

Air Quality in the Denver Area



Regional Air Quality Council

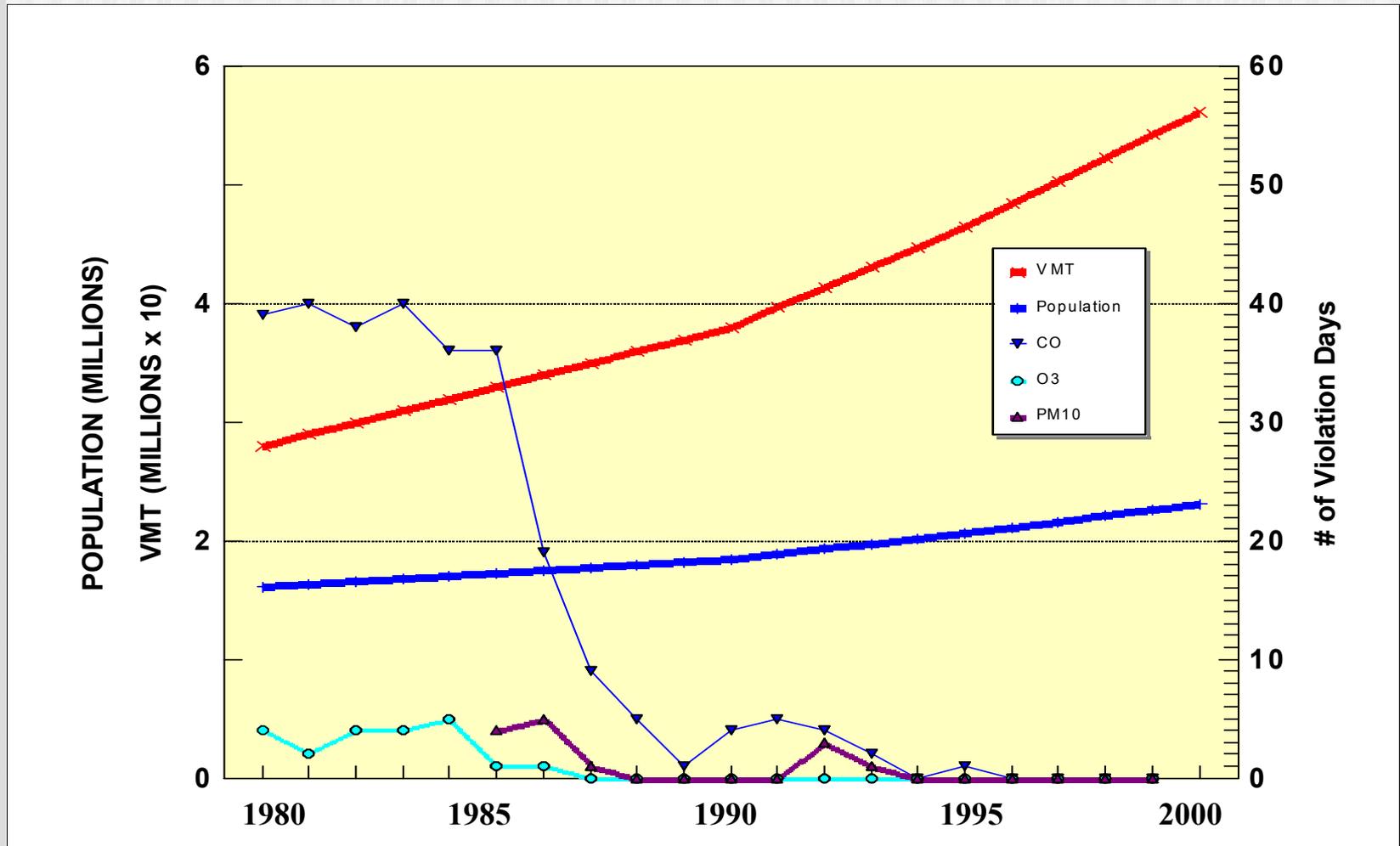
- **Lead agency for air quality planning for Denver region**
- **Formed by Governor's Executive Order**
- **Public/private partnership**
- **Prepares plans required by Clean Air Act**
- **Develops programs to improve air quality in region**
- **Implements programs of public education and involvement**
- **Works closely with other agencies, local governments, and the private sector**

Denver Air Quality History

- **1970's-early 1980's the Denver area exceed all EPA air quality standards nearly 200 days annually**
- **Denver area had the highest carbon monoxide levels in the country**
- **Infamous "Brown Cloud" hung over the city and made national magazine covers**
- **Denver rivaled Los Angeles for poor air quality**



Air Quality Progress



Attainment Triple Crown

- **Ozone (1-hour standard)**
 - No violations since 1987
 - EPA approved attainment redesignation in Sept. 2001
- **Carbon Monoxide**
 - No violations since 1995
 - EPA approved attainment redesignation in Jan. 2002
- **PM-10**
 - No violations since 1993
 - EPA approved attainment redesignation in Sept. 2002
- **First area in country to achieve attainment redesignation for all pollutants**

Denver Brown Cloud

- **Made up of fine particulate matter at levels below federal health standard**
- **Colorado established urban visibility standard in 1990 -- first in the nation**
- **Standard is essentially a goal of acceptable visual air quality**
- **Serves as the basis for bad air days in the winter**
- **CDPHE estimates poor visibility days have been reduced by nearly 30% since 1990**

Blueprint For Clean Air

- **Region's first comprehensive, long-range air quality plan**
- **Grew out of frustration with normal SIP process**
- **Looked at all pollutants over 20 years to 2020**
- **Coordinated look at air quality and transportation**
- **Significant public involvement**
- **Set the course for many short-term actions**



Blueprint Recommendations

- **Reduce power plant emissions**
- **Reduce emissions from diesel vehicles**
- **Reduce emissions from smoking and high-emitting vehicles**
- **Evaluate future of I/M and oxygenated gasoline programs**
- **Continue to reduce street sanding to offset growth**

Blueprint Recommendations

- **Work with DRCOG and local governments to implement Metro Vision and urban design measures**
- **Evaluate impact of new vehicle standards on long-term air quality**
- **Develop voluntary efforts to address new ozone standard**
- **Implement voluntary and incentive programs to reduce air pollution**
- **Develop maintenance plans and redesignation requests**

Success Stories

- **Achieving attainment status for all standards**
 - CO was major accomplishment
- **Oxygenated gasoline**
 - First state to require use in 1980's
 - Now phasing out usage
- **Woodburning restrictions**
 - Established state woodstove standards in 1980's
 - High Pollution Day restrictions
 - Changeout programs
- **Street sanding reductions**
 - Reduced use of street sand by over 60%
 - Led to dramatic reductions in PM-10

Success Stories

■ **Power plant reductions**

- Voluntary program initiated by Xcel Energy
- Reduced SO₂ emissions by 70%, NO_x by 50%

■ **School bus diesel retrofits**

- Over 800 buses retrofitted

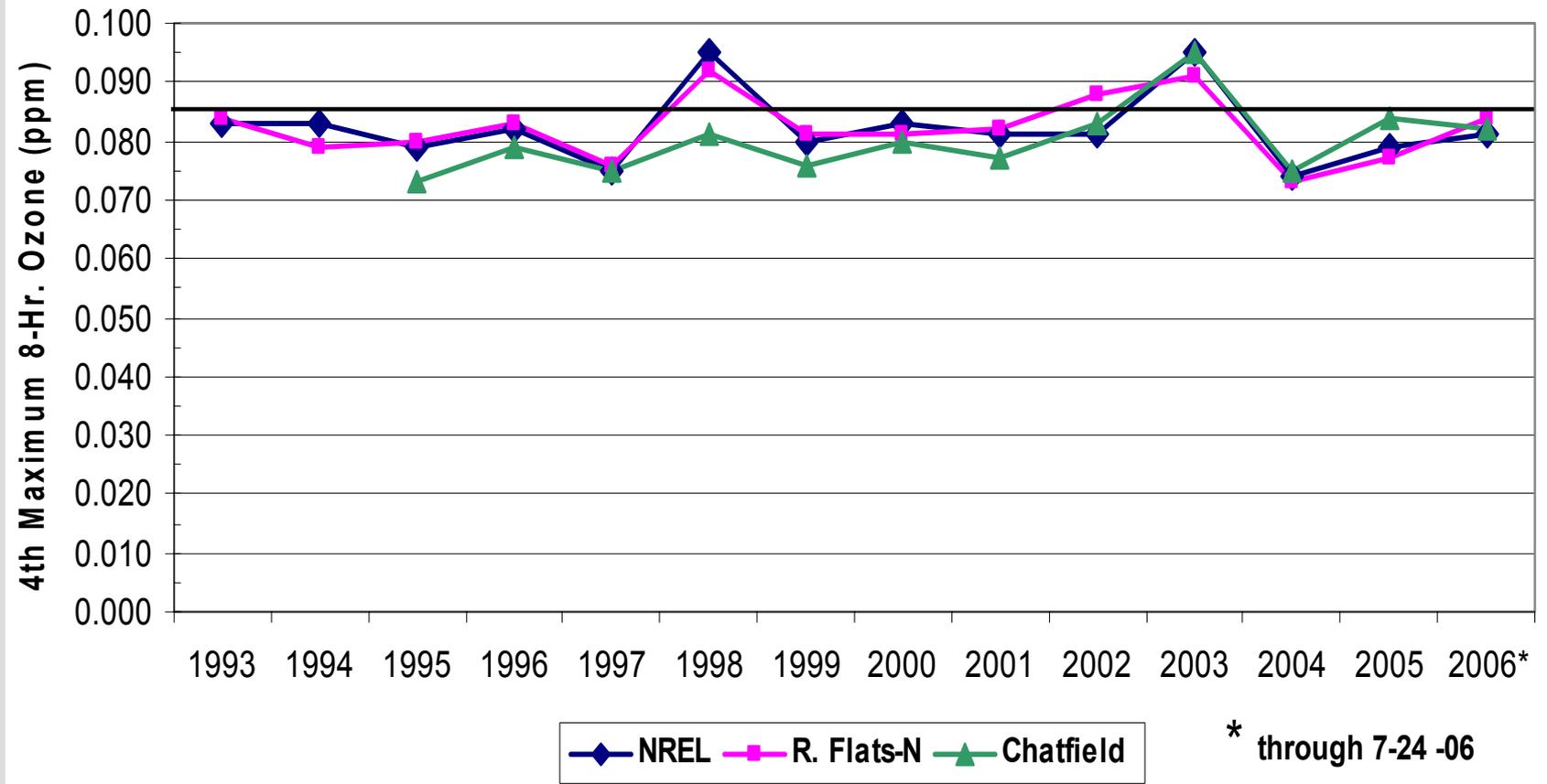
■ **Transportation/air quality coordination**

- Close working relationship with Denver Regional Council of Governments
- Consistency between transportation and air quality planning
- Metro Vision 2030
- Passage of FasTracks transit funding
- Encourage local design/land use practices

Future Challenges

- **Maintaining 8-hour ozone standard**
- **Revised PM-2.5 standards**
- **New PM-coarse standard**
- **Continued improvement in Brown Cloud**
- **Impacts on Rocky Mountain National Park**
 - Ozone
 - Nitrogen deposition
- **Transportation conformity**
- **Oil and gas development**

8-Hour Ozone Trend



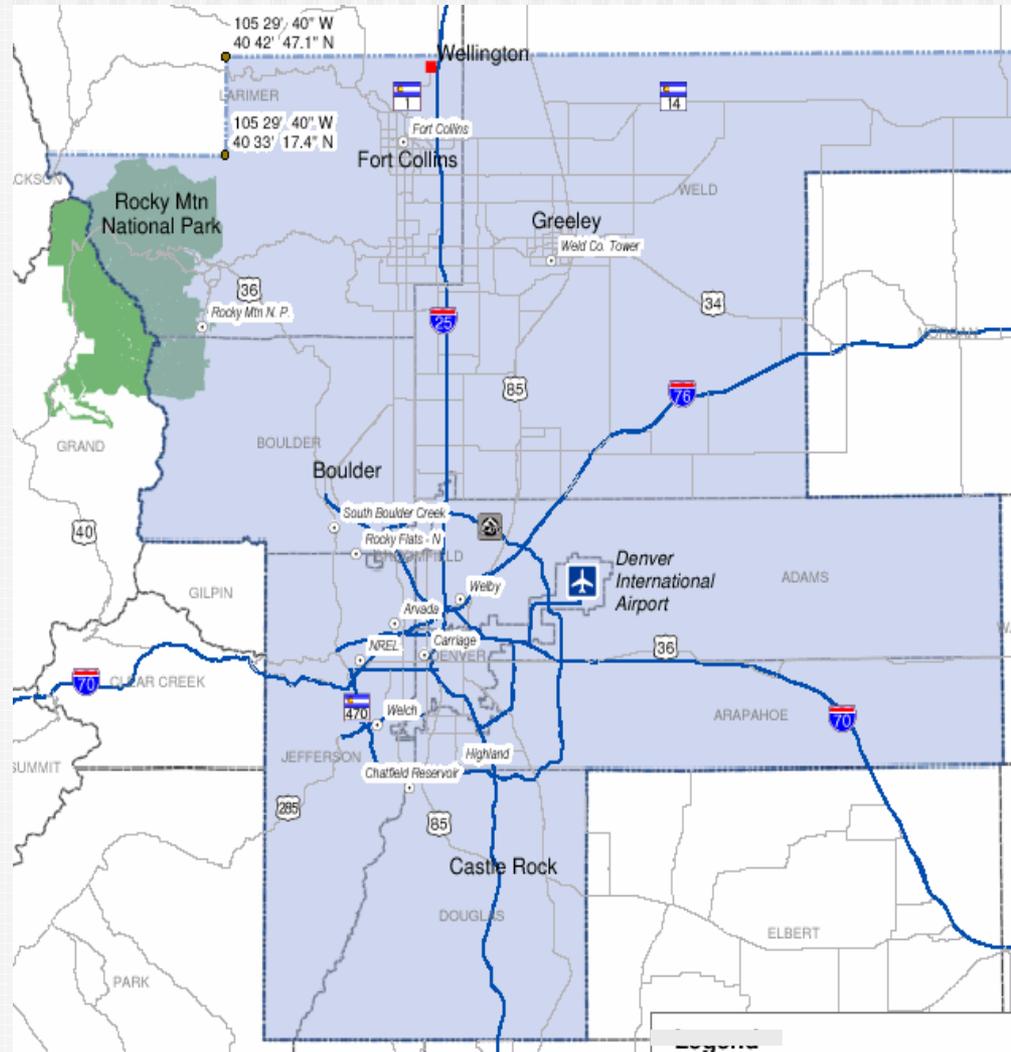
Voluntary Ozone Program

- **Began by the RAQC in cooperation with CDPHE in 1999**
- **Ozone alerts called on high ozone days**
- **Significant public education/awareness efforts, involving local governments**
- **New programs**
 - Voluntary gasoline volatility reduction
 - "Put a Cap on Ozone"
 - "Stop at the Click"
 - "Mow Down Pollution"
 - "Repair Your Air" campaign
 - "Let's Take Care of Our Summer Air" campaign
 - Collaboration with north Front Range communities

Early Action Compact

- **State and regional agencies entered into a voluntary agreement with EPA to address ozone in Dec. 2002**
- **Region committed to developing an Ozone Action Plan earlier than would normally be required**
- **Region committed to meeting several planning/implementation milestones**
- **EPA agreed to defer any nonattainment designation and any resulting requirements, pending the area coming into attainment by 2007**
- **April 2004 Denver/NFR area designated as a nonattainment area, with effective date deferred**

Ozone Area Boundary



Benefits of EAC

- **Achieves cleaner air sooner**
- **Preserves more local flexibility**
- **Avoids nonattainment designation**
- **Avoids additional, protracted planning requirements**
- **Avoids more stringent siting requirements for major sources**
- **Avoids more stringent transportation planning requirements and possible funding restrictions**

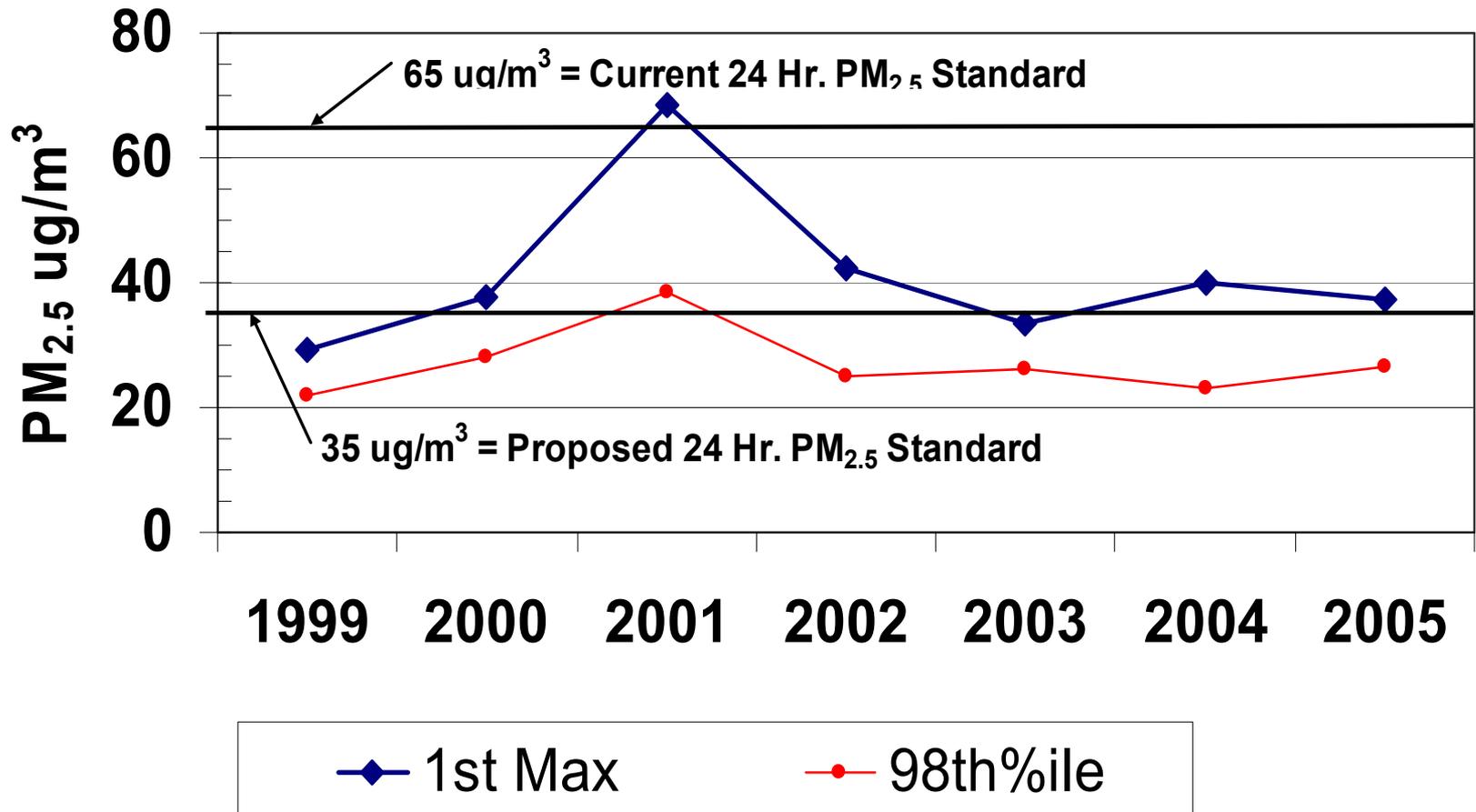
Ozone Action Plan

- **Adopted by AQCC in March 2004, approved by the General Assembly in May, submitted to EPA in July 2004**
- **EPA approved plan in August 2005**
- **Control measures**
 - Current federal/state programs
 - Reductions in gasoline volatility (RVP)
 - Plan recommended level of 8.1 psi
 - EPA subsequently established a level of 7.8 psi
 - Reductions in emissions from oil/gas industry
 - Public awareness program (not formal part of plan)
- **Combination of control measures expected to result in attainment by 2007**

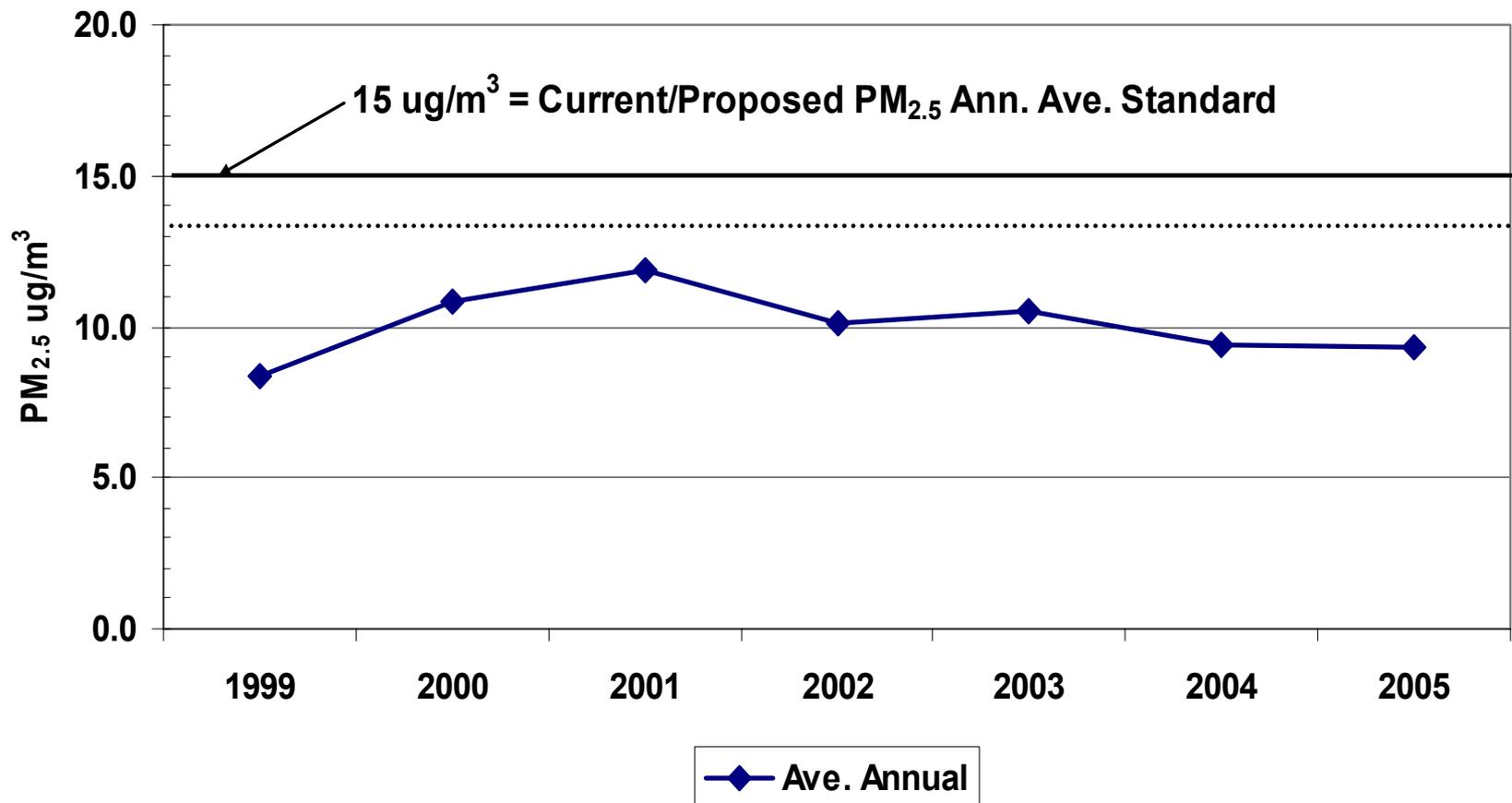
Ozone Status – 2006 (thru 7/31/06)

Monitor	2006			2006	2005	2004	2004-06	2007
	1st Max	2nd Max	3rd Max	4th Max	4th Max	4th Max	Ave.	Allow. 4th Max
Highland	13-Jul	22-Jul	29-Jul	19-Jul				
	85	82	82	81	80	72	77	93
Chatfield S.P.	13-Jul	29-Jul	22-Jul	27-Jul				
	92	88	86	86	84	75	81	84
NREL	29-Jul	22-Jul	28-Jul	23-Jul				
	94	89	84	83	79	74	78	92
Rocky Flats	19-Jun	29-Jul	14-Jul	15-Jul				
	94	93	91	90	77	73	80	87
So. Bld Ck	19-Jun	14-Jul	15-Jul	29-Jul				
	87	86	86	82	76	68	75	96
Fort Collins W.	14-Jul	29-Jul	13-Jun	19-Jun				
	97	95	88	87	--	--	--	--
RMNP*	14-Jul	25-May	12-Jun	27-Jun				
	91	76	76	74	75	73	74	105

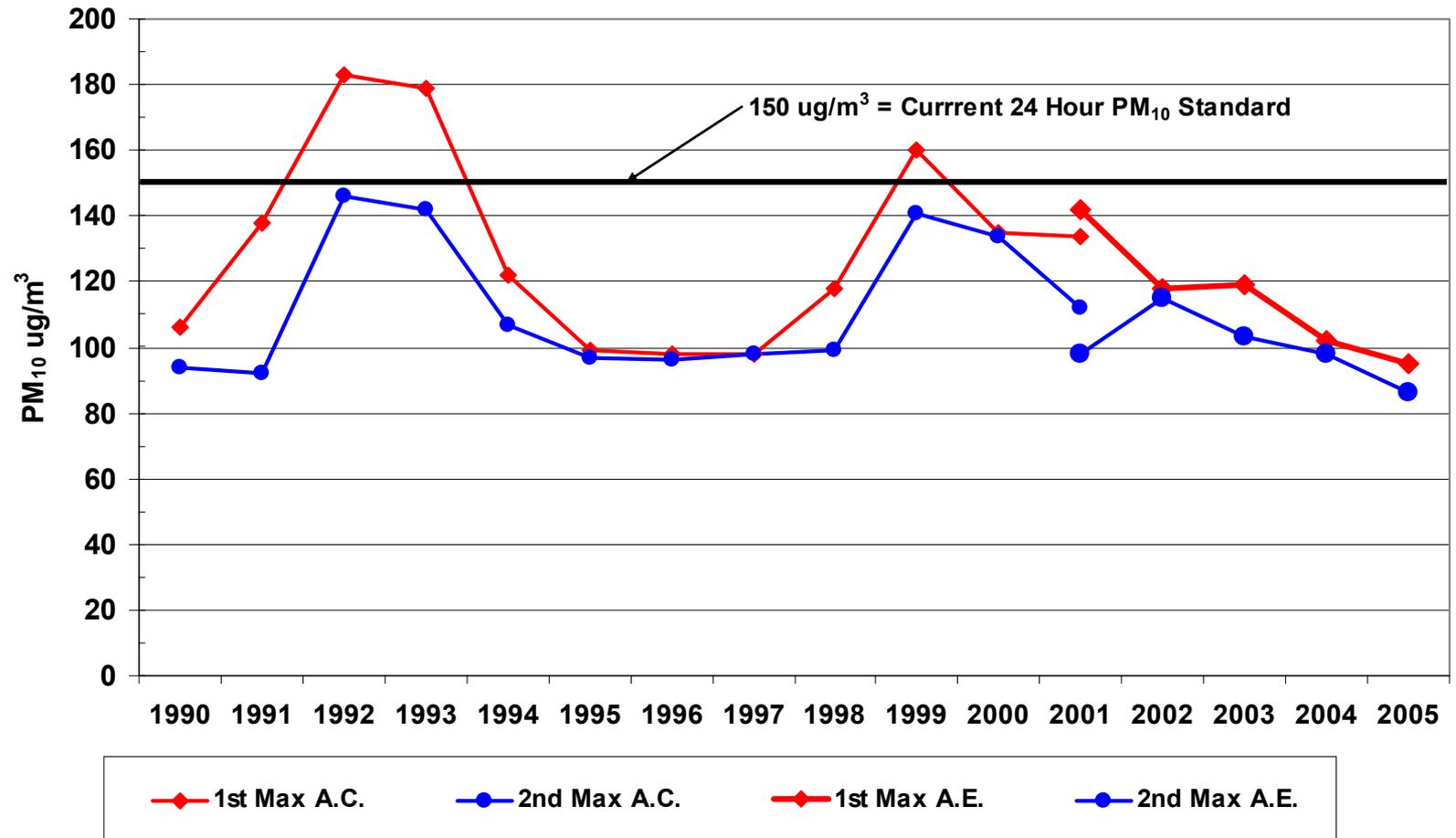
PM-2.5 Trends (24-hr. standard)



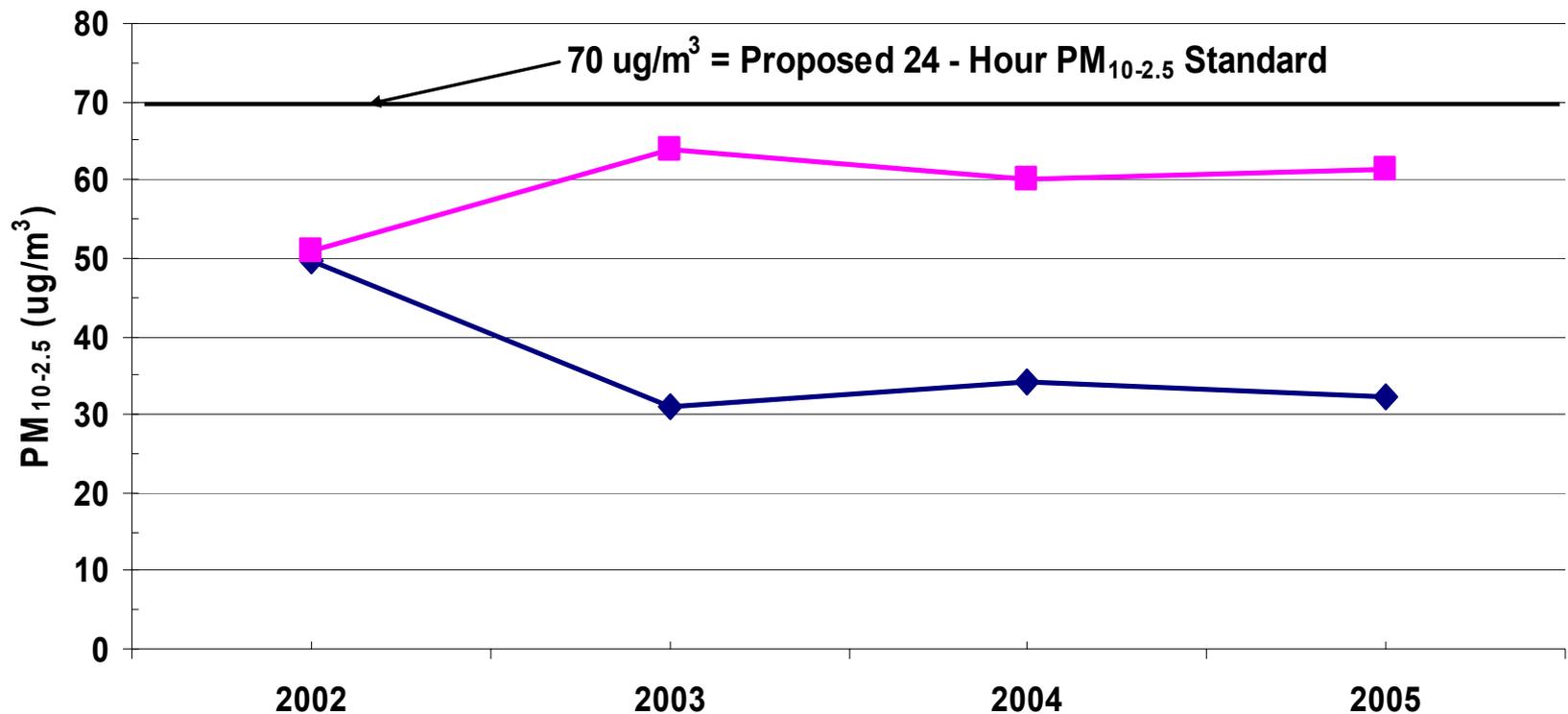
PM-2.5 Trends (annual standard)



PM-10 Trends



PM-coarse Standard



* Wide range of uncertainty dependent on monitoring equipment

◆ CAMP ■ Commerce City

Diesel Retrofit Program

- **Retrofitted over 800 school buses in 15 Front Range school districts**
 - Diesel oxidation catalysts
 - Engine preheat systems
 - Biodiesel fuel
 - Combination of EPA and CMAQ funding (\$1.4 million)
- **Retrofits with Denver and private fleets**
- **Off-road equipment retrofit pilot project**
- **In 2007/08, will retrofit an additional 1500 school buses and municipal trucks with a \$2.6 million CMAQ grant**

Repair Your Air Campaign

- **Uses remote sensing technology to identify high-emitting vehicles**
- **Combined with region's RapidScreen clean screen program**
- **Will pay up to \$1,000 for emission-related repairs**
- **Before and after IM240 testing**
- **Will lead to development of a high-emitter program to replace the region's current I/M program**