Charting a New Path for Tennessee's Electricity Generation and Use

Tennessee's energy future is at a crossroads

One path leads to increased dependency on fossil fuels—threatening our economy and fueling global warming. The other leads to a new, smarter energy future for Tennessee. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in Tennessee, save families and businesses money, and make America more energy independent. Clean energy is also the most effective solution to the threat of global warming. We can start making progress right away using proven technology, and then draw on American innovation to take us the rest of the way with new technologies.

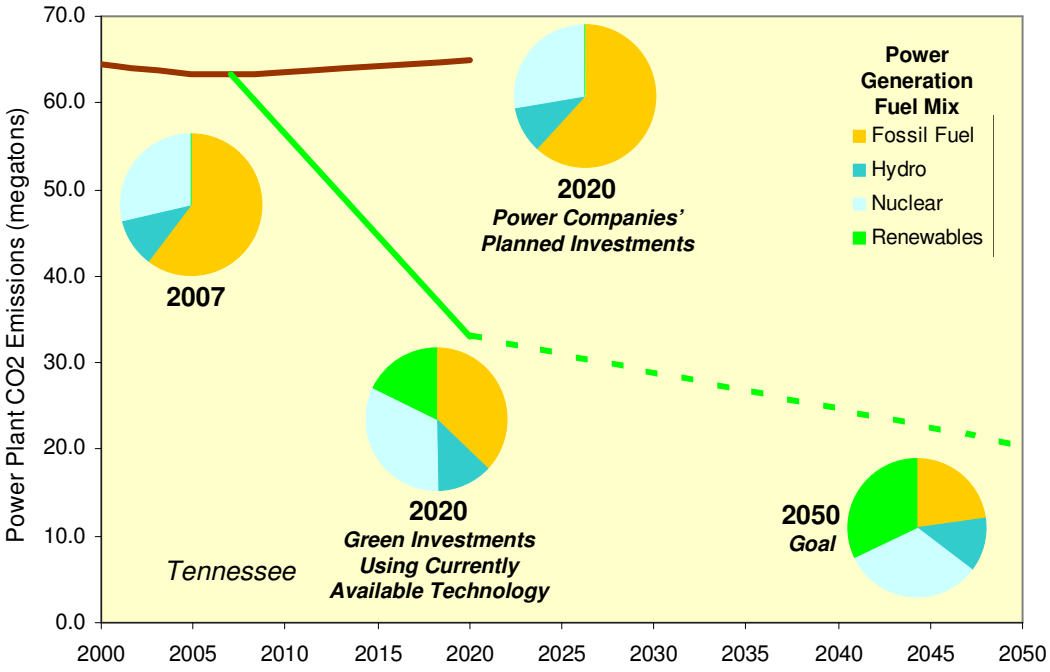
How does Tennessee generate electricity today?

In 2007, electric power generated in Tennessee primarily came from coal (51.5 percent), oil (4.0 percent), gas (4.4 percent), hydro (11.0 percent), and nuclear (28.7 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Tennessee power companies plan to increase the energy generation from Less than 0.1 percent of electricity generated in Tennessee is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

Tennessee has a choice to invest in a cleaner energy future

Tennessee can achieve a new energy future by making better investments as utilities replace increasingly aged infrastructure and expand capacity. An important first step is for Tennessee to generate at least 20 percent of electricity from renewable sources by 2020, a goal readily achievable with today's technology. Continuing to convert 15 percent of the state's energy portfolio to renewable energy sources each decade could yield an energy profile of at least 65 percent renewables by 2050.

Tennessee can also benefit from improved energy efficiency. Technologies are available that could reduce demand nationally by 20 to 30 percent over the next decade. Innovations in energy efficiency should allow us to keep demand constant after 2020, even as the population grows.



About the chart: 2000, 2007 and 2020 Power Companies' Planned Investments from CARMA 1.0 (www.CARMA.org). The 2020 Green Investments projection assumes that, using currently available technology, Tennessee makes (1) improvements in efficiency to reduce overall demand by 25 percent and (2) shifts away from fossil fuels so that 20 percent of power generation is from renewable energy sources. The 2050 Goal assumes (1) hydro and nuclear are unchanged, (2) continued efficiency improvements keep total demand flat, and (3) renewable energy replaces at least 65 percent of power generation formerly done through fossil fuel burning. Note that the projection of future CO_2 emissions from fossil fuels assumes no investment in carbon capture and storage.

Making a Difference in Tennessee

The Tennessee Valley Authority (TVA), the main power company in Tennessee, is leading the way for renewable energy in the state. The TVA wind farm produces 29 megawatts of power and its 16 solar instillations in and around Tennessee produce nearly 1 MW. Completed in 2005, these projects were developed in response to rising energy costs and increased demand for renewable energy. TVA also allows people to sell back power to the grid, making it more affordable for individuals to invest in small-scale wind or solar. TVA will pay for excess electricity at a rate of 15 cents per kilowatt-hour and they offer a maximum $500 incentive for installation of a new system. The success and support of these efforts will hopefully spur TVA to further invest in renewables.

Sources:
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http://www.tva.gov/greenpowerswitch/partners/index.htm

Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Tennessee can reduce its future carbon dioxide (CO_2) emissions from electricity generation by 49 percent compared to the business-as-usual path that utilities are following now.

Given that 41 percent of Tennessee's CO_2 emissions come from electricity generation, diversifying and updating our power sources is critical for cutting the state's total global warming pollution.

Increasing Tennessee's energy and economic security

Investing in renewable energy sources will reduce Tennessee's dependence on fossil fuels and at the same time create new green collar jobs. A new energy future in Tennessee could include:

Expanded solar power. Tennessee has enough solar resources to produce 4,500 to 5,000 Whr per square meter using photovoltaic systems and 3,500 to 4,500 Whr per square meter using concentrating solar power systems. This means that devoting just 1 square mile in Tennessee to solar power can provide enough electricity for about 1,100 households each year.

Expanded wind power. Tennessee is currently ranked 27th for wind power, with 29 MW of existing electricity generation capacity. The American Wind Energy Association ranks Tennessee 39th in terms of its future wind potential, with 186 MW of potential capacity.

Biomass power. Tennessee has 15.2 million dry tons of biomass available each year that could be used to generate about 3,000 MW of electricity.

A stronger economy. Tennessee could realize as many as 4,233 jobs manufacturing wind turbines and $1.41 billion investment in the wind industry alone if 50,000 MW of new wind energy is created on a national level.

How does Tennessee use electricity?

Tennessee's energy is used to power:

- homes (39 percent),
- businesses (28 percent), and
- industry (33 percent).

Per capita residential electricity use is 6,719 kilowatt hours per year, 49 percent greater than the national average.

References and Additional Reading:

American Council for an Energy-Efficiency Economy, www.aceee.org.
American Wind Energy Association, www.awea.org.
Bioenergy Feedstock Information Network. bioenergy.ornl.gov
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For more information, visit www.nwf.org/globalwarming.