

RESILIENTPOWER

A project of **CleanEnergy**Group



Sea Level Rise – A Grid Submerged

November 3, 2015

Seth Mullendore
Project Manager
Clean Energy Group

Housekeeping



All participants are in “Listen-Only” mode. Select “Use Mic & Speakers” to avoid toll charges and use your computer’s VOIP capabilities. Or select “Use Telephone” and enter your PIN onto your phone key pad.

Submit your questions at any time by typing in the Question Box and hitting Send.

This webinar is being recorded.

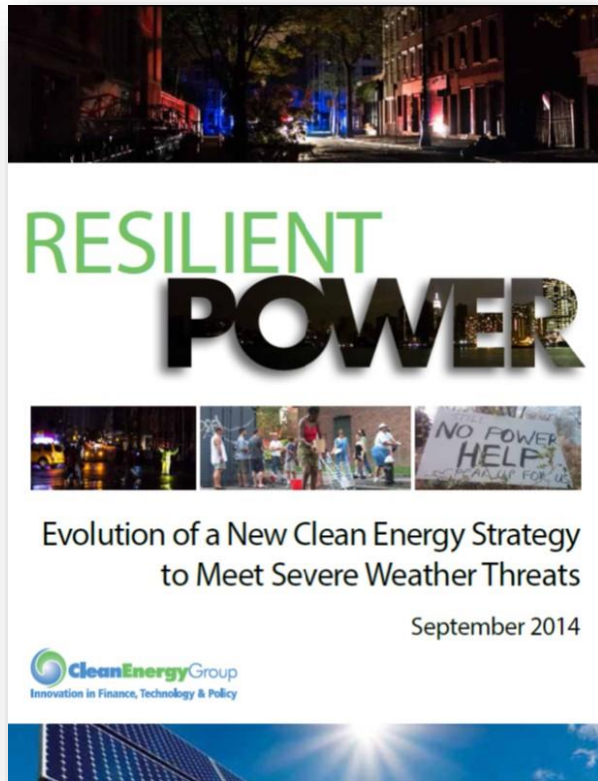
You will find a recording of this webinar, as well as previous Resilient Power Project webinars, online at:

www.cleangroup.org/ceg-projects/resilient-power-project/webinars/

and at

vimeo.com/channels/resilientpower

Who We Are



www.cleangroup.org

www.resilient-power.org

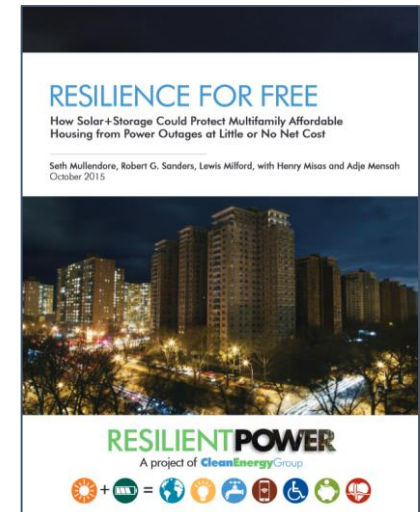
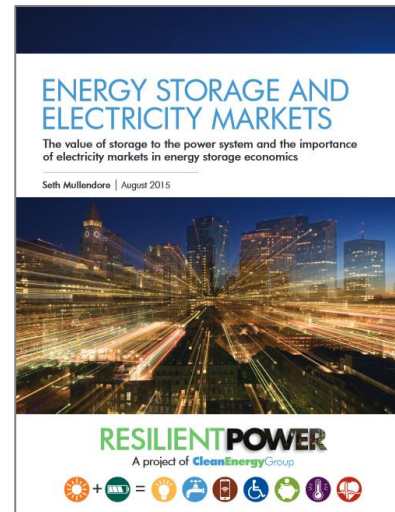
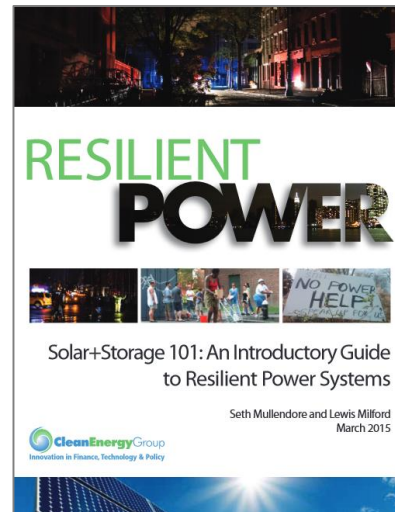
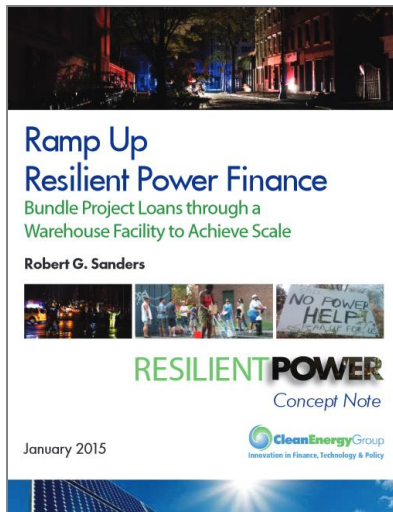


SURDNA FOUNDATION

Fostering sustainable communities in the United States

Resilient Power Project

- Increase public/private investment in clean, resilient power systems
- Engage city officials to develop resilient power policies/programs
- Protect low-income and vulnerable communities
- Focus on affordable housing and critical public facilities
- Advocate for state and federal supportive policies and programs
- Technical assistance for pre-development costs to help agencies/project developers get deals done
- See www.resilient-power.org for reports, newsletters, webinar recordings



Today's Speakers

- **Steve Clemmer**, Director of Energy Research & Analysis, Union of Concerned Scientists
- **Julie McNamara**, Energy Research Associate, Climate and Energy Program, Union of Concerned Scientists

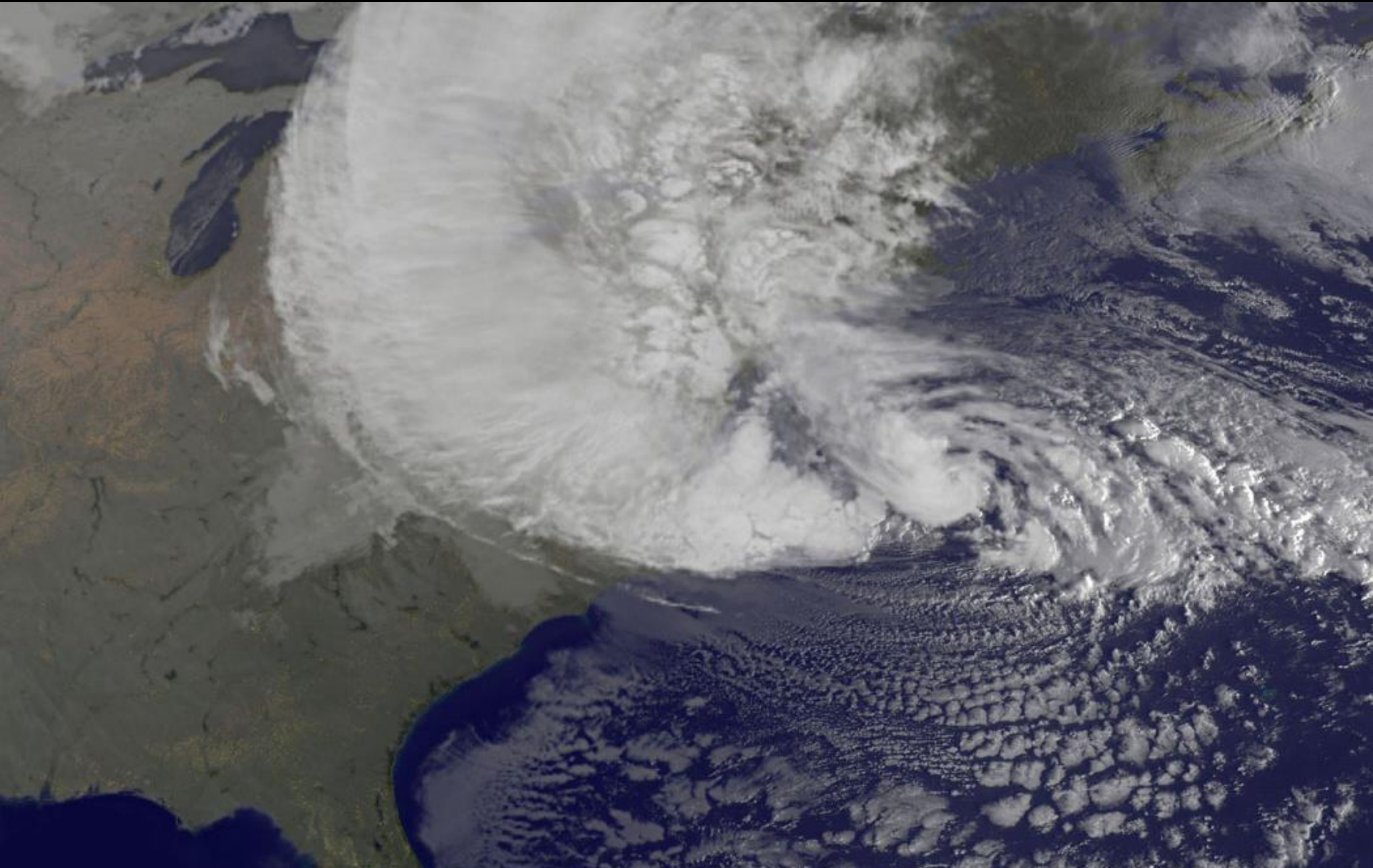




Lights Out?

Storm Surge, Blackouts, and
How Clean Energy Can Help

Hurricane Sandy was a wake up call

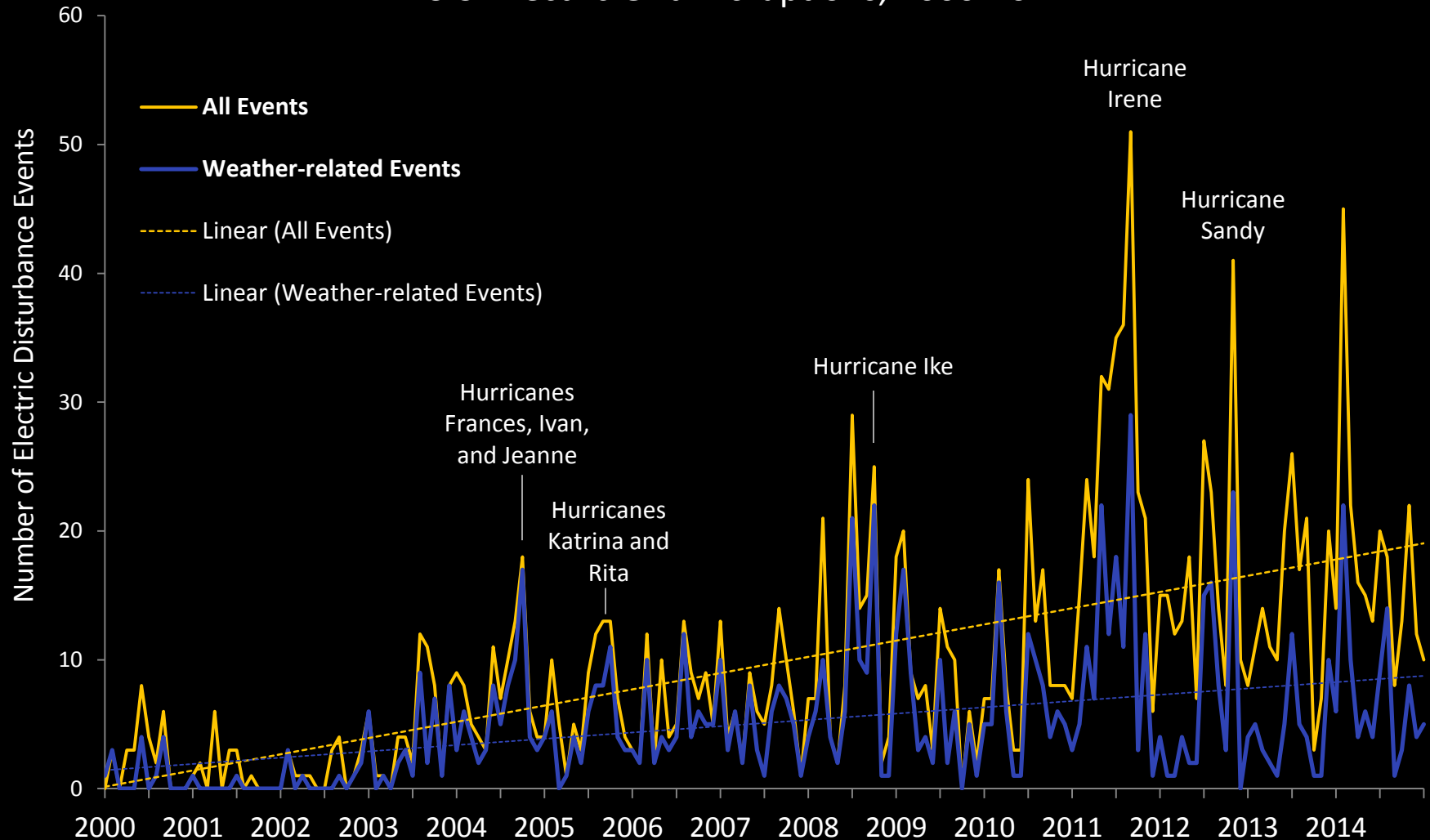


Storm surge and coastal flooding: A major cause of power outages



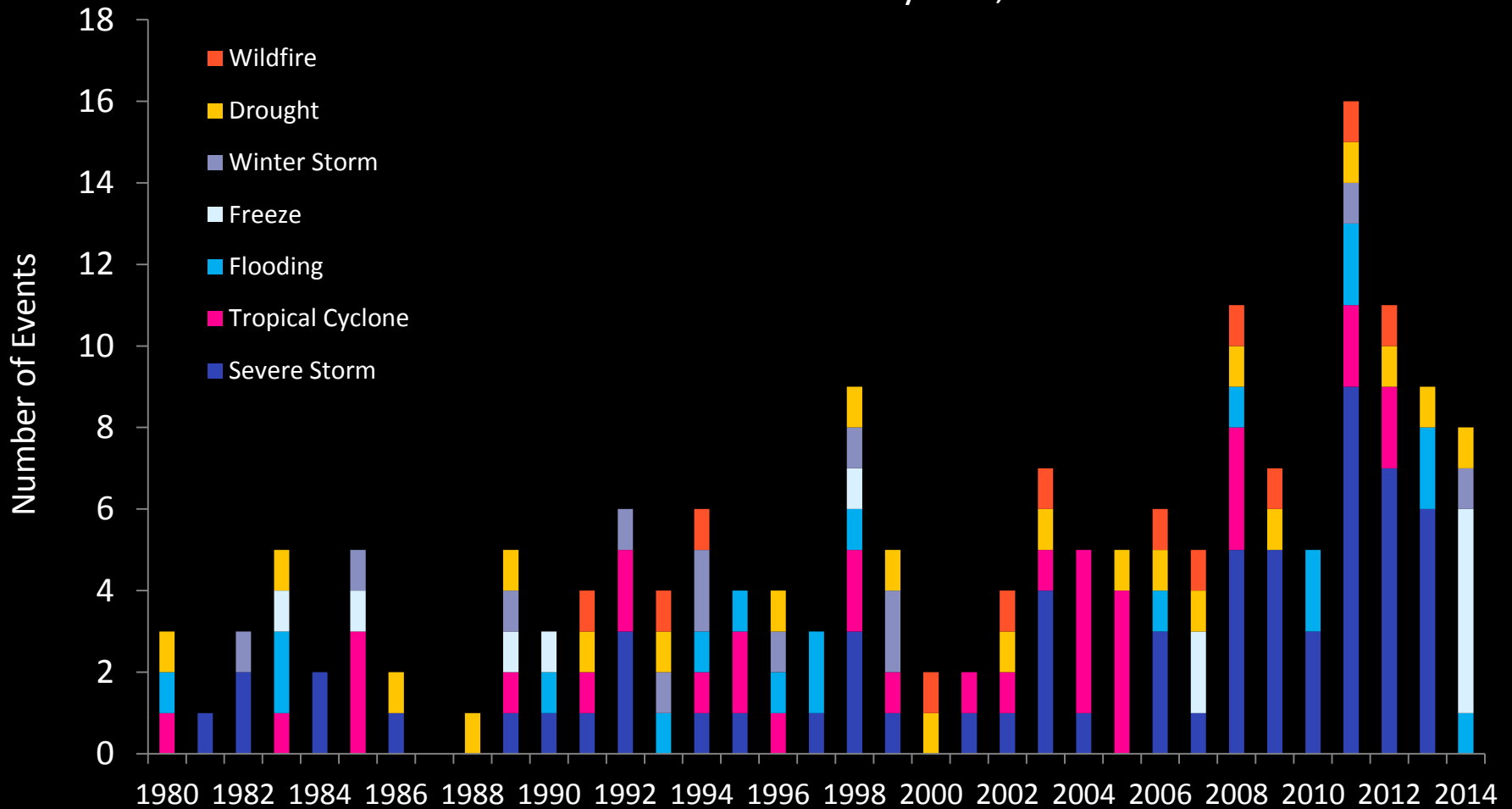
Outages from severe weather are rising

U.S. Electric Grid Disruptions, 2000-2014



Costs are also rising

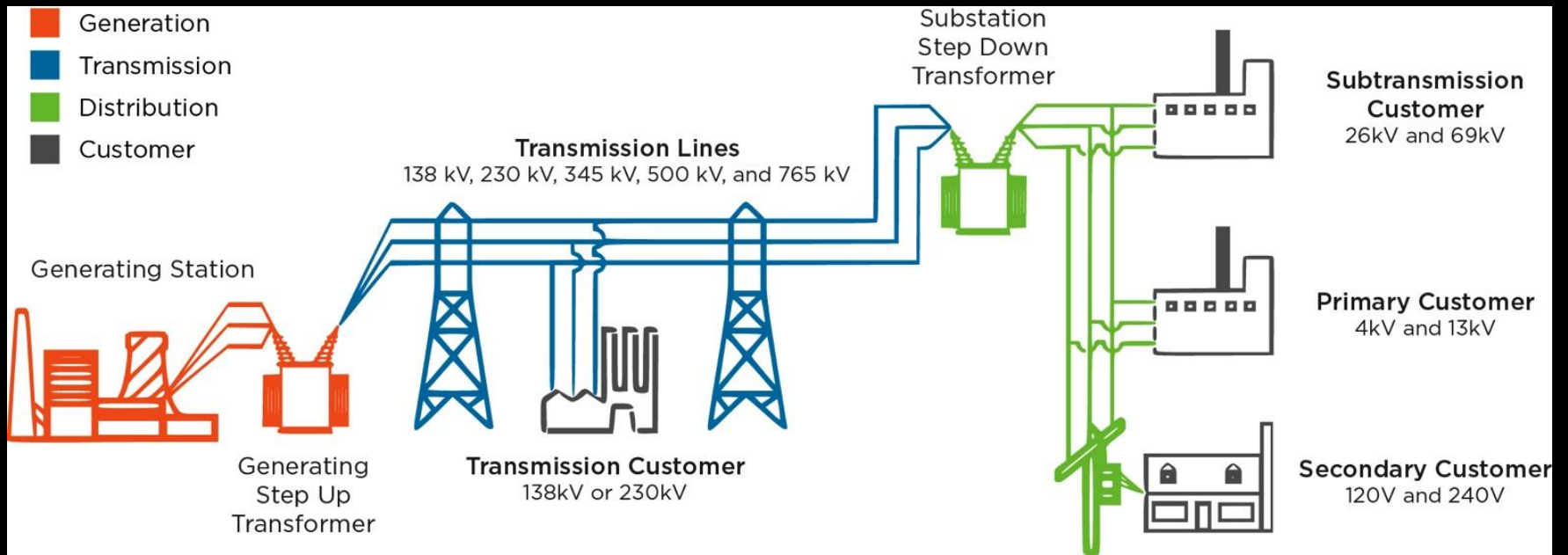
Billion-dollar Disaster Events by Year, 1980-2014



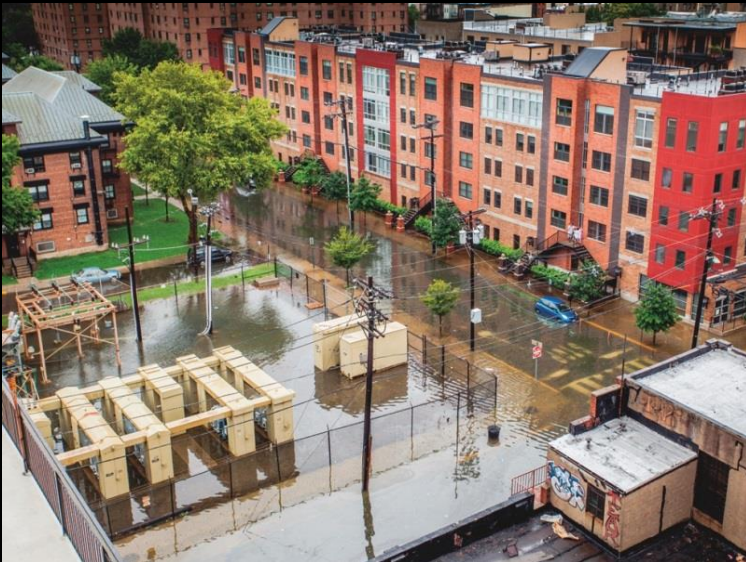
The impacts can be devastating



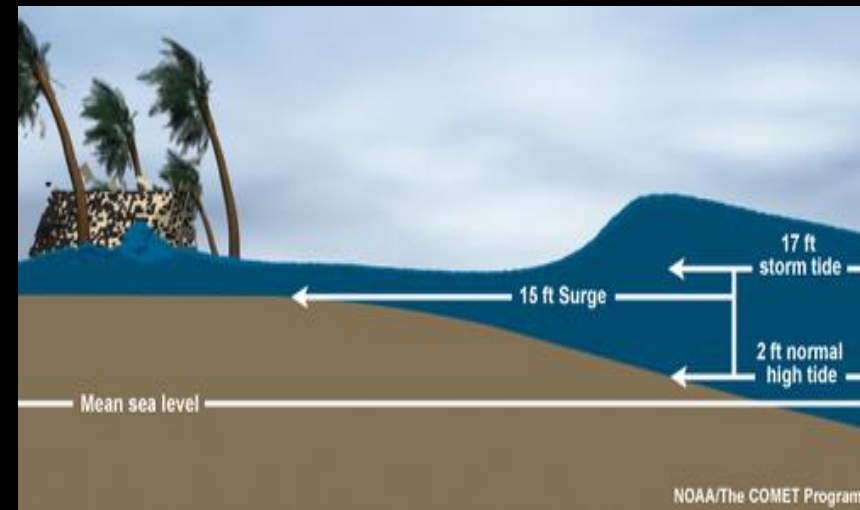
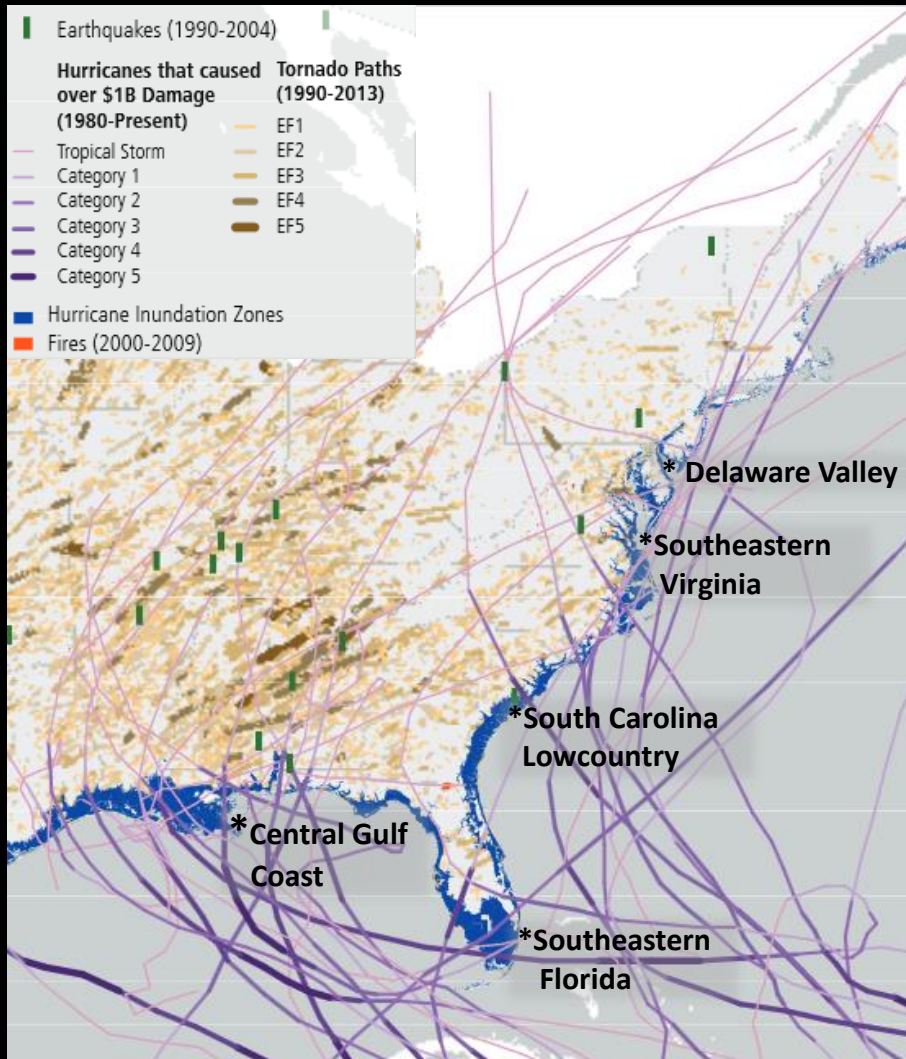
The centralized grid is vulnerable



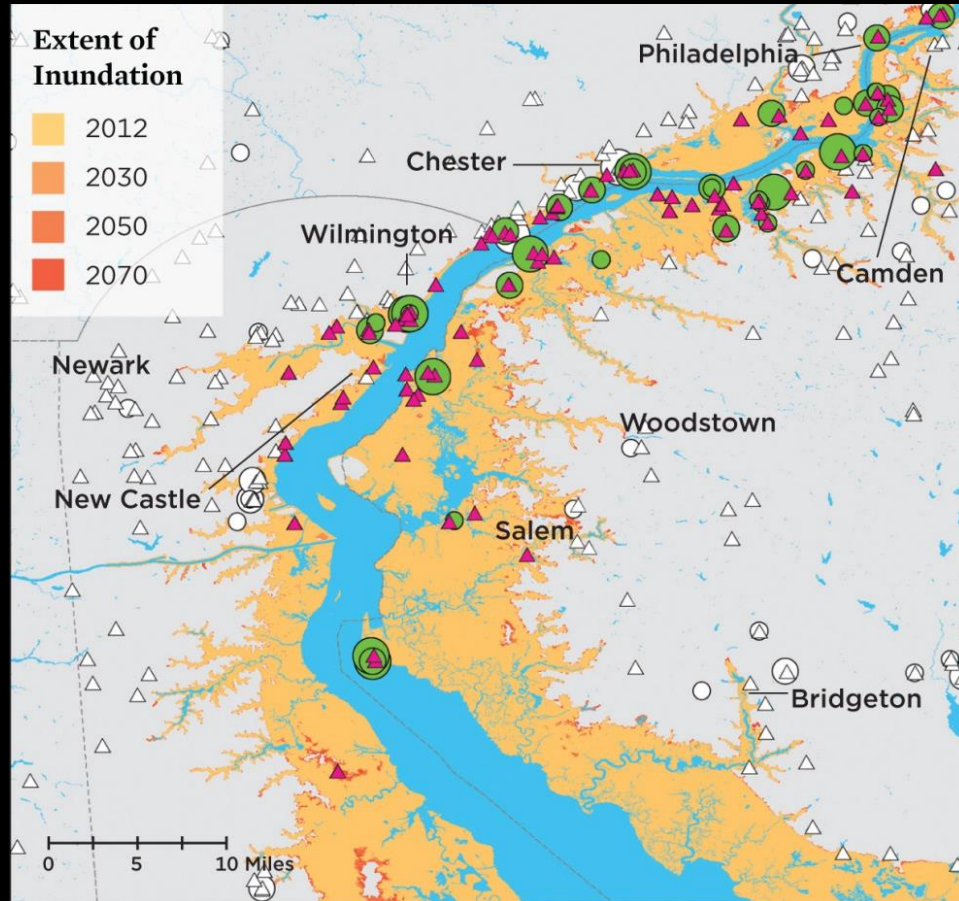
Power plants, substations, and flooding



Mapping flooding in five regions

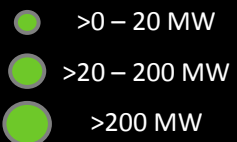


Delaware Valley



Power Plants

Exposed



Unexposed



Substations

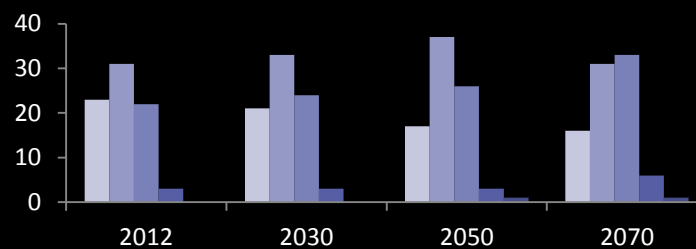
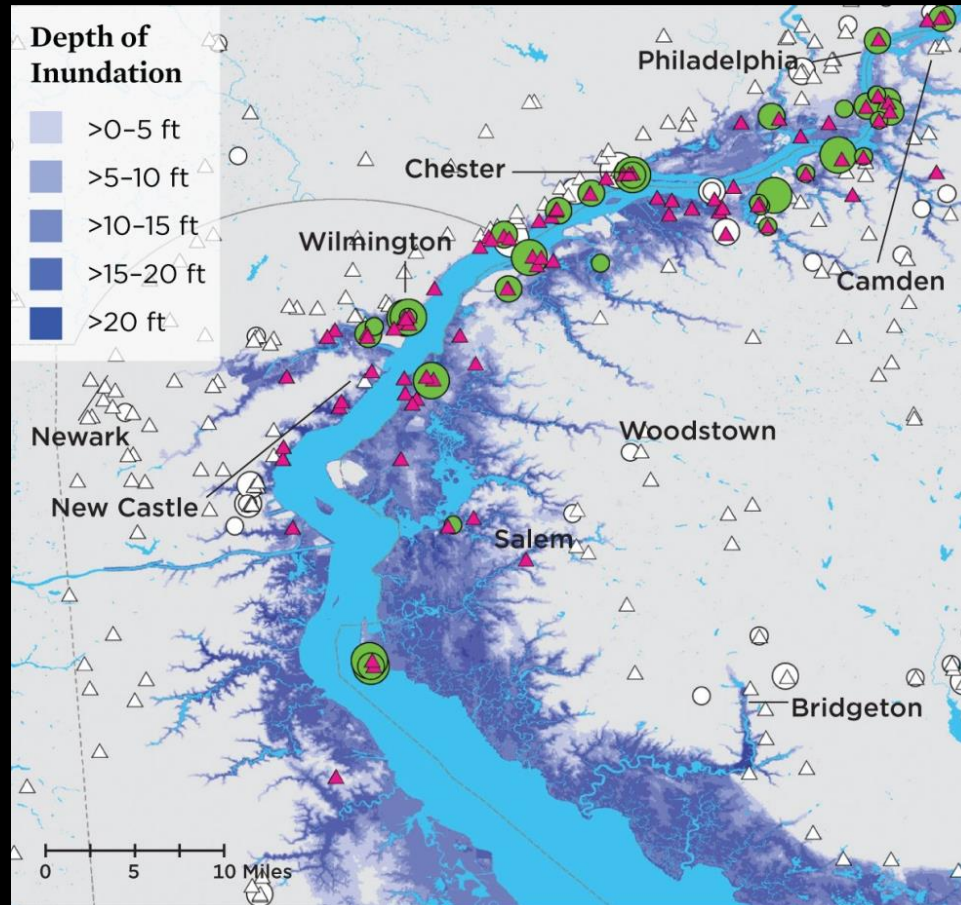
Exposed



Unexposed

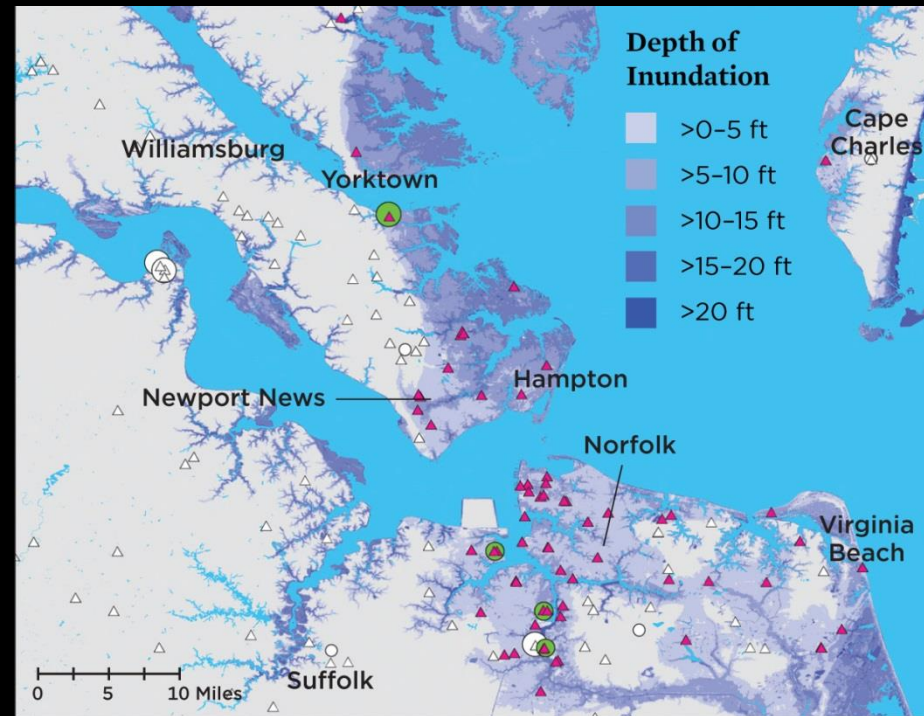
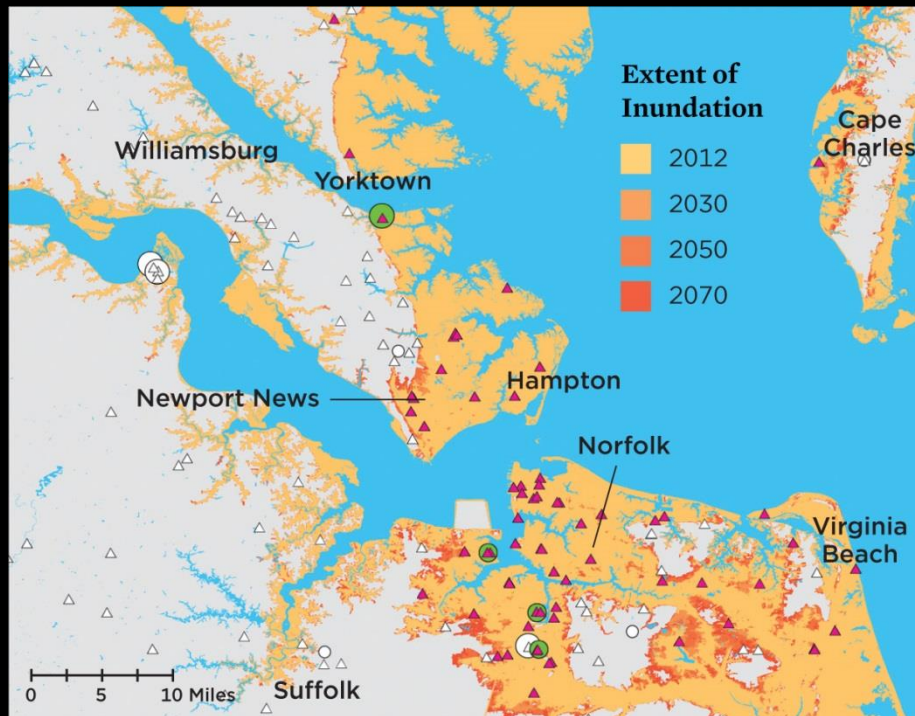


Delaware Valley



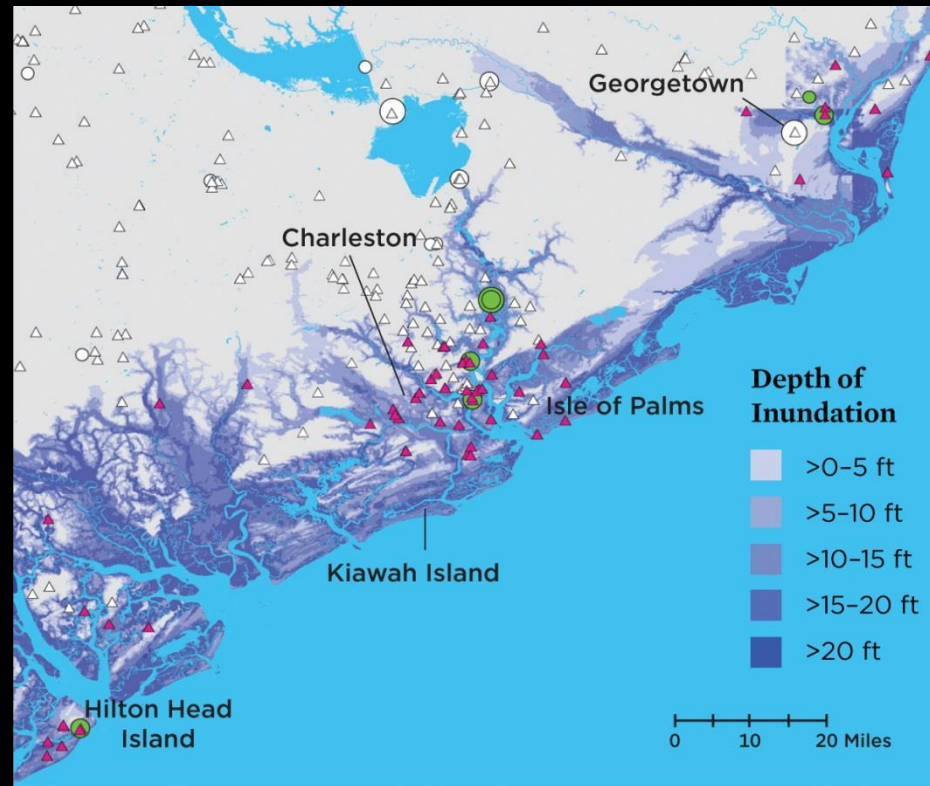
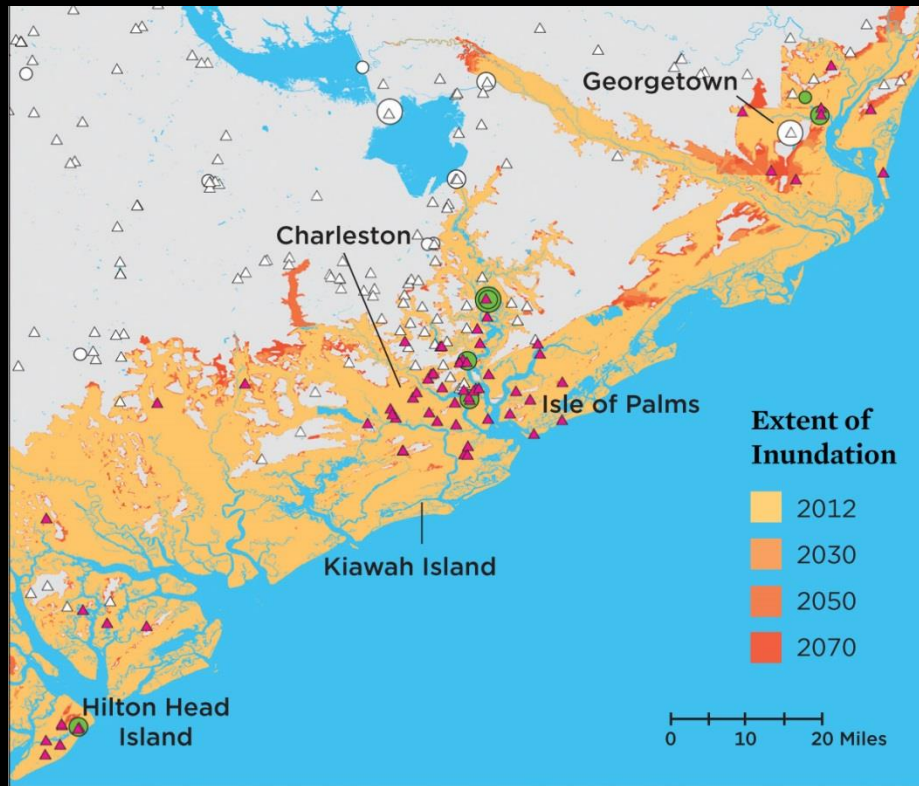
2050

Southeastern Virginia



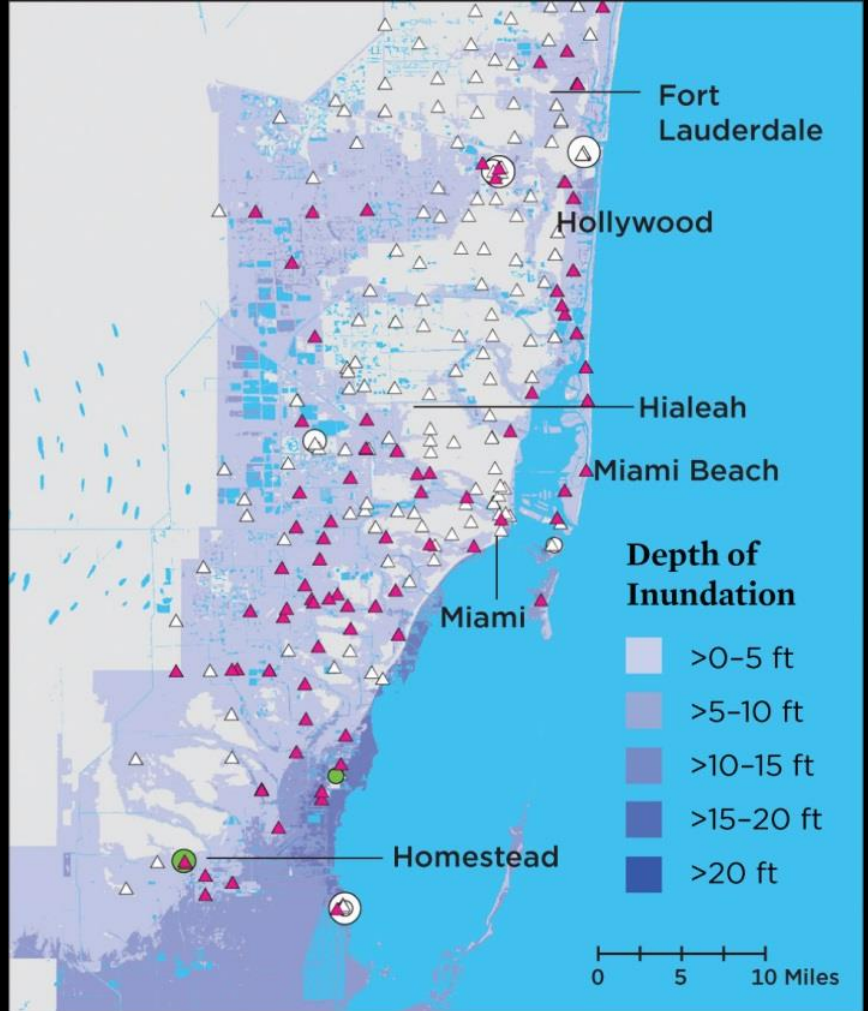
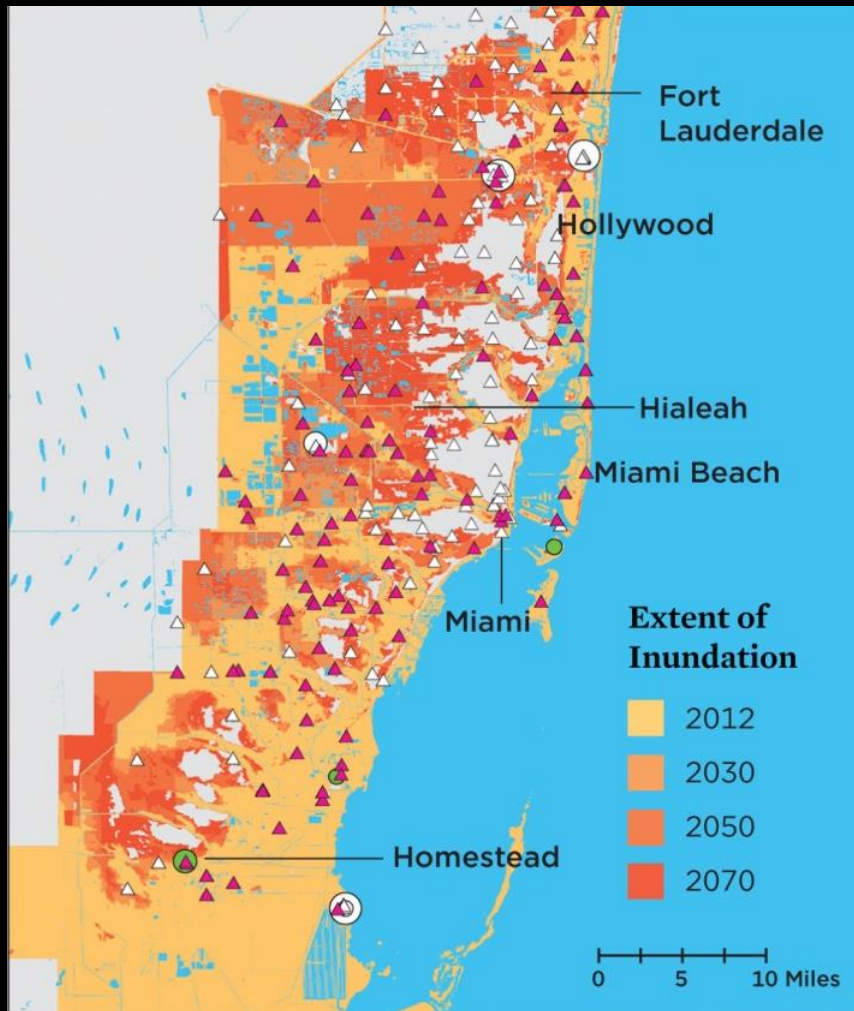
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South Carolina Lowcountry



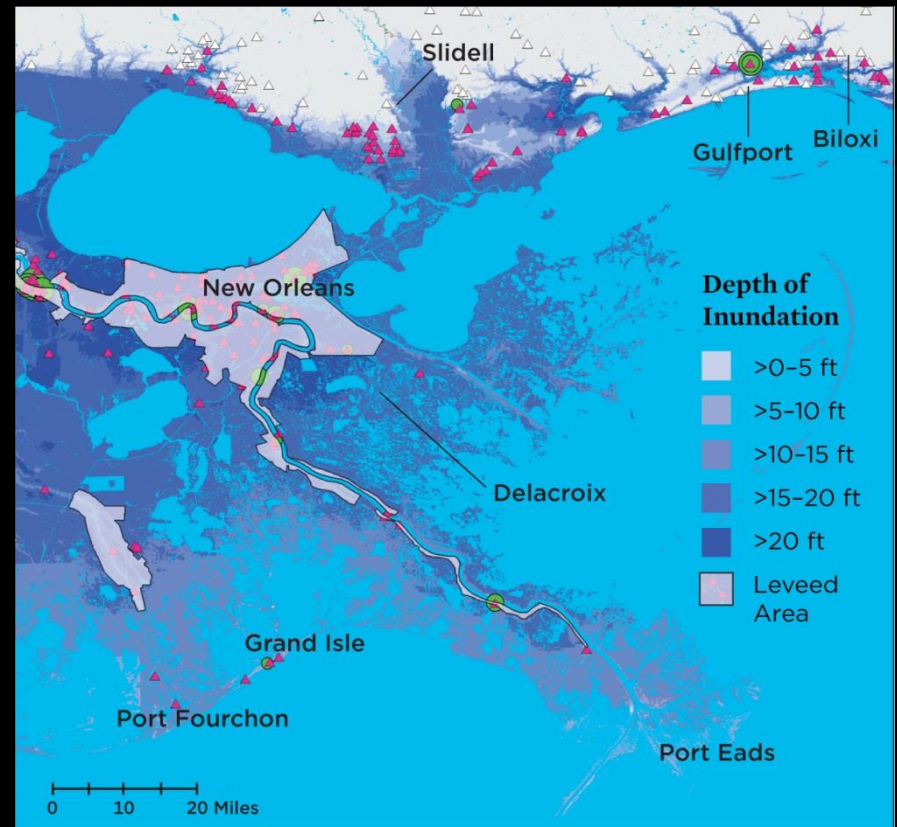
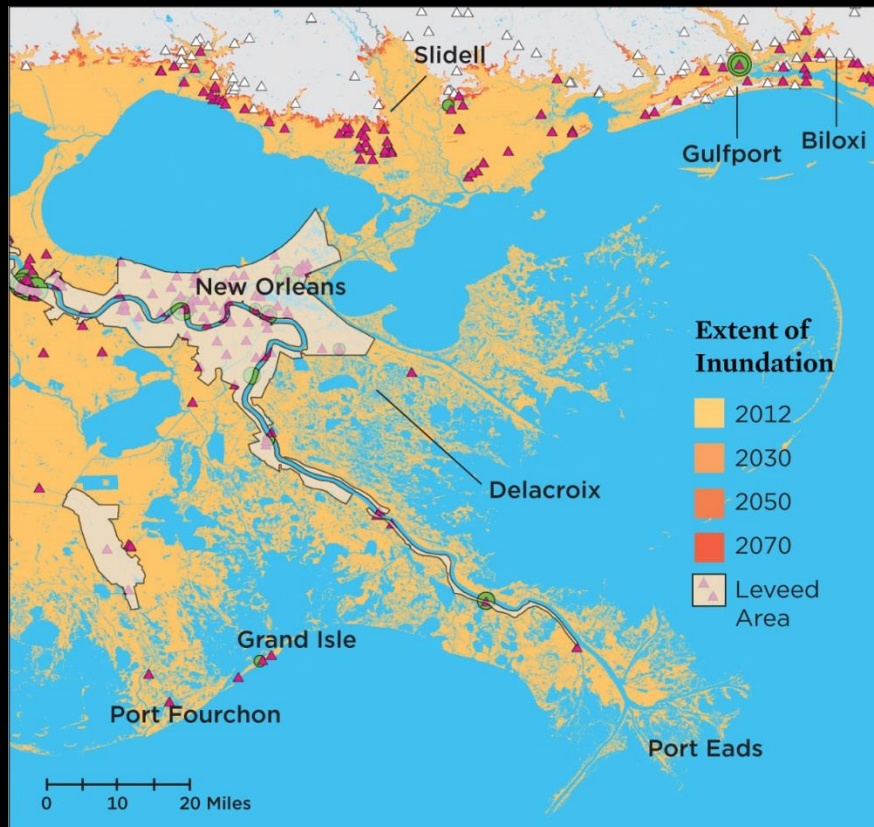
2050

Southeastern Florida



2050

Central Gulf Coast



2050

A satellite night view of North America, showing the United States and parts of Canada and Mexico. The landmasses are outlined by a dense network of yellow and white lights, representing city lights and infrastructure. The surrounding oceans are dark blue. In the upper left corner, there is a semi-transparent dark blue rectangle containing white text.

{ So, How Can We
Keep the Lights On?

Protect, Accommodate, Retreat



Back-up generators are prone to failure



Renewables can increase electricity resilience

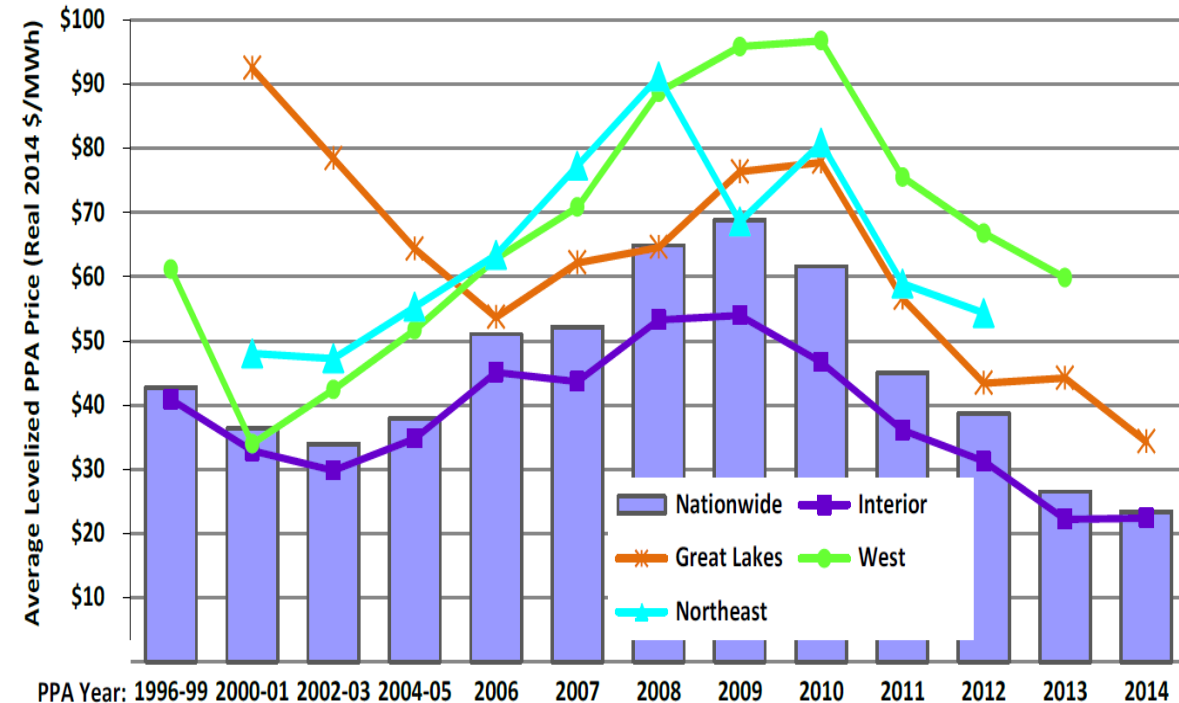
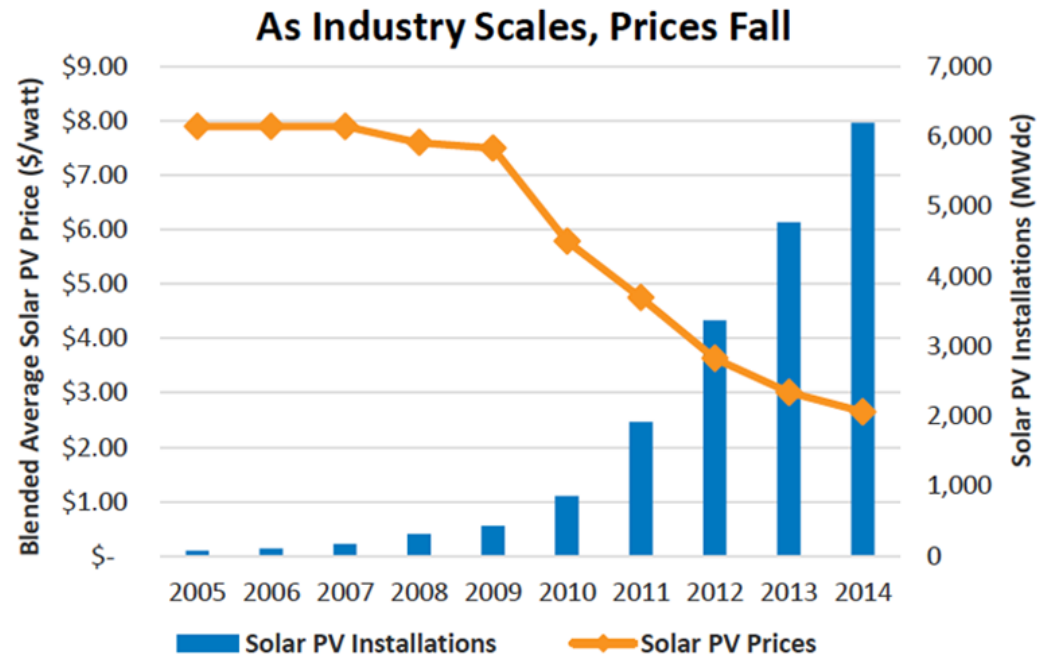


New Orleans



Atlantic City, NJ

Wind and solar costs are falling



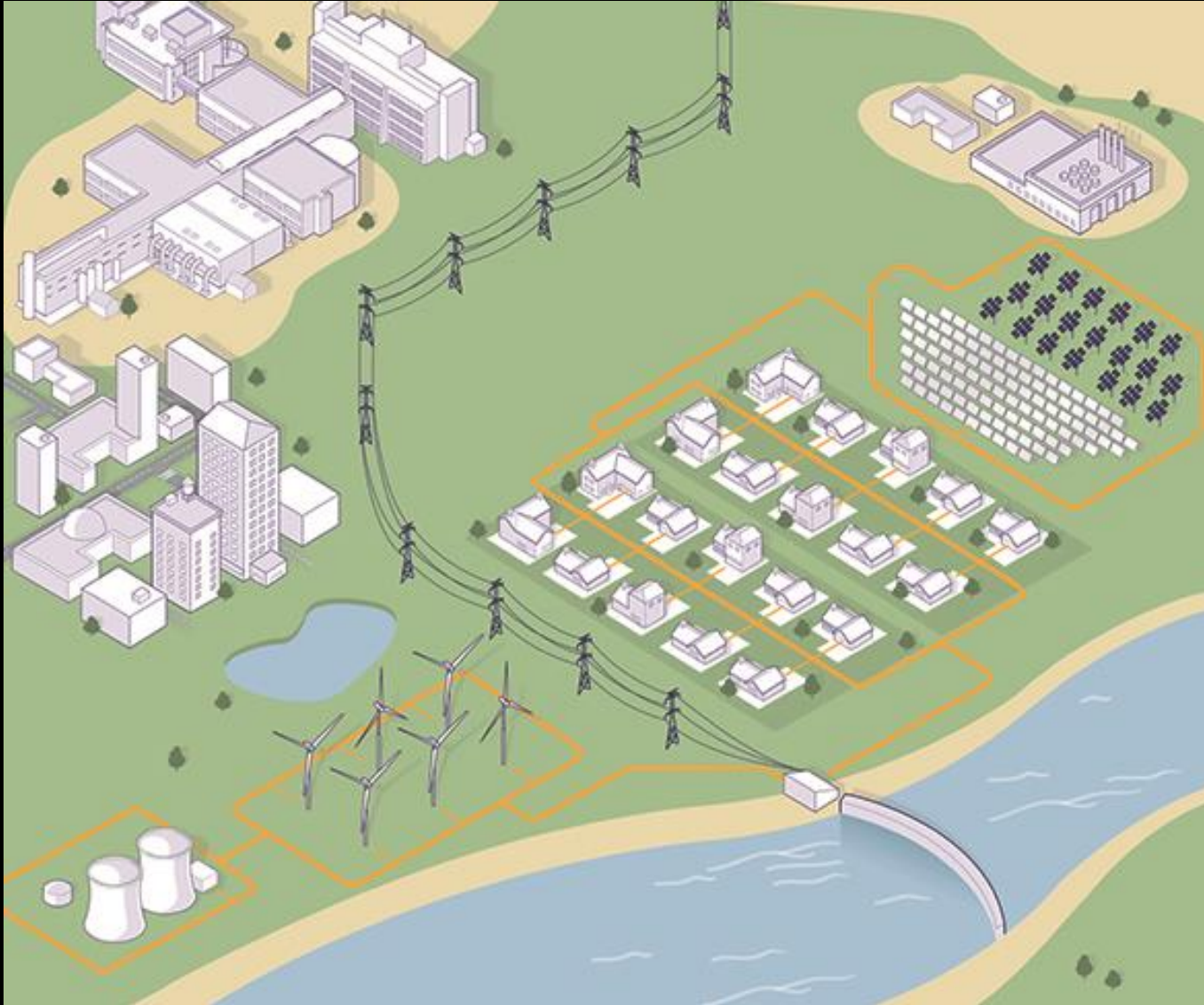
Combined heat and power



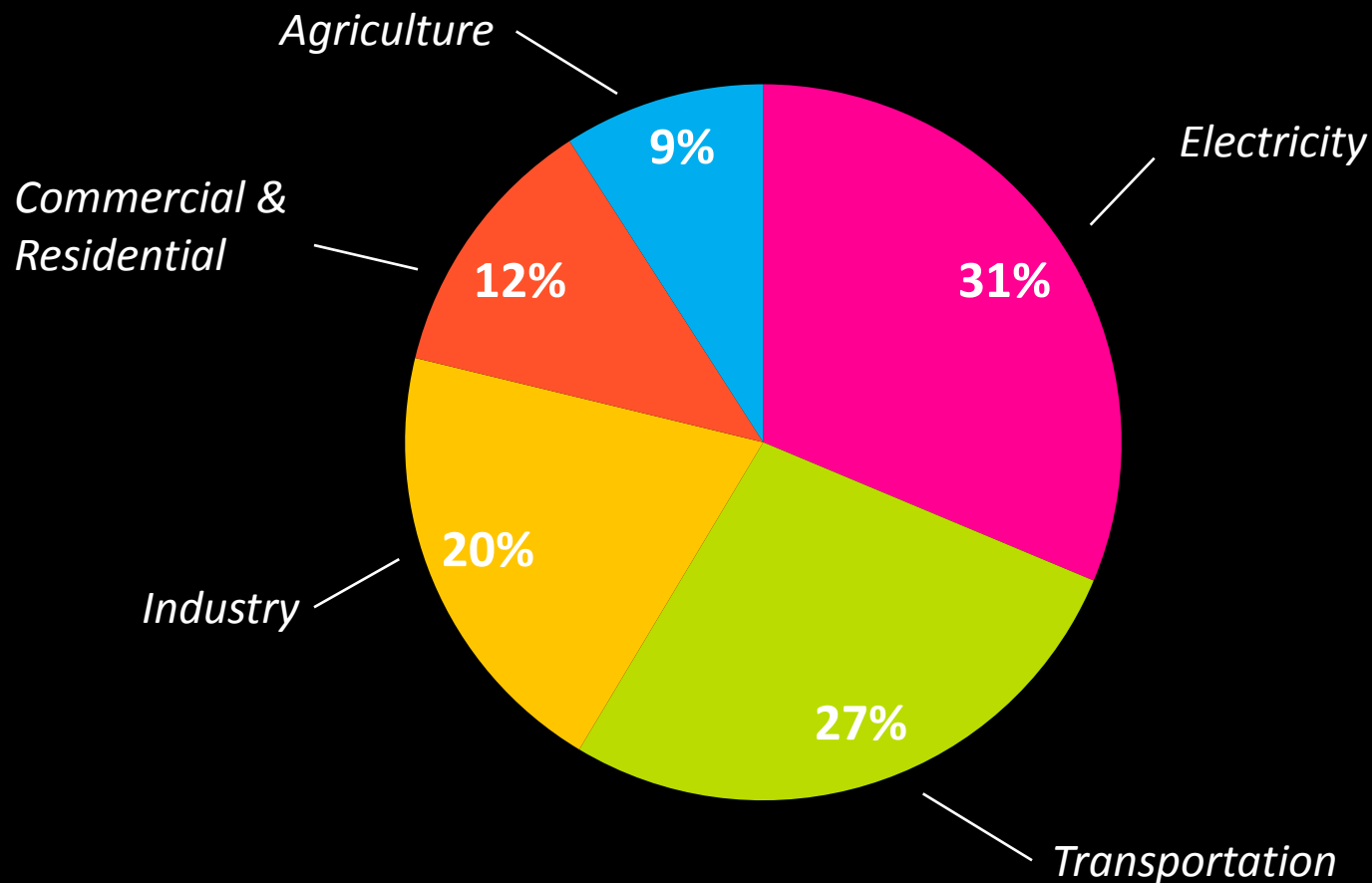
Energy efficiency: Reducing the problem by reducing demand



Microgrids can reduce outages



Power plants are the largest source of U.S. global warming emissions



Recommendations

Prepare grid for current
and future impacts

Increase the electricity
resilience of communities

Adopt strong policies to
reduce GHG emissions



A background image of the Statue of Liberty in New York Harbor at sunset. The statue is silhouetted against a sky with orange and blue hues. The water in the foreground is dark with some ripples.

{ Thank You

COMMONSENSEFUND

THE WILLIAM AND FLORA
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www.ucsusa.org/LightsOut

[Union of
Concerned Scientists



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More information about the Resilient Power Project, its reports, webinar recordings, and other resources can be found at www.resilient-power.org.

Thank you for attending our webinar

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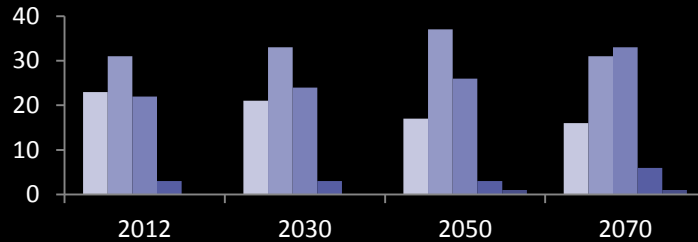
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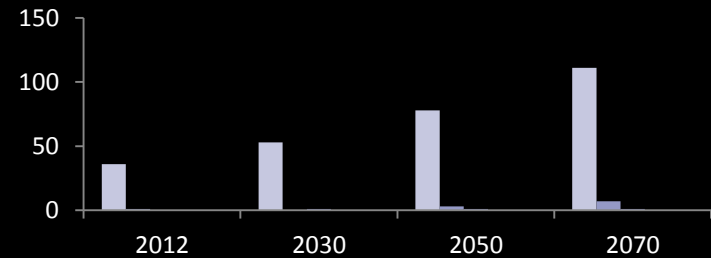
Extra Slides

Substation Inundation Charts

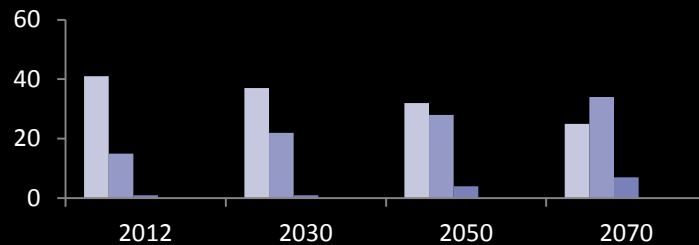
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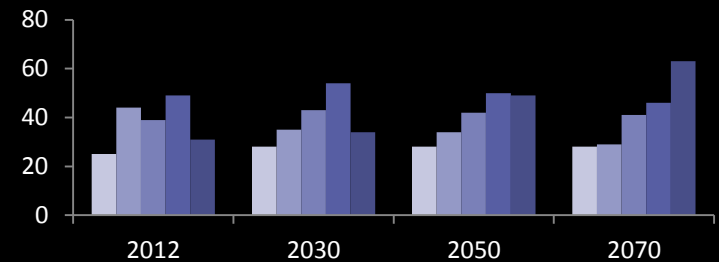
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