

## IN TEXAS, ADVANCED ENERGY IS BOOMING

New technologies and business models are fundamentally changing the way we make, manage, and use energy. We call these technologies “advanced energy,” and they are driving our economy toward a prosperous future powered by secure, clean, and affordable energy.

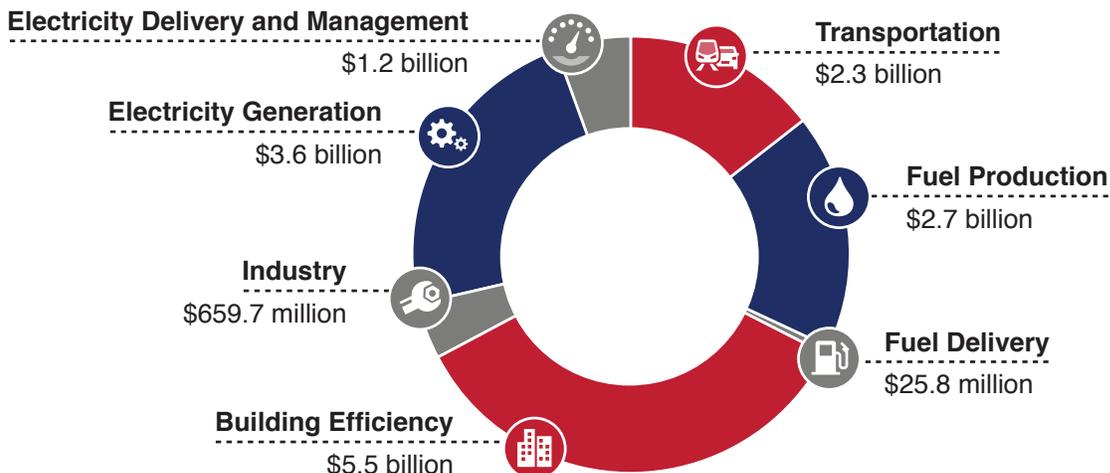
Advanced energy is a broad range of technologies, products, and services that constitute the best available technologies for meeting energy needs today and tomorrow – cutting costs and improving reliability.

*Advanced Energy in Texas*, prepared by Navigant Research, is the first-ever analysis of the advanced energy industry in the Lone Star State, highlighting market size, key trends, and growth companies. In each of the seven segments that make up advanced energy, Navigant applied strict definitions to distinguish advanced energy from conventional energy products, making this a conservative estimate of the industry’s economic footprint in Texas.

### Summary Findings:

- **The advanced energy market in Texas in 2014 is estimated at \$16 billion in total revenue**, representing about 8% of the total U.S. market – and enough to buy the Dallas Cowboys five times over.
- With energy efficient lighting, HVAC, and retrofits of public and commercial facilities, the **Building Efficiency** segment is the largest advanced energy market in Texas, with **\$5.5 billion in revenue**.
- **Electricity Generation** is the second leading advanced energy segment in Texas, with **\$3.6 billion in revenue** last year, \$2.3 billion of that from wind energy installations.
- **Fuel Production**, which includes compressed and liquefied natural gas for vehicles, is the third largest segment, with **\$2.7 billion in revenue**.
- Thanks to natural gas vehicles, hybrid electric vehicles, and the fueling infrastructure that supports them, the **Transportation** segment saw revenue of **\$2.3 billion** in 2014.
- Driven by transmission projects required for integrating larger amounts of advanced energy into the transmission system, the **Electricity Delivery and Management** segment reached **\$1.2 billion**.
- **Fuel Delivery** was the smallest segment, with **\$25.8 million** from natural gas fueling stations.

### Advanced Energy: A \$16 Billion Industry in Texas



# Key Trends in Texas:

## Wind, Natural Gas, and Solar Balance the Electricity

**Portfolio:** Texas has more than 14 GW of wind energy installed, producing over 10% of the state’s electricity, with an additional 10 GW in the pipeline. Solar is on the launch pad, with 10 GW of new capacity expected by 2029. With abundant natural gas in greater use as well, Texas is developing a complementary mix of homegrown energy sources for economic growth.

## Energy Efficiency Provides Reliability and Savings:

Energy efficiency and demand response are already big in Texas, saving money for customers and helping prevent blackouts. But with efficiency measures one-third the cost of power generation, there is vast untapped potential for savings and peak load reduction.

**Energy Storage is the New Frontier:** With potential to end a range of electricity system problems and inefficiencies – fluctuating demand, idle capacity, variable resources, minute-to-minute frequency control – and steep cost reductions expected, energy storage is now within reach.

# Companies Making Their Mark:

**Opower** (NYSE: OPWR) is a leader in customer data analytics, with over 50 million households and businesses. Utility clients include 28 of the 50 largest in the U.S., including Centerpoint Energy. Opower sees a huge opportunity in Texas for residential demand response to save money for customers and relieve stress on the power grid.

**First Solar** (NASDAQ: FSLR) is a vertically integrated solar power provider with more than 10 GW of installed capacity worldwide. Its Barilla Solar project in Pecos County is the first solar plant in the U.S. that offers electricity on a competitive open contract basis, with no long term contracts.

**RES Americas** is a renewable energy, transmission, and energy storage developer. Its projects in Texas total nearly 2,500 MW, including the 278 MW King Mountain Wind Ranch, the 60 MW Whirlwind Energy Center, and the 166 MW Hackberry Wind Farm. RES Americas was also a contractor for the 30 MW Webberville and 41 MW Alamo 1 solar projects. Near completion is its Keechi wind project, owned by Enbridge Inc., which will power Microsoft Corp. near Dallas-Fort Worth.



ENERGY SUPPLY	
Electricity Generation	Electricity Delivery & Management
<ul style="list-style-type: none"> <li>Hydropower</li> <li>Gas Turbines</li> <li>Solar</li> <li>Wind</li> <li>Geothermal</li> <li>Marine</li> <li>Waste</li> <li>Biomass</li> <li>Nuclear</li> <li>Fuel Cells and Other DG</li> </ul>	<ul style="list-style-type: none"> <li>Transmission</li> <li>Distribution</li> <li>AMI</li> <li>Micro-grids</li> <li>EV Charging Infrastructure</li> <li>Energy Storage</li> <li>Enabling IT</li> </ul>
Fuel Production	Fuel Delivery
<ul style="list-style-type: none"> <li>Ethanol &amp; Butanol</li> <li>Biodiesel</li> <li>Biogas</li> <li>Synthetic Diesel &amp; Gasoline</li> <li>Bio-oil</li> <li>CNG &amp; LNG</li> <li>Hydrogen</li> </ul>	<ul style="list-style-type: none"> <li>Fuel Transportation Infrastructure</li> <li>Fueling Stations</li> </ul>
ENERGY DEMAND	
Building Efficiency	Transportation
<ul style="list-style-type: none"> <li>Building Design</li> <li>Building Envelope</li> <li>HVAC</li> <li>District Energy, CHP, CCHP</li> <li>Water Heating</li> <li>Lighting</li> <li>Appliances &amp; Electronics</li> <li>Enabling IT/ Demand Response</li> </ul>	<ul style="list-style-type: none"> <li>Propulsion Systems</li> <li>Vehicle Design &amp; Materials</li> <li>Freight Logistics</li> <li>Land Use &amp; Infrastructure Design</li> <li>Enabling IT</li> </ul>
Industry	
<ul style="list-style-type: none"> <li>Manufacturing Machinery &amp; Process Equipment</li> <li>Industrial Combined Heat &amp; Power</li> </ul>	