

# DOE ENERGY EFFICIENCY PROGRAMS: BENEFITS TO NEVADA

## SOUTHWEST ENERGY EFFICIENCY PROJECT

The U.S. Department of Energy (DOE) manages energy efficiency programs involving both research and development (R&D) and programs to encourage adoption of energy efficiency technologies and best practices. These programs help Nevada businesses and consumers save energy and money, and they add jobs through businesses that sell, install, and maintain energy efficiency products and services. According to DOE's 2017 U.S. Energy and Employment Report, energy efficiency provides 9,600 jobs in Nevada.

The table below shows the main categories of DOE's energy efficiency programs, and the proposed levels of funding for FY 2018 under both the House and Senate Appropriations bills. How does the DOE directly benefit Nevada businesses and residents? Read on for some of the highlights.

**ENERGY EFFICIENCY PROVIDES 9,600 JOBS IN NEVADA**



DOE Energy Efficiency Programs	FY 2017 Budget (thou \$)	2018 White House Request (thou \$)	2018 House Approp. Bill (thou \$)	House % Reduction vs. 2017	2018 Senate Approp. Bill (thou \$)	Senate % Reduction vs. 2017
<b>Advanced Manufacturing</b>	306,959	82,000	125,000	59%	277,988	9%
<b>Building Technologies</b>	257,500	82,000	102,000	60%	252,000	2%
<b>Vehicle Technologies</b>	199,141	67,500	91,406	54%	195,000	2%
<b>Weatherization Assistance</b>	225,000	0	225,000	0%	212,000	6%
<b>Total for EE programs above</b>	<b>988,600</b>	<b>231,500</b>	<b>543,406</b>	<b>45%</b>	<b>936,988</b>	<b>5%</b>

# BTO PROGRAMS

The Building Technologies Office (BTO) spearheads several programs including the Building America Program, the Building Energy Codes Program, and Appliance and Equipment Efficiency Standards, Emerging Technologies, and Residential and Commercial Building Integration.

## Building America

The Building America Program conducts research on energy efficiency innovations to benefit the residential building industry and the public. The program helps push these innovations into the market through demonstrations, information dissemination, and voluntary residential energy efficiency programs. Through adopting energy efficiency improvements advanced by the Building America program:

- U.S. households save **\$54 billion annually** on their utility bills, with **\$170 of homeowner savings for each \$1** of Building America revenue spent
- Highly efficient new homes generate millions of dollars per year in additional construction revenue and generate thousands of new jobs nationally

## Building Energy Codes Program

The DOE Building Energy Codes Program contributes to energy savings in buildings by supporting the implementation of the model building energy codes. The program accomplishes this by: 1) Participating in industry processes to develop and update codes—analyzing energy and cost savings associated with code updates and improvements; 2) providing technical assistance to states and localities—helping them adopt and implement better codes; and 3) supporting energy code compliance through providing training and tools—ensuring that intended savings are realized by U.S. home and business owners. DOE estimates that adopting the latest model energy codes would result in these benefits by 2030:

- Save Nevada businesses and homes at least **\$90 million per year**
- Reduce Nevada's energy consumption in residential and commercial buildings by **9.9 trillion Btu per year** or more (about 4% savings)

## Appliance and Equipment Efficiency Standards

The federal government has adopted minimum energy standards for more than 60 products, representing about 90% of home energy use, 60% of commercial building energy use, and 30% of industrial energy use. DOE periodically reviews and updates the standards and test procedures. In Nevada, appliance and equipment standards adopted to date achieve these benefits:

- Nevada businesses save a total of **\$150 million per year**
- A typical Nevada household saves about **\$480 per year** (about 14% of its annual utility bill)

The national energy efficiency standards completed through 2016 will result in the following cumulative savings through 2020 for the U.S.:

- **71 quadrillion Btu** (quads) of energy savings
- **\$1 trillion** of net economic benefits to consumers and businesses

# R&D PROGRAMS - ADVANCED MANUFACTURING AND BUILDING TECHNOLOGIES

Both the Advanced Manufacturing Office (AMO) and Building Technologies Office (BTO) support R&D of new energy efficiency technologies, with the main goal of helping to introduce new technologies to the market that will improve energy efficiency in buildings and industry, savings businesses and consumers money on energy costs. In many cases the new technologies are manufactured by entrepreneurial start-up companies, creating new jobs in addition to contributing to energy and cost savings. Here are some examples of Nevada businesses that have benefited through collaborations with the DOE's R&D programs.

Nevada Business and location	Technology	Commercial -ization Date	No. of Employees	DOE Program Collaboration
<b>IntelliChoice Energy – Las Vegas</b>	Packaged gas-fired heat pump	2010	NA	BTO
<b>GE Energy - Minden</b>	Wireless sensors for process control	2008	NA	AMO

**IntelliChoice Energy.** The NextAire gas heat pump is an alternative to electricity-driven rooftop HVAC units used by commercial buildings across the United States. The NextAire pump runs on natural gas and can operate at various speeds, improving efficiency at partial load. The heat pump also recovers the waste heat from the engine for additional space heating (during heating season). By operating on natural gas, the NextAire heat pump eliminates companies' dependence on high-price electricity during peak summertime hours. The heat pump has also been shown to save 0.5 gallons of water per kWh compared to electric units of a similar size (compared to water consumption associated with generation of electricity from the grid). "The grant from the DOE was instrumental to getting this technology off the ground," said Isaac Mahderekal from IntelliChoice Energy. "Without it, it [the technology] wouldn't be what it is today," he said.

**GE Energy.** Developed in 2008 by GE and supported by a grant from AMO, the Essential Insight-mesh system is a wireless system that allows companies to safely and accurately monitor industrial equipment throughout a plant. The system reduces costs associated with technician time spent conducting monitoring, as well as improving technician safety by eliminating the need for humans to enter dangerous areas of the plant. The technology allows companies to better monitor all their systems, which improves process control and productivity as well as energy efficiency.

## AMO PROGRAMS

The Advanced Manufacturing Office (AMO) runs several programs including the Industrial Assessment Centers and the Combined Heat and Power (CHP) Technical Assistance Partnerships (TAPs). The CHP TAPs provide free assistance to industrial and commercial facilities in evaluating applications of combined heat and power, which can help businesses save money, improve reliability, and reduce their carbon footprint.

### Industrial Assessment Centers

Industrial Assessment Centers (IACs) are operated by 28 universities throughout the U.S., including the University of Utah in Salt Lake City, and Arizona State University in Tempe, AZ. The IACs

provide free energy assessments to small and medium-size manufacturers, and provide training to engineering students. Since 1984, the IACs in the Southwest achieved the following results:

- **118 students** trained
- **1150 assessments** completed (most of these for Colorado manufacturers)
- **4.9 trillion Btu** of energy savings from implemented recommendations
- **\$57 million** in cost savings to the industrial facilities

## VEHICLE TECHNOLOGIES

The Vehicle Technologies Office (VTO) supports research, development (R&D), and deployment of efficient transportation technologies that improve energy efficiency, improve fuel economy, and reduce petroleum consumption. These technologies include advanced batteries and electric drive systems, lightweight materials, advanced combustion engines, alternative fuels, and energy efficient mobility systems. VTO also supports implementation programs such as Clean Cities that encourage adoption of alternative fuels and vehicles.

## WEATHERIZATION ASSISTANCE

The DOE's weatherization assistance program provides cost-effective energy savings and health benefits to low-income American families and supports jobs. In Nevada from 2010-2017, the program has achieved the following results:

- **2,300** Nevada homes received energy efficiency upgrades
- **\$800 thousand per year** in energy cost savings to low-income Nevada homes
- **66 billion Btu per year** in energy savings

Here are some highlights of annual benefits at the national level:

- **\$340 million** in energy cost savings
- **\$280** in average cost savings for a single-family home
- **8,500 jobs** supported
- **Benefit-to-cost ratio of 4.1** including energy savings and health and safety benefits
- **Savings-to-investment ratio of 1.4** (\$1.40 in savings for every \$1 spent)

This fact sheet was produced by the Southwest Energy Efficiency Project (SWEEP), a non-profit, nonpartisan organization that promotes greater energy efficiency in AZ, CO, NM, NV, UT, and WY. (See [www.swenergy.org](http://www.swenergy.org).) Please send any questions or comments to Neil Kolwey at [nkolwey@swenergy.org](mailto:nkolwey@swenergy.org); ph: 303-499-0213.