

DOE Materials Strategy  
Request for Information (RFI)



**DATE:** May 6, 2010

**SUBJECT:** Request for Information (RFI)

**DESCRIPTION:** The Department of Energy (DOE) recently announced its intent to develop its first-ever strategic plan for addressing the role of rare earth and other materials in energy technologies and processes. In support of this effort, DOE is seeking information from stakeholders on rare earth elements and other materials used in energy technologies, particularly clean energy components and applications, and energy efficiency technologies. Examples include lanthanum and lithium use in batteries, neodymium use in permanent magnet motors and compact fluorescent light bulbs, gallium and ytterbium use in photovoltaics, as well as the use of these materials in other clean energy applications.

**PURPOSE:** The purpose of this RFI is to solicit feedback from industry, academia, research laboratories, government agencies, and other stakeholders on issues related to the demand, supply, use, and costs of rare earth metals and other materials used in the energy sector. DOE is specifically interested in information on rare earth elements (e.g., lanthanum, cerium, neodymium, terbium, europium, samarium, dysprosium and ytterbium), gallium, lithium, cobalt, indium, tellurium and platinum group metals, as well as other materials of interest identified by the respondents to this request. This is solely a request for information and not a Funding Opportunity Announcement (FOA). DOE is not accepting applications.

**DISCLAIMER AND IMPORTANT NOTES:** This is an RFI issued solely for information and program planning purposes; this RFI does not constitute a formal solicitation for proposals or abstracts. Your response to this notice will be treated as information only. In accordance with FAR 15.201(e), responses to this notice are not offers and cannot be accepted by the Government to form a binding contract. DOE will not provide reimbursement for costs incurred in responding to this RFI. Respondents are advised that DOE is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this RFI. Responses to this RFI do not bind DOE to any further actions related to this topic.

**PROPRIETARY INFORMATION:** Patentable ideas, trade secrets, proprietary or confidential commercial or financial information, may be included in responses to this RFI. The use and disclosure of such data

may be restricted, provided the respondent includes the following legend on the first page of the response narrative and specifies the pages of the response which are to be restricted:

“The data contained in pages \_\_\_\_\_ of this response have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for information and program planning purposes. This restriction does not limit the government’s right to use or disclose data obtained without restriction from any source, including the respondent, consistent with applicable law.”

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend similar to the following:

“The following contains proprietary information that (name of respondent) requests not be released to persons outside the Government, except for purposes of review and evaluation.”

**EVALUATION AND ADMINISTRATION BY FEDERAL AND NON-FEDERAL PERSONNEL:** Government civil servant employees are subject to the non-disclosure obligations of a felony criminal statute, the Trade Secrets Act, 18 USC 1905. The Government may seek the advice of qualified non-Federal personnel. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The respondents, by submitting its response, consent to DOE providing their response to non-Federal parties. Non-Federal parties given access to responses must be subject to an appropriate obligation of confidentiality prior to being given the access. Submissions may be reviewed by support contractors and private consultants.

**REQUEST FOR INFORMATION CATEGORIES:**

**Category 1: Demand**

- For which materials of interest used in energy applications will future US and global demand increase most significantly in the short (<5 years) and longer term?
- What is the forecast demand of each of these materials? Please explain the basis for this forecast, its assumptions, and how it is calculated.
- What portion of the overall demand is for energy applications and how will this change over time?

**Category 2: Supply**

- What are the most significant supply risks for the identified materials of interest? Please also describe any risks due to supply chain fragmentation.
- What are the current investment trends in global sources (including locations) of the materials of interest? Include investment plans and trends at each point in the supply chain (i.e., exploration, mining, separation, refining, alloying, and manufacturing).

- What current or anticipated research and development (R&D) related to mining and extractive processing will benefit supply by contributing to more efficient and environmentally sound extraction of the materials of interest?

### **Category 3: Technology Applications and Processes**

- What are the specific energy technology applications of the materials of interest? Please consider component technologies (such as permanent magnets or batteries), finished products (such as vehicles, wind turbines or PV cells) and other energy related processes (such as oil refining).
- What is the material requirement of these energy technology applications? What is the level of purity required? Please express material requirements in terms of weight percentage per magnet of a given size, content per unit of generation or storage capacity, content per vehicle, weight requirement per industrial process output, or other appropriate metric. Please also provide information on processing losses.
- Describe any areas of innovation, research and development, or alternative techniques or processes that are likely to reduce the material requirements per unit (i.e. per weight, volume, power rating, etc.).
- Based on knowledge of the technologies and potential innovations, what is a feasible range for material requirements per unit (i.e. per weight, volume, power rating, etc.) in 5 years? In 20 years? How do these future material requirements compare to present requirements?
- What is the anticipated US and global market scale up of these energy technology applications in the short (< 5 years) and longer term?

### **Category 4: Costs and Availability**

- What are the price projections of materials of interest and what factors drive the projections?
- To what extent does the cost of the materials of interest influence the cost of energy technology applications (components, finished products or energy related processes)? What percent of the total cost of energy technology applications are attributed to the cost of the identified materials of interest?
- To what extent are uncertainties in materials future prices and/or availability driving technology investment decisions?
- How are the materials of interest typically procured? Is there substantial use of long-term contracting? If so, how are such contracts typically characterized?

### **Category 5: Substitutes**

- What research is required to find substitutes that will have the desired functionality for specific energy technology applications? Please consider both substitutes for the materials themselves and also substitutes for energy technology applications.
- What are the current and potential R&D efforts with respect to substitutes for these materials?

### **Category 6: Recycling**

- What are the best recycling opportunities for the materials of interest? Consider technical, logistical and economic feasibility.
- What are the current and projected levels of recycling?
- What areas of research and development will improve the efficiency and effectiveness of recycling processes?
- What innovations will promote design for recyclability of energy technology applications?

### **Category 7: Intellectual Property**

- To what extent does intellectual property protection constrain firms from entering or expanding into markets related to the identified materials of interest? To what extent do these constraints impact cost or affect innovation?

### **Category 8: Additional Information**

- Is there additional information, not requested above, that you believe DOE should consider in developing a strategic plan? If so, please provide here.

**REQUEST FOR INFORMATION RESPONSE GUIDELINES:** Responses to this RFI must be submitted electronically to [materialstrategy@hq.doe.gov](mailto:materialstrategy@hq.doe.gov) no later than 5:00pm (EDT) on June 7, 2010. Responses must be provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Only electronic responses will be accepted.

Please identify your answers by responding to a specific question or topic if possible. Any information obtained as a result of this RFI is intended to be used by the Government on a non-attribution basis for planning and strategy development. DOE will review and consider all responses in its formulation of program strategies for the identified materials of interest that are the subject of this request.

DOE will not respond to individual submissions or publish publicly a compendium of responses. A response to this RFI will not be viewed as a binding commitment to develop or pursue the project or ideas discussed.

Respondents are requested to provide the following information at the start of their response to this RFI:

Company/Institution name; Company/Institution contact; Contact's address, phone number, and e-mail address.

DOE will not pay for information provided under this Request for Information (RFI). This RFI is not accepting applications for financial assistance or financial incentives. DOE has no obligation to respond to those who submit comments, and/or give any feedback on any decision made based on the responses received.