# *Entergy's Voluntary GHG Stabilization Commitments*

15th Annual Emission Inventory Conference

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Entergy

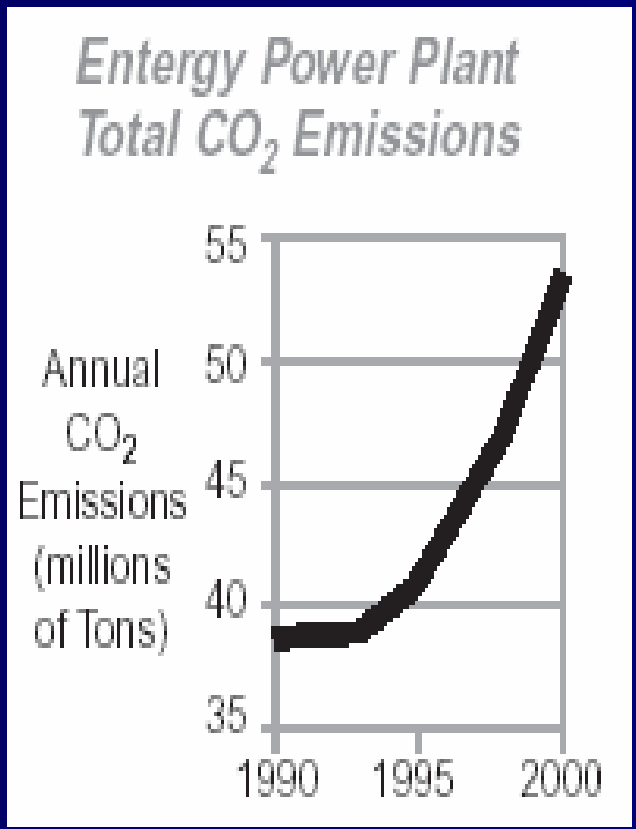
# Corporate Highlights

- Entergy is an integrated energy company engaged in electric power production, retail distribution, energy marketing and trading, and gas transportation
- Headquarters in New Orleans; operations in Gulf Coast (LA, MS, AR & TX) and Northeast (NY, MA, VT)
- $26.9 billion in assets;  $10 billion in revenues
- 2.6 million retail customers;  14,000 employees
- 30,000 MW of generation;  14,500 miles of transmission; an expanding U.S. plant portfolio
- 5th largest U.S. electricity generator

# CONTEXT FOR ENTERGY'S CLIMATE CHANGE PROGRAM: THE GOOD NEWS

- Entergy's $CO_2$ emission rate is among the lowest of any US electric generating company
- It is good and getting better
- Entergy's major source of greenhouse gas emissions is carbon dioxide ($CO_2$) from fossil-fueled power plants
- Entergy has been taking actions since 1991 to reduce total company greenhouse gas emissions
- The company reduced emissions by over 30 million tons $CO_2E$ during the 90's as part of DOE's "Climate Challenge" Program

# CONTEXT FOR ENTERGY'S CLIMATE CHANGE PROGRAM: THE BAD NEWS




- ✓In spite of reducing $CO_2$ emissions per unit of electricity, overall $CO_2$ emissions increased during the 1990's due to increased demand for electricity
- ✓Entergy decided further action was needed to stabilize the growth of $CO_2$ emissions as we entered the new century

# Reasons Why Entergy Established a GHG Target

- Entergy management philosophy
  - Science on climate change sufficient to indicate meaningful risks
  - Responsible thing to do
- Exposure of service territory, e.g.,
  - Increased flooding from sea level rise/hurricanes
  - Increased spread of mosquito-borne tropical diseases due to warmer climate
  - Impending emission limitations on other pollutants; need for integrated approach
- Early action could mean lower cost
- $CO_2$ reduction actions create other co-benefits

# Entergy's Greenhouse Gas Reduction Commitment

- May 2001, Entergy established a voluntary stabilization target for $CO_2$ emissions
- Stabilize $CO_2$ from power plants at 2000 levels through 2005 (53.2 million tons CO2)
- Established Environmental Initiatives Fund (EIF)

# Internal GHG Reduction Projects – end 2005

- 61 internal projects with $14.8 million to achieve 6.3 million tons $CO_2$ reduction by 2010
  - Power plant efficiency improvements;
  - SF6 circuit breaker replacement
  - Carbon sequestration at company property

# External GHG Offset Projects

- 15 external projects with $5.5 million to achieve 3.6 million tons of $CO_2e$ offsets by 2005
  - Carbon sink projects
  - Renewable energy projects
  - Geologic Sequestration
  - Production Efficiency

# Tensas Wildlife Refuge Reforestation & Carbon Sequestration Project

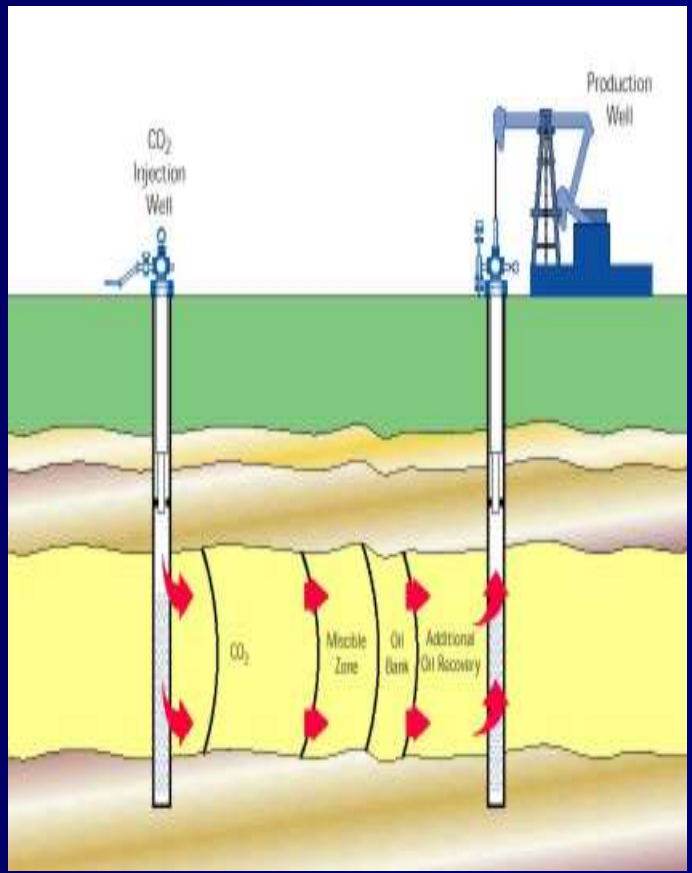
- With Trust for Public Land & ESI, Entergy restored 1,900 acres of marginal cropland to hardwoods using low income labor;
- Donating high priority land to US FWS to expand Tensas NWR;
- Trees will remove 760,000 tons CO2 as they mature;
- Enhances habitat for Louisiana Black Bear & neotropical songbirds;
- Adds eco-tourism benefits for region

# PNDSA-Entergy
# Agricultural $CO_2$ Emission Offset Reduction Project
## *Interior Pacific Northwest Region*

- **Entergy**
  - lease 30,000 tons sequestered carbon and 4,500 tons of emission reductions through reduced fuel use
  - 3rd party verification
  - study/field samples of sequestration verified against USDA CQESTR model
  - Verify fuel use analysis
  - Conservation Districts verify direct seeding, no residue burn

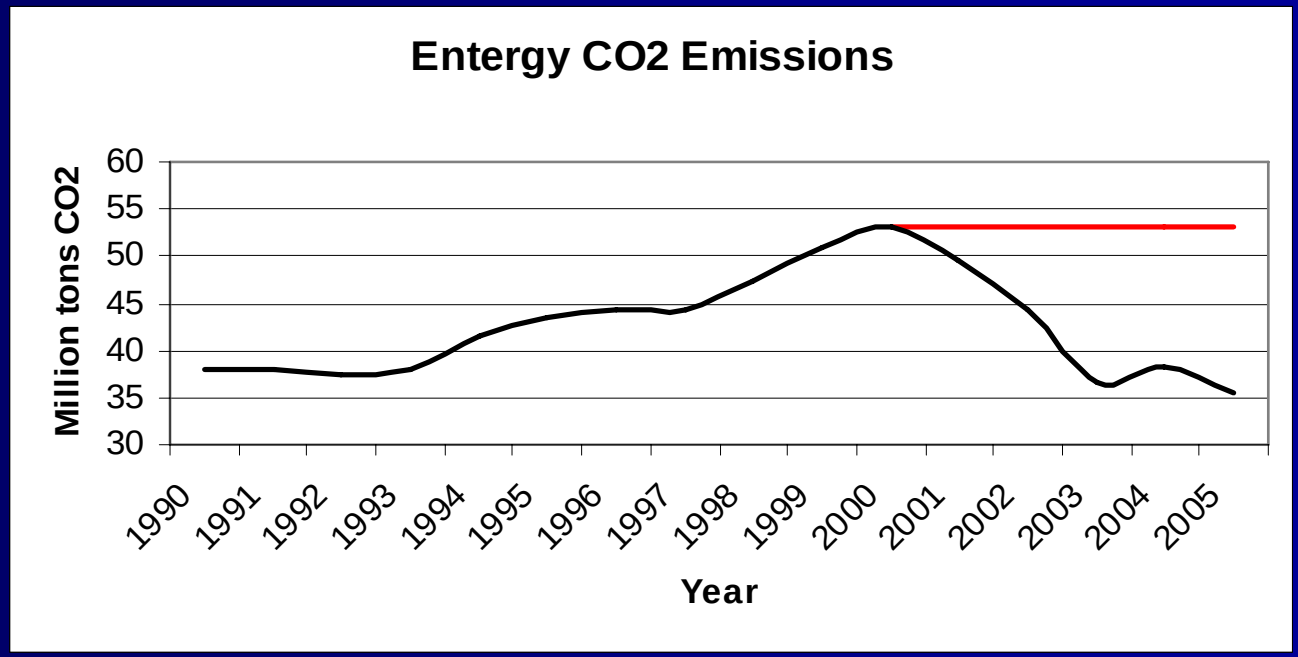
- **PNDSA**
  - Under contract 2002-2011
  - aggregate sequestered tons
  - Contract w/ individual farms
    - Direct seed, no burning
    - Transfer credits to PNDSA
    - 3rd parties access to contracted lands
  - PNDSA bears permanency risk

# Geologic Sequestration for Enhanced Oil Recovery




- CO2 captured from vent gas and injected into geologic formations for enhanced oil recovery.
- Verified Emission Reductions equivalent to 1,450,000 metric tons of CO2.
- Helps energy security
- Adds jobs, royalties and tax revenues

# Greenhouse Gas Reduction Commitment Progress vs. Target: 2001 - 2005




- 2001- 2005 exceeded goal by 23%
- 2005 emissions below 1990 levels

# GHG - Direct Emissions

| | 2000 $CO_2e$ (1,000 ST) | 2004 $CO_2e$ (1,000 ST) |
|---|---|---|
| **Generation** | **53,235** | **38,280** |
| Fleet | 62 | 64 |
| Fugitives | 492 | 410 |
| Total Direct | 53,789 | 38,754 |

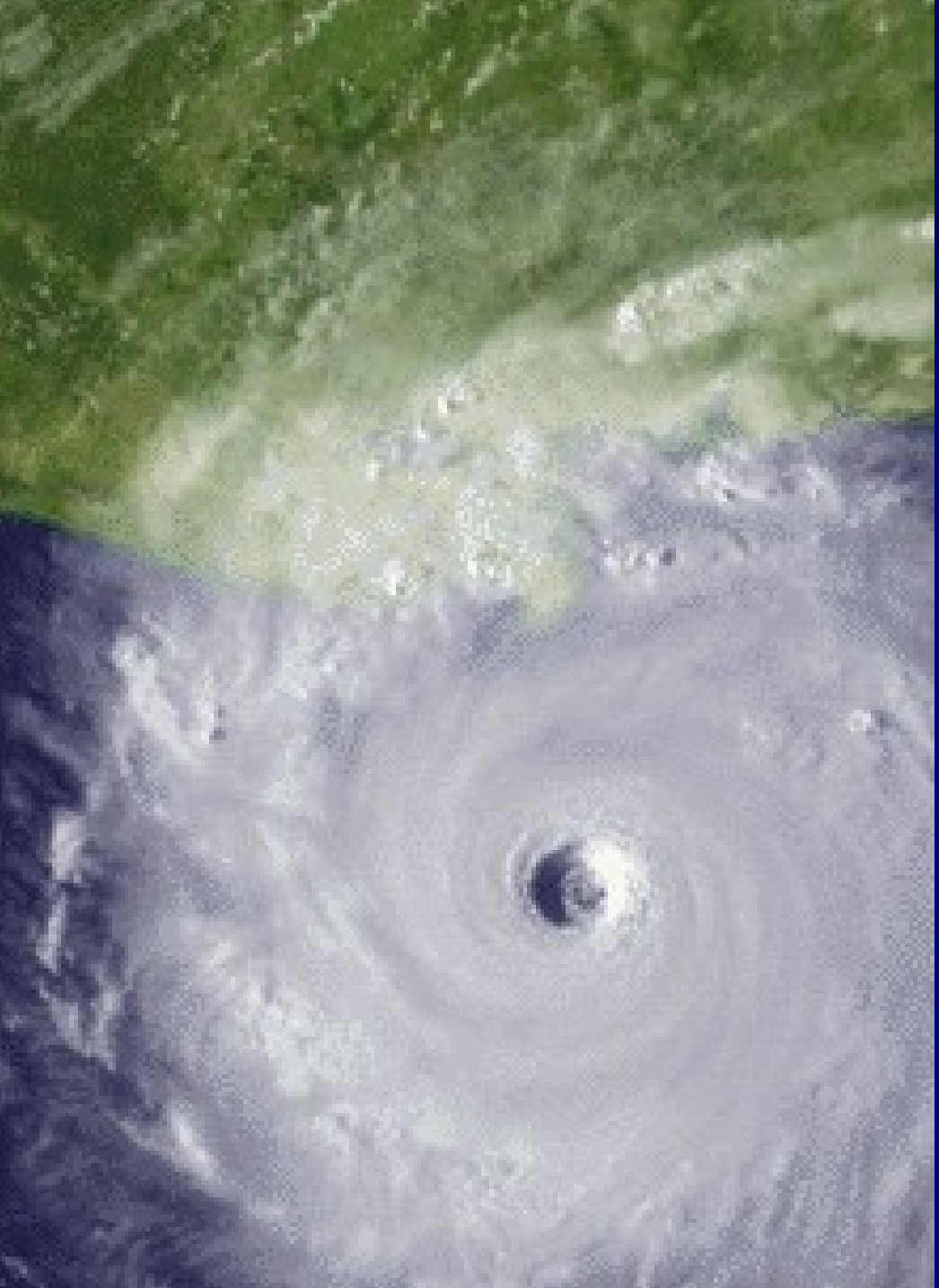
# GHG - Direct & Indirect

| | 2000 $CO_2e$ (1,000 ST) | 2004 $CO_2e$ (1,000 ST) |
|---|---|---|
| **Generation** | **53,235** | **38,280** |
| Fleet | 62 | 64 |
| Fugitives | 492 | 410 |
| Total Direct | 53,789 | 38,754 |
| Purch Power | 16,071 | 23,087 |
| Direct + Indirect | 69,860 | 61,841 |

# 2nd GHG Stabilization Commitment

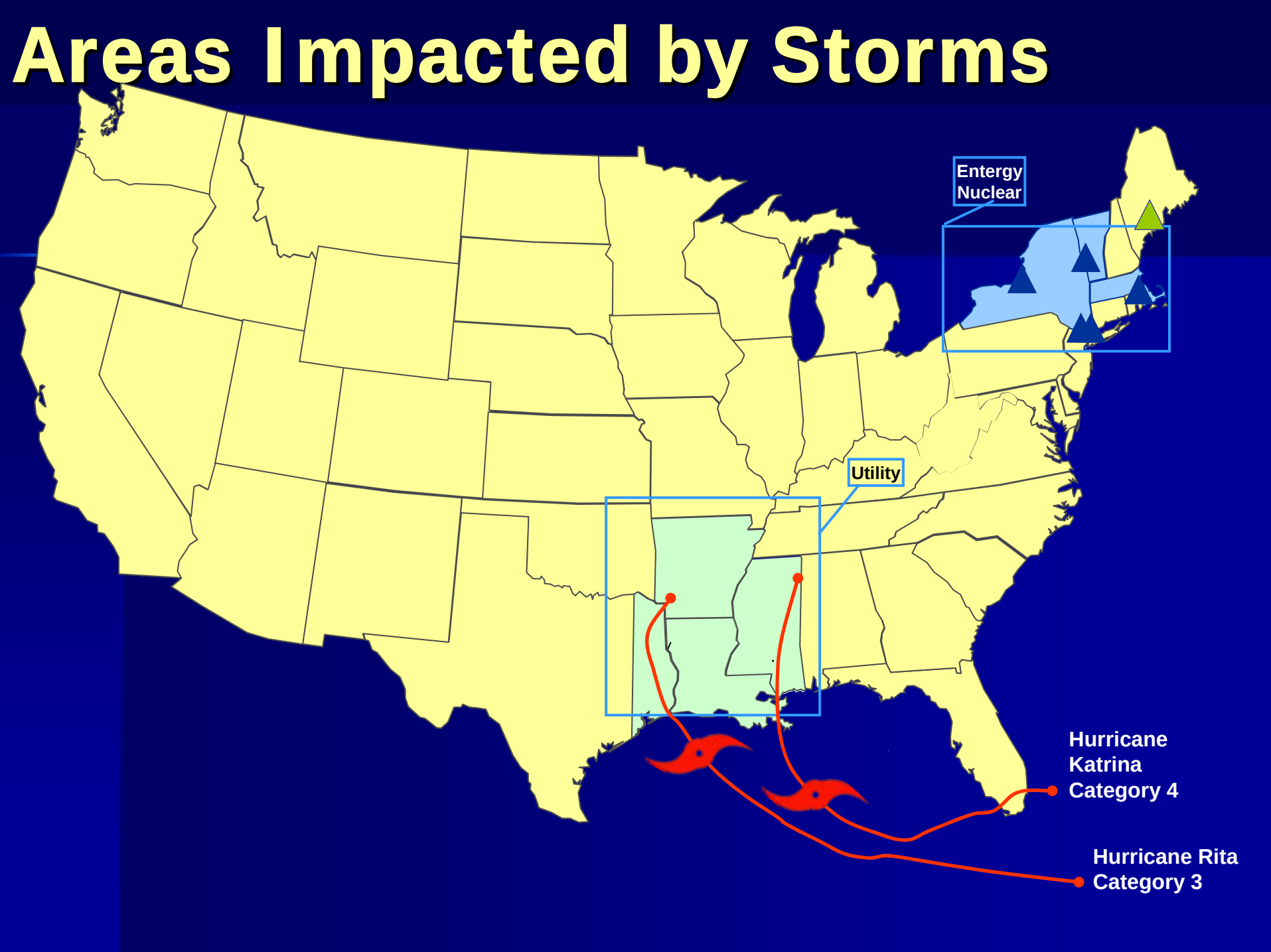
- Stabilize $CO_2$ emissions at 20% below 2000 emissions level through 2010;
- Footprint includes self generation & controllable purchases;
- Independent 3rd party evaluation;
- Report progress annually;
- Partnership with Environmental Defense;
- Annual enterprise GHG Inventory using WRI/WBCSD protocol;

# Questions



**Recent hurricanes put a face on what life will be like if we fail to address Climate Change**

# Areas Impacted by Storms

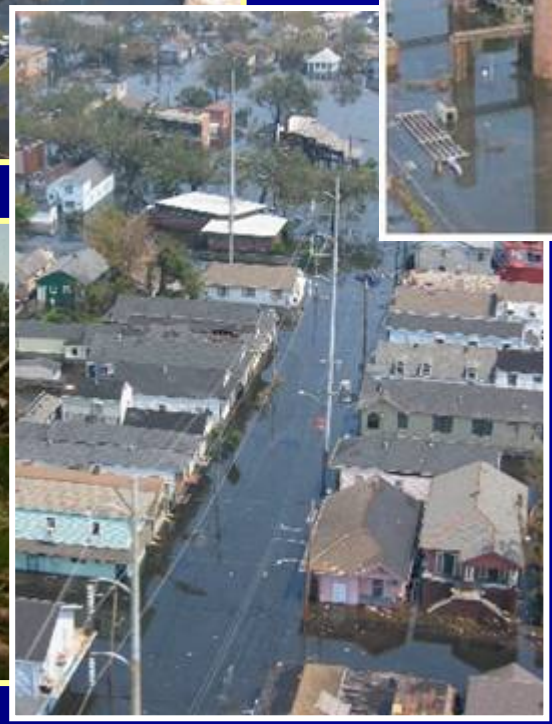


**ETR restoration costs ~ $1.5 billion for Katrina & Rita.**

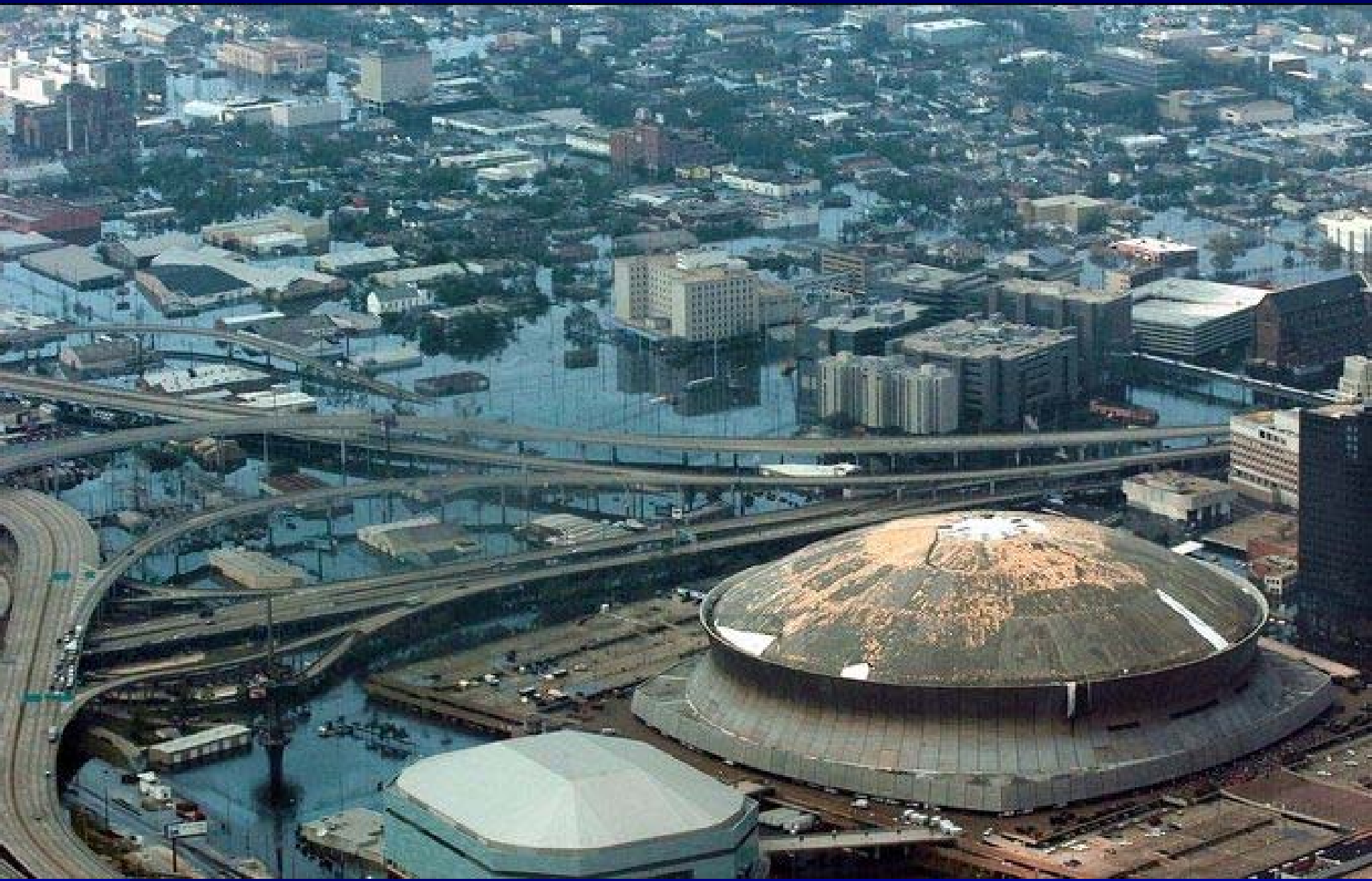
**Katrina – 1.1 million left without power,**

***800,000 Louisiana outages***

***Over 300,000 Mississippi outages***




American
Red Cross
Disaster Relief



# Red River Wildlife Refuge Reforestation & Carbon Sequestration Project


- With The Conservation Fund and Environmental Synergy, Inc., Entergy restored 600+ acres of hardwood in NW Louisiana.
- Property transferred to U.S. Fish and Wildlife Service; became the first landholding in the country's newest national wildlife refuge.
- Trees will remove an estimated 275,000 tons of $CO_2$ from the atmosphere as they mature; provide federally-protected fish and wildlife habitat and recreation-driven economic benefits to the region.

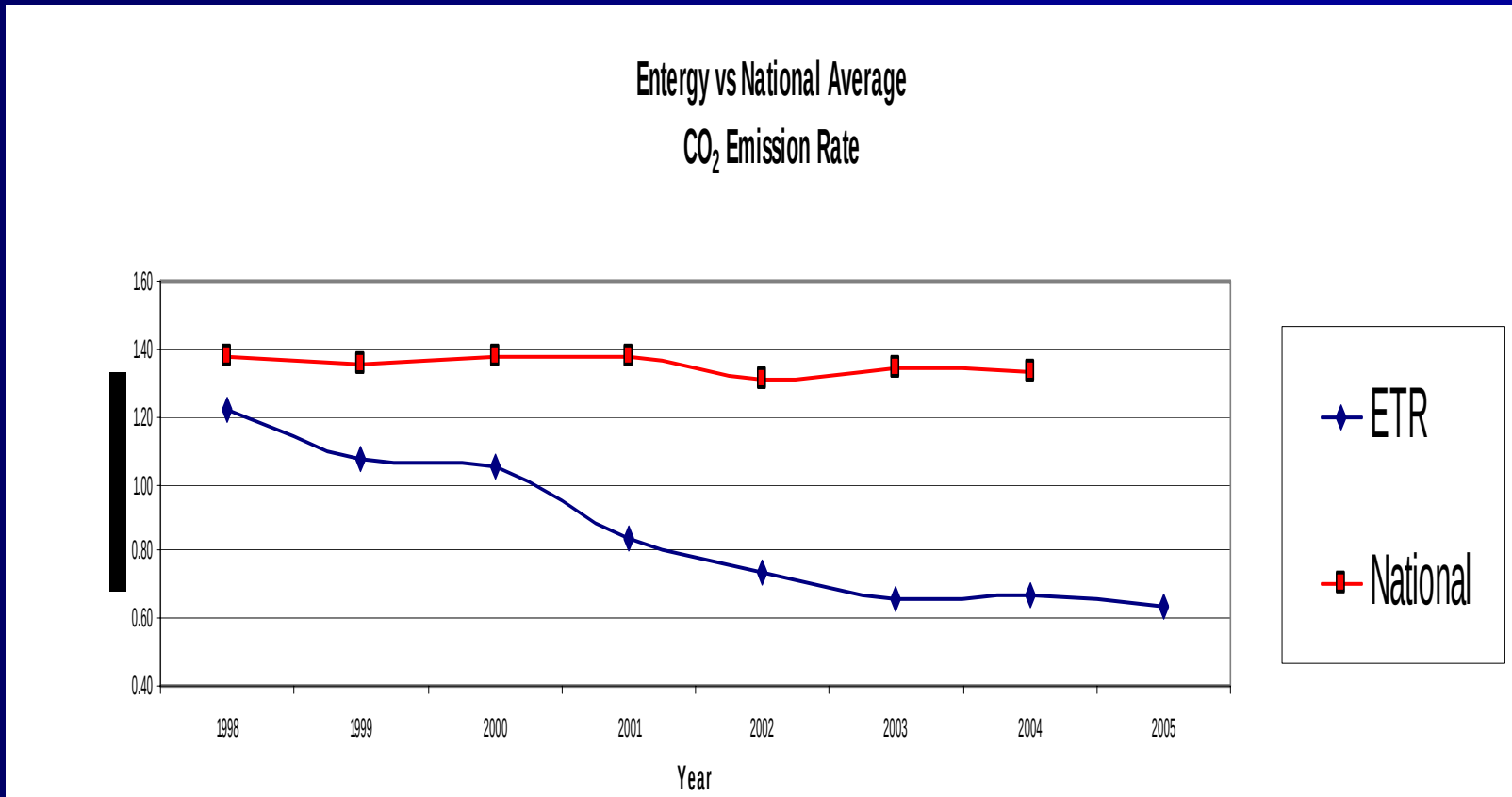
# Landfill Gas to Energy Project

- 50,000 metric tons of $CO_2$-equivalent greenhouse gas reductions created through the capture and beneficial use of landfill gas (methane).
- Municipal landfill methane that would otherwise be released to the atmosphere is collected as a fuel to generate electricity.
- Methane is over 20 times more potent in creating the greenhouse effect as $CO_2$.

# EIF Renewable Energy Projects
# Coal Mine Methane Utilization

- Funded collection of methane vented from abandoned coal mines
- Converting methane to pipeline quality natural gas to generate electricity or provide pipeline compression.
- Will reduce 400,000 metric tons CO2e

# $CO_2$ Emission Rates



# SUMMARY & CONCLUSIONS

- Invested in power production efficiency improvements,
- Increased production from non-emitting nuclear units through capacity up-rates and increased capacity factors,
- Increased production from more efficient, low emitting combined cycle gas turbines;
- Use of external offsets is critical to help meet GHG reduction targets
- Investments in external offsets, and corresponding GHG reductions, will likely remain limited absent a government program to control emissions, register GHG credits, or at least formally grant credit for early action