

# **DOE Preparedness and Response to Major Threats and Disasters**

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**NASEO Annual Meeting  
September 16, 2013  
Denver, CO**

# Threats and Disasters

## 2012 Highlights

- 11 weather and climate disaster events
- Each event had losses exceeding \$1 billion
- These 11 events resulted in over 300 deaths
- 2012 is the second costliest year since 1980
- Total 2012 damages exceeded \$110 billion
- Increasing threat from cyber attacks

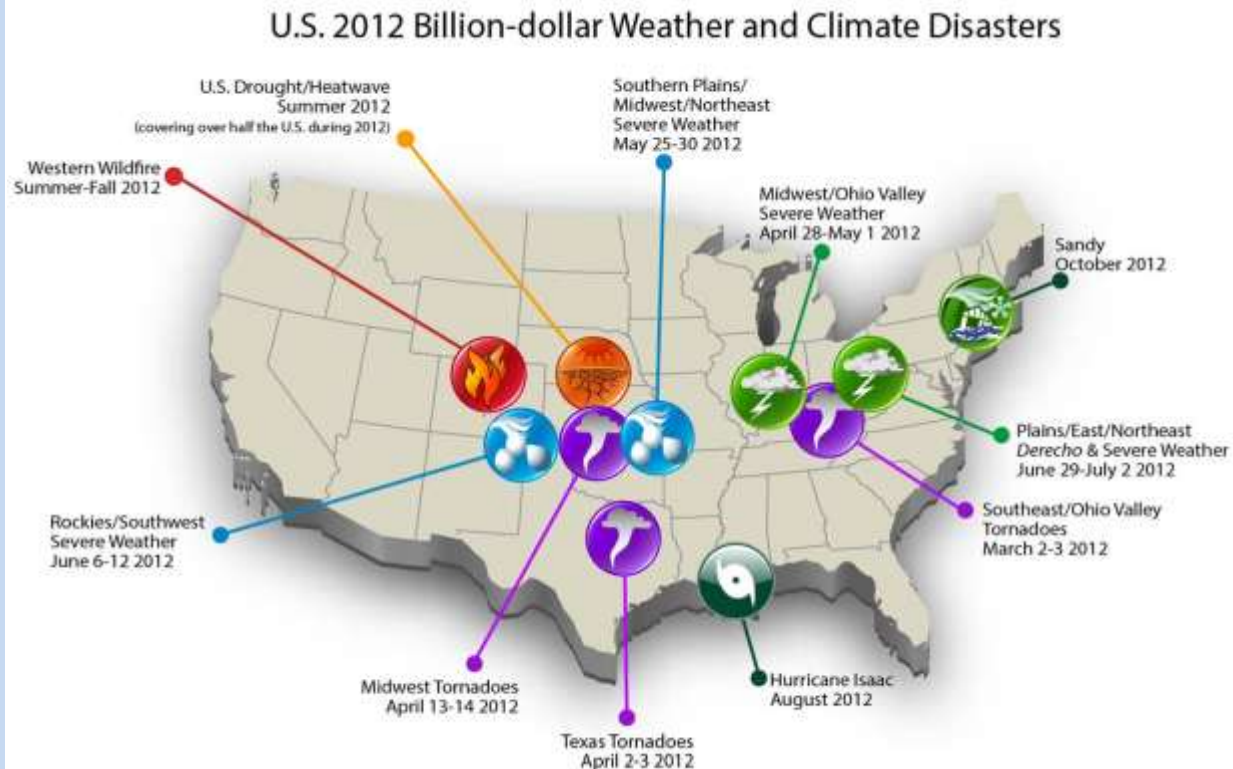
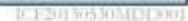


Image Source: NOAA National Climatic Data Center (NCDC)

<http://www.ncdc.noaa.gov/billions/images/billion-dollar-disaster-map-2012.jpg>



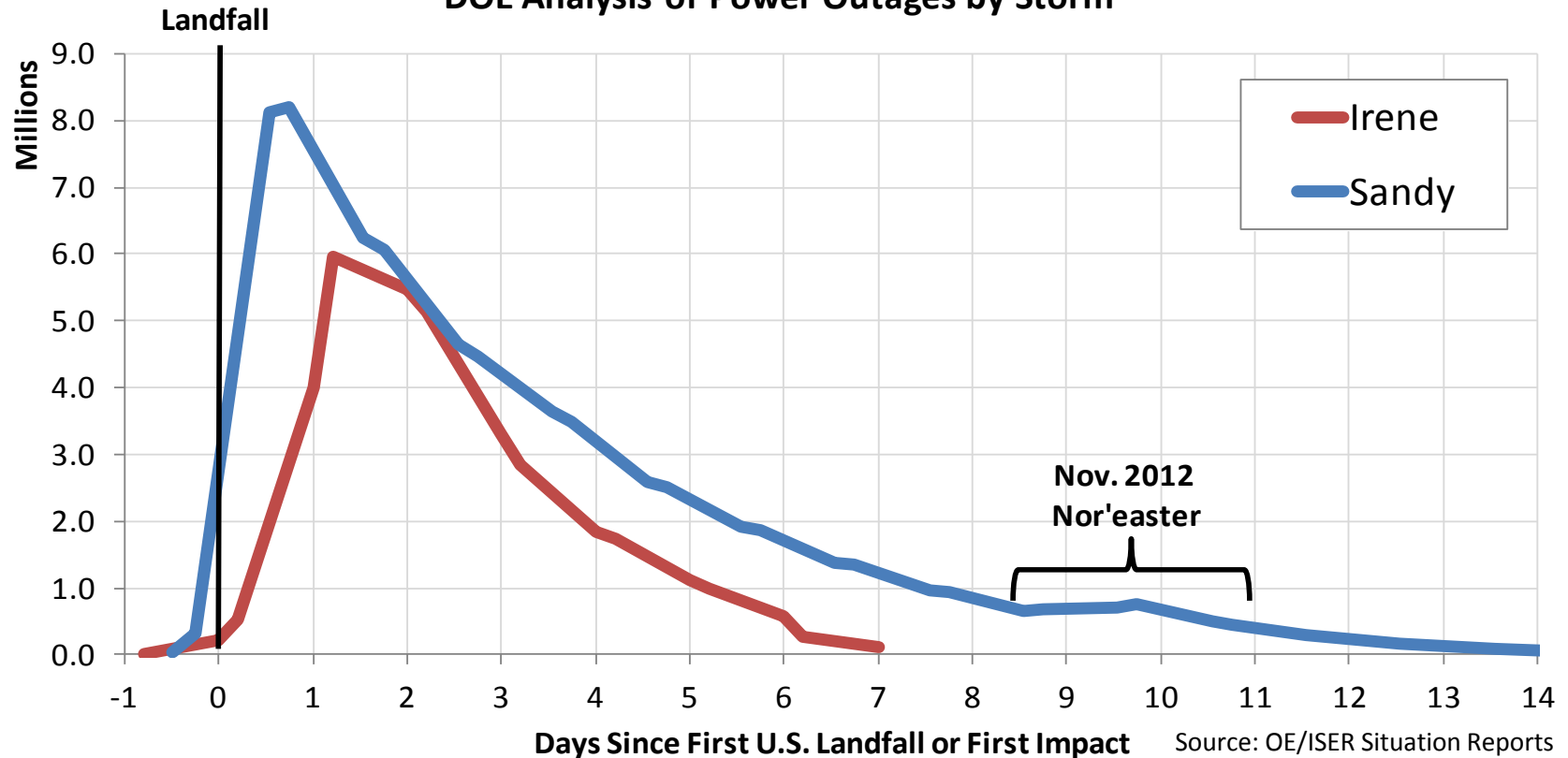




# Electricity Outages



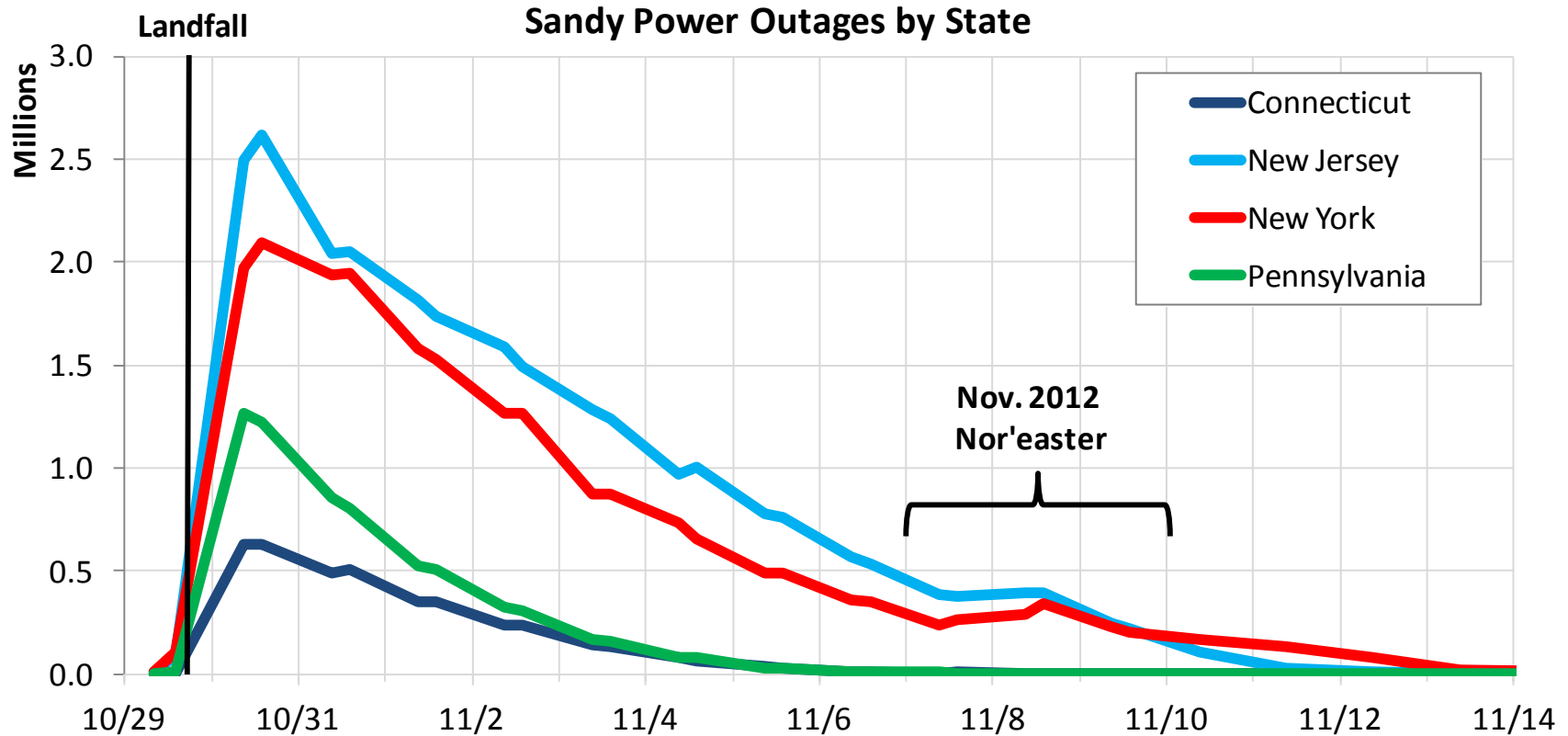
DOE Analysis of Power Outages by Storm



Storm	Peak Outages (Millions)	Total Outages* (Millions)
Irene	5.95	6.69
Sandy	8.20	8.66

\*Total outages reported at one point or another over the course of storm and resulting from other storms affecting the region during the restoration period.

# State Electricity Outages



State	Peak Outages (Millions)
Connecticut	0.63
New Jersey	2.62
New York	2.10
Pennsylvania	1.27

Source: OE/ISER Situation Reports

# Oil, Gas, and Nuclear Outages



Infrastructure	Hurricane Sandy	Hurricane Irene
<b>Refineries</b>		
Number	2 shut, 4 reduced	1 shut, 5 reduced
Capacity Shut	308,000 barrels per day	238,000 barrels per day
<b>Pipelines</b>		
Products	Buckeye, Colonial, Plantation	Buckeye, Plantation, TEPPCO (LPG)
Crude	None	Portland Pipe Line
Natural Gas	New Jersey Natural Gas	None
<b>Ports</b>	Hampton Roads, Baltimore, Delaware Bay, New York, Long Island Sound, Southeastern New England, Boston	North Carolina, Hampton Roads, Baltimore, Delaware Bay, New York, Long Island Sound, Southeastern New England, Boston
<b>Petroleum Terminals</b>	57	25
<b>Nuclear Power Reactors</b>	3 shut, 5 reduced	2 shut, 6 reduced

Source: OE/ISER Situation Reports, NRC

# Recognized Practices



- **Assisting Power Restoration**

- Dedicated senior leadership involvement
- Secretary of Energy held daily conference calls with utility CEOs

- **Situational awareness of energy outages and restoration activities**

- Twice Daily Situation Reports

- **“Boots on the Ground” support: 35 DOE Personnel Deployed**

- **Release of the Northeast Home Heating Oil Reserve**

- **Expedited waivers**

- President: “zero tolerance for red tape”
- Facilitated movement of personnel and resources
- Provided flexibility in fuel systems
  - Jones Act and EPA Waivers

- **Expanded mutual aid assistance**

- Peak deployment of 70,000 workers (including DOE PMA crews)
- DOD movement of personnel and resources
- State and Federal waivers to facilitate movement of resources across State lines



# DOE Preparations for Future Storm Seasons

- **Expanded Emergency Response Operations**
  - **Energy Response Team (ERT)**– Aggregated group of subject-matter expertise from across DOE, Federal Inter-agencies and industry associations to promptly identify and resolve energy issues.
- **DOE Tabletop Exercise to Test DOE Emergency Response Organization Capability**
- **Coordination with energy sector stakeholders to identify information needs and flows**
  - **ESF-12 Communications Process Model** – DOE, in collaboration with federal interagency partners and industry has developed a communications process model to streamline communication flow between the fuels industry and DOE.
  - **ONG Industry Preparedness Handbook** – As a post-Sandy recommendation, ONG associations (API, AFPM, PMAA, ILTA,etc) have developed a handbook to address system communications flows of the liquid fuels industry to aid in understanding the complexity of the fuels system.
- **Review of processes and laws to facilitate access to critical supplies for restoration of critical services (such as electric power).**
  - **Waiver and Permit Process** – DOE/OE has engaged DOT and private sector partners to discuss pre-event actions that can be implemented to decrease response time for utility crews.
- **Energy Infrastructure, Modeling, & Analysis (EIMA) Division** – New Division in OE to provide infrastructure impact assessments during an event as well as steady-state analysis and predicative modeling of cascading events.
- **Collaboration with various federal and State government agencies on long-term restoration and recovery.**

# Past Disasters Illustrate Interdependent Infrastructure Disruptions



## Interdependencies & Related Impacts

- Electric power disrupted
- Water supply problems
- Natural gas processing shut-ins
- Waterborne deliveries halted
- Cell phone towers inoperable
- Radio stations offline
- Airport closures – Passenger & Freight
- Helicopters grounded
- Port interruptions
- Oil Refineries/Chemical plants inoperable
- Nuclear plant shut-downs

URL: <http://www.oe.netl.doe.gov/docs/HurricaneComp0508r2.pdf>

<http://www.cimap.vt.edu/2DOC/ALA%20Lifeline%20Report%20Final%20Draft%20030606.pdf>

# Preparedness and Response Planning Considerations

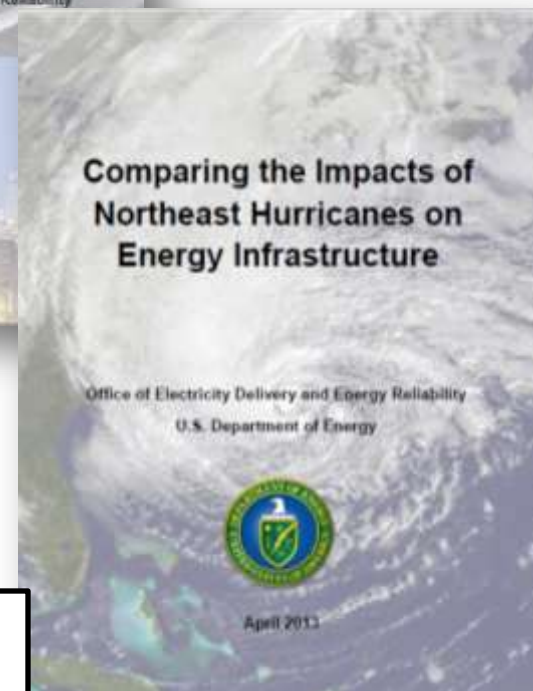
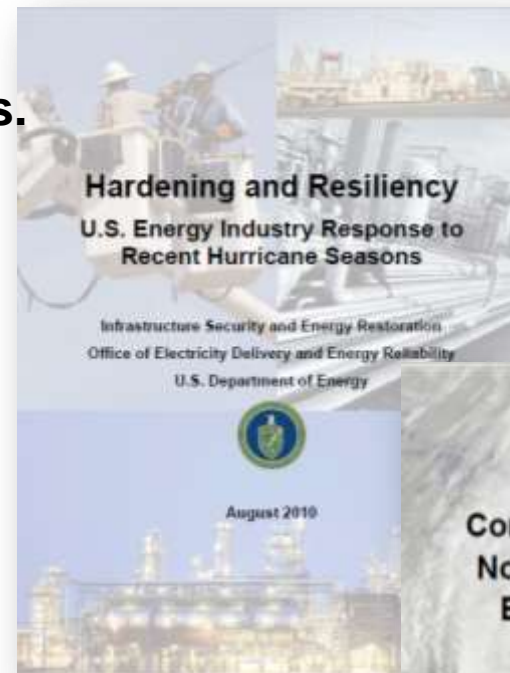
- Communication and Coordination
- Situational Assessment
- Damage Assessment
- Restoration Priorities
- Public Messaging
- Public Awareness
- Mutual Assistance
- Interdependencies
- Credentialing/Site Access
- Cascading Impacts
- State Energy Assurance Plans
- Exercises and Training



# DOE Reports

DOE -OE publishes analytical reports related to major energy disasters and public and private sector response actions.

- **Comparing the Impacts of Northeast Hurricanes on Energy Infrastructure:** compares the impacts of Hurricanes Irene and Sandy
- **Hardening and Resiliency: U.S. Energy Industry Response to Recent Hurricane Seasons:** focuses on the energy industries efforts to harden infrastructure against future storms.
- **Comparing the Impacts of the 2005 and 2008 Hurricanes on U.S. Energy Infrastructure:** compares the impacts of Hurricanes Katrina, Rita, Wilma, Ike, and Gustav.



<http://www.oe.netl.doe.gov/outreach.aspx>



# Thank You

**For public information visit:**

<http://energy.gov/oe/services/energy-assurance/incident-preparedness/state-and-local-energy-assurance-planning>

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