



# NAAQS and Roadside Monitors

TWG Meeting August 5, 2010

EPA, TxDOT and TCEQ



# Final Revisions to Primary NO<sub>2</sub> NAAQS

- February 9, 2010 Final Revisions
- Created a **1-hour** NO<sub>2</sub> standard at 100 parts per billion (ppb) defined as the maximum allowable concentration anywhere in an area.
  - Expressed as 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations.
  - Based upon highest monitor reading located within the area.
- Retained annual average NO<sub>2</sub> standard at 53 ppb.
- EPA anticipates NO<sub>x</sub> concentrations will continue to decrease as a result of mobile source regulations.



# NO<sub>2</sub> Monitoring Network

- The NO<sub>2</sub> monitoring network includes: road-side NO<sub>2</sub> concentrations, community-wide NO<sub>2</sub> concentrations, and discretionary susceptible populations.
- Timing: New monitors are required to be operational by January 1, 2013.
- Near Road: At least one monitor would be located near a major road in any urban area with a population greater than or equal to 500,000 people.
- Community-Wide:
  - At least 1 monitor would be placed in any urban area with a population greater than or equal to 1 million people to assess community-wide concentrations.
  - A second monitor would be required near a major road in areas with either:
    - population  $\geq$  2.5 million people, or
    - 1 or more road segments with an annual average daily traffic (AADT)  $\geq$  250,000 vehicles
- Susceptible and Vulnerable Communities: EPA Regional Administrators will site at least 40 additional NO<sub>2</sub> monitors (with a focus on in low-income or minority communities) to help protect communities that are susceptible to NO<sub>2</sub>-related health effects.



# NO2 Roadside Monitors

- Requires roadside monitoring within 50 meters from the edge of the nearest lane to be operational by January 1, 2013:
- Fort Worth-Dallas and Houston are each required to install 2 monitors, 1 for each of the 2 largest traffic volume roadways.
- Austin-Round Rock, El Paso, McAllen-Edinburg-Mission, San Antonio are required to install 1 monitor next to the largest traffic volume roadway.
- The TCEQ and EPA intend to coordinate with affected entities (TxDOT, FHWA, MPOs, local governments) to determine roadside monitor locations.
  - EPA is developing “Monitor Siting Guidance” in consultation with FHWA.
  - ENV anticipates that coordination with FTW, DAL, AUS, ELP, PHR, SAT, HOU, MPOs within these Districts, TPP, MNT, TRF and ROW may be needed.

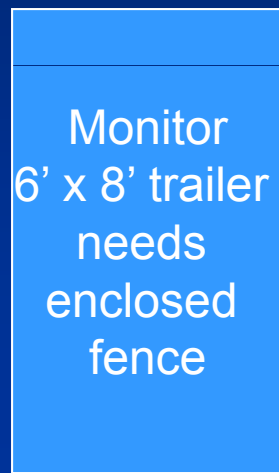


# Roadside Monitor Location

- Place near road segments ranked with the highest traffic levels by AADT where the peak concentrations of NO<sub>2</sub> are expected to occur, with consideration given to:
  - fleet mix; congestion patterns; terrain;
  - geographic location; & meteorology.
- Monitors must be within 50 meters (approx 164 feet) from edge of nearest traffic lane.
- The near-road monitor probes shall:
  - be as near as practicable to outside nearest edge of traffic lanes, but shall not be located at a distance > 5 meters (horizontal), from outside nearest edge of the traffic lanes;
  - have unobstructed air flow, where no obstacles exist at or above the height of the monitor probe, between the monitor probe and outside nearest edge of the traffic lanes;
  - have sampler inlets between 2 and 7 meters above ground level and unobstructed by noise barriers or vegetation; and
  - residence time of NO<sub>2</sub> in the sample line between the inlet probe and analyzer does not exceed 20 seconds.



# Roadside Monitor and Probe Location Diagram



Line from probe to monitor

A curved white line with an arrow pointing from the probe to the monitor, labeled with this text.

20 sec residence time

A horizontal double-headed arrow between the monitor and the probe, labeled with this text.

Probe  
height  
7 m (23 ft)

Text describing the probe's height, positioned above the probe box.

Probe

A blue rectangular box representing the probe, positioned on a vertical line.

2 m (6.5  
ft)

Text describing the probe's width, positioned below the probe box.

Road

Text located at the top right of the diagram, above the road lines.

50 m (164 ft)  
Monitor

Text indicating the distance from the road lane edge to the monitor, positioned above a mountain silhouette.

Clearance Zone  
Distance from road lane edge

Text indicating the clearance zone distance from the road lane edge, positioned above a mountain silhouette.

5 m (16.4 ft)  
Probe

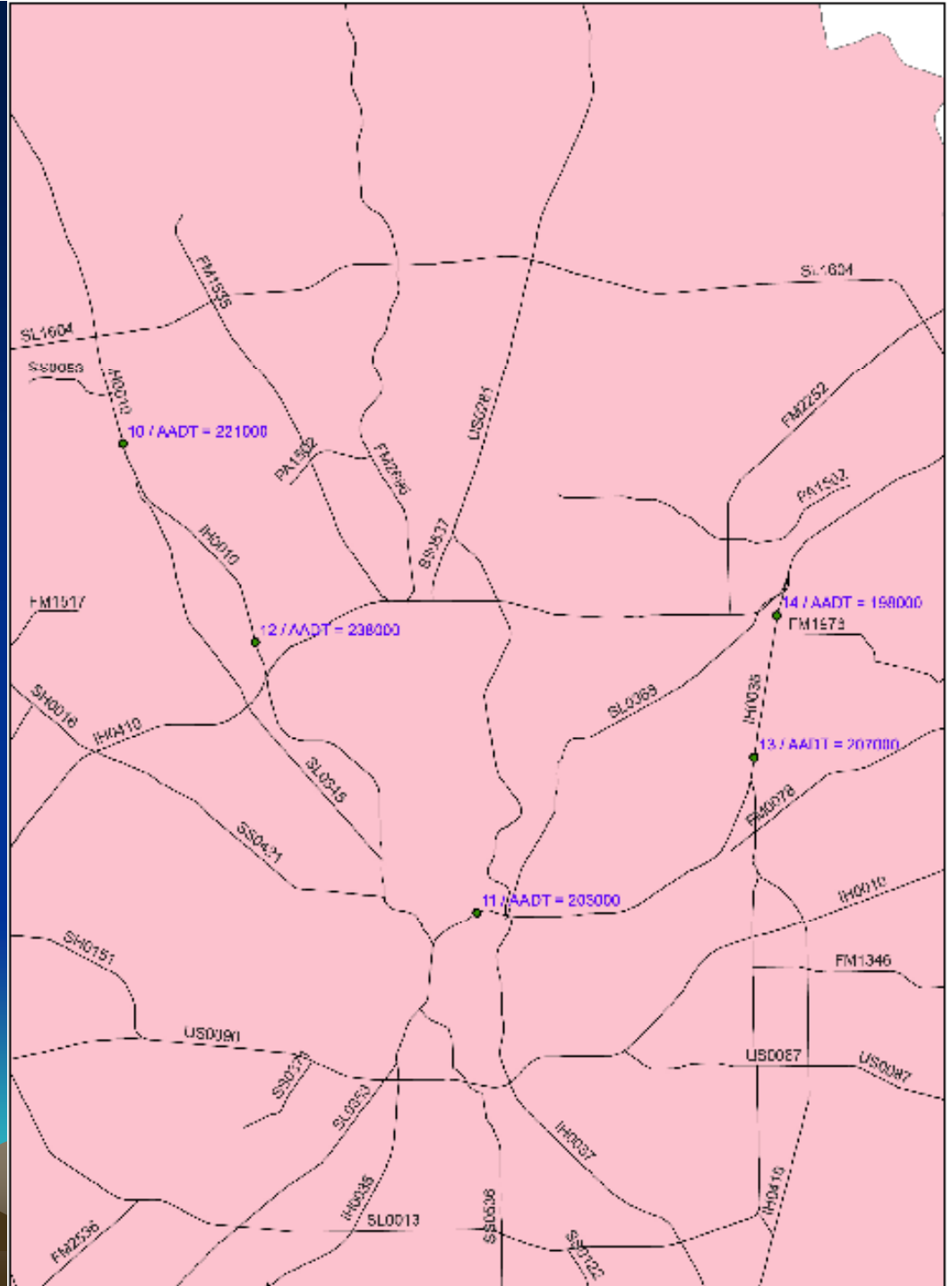
Text indicating the distance from the road lane edge to the probe, positioned above a mountain silhouette.

# Monitor Trailer



# SAT

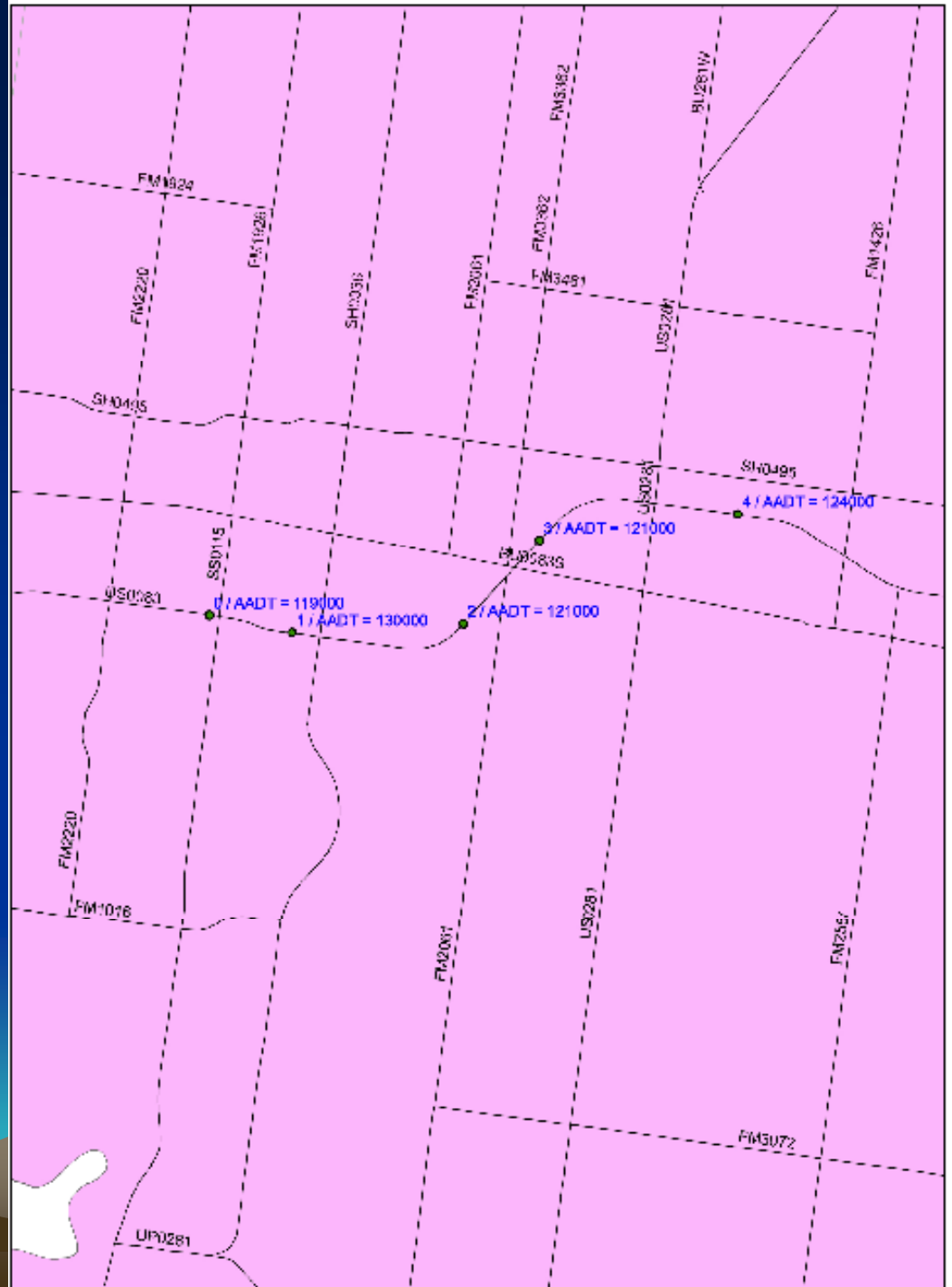
IH 10  
and  
IH 35





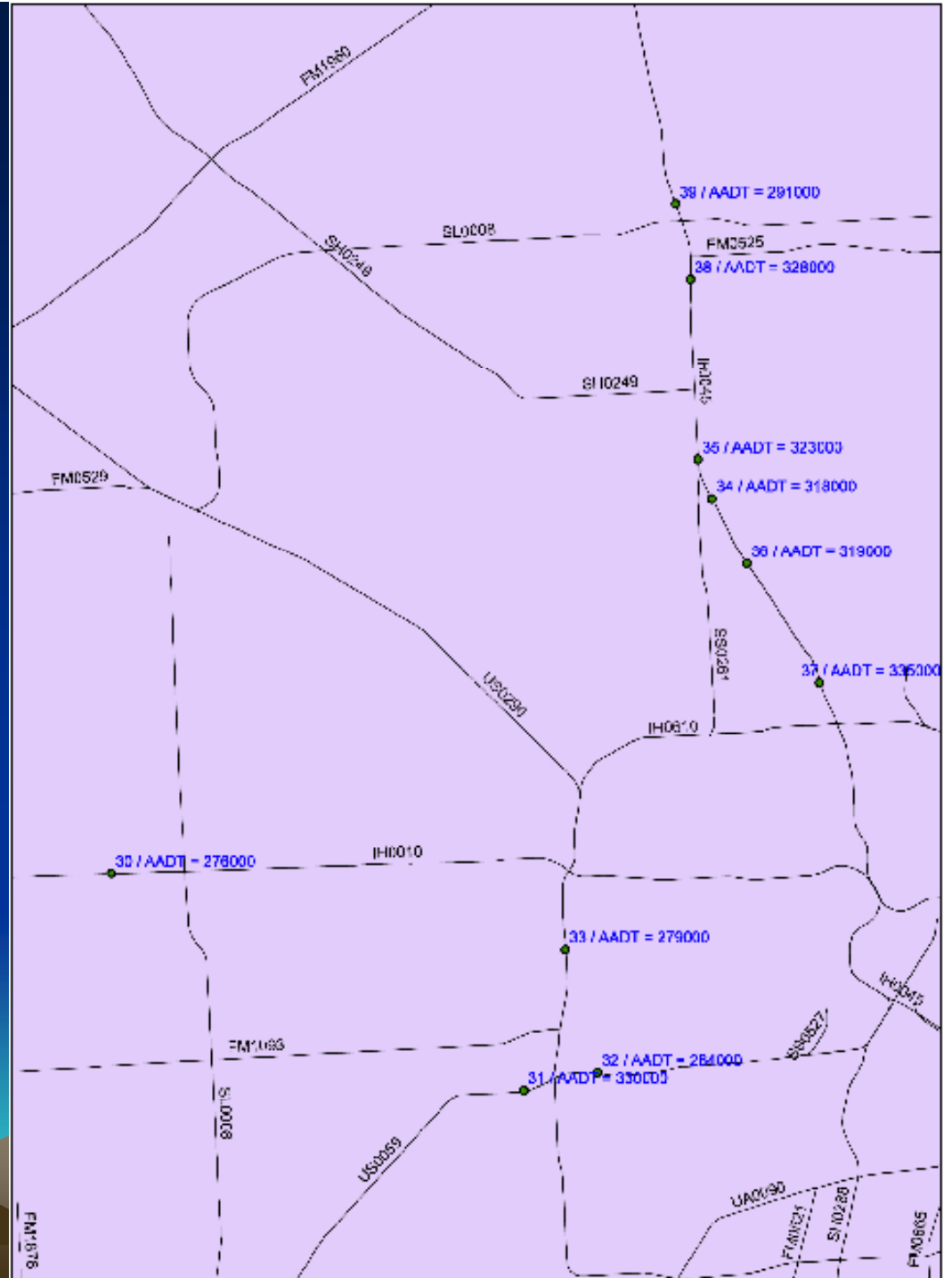
# McA/E/P

# US 83



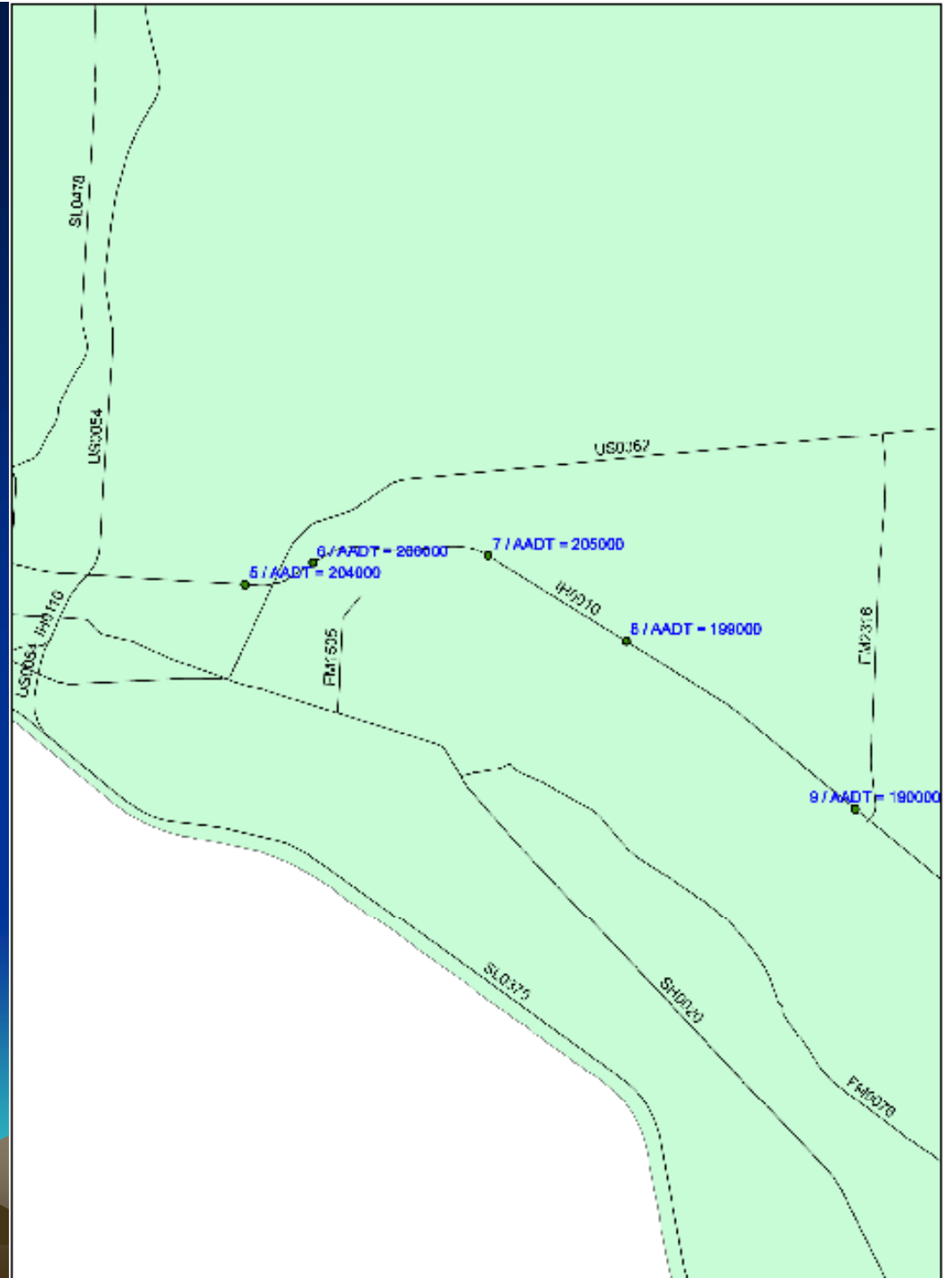
# HOU

IH 10  
IH 610  
IH 45  
US 59



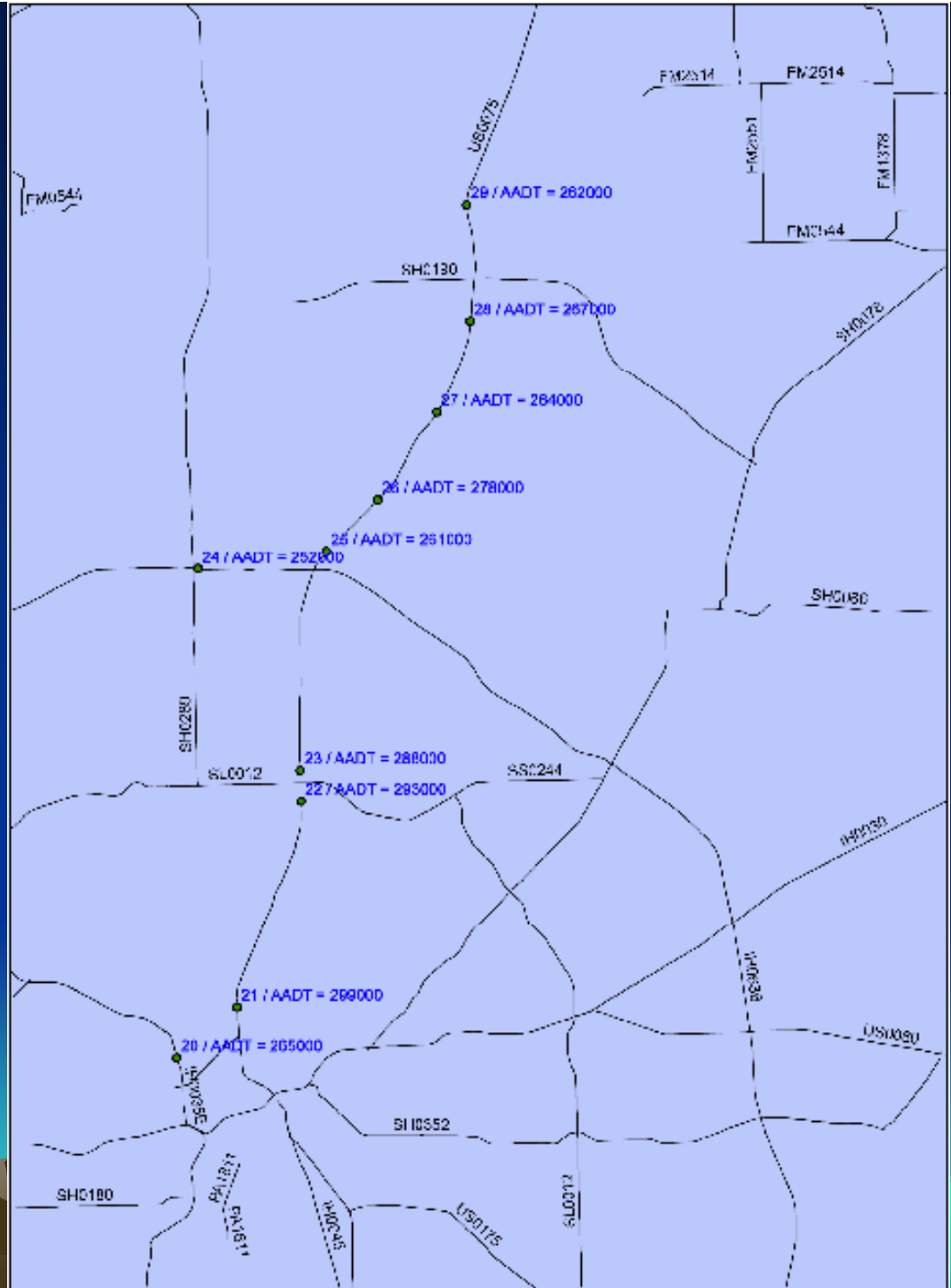
# ELP

# IH 10



# DFW

US 75  
IH 635 @  
SH 289  
and  
IH 35 E





# Timeline for NO2 NAAQS

Milestone	Date
Signature—Final Rule	January 2010
State Designation Recommendations	<b>none anticipated for Texas 1/2011</b>
Final Designations Signature	<b>none anticipated for Texas 1/2012</b>
Conformity Determination	<b>none anticipated</b>
Monitoring Siting Decisions	to be determined
Monitor Siting Guidance	to be determined
New Roadside Monitors on-line	1/1/2013
Proposed Reclassification with new monitor data	2016
Final Reclassification with new monitor data	2017



# NO2 Design Values (Average 1-Hour 98th Percentiles over 3 Years)

Area	2006-2008 Design Value (per EPA)	Estimated 2006-2008 Roadside Monitor DV Assuming Levels 100% Higher	Projected Design Value by 2016	Projected Design Value for 2020
Bexar	54	108	68	43
Dallas	58	116	73	47
El Paso	67	134	85	54
Gregg	30	60	37	24
Harris	62	124	78	50
Jefferson	42	84	53	34
Smith	23	46	28	18
Tarrant	60	120	76	48
Travis	26	52	32	21

# Roadside Monitors

- Monitor housing is 6' X 8' trailer, and will need to be fenced.
- The probe is ¼ inch teflon to be enclosed in a 2-4 inch PVC tubing.
- Initial Deployment time is approximately 1 hour for monitor and probe. Trenching and fencing takes additional time.
- Right of entry will occur at approximately 6 month intervals to change out probe line.
- Utilities include electricity and phone.





# Roadside Monitors Questions

- The probe needs to be 10 meters from physical obstructions or trees. -- What other siting issues need to be considered (e.g. away from stationary or area sources of combustion, or away from certain utilities such as microwave towers or high voltage electric lines, or other...)?
- How will the probe be mounted?
- Other Questions?



# PM and CO NAAQS Review

- EPA preliminary documents have suggested that additional roadside monitors may be needed for PM and CO.
- Information on proposed and final rules for PM and CO will be shared with TWG.



# CO NAAQS Review

- Proposed decision is scheduled for October 2010, and final rule May 2011.
- 3/8/10 Policy Assessment for the Review of the CO NAAQS External Review Draft staff recommendations are:
  - Retain or revise the level of the **8-hour** standard to **3 - 9 ppm**, a range of **3-6 ppm** was based on more recent studies, combined with a 99th percentile or 4th-highest daily maximum form that is averaged across 3 years. *Current standard is not to exceed 9 ppm.*
  - Consider revoking the 1-hour standard if the 8-hour standard is lowered
  - Retain or revise the current **1-hour** standard to a level between **5 - 15 ppm**, combined with a 99th percentile or 4th -highest daily maximum form. *Current 1 hour standard is not to exceed 35 ppm.*



# CO NAAQS Review

- Based on a quick review of TCEQ data:
  - CO levels throughout Texas continue the downward trend.
  - El Paso, is of concern if the 1-hour standard is set at 5 ppm.
  - The 2007-2009 design value for El Paso Chamizal monitor is 5 ppm and El Paso Sun Metro monitor is 5.8 ppm.
- Did not find TCEQ data on the 8-hour average, but areas that had **1-hour (not 8-hour)** reading above 3 ppm were (but does not mean that an 8-hour standard would be exceeded):
  - El Paso,
  - Houston (2 monitors),
  - Laredo (2 monitors) and
  - San Antonio (1 monitor).

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# PM NAAQS Review

- Proposed decision is December 2010/January 2011; and final rule October 2011. Preliminary Staff Conclusions from Secondary Draft Policy Assessment are:
- 1° Standard for fine particles (PM<sub>2.5</sub>) (pg 2-84)
  - Alternative standards presented for consideration are: annual PM<sub>2.5</sub> within a range of **13 - 11 ug/m<sup>3</sup> (current is 15 ug/m<sup>3</sup>)**, and 24 hour within a range of **35 - 30 ug/m<sup>3</sup> (current is 35 ug/m<sup>3</sup>)**
  - Strong support for retaining the current 24-hour and annual averaging times. A 98th percentile form presented for the 24 hour standard.



# PM NAAQS Review

- 1° PM10 Standard for Thoracic Course Particles (PM10)  
(page 3-44)
  - Potential alternative forms and levels presented were 24 hour PM10 at **65-85 ug/m<sup>3</sup>** at a **98th percentile**.
- 2° Standard for Visibility (page 4-48)
  - Possible changes to the indicator, consideration of a 1-hour averaging time. Options include:
    - **PM light extinction between 64 - 191 Mm<sup>-1</sup>** with a 90 - 98 percentile form, or
    - **PM2.5 1-hour daily maximum in a range of 10 to 30 ug/m<sup>3</sup>**, with a 90 or 95% percentile form averaged over 3 years, or (in first draft, not found in second draft)
    - all daylight hours with consideration of a 98th percentile



# PM NAAQS Review

- 2° Standard for Other Welfare Effects – Climate (page 5-10)
  - Insufficient information
- 2° Standard for Other Welfare Effects - Ecological Effects (page 5-23)
  - Insufficient information
- 2° Standard for Other Welfare Effects - Materials Damage and Soiling (page 5-28)
  - No additional changes considered



# References

- On 3/8/10, EPA released the Policy Assessment for the Review of the CO NAAQS External Review Draft  
[http://www.epa.gov/ttn/naaqs/standards/co/s\\_co\\_cr\\_pa.html](http://www.epa.gov/ttn/naaqs/standards/co/s_co_cr_pa.html)
- Secondary Draft Policy Assessment (PA) for the review of the PM NAAQS is at:  
<http://www.epa.gov/ttn/naaqs/standards/pm/data/Second%20Draft%20PM%20Policy%20Assessment%2006%2030%2010%20CASAC%20REVIEW%20DRAFT.pdf> .
- EPA's final integrated science assessment for PM was published December 2009. <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=216546>
- PM Risk and Exposure Assessments from Sept 2009 to March 2010 are at:  
[http://www.epa.gov/ttn/naaqs/standards/pm/s\\_pm\\_2007\\_risk.html](http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_2007_risk.html)





# Questions

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