



BUILDING A BRIGHTER FUTURE

THROUGH TRANSMISSION SYSTEM INVESTMENTS



FirstEnergy[®]

WE'RE INVESTING IN OUR CUSTOMERS

FirstEnergy launched *Energizing the Future* in 2014 to build a stronger, smarter, more secure transmission system.

These efforts to modernize the “Interstate Highway System” of the electric grid are achieving results that benefit our customers.

Since 2014, FirstEnergy has achieved a 37 percent reduction in equipment-related transmission outages in our Ohio territory, as well as our Penn Power service area in western Pennsylvania. We anticipate achieving similar results as the program expands eastward.

Transmission upgrades are also needed to integrate advanced energy options, including renewables and private generation sources, and to respond to our customers’ evolving needs.



1 UPGRADING OR REPLACING AGING EQUIPMENT



- By modernizing our transmission equipment, we’re able to help reduce the number and frequency of outages, strengthen our facilities and better manage maintenance expenses.
- We’ve rebuilt or replaced more than 700 miles of transmission lines across our service area.
- We’ve replaced aging circuit breakers and transformers in substations with new models featuring diagnostic systems that detect problems before they occur.

ENHANCING SERVICE RELIABILITY

FirstEnergy has completed 600 to 700 projects per year focused on three main areas

2 BOOSTING SYSTEM PERFORMANCE



- Technology upgrades are making our system more secure and more resistant to extreme weather events and cyberattacks.
- Since 2014, we've installed 1,000 miles of new fiber optic cable to enhance network communications. This will enable grid operators to react more quickly to disturbances on the system by isolating damage and rerouting power from other sources.
- An advanced, secure communications network also supports real-time monitoring and predictive maintenance of our substation equipment so we can detect problems before they impact service to customers.

3 ADDING OPERATIONAL FLEXIBILITY TO THE GRID



- Adding a separate set of wires to existing transmission lines, which reduces the likelihood of power outages by adding redundancy to our system.
- Reducing the duration of outages on long-distance power lines by installing new technology that can isolate a power outage to the immediate area where damage occurs. This limits the number of customers affected by a lengthy outage.
- Upgrading older substations to an advanced design that helps keep power flowing to our customers if a local transmission line goes out of service due to weather, maintenance work or other disruption. The design creates additional paths for power to flow to customers.

SINCE 2014, WE'VE ACHIEVED A

37%

REDUCTION IN EQUIPMENT-RELATED
TRANSMISSION OUTAGES
(OHIO AND PENN POWER SERVICE AREAS)

SINCE 2014, WE'VE COMPLETED

600 TO 700

PROJECTS PER YEAR

FROM 2014 TO 2017, WE INVESTED

\$4.4 BILLION

ON GRID IMPROVEMENT PROJECTS

SINCE 2014, WE'VE
REPLACED MORE THAN

700

MILES OF TRANSMISSION LINES

WE'VE INSTALLED

1,000

MILES OF NEW FIBER OPTIC CABLE

OPENING 2019, OUR

88,000 SQ.
FT.

CENTER FOR ADVANCED ENERGY
TECHNOLOGY WILL BE ONE OF THE
MOST COMPREHENSIVE SMART GRID
FACILITIES IN THE COUNTRY

WE'RE INVESTING IN OUR WORKFORCE

Our new Center for Advanced Energy Technology (CAET), expected to open in early 2019, is dedicated to evaluating and testing transmission equipment and training our staff on new, digital grid technologies that enhance our ability to serve customers.

- The 88,000-square-foot facility will be one of the most comprehensive smart grid testing and training facilities in the country.



WE'RE COMMITTED TO HONEST AND OPEN DIALOGUE TO KEEP STAKEHOLDERS INFORMED ABOUT TRANSMISSION PROJECTS

- We solicit and carefully consider public input when siting new transmission lines, and we're dedicated to working closely with elected officials and property owners to address concerns and provide timely project updates.
- Much of our work is along existing rights-of-way, or at existing substations and facilities on company property, which minimizes impacts on local communities and the environment.

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