier in their careers, women, and minorities?

There were 284 responses to this question. Of those, the highlights are as follows:

- A. Assessment
 - 1. Membership is relatively diverse and well balanced. 59
 - 2. Panels are overweighed toward academia. 18
 - 3. There are too many members who are relatively late in their careers. 5
- B. Steps for expanding participants
 - 1. Establish greater expectations, be more proactive, make the process more open, promote wider discussion, and give chairs and other experts a wider role, rely less on big names and old boy/immediate networks, and same old people. 82
 - 2. Build a database and get input from appropriate organizations, including professional societies, NAS/NAE/IOM, NRC/OSEP, NSF, and industry consortiums. 38
 - 3. As appropriate, consider adding one or two minorities and/or females and/or people earlier in careers. 8

C. Factors	
1. Do not compromise expertise to meet diversity goals.	37
2. Finding women and minorities is, in some cases, difficult because of limited availability in fields.	19
3. It may be unfair to ask people earlier in their careers to commit time to the NRC.	11
4. Younger people need mentoring; it should probably be done by chair.	7
Total for “expanding participation”	284
Total for “other” responses, reported under Section IV	79
Total for “clarifying roles”	106
Combined total responses for “clarifying roles” and “expanding participation”	469

Question 4

Did you find the NRC organizational structure to be:

There were 457 responses to this question. Of those, the breakdown is as follows:

Essential	118	26%
Helpful	170	37%
Neutral	115	25%
A clear impediment	25	5%
Variable	29	6%

Can you identify components of the NRC that should be changed or must be maintained?

There were 289 responses to this question. Of those, the highlights are as follows:

A. Assessment	
1. The current structure is ineffective in many ways. (“Bureaucratic, obsessed with process, arcane, slow, complex, obstructionist, fosters competition and stifles cross-unit collaboration, based more on history than logic, overlapping, wasteful, not essential, impossible to comprehend, should be smaller,” etc)	58
2. The current structure may be unknown but it and the key policies work adequately or better.	41
3. The review process is critical and should be maintained or strengthened, but it must be streamlined.	37
4. The participant selection process is critical and must be carefully maintained or strengthened.	11
B. Comment on NRC units and structure	
1. The need for commissions and/or the board-commission relationship is unclear, they add little value, cost too much.	11
2. It is time to reexamine the boards, fewer might be more effective and they should have term limits and not proliferate. Better disciplinary boards are needed to avoid becoming a beltway bandit. Boards should be broadened to renew independence. Boards should avoid those repetitive discussion that add little value, and concentrate on supporting and improving programs.	6
C. Staff	
1. Staff are extremely important and their performance is good to excellent.	27
2. Staff are overloaded.	7
3. Staff turnover is a problem.	7
4. Staff performance is marginal or variable in quality.	5
Total responses for all categories	210
Total for “other” responses, reported under Section IV	79
Combined total for “NRC components”	289

Do you have suggestions for performing activities more effectively that cut across disciplines and NRC/IOM units?

There were 44 responses to this question. Of those, the highlights are as follows:

A. Suggestions and comments	
1. Multidisciplinary, cross-unit work is vital and should be improved through choice of studies, committee selection and facilitating communication among committees and among units.	17
2. <u>The current structure fosters competition and impedes collaboration.</u>	<u>9</u>
Total for all categories of responses	26
Total for “other” responses, reported under Section IV	<u>18</u>
Combined total for “cross cutting work”	44

Question 5:

Do you have suggestions about staffing, administrative and technology support, scheduling, or other NRC processes that would make better use of your time and expertise and help complete activities on time and within budget?

There were 255 responses to this question. Of those, the highlights are as follows:

A. Staffing	
1. Staff are critical and are good to excellent.	46
2. Staff are overloaded in some units.	15
3. Staff performance is mixed. It is sometimes unsatisfactory.	13
4. Staff turnover is a problem.	9
5. NRC must pay to get, retain, recognize best people.	8
B. Administrative and technical support	
1. Administrative and technical support is adequate or better, time was well used.	38
2. Timely, open circulation of drafts/reports/follow-up and use of internet, email, and conference calls should be increased to reduce travel time and make better use of time between meetings.	28
3. Technology support (including the use of different software) and should be improved.	26
4. <u>Since members are volunteers, NRC should reduce restrictions on travel and improve accommodations and reimbursement.</u>	<u>13</u>
Total for all categories of responses	196
Total for all “other” responses, reported under Section IV	<u>59</u>
Combined total for “staffing, admin, and technology support”	255

Question 6

Would you be willing to serve again in the future? If not, why not?

There were 507 responses to this question. Of those, the breakdown is as follows:

Yes	443	87%
No	20	4%
Conditional	44	9%

Section III. Multiple Responses in Key Categories Across Questions

The objective of this section is to provide a summary of the most significant multiple responses in key categories across all questions. Some respondents addressed the same or similar topics, such as staff performance, in responding to two or three questions. Therefore, this section provides the total number of respondents who addressed the nine broad categories below, with redundant responses eliminated. For example, a total of 290 respondents stated that staff performance is good to excellent, as part of their response to three separate survey questions. There were 23 respondents who repeated this statement two or more times. Therefore, the total number of respondents who made this statement is shown as 267.

A. Staff performance is good to excellent.	267
B. Staff performance is marginal or poor.	50
C. Staff turnover is a problem.	31
D. Staff are overloaded.	27
E. Member performance is good to excellent. (Although this statement (E) is not addressed under more than one question, the response is repeated here in the interest of context on this subject.)	61
F. Member performance is marginal or poor.	60
G. Project management should be improved.	107
H. Some NRC components and structure are bureaucratic, cumbersome, slow, or worse.	77
I. Report review is essential but must be streamlined.	90

**Section IV. All “Other” Responses
(Suggestions and Comments Made by Fewer Than Five Respondents)**

The objective of this section is to provide information on the additional comments and suggestions that were stated by less than five respondents and were listed in Section II as "other". Most are specific items stated by a single respondent but, in a few cases, similar comments were consolidated. The subtopics are grouped under the following topics reflecting the main categories in the questionnaire.

<u>TOPIC</u>	<u>NUMBER OF SUBTOPICS</u>	<u>NUMBER OF RESPONSES</u>
A. Quality and Project Management	79	121
B. Dissemination and Impact	26	26
C. Participants’ Roles and Responsibilities–Expanding Participation	57	79
D. NRC Components That Should Be Changed or Maintained	57	79
E. Performance of Multidisciplinary, Crosscutting Studies	17	18
F. Staffing and Administrative–Technology Support	<u>40</u>	<u>59</u>
TOTAL	276	382

Attachment: NRC Participant Questionnaire

Please identify on which of the following you have served: (please check all relevant activities)

- | | |
|---|---|
| <input type="checkbox"/> Commission | <input type="checkbox"/> Ad hoc study committee |
| <input type="checkbox"/> Board | <input type="checkbox"/> Roundtable |
| <input type="checkbox"/> Standing committee | <input type="checkbox"/> Other (e.g. report review, workshop participant) |

If you have participated in multiple activities, please consider them all and note when your comments are specific to a particular activity. Based upon your experience as a participant in NRC/IOM activities:

1. How satisfied are you with the quality of the NRC/IOM products that resulted from your involvement?
a) very satisfied b) satisfied c) not satisfied
How satisfied are you with the impact your work had?
a) very satisfied b) satisfied c) not satisfied

What suggestions do you have for improving the quality and enhancing the impact of NRC work?

2. What were the key factors that helped or hindered your efforts?

3. Did you find the mix of people in the activity in which you participated to be:
a) not balanced b) adequate c) well balanced
How well did the committee or other group in which you participated function?
a) very well b) satisfactorily c) poorly

What suggestions do you have for clarifying participants' roles and responsibilities and for expanding participation, especially among people earlier in their careers, women, and minorities?

4. Did you find the NRC organizational structure to be:
a) essential b) helpful c) neutral d) a clear impediment

Can you identify components of the NRC structure that should be changed or must be maintained? Do you have any suggestions for performing activities more effectively that cut across disciplines and NRC/IOM units?

5. Do you have suggestions about staffing, administrative and technology support, scheduling, or other NRC processes that would make better use of your time and expertise and help complete activities on time and within budget?

6. Would you be willing to serve again in the future? If not, why not?

7. Please provide any additional comments or suggestions that you believe would be useful to the Task Force.

APPENDIX C

SUMMARY OF NRC SPONSOR INTERVIEWS

The Task Force sought comments from a variety of sponsors of NRC work about their level of satisfaction with NRC products and ways the institution might be more responsive to sponsor needs in the future. At its second meeting in October 1999, the Task Force heard from a panel of senior managers from the National Institutes of Health, the Environmental Protection Agency, the House Science Committee, and the American Association of State Highway and Transportation Officials. During December 1999 and January 2000, Task Force members contacted sponsors from a range of government agencies and foundations. Included were officials from the National Science Foundation, the Department of the Army, the National Institutes of Health, the Department of Education, the Office of Science and Technology Policy, the National Aeronautics and Space Administration, the National Institute of Standards and Technology, and the Department of Transportation. In total, Task Force members spoke with more than 30 sponsors. Although comments varied, a number of common themes emerged and are highlighted below.

Quality and Independence of NRC Work

Almost all the sponsors gave the NRC high marks for the quality of its reports. Only a few comments were received concerning studies whose sponsors regarded the study panels as lacking breadth or the data as insufficient to support the study conclusions. Several sponsors suggested that the NRC should expand the pool of volunteers so that the same circle of experts is not always used and fresh points of view are brought into the process. Other ideas included expanding staffing and volunteer options through the use of rotations, fellowships, and paid appointments to bring in the best people to work on projects.

The stature, independence, and neutrality of the NRC were extremely important to sponsors, who rely on the institution to address controversial issues. They cited the importance of the NRC being able to establish consensus on topics that can serve as the basis for federal policymaking, budget decisions, and program directions. They specifically commented that the NRC's work has been very helpful in leveraging changes to programs and budgets, addressing highly charged issues, dealing with legislative requests, and educating staff on important issues. Sponsors also cited as valuable the NRC's ability to mobilize expertise on a very broad range of issues.

Timeliness and Cost of NRC Products

Sponsors were almost unanimous in citing timeliness as a major problem for the NRC. Sponsors emphasized that the accelerated pace of issues and agendas in government and the timetables imposed by the federal budget process necessitate improvement in delivering advice in a timely way. They commented that they often had to make

decisions before an NRC report was completed and available. Some sponsors viewed “fast-track” reports as a positive step, but others expressed concerns about the impact on quality and the growing pressure from Congress to produce reports quickly on highly controversial subjects for which inadequate data exist. In addition to improving the speed with which reports can be delivered, sponsors suggested that the NRC should try to find ways to provide interim briefings that would maintain the needed independence while getting useful information to sponsors more quickly. Sponsors also noted that it took too long to publish the proceedings of workshops and symposia.

A number of sponsors commented on the high cost of NRC studies, although many considered the cost “worth it” for the product received. Several comments were made about the difficulty of providing sustaining funds to support NRC groups between projects and suggested that endowment or appropriated funds might be helpful to address this problem.

Mix of Products

Sponsors confirmed the importance of offering a portfolio of products, including major policy studies, research agendas, evaluations of agency programs, and convening activities. In addition to providing products that will enable the NRC to deliver information more quickly, they suggested that the NRC consider how it can better tailor products to the specific needs of individual sponsors. Other suggestions included preparation of “lay” summaries, briefing materials, reports that focus on the application of research findings, standing advisory groups, and actual research.

Crosscutting Work

Task Force members received several comments about the increasing need to undertake multidisciplinary work and the difficulty of getting the NRC to perform it. They stated that working on cross-disciplinary topics at the NRC can be problematic because of jurisdictional divides among different units and the difficulty in sharing resources and staff across them. Sponsors also suggested that it might be useful to have more activities that engage multiple agencies in areas where there are overlapping needs and programs.

Communicating with Sponsors and Improving Dissemination

Many sponsors noted that they had strong working relationships with relevant staff and the leadership of the NRC, but saw a variety of ways in which communications between the NRC and sponsors might be improved. Several commented that the NRC lacks a good understanding of the issues agencies are currently struggling to address and that more opportunities to interact with NRC senior officials to discuss emerging issues would be helpful. Sponsors suggested small group meetings for bringing together the NRC leadership and senior staff members to discuss future science, technology, and medicine policy agendas with agency staff. Sponsors also desired more information on the range of work the NRC undertakes and activities under way. Other suggestions included

developing symposia to spotlight the latest breakthroughs in different fields to increase agency and congressional staff awareness of these topics.

On the other hand, sponsors disliked being approached by staff whom they characterized as “shopping for ideas” for funding. They recommended that the NRC improve its ongoing interaction with agencies and provide better follow-up to meetings. Sponsors complained that they were not given adequate notice of the release of results of studies to enable them to prepare their response. Some also commented on staff who used the NRC’s requirement for independence as a rationale for not providing regular status reports on projects. They also suggested that dissemination should be improved to make the study results more widely known and that lack of available staff at the end of a project hampers effective dissemination. Some sponsors cautioned, however, that dissemination geared strictly to generating publicity may be counterproductive and may damage opportunities for advancing public policy in certain areas.

APPENDIX D

SUMMARY OF MEETINGS WITH NRC STAFF

The Task Force viewed interaction with NRC staff as a critical component of its data gathering and deliberative process. Task Force members spoke with staff from all parts of the institution to expand their knowledge of NRC operations, understand staff perspectives on issues of concern, and hear staff ideas for improvements. In addition, the Task Force Web site provided an opportunity for staff to submit comments, and the Task Force Director spoke at an all-staff “brown-bag” to provide information on Task Force activities and solicit staff input. During the course of their deliberations, Task Force members had more than 25 individual or small group meetings with staff at various levels in the organization and heard from at least 100 NRC staff about issues they believed warranted attention. At its second meeting, a panel of staff members provided the Task Force with information on conducting different types of NRC activities, including full-length consensus studies, fast-track reports, and workshops.

Throughout the discussions with staff members several common themes emerged. These are highlighted below.

Volunteers

Many staff members commented that it is harder now to obtain time from volunteers because of the increasing pressures of today’s work environment. They saw the reduced availability of volunteers as having an impact on the ability to meet deadlines and on the role of staff. They emphasized that study directors and study chairs need to have a true intellectual partnership for the study process to work effectively. Staff noted that they find it more productive to recruit members of the Academies through the network of Commission and Board members, rather than through the liaison system. Staff suggested that volunteers be given a better orientation on NRC procedures and on the expectations for service. Some staff officers also commented on the need for increased attention to bias and conflict issues, given the many controversial topics addressed by the NRC.

Funding Issues

A consistent concern is the lack of core funding to support effective management and program development. Several suggested that it would be helpful in certain cases to have money available to begin projects prior to a contract being completed. Staff members voiced considerable concern about the pressures caused by rising costs for performing studies. They saw problems created by agreements to perform studies for less funding than is required and by staff working on too many studies simultaneously. Staff advocated reducing indirect costs and equally importantly, allocating indirect funds to support top priorities, including returning some indirect resources to the Boards that generate them.

Staffing

Managers commented that they are reluctant to hire additional staff due to the uncertainty of future funding, resulting in existing staff being overcommitted and unable to deliver products on time. Staff members commented that recruitment and retention of good staff were sometimes difficult because of funding uncertainties, inadequate recognition of staff (especially for their contributions to studies), and the lack of career opportunities. Staff voiced strong support for more training and staff development, especially in areas such as project management, interaction with volunteers, and attendance at professional meetings. They saw a significant need for more mentoring and opportunities for staff to share knowledge and exchange ideas. They noted that having time to take advantage of staff development opportunities was as critical a problem as lack of financial support for such activities. Staff commented that collaboration is difficult in the NRC because of cultural barriers between units and funding-related barriers.

Product Mix

Staff emphasized that having a mix of products was important for responding to agencies. They saw “fast-track” studies as important but difficult to do because of the pressures created on staff and volunteers. In order to perform fast-track studies, adequate staffing and resources are required. Staff suggested that new models for doing short-term activities should be developed. They noted that new audiences might require new approaches and institutional investments, and that dissemination warranted increasing support.

NRC Structure and Management

Staff complained about what they saw as a proliferation of rules, structures, and paperwork to address problems rather than relying on the judgment of staff or holding people accountable. They saw a growth in senior management, which they believe is not sufficiently connected with staff at the working level. While staff favored achieving economies of scale, creation of a minimum set of common practices, and streamlining procedures, they cautioned against excessive standardization or a “one size fits all” approach. They also criticized internal administrative service units for inconsistent support and cited the high cost of information technology services. Other concerns expressed were the shifting of administrative responsibilities to program officers and the lack of integration of different management information systems. A number of staff suggested that the Governing Board should focus on determining the NRC’s future direction rather than approving individual projects. Staff saw the value of Commissions as varying, with many questioning their contribution. Most staff officers stated that they rely primarily on their Boards for expert advice.