DEPARTMENT OF ENERGY

The Department of Energy (DOE) has four strategic mission areas. They include advancing energy and nuclear security, promoting scientific discovery and innovation, and ensuring environmental responsibility and management excellence. DOE initiates and coordinates various energy-related programs throughout the country and provides much of the data and information that is used to educate individuals and lawmakers on energy issues. The DOE has been host to some of the world's greatest technological breakthroughs to date and have established energy technology infrastructure to better harness the country's natural resources.

To continue into the future and to survive in these tight budgetary times, the agency and Congress need to better harness taxpayer funds to secure our energy future.

In the pages that follow, this proposal will discuss ways to make DOE more efficient and ensure that the agency is focused on the core mission for which it was created. However, it must be emphasized that the single greatest impact the federal government can have on our energy security is to expand access to the vast energy resources—traditional and alternative—available on federal lands.

The most important role this agency has is directing our nation on a course towards energy security. As it stands, federal lands contain vast amounts of renewable and traditional energy resources that remained largely untapped due to land use and offshore access restrictions. For example, 90 percent of geothermal resources are found on federal lands while 29 million acres are primed for solar energy development, particularly in the Southwest.[1]

Onshore wind energy potential covers at least 21 million acres of public lands, but the transmission lines and pipelines necessary to transmit power to consumers cross hundreds of public lands, rivers, and streams.[2] Ocean wind and wave power have tremendous potential off our nation's coasts.[3] The single greatest way our government can advance our energy economy is to provide full access to these energy supplies, so the country's true capabilities can be fully and responsibly harnessed.

[1] "U.S. Department of the Interior, "Building Our Clean Energy Economy," http://doi.net/progressreport/energy.html
[2] DOI, News Release, March 11, 2009, http://www.doi.gov/news/09_News_Releases/031109c.html
[3]U.S. Department of Interior, Bureau of Ocean
http://www.boemre.gov/offshore/renewableenergy/PDFs/BOEMREAlternativeEnergyfactsheet.pdf

Eliminate the Office of Energy Efficiency and Renewable Energy[4] to save $24 billion over ten years

Basic Renewable Energy Research and Development is the focus of EERE. This sub-agency administers a dedicated program for every major renewable energy source and efficiency technology. [5] Partnering with industry, the agency has made significant progress to develop more cost competitive alternative energy technologies. EERE was funded at $9.1 billion in FY2010, which includes funding from the American Recovery and Reinvestment Act (ARRA), and the Administration proposed $3.2 billion in its FY 2012 Request. Ending EERE's programs is estimated to save $24 billion over ten years.

There is little doubt the Department of Energy (DOE) and EERE in particular have played an important role to furthering fledgling technology. In recent years though, the pace of private investment has begun to increase commensurate with the maturity of the technology itself. Combined global public and private renewable energy financing reached $243 billion in 2010, up from $186.5 billion in 2009.[6]

For its own part, the federal government began funding research and development for renewable energy in the 1970s.[7] The American Recovery and Reinvestment Act provided an infusion of over $90 billion.[8] In 2010, the federal assistance reached $34 billion.[9]

The role of federal research should not be overlooked. Federal research has brought about spectacular technology advancements in past decades, such as the invention of the atom bomb in the 1940s or the Internet and GPS in more recent years. Indeed, certain research initiatives will have an important place in the federal budget.

While basic federal renewable energy research and development is a worthy goal, it is no longer a priority, considering the nation's unsustainable debt combined with the technology and scale of renewable energy generation having reached a point where industry experts and private investors are capable of assuming funding responsibilities.

The Congressional Budget Office (CBO) recommended reducing funding for research and later stage technology development, demonstration of commercial feasibility and the deployment of new technologies at EERE. CBO acknowledged the private sector often performs these activities better and can generate direct feedback from consumers in markets to determine the true merits

[4]Congressional Budget Office, 2011 Budget Options, Page 117 of PDF http://www.cbo.gov/ftpdocs/120xx/doc12085/03-10-ReducingTheDeficit.pdf

[5] hydrogen, biomass and biorefineries, solar, wind, geothermal, hydro, vehicle technologies, building technologies, industrial technologies, federal energy management, facilities and infrastructure, and weatherization

[6]Bloomberg New Energy Finance, BCSE Meeting, March 15, 2011; RemewableEnergyWorld.com, 2010 Clean Energy Investment Hits a New Record, January 11, 2011 http://www.renewableenergyworld.com/rea/news/article/2011/01/2010-clean-energy-investment-hits-a-new-record

[7]Congressional Research Service, RS22858, Fred Sissine, January 26, 2011; http://www.crs.gov/Products/RS/PDF/RS22858.pdf

[8] "Department of Energy pours funds into cleantech industry," iStockAnalyst, November 14, 2010; http://www.istockanalyst.com/article/viewiStockNews/articleid/4666702

[9]Renewableenergyfocus.com, News, 2010: Clean energy investment up to US$243 billion, April 27, 2011; http://www.renewableenergyfocus.com/view/17600/2010-clean-energy-investment-up-to-us243-billion/

of a technology more cost-effectively. CBO also cited previous conclusions by the Government Accountability Office, which determined the DOE has not been successful manager (or consistently improved since earlier assessments) of various technology development projects, which have often failed to meet their goals, and are not initiating sufficient oversight.[10]

Alternative energy technology is a growing market and a multi-billion dollar industry with many applications already available. Energy security, as it relates to DOE's purview, should *not* mean investing in projects the private sector is already investing in or spending taxpayer dollars to deploy non-competitive technology.

Some of the venture capital backers of Google, Amazon.com, and others say that the alternative energy boom "is bigger than the internet by an order of magnitude. Maybe two."[11] Even initiatives once considered too risky for private investment eventually catch on if determined to have potential.[12]

Renewable energy development is not without its risks. These risks, however, are a cornerstone to a working market. They enable entrepreneurs to address glitches in technology and delivery systems, ultimately providing the highest quality good or service in response to demand rather than politics. Misguided subsidies foster an attitude of apathy by removing the natural link between revenues and performance value. Too much government investment can also neutralize the competitive advantage that investors and companies have earned by risking capital on cutting edge energy technologies. Providing subsidies allows others to catch up without true risk and ignore potential financial challenges.

After decades of research and federal funding that have laid the foundation for renewable energy, venture capital, private equity, philanthropists, and dedicated renewable energy businesses should take the lead in developing technologies on a commercial scale that are cost-competitive.

Billions of private sector dollars and venture capital[13] are already dedicated to next generation energy technologies. The U.S. led the world in venture capital and private equity investments in renewable energy by a long shot with over $4 billion in 2010.[14] U.S. venture capital investment in renewable energy increased 54 percent to $1.14 billion in the first quarter of 2011 from the

[10]Congressional Budget Office, Reducing the Deficit: Spending and Revenue Options, March 2011; http://www.cbo.gov/ftpdocs/120xx/doc12085/03-10-ReducingTheDeficit.pdf

[11]New Energy Technologies, Inc., Investing in Renewable and Alternative Energy, 2010; http://www.newenergytechnologiesinc.com/investing_renewable

[12]The New York Times, Matthew L. Wald, "Energy Firms Aided by U.S. Find Backers, February 2, 2011; http://www.nytimes.com/2011/02/03/business/energy-environment/03energy.html?_r=1&pagewanted=print

[13]The New York Times, Cezary Podkul, "Private Equity Is Bullish on Clean Energy, January 29, 2011; http://green.blogs.nytimes.com/2010/01/29/private-equity-is-bullish-on-clean-energy/. Pipeline Clean Energy, CleanTech & Renewable Energy 1Q11; Press Release, April 19, 2011; http://cleanenergypipeline.com/Press.aspx?id=15. Live Science, "Investment in Green Energy Quadruples in 4 Years, June 3, 2009: http://www.livescience.com/5497-investment-green-energy-quadruples-4-years.html.

[14] Bloomberg New Energy Finance, BCSE Meeting, March 15, 2011, Slide 11

same time period in 2010.[15] Global venture capital reached $8.8 billion in 2010, up 28 percent from 2009.[16]

Philanthropists are now playing a significant role as well. Started in 2005, GE's Ecomagination program is on pace to invest $10 billion between 2010 and 2015 in renewable energy and energy efficiency technologies, such as buildings and appliances.[17] GE recently marked a milestone in thin-film solar and will construct what will likely be the largest manufacturing plant for solar panels in the country that is estimated to cost $600 million.[18] To date, Google has totaled $780 million in renewable energy investments, including solar, wind, and transmission.[19] The company does not seem to be slowing down either as it recently announced its largest renewable energy investment to date of $280 million into a solar energy fund[20] and, most recently together with Citi, $102 million in a wind energy project.[21] Goldman Sachs went beyond its original commitment of investing $1 billion in renewable energy and energy efficiency projects and has now invested over $2 billion.[22]

Subsidizing market success or potential is not the highest and best use of taxpayer dollars. In Pennsylvania, a swath of tax credits from various levels of government depressed market prices for solar by 75 percent to the point it could not be made profitable. Now state legislators are seeking corrective measures that would require utilities to buy solar power—essentially increasing the state's clean energy standard—that will initially increase prices for them but ultimately be passed on to consumers.[23]

While there may be a limited role for DOE research where market investments do not initially reach, this is done most efficiently at the Office of Science where the Department is already at work in these areas.

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[15]Ernst & Young, US VC investment in cleantech reaches $1.14 billion in Q1 2011, a 54% increase from Q1 2010, May 2, 2011; http://www.ey.com/US/en/Newsroom/News-releases/US-VC-investment-in-cleantech

[16]Renewable Energy World, "2010 Clean Energy Investment Hits a New Record, January 11, 2011; http://www.renewableenergyworld.com/rea/news/article/2011/01/2010-clean-energy-investment-hits-a-new-record

[17]Environment and Energy Management News, "GE's Ecomagination Spent $1.8bn, Launched 22 Products in 2010,"June 21, 2011, http://www.environmentalleader.com/2011/06/21/ges-ecomagination-spent-1-8bn-launched-22-products-in-2010/, accessed June 28, 2011.

[18]Anderson, Eric, "GE hits milestone with thin-film solar, will build plant," *Times-Union* (Albany, NY), April 7, 2011. http://blog.timesunion.com/business/ge-hits-milestone-with-thin-film-solar-will-build-plant/23346/, accessed June 28, 2011.

[19] Website of Google Green, "Are there innovative ways to support innovation," http://www.google.com/green/collaborations/support-innovations.html, accessed June 28, 2011.

[20]The Official Google Blog website, "Helping homeowners harness the sun," June 16, 2011, http://googleblog.blogspot.com/2011/06/helping-homeowners-harness-sun.html, accessed June 28, 2011; Website of the Financial Times Tech Hug, "Google launches $280 million solar fund," June 15, 2011 http://blogs.ft.com/fttechhub/2011/06/google-launches-280-million-solar-fund/, accessed June 28, 2011.

[21]Website of BusinessWire, "Citi, Google to Invest in Additional Phase of Terra-Gen Power's Alta Wind Energy," June 22, 2011, http://www.businesswire.com/news/home/20110622006208/en/Citi-Google-Invest-Additional-Phase-Terra-Gen-Power%E2%80%99s, accessed June 29, 2011; Website of Austin Business Journal, by Silicon Valley/San Jose Business Journal, "Google puts another $102M in wind energy," June 22, 2011, http://www.bizjournals.com/austin/news/2011/06/22/google-puts-another-102m-into-mojave.html, accessed June 28, 2011.

[22] Website of Goldman Sachs, "Environmental Stewardship and Sustainability," http://www2.goldmansachs.com/citizenship/environment/business-initiatives.html, accessed June 28, 2011.

[23] Maykuth, Andrew, "Pennsylvania's solar-energy industry suffering from success," Philadelphia Inquirer (PA), May 24, 2011, http://articles.philly.com/2011-05-24/business/29578002_1_solar-projects-green-energy-capital-partners-solar-power, accessed June 28, 2011.

Finally, EERE operates in the name of energy security in preparation for coming decades as global fossil fuel supplies are depleted and expanding energy economies continue to demand more fuel. However, the U.S. Energy Information Administration projects fossil fuels will still account for 78 percent of America's energy mix in 2035.[24] While such preparation is necessary, existing fossil fuel supplies should not be ignored nor their economic importance be understated. The federal government should serve as a steward and facilitator of domestic exploration and production of natural resources. Energy security in this respect should mean increasing access to domestic natural resources (primarily a function of the Interior Department's Bureau of Land Management and Bureau of Ocean Energy Management, Regulation, and Enforcement) and maintaining the national petroleum reserves for significant, unanticipated breaks in fuel supplies.

Federal energy policy should focus on increasing access to our nation's domestic natural resources and leave advancements in technology to private markets.

EERE Programs

1. **Solar Energy Technologies Program**
   This program provides funding for various solar power projects, such as photovoltaics, concentrating solar power, systems integration, and market transformation. It includes the new SunShot Initiative that attempts to achieve solar cost-competitiveness by 2020.

   As it stands, solar power is receiving extensive support from private sources. In the first quarter of 2011, solar raised the largest percentage of capital at 32 percent, a 162 percent increase over the first quarter of 2010.[25] Mergers and acquisitions activity nearly doubled for solar power in the same time period with 63 transactions.[26]

   While the industry is still struggling to achieve cost-competitiveness, residential solar accompanied by power purchase agreements (PPA) hold great promise in the near term while larger projects continue to address the remaining technical barriers to widespread commercial and utility scale implementation.[27]

2. **Wind & Water Power Program**
   This program seeks to increase performance, cost-competitiveness, and deployment time of wind and hydropower technologies.

   The U.S. Energy Information Administration projects wind power and hydropower will account for the largest portion of renewable electricity generation through 2030. Hydropower continues to lead with a 35 percent share of the nation's renewable energy

[24]U.S. Energy Information Administration, Richard Newell, Annual Energy Outlook 2011 Reference Case, December 16, 2010; http://www.eia.gov/neic/speeches/newell_12162010.pdf
[25]Ernst & Young, "US VC investment in cleantech reaches $1.14 billion in Q1 2011, a 54% increase from Q1 2010, May 2, 2011; http://www.ey.com/US/en/Newsroom/News-releases/US-VC-investment-in-cleantech
[26]Peachtree Capital Advisors, 2010 Greentech M&A Review; http://www.peachtreecapitaladvisors.com/lib/downloads/research/2010GreentechAnnual.pdf
[27]Forbes, Eric Savitz, "Venture Capital: The Case For Investing In Solar, January 13, 2011; http://blogs.forbes.com/ericsavitz/2011/01/13/venture-capital-the-case-for-investing-in-solar/

generation portfolio[28] while onshore wind power is the most attractive private investment of renewable energy sources next to solar.[29]

3. Geothermal Technologies Program

This program partners with industry and academia to explore and access geothermal resources in the United States, already a $1.5 billion industry annually.[30]

4. Fuel Cell Technologies Program

This program provides a wide range of initiatives to enhance the development and deployment of hydrogen and fuel cell technologies and achieve cost-competitiveness.

There are already several existing applications for fuel cell technology, including aerospace[31] as well as spacecraft.[32] Sales of primary fuel cell power and combined heat and power (CHP) systems to grocery and retail markets, university campuses, local governments, and corporate facilities like Walmart, Google, Bank of America, and Coca-Cola increased significantly in 2010. Sales also increased for industrial purposes and for backup electricity generation purposes. States are also creating favorable policies that provide tax benefits for fuel cell infrastructure. There is estimated to be 3,600 jobs associated with fuel cell technology and 7,000 if supply chain employment is considered.[33]

5. **Biomass Program**

This program conducts and facilitates research and development for each stage of biomass applications, primarily dealing with converting various feedstocks into fuel more efficiently. Biomass in certain forms already benefits from federal assistance in the form of tax credits, the Renewable Fuels Standard that mandates certain percentages of its use over time, and various grant and loan programs.

6. **Building Technologies Program**

This program addresses commercial and residential structure components (windows, lighting, sensor controls, etc.) that are already being addressed by the private sector.

Energy efficiency, whether at home or at work, are worthwhile goals. However, these efficiency and weatherization measures are not without their own hurdles. The Institute of Medicine recently studied the impacts of green buildings on indoor environments and found that buildings tightly sealed could expose occupants to insufficient ventilation and higher

[28]U.S. Energy Information Administration, Energy in Brief, September 1, 2010; http://www.eia.gov/energy_in_brief/renewable_energy.cfm
[29]Pipeline Clean Energy, Press Release, April 19, 2011; http://www.cleanenergypipeline.com/public/Press.aspx?id=15
[30]U.S. Department of Energy, Energy Efficiency & Renewable Energy, Geothermal Technologies Program, About the Program, October 25, 2010; http://www1.eere.energy.gov/geothermal/about.html
[31]Fuel Cells 2000, Fuel Cell Technology Update, July 2011; http://www.fuelcells.org/news/updates.html
[32]National Aeronautics and Space Administration, Kenneth A. Burke, NASTA/TM-2003-212730, Fuel Cells for Space Science Applications, November 2003; http://gltrs.grc.nasa.gov/reports/2003/TM-2003-212730.pdf
[33] Fuel Cells 2000, State of the States: Fuel Cells in America, June 2011; http://www.fuelcells.org/StateoftheStates2011.pdf

concentrations of pollutants.[34] Indoor dampness, poor ventilation, excessive temperatures, and emissions from buildings were all cited as potential problems with retrofitted buildings.[35]

According to another report, this is not the first time buildings attempting to pass as environmentally friendly have run into problems. During the last shift in construction methods from traditional to those supposed environmentally sound, airtight (i.e. weatherized) buildings faced unnatural buildup of humidity and outbreak of dangerous molds.[36]

In order to solve the remaining problems associated with building retrofits and weatherizing homes, the federal government should stop incentivizing the technology so markets will be incentivized to address them most efficiently.

7. **Weatherization and Intergovernmental Assistance Program**
This program is comprised of the Weatherization Assistance Program and the State Energy Program that have largely been in place since the 1970s. It provides grants to states, Indian tribes, and international agencies, contributing to economic development overseas,[37] for energy efficiency methods for low-income households.[38] It was funded at $270 million in FY 2010 and $8.1 billion from the American Recovery and Reinvestment Act (ARRA), nearly eight times the normal amount of annual funding for these purposes across all federal programs.[39]

Other agencies also provide homeowners with significant support. Department of Health and Human Services operates the Low Income Home Energy Assistance Program (LIHEAP), which exists for the same purpose only it provides the actual payment of consumer utility bills.[40] This plan halves that money, essentially following this administration budget proposal. Further, the Building Efficiency Program at the Department of Housing and Urban Development[41] and the Building Technologies/Retrofitting[42] both provide overlapping initiatives.

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[34]Institute of Medicine, *Climate Change, the Indoor Environment, and Health*, http://www.nap.edu/catalog.php?record_id=13115#description

[35]Harvard School of Public Health, News AT HSPC, "Energy-Efficient Buildings Can Be Hazardous To Health," http://www.hsph.harvard.edu/news/features/coverage-in-the-media/environmental-health-green-buildings-spengler/index.html; and
The Hill, Energy & Environment Blog, "Report" 'Green' buildings could harm your health, Julian Pecquet, June 7, 2011, http://thehill.com/blogs/e2-wire/677-e2-wire/165191-report-green-buildings-could-harm-your-health

[36]International Business Times, Blogs, Going Green Could Be Hazardous to Your Health: Institute of Medicine, Vincent Zandri, June 26, 2011; http://www.ibtimes.com/blog/world-watch/institute-medicine-green-health_152.htm

[37]U.S. Department of Energy, Energy Efficiency & Renewable Energy, Weatherization and Intergovernmental Program, "Accelerating Adoption of Energy Efficiency and Renewable Energy," May 2009; http://www1.eere.energy.gov/wip/pdfs/wip_factsheet.pdf

[38]U.S. Department of Energy, Energy Efficiency & Renewable Energy, Weatherization & Intergovernmental Program, About, September 23, 2010; http://www1.eere.energy.gov/wip/about.html

[39]Congressional Budget Office, Reducing the Deficit: Spending and Revenue Options, March 2011; http://www.cbo.gov/ftpdocs/120xx/doc12085/03-10-ReducingTheDeficit.pdf

[40] U.S. Department of Energy, Energy Efficiency & Renewable Energy, Weatherization and Intergovernmental Program, "Accelerating Adoption of Energy Efficiency and Renewable Energy," May 2009; http://www1.eere.energy.gov/wip/pdfs/wip_factsheet.pdf

[41]Reuters, U.S. Secretary of Housing and Urban Development, U.S. Congressman, Boston Mayor Tour Unprecedented Energy-Savings Renovation, May 19, 2011; http://www.reuters.com/article/2011/05/19/idUS238743+19-May-2011+BW20110519.

After issuing a Management Alert in 2009, the U.S. Department of Energy Inspector General (DOE IG) found the weatherization program suffered from poor workmanship, inflated material costs, and inadequate inspections in 2010.[43] The investigation focused on Illinois' weatherization program, which received $242 million from the U.S. Department of Energy. The report found substandard home assessments, weatherization workmanship, and contractor billing, which "put the entire program at risk."[44] The administering of the program itself had initially falling short of its intended timeline—approximately 98.5 percent behind schedule. According to the Department of Energy itself, delays stemmed from federal regulations.[45]

Numerous reports have revealed this program is riddled with waste and abuse. [46] In one example, new Jersey was forced to end a $4 million federally funded weatherization job training program after a lack of job demand left trainees without prospects – only seven of the 184 aspiring workers that received training found work in the field.[47] California also had trouble allocating funding.[48]

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[42] U.S. Department of Energy, Energy Efficiency & Renewable Energy, Weatherization and Intergovernmental Program, "Accelerating Adoption of Energy Efficiency and Renewable Energy," May 2009; http://www1.eere.energy.gov/wip/pdfs/wip_factsheet.pdf

[43]The New York Times, Emily Yehle, "'Substandard' Ill. Program Undermines U.S. Weatherization Effort, Says DOE Watchdog," October 19, 2010; http://www.nytimes.com/gwire/2010/10/19/19greenwire-substandard-ill-program-undermines-us-weatheri-18351.html?ref=earth

[44]U.S. Department of Energy, Office of Inspector General, OAS-RA-11-01, October 2010; http://www.eenews.net/assets/2010/10/19/document_gw_01.pdf

[45]ABC News, Report: Stimulus Weatherization Program Bogged Down by Red Tape, Jonathan Karl, February 17, 2010; http://abcnews.go.com/print?id=9780935; Los Angeles Times, "Obama's federal government can weatherize your home for only $57,362 each," Andrew Malcom, February 18, 2010; http://latimesblogs.latimes.com/washington/2010/02/obama-stimulus-weatherization.html.

[46] http://www.youtube.com/watch?v=TvCZBKxP4TY and ABC News, Jonathan Karl, "Report: Stimulus Weatherization Program Bogged Down by Red Tape, February 17, 2010; http://abcnews.go.com/print?id=9780935 and http://www.eenews.net/Greenwire/2010/05/13/14. The Washington Examiner, Byron York, "Report: In Obama's Chicago, stimulus weatherization money buys shoddy work, widespread fraud, October 19, 2010; http://www.washingtonexaminer.com/opinion/blogs/beltway-confidential/Report-In-Obamas-Chicago-stimulus-weatherization-money-buys-shoddy-work-widespread-fraud-105300303.html. The Daily News Miner, by the Associated Press, "Anchorage opts out of home weatherization program," November 4, 2010; http://newsminer.com/bookmark/10163297-Anchorage-opts-out-of-home-weatherization-program. The Boston Herald, by Associated Press, "Another $10M headed to RI for weatherization, November 6, 2010; http://www.bostonherald.com/business/general/view/20101106another_10m_headed_to_ri_for_weatherization/**.** Central Valley Business Times, "Auditor: California's weatherization program virtually frozen, February 2, 2010**;** http://www.centralvalleybusinesstimes.com/stories/001/?ID=14284. Newjerseyroom.com, "State audit finds $118.8 million weatherization program lacks oversight, April 5, 2010; http://www.newjerseynewsroom.com/state/state-audit-finds-1188-million-weatherization-program-lacks-oversight. The Detroit News, "Grads finding green jobs hard to land, " May 13, 2010; http://www.detnews.com/article/20100513/BIZ/5130450/Grads-finding-green-jobs-hard-to-land. Pine Tree Watchdog, Naomi Schalit, "Energy program shut down after questions raised about politics, effectiveness," January 31, 2011; http://pinetreewatchdog.org/2011/01/31/energy-program-shut-down-after-questions-raised-about-politics-effectiveness/. Citizens Against Government Waste, "CAGW Issues Spending Cut of the Week: Weatherization Assistance Program, May 19, 2011; http://www.cagw.org/newsroom/releases/2011/cagw-issues-spending-cut-of-2.html.

[47]Website of U.S. Senator Tom A. Coburn, MD, Oversight and Investigations, "Help Wanted: How Federal Job Training Programs are Failing Workers, February 2011; http://coburn.senate.gov/public/index.cfm?a=Files.Serve&File_id=9f1e1249-a5cd-42aa-9f84-269463c51a7d

[48]Sacramento Business Journal, Michael Shaw, "Auditor questions Energy Commission's stimulus spending," December 1, 2009: http://sacramento.bizjournals.com/sacramento/stories/2009/11/30/daily15.html

According to the Congressional Budget Office (CBO), federal funding could encourage state and local governments to reduce their incentives for weatherization and energy conservation and spend state revenues elsewhere, leaving federal support with little net impact. CBO recommend this program be eliminated, which would save taxpayers $900 million in savings over five years and $2 billion over 2012-2021 period. [49]

8. Federal Energy Management Program

The Department coordinates energy efficiency efforts for all federal agencies, and it is also the primary outlet for federal energy efficiency programs and enforcement for the private sector.

Despite this important role, the Department is the largest consumer of energy among all federal civilian agencies (excluding the postal service) and unlike most other agencies, has actually increased its energy usage in the most recent reporting period. The Department's Inspector General estimates the agency wastes $11.5 million annually by simply refusing to adhere to federal efficiency guidelines. The energy savings would be enough to power 9,800 homes for an entire year. [50]

9. **State Energy-Efficient Appliance Rebate Program**

This program provides rebates that go to state governments to promote the purchase of Energy Star qualified appliances. It received $300 million from the American Recovery and Reinvestment Act.

The Department of Energy Inspector General reported instances of fraud in the $300 million State Energy Efficient Appliance Rebate Program. It found at least one consumer in Georgia had bought multiple appliances that were eligible for rebates under the program, then returned them later only to still get the federal rebate for their purchase. The investigation concluded that the rebate program has inadequate safeguards that "expose the program to potential abuse on a significant scale."[51]

10. **Vehicle Technology Programs**

This program seeks technology breakthroughs to reduce highway transportation petroleum use by developing technologies for hybrid, plug-in hybrid, fuel cell, and advanced efficiency vehicles. It received $25.5 million in FY 2010.

Electric vehicle technology has been around for decades and has yet to catch on. The State of California reversed its electric vehicle production mandate in the 1990s, because consumers the cars, "…fall short on performance, range or both."[52]

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[49]Congressional Budget Office, 2011 Budget Options, Page 116 of PDF, http://www.cbo.gov/ftpdocs/120xx/doc12085/03-10-ReducingTheDeficit.pdf

[50]Government Executive, Katherine McIntire Peters, "IG: Energy is setting a poor example for conservation," June 3, 2009: http://www.govexec.com/story_page.cfm?articleid=42877&dcn=todaysnews. The Gaea Times, Duncan Mansfield of Associated Press, "Inspector general finds federal DOE sites fail to turn down thermostats in off-hours, July 24, 2009; http://news.gaeatimes.com/inspector-general-finds-federal-doe-sites-fail-to-turn-down-thermostats-in-off-hours-119144/.

[51]U.S. Department of Energy, Office of Inspector General, INV-RA-11-01, Investigative Report, "Management Alert on the State Energy Efficient Appliance Rebate Program," December 2010; http://www.ig.energy.gov/documents/INV-RA-11-01.pdf, http://www.eenews.net/eenewspm/2010/12/06/3

[52] http://www.nytimes.com/1995/12/26/us/california-is-backing-off-mandate-for-electric-car.html

Still there has been a resurgence in private investment interest in recent years where development is being spearheaded.[53] The technology has become widely available to consumers as automakers have begun mass producing their own versions, such as the Nissan Leaf and Chevy Volt, and others are looking to get into the market as well.[54] Nissan has committed to investing $5.6 billion to expand capacity for electric vehicle construction to 500,000 by 2013.[55] These developments among private companies have provided enough seed money for the industry to move along on its own.[56]

Eliminate the Office of Fossil Energy's Research and Development funding but Maintain Strategic Petroleum Reserve Responsibilities for a ten year savings of $7.322 billion

The Office of Fossil Energy's (FE) stated mission is to ensure the nation can continue to rely on traditional resources for clean, affordable energy while enhancing environmental protection.[57] Its staff consists of hundreds of scientists, technicians, and administrative staff.

FE headquarters at two major facilities to develop new technology—the National Energy Technology Laboratory (NETL), which is the only U.S. national laboratory largely devoted to fossil energy research through the development of advanced coal, natural gas, and oil technologies. It has locations in West Virginia, Pennsylvania, Texas, Oregon, and Alaska. Its research portfolio includes over 1,800 projects with a total value of over $9 billion and private sector cost-sharing over $5 billion. There are 15 projects operating in Oklahoma (conducted by universities and state agencies) valued at $34 million ($18 million DOE cost-share) and supporting 970 jobs.[58]

Continued federal funding for fossil fuel research and development is not a priority at this time, particularly because the energy industry has the resources to conduct the research on their own. The original purpose of the Office of Fossil Energy was the gasification of coal and its transformation into hydrogen. It has since become more closely associated with a carbon sequestration program.

In 2009, GAO found that from 1997 to 2006, the U.S. oil and natural gas industry spent at least $20 billion on R&D—oil companies spent $9.6 billion; service companies spent $10.7 billion. During this time period, DOE funding for the same purposes totaled $1 billion. While there are

[53]Financial Times, John Reed, "Electric carmakers raise funds for new models, June 3, 2011; http://www.ft.com/cms/s/0/ffc24862-8dff-11e0-bee5-00144feab49a.html#ixzz1OVHt5ShE

[54] Nissan official website, http://www.nissanusa.com/leaf-electric-car/index#/leaf-electric-car/index. General Motors, Chevrolet 2011 Volt, http://www.chevrolet.com/volt/. Wall Street Journal, Venture Capital Dispatch, "Electric Car Maker Coda Raises $76M As Competition Rises, January 5, 2011, http://blogs.wsj.com/venturecapital/2011/01/05/electric-car-maker-coda-raises-76m-as-competition-rises/. Tesla Motors official website, About Tesla, http://www.teslamotors.com/about.

[55]Loveday, Eric, "Renault-Nissan CEO still committed to $5.6 billion electric vehicle investment," June 20, 2011, http://green.autoblog.com/2011/06/20/renault-nissan-ceo-5-6-billion-electric-vehicles/

[56]The New York Times, Matthew L. Wald, "Energy Firms Aided by U.S. Find Backers, February 2, 2011; http://www.nytimes.com/2011/02/03/business/energy-environment/03energy.html?_r=1&pagewanted=print

[57] U.S. Department of Energy, Office of Fossil Energy, Fact Sheet, http://fossil.energy.gov/aboutus/fe_fact_sheet2011.pdf

[58]U.S. Department of Energy, Office of Fossil Energy, R&D Projects in Oklahoma, June 21, 2007; http://fossil.energy.gov/programs/projectdatabase/stateprofiles/2004/Oklahoma.html, based on the Department of Commerce's assumption that 28.5 direct and indirect jobs are created for every $1 million in R&D funding

some safeguards in place, the study also found that DOE does not formally assess or include a screening in its criteria of the likelihood that industry would have conducted the R&D without federal funding and, in some cases, has conducted similar studies already made available by industry. Competition and consumer demand provides sufficient incentive for this industry to continue its own R&D. [59]

While the major oil and natural gas companies are typically the ones in the industry with in-house R&D operations, independents do not typically have the money to conduct research themselves. However, they often obtain or become aware of new technologies from other companies, trade publications, or professional associations. While some may argue smaller independents will act as free riders to the majors' R&D, DOE's continued funding causes taxpayers to otherwise be the host of free ridership.

- Funding for the Office of Fossil Energy should be reduced by eliminating funds for research and development (R&D). **This would save $659.7 million annually**.
- Terminate the *Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Research Program* fund, which operates with the Office of Fossil Energy but is funded by federal oil and gas leasing revenues ($100m annually). These revenues should be re-directed towards deficit reduction, and the purpose of the fund—to increase supplies of natural gas and other petroleum resources—should be fully assumed by private industry.
- Keep Strategic Petroleum Reserve intact

Fossil Energy Research and Development (R&D) programs - - $659.7 million

CCS Demonstration Program
- the Clean Coal Power Initiative
- FutureGen 2.0
- Industrial CCS Demonstrations

The CCS and Power Systems Program supports long-term, high-risk research and development
- *The Carbon Capture Sub-Program* develops pre and post combustion co2 capture technologies
- *The Carbon Storage Sub-Program* previously funded carbon sequestration activities and now looks at geologic storage
- *The Advanced Energy Systems sub-program* seeks to improve the efficiency of coal-based power systems
- *The Cross-Cutting Research sub-program* seeks to bridge basic and applied research

Other R&D Programs, Direction Management Support
- Drilling, Well-Completion, and Stimulation
- Environmental Protection
- Field Projects/Technical Assistance
- Methane Hydrates

[59]U.S. Government Accountability Office, GAO-09-186, Research and Development, DOE Could Enhance the Project Selection Process for Government Oil and Natural Gas Research, December 2008; http://www.gao.gov/new.items/d09186.pdf

- Natural Gas Delivery Reliability and Storage R&D
- Oil and Natural Gas Production R&D
- The Natural Gas Technology Program focuses on developing technology to mitigate environmental risks with natural gas production.

Petroleum Reserves - - $242.4 million

FE is responsible for maintaining and operating national fuel reserves for security in the case of emergency supply disruptions

- Strategic Petroleum Reserved in New Orleans, LA
- The Northeast Home Heating Oil Reserve in the northeastern US
- The Rocky Mountain Oilfield Testing Center in Casper, Wyoming.

Reduce Funding for Office of Science in certain areas and Consolidate ARPA-E within the Program's Structure to maintain level funding

The Office of Science conducts research and development on advanced technology and concepts dating back to the Manhattan Project. Facilities constructed in the 1940s and 1950s began decades of advanced scientific research on some of the most complex and otherwise untouched issues, such as supercomputers, the Human Genome Project, and advancements in fusion energy.

The Office of Science can play a useful role in continuing its operations in fields where market-based research does not yet reach. This office operates within the boundaries of known scientific concepts but in areas where commercial applications may not yet be apparent. In a similar way, the Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) was created to further high-risk research and development of groundbreaking technologies unlike the nature of its counterparts currently found within the Energy Efficiency and Renewable Electricity (EERE) agency that support scientific applications already found on a commercial scale.

To promote better coordination and prevent duplication, ARPA-E should be consolidated into the Office of Science.[60] The Office of Science and Technology Policy—a research coordinating agency at the White House—should be responsible for the transition and adjustment of mission in accordance with its Strategic Goals and Objectives[61]

The Office of Science held over 900 conferences, symposia, workshops, and meetings from 2005 to 2007, costing over $38 million. The Department of Energy's Inspector General found that these numbers were understated also. For example, registration fees were used to pay for alcohol, entertainment, and gifts like the nearly $28,000 spent to entertain guests at a yacht club with cigars and wine. Additionally, 318 attendees to one conference in 2007 received extravagant meal items, costing over $230,000.[62] The Office can disseminate and discuss latest

[60]The New York Times, Matthew L. Wald, "Energy Firms Aided by U.S. Find Backers, February 2, 2011; http://www.nytimes.com/2011/02/03/business/energy-environment/03energy.html?_r=1&pagewanted=prin
[61]Office of Science and Technology Policy, the White House, About, http://www.whitehouse.gov/administration/eop/ostp/about
[62]U.S. Department of Energy, Office of Inspector General, DOE/IG-0794, Inspection Report, Office of Science Laboratory Conferences, May 2008; http://www.ig.energy.gov/documents/IG-0794.pdf

research and developments in other, more technologically advanced means, such as webinars and videoconferences without the unnecessary expenses.

The Office of Science should consolidate ARP-E within its structure and reduce funding to reflect reductions in travel, conferences, and certain non-priority research areas.

Funding changes are made to the following areas

Fusion Energy Science receives $0; previously $417 million
Funding for fusion energy projects is a longstanding and worthwhile agenda for the Office of Science. Modeled after the process that fuels the sun's explosive and sustaining energy, this science has been touted as one of the most promising forms of energy generation. Significant advancements have been made by the Department of Energy already in conjunction with industry and academia. For example, General Fusion, a Canadian company funded by venture capital, is advancing with equipment necessary to develop fusion energy based on concepts developed decades ago[63] It recently received $19.5 million from various private sources in its efforts to conduct demonstrations with the ultimate goal of making the technology commercial within a decade.[64] The company hopes to accomplish this with less than $1 billion, which significantly undercuts the federal cost of building new facilities for the next stage of experimentation.[65]

While fusion energy has not been harnessed in a controlled setting for general use, its promise has captured the interest of private capital that will continue to grow if the energy is found viable. For these reasons, DOE's $417 million for fusion energy sciences should be reduced by 75 percent to $104.25 million.

Biological & Environmental Research receives $0; previously $588 million
This program is funding $603 million in the FY 2012 budget, should be eliminated entirely. Business and social demand for environmental and climate change goals have accelerated to a level that no longer necessitates targeted public research and development.

Workforce Development for Teachers and Scientists receives $0; previously $20 million
Both industry and the nation's network of colleges and universities are providing students with the knowledge and opportunities to pursue science, technology, engineering, and mathematics.

Science Lab Infrastructure remains $127 million
Advanced Scientific Computing Research remains $383 million
The following programs will retain their previous funding levels
Basic Energy Sciences remains $1.59 billion
High Energy Physics remains $790 million

[63]General Fusion Inc., Home, 2010; http://www.generalfusion.com/
[64]General Fusion Inc., "General Fusion Closes $19.5M Series B Funding Round, May 5, 2011; http://i.bnet.com/blogs/gf_pr_series_b.pdf?tag=content;drawer-container
[65]CBS Business Network, BNET, Kristen Korosec, "Amazon's Jeff Bezos Invests in the Search for the Holy Grail – Fusion Power, May 6, 2011; http://www.bnet.com/blog/clean-energy/amazon-8217s-jeff-bezos-invests-in-the-search-for-the-holy-grail-8212-fusion-power/5075?tag=mantle_skin;content

Nuclear Physics remains $522 million
Safeguards and Security remains $83 million
Science Program Direction remains $189 million
SBIR remains $107 million

Eliminate the Office of Nuclear Energy and transfer its nuclear waste storage responsibilities[66]

The Office of Nuclear Energy seeks to advance nuclear power as a reliable and safe energy source. This office is responsible for supporting national nuclear facilities and funding research and development initiatives, including fuel cycle R&D, waste storage and management, and efforts to achieve cost-competitiveness. The program was funded at $866 million in FY 2011 and requests $852 million for FY 2012.

*In recent months, the Office has shut down its nuclear waste storage preparation, focusing entirely on research and development. This interim period provides an opportune time to begin preparing plans to competitively bid its waste storage responsibilities while working with Congress to modify existing statue.

Nuclear Waste Storage

The U.S. has generated over 75,000 metric tons of hazardous spent nuclear fuel, which is expected to double by 2055.[67] DOE currently stores commercial and defense-related nuclear waste at five DOE stations and various other on-site locations at reactors across the U.S. In the early 1980s, the federal government was tasked with storing nuclear waste.[68] Future legislation determined Yucca Mountain in Nevada would be the primary repository.[69] While DOE has spent $10 billion preparing for storage at this site, no nuclear waste has been stored at Yucca Mountain to date.[70]

The Administration's FY 2010 budget request ended the potential of nuclear waste at Yucca Mountain. In June 2011, the chairman of the Nuclear Regulatory Commission (NRC) effectively withdrew DOE's submission for licensure to store waste at Yucca Mountain, terminating the remaining momentum of the program.[71] The chairman claimed there was insufficient public

[66]CBS Business News, BNET, Chris Morrison, "Week in Renewables: Risky IPOs, Solar Gasoline and the Nuclear Renaissance, February 8, 2010; http://www.bnet.com/blog/energy/week-in-renewables-risky-ipos-solar-gasoline-and-the-nuclear-renaissance/2954?tag=mantle_skin;content
[67]U.S. Government Accountability Office, GAO-11-731T, Nuclear Waste, Disposal Challenges and Lessons Learned from Yucca Mountain, June 1, 2011; http://www.gao.gov/new.items/d11731t.pdf
[68]The Library of Congress, Thomas, Bill Summary & Status 97th Congress (1981-1982) H.R. 3809, P.L. 97-425; http://thomas.loc.gov/cgi-bin/bdquery/z?d097:H.R.3809:
[69]Govtrack.us, H.J. Res 87: Yucca Mountain Development resolution, 107th Congress 2001-2002, http://www.govtrack.us/congress/bill.xpd?bill=hj107-87
[70]Nuclear Energy Institute, "Frequently Asked Questions: Yucca Mountain and Used Nuclear Fuel Management," http://www.nei.org/keyissues/nuclearwastedisposal/factsheets/yuccamountainfaqpage2/
[71]The Seattle Times, By Associated Press, "Major actions on nuclear dump under Jaczko's rule," June 12, 2011; http://seattletimes.nwsource.com/html/nationworld/2015301563_apusnuclearchieftimeline.html

support in Nevada but did not site technical or safety concerns. DOE was initially denied this request and further action is to be determined.[72]

In 2010 the President established the Blue Ribbon Commission to review alternative options for nuclear waste storage and disposal. The Commission recently released a preliminary report in which it acknowledged that a geologic location for nuclear spent fuel is currently the most viable option.[73]

In the meantime, bureaucratic licensing uncertainties and delays will likely mean more waste will be stored on site at reactors. However, spent nuclear fuel pools for waste storage are near capacity at reactors. Further, states under contractual agreement with the federal government to have waste stored elsewhere are currently without assurances of future storage. Washington and South Carolina have already sued to prevent the termination of the repository for this reason. Fines generated from federal delays are adding up and have already cost $956 million. Further deviating from agreements is estimated to cost taxpayers $15.4 billion through 2020 due to broken contractual agreements. The uncertainty surrounding a viable waste option also increases inaction of new nuclear reactor construction.[74]

A few insights have become apparent. First, taxpayers are spending money for a government service that has yet to materialize since its inception nearly thirty years ago. Any progress made towards a workable repository appears to have been stopped short as DOE has already begun terminating its Yucca operations, eliminating any sense of assurance for future waste storage.

Because the option to store nuclear waste is at an impasse, Congress should provide clear direction for the future of nuclear power in our country. In the interim, Congress should begin by repealing the federal government's responsibility of managing nuclear waste and, instead, allow states and other entities to perform a more efficient and cost-effective management of spent nuclear fuel.

The State or controlling entities can determine alternative options as they so choose and developers of new nuclear reactors will have assurance of a waste repository for energy generation. As new technology develops in accordance with nonproliferation standards, these entities may choose to reprocess portions of spent nuclear fuel rods based on the most cost-effective method and community interests. NRC should retain its regulatory oversight

To do this, the NRC should move forward in its license review of Yucca Mountain's technical and safety merits after which DOE should competitively bid its licensing contracts from the NRC to states and private entities that can determine and perform storage and management more efficiently and cost-effectively. This will allow an expeditious commencement of Yucca

[72] U.S. Government Accountability Office, GAO-11-731T, Nuclear Waste, Disposal Challenges and Lessons Learned from Yucca Mountain, June 1, 2011; http://www.gao.gov/new.items/d11731t.pdf

[73] Blue Ribbon Commission on America's Nuclear Future, Disposal Subcommittee Report to the Full Commission, June 1, 2011; http://brc.gov/sites/default/files/documents/draft_disposal_report_06-01-11.pdf

[74] U.S. Government Accountability Office, GAO-11-731T, Nuclear Waste, Disposal Challenges and Lessons Learned from Yucca Mountain, June 1, 2011; http://www.gao.gov/new.items/d11731t.pdf

Mountain as a storage facility, so nuclear waste, currently stored at various locations across the country, can consolidate potentially dangerous materials into one secure location.

Finally, the current utility fee—a $0.01 cent flat fee paid by ratepayers for storage costs—should sustain the transition and downsizing of NRC during this process. Later it can be shifted from ratepayers to plant operators to reflect the true costs of storage.

Research and Development

Today, nuclear energy is a viable commercial industry accompanied by mature but growing technology. There are 104 nuclear reactors in the U.S. that provide approximately 20 percent of the nation's electricity generation. Over the last several decades, efficiency improvements have allowed nuclear power plants to markedly increase power generation.[75]

The Office of Nuclear Energy, distinct from the Office of Science, conducts research and development work more closely tied with commercial technology applications that can be expected to be subsumed by industry in time. While some narrow research and development can be effective, there is sufficient and growing demand in markets to achieve greater nuclear power efficiency and innovative technology without supplementary federal research and development.

The Congressional Budget Office recommended reducing federal funding for nuclear energy for similar reasons. In its 2011 Budget Options, CBO notes that federal research and development is not furthering the proliferation of nuclear power plants. Other factors will determine whether an expansion occurs.[76] New private investments in nuclear energy are still being made and totaled $7.2 billion in the Third Quarter of 2010 after reaching $15.4 billion earlier in the year.[77]

U.S. energy consumption is projected to rise significantly in the coming decades. With traditional natural resources expected to be depleting within the same time period, it is likely nuclear power will play a strong role in the country's energy mix.

Despite advancements in nuclear technology and efficiency, nuclear power plant construction has idled for decades as regulatory hurdles and capital costs remain remarkably high. Despite these difficulties, the Energy Policy Act of 2005 included a vehicle to advance nuclear reactors and standby support framework for new nuclear power plant construction to protect against regulatory or judicial delays. Rather than providing direct subsidies for activities that can and largely have been absorbed by private industry, federal assistance should focus on loan guarantees. Such a "borrower-pay" system would ensure private developers have access to the necessary capital to bridge the gap where private investment falls short. Title XVII Sec. 1703 loan guarantees are sufficient to do this and should remain intact with structural changes as noted in another section of this report.

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[75]U.S. Department of Energy, Office of Nuclear Energy, Nuclear Energy—An Overview, February 15, 2011; http://www.ne.doe.gov/pdfFiles/factSheets/2012_Overview_Factsheet_final.pdf

[76]Congressional Budget Office, Reducing the Deficit: Spending and Revenue Options, March 201; http://www.cbo.gov/ftpdocs/120xx/doc12085/03-10-ReducingTheDeficit.pdf

[77]Reuters, "Research and Markets: New Investments in the Nuclear Energy Market Were Majorly Recorded in the United States, Reporting 40 Deals $7.2 Billion in Q3 2010, January 25, 2011; http://www.reuters.com/article/2011/01/25/idUS220558+25-Jan-2011+BW20110125

Especially as demand for electricity is projected to grow immensely in the coming decades, nuclear power has almost guaranteed its market share in the nation's energy mix. Federal research and development activities, while helpful, are no longer necessary.

Maintain the National Nuclear Security Administration (NNSA) and consolidate the Office of Environmental Management and reduce funding by 20 percent

This program was created in 2000 as a semi-autonomous agency to consolidate three existing program components. Its mission is to maintain the nation's stockpile of nuclear weapons, prevent nuclear terrorism, provide the U.S. Navy with nuclear propulsion, and respond to nuclear and radiological emergencies.

After the damage witnessed from atomic energy in World War II, Congress directed federal efforts to address nuclear weapons stockpiles and the management of waste and contamination generated by nuclear facilities and other materials. These responsibilities were transitioned from defense authority to civilian authority where the Office of Environmental Management (EM) was eventually created. EM is tasked with the cleanup and waste management at Cold War legacy sites. Although separate form NNSA, EM performs activities similar in nature to NNSA and sometimes at the same locations, such as at the Savannah River.[78]

Both NNSA and EM conduct similar work relating to nuclear weapons and facilities and should be consolidated to improve management and performance. Since 1990, GAO has placed EM on its *High Risk* federal programs that are vulnerable to waste, fraud, and abuse.[79] Reports have repeatedly shown both NNSA and EM continue to be cited for mismanagement and for failing to meet cost requirements and agency goals.[80] EM's own agency reorganization plan proposes to move the agency to within NNSA.[81] Consolidating the two would prevent confusion and streamline DOE's broader efforts. These agencies should be consolidated to achieve better coordination and efficiency.

NNSA received $9.2 billion in FY 2010 while EM received $5.9 billion for a total of $15.10 billion. This proposal would combine the two agencies and reduce funding by 20 percent for $12.08 billion annually and a ten year cost of $134.09 billion.

Reduce Office of Electricity Delivery and Energy Reliability (EDER) funding by eliminating research and development activities but maintaining Permitting, Siting, and Analysis as well as Infrastructure Security and Energy Restoration for a ten year savings of $1.34 billion

[78] U.S. Government Accountability Office, GAO-10-816, Nuclear Waste, Actions Needed to Address Persistent Concerns with Efforts to Close Underground Radioactive Waste Tanks at DOE's Savannah River Site, Septemeber 2010; http://www.gao.gov/new.items/d10816.pdf

[79] U.S. Government Accountability Office, GAO-10-816, Nuclear Waste, Actions Needed to Address Persistent Concerns with Efforts to Close Underground Radioactive Waste Tanks at DOE's Savannah River Site, Septemeber 2010; http://www.gao.gov/new.items/d10816.pdf

[80] U.S. Government Accountability Office, GAO-09-271, High-Risk Series, An Update, January 2009; http://www.gao.gov/new.items/d09271.pdf

[81] EM Reorganization into NNSA, Secretary Chu, electronic mail correspondence, July 8, 2011

The program's mission is to modernize the electric grid, enhance security and reliability of the energy infrastructure, and facilitate recovery from disruptions to the energy supply. There is a legitimate role for DOE to issue permitting and siting of electricity infrastructure nationwide as well as infrastructure security. It is less prudent, particularly in these economic times, for this agency to be proactive in pursuing research and development or funding towards goals shared by private or state/cooperative entities. The remainder can be accomplished through technology transfer rather than R&D, which accounts for the majority of EDER's funding.

Climate change, energy storage, and renewable energy integration, smart grid, and others are initiatives within EDER's research and development but also interests shared by growing market demand and private capital. EDER's funding should be reduced to reflect $0 for research and development in order that it can be dedicating to serving only core functions. For any shortcomings, the Department of Energy's Office of Science is sufficient to fill in the gaps.

Research and Development initiatives conducted at the nine national laboratories include:

High temperature superconductivity Research and Development

Superconductivity is a more efficient way to transfer energy that replaces copper wiring with an alternative that is capable of transporting higher levels of electricity without the load loss. Further research and development will be required to achieve technological breakthroughs necessary to implement superconductivity on a broad scale. However, industry progress has occurred[82] as scientists continue research in this field. [83] Demonstration is also being done for some advanced technologies.[84]

Visualization and Controls

Our nation's electric infrastructure is more than 100-years old and is in need of modernization that will provide for the more efficient and reliable delivery of electricity while protecting from attacks. Certain components of smart grid technology have shown potential benefits with customer consent. While pilot projects have garnered protests among community stakeholders for privacy and central control concerns, markets have seen the writing on the wall and are moving towards innovative technology that can achieve these goals and more acutely meet consumer demand without invading privacy or limiting individual freedoms.[85]

[82]Scientific American, Charles Q. Choi, "Iron Exposed as High-Temperature Superconductor," April 23, 2008; http://www.scientificamerican.com/article.cfm?id=iron-exposed-as-high-temp-superconductor

[83]Physorg.com, "Breakthrough in high-temperature superconductivity," August 18, 2005; http://www.physorg.com/news5893.html

[84] Sumitomo Electric, Press Release, 2011, Sumitomo Electric Commenced Trial Mass Production of High-Temperature Superconducting Wire with Critical Current of 200A, February 10, 2011; http://global-sei.com/news/press/11/11_16.html

[85] Electric Light & Power/POWERGRID International, Leo McCloskey, Airbiquity, "What Makes a Grid Smart?" June 20, 2011; http://www.elp.com/index/display/article-display/3108906422/articles/electric-light-power/volume-89/issue-3/sections/what-makes-a-grid-smart.html. Electric Light & Power/POWERGRID International, C.A. Burkhardt, HT Capital Advisors, "Mergers, Acquisitions for Smart Grid Red Hot, June 1, 2011; http://www.elp.com/index/display/article-display/1688161561/articles/electric-light-power/volume-88/issue-4/sections/mergers_-acquisitions.html

Smart Grid saw a substantial infusion of venture capital in 2010[86] that nearly doubled from 2009 to $769 million.[87] GE's *Ecomagination* partnered with venture capital firms to create a $200 million fund in 2010 that promotes competitive awards for innovative electric grid ideas and technologies.[88] Several other industry giants are paving the way as well, such as IBM that alone invested $2 billion for smart grid start-up companies as well as AT&T, Verizon, T-Mobile, Cisco, and Intel.[89]

Renewable and Distributed Systems Integration (Eliminated)

Renewable energy integration will be a key component of modernizing the nation's electric grid and bringing a new generation of energy sources online. Consumer demand appears to be growing in this respect and is likely a primary driver behind growth in renewable energy investments. The critical point will be how efficient can electricity generated from renewable sources be transmitted through the grid for rate payers to consume. Consumer demand and necessity of available natural resources will continue to move U.S. research and development in this area without federal funding.[90] Climate change research and development is also included under this initiative. Federal funding for various domestic and international climate change research and initiatives has reached across multiple federal agencies, costing taxpayers billions of dollars annually without a method of measuring results.[91]

Eliminate Energy storage and Power Electronics

Increasing investments in renewable energy and electric vehicles are drawing private capital for bulk energy grid storage. One report indicates the industry market share will reach $13 billion by 2015.[92] The industry reached $1.5 billion in 2010 when another report projected it would be valued at $35.3 billion in 2020.[93] The Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) is already funding energy grid storage and advanced battery companies,[94] and companies like NRG Energy, Microsoft, Silver Spring Networks, Tesla, and

[86] GreenTechMedia, Eric Wesoff, Huge 2010 Finish for Greentech Venture Capital, January 3, 2011; http://www.greentechmedia.com/articles/read/This-Week-in-Greentech-Finance-VC-MA-IPOs/

[87] Energy Business Daily, "Smart Grid Venture Capital Investments Almost Doubled in 2010, January 27, 2011; http://energybusinessdaily.com/renewables/smart-grid-venture-capital-investments-almost-doubled-in-2010/

[88] General Electric Company, Ecomagination, About the Challenge, 2011; http://challenge.ecomagination.com/ct/a.bix?c=home

[89] Smart Meters, "IBM becomes venture capitalist for smart grid start-ups, May 4, 2011; http://www.smartmeters.com/the-news/522-ibm-becomes-venture-capitalist-for-smart-grid-start-ups.html

[90] Electric Light & Power/POWERGRID, Ravi Mandalike, Wipro Technologies, "Renewables on Smart Grid," June 20, 2011; http://www.elp.com/index/display/article-display/8503235096/articles/electric-light-power/volume-89/issue-3/sections/renewable-on-smart-grid.html. Electric Light & Power/POWERGRID, Grid Integration Articles, http://www.elp.com/index/renewable-energy/gridintegration/more-articles.html

[91] The White House, Federal Climate Change Expenditures Report to Congress, FY 2011, June 2010,

[92] The Wall Street Transcript, "$13 Billion Market Share For Power Grid Storage Sector By 2015 Says Deutsche Bank Lead Analyst; Frequency Regulation Subsector To Lead To Bulk Energy Storage Solutions For Grid Use In The Long Term, February 25, 2011; http://www.twst.com/yagoo/Galveson121123.html.

[93] Renewable Energy World, Jennifer Runyon, "Grid Energy Storage a $35B Market by 2020," August 31, 2010; http://www.renewableenergyworld.com/rea/news/article/2010/08/pike-research-grid-energy-storage-a-35b-market-by-2020

[94] U.S. Department of Energy, Press Releases, "Six ARPA-E Projects Illustrate Private Investors Excited About Clean Energy Innovation, February 3, 2011; http://www.energy.gov/10045.htm

BrightSource Energy are investing in similar energy storage projects.[95] Other private donors are also taking the lead by investing in innovative battery technologies and storage capacity.[96]

Activities, such as infrastructure security and energy restoration[97] that protect the nation's critical energy infrastructure should remain intact. Additionally, EDER's role in permitting and siting should continue being at current funding levels as well necessary funding for[98] the authorization for electricity exports and Presidential permits for cross-border transmission lines.

Eliminate the Energy Star Program and save $627 million over ten years.[99]

Energy Star is a program is jointly administered by the Department of Energy and the Environmental Protection Agency (EPA). Energy Star[100] is a voluntary appliance labeling program that provides consumers with energy efficiency data for a wide range of products sold in stores, covering more than 60 product categories from household appliances and computers to water coolers and vending machines.

Federal investigations have revealed substantial flaws in the program's integrity, leading those administering it to give consumers false assurances of efficiency and cost savings and providing retailers with a marketing boon at the expense of taxpayers.

GAO conducted a sting operation by submitting applications for 20 bogus products under four different fictitious company names to find out if they would receive Energy Star certification.[101] These 20 products included an alarm clock powered by a gasoline generator and a space heater with a duster taped to it claiming to be an air purifier. Both received approval within a matter of days along with 15 of the 20 submitted. The products submitted did not include disclaimers or safety standard file number typically required. Instead, Energy Star agencies simply accepted the fake companies' claims that the products met program standards.[102]

Other basic shortfalls have been were found. For example, when DOE tested dishwashers, it did so with clean dishes; whereas, outside groups tests them with dirty ones for a more conservative efficiency estimate.

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[95]GigaOM Pro, "Green IT Q1: Cleantech Breaking Out – and Bracing for Hard Times, April 20, 2011; http://pro.gigaom.com/2011/04/green-it-q1-cleantech-breaking-out-and-bracing-for-hard-times/

[96]Renewable Energy World, "Bill Gates backs battery built for clean energy, May 23, 2011; http://www.renewableenergyworld.com/rea/partner/buy-battery/news/article/2011/05/bill-gates-backs-battery-built-for-clean-energy; http://www.renewableenergyworld.com/rea/partner/buy-battery/news/article/2011/05/bill-gates-backs-battery-built-for-clean-energy; http://gigaom.com/cleantech/general-compression-raises-20m-for-air-energy-storage/

[97]U.S. Department of Energy, Office of Electricity Delivery & Energy Reliability, Infrastructure Security & Energy Restoration (ISER) http://www.oe.energy.gov/about/iser.htm

[98] U.S. Department of Energy, Office of Electricity Delivery & Energy Reliability, Permitting, Siting & Analysis (PSA); http://www.oe.energy.gov/about/psa.htm

[99]Congressional Budget Office, Budget Options, Volume 2, August 2009: http://www.cbo.gov/ftpdocs/102xx/doc10294/08-06-BudgetOptions.pdf

[100]U.S Environmental Protection Agency-U.S. Department of Energy, Energy Star, 2011 Federal Tax Credits for Consumer Energy Efficiency; http://www.energystar.gov/index.cfm?c=tax_credits.tx_index

[101]U.S. Government Accountability Office, GAO-10-470, Energy Star Program, Covert Testing Shows the Energy Star Program Certification Process Is Vulnerable to Fraud and Abuse, March 2010; http://www.gao.gov/new.items/d10470.pdf

[102] The Oakland Press, GAO undercover probe finds Energy Star program easy to fool, April 30, 2010; http://www.theoaklandpress.com/articles/2010/04/30/opinion/doc4bd8ea1eaf938788972577.txt

The GAO briefed officials from the DOE and EPA after the investigation. Those officials acknowledged that the current Energy Star program relies on self-policing and aftermarket testing when there is not a third-party verification requirement, according to the report. The report said that the program needs more third-party testing, "at a minimum."

The Department of Energy Inspector General found that the agency has not effectively monitored the use of the Energy Star label for manufacturers not compliant with the program. In addition, delaying improvements to the program could reduce public confidence in the Energy Star label and could "reduce energy savings, increase consumer risk, and diminish the value of the recent infusion of $300 million for Energy Star rebates under the Recovery Act."[103]

While program officials claim to have made progress,[104] the problems with Energy Star have been developing for years despite being told to tighten safeguards. In 2006 a federal court directed DOE to strengthen the program's safeguards after 14 states brought suit against the agency. Two years later, Consumer Reports documented ongoing problems with product qualification and testing standards.[105]

In one instance, a brand name refrigerator claiming Energy Star-qualified efficiency was tested at double the energy consumption as the program would lead consumers to believe.[106] In 2009, DOE itself admitted after an internal audit that certified Energy Star appliances do not necessarily meet the program's own standards and may not be efficient, because the agency does not track whether manufacturers meet requirements.

As a labeling program, Energy Star facilitates subsidies for appliances in two ways: (1) a federal tax credit for manufacturers to produce appliances that adhere to Energy Star's efficiency standards as well as (2) a federal rebate program for consumers to purchase with the Energy Star label. Manufacturers value it as a way to target products to energy-conscious consumers. About 3 billion products have been sold since 2000.

During this time of economic struggles, Americans are forced to shop with a keen eye towards efficiency and thrift. Energy Star has misled consumers to spend their hard earned wages on products that perform at lesser rate of efficiency than advertised. Congress should allow industries to develop their own efficiency standards and the free market to determine the most efficient, cost-effective products.

[103] Department of Energy Inspector General, DOE IG-0827, "The Department's Management of the ENERGY STAR Program," October 14, 2009; http://www.ig.energy.gov/documents/IG-0827-508.pdf.
[104]Daily Tech, Jason Mick, "DOE and EPA Say Americans Can Still Trust EnergyStar," March 26, 2010; http://www.dailytech.com/article.aspx?newsid=17992
[105]Clean Technica, Susan Kraemer, "GAO Sting Finds Energy STAR® Program in Need of Independent Review; Overhaul Imminent, March 26, 2010; http://cleantechnica.com/2010/03/26/gao-sting-finds-energystar%c2%ae-program-in-need-of-independent-review-overhaul-imminent/
[106]Consumer Reports, Energy Star has lost some luster, October 2008; http://www.consumerreports.org/cro/home-garden/resource-center/energy-star-has-lost-some-luster/overview/energy-star-ov.htm

Program bureaucrats deemed such products as a diesel-powered alarm clock and a space heater with a feather duster attached that qualified as an air purifier as "energy efficient."

Eliminate Title XVII Sec. 1705 loan guarantees and the Advanced Technology Vehicles Manufacturing Loan Program but maintain Sec. 1703 loan guarantees at a reduced funding level

U.S. energy consumption is projected to rise significantly in the coming decades.[107] With traditional natural resources expected to be depleting within the same time period and a growing distaste for their byproducts at the same time, it is likely nuclear power will play a strong role in the country's energy mix.

[107]U.S. Energy Information Administration, International Energy Outlook 2010, Figure 72. Net electricity generation in North America; http://www.eia.gov/oiaf/ieo/electricity.html

The commercial nuclear energy industry is in an odd place where uncertainty is a primary factor in delaying the more widespread development of nuclear power. Foremost is the lack of clarity on whether the federal government will make good on its promise to store nuclear waste as noted in another section of this proposal. While there are promising technologies that hold great potential for reducing the need to address this issue, such as thorium-based reactors, there is undoubtedly a necessity to store waste at this time.

Sec. 1703 loan guarantees were created by the Energy Policy Act of 2005 to provide financing for capital intensive, advanced renewable energy projects that cannot otherwise garner sufficient private investment. Eligible projects include various renewable energy, efficiency, and electric projects including nuclear power. In a similar way, Sec. 1705 loan guarantee programs were created by the American Recovery and Reinvestment Act intended to be a temporary method of providing renewable energy projects an opportunity to get off the ground in a struggling economy.

One key difference is that Sec. 1703 loan guarantees are fully paid for by the private sector, including the credit subsidy costs[108] and administrative costs. In the case of credit subsidy costs, unlike Sec. 1705 guarantees that require congressional appropriations, Sec. 1703 program is structured so subsidy costs are covered by private investment, not taxpayers.

Another primary distinction between the two programs is that Sec. 1703 loan guarantees require project applicants to "employ innovative technology," rather than commercial technology.[109] As a result, this program is intended to provide funding for projects where capital intensive projects have not been able to garner enough private investment or where investors cannot be assured a return on their investment.[110] This is a function the federal government can maintain that the private sector will not otherwise and without risk to taxpayers.

For these two reasons, Sec. 1705 loan guarantees should be eliminated, so federal efforts to back groundbreaking energy technologies that are short on needed capital can focus on those projects that would not otherwise receive sufficient investment and so taxpayers are not left on the hook for each project.

Structural Changes Needed for Sec. 1703

Title XVII Sec. 1703 loan guarantees has the potential to provide financing where private capital has not been sufficient. There is a legitimate role for such assistance especially as it relates to construction of new nuclear reactors that are known for their capital intensive project costs.

However, OMB's credit program that operates loan guarantees has not operated faithfully to the underlying Title XVII congressional statute, rendering most loan guarantee applicants either unwilling or unable to follow-through with the process. The program's administrative structure is inconsistent in several places with the congressional statute that governs Title XVII credit

[108] Credit Subsidy Costs are equal to the net present value of costs incurred under a potential default
[109] Commercial Technology is a technology in general use (three or more commercial projects in operation for at least five years) in the commercial marketplace in the U.S. https://lpo.energy.gov/?page_id=39
[110] Carlyle Capital Markets Inc., Alternative Energy, http://www.carlylecapitalmarkets.com/experience.html

programs. Since the program's inception, there have been over $40 billion in solicitations but not a single loan guarantee. There are currently four "conditional commitments" for project applicants, but these are far from finalized and could be terminated at any point.[111] In contrast, Sec. 1705 loan guarantees have closed over ten applications.

In part, this can be attributed to more stringent application requirements for Sec. 1703 guarantees, but it is also attributable to inconsistent federal guidelines. To reconcile the differences, the Office of Management and Budget should modify agency rulemaking in a manner faithful to the underlying congressional statute that directs a true borrower-pay program. Additionally, the Congressional Budget Office should modify its 1 percent appropriation requirement for credit subsidy costs to zero.

To ensure the reasonable opportunity of private nuclear development, Congress must reform Sec. 1703 loan guarantees and shift the remaining 1 percent credit subsidy cost to the applicant, minimizing the necessary budget authority to operate the program.

Eliminate the Office of Indian Energy Policy and Programs ($5.5 million annually[112])
The Bureau of Indian Affairs already administers a Division of Energy and Mineral Development, containing Renewable Energy Opportunities, Mineral Opportunities, and Business Development Opportunities. Yet, Indian and tribal business entities are not excluded as eligible participants in existing federal energy programs that are not exclusive to tribes. For example, Indian tribes received over $54.8 million from the Energy Efficiency and Conservation Block Grant (EECBG), which provides funding for improving energy efficiency.[113]

Natural resources on Indian lands should be utilized for the benefit of Indian tribes and the country as a whole. However, there is sufficient financial incentive to do this without dedicated federal offices. According to the National Congress of American Indians (NCAI), Indian lands contain 10 percent of the nation's energy supplies yet only supply 5 percent of its production. Moreover, NCAI estimates there is approximately $1 trillion in revenue from these natural resources that continues to remain untapped.[114]

If Indian tribes or tribal members are unwilling or unable to produce the extensive natural resources on Indian lands, outside investors can fill in the gaps. For any shortcomings in leasing, existing federal regulatory hurdles should be streamlined to attract investment.[115]

Eliminate Power Marketing Administrations and save $1.103 billion over ten years.

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[111] U.S. Department of Energy, Loan Programs Office; https://lpo.energy.gov/?page_id=45
[112] U.S. Department of Energy, FY 2012 Congressional Budget Request, DOE/CF-0058 Volume 2, February 2011; http://www.cfo.doe.gov/budget/12budget/Content/Volume2.pdf
[113] U.S. Department of Energy, Energy Efficiency & Renewable Energy, Weatherization & Intergovernmental Program, Energy Efficiency and Conservation Block Grant Program, September 29, 2010; http://www1.eere.energy.gov/wip/eecbg.html
[114] The Journal Record, by Associated Press, "Indian leader: Unleash energy on tribal lands," January 27, 2011; http://journalrecord.com/2011/01/27/indian-leader-unleash-energy-on-tribal-lands-energy/
[115] U.S. House of Representatives Committee on Natural Resources, "Obama Admin. Roadblocks on Indian Land Hamper Energy Development, Stifle Job Creation, Hurt Tribal Economies, April 1, 2011; http://naturalresources.house.gov/News/DocumentSingle.aspx?DocumentID=233288

The federal power marketing program originated in the early 1900s to repay federal project investments with sales of excess hydroelectric power. The program is made up of the Bonneville Power Administration, Southeastern Power Administration, Southwestern Power Administration, and Western Area Power Administration, which primarily market wholesale power in select states from hydroelectric dams operated by the U.S. Corps of Engineers. Most of the PMAs have facilities to transmit their power. The program received $99.4 million in FY 2010 and could cost $1.103 billion over ten years at current levels.

Federal statute requires that PMAs set their power rates at levels that reimburse the federal government for their funding within the year that costs are incurred with the exception of capital investments, which are allowed up to 50 years in some cases to recoup costs. In 1996, GAO found that three PMAs were not recovering the full extent of their costs incurred in marketing federal power. It further noted that power from PMA is sold at more than 40 percent below market rates. [116] In 1997, PMAs had over $14 billion in outstanding debt. A later GAO report confirmed there is insufficient monitoring of cost-recovery efforts.[117] In FY 2010, PMA receipts were re-classified from mandatory to discretionary offsetting some expenses while requiring discretionary appropriations for certain PMAs.

DOE should restructure DOE's Power Marketing Administration utilities that sell electricity to utilities (using revenue to reimburse taxpayers) by requiring them to sell at market rates would correct price signals, encourage conservation and efficient use of energy, and generate savings for the federal government.[118]

A more solvent proposal would be to end the federal role of generating and marketing power at favorable rates and allow municipal, cooperative, and investor owned utilities to produce and market power as the market demands. According to the Congressional Budget Office, " the federal presence in the production and marketing of electricity, which is primarily a private and local function, is in many ways an anomaly, unchanged since the New Deal of the 1930s…Most of the reasons that direct federal development and ownership of facilities that produce electricity might have been appropriate in the 1930s are no longer valid."[119] CBO later notes that transferring ownership to could produce and provide power more efficiently, which could generate a better selling price for the federal government.[120]

Already, the Alaska Power Administration—formerly a part of the federal PMAs—has been proposed for sale, which is still pending. CBO estimates the sale of the remaining PMA facilities

[116] U.S. Government Accountability Office, AIMD-96-145, Power Marketing Administrations: Cost Recovery, Financing, and Comparisons to Nonfederal Utilities, September 19, 1996; http://www.gao.gov/products/AIMD-96-145

[117] U.S. Government Accountability Office, AIMD-98-164, Power Marketing Administrations: Repayment of Power Costs Needs Closer Monitoring, June 30, 1998; http://www.gao.gov/products/AIMD-98-164

[118] Congressional Research Service, RL 32798, Power Marketing Administrations: Proposals for Market-Based Rates, March 11, 2005; http://assets.opencrs.com/rpts/RL32798_20050311.pdf

[119] Congressional Budget Office, Should the Federal Government Sell Electricity? Chapter 2 – Rethinking the Federal Role, November 1997; http://www.cbo.gov/doc.cfm?index=243&type=0&sequence=0

[120] Congressional Budget Office, Should the Federal Government Sell Electricity? Chapter 3 - The High Social Costs of Government Production, November 1997; http://www.cbo.gov/doc.cfm?index=243&type=0&sequence=4

could range from $0.2 billion to $16 billion.[121] For any shortcomings in services after sale for rural areas, the U.S. Department of Agriculture administers the Rural Development agency that is maintained at a lower funding level.

PROGRAM ELIMINATIONS
Office of Energy Efficiency and Renewable Energy
Office of Fossil Energy Research and Development
Office of Nuclear Energy
Energy Star
Title XVII Sec. 1705 Loan Guarantee Program
Office of Indian Energy
Power Marketing Administration

PROGRAM REDUCTIONS
Office of Electricity Delivery and Energy Reliability (EDER)

PROGRAM CONSOLIDATIONS
Consolidate the Advanced Research Projects Agency—Energy (ARPA-E) into the Office of Science
Consolidate the Office of Environmental Management within the National Nuclear Security Administration

Ten Year Savings (billions)	
EERE	**24.59**
Fossil	**7.32**
Office of Science	**11.00**
Nuclear Energy	**8.59**
NNSA/EM	**33.53**
EDER	**14.95**
Energy Star	**.63**
Indian Energy	**.06**
PMA	**1.10**
Total	**$101.77**

DEPARTMENT OF ENERGY TEN YEAR SAVINGS
Discretionary: $101.77 billion
Total: $101.77 billion

[121] Congressional Budget Office, Should the Federal Government Sell Electricity? Chapter 6 - Budgetary Consequences of Selling Power Assets, November 1997; http://www.cbo.gov/doc.cfm?index=243&type=0&sequence=7