



2017

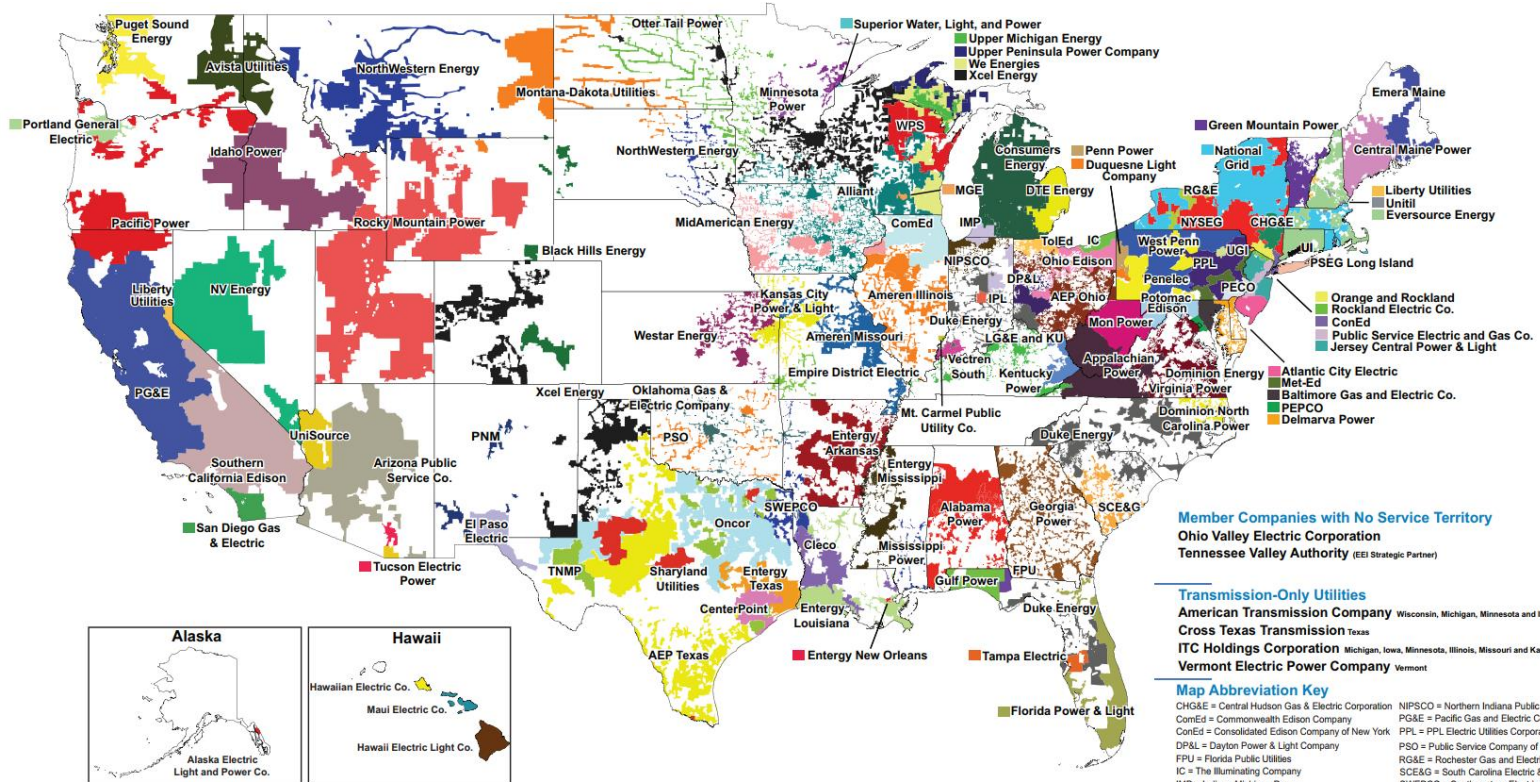
# Historic Storms, Historic Responses

Department of Energy Electricity Advisory Committee – February 21, 2018

# About Edison Electric Institute

- 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.

# EEl Member Company Territories



# EEI Member Company Mutual Assistance

- Regionally-based voluntary partnership of investor-owned electric companies across the country committed to providing resources to help restore power.
  - Some municipal and cooperatives participate in Regional Mutual Assistance Groups (RMAGs), but they also have their own mutual aid programs
- Mutual assistance is a force-multiplier.



A satellite image of Earth from space, showing a large, swirling storm system over the Atlantic Ocean. The storm is characterized by a dense, white cloud mass with a distinct eye-like structure in the center. The surrounding ocean is a deep blue, and the landmasses of North and South America are visible on the left side of the frame. The image is partially obscured by two semi-transparent blue text boxes.

# October 2012, Superstorm Sandy

8.2 million out, 14 days+

## Enhance Mutual Assistance Processes

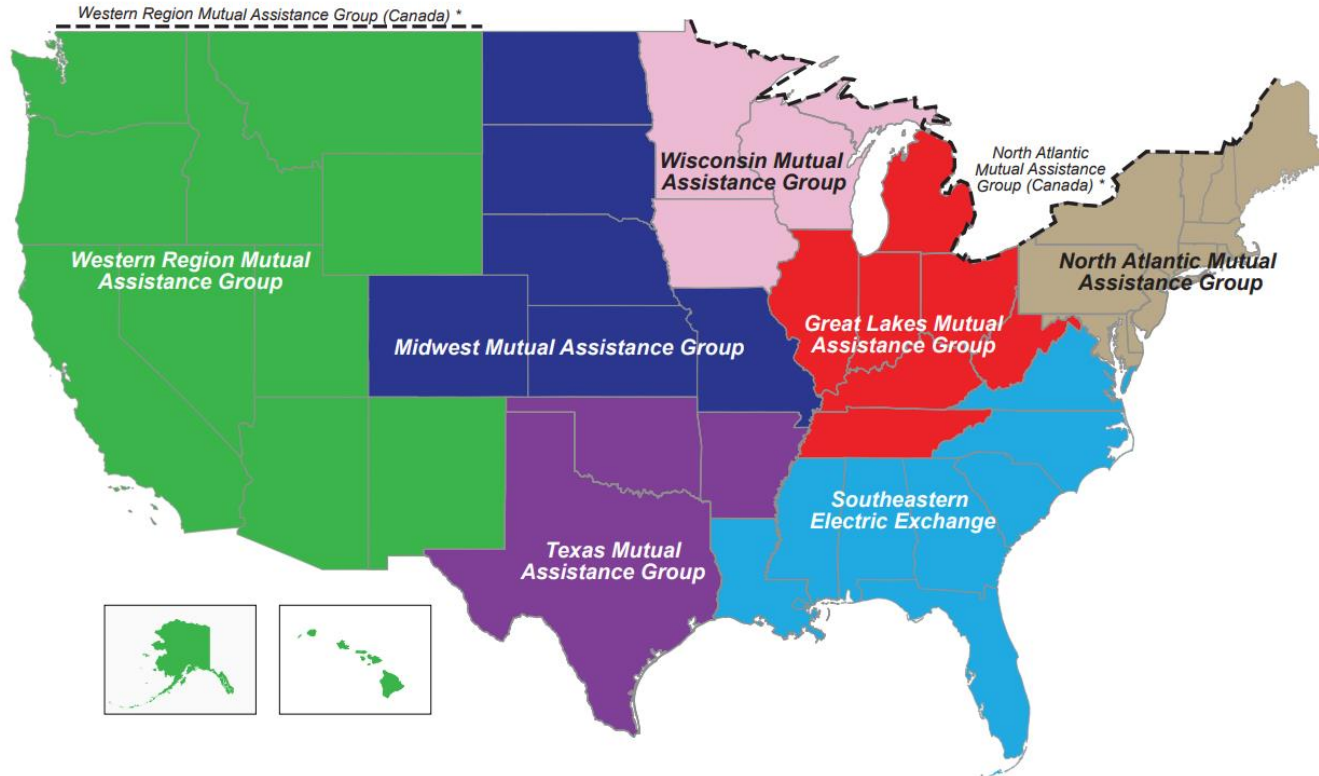
## Respond and Coordinate on a National Level

January 2013, the EEI Board meets and directs EEI to develop a new national-level mutual assistance framework. September 2013, EEI Board approves “National Response Event” Framework.

# Post Sandy Mutual Assistance Improvements

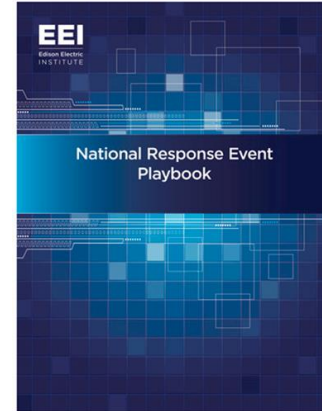
- Regional Mutual Assistance Group consolidation
- National Response Event framework
- Streamline and improve transportation and fleet movement
- Stronger Industry-Federal Government partnerships and coordination
- Enhancement of industry association capabilities and coordination

# Regional Mutual Assistance Groups



# National Response Event Framework

NRE Framework a foundation for the multi-RMAG response





# National Response Event Overview

- A NRE is an event that:
  - Is expected to or has impacted two or more RMAGs; and
  - The resource requirements are greater than what the impacted RMAGs can provide; or
  - There are multiple events that create a resource constraint or competition between RMAGs.
- When an NRE is activated, all available EEI member emergency restoration resources (including contractors) will be pooled and allocated to participating utilities in a safe, efficient, and equitable manner.

# NRE Addresses Allocation of Restoration Resources

- Workers
  - Line, Vegetation, Damage Assessment, Engineers, Others
- Equipment
- Coordinates resources
- All Hazards
- Would support the physical restoration in a cyber or transmission system incident
  - ESCC Cyber Mutual Assistance / Equipment Sharing programs would operate in parallel to NRE

# Better Tools to Support Mutual Assistance



Resource Allocation  
Management Program for  
Utility Personnel

# Support for Transportation Movement

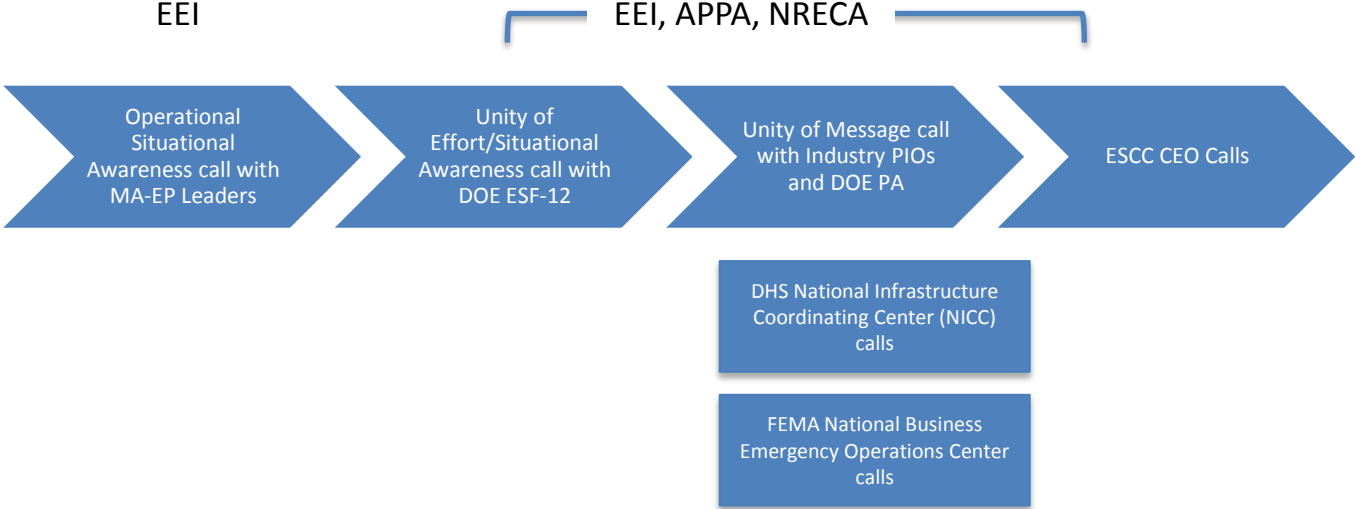


- All Hazards Consortium's Multi-State Fleet Response Working Group
- National Emergency Management Association
- National Governors Association

# Industry-Government Partnership



# Daily Industry- Federal Government Coordination



Outcome: consistent effort and messages from industry and government

# Unity of Effort

## Federal Government

- ⑩ DOE
- ⑩ FEMA
- ⑩ DHS

## Cross-Sector

- ⑩ Coordination with oil and natural gas sector for power restoration at refineries

# Unity of Message

Hurricane Irma:  
Progress Being  
Made to Restore Power



**7.8 million**  
PEAK NUMBER OF  
OUTAGES  
ON  
SEPTEMBER 11

**95%**  
OF CUSTOMERS  
ALREADY  
RESTORED ON  
SEPTEMBER 18\*\*

Every county in Florida and Georgia, as well as parts of Alabama, North Carolina, and South Carolina, were impacted by Irma.

The electric power industry's Irma response is one of the largest power restoration efforts in U.S. history.

More than 60,000 workers were dedicated to the response and recovery effort.

Crews are working around the clock and will continue to work until everyone who is able to receive power is restored.

The safety of our customers and crews remains our highest priority. Find safety tips at [www.eeii.org](http://www.eeii.org).

\*\*No significant outages remain in Alabama, Georgia, North Carolina, or South Carolina. \*As of 4:00pm.

**Floods and Power Restoration: 5 Things to Know**

Three workers in safety gear repair a power line in a flooded area. A car is stuck in a flooded road. A worker in a yellow safety vest stands near a power line. A worker in a yellow safety vest stands near a power line.

**Harvey Safety Tips**

Power lines are down and outages are common. Workers are working around the clock to restore power. Workers are working around the clock to restore power.

**TALKING POINTS**  
Tropical Storm Harvey Update  
August 27, 2017 | 6:00 PM EDT

**Key Messages**

- EEI is providing information to the public and the media regarding the status of power restoration efforts.
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**Storm Update**

- As of 6:00 pm EDT, the center of Tropical Storm Harvey has moved to the southeast of Houston, TX, and is moving northeast at about 10 mph. Forecast models indicate Harvey will track southward to the Gulf of Mexico and make landfall on the coast of Texas by Monday. It is expected to pass through Monday night.
- As of 6:00 pm EDT, approximately 15,000 customers were without power in Texas and Louisiana.

**T-13 Special Report: Irma - GRIDWIT**  
How is Our Grid Performing? Energy and Generation

The GridWIT report provides a detailed look at the performance of the power grid during the storm. It covers various aspects of the grid, including generation, transmission, and distribution. The report highlights the resilience of the grid and the efforts of utility companies to maintain service during the storm.



**There Are 6 Steps To the Power Restoration Process**

<p><b>Step 1</b></p> <p><b>Power Plants</b> Power plants, the primary source of power production, are assessed for damage and restored.</p>	<p><b>Step 2</b></p> <p><b>Transmission Lines</b> High-voltage transmission lines serving thousands of customers over wide areas are repaired.</p>	<p><b>Step 3</b></p> <p><b>Substations</b> Substations are brought online in order for power to reach local distribution lines.</p>
<p><b>Step 4</b></p> <p><b>Emergency Responders and Essential Services</b> Power is restored to emergency services and facilities critical to public health and safety—including hospitals, police and fire stations, water reclamation plants, and communications systems.</p>	<p><b>Step 5</b></p> <p><b>Large Service Areas</b> Crews are dispatched to repair lines that will return service to the largest number of customers in the least amount of time. Service lines to neighborhoods, industries, and businesses are systematically restored.</p>	<p><b>Step 6</b></p> <p><b>Individual Homes</b> Once major repairs are completed, service lines to individual homes and smaller groups of customers are restored.</p>





# Infrastructure Investments

## Grid Investments

⑩ \$52.8 billion  
in T&D since  
2016

## Technology Deployments

- ⑩ Smart grid
- ⑩ UAS
- ⑩ Sensors
- ⑩ Substation hardening

# 2017 Hurricane Season

3 Major hurricanes – Harvey, Irma, Maria – hit the U.S.

4 other storms also made landfall

A satellite image of Hurricane Harvey, showing a well-defined eye and a dense, dark cloud structure over the Gulf of Mexico. The background is dark with some lighter, wispy clouds.

# Hurricane Harvey

More than

**10,000**

workers

from at least

**21 states**

across the country.

A satellite image of Hurricane Irma, showing a large, swirling cloud structure over the Atlantic Ocean. The background is a deep blue color with some lighter, wispy clouds.

# Hurricane Irma

More than

**60,000**

workers from

**across the  
country and  
Canada.**



# Puerto Rico Power Restoration Efforts





A white semi-truck is shown from a front-quarter perspective. A large red semi-transparent banner is overlaid across the middle of the image, containing white text. The truck's front grille is visible on the left, and a large cylindrical tank is mounted on the side. The truck is parked on a paved surface. In the background, another red truck is partially visible.

MUTUAL ASSISTANCE RESPONSE  
**Sending Crews & Supplies**

890080

REYNOLDS  
TRUCK EQUIP  
ALLEN, KY  
(606) 874-6011



# Puerto Rico Incident Management Teams









TEREX  
GRADVE

conEdison

BIODIESEL POWER

conEd.com  
US3031 106673

61250

# Working together to restore power to the people of Puerto Rico.



**One team one mission!**



Puerto Rico Electric  
Power Authority



FEMA



**EEd**

Edison Electric  
INSTITUTE

AMERICAN  
**PUBLIC  
POWER**  
ASSOCIATION  
Powering Strong Communities



**NRECA**  
America's Electric Cooperatives

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For more information, visit our Web site at [www.eei.org](http://www.eei.org).

