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**The Generation IV Nuclear Energy System Roadmap  
Evaluation Methodology Group**

**Charter - 2/12/01**

The Evaluation Methodology Group (EMG) will develop a process for the systematic evaluation of the comparative performance of proposed Generation IV concepts against established Generation IV Goals. This process will be used for the initial screening of concepts in the summer of 2001, the final screening in May 2002, and the planned down-selection evaluations following the viability and performance R&D phases.

The main responsibilities of the EMG are to:

- Support the Roadmap Integration Team (RIT) in defining the overall evaluation process (schedules, evaluation scope, etc.)
- Develop a methodology for evaluating the performance of candidate concepts against the goals and for prioritizing R&D requirements
- Define the evaluation criteria and metrics employed in the evaluation methodology
- Support the RIT and Technical Working Groups (TWGs) in applying the evaluation methodology during the screening evaluations
- Review the RIT/TWG screening evaluations for proper implementation of the evaluation methodology

The EMG will identify and describe the tools needed to support the concept evaluation and progressive down-selection. The main products of the EMG activity will include:

- Description of the evaluation process indicating how and when the design and performance characteristics of the concepts will be assessed;
- Identification of criteria to be used in the evaluation of the different concepts;
- Definition of metrics that can be used to assess the performance of the concepts against the criteria;
- Definition of a methodology to be applied in evaluating the concepts using the proposed metrics; and
- Identification of the R&D that may be required to further develop and apply the evaluation methodology.

The schedule, the level of information about the concepts, and the desired reduction in the number of concepts at each evaluation stage will dictate the nature of the criteria needed. The EMG will have the primary responsibility for identifying the evaluation criteria, which will be based on the Technical Goals Document to be issued by GRNS and reviewed by the Generation IV International Forum (GIF). Metrics for assessing the performance of the different concepts against the evaluation criteria will also be developed. The rigor of the metrics will be commensurate with the level of design detail available for the concepts, which may be limited in the screening evaluations. The EMG

will interact closely with the TWG crosscut groups to ensure that their input to evaluation criteria and metrics is reflected in the EMG evaluation method.

The EMG will also develop the methodology for evaluating the concepts and prioritizing related R&D. This methodology will address uncertainty in system features and performance, including the uncertainty about the performance of a concept at a particular stage and the assessment of the costs and risks of the R&D needed to reduce this uncertainty.

The EMG will consist of members with a wide span of expertise in technical areas of particular interest for Generation IV, as reflected in the Technology Goals Document.

The schedule for EMG deliverables is as follows:

- Summary of the evaluation process to be implemented for Generation IV nuclear energy systems – March 2001
- Reports on evaluation method, criteria and metrics:
  - Methodology and Criteria/Metrics for initial screening – draft, March 2001; Final, June 2001
  - Methodology and Criteria/Metrics for second screening – January 2002
- Report on evaluation methodology for post-roadmap evaluation steps, including recommended R&D to further the evaluation methodology – Summer 2002