



# Environmental Issues and Potential Impacts

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# Agenda

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- Current non-attainment zones
- Recommended non-attainment zones
- How do non-attainment zones affect transmission
- Potential EPA regulations summary
- NERC 2010 Special Reliability Scenario Assessment study summary
- How do EPA regulations affect transmission
- Example: expected regulatory timeline for coal units

# Current Non-Attainment Zones

- Brazoria (Houston/Galveston)-**severe 15**
- Chambers(Houston/Galveston)-**severe 15**
- Collin(Dallas/Fort Worth)-**moderate**
- Dallas(Dallas/Fort Worth)-**moderate**
- Denton(Dallas/Fort Worth)-moderate
- Ellis(Dallas/Fort Worth)-**moderate**
- Fort Bend(Houston/Galveston)-**severe 15**
- Galveston(Houston/Galveston)-**severe 15**
- Harris(Houston/Galveston)-**severe 15**
- Johnson(Dallas/Fort Worth)-**moderate**
- Kaufman(Dallas/Fort Worth)-**moderate**
- Montgomery(Houston/Galveston)-**severe 15**
- Parker(Dallas/Fort Worth)-**moderate**
- Rockwall(Dallas/Fort Worth)-**moderate**
- Tarrant(Dallas/Fort Worth)-**moderate**
- Waller(Houston/Galveston)-**severe 15**

## 8 Hour Zone Classifications

- Marginal: 0.085-.092 ppm
- Moderate: 0.092-0.107 ppm
- Serious: 0.107-0.120 ppm
- Severe 15: 0.120-0.127 ppm
- Severe 17: 0.127-0.187 ppm
- Extreme: 0.187 ppm and above

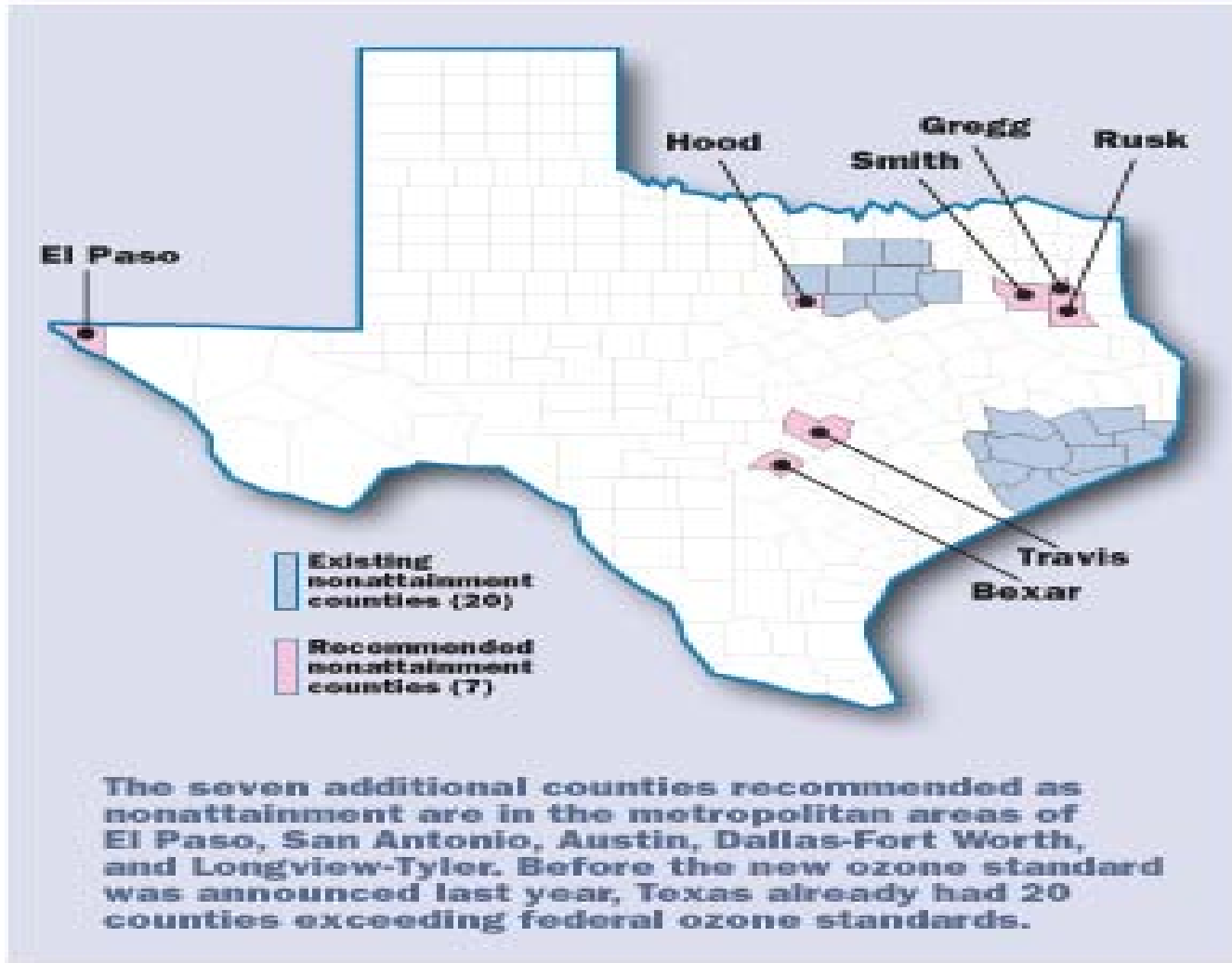
\*ppm: parts per million

\*Receives non-attainment zone status if the area does not meet the above national primary or secondary ambient air quality standard on an average of once per year calculated over a three year time frame

\*Source: EPA

<http://www.epa.gov/oaqps001/greenbk/ancl.html>  
as of 9/16/2010

## Recommended Nonattainment Counties



Source: [http://www.tceq.state.tx.us/comm\\_exec/forms\\_pubs/pubs/pd/020/09-02/nonattainmentcounties.html](http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/pd/020/09-02/nonattainmentcounties.html)

# How do non-attainment zones affect transmission?

- **Location of ozone pollutant emitting generation is limited**
  - Increased need for transmission outside of these zones
- **If EPA non-attainment zone limits become more strict, more counties could be affected in the future**
  - These added limitations, environmental habitats, and federal, state, and local permit processes could severely decrease the available land for generation
  - Increase in capital investment for emission technology or retrofitting or repowering to meet stricter standards

- **Electric Vehicles**

- There is large uncertainty with the impact of the number of vehicles
  - Increase in non-attainment zones or reduction in allowed pollutant levels of current non-attainment zones could force larger penetration rates of EVs
- Transmission challenges associated with an increase of EVs
  - Including charging hours in load forecast
    - Predicting consumer behavior
  - Public charging stations
  - Total MW effect of all EVs on the system
  - Potential to provide ancillary services
- Austin Energy forecasts 192,000 PEVs by 2020
  - Source: <http://www.ci.austin.tx.us/edims/document.cfm?id=142322>

# EPA regulation summary

Rule	Targeted Emission	Potential Control Required
Title I of Clean Air Act- MACT	Mercury and other potentially “hazardous air pollutants”	Scrubbers and other technologies if other pollutants are included
Clean Air Transport Rule- CATR	Nitrogen oxide (NOx) Sulfur dioxide (SO2)	SCR for the NOx Scrubber for the SO2
Clean Water Act- 316 (b)	Reduce fish impingement at cooling water intakes	Replace cooling water intakes with cooling towers
Coal Combustion Residuals- CCR	Fly ash, bottom ash & scrubber and cooling tower by products	New waste ash handling Additions to existing landfills or new landfills altogether

# NERC 2010 Special Reliability Scenario Assessment

- **Analysis was performed assuming the following EPA potential standards were formulated into law**
- **Clean Water Act-Section 316 (b), Cooling Water Intake Structures**
  - Potential ERCOT impact: 5611 MW of generation capacity
- **Title I of the Clean Air Act-National Emission Standards for Hazardous Air Pollutants (NESHAP) for the electric power industry (referred to as MACT)**
  - Potential ERCOT impact: 73 MW
- **Clean Air Transport Rule (CATR)**
  - Potential ERCOT impact: 91 MW
- **Coal Combustion Residuals (CCR) Disposal Regulations**
  - Potential ERCOT impact: 0 MW
- **Combined EPA regulations**
  - Potential ERCOT impact: 5775 MW
    - Derated: 480
    - Retired: 5295

Source: NERC 2010 Special Reliability Scenario Assessment: Resource Adequacy Impacts of Potential U.S. Environmental Regulations

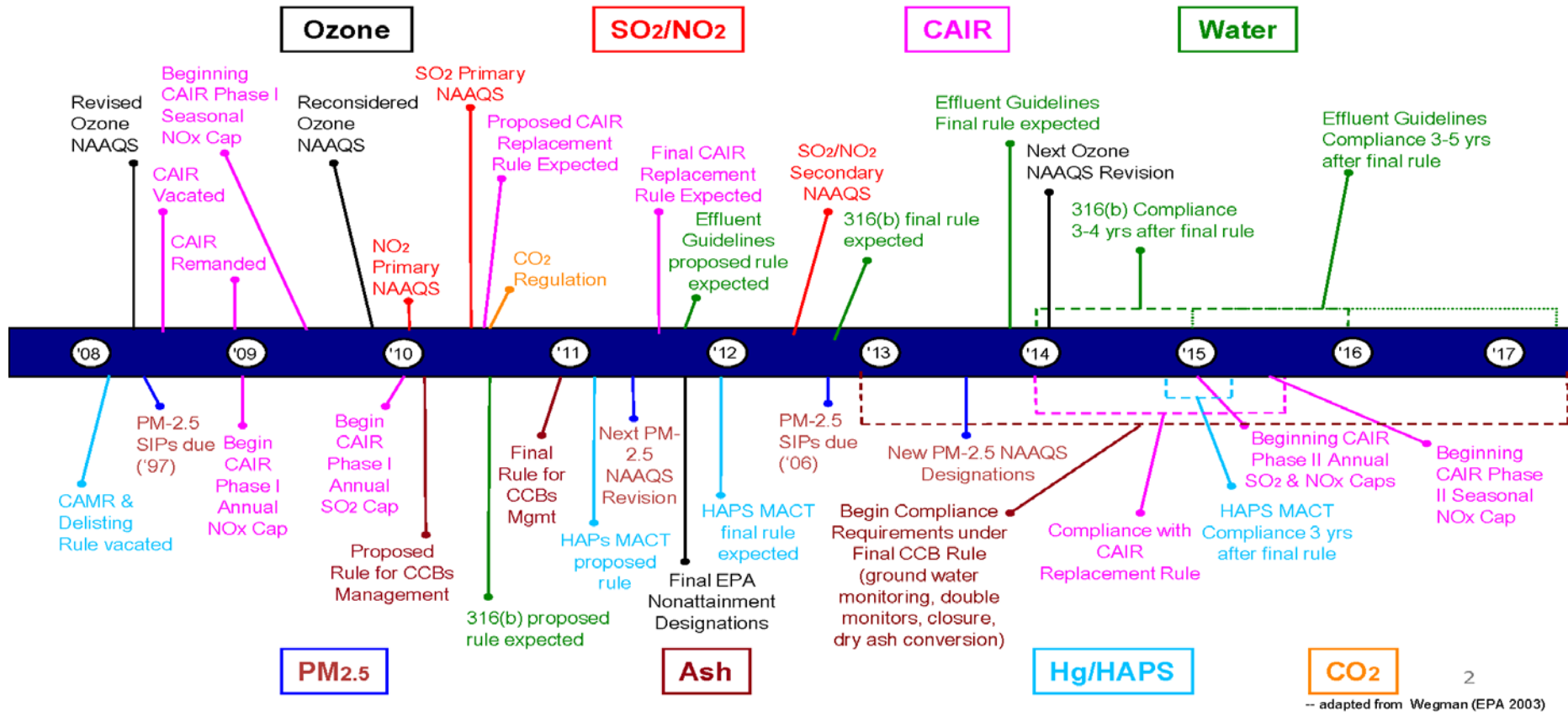


# How do the EPA regulations affect transmission?

- **New EPA regulations included in NERC analysis**
  - Additional capital investment for emission technology on existing generation
  - Increased capital investment to include emission technology for new generation
  - Deration/Retirement of existing units due to not meeting emission standards → increased need for generation
- **Transport Rule 2**
  - would require additional environmental controls not covered by CATR, regulating NOx in particular
- **Carbon Emission Reductions**
  - Cap and trade program
    - Increased production costs
  - Emission permits
    - Need for more environmentally conscious generation if not enough permits allocated to cover current emitting generation

# Example

## Environmental Regulatory Timeline for Coal Units



Source: <http://www.energyfutureholdings.com/pdf/2010EEIDeckFinal.pdf>