

## DRAFT SUMMARY

### Review of Ozone Strategies in State Implementation Plans Across the Country

#### Ozone Strategy Development September 2007

#### INTRODUCTION

In preparation for the development of short- and long-term ozone reduction plans, the Regional Air Quality Council (RAQC) has prepared the following document to provide information on strategies and efforts recently adopted in six other areas of the country: Bay Area, Sacramento, North Texas, Kansas City<sup>2</sup>, St. Louis<sup>3</sup> and the Ozone Transport Commission<sup>1</sup> (a 13-state area covering the Northeast and Mid-Atlantic regions). All of these areas are out of compliance with the 8-hour ozone standard and have recently identified and/or adopted additional control measures to ensure compliance in future years. *Please note that this document is a working document in DRAFT form and is RAQC staff's interpretation of information provided in phone and email conversations, State Implementation Plans and other informational documents, such as press releases. Its purpose is to serve as background information for those stakeholders working towards identifying additional control strategies for the Denver area.*

#### EPA 8-HOUR DESIGN VALUES AND CLASSIFICATIONS

The U.S. Environmental Protection Agency (EPA) designates areas of the country as attainment or nonattainment, depending on whether or not each complies with the standard for 8-hour ozone. This designation is based on each area's Design Value – the highest three-year average at any given monitor. A classification of Marginal (least severe), Moderate, Serious, Severe 15, Severe 17 or Extreme (most severe) is assigned. The below table demonstrates the design values and corresponding classifications for each of the areas reviewed in this document, organized by least severe to most severe. For more information on EPA's designation and classification system, visit [www.epa.gov/air/oaqps/greenbk/0801hr\\_classnote.html](http://www.epa.gov/air/oaqps/greenbk/0801hr_classnote.html).

Area	Current Design Value	Classification
Kansas City	----- In attainment <sup>2</sup> -----	
Bay Area	.086 ppm	Marginal
<b>Denver Region</b>	<b>.086 ppm</b>	<b>Marginal</b>
St. Louis	.092 ppm	Moderate
North Texas	.100 ppm	Moderate
Ozone Transport Commission	.095-.106 ppm	Moderate
Sacramento	.107 ppm	Serious

<sup>1</sup>The Ozone Transport Commission (OTC) is a multi-state organization created under the Clean Air Act (CAA) to develop and implement regional solutions to the ground-level ozone problem in the Northeast and Mid-Atlantic regions. The measures included in this table were identified as part of a number of stakeholder workgroups that met between spring of 2004 and fall of 2006 to determine the most effective strategies to reduce ozone pollution in the Northeast and Mid-Atlantic regions. These strategies were published as part of a report, *Identification and Evaluation of Candidate Control Measures: Final Technical Support Document*, February 28, 2007. While these strategies may or may not have been formally adopted, the implementation date is assumed to be 2009.

<sup>2</sup>Two years after the adoption of The 2005 Kansas City Ozone Maintenance Plan, the area fell out of compliance with the 8-hour ozone standard. EPA announced in July 2007 the approval of two additional contingency measures to be implemented pending public review/comment. These two measures are detailed in the table. The measures included in the maintenance plan can be viewed at [www.kdheks.gov](http://www.kdheks.gov). Since the area previously was in attainment, EPA has not yet classified it as nonattainment as a result of 2007 values.

<sup>3</sup>Based on the 2007 Revision of the State Implementation Plan for the St. Louis 8-Hour Ozone Nonattainment Area, which was approved earlier this year, the area expects to attain the 8-hour ozone standard by 2010 with emission controls that are already on-the-books. However, the plan outlines many of the more significant emission controls that are in place in St. Louis that are contributing to this finding. These are the measures that are included in this table.

**AREA SOURCES**

Description of Strategy	Geographic Region Where Implemented						Main Pollutant Addressed		Date of Implementation
	Bay Area ----- DV: .086	Sacramento ----- DV: .107	North Texas ----- DV: .100	Kansas City <sup>2</sup> ----- DV: .085	St. Louis <sup>3</sup> ----- DV: .092	OTC <sup>1</sup> ----- DV: .095 to .106	VOCs	NOx	
Consumer Products – Adopt the CARB 7/20/05 Amendments which sets new or revises existing VOC limits on 12 consumer product categories via a model rule						X	X		By 2009
Adhesives, Sealants, Adhesive Primers, and Sealant Primers (Industrial) – Enact VOC content limits similar to those contained in the CARB RACT/BARCT document for adhesives and sealants (Dec. 1998) via a model rule	X					X	X		OTC: By 2009 Bay Area: 1992, 1996 and 2001
Cutback and Emulsified Asphalt Paving – Prohibits the use of cutback asphalt during the ozone season, limiting it to that which contains not more than 0.5 mL of oil distillate from a 200 mL sample as determined using ASTM Method D244 via an updated state rule						X	X		By 2009
Portable Fuel Containers – Adopt the CARB 2006 amendments broadening the definition of PFCs to include kerosene and diesel containers and utility jugs used for fuel, and other changes to make OTC Model Rule consistent with CARB requirements  North Texas: only “non-spill” design can be sold & distributed			X			X	X		OTC: By 2009 N. Texas: 2005
Architectural coatings rules, and automotive refinishing coatings rules recommended by CARB, and new rules for previously not captured categories such as glass /plastic/wood/metal/aerospace/automotive parts and products.	X	X					X		Bay Area: 1998 Sacramento: By EOY 2008
Lower VOC rules for Degreasing/Solvent cleaning and Graphic Arts operations	X	X					X		Bay Area: 2001 & 2006 Sacramento: By EOY 2008
Lower NOx limits for boilers and steam generators that provide hot water and steam for numerous industrial applications, including space heating, food processing, garment laundering, equipment sterilization.		X						X	By EOY 2008
Revised NOx emission limits of 93 lb per billion BTU of heat output for large water heaters and small boilers in the range of 75,000 to 1 million BTU/hr.		X						X	By EOY 2008

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Low NOx combustion chambers, after treatment with catalytic or non-cat converters or NOx absorbers, or engine replacement for IC engines used for electric generators, pumps, gas compressors, blowers.		X						X	By EOY 2008
LDAR for Natural gas production and processing for valves, pumps, compressors, pressure relief devices, flanges, threaded connections at wells and assoc transmission systems.		X					X		By EOY 2008
Low NOx burners and flue gas recirculation retrofits for asphalt concrete dryers.		X						X	By EOY 2008
RACM for "all candidate measures potentially available" needed to demonstrate attainment "as expeditiously as practicable" and as needed for reasonable further progress.		X					X	X	By EPY 2008
Urban Forest Development Program – would add 4.9 million low VOC trees over 15 years (replacing some hi-VOC trees), adding 5% canopy and increasing urban shade by 17% reducing AC needs/power plant emissions.		X					X	X	By EOY 2008
Zero emission Lawn and Garden Incentives (Residential) Year-round continuous incentive program for replacement of SI gas-powered mowers with electric or zero emission alternatives. Mainly mowers with Hp<5.		X						X	2008-2019 or until zero emission commercial alternatives avail, cost effective.
Zero emissions lawn and garden ( <b>commercial</b> ) incentives for replacement of spark ignited hand-held garden equipment (trimmers, edgers, brush cutters chainsaws, leaf blowers vacuums).		X					X	X	2020-2023, after shift of funding from Residential garden Incentives (above)
Indirect Source Rule: Construction Mitigation Rule to reduce off-road construction emissions assoc w/new land use development for large projects. Possible District rule to mitigate 100% of emissions from grading portion of construction projects over 10 acres.		X					X	x	Rule by EOY 2008
Operational Indirect Source Rule to reduce emissions assoc w/new land use development of large commercial and residential projects after project completion.		X					X	X	Rule by EOY 2008

**POINT SOURCES**

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Glass Furnaces – Require furnace operators to meet the emission limits in the San Joaquin Valley rule via a state rule or permit						X		X	By 2009
Cement Plants – Via an updated state rule, require existing kilns to meet a NOx emission rate of: 3.88 lbs/ton clinker for wet kiln 3.44 lbs/ton clinker for long dry kiln 2.36 lbs/ton clinker for pre-heater kiln 1.52 lbs/ton clinker for pre-calciner kiln						X		X	By 2009
High Electrical Demand Day (HEDD) – Pursue emission reductions associated with HEDD units on high demand days during the ozone season; states will choose the mechanism, which include but are not limited to: <ul style="list-style-type: none"> <li>Regulatory caps</li> <li>Performance standards</li> <li>State/generator HEDD partnership agreements</li> <li>Energy efficiency programs</li> <li>Demand response programs</li> <li>Regulatory standards or controls</li> <li>Effective adjustment of the NOx retirement ratio</li> </ul>						X		X	Prior to 2009 ozone season or as soon as feasible thereafter; no later than 2012
RACM for “all candidate measures potentially available” needed to demonstrate attainment “as expeditiously as practicable” and as needed for reasonable further progress.		X					X	X	By EOY 2008
Reduction in NOx emissions from sources larger than 1,000 tons of annual emissions in Wyandotte and Johnson Counties accomplished through either RACT rules or signed agreements with the affected sources.				X				X	Approved by EPA in July 2007, state proposal and public comment pending
Stage I and Stage II Vapor Recovery – captures vapors that are ordinarily released during the refueling of vehicles			X		X		X		Both Areas: Current

**AREA AND POINT SOURCES**

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Asphalt Production Plants, Area/Point Sources – Batch Natural Gas 0.02 lb/ton or equivalent ppm Batch Distillate 0.09 lb/ton or equivalent ppm Drum Natural Gas 0.02 lb/ton or equivalent ppm Drum Distillate 0.04 lb/ton or equivalent ppm or Low NOx Burners, Best Management Practices						X		X	By 2009
Industrial/Commercial/Institutional Boilers >250 mmBtu/hour – Option 1 – Purchase current year NOx allowances equal to reductions needed to achieve the required emission rates Option 2 – Phase I 2009 emission rate equal to EGUs of similar size; Phase II 2013 emission rate equal to EGUs of similar size						X		X	By 2009
ICI Boilers 100-250 mmBtu/hour – NOx Strategy #1: Nat gas: 0.10 lb/mmBtu #2, #4, #6 Oil: 0.20 lb/mmBtu Coal: 0.08 to 0.22 lb/mmBtu, depending on boiler type NOx Strategy #2: Reductions achievable through LNB/SNCR, LNB/FGR, SCR or some combination of these controls NOx Strategy #3: 60% reduction from uncontrolled NOx Strategy #4: Purchase current year CAIR allowances						X		X	By 2009
ICI Boilers 25-100 mmBtu/hour – NOx Strategy #1: Nat gas: 0.05 lb/mmBtu #2 Oil: 0.08 lb/mmBtu #4, #6 Oil: 0.20 lb/mmBtu Coal: 0.30 lb/mmBtu NOx Strategy #2: 50% reduction from uncontrolled NOx Strategy #3: Purchase current year CAIR allowances						X		X	By 2009
ICI Boilers <25 mmBtu/hour – Annual boiler tune-up						X		X	By 2009

**MOBILE SOURCES**

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	Bay Area ----- DV: .086	Sacramento ----- DV: .107	North Texas ----- DV: .100	Kansas City <sup>2</sup> ----- DV: .085	St. Louis <sup>3</sup> ----- DV: .092	OTC <sup>1</sup> ----- DV: .095 to .106	VOCs	NOx	
Diesel Truck Chip Reflash – Mandatory program to upgrade the version of software in engine electronic control module (ECM), (also known as “chip reflash”) to reduce off-cycle NOx emissions via a model rule						X		X	By 2009
Reformulated Gasoline – a year-round program that reduces evaporative and exhaust emissions by improving the quality and adjusting the quantities of certain components found in conventional gasoline. This is achieved through oxygen content requirements and limits on olefins, sulfur, distillation temperatures, aromatics and benzene.  OTC: Regional Fuel based on Reformulated Gasoline Options – Extend RFG requirements to counties in OTC that currently do not have RFG via a memorandum of understanding (OTC)			X		X	X	X	X	OTC: By 2009 Other Areas: Current
Using CMAQ and current state funding sources, Incentives to retrofit older HDD vehicles. Based on dollar/ton NOx reduction basis.  Texas Emission Reduction Plan (TERP) – statewide program funded at \$60 million/year		X	X					X	Sacramento: By EOY 2008 Texas: Current
Using CMAQ and current state funding sources (e.g., Carl Moyer Program) cash for early retirement (scrappage) of light duty vehicles and replace with ULEVs.		X					X	X	By EOY 2008
Off-road CI Engine replacement: promotes engine re-powers in older engines with Tier 3 engines in the 2010-14 timeframe. (Not for lawn and garden)  TERP statewide program		X	X					X	Sacramento: By EOY 2008 Texas: Current
Off-road CI engine after-treatment incentives for early replacement of HDD equipment. Dollar/ton NOx reduction basis.  TERP statewide program		X	X					X	Sacramento: By EOY 2008 Texas: Current
TCM: “Spare the Air” program – Year-round public education. Includes encouraging reduction of vehicle trips.  North Texas: Voluntary Mobile Emission Reduction Program		X	X				X	X	Both Areas: Current

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<p>Diesel idle reduction in Wyandotte and Johnson Counties through administrative regulations or local ordinances, which would affect commercial heavy-duty diesel vehicles, and restrict how long these types of vehicles could idle before having to turn off their engines.</p> <p>North Texas: locally enforced</p>			X	X				X	KC: Approved by EPA in July 2007, state proposal and public comment pending N. Texas: Current
Tier 2 federal emission standards for passenger cars, light trucks, and larger passenger vehicles.					X		X	X	Current for all vehicles, except heavy trucks – deadline is 2009
Tier 4 Clean Air Non-road Diesel Rule to require stringent pollution controls on diesel engines used in industries such as construction, agriculture and mining.					X			X	Beginning in 2008, depending on engine horsepower