



Executive Summary

Increasing the Texas Renewable Energy Standard: Economic and Employment Benefits

A growing number of states have taken steps to increase their use of renewable energy sources like wind, solar, and bioenergy. Eighteen states, including Texas and the District of Columbia, have enacted renewable energy standards—also known as Renewable Portfolio Standards (RPS)—that require electric companies to increase their use of renewable energy. Fifteen states have created renewable energy funds, which provide financial resources for renewable energy development. Five states have revisited initial standards and have subsequently raised or accelerated them.

In 1999, Texas enacted its RPS—requiring 2,000 megawatts (MW) of new renewable energy capacity by 2009—as part of legislation that restructured the state’s electricity market. Today, the Texas RPS is one of the most effective and successful in the nation. The state is ahead of its annual requirement schedule with nearly 1,200 MW of new renewable energy already installed.

Given the success of the existing law and the state’s vast renewable energy potential, at least two proposals have been made to increase the state’s standard. The Texas Renewable Energy Industries Association (TREIA) and a coalition of Texas environmental organizations are advocating for a long-term 20 percent by 2020 RPS, with one percent of the requirement set aside for distributed resources like solar energy and farm-based technologies.¹ The Texas Energy Planning Council (TEPC) is recommending a more modest increase of the standard to 5,000 MW by 2015 (500 MW from non-wind renewable resources), with a goal of 10,000 MW by 2025. We project that the TEPC proposal would yield approximately 8 percent renewable energy in 2025.

The Union of Concerned Scientists analyzed the costs and benefits of increasing the current Texas RPS based on the proposals made by TREIA and the TEPC, using the Energy Information Administration’s (EIA) National Energy Modeling System. Under the more likely scenario that primarily utilizes renewable energy technology cost projections from the Department of Energy’s national laboratories, we found that both the 20 percent proposal and the 10,000 MW proposal would result in significant new benefits for Texas’ economy and environment (Table ES1). Under the 20 percent proposal, economic development and environmental benefits would be much greater because it stimulates more renewable energy development—a total of 17,820 MW by 2025.

Table ES1. Comparison of Benefits*, Texas RPS Proposals (More Likely Scenario)

| | 20 Percent by 2020 RPS | 10,000 MW by 2025 RPS |
|--|------------------------|-----------------------|
| Consumer Benefits | | |
| Electric Bill Savings | \$4.6 billion | \$5 billion |
| Natural Gas Bill Savings | \$1 billion | \$0.5 billion |
| Total Energy Bill Savings | \$5.6 billion | \$5.5 billion |
| Economic Benefits | | |
| New jobs created | 38,290 | 19,950 |
| New capital investment | \$9.4 billion | \$4.7 billion |
| Biomass energy revenues | \$542 million | \$197 million |
| School tax revenues | \$1.1 billion | \$628 million |
| Wind power land lease royalties | \$154 million | \$111 million |
| Environmental Benefits | | |
| Power plants annual CO ₂ emission savings | 20 MMT | 5 MMT |

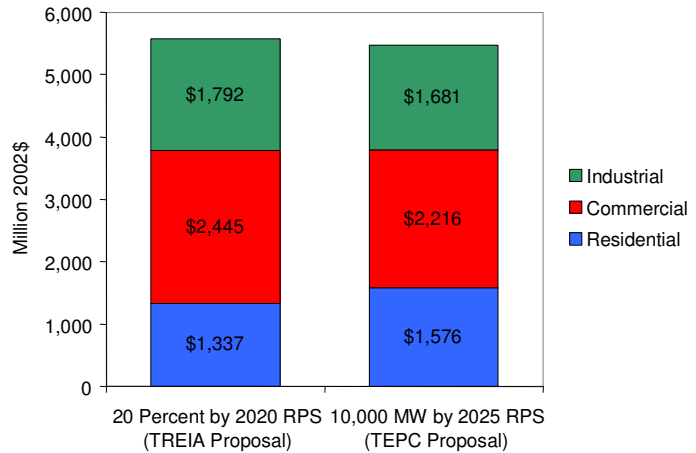
* Results are in cumulative net present value 2002\$ using a seven percent real discount rate. Job results are for the year 2025.

¹ TREIA is also recommending a shorter-term expansion of the current RPS to be adopted by the Texas Legislature in 2005, requiring 10,000 MW of renewable energy capacity (500 MW from distributed renewable resources) by 2015. This shorter-term goal is not analyzed in this report.

Renewable Energy Saves Consumers Money. New renewable energy generation would create much needed competition with natural gas power plants, leading to reduced gas demand and lower natural gas and electricity prices. Under the 20 percent standard, average consumer electricity prices would remain virtually unchanged through 2012, with prices beginning to decline thereafter. By 2025, average electricity prices would be nine percent lower under the 20 percent standard compared with business as usual. Average annual natural gas prices would be as much as three percent lower than business as usual during the forecast period.

Lower natural gas and electricity prices lead to a reduction in the overall cost of energy for consumers. By 2025, total consumer energy bills (natural gas and electric) would be nearly \$5.6 billion lower under the 20 percent standard. All sectors of the economy would benefit, with residential, commercial, and industrial customers' total savings reaching \$1.3 billion, \$2.4 billion, and \$1.8 billion, respectively (Figure ES1).

Figure ES1. Cumulative Consumer Energy Bill Savings, Comparison of Proposals by Sector, 2005-2025^a



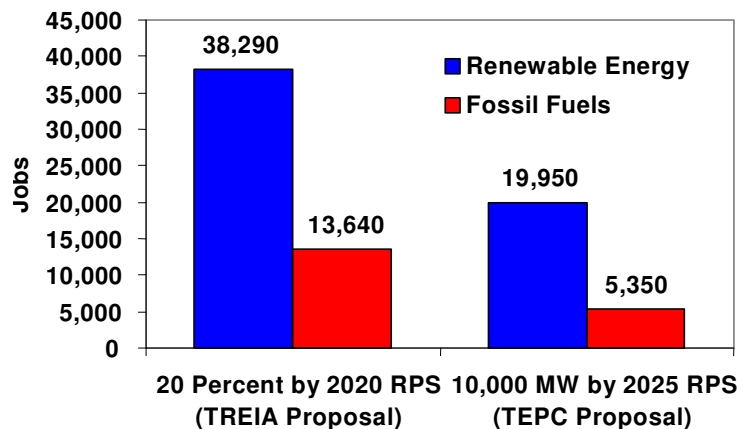
^aNet present value 2002\$ using a seven percent real discount rate.

New renewable energy generation would also lead to slightly lower natural gas and electricity prices under the 10,000 MW proposal. By 2025, consumers would see cumulative energy bill savings of nearly \$5.5 billion compared with business as usual, with savings reaching residential, commercial, and industrial customers.

If natural gas prices exhibit either short-term price spikes or long-term sustained increases beyond those currently projected by the EIA, or if the federal production tax credit for wind and other renewable resources is extended beyond 2005, consumer savings would be greater under both policy proposals than reported here.

Renewable Energy Creates Jobs and Boosts the Economy. By 2025, the 20 percent RPS would create 38,290 new jobs in manufacturing, construction, operation, maintenance, and other industries. In fact, the amount of renewable energy needed to meet the requirement would create 2.8 times more jobs than fossil fuels—a net increase of 24,650 jobs by 2025 (Figure ES2). These jobs would generate an additional \$950 million in income and \$440 million in gross state product for Texas' economy.

Figure ES2. Renewable Energy vs. Fossil Fuel Jobs, Comparison of Proposals (2025)



Rural Texas would also receive a tremendous boost from increasing the current renewable energy standard. Many of the jobs identified above would be created in rural areas where most of the facilities would be located. By 2025, the 20 percent standard would provide:

- \$9.4 billion in new capital investment
- \$1.1 billion in new property tax revenues for local school districts, and \$750 million in additional new property tax revenues for other local public services
- \$542 million in additional revenues to farmers, rural landowners, and other biomass energy producers
- \$154 million in income to farmers, ranchers, and rural landowners from wind power land leases²

The 10,000 MW proposal leads to significantly less development of renewable energy capacity compared with the 20 percent by 2020 standard, resulting in fewer jobs and other economic benefits (See Table ES1 for comparison).

Renewable Energy Diversifies the Electricity Mix. Currently, Texas relies heavily on fossil fuels and nuclear power for most of its electricity. This reliance on fossil fuels—particularly natural gas and coal—for electricity generation will increase if Texas continues on its current path. Increasing the existing state RPS would stimulate additional renewable energy development and help diversify the electricity mix. Under the 20 percent proposal, Texas would increase its total homegrown renewable power to more than 17,800 MW by 2025³—producing enough electricity to meet the needs of 4.9 million average-sized homes.⁴ Texas’ strong wind resources would power the majority of this development, with bioenergy and solar resources also making significant contributions to the mix. For much of the 20-year forecast period, renewable energy primarily displaces natural gas generation. In the later years, renewable energy also helps to displace new coal generation.

Under the 10,000 MW proposal, wind power would constitute the majority of development, while nearly all of the 500 MW of non-wind capacity would come from bioenergy by 2015. The 10,000 MW proposal would lead to about 8 percent of statewide electricity sales from renewable energy by 2025. It would also help to displace fossil fuel generation, primarily from natural gas.

Renewable Energy Improves the Environment. Increasing renewable energy use will reduce the amount of air pollution from coal-, oil-, and natural gas-fired power plants, resulting in better air quality and fewer pollution-related illnesses. Carbon dioxide (CO₂) emissions, which trap heat in the atmosphere and cause global warming, would also be reduced. The 20 percent RPS will reduce about 20 million metric tons (MMT) of power plant CO₂ emissions per year by 2025—a reduction of 7.4 percent below business-as-usual levels. This reduction is equivalent to taking 2.5 million cars off the road or planting 4.8 million acres of trees—an area the size of New Jersey. The 10,000 MW proposal would reduce annual CO₂ emissions from power plants by 5 MMT—a reduction of 1.7 percent below business-as-usual levels. Increasing the RPS will also reduce the impact on water and land resources through extraction, transport, and use of fossil fuels, and conserve resources for future generations.

² Results are in cumulative net present value 2002\$ using a seven percent real discount rate.

³ This development includes residential solar water heating systems that offset an estimated 390 MW of peak generating capacity.

⁴ Based on EIA Electric Sales & Revenue Report 2002 data for residential sector of 1,140 kWh per month.

Consumers Still Benefit With EIA’s Conservative Renewables Assumptions. Even with EIA’s more pessimistic assumptions for renewable energy technology costs, increasing the current RPS under both policy proposals would provide significant benefits for Texas (Table ES2). In fact, our results show that—with a few key exceptions—many of the benefits are comparable with those from our more likely scenario under both proposals. One of the more important differences is that while wind resources still power the majority of the renewable energy development under the less likely scenario, EIA’s higher cost assumptions for wind power lead to considerably more generation from new bioenergy facilities under both policy proposals.

Because bioenergy power plants require more jobs to construct and operate than wind power facilities, the additional bioenergy development results in greater job creation under the 20 percent standard for our less likely scenario compared with the more likely scenario. The increased use of bioenergy, combined with less total renewable energy generation in the business as usual case for our less likely scenario compared with our more likely scenario, also leads to larger net reductions in CO₂ emissions from power plants under both policy proposals. Bioenergy facilities can directly displace more generation from natural gas and coal plants—which are the greatest source of global warming emissions in the country.

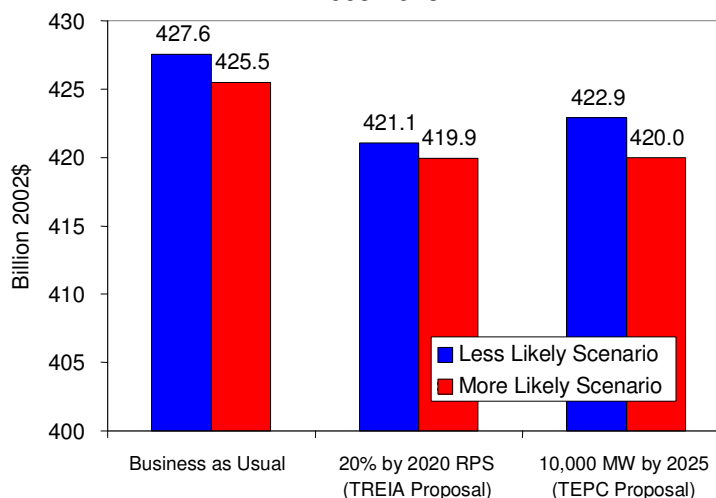
In our less likely scenario, the increased use of renewable energy would still stimulate competition with natural gas facilities under both policy proposals, resulting in significant savings for energy consumers. Cumulative energy bill savings through 2025 under the 20 percent proposal would be \$6.5 billion, when compared with its respective business-as-usual case. These net savings are greater than those achieved for the 20 percent proposal in our more likely scenario. However, cumulative consumer energy bills through 2025 are still the lowest under the 20 percent proposal when using our more likely set of assumptions (Figure ES3).

Table ES2. Comparison of Benefits*, Texas RPS Proposals (Less Likely Scenario)

| | 20 Percent by 2020 RPS | 10,000 MW by 2025 RPS |
|--|------------------------|-----------------------|
| Consumer Benefits | | |
| Electric Bill Savings | \$5.9 billion | \$4.5 billion |
| Natural Gas Bill Savings | \$0.6 billion | \$0.2 billion |
| Total Energy Bill Savings | \$6.5 billion | \$4.7 billion |
| Economic Benefits | | |
| New jobs created | 45,470 | 17,060 |
| New capital investment | \$9.7 billion | \$4.0 billion |
| Biomass energy revenues | \$1.5 million | \$433 million |
| School tax revenues | \$1.2 billion | \$534 million |
| Wind power land lease royalties | \$133 million | \$98 million |
| Environmental Benefits | | |
| Power plants annual CO ₂ emission savings | 27 MMT | 9 MMT |

* Results are in cumulative net present value 2002\$ using a seven percent real discount rate. Job results are for the year 2025.

Figure ES3. Cumulative Energy Bills* Comparison, 2005-2025



*Excludes Transportation.