



A Program for the Third Decade of the National Academy of Engineering (1983)

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**A PROGRAM
for the
THIRD DECADE
of the
NATIONAL ACADEMY OF ENGINEERING**



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**Washington, D.C.
1983**

**A PROGRAM
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of the
NATIONAL ACADEMY OF ENGINEERING**

The National Academy of Engineering is a private organization established in 1964 to share in the responsibility given the National Academy of Sciences under its charter granted in 1863 to advise the federal government. In collaboration with the NAS, the NAE examines questions of science and technology at the request of the federal government through the National Research Council. The NAE recognizes distinguished engineers, sponsors engineering programs aimed at meeting national needs, and encourages engineering education and research.

Following two decades of growth during which there has been increased national recognition of the central role of technology in maintaining our national welfare, the National Academy of Engineering is seeking to formulate a set of goals and objectives that can enable it to serve the national interest more effectively. This document outlines the goals and objectives of the Academy for its third decade, adopted by its Council on August 8, 1983.

The NAE's goals represent basic purposes of the organization, many of which are specified in its bylaws. Its objectives represent specific programs, projects, and activities to be undertaken to achieve these goals. The goals and objectives have been formulated to serve as a guide for the activities of the Academy during the next decade. As national needs change, it is anticipated that these goals and objectives will also change.

Members of the NAE are encouraged to submit their comments and suggestions on these goals.



**Robert M. White
President**

GOALS AND OBJECTIVES FOR THE THIRD DECADE OF THE NATIONAL ACADEMY OF ENGINEERING

BACKGROUND

The NAE Is Now Reaching Maturity After Its Second Decade.

- o Its membership now exceeds 1,100, and it is in a position to identify its steady-state membership target.
- o It has assumed a more prominent role in the governance of the National Research Council in cooperation with the NAS and collaborates with the NAS in the conduct of certain corporate activities.
- o It has established a modest but important endowment.
- o It now contributes to and participates in a wide range of NRC activities, in addition to those of the Commission on Engineering and Technical Systems.
- o It has revised its governance to provide for a separate Chairman and President.
- o It is now poised to realize its full potential for advancing engineering, providing advice to the federal government through the NRC and ensuring that national policies adequately consider engineering and technological implications.

The Changing Environment.

- o It is now widely acknowledged that technological development is the key to economic growth and industrial competitiveness.
- o Significant changes are occurring in relationships among industry, government, and universities.

- o The interdependence of academia and industry points to a new era of cooperation, especially in science and engineering.
- o Relationships between private industrial corporations are changing to cooperation in research and in fostering continuing education.
- o Relationships between industry and the federal government are slowly moving from an adversarial to a cooperative mode.
- o New attention is being given to the rebuilding of the nation's infrastructure and its industrial capacity and competitiveness. As a result, engineering is rivaling science for the limelight.

The NAE Needs to Reexamine its Goals and Objectives.

- o The original goals and objectives of the NAE are now 20 years old. The needs of the NAE have changed, as have the national and international environments in which the NAE operates.
- o Some original NAE goals have been achieved, others need to be redefined, and new ones need to be established.
- o Agreement on goals and objectives is essential to formulating and executing NAE programs.

Goals Approved by the NAE Council.

- 1.* Recognize outstanding engineers and those who have a record of outstanding technological accomplishment.
- 2.* Advise the federal government, principally through the NRC, on matters of national and international importance that have a significant engineering and technological content.
- 3.* Assess the needs of the nation and the contributions that engineering and technology can make and advance programs to meet these needs.
- 4.* Encourage international collaboration in engineering and technology.
5. Achieve a strengthened NAE identity while maintaining close and cooperative relations with the NAS.
6. Strengthen engineering education and research.
7. Strengthen the engineering community and the national engineering and technological enterprise.
8. Develop the financial strength of the NAE.
9. Ensure that NAE operations are responsive to the needs of the NAE membership and NAE's responsibilities in the Academy complex.

*Paraphrased goals specified in the bylaws.

Goal #1
Recognize Outstanding Engineers
and Engineering Accomplishments

Objectives

- o **Ensure a membership of highest distinction.**
- o **Strengthen mechanisms for identification and selection of members.**
- o **Develop a more active role for members in the NAE election process.**
- o **Recognize the dynamic nature of technological developments and ensure that the NAE membership is broadly representative of changing engineering practices.**

Goal #2
Advise the Federal
Government Principally Through the NRC

Objectives

- o **Take a more active role in the governance of the NRC jointly with the NAS and the Institute of Medicine through participation on the Governing Board of the NRC and its Executive Committee.**
- o **Introduce a system of rotation of NAE representatives to the NRC Governing Board to permit more NAE Council members to participate.**
- o **Ensure adequate representation of NAE members and other engineers on NRC committees and on the Committee on Science, Engineering, and Public Policy (COSEPUP).**
- o **Generate new topics with important engineering content for NRC and COSEPUP study.**

- o Develop a more active role for the NAE President as NRC Vice Chairman in day-to-day NRC affairs.
- o Maintain a roster of NAE members and other experts who are willing to testify on engineering and technological issues before Congress and other groups.
- o Ensure increased NAE Council awareness of NRC and COSEPUP activities by reports on NRC and COSEPUP at NAE Council meetings.
- o Strengthen contacts between NAE and government agencies by visits and other mechanisms.
- o Conduct programs to brief members of the Congress and the Executive Branch and their staffs on technological issues.

Goal #3

Assess the Needs of the Nation and the Contributions That Engineering and Technology Can Make and Advance Programs to Meet These Needs

- o Strengthen the NAE Symposium Program.
- o Strengthen the NAE Roundtable Program.
- o Stimulate COSEPUP and NRC studies on technology and public policy issues. Ensure participation by NAE members.
- o Consider establishment of an NAE Fellowship/ Associates Program for senior and junior scholars, interns, etc.
- o Ensure assessment of critical national issues involving technology and public policy, including analysis of various industrial sectors.

- o Strengthen complementary relations with other engineering organizations to establish a firmer intellectual basis for furtherance of the contributions of the engineering and technological community to the development of public policy.
- o Participate in efforts to educate the public on technical aspects of important national policy issues.
- o Explore establishment of an Industry/University Forum to discuss common issues.
- o When appropriate, act as a spokesman on engineering issues.

Goal #4

Encourage International Collaboration in Engineering

- o Elect foreign associates of great distinction.
- o Encourage the establishment of engineering academies and like organizations in other countries.
- o Become more active in engineering aspects of major international programs and research activities.
- o Encourage international engineering nongovernmental organizations that have goals compatible with those of the NAE.
- o Involve foreign associates in the execution of NAE programs with international dimensions and in the election of outstanding foreign associate candidates to the NAE.
- o Explore international opportunities for involvement in engineering education.

Goal #5 Achieve a Strengthened NAE Identity

- o Strengthen the publication efforts of the NAE to address its broad interests.
- o Improve institutional public relations by use of NRC staff and by establishing a staff focus for public relations.
- o Increase public appearances by the NAE President, its officers, and its members to discuss major national engineering and technological issues.

Goal #6 Strengthen Engineering Education and Research

- o Establish a broadly representative NAE Educational Advisory Board to monitor and assess the health of engineering education and advise the NAE Council and officers on appropriate actions and programs.
- o Identify critical issues in engineering education.
- o Collaborate with professional societies to advance engineering education and research.
- o Maintain active liaison with government agencies and private sector organizations interested in academic engineering programs.
- o Encourage the development of continuing education programs.
- o Stimulate a strong and continuing interaction among the academic, industrial, and government communities.

Goal #7
**Strengthen the National Engineering
and Technological Enterprise**

- o Monitor the health of the national engineering and technological enterprise and identify actions needed to maintain technological leadership.
- o Encourage systematic reviews of the status and opportunities for research and advancement in engineering and technological fields so that such information is available to public and private decision-makers.
- o Establish senior advisory groups of distinguished members as needed, such as an Industrial Advisory Board.

Goal #8
Develop the Financial Strength of the NAE

- o Organize the institutional mechanisms to plan and oversee NAE development activities.
- o Seek increased endowment funds.
- o Seek program funds for specific NAE needs in a manner consistent with other fund-raising activities of the Academy complex.
- o Ensure that the NAE fund is managed in a prudent manner.

Goal #9

Ensure That NAE Operations Are Efficient and Responsive to the Needs of the NAE Membership and NAE's Responsibilities in the Academy Complex

- o **Review and revise committee structure.**
- o **Automate office operations and membership records, to facilitate all NAE purposes.**
- o **Draw upon the professionalism of the NRC staff in public information, budget and finance, and international affairs.**
- o **Revise bylaws to reflect present practices.**
- o **Improve communications with members by holding regional meetings and by other approaches.**
- o **Establish a staff focus for development activities.**
- o **Increase content of, interest in, and attendance at annual meetings.**