



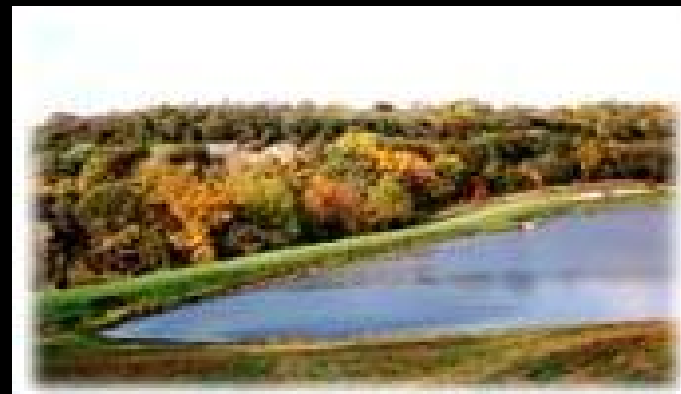
Illinois
Environmental Protection Agency

Illinois Air Issues - Update

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October 2007



Overview

- Illinois Problem Areas
- SIP Status
- Regional/State O₃ & PM_{2.5} Control Plans
- Redesignation Policy
- Big Reductions Coming in Illinois - Beyond CAIR
- Hot Topics

Illinois Stats

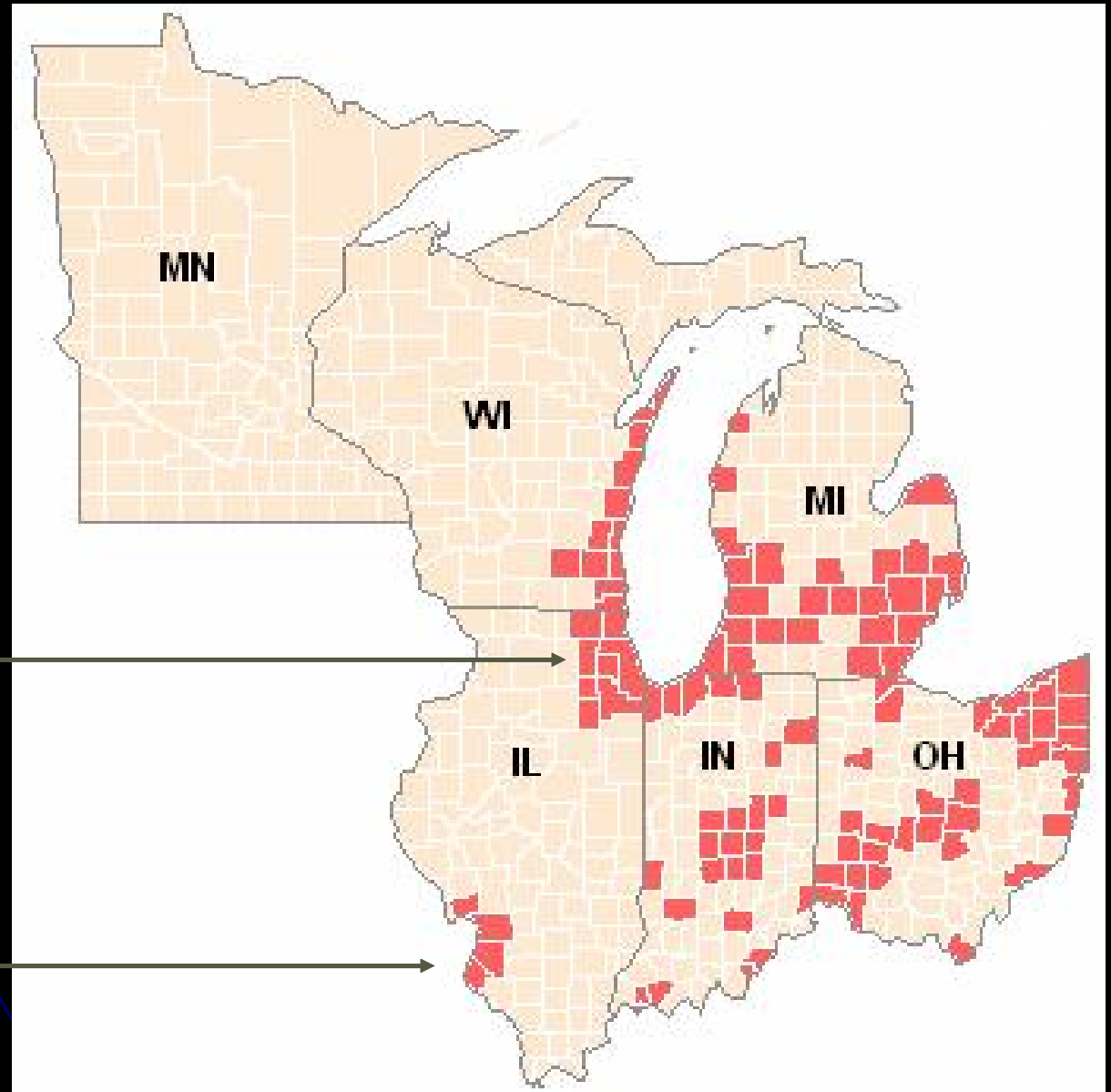
- **Population = 13 million** ($\approx 4.3\%$ of U.S. – 5th in Nation)
- **Gross State Product = \$522 billion** ($\approx 4.2\%$ of U.S. GDP – 5th in Nation)
- **Large metropolitan areas:**
 - Chicago area, Metro East St. Louis area, Peoria, Rockford, Quad Cities, Springfield, Decatur, Bloomington/Normal, Champaign
- **38 billion tons of coal – 3rd largest reserves in Nation**



Illinois Stats cont.

- **2 nonattainment areas (NAA) - Chicago area, Metro-East St. Louis area**
 - **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**

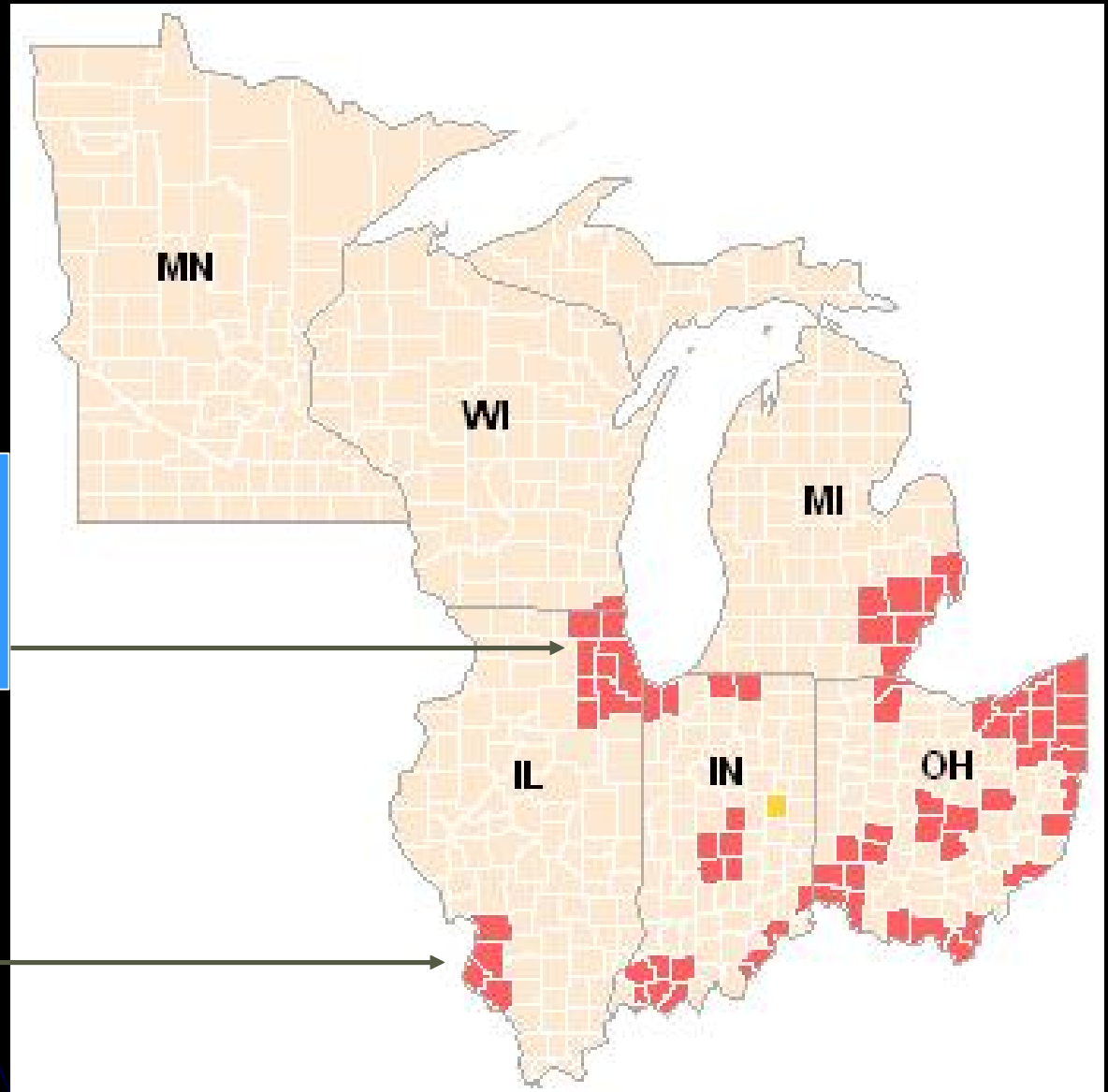
8-Hour Ozone Nonattainment Areas



*Cook, DuPage, Kane
Lake, McHenry, Will,
Grundy (partial),
Kendall (partial)*

*Jersey, Madison,
Monroe, St. Clair*

PM_{2.5} Nonattainment Areas



*Cook, DuPage, Kane
Lake, McHenry, Will,
Grundy (partial),
Kendall (partial)*

*Madison,
Monroe, St.
Clair, Randolph
(partial)*

Key Regulatory Dates

	Ozone	PM_{2.5}	Haze
Nonattainment Designations	Jun 15, '04	Apr 5, '05	-----
SIPs due	Jun '07	Apr '08	Dec '07
Attainment Dates	2010	2010	2018 (2064)

SIP Status: *8-Hour OZONE*

- Chicago Nonattainment Area (NAA)
 - Letter to USEPA on June 29, 2007 – schedule and commitment to complete
 - Working with LADCO and member states
 - Switch to 2005 base year from 2002 caused delays
 - Results show attainment by 2010 (except Holland, MI)
 - Submit SIP attainment demonstration to USEPA by January 2008 (work to resolve nonattainment at Holland, MI)
 - Must adopt NOx RACT
- Metro-East NAA
 - Submitted attainment demonstration to USEPA June 2007
 - Results show attainment by 2010
 - Must adopt NOx RACT

SIP Status: *PM2.5*

Chicago NAA

- Submit SIP to USEPA by April 2008
- Show attainment by 2010

● Metro-East NAA

- Submit SIP to USEPA by April 2008
- Modeling shows will not attain by 2010
- Request attainment date extension until 2012
- Work with Illinois major sources in NAA and Missouri DNR to get additional controls

Control Strategy based on 2002 Modeling

- **PM2.5:**
 - “On the books” controls plus CAIR are not enough to attain by 2010
 - Nonattainment problems remain in Chicago and Metro-East
 - A combination of local and regional controls are needed to provide for PM2.5 attainment
- **8-Hour Ozone:**
 - “On the books” controls plus CAIR are not enough to attain in the Lake Michigan region by 2010
 - Attainment expected in Metro-East by 2010

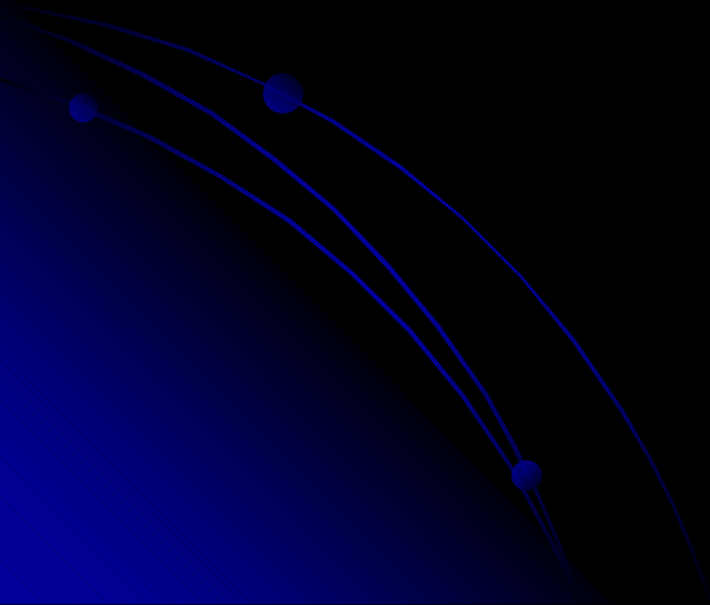
Implications of moving to a 2005 Base Year...

- **2002 modeling not rendered obsolete – recognize differences in meteorology, etc.**
- **Now have 2 sets of modeling data to base policy on – weight of evidence**
- **The 2 sets provide differing results – present a degree of uncertainty**
- **Flexible Policy based on science and measured air quality trends**
- **Continue involvement of Stakeholders**

Revised Control Strategy in consideration of 2005 base year modeling

- “On the books” controls plus CAIR and NOx RACT are enough to Attain:
 - Chicago: Ozone and PM2.5
 - Metro-East: attains for Ozone however *PM2.5 still a problem*
- Focus on Nonattainment area regulations
- Evaluate need for SO2 and PM RACT in Metro-East NAA
- Address uncertainty of modeling results from 2 base years showing different results = Contingency Regs

Illinois' *Revised* Regulatory Approach...



NOx RACT (revised)

- Geographic applicability: Chicago and Metro-East nonattainment areas (*no longer statewide*)
- Source categories:
 - Stationary IC engines and turbines (withdraw pending statewide RICE proposal & include in existing NOx RACT proposal)
 - EGU's (assume MPS/CPS equals RACT)
 - Non-EGU boilers
 - Process heaters
 - Cement kilns
 - Lime kilns
 - Glass melting furnaces
 - Iron and Steel furnaces
 - Aluminum melting furnaces
- Compliance date: 2009 ???

NOx SIP Call (non-EGU's)

- Add sunset provision in Subpart U (withdraw pending Subpart U revision)
- Establish non-EGU source-wide emission caps to meet NOx SIP call budget
 - 10% set-aside for new sources
 - CAIR NOx allowances as temporary compliance option

SO₂ and PM RACT

- Assume SO₂ and PM RACT are met in Chicago
- IEPA will evaluate if SO₂ and PM RACT is necessary for attainment in Metro-East
- May be needed for attainment of new 24-hour PM_{2.5} standard or for Contingency Measures

Consumer Products, AIM, Aerosol Coatings

- State rulemaking unless USEPA promulgates federal rules in a timely manner

Addressing Modeling Uncertainty

- **Contingency Measures:** Illinois EPA considering:
 - Statewide NO_x RACT
 - SO₂ and PM RACT in NAA's (if not already needed and implemented for attainment)
 - Implementation triggered by measured violations after 2009

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
- Evaluate "ASK" from MANEVU and Minnesota (MPS/CPS should be adequate to address requested emission reductions.)

PM2.5

Recommended NAA's under new 24 hour standard

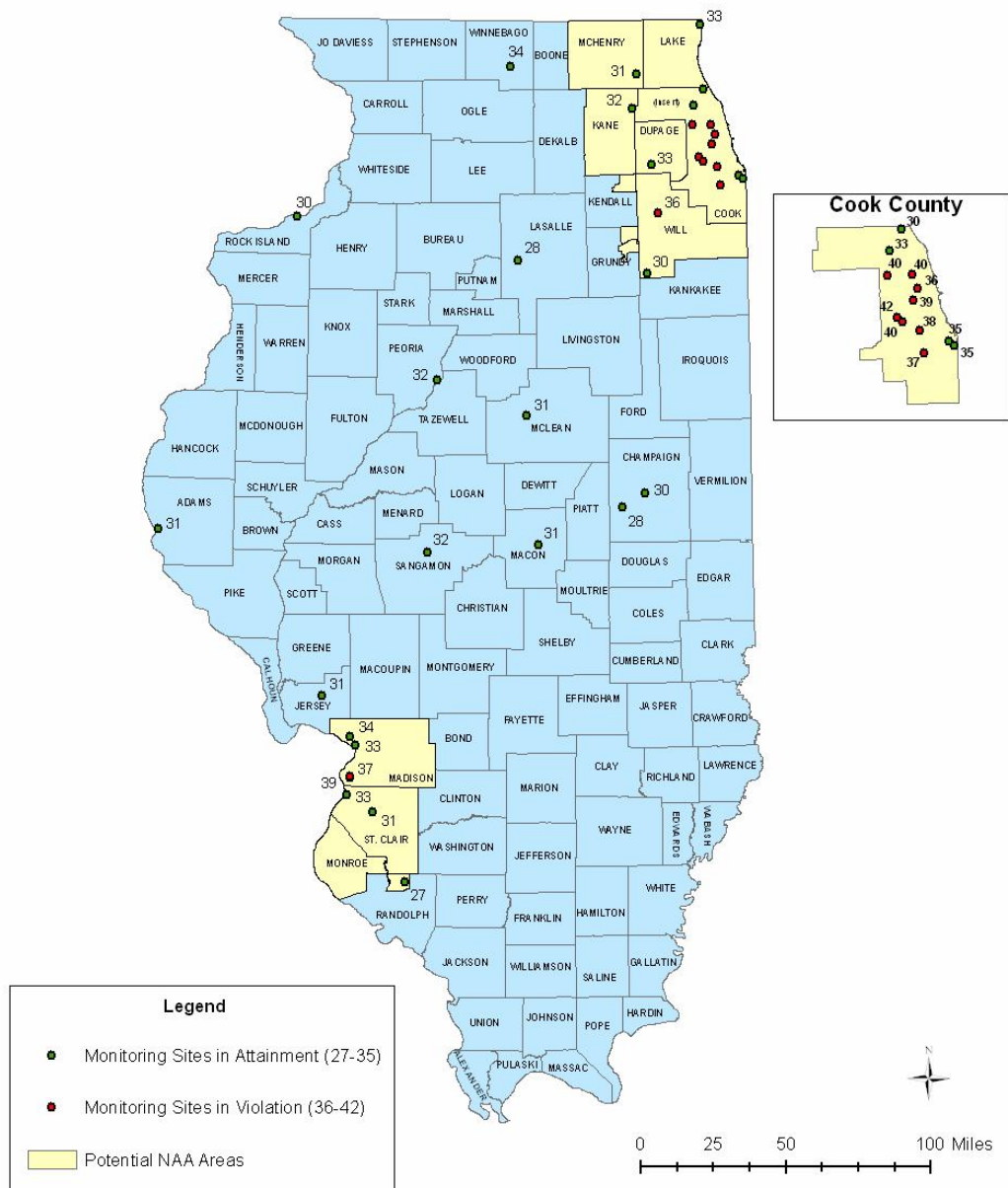
* Due to USEPA Dec. 2007

* Monitoring data indicates
violations in Chicago and
Metro-East

* Recommend same
boundaries that currently exist
for annual standard

* Public meetings on
recommendations in
November

Potential Nonattainment Areas based on 2004-2006 24-hour PM2.5 Design Values



Implications of New PM2.5 and anticipated Ozone Standards on Current Planning/Strategies

- Current regulatory approach addresses 1997 NAAQS revisions
- 24-hour PM-2.5 revised in 2006, Ozone NAAQS revision expected in 2008
- Attainment dates far in the future (e.g., PM2.5 SIP due = 2012-13, Attainment date = 2014-20)
- By those dates should see significant progress in air quality due to both “on the books” and “on the way” regulations
- If further reductions needed Illinois EPA will look both locally and statewide (e.g., statewide NOx and SO2 RACT)

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, SO₂ & NO_x controls effective regionally
- IEPA is pursuing a regional, multi-pollutant, multi-sector planning approach
- Where culpability exists for persistent problems – 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 redesignations

- **Ozone**

- Entire state is monitored attainment for Ozone
- Cannot seek redesignation until have NOx RACT
- Chicago Area:
 - Nearby, downwind monitors where Illinois has significant impact are still showing non-attainment - Holland, MI monitor out to 2009 – regional planning approach preferred
- Metro-East
 - St. Louis is nonattainment for ozone, Illinois contribution unclear
 - Must consider regional planning approach and look to have modeling that shows St. Louis in attainment – good neighbor

- **PM2.5**

- Continued monitored nonattainment in both NAA's therefore cannot seek redesignation
- Modeling shows Metro-East Granite City area problem persistent out to 2018 – other Illinois areas attainment in 2009

Significant Reductions coming in Illinois



- **Coal-Fired Power Plants**
- **CAIR – Illinois way**
- **Multi-Pollutant Reduction Agreements with Power Plants**

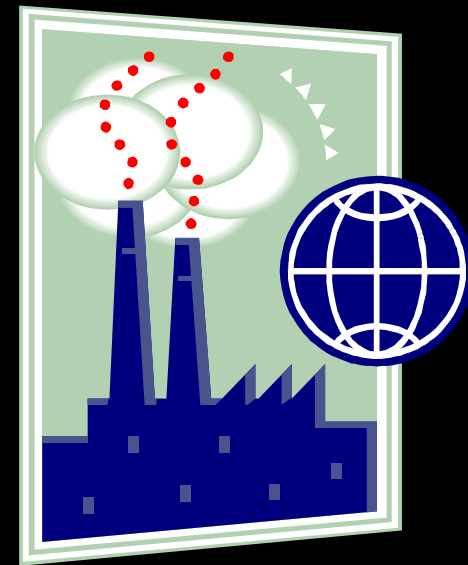
(Defining the Problem in Illinois)

- **59 Coal-Fired boilers (at 21 large power plants) affected by CAIR & CAMR** *(also have 170 oil/gas-fired boilers and turbines affected by CAIR)*
- **Largest source of man-made Hg emissions, largest source of SO₂ and one of largest sources of NO_x**
- **17,007 Megawatts of coal-fired electric generating capacity**
- **Large reserves in bituminous coal, however, most Illinois plants fire subbituminous coal**

<u>2005 Emissions</u>	SO₂ (tons/year)	NO_x (tons/year)
Total stationary sources	486,523	208,335
Coal-fired plants	326,171	124,620
% from Coal-Fired Plants	67%	60%

CAIR in Illinois

- **SO₂** – precursor to PM2.5
 - Follow USEPA's "Model Rule"
 - Cap & Trade based on Acid Rain Program
- **NO_x** – precursor to both Ozone & PM2.5
 - USEPA allows more flexibility
 - Cap & Trade based on NO_x SIP Call
 - Seasonal & Annual Caps
 - Flexibility:
 - Allocation Methodology
 - Set-asides

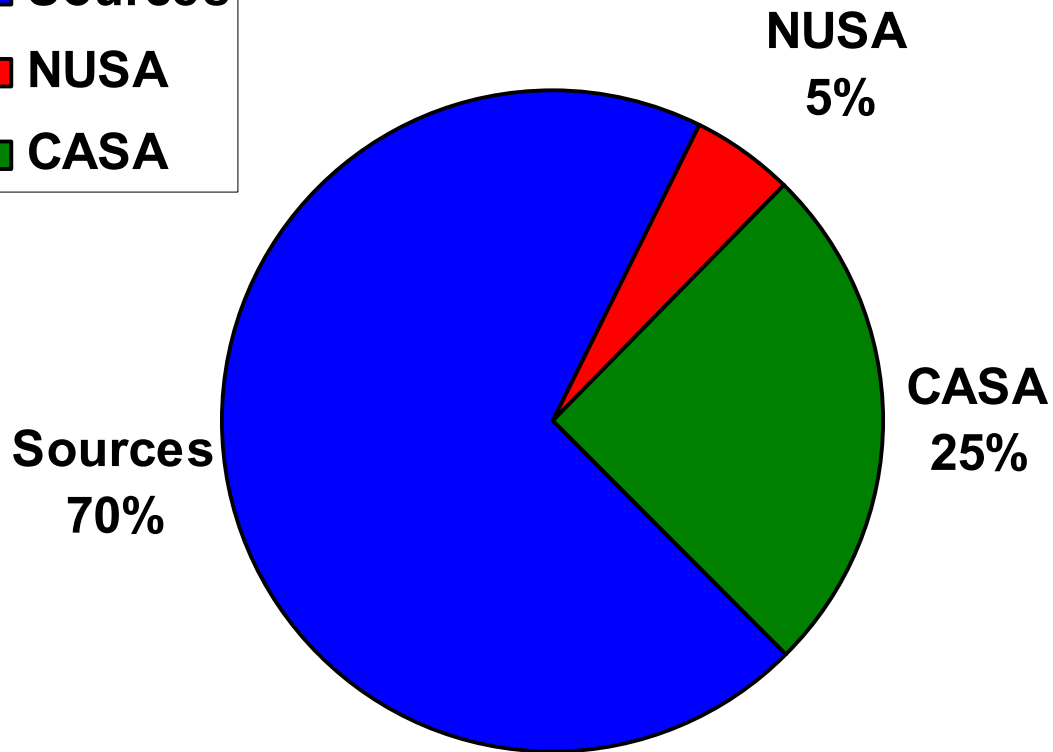
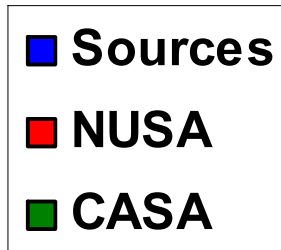


CASA breakdown - NOx

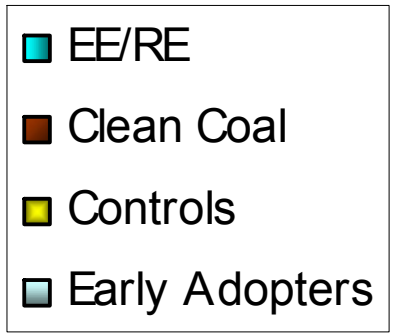
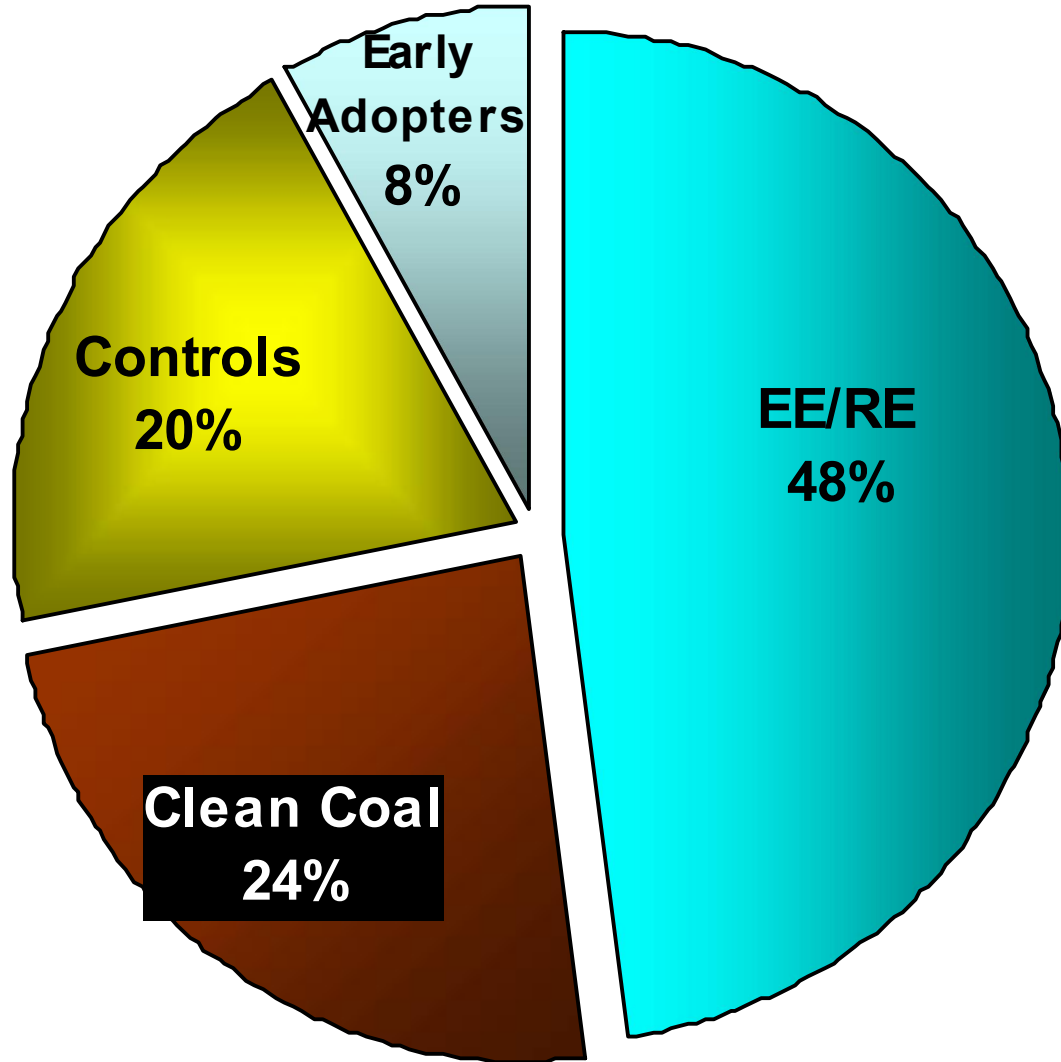
Purpose: Encourage Energy Efficiency, Renewable Energy, Clean Coal Technology, and Early Reductions

- **12%** - EE/RE (Energy Efficiency/Renewable Energy) set-aside
- **6%** - Clean Coal Technology (IGCC)
- **5%** - Installation of Pollution Controls
- **2%** - Early Reductions (Early Adopters): above Clean Coal & Pollution Control projects that commence operation before 2012

NOx Allowances



NOx CASA



USEPA Estimates

Impact of CAIR in Illinois

- By 2015, CAIR will reduce SO₂ emissions by 125,000 tons – 34% reduction.

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

- By 2015, CAIR will reduce emissions of NO_x by 81,000 tons – 55% reduction.

(tons/yr)	2003	2010	2015
NO _x w/o CAIR	146,000	146,000	159,000
NO _x w/CAIR	-	69,000	65,000

- **The NOx CASA expected to result in additional NOx reductions within IL through promotion of EE/RE and clean technology**
- **Retirement of the NOx Compliance Supplement Pool should result in additional NOx reductions**

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



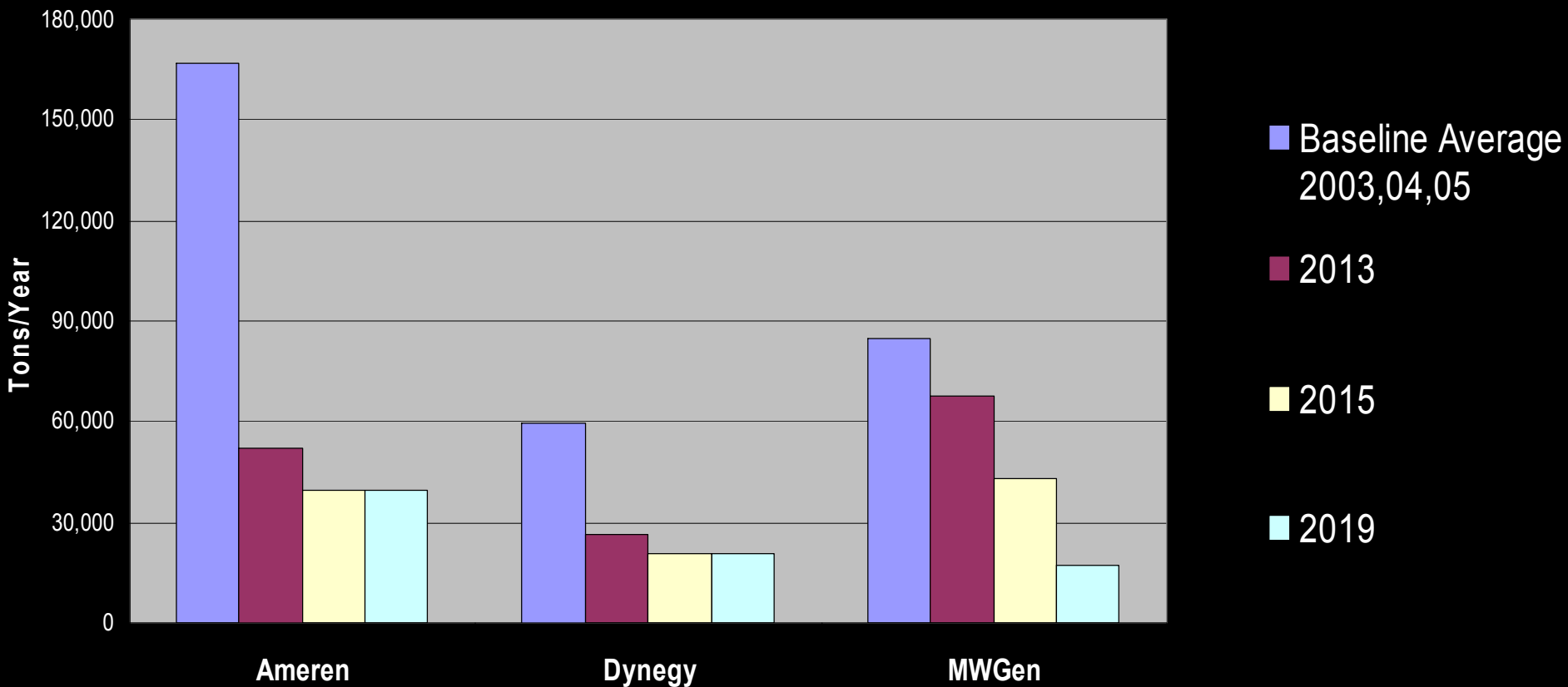
- **Hg rule flexibility in exchange for significant NOx and SO2 reductions – Hg rule was the driver**
- **Negotiated Emission Standards case-by-case**
- **Reversed Industry positions: opposition of proposed rules became support for Hg rule and CAIR**
- **MPS & CPS are optional, however, if companies don't opt-in, further regulation is certain**

- **Multi-Pollutant Standard (MPS)**
 - **Ameren & Dynegy**
 - **Contained in Illinois Hg rule (final and effective 12/21/06)**
 - **35 IAC Part 225, Subpart B, 225.233 Multi Pollutant Standard**
- **Combined Pollutant Standard (CPS)**
 - **Midwest Generation**
 - **Contained in the proposed Illinois CAIR**
 - **35 IAC Part 225, Subpart F: Combined Pollutant Standards**

SO₂ Agreed to Reductions

	<u>SO₂</u> <u>Requirement</u> <u>(lbs/mmbtu)</u>	<u>By</u> <u>Year</u>	<u>SO₂</u> <u>eliminated</u> <u>(tons/yr)</u>	<u>SO₂</u> <u>%</u> <u>reduced</u>
Ameren	0.25	2015	127,145	76.3
Dynegy	0.19	2015	38,745	65
Midwest	0.28	2015	35,343	45
Generation	0.11	2019	67,710	80
Total			<u>233,600</u>	

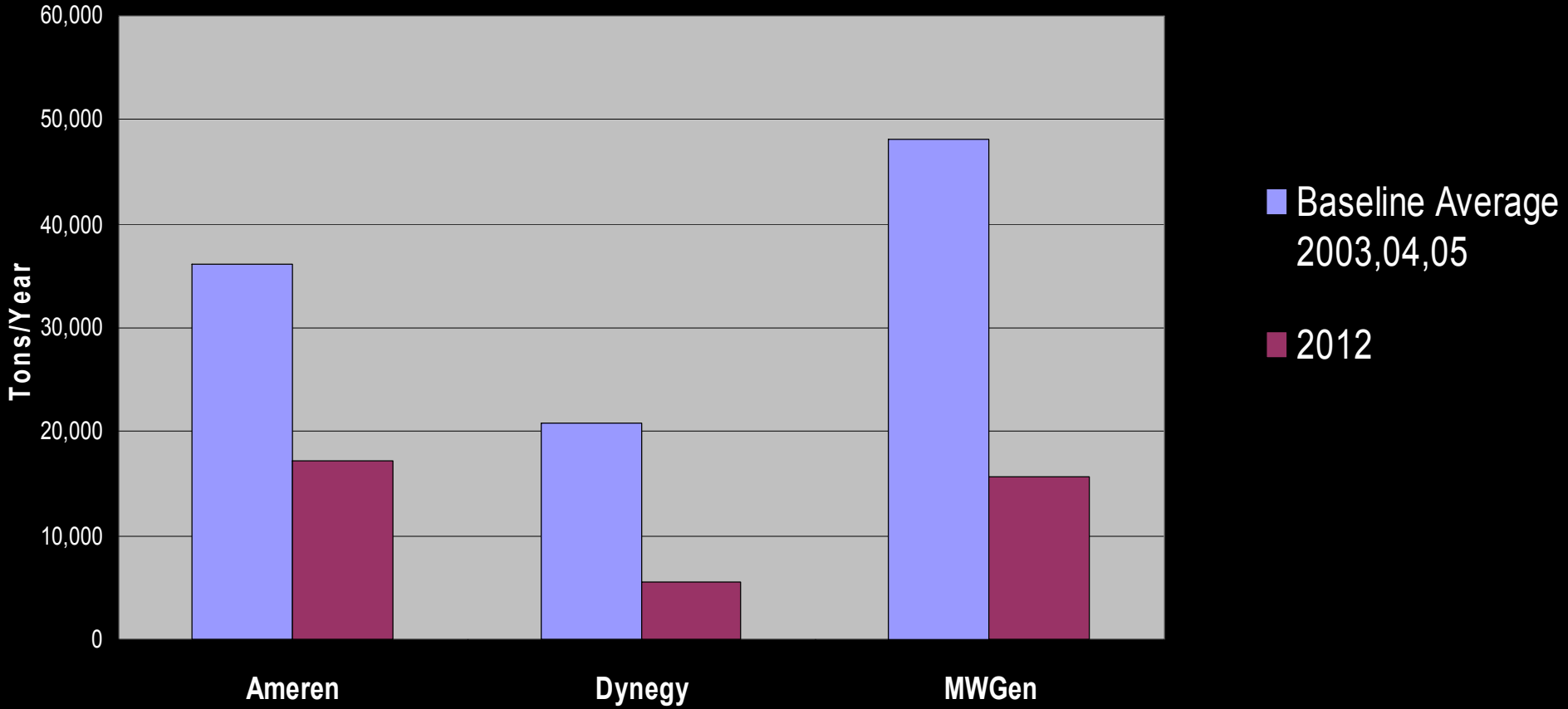
Projected Annual SO₂ Emissions Under the MPS and CPS



NOx Agreed to Reductions

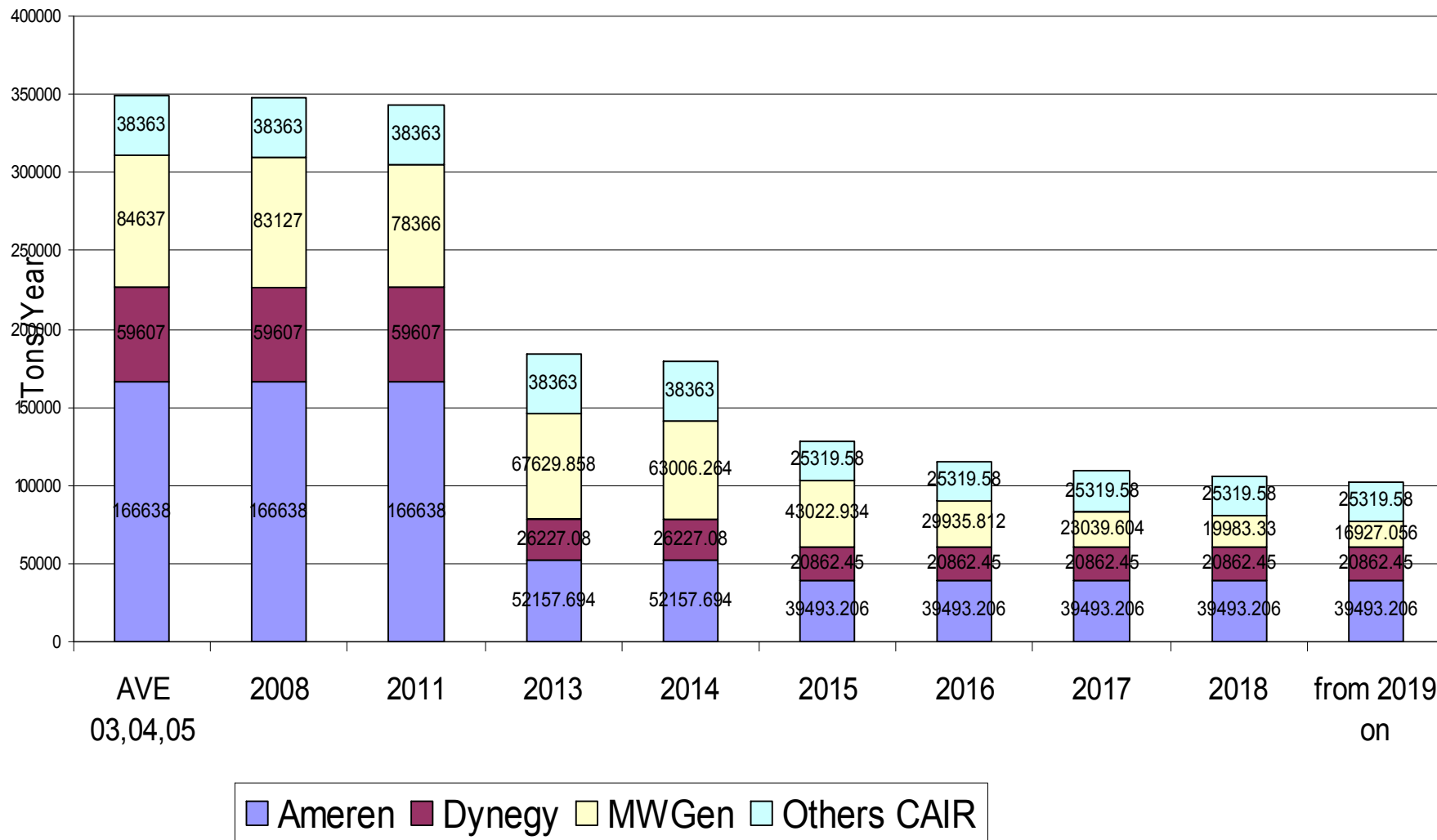
	<u>NOx Requirement (lbs/mmBtu)</u>	<u>By Year</u>	<u>NOx eliminated (tons/yr)</u>	<u>NOx % reduced</u>
Ameren	0.11	2012	18,799	52.2
Dynegy	0.10	2012	9,980	48
Midwest Generation	0.11	2012	32,655	68
Total			<u>61,434</u>	

Projected Annual NOx Emissions Under the MPS and CPS



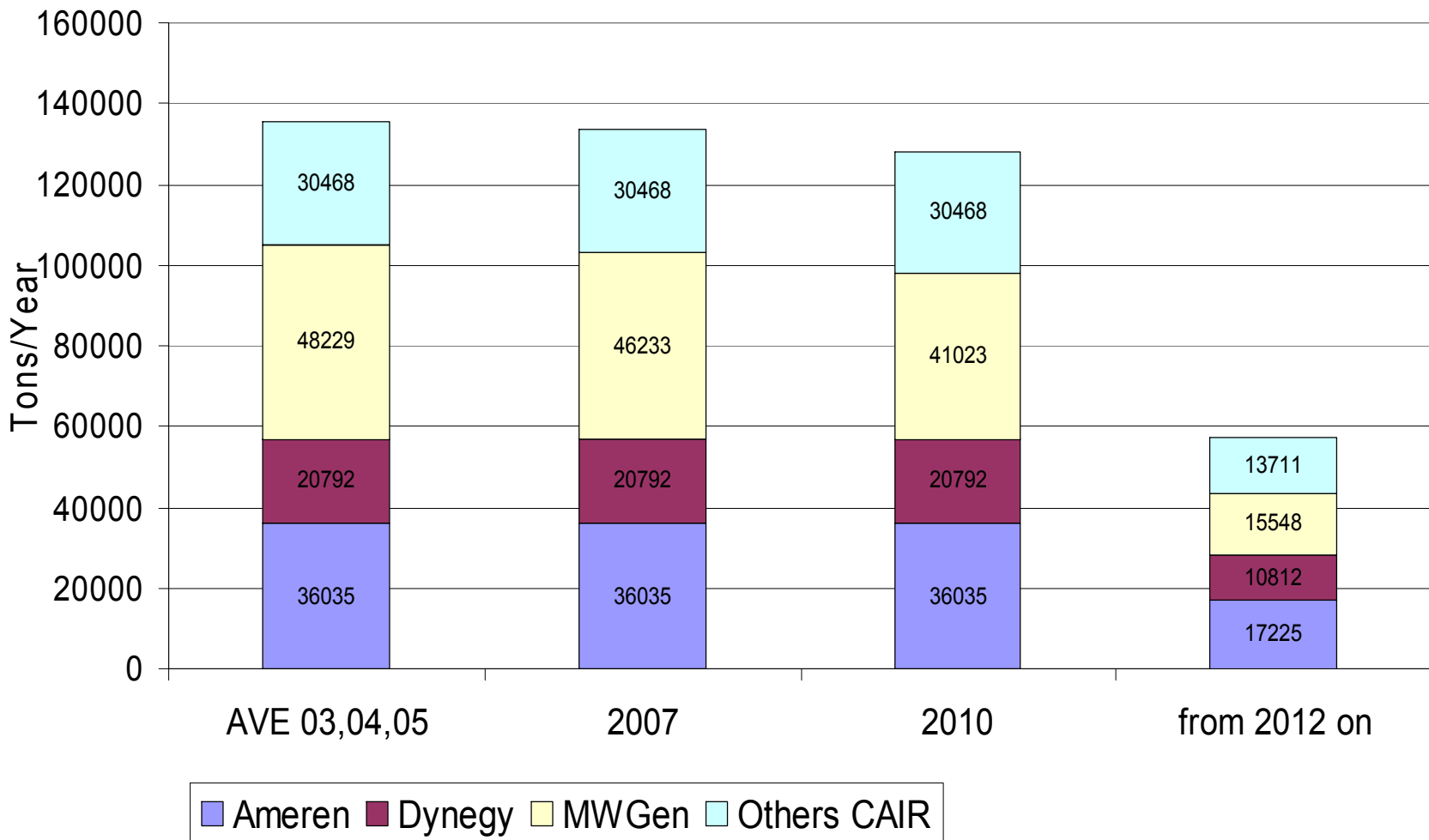
SO₂

Projected Annual SO₂ Emissions Under the MPS and CPS and CAIR



NOx

Projected Annual NOx Emissions Under the MPS and CPS and CAIR



Conclusion: Illinois has considerable reductions coming after 2010

Illinois has recently made groundbreaking strides towards controlling the emissions from coal-fired power plants as well as promoting environmentally beneficial clean coal technologies. 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 (Coal-fired power plants)
- Establishment of the Illinois Climate Change Advisory Group (ICCAG), and
- Governor's Energy Independence Plan.

Other Hot Topics

- Renewable Energy Standard (RES) and Energy Efficiency Portfolio Standard (EPS)
 - RES will require Illinois utilities to supply 2% of their power from renewable energy source 2008, 10% by 2015, and 25% by 2025.
 - EPS will require Illinois utilities to reduce overall electric usage by 0.2% of demand in 2008 and increasing to 2.0% by 2015.
 - RES seen as boon to wind power in Illinois
- Climate Change:
 - Illinois Climate Change Advisory Group – recommendations to Gov soon, include CO2 cap and trade.
 - Green House Gas Registry
 - Chicago Climate Exchange
 - Voluntary reporting of GHG emissions beginning in 2008