***Final amounts could differ. These projects are subject to negotiation.**

Arizona $3,717,000

(High Penetration Solar Deployment)

Arizona Public Service Company. This project will develop, construct, manage and study a high penetration of 1.5 MW of distributed photovoltaic (PV) generation on a typical residential feeder in Flagstaff, Arizona, including a mix of residential and commercial systems, as well as a 0.5 MW utility system. The model and evaluation will be according to utility standard practice.
Total DOE Award: $3,328,000

(Market Transformation, Solar America Cities Special Projects)

City of Tucson. This project will explore innovative financing mechanisms for solar systems on Tucson's city facilities, provide information and referral services for consumers, businesses, and the solar industry, including training opportunities and permitting assistance. This project will also coordinate with planning and permitting staff to integrate solar and solar-ready requirements into green building certification processes and long range city infrastructure planning.
Total DOE Award: $389,000

California $13,739,412

(Market Transformation, Solar America Cities Special Projects)

City of Berkeley. This project will expand its Smart Solar outreach program to provide customized assistance, including site assessments, to property owners throughout the region. The City will integrate an economic calculator into its Solar Map, providing a user-friendly way for potential customers to estimate the cost of installing PV and the savings that will be realized from lower electricity bills.
Total DOE Award: $108,500

City of San Diego.
Solar Financing Options for Multifamily Affordable Housing- The City will work to remove barriers that prevent multifamily affordable housing developments from installing PV systems by generating and providing data to developers that demonstrate the expected benefits of PV systems for both tenants and building owners, and by conducting the first PV impact studies that incorporate the new state virtual net metering tariff.
Solar-Powered Fire Shelter Integration into Disaster Response Planning- This project will equip a city-owned facility located near fire-prone areas with secure, solar generation and energy storage systems to create a strategic full-service island where officials can attend to impacted residents and assist fire, rescue and health responders without fear of losing critical infrastructure.
Total DOE Award: $925,000

City of San Francisco.
Debt-Financed Solar Water Heating Retrofits for Affordable Housing- The City will partner with Enterprise Community Partners to pilot a solar water heating financing model for affordable housing that uses the energy savings to service the debt needed to pay for the solar systems.

San Francisco Sustainable Financing Program (SF^2)- The City will conduct an outreach and marketing campaign targeting previously untapped markets that could benefit from property assessed financing, particularly for solar water heating systems.
Commercial Solar Power Purchase Agreement Model- The City will develop a new solar Power Purchase Agreement (PPA) model to take advantage of federal incentives, such as New Market Tax Credits and Community Reinvestment Act Credits, and expand the market for midsize solar system installations.
Solar Financing for Public Schools- The San Francisco Unified School District and Public Utilities Commission will partner with a third party interested in combining a unique blend of incentives to develop a solar PPA structure for public schools at a per kW price below current PPA market rates.
Total DOE Award: $750,635

City of San Jose.
Property Assessed Solar Financing through Joint Powers Authority- The City will implement the CaliforniaFIRST financing structure to enable property owners to finance 100% of the upfront capital costs of clean energy projects and repay the loan through their property tax payments over 20 years.
Solar Loans for City Staff- The City will partner with the San Jose Credit Union to offer low interest loans and solar group buys for the City's 7,000 employees.
Qualified Energy Conservation Bond (QECB) Financing for Revolving Solar Loan Fund- The City will explore financing a revolving loan fund for solar projects through QECBs and convene internal and external stakeholders to determine target community recipients such as low-income households.
Streamlined Regional Solar Permitting Process- The City will coordinate permitting efforts with other jurisdictions in the region to minimize inconsistency and reduce the time and cost involved in the solar permitting process.
Solar Train the Trainer Internship Program - The City will collaborate with local education institutions, non-profit organizations, and labor unions to provide opportunities for students enrolled in various green workforce training programs to gain hands-on experience in conducting solar site evaluations, generating reports and communicating results to community members.
Solar Career Training for At-Risk Youth - The City will develop a program to connect disadvantaged youth with the prospects of green career pathways with a specific emphasis on the solar industry.
Green Vision Education and Demonstration Center - The City will develop an Education and Demonstration Center across the street from City Hall that will act as a hub for dissemination of information on solar technologies and innovative financing options, and allow the community to gain hands-on experience with solar technologies.
Total DOE Award: $1,357,298

City of Santa Rosa. This City will establish a Clean Energy Advocate project to address a significant market barrier, the lack of impartial education and assistance for property owners in determining their options for pursuing solar and energy efficiency projects. The Clean Energy Advocates will provide education and guidance to property owners, shepherding them through the decision-purchase-project cycle and assisting them with financing.
Total DOE Award: $1,047,180

(Market Transformation, Solar Workforce Development)

CA Community Colleges Board of Governors. California Solar Training Partnership will create a state-wide standardized training curriculum and certification for PV and Solar Heating and Cooling (SHC) Instructors, Train-the-Trainer events, professional development and curricular resources in Solar PV and SHC industry careers to California Community College part-time and full-time faculty, adult schools, Regional Occupational Programs and high schools. This partnership will also participate in National Consortium for Solar Installer Instructor Training and convene with national and regional experts in solar training to share model curricula, lessons learned, and best practices.
Total DOE Award: $3,499,828

(High Penetration Solar Deployment)

SMUD. This one-year project will evaluate the value of advanced metering infrastructure, PV, and storage for homes with advanced metering infrastructure and PV along with the variables of 1) no storage, 2) home-based storage, or 3) community-based storage. Actual utility-collected data will be available to assess the performance and market impacts of these options.
Total DOE Award: ($4,300,971)

University of California San Diego This project will develop advanced modeling tools and electric power control strategies to optimize electric power value and remove or reduce the impact of PV-sourced electricity on existing microgrids and the SmartGrid. Factors to be modeled and evaluated include monitoring of micro-climate effects and sky (cloud) imaging systems to enable one-hour-ahead PV-sourced electric power output forecasting in conjunction with a utility's dynamic price signals.
Total DOE Award: $1,750,000

Colorado $ $13,498,218

(Lab Call)
National Renewable Energy Laboratory (Alliance for Sustainable Energy, LLC) – 6 awards

Imaging Techniques for Statistical Process Control on a Solar Cell Manufacturing Line – This project will develop imaging techniques for diagnostics and characterization of material quality and device performance immediately before and after processing steps, instead of waiting only for the measurement of the finished cell. The availability of such on-line metrology will facilitate higher manufacturing yields, faster production line ramp-up, lower production cost, and higher module efficiencies for a wide range of PV technologies and manufacturers.
Total DOE Award: $600,000

Next-Generation Inverted Metamorphic Multi-junction (IMM) III-V Solar Cells - This project builds on current state of the art for 40.8% efficient three-junction IMM cells. Through advanced material development, a fourth band gap will be incorporated into IMM cells, enabling these cells to approach efficiencies as high as 50%.
Total DOE Award: $900,000

Black Silicon Anti-Reflection: Increased Wafer Silicon Efficiency with Reduced Manufacturing Costs - This project will enable a disruptive black silicon approach to anti-reflection in wafer silicon PV cells based upon a nanostructured graded-density surface layer that can reduce PV module cost and increase energy production. If

successful, this technology could reduce the cost of solar-generated electricity by as much as 2 cents per kWh. The technology could be incorporated into commercial production systems by as early as 2011.
Total DOE Award: $1,000,000

Technologically Relevant Nanomaterials for Thermal Energy Storage in Concentrating Solar Power Plants - The goal of this project is to develop new nanomaterials and encapsulation strategies that could lead to a two to four fold improvement in the thermal energy storage density for Concentrating Solar Power systems. These nanostructures are expected to be cost-competitive and show improved performance over conventional phase change systems.
Total DOE Award: $1,000,000

Completion of NREL's Process Development and Integration Laboratory, including the Silicon Wafer Replacement Tool - This project will support the U.S. solar industry by enabling research and development of cutting-edge manufacturable PV technologies. The availability of this large-area silicon wafer replacement tool will enable evaluation of epitaxial crystal silicon growth on low-cost substrates and facilitate transfer of these technologies to full-scale manufacturing.
Total DOE Award: $2,000,000

Advanced Thermal Energy Storage and Solar-Field Test and Evaluation Facilities – This project will enhance and expedite manufacturing, testing, and evaluation of advanced Concentrating Solar Power (CSP) technologies by upgrading and adding equipment and facilities used to characterize new optical reflector and absorber materials, heat transfer fluids, storage fluids, and storage materials, as well as storage and collector systems and subsystems. These testing capabilities will support the U.S. solar industry in making CSP technologies cost competitive for intermediate- and base-load power generation.
Total DOE Award: $4,398,218

(High Penetration Solar Deployment)
National Renewable Energy Laboratry (Alliance for Sustainable Energy, LLC). This project will utilize modeling and simulation, laboratory testing, and field demonstrations to determine the effects of high penetrations of up to 500 MW of mostly commercial-scale rooftop PV on electrical distribution systems, including prototypical distribution circuits and a circuit with SmartGrid functionality.
Total DOE Award: $3,600,000

Florida $6,399,957

(High Penetration Solar Deployment)
Florida State University. The project will characterize the variation and impact of solar power as a function of system size (both kilowatt and megawatt), location, installation type and technology, including examination of variation within larger systems. The result will be technical solutions, from protection and control strategies and technologies, to converter, converter control and PV system technologies, to address any issues identified with high-penetration levels of grid-connected PV.
Total DOE Award: $3,599,957

(Market Transformation, Solar Workforce Development)

University of Central Florida. This project will create the Southern Alternative Energy Training Network, which, in turn, will create industry recognized and quality staffed alternative energy training centers throughout the southern U.S and its territories. The Network program will be built upon the existing model of the Florida Alternative Energy Banner Center framework, which already has trained 32 faculty members from seven community colleges and two vo-tech schools. The Southern Alternative Energy Training Network will enhance the south's economic development efforts by responding to projected market and industry demands for solar technologies.
Total DOE Award: $2,800,000

Illinois $ 7,695,000

(High Penetration Solar Deployment)
Commonwealth Edison Company. This one-year project will evaluate consumer reactions when a utility provides advanced metering and price signals for electric power without PV, with PV, and with both PV and energy storage. The impact will be a utility-based understanding of market response for PV. Total DOE Award: $5,000,000

(Lab Call)
Argonne National Laboratory (UCHICAGO ARGONNE, LLC) – 3 awards

Interdigitated Cu2S Thin Film Photovoltaics - This project will develop high efficiency (> 20%) photovoltaics to be produced from low cost and unconventional materials through an interdigitated device architecture using atomic layer deposition (ALD). If successful, interdigitated copper sulfide (Cu2S) thin film PV could meet or exceed the efficiency of existing commercial PV systems, while dramatically decreasing materials and processing costs.
Total DOE Award: $750,000

Transparent Conducting Coatings for Cost Effective Photovoltaics Manufactured Using Atomic Layer Deposition - This project will develop new transparent conducting coatings and methods for depositing them onto PV cells using atomic layer deposition (ALD). This new cross-cutting deposition technology will benefit a wide range of PV devices including nanocoaxial solar cells, dye-sensitized solar cells (DSSCs), nanostructured thin film solar cells, amorphous silicon solar cells and multijuntion concentrated PV devices.
Total DOE Award: $945,000

Dual Purpose Advanced HTFwith Enhanced Thermal Properties and TES Capabilities – This project will develop engineered nanoparticles and incorporate them into heat transfer fluids for improved thermal storage for Concentrating Solar Power systems.
Total DOE Award: $1,000,000

Lousiana $1,575,858

(Market Transformation, Solar America Cities Special Projects)

City of New Orleans.

Third Party Solar Tax Credit Implementation- The City will develop guidelines for public entities and tax-exempt institutions to take advantage of the state tax credit via third party financing.
Sustainable Energy Financing District Implementation- Following the passage of authorizing legislation by the state, the City will implement a sustainable energy financing program that allows customers to pay off a solar system through a long-term assessment on their property tax bill.
Total DOE Award: $1,575,858

Massachusetts $1,343,020

(Market Transformation, Solar America Cities Special Projects)
City of Boston. This project will integrate solar into Boston's emergency response infrastructure by installing backup PV systems at Boston's main emergency-vehicle fueling station, as well as solar-powered traffic control and monitoring equipment, lighting, and emergency radio repeaters.
Total DOE Award: $1,343,020

Maine $2,886,782

(Market Transformation, Solar Workforce Development)
Kennebec Valley Community College Kennebec Valley Community College (KVCC) will modify their existing high-quality Photovoltaic (PV) and Solar Heating & Cooling (SHC) technician training programs and integrate best practices from around the country to develop and deliver a nationally accepted train-the-trainer program designed around industry standards. Professional development activities will target instructors from community colleges, career & technical education centers and private industry training incubators in Northern New England who are looking to enhance their existing plumbing, heating, electrical and other building-related programs through the inclusion of PV and/or SHC installation training courses.
Total DOE Award: $2,886,782

Minnesota $2,000,000

(Market Transformation, Solar America Cities Special Projects)

City of Saint Paul. The City will integrate solar thermal into a local district energy system to demonstrate how solar energy can supplement existing district energy systems from a technological perspective, as well as from a business model perspective.
Total DOE Award: $2,000,000

North Carolina $3,008,826

(Market Transformation, Solar Workforce Development)
North Carolina State University. North Carolina Solar Center's (NCSC) proposed Mid-Atlantic Joint Excellence in Solar Training Consortia (MAJESTC) project would expand the training offerings from training solar professionals and the installation workforce to training the "Local Educational Institution" (LEI) instructors. NCSC will address the education, training, and professional development of solar instructors through providing classroom and hands-on training in the region, assistance in development of standardized curricula and making online training, reference modules and online financial tools available for the LEIs. The MAJESTC project would also implement workshops and face-to-face conferences with trainers, community colleges, vocational and technical high schools to provide solar industry information and best practices.

Total DOE Award: $3,008,826

New Mexico $2,016,400

(Lab Call)

Los Alamos National Laboratory (LANL) – 2 awards

Assessment of Silicon Nanowire Architecture for PV Application – This project will develop silicon nanowire solar cells that would require about 1/10 the amount of silicon as conventional crystalline silicon solar cells. This would reduce the cost of silicon solar cells to around 50 cents per watt and cut the cost of solar-generated electricity in half.
Total DOE Award: $1,049,443

Hybrid Organic Silicone Heat Transfer Fluids Utilizing Endothermic Chemical Reactions for Latent Heat Storage – This project will develop silicone-based heat transfer fluids for Concentrating Solar Power Systems. These fluids are expected to have improved thermodynamic efficiencies compared to conventional fluids, and be stable at temperatures approaching 600°C. If successful, a 20%-33% cost reduction coule be realized.
Total DOE Award: $966,957

New York $4,430,103

(Market Transformation, Solar Workforce Development)

Hudson Valley Community College. Hudson Valley Community College (HVCC) is building a new $1.5 million dollar training facility dedicated specifically to provide "clean energy" training. The college will utilize this world-class facility to develop ISP Certified instructors across the northeast that will help transform the solar industry.
Total DOE Award: $3,497,595

(Market Transformation, Solar America Cities Special Projects)

City of New York.
Smart Solar City Data Acquisition System- The City will develop a system to allow communication and control between the electric grid and distributed PV generation, increasing the ability of electric utility ConEdison to depend on solar as a peak generation source.
Community Solar Financing- The City will develop a financing structure that empowers residents to invest in solar electricity generation even if they cannot support solar arrays on their own homes and businesses.
Smart Solar Virtual Community- The City will develop an online portal with a solar planning map that will help predict the interaction of loads, PV generation, and grid reactivity, as well as calculate statistics such as the daily amount of solar energy produced in New York City.

Total DOE Award: $932,508

Oregon $400,000

(Market Transformation, Solar America Cities Special Projects)

City of Portland.
Solar Now! Regional Outreach Campaign- The City will deliver the Solar Now! marketing toolkit to ten new communities in the region to create a corps of well-informed, well-trained solar volunteers across Oregon.
Neighborhood-Based Volume Solar Purchasing- The City will facilitate volume purchasing of solar energy systems in four Portland neighborhoods to bring down installed costs and increase the rate of installation.
Residential Solar Power Purchase Agreement Model for Utility-Bill Financing- The city will incorporate a residential solar power purchase agreement into Portland's new clean energy financing program, Clean Energy Works Portland.
Neighborhood-Scale Distributed Energy Systems- The City will identify and remove regulatory barriers to neighborhood-scale shared renewable energy utilities, focusing on a pilot project involving combining a PV system with ground source heat pumps to heat and cool water for a 40-block area.
Total DOE Award: $400,000

Pennsylvania $3,500,000

(Market Transformation, Solar Workforce Development)
The Pennsylvania State University. The Pennsylvania State University's Mid-Atlantic Solar Regional Training Center (SRTC) will build upon the important work currently conducted by the Penn State Center for Sustainability and capitalize on current regional solar energy momentum by collaboratively engaging a broad spectrum of stakeholders including community colleges, universities, labor organizations, trade associations, nonprofit organizations, state agencies, workforce development entities, and industry. This regional network will support a comprehensive training infrastructure for sales, design, installation, commissioning, and service of both PV and SHC technologies.
Total DOE Award: $3,500,000

South Carolina $1,005,000

(Lab Call)

Savannah River National Laboratory (Savannah River Nuclear Solutions, LLC). This project will enhance the heat transfer and solar thermal energy collection of Concentrating Solar Power systems by dispersing small volume percentages of nanoparticles into the ionic liquid carriers. If successful, this could result in a 10-40% improvement in thermal conductivity.
Total DOE Award: $1,005,000

Tennessee $935,000

(Lab Call)

Oak Ridge National Laboratory. This project will develop polyaromatic hydrocarbons as heat transfer fluids for improved thermodynamic efficiency in Concentrating Solar Power systems. These fluids are expected to be stable to temperatures approaching 600°C, have good thermal characteristics, and be readily available.
Total DOE Award: $935,000

Texas $5,566,058

(Market Transformation, Solar America Cities Special Projects)

City of Austin. Austin Energy will collaborate with the Austin Independent School District, the University of Texas, and Austin Community College to improve K-12 solar curriculum, install PV demonstration projects with educational components at area schools, and develop career pathways for Solar Engineers and Solar Technician certifications.
Total DOE Award: $2,000,000

(Market Transformation, Solar Workforce Development)
Houston Community College. Houston Community College project will establish a network of educational, industry, and state partners to ensure the availability and effectiveness of solar installation training throughout the South-Central region. Existing solar training programs will be upgraded, additional instructors will be trained, and all training providers will be benefit from on-line instructional resources and dynamic solar industry standards resources. The project will also provide professional development opportunities for educators at institutions that wish to start or improve training and education programs in the field of solar installation and will include train-the-trainer courses in both photovoltaic and solar thermal technologies.
Total DOE Award: $3,566,058

Utah $3,377,840

(Market Transformation, Solar Workforce Development)
Salt Lake Community College. The purpose of the Rocky Mountain Solar Training Consortium (RMSTC) will be to accelerate the wide-spread adoption of solar electrical technologies and curriculum in the intermountain and surrounding states through the training of trainers and professional development activities at community and technical colleges or other training institutions that are developing and improving existing PV or SHC installation courses. Salt Lake Community College will assist institutions and State Directors of Career and Technical Education in articulating solar installation training to non-credit certificates, and for-credit degrees and programs around individual states needs.
Total DOE Award: $3,110,140

(Market Transformation, Solar America Cities Special Projects)

City of Salt Lake.
Solar Rebate Program Expansion and Third Party PPA Legal Analysis- The City will engage the Utah Public Service Commission, Rocky Mountain Power, and solar stakeholders to improve the business environment for solar, in particular by expanding the utility rebate program and allowing third party power purchase agreements.
Financing Options for Mid to Large Scale Solar Systems- Identify and implement innovative financing structures for solar installations on Salt Lake County facilities, such as new market tax credits combined with a third party power purchase agreement, which will serve as model for other nontaxable entities, such as local governments, schools, churches and nonprofits.
Total DOE Award: $267,700

Virgina $3,206,108

(High Penetration Solar Deployment)

Virginia Polytechnic Institute and State University. The project will evaluate existing and Virginia Tech prototype power conditioners to identify cost-effective approaches to address issues associated with high-penetration PV systems, such as voltage regulation, reverse power flow, unintentional islanding, false inverter trips, reactive power control, fault contribution, protection, communications, and intentional islanding operation.
Total DOE Award: $3,206,108

Washington $1,797,974

(Lab Call)

Pacific Northwest National Laboratory (Battelle Memorial Institute) – 2 awards

Multilayer Window for Improved Performance in CdTe Solar Cells – This project will develop improved window barrier and interlayer materials for use in CdTe-based solar cells. If successful, this could reduce the cost of solar-generated to under 11 cents per kWh.
Total DOE Award: $750,000

Thermochemical Energy Storage for Stirling Concentrating Solar Power – This project will develop thermochemical energy storage for dish-based Concentrating Solar Power systems. If successful, this could double the number of hours these systems can generate electricity and result in a 20% reduction in the cost of solar-generated electricity, making them competitive for intermediate-load power generation.
Total DOE Award: $747,974

(Market Transformation, Solar America Cities Special Projects)

City of Seattle. This project will develop a sustainable community solar financial and ownership model, market the program and enroll participants.
Total DOE Award: $300,000

Wisconsin $5,343,052

(Market Transformation, Solar America Cities Special Projects)

City of Madison.
MadiSUN Community Solar Financing- The City will develop a financing strategy that allows residents and businesses to take an ownership share in solar projects located on city property, enabling a greater portion of the community to invest in local solar energy generation.
Target Marketing Solar to Businesses- The City will deliver customized assessments and economic analyses to businesses and business groups that are well-positioned to invest in solar energy systems.
Solar Business Center- The City will develop a solar business and educational hub, based on the Solar Info Center of Freiburg, Germany, intended to support the rapid and sustained deployment of solar in the Midwest.
Total DOE Award: $554,300

City of Milwaukee.
Solar Hot Water Business Council- The City will create a Council to educate and enable local water technology manufacturers to shift into the growing solar industry, leading to the creation of a solar manufacturing cluster in the region.
Solar Water Heating Demonstration Projects and Best Practices Manual- The City will install large-scale commercial and smaller-scale residential solar water heating demonstration projects, and will develop a best practices manual for solar water heating in northern climates.
Property Assessed Clean Energy Financing- Following Wisconsin's passage of authorizing legislation for property assessed clean energy financing, the City will establish a long-term financing mechanism, such as a revolving loan fund, to help consumers offset the high initial cost of solar installation.
Solar School Swap- The City will facilitate a learning competition between two rival high schools involving installation of a PV and solar water heating system on each school. The project will train students in assessing, financing, and installing solar systems, as well as educate the broader community.
Total DOE Award: $1,481,043

(Market Transformation, Solar Workforce Development

Midwest Renewable Energy Association Inc. Midwest Renewable Energy Association (MREA) will provide instructor development opportunities and organize a network of instructors, installers, engineers, administrators, and other industry stakeholders to create and share instructional resources. The program will use team learning methods and collaborative technologies to create shared instructional resources. Total DOE Award: $3,307,709