

# The Benefits of Energy Efficiency in Texas

January 2011

## Key Benefits

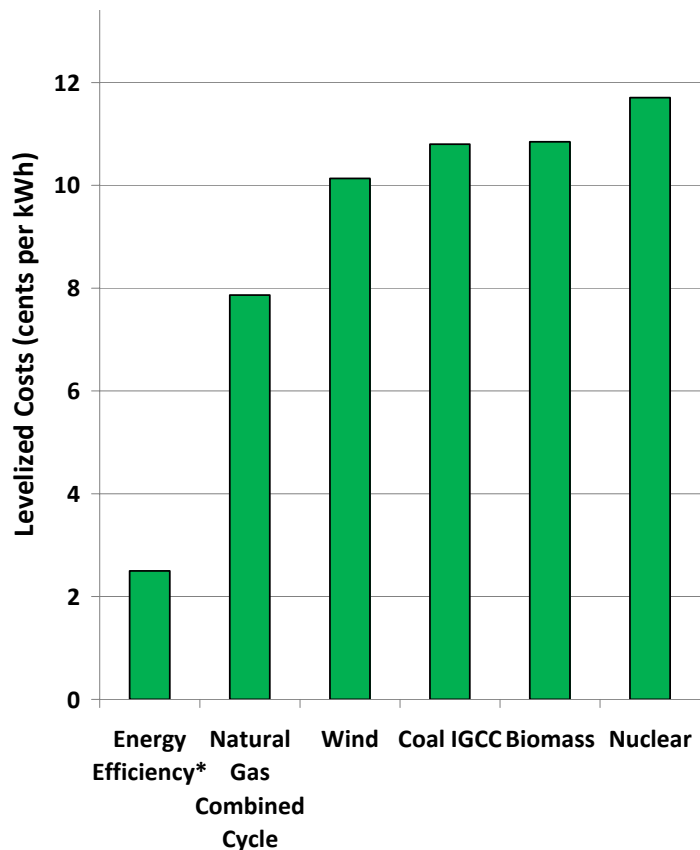
- Energy efficiency provides Texans the lowest cost source of electric power and creates local manufacturing, technical, and service jobs.
- Texas utilities run energy efficiency programs effectively saving ratepayers over \$1 billion, but much more efficiency remains untapped.
- Texas' deregulated energy markets allow *all* ratepayers to save from the increased supply that energy efficiency creates.
- While saving electricity ratepayers money, Texas energy efficiency programs are reducing costs of compliance with federal air quality requirements.

## Background

State governments, utilities, and businesses around the country are turning to energy efficiency as the lowest cost resource to meet rising energy demand while lowering energy bills, creating jobs, improving the reliability of our power grid, and reducing air emissions. During a time of paralyzing state budget deficits, efficiency is a commonsense, win-win-win solution that directly addresses economic challenges by putting money back into consumers' pockets, lowering businesses' costs, and creating jobs. A recent review of 13 states, including Texas, found that utilities and other efficiency program administrators are successfully achieving energy efficiency savings at a cost of about 2 to 3 cents per kilowatt-hour.<sup>1</sup> This makes energy efficiency *the lowest cost* energy resource to the utility compared to other supply options—in both regulated and deregulated markets (see Figure 1). And much more *untapped* energy efficiency potential remains on the table in Texas and throughout the U.S.<sup>2</sup>

When Texas deregulated its electricity market in 1999 to introduce retail

**Figure 1. Cost of New Electricity Supply in ERCOT and Energy Efficiency Programs\***



Source: EIA 2010 for ERCOT; \*Energy efficiency estimates are from a national ACEEE review (Friedrich et al. 2009)

<sup>1</sup> These are the "levelized" costs, which mean the average cost over the lifetime of efficiency measures or supply-side options. Source: Friedrich et al. 2009. *Saving Energy Cost-Effectively*. American Council for an Energy-Efficient Economy.

<sup>2</sup> Elliott et al. 2007. *Potential for Energy Efficiency, Demand Response, and Onsite Renewable Energy to Meet Texas' Growing Electricity Needs*. American Council for an Energy-Efficient Economy; McKinsey & Company. 2009. *Unlocking Energy Efficiency in the U.S. Economy*.

competition among power generation companies, it also set up long-term energy savings goals to take advantage of the benefits of energy efficiency by helping customers—residents and businesses—reduce annual electricity consumption and bills. The Energy Efficiency Improvement Program (EEIP) requirements—the first state model of its kind in the country—ensure that the state continues to tap into efficiency as a resource to benefit consumers and businesses in Texas. The statewide savings targets ramped up from 10% of demand growth starting in 2003 to 20% in 2010, to 25% in 2012, and 30% in 2013 and beyond. While utilities have consistently exceeded these savings targets,<sup>3</sup> *these targets only represent a small fraction of Texas' potential for efficiency and are three to four times lower than most targets set by other states. Much more can be done to help Texas businesses and residents save energy and money through efficiency.*

### **Lower Electricity Bills for Consumers**

Energy efficiency improvements in Texas homes and businesses—such as building and lighting upgrades and equipment or appliance replacements—reduce electricity consumption and as a result reduce electricity bills each month. Texas energy efficiency programs offer their customers financial incentives (such as rebates and loans) and non-cash incentives (including information, guidance, and assistance by technical experts). Since 1999, the programs have saved 1,365 MW of peak demand and 3,574,000 MWh in annual electricity savings. In 2009, the programs saved about 560,000 MWh resulting in a *net* savings of approximately \$56 million in lower electricity bills *each year* from energy efficiency improvements. That translates *into about \$600 million of electricity bill savings over the life of the efficiency measures.*<sup>4</sup>

### **Economic Development and Jobs Benefits**

In addition to the large overall energy bill savings, the EEIP energy efficiency programs help support economic development in Texas in several ways. First, the energy bill savings achieved by firms participating in the programs improve the competitiveness of Texas businesses by lowering their operating costs compared to out-of-state firms. Second, the EEIP incentives for energy efficiency improvements are an effective way to spur business investments in Texas, because those incentives can only be earned by making energy efficiency improvements in Texas facilities. When a multi-state company is looking to allocate capital investments in its business, the EEIP can help influence those investments toward Texas.

Moreover, efficiency stimulates a net increase in jobs in the state, including those directly associated with manufacturing of energy-efficient products and technical service companies that improve the efficiency of homes and businesses, as well as *an overall net increase in jobs throughout the economy.* The energy bill savings from efficiency programs free up money that consumers then re-spend in more labor-intensive sectors of the economy—such as manufacturing and business services. By shifting some economic activity away from the traditional energy supply sector toward more labor-intensive sectors, greater energy efficiency investments can lead to an overall net increase in jobs throughout the Texas economy. ACEEE estimates that investments in greater levels of cost-effective energy efficiency throughout the U.S. could stimulate more than 700,000 jobs in 2030 and as many as 2.5 million jobs by 2050 compared to a business-as-usual scenario.<sup>5</sup>

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<sup>3</sup> Frontier Associates. *Energy Efficiency Accomplishments of Texas Investor Owned Utilities Calendar Year 2009.*

<sup>4</sup> This is a rough estimation of gross consumer benefits, assuming an average electricity rate of \$0.10 per kWh and an average efficiency measure lifetime of 10 years.

<sup>5</sup> Laitner et. al. 2010. *The American Power Act and Enhanced Energy Efficiency Provisions: Impacts on the U.S. Economy.* ACEEE; Laitner 2009. *Climate Change Policy as an Economic Redevelopment Opportunity.* ACEEE.

## Efficiency as a Resource in a Deregulated Market

*From both an engineering and economic perspective, energy efficiency programs are by far the lowest-cost electricity resource available to an electric system. We know from 20 years of documented experience that operating energy efficiency programs saves electricity at one-half to one-third the cost of building, fueling, and operating a new power plant—no matter what the fuel source (see Figure 1).*

In a deregulated market such as Texas, we know that market electricity prices can and will fluctuate, for many reasons. For example, Texas electricity rates are affected by fuel prices. The high fuel costs in 2008 led to increases in electricity prices and the record low natural gas prices in 2010 contributed to a drop in electricity prices. The rising fuel prices in 2011 will likely lead to pricing increases again. Furthermore, in times of low demand, prices may approach levels just reflecting fuel and operating costs. In times of high demand and/or resource constraints, market prices may far exceed the actual capacity, fuel, and operating costs.<sup>6</sup> But what we also know is that in the long run, market prices will at least be sufficient to cover all capacity, fuel and operating costs....plus a profit. (If they weren't, new suppliers would not make the investments necessary to participate in that market.) Therefore, for purposes of electric system policy and planning, the cost of the electric system acquiring energy efficiency resources is best compared to the long-run costs of supply, reflecting all appropriate capacity, fuel, and operating costs.<sup>7</sup> In simple language, the cost of energy efficiency is best quantified when compared with the long-term cost of electricity from other sources and, as stated above, energy efficiency is consistently one-third to one-half that cost or less.

Under the current Texas energy market structures, energy efficiency benefits most from sustained implementation efforts over time, and once in place, remains essentially a “permanent” energy supply that is always in operation. *Continuing and expanding Texas current programs will provide an even greater supply of cheap electricity for Texas citizens and businesses.*

## Money and Jobs Still Left on the Table

Today half of the states in the U.S. have long-term energy savings targets, many of which establish much more aggressive goals than Texas. As states around the country increase their commitment to providing efficiency services for their citizens, Texas has fallen behind on its energy efficiency efforts.<sup>8</sup> In 2008, the state saved only 0.21% of its annual electricity needs from efficiency programs, compared to about 0.75–2.5% in the leading states (see Figure 2). *This low bar for efficiency targets means that consumer bill savings and jobs are still left on the table in Texas.*

Texas utilities budgeted about \$100 million on energy efficiency programs in 2009, which is equivalent to about 0.3% of utility revenues in the same year.<sup>9</sup> By comparison, the national average is 1% of utility revenues budgeted for energy efficiency programs and leading states budget 2–4% of revenues on efficiency. Stronger investments in energy efficiency in Texas would mean more jobs for Texans and savings for residents and businesses in Texas.

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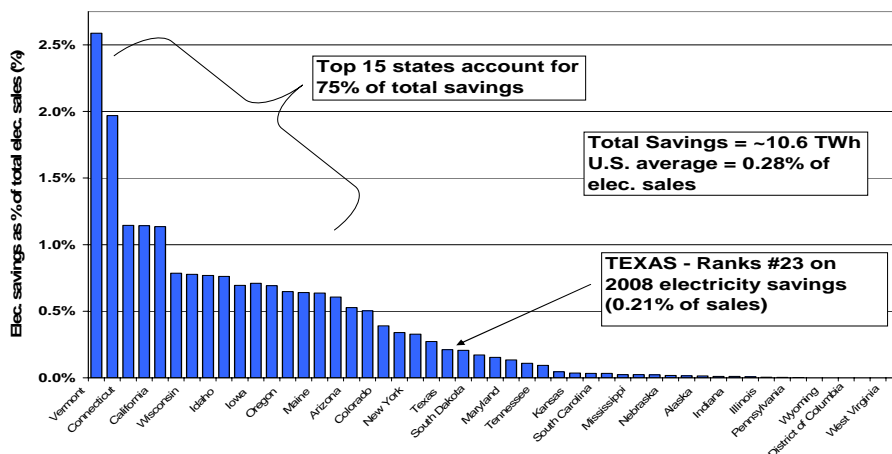
<sup>6</sup> This characteristic of deregulated electricity markets actually facilitates an additional important benefit from energy efficiency programs, because energy efficiency reduces total market demand, thereby reducing the incidence of “tight” market conditions and putting overall downward pressure on market electricity prices. This downward pressure likely reduced prices for all ratepayers. However, this cost saving benefit has, to date, not been included in the cost savings quantifications of the Texas programs.

<sup>7</sup> This analysis should also include transmission and distribution system costs avoided as a result of the energy efficiency improvements. In addition, most experts believe that there will eventually be costs associated with carbon emissions from electricity generation, and energy efficiency will reduce those costs as well.

<sup>8</sup> Molina et al. 2010. *The 2010 State Energy Efficiency Scorecard*. ACEEE.

<sup>9</sup> Frontier Associates *Energy. Efficiency Accomplishments of Texas Investor Owned Utilities Calendar Year 2009*.

**Figure 2. Electricity Savings by State in 2008 from Ratepayer-Funded Energy Efficiency Programs**



Source: ACEEE. *The 2010 State Energy Efficiency Scorecard*. Note: Figures are relative to statewide electricity sales in 2008. Graph displays all state values, but only lists the name of every other state.

### Environmental and Health Benefits

Electricity generation from fossil fuels and its associated emissions, including criteria air pollutants, result in a major external cost to public health. Reducing electricity consumption through energy efficiency provides a major benefit to Texans by lowering emissions of NOx, sulfur dioxide, and carbon dioxide. Efficiency can be particularly beneficial in Eastern Texas, where many communities do not meet air quality standards set by the Environmental Protection Agency. The State Implementation Plan (SIP) to reduce air emissions and meet the EPA guidelines relies in part on the contributions of energy efficiency. Utility energy efficiency programs from 2009 resulted in reductions of nearly 830,000 pounds of NOx.<sup>10</sup> *These emissions reductions that result from energy efficiency provide a direct economic benefit to Texas by lowering pollution reduction compliance costs that the state would otherwise incur.*

### Conclusion

The economic, energy, and environmental benefits of energy efficiency make a strong case for advancing efficiency policies and programs in Texas. As the lowest cost electric resource to utilities, efficiency is a commonsense solution that will help stimulate economic development, save consumers and businesses money on energy bills, provide benefits to the energy system, and provide environmental benefits.

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#### About the American Council for an Energy-Efficient Economy (ACEEE)

ACEEE is a nonprofit organization dedicated to advancing energy efficiency as a means of promoting economic prosperity, energy security, and environmental protection. For more information, see [www.aceee.org](http://www.aceee.org). Support for our work comes from a broad range of foundations, governmental organizations, research institutes, utilities, and corporations. ACEEE fulfills its mission by:

- Conducting in-depth technical and policy assessments
- Advising policymakers and program managers
- Working collaboratively with businesses, public interest groups, and other organizations
- Organizing conferences and workshops
- Publishing books, conference proceedings, and reports
- Educating consumers and businesses

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<sup>10</sup> Frontier Associates. *Energy Efficiency Accomplishments of Texas Investor Owned Utilities Calendar Year 2009*.