



Edison Electric
INSTITUTE

Energy Storage, Renewable Power, and Demand Response

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Washington, DC
February 7, 2018

Electric Companies
Power American Jobs

7 million+

The electric power industry supports **more than 7 million jobs** in communities across the United States—**that's 1 in every 20 American jobs.**



\$73,000

In 2015, **median annual wages for workers in the electric power industry were \$73,000**—twice the national median.

Electric Companies Are Building
Smarter Energy Infrastructure

\$100 billion+

Electric companies **invest more than \$100 billion each year** to make the energy grid more dynamic, more resilient, cleaner, and more secure; to diversify the nation's energy mix; and to integrate new technologies that benefit customers.



Electric Companies Support
a Healthy Economy








\$880 billion

The electric power industry **contributes \$880 billion to the U.S. GDP** each year, or **5 percent of the nation's total GDP.**



10 WAYS

Electric Companies Are Leading on Clean Energy

<p>1</p>  <p>Investing more than \$100 billion each year to build smarter energy infrastructure and to TRANSITION TO EVEN CLEANER ENERGY SOURCES.</p>	<p>2</p> <p>CO₂</p> <p>REDUCING CARBON DIOXIDE EMISSIONS NEARLY 25 PERCENT BELOW 2005 LEVELS as of 2016, the lowest annual emissions level since 1988.</p>	<p>7</p>  <p>Using MORE THAN 90 PERCENT OF ALL ENERGY STORAGE in the U.S.</p>	<p>8</p>  <p>Investing in energy efficiency programs that saved enough energy in 2015 to power 17.5 MILLION U.S. HOMES FOR A YEAR.</p>
<p>3</p> <p>NO_x + SO₂</p> <p>Decreasing emissions of NITROGEN OXIDES by 82 PERCENT and SULFUR DIOXIDE EMISSIONS by 91 PERCENT, while ELECTRICITY USE GREW by 36 PERCENT (1990-2016).</p>	<p>4</p> <p>1/3</p> <p>Changing the energy mix, more than ONE-THIRD OF THE NATION'S ELECTRICITY NOW COMES FROM ZERO-EMISSIONS SOURCES (like nuclear, hydropower, and renewables).</p>	<p>9</p>  <p>Creating a nationwide initiative that EXPANDED THE USE OF EVS in our member companies' fleets by 43 percent since 2015.</p>	<p>10</p>  <p>Promoting widespread adoption of EVs that could REDUCE GREENHOUSE GAS EMISSIONS by the equivalent of removing 100 million conventional vehicles from the road.</p>
		<p>5</p>  <p>Providing VIRTUALLY ALL OF THE WIND, GEOTHERMAL, AND HYDROPOWER—and 64 PERCENT OF THE SOLAR—in the U.S.</p>	<p>6</p>  <p>Driving the majority of demand for solar, accounting for 72 PERCENT OF INSTALLED SOLAR CAPACITY in 2016.</p>

We Are Adding More Non-Hydro Renewable Resources to the Mix

Our universal solar projects accounted for

72% of all

INSTALLED U.S. SOLAR CAPACITY in 2016.



OUR SOLAR PV had an average cost of

\$1.06

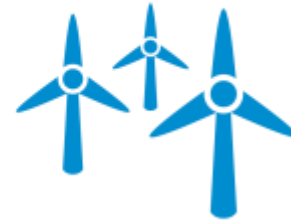
per watt in 2016

→ **COMPARED TO** ←

RESIDENTIAL ROOFTOP SOLAR PV had an average cost of

\$2.89

per watt in 2016



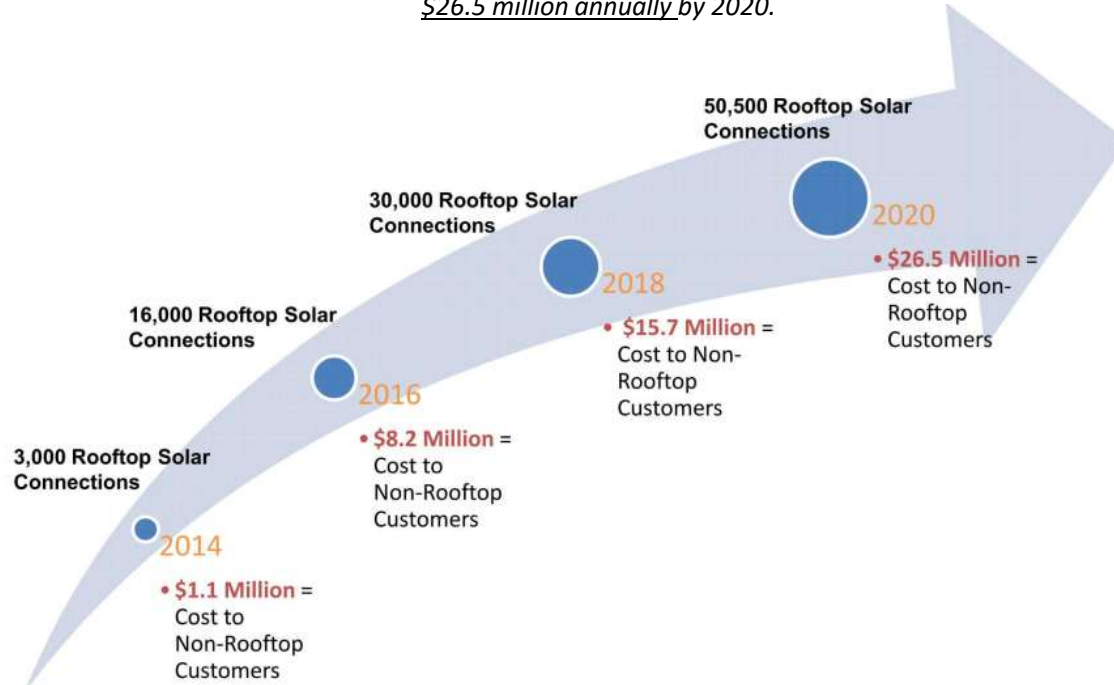
Our wind projects provide almost

100%

of wind energy nationwide.

Extent of NEM-Related Cost Shift

Without changes to rate structures, net metering for private solar customers could cost non-solar customers in Utah \$26.5 million annually by 2020.



We Are the Largest Users of Energy Storage Technology

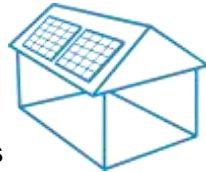
Using more than 90% of all energy storage in the U.S.

What is stationary energy storage?

Stationary storage is capable of taking electric output and converting it into another form of energy for use on demand.

What are the benefits?

For Homes



Storing solar and wind power could increase time off grid by 2-4 hours.

For Businesses



Control of power costs reduces downtime and production losses.



For Power Companies

Improved efficiencies in demand-side management, generation, and transmission.

Smarter Energy Infrastructure

DRIVERS



1

Customer
Wants &
Needs

2

Environmental
Goals

3

Growth in
Distributed
Energy Resources

4

New
Technologies

BENEFITS



1

Enhanced
Reliability

2

Increased
Resiliency

3

Reduced Carbon
Emissions

4

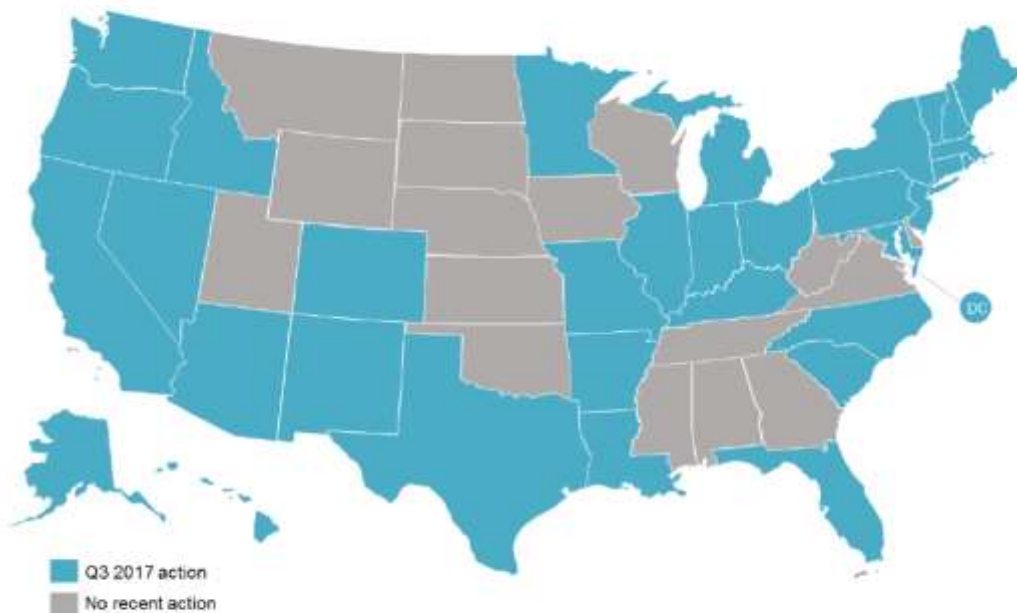
Empowered
Customers

5

Flexible & Responsive
Energy Grid Platform

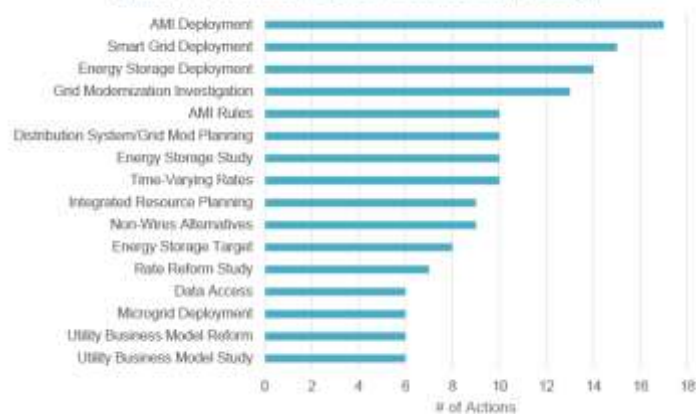
State Policy Action

Figure 1. Legislative and Regulatory Action on Grid Modernization (Q3 2017)

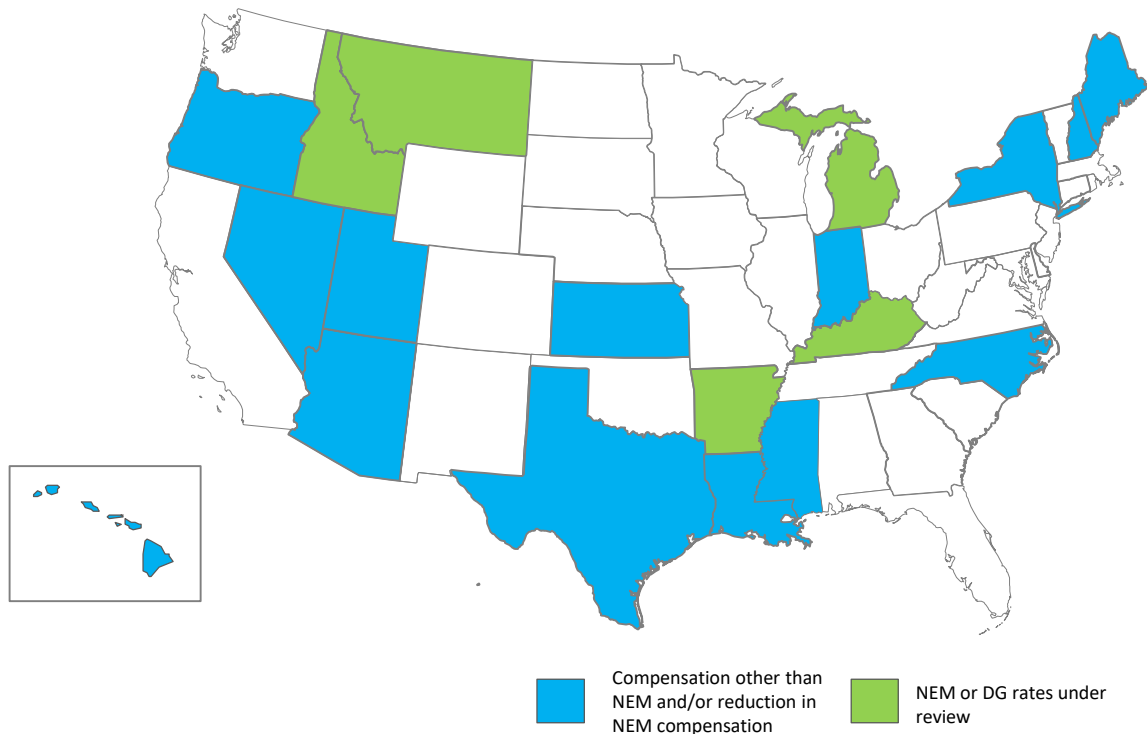


Type of Action	# of Actions
Policies	40
Deployment	38
Studies and Investigations	32
Planning and Market Access	32
Business Model and Rate Reform	25
Financial Incentives	17
Total	184

Figure 4. Most Common Types of Actions Taken in Q3 2017



Recognizing Challenges of Private Solar & Net Metering, States Are Changing Policies



Options Beyond Retail NEM to Achieve Equity and Capture Value of the Grid

- Private solar rate class (Kansas)
- Reduced netting periods (Utah, Mississippi)
- Buy/sell arrangements (City of Austin)
- Step down from retail to wholesale/avoided cost (Nevada, Maine)
- Demand charges (Arizona)
- Fixed charges, minimum bill, or (Hawaii, Texas)
- New compensation system (Arizona, New York)

Rate and Regulatory Reform Is Needed

CHALLENGES



- 1 Rapid Technology Change
- 2 Changing Customer Expectations
- 3 Slow & Inflexible Process
- 4 One Size Does Not Fit All

WAYS FORWARD



- 1 Informal Collaboration
- 2 Performance-Based Ratemaking
- 3 Flexible Rate Structures
- 4 Transparent Pricing for Grid & Energy

The **Edison Electric Institute** (EEI) is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for about 220 million Americans, and operate in all 50 states and the District of Columbia. As a whole, the electric power industry supports more than 7 million jobs in communities across the United States.

In addition to our U.S. members, EEI has more than 60 international electric companies, with operations in more than 90 countries, as International Members, and hundreds of industry suppliers and related organizations as Associate Members.

Organized in 1933, EEI provides public policy leadership, strategic business intelligence, and essential conferences and forums.

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