(2-3-07 Note to Readers: The following is a recent draft that was presented to various members of the United States Congress and their legislative assistants by the executive staff of **The New Energy Movement** *(www.NewEnergyMovement.org). While the provisions of this draft legislation clearly articulate the need for and the means to support accelerated research and development of "new and unconventional" clean energy technologies, the reader should understand that The New Energy Movement recognizes and supports the important and growing role of conventional renewable energy technologies (wind, solar, biofuels, hydroelectric) in the U.S. energy portfolio. Certainly we welcome advances in the conventional energy technologies, such as the developments in thin-film solar photovoltaics and new wind turbine design. However, the well-known and widely accepted conventional renewables have the advantage of ready access to a growing pool of market capital and government resources to finance R&D. In contrast, unconventional energy technologies are generally little-known and poorly funded, yet have the potential to produce the quantum leap breakthroughs in clean energy generation so desperately needed in this age. Therefore this draft legislation focuses on the latter, as does the sponsoring organization.*

A continuously updated and publicly viewable database of new energy technologies, both conventional and unconventional, has been assembled by the organization **New Energy Congress** *and can be viewed at www.NewEnergyCongress.org, "Top 100".*

The draft legislation below has a provision for establishing a new Office of Energy Innovation as a Joint Congressional Office, and such Office would perform the type of activities normally reserved for Executive Branch agencies. As such, this particular provision is unusual, and perhaps even unconstitutional, yet serves to focus the debate on the need for critical new approaches to serious and growing energy-related problems. Specifically, the new Office should not be established as an agency of the Department of Energy, which has a well-documented history of vested-interest obstructionism of breakthrough energy technologies. To paraphrase a well-known saying, "New wine should not be put in old bottles!")

Energy Innovation Act of 2007 (draft)

Preamble

The United States is faced with unprecedented challenges to its national security, environment, and economic growth and stability due to a combination of factors that relate directly and indirectly to energy policy. These factors, and their connection to energy policy, are as follows:

- International terrorism. The United States military has long maintained an active presence in the Middle East to ensure an uninterrupted supply of oil to meet domestic demand for energy. Tensions in Middle East nations, and particularly the hostilities directed toward the United States by resentful extremists groups, are exacerbated by this military presence.

- Nuclear proliferation and increased threats of nuclear war. As global fossil fuel supplies tighten and energy prices rise, increasing numbers of nations are actively developing and installing nuclear power plants to satisfy demand for electricity. Some of these nations have stated or unstated intentions to use uranium enrichment technology to develop nuclear weapons to enhance their military capabilities, international status, and as a deterrent to U.S. military intervention in their sovereign affairs. As nuclear capabilities and materials become more

widespread, there is an obvious increase in the probability of nations or extremist groups hostile to the United States acquiring sufficient materials and technology to construct atomic or radiological weapons.

- Potential large-scale disruptions to fossil fuel supplies and resultant major negative impacts on the U.S. economy. Due to dependence on imported oil and a domestic economy whose foundation is built on low-priced and readily-available fossil fuels, the United States is peculiarly vulnerable to any large-scale disruptions in fossil fuel supplies. Such disruptions could arise through any number of mechanisms, natural or man-made. Acute short-term shortages may arise through weather or seismic activity, incidents of terrorism, regional warfare, or aggressive actions by energy cartels. Long-term shortages may arise as global supplies peak and decline in the face of accelerating global demand, particularly in China, India, and other developing nations. Whether short-term or long-term, spikes in fuel costs to unprecedented levels could have a crippling effect on the nation's economy and national security. Transportation, food production, manufacturing, product distribution, and roadway infrastructure are key segments that would suffer major negative impacts from high cost or sharply curtailed fossil fuel supplies.

- High cost of military deployment to protect United States energy interests in foreign lands. The use of military assets to ensure uninterrupted supplies of foreign oil requires a major allocation of federal funds that might otherwise be directed toward domestic programs. The U.S. military presence is unwelcome in several regions, and contributes to geopolitical tensions and the likelihood of hostilities involving U.S. military personnel and civilians.

- Negative impacts of global warming arising from combustion of fossil fuels. The scientific community, including leading climatologists at NASA and various global scientific institutes, has concluded from a mounting body of evidence that greenhouse gas emissions (predominantly carbon dioxide) from routine burning of fossil fuels is the major causative factor in the observed global warming phenomenon. The implications of significant warming and shift in global climate patterns are vast and potentially devastating, as follows:

    - Inundation of high population coastal cities worldwide due to rising sea levels from the melting of polar and Greenland ice sheets and mountain glaciers.
    - Weakening and potential shutdown of the Atlantic Ocean's Gulf Stream current due to freshwater intrusion, resulting in much colder climate and reduced food production in Western Europe and Northeastern U.S. and Canada.
    - Extreme heat and cold waves and storms of increasing intensity, including major hurricanes, tornadoes, typhoons, and snowstorms.

- Extensive weather-related damage to agricultural, manufacturing, commercial, and residential properties, including massive losses from flooding and drought.
- Fresh water and arable land shortages from melting of mountain glaciers and increased desertification
- Widespread crop failures with resultant food shortages.
- Disruption of energy supplies from weather-related damage to fossil fuel and electrical power infrastructures.
- Stressing and extinction of a significant percentage of terrestrial and oceanic species, including species at the base and pinnacle of the food chain.
- Migration of disease vectors to non-native regions.
- Collapse of domestic and international economies.
- Large migrations of human populations from heavily affected regions to less-affected regions, with accompanying resource strains put on the receiving regions.
- Increased potential of international, regional, and tribal conflicts over basic resources, including water, food, energy, and arable land.
- Potential for catastrophic die-off of ocean species due to acidification of oceans from increased carbon dioxide concentration in seawater, compounded by reduced oxygen solubility in warmer water and resultant blooms of toxic anaerobic microorganisms.
- Potential catastrophic releases of methane, a potent greenhouse gas, from melting permafrost, resulting in an accelerating global warming feedback loop.

- Damage to human health and the environment due to pollution of air, water, and soil from toxic and radioactive by-products of fossil fuel combustion and spills and nuclear power generation. Mercury levels continue to climb in fish, animal, and human tissues as a result of increasing domestic and global combustion of coal for electrical power generation. Breathable air quality and potable water quality deteriorates with the emissions of particulates, oxides of sulfur and nitrogen, and various carcinogenic and toxic byproducts of fossil fuel combustion and spills. Leakage of toxic and radioactive compounds due to inadequate containment and treatment of growing stockpiles of domestic and global nuclear wastes poses serious contamination dangers to the food chain and groundwater supplies.

- Vulnerability of the electrical grid to sabotage. The high degree of centralization of electrical generation facilities and extensive inter-connectedness of the U.S. electrical grid system makes this infrastructure very susceptible to acts of sabotage.

- Acceleration of innovative energy research in other nations may result in breakthroughs that economically disadvantage the United States. Research into new unconventional energy technologies is progressing in many nations. Without

significant investment in new approaches to energy generation, the United States is unlikely to play a leadership role and benefit from the tremendous economic development opportunities and increased competitiveness that would accrue to the early developers and adopters of breakthrough energy technologies.

Despite some modest progress in the adoption of conventional clean and renewable energy sources such as wind power, solar power, and biofuels, these technologies have significant limitations and can satisfy only a small fraction of the growing U.S. demand for energy. Based on current U.S. energy policy, the Energy Information Administration (the official statistics and projections agency of the Department of Energy) projects that by the year 2030 domestic energy consumption will be 30% higher than 2005 levels, with fossil fuels supplying 86% of the total energy demand, leading to a 35% increase in carbon dioxide emissions. Petroleum consumption is projected to be 20% higher than 2005 levels, with imports providing 60% of the supply. Despite the array of energy-related challenges facing our nation and planet, these projections suggest that current policies will leave the country in a precarious and highly-vulnerable state even 25 years from now.

America must embark on a bold new path with serious commitment and urgency.

The single most highly-leveraged opportunity for advancement toward solving complex global problems lies in a transformation in the way humanity generates and uses energy. The discovery and widespread deployment of advanced clean energy generation systems can lead to a future of breathtaking promise and near-limitless possibilities for the United States and the greater global community. A partial vision of the possibilities includes:

- Mitigation of global warming and stabilization of climate patterns.
- Clear, clean, healthy air through elimination of air pollution from industrial sites and vehicle fleets. Mercury contamination and other forms of toxic pollution from combustion of fossil fuels become a historical footnote.
- Cessation of military conflicts and geopolitical tensions related to dwindling fossil fuel supplies and other natural resources, resulting in greatly enhanced national security, reduced U.S. military expenditures, and reduced risk to military personnel and civilians.
- Reduction of the proliferation of potentially destructive nuclear technologies.
- Reduction or elimination of the generation of long-lived radioactive wastes.
- Mitigation and remediation of water and soil pollution made possible by very low cost energy.

- Great reduction in environmentally-damaging resource extraction and transportation of fossil and nuclear fuels.

- Restoration and preservation of forests formerly depleted for wood fuel.

- Sustainable low-impact forest management made possible by selective logging with aircraft powered by inexpensive new energy technology, eliminating the need for logging roads and preserving stream quality.

- Cessation of environmentally-damaging hydroelectric dam building and removal of dams that are devastating to fish runs and which inhibit the natural cyclical replenishment of flood plain soils.

- Greatly increased recycling of wastes made possible by very low cost energy, further reducing the need for environmentally-damaging resource extraction.

- Decentralization of energy generation eliminates the vulnerability of a centralized electrical grid system. Expensive, dangerous, landscape-altering power transmission lines become obsolete.

- Hunger and thirst disappear as food can be grown in compact automated systems anywhere on the planet, and water can be extracted from the air and sea and repeatedly recycled using low cost energy.

- Global standard of living greatly improves using clean inexpensive energy to foster sustainable local economies.

- Education rates improve throughout the developing world as subsistence living conditions are eliminated.

- Human population stabilizes as third world birth rates decline, the result of an educated global populace, thriving local economies, and higher living standards.

- A great expansion of the U.S. and global economy occurs as new industries and businesses are spawned by advances in energy generation.

- A new era of space travel is ushered in with the development of advanced energy and propulsion systems.

- A tremendous wave of human creativity is unleashed as people are freed from toil for basic sustenance, producing unimaginable progress in social and material conditions. A global culture of sharing and cooperation is embraced.

- The possibility for true and lasting world peace is within humanity's grasp.

Summary of the Energy Innovation Act of 2007

The Energy Innovation Act of 2007 contains the following provisions:

- Establishes and funds a new Joint Congressional Office of Energy Innovation
- Assigns to the Office of Energy Innovation the following mission:
    - Identify and rapidly advance new and unconventional approaches to energy generation in recognition of their critical importance to the United States' national and energy security and their potential as valuable solutions to urgent global environmental and resource depletion issues.
    - Accelerate small business early-stage research and development of new and unconventional approaches to energy generation through awards of modified Small Business Innovative Research (SBIR) grants and loan guarantees designed to fund up to five years of R&D.
    - Award large cash prizes for outstanding achievements in new and unconventional approaches to energy generation.
    - Perform initial and biannual technical assessments of candidate technologies through collaboration with contract consultants and various qualified university, private, and national laboratories.
    - Track progress of candidate technologies through annual progress reports.
    - Engage the American public's enthusiasm and support for new energy options through high-profile publication of award recipients, general descriptions of the technologies, and nonproprietary summaries of technical assessments and annual progress reports.
    - Establish regional research centers and incentives for collaborative work among researchers expert in a particular energy technology category.
    - Administer an Energy Innovation Fund to receive royalties from the profits of commercially successful federally-supported technologies, and use these royalties to fund ongoing future grants.
    - Collaborate with the Department of Energy on strategies for widespread deployment of viable commercial technologies.
- Establishes an independent and publicly accountable Citizen Oversight Council to monitor the Office of Energy Innovation and ensure compliance with its stated mission.
- Authorizes appropriations of $2.25 billion dollars per year for ten years, beginning in 2007, as follows:

    - $2 billion/year for awards of modified SBIR grants, loan guarantees, and cash prizes

    - $200 million/year for initial and biannual technical assessments of candidate technologies

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    - $50 million/year for facilities, administrative staff and overhead of the Office of Energy Innovation

It is expected that the federal funding awarded for two to five years of research and development of promising new energy generation technologies will result in many such technologies advancing to the stage of demonstrating substantial commercial potential, at which point private investment capital will provide further funding to the technologies of merit.

The economic stimulus and resultant federal, state, and local tax revenues generated by the provisions called for in the Act are substantial. Successful commercial ventures arising from the federal funding and "incubation" of promising concepts/technologies will multiply the economic stimulus and tax revenues many times over through new enterprise, creation of new jobs, and a general expansion of the U.S. economy that will rival or surpass the impact of the computer revolution.

The per capita investment by American citizens in the provisions called for by the Act amounts to less than $8 per year. The potential returns as measured by positive impacts to national security, energy security, human health, the environment, and economics are enormous and incalculable.

1.0. Establishment of a Joint Congressional Office of Energy Innovation

The 2007 Energy Innovation Act establishes and funds a new **Joint Congressional Office of Energy Innovation**. The focus of the Office of Energy Innovation is on promoting and jumpstarting **new and unconventional** approaches to energy generation, such approaches having the potential to enhance the national and energy security of the United States while providing environmental and human health benefits when compared to energy derived from fossil fuel combustion and fission-based nuclear reactors.

1.1. Mission of the Office of Energy Innovation

The mission of the Office of Energy Innovation shall be:

- Identify and rapidly advance new and unconventional approaches to energy generation in recognition of their critical importance to the United States' national and energy security and potential as valuable solutions to urgent global environmental and resource depletion issues.
- Accelerate small business early-stage research and development of new and unconventional approaches to energy generation through awards of modified Small Business Innovative Research (SBIR) grants and loan guarantees designed to fund up to five years of R&D.
- Award large cash prizes for outstanding achievements in new and unconventional approaches to energy generation.
- Perform initial and biannual technical assessments of candidate technologies through collaboration with contract consultants and various qualified national,

university, and private laboratories (similar to Congressional Office of Technology Assessment).
- Track progress of candidate technologies through annual progress reports.
- Engage the American public's enthusiasm and support for new energy options through high-profile publication of award recipients, general descriptions of the technologies, and nonproprietary summaries of technical assessments and annual progress reports.
- Establish regional research centers and incentives for collaborative work among researchers expert in a particular energy technology category.
- Administer an Energy Innovation Fund to receive royalties from the profits of commercially successful federally-supported technologies, and use these royalties to fund ongoing future grants.
- Collaborate with the Department of Energy on strategies for widespread deployment of viable commercial technologies.

1.2. Definition of "New and Unconventional Approaches to Energy Generation"

"New and unconventional approaches to energy generation" may include, but are not limited to, energy generation systems based on:

- Manipulation of electric and/or magnetic fields with novel circuits, materials, or fluids with reciprocating and/or rotating platforms or solid state designs
- Catalytic activation of electron energy levels in hydrogen, noble gas, or molecular gas plasma
- Zero-point energy conversion and/or Casimir effect nanotechnology engines, Van der Waals force devices, zero-bias diodes and/or non-thermal rectifiers
- Non-radioactive, aneutronic, or minimally radioactive low-temperature fission or fusion reactors
- Thermal gradient-to-electricity processes
- Hydrogen production through water splitting using catalysts, resonant frequencies, plasma arcing, and/or other novel processes
- Novel waste-to-energy processes
- Novel biochemical/bioelectric processes

Energy generation technologies that **do not** qualify as "new and unconventional approaches to energy generation" include the following well-researched and presently supported energy technologies:

- Combustion of petroleum-based fuels
- Combustion of natural gas
- Combustion of coal and its derivatives
- Hydrogen derived from petroleum, natural gas, or coal
- Uranium and plutonium fission-based nuclear reactors that emit neutrons

- "Hot fusion" (Tokamak-related) technologies supported by Department of Energy research programs
- Wind-based generation systems
- Solar-based generation systems
- Geothermal-based generation systems
- Biofuels (ethanol and biodiesel)
- Biomass combustion
- Fuel cells
- Anaerobic digestion of waste to biogas
- Conventional hydroelectric generators
- Any other technologies currently supported by DOE Offices or research programs

1.3. Modified Small Business Innovative Research Grants

A **modified** Small Business Innovative Research (SBIR) grant is designed to fund two years of research and development of a qualifying new and unconventional approach to energy generation using an accelerated and streamlined funding process and at increased award levels compared to conventional SBIR grants. These modifications recognize the critical importance of rapidly developing new clean energy generation technologies for our nation and our planet.

Conventional SBIR grants are awarded in a two-phase program. In Phase I, a successful grant applicant is normally awarded $100,000 in funding over a six to nine month period for the purpose of exploring the feasibility of the technical concept and the market potential for an eventual commercial offering. If the concept demonstrates technical merit and market potential, the applicant may be considered for a Phase II grant for research and development, such grants awarding up to $750,000 over a 2-year period.

Concerning intellectual property rights, the conventional SBIR grant recipient must agree to grant the federal government royalty-free use of any new discovery developed during the funding period for any purposes the government may choose. This "royalty-free" provision often discourages small businesses from seeking federal funding support for research and development. Large companies are frequently successful in having the royalty-free provision removed from federal research grants awarded to them.

Modified SBIR grants differ from conventional SBIR grants as follows:

- Grant are awarded in a single phase designed to fund up to two years of research and development
- Grant awards range up to $2 million
- Grant recipients are not required to grant the federal government royalty-free use of any new discovery developed during the funding period
- Grant recipients agree to pay a royalty on profits from commercially successful energy generation technologies arising from federally-supported research. This royalty is paid to a dedicated government fund ("Energy Innovation Fund") which

has the exclusive purpose of using these royalties to fund ongoing future modified SBIR grants, as described in Article 1.8 Royalties Paid to Energy Innovation Fund.

1.3.1. Requirements for Modified SBIR Grant Award Determination

A modified SBIR grant will be awarded based on merit as determined from:

- The applicant's written modified SBIR grant application
- The applicant's written budget for two years of research and development
- Scientific analysis as prescribed by the Office of Energy Innovation, such analysis composed of:
    - Technical review of the candidate concept/technology
    - Technical assessment through demonstration of the prototype or proof-of-principle experiments, if applicable

The modified SBIR grant application will include all the information required in a standard conventional SBIR grant application, and supplemented with information pertinent specifically to new energy generation technology, as follows:

- Technical description of the concept/technology
- Patent status and patent number(s) if applicable
- Number of years invested in research and development to date
- Progress of research and development to date
- Financial investment in research and development to date
- Grants and loans received for research and development
- Qualifications of key personnel on the research team
- Assessment of the concept/technology in the following areas:
    - Availability of a prototype for demonstration and assessment
    - Projected time required to produce a prototype if grant is awarded
    - Projected time required to produce a commercially marketable device
    - Safety in construction
    - Safety in operation
    - Exotic or hazardous materials used in construction
    - Exotic or hazardous materials used in operation
    - Characterization and toxicity of waste and emissions from construction
    - Characterization and toxicity of waste and emissions from operation
    - Remarkable features and advantages of the concept/technology compared to conventional energy generation technologies
    - Physical dimensions of the prototype and projected commercial device or system
    - Power output (watts/kilowatts) of the prototype and projected commercial device or system
    - Cost of manufacture of the prototype and projected commercial device or system

- Projected cost of commercial power delivery (cents/kilowatt-hour)
- Suitability for centralized power generation
- Suitability for decentralized power generation
- Suitability for mobile personal power generation
- Suitability to power vehicles

1.3.2. Reporting and Technical Review/Technical Assessment Requirements of Grant Recipient

The recipient of a modified SBIR grant is required to prepare and submit to the Office of Energy Innovation an annual progress report for each of the two years of research and development funded by the grant. The reports will detail any substantial progress that has occurred during the relevant period. The reports will be due at the end of the 13th and 25th months following the date of the grant award.

At the end of the two-year research and development period funded by the grant, the grant recipient is required to submit the concept/technology for a second round of scientific analysis, as prescribed by the Office of Energy Innovation. As in the initial scientific analysis required in the grant application process, this second scientific analysis is composed of the following:

- Technical review of the concept/technology
- Technical assessment through demonstrations of the prototype or proof-of-principle experiments, if applicable

Information provided in the annual reports and progress demonstrated in the technical review and assessment will be primary considerations in determining a candidate's merit for award of a subsequent loan guarantee.

1.4. Loan Guarantees for Continued Research and Development of New and Unconventional Approaches to Energy Generation

An **Innovative Energy Research Loan Guarantee** is designed to fund an additional three years of research and development of a concept/technology that previously had been awarded a modified SBIR grant, and which has demonstrated substantial progress during the two-year R&D period funded by the grant. In certain exceptional cases, an Innovative Energy Research Loan Guarantee may be issued to an applicant who was not an earlier recipient of a modified SBIR grant.

Typically the loan is 80% guaranteed by the federal government, with the applicant assuming the remainder of the risk. The loan guarantee percentage may be increased in exceptional circumstances.

Loan guarantees will range in amount from a minimum of $100,000 to a maximum of $10,000,000.

Loan guarantee recipients agree to pay a royalty on profits from commercially successful energy generation technologies arising from federally-supported research. This royalty is paid to a dedicated government fund ("Energy Innovation Fund") which has the exclusive purpose of using these royalties to fund ongoing future modified SBIR grants, as described in Article 1.8 Royalties Paid to Energy Innovation Fund.

1.4.1. Requirements for Innovative Energy Research Loan Guarantee Award Determination

An Innovative Energy Research Loan Guarantee will be awarded based on merit as determined from:

- The applicant's written Innovative Energy Research Loan Guarantee application, such application including information required by the modified SBIR grant application (see 1.3.1. Requirements for Modified SBIR Grant Award Determination)
- The applicant's written budget for an additional three years of research and development of the concept/technology
- Satisfactory annual written progress reporting on research and development performed during the two-year period funded by a modified SBIR grant
- Progress demonstrated in the second round scientific analysis at the end of the two-year research and development period funded by a modified SBIR grant
- If applicant is not a previous recipient of a modified SBIR grant, scientific analysis of the concept/technology as prescribed by the Office of Energy Innovation, such analysis composed of:
    - Technical review of the candidate concept/technology
    - Technical assessment through demonstration of the prototype or proof-of-principle experiments, if applicable

1.4.2. Reporting and Technical Review/Technical Assessment Requirements for Loan Guarantee Recipient

The recipient of an Innovative Energy Research Loan Guarantee is required to prepare and submit to the Office of Energy Innovation an annual progress report for each of the three years of research and development funded by the guaranteed loan. The reports will detail any substantial progress that has occurred during the relevant period. The reports will be due at the end of the 13^{th} , 25^{th} , and 37^{th} months following the closing date of the guaranteed loan.

At the end of the second year of the research and development period funded by the guaranteed loan, the loan guarantee recipient is required to submit the concept/technology

for a third round of scientific analysis (second round if the loan guarantee recipient is not a previous recipient of a modified SBIR grant), as prescribed by the Office of Energy Innovation. As in the prior analysis, this scientific analysis is composed of the following:

- Technical review of the concept/technology
- Technical assessment through demonstrations of the prototype or proof-of-principle experiments, if applicable

Information provided in the annual reports and progress demonstrated in the technical review and assessment will be valuable in attracting investment capital from the private sector.

1.5. Scientific Analysis of Concepts and Technologies

Results from the rigorous scientific analysis of a candidate concept/technology are a critical factor in the determination of merit for a modified SBIR grant and Innovative Energy Research Loan Guarantee. Scientific analysis is composed of the following:

- Technical review of the concept/technology
- Technical assessment through demonstrations of the prototype or proof-of-principle experiments, if applicable

Scientific analysis is performed by qualified personnel at qualified facilities as follows:

- Technical review of the concept/technology is performed by a qualified contract consultant or consultant team
- Technical assessment through demonstrations of the prototype or proof-of-principle experiments is performed by a qualified contract consultant or consultant team with the cooperation of the technology research team
- Technical assessment through demonstrations of the prototype or proof-of-principles experiments is performed at a qualified university laboratory, private laboratory, or national laboratory
- Qualifications for contract consultants and laboratory facilities are established by the Office of Energy Innovation

Nominal expenses incurred by the applicant and applicant's research team to facilitate the scientific analysis of the candidate concept/technology will be reimbursed by the Office of Energy Innovation. Nominal expenses may include the following:

- Packaging, freight, and freight insurance for the technology, associated equipment, and instruments
- Transportation of the applicant and research team
- Lodging for the applicant and research team
- Meals for the applicant and research team

1.6. Prizes for Outstanding Achievements in New and Unconventional Approaches to Energy Generation

As a means of stimulating private and public sector efforts to produce breakthroughs in energy generation technology, the Director of the Office of Energy Innovation shall administer a program to award cash prizes in recognition of outstanding achievements in research and development of new and unconventional approaches to energy generation.

Provisions of the prize program shall include:

- Widely advertised solicitation of submissions of research results, technology development, and prototypes
- A competitive process for the selection of cash prize recipients
- Eligibility to compete for cash prizes shall be extended to candidates who have applied for a modified SBIR grant and/or an Innovative Energy Research Loan Guarantee, and to candidates who have not applied for such a grant and/or loan guarantee.
- The total amount of all cash prizes awarded for a fiscal year shall not exceed $50,000,000.
- The amount of an individual cash prize shall not exceed $10,000,000.

1.7 Publication of Grant and Loan Guarantee Recipients, Technical Reviews/Technical Assessments, and Progress Reports

The Office of Energy Innovation will engage the American public's enthusiasm and support for new energy options through high-profile publication of:

- The names of modified SBIR grant and Innovative Energy Research Loan Guarantee recipients
- General descriptions of the respective concepts/technologies
- Summaries of the respective annual progress reports
- Summaries of the respective technical reviews and technical assessments

All such descriptions and summaries will be composed in such a way as to keep the public informed without compromising proprietary intellectual property.

1.8 Royalties Paid to Energy Innovation Fund

The awards of taxpayer-funded modified SBIR grants and Innovative Energy Research Loan Guarantees are expected to advance a significant number of new energy generation technologies to the stage of successful commercial deployment. The anticipated high commercial value of successful technologies will provide substantial financial benefit to the private technology owners. In recognition of the critical incubation funding provided

by the taxpaying public, recipients of modified SBIR grants and Innovative Energy Research Loan Guarantees agree to pay royalties on profits earned from commercial deployment of technologies arising from federally-supported research and development.

Royalties are paid to the "Energy Innovation Fund". The exclusive purpose of this dedicated government fund is to serve as a source of funds for ongoing future modified SBIR grants. As the endowment of the Energy Innovation Fund increases, the need for taxpayer funding of grants decreases and ultimately ceases altogether in the event of sufficient royalty payments to the Fund.

Royalty payments shall be required as follows:

- Recipient of any combination of modified SBIR grants and Innovative Energy Research Loan Guarantees totaling less than $1,000,000 shall be required to pay royalties amounting to 2% of profits.
- Recipient of any combination of modified SBIR grants and Innovative Energy Research Loan Guarantees totaling $1,000,000 or greater shall be required to pay royalties amounting to 3% of profits.
- In instances in which two or more individual recipients of grants and/or loan guarantees collaborate for teamwork on similar energy generation technologies, the royalty payment shall be 1% of profits. The Office encourages such collaboration in recognition of the benefits of pooled research expertise.
- In the event of transfer of ownership of intellectual property related to the commercially successful technology, the royalty requirement becomes the obligation of the new owner(s).

1.9. Regional Research Centers for Collaborative Work on a Specific Technology Category

In order to leverage the benefits of collaborative work among researchers expert in a particular category of new and unconventional energy generation technology, and the benefits of access to high quality research and development facilities, the Office shall collaborate with universities and national laboratories to establish regional research centers. Each research center shall focus on one particular technology category.

"Collaboration" is defined as two or more individual recipients of modified SBIR grants and/or Innovative Energy Research Loan Guarantees working as a team to advance the similar technologies referred to in their grant or loan guarantee applications.

Incentives shall be provided to encourage teamwork among researchers of related technologies, as follows:

- The Director of the Office of Energy Innovation shall favor an increase in the total funding for modified SBIR grants awarded to collaborating researchers.

- The royalty requirement on profits earned from successful commercial deployment of federally-supported and collaboratively developed technologies shall be reduced such that royalties amount to 1% of profits, as described in Article 1.8 Royalties Paid to Energy Innovation Fund.

1.10 Federally-Assisted Deployment of Commercially Successful New Energy Generation Technologies

Upon advancement of a new and unconventional energy generation technology to the stage of commercial viability, the Director of the Office of Energy Innovation shall jointly develop with the Secretary of Energy a strategy for widespread commercial deployment.

1.11. Appointment of the Director of the Office of Energy Innovation

The Director of the Office of Energy Innovation shall be appointed by the Chairman of the Senate Committee on Energy and Natural Resources.

1.12. Qualifications of Candidate for Director of the Office of Energy Innovation

In order to prevent potential conflicts of interest in the Director's administration of the Office of Energy Innovation and its mission, a candidate for the position of Director of the Office of Energy Innovation shall meet the following requirements:

- The candidate shall publicly disclose receipt of any compensation, grants, donations, entertainment, gifts or favors from any company, organization, government agency, or individual whose primary business, mission, or income pertains to one or more energy generation technologies listed in Article 1.2. Compensation, grants, donations, gifts, and favors not permitted include the following:
    - Compensation received as an owner, employee, independent contractor, consultant, or provider of professional services
    - Grants received for research, development, or other work
    - Campaign contributions received as a candidate for public office or as an elected official
- The candidate shall publicly disclose the value of candidate's ownership as stock or real assets in companies or assets whose primary activities pertain to one or more energy generation technologies listed in Article 1.2.
- The candidate is a well-recognized advocate of "new and unconventional approaches to energy generation" as defined in Article 1.2.

2.0. Establishment of a Citizen Oversight Council

Due to the critical nature of the mission of the Office of Energy Innovation and the relevance of successful execution of this mission to the enhancement of U.S. national security, energy security, and global environmental conditions, the Act establishes a Citizen Oversight Council to monitor the Office of Energy Innovation.

2.1. Mission of the Citizen Oversight Council

The mission of the Citizen Oversight Council shall be:

- Monitor the activities of the Office of Energy Innovation and ensure compliance to its stated mission using the highest ethical standards of conduct.
- Ensure conflicts of interest do not disrupt the execution of the mission of the Office of Energy Innovation
- Serve as an Appeals Board in cases when a grant or loan guarantee applicant disputes the outcome of the application or scientific analysis process
- Act as advocates for the public interest in developing new and unconventional energy generation systems
- Issue widely publicized reports in cases of disruption to the execution of the stated mission of the Office of Energy Innovation

Expenses incurred by the Members of the Citizen Oversight Council in the performance of its stated mission will be reimbursed by the Office of Energy Innovation. Expenses may include the following:

- Transportation
- Lodging
- Meals
- Expenses related to publicity of findings
- Expenses related to consultations with experts

2.2. Appointment of the Citizen Oversight Council

The Citizen Oversight Council shall be appointed by the Chairman of the House Committee on Energy and Commerce.

2.3. Composition of the Citizen Oversight Council

The Citizen Oversight Council shall be composed of 15 individuals as follows:

- 5 Council Members shall be well-recognized advocates of "new and unconventional approaches to energy generation" as defined in Article 1.2.
- An additional 5 Council Members shall be well-known environmental advocates
- An additional 5 Council Members shall be respected leaders from the business or science community

2.4 Public Disclosures of Members of the Citizen Oversight Council

The names and qualifications of the Members of the Citizen Oversight Council shall be made public by the Office of Energy Innovation. In addition, the Members shall make public disclosure of the following:

- Any compensation, grants, donations, entertainment, gifts or favors from any company, organization, government agency, or individual whose primary business, mission, or income pertains to one or more energy generation technologies listed in Article 1.2. Such compensation, grants, donations, gifts, and favors include the following:
    - Compensation received as an owner, employee, independent contractor, consultant, or provider of professional services
    - Grants received for research, development, or other work
    - Campaign contributions received as a candidate for public office or as an elected official
- The value of Member's ownership as stock or real assets in companies or assets whose primary activities pertain to one or more energy generation technologies listed in Article 1.2.

3.0 Appropriations

The Energy Innovation Act of 2007 authorizes appropriations of $2.25 billion dollars per year for ten years, beginning in 2007, as follows:

- $2 billion/year for awards of modified SBIR grants, Innovative Energy Research Loan Guarantees, and cash prizes
- $200 million/year for initial and biannual technical reviews and assessments of candidate technologies
- $50 million/year for facilities, administrative staff and overhead of the Office of Energy Innovation