

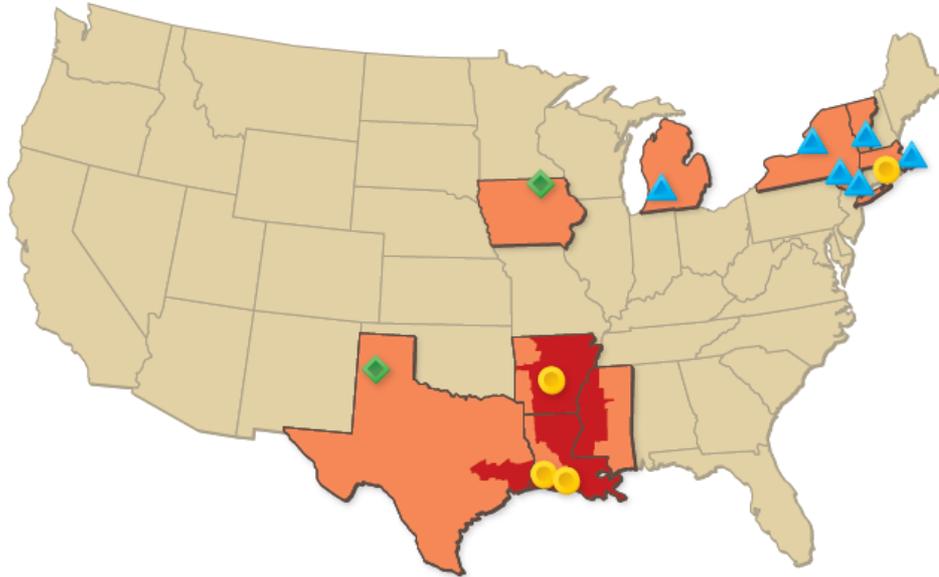


Social Cost of Carbon: Some Not So Rhetorical Questions for Consideration



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Washington, DC
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Entergy

Who is Entergy?



Entergy Corporation Operating Areas

- **Utility Service Area:** Entergy provides electrical service to 2.8 million customers in four states.
- ▲ **Entergy Wholesale Commodities Nuclear Facilities:** Entergy owns and operates nuclear power plants in the northern United States that generate electricity for the wholesale market.
- **EWC Fossil Facilities:** Entergy's wholesale power generation facilities include three fossil-fuel plants in the Southeast and one in the Northeast.
- ◆ **EWC Wind Facilities:** Entergy also shares ownership in two wholesale wind-powered generating facilities.



Adapting to a Changing World



Objective: Develop a comprehensive, objective, consistent fact base to quantify climate risks in the U.S. Gulf Coast and inform economically sensible approaches for addressing this risk

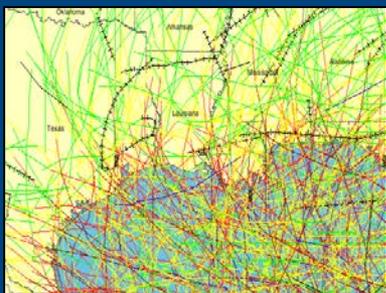


Illustration of hurricane paths/ intensities

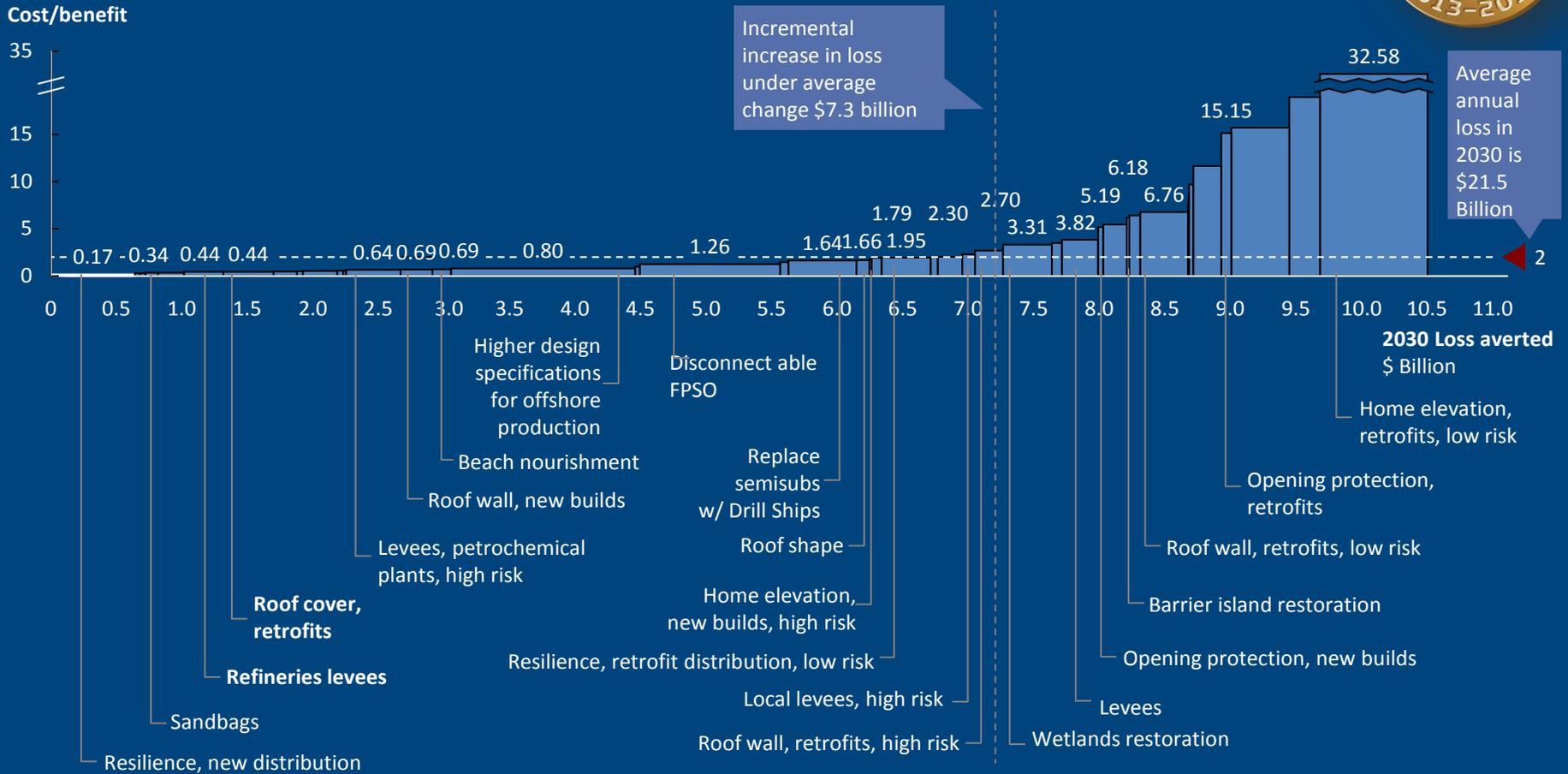


Engaged with experts across the Gulf Coast

- Granular, “bottom-up” analysis using a risk framework:
 - Modeled 23 asset classes and 43 million structures across residential, commercial, infrastructure, oil, gas and utility
 - Modeled 800 zip codes across 77 counties
 - Simulated ~10,000 hurricane “years” across multiple climate scenarios
 - Modeled over 50 adaptation measures
- First time broad range of Gulf Coast stakeholders and experts engaged
 - Discussed with over 100 global, regional academics, government officials, industry experts and NGOs
 - Used credible, publicly available sources (e.g., IPCC climate scenarios, FEMA, BEA, DOE EIA, MMS, Energy Velocity,)



Risk and Casualty Loss Adaptive Measures Exist

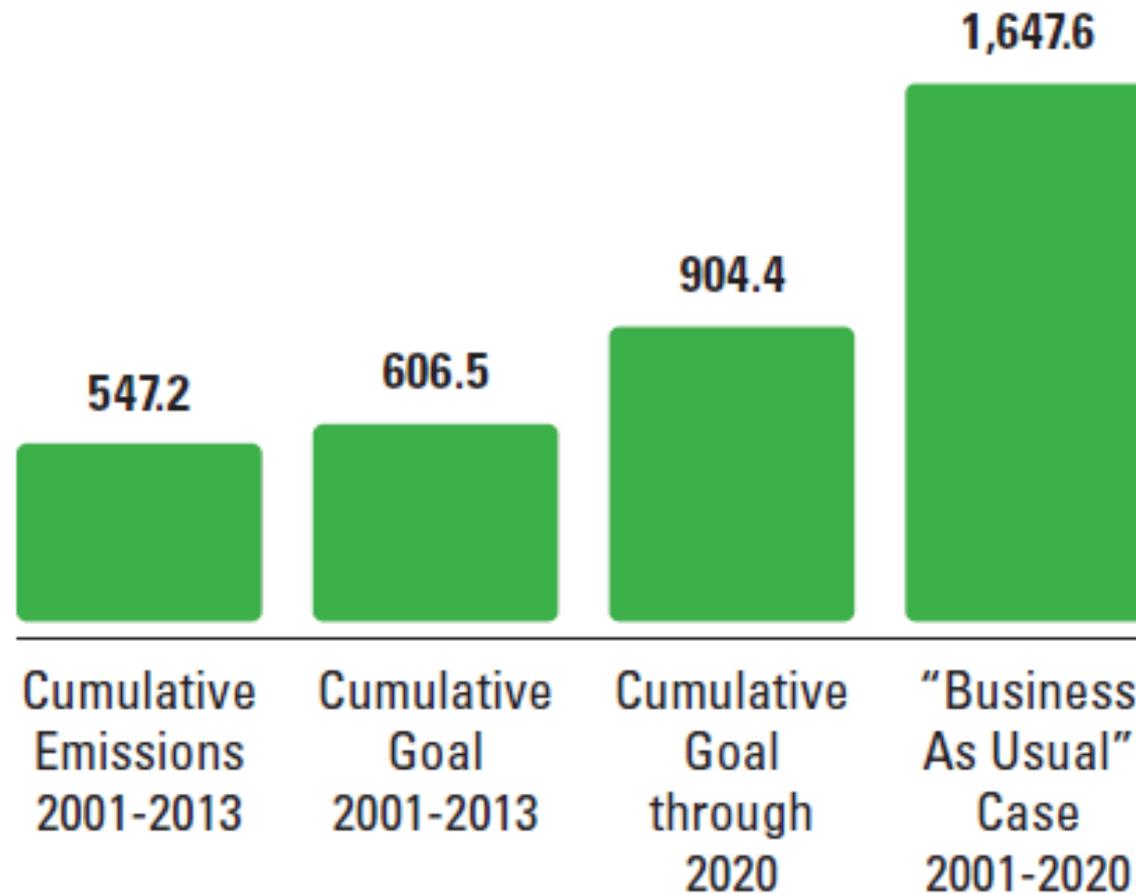


Entergy's GHG Commitment



CUMULATIVE CO₂ EMISSIONS

Million tons



Some “Not So Rhetorical Questions”



- Is an analysis for a 300 year time horizon realistic?
 - The industrial revolution began about 1760 in England
 - How can we imagine the future when knowledge and technology is expanding exponentially (and accelerating)?

- What is an appropriate discount rate to bring it all back to today's dollars?
 - Measure with a micrometer
 - Mark with a piece of chalk
 - Cut with a chainsaw

- Are there benefits that are not being captured in SCC cost/benefit analysis?

- The SCC utilized several different models, each with its own strengths and weaknesses
 - Can these strengths be leveraged and weaknesses reduced?



Some “Not So Rhetorical Questions”



- How will the SCC (and is the SCC the appropriate tool) to be used by the government/EPA?
 - Calculate fuel economy standards
 - Energy efficiency standards for appliances
 - Power plant efficiency standards

- What are the economic and social impacts of the application of an SCC unilaterally?
 - Demonstration of leadership (priming the pump to get others to commit to reductions)
 - Shifting production offshore
 - Reduced in-migration

- Is it appropriate for the Social Cost of Carbon to be used as a proxy?
 - For the value of solar?
 - Is a similar proxy substitution valid for the value of nuclear?
 - The value of base load generation?
 - The value of the grid?



Some “Not So Rhetorical Questions”



- Are there better investments that could provide society a better return on investment?
 - Poverty
 - Health
 - Clean water
 - Infant mortality
 - Education
- What are alternatives to the use of Social Cost of Carbon prices?
 - Regulatory - Command and Control, CAA 111(d), other approaches
 - Legislative – well reasoned, comprehensive, multi-sector legislation (a fantasy)
 - Market based approaches - Cap & Trade, Carbon Tax
- Are we more persuaded by the ends (dollars/ton) versus the means (model specs and process) of the SCC modeling?



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