

Proposed Section 185 Fee Termination Determination (TD)

Background

Section 185 Information Meeting
Houston, Texas
April 28, 2010



Agenda

- Background
- Emissions Inventory Analysis
- Meteorological Analysis
- Economic Analysis
- Closing Remarks



Background

- Federal Clean Air Act Amendments (FCAAAA) Section 185 requires fees for all severe or extreme ozone nonattainment areas failing to meet the National Ambient Air Quality Standard (standard) by the applicable attainment date
- The Houston Galveston Brazoria (HGB) one-hour area was classified as severe for the one-hour ozone standard in 1990
 - Failed to demonstrate attainment by its attainment date, November 2007



Section 185 Fee Applicability

- A major source in a severe or extreme ozone nonattainment area is subject to this rule if the area fails to attain the national standard by the applicable attainment date
- Pollutants considered
 - Section 185 for volatile organic compounds (VOC)
 - Section 182(f) for nitrogen oxides (NO_x)
- Can be major for either or both VOC and NO_x



FCAA, Section 185 Fee

- Requires fee to be assessed on actual emissions starting the first year after the attainment year
- Applied to emissions exceeding 80 percent of the approved baseline amount
- Baseline amount is determined from allowed or actual emissions from attainment year
- For 1990, Section 185 fee rate is \$5,000/ton
- Adjusted by the consumer price index (CPI)
- Due annually



TCEQ Rulemaking

- Proposed rule December 4, 2009
- Implemented provisions of FCAAA Section 185
 - Fee-only program
- Proposed alternative equivalent options allowed under FCAAA, Section 172(e)
 - Aggregating baseline amounts or pollutants
 - Use of supplemental environmental projects to fulfill obligation
- Rule placed on hold after review of United States Environmental Protection Agency (EPA) guidance



EPA Section 185 Guidance

- EPA issued guidance on Jan 5, 2010
- EPA guidance states if area is attaining either the one-hour or the 1997 eight-hour ozone standard, the area would no longer be obligated to submit a fee program if attainment is
 - based on permanent and enforceable emissions reductions, and
 - not attributable to meteorological or economic conditions
- Existing State Implementation Plans (SIP) meet anti-backsliding requirement associated with transition from one to eight hour standard



Documentation Required

- Section 185 Termination Determination must have:
 - Quality assured data demonstrating attainment
 - Permanent and enforceable emissions reductions
 - Not due to meteorological conditions
 - Not due to economic conditions



Commission Plan

- Place Section 185 Fee rule on hold
- Develop proposed Section 185 termination determination
- Solicit comments
 - Written comments are due to TCEQ April 30, 2010
- Present proposed Section 185 termination determination at a Commissioner's Work Session (CWS), tentatively scheduled May 14, 2010
 - Oral comments at CWS welcome



Section 185 Termination Determination

- Executive Summary
- Appendix A: Data Demonstrating Attainment
 - Certification letter
- Appendix B: Economic Analysis
- Appendix C: Meteorological Analysis
- Appendix D: Emissions Inventory Analysis
- Appendix E: Control Measures
- Copy is available on SIP Section 185 Fees webpage at

www.tceq.state.tx.us/implementation/air/industei/psei/sipsection185.html

Proposed Section 185 Fee Termination Determination (TD)

Emissions Inventory Analysis

Section 185 Information Meeting

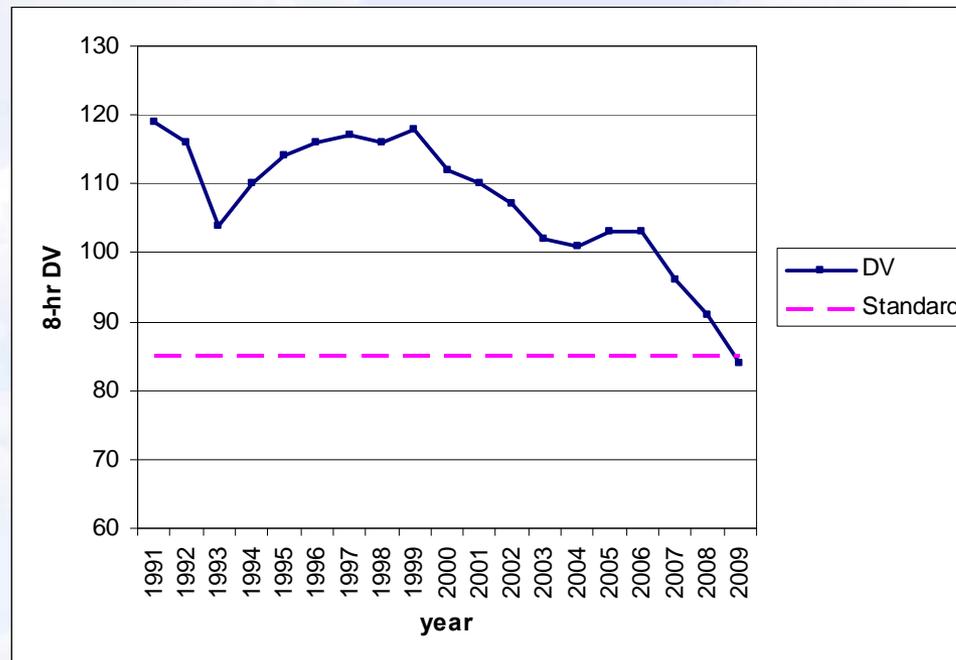
Houston, Texas

April 28, 2010



HGB Monitored Attainment

- HGB area's 2009 eight-hour ozone design value was 84 parts per billion (ppb)
- Long term decrease in ozone trend
- Letter certifying data sent to the EPA on March 22, 2010



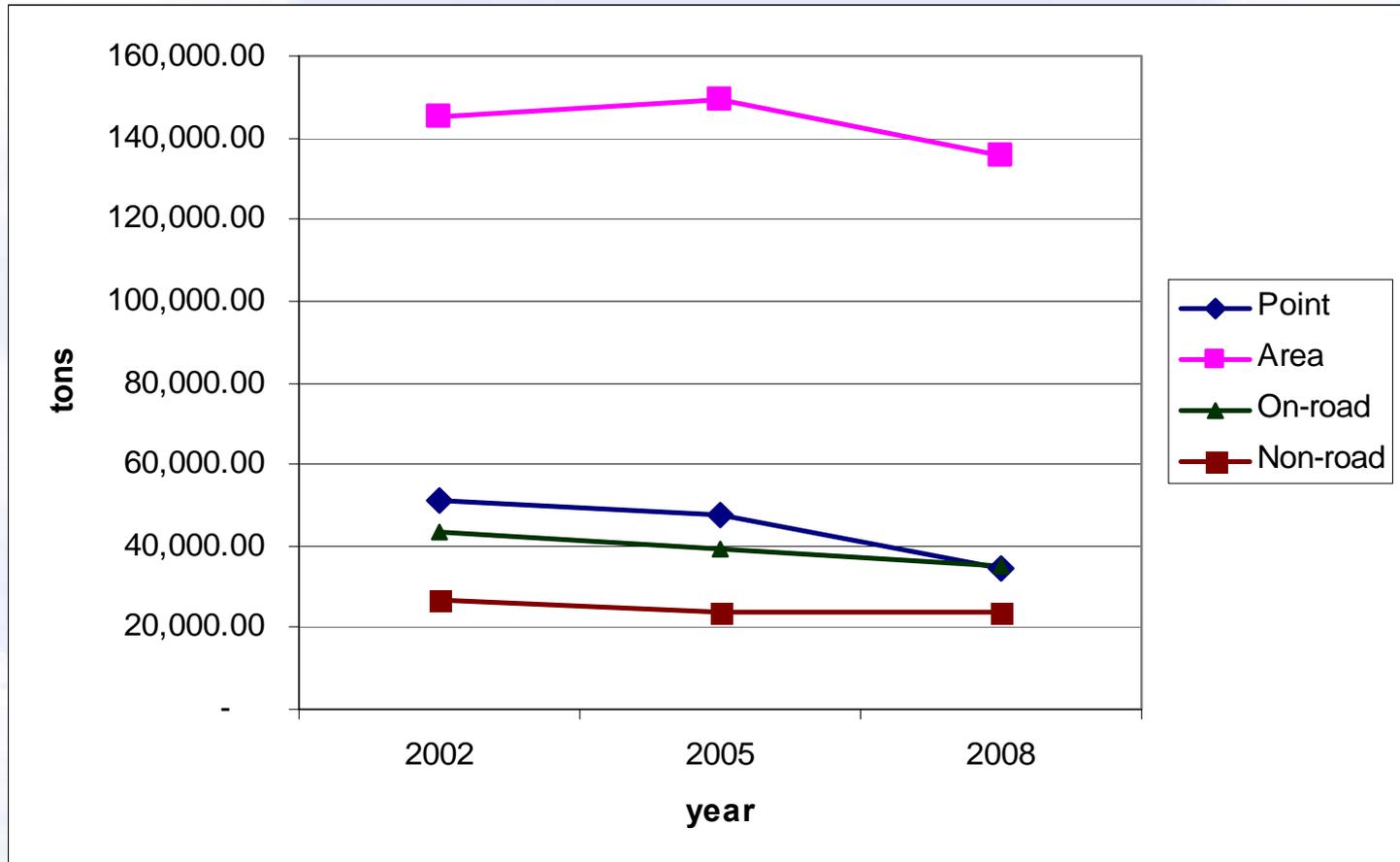


Emissions Have Decreased

- Total actual emissions from all categories in the HGB eight-count area reduced between 2002 and 2008
 - Industrial
 - Area
 - On-road
 - Non-road
- Overall volatile organic compounds (VOC) reduced 14 percent between 2002 and 2008
 - From 266,427 tons to 229,166 tons
- Overall nitrogen oxides (NO_x) reduced 43.9 percent between 2002 and 2008
 - From 298,184 tons to 167,137 tons

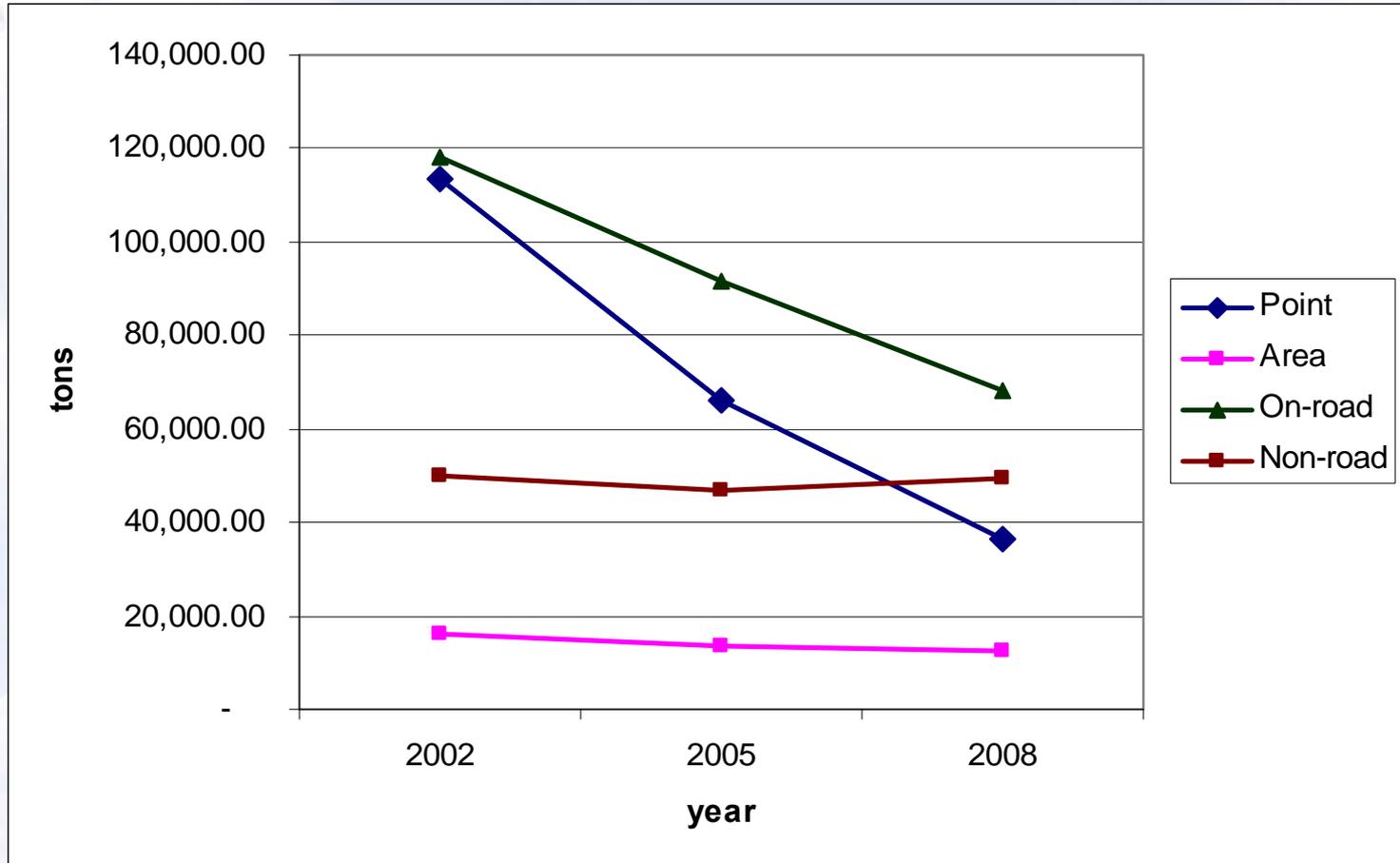


HGB Eight-County VOC Emissions





HGB Eight-County NO_x Emissions





Reductions Are Enforceable and Permanent

- Federal control measures include:
 - Tier 2 Emissions standards for vehicles and gasoline sulfur standards
 - Heavy duty diesel engine rule
- State point and area source controls have reduced VOC and NO_x emissions
- For rules adopted between 2002 and 2008
 - TCEQ rule citation
 - Federal Register for EPA approval
- For rules, 2009 and later
 - SIP enforceable mechanism



Some Texas Rule Control Measures for HGB

- NO_x Mass Emissions Cap and Trade (MECT) from existing point sources and power plants
- Highly-reactive VOC Rules and Mass Emissions Cap and Trade (HECT) program
- Emission limits on
 - Stationary diesel engines
 - Natural gas-fired small boilers and heaters
- Texas Low Emissions Diesel (TxLED) programs
- VOC rules
 - Fugitives
 - Batch processes



Conclusions

- Overall emissions inventory reductions occurred between 2002 and 2008
 - VOC reduced 14 percent, from 266,427 tons to 229,166 tons
 - NO_x reduced 43.9 percent between 2002 and 2008, from 298,184 tons to 167,137 tons
- Emissions reductions are enforceable and permanent
 - State controls
 - Federal controls

*Proposed Section 185 Fee
Termination Determination (TD)
Meteorological and Economic Analysis*

*Section 185 Information Meeting
Houston, Texas
April 28, 2010*



Summary

- **In 2009, Houston-Galveston-Brazoria (HGB) area attained the 1997 8-hour ozone NAAQS**

- **Role of meteorology was not decisive**

Meteorological factors do not appear to be the primary reason for decreasing ozone. Analyses show that ozone trends are still decreasing in the Houston-Galveston-Brazoria ozone nonattainment area (HGB area), even when accounting for the effects of meteorology.

- **The economic downturn in HGB occurred after 2008.**

Detailed analysis of economic data from Texas, the HGB area, and the refining industry along the Gulf Coast demonstrate that the economy was still growing robustly as late as 2008. The 2009 design value is constructed using data from 2007, 2008 and 2009.



Findings on Meteorological Impact

- **Detailed analyses indicate meteorological factors cannot explain recent decreases in ozone:**
 1. Meteorology-adjusted ozone trends (Univ. of Texas)
 2. Meteorology-adjusted ozone trends (EPA)
 3. Ozone conducive day analysis (URS)
 4. Comparison of forecasted high ozone days to actual high ozone days
 5. Wind speeds and directions on ozone exceedance days

- **These analyses demonstrate:**
 1. Ozone concentrations continue to decrease, even when adjusted for meteorology.
 2. In recent years, the number of ozone conducive days appears to be higher, while the number of actual ozone exceedances has decreased.
 3. The number of exceedance days in 2008 was lower than forecast.



Meteorologically-Adjusted Ozone Analysis from the University of Texas

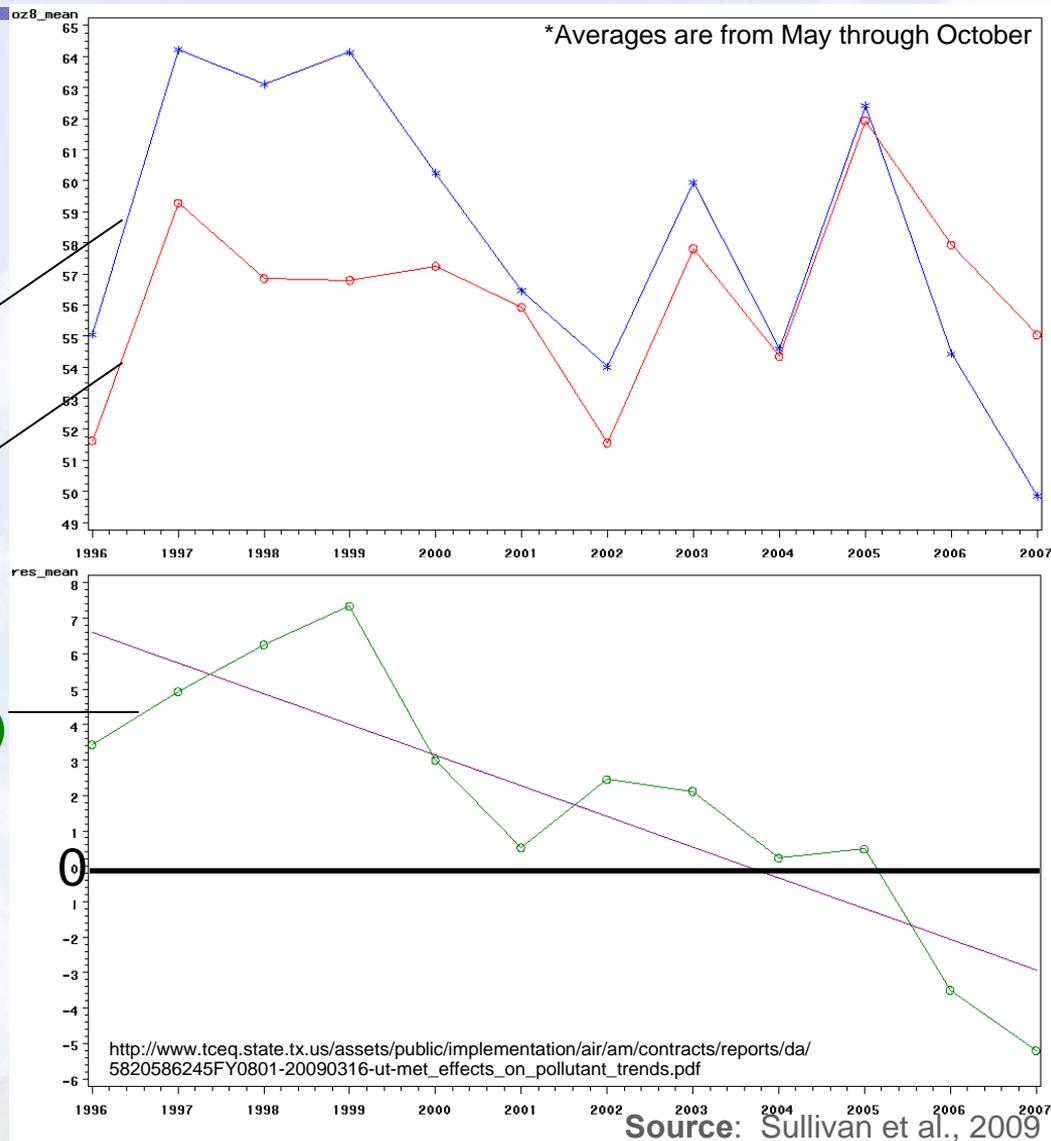
- Since 1999, met-adjusted ozone has dropped considerably.

Average peak daily ozone
(MEASURED)

Average peak daily ozone attributable to meteorology alone (PREDICTED)

Meteorology-corrected ozone trend (DIFFERENCE)

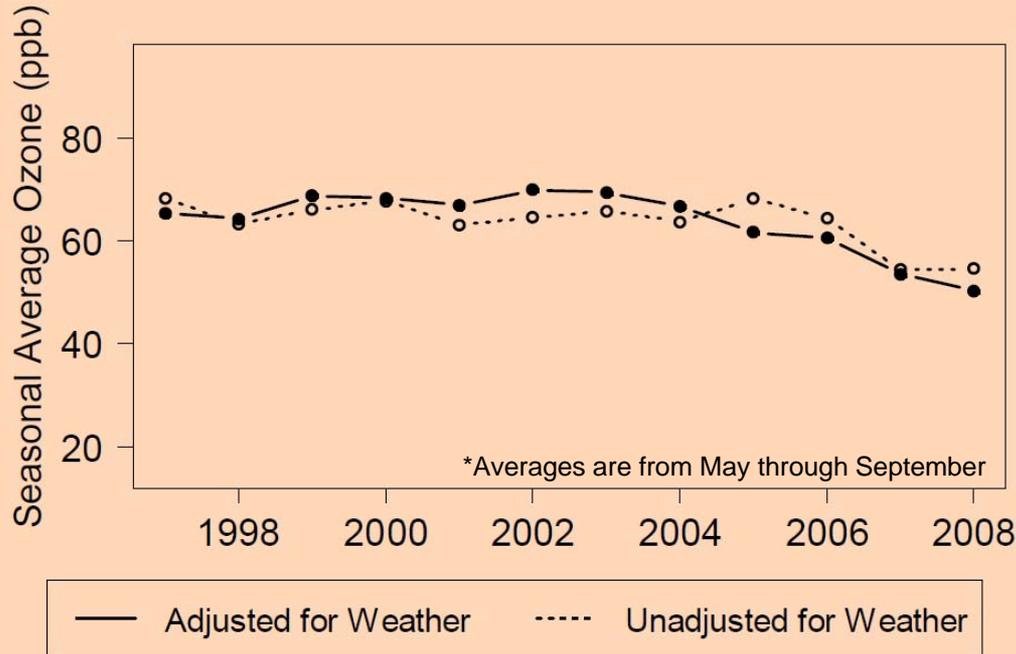
- A clear downward trend is observed in the residual (all non-meteorological factors).





Meteorologically Adjusted Ozone Analysis from EPA

Houston-Sugar Land-Baytown, TX



Comparison of actual average ozone to ozone adjusted for meteorology.

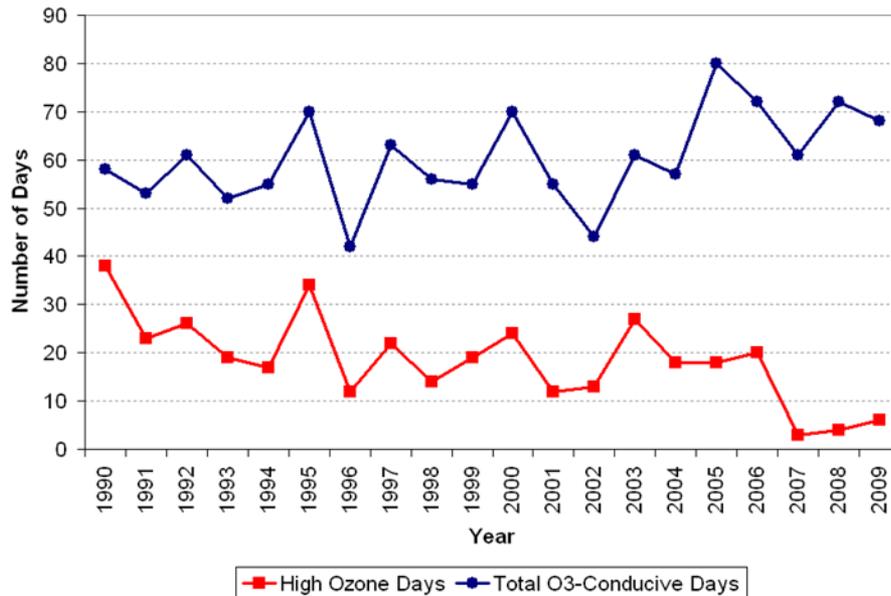
- The adjustment corrects for annual variability in meteorology to create a normal or 'typical' meteorology.
- Both series exhibit downward trends since 2002.
- Actual ozone in 2008 was higher than it would have been if the weather had been typical.

Source: EPA, www.epa.gov/airtrends/weather/region06.pdf



Ozone Conducive Day Analysis from URS

Annual Number of O₃-Conducive Days (OCDs) and the Number of OCDs with Max O₃ > 84 ppb



Source: URS Corporation

http://www.tceq.state.tx.us/assets/public/implementation/air/am/committees/pmt_set/20071212/20071212-setpmtc-hgb_ozone_trend.pdf

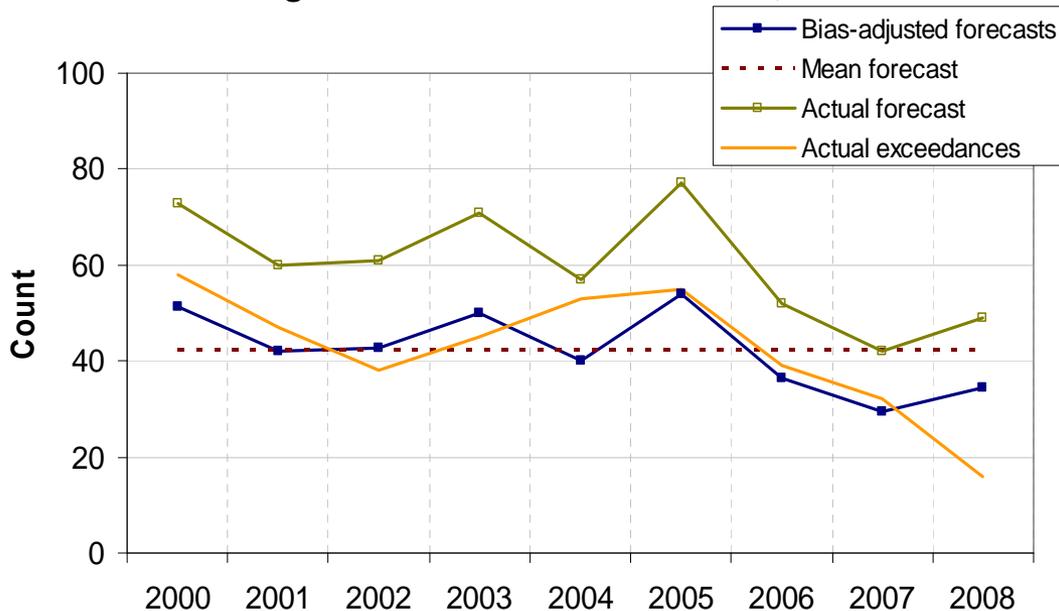
A Classification and Regression Tree (CART) compares ozone conducive days to the number of ozone exceedance days.

- Past three ozone seasons (2007, 2008, 2009) appear at least as conducive to high ozone formation as previous years.
- Since 2005: more ozone-conducive days, but fewer eight-hour ozone exceedance days.
- 2005: largest number of ozone-conducive days since 1990, but fewer exceedance days than previous years that had fewer ozone-conducive days.



Forecasted Ozone Exceedance Days

Forecasting 8-hour ozone exceedances, Houston



Source: TCEQ.

*Ozone Action Day forecasts are purposely biased upward to ensure all potential high ozone days, even ones that do not eventually exceed the standard, are announced. A false negative is a day when an ozone exceedance is observed but was not forecast. A false positive is when an exceedance is forecast but not observed.

Comparison of TCEQ forecasts of high ozone days (“Ozone Action Days”) to observed exceedances.

- Forecast bias* is corrected by adding false negatives and subtracting false positives.
- The 2008 bias-adjusted forecast of ozone exceedance days was much higher than the actual number of eight-hour ozone exceedance days, suggesting decreases are due to factors other than meteorology.
- The number of forecasted ozone days in 2008 approximated the number in 2006, but there were about **half** as many actual exceedance days in 2008 as 2006.



Wind Speed and Direction

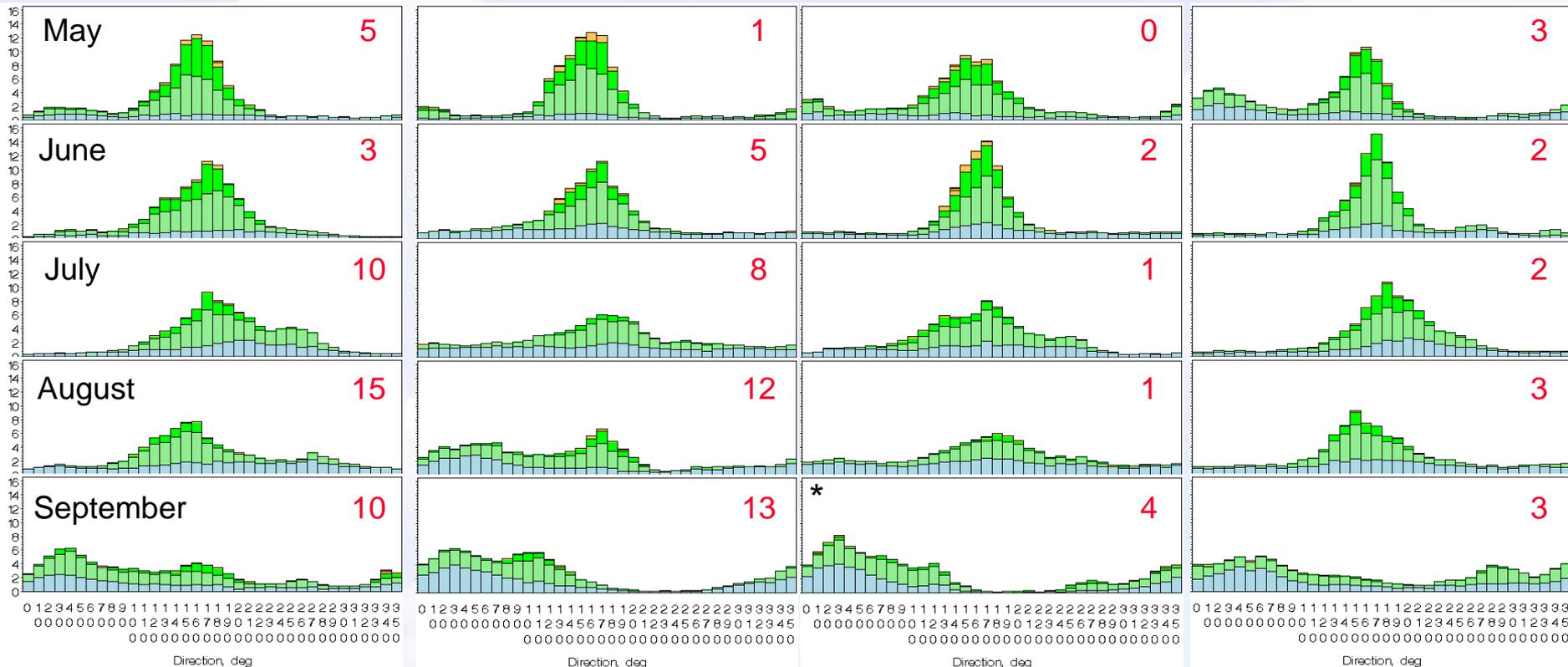
Eight-Hour Ozone Exceedance Days (≥ 85 ppb) in Red

2000

2004

2008

2009



Winds are from 05:00 to 19:00 LST



*September winds incomplete due to the passage of hurricane Ike.



Wind Speed and Direction

Results

- **May:** 2000 and 2004 were less conducive to ozone formation but had more exceedances than 2008 and 2009. 2009 was more conducive based on wind direction yet had fewer exceedances than 2000 or 2004.
- **June:** In all years, June is dominated by southerly winds, which are not conducive to ozone formation (see: low number of exceedances). The slightly greater frequency of high winds in 2008 was unlikely to affect the number of exceedances.
- **July:** Winds were very similar in 2000 and 2009, but there were only two exceedance days in 2009 compared to 10 in 2000.
- **August:** 2008 was more conducive to high ozone than 2000, based on wind speeds, but had far fewer exceedances.
- **September:** 2009 was more conducive to high ozone, but had far fewer exceedances than 2000 or 2004.



Findings on Economic Impacts

TCEQ investigation found no evidence of an economic downturn in Texas, the HGB area, or the petrochemical industry specifically, prior to late 2008.

- GDP in HGB was still increasing in 2007 and 2008. The 2009 design value, which uses 2007-2008 data, includes only one year of decline and even that year is the 2nd highest HGB GDP on record.
- Petrochemical output is highly variable week to week. A long-term decline is detectible but it is mild and began long before before 2007, suggesting other factors are impacting refining in the HGB area.
- While the impacts of these phenomena on air quality in the HGB area are unclear, there is no evidence that ozone and precursor emissions could have been impacted by economic factors as early as 2007 or 2008.



Gross Domestic Product of Texas

\$ billions
\$1,400

\$1,200

\$1,000

\$800

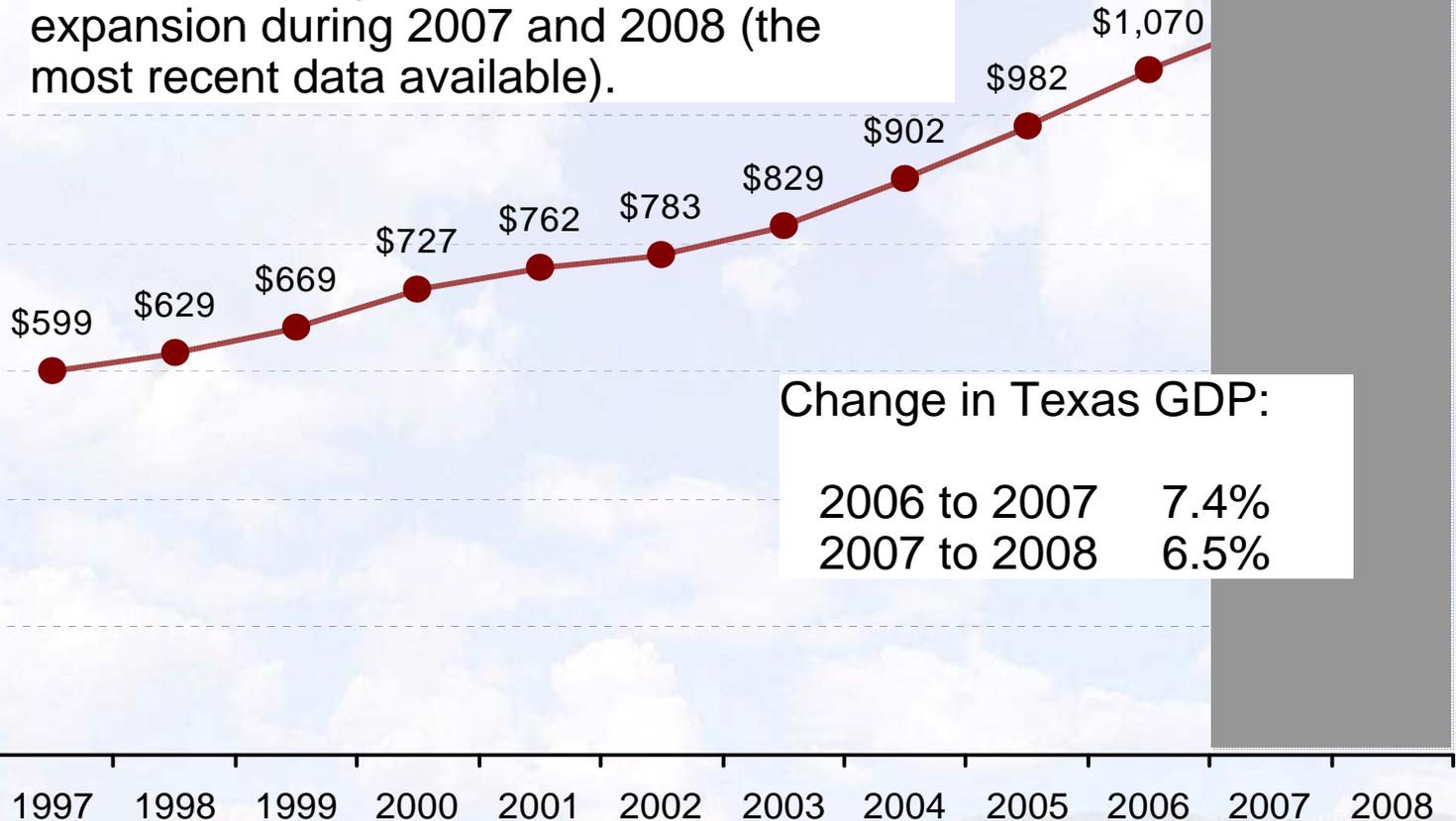
\$600

\$400

\$200

\$-

Though the national economy entered a recession beginning in the fourth quarter of 2007, both Texas and the HGB area continued to experience robust economic expansion during 2007 and 2008 (the most recent data available).



Change in Texas GDP:

2006 to 2007	7.4%
2007 to 2008	6.5%

Source: Bureau of Economic Analysis, U.S. Department of Commerce <http://www.bea.gov/regional/gsp/>



Gross Domestic Product of Houston-Sugarland-Baytown*

\$ billions

\$450

\$400

\$350

\$300

\$250

\$200

\$150

\$100

\$50

\$-

The economy of the **Houston-Sugarland-Baytown*** MSA grew even faster than Texas as a whole.

\$230

\$234

\$253

\$281

\$312

\$346

Change in H-S-B GDP:

2006 to 2007 8.4%

2007 to 2008 7.5%

Only in early 2009 did either Texas or the HGB area begin to exhibit flat or slightly reduced economic activity.

2001

2002

2003

2004

2005

2006

2007

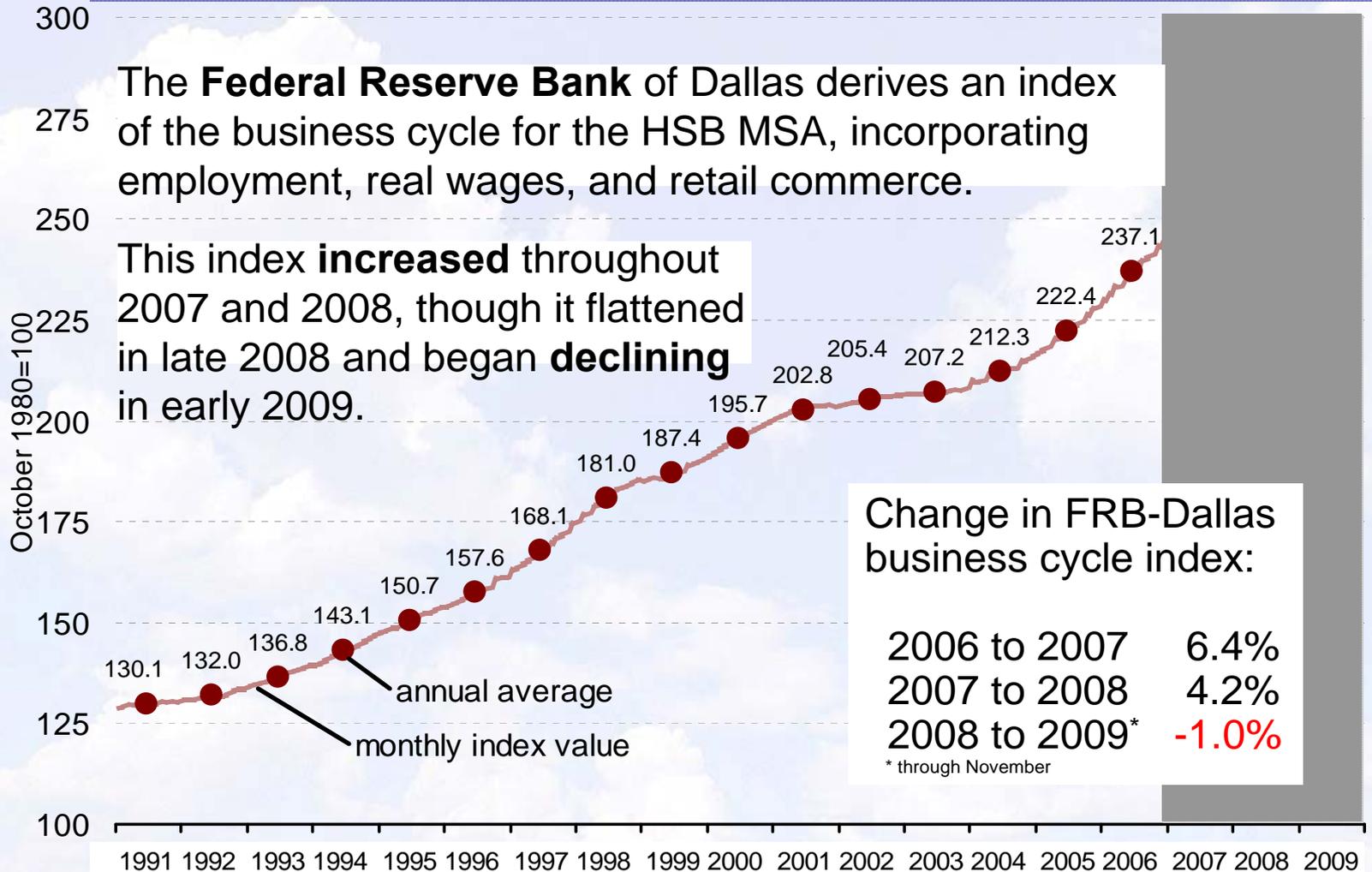
2008

Source: Bureau of Economic Analysis, U.S. Department of Commerce <http://www.bea.gov/regional/gsp/>

*Houston-Sugarland-Baytown Metropolitan Statistical Area (MSA) is the definition of the HGB area used by the U.S. Dept. of Commerce.



Metro Area Business Cycle Index, Houston-Sugarland-Baytown*

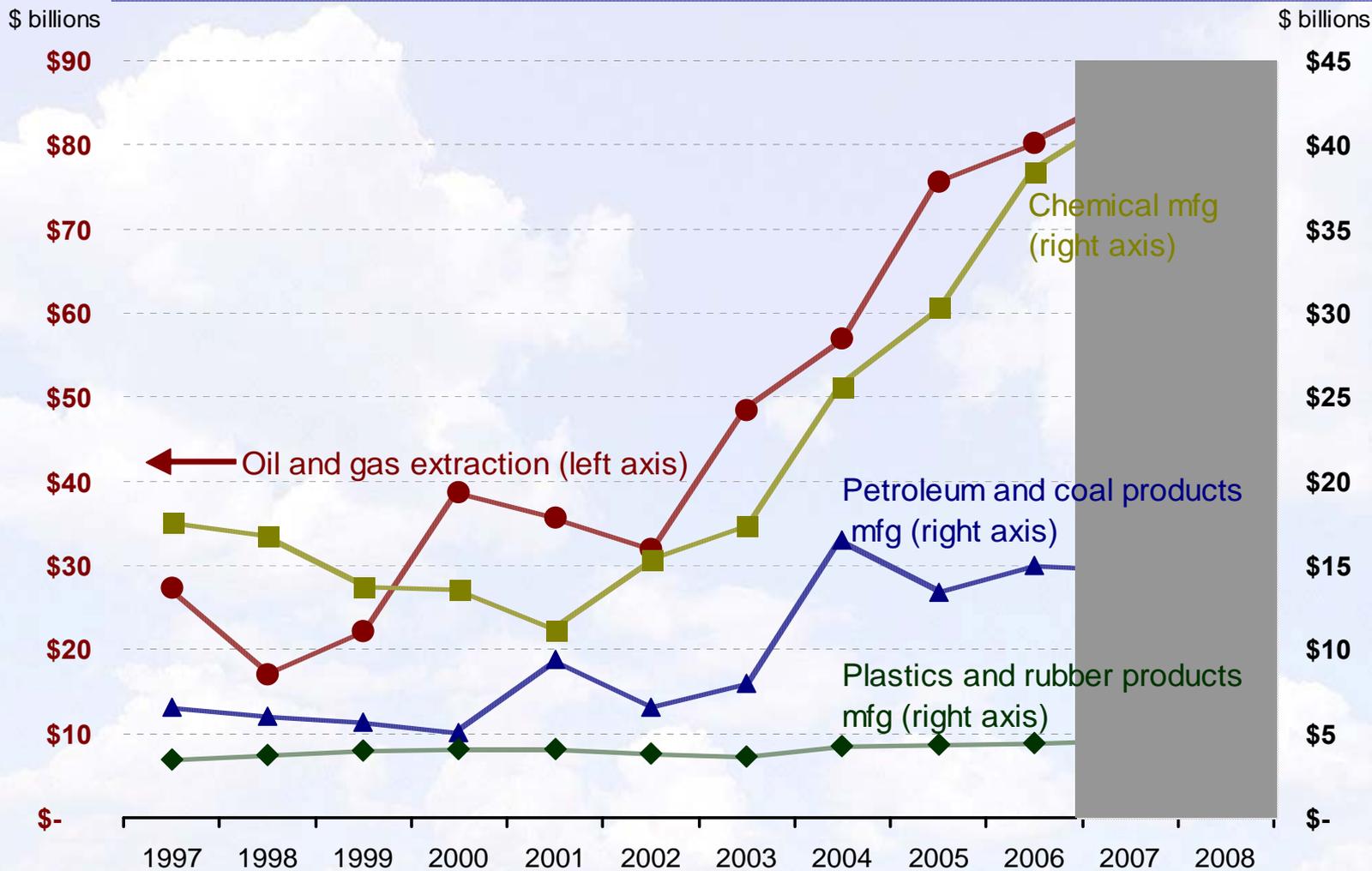


Source: Federal Reserve Bank of Dallas, <http://dallasfed.org/data/data/metro9.tab.htm>

*Houston-Sugarland-Baytown Metropolitan Statistical Area (MSA) is the definition of the HGB area used by the U.S. Dept. of Commerce.



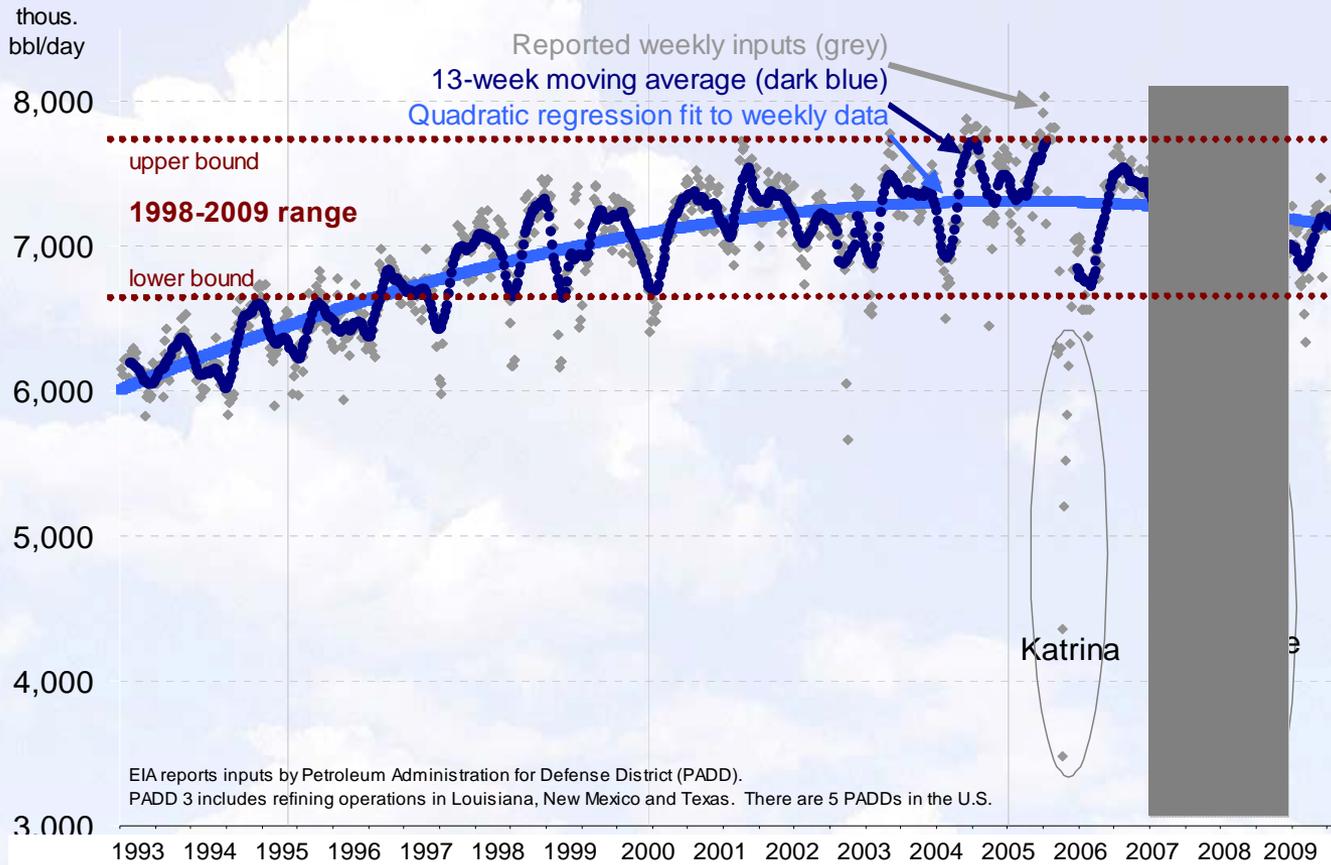
Gross Domestic Product of Key Petroleum Related Industries



Source: Bureau of Economic Analysis, U.S. Department of Commerce <http://www.bea.gov/regional/gsp/>



Weekly Gulf Coast Crude Oil Inputs to Refineries (PADD 3)



Source: U.S. Dept. of Energy, Energy Information Admin., <http://tonto.eia.doe.gov/dnav/pet/hist/w/criip32w.htm>

The moving average reveals seasonal cycles as refineries ramp up production for periods of high product demand.

Although inputs to refineries appear to be on a slight downward trend since 2007, they have actually been increasing since early 2009, though this is likely a cyclical phenomenon.

In fact, neither high nor low values of the quarterly average since 2007 have strayed beyond the highest or lowest values observed over the previous decade suggesting the industry as a whole has neither grown nor shrunk markedly.



Conclusions

- **In 2009, Houston-Galveston-Brazoria (HGB) area attained the 1997 8-hour ozone NAAQS**

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Closing Remarks

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Closing Comments

- Proposed Section 185 Termination Determination demonstrates reductions in ozone in the HGB
 - Are a result in emissions reductions
 - Permanent and enforceable
 - Not result of meteorological conditions
 - Not a result of economic conditions



Section 185 TD Schedule

- Public meeting 4/28/2010
- Written comments due 4/30/2010
- Work Session tentatively scheduled 5/14/2010
 - Accept oral comments



Comments

Written comments are due: April 30, 2010

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Questions?

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Additional information and proposed Section 185
Termination Determination available at:

[www.tceq.state.tx.us/implementation/air/industeipsei/
sipsection185.htm](http://www.tceq.state.tx.us/implementation/air/industeipsei/sipsection185.htm)