



Early Action Compact Modeling

**3rd Particulate Matter/Regional
Haze/Ozone Modeling Workshop
May 18-20, 2005
New Orleans**

Early Action Compact (EAC)

Background

- EAC originated out of stakeholder process in Texas (Local governments/TCEQ/EPA R6).
- EPA HQ later endorsed EAC concept.
- EAC Protocol deals with attainment of the 8-hour ozone standard.
- For 1-hour ozone attainment areas and other areas which approach or monitor exceedances of the 8-hour ozone standard.

Benefits

Cautions

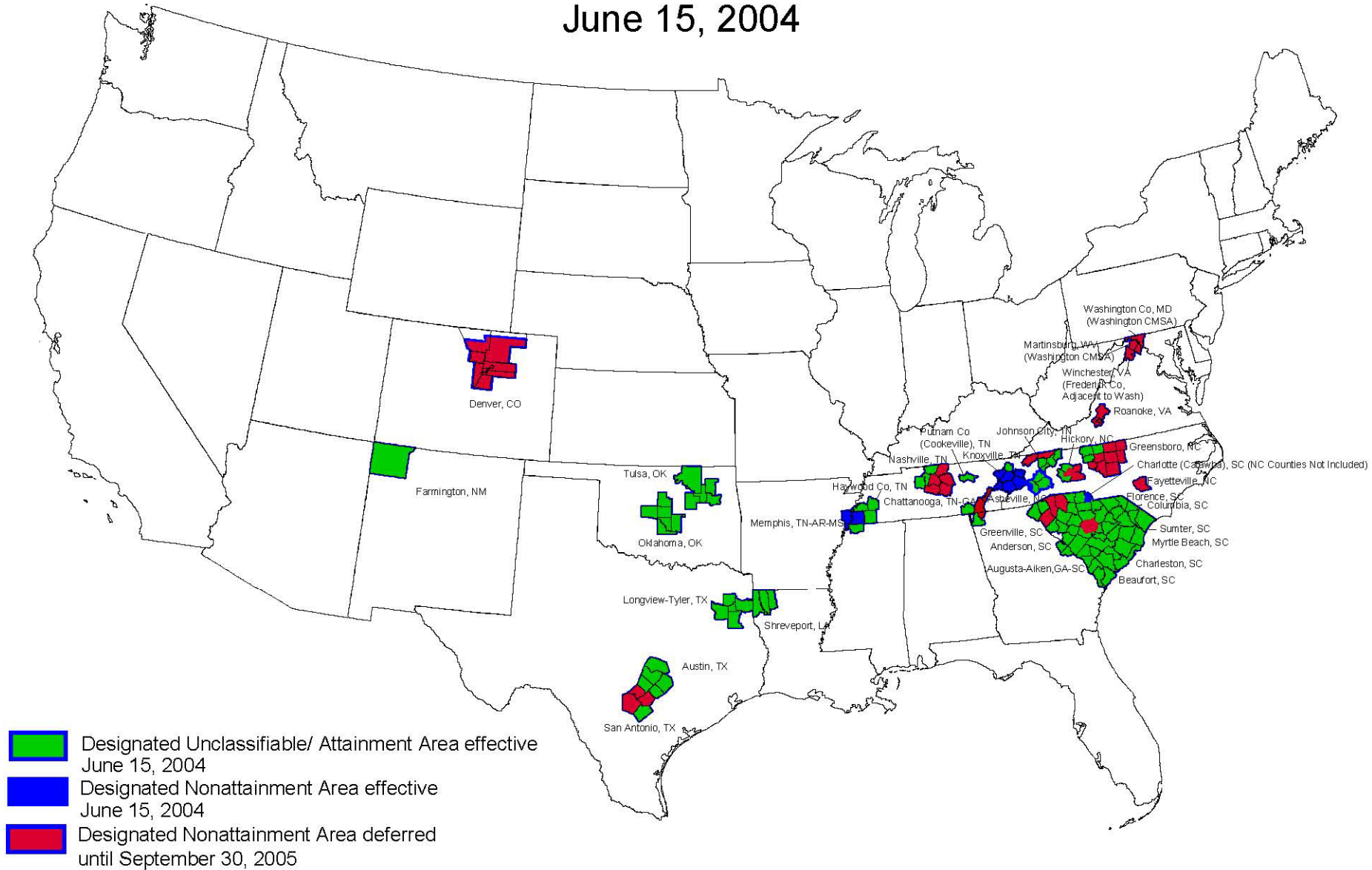
Local areas develop plan for early, “voluntary” attainment of 8-hr ozone standard. Attainment demonstration based on modeling.	Success depends on active and sustained participation of stakeholders (local, state and federal officials).
EPA defers the effective date of the nonattainment designation, if milestones are met.	Trans. conformity & 1-hr requirements remain until standard revoked. OTC EAC areas still subject to NSR.
People living in EAC areas enjoy health benefits of cleaner air sooner than CAA requirement.	Not eligible for CMAQ funds since EAC areas not nonattainment until effective date of nonattainment designation.
Reduction of air pollution controls creditable towards AQ planning goals.	Have aggressive, accelerated milestones. If not met, subject to all nonattainment requirements.

EAC Milestone Dates

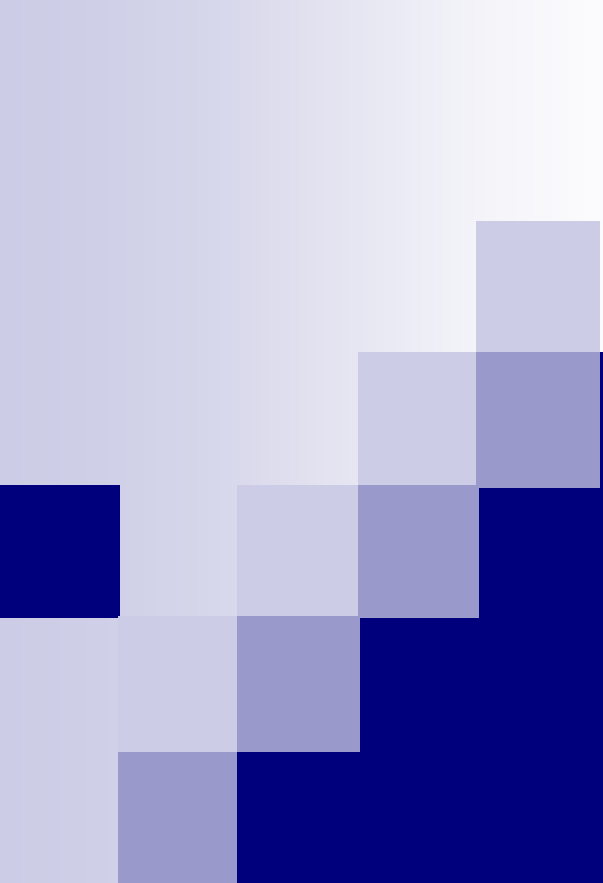
Submittal Dates	Compact Milestones
December 31, 2002	Submit Compact signed by all parties.
March 31, 2004	Submit local plans to states with specifics, quantified, permanent controls.
December 31, 2004	Submit SIP with modeling and adopted control measures.
2005 ozone season (or no later than December 31, 2005)	Implement SIP control measures
June 30, 2005	State reports on implementation of controls and assessment of AQ improvements and reductions
December 31, 2007	Area attains 8-hr ozone standard
April 15, 2008	EPA determines attainment/nonattainment, 3 rd deferral

Early Action Compact Areas

June 15, 2004



A portion of some of the counties are excluded from the EAC



EAC Modeling and Lessons Learned

EAC Modeling Summary

- 11 different modeling demonstrations for 25 areas
- Models: CMAQ, CAMx, MAQSIP, UAM-V
- Local modeling resolution: 4 km basically with one 12 km domain.
- Episodes
 - Included 1 to 4 multi-day episodes consisting of 6-26 days
 - Base years from '95, '96', '97', '98,' 99,' 00, '02
- Current years: '98,' 99, '00, '01, '02
- Attainment year: 2007
- Maintenance years:
 - 2012 (mandatory) and 2017 (voluntary)
 - Demonstrated through modeling or emission inventory
- FDV < 85 ppb modeled and WOE
 - Modeled by all states except for two EAC areas (WOE needed)
 - WOE submitted voluntarily by 4 states

EAC Modeling Summaries

State and # areas	AQ Models	Local scale	episodes, days	Base Year	Current Year	FDVs < 85 ppb	WOE	Maintenance yrs modeled
MD: 1	CMAQ	12 km	1,11	1999	1999	yes	no	2012 (emissions evaluated not modeled)
VA: 2	CMAQ	12 km	1,11	1999	1999	yes	no	2012 (emissions evaluated not modeled)
WVA: 1	CMAQ	12 km	1,11	1999	1999	yes	no	2012 (emissions evaluated not modeled)
TN: 3	UAM-V	4 km	3, 26	'99	2001	yes	yes	2012, 2017
NC: 4	MAQSIP	4 km	4, 16	'95, 96, 97	2000	yes	yes	2012, 2017

EAC Modeling Summaries

State and # areas	AQ Models	Local scale	Number episodes, days	Base Year	Current Year	FDVs < 85 ppb	WOE	Maintenance yrs modeled
SC: 6	UAM-V	4 km	1, 8	'98	1998	yes	no	2012, 2017
GA: 2	CMAQ	4 km	1, 7	2000	2000	yes	no	2012
NM: 1	CAMx	4 km	4,10	2002	2002	yes	no	2012 (one 3-day episode)
OK: 2	CAMx	4 km	1, 18	1999	1999 & 2002	OKC – Yes Tulsa - No	yes	2012 (emissions evaluated not modeled)
LA: 1	UAM-V	4 km	3, 9	1999/ 2000	Hybrid of 1999 & 2000	yes	no	2012

EAC Modeling Summaries (cont.)

State and # areas	AQ Models	Local scale	Number episodes, days	Base Year	Current Year	FDVs < 85 ppb	WOE	Maintenance yrs modeled
TX: 3 (NETAC)	CAMx	4 km	1, 8	1999	2002	yes	yes	2012 (emissions evaluated not modeled)
TX: 3 (Austin)	CAMx	4 km	1, 6	1999	1999	yes	yes	2012 (emissions evaluated not modeled)
TX: 3 (San Antonio)	CAMx	4 km	1, 6	1999	1999	yes	yes	2012 (emissions evaluated and modeled)
CO: 1	CAMx	4 km	1, 8	2002	2002	no	yes	2012

EAC Modeling Issues

- How to use existing modeling developed prior to EAC program?
- How to quantify controls? What about voluntary controls?
- How to use and review weight of evidence?
- How to apply the screening test, number of episode days, develop RRF, current year, etc.?
- How to develop independent but consistent SIP demonstrations and strategies for interstate areas.
- Should modeled point source emission rates be included in the SIP?

EAC Lessons Learned...

- Allow time to develop base case modeling and to develop and model strategies (2 years at a minimum if possible).
- Allow time to quality assure emission inventories.
- Sensitivity simulations should be developed and could possibly be beneficial for other purposes (e.g., 110(I), 110(a)(1) or 175(A) maintenance plans, etc.).
- If demonstration is not developed in-house.
 - Some knowledge of the guidance is recommended to ensure that the product requested is what is needed.

EAC Lessons Learned...

- In order to get a robust data set for the RRF calculations
 - More days should be modeled initially because some days are not going to work out.
 - Episode selection should take into account the number of exceedances at each monitor and ensure that enough days with elevated levels will be available for the RRF calculations for each monitor if possible.

EAC Lessons Learned...

- Compared to 1-hr modeling, 8-hr appears to be more sensitive to regional levels, transport levels and to local influences for most areas.
- Significantly more controls may be needed to move the DV 1ppb than the 1-hr standard required.
- To understand the model performance
 - 1-hr metrics in conjunction with some of the 8-hr metrics seem adequate.
 - Domain wide 8-hr statistics smooth things out compared to 1-hr, but more targeted analyses are beneficial.

EAC Lessons Learned...

- Detailed information on exactly what control measures were modeled and the amount of credit taken should be clearly discussed in SIP.
- Clear detailed documentation is critical to EPA and public review.
 - In public hearings (remember 30-day comment period)
 - In SIP submittal

EAC Lessons Learned...

- Regional approach to SIP planning works if sufficient time is allocated.
 - Allows immediate and sustained collaboration
 - Sharing resources.
 - Ensures development of consistent strategies and demonstrations
 - For interstate areas
 - For areas with downwind impacts
 - For assessing multi-pollutant strategies

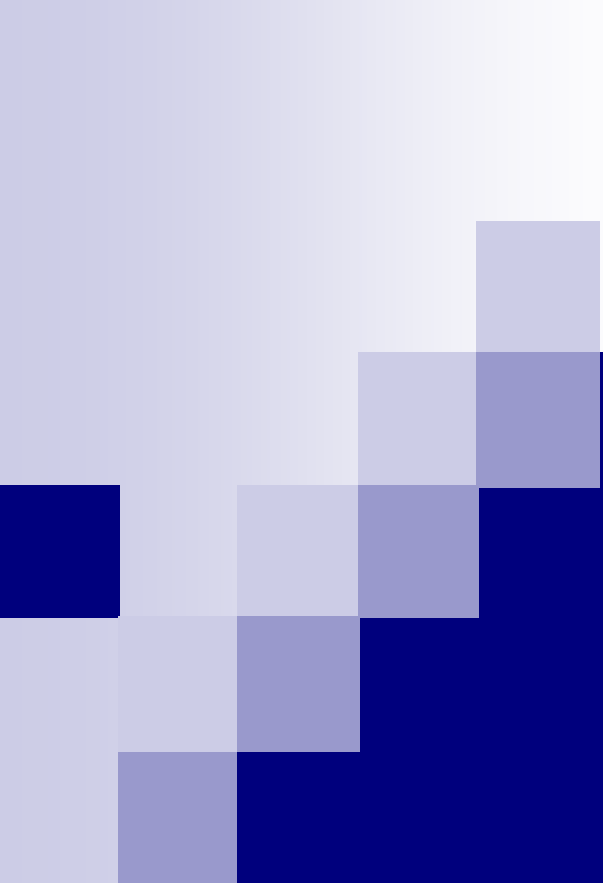


More EAC Information?

<http://www.epa.gov/ttn/naaqs/ozone/eac/>

Acknowledgements....

Todd Ellsworth	EPA Region 3
Brenda Johnson	EPA Region 4
Erik Snyder	EPA Region 6
Tim Russ	EPA Region 8



Overview of 110(a)(1) Maintenance Plan Draft Guidance

**3rd Particulate Matter/Regional
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What is the purpose of this 110(a)(1) maintenance guidance?

Background:

- 4/30/2005... EPA designated and classified areas for 8-hr O₃ NAAQS.
- For most areas these designations became effective June 15, 2004.
- Section 110(a)(1) guidance addresses the maintenance requirements in the CAA for certain areas designated unclassifiable/ attainment for 8-hr NAAQS.

What is a 110(a)(1) maintenance plan?



- A 110(a)(1) maintenance plan is a plan required under Section 110(a)(1) of the CAA.
- Section 110(a)(1) requires that each state adopt and submit (within 3 years after the promulgation of a NAAQS), a plan which provides for implementation, **maintenance**, and enforcement of such primary standard for all areas within the state.
- This guidance is designed to provide information regarding how States might fulfill the maintenance plan obligation established by the CAA and EPA's Phase 1 Implementation Rule.



Key maintenance plan element demonstration of how area will remain in compliance with the 8-hr standard for 10 yr period following the effective date of designation as unclassifiable/attainment.

Different 8hr designation scenarios!

Designation Status of 8-hr O₃ Areas

		1-hr O ₃		
		Unclassifiable/ Attainment	<u>Nonattainment</u>	Attainment with a maintenance plan
8-hr O ₃	Unclassifiable/ Attainment	Scenario A (8UA/1UA)	Scenario B (8UA/1N) 	Scenario C (8UA/1M) 
	<u>Nonattainment</u>	Scenario D (8N/1UA)	Scenario E (8N/1N)	Scenario F (8N/1M)

Guidance only addresses areas that fall under scenarios B and C ... areas that are designated as unclassifiable/attainment for 8-hr ozone standard and are either nonattainment for 1-hr standard (scenario B) or are designated attainment with a 175A maintenance plan for the 1-hour ozone standard (scenario C).

When must a 110(a)(1) maintenance plan for scenario B and C be submitted to EPA?

- Section 110(a)(1) maintenance plan is due no later than **3 yrs** after the effective date of the area's 8-hr O₃ NAAQS designation.
 - ✓ For most areas, June 15, 2004, is the effective date of the 8- hr designations.
 - ✓ Thus, for these areas, section 110(a)(1) 8-hr O₃ maintenance plans are due **no later than June 15, 2007.**

What does a 110(a)(1) maintenance plan for scenario B and C areas contain?

- The 110(a)(1) plan constitutes a SIP revision.
- Provides for continued maintenance for 8-hr NAAQS for 10 years.
 - The end projection year ... 10 years from the effective date of the 8-hr attainment designation.
 - For areas with a June 15, 2004 effective date for 8-hr designation, the end projection year may be beyond 2014 ... *but maintenance plan must project attainment for 2014*.
- Contains five components.
 - **Attainment inventory**
 - **Maintenance demonstration**
 - **Ambient air quality monitoring**
 - **Verification of continued attainment**
 - **Contingency plan**

Details about the Attainment Emissions Inventory

...

- Based on actual “typical summer day” emissions of VOCs and NOx
- 10-yr maintenance period begins on effective date of area designation for 8-hour O3 NAAQS
- Can be based on any of the 3 yrs on which the 8-hr attainment designation was based (i.e., 2001, 2002, and 2003).
- EPA recommends 2002 as the attainment emission inventory base year for the section 110(a)(1) maintenance plan.

(Note: An inventory for 2002 is already required under EPA’s Consolidated Emissions Reporting Rule (CERR))

Details about the Maintenance Demonstration ...

- The end projection year ... 10 years from the effective date of the attainment designation.
- For areas with an June 15, 2004 effective date for 8-hr designation, the end projection year may be beyond 2014 ... *but maintenance plan must project attainment for 2014.*
- Typical method for past 1-hr O₃ maintenance demonstrates
“ ” emission-level approach ...
 - ★ → *Identify the level of ozone precursor emissions in the*
 - *area which is sufficient to attain the NAAQS and showing*
 - *that future emissions of ozone precursors will not exceed*
 - *the attainment levels.*
- Interim analysis years recommended.
- Maintenance may also be demonstrated using other methods, such as modeling.

Details about the Contingency Plan- ...

- Section 110(a)(1) maintenance plans must contain a **contingency plan** that ensure any violation of 8-hr O₃ NAAQS is promptly corrected.
- Contingency plan should clearly identify the measures to be adopted and a schedule and procedure for adoption and implementation, and a specific time limit for action by State.
- Schedule for adoption and implementation should be as expeditious as practicable, but no longer than **24 months**.
- Plan must identify **specific indicators, or triggers**, to determine when the contingency measures need to be adopted and implemented.

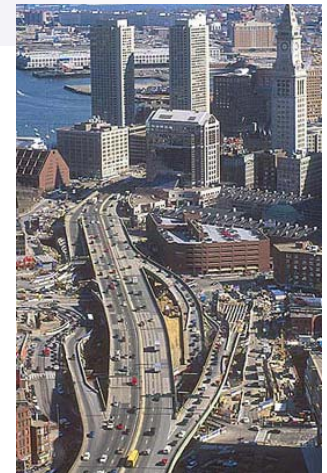
Details about the

Verification of Continued Attainment -

- Maintenance plan should indicate how the area will track progress ... needed because emissions projections depend on assumptions of point area and mobile source growth.
 - Periodically updating the **emissions inventory**.
 - **Modeling**

What about conformity?

- Conformity for 8-hr O₃ NAAQS **does not apply** in 8-hr unclassifiable/attainment areas that are subject to the CAA 110(a)(1) maintenance plan requirements.
- Conformity applies only to areas that are nonattainment or were nonattainment and were then redesignated to attainment subject to requirement to develop a maintenance plan under 175A of CAA with respect to a particular NAAQS.
- Conformity for 1-hr O₃ standard will continue to apply in existing 1-hr nonattainment and maintenance areas **until that standard is revoked**.
- When the 1-hour standard is revoked, conformity will not apply for either ozone standard in 8-hr unclassifiable/attainment areas.





Next Steps

- Final guidance expected soon

Acknowledgement....

Tom Helms EPA OAQPS