



# Renewable Energy in Texas

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# Presentation Outline

- ❖ The Texas Energy Picture
- ❖ Renewable Energy Resources
- ❖ Policy and Economic Impact
- ❖ Renewable Energy Projects
- ❖ Consumer Education

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# Texas Energy Picture

## Production-Consumption

- ❖ Oil & Gas production peaked in 1972
- ❖ Texas became a net energy importer in 1993
- ❖ Texas accounts for 12% of U.S. energy consumption - Why?
  - ❖ 60% of US petrochemical production
  - ❖ 25% of US refining capacity
  - ❖ 19 million automobiles
  - ❖ 22 million population
  - ❖ 7.5 million households

# Texas Energy Picture - Electricity

- ❖ Annual growth in electrical use averaged +2.5% over last 10 years
- ❖ 437 electric generating plants
- ❖ Electricity generation
  - ❖ Natural gas 49%
  - ❖ Coal 39%
  - ❖ Nuclear 10%
  - ❖ Renewable\* 2%

\*Leads US in combined renewable energy potential

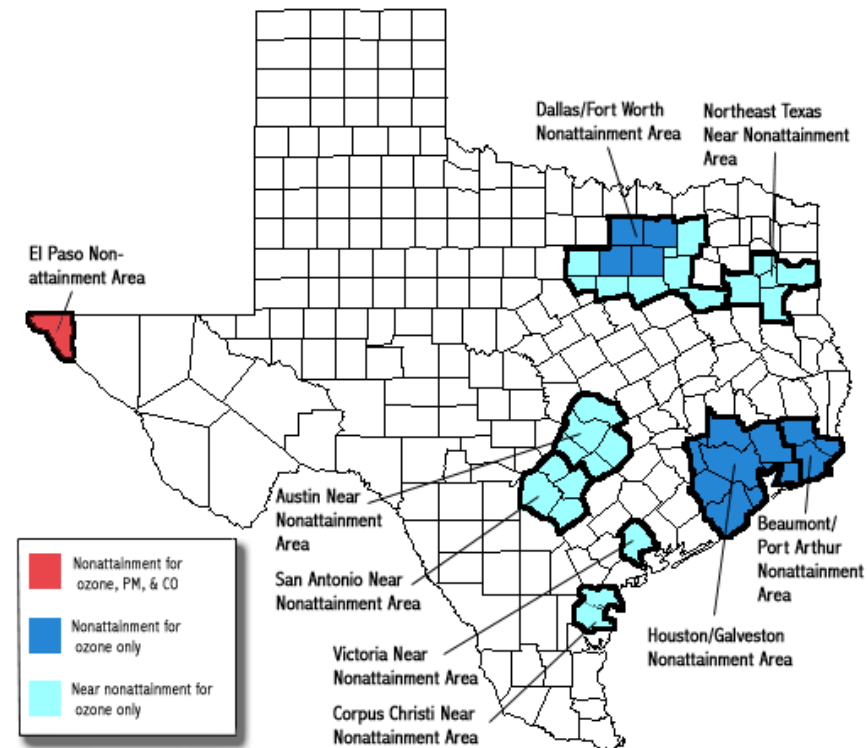
# Texas Air Quality Challenges

## Ozone Non-Attainment

- ❖ Dallas/Fort Worth
- ❖ Houston/Galveston
- ❖ Beaumont/Port Arthur
- ❖ El Paso

## Ozone Near Non-Attainment

- ❖ Austin/San Antonio
- ❖ Corpus Christi/Victoria
- ❖ Tyler/Longview/Marshall



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# Top Twenty States for Wind Energy

As measured by annual potential in billions of kWhs, factoring in environmental and land use exclusions for wind class of 3 and higher:

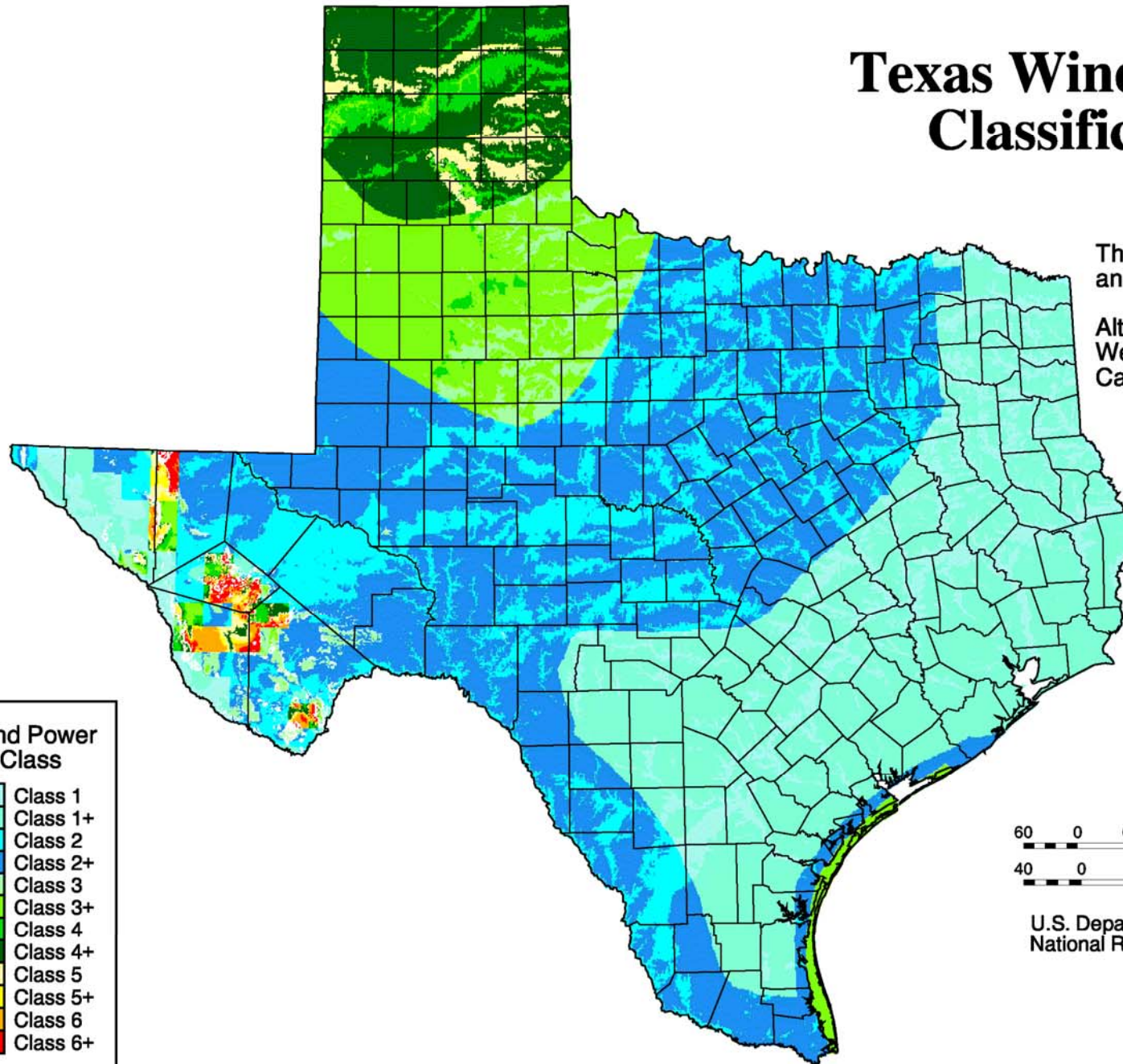
1	North Dakota	1,210	11	Colorado	481
<b>2</b>	<b>Texas</b>	<b>1,190</b>	12	New Mexico	435
3	Kansas	1,070	13	Idaho	73
4	South Dakota	1,030	14	Michigan	65
5	Montana	1,020	15	New York	62
6	Nebraska	868	16	Illinois	61
7	Wyoming	747	17	California	59
8	Oklahoma	725	18	Wisconsin	58
9	Minnesota	657	19	Maine	56
10	Iowa	551	20	Missouri	52

*Source: An Assessment of the Available Windy Land Area and Wind Energy Potential in the Contiguous United States, Pacific Northwest Laboratory, 1991.*

# Texas Wind Energy Classification

The data was produced and provided by:

Alternative Energy Institute  
West Texas A&M University  
Canyon, Texas



## Wind Power Class



60 0 60 120 180 240 Kilometers

40 0 40 80 120 160 Miles

U.S. Department of Energy  
National Renewable Energy Laboratory



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# Texans Want Renewable Energy

IRP Deliberative Polls™ ('95-'98)

## Preference?

- ❖ Renewables 49%
- ❖ Efficiency 31%
- ❖ Fossil 14%
- ❖ Buy and Transport 5%

## Will you pay more?

- ❖ Renewables + \$5
- ❖ Efficiency + \$2
- ❖ Fossil + \$0

*(8 largest IOUs, 67% of Texas customers)*

# Texas Renewable Energy Portfolio Standard (RPS)

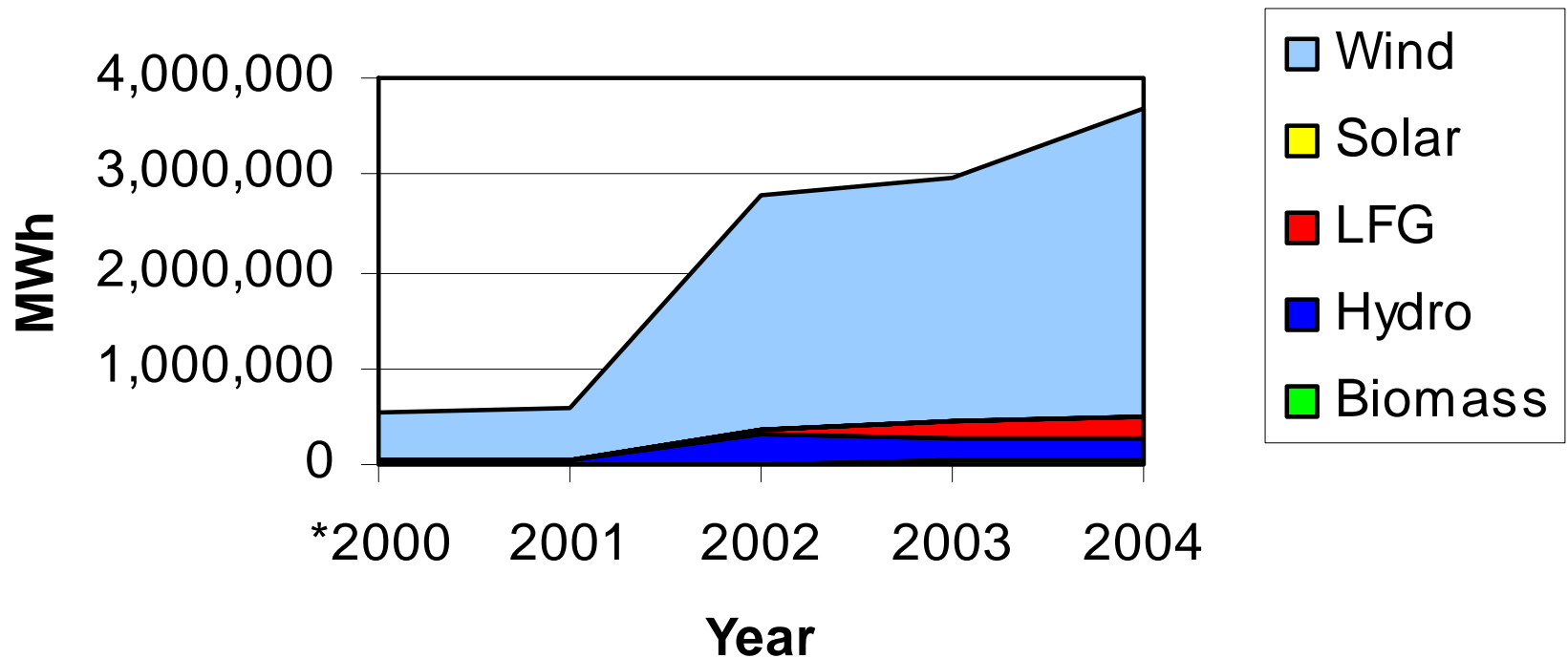
Enacted - 1999

- ❖ 2,000 new MW by 2009

Status - 2005

- ❖ 1322 MW added
- ❖ 486 MW under construction
- ❖ 720 MW authorized/permitted
- ❖ Over \$1.5 Billion invested
- ❖ Construction, O&M jobs

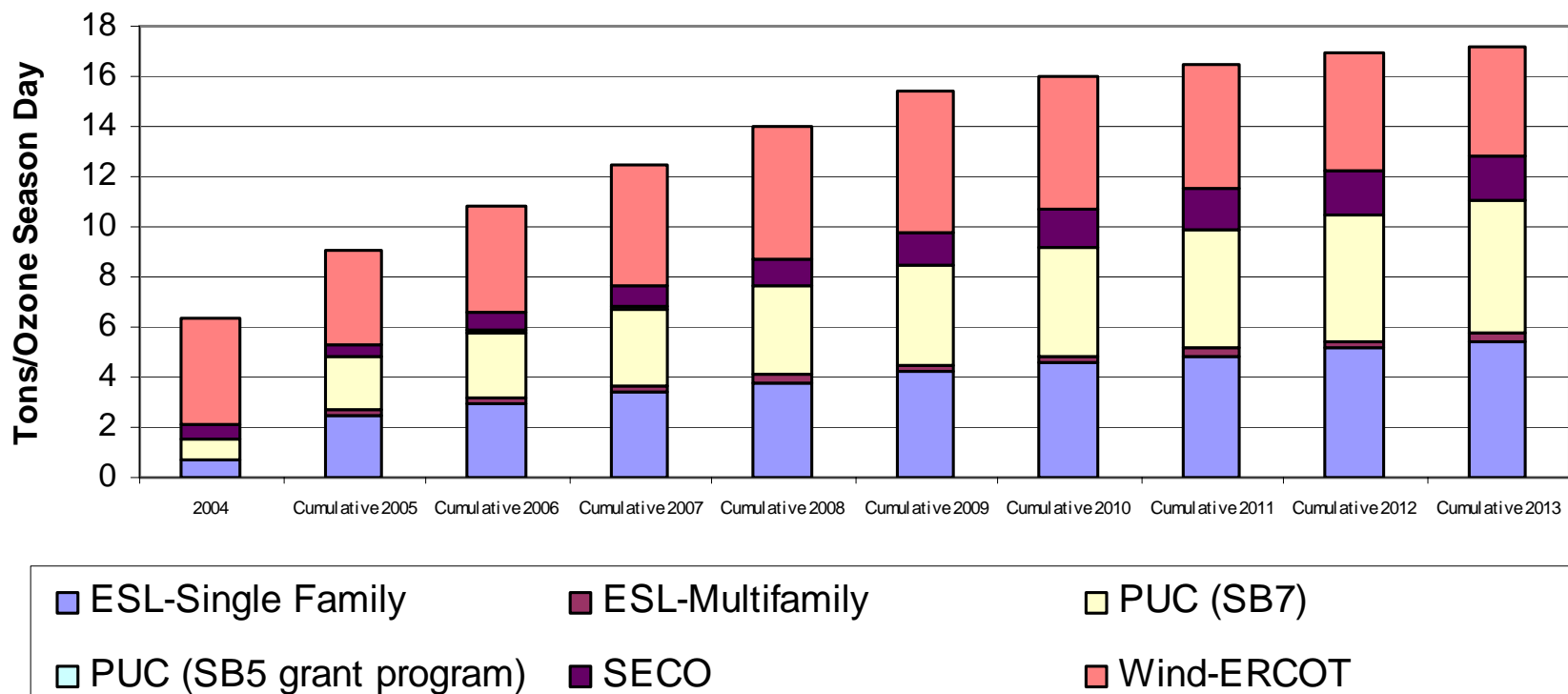
## Texas Renewable Energy Generation (ERCOT REC Program)



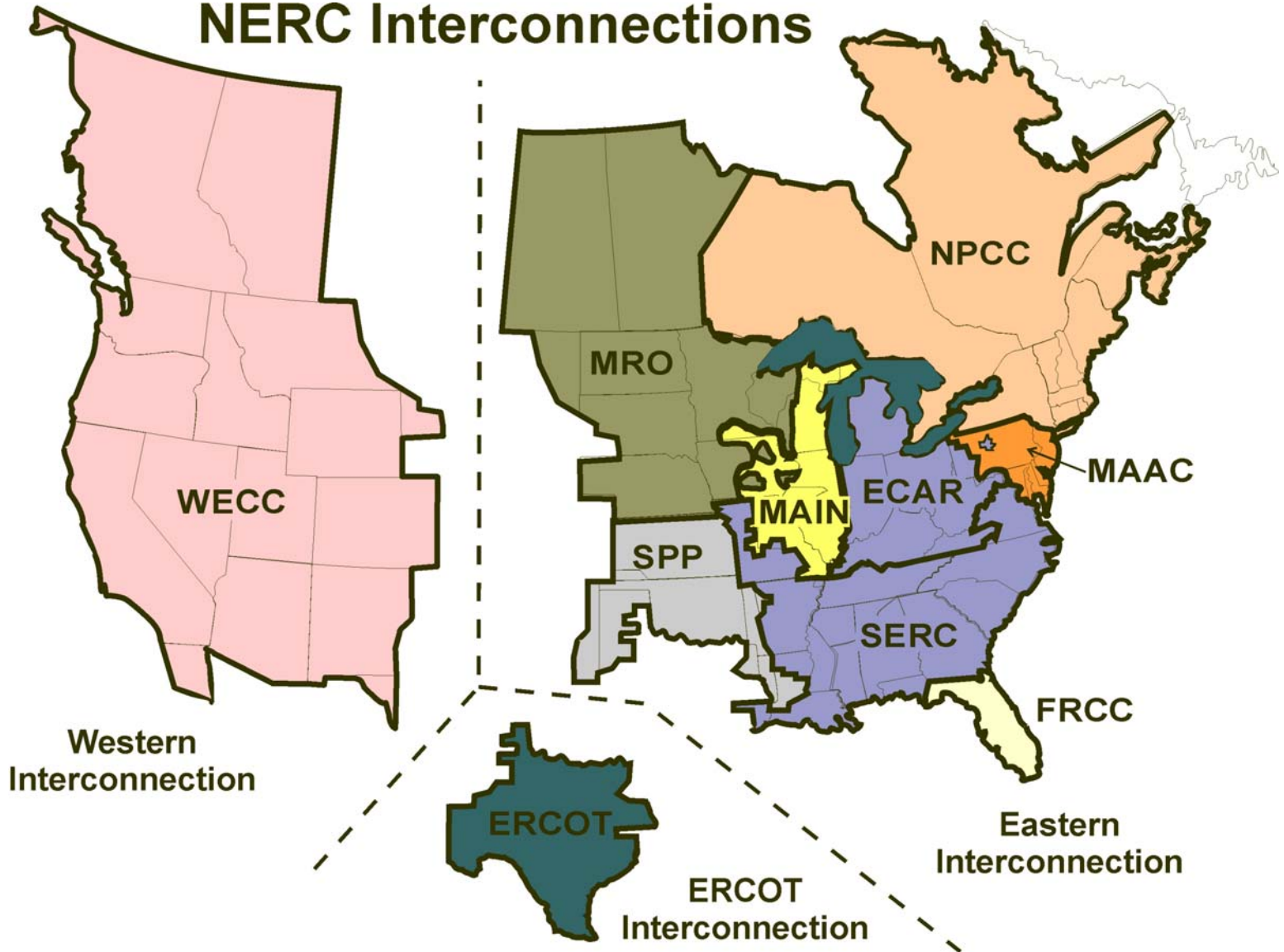
# RPS Air Benefits



OSD NOx reduction levels ERCOT Wide



# NERC Interconnections



# RPS Rural Economic Impact



- ❖ *"2<sup>nd</sup> industry in 80 years"* - Mayor Phillips  
McCamey, TX (pop. 1,650)
- ❖ New school via property taxes  
Trent, TX (pop. 300)
- ❖ Tower paint shop – 300 jobs  
Coleman, TX (pop. 4,800)

# RPS Enhancements

## 2005 Texas Legislature

- ❖ 5,000 new MW by 2015
- ❖ 500 MW non-wind carve out
- ❖ Fixes “chicken-and-egg” problem:
  - ❖ PUC designates best development zones
  - ❖ Transmission will be built to zones
  - ❖ Cost recovery for transmission owners is assured
- ❖ \$3.5 billion net economic benefit

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# Utility-Scale Wind Farms



- ❖ 1503 MW operating
- ❖ 496 MW under construction
- ❖ Over \$1.5 billion invested

# Texas/Mexico Border Colonias Water Purification

- ❖ Solar Powered Reverse Osmosis System
- ❖ 8 Kw PV
- ❖ 24/7 Operation
  - ❖ Grid Backup
- ❖ Treats 14,000 Gallons/day



# Ethanol Production

## Dumas, Texas

- ❖ Input: 12 million corn bushels
- ❖ Outputs: 30 million ethanol gallons & 90,000 distillers grains tons



# Dairy Biogas

## Hico, Texas

- ❖ Anaerobic digester
- ❖ 75 kW electricity production
- ❖ 80% phosphorus removal
- ❖ Compost mgmt



# Innovative Retail Programs

- ❖ 100% via **GreenChoice®**
- ❖ 685,000 kWh annually
- ❖ Early subscriber to **GreenChoice®**
- ❖ Saved \$15,700 from 4/01 – 9/05



# Hedging Against Rising Fuel Costs

- ❖ 100% via **GreenChoice®**
- ❖ 13 million kWh annually
- ❖ Early subscriber to **GreenChoice®**
- ❖ Saved \$315,000 from 4/01 – 9/05



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# Solar on Schools

- ❖ 21 Locations
- ❖ 1 Kw Pv Systems
  - ❖ Grid Connected
- ❖ Computer-based Monitoring Systems
  - ❖ [www.Soltrex.Com](http://www.Soltrex.Com)
- ❖ Hands-on Learning Tools
- ❖ Student & Staff Training



# Renewable Energy Education

- ❖ InfinitePower Campaign
  - ❖ Educational materials
    - ❖ Lesson Plans
    - ❖ Fact Sheets
  - ❖ Interactive Calculators
  - ❖ Answers to FAQ's
  - ❖ Website:



# Summary of Key RE Drivers in Texas

- ❖ Address future capacity needs
- ❖ Correct State supply-demand imbalance
- ❖ Stimulate rural economic development
- ❖ Enhance retail price stability
- ❖ Maximize environmental (air) benefits

# Questions?

Dub Taylor, Director  
State Energy Conservation Office

[www.seco.cpa.state.tx.us](http://www.seco.cpa.state.tx.us)

