"Does advanced energy create good, well-paying jobs?"



TEXAS ADVANCED ENERGY BUSINESS ALLIANCE



The Texas economy is suffering from the coronavirus health crisis and we need to grow more jobs. Technologies such as solar, wind, and energy efficiency are fast to market, and are poised to support our economic recovery and growing population with secure, clean, reliable and affordable power.

There are 254,300 advanced energy jobs in Texas. That's more jobs than in real estate and triple the jobs in chemical manufacturing (2020 TAEBA Jobs Fact Sheet).

Advanced energy jobs in Texas grew at twice the rate of Texas jobs overall from 2018-2019 (4% vs. 2%) (TAEBA).

- 254,300 jobs: 169,000+ energy efficiency jobs; 48,000+ electricity generation jobs, 13,000+ jobs in energy storage, microgrids; 17,000+ in clean vehicles
- Wind turbine technician starting salary is about \$53k and the sector will grow 96% by 2026 (Bureau of Labor Statistics).
- Solar PV installer starting salary is about \$45k and the sector will grow by 105% by 2026 (Bureau of Labor Statistics).
- Solar PV installer and wind turbine technician are projected to be the #1 and #2 fastest growing jobs in America from 2018-2028 (Bureau of Labor Statistics).

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Advanced energy saves money for people through energy efficiency by meeting our needs while using less energy. Utility programs that provide assistance for energy efficiency measures - like weatherization, high-efficiency light bulbs and appliances - lower monthly electric bills.

Advanced energy technologies like wind and solar power are now among the cheapest sources of electric power available, and getting cheaper. They are also not subject to fluctuations in the price of fuels. Advanced energy means low, stable electricity prices.

- The cheapest energy is the energy you don't need. The average cost per kilowatt-hour saved by utility-sponsored energy efficiency measures is 3 cents per kilowatt-hour, less than power from a combined cycle gas facility and half that of a coal-fired facility (ACEEE).
- Texas was the first state to adopt an energy efficiency resource standard (EERS) in 1999.
- Texas now ranks #26 among the 50 states for EE policy effectiveness as of 2019 (ACEEE, 2019).
- Solar and wind generation technologies continue to decline dramatically in costs, 13% per year and 7% per year, respectively, which lowers market prices for consumers (Lazard LCOE study).

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Grid operators like the Electric Reliability Council of Texas (ERCOT) have shown that they can manage increasing amounts of variable renewable energy without compromising reliability. As of May 2020, we have successfully operated with more than 59% of energy produced by wind – with no impact on reliability.

Large-scale batteries can absorb excess energy when there is lots of sun and wind and save it for when we need it later. These energy storage systems, which are now growing in the Texas market, are getting increasingly cost-effective, and provide a variety of services to maintain grid reliability.

- Solar developers are expected to add 5.5 GW of capacity from new solar projects in 2021, which is enough to power 3.85 million homes (ERCOT).
- Wind capacity in the state has grown each year from just over 100 MW in 2000 to more than 24,000 MW as of June 2020 (ERCOT).
- Texas produces more wind energy than any other state and only four countries across the world have more wind power than Texas (U.S. Energy Information Agency).
- At the end of 2019, renewables made up over 90% of ERCOT's interconnection queue 27% wind, 61% solar (over 43 GW of utility-scale PV), and 7% battery storage projects. In 2020, wind and solar are "slated to account for 99% of all new capacity" (Silverstein, 2020).

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Electric vehicles (EVs) are coming down in price, and are expected to cost no more than comparable gasolinepowered models by mid-2020s (Deloitte).

EVs already cost less to own and operate than gasolinepowered cars, due to lower fuel cost and lower maintenance expenses. Electric school and transit buses, delivery vehicles, and port vehicles save money for operators and contribute to cleaner air.

In addition to these benefits for vehicle owners, EVs drive down costs for all electricity ratepayers because they share the cost of existing electric infrastructure.

- Bloomberg New Energy Finance projects that EVs will reach up-front price parity - without subsidies - with gasolinepowered vehicles by the mid-2020s.
- On a national average, it costs less than half as much to travel the same distance in an EV than a conventional vehicle (U.S. Department of Energy).
- Between 2012 and 2019, in the two utility service territories with the most EVs in the U.S., EV customers contributed more than \$800 million in net revenue to the body of utility customers (Synapse Energy).

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Electric vehicle (EV) owners should pay their fair share to support Texas roads, but not more than their fair share.

EV owners contribute to state revenues through sales tax, vehicle registration fees and tolls, and through taxes on the electricity they use to charge their vehicles.

Initial levels of EV adoption will have minimal impact on highway funding, but punitive new taxes could cripple the emerging market for the first true alternative to petroleumpowered vehicles for consumers.

Over time, we need to look at adopting an annual fee formula that would result in a fair tax, comparable to what drivers of comparable vehicles pay in gas tax.

- EVs are still new to Texas and make up a very small portion of the number of vehicles on the road (approximately 0.1%), thus having the potential to contribute very little to state revenues if punitive new taxes are imposed on EV drivers (AutoAlliance and Texas Department of Motor Vehicles).
- In FY2019, motor fuels taxes brought in less than 7% of all state sales tax revenues (TX Comptroller).
- In 2015, Georgia eliminated the state's EV tax credit and replaced it with a \$200 annual registration fee. In the immediate year and a half following the implementation of a fee, sales of EVs fell about 80% (UtilityDive and Atlanta Journal-Constitution).

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The competitive electric market in Texas is the envy of the nation, but competition only works if the rules keep up. The market rules in place today have been developed by and for incumbent interests, so we need to remove market barriers to ensure the best technologies can fairly compete.

One example where we could do more to promote competition is to ensure competitive distributed energy resources (DERs) such as energy storage, demand response, or solar panels can compete against traditional utility "poles and wires" investments to lower infrastructure costs borne by customers.

- A recent report shows that Texas could access \$5.47 billion in value over 10 years by better integrating DERs (TAEBA DER Report).
- Introducing more competition into developing utility infrastructure could save households and businesses \$2.45 billion over 10 years.
- Texans could access an additional \$3.02 billion over 10 years by injecting power into wholesale markets at times when energy prices are spiking.

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Advances in technology, reductions in cost and increased interest by customers who want to take control of their energy have started a trend toward more distributed energy resources, or DERs. These include onsite generation (such as rooftop solar panels), energy efficiency, demand response, batteries, and electric vehicles.

Customers should be able to invest in solar, storage and other DERs that offer savings and reliability without onerous requirements or discriminatory fees. Customers should have opportunities to participate in markets, if they so choose, and provide energy and reliability services to the grid.

- As of December 2019, there were approximately 710 MW of rooftop solar in the ERCOT region (ERCOT).
- By better integrating DERs such as solar, battery storage, energy efficiency, demand response, and electric vehicles, Texans could access \$5.47 billion in value over the next decade (TAEBA DER report).

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The total cost of owning and driving an electric vehicle (EV) is already lower than similar gasoline-powered vehicles, and due to falling battery prices and economies of scale, an EV will cost less than a comparable internal combustion engine vehicle in the next couple of years.

Every year, EVs become more affordable, with longer battery ranges, and more models to choose from, even pick-up trucks. With Tesla's Cybertruck, Rivian's R1T, Ford's electric F-150 and Raptor, and GMC's Hummer EV, there will be plenty of options for Texans.

- The typical battery range of an EV averages around 200 miles, with the top EV makers reaching upwards of 300 miles, and this is only going to get better with time (InsideEVs, 2019).
- 90% of the car trips we make are less than 100 miles, so the average EV today can cover that more than twice over (EVadoption, 2019).
- Texas has over a thousand public charging locations across the state, with more on the way (EVadoption, 2018).
- As of August 2020, the average price per gallon of gas in Texas is \$2.17 versus the equivalent cost for an eGallon of electricity at \$1.20 (US Department of Energy).
- EV owners have lower maintenance costs because EVs don't need oil changes, head gaskets, spark plugs, timing belts, or air filters.

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All forms of energy get some kind of incentive, whether it's a federal tax credit, local tax abatements, accounting treatment, loan guarantees, or public funding for research and development.

Economic development incentives available to renewable energy companies are the same that are provided to manufacturing and other major economic development projects. These projects result in new tax revenues and landowner payments that otherwise would not come to Texas.

- More than \$42B has been invested in Texas to date from the wind power industry, which now provides approximately 20% of the state's electricity (AWEA, ERCOT).
- Existing utility-scale solar and wind projects in Texas will pay local landowners \$4.8-\$7.3 billion over the lifetime of the projects (Rhodes, 2020).
- Of these taxes and landowner payments, 70% are paid to rural counties (Rhodes, 2020).
- Texas electricity customers saved a total of \$5.7 billion in electricity costs from 2010 to 2017 compared to what they would have paid if renewables were not part of the ERCOT generation portfolio (TXP-IdeaSmiths, 2018).

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Advanced energy is already attracting corporate investment in Texas. As leading companies like Google, Apple, General Motors, and Walmart increasingly seek to purchase renewable energy to meet ambitious sustainability goals, the Texas market has emerged as the runaway favorite.

Strong resource potential is one important factor drawing this investment to Texas, but not the only one; the state's competitive retail and wholesale market structure, its early investment in transmission infrastructure to facilitate renewable energy buildout, and its favorable tax and siting policies are all important drivers.

- Companies across all sectors are setting sustainability goals that require sharp emission reductions from electricity use. Renewable energy is an affordable, available technology to meet these goals. More than 70% of the Fortune 100 and nearly half of the Fortune 500 have set such targets (AEE, 2016).
- Texas accounts for an impressive 39% of total wind capacity purchased by commercial and industrial (C&I) customers across the entire country since the trend of corporate procurement picked up roughly ten years ago (AWEA).
- In 2019, Texas accounted for 40% of renewable capacity contracted by C&I customers, of which nearly two-thirds were for solar projects (Bloomberg).