Kentucky's Improving Environment: Trends in Air Quality

October 2012

Department for Environmental Protection
Energy and Environment Cabinet

To Protect and Enhance Kentucky's Environment

Kentucky
UNBRIDLED SPIRIT™

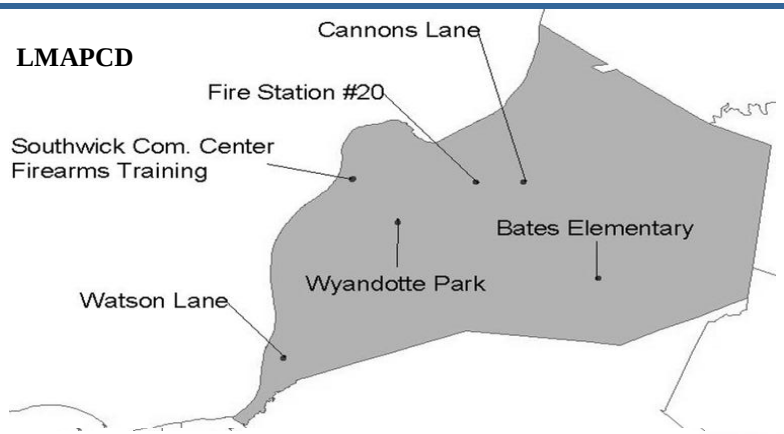
Clean Air Act

- Enacted by Congress in 1970 & revised in 1990
- Identifies six major “criteria” pollutants:
  - Particulate matter
  - Sulfur dioxide
  - Nitrogen oxides
  - Carbon monoxide
  - Ozone
  - Lead
- Establishes National Ambient Air Quality Standards (NAAQS) for each criteria pollutant
- States must monitor and permit for these pollutants, establish plans for attaining the NAAQS

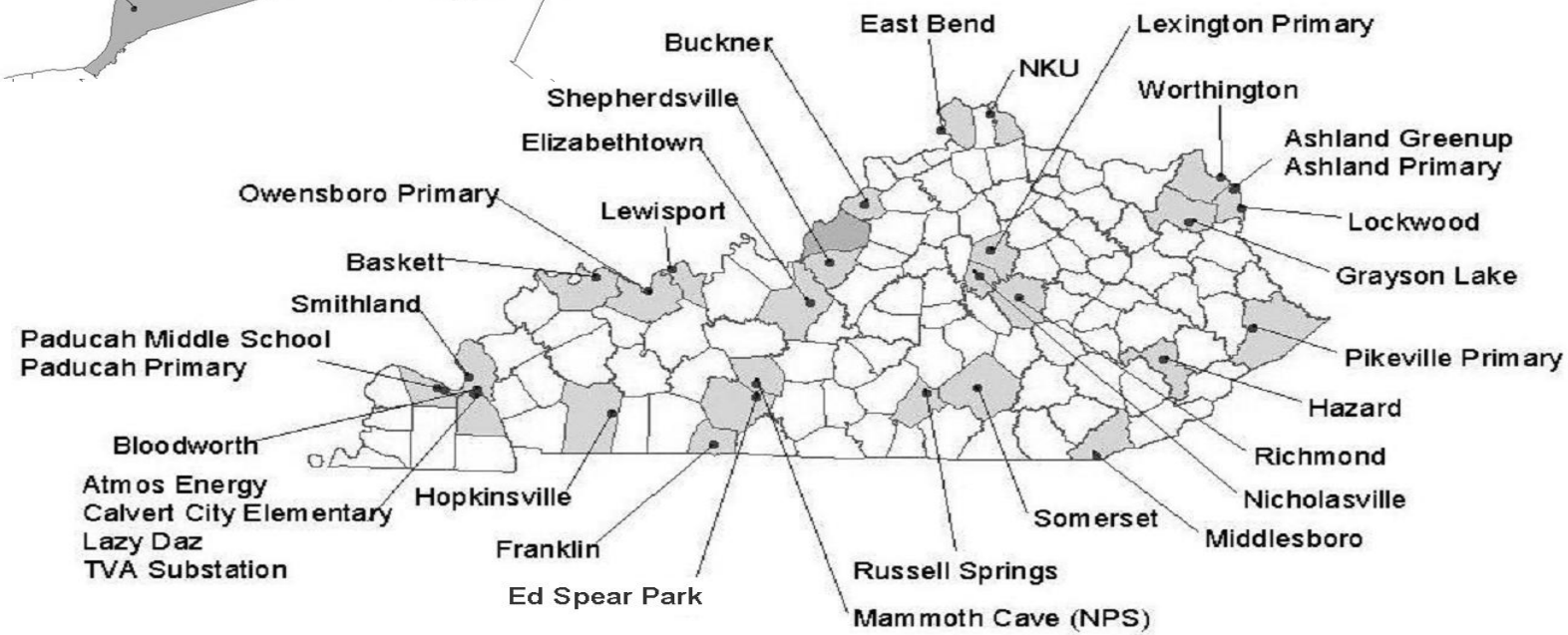
NAAQS Revisions

Pollutant	Original Standard	Year Implemented	Current Standard	Year Revised
Ozone	.080 ppm (8-hour)	1997	.075 ppm (8-hour)	2008
Fine Particles ($PM_{2.5}$)	15 µg/m^3 (annual) 35 µg/m3 (24-hour)	1997 annual 2006 24-hour	12-13 µg/m^3 (*proposed annual*) 35 µg/m3 (24-hour)	2012 (*proposed*)
NO_2	53 ppb (annual)	1971	100 ppb (1-hour) 53 ppb (annual)	2010
SO_2	0.03 ppm (annual) 0.14 ppm (24-hour)	1971	75 ppb (1-hour)	2010

Kentucky's Air Monitoring Network

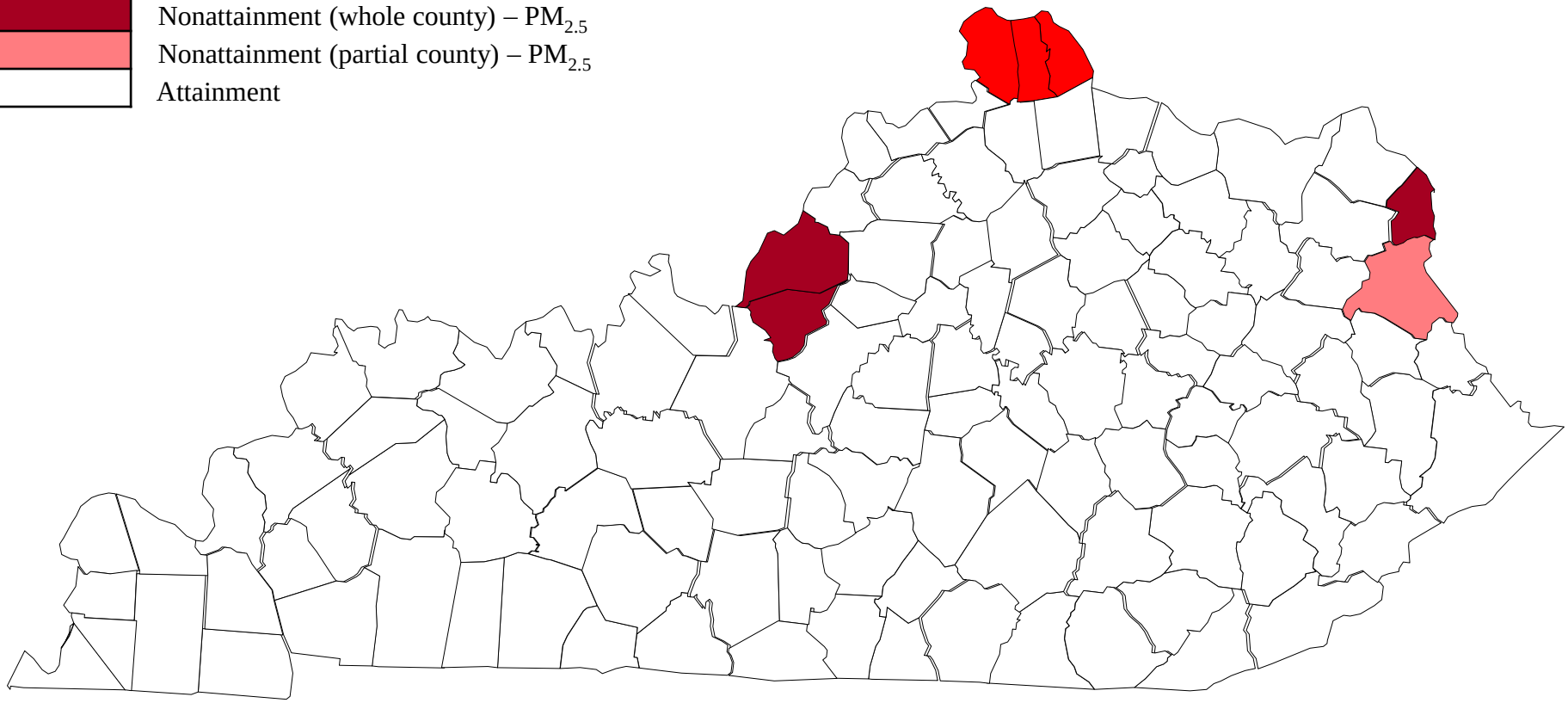


KYDAQ
Ambient Air Monitoring
Network

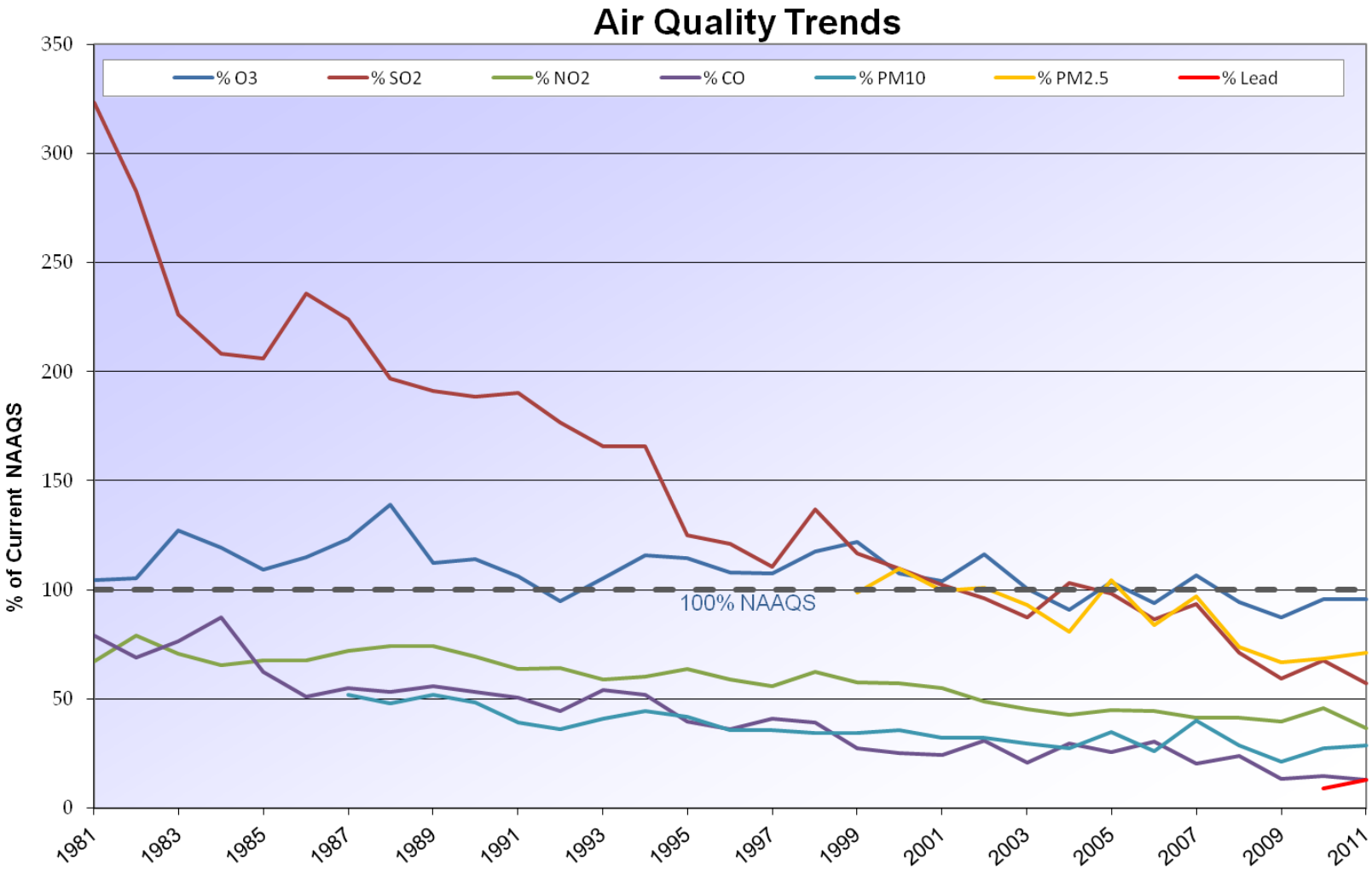


Attainment Status

Nonattainment (partial county) – 8-hour ozone
Nonattainment (whole county) – $PM_{2.5}$
Nonattainment (partial county) – $PM_{2.5}$
Attainment



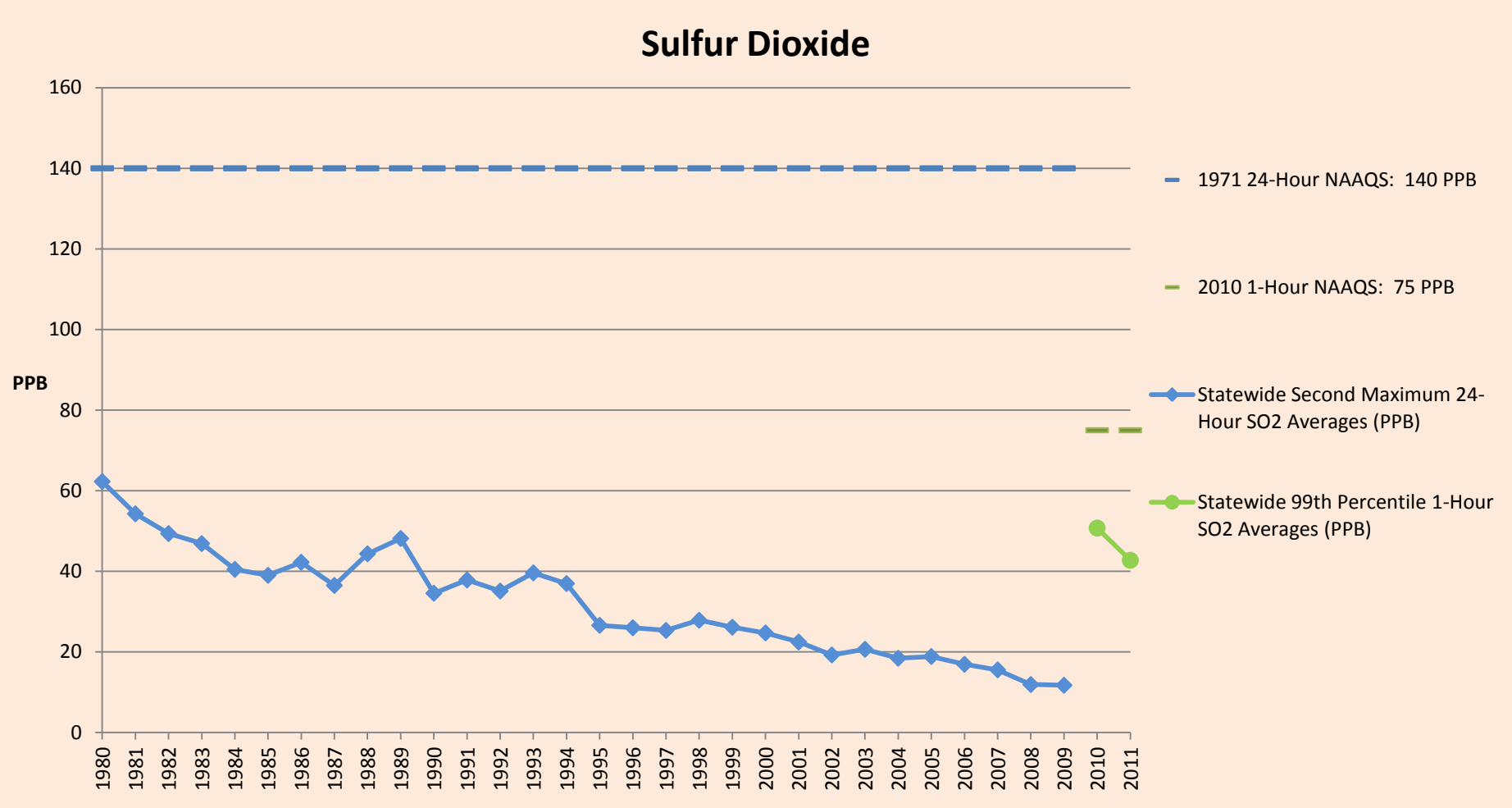
Air Quality Trends



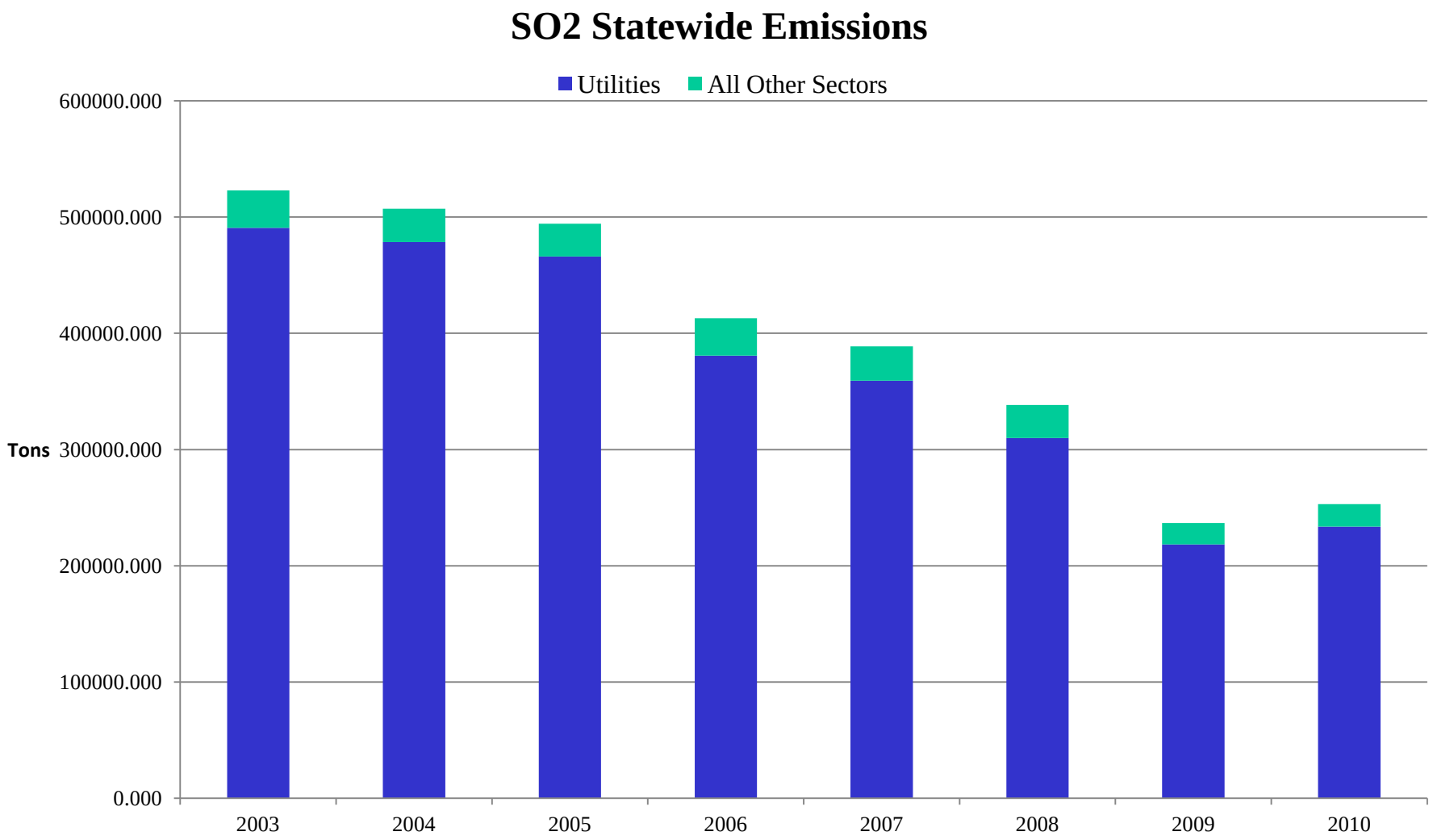
Air Quality Programs

Program	Federal Register Final Rule Date	Compliance Dates
Acid Rain	January 11, 1993	All existing and new facilities in compliance by **January 1, 1995**
NOx SIP Call	October 27, 1998	Trading Program began in 2004 ozone season (**May 2004**)
CAIR	May 12, 2005	Phase 1 implementation of NOx reductions required by **January 1, 2009**; Phase 1 implementation of SO2 reductions required by **January 1, 2010**; Phase 2 implementation of reductions for both pollutants by **January 1, 2015**
CSAPR	*Rule vacated by the U.S. Court of Appeals on August 21, 2012*	Phase 1 sources must demonstrate compliance by **March 1, 2013** for SO2 and annual NOx reductions, and **December 1, 2012** for ozone season NOx reductions; Phase 2 sources must demonstrate compliance by **March 1, 2015** for SO2 and annual NOx reductions, and **December 1, 2014** for ozone season NOx reductions

SO_2 – Historic Ambient Data



SO_2 - Emissions by Sector



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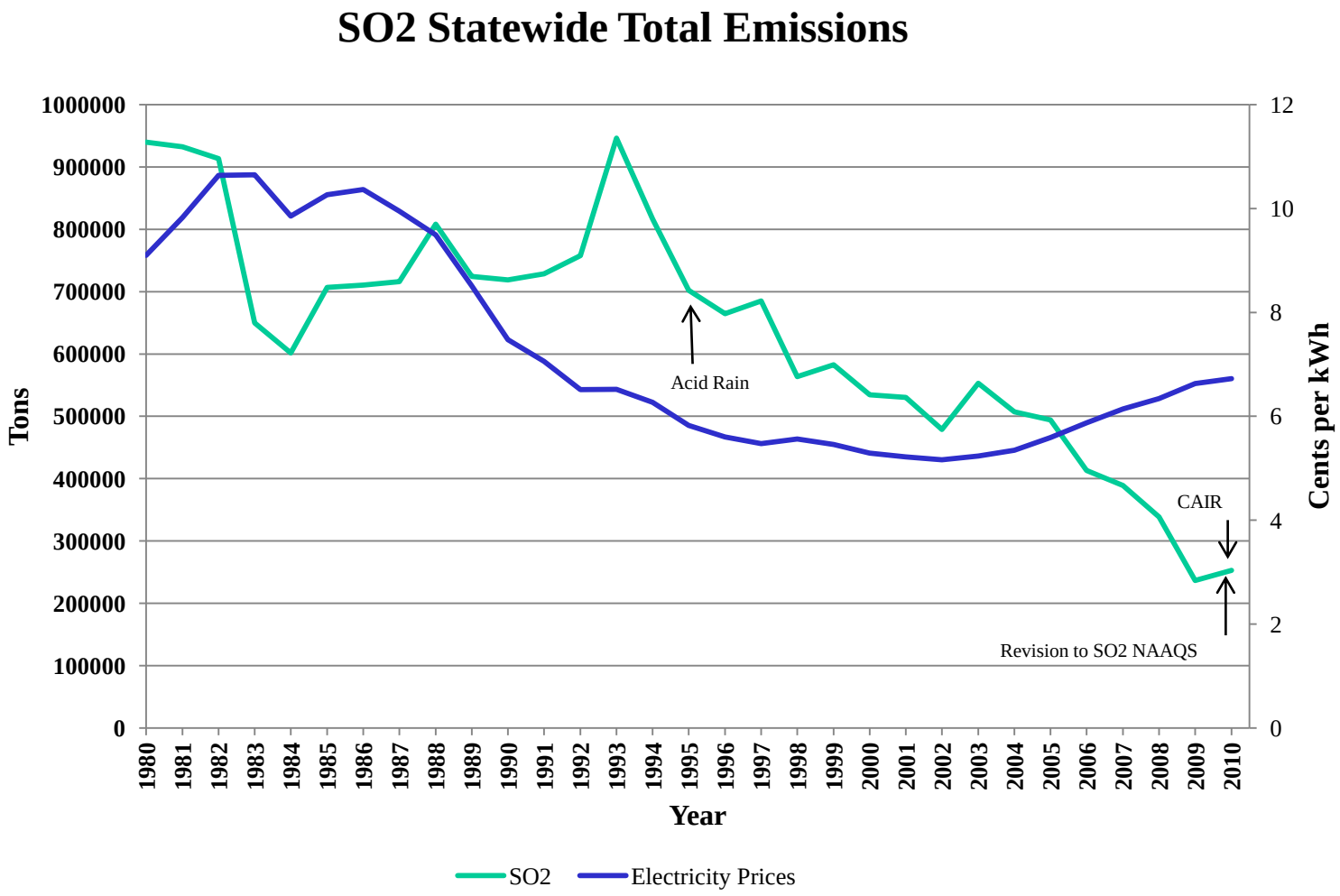
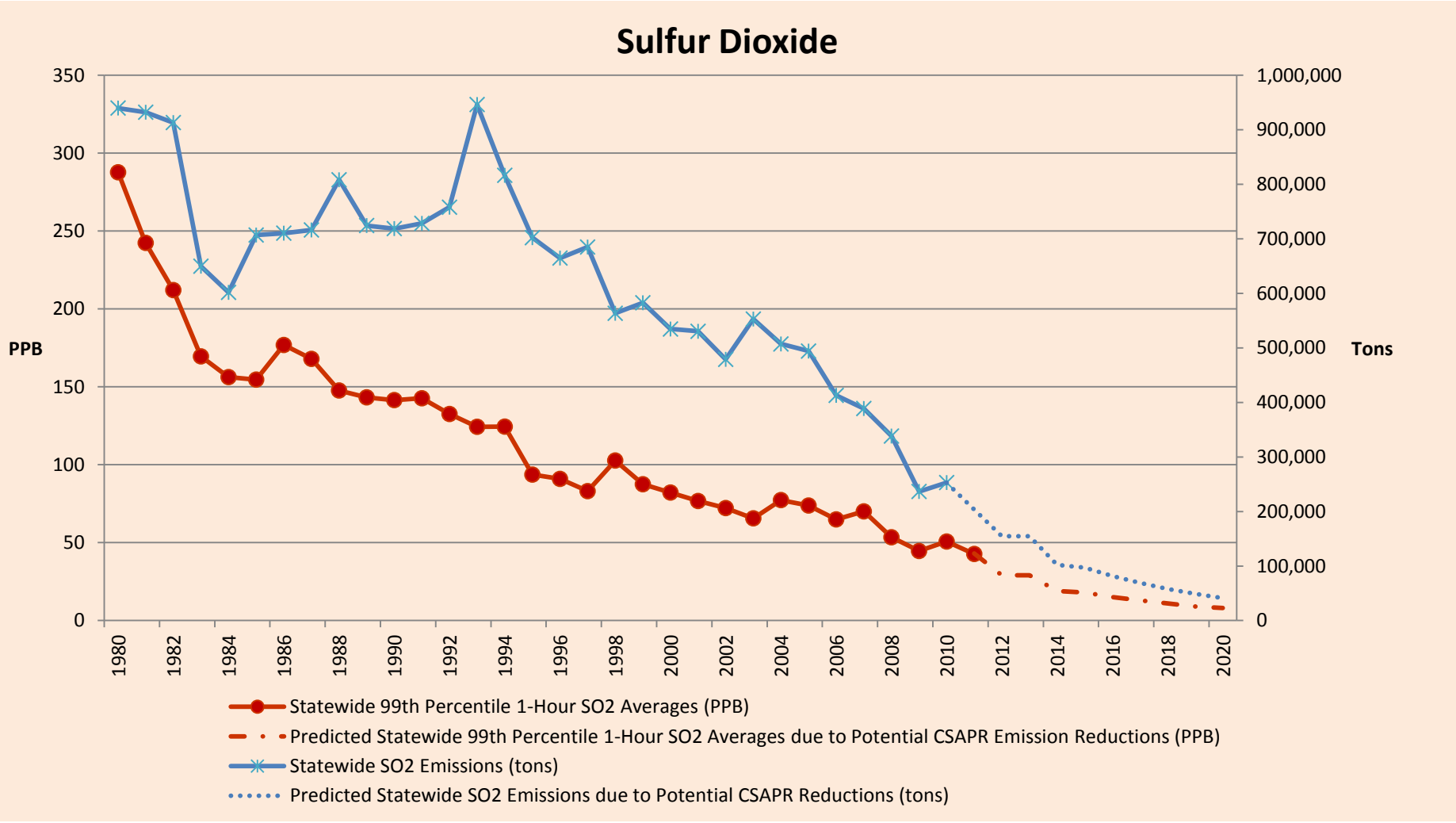
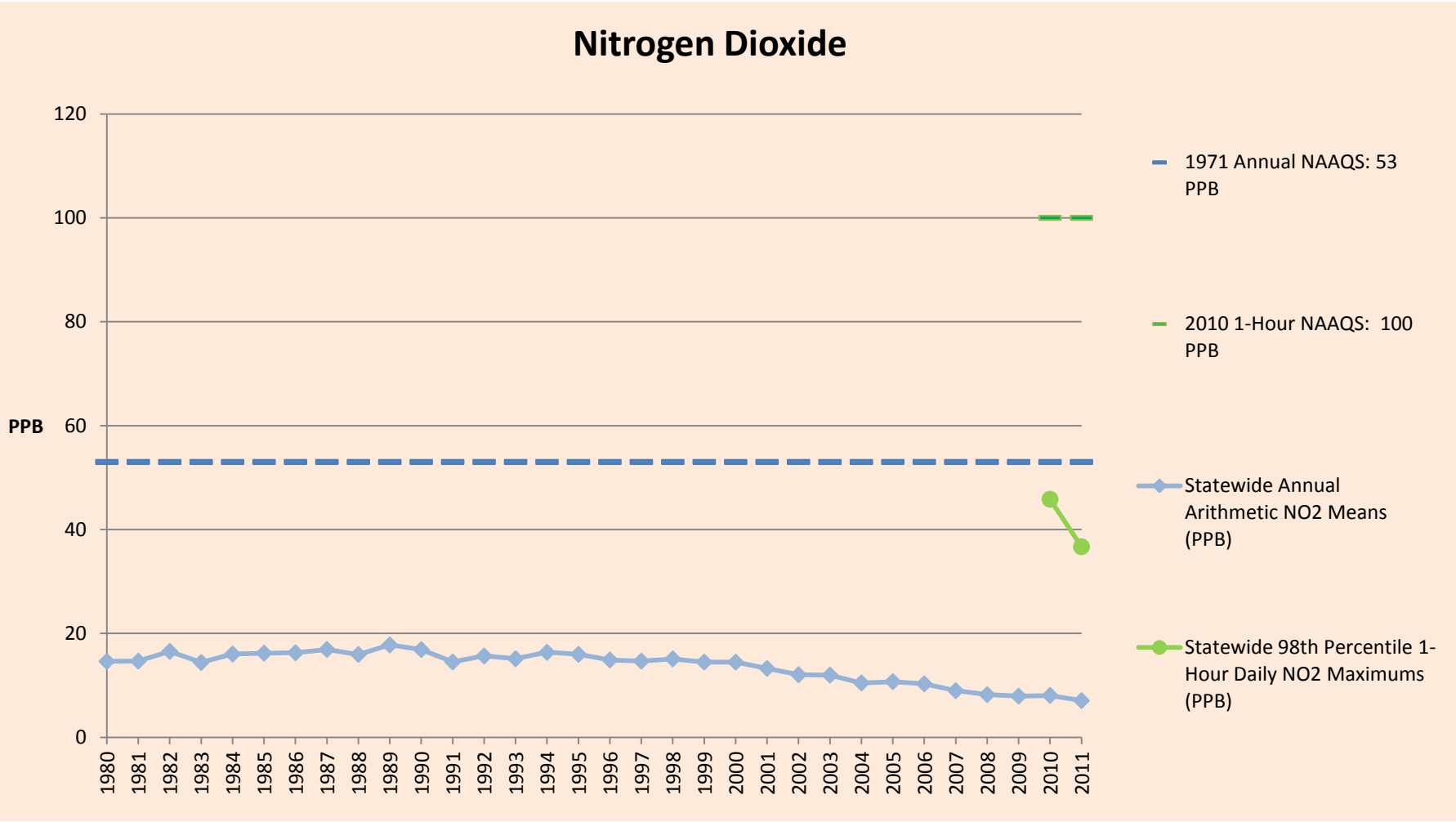


SO_2 - Future Projections



No_2 – Historic Ambient Data



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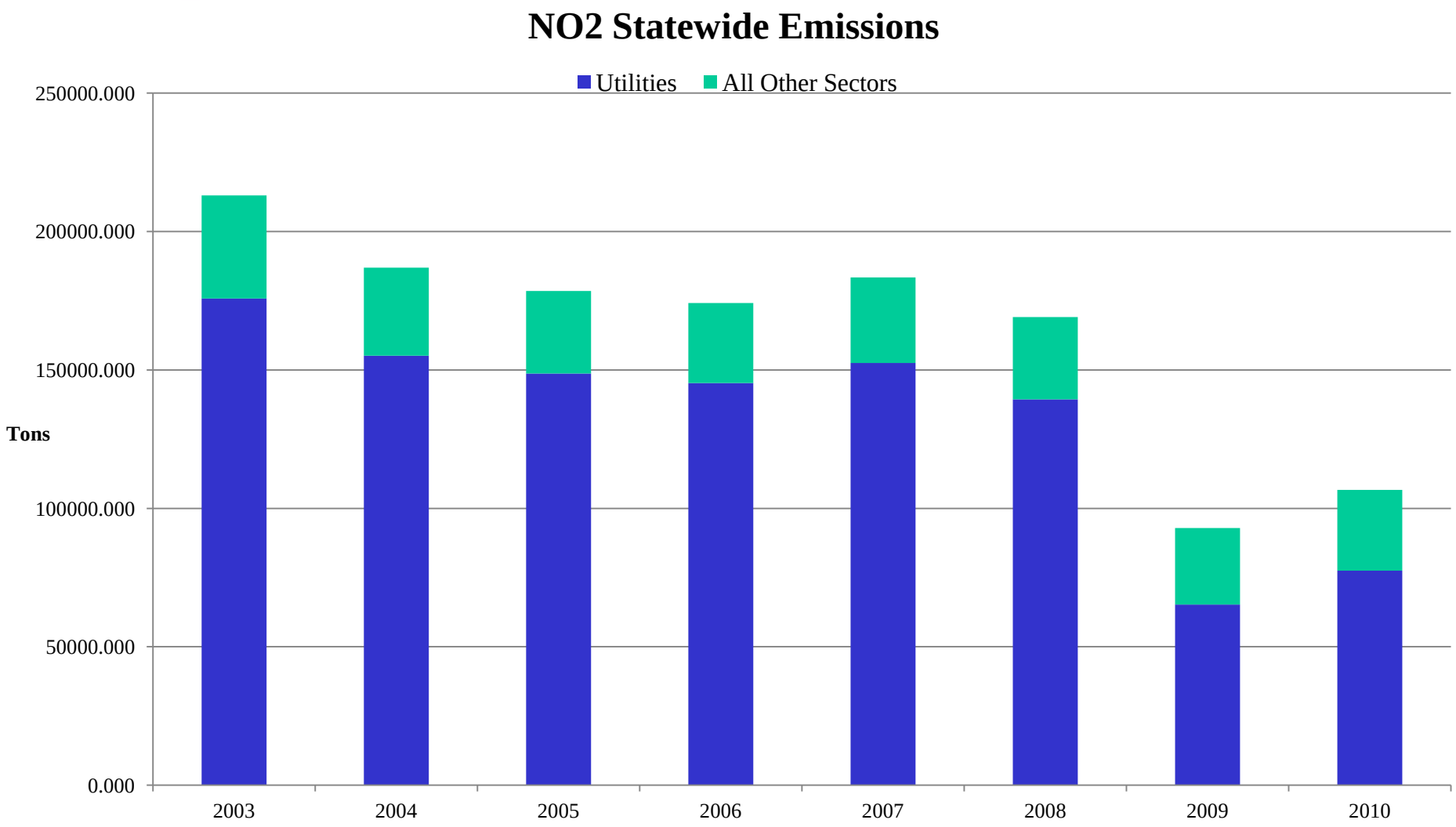

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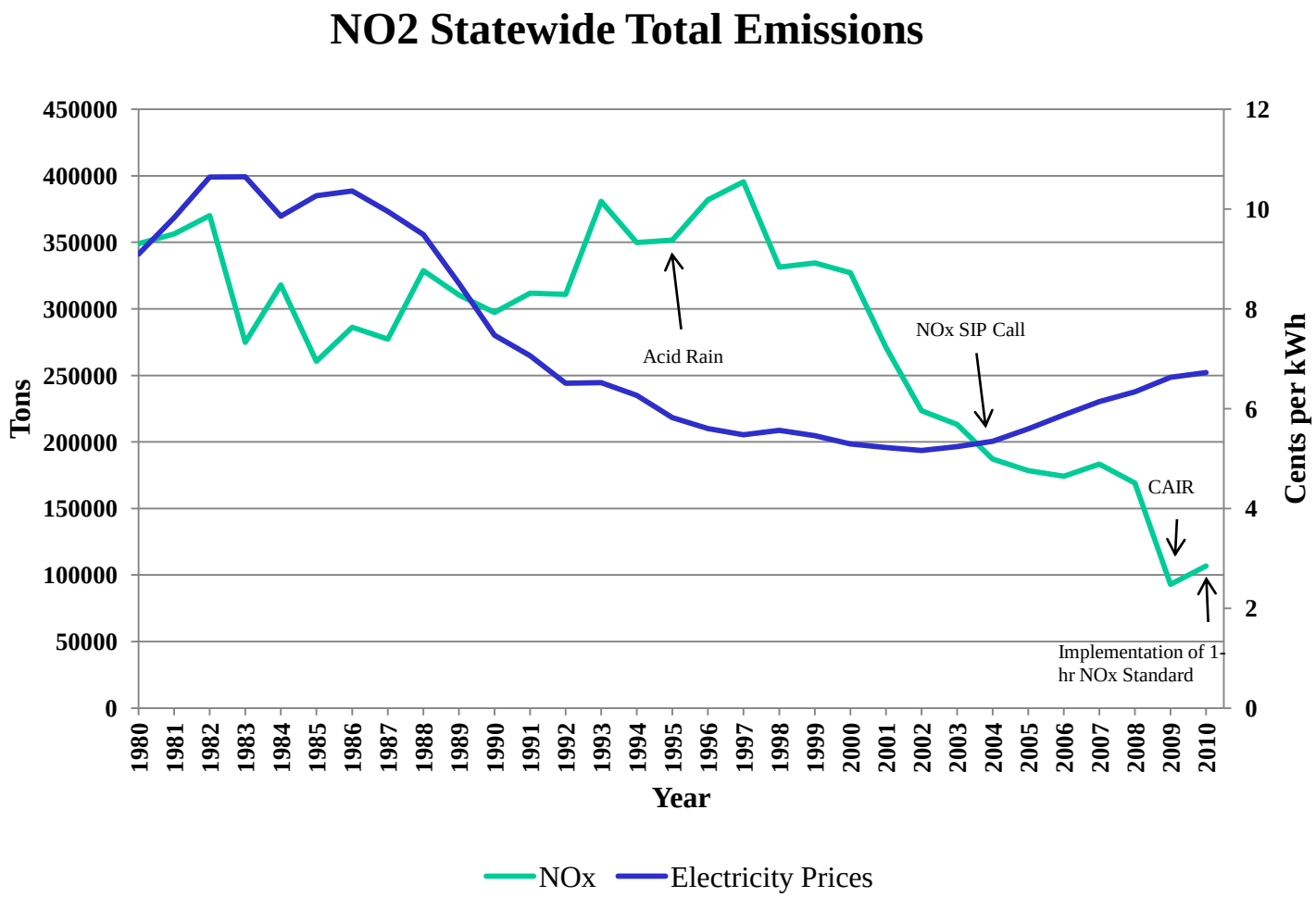

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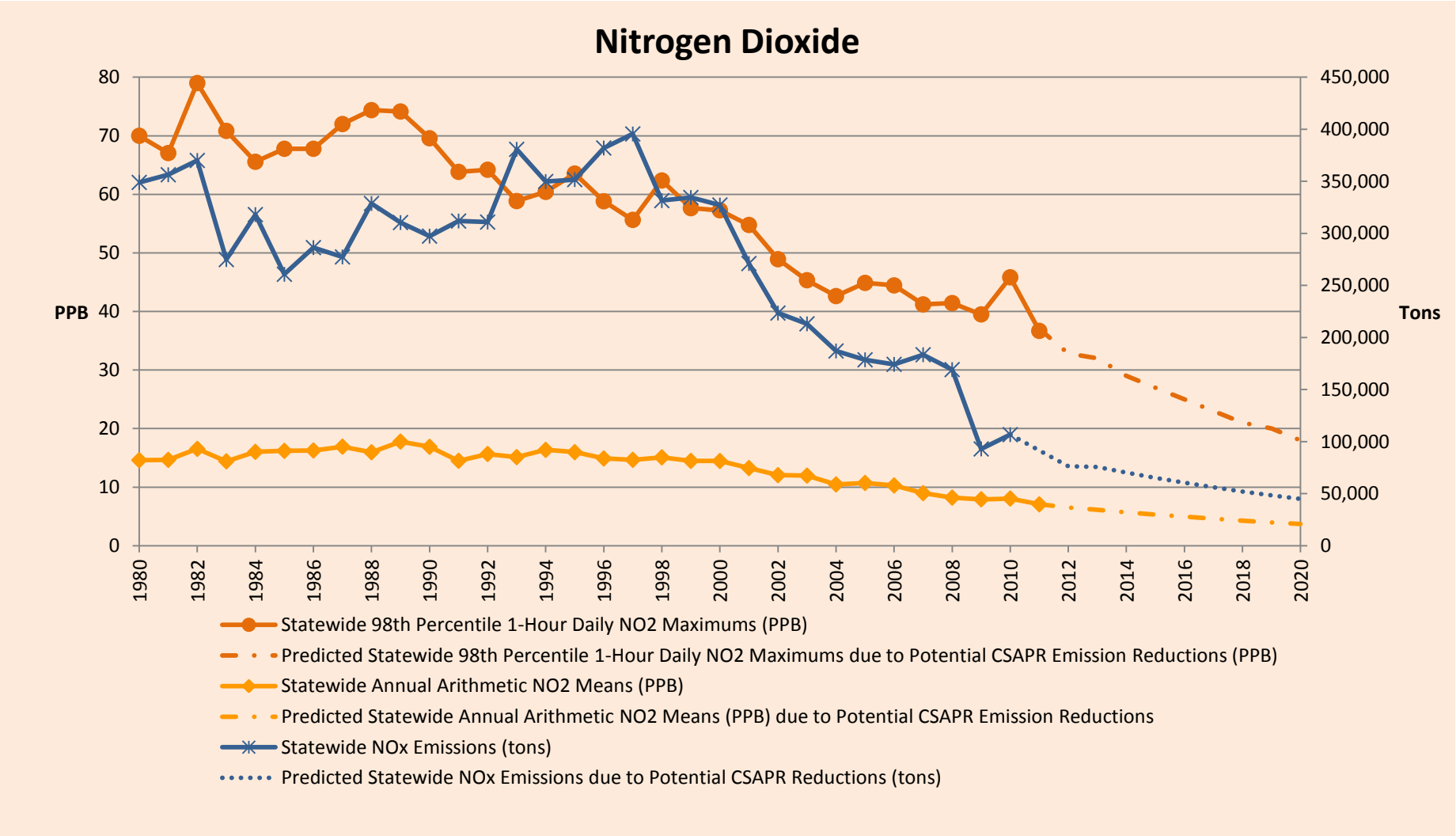
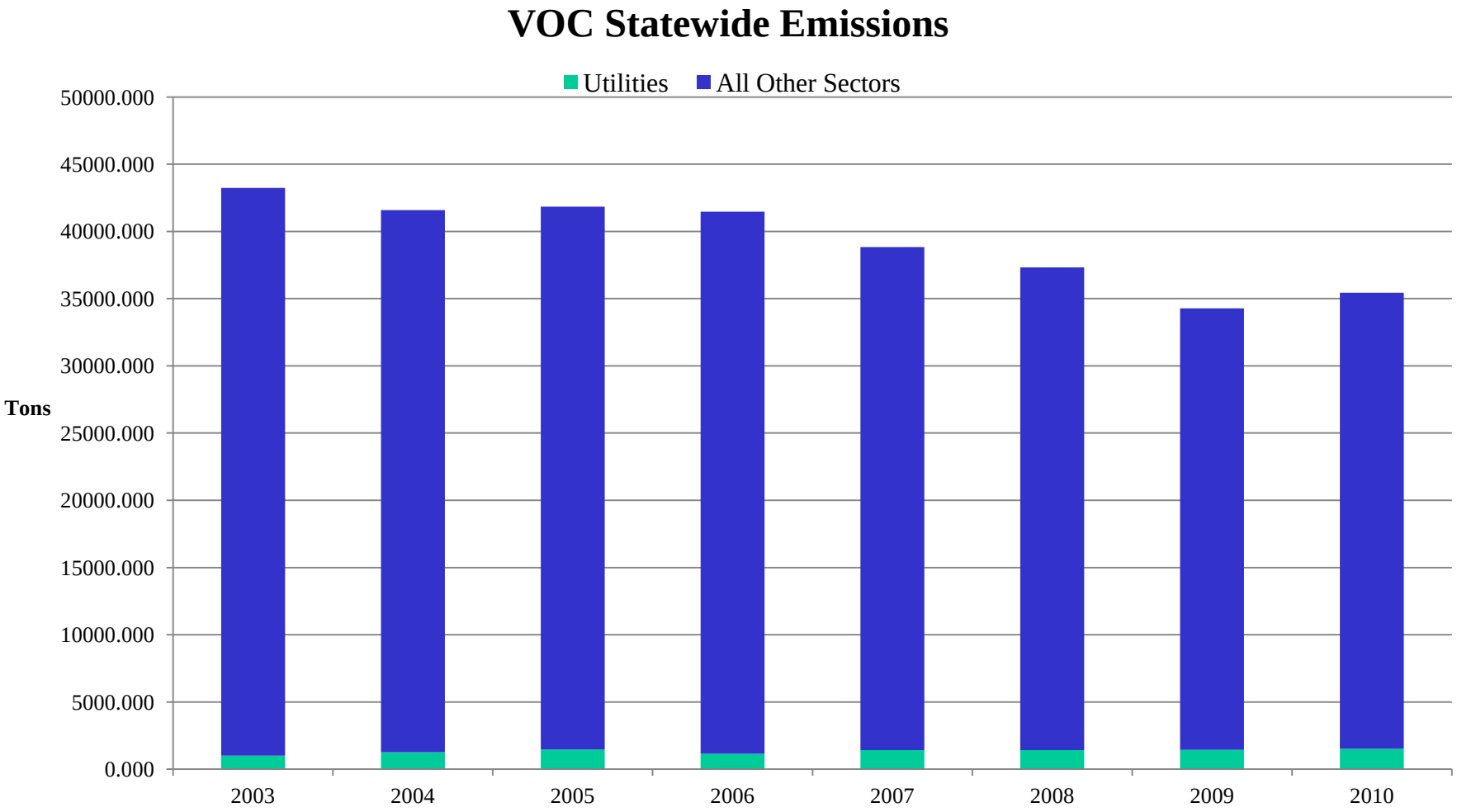
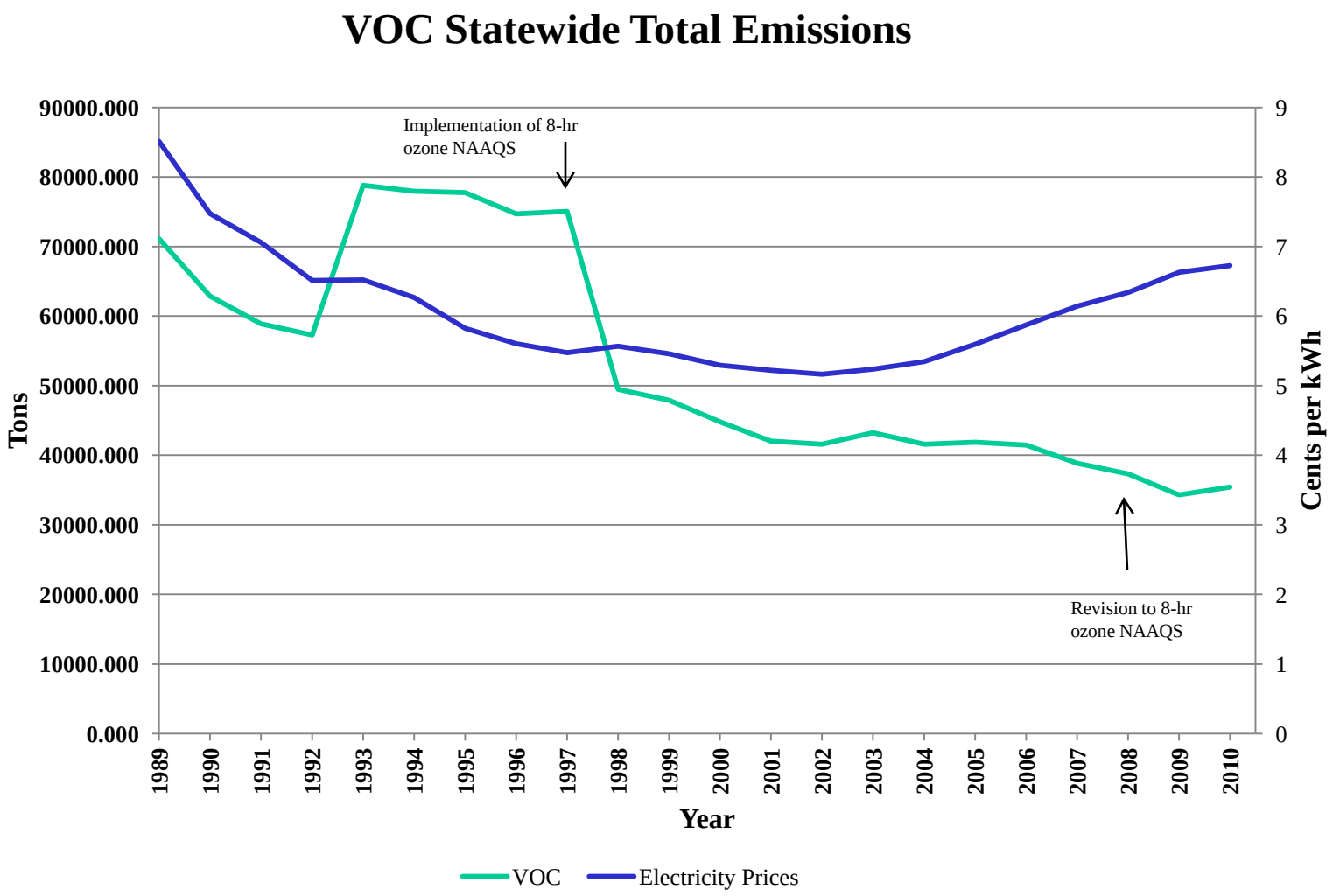


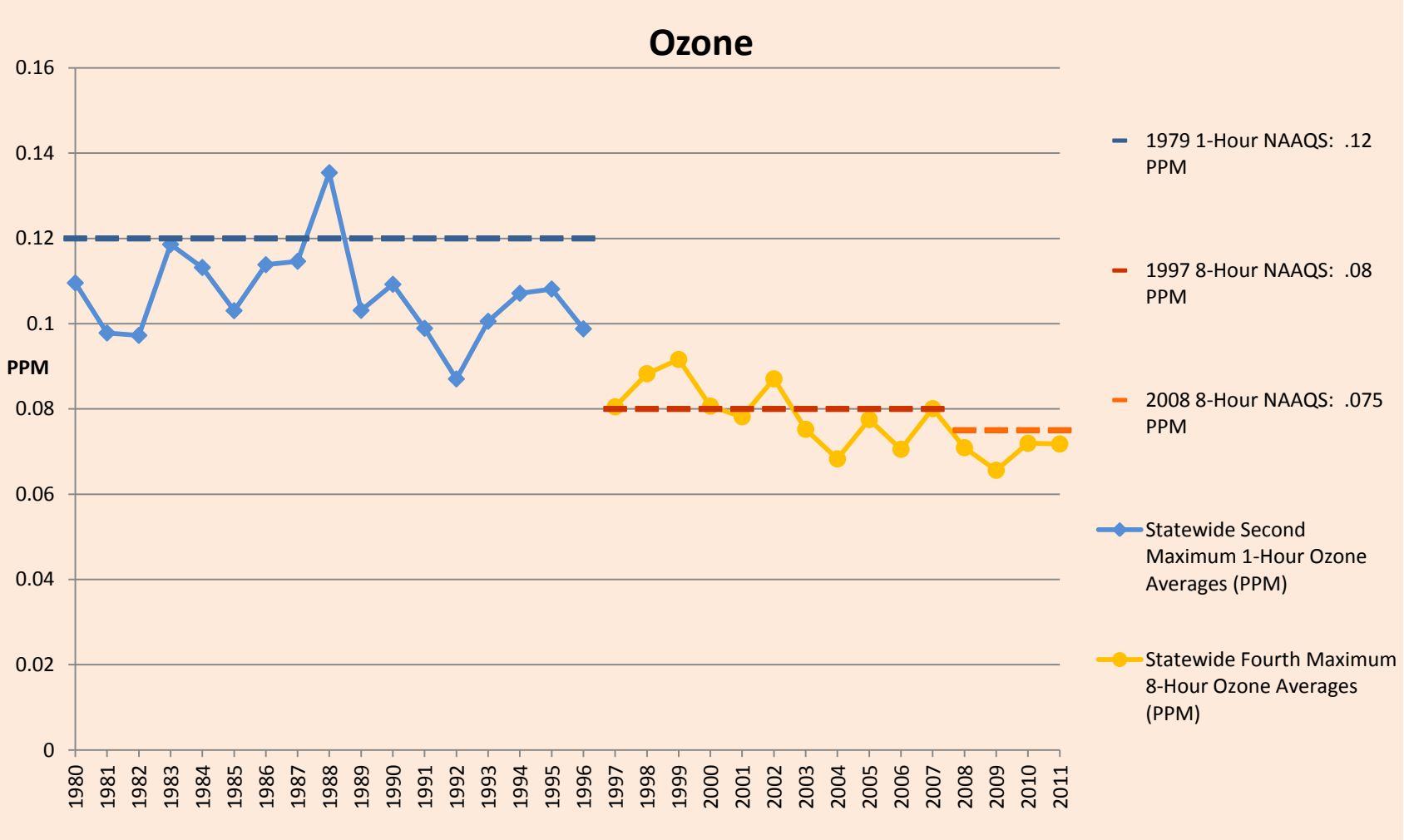
VOC – Emissions by Sector



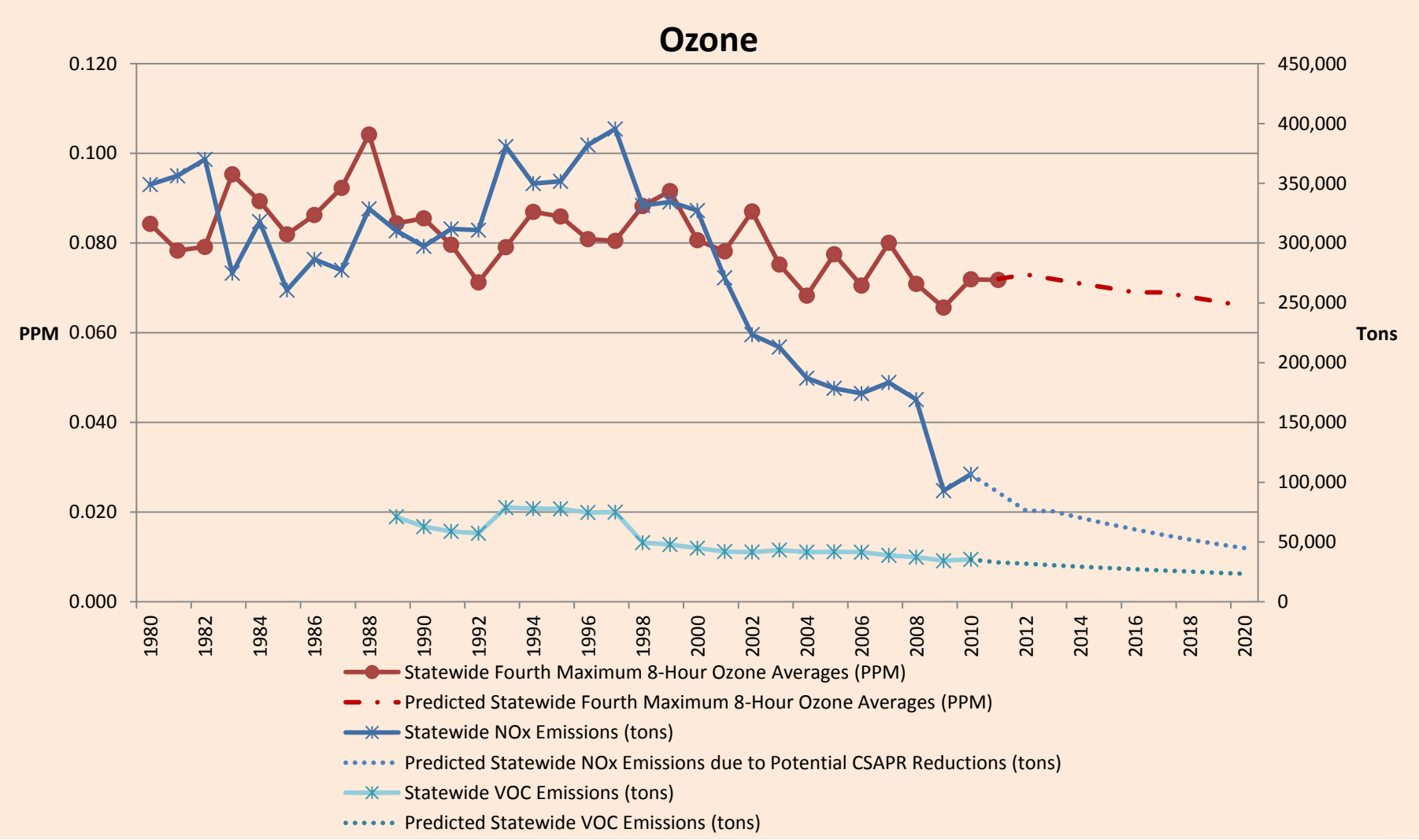
VOC - Historic Emissions Data



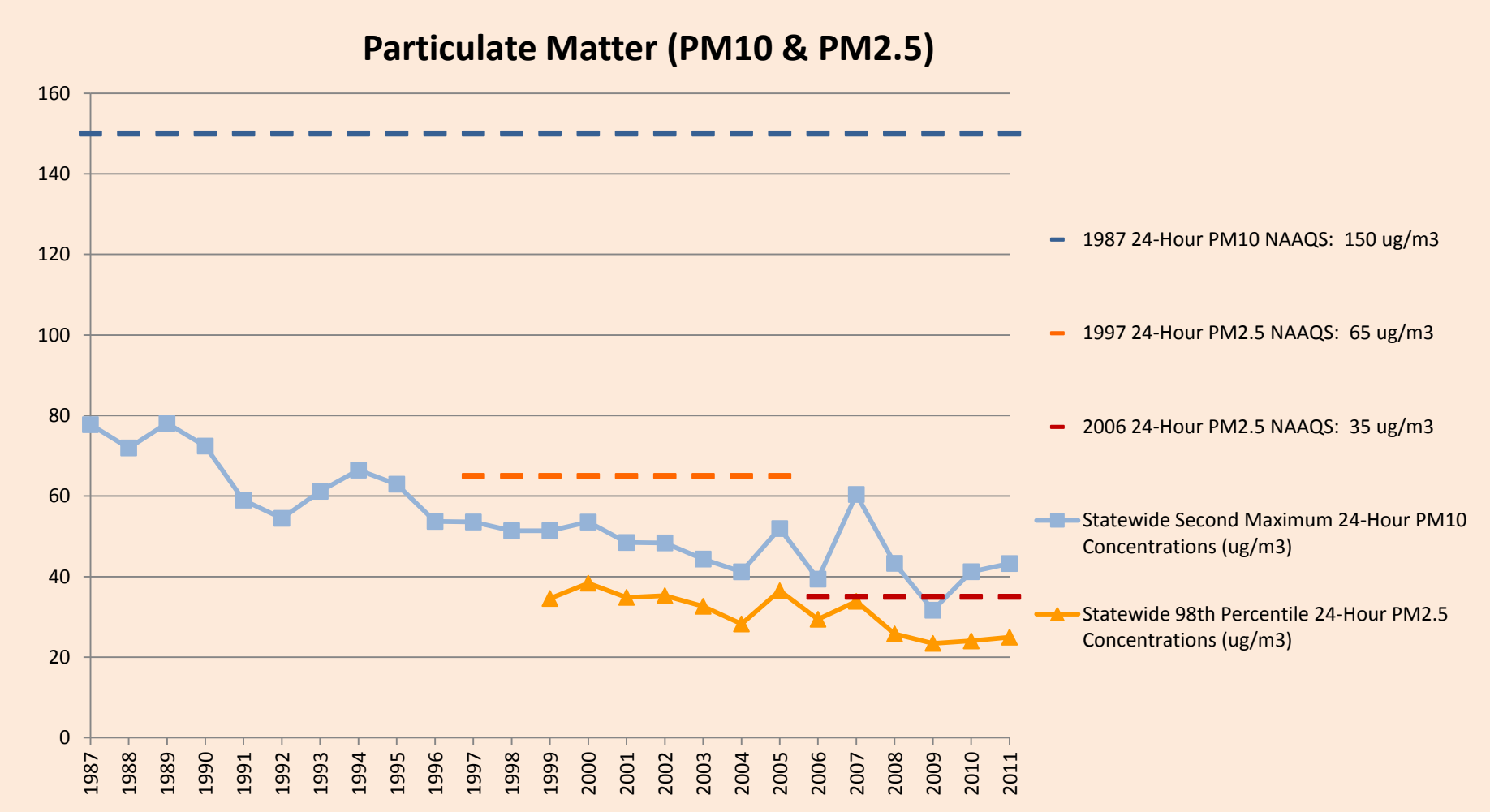
Ozone – Historic Ambient Data



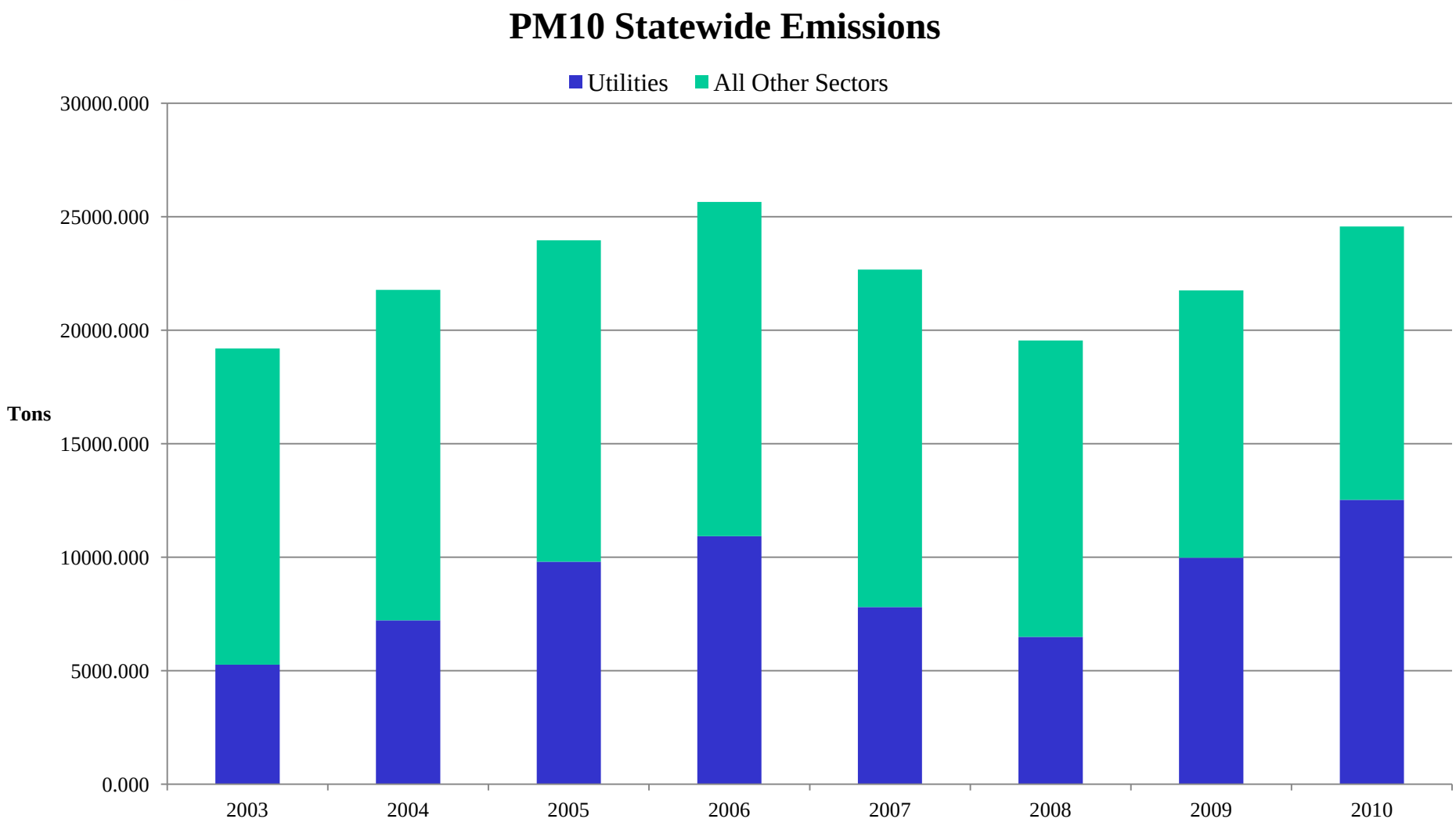
Ozone - Future Projections



Particulate Matter – Historic Ambient Data



PM - Emissions by Sector



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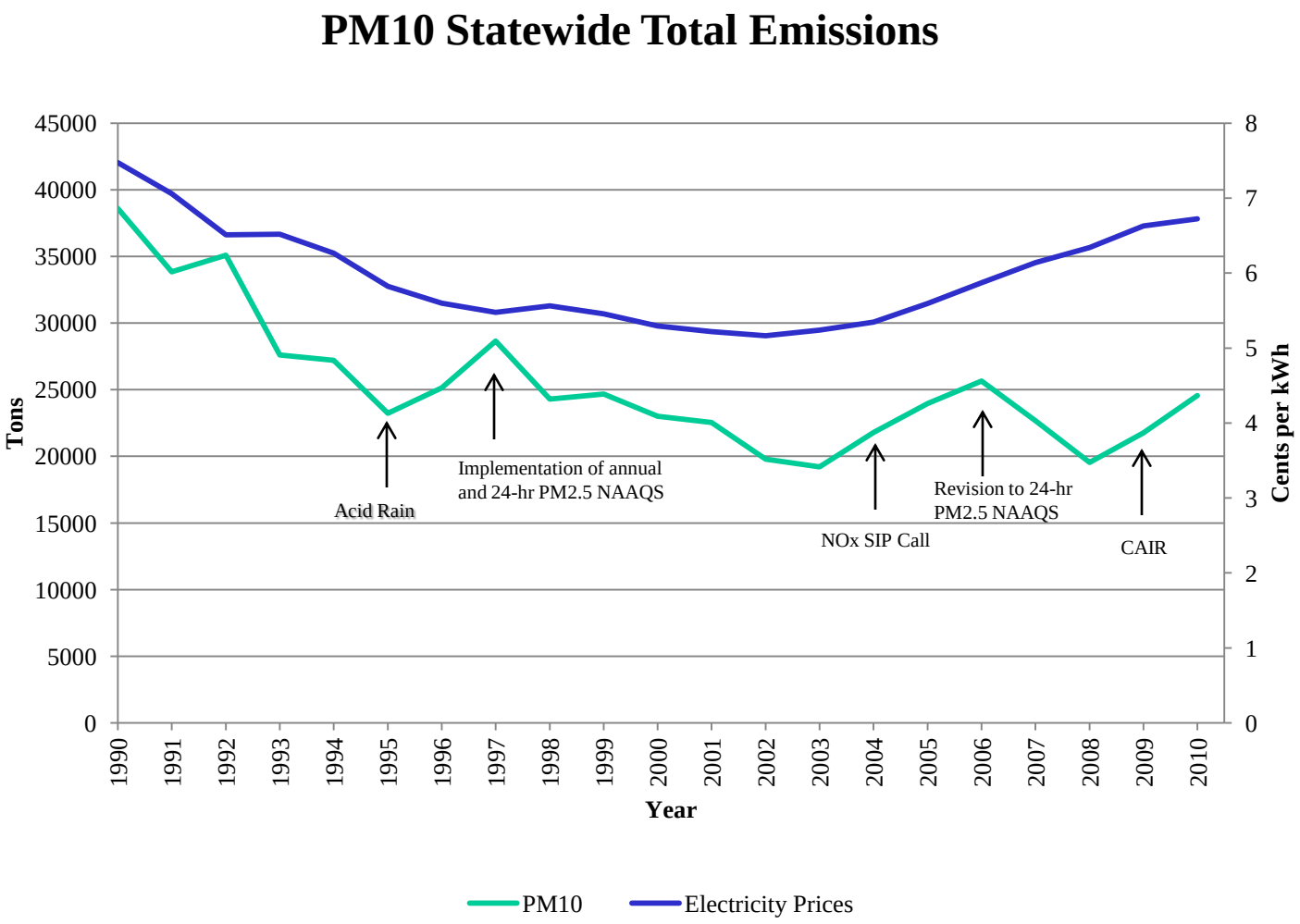
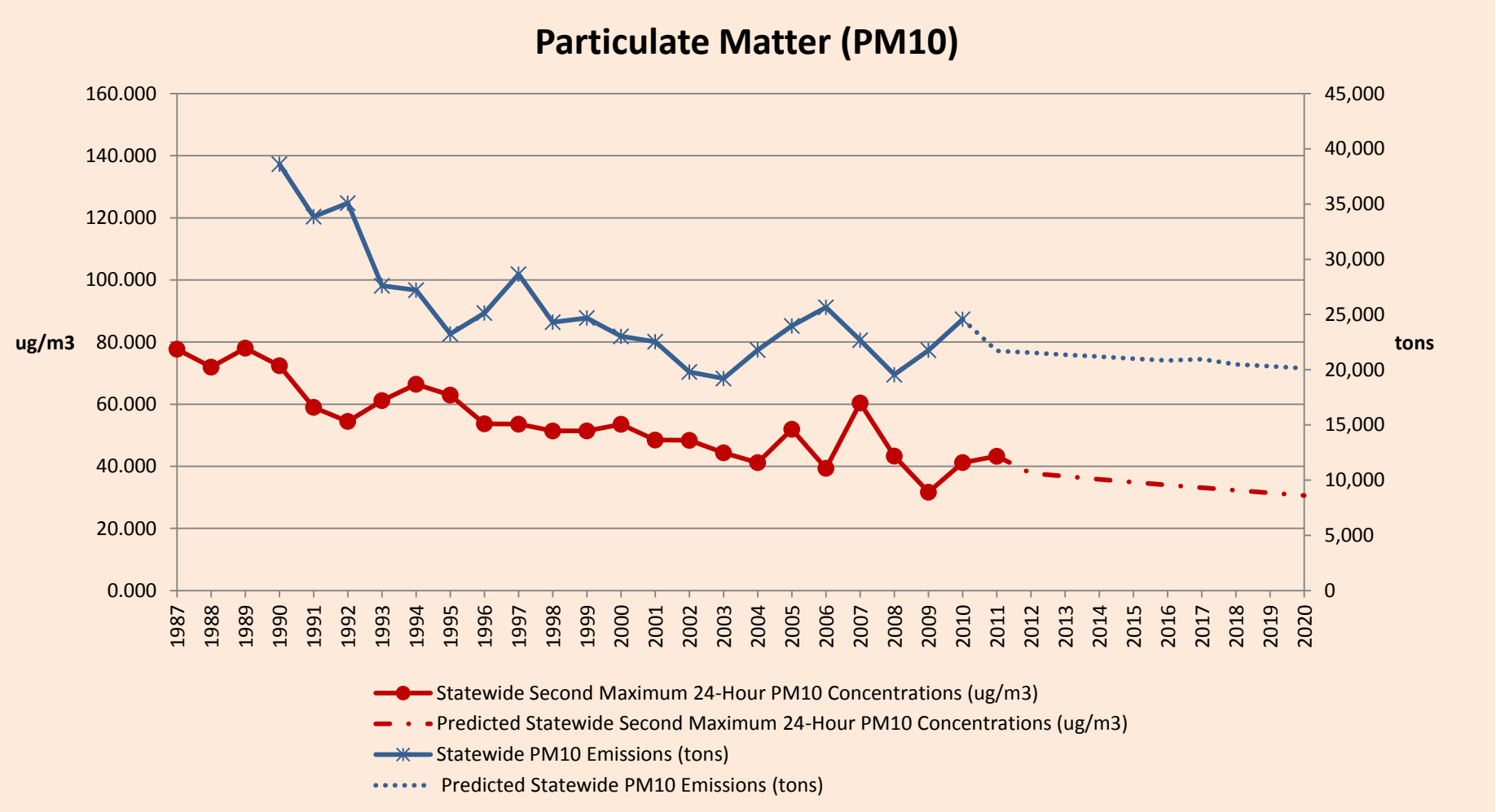


PM - Future Projections



Conclusions

What does the data tell us?

- Is the air getting cleaner?
  - **YES!**
- What are areas of concerns?
  - Ratcheting down of NAAQS, reaching background concentrations
- What are our data gaps?
  - Geographic gaps, rural areas underrepresented
  - Very little data collection on new NAAQS

Questions?

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