

# Wisconsin's Development of its Attainment Demonstration for the New 8-Hour Ozone Standard

## Status Report & Arguments for a Flexible Approach

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### EXECUTIVE SUMMARY

By June 15, 2007, Wisconsin must provide EPA their State Implementation Plan (SIP) demonstrating how the state will attain compliance with the new 8-hour ozone standard. As with past ozone plans, we expect a significant debate on what is necessary to reach attainment.

This is a preliminary assessment of some key policy matters that will be the focus of these upcoming discussions. One of the first issues facing Wisconsin and other members of the Lake Michigan Air Directors Consortium (LADCO) is the role attainment modeling should play when developing the ozone plans. It is literally a billion dollar question.

#### **DNR Asserts Draconian Cuts in Emissions Required**

The latest LADCO modeling predicts that even the most severe reductions will not get Wisconsin into attainment. DNR recently published its views that all the following emission cuts beyond existing programs are required to attain the ozone standard in Wisconsin:

1. 60 percent statewide NO<sub>x</sub> reductions from utilities and large industrial sources.
2. 30 percent statewide NO<sub>x</sub> reductions from highway, off-road, area and small industries.
3. 30 percent VOC reductions in nonattainment areas.

Preliminary estimates of the costs associated with the strategies being evaluated by LADCO and DNR are staggering. Even DNR estimates that the compliance costs necessary to meet the new air quality standards would exceed \$1 billion. Such a burden will cripple Wisconsin industry.

A recent study of utility control measures being evaluated by LADCO found that one scenario would increase electricity rates in Wisconsin \$711 million annually, with a Wisconsin job loss between 5,290 and 7,950. Wisconsin households would see their electricity costs increase by \$360 annually under this scenario. Because this is a statewide strategy, these costs would be borne by all businesses and households across the state, not just in nonattainment areas.

This utility cost study just scratches the surface on the overall economic impacts in Wisconsin if the state pursues the draconian measures that DNR believes is necessary. The billion dollar utility strategy only provides a seven percent NO<sub>x</sub> reduction. The NO<sub>x</sub> controls on non-utility industrial, commercial and institutional boilers being evaluated by LADCO only provide another two percent reduction. All together, the entire set of NO<sub>x</sub> controls being evaluated only gets nine percent reductions beyond existing programs. That is a far cry in both emissions and costs from the 25-35 percent being projected as necessary by the modeling; projections we deem flawed, in any event.

Additional VOC reductions would be local, or in existing nonattainment areas. Those modeled VOC controls target industrial surface coating, industrial solvent cleaning, AIM coatings, portable fuel containers, auto refinishing, consumer and commercial solvents, gasoline dispensing facilities, asphalt paving, and also would impose lower RVP fuel costs on Wisconsin residents. Together, these sweeping mandates would reduce VOC an estimated 12 percent, less than half of the emissions LADCO modeling predicts as necessary.

The incremental costs for the VOC controls projected by the LADCO modeling would be exorbitant. Moreover, the costs for industrial and commercial boilers NOx controls and the increased energy costs associated with the utility NOx mandates would be added to these additional VOC control costs. All of these costs would be layered on the substantial regulatory burdens already placed on eastern Wisconsin businesses from prior ozone mandates. Thus, the proposed mandates would devastate our eastern industrial corridor, making it impossible for those businesses to compete with companies outside this nonattainment area that do not face such costs.

Wisconsin industries must be highly competitive, particularly those with manufacturing plants in the state that must compete on costs against manufacturers throughout the U.S. and in other countries. The higher costs associated with additional ozone mandates would lead to reduced demands for goods manufactured in Wisconsin plants, leading to job loss and related economic damage to the state. The higher cost would also make Wisconsin an undesirable location for expansion and location of new companies.

### **The LADCO Modeling is Flawed and does not Consider Expected Progress**

We argue here that the LADCO modeling is flawed and will lead to unnecessary and draconian mandates if not supplemented with reasoned analysis of air quality trends and expected additional benefits from programs already on the books.

Often lost in the debate over the need for additional air quality mandates is recognition of the significant improvements to our air quality as the result of existing programs. The air quality improvement trends are indisputable, with related emissions reductions real and permanent, resulting in substantial movement toward compliance with the more stringent 8-hour standard.

In the six-county Milwaukee-Racine nonattainment area, Washington and Waukesha counties continue to meet the new standard by substantial margins, and it appears Racine County will move into compliance based on preliminary 2005 data. The average ozone levels for the five Milwaukee County monitoring locations are also far below the standard. While the vagaries of the Clean Air Act require these counties to suffer the same nonattainment status of counties violating the standard in the six-county area, it is encouraging that most of the residents in this populated region are breathing air that meets the rigorous 8-hour standard.

We are also seeing significant improvements of 8-hour values in counties bordering nonattainment areas. All of these counties, from Brown south to Dane, were identified by DNR as "probable violation areas" or "near-violation areas" in 2003 and all were targeted for a nonattainment designation. Consistent with prior DNR miscalculations, none of these counties are remotely close to violating the standard at this time.

More progress is necessary, but aggressive new programs already on the books ensure Wisconsin reaches attainment without additional mandates. For example, EPA's new Clean Air Interstate Rule (CAIR) will result in a 60 percent reduction in NOx emissions across the U.S. from the electric utility sector. Federal mobile and area source programs such as EPA's Tier 2/Low Sulfur Gasoline Rule, Highway Diesel Rule, and the Non-Road Diesel Rule, combined with fleet turnover, will result in sweeping NOx and VOC emission reductions.

### **The Clean Air Act and EPA Allow for a more Reasoned Approach**

While the Clean Air Act generally requires states to demonstrate attainment through photochemical grid modeling, the type of which is being performed by LADCO, both the Act and EPA anticipated the need for flexibility. Specifically, EPA recognizes that photochemical grid analysis is often inaccurate and has, therefore, provided states with an invaluable alternative to adjust incongruent modeling results. This "weight of evidence" tool has been used in the past by other states and EPA and upheld in the courts.

EPA recently blessed a weight of evidence approach that was the basis of a draft Michigan SIP for the 8-hour standard. In that SIP, Michigan documented recognized limitations on the ability of models to produce a meaningful degree of certainty on the benefits of a particular control measure. Accordingly, Michigan used qualitative factors such as emission trends in determining needed controls to reach attainment.

It is expected that other LADCO states will take an approach similar to Michigan. Given the incongruity between Wisconsin's current ozone values and the projected ozone levels by LADCO's modeling, Wisconsin has both an opportunity and obligation to ensure it also implements a flexible approach in developing its SIP.

## I. BACKGROUND – PAST & CURRENT SIP CHALLENGES

Since passage of the Clean Air Act Amendments of 1990, DNR's efforts to develop ozone regulations and policies to ensure compliance with the federal law have been controversial as well as a top industry priority. DNR has in the past proposed ozone mandates such as statewide controls that were not required by federal law. Their prior efforts often reflect overly conservative estimates on what is needed to reach attainment, including projections of future air quality that later proved inaccurate. History, and some early signals from the DNR's Air Bureau, suggest industry should expect another vigorous debate over what really is necessary to meet the new 8-hour ozone standard.

**A. Wisconsin's 2007 Ozone SIP Development Process.** On March 26, 2002, the D.C. Circuit Court upheld EPA's new 8-hour ozone standard, paving the way for the states to implement the new standard. Wisconsin and other states must provide EPA their State Implementation Plans (SIPs) demonstrating compliance with the new 8-hour ozone standard by June 15, 2007. States also must submit related SIPs as part of EPA's Clean Air Interstate Rule (CAIR) by Sept. 11, 2006.

On April 15, 2004 [EPA designated nonattainment areas](#) throughout the country that exceeded the 8-hour ozone standard. Wisconsin 8-hour ozone nonattainment areas and respective compliance deadlines include:

Nonattainment Areas	Counties	Classification	Attainment Date
Door Co	Door	Basic	June 2009
Kewaunee Co	Kewaunee	Basic	June 2009
Manitowoc Co	Manitowoc	Basic	June 2009
Sheboygan	Sheboygan	Moderate	June 2010
Milwaukee-Racine CMSA <sup>1</sup>	Milwaukee, Ozaukee, Racine, Washington, Waukesha, Kenosha	Moderate	June 2010

<sup>1</sup>EPA's policies create a "presumption" that a violation at any monitor within a Consolidated Metropolitan Statistical Area (CMSA), such as the Milwaukee-Racine CMSA, causes each county to be considered nonattainment for the purpose of SIP planning, even if those other counties are well below the ozone standard. For example, Washington and Waukesha counties are considered nonattainment despite compliance with the standard.

On June 15, 2004, EPA issued the final [Phase I Rule](#) to implement the 8-hour ozone standard. The Phase I final rule sets forth the classification scheme for nonattainment areas and requires states' continued obligations with respect to existing 1-hour ozone requirements. While EPA is expected to issue additional guidance and rules, states have little choice but to start the SIP development process now. For example, the basic component of a SIP is administrative rules that must be promulgated in accordance with statutory procedures. In Wisconsin, these procedures include notice and opportunities of comments, as well as legislative review. This process takes time, requiring DNR to start selecting regulatory components to the SIP late this year or in early 2006.

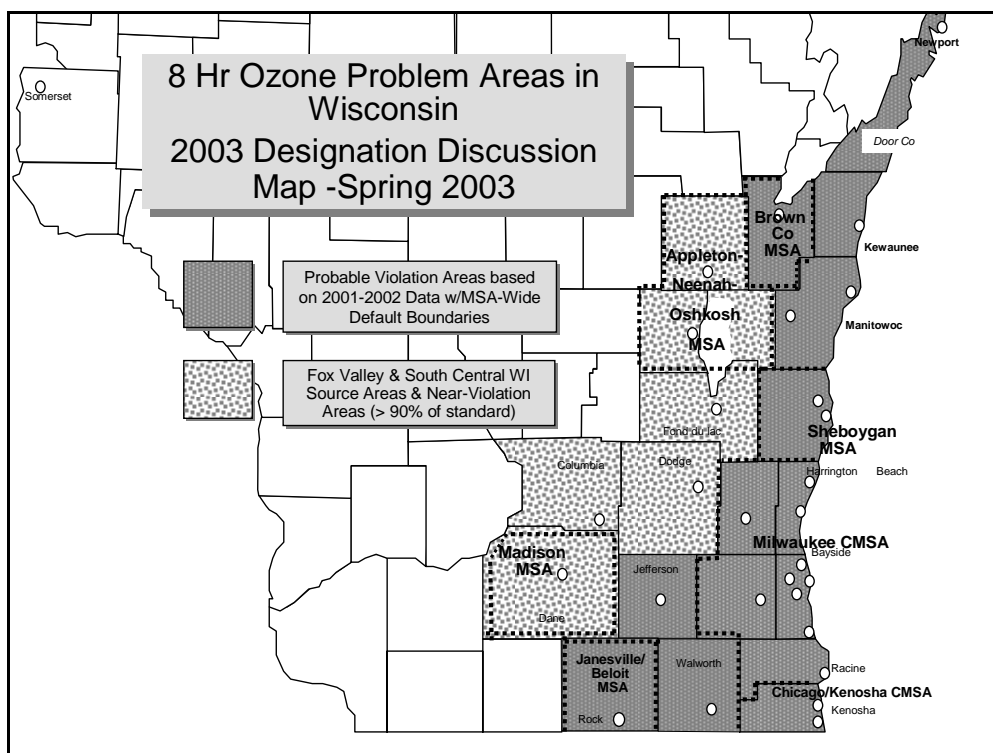
Wisconsin also has special statutory provisions for SIPs. DNR must promulgate as rules prior to a SIP submittal to EPA any "control measures or strategies that impose or may result in regulatory requirements" contained in the SIP. These control measures and strategies must not exceed Clean Air Act requirements. DNR must also submit draft SIPs and related documentation to the Legislature 60 days before they are due EPA, and DNR must respond to legislative comments. DNR's current schedule for the 2007 SIP submittal is as follows:

- June 2006 – Industrial RACT Controls
- Sept. 2006 – Clean Air Interstate Rule due EPA
- June 2007 – 8-Hour Attainment SIP due EPA



**C. DNR's 2003 Proposed 8-Hour Ozone Nonattainment Designations.** Under the Act, the states must submit proposed nonattainment designations for areas violating the new 8-hour standard. Like the 2000 SIP, the process should have been straightforward – those counties violating the standard, or located within a Consolidated Metropolitan Statistical Area (CMSA) in which one or more counties violate the standard, are presumed nonattainment under EPA's guidelines.

In 2003, however, DNR proposed to designate as nonattainment numerous Wisconsin counties in compliance with the standard. While common sense and intervention from the governor's office prevailed, the threat of unnecessary ozone mandates in attainment counties from Brown to Dane was as real in 2003 as it was in 2000. (See DNR's map, below, of ozone "problem areas" targeted for nonattainment designation.)



**Source:** DNR Clean Air Act Task Force Presentation on Major Issues for Designating Areas for the new 8-hour Standard, Part 2, p. 43 (May 20, 2003). **Link:** <http://dnr.wi.gov/org/aw/air/hot/8hrozonestd/may20part2.pdf>

**D. We Expect Attainment Counties to be targeted again for the 8-Hour Ozone SIP.** Both the 2000 and 2003 ozone initiatives noted above were later modified, but not without unnecessary and rancorous debate. Subsequently, the Legislature and Governor Doyle supported additional restrictions on DNR's authority to impose ozone mandates not required under federal law.

While we are early in the planning stages of developing the state's plan to demonstrate compliance with the new ozone standard, there is indication that DNR has again started down a path that could lead to costly and unnecessary regulatory mandates for the entire state. DNR is citing air quality modeling that would lead to severe, if not unattainable, emission reductions. That modeling predicts, and DNR asserts, that Wisconsin needs reductions in the range of 25-35 percent for both VOC and NO<sub>x</sub> beyond already aggressive federal programs such as CAIR. As in 2000, DNR asserts the NO<sub>x</sub> requirements must be imposed on utility and manufacturing sources in attainment counties, with aggressive VOC mandates in nonattainment areas.

## II. EXISTING AIR QUALITY PROGRAMS HAVE SUBSTANTIALLY REDUCED OZONE POLLUTION AND WILL RESULT IN FULL COMPLIANCE WITH THE NEW 8-HOUR STANDARD.

What is often lost in political rhetoric when debating the need for additional air quality requirements is recognition of significant improvements to our air quality as the result of existing programs. Instead, conventional wisdom, often furthered by misconceptions in the media, appears to be that our air quality is getting worse. Nothing could be further from the truth. Moreover, on top of the improvements seen to date will be historic future reductions yet to be realized but assured from regulatory programs already on the books.

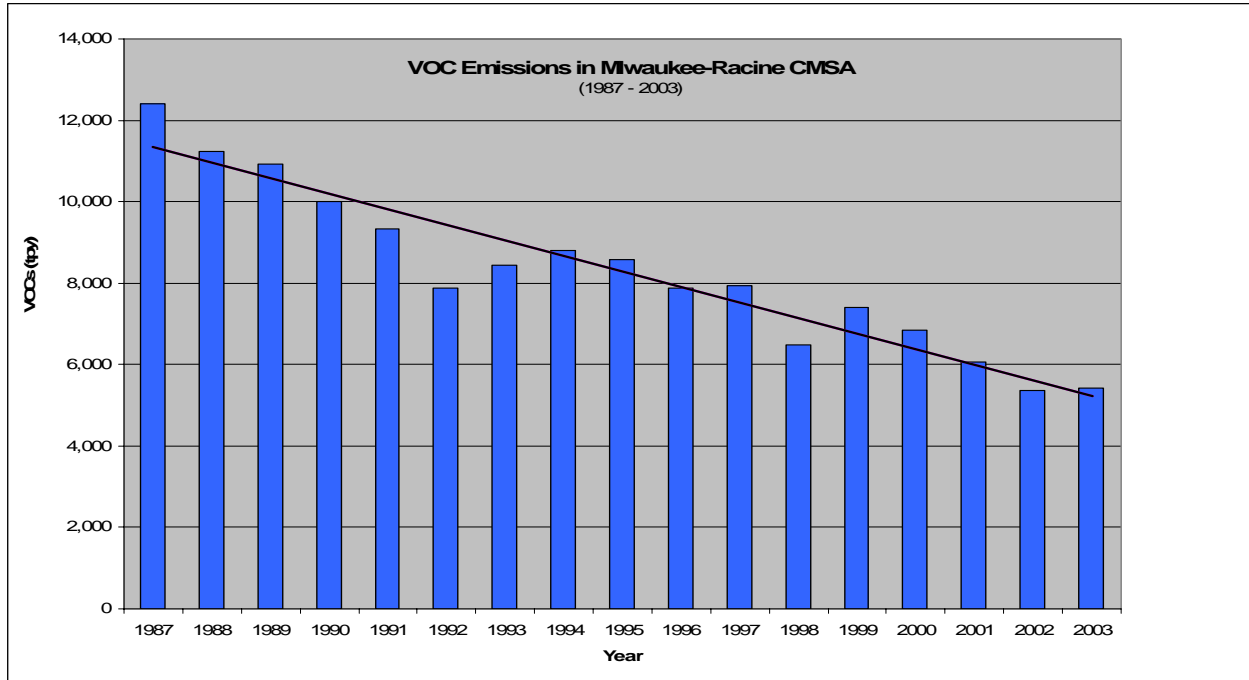
**A. Air Quality Improvements – 1-Hour Ozone.** There are numerous control measures already in place for the 8-hour ozone nonattainment areas. Those measures, mostly promulgated in the 1990s, furthered a then-prevailing VOC strategy in nonattainment counties for the 1-hour ozone standard. The table below is a sampling of the VOC control mandates in those same counties facing potential VOC and NO<sub>x</sub> mandates under the 8-hour standard.

<b>Existing VOC Control Strategies for Nonattainment Areas</b>		
<b>Point Source</b>	<b>Mobile Source</b>	<b>Area Source</b>
Asphalt Production Plants	Conformity Determinations	Automobile Refinishing
Industrial Adhesives	Tier I Light Duty Vehicle Standards	Degreasing Controls
Iron and Steel Foundries RACT	Reformulated Gasoline – Phase II	Solid Waste Toxic Substance Disposal Facility MACT
Wood Product Coating	Enhance I/M	Stage II Vehicle Vapor Recovery
Degreasing Controls	Clean Fuels Fleet	Reformulated Gasoline in Off Road Vehicles
Industrial Solvent Cleanup RACT	Transportation Improvement Program	Traffic Marking Reformulation or Solvent Control
Large Gasoline Storage	Employee Commute Options Program	Wood Furniture Coating Tightening
Offset Lithography	Long Range Transportation Plan	Architectural and Industrial Maintenance Coatings
Plastic Parts Coating Tightening		Municipal Waste Landfills
Wood Furniture Coating RACT		Use of Reformulated Gasoline <ul style="list-style-type: none"> <li>o Stage I Refueling Reductions</li> <li>o Gasoline Tank Truck Leak Reductions</li> <li>o Underground Tank Breathing Losses and Leak Control</li> </ul>
Screen Printing RACT		
Yeast Manufacturing RACT		
		Commercial/Consumer Solvent Reformulation
		On Board Vehicle Controls

**Source:** Redesignation Request for Door and Manitowoc Counties, Appendix 4-2: (May 20, 2003).

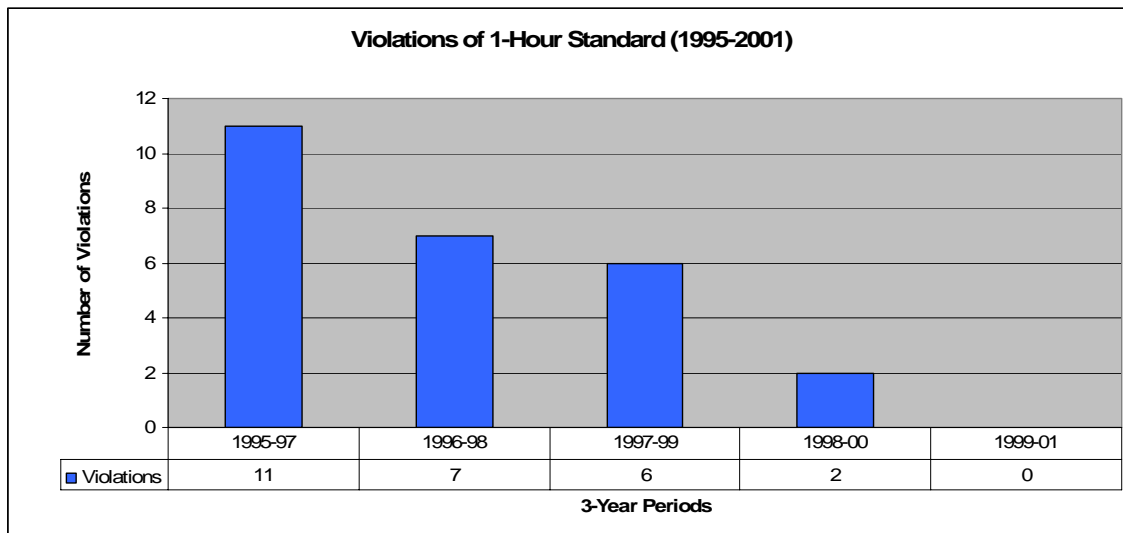
**Link:** [http://dnr.wi.gov/org/aw/air/hot/1hr\\_redes/consolidated02/RedesAPPDX4\\_2L\\_2.pdf](http://dnr.wi.gov/org/aw/air/hot/1hr_redes/consolidated02/RedesAPPDX4_2L_2.pdf).

The following graph shows the significant VOC emission reductions resulting from these mandates and other environmental improvement initiatives by industry in Southeastern Wisconsin's nonattainment area. These emissions reductions are real and permanent and the trend will continue. Many significant VOC sources such as tanneries are all but gone, with other companies reducing or moving their Wisconsin operations. Those that remain have drastically reduced emissions.



**Source:** DNR emission inventory reports for 6-county Southeast nonattainment area (Milwaukee, Kenosha, Ozaukee, Racine, Washington, and Waukesha counties).

The VOC and NOx emission reductions in the 1990s resulted in measurable improvements in air quality relevant to the 1-hour ozone standard. In fact, in 2001 all Wisconsin counties ceased showing any violation of the 1-hour ozone standard. While 2002 found the Milwaukee-Racine CMSA area back in noncompliance, all other counties in Wisconsin continued to meet the 1-hour standard. Compliance in 2001 for the entire state, years before the 2007 deadline, was a watershed event. The improvement trends are indisputable and confirm that DNR's effort as part of a 1-hour SIP to impose mandates in attainment counties, as well as severe restrictions in nonattainment counties, was overly conservative and never justified.

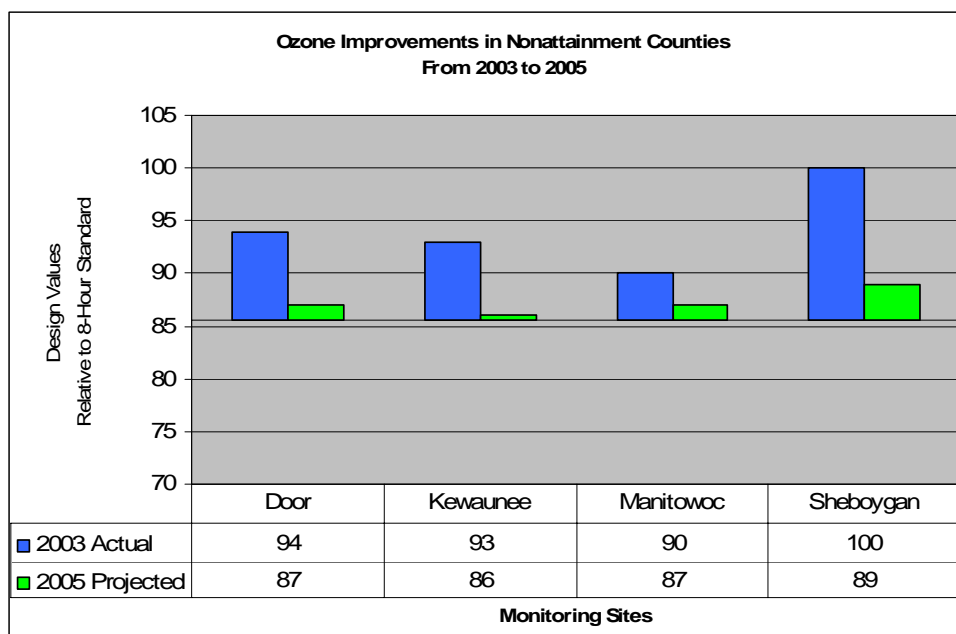


**Source:** Summary of Ozone Monitoring Data in the Lake Michigan Region: 1999-2001 (May 22, 2002).  
**Link:** [http://dnr.wi.gov/org/aw/air/hot/1hr\\_redes/ozonemon.pdf](http://dnr.wi.gov/org/aw/air/hot/1hr_redes/ozonemon.pdf)

**B. Air Quality Improvements – 8-Hour Ozone.** As is often the case with environmental policy developments, just as we are on the verge of clearing one standard, the bar is raised. So it was with ozone as EPA moved from the 1-hour standard to the more stringent 8-hour standard. Nevertheless, improvements seen relative to the 1-hour standard were encouraging and suggest substantial movement toward compliance with the more stringent 8-hour standard.

The 8-hour ozone standard is 80 parts per billion (ppb) peak daily 8-hour running average. EPA rounds that to 84 ppb for significant digit purposes. A site is in violation of the standard when the truncated (rounded down) average of the fourth highest values in each of the most recent three years is 85 ppb or higher. That average over the three-year period is called the site's "design value." The fourth highest value in any given year is known as that year's "critical value." For example, the Harrington Beach site in Ozaukee County had fourth highest readings of 99, 73, 94 ppb for 2003, 2004, and 2005. The average of those three readings is 88.67, which rounded down gives an 88 ppb design value.

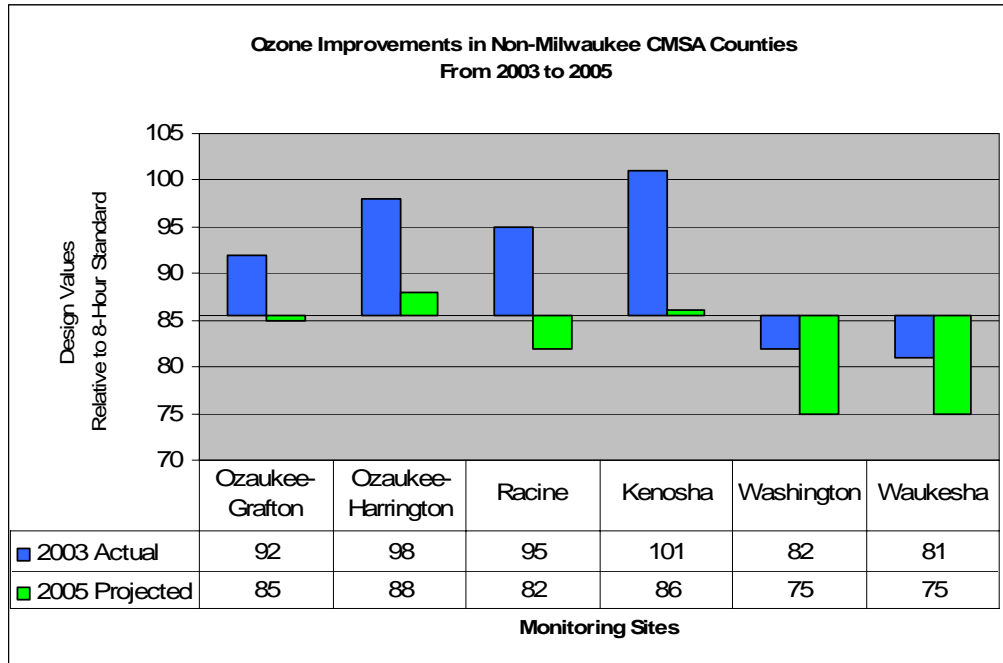
The blue bars (left) in the charts below reflect the current legal status relative to the 85 ppb standard at monitoring locations within the existing nonattainment areas, which is based on 2001-03 ozone levels. These design values were used for Wisconsin's initial attainment/nonattainment designations for the 8-hour standard. The green bars (right) are projected design values using 2003-05 ozone values. The 2005 monitored values are not official, but the projections show marked improvement despite the unusually hot 2005 summer. In fact, almost every monitoring site is recording significantly better design values. Of the 14 monitoring sites discussed here, seven locations now appear to meet the standard, with the other seven sites close to compliance. On average, the nonattainment area monitoring sites are at 83 ppb, down close to 8 ppb in just two years.



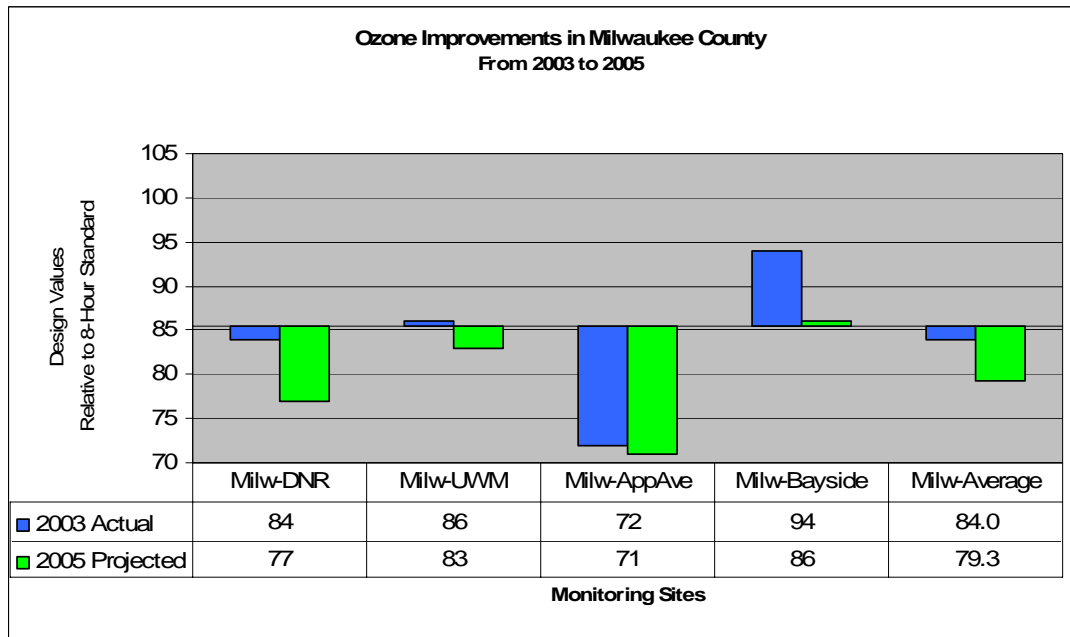
**Source 2003 Values:** 2003 Design Values from DNR briefing documents on designation status.

**Source 2005 Values:** 2003-04 data from EPA web site. [Link: http://www.epa.gov/air/data/monvals.html?st-WI-Wisconsin](http://www.epa.gov/air/data/monvals.html?st-WI-Wisconsin). 2005 data from Wisconsin DNR Air Monitoring Network, 4<sup>th</sup> Highest May-Sept 2005 (Preliminary data only), (Run on Sept. 5, 2005). [Link: http://maps.dnr.state.wi.us/imf/dnrimg.jsp?site=wisards](http://maps.dnr.state.wi.us/imf/dnrimg.jsp?site=wisards)

As the chart below reflects, in the six-county Milwaukee-Racine CMSA area, Washington and Waukesha counties continue to meet the standard, but now by a substantial margin of 10 ppb. It appears Racine County will move into compliance with a projected 82 ppb design value, down from 95 ppb in 2003, for an astonishing 13 ppb improvement. Both Ozaukee locations are very close to meeting the standard.

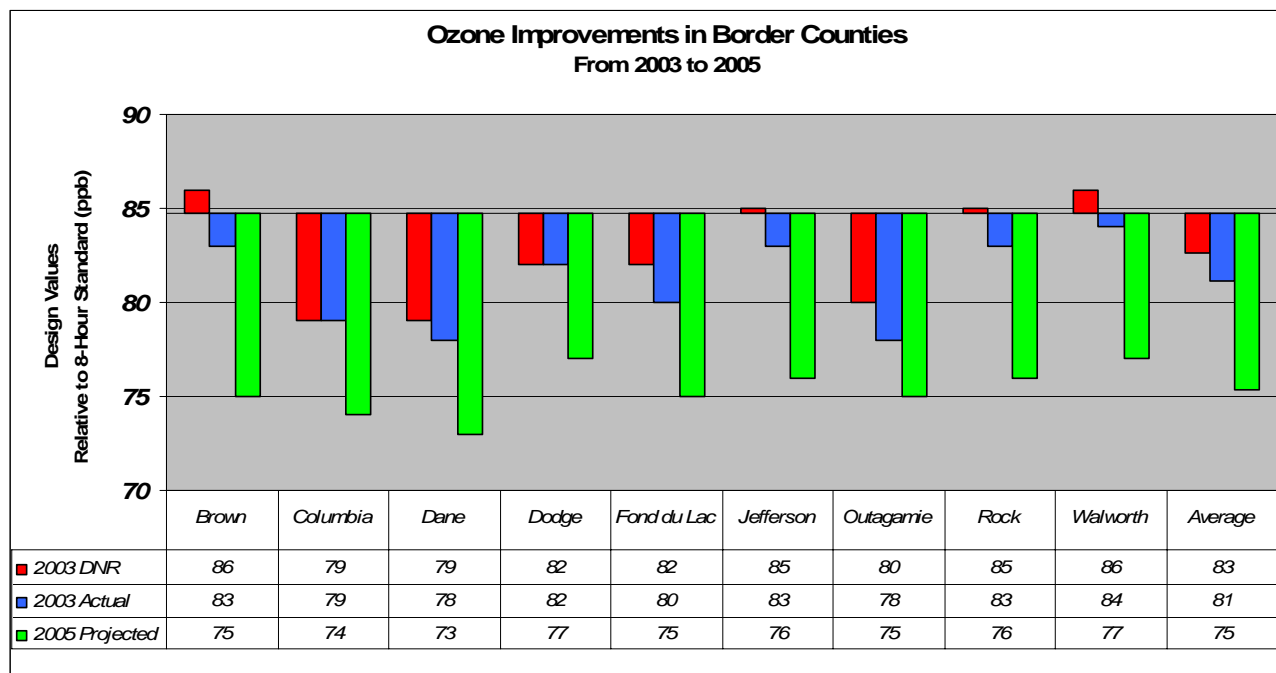


The average monitored design value for the five current Milwaukee County monitoring locations is 77 ppb, far below the standard. (The graph below only includes those four locations with both 2003 and 2005 values.) Unfortunately, environmental groups, with the media following suit, publish reports stating that everyone in this six-county area is subject to air quality above the standards. This is not just twisting the facts, it is an outright misrepresentation. Most citizens in the six-county area are not seeing levels of ozone above the standard. It is only the legal vagaries of the Clean Air Act that require attainment counties within a CMSA to be tagged with the nonattainment status associated with the worst monitor, even if that offending monitor resides far outside the otherwise compliant county.



Also worth noting are the improvements at "border county" monitoring sites. The red bars (left) in the table below compare 2003 design values "projected" by DNR using 2001-02 ozone values during the initial designation debate. The blue bars (middle) reflect the actual 2003 design values using 2001-03

ozone levels, with the green bars (right) being the 2005 projected design values using preliminary 2003-05 ozone levels. All of those counties were identified by Air Bureau staff as “probable violation areas” or “near-violation areas” in 2003, and all were targeted for a nonattainment designation. None of these counties are remotely close to violating the standard at this time.



DNR correctly points out that the improvements noted above take into account an unusually cool 2004. The average of the fourth highest ozone levels in 2004 for the four nonattainment counties (Door, Kewaunee, Manitowoc, and Sheboygan) was 76 ppb, and for the six-county Milwaukee-Racine CMSA, 68 ppb. Thanks in part to the weather, not one monitoring site in the state even came close to breaching the 85 ppb standard.

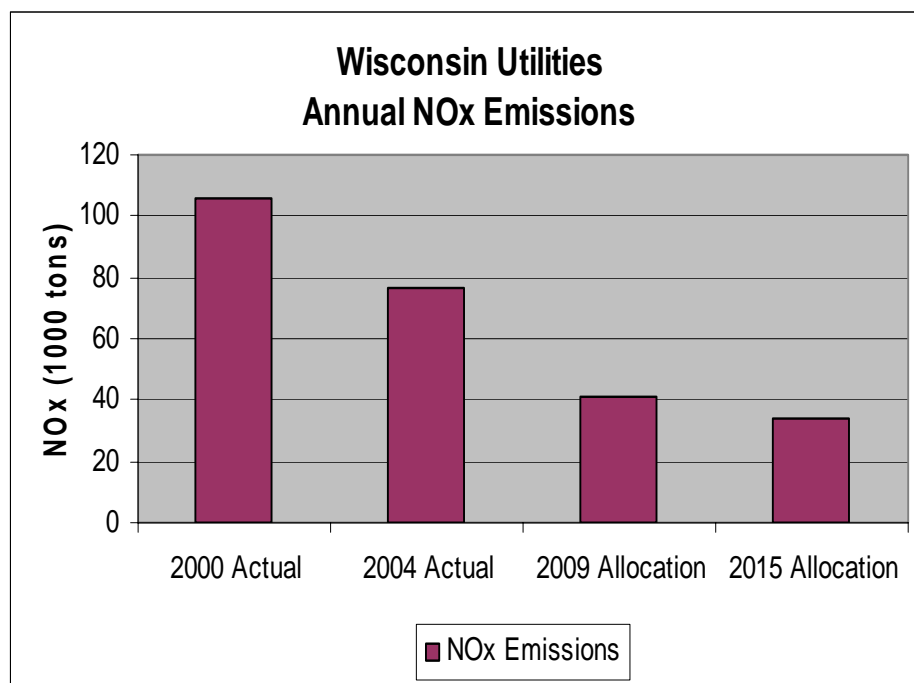
But on the other hand, we should also recognize that we saw these significant improvements in the three-year design values while factoring in higher than would be expected ozone levels due to the unusually hot summer of 2005. For example, Milwaukee saw a 10-day hot streak in July with an average high over the period of 88 degrees, well above average July temperatures, including six days in the 90s. As expected, the first and third highest ozone readings for Milwaukee County were during that period. Yet, the average monitored 2005 design value for the five Milwaukee County monitoring locations is 77 ppb, far below the standard, despite the unusually hot summer of 2005.

The hot summer did little to tip border counties toward nonattainment, as some suggest. For example, Madison saw a 16-day streak in July with an average high of 88 degrees and four straight days in the 90s. Dane County also saw its two highest ozone readings during that period. But as the “ozone alerts” flew off the presses and the local media warned of ozone levels approaching “dangerous levels,” the fact of the matter was that Dane County’s critical value for 2005 was still only 77 ppb, better than 2001 and 2002. Their projected 2005 design value is 73 ppb, a dozen points below the standard. Despite the rhetoric and poor reporting, there is no plausible scenario in which Dane County reaches nonattainment.

So where are we? In 2004, with its unusually cool summer, we saw lower than expected ozone levels. In 2005, with its abnormally hot summer, we saw elevated ozone levels. Nothing surprising here; the vagaries of weather will always dictate ozone levels. What is indisputable is that the substantial reductions in emissions that form ozone have resulted in registered improvements in ozone levels, even measured against the more resilient 8-hour standard. And what is most notable, these successes that are

bringing us to the brink of full compliance were accomplished **without** the benefits of the most significant reductions ever seen under federal programs that are already on the books.

**C. EPA's Clean Air Interstate Rule (CAIR).** It is well recognized that regional and national NOx controls are the key to reaching compliance with the ozone standard in a cost-effective manner. It was this rationale that prompted EPA to promulgate its Clean Air Interstate Rule (CAIR) that targets NOx emissions from utilities. The rule was finalized on March 10, 2005. EPA concluded that the effect of CAIR and other regional efforts is that "attainment would be achieved in a more equitable, cost-effective manner than if each nonattainment area attempted to achieve attainment by implementing local emission reductions alone." Such results should not be all that surprising considering the significant reductions that will result from the new federal program, as reflected in the table below.

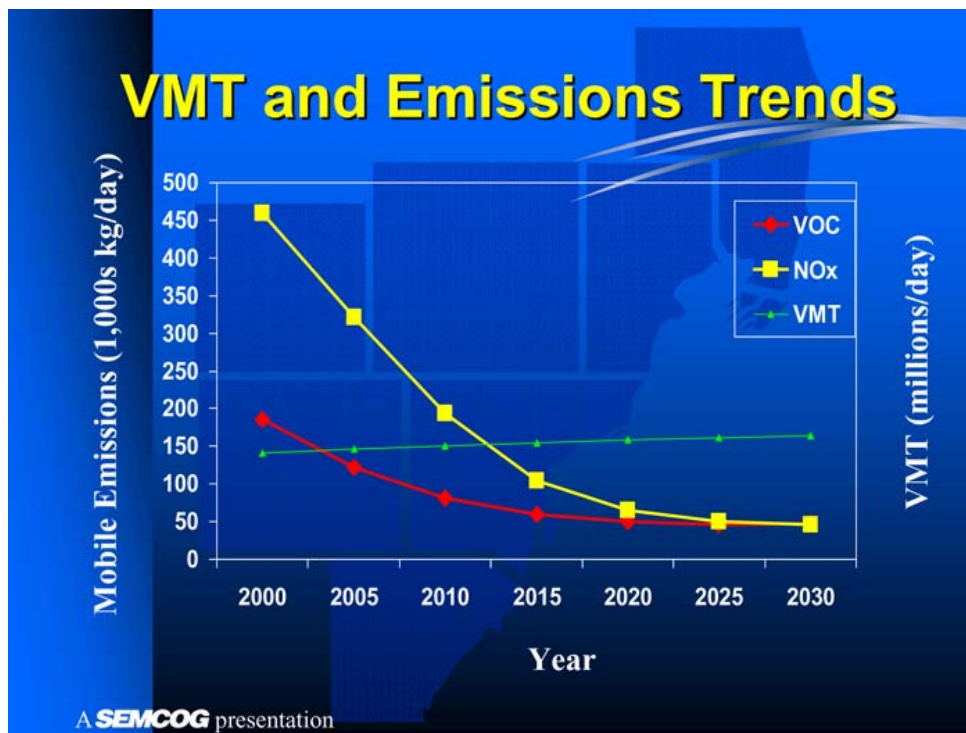


While CAIR continues to be used as a political football for environmental groups and aligned state agencies, the fact is that the federal rule will result in massive reductions from Wisconsin utilities. Wisconsin industry rightfully asserts that CAIR will bring us into full compliance without any further mandates. But future reductions do not end with CAIR. Additional federal programs and industry initiatives will further reduce emission levels.

**D. Other EPA Programs Reducing Ozone.** Other federal programs on the books that help ensure states move toward compliance include aggressive mobile source programs for both on-road and off-road vehicles and equipment. The more important programs and expected NOx reductions include:

- **Tier 2/Low Sulfur Gasoline Rule** – Issued in early 2000. NOx reductions of 856,000 tons per year (tpy) by 2007; 1,236,000 tpy by 2010; and reaching 2,220,000 tpy in 2020, with rising reductions beyond 2020.
- **Highway Diesel Rule** – Issued in early 2001. NOx reductions of 58,000 tpy in 2007; 1,820,000 tpy 2020; and reaching 2,600,000 tpy by 2030.
- **Non-Road Diesel Rule** – Issued in 2004. Fuel controls phased in at 2007 and 2010/2012 deadlines. Engine standards will be phased in beginning in 2008. This phased approach will eventually result in NOx reductions of 444,000 tpy in 2020 and 738,000 tpy by 2030.

As the graph below denotes, these federal mobile source programs, combined with fleet turnover, will result in sweeping NOx and VOC emission reductions.



**Source:** Fuel Issues in Michigan LADCO presentation by Robert Rusch, MDEQ Air Quality Division, (June 29, 2005).  
**Link:** [http://ladco.org/reports/rpo/Regional%20Air%20Quality/June28\\_2005/June-Workshop/Fuels.pdf](http://ladco.org/reports/rpo/Regional%20Air%20Quality/June28_2005/June-Workshop/Fuels.pdf)

The ozone progress to date has been considerable, to the point we are meeting the 8-hour standard at many monitoring sites within existing nonattainment areas. In addition, counties bordering nonattainment areas are in no jeopardy of breaching the new standard. The trend-lines noted above for Wisconsin VOC sources in the six-county Milwaukee-Racine nonattainment area, and the significant regional and state NOx reductions from CAIR and other federal programs that reduce both NOx and VOCs, point to the conclusion that no additional mandates are necessary to take us the last few steps needed to reach attainment. The benefits of these new programs and continued efforts by industry may be overlooked, however, if agencies rely on inaccurate ozone attainment modeling that has little basis in reality.

### III. LADCO STRATEGY MODELING – EITHER NOTHING WORKS OR IT'S WRONG

As noted above, LADCO is undertaking modeling of various control strategies to support member states' efforts relating to the 8-hour ozone attainment demonstration SIP. LADCO's latest modeling effort, [Round 2 Strategy Modeling](#), paints a grim picture in that it shows a significant shortfall toward attainment, even considering CAIR and other in-place rules. That is, if the model is to be believed, substantial local and regional controls would be needed to reach attainment.

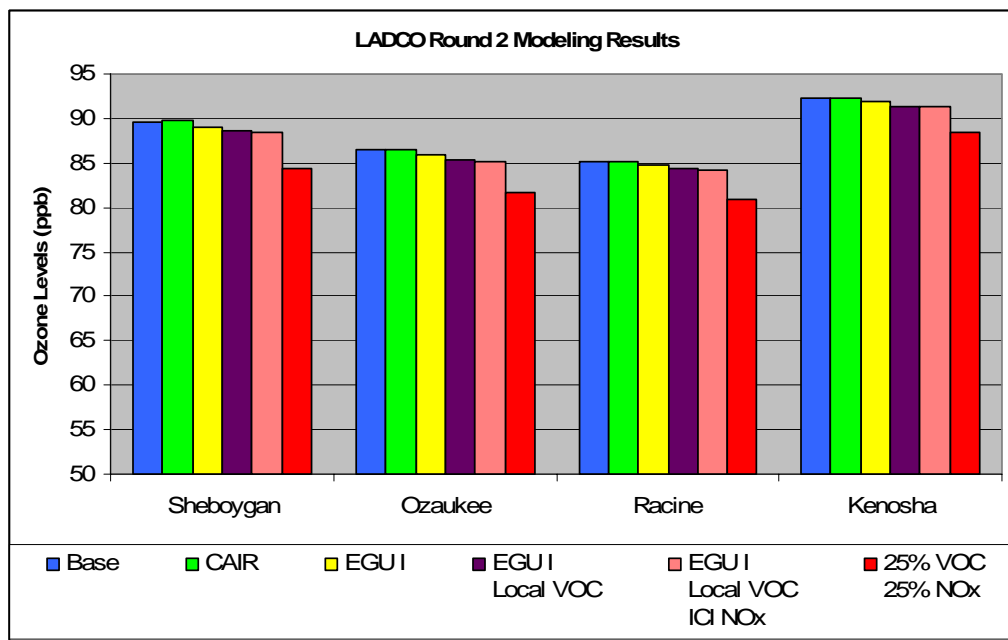
What puts a fine point on the shortcomings of modeling in general, and LADCO's Round 2 in particular, is that the model sees little benefit resulting from not only programs such as CAIR, but aggressive additional controls strategies that barely budge the nonattainment needle toward attainment. A listing of "candidate control measures" and related white papers can be found on LADCO's [Regional Air Quality Planning](#) web page.

**A. LADCO Strategies Modeled.** The strategies modeled by LADCO to date and included in this discussion are the following:

- Strategy 4a. Additional statewide controls on electric utilities in the 5-state LADCO region (EGU 1).
- Strategy 3a. In addition to EGU 1, VOC point source controls, area source controls, and lower RVP fuel. These measures include the following:
  - **Industrial Surface Coating** – Adopt more stringent RACT (90% reduction from uncontrolled) and lower applicability thresholds.
  - **Industrial Solvent Cleaning** – Adopt Chicago/Metro East cold cleaning regulations (66% reduction from uncontrolled).
  - **AIM Coatings** – Adopt California South Coast Phase III VOC limits, in addition to OTC model rule.
  - **Portable Fuel Containers** – Adopt incentive program to accelerate phase-in of compliant PFCs.
  - **Auto Refinishing** – Adopt more stringent RACT regulations (89% reduction from uncontrolled).
  - **Consumer and Commercial Solvents** – Adopt California 2003 SIP requirements with additional products and more stringent VOC limits, in addition to OTC model rule (25% reduction beyond federal Part 59 rule).
  - **Gasoline Dispensing Facilities** – Require air pollution control devices for UST vents (90%).
  - **Asphalt Paving** – Adopt California South Coast VOC content limit for emulsified asphalt (50% reduction).
  - **Low RVP Fuel** – Move to 7.0 psi in all current ozone nonattainment counties, and include adjacent attainment counties if desired by state.
- Strategy 5. In addition to the above statewide EGU NOx and local VOC controls, point and areas source NOx controls on industrial, commercial and institutional (ICI) boilers, as well as on refineries and cement kilns.
- 25% VOC & 25%NOx Reductions. This “sensitivity run” assumes 25 percent reductions beyond CAIR.

**B. LADCO Modeling Results do not Reflect Reality.** The chart below shows the Round 2 LADCO modeling results. Despite the significant level of reductions under the above strategies, including CAIR, additional NOx controls on utilities, numerous VOC measures, and ICI NOx controls, the ozone levels barely budge. The model finds the significant reductions from CAIR do absolutely nothing for Ozaukee, Racine or Kenosha counties, and would actually **increase** ozone in Sheboygan County.

According to the model, only the draconian 25 percent emissions reductions beyond CAIR for both VOC and NOx have much effect on ozone levels. Even then, the modeling predicts Kenosha would still be in violation. Notably, we predict Kenosha will have an 86 ppb design value for 2003-05, while the model predicts the 25 percent VOC/NOx scenario would get Kenosha to 88.4 ppb, which reflects an increase in ozone from what we are now seeing in Kenosha. ***Even after the massive emission reductions expected under CAIR and in the mobile source sectors, and an additional 25 percent VOC/NOx cut, are we to believe ozone concentrations will go up in Kenosha?***



A reasonable assumption one could reach when reviewing the modeling results is that nothing works. An alternate, more plausible conclusion is that there is something fundamentally wrong with LADCO's modeling.

**C. What does LADCO Modeling Project as Needed.** The LADCO modeling paints an impossible scenario, with the preliminary results from Round 2 modeling being that Wisconsin must make substantial additional reductions beyond CAIR in the range of 25-35 percent for both VOC local emissions and NOx regional emissions. The relevant LADCO "sensitivity" runs using 25 percent NOx and VOC reductions show Kenosha still in noncompliance. Thus, the preliminary indication from DNR, consistent with these modeling results, is that an additional 25-35 percent reduction beyond CAIR is required.

Specifically, a recent [DNR briefing paper](#) states all of the following is required to attain the ozone standard in Wisconsin:

4. 60 percent statewide reduction in NOx from utilities and large industrial sources.
5. 30 percent statewide NOx reduction from highway, off-road, area and small industries.
6. 30 percent VOC reduction in nonattainment areas.

These levels of reductions are beyond CAIR and well exceed those reductions projected from the sweeping Strategy 5 controls. Assuming a required 30 percent reduction, the additional NOx and VOC reductions from the already overly aggressive Strategy 5 measures would be drastic and prohibitively expensive. According to LADCO's Round 2 modeling report:

- Strategy 5 reductions reduce VOCs 12 percent, which means that ***the additional VOC reductions to reach 30 percent would be equivalent to 250 percent of what would result from the Strategy 5 VOC controls noted above.*** (See Strategy 3a, above)
- Strategy 5 reductions reduce NOx seven percent beyond CAIR, which means that ***the additional NOx reductions needed to hit a 30 percent target would be equivalent to over 400 percent of what would result from the Strategy 5 NOx controls noted above.***

**D. The Additional Compliance Burdens beyond CAIR would cripple Wisconsin.** Preliminary estimates of the costs associated with those strategies being evaluate by LADCO and DNR are

staggering. ***Even DNR estimates that the compliance costs necessary to meet the new air quality standards would exceed \$1 billion. Such a burden would cripple Wisconsin's economy.***

A recent [Beyond CAIR Cost Study](#) of the [utility control measures evaluated by LADCO](#) found that one control scenario (EGU1) would increase electricity rates in Wisconsin \$345 million annually, with a related job loss of between 2,560 and 3,830. If the next level of controls (EGU2) is imposed, the costs would be \$711 million annually, with a Wisconsin job loss between 5,290 and 7,950. Wisconsin households would see their electricity costs increase by \$360 annually under this scenario. Because this is a statewide strategy, these costs would be borne by all businesses and households across the state, not just in nonattainment areas. The study's findings are conservative because impacts of higher electric rates on other industries and the commercial sector (which together account for about one-third of all electricity sales) were not included. Nevertheless, the total economic impact is projected to exceed \$1 billion.

The study assesses electric rate impacts in nine industries in the Midwest based on their intensive use of electricity. Major Wisconsin employers noted in the report that would be impacted by higher energy costs are set forth in the table below.

Industry Sector	Major Wis Employers	
Food Products	American Foods Group Pakerland Packing Co Great Lakes Cheese Wisconsin Kraft Food	
Paper	Appleton Papers Georgia-Pacific Procter & Gamble Paper Stora Enso NA Domtar Industries Curwood Inc.	
Chemical	S C Johnson Wax	
Plastics & Rubber Manufacturing	Church Seat Co	
Primary Metals	Thyssen Krupp Waupaca Inc Kohler Co J L French Automotive Casting	
Fabricated Metals	Polaris Industries Snap-On Tool Venco Products Ladish Co Inc	
Machinery Manufacturing	Briggs & Stratton Trane CNH American LC	
Computer Manufacturing	Plexus Corp	
Transportation Equipment	General Motors DaimlerChrysler Corp	

This utility cost study just scratches the surface of the overall economic impacts in Wisconsin if the state pursues the draconian measures that the LADCO modeling would dictate. For example, moving from EGU1 to EGU2 utility controls only provides an additional two percent NOx reduction, but adds another \$366 million and thousands of more lost jobs. The NOx controls on non-utility industrial, commercial and institutional boilers likewise only provide another two percent NOx reductions. All together, the entire set of NOx controls being evaluated gets only 9 percent reductions beyond CAIR. That is a far cry in both emissions and costs from the 25-35 percent being projected as necessary by the modeling. In other words, if the incremental cost for a two percent NOx reduction (EGU1 to EGU2) is

\$366 million, how could Wisconsin possibly get to the 25-35 percent target? Even if costs were not relevant, where these additional reductions would come from is at best perplexing.

While the NO<sub>x</sub> measures under consideration would be statewide under LADCO modeling strategies, LADCO and DNR foresee that any additional VOC reductions would be local, or in existing nonattainment areas. Those modeled VOC controls target industrial surface coating, industrial solvent cleaning, AIM coatings, portable fuel containers, auto refinishing, consumer and commercial solvents, gasoline dispensing facilities, asphalt paving, and also would impose lower RVP fuel costs on Wisconsin residents. Together, these sweeping mandates would reduce VOC an estimated 12 percent, less than half projected as necessary by LADCO modeling.

It is estimated that existing VOC controls currently have an incremental cost approaching \$10,000 per ton. The incremental costs for the VOC controls projected by the Round 2 modeling would be exorbitant. Moreover, costs for NO<sub>x</sub> controls for industrial boilers and the increased energy costs associated utility mandates would be piled on these additional VOC control costs. All of these costs would be layered on the substantial regulatory burdens already placed on eastern Wisconsin businesses from prior ozone mandates. Thus, the proposed mandates would devastate our eastern industrial corridor, making it impossible for those businesses to compete with companies outside the region that do not face anything close to the compliance costs envisioned under the LADCO strategies.

Wisconsin industries must be highly competitive, particularly those with manufacturing plants in the state that must compete on costs against manufacturers throughout the U.S. and in other countries. The higher costs associated with additional ozone mandates would lead to reduced demands for goods manufactured in Wisconsin plants, leading to job loss and related economic damage to the state. The higher cost would also make Wisconsin a less attractive location for expansion and location of new companies.

Recognition of the progress already made and the improvements in air quality reasonably expected from programs in place, however, leads to the reasoned conclusion that Wisconsin will reach attainment without additional mandates. All that is necessary is to realize that modeling, particularly that modeling now before us, is often flawed and can lead to implausible results. Anyone with even a basic understanding of environmental policy knows that the air quality is not getting worse and will certainly get better. Thankfully, EPA, LADCO staff, other states, and the courts understand this, as well as the reality that choosing to live or die with modeling results is irresponsible. We trust DNR will agree.

#### **IV. OPPORTUNITIES FOR FLEXIBILITY IN DEVELOPING WISCONSIN'S OZONE PLAN**

While the Clean Air Act generally requires states to demonstrate attainment through photochemical grid modeling, the type of which is being performed by LADCO, both the Act and EPA anticipated the need for flexibility. The states have considerable leeway in selecting the particular methods and programs they will use to achieve compliance with the national standards. Specifically, EPA recognizes that photochemical grid analysis is often inaccurate, and has provided states with an invaluable option to adjust incongruent modeling results. This "weight of evidence" tool has been used in the past by states and EPA and has been upheld in the courts.

**A. EPA's Weight of Evidence Guidance.** A weight of evidence (WOE) determination allows states to use trends in ambient air quality and rates of pollutant emissions, and modeling of observed concentrations of ozone concentrations and other factors to supplement modeling. EPA's guidance on the use of such corroboratory analysis in WOE determinations is set forth in its [Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS](#), Draft Final (February 17, 2005).

In that guidance, EPA recommended "a modeled attainment test in which model predictions are used in a relative rather than absolute sense." They note that "model results and projections will continue to have associated uncertainty." To address these uncertainties, EPA states "a weight of evidence

analysis may be used to support a determination that attainment will be achieved, despite the results of the modeled attainment test.” Clearly, then, EPA does not expect states to rely solely on a modeled attainment test.

One key point relevant to the development of Wisconsin’s attainment demonstration is EPA advice that states should start with an observed concentration as the base value to reduce problems in interpreting model results. As discussed above, the ozone levels currently monitored at Wisconsin nonattainment sites have projected design values all less than 90 ppb. The WOE protocol was intended for such occasions in which discernable trends and observed ozone levels suggest attainment is close at hand. In those situations, modeling should be supplemented, particularly when that modeling has clear incongruities, as in the case of LADCO’s Round 2 efforts.

Additional discussion on the use of WOE and modeling limitations can be found in the [Recommendations to the Clean Air Act Advisory Committee](#) (January 2005) by the Air Quality Management Work Group. The CAAAC Work Group was tasked to assess the recommendations made by the National Research Council (NRC) of the National Academies in its 2004 report, *Air Quality Management in the United States*. The key recommendation by the Work Group was as follows:

**Weight-of-Evidence Demonstrations** - *In order to move beyond the current approach of relying on air quality modeling, EPA, in conjunction with S/L/T and affected stakeholders, should modify its guidance to promote weight-of-evidence (WOE) demonstrations for both planning and implementation efforts. In particular, these demonstrations should reduce reliance on modeling data as the centerpiece for SIP/TIP planning, and should increase use of monitoring data and analyses of monitoring data, especially for tracking progress. The current system is top-heavy on modeling for planning purposes, especially during the preparation of an attainment demonstration, and light on tracking progress. Enhanced tracking and ambient monitoring data is a better use of available resources than intensive local modeling (p. 31, emphasis theirs).*

In an April 2005 article, Michael Koerber, LADCO Executive Director, and Donna Kenshi, LADCO Data Analyst, discuss the CAAAC Work Group recommendation. They opined in support of WOE demonstrations to “reduce reliance on modeling data as the centerpiece for SIP planning and [to] increase the use of monitoring data (and analyses of monitoring data).”

**B. Michigan Opt's to Show Attainment through WOE.** Other states have been successful using the WOE approach, but probably the most noteworthy to the challenge at hand for Wisconsin is Michigan’s current effort in this regard. Michigan agreed to an early SIP submittal (June 2006), which resulted in a draft SIP being submitted to EPA in May 2005. (See [Ozone Attainment Strategy for Southeast Michigan Draft Proposal](#); May 3, 2005, Southeast Michigan Council of Governments.) In that SIP, Michigan, a member of LADCO, expressly rejected the idea of relying solely on LADCO modeling.

Michigan documented recognized limitations on the ability of models to produce a meaningful degree of certainty on the benefits of a particular control measure. Accordingly, Michigan used several WOE factors in determining needed controls to reach attainment. Notably, in a July 29, 2005 letter to Michigan Department of Environmental Quality, EPA agreed with Michigan “that the implementation of national measures is expected to bring the Southeast Michigan area close to attainment of the 8-hour standard by 2007.” Moreover, EPA approved the use of WOE and that it identified “the most effective strategy to bring the area into attainment.”

**C. Courts Uphold WOE Determinations.** Another example of using a WOE approach entailed New York’s SIP demonstrating attainment with the old 1-hour ozone standard. The U.S. Court of Appeals, Second Circuit, upheld New York and EPA’s use of WOE in [Environmental Defense v. EPA](#), 369 F.3d 193 (2d Cir. 2004). In the subject SIP, the model in New York predicted ozone levels at the compliance date to be around 170 ppb, far in excess of the then 124 ppb standard.

Similar to the LADCO modeling results before us now, the New York model predicted comparable ozone levels that occurred before numerous emission reductions measures were to be implemented. Given these expected improvements in air quality, both New York and EPA knew the model was wrong. New York’s supplemental WOE analysis projected future design values through a method known as

design value rollback. This entailed subtracting predicted improvements relating to anticipated reductions from the current design value, resulting in projected values between 118 and 122 ppb, well below the grid modeling 170 ppb prediction. EPA adjusted New York's calculations, using an alternate WOE analysis, but still found the expected value to be about 129 ppb.

## V. CONCLUSION

The latest LADCO modeling projects that even the most severe reductions will not get Wisconsin into attainment. These modeling results are implausible on their face in light of the significant improvements Wisconsin has seen in nonattainment areas. These air quality improvement trends are indisputable, with related emissions reductions real and permanent, resulting in substantial movement toward compliance with the 8-hour standard.

More progress is necessary, but aggressive new programs already on the books will ensure Wisconsin reaches attainment without additional mandates. EPA's new Clean Air Interstate Rule (CAIR) will result in a 60 percent reduction in NO<sub>x</sub> emissions across the U.S. from the electric utility sector. Federal mobile and area source programs such as EPA's Tier 2/Low Sulfur Gasoline Rule, Highway Diesel Rule, and the Non-Road Diesel Rule, combined with fleet turnover, will result in sweeping NO<sub>x</sub> and VOC emission reductions.

While the Clean Air Act generally requires states to demonstrate attainment through photochemical grid modeling, the type of which is being performed by LADCO, both the Act and EPA anticipated the need for flexibility. Specifically, EPA recognizes that photochemical grid analysis is often inaccurate and has provided states with an invaluable option to adjust incongruent modeling results. This "weight of evidence" tool has been used in the past by states and EPA and upheld in the courts.

EPA recently blessed a weight of evidence approach that was the basis of a draft Michigan SIP for the 8-hour standard. We expect that other LADCO states will take an approach similar to Michigan. Given the incongruity between Wisconsin's current ozone values and the projected ozone levels by LADCO's modeling, Wisconsin has both an opportunity and obligation to ensure it also implements a flexible approach in developing its SIP. To do otherwise would lead to unnecessary and draconian mandates; this, in turn, would lead to substantial job loss and related economic damage to the state.

### Cited Documents Links

8-Hour Ground-level Ozone Designations; EPA

<http://www.epa.gov/ozonedesignations/finrulefs.htm>

Jobs Creation Act of 2003 Update, The Hamilton Consulting Group

[http://www.hamilton-consulting.com/updates/1222jobsbill\\_fass.html](http://www.hamilton-consulting.com/updates/1222jobsbill_fass.html)

Clean Air Interstate Rule, EPA

<http://www.epa.gov/interstateairquality/>

Round 2 Strategy Modeling, LADCO

<http://ladco.org/reports/rpo/Regional%20Air%20Quality/Round%202%20Strategy%20Modeling.pdf>

Regional Air Quality Planning, LADCO

[http://ladco.org/Regional\\_Air\\_Quality.html](http://ladco.org/Regional_Air_Quality.html)

Required Emission Reductions, DNR

[http://www.hamilton-consulting.com/updates/docs/ladco2009results\\_slide.pdf](http://www.hamilton-consulting.com/updates/docs/ladco2009results_slide.pdf)

Midwest Electric Rate Impact Study, BBC Research and Consulting (August 26, 2005)

<http://www.hamilton-consulting.com/updates/docs/082705beyondcair.pdf>

Electric Generating Units White Paper, LADCO

[http://ladco.org/reports/rpo/Regional%20Air%20Quality/WP\\_EGU\\_Version\\_31.pdf](http://ladco.org/reports/rpo/Regional%20Air%20Quality/WP_EGU_Version_31.pdf)

Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS, EPA

<http://www.epa.gov/scram001/guidance/guide/draft-final-o3.pdf>

Ozone Attainment Strategy for Southeast Michigan, Draft Proposal (May 3, 2005), SEMCOG

[http://www.semco.org/News/NewsReleases/assets/OzonePlan\\_5-20-05.pdf](http://www.semco.org/News/NewsReleases/assets/OzonePlan_5-20-05.pdf)

Environmental Defense v. EPA, 369 F.3d 193 (2d Cir. 2004).

<http://caselaw.lp.findlaw.com/data2/circs/2nd/024107p.pdf>