Decisions regarding annual continuation awards will be based on the program narratives, budgets and budget narratives, and Grant Performance Reports submitted by grantees, and on the regulations in 34 CFR 75.253.

Consistent with 34 CFR 75.253, we would award continuation grants if we determine, based on information provided by each grantee, that each grantee is making substantial progress performing approved National Center grant activities.

We do not interpret these waivers as exempting current grantees from the account closing provisions of Public Law 101–510, or as extending the availability of FY 2000 funds awarded to the grantees. As a result of Public Law 101–510, appropriations available for a limited period may be used for payments of valid obligations for only five years after the expiration of their period of availability for Federal obligation. After that time, the unexpended balance of those funds is canceled and returned to the Treasury Department and is unavailable for restoration for any purpose.

Regulatory Flexibility Act Certification

The Secretary certifies that the proposed extension of project period and waivers and the activities required to support additional years of funding would not have a significant economic impact on a substantial number of small entities.

The small entities that would be affected by this proposed extension of project period and waivers are the two FY 1999 grantees currently receiving Federal funds and the following entities that are eligible for an award under the National Centers authority:

(1) An institution of higher education.

(2) A public or private nonprofit organization or agency.

The proposed extension of project period and waivers would not have a significant economic impact on these entities because the proposed extension of project period and waivers and the activities required to support the additional years of funding would not impose excessive regulatory burdens or require unnecessary Federal supervision. The proposed extension of project period and waivers would impose minimal requirements to ensure the proper expenditure of program funds, including requirements that are standard to continuation awards.

Instructions for Requesting a Continuation Award

Generally, in order to receive a continuation grant, a grantee must submit an annual program narrative that describes the activities it intends to carry out during the year of the continuation award. The activities described must be consistent with, or be a logical extension of, the scope, goals, and objectives of the grantee's application approved under the FY 1999 National Research Centers competition and related cooperative agreements. A grantee must also submit a budget and budget narrative for each year for which it requests a continuation award. (34 CFR 75.253(c)(2)). A grantee should request a continuation award at least 60 days before its current grant expires. A grantee may request a continuation award for any year for which Congress appropriates funds under the current statutory authority.

Amount of New Awards Under Continuation Grant

The actual amount of any continuation award depends on factors such as: (1) The grantee's written statement describing how the funds made available under the continuation award will be used, (2) a cost analysis of the grantee's budget by the Department, and (3) whether the unobligated funds made available are needed to complete activities that are planned for completion in the prior budget period. (34 CFR 75.232 and 75.253(c)(2)(ii) and (3)).

Paperwork Reduction Act of 1995

This notice of proposed extension of project period and waivers does not contain any information collection requirements.

Intergovernmental Review

This program is not subject to Executive Order 12372 and the regulations in 34 CFR part 79.

Assessment of Educational Impact

The Secretary particularly requests comments on whether this proposed extension of project period and waivers would require transmission of information that any other agency or authority of the United States gathers or makes available.

Electronic Access to This Document

You may view this document, as well as all other Department of Education documents published in the **Federal Register**, in text or Adobe Portable Document Format (PDF) on the Internet at the following site: *http://www.ed.gov/news/fedregister.*

To use PDF you must have Adobe Acrobat Reader, which is available free at this site. If you have questions about using PDF, call the U.S. Government Printing Office (GPO), toll free, at 1–888–293–6498; or in the Washington, DC, area at (202) 512–1530.

Note: The official version of this document is the document published in the **Federal Register**. Free Internet access to the official edition of the **Federal Register** and the Code of Federal Regulations is available on GPO Access at: *http://www.gpoaccess.gov/nara/index.html.*

(Catalog of Federal Domestic Assistance Number 84.051 National Research Centers.)

Program Authority: 20 U.S.C. 2324(c)(5) and (6)(A).

Dated: April 21, 2004.

Susan Sclafani,

Assistant Secretary for Vocational and Adult Education.

[FR Doc. 04–9549 Filed 4–26–04; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF ENERGY

Office of Science Financial Assistance Program Notice DE–FG01–04ER04–20; Basic Research for the Hydrogen Fuel Initiative

AGENCY: Department of Energy.

ACTION: Notice inviting grant applications.

SUMMARY: The Office of Basic Energy Sciences (BES) of the Office of Science (SC), U.S. Department of Energy (DOE), in keeping with its energy-related mission to assist in strengthening the Nation's scientific research enterprise through the support of basic science, announces its interest in receiving grant applications for projects on basic research for the Hydrogen Fuel Initiative (HFI). Areas of focus include: Novel Materials for Hydrogen Storage; Membranes for Separation, Purification, and Ion Transport; Design of Catalysts at the Nanoscale; Solar Hydrogen Production; and Bio-Inspired Materials and Processes. More information on these focus areas is provided in the **SUPPLEMENTARY INFORMATION** section below.

DATES: Potential applicants are required to submit a brief preapplication. Preapplications referencing Program Notice DE–FG01–04ER04–20, must be received by DOE by 4:30 pm, Eastern Time, July 15, 2004. Preapplications will be reviewed for conformance with the guidelines presented in this notice and suitability in the technical areas specified in this notice. A response to the preapplications encouraging or discouraging formal applications will be communicated to the applicants within approximately forty-five days of receipt.

Only those preapplicants that receive notification from DOE encouraging a formal application may submit full proposals. No other formal applications will be considered. Formal applications in response to this notice must be received by January 4, 2005.

ADDRESSES: Preapplications referencing Program Notice DE–FG01–04ER04–20 should be sent as PDF file attachments via e-mail to: *hydrogen@science.doe.gov* with ''Notice DE–FG01–04ER04–20'' and the submission category (*e.g.*, Novel Materials for Hydrogen Storage) in the Subject line. No FAX or mail submission of preapplications will be accepted.

Formal applications referencing Program Notice DE–FG01–04ER04–20 must be sent electronically by an authorized institutional business official through DOE's Industry Interactive Procurement System (IIPS) at: *http://e-center.doe.gov*. IIPS provides for the posting of solicitations and receipt of applications in a paperless environment via the Internet. In order to submit applications through IIPS your business official will need to register at the IIPS Web site. IIPS offers the option of using multiple files, please limit submissions to one volume and one file if possible, with a maximum of no more than four PDF files. The Office of Science will include attachments as part of this notice that provide the appropriate forms in PDF fillable format that are to be submitted through IIPS. Color images should be submitted in IIPS as a separate file in PDF format and identified as such. These images should be kept to a minimum due to the limitations of reproducing them. They should be numbered and referred to in the body of the technical scientific grant application as Color image 1, Color image 2, etc. Questions regarding the operation of IIPS may be e-mailed to the IIPS help desk at: *HelpDesk@pr.doe.gov* or you may call the help desk at (800) 683–0751. Further information on the use of IIPS by the Office of Science is available at: *http://www.science.doe.gov/production/grants/grants.html.*

If you are unable to submit an application through IIPS, please contact the Grants and Contracts Division, Office of Science at: (301) 903–5212 or (301) 903–3064, in order to gain assistance for submission through IIPS or to receive special approval and instructions on how to submit printed applications.

FOR FURTHER INFORMATION CONTACT: Harriet Kung, Ph.D., Office of Basic Energy Sciences, Materials Sciences and Engineering Division, SC–131, telephone: (301)903–1330, e-mail: *harriet.kung@science.doe.gov*. The full text of Program Notice DE–FG01–04ER04–20 is available via the Internet using the following Web site address: *http://www.sc.doe.gov/production/grants/grants.html.*

SUPPLEMENTARY INFORMATION: President Bush, in his 2003 State of the Union address, announced a $1.2 billion hydrogen initiative to reverse America's growing dependence on foreign oil and reduce greenhouse gas emissions. DOE Office of Energy Efficiency and Renewable Energy (EERE) coordinates the DOE Hydrogen Program; efforts include R&D of hydrogen production, delivery, storage, and fuel cell technologies; technology validation; safety, codes and standards; and education *http://www.eere.energy.gov/hydrogenandfuelcells/*.

The President's 2005 Budget proposed that fundamental research within DOE Office of Science be enhanced, focused, and included in the HFI. The basic research will help overcome key technology hurdles in hydrogen production, storage, and conversion by seeking revolutionary scientific breakthroughs *http://www.ostp.gov/html/budget/2005/FY05HydrogenFuelInitiative1-pager.pdf*.

In the fall of 2002, the National Academies'' National Research Council appointed a Committee on Alternatives and Strategies for Future Hydrogen Production and Use. While addressing the topic on ''Research and Development Priorities,'' the Committee concludes that ''There are major hurdles on the path to achieving the vision of the hydrogen economy; the path will not be simple or straightforward.'' Specifically, the Academies'' report recommends a shift toward exploratory work, and calls for increased funding in important exploratory research areas with a focus on interdisciplinary scientific approaches *http://www.nap.edu/books/0309091632/html/*.

In May 2003, a workshop was sponsored by BES to identify basic research needs for hydrogen production, storage and use. The workshop report, entitled Basic Research Needs for the Hydrogen Economy *(http://www.science.doe.gov/bes/Hydrogen.pdf),* detailed a broad array of basic research challenges. These challenges depict the vast gap between present-day scientific knowledge/technology capabilities and what would be required for the practical realization of a hydrogen economy. This Notice solicits innovative basic research proposals to establish the scientific basis that underpins the physical, chemical, and biological processes governing the interaction of hydrogen with materials. We seek to support outstanding fundamental research programs to ensure that discoveries and related conceptual breakthroughs from basic research will provide a solid foundation for the innovative design of materials and processes to usher in hydrogen as the clean and sustainable fuel of the future. Five high-priority research directions, encompassing both short-term showstoppers and long-term grand challenges, will be the focus of this solicitation. They are:

1. Novel Materials for Hydrogen Storage.
2. Membranes for Separation, Purification, and Ion Transport.
3. Design of Catalysts at the Nanoscale.
4. Solar Hydrogen Production.
5. Bio-Inspired Materials and Processes.

The following provides further information under each of the five focus areas to illustrate the scope of applications solicited under the Notice.

Novel Materials for Hydrogen Storage

On-board hydrogen storage is considered to be the most challenging aspect for the successful transition to a hydrogen economy, because the performance of current hydrogen storage materials and technologies falls far short of vehicle requirements. A factor of two to three improvement in hydrogen storage capacity and energy density, and considerable improvements in hydrogen uptake and release kinetics and cycling durability are needed to achieve performance targets within the next decade. Improvements in current technologies will not be sufficient to meet the goals. The Hydrogen Storage Grand Challenge solicitation, issued by the DOE Office of Energy Efficiency and Renewable Energy (EERE) in June 2003, aims at addressing these critical performance gaps by supporting innovative R&D efforts in the areas of metal hydrides, chemical hydrides, carbon-based materials, and new materials or technologies (*http://www.eere.energy.gov/hydrogenandfuelcells/2003_storage_solicitation.html*).

As indicated in the BES hydrogen workshop report, basic research is essential for identifying novel materials and processes that can provide important breakthroughs needed to meet the HFI goals. These breakthroughs may result from research at the nanoscale facilitated by new understanding derived from both theory and experiment. The advances may not necessarily come from within the

boundaries of metal hydrides, chemical hydrides or carbon-based materials; instead success may well be found at the interstices of these classes of materials or may come from ''out-of-the-box'' concepts. Innovative basic research in the following high priority areas is needed:

- *Complex hydrides.* A basic understanding of the physical, chemical, and mechanical properties of metal hydrides and chemical hydrides is needed. Specifically, the fundamental factors that control bond strength, atomic processes associated with hydrogen update and release kinetics, the role of surface structure and chemistry in affecting hydrogen-material interactions, hydrogen-promoted mass transport, degradation due to cycling, reversibility in metal hydrides, and regeneration of chemical hydrides must be understood. Specific emphasis is also placed on innovative synthesis and processing routes (*e.g.*, solvent-free synthetic approaches), and on the exploration of multi-component complex hydrides. The effect of dopants in achieving reasonable kinetics and reversibility needs to be understood at the molecular level.
- *Nanostructured materials.* Nanophase materials offer promise for superior hydrogen storage due to short diffusion distances, new phases with better capacity, reduced heats of adsorption/desorption, faster kinetics, and surface states capable of catalyzing hydrogen dissociation. Improved bonding and kinetic properties may permit good reversibility at lower desorption temperatures. Tailored nanostructures based on light metal hydrides, carbon-based nano-materials, and other non-traditional storage approaches need to be explored with the focus on understanding the unique surfaces and interfaces of nanostructured materials and how they affect the energetics, kinetics, and thermodynamics of hydrogen storage.
- *Other materials.* Research is needed to explore other novel storage materials, *e.g.*, those based on nitrides, imides, and other materials that fall outside of metal hydrides, chemical hydrides, and carbon-based hydrogen storage materials as identified by EERE's ''Grand Challenge'' for Basic and Applied Research in Hydrogen Storage Solicitation.
- *Theory, modeling, and simulation.* Theory, modeling, and simulation will enable (1) understanding the physics and chemistry of hydrogen interactions at the appropriate size scale and (2) the ability to simulate, predict, and design materials performance in service. Examples of research areas include: hydrogen interactions with surface and bulk microstructures, hydrogen bonding, role of nanoscale, surface interactions, multiscale hydrogen interactions, and functionalized nanocarbons. The emphasis will be to establish the fundamental understanding of hydrogen-materials interactions so that completely new and revolutionary hydrogen storage media can be identified and designed.
- *Novel analytical and characterization tools.* Sophisticated analytical techniques are needed to meet the high sensitivity requirements associated with characterizing hydrogen-materials interactions, especially for nanostructured materials (*e.g.*, individual carbon nanotubes), while maintaining high specificity in characterization. In-situ studies are needed to characterize site-specific hydrogen adsorption and release processes at the molecular level.

Membranes for Separation, Purification, and Ion Transport

Membranes that selectively transport atomic, molecular, or ionic hydrogen and oxygen are vital to the hydrogen economy: they purify hydrogen fuel streams, transport hydrogen or oxygen ions between electrochemical half-reactions, and separate hydrogen in electrochemical, photochemical, or thermochemical production routes. Often these membrane functions are closely coupled with catalytic functions such as dissociation, ionization, or oxidation/reduction. Successful integration of membranes with nanocatalysts may improve the efficiency in reforming, shift chemistry and hydrogen separation utilizing different feedstocks by combining one or more of these steps.

Current membrane materials often lack sufficient selectivity to eliminate critical contaminants or to prevent leakage transport between fuel cell compartments that robs efficiency. The Nafion™ membrane, which is presently the best available for separating low temperature fuel cell chambers, is expensive and allows enough gas transport to reduce efficiency. Currently available oxide membranes, which are critical for ionic transport in higher-temperature fuel cells, are inefficient and fail to operate at the lower temperatures needed for use in transportation. Separation membranes that could operate in the rigorous chemical environment of a thermal cycle hydrogen generator would be of substantial value but are unknown at present. Overcoming these barriers will require an integrated, basic research effort to enable discovery of new membrane materials, improvement in membrane performance, and integration of membrane and catalytic functions. High priority research directions include:

- *Integrated nanoscale architectures.* The similar nanoscale dimensions of catalyst particles and of pores that transport fuel, ions, and oxygen hold promises to enable gas diffusion layers, catalyst support networks, and electrolytic membranes in fuel cells to be integrated into a single network for ion, electron, and gas transport. Chemical self-assembly of this integrated network would dramatically reduce cost and improve uniformity. Synthesis and characterization of radically new nanoscale and porous materials are required, including microporous oxides, metal-organic frameworks, and carbons that remove sulfur and carbon monoxide from hydrogen. This new approach to the design and fabrication of integrated nanoscale architectures would enable ultra-pure hydrogen to be produced from fossil, solar, thermochemical and bio-based processes. It might also revolutionize fuel cell designs.
- *Fuel cell membranes.* Novel membranes with higher ionic conductivity, better mechanical strength, lower cost, and longer life are critical to the success of fuel cell technologies. Polymeric membranes that conduct protons and remain hydrated to 120–150° C are needed to reduce the purity requirements and enable the use of non-noble-metal catalysts. Solid oxide fuel cells need lower-temperature oxide-ion membranes to minimize corrosion and differential thermal expansion, while maintaining selectivity and permeability. Many thermal water-splitting cycles subject materials to harshly corrosive, high temperature environments. Sorbents and membranes that are stable and durable in such environments are needed for efficient thermal cycles. Achieving these goals will require discovery of better, more durable materials, as well as better understanding and control of the electrochemical processes at the electrodes and membrane electrolyte interfaces.
- *Theory, modeling, and simulation of membranes and fuel cells.* Fundamental understanding of the selective transport of molecules, atoms, and ions in membranes is in its infancy. The diversity of transport mechanisms and their dependence on local defect structure requires extensive theory, modeling and simulation to establish the basic principles and design strategies for improved membrane

materials. The emphasis is to understand the nature of proton transport in polymer electrolyte membranes; the interaction of complex aqueous, gaseous, and solid interfaces in gas diffusion electrode assemblies; the nature of corrosion processes under applied electrochemical potentials and in oxidative media; and the origin of the performance robbing overpotential for fuel cell cathodes.

Design of Catalysts at the Nanoscale

Catalysis is vital to the success of the HFI owing to its roles in converting solar energy to chemical energy, producing hydrogen from water or carbon-containing fuels such as coal and biomass, and producing electricity from hydrogen in fuel cells. Catalysts can also increase the efficiency of the uptake and release of stored hydrogen with reduced need for thermal activation. Breakthroughs in catalytic research would impact the thermodynamic efficiency of hydrogen production, storage, and use, and thus improve the economic efficiency with which the primary energy sources—fossil, biomass, solar, or nuclear—serve our energy needs. Most fuel-cell and low-temperature reforming catalysts are based on expensive noble metals (*e.g.*, platinum), and their limited reserves threaten the long-term sustainability of a hydrogen economy. High priority research directions include:

- *Nanoscale catalysts.* Nanostructured materials—with high surface areas and large numbers of controllable sites that serve as active catalytic regions—open new opportunities for significantly enhancing catalytic activity and specificity. The concepts, technologies, and synthetic capabilities derived from research at the nanoscale now provide new approaches for the controlled production of catalysts. Specific emphasis is on elucidating the atomic and molecular processes involved in catalytic activity, selectivity, deactivation mechanisms, and on understanding the special properties that emerge at the nanoscale.
- *Innovative synthetic techniques.* Emerging technologies that allow synthesis at the nanoscale with atomic-scale precision will open new opportunities for producing tailored structures of catalysts on supports with controlled size, shape and surface characteristics. New, high-throughput innovative synthesis methods can be exploited in combination with theory and advanced measurement capabilities to accelerate the development of designed catalysts. In addition, novel, cost-effective fabrication methods need to be developed for the practical application of these new designer catalysts. The interplay between theory and experiment forms a recursive process that will accelerate the development of predictive models to support the development of optimized catalysts for specific steps in hydrogen energy processing.
- *Novel characterization techniques.* To fully understand complex catalytic mechanisms will require detailed characterization of the active sites; identification of the interaction of the reactants, intermediates and products with the active sites; conceptualization and, possibly, detection of the transition states; and quantification of the dynamics of the entire catalytic process. This will entail the production of well-defined materials that can be characterized at the atomic level. Special focus is placed on developing new analytical tools to permit the determination of the interatomic arrangements, interactions and transformations *in situ*, *i.e.*, during reaction, in order to reveal details about reaction mechanisms and catalyst dynamics.
- *Theory, modeling, and simulation of catalytic pathways.* Computational methods have now developed to the point that entire reaction pathways can be identified and these advances will allow trends in reactivity to be understood. Close coupling between experimental observations and theory, modeling, and simulation will provide unprecedented capabilities to design more selective, robust, and impurity-tolerant catalysts for hydrogen production, storage, and use. This approach will enable the design and control of the chemical and physical properties of the catalyst, its supporting structure, and the associated molecular processes at the nanoscale.

Solar Hydrogen Production

The sun is Earth's most plentiful source of energy, and it has sufficient capacity to fully meet the global needs of the next century without potentially destructive environmental consequences. Efficient conversion of sunlight to hydrogen by splitting water through photovoltaic cells driving electrolysis or through direct photocatalysis at energy costs competitive with fossil fuels is a major enabling milestone for a viable hydrogen economy. Basic strategies for cost effective solar hydrogen production are rooted in fundamental scientific breakthroughs in chemical synthesis, self-assembly, charge transfer at nanoparticle interfaces, and photocatalysis. High priority research directions for solar hydrogen include:

- *Nanoscale structures.* The sequential processes of light collection, charge separation, and transport in photovoltaic and photocatalytic devices require nanoscale architectural control and manipulation. Nanoscale assemblies of multiple wavelength absorbers (*e.g.*, semiconductor quantum dots), nanoscale polymer or molecular diodes that prevent recombination, and employing short collection lengths between the excitation and collection points have the potential to dramatically improve efficiencies. Semiconductor-metal nanocomposites show promise for improved light-harvesting and charge-separation efficiency. Incorporation of multielectron redox catalysts for direct water splitting greatly simplify the water splitting process and offer new horizons for improved photocatalytic hydrogen production.
- *Light harvesting and novel photoconversion concepts.* New strategies are needed to efficiently use the entire solar spectrum. These strategies could involve molecular photon antennas, junctions containing multiple absorbers, and up- and down-conversion of light to the appropriate wavelengths. Dye-sensitized TiO_2 nanocrystalline solar cells have emerged as a potential, cost effective alternative to silicon solar cells. New photochemical sensitizers are needed (*e.g.* bi- and trimetallic transition metal complexes) that absorb in the visible and near-infrared and that are efficient injectors of electrons into semiconductor nanoparticles. Solid-state molecule-based solar photochemical conversion, however, offers distinct advantages over liquid junction dye-sensitized nanocrystalline solar cells. Multicomponent molecular architectures are envisioned in which bioinspired multiredox catalysts are incorporated within durable polymer, zeolite, or membrane organizing environments for vectorial electron transfer. The exploitation of higher energy radiation to produce charge carriers would enable the use of corrosion-resistant wide band-gap semiconductors without sensitizers for hydrogen production.
- *Organic semiconductors and other high performance materials.* The organic semiconductors offer an inexpensive alternative to traditional semiconductors for photovoltaic and photocatalytic devices. Basic research on the fundamental charge excitation, separation, and collection processes in organics and their dependence on nanoscale structure is needed to bring their efficiency from the current 3% to

10% or more, which is needed for economically competitive photovoltaic and photocatalytic hydrogen production. In addition, novel materials for transparent conductors, electrocatalysts, electron- and hole-conducting polymers, and for charge promoting separation in liquid crystals and organic thin films are needed for novel photovoltaic and photocatalytic solar hydrogen production.

• *Theory, modeling, and simulation of photochemical processes.* Theory and modeling are needed to develop a predictive framework for the dynamic behavior of molecules, complex photoredox systems, interfaces, and photoelectrochemical cells. As new physical effects are discovered and exploited, particularly those involving semiconductor nanoparticles and supramolecular assemblies, challenges emerge for theory to accurately model the behavior of complex systems over a range of time and length scales.

Bio-Inspired Materials and Processes

Direct production of hydrogen from water and other carbon neutral sources using sunlight (solar radiation) offers real promises in realizing a clean and sustainable energy future, but there are many obstacles to efficient and cost-effective technologies. Fortunately, plants and some bacteria are endowed with enzymes and catalysts that can produce hydrogen while powered by sun light or fermentation-derived energy at operating temperatures ranging from 0° C to 100° C. While inherent biological inefficiencies and public sensitivity to genetically engineered organisms may need to be overcome for biological production of hydrogen to become competitive and viable, a fundamental understanding of the molecular machinery of biological systems could provide the knowledge that is needed to design artificial, bio-inspired materials that make solar photochemical production of hydrogen a reality. Our current knowledge of many of the basic aspects of these biological processes is limited.

Fundamental research into the molecular mechanisms underlying biological hydrogen production is the essential key to our ability to adapt, exploit, and extend what nature has accomplished for our own renewable energy needs. Important research directions include:

• *Enzyme catalysts.* A fundamental understanding is needed of the structure and chemical mechanism of enzyme complexes that support hydrogen generation. For example, photochemical hydrogen production requires biology-inspired catalysts that (1) can operate at the very high potential required for water oxidation, (2) can perform a four-electron reaction to maximize energetic efficiency and avoid limiting cathode overpotentials, and (3) can avoid production of corrosive intermediates (such as hydroxyl radicals), and mediate proton-coupled redox reactions. Research approaches would likely include novel analytical technologies and would merge aspects of disparate biological and physical techniques.

• *Bio-hybrid energy coupled systems.* As more is understood about biocatalytic hydrogen production, there is the possibility that critical enzymes that are synthesized and employed by biological systems can be harvested and combined with synthetic materials to construct robust, efficient hybrid systems that are scalable to hydrogen production facilities. Before we can efficiently apply biological catalysts to hydrogen generation, we need to understand how these catalysts are assembled with their cofactors into integrated systems. How are these multi-component systems organized, continually refreshed, and maintained, while remaining functional in the face of damaging side reactions or changing external environmental conditions? Can the natural enzymes be reduced in size and complexity to contain the essential catalytic activity while removing the complex regulation and signaling components that are required for integration into functioning biological species?

• *Theory, modeling, and nanostructure design.* Taking cues from these various natural processes, computational approaches may be employed for rational redesign of enzymes for improved hydrogen production, reduced sensitivity to inhibitors, and improved stability. Emerging capabilities in nanoscale science hold particular promise for harnessing the chemical processes inherent in bio-inspired hydrogen production. For example, nanoscale structures can be designed to spatially separate oxygen and hydrogen formation during photochemical water splitting for a biomimetic or biohybrid system that circumvents problems with inactivation of catalytic sites. Research at the nanoscale is challenging, but offers the promise of inexpensive materials for overcoming current kinetic constraints in hydrogen energy systems.

Program Funding

It is anticipated that up to $12 million annually will be available for multiple awards for this notice. Initial awards will be in Fiscal Year 2005, and applications may request project support for up to three years. All awards are contingent on the availability of funds and programmatic needs.

Preapplication

The preapplication should consist of a description of the research proposed to be undertaken by the applicant including a clear explanation of its importance to the advancement of basic hydrogen research and its relevance to the HFI. The preapplication must include a cover sheet downloadable at: *http://www.science.doe.gov/bes/HFI_preapp_cover_grants.pdf* to identify the institution, Principal Investigator name(s), address(es), telephone and fax number(s) and e-mail address(es), the title of the project, the submission category, and the yearly breakdown of the total budget request. A brief (one-page) vitae should be provided for each Principal Investigator. The preapplication should consist of a maximum of 3 pages of narrative (including text and figures) describing the research objectives, approaches to be taken, the institutional setting, and a description of any research partnership if appropriate.

Full Application

The Department of Energy will accept Full Applications by invitation only, based upon the evaluation of the preapplications. After receiving notification from DOE concerning successful preapplications, applicants may prepare formal applications. The Project Description must not exceed 20 pages, including tables and figures, but exclusive of attachments. The application must contain an abstract or project summary, short vitae, and letters of intent from collaborators if appropriate. The application should also contain one paragraph addressing how the proposed research will address one or more of the four BES long-term program measures used by the Office of Management and Budget to rate the BES program annually; these measures may be found at: *http://www.sc.doe.gov/bes/BES_PART_Long_Term_Measures_FEB04.pdf.* DOE is under no obligation to pay for any costs associated with the preparation or submission of applications.

Merit Review

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following evaluation criteria listed below as codified at 10 CFR 605.10 (d) for the university projects.

1. Scientific and/or Technical Merit of the Project, 2. Appropriateness of the Proposed Method of Approach, 3.

Competency of Applicant's Personnel and Adequacy of Proposed Resources, 4. Reasonableness and Appropriateness of the Proposed Budget, 5. Basic research that is relevant to the Administration's Hydrogen Fuel Initiative.

The external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Non-federal reviewers may be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

Submission Information

Other information about the development and submission of applications, eligibility, limitations, evaluation, selection process, and other policies and procedures including detailed procedures for submitting applications from multi-institution partnerships may be found in 10 CFR part 605, and in the Application Guide for the Office of Science Financial Assistance Program. Electronic access to the Guide and required forms is made available at: *http://www.science.doe.gov/production/grants/grants.html.*

Coordination and Integration With the DOE Offices of Energy Efficiency and Renewable Energy (EERE), Fossil Energy (FE), and Nuclear Energy, Science and Technology (NE) Hydrogen Programs

The proposal solicitation and selection processes will be coordinated with EERE, FE, and NE's programs to ensure successful integration of the basic research components with the applied technology programs. Specifically, input from EERE, FE and NE have been incorporated in the formulation of this announcement, and further input will be solicited in the review processes. There will also be an annual Contractors' Meeting for all participants in the BES program to help coordinate and integrate research efforts related to hydrogen research. The Annual Contractors' Meeting of BES principal investigators will be coordinated with EERE, FE and NE, and will include presentations on applied research and development needs from researchers inside and outside of the Contractors' group.

The Catalog of Federal Domestic Assistance number for this program is 81.049, and the solicitation control number is ERFAP 10 CFR part 605.

Issued in Washington, DC.

Martin Rubinstein,

Acting Director, Grants and Contracts Division, Office of Science.

[FR Doc. 04–9525 Filed 4–26–04; 8:45 am]

BILLING CODE 645–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. RP04–201–001]

ANR Pipeline Company; Notice of Compliance Filing

April 20, 2004.

Take notice that on April 14, 2004, ANR Pipeline Company (ANR) tendered for filing its transmittal letter and appendix.

ANR states that the transmittal letter and appendix is being filed in compliance with the Commission's order issued March 30, 2004 in the referenced proceeding.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 888 First Street, NE., Washington, DC 20426, in accordance with § 385.211 of the Commission's Rules and Regulations. All such protests must be filed in accordance with § 154.210 of the Commission's Regulations. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceedings. This filing is available for review at the Commission in the Public Reference Room or may be viewed on the Commission's Web site at *http://www.ferc.gov* using the eLibrary link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, please contact FERC Online Support at *FERCOnlineSupport@ferc.gov* or toll-free at (866) 208–3676, or TTY, contact (202) 502–8659. The Commission strongly encourages electronic filings. See, 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's Web site under the e-Filing link.

Magalie R. Salas,

Secretary.

[FR Doc. E4–928 Filed 4–26–04; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. RP04–62–001]

CenterPoint Energy-Mississippi River Transmission Corporation; Notice of Tariff Filing

April 20, 2004.

Take notice that on April 14, 2004, CenterPoint Energy-Mississippi River Transmission Corporation (MRT) tendered for filing as part of its FERC Gas Tariff, Third Revised Volume No. 1, the following revised tariff sheet to be effective on June 1, 2004:

Fifth Revised Sheet No. 252

MRT states that the purpose of this filing is to modify MRT's tariff to include Web site notifications, in addition to notification by mail of the Annual Penalty Revenue Credits as directed in the Commission's Order, dated March 26, 2004.

Any person desiring to protest said filing should file a protest with the Federal Energy Regulatory Commission, 888 First Street, NE., Washington, DC 20426, in accordance with Section 385.211 of the Commission's Rules and Regulations. All such protests must be filed in accordance with Section 154.210 of the Commission's Regulations. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceedings. This filing is available for review at the Commission in the Public Reference Room or may be viewed on the Commission's Web site at *http://www.ferc.gov* using the eLibrary link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, please contact FERC Online Support at *FERCOnlineSupport@ferc.gov* or toll-free at (866) 208–3676, or TTY, contact (202) 502–8659. The Commission strongly encourages electronic filings. *See*, 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's Web site under the e-Filing link.

Magalie R. Salas,

Secretary.

[FR Doc. E4–922 Filed 4–26–04; 8:45 am]

BILLING CODE 6717–01–P