U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Focus on Research: Long-Term Research

- The NRC is developing a long-term research plan, which will:
    - o Identify long-term research activities;
    - o Provide the basis for the assessed needs; and
    - o Identify research areas where NRC's resources can be leveraged through cooperation with other organizations.
- Both internal and external stakeholders have been involved in developing the plan:
    - o NRC staff
    - o Advisory committees
    - o Other government agencies
    - o Industry
    - o National laboratories
- Continued stakeholder involvement is key to the success of this effort.
- The plan will be a living document, updated on an annual basis.

Long-term research activities the NRC plans to initiate are:

1. Department of Energy's Global Nuclear Energy Partnership[1]

2. Reactor License Renewal Beyond 60 Years

3. Integrated Effects Test Facilities for Advanced non-Light Water Reactors

4. Multiphase Computational Fluid Dynamics

5. Advanced Modeling Techniques for Level 2/3 Probabilistic Risk Asssessment

6. Advanced Fabrication Techniques

7. Extended In-Situ and Real-Time Inspection and Monitoring Capabilities

8. Offsite Mitigation Strategies

Purpose & Use

The primary purpose of the long-term research plan will be to identify and prioritize long-term research activities to support NRC planning. The plan will also support the development of reports and other communication tools (e.g., brochures, information sheets) addressing specific issues (such as the NRC's research plans for supporting the licensing and regulation of new facilities). The intent is that NRC's plans for future research will be both more cohesive and transparent to both internal and external stakeholders as a result of this process.

Find out more...
For more information about NRC's research activities, go to:
http://www.nrc.gov/about-nrc/regulatory/research.html

- **Regulatory research:** activities aimed at providing the NRC staff with new methods, tools, and information to support regulatory decisionmaking.
- **Long-term regulatory research:** forward-looking regulatory research performed to provide fundamental insights and technical information, or address potential technical issues or identified gaps to support anticipated future (>5 years) NRC needs.

1 Work in this area will be reimbursed by the Department of Energy

Scope and Process

The scope of the long-term research plan is limited to research activities aimed strictly at anticipated future needs which are not currently identified within the agency's planning documents. For example, the current report addresses activities associated with the emergence of new technologies (e.g., advanced sensors) that have not yet been applied in nuclear facilities but could be in coming years. Conversely, the report does not address currently planned research activities, some of which may be long-running, that are relevant to existing or anticipated regulatory concerns. These latter activities, which include research supporting current reactors, new reactors, advanced reactors, nuclear matierals, waste, transportation, and security, are identified in the operating plans of the NRC offices performing the research.
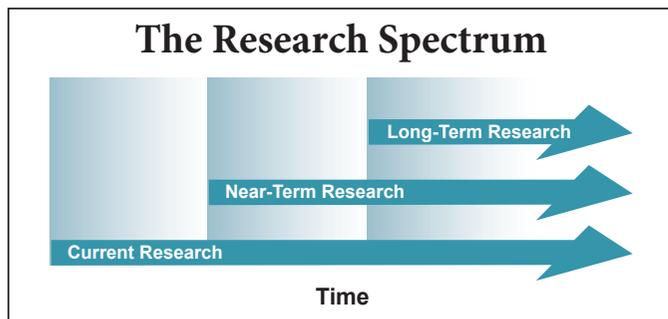
Topic areas considered:

Materials
Reprocessing Spent Nuclear Fuel
I&C and Electrical Systems
Structural and Component Integrity
Non-Destructive Examination
Human Factors
External Hazards
Risk Assessment
Fire Safety
Nuclear Fuels
Thermal-Hydraulics
Nuclear Material / Plant Security
EP & Incident Response
Severe Accidents and Consequences
Radiation Protection
Decision Support
Environmental Assessment and
    Protection

The Research Spectrum

The long-term research activities identified in this report were developed through a variety of means. These means include the solicitation of research ideas from the NRC's staff, the review of existing research plans from both NRC and external organizations, the review of selected reports on NRC research activities and other relevant currently-existing planning tools, and input from advisory committees and external stakeholders.

Annual updates will be performed to reflect changes in the agency's knowledge base and priorities, and in the external environment.

Long-Term Research Report Development