



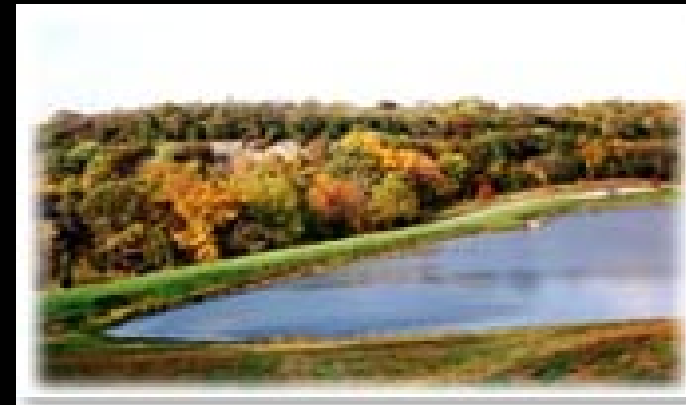
Illinois  
Environmental Protection Agency

# Illinois Air Issues - Update

*Jim Ross*

Illinois Environmental Protection Agency

*October 2008*



# Overview

- SIP Status
- Regional/State O<sub>3</sub> & PM<sub>2.5</sub> Control Plans
- Redesignation Policy
- Big Reductions Coming in Illinois - Beyond CAIR

# Illinois

- **2 non-attainment areas (NAA):**
  - **Chicago area & Metro-East** St. Louis area – both areas non-attainment for both:
    - **PM-2.5**
    - **Ozone (moderate)**
- **Over 6,500 permitted sources of air pollution**
- **673 Major Sources of air pollution**
- **325 sources (5%) emit 92% of the emissions**

# New non-attainment issues

- PM2.5:

- **Rock Island County** (violating monitor in Davenport, Iowa)
- **Massac County** (violating monitor in Paducah, Kentucky)

Both counties determined non-attainment by USEPA due to monitors in other states. IEPA gathering info to show both IL counties should be attainment

- 8-hour Ozone

- **Peoria County**: 2005 - 2007 monitoring data slightly over the standard. IEPA designation recommendation due to USEPA in March 2009 based on monitoring data from 2006 - 2008, which shows area back into attainment

# CAIR vacatur impact

- NOx SIP call back
- Attainment SIPs reevaluated and further delayed
- New regulations may be needed – SO<sub>2</sub> and PM RACT
- Uncertainty for regulators and the regulated

# Modeling Results w/ CAIR

“On the books” controls plus CAIR and NOx RACT



## ■ Chicago area:

- **Ozone: Attainment** in Lake Michigan region by 2010 except for Holland, MI – which attains by 2012.
- **PM2.5: Attainment** by 2010

## ■ Metro-East:

- **Ozone: Attainment** by 2010
- **PM2.5:** attainment **NOT** demonstrated for PM<sub>2.5</sub> by 2010 – will attain in 2012 with local controls



# Modeling w/out CAIR

“On the books” controls plus NOx SIP call and NOx RACT →

- **Chicago area:**

- Ozone: Attainment in 2010
- *PM2.5: Becomes a problem (attained with CAIR) – latest modeling show slightly above standard in 2010*

- 

- **Metro-East:**

- Ozone = ? (attained with CAIR)
- *PM2.5 remains a problem past 2010*

# SIP Status: **8-Hour OZONE**

*(1997 standard: 0.08 ppm)*

- **Chicago Non-attainment Area (NAA)**

- Did not submit on time
- Sent letter to USEPA on June 29, 2007 – contained schedule and commitment to complete
  - Switch to 2005 base year from 2002 caused initial delay
- Modeling w/ CAIR shows attainment by 2010 (except Holland, MI)
- Modeling w/out CAIR shows **still OK**
- Plan to submit attainment demonstration to USEPA by December 2008



- **Metro-East NAA**

- Submitted attainment demonstration to USEPA on time - June 2007
- Modeling w/ CAIR shows attainment by 2010
- Missouri and Illinois have not addressed post CAIR scenario yet
- CAIR vacatur may impact – awaiting USEPA review of our attainment demonstration



# SIP Status: **PM2.5**

*(1997 annual: 15 ug/m<sup>3</sup>, 24-hour: 65 ug/m<sup>3</sup>)*

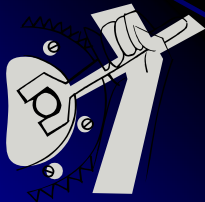
## ● Chicago NAA

- Modeling w/ CAIR shows attainment in 2010
- Modeling w/out CAIR produces different results – will not attain in 2010
- May ask for extension out to 2012
- Modeling w/out shows attainment in 2012
- Plan to submit attainment demonstration in December 2008



## ● Metro-East NAA

- Modeling w/CAIR shows will **NOT** attain by 2010
- Modeling w/out CAIR by LADCO shows bigger problem
- Will request attainment date extension until 2012
- Work with Illinois major sources in NAA and Missouri DNR to get additional controls
- Doing local scale modeling to better understand emissions picture – where to focus our attention (problem sources)
- Plan to submit attainment demonstration as soon as possible



# NOx RACT (required for Ozone NAA)

- Geographic applicability: Chicago and Metro-East non-attainment areas
- 2 Rules:
  1. Engine and Turbines (capacity of 500 bhp or 3.5 MW)
  2. All sources w/ PTE  $\geq$  100 tpy & units w/ actual  $>$  15 tpy & 5 tpy ozone season.
- Rules pending before Illinois Pollution Control Board
- Final rules submitted to USEPA in 2009

# NOx SIP Call

- Reinstated
- Allocations should be made prior to 2009 ozone season – working with USEPA

# VOC RACT (required for Ozone NAA)

- Chicago and Metro-East non-attainment areas
- Group I and II CTG's
- Group I projected rules submitted to Illinois Pollution Control Board = January 2009

# Additional PM2.5 Measures

- SO<sub>2</sub> & PM RACT in NAA's
  - Both required in absence of CAIR and needed for attainment
- For Metro-East: pursuing local PM<sub>2.5</sub> reduction strategy with major sources in area

# SO<sub>2</sub> and PM RACT

- SO<sub>2</sub> and PM RACT back on table for PM<sub>2.5</sub> non-attainment areas
  - SO<sub>2</sub> RACT: Likely need for Metro-East regardless of CAIR status
    - Plan to submit to Illinois Pollution Control Board in March 2009
  - PM RACT: reviewing – took significant measures for PM-10
- If CAIR reappears, both may still be needed - either as Contingency Measures or for attainment of new 24-hour PM<sub>2.5</sub> standard
  - If contingency measures, implementation triggered by measured violations after 2009. These measures address modeling uncertainty (differing results from 2002 versus 2005 base year)

# BART/Regional Haze

- Illinois EPA is continuing to work with affected sources
- Smoke Management Plan (MOU's with IDNR, IDOT, USFS, Forest Preserve Districts in northern Illinois, other land managers) including revised language in open burning permits
- Projected SIP submittal to USEPA = March 2009

# Redesignation Policy

- Evolving, flexible policy based on air quality – data driven, weight of evidence, risk analysis
- Regional approach is desired - neighbors and partners in combating pollution
- Need combination of local and regional controls
- VOC/OC controls effective locally, SO<sub>2</sub> & NO<sub>x</sub> controls effective regionally
- IEPA is pursuing a regional, multi-pollutant, multi-sector planning approach
- Where culpability exists for persistent problems – states should consult and work together for solutions
- Oppose other states moving toward redesignation prematurely
- Illinois must consider other state's actions when contemplating whether to seek redesignation

- **Ozone**

- Entire state is monitored attainment for Ozone (but design monitor in Metro-East area is non-attainment)
- Chicago Area:
  - Nearby, downwind monitors where Illinois has significant impact showing non-attainment - Holland, MI. Regional planning approach continues – Illinois has taken significant actions to address this issue
- Metro-East
  - St. Louis is non-attainment for ozone
  - Pursuing regional planning approach

- **PM2.5**

- Continued monitored non-attainment in both NAA's therefore cannot seek redesignation
- Modeling shows Metro-East Granite City area problem persistent out to 2018 – Chicago area now an issue out past 2010 due to CAIR vacatur

# Chicago 8-hour ozone redesignation request for the 1997 standard

- 2006 - 2008 monitoring data shows attainment for Lake Michigan area – all sites except Holland, Michigan.
- Illinois has taken significant steps to reduce emissions consistent with our redesignation policy
- May submit redesignation request by December 2008 with Chicago ozone attainment demonstration
- No other non-attainment areas in Illinois qualify for redesignation

# Significant Reductions coming in Illinois

- **Coal-Fired Power Plants**
- **Multi-Pollutant Reduction Agreements with Power Plants**



- **59 Coal-Fired boilers (at 21 large power plants)**
- **Largest source of man-made Hg emissions, largest source of SO<sub>2</sub> and one of largest sources of NO<sub>x</sub>**
- **17,007 Megawatts of coal-fired electric generating capacity – about 49% of total generation in IL (nuclear ~ 49%)**

<b><u>2005 Emissions</u></b>	<b>SO<sub>2</sub> (tons/year)</b>	<b>NO<sub>x</sub> (tons/year)</b>
<b>Total stationary sources</b>	<b>486,523</b>	<b>208,335</b>
<b>Coal-fired plants</b>	<b>326,171</b>	<b>124,620</b>
<b>% from Coal-Fired Plants</b>	<b>67%</b>	<b>60%</b>

# USEPA Estimates

## Impact of CAIR in Illinois

- By 2015, CAIR will reduce SO<sub>2</sub> emissions by 125,000 tons – 34% reduction.

(tons/yr)	2003	2010	2015
SO <sub>2</sub> w/o CAIR	365,000	402,000	447,000
SO <sub>2</sub> w/CAIR	-	240,000	240,000

- By 2015, CAIR will reduce emissions of NO<sub>x</sub> by 81,000 tons – 55% reduction.

(tons/yr)	2003	2010	2015
NO <sub>x</sub> w/o CAIR	146,000	146,000	159,000
NO <sub>x</sub> w/CAIR	-	69,000	65,000

# **MPS and CPS Agreements - the Deals w/ Coal-fired Power Plants**



- Ameren, Dynegy and Midwest Generation represent 88% of Illinois' coal fired capacity
- Hg rule flexibility in exchange for significant NOx and SO2 reductions – Hg rule was the driver
- Negotiated Emission Standards case-by-case
- Reversed Industry positions: strong opposition of proposed rules became support for Hg rule and to lesser extent, Illinois CAIR

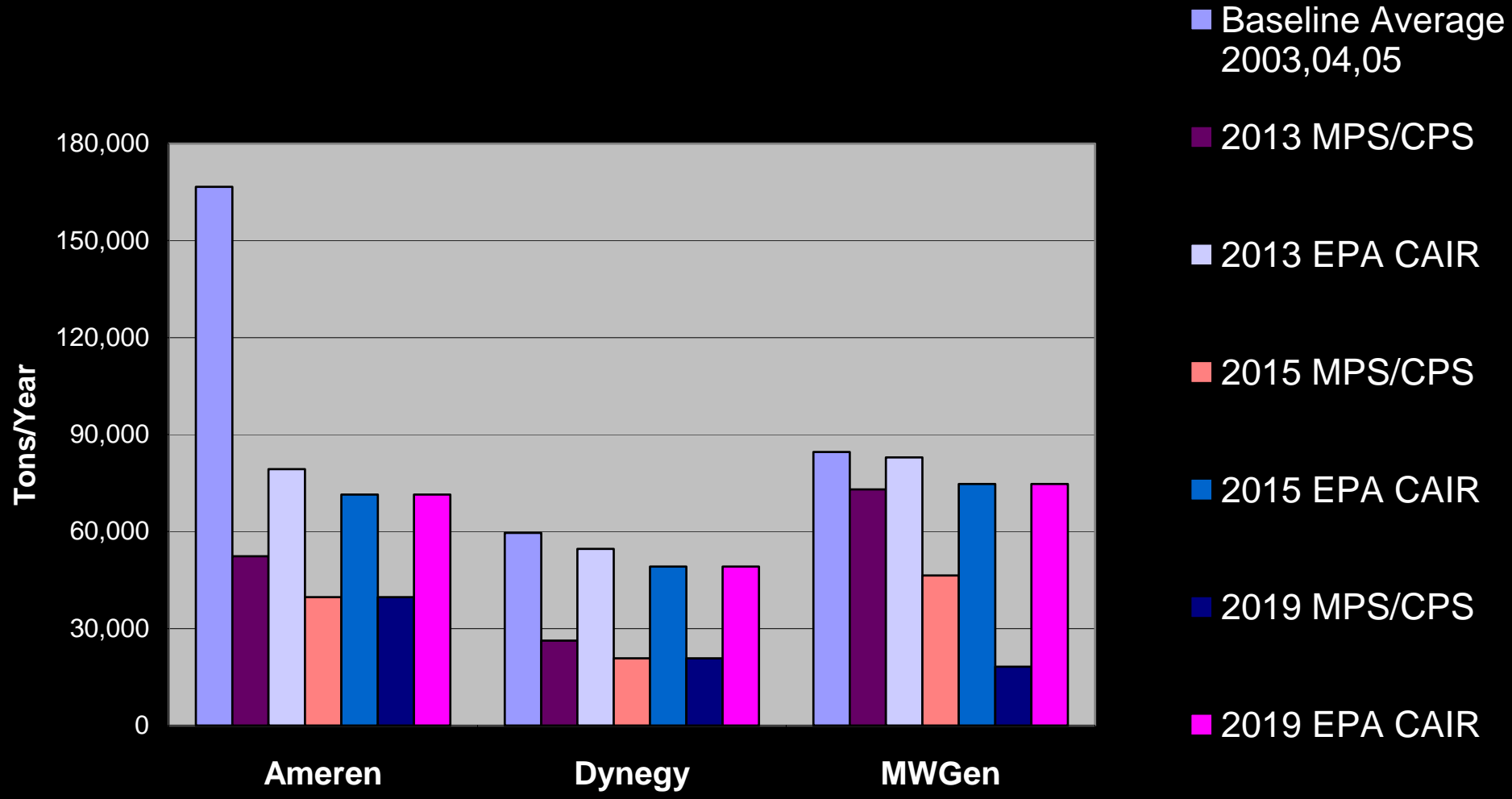
- **Multi-Pollutant Standard (MPS)**
  - Ameren & Dynegy
  - 35 IAC Part 225, Subpart B, 225.233 Multi Pollutant Standard
  
- **Combined Pollutant Standard (CPS)**
  - Midwest Generation
  - 35 IAC Part 225, Subpart F: Combined Pollutant Standards

# SO<sub>2</sub> Agreed to Reductions

	<u>SO<sub>2</sub> Requirement (lbs/mmbtu)</u>	<u>By Year</u>	<u>SO<sub>2</sub> eliminated (tons/yr)</u>	<u>SO<sub>2</sub> % reduced</u>
<b>Ameren</b>	<b>0.25</b>	<b>2015</b>	<b>127,145</b>	<b>76.3</b>
<b>Dynegy</b>	<b>0.19</b>	<b>2015</b>	<b>38,745</b>	<b>65</b>
<b>Midwest Generation</b>	<b>0.28</b>	<b>2015</b>	<b>35,343</b>	<b>45</b>
	<b>0.11</b>	<b>2019</b>	<b>67,710</b>	<b>80</b>
<b>Total</b>			<b><u>233,600</u></b>	

	CAIR		Midwest Generation		Ameren		Dynegy	
	Emission Rate (lbs/mmbtu)	% Reduction	Emission Rate (lbs/mmbtu)	% Reduction	Emission Rate (lbs/mmbtu)	% Reduction	Emission Rate (lbs/mmbtu)	% Reduction
<b>SO2</b>								
2013	0.50	31%	0.44	13.7%	0.33	69%	0.24	56%
2014			0.41	19.6%				
2015	0.45	34%	0.28	45.1%	0.25	76%	0.19	65%
2016			0.195	61.8%				
2017			0.15	70.6%				
2018			0.13	74.5%				
2019	0.45	34%	0.11	78.4% <sup>2</sup>	0.25	76%	0.19	65%

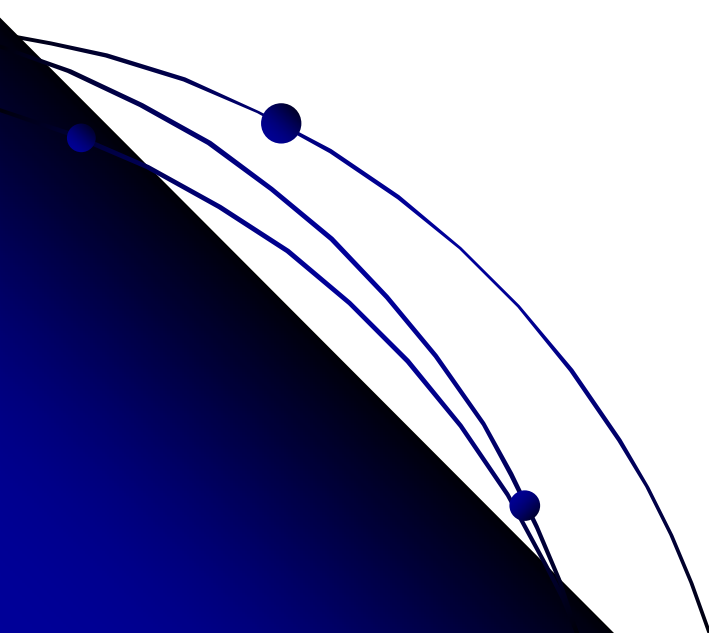
# Projected Annual SO<sub>2</sub> Emissions Projection Under the MPS and CPS and Under EPA CAIR



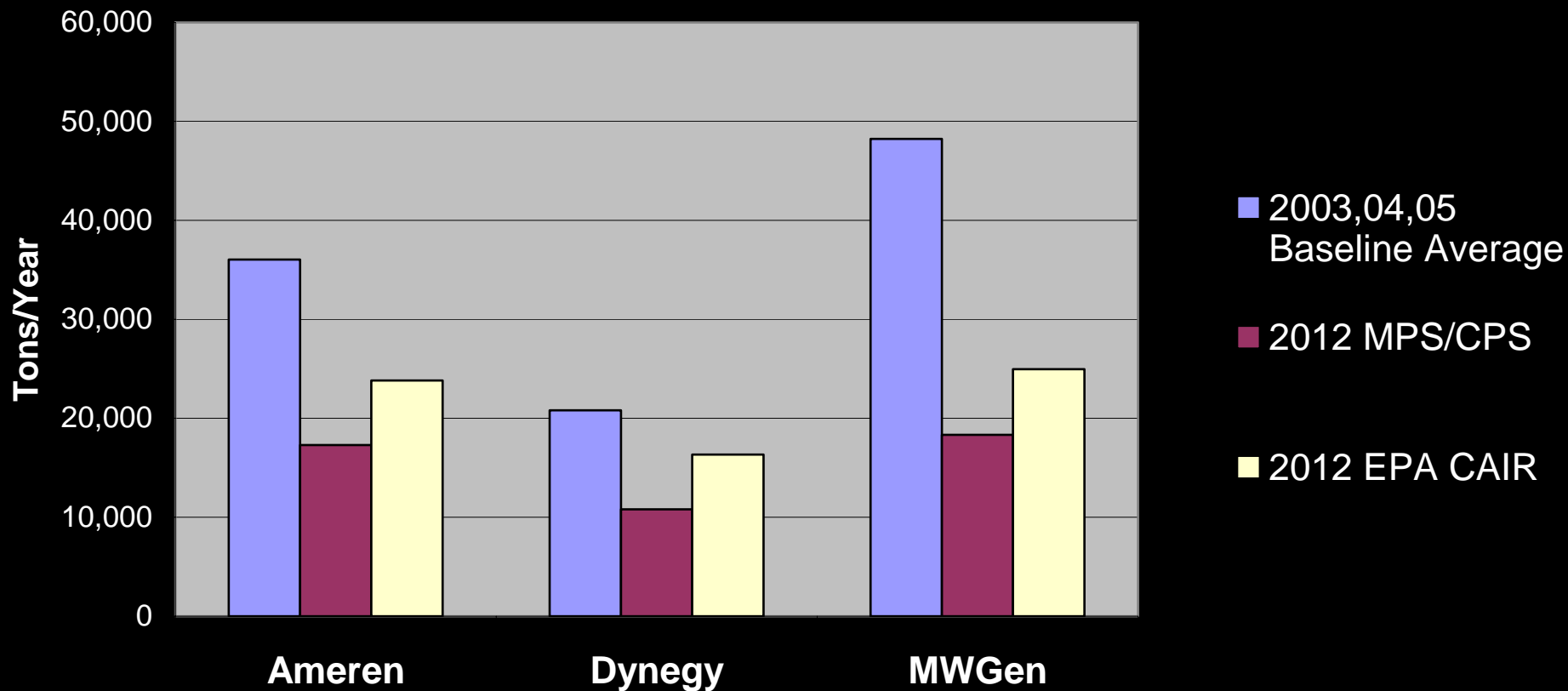
# NOx Agreed to Reductions

	<u>NOx Requirement (lbs/mmBtu)</u>	<u>By Year</u>	<u>NOx eliminated (tons/yr)</u>	<u>NOx % reduced</u>
Ameren	0.11	2012	18,799	52.2
Dynegy	0.10	2012	9,980	48
Midwest Generation	0.11	2012	32,655	68
<b>Total</b>			<b><u>61,434</u></b>	

<b>NO<sub>x</sub></b>	<b>CAIR</b>		<b>MidWest Gen</b>		<b>Ameren</b>		<b>Dynegy</b>	
Annual – 2012	0.15	44%	0.11	62%	0.11	52%	0.10	48%
Annual - 2015	0.12	55%	0.11	62%	0.11	52%	0.10	48%
Seasonal - 2012	No data	No data	0.11	51%	0.11	22%	0.10	25%



# Projected Annual NOx Emissions Projection Under the MPS / CPS and Under EPA CAIR



# Conclusion: Illinois has substantial reductions coming

Illinois has recently made groundbreaking strides towards controlling the emissions from coal-fired power plants. Notable measures that affect these power plants and that will serve to significantly reduce their air emissions include:

- The Illinois Mercury Rule,
- *???Clean Air Interstate Rule (CAIR)???*,
- Multi-pollutant reduction agreements,
- Settlement of alleged air violations through legal consent decrees