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To provide leadership on policy and programs that drive Arizona's sustainable energy development, economic prosperity and security. Programs, services, and trainings seek to maximize the state's efficient use of natural resources through conservation, efficiency, solar and renewable energy. The State Energy Program (SEP) funded by the U.S. Department of Energy is the foundation for many programs within Arizona's Energy Office. Achievements and Programs that receive SEP funding:



### ***Energy Conservation, Engineering and Building Science Programs***

Through **residential training and technical assistance**, in partnership with Arizona utilities and the building industry, the Energy Office staff provides training and technical assistance to a wide variety of audiences. The training targeted to the building industry has focused on the incorporation of basic building science techniques throughout the building process to promote the energy conservation initiatives. Major focus areas include proper design, advanced detailing, correct installation of ductwork, insulation, and ventilation systems.

Since implementation (1996) of this training, improvements in the installation of the HVAC system (sealed ducts) have been incorporated in over 140,000 homes. In 2005, over 13,000 EPA Energy Star homes were built. Of these, over 8,000 homes were built with guaranteed heating and cooling costs of less than \$.30 per square foot. The cumulative saving of approximately 100,000 kW (100 MW) and 150,000,000 kWh has been achieved through this training.

**Southwest Building Science Training Center (SBSTC)**, operated by Foundation for Senior Living Home Improvement and funded through the Department of Commerce Energy Office and local utilities, provides Arizona Low-Income Weatherization Technicians and residential building trades with the knowledge and skills needed to successfully perform diagnostic and repairs on Arizona's housing stock. Through this partnership and in conjunction with the Building Performance Institute (BPI) the center is utilized to provide nationally recognized building science certifications to the Southwest's construction community. To date 21 weatherization technicians and members of the building (from three states) trades have gone through the training and certification process for Building Performance.

The SBSTC consists of classroom space, combustion safety lab, pressure diagnostic lab and hand-on work stations. Training courses include Basic of Energy, Applied Building Science, Pressure Diagnostic, Thermal Performance, Advanced Pressure Diagnostics, Health and Safety, Combustion Appliance Diagnostic, Moisture/Mold Issues and computer classes. The labs provide attendees with the opportunity to gain hands on experience with a number of pieces of diagnostic equipment including Blower Doors, Duct Blasters, pressure gauges, CO detectors and infrared cameras.

**State Agency Energy Efficiency Program** provides SEP funded training and technical assistance towards energy efficiency in state government buildings. In 2003 Arizona's Governor Napolitano signed into law HB 2324 that sets goals for reducing overall energy use in state government and university buildings. The law requires 10% savings by 2008, 15% by 2011, and requires new construction to be more energy-efficient. The law required annual reporting by the Arizona Department of Commerce Energy Office to the State Legislature. In 2006 agencies had average reductions of 5 percent. However, the Arizona Department of

Emergency and Military Affairs lead the way in reducing their energy usage. Their energy usage in FY05-06 is 31% below their FY01-02 level. With cooperation from their Department of Defense partners, DEMA was able to make over \$1,000,000 in energy improvements to their facilities to reduce energy usage and to improve their energy security. The University of Arizona reports energy usage down 6.5% from the baseline period. Universities and state agencies reported over \$6,000,000 in annual savings in 2006. In 2006, another state building received the EPA Energy Star Label bringing our total to 3 state buildings. Two state buildings received LEED Silver designation from the U.S. Green Building Council: the Arizona Department of Environmental Quality Building and the Interdisciplinary Science & Technology Building.

**Community Energy Planning** (CEP) is designed to encourage and assist in the development and implementation of community energy management programs by facilitating the planning process and providing the necessary basic tools, staff training and technical assistance.

As part of CEP, the Energy Office makes funds available to assist communities incorporate energy into their planning process and implement energy audits of the community's facilities. All incorporated Arizona cities, towns, counties, improvement districts, and Indian tribes with populations under 70,000 are eligible to apply.

### ***Education and Community Outreach Programs***

The Energy Office continues to provide education programs through public events and web-based information. The Energy Office has been a co-sponsor of the annual Southwest Sustainable Energy Expo, and has held an annual energy management conference for facility managers and decision makers at the state and local government level. In addition, the Energy Office has conducted two tribal energy summits for leaders of the state's 22 Indian tribes.

**Rebuild America** The Energy Office, as a Rebuild America partner, provides technical assistance to the Arizona Department of Housing to make low-to-moderate income housing more affordable through energy-efficiency building standards. Since July 2000, more than 7,628 (**1,800 in 2006**) affordable housing units have been built according to energy standards. The \$1,546,650 (**\$360,000 in 2006**) invested in the energy-saving portions of these projects is expected to result in energy cost savings of **\$699,195 every year**.

**Governor's Office of Housing Development Tax Credit Program** Working with the Arizona's Housing Office, the Energy Office has incorporated energy codes and performance standards covering duct leakage, room pressures and insulation installation. Approximately 2,000 low-income units are constructed yearly under this program. These performance based standards result in substantial saving. A study completed by EPA, "*Phoenix Home Energy Efficiency Study 2005*" found that production homes that incorporate these performance standards have a 33% lower summer/cooling intensity than the typical baseline homes and 20% below Energy Star® homes.

The key to the success of this program has been the hands-on field training and technical assistance provided by the Energy Office to the developers, builders and trades constructing the complexes. It is one thing establishing standards, but it is absolutely imperative that the people implementing these standards understand what the standards are, why they have been adopted and how to install them correctly.

In a number of cases developers have stated that they plan on utilizing these standards in all (non-tax credit) multi-family projects and in tax credit projects in other states.