Contents

Introduction 1
U.S. Department of Energy 1
Office of Energy Efficiency and Renewable Energy 1
Office of Weatherization & Intergovernmental Programs 2
Part 1: Overview 3
The Programs 4
Focus Programs 6
Who Is Eligible to Apply 7
Funding 7
Benefits 8
Considerations 9
Grant Process 10
How to Apply 11
Evaluation Criteria 12
Evaluation Process 15
Selection, Negotiation, and Award 16
Grantee Responsibilities 16
Part 2: Inventions & Innovation 17
Financial Assistance 17
Eligibility Requirements 18
Part 3: NICE^3 20
Financial Assistance 20
Eligibility Requirements 21
Part 4: EERE PROGRAMS 22
BIOMASS 22
Building Technology Programs 23
Distributed Energy & Electric Reliability Program 23
Federal Energy Management Program 24
FreedomCAR & Vehicle Technologies Program 24
Geothermal Technologies Program 25
Hydrogen, Fuel Cells, and Infrastructure Technologies Program 25
Industrial Technologies Program 25
Solar Energy Technology Program 26
Weatherization & Intergovernmental Program 27
Wind & Hydropower Technologies Program 27
Part 5: Monitoring Technology Benefits 28
Metrics for Evaluating Benefits 28
Why Monitor Results 29
Part 6: Other Assistance Available 30
Other Commercialization Assistance 30
A. Regional and State Offices 30
B. Commercialization Workshops 30
C. Market Assessment 31
Financial Assistance Through the Office of Energy Efficiency and Renewable Energy 31

Introduction

This guidebook provides basic information on financial and technical assistance available through the Inventions and Innovation (I&I) grant program, and the National Industrial Competitiveness through Energy, Environment, and Economics (NICE³) grant program. It will also help you determine if these programs are applicable to you or your business. For the latest information about the programs in this guidebook, refer to their websites located at www.oit.doe.gov/inventions and www.oit.doe.gov/nice3.

These programs are organizationally located in the Weatherization & Intergovernmental Program (WIP), Office of Energy Efficiency and Renewable Energy (EERE).

U.S. Department of Energy

The U.S. Department of Energy (DOE) is a leading science and technology agency whose research supports our nation's energy security, national security, and environmental quality and contributes to a better quality of life for all Americans. The Office of Energy Efficiency and Renewable Energy (EERE) is one of the research offices located within DOE.



Office of Energy Efficiency and Renewable Energy

The goal of the Office of Energy Efficiency and Renewable Energy (EERE) is to develop cost-effective energy efficiency and renewable energy technologies that protect the environment and support the nation's economic competitiveness. EERE achieves this goal through a strong and balanced program of research, development, and market deployment through private-sector partnerships. EERE is organized into programs

and this orientation toward end users has helped the technology development programs focus on addressing the needs of the marketplace.



Office of Weatherization & Intergovernmental Programs

The Office of Weatherization & Intergovernmental Program (WIP), located within EERE, provides consumers and decision makers with information on cost, performance, and financing of energy efficiency and renewable energy projects. It is responsible for maintaining working relationships with our stakeholders, some of whom include state and local governments, weatherization agencies, auto companies, fleet managers, building code officials, Native American tribal governments, and international agencies.

The components of EERE include:

Alternative Fuels Data Center
Building Energy Codes
Clean Cities
Energy Star
Fuel Economy
International Activities
Inventions and Innovation
National Industrial Competitiveness Through Energy, Environment, and Economics (NICE^3)
Rebuild America
State Energy Assistance
Tribal Energy Activities
Weatherization Assistance

Part 1: Overview

The NICE^3 and I&I programs offer financial and technical assistance from concept development, prototype development and testing to first commercial demonstration of projects whose scope are within the EERE mission. These grant programs are specifically designed to complement the existing EERE research and development (R&D) portfolios.

While there are many ways that ideas become marketplace realities, generally the following steps occur:

- idea,
- R&D,
- prototype,
- additional developmental R&D,
- first commercial demonstration,
- and often additional developmental R&D,
- and lastly, a marketable piece of equipment, software, etc.

The typical EERE solicitation seeks long-term R&D proposals. I&I and NICE^3 programs offer excellent segues to bridge the gaps in the commercialization continuum above. That assistance is limited to small business and individual inventors in the I&I program. However, no such exclusion exits in the NICE^3 program.

I&I has two-phases in their solicitation and NICE has only one level of grant. In Phase I, I&I program offers potential grantees and opportunity to test their early-stage concepts before investing in a long-term R&D effort. In Phase II, it offers an opportunity for grantees to have a prototype developed and tested. Lastly, the NICE^3 program provides an opportunity for the first commercial demonstration of a technology, a stage of development that is usually beyond the scope of the R&D portfolios of the EERE programs.

The following overview of the I&I and NICE^3 programs can help you decide if any of these would benefit you or your business. Many aspects of the program-are similar and are described below. Refer to Parts 2, 3, and 4 for specific information that is relevant to each program.

Hurdles are particularly steep for innovative technologies whose developers know how to move promising ideas from the research bench to the marketplace but may lack the funds needed to accomplish this. In addition, emerging technologies face a tremendous barrier to acceptance in the industrial manufacturing sector unless there are full-scale demonstration results. These programs are designed to address these significant barriers.

EERE encourages the integration of its programs to maximize the ultimate benefits to the taxpayer for investment in technologies. To implement this, EERE practices integrated delivery of products from financial assistance to technical assistance to facilitation and support of all of the programs within the EERE. This integrated delivery includes outreach, promotional activities, and evaluation of proposals and projects to concentrate resources on those technological challenges that will benefit the broadest segment of energy users. An innovation that would reduce energy consumption of a FreedcomCAR process, which was also identified in an IOF roadmap, would be evaluated very highly, for example. (A known market and receptive consumers are strong endorsements!) Strategically, EERE programs are aimed at the critical challenges of developing and adopting more energy efficient technology by American business and industry, and international companies.



Helps inventors and small businesses develop and deploy promising technologies

The Inventions and Innovation (I&I) program provides financial assistance at two levels: up to $40,000 (Category 1) for proof of concept or up to $200,000 (Category 2) - for conducting early development and establishing technical performance of innovative energy saving ideas and inventions. For a more complete description of the program, see Part 2. On the web: (http://www.oit.doe.gov/inventions/)



Provides grants to state and industry partnerships to demonstrate new technologies

The DOE sponsors an innovative, cost-sharing program to promote energy efficiency, clean production, and economic competitiveness in industry. The grant program, National Industrial Competitiveness through Energy, Environment, and Economics (NICE³), provides funding to state and industry partnerships (large and small business) for projects that develop and demonstrate advances in energy efficiency and clean production technologies. For a more complete description of the program, see Part 3. On the web: (http://www.oit.doe.gov/nice3/) NICE^3 and I&I also encourage-projects that result in the development of crosscutting technologies that address common needs within different programs.

Focus Programs

For additional information on the scope of the EERE Programs, please refer to following websites.

- Biomass Program
- Building Technologies Program
- Distributed Energy & Electric Reliability Program
- Federal Energy Management Program
- FreedomCAR & Vehicle Technologies Program
- Geothermal Technologies Program
- Hydrogen, Fuel Cells, & Infrastructure Technologies Program
- Industrial Technologies Program
- Solar Energy Technology Program
- Weatherization & Intergovernmental Program
- Wind & Hydropower Technologies Program

Who Is Eligible to Apply

The I&I and NICE^3 programs provide assistance to inventors, technology developers, – industry, and governmental and non-governmental organizations. Each program is restricted to specific types of applicants.



Independent inventors and small profit or not-for-profit businesses with less than 500 employees are eligible to apply for grants under the Inventions and Innovation program:

- U.S. individual inventors, small businesses, universities, and not-for-profit research institutes can apply for grants - from $40,000 to up to $200,000.



State agencies in partnership with a proposer are eligible to apply for a NICE^3 grant under the following guidelines:

- State and industry partners from all 50 states, the District of Columbia, the U.S. Virgin Islands, the Commonwealth of Puerto Rico, any territory or possession of the United States, and all Federally-recognized Indian tribes can apply if they are acting on behalf of or in conjunction with an industry partner(s).
- Local governments, state universities, private universities, private non-profits, private businesses, individuals, and all others must apply through a state agency. However, state's participation is optional.
- State/Industrial Partnerships can apply for grants of up to $525,000 (up to $25,000 to the state and matching funds of up to $500,000 to the demonstration partner.)

Funding

Different levels of financial assistance are available through the NICE^3 and I&I programs. Funds are awarded through a competitive solicitation

process with a focus on ideas that have significant energy-savings impact and future commercial market potential.

The I&I program provides financial assistance at two levels, depending on the technology's stage of development. Grants of up to $40,000 are awarded for early-stage concept development and feasibility, and grants of up to $200,000 are available for late-stage research, development, and deployment.

NICE^3 provides financial assistance to state and industry partnerships of up to $525,000 for the first-time demonstration of an industrial technology. The industrial partner may receive a maximum of $500,000 in Federal funding. The program requires a non-Federal cost share of at least 50% of the total cost of the project.

Benefits

The I&I and NICE^3 programs offer several benefits to grant recipients:

- Provide millions of dollars in funding annually to research high-risk innovations.
- Help inventors find technical partners, commercial sponsors, business plan resources, and other funding sources.
- Provide access to technical assistance and user facilities.
- Assist in commercialization planning.
- Offer market assessments.
- Provide access to regional and local services.
- Provide internet sites and information relevant to energy-related innovations.
- Conduct forums for financial investors with particular interest in energy-related businesses.
- Mitigate financial risk in developing new technologies.

The programs also benefit the EERE missions:

- Provide technology solutions to major energy problems.
- Reduce the risk of implementing new technologies.
- Provide information for technology investment decisions.

Considerations

Although the NICE^3 and I&I program offers great opportunities to individual inventors, small and large businesses, and industry, these programs may not be the answer for you or your business. Technical and financial assistance through these programs is limited to those doing cutting-edge research and development activities. You should consider the following factors before entering one of the programs:

- **Competitive:** Your proposal will be evaluated against specific criteria and compared with other proposals to determine relative merit. WIP cannot fund all of the good proposals submitted.
- **Hard Work:** Although the Program has tried to reduce the burden in applying for financial assistance, preparing a proposal takes time, effort, and money. You need to decide if the investment is worth making.
- **Multi-step Process:** The evaluation process involves several stages and various entities work together on these programs. Therefore, it takes several months from the time proposals are submitted until funding decisions are made and awards are granted.
- **Not Continuous Funding:** These awards are intended to be one-time funding awards. They are not designed to provide continuous funding. Each stage is competed separately.
- **Commercialization:** The ultimate goal of these financial assistance programs is to commercialize technologies that meet the EERE mission and reduce the energy use of the United States. Proposal reviewers look for evidence of a sound commercialization strategy or evidence of a commitment to develop one.
- **Government Regulations:** Government procurement regulations apply to these programs. Consequently, you will be required to follow certain procedures and practices to comply with these regulations.

Grant Process

The I&I and NICE^3 grants are awarded using competitive solicitations (Solicitations for Financial Assistance Proposals [SFAP]). Although the processes differ slightly for each solicitation, the following steps generally apply:

Step 1 **Preliminary Evaluation**	Prior to the annual solicitation, an applicant is encouraged to submit a pre-proposal to the DOE Golden Field Office for the idea's program relevance.
Step 2 **Competitive Solicitation**	DOE announces the availability of the solicitations in the *Commerce Business Daily, Federal Register,* and on the DOE website, and makes the solicitation package available.
Step 3 **Grant Award**	After a detailed review, DOE awards financial assistance grants to winning applicants based on available funding for each fiscal year.
Step 4 **Monitoring**	After the grant is awarded, the grantee must submit status reports and a final report.
Step 5 **Post Grant**	The grantee must supply technology updates and commercialization data for 10 years.

The I&I and NICE^3 solicitations are issued on concurrent schedules.

Inventions and Innovation and NICE^3
FY2004 Solicitation Schedule

Pre-proposals Accepted	September - March
SFAPs Issued/Solicitation Opened	April
Solicitation Closed	June
Proposal Review Process	June - September
Selected Proposals Announced	October

How to Apply

The first step in the application process involves making a determination whether to apply or not. Both the I&I and NICE^3 programs strongly encourage all potential applicants to submit a 2-page summary of their proposal to the U.S. DOE Golden Field office for a "pre-proposal" review. This is the easiest way to determine if your proposed idea might be eligible for consideration. This step can help you determine whether it is worth the investment of your time and effort to submit a full proposal. While this step is strongly encouraged and intended to help you, it is not mandatory. Check the program websites listed below for format and deadlines for pre-proposal review.

The solicitation is the document that requests the submission of applications for financial assistance and describes program objectives, recipient and project eligibility requirements, desired performance activity, evaluation criteria, award terms and conditions, and other relevant information about the financial assistance opportunity.

During the open solicitation period, you can download the solicitation (including all required forms) from the program websites listed below.

Applicants are encouraged to review the entire solicitation package to become familiar with the requirements, evaluation criteria, and instructions for completing an application. Further information on the solicitation process, the required forms listed in the solicitation, and the schedule for each program is available on the program websites:



http://www.OIT.doe.gov/inventions



http://www.OIT.doe.gov/nice3

Evaluation Criteria

Five criteria are used in the evaluations for the I&I and NICE^3 program applications (this list is subject change):

Criterion 1—Critical Review of Technology Status
Criterion 2—Project Description
Criterion 3—Benefits
Criterion 4—Project Plan
Criterion 5—Project Management Plan
Criterion 6—Technical Capabilities

Criterion 1—Critical Review of Technology Status

- Provide a technology status. The application should discuss the developmental history of the proposed technology or process to illustrate its readiness, viability, and potential for plant field-testing. Address the intellectual property ownership issues associated with the proposed technology or process as contained in Attachment 2, "Intellectual Property Ownership." For category 2 applications only, the application must illustrate that a bench-scale model and/or other preliminary investigations are complete and include specific performance data. Include domestic and worldwide status of the proposed and competing technologies.

- Explain why domestic industry or commercial sectors are not already investigating or implementing the proposed concept and why they will not conduct the R&D without government assistance.

Criterion 2—Project Description

- Introduction and proposed concepts.

- Technical feasibility.

- Technical hurdles to be overcome by the proposed project.

Criterion 3—Benefits

- Energy benefits: Utilizing the format at Metrics Summary, describe how the proposed technology will significantly reduce overall U.S. energy consumption. The proposed technology must be at least a 30% improvement in energy efficiency over the technology being replaced or save a minimum of 1 trillion Btu. This should be done as a comparison between the proposed technology and the best commercial technology being used to produce the same or similar product or service. Provide all assumptions made and the detailed calculations (list energy savings in Btu). Examples should reflect percentage improvement.

- Economic benefits: Describe how the proposed technology will significantly improve U.S. quality and productivity and the impacts of the technology on U.S. employment. Define the market(s) in which the technology will be utilized. This should include the current size of the market(s) and its projected size in 2010 and 2020 in both volume and dollar sales. Project penetration of the proposed technology into this market(s). Project the estimated manufacturing cost or cost difference between the proposed technology and the current commercial technology and the rationale for this projection. Provide all assumptions made.

- Environmental benefits: Utilizing the format at Metrics Summary, describe how the proposed technology will significantly reduce overall U.S. environmental impacts, including reductions in CO_2 emissions and elimination of waste production at the source, compared with the best commercial technology being used to produce the same or similar product or service. Provide all assumptions made and the detailed calculations.

Criterion 4—Project Plan

- Project goals and scope.

- Statement of goals and objectives.

- Work breakdown structure, including how partners will participate.

- Milestone plan (Task/milestone table), schedule integration (Gantt chart) (See "I&I Project Plan Requirements").

- Spending plan by task (include federal, and, if any, non-federal cost share funds).

- Commercialization plan, including a commercialization market strategy, timeline, a comparison with competing product/process technologies, and a thorough understanding of the market.

Criterion 5—Project Management Plan

- Project organization and responsibilities.

- Task integration and project coordination.

- Project management structure, including field testing and monitoring of progress.

Criterion 6—Technical Capabilities

- Key personnel, capabilities, and project responsibilities.

- Related experience.

- Facilities and available equipment.

- Justification for and description of needed facilities and estimated costs.

Evaluation Process

The evaluation process for I&I and NICE^3 program applications includes screening for completeness, a merit review, and a programmatic review.

- **Screening:** Upon receipt, applications will undergo an administrative screening by the DOE Golden Field Office. DOE personnel at the Golden Field Office will use the "Grant Application Requirements Checklist" to determine if the application is responsive and meets the solicitation requirements. **Critical items on the checklist must be present and acceptable for an application to be considered responsive**.

- **Merit Review:** Technical and scientific personnel will evaluate the application on the five evaluation criteria. Based on this evaluation, the most highly rated applications will be forwarded for Programmatic Review.

- **Programmatic Review:** In conjunction with the evaluation results and rankings of individual applications, the Government will make selections from the highest-ranking applications, using the following programmatic considerations:

    - Relevance to the visions and roadmaps of the WIP focus industries and/or the EERE mission.
    - Total U.S. energy savings
    - Geographic distribution
    - Diversified portfolio of EERE technologies
    - Justification for DOE funding
    - Number and success of prior awards
    - Amount of available DOE funding.

DOE reserves the right to use any assistance deemed necessary, in accordance with applicable regulations, including qualified personnel from other Federal agencies, other government entities, universities, industry, and DOE contractors. Please note that all reviewers will be required to protect the confidentiality of any specifically identified trade secrets and/or privileged or confidential commercial or financial information obtained as a result of their participation in this evaluation.

Selection, Negotiation, and Award

The Selection Official is a designated DOE official authorized to select the applications for award based on the technical and programmatic evaluations. Individual application status information will not be available until an official DOE announcement of awards is made. Written notice to unsuccessful applicants and grant award information will be released in accordance with DOE regulations applicable to financial assistance awards.

Grantee Responsibilities

After an applicant's project is selected for award, the grantee is required to:

1. Work with DOE to prepare a fact sheet on the technology for general distribution.
2. Attend a kick-off meeting. This meeting helps grantees develop and implement a commercialization strategy. The meeting is mandatory for NICE^3 and I&I Category 2 grantees and optional, but encouraged, for Category 1 grantees.
3. Submit technical and financial status reports.
4. Work with DOE to complete energy, environmental, economic, and commercialization data.
5. Submit a final technical report, suitable for DOE publication, within 90 days of project completion and the grant-funding period.
6. Allow DOE to track the progress and replication of the technology for 10 years after the grant period.
7. Provide an onsite review if requested by DOE.
8. Attend annual project review meetings if requested by DOE.



Part 2: Inventions & Innovation

The I&I program is committed to providing inventors and small technology-based companies financial and technical assistance to support the development and deployment of new innovative energy-related technologies. Projects that have significant potential energy savings and a future commercial market are chosen for financial and technical support through this competitive solicitation process. Additionally, the program provides non-financial support by assisting in business development and commercialization planning through a network of national and regional resource providers.

Financial Assistance

Two levels of financial assistance are available. Grants of up to $40,000 are awarded for early-stage concept development and feasibility (Category 1), and grants of up to $200,000 are available for prototype development and commercial validation (Category 2).

Financial assistance is intended to support the research and technical development of an innovation. The financial assistance will not fund patent applications or advertising/marketing applications. Projects are funded for a period not to exceed two years for Category 1 and Category 2 applications.

Grantees must find their own sources of financial assistance for commercialization. However, the Inventions and Innovation Program offers a variety of resources to help evaluate the best commercialization opportunities and strategies for its grantees and it may provide market assessments and other assistance including access to experts.

Category 1 Applications

I&I Category 1 applications must address one of the high-priority topic areas identified by the EERE components. These topical areas may vary from year to year. The current year's topics can be found in the solicitation on I&I website (www.oit.doe.gov/Inventions/).

Category 1 applications are restricted to U.S. individual inventors, small businesses (for profit or not-for-profit with less than 500 employees), universities, and not-for-profit research institutes. A "U.S. individual inventor" is an inventor who retains U.S. citizenship. A "U.S. business" is either 1) a corporation that is incorporated in the United States and whose parent company (if applicable) is not of foreign origin or 2) a business entity, other than a corporation, that is owned substantially by U.S. citizens.

Stages of Technology Development Eligible Under Category 1

- **Stage 1 - Conceptual***:* Stage 1 under a Category 1 application is the period during which a concept is scientifically proven or is shown to be potentially valid by the application of a test-of-principle model. The objective of this stage is to demonstrate through tests or analyses the performance and implementation potential of a concept.

- **Stage 2 - Technical Feasibility***:* Stage 2 under a Category 1 application is the period during which it is proven possible within the technological state of the art to produce a new product or develop a process from the concept. The objective here is to confirm the target performance of the new product through experimentation and/or accepted engineering analysis and to ascertain that there are no technical or economic barriers to implementation that cannot be overcome by development.

Category 2 Applications

Category 2 applications must address topics within the EERE mission. Specifically, they must address a technical area within the program areas identified on page 2. For more information on the scope of these programs, refer to the EERE website at http://www.eren.doe.gov/.

Category 2 applications are restricted to U.S. individual inventors and small businesses (for profit or not-for-profit with less than 500 employees). A "U.S. individual inventor" is an inventor who retains U.S. citizenship. A "U.S. business" is either a) a corporation that is incorporated in the U.S. and whose parent company (if applicable) is not of foreign origin; or b) a business entity, other than a corporation, that is owned substantially by U.S. citizens.

Stages of Technology Development Eligible Under Category 2

- **Stage 3 - Development***:* Stage 3 under a Category 2 application is the period during which the needed improvements in materials, design, and processes are made, and the product is tested and proven to be commercially producible. The objective is to make the needed improvements in materials, design, and processes and to confirm that the product will perform as specified by constructing and testing engineering prototypes or pilot processes.

- **Stage 4 - Commercial Validation:** Stage 4 under a Category 2 application is the period during which a product or process is prepared for introduction into the marketplace. The objective is to develop the manufacturing techniques and establish test market validity of the new product or introduce a new process in a system.

Individual inventors and very small businesses (15 or fewer employees) are especially encouraged to participate. DOE laboratories are not eligible to receive DOE funding as grantee or subgrantee in this program. More than one application may be submitted by an applicant for different innovations, however, funding will be limited to one award per applicant, per category, per cycle.

Part 3: NICE^3

The primary goal of the NICE^3 program is to fund the first commercial demonstration of an innovative manufacturing or industrial process. To be ready for commercialization, all research and development activities must be completed with successful test results. By the end of the financial assistance period, an industrial scale commercial demonstration should be complete. The demonstration must be conducted long enough to gather sufficient data to determine the energy, environmental, and economic impacts. At the end of the project, the technology/process will be ready for commercialization.

Financial Assistance

State agencies in partnership with industry can submit applications for demonstrating technologies in an industrial setting for a sufficient time to determine the energy, environmental, and economic benefits of the technology. The proposals should describe how applying the innovative technology would improve energy efficiency, reduce industry costs, and prevent pollution in industry.

Through NICE^3, the state/industry applicant may receive a one-time grant of up to $525,000 (up to $500,000 to industry and up to $25,000 to the state agency) of Federal funding for up to 3 years, with the stipulation that the recipient match these funds with a minimum 50% project cost share. Companies that receive grants agree to help commercialize their technologies inside and outside their companies or agree to share the results with other companies.

Eligibility Requirements

All 50 states, the District of Columbia, the U.S. Virgin Islands, the Commonwealth of Puerto Rico, any territory or possession of the United States, and all Federally-recognized Indian tribes are eligible if they are acting on behalf or in conjunction with an industry partner or partners. Industry participation is required in all applications. Local governments, state universities, private universities, private non-profits, private businesses, individuals, and all others must apply through a state agency.

NICE^3 applications must be submitted and signed by an authorized state official for an application to be considered responsive to this solicitation and eligible for consideration.

State organizations are not limited in the number of applications they can submit. More than one state organization may be involved in an application, as long as the lead organization and lead financial assistance management responsibilities are defined. Support can come from one or more industrial partners and must be in the form of cost-sharing or other significant participation that demonstrates a substantial interest in the proposed project. Cash, equipment, labor, and in-kind contributions are all allowable as cost share.

Multiple applications by an industry participant for essentially the same project through different state agencies are not permitted, but an industry participant may be a party to more than one application through a state or states if different projects are involved.

Part 4: EERE PROGRAMS

I&I and NICE^3 use an integrated approach to help all EERE sectors to increase competitiveness and reduce resource and energy use today and tomorrow. The strategy seeks to simultaneously encourage expanded use of energy-efficient technologies today and to ensure that some of our most energy-intensive sectors will be able to produce technologies that will compete in the global markets of the future.

Working closely with all the EERE components to maximize the impact of the programs and to assure compatibility with existing programmatic goals, I&I and NICE^3 proposals are reviewed by sector personnel to determine which proposals are most compatible with sector goals and objectives. This process helps align public and private resources so they can collectively focus on solving the nation's toughest technical challenges. With emphasis on "customer pull" as well as "technology push," this approach obtains strong commitment to the research, facilitating widespread adoption of resulting energy-efficient technologies.

BIOMASS

Biomass offers America a tremendous opportunity to use domestic and sustainable resources to provide its fuel, power, and chemical needs from plants and plant-derived materials. The Office of Energy Efficiency and Renewable Energy Biomass Program includes major programs for developing and improving technology for biomass power; for making biofuels such as ethanol (from biomass residues as well as grain) and renewable diesel; and for making plastics and chemicals from renewable, biobased materials.

The Biomass Program is also the lead agency in the multi-agency Biomass Research and Development Initiative working to coordinate and accelerate all federal biobased products and bioenergy research and development in accordance with the Biomass Research and Development Act of 2000.

On the web: http://www.eren.doe.gov/biomass.html

Building Technology Programs

The Department of Energy has reorganized its Office of Energy Efficiency and Renewable Energy (EERE) in response to a recent program performance review. This new structure will strengthen our programs and our ability to meet your needs efficiently.

In the new organization structure, the Office of Building Technology, State and Community Programs has been reorganized into the Building Technologies Program and the Weatherization and Intergovernmental Program.

The Building Technologies Program conducts research and development on technologies and practices for energy efficiency, working closely with the building industry and manufacturers; promotes energy and money-saving opportunities to builders and consumers; and works with state and local regulatory groups to improve building codes and appliance standards.

On the web: http://www.eren.doe.gov/building.html

Distributed Energy & Electric Reliability Program

The Department of Energy has reorganized its Office of Energy Efficiency and Renewable Energy (EERE) in response to a recent program performance review. This new structure will strengthen our programs and our ability to meet your needs efficiently.

As a result of this reorganization, EERE's Office of Distributed Energy Resources has been renamed. The new Distributed Energy and Electric Reliability Program now also includes initiatives to improve operation of the nation's transmission network.

On the web: http://www.eren.doe.gov/deer.html

Federal Energy Management Program

The U.S. Department of Energy's Federal Energy Management Program (FEMP) works to reduce energy use at federal facilities. FEMP helps agencies save energy and taxpayer dollars by advancing energy efficiency and water conservation, promoting the use of distributed and renewable energy, and improving utility management decisions at federal sites.

Energy management—using energy efficiently, ensuring reliable supplies, and reducing costs—is one of the most challenging tasks facing federal facility managers. Now, more than ever, the federal government, as the nation's largest single energy consumer, has a tremendous opportunity and a clear responsibility to save energy and lead by example.

On the web: http://www.eren.doe.gov/femp.html

FreedomCAR & Vehicle Technologies Program

The Department of Energy has reorganized its Office of Energy Efficiency and Renewable Energy (EERE) in response to a recent program performance review. This new structure will strengthen our programs and our ability to meet your needs efficiently.
Key aspects of the Office of Transportation Technologies have been incorporated into the FreedomCAR & Vehicle Technologies Program.

This new program works with industry to develop and deploy advanced transportation technologies that reduce the nation's use of imported oil and improve air quality.
On the web: http://www.eren.doe.gov/vehicle.html

Geothermal Technologies Program

The Department of Energy has reorganized its Office of Energy Efficiency and Renewable Energy (EERE) in response to a recent program performance review. This new structure will strengthen our programs and our ability to meet your needs efficiently.

In the previous EERE structure, the geothermal and wind programs were combined. In the new structure, the Geothermal Technologies Program has been made a stand-alone program to reflect its increasing contribution to the goals of the National Energy Policy. Our new program continues to work with industry partners to develop and deploy this clean energy technology.

On the web: http://www.eren.doe.gov/geothermal.html

Hydrogen, Fuel Cells, and Infrastructure Technologies Program

The Department of Energy has reorganized its Office of Energy Efficiency and Renewable Energy (EERE) in response to a recent program performance review. This new structure will strengthen our programs and our ability to meet your needs efficiently.

In the new organizational structure, the Hydrogen Program has been expanded to include fuel cells and infrastructure research and development (R&D) efforts, in addition to the hydrogen system-specific R&D work already underway. These will be combined under a new program to be known as the Hydrogen, Fuel Cells, and Infrastructure Technologies Program.

On the web: http://www.eren.doe.gov/hydrogen_fuelcell.html

Industrial Technologies Program

The Department of Energy has reorganized its Office of Energy Efficiency and Renewable Energy (EERE) in response to a recent program performance review. This new structure will strengthen our programs and our ability to meet your needs efficiently.
In the new organization structure, the Office of Building Technology, State and Community Programs has been reorganized into the Building

Technologies Program and the Weatherization and Intergovernmental Program.

The Building Technologies Program conducts research and development on technologies and practices for energy efficiency, working closely with the building industry and manufacturers; promotes energy and money-saving opportunities to builders and consumers; and works with state and local regulatory groups to improve building codes and appliance standards.

On the web: http://www.eren.doe.gov/industrial.html

Solar Energy Technology Program

The DOE Solar Energy Technology Program accelerates the development of solar technologies as energy sources for the nation and world. We also educate the public about the value of solar as a secure, reliable, and clean energy choice.

Photovoltaic cells convert sunlight directly into electricity and are made of semiconductors such as crystalline silicon or various thin-film materials. Photovoltaics can provide tiny amounts of power for watches, large amounts for the electric grid, and everything in between. **Concentrating solar power** technologies use reflective materials to concentrate the sun's heat energy, which ultimately drives a generator to produce electricity. These technologies include dish/engine systems, parabolic troughs, and central power towers. **Low-temperature solar collectors** also absorb the sun's heat energy, but the heat is used directly for hot water or space heating for residential, commercial, and industrial facilities.

On the web: http://www.eren.doe.gov/solar.html

Weatherization & Intergovernmental Program

The Department of Energy has reorganized its Office of Energy Efficiency and Renewable Energy (EERE) in response to a recent program performance review. This new structure will strengthen our programs and our ability to meet your needs efficiently.

In the reorganization, we have formed a new Weatherization and Intergovernmental Program. This new program will provide consumers and decision makers with information on cost, performance, and financing energy efficiency and renewable energy projects. It is responsible for maintaining working relationships with our stakeholders, some of whom include state and local governments, weatherization agencies, auto companies, fleet managers, building code officials, Native American tribal governments, and international agencies.

On the web: http://www.eren.doe.gov/weatherization.html

Wind & Hydropower Technologies Program

The Department of Energy has reorganized its Office of Energy Efficiency and Renewable Energy (EERE) in response to a recent program performance review. This new structure will strengthen our programs and our ability to meet your needs efficiently.

In the new organizational structure, the Wind Energy Program and the Hydropower Program have been joined to form the Wind & Hydropower Technologies Program. Our new program works with industry partners to develop and deploy both of these clean energy technologies.

On the web: http://www.eren.doe.gov/windandhydro.html

Part 5: Monitoring Technology Benefits

The I&I and NICE[3] goals and objectives are consistent with DOE's overall mission statement, which is to save energy to relieve the United States of its over-dependence on foreign oil, to protect the environment, and to advance the U.S. science and technology base.

As the inventor or demonstrator of an energy-efficient technology, you already clearly understand what problem you are trying to solve, and why your invention offers substantial advantages over the conventional method. There is a need to compare your improvement against a baseline.

Metrics for Evaluating Benefits

To help evaluate the benefits of your technology and the return on taxpayer investment, DOE has established the following metrics:

- **Cost Sharing** - How much capital and in-kind resources (primarily money and time) did you, your company, and outside investors combine with the DOE grant to achieve the Statement of Work objectives?
- **Cost Leveraging** - Has DOE funding and subsequent project success aided your company in raising investment capital? Approximately how much and when?
- **Technical Success** - How have you defined technical success in your Statement of Work? Have you achieved technical success?
- **Energy Savings** – How does your technology compare with the conventional technology in terms of energy usage per unit, per year, and by fuel type.
- **Environmental Savings** - If raw materials are saved, or other waste avoided, please estimate savings compared with the conventional technology on a per unit per year basis. (DOE will calculate emissions savings as a derivative of fuel savings.)
- **Financial Savings** - If non-energy dollar savings result from the use of your technology, please estimate savings compared with the conventional technology on a per unit per year basis. Energy dollar savings are automatically derived from the energy-savings numbers.
- **Commercial Introduction** – When did you sell or deploy the technology beyond the prototype or demonstration unit?
- **Sales** – On a yearly basis, what are your sales for the technology?

Why Monitor Results

Several groups are interested in your progress. Potential customers and purchasers will need the benefits information described above to make prudent business investment decisions. WIP has funded the development/demonstration of your technology to mitigate risk. In turn, the country benefits by sharing your results with other industrial entities so they can invest in your proven technology with energy, environmental, and financial benefits.

Ultimately, taxpayers must be satisfied that they are getting a sufficient return on investment. To address this issue, Congress passed the Government Performance and Results Act (GPRA) in 1993. GPRA dictates that every department and agency within the Federal government must clearly enunciate its mission, have a strategic plan for carrying out that mission, and report back to Congress on its progress/achievement of stated goals. Starting with the FY 2001 budget to Congress, DOE, the programs of EERE are required to state these goals and results in their budget request. You and your invention have an impact on achieving these goals!

Part 6: Other Assistance Available

Other assistance is available to grantees.

Other Commercialization Assistance

A. Regional and State Offices

EERE's six regional offices located in Atlanta, Boston, Chicago, Denver, Philadelphia, and Seattle, each of which serves a specific geographic region of the United States and its territories, provide project management and technology deployment while serving as the regional liaisons for EERE programs. The regional offices achieve unique relationships with state and local governments, regional industries, and other stakeholders to promote the adoption of EERE technologies. The State Energy Offices also provide valuable dissemination services for each of the successful technologies.

B. Commercialization Workshops

I&I and NICE^3 hold a kick-off workshop which bring grant awardees together with Department of Energy HQ Program Managers and Golden Field Office Project Monitors, Regional and State representatives and the program's support personnel to discuss what assistance is available to the grantee in completing their grant objectives of commercializing their technologies.

Grantees are encouraged to attend additional workshops on such topics as how to obtain seed and venture capital; how to write a commercialization plan; and how to obtain needed demonstration partners that are available in the private sector. Awardees are also encouraged to use local resources such as the Small Business Administration, State Economic Development Offices, and technical incubators, etc.

C. Market Assessment

An assessment of the market for a new product or technology is a critical tool necessary for commercialization planning. Technology commercialization only occurs when "consumers" are aware of the new product or service, have a need that the product/service satisfies, believe its value exceeds the cost, and can easily acquire the product/service.

A grantee may request a market assessment that will encompass an investigation into how the inventor's product or service will be received by the market and the business strategies necessary to reach the potential buyers. Shortly after an inventor satisfies the requirements of the DOE grants, the market assessment may be conducted. The assessment report may include factual data and statistics, analysis of market trends that are relevant to the subject invention, and industrial contacts that may be very useful as the inventor starts the commercialization process.



Financial Assistance Through the Office of Energy Efficiency and Renewable Energy

EERE offers broad-based and targeted R&D solicitations for programs in transportation, utilities, buildings, and renewable energy. Major solicitations and other business opportunities are posted under "Doing Business with Us," which is accessed through the EERE homepage at www.eren.doe.gov. You can also review a multitude of financial opportunities through the EERE homepage under the "Financing" button. Not only are DOE-supported activities provided, but you can also identify other sources like a database of state incentives for renewable energy.

Financing opportunities are listed by category, and each major program area provides links to other funding opportunities. For example, you can find transportation-related solicitations under the Office of Transportation Technologies (OTT) homepage through the button labeled "DOE Funding Opportunities."

Many financial resources are available to help small businesses become more energy efficient or adopt renewable energy technologies. You can easily review these resources through the funding opportunities link

under "Small Business." For example, OTT offers the Cooperative Automotive Research for Advanced Technology (CARAT) program that specifically targets smaller businesses, colleges, and universities. CARAT solicits R&D proposals that advance a technology to improve energy efficiency and reduce waste and emissions. This program provides funding for the design and development of advanced energy-efficient automotive components and facilitates the adoption of such products by the automotive industry.



The Regional Offices of DOE's Office of Energy Efficiency and Renewable Energy (EERE) catalyze the implementation of energy-efficient and renewable energy strategies at the state and local level by:

- Working with states and communities to promote EERE programs
- Identifying and engaging community and state partners
- Integrating EERE programs with public and private sector activities.

The state and local partnerships that take place through the Regional Offices are the primary vehicle through which the Department of Energy meets the needs of individual citizens, cities, counties, and states across the nation.

U.S. Department of Energy Regional Offices

- Atlanta Regional Office
- Boston Regional Office
- Chicago Regional Office
- Denver Regional Office
- Philadelphia Regional Office
- Seattle Regional Office

On the web: http://www.eren.doe.gov/rso.html