Texas Department of Transportation

January 2015

2015 Ozone NAAQS: Impacts to Texas

Background

The Environmental Protection Agency enforces the Clean Air Act and is required to set the National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. Ozone is one of those pollutants. The EPA must reevaluate the NAAQS every five years.

EPA is currently reevaluating NAAQS for ozone and has proposed lowering the current standard of 75 parts to billion to between 65 and 70 parts per billion.

Impact to Texas

Currently Texas has two regions (DFW and Houston) that are in "non-attainment" for ozone standards. Being in non-attainment means the county's air is deemed too polluted to meet the standard set by the EPA. Non-attainment areas must spend a portion of their federal highway money on projects that work to clean the air and bring their region into attainment. These non-attainment areas risk losing some of their federal highway dollars if they can't reach the air quality standards set by the EPA.

Under the proposed new standard, Texas would go from having 18 counties in non-attainment to 68 counties in non-attainment. (See map)

The tightened standards would trigger transportation conformity requirements, resulting in the following impacts:

- Increase potential for project delays and project costs;
- Delay the ability to rapidly utilize innovative funding options that may become available for capacity projects (estimate up to a 6 month minimum delay per project);
- Increase transportation planning requirements and lengthen planning schedules;
- Redistribute limited federal Congestion Mitigation Air Quality (CMAQ) funds

Suggestions

- Delay the implementation of new standards. Current standards are already working, with reduced pollution being achieved under the existing standards.
- Allow counties and regions to fully implement plans developed under existing regulations before mandating new regulations.
- Change the NAAQS reevaluation requirement from every 5 years to every 10-15 years.
- Significantly revise transportation conformity requirements.

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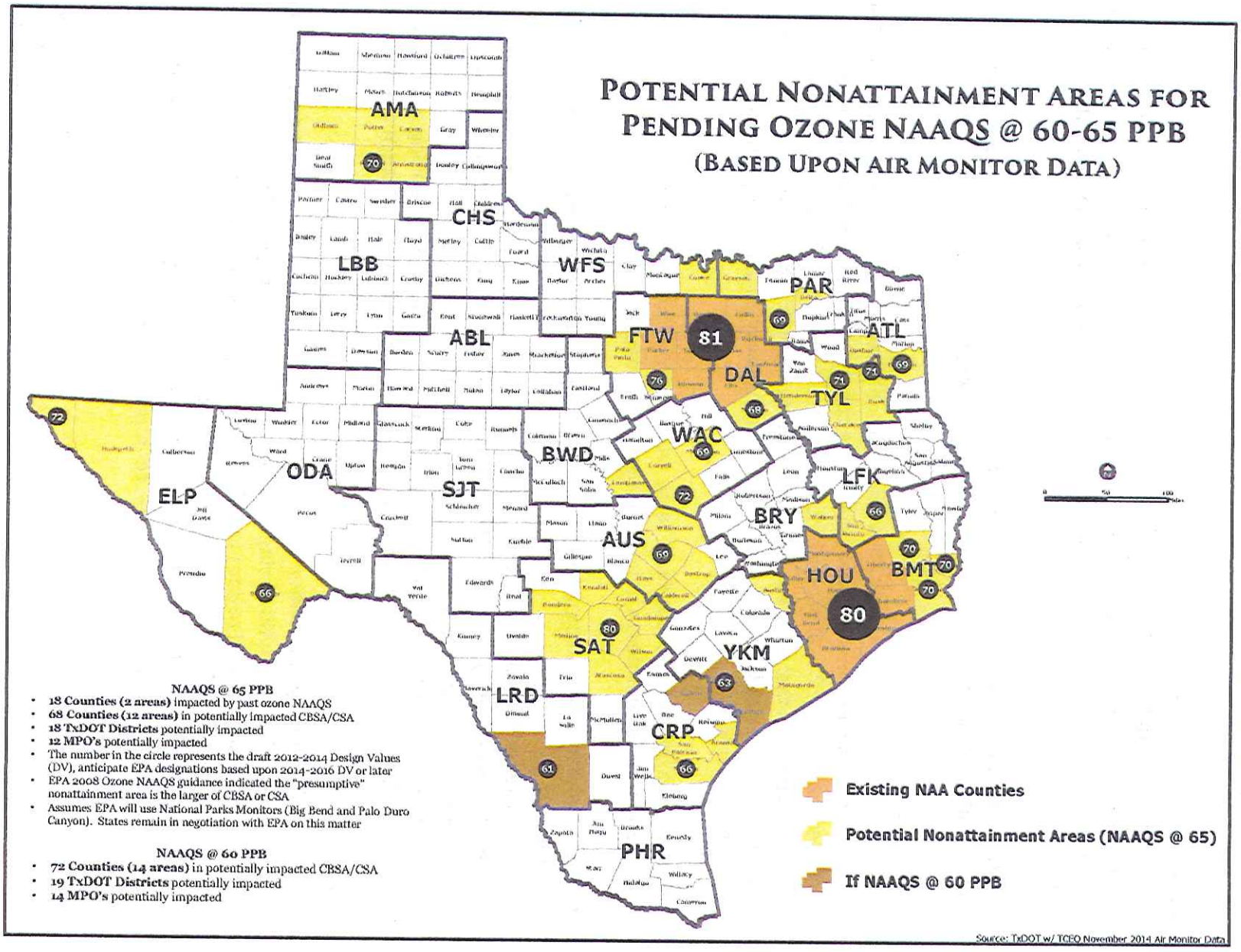
POTENTIAL NONATTAINMENT AREAS FOR PENDING OZONE NAAQS @ 60-65 PPB
(BASED UPON AIR MONITOR DATA)
AMA
CHS
LBB
WFS
PAR
ATL
ABL
FTW
81
DAL
TYL
WAC
BWD
ODA
ELP
SJT
LFK
BRY
AUS
HOU
BMT
80
SAT
YKM
LRD
CRP
PHR
NAAQS @ 65 PPB
18 Counties (2 areas) impacted by past ozone NAAQS
68 Counties (12 areas) in potentially impacted CBSA/CSA
18 TxDOT Districts potentially impacted
12 MPO's potentially impacted
The number in the circle represents the draft 2012-2014 Design Values (DV), anticipate EPA designations based upon 2014-2016 DV or later
EPA 2008 Ozone NAAQS guidance indicated the "presumptive" nonattainment area is the larger of CBSA or CSA
Assumes EPA will use National Parks Monitors (Big Bend and Palo Duro Canyon). States remain in negotiation with EPA on this matter
NAAQS @ 60 PPB
72 Counties (14 areas) in potentially impacted CBSA/CSA
19 TxDOT Districts potentially impacted
14 MPO's potentially impacted
Existing NAA Counties
Potential Nonattainment Areas (NAAQS @ 65)
If NAAQS @ 60 PPB
Source: TxDOT w/ TCEQ November 2014 Air Monitor Data

Pending 2015 Ozone NAAQS: Implications for Texas

The Environmental Protection Agency (EPA) proposal to lower the ozone national ambient air quality standard (NAAQS) to a range between 65 and 70 parts per billion (ppb) may have a serious and detrimental effect on the future development of transportation projects in Texas.

Currently, 18 Texas counties do not meet EPA's existing ozone standard of 75 ppb. If EPA revises the NAAQS to 65 ppb, it may impact an additional 50 counties for a total of 68 counties. The attached map identifies the areas in Texas that may be impacted by this proposal.

For the affected Texas counties, the proposal may impact transportation in the following ways:

- Increase potential for project delays[1] and potentially increase project costs;
- Place additional constraint/limit/delay on moving funds around and specifically delay the ability to rapidly utilize innovative funding options that may become available for capacity projects (estimate up to a 6 month minimum delay per project);
- Increase transportation planning requirements and lengthen planning schedules;
- Increase coordination for plans and projects with Metropolitan Planning Organizations (MPOs)/Districts/TxDOT central office divisions;
- Require additional coordination of transportation planning with EPA and Texas Commission on Environmental Quality (TCEQ) for air quality issues;
- Dilute the distribution of limited state planning dollars that are set-aside to MPOs for air quality planning which may pose additional risk to transportation plans and projects;
- Redistribute limited federal Congestion Mitigation Air Quality (CMAQ) funds;
- For projects in these newly designated areas, require transportation conformity determinations prior to:
  - funding changes that impact fiscal constraint (federal, state, local and private);
  - plan/Transportation Improvement Plan changes (beyond administrative amendments);
  - environmental clearance of project design, concept and scope changes; and environmental clearance of project schedule changes.

Remove transportation conformity and state requirements when only federal controls are needed. The Clean Air Act and current NAAQS standard are working. EPA projections of future non-attainment areas show significant reductions, from 558 counties currently to 68 counties in 2025. Unfortunately, instead of focusing on the 68 counties that need extra help, the Clean Air Act requires all 558 counties to adhere to stricter requirements. In addition, these counties have to adhere to stricter requirements for 20 years AFTER an area reaches the NAAQS goal. Removing

1 For example, the $3.2 billion SH 121 concessionary payment was delayed by several months awaiting a new conformity determination.

conformity requirements would put the focus where it is most needed and offer relief to areas that will achieve attainment goals through existing standards.

In Texas, reducing ozone is accomplished by reducing nitrogen oxides (an ozone precursor). The TCEQ estimates that 59% to 81% of NOx emissions are from transportation (see attachment 2). Consequently, any future reductions in the ozone standard will likely place added pressure on the Texas transportation industry to reduce NOx emissions (e.g. diesel retrofits, night-time construction, or other limitations on construction during the summer ozone season).

EPA is also soliciting comment on alternative options that include the NAAQS as low as 60 ppb or leaving it at the current level of 75 ppb. The National Association of Manufacturing commissioned a study that indicates all of Texas could be designated nonattainment if EPA uses both modeling and monitoring data. Although EPA did not specifically propose to use modeling data for ozone designations, the authority for it exists in current rules.

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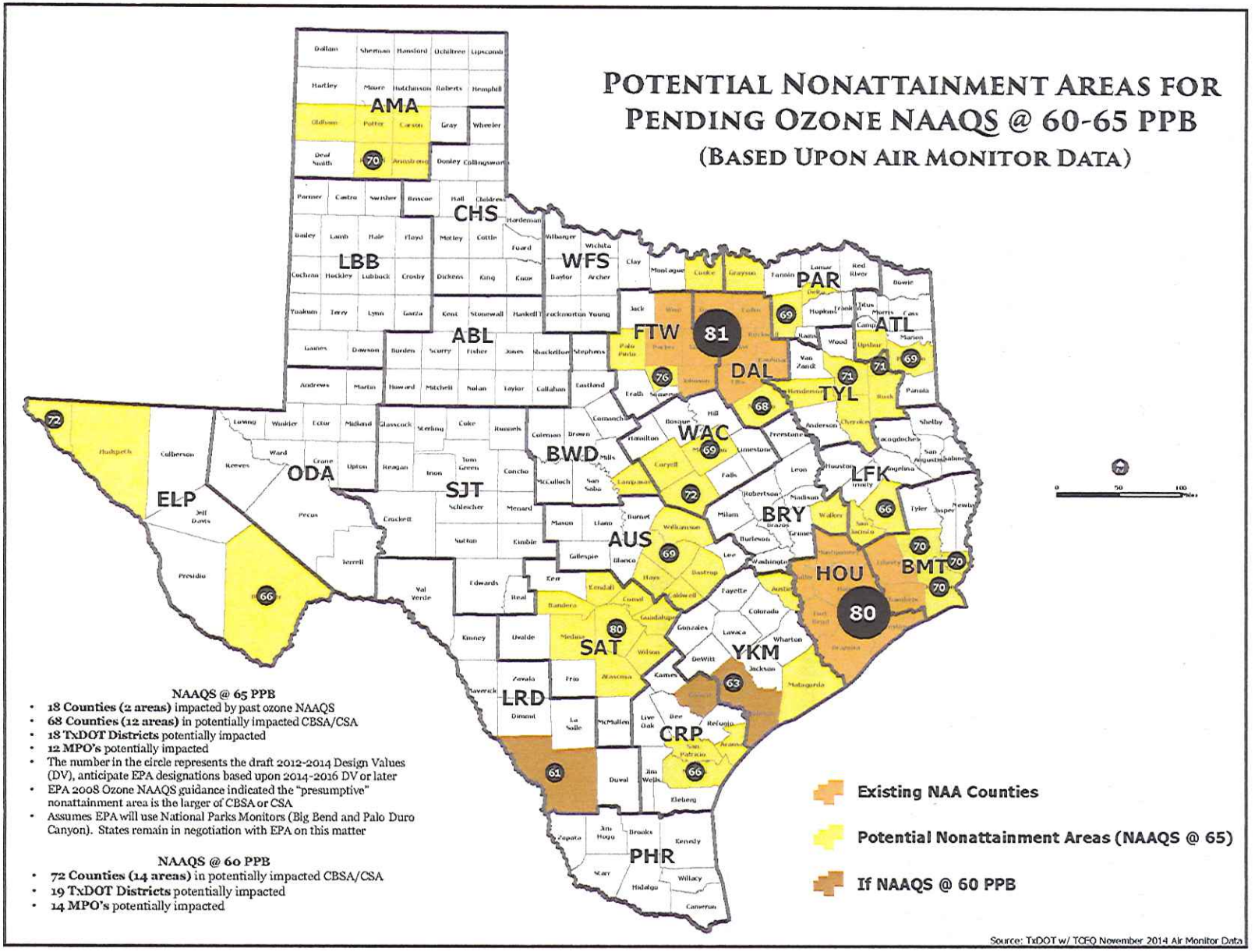
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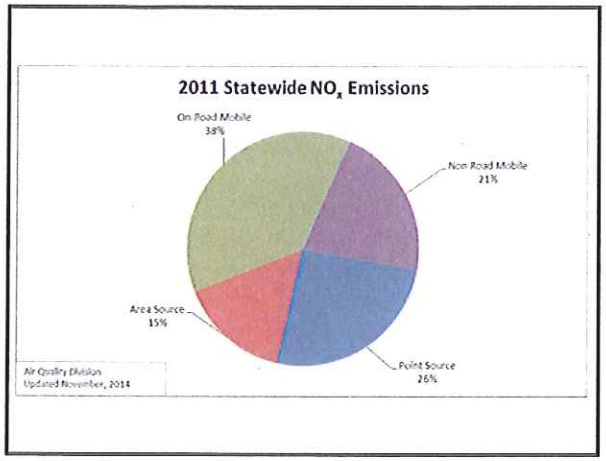
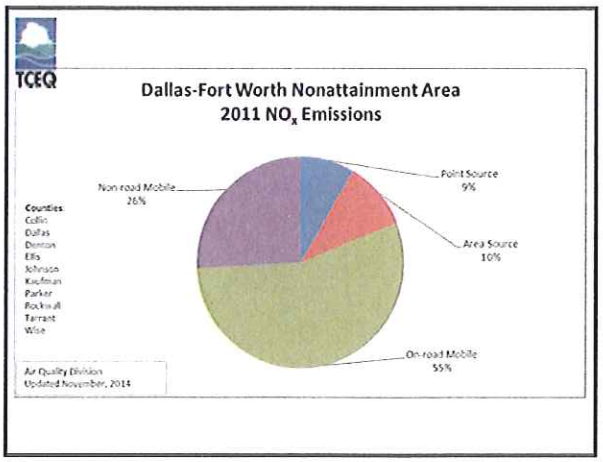
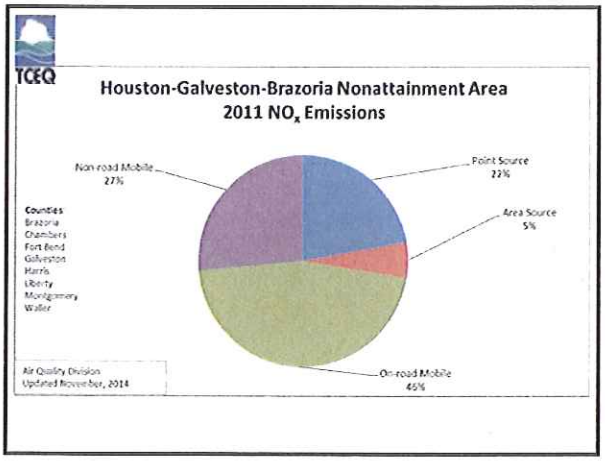
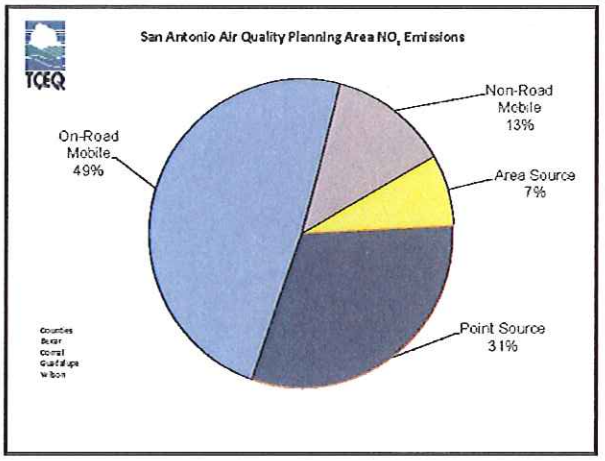
Source: TxDOT w/ TCEQ November 2014 Air Monitor Data

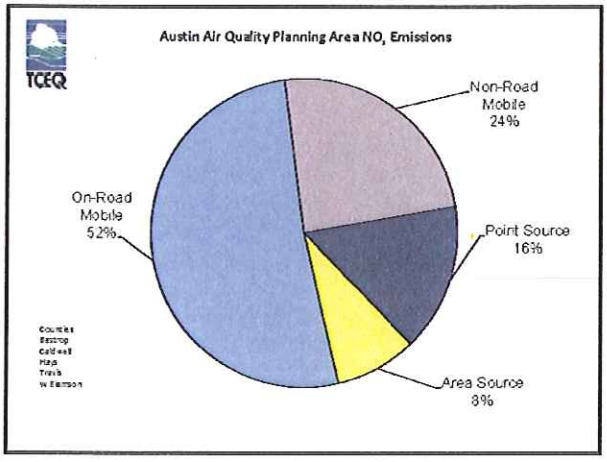
Attachment 2











Summary

- 73- 81% of NO_x emissions in major Texas metropolitan areas are due to transportation (on-road/non-road emissions)
- Due to interstate commerce laws, these emissions are regulated by the federal government, not state and local governments

The Clean Air Act Delays Transportation Projects

Without statutory changes to transportation conformity, nonattainment and maintenance areas have limited benefits from MAP-21 project delivery streamlining. With the exception of State Implementation Plan (SIP) required transportation control measures (TCMs), regional transportation conformity does not reduce emissions; it simply estimates if emissions reductions were predicted accurately. It's an intensive paperwork exercise that wastes resources and delays projects. Examples of project delay in Dallas are provided in Attachment 4. Highway sanctions and transportation conformity lapses jeopardize the ability to plan and ultimately deliver transportation projects on time and result in infrastructure delays[1]. Such delays may: impact the safety of the traveling public, waste funds, and contribute to congestion (thereby increasing travel time and wasting fuel). It is not clear how these issues were considered when the CAA was amended, but fast forward 25 years and transportation funding cannot keep up with maintenance and demand, making congestion[2] much worse. So the efficient use of funds is far more critical now than ever before.

Regional transportation conformity assesses if the current transportation plan is consistent with the SIP. It involves estimating emissions from all non-exempt projects in a region. It also assesses how accurately emission reductions were predicted for fleet and fuel advances under CAA Title II, vehicle inspection/maintenance programs, travel demand management (TDM) and traffic system management (TSM) as well as whether projects proceed as originally envisioned. One of the problems with the analysis is that it assumes that each of the projects and the underlying planning assumptions will remain static and unchanged. The planning assumptions include changing funding levels, project schedule, project design, fleet mix, demographics and model changes. All assumptions are dynamic and most are beyond the DOT/MPO control. The iterative and fluid nature of planning and project development requires increased project specificity throughout project development and is therefore in direct conflict with the rigid nature of the regional conformity analysis. It is this conflict in processes that leads to project delays as individual project changes may trigger the need for new regional conformity determinations.

The hierarchical nature of conformity also enforces a strict rigidity. For instance a project must conform to a regionally conforming transportation plan, which was, in turn, found to conform to the SIP. If a SIP revision is triggered, this affects conformity down the chain. The last major EPA emission model change is a great example of this. It increased NOx emission estimates by 30-50%, so any area with a tight SIP limit, had to undergo a SIP revision to include the increased NOx emissions before a new regional conformity could be demonstrated. Conformity ultimately depends upon the SIP limits, which vary widely in the

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1 For example, a $3.2 billion dollar toll concessionary payment was delayed by 6-9 months, which delayed use of those funds in the DFW area.

2 For the 101 most congested U.S. metroplexes, in 1990, wasted fuel due to congestion was 1.1 billion gallons, in 2011, it was 2.2 billion gallons; TTI 2012 Urban Mobility Report.

U.S. Some are based on old historical 1-our ozone limits (prior to 1997 limits) and some are updated more frequently with much lower limits, which in turn make conformity more difficult. Texas SIP limits are all more recent.

Another challenge with conformity is requiring the use of highly variable latest planning assumptions that requires a level of precision that just does not exist. Research studies document that a substantial degree of uncertainty exists in forecasting future population, land use, finances, and the multitude of issues that go into transportation plans and travel models[3]. Plans and travel models were intended to be guide and be subject to change as new information becomes available that affects planning issues; so conformity requires the plans and travel demand models to be used in a manner contrary to their intended fluid nature. Projecting exactly where people are going to live and work 20-30 years into the future is speculative at best. The difference in these assumptions resulted in an almost 2 year conformity lapse in Beaumont that prevented advancement of needed infrastructure.

Transportation conformity lacks flexibility. Larger metropolitan areas are able to complete regional conformity semiannually to biennially, and smaller metropolitan areas less often (once every 2 years), so conformity may delay projects by 6-24 months. In order to obtain a project-level conformity determination, a project must be found to be consistent with the regional conformity determination of the plan. A project change that makes it inconsistent with the design concept and scope, funding, or schedule beyond what was originally approved in the plan results in needing a new regional conformity determination or a new demonstration that the existing regional conformity determination is not impacted. This can occur even for changes as small as adding, delaying, or advancing one additional lane mile; even though a transportation plan network may be quite large (Dallas-Fort Worth has 43,606.9 lane miles). Unfortunately, such changes can encompass even such trivial things as changing the location of a ramp or extending the project limits for construction warning signs if the project is described with specific post miles in the plan and/or TIP. Regional conformity must be re-determined even if the change isn't sufficient to trigger a subsequent NEPA action. Delays have occurred on a number of projects in Texas while awaiting a new regional conformity determination. This delays the benefits (e.g., safety, economic, congestion reduction) associated with the project.

In an effort to add flexibility with respect to the number of project-level conformity determinations, the 1997 conformity rule had a "grandfathering" provision that locked in

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3 National Academies - Transportation Research Board 288 excerpts include page 77 "there is really no hope that a mathematical model can ever accurately predict the future, given the uncertainty in demographics, technological shifts, and social changes" or page 76 "In...more rapidly changing regions, greater errors in demographic forecasts would be expected. There may be considerably more uncertainty in allocating regional demographic forecasts to subareas...where those people and jobs are going to go within the region is far more uncertain.

conformity at the NEPA approval point regardless of what happened later. However, that was thrown out by court action, so project-level conformity must be demonstrated for each federal decision point in project development (NEPA/environmental decision, design, PS&E, ROW, and letting for construction). This increases the number of opportunities that a project-level conformity determination may trigger the need for a new regional conformity determination and the resulting delays.

Project level transportation conformity compares what was originally conceptualized in the plan to the increased specificity that is developed throughout its five different stages of project development. Providing an option for conformity to only apply to the post-NEPA stage would allow for changes made in the NEPA process including public involvement to be incorporated into an updated plan without causing project delays (similar to permits issued post-NEPA).

Transportation conformity is only nominally able to reduce emissions. It is worthwhile, therefore, to briefly discuss how transportation emission reductions are achieved so that can be factored into future policy decisions. EPA, FHWA[4], AASHTO and National Academies studies all suggest that implementation of federal vehicle and fuel technological improvements have and will continue to provide significant transportation reductions. For example, such advances have resulted in more than an 80% reduction in vehicle emissions while VMT grew by 300%, including more than a 10% annual reduction of NOx. According to AASHTO,[5] national technological advancements will provide greater emission reductions than what can modestly be achieved through the types of programs used for transportation conformity such as: land use, transit, TDM, TSM, fees, and lifestyle changes. These types of projects occur regardless of conformity because they reduce congestion, improve safety and improve system reliability.

Another recent study was EPA's "*Potential Changes in Emissions Due to Improvements in Travel Efficiency - Final Report, March 2011*"[6], It indicates:

- Further technological advancements are crucial to reducing vehicle emissions because:
  - Travel demand management (TDM) + land use changes + transit fare reduction + transit service improvements + parking fees + mileage fees "bundle" may reduce CO2 by 8.83%, PM by 8.78%, NOx by 8.65% and VOC by 8.29% by the year 2050 (40 year reduction).

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4 http://www.fhwa.dot.gov/environment/vmtems.htm

5 AASHTO 2009 Real Solutions for Reducing Greenhouse Gas Emissions

6 EPA report: "Potential Changes in Emissions Due to Improvements in Travel Efficiency - Final Report" and is available at: http://www.epa.gov/oms/stateresources/policy/420r11003.pdf.

- On average, a 0.2% reduction per year could be achieved if implementing all bundled measures

The attached charts show NOx emission reductions from 1970 to projections out to 2050, and current transportation contributions for major metropolitan areas in Texas. Note the tremendous reductions in both on-road and non-road transportation emissions. The attachments also include pie charts for NOx emissions for major Texas metropolitan areas. (NOx is an ozone precursor emission, and ozone reductions in Texas and most of the U.S. require NOx reductions.) When Clean Air Act vehicle and fuel controls can reduce NOx by more than 10% per year, then is conformity needed when it typically results in a maximum of 0.4% NOx reductions per year?

Suggested Improvements

Significantly revise transportation conformity to maximize efficient use of limited transportation funds and reduce project delays.[7] Recognize that vehicle and fuel controls will continue to be the primary option to reduce transportation emissions through 2050. Assess whether highway sanctions are necessary under the Clean Air Act.

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7 For example, the 1977 Clean Air Amendments included conformity provisions but it required a qualitative and not quantitative analysis.

Other topics for which TxDOT has information that can be shared in the future are other possible policy options that can streamline project development, including but not limited to:

- Is transportation conformity needed when considering required CAA vehicle and fuel emission reductions?[8]
  - Best use of funds (mitigation or paperwork conformity demonstrations);
  - Risk to roadway infrastructure;
  - Conformity costs and transportation AQ improvement project costs;
  - Potential unintended consequences of conformity (economy, MOVES);
  - Timing of transportation air quality improvements versus SIP schedules
- Conformity is inflexible and rigid. What are streamlining or exemption options
  - Provide a range that is acceptable not a single number- allows for uncertainty of models and variability of assumptions
  - Offer a *de minimis* threshold
  - Offer option for conditional NEPA clearance –don't mandate it for all 5 stages of development
  - Have it apply initially at the same time a SIP is due – 3 years after designation, instead of 1[9]
  - Conformity exemption options:
    - areas that will attain simply through implementation of federal programs,
    - marginal areas or any area not subject to a SIP, and
    - maintenance areas (up to 20 years after an area attains), especially those that meet a new more stringent NAAQS
    - areas designated due to international transport or dust storms (e.g. El Paso)
- Alternatives to transportation conformity (e.g. expand CMAQ)
- Is it still appropriate for the CAA to jeopardize tax funds dedicated to transportation assets including redirecting funds away from intended use or delaying infrastructure?

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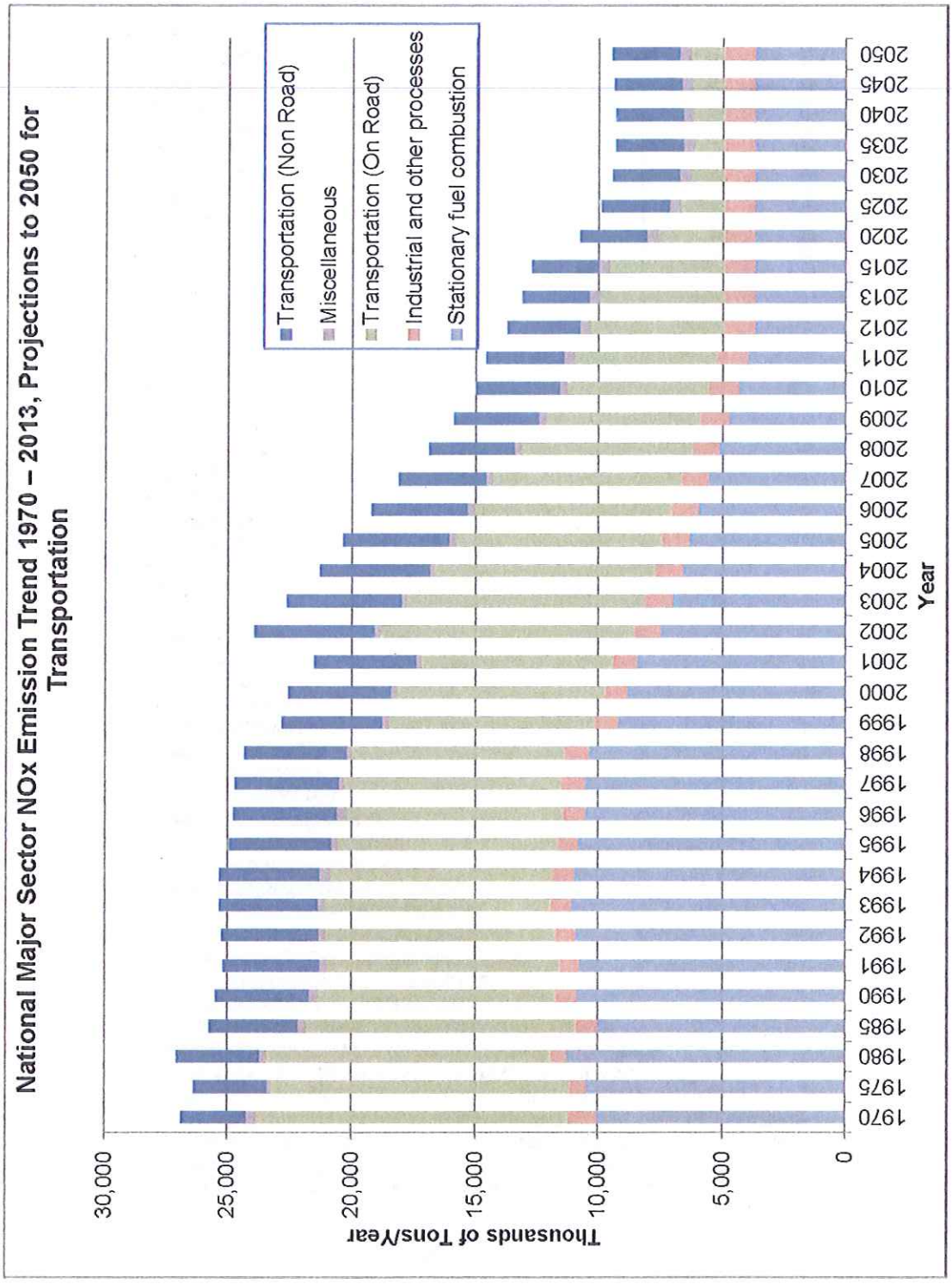
8 Title II of the Clean Air Act controlling vehicle and fuel emissions has made substantial reductions over time and is projected to continue making such reductions past 2030, even with increasing VMT over this 60+ year span (40 years in past and 20+ years in future).

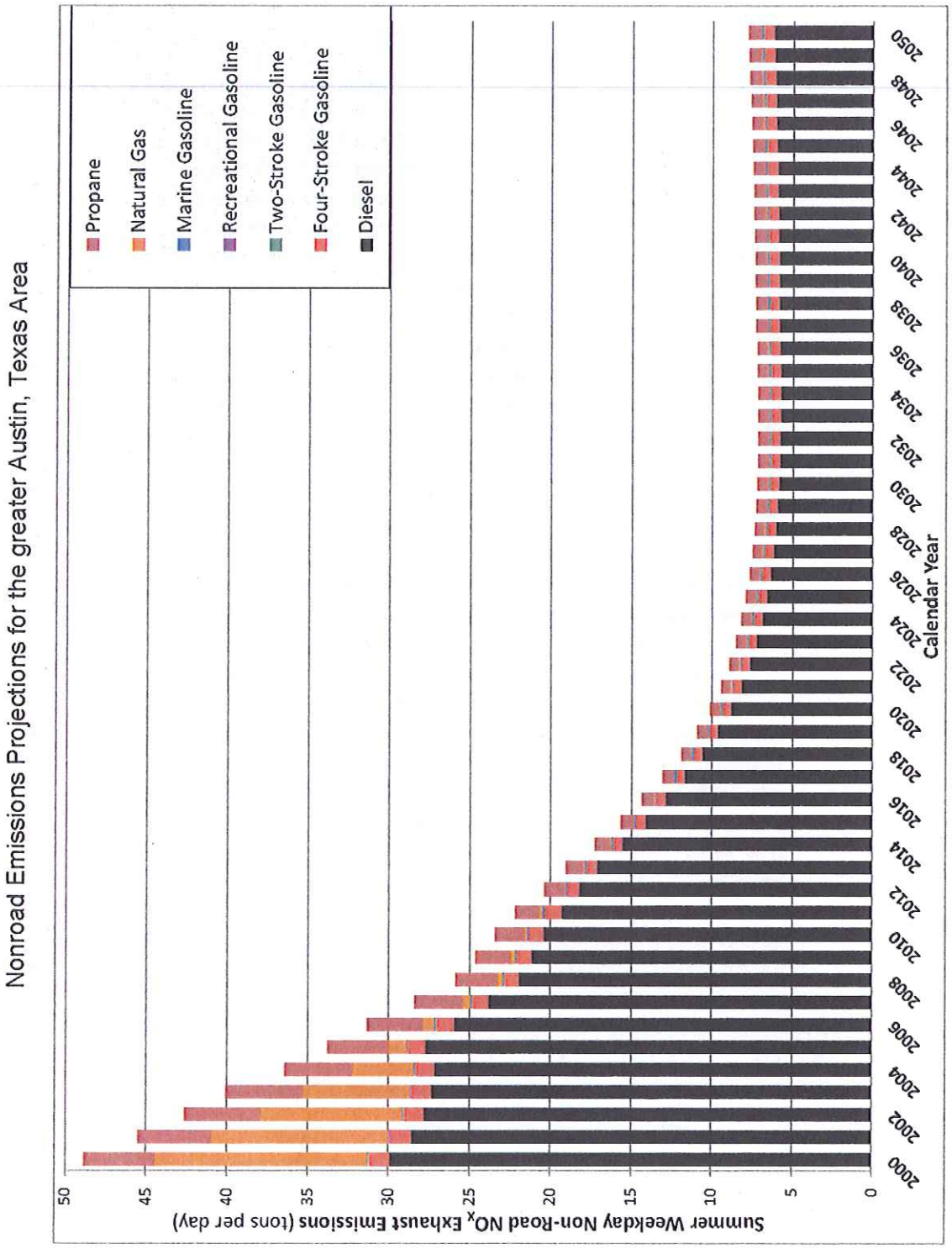
9 This is critical if a state becomes subject to multiple nonattainment areas because this affords DOTs and MPOs time to budget, obtain resources, and complete the first conformity determination.

Attachment 1



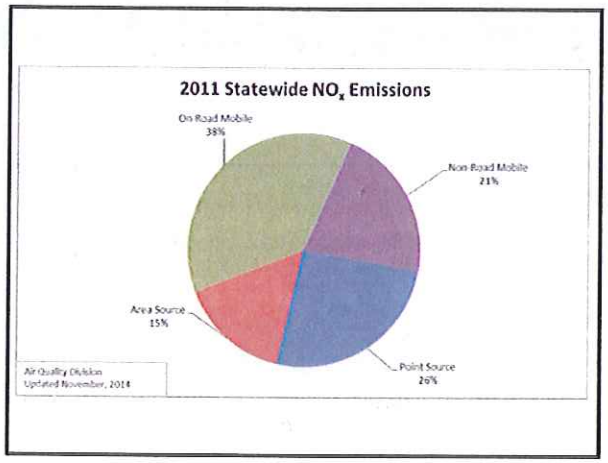
Notes: Major Sector NOx emissions from EPA NEI data extracted December 2014 from: http://www.epa.gov/ttn/chief/trends/. Transportation on-road projections are from FHWA December 2014 (MOVES-2014 Oct. release). Non-road, miscellaneous, industrial and other processes, and stationary fuel combustion held constant at 2013 levels (information was not immediately available on what these projected reductions are). Non-road projections are pending from FHWA; based upon TCEQ analysis for the Austin, Texas area, nonroad emissions by 2050 should be approximately ½ of 2015 levels.

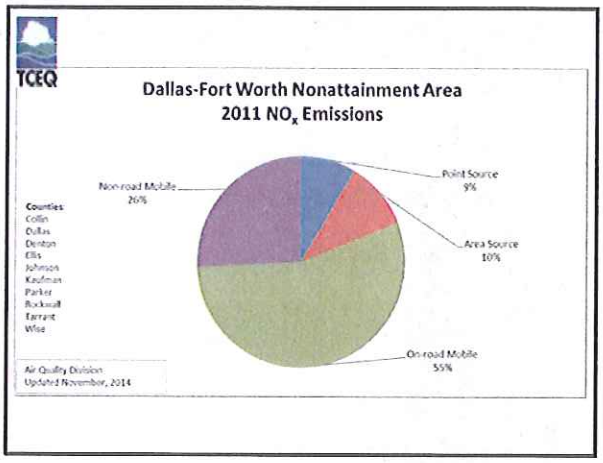
Attachment 2

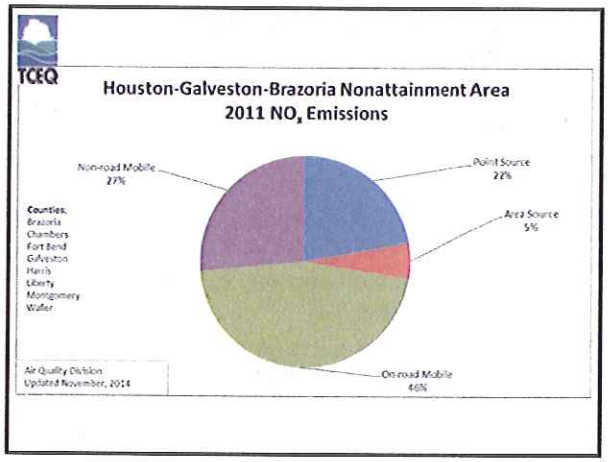


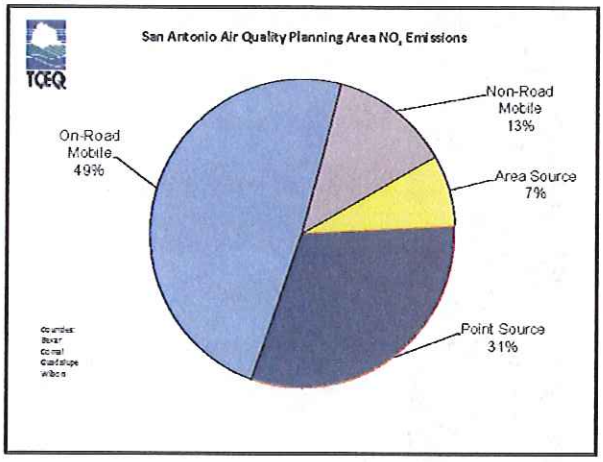
TCEQ, 2014. Approximately a 50% reduction from 2015 to 2050 levels.

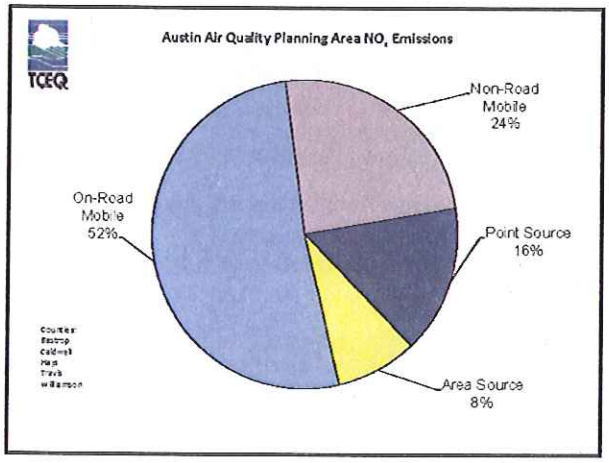
Attachment 3











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Attachment 4 - Example of Dallas District Project Delays Due to Transportation Conformity

Project	Description	Year	Conformity Issue(s)	Delay
US 75	Capacity 4 to 6 lanes	2011/2012	Incorrect ETC Year	9 months
IH 35E	Ramp/FR Rds/Overpass	2004	SIP Commitment Project; Move from Appendix D to meet the year	6 months
SH 114	Bottleneck Improvement	2005/2006	Bottleneck Improvement vs Capacity Issue	3 months
SH 121/ US 75	Reconstruct Interchange	2005/2006	Incorrect ETC Year	11 months
FM 2181	Capacity 2 to 6 lanes	2004	Incorrect # of lanes	6 months
IH 635	Frontage Roads	2004	Incorrect ETC Year	6 months
FM 2499	New Location 6 Lanes	2008/2009	Incorrect ETC Year	12 months
SH 190 (EPGBT)	New 6-lane toll road	2007	Wrong Description and ETC for shared/Managed HOV integrated toll for year 2007	6 months
IH 20	Frontage Roads	2002/2003	Incorrect ETC Year	12 months
SH 121	Add 6 lane toll to 6 lane frontage roads	2003	Incorrect # of lanes	12 months
US 175	Frontage Roads	2003/2004	Incorrect description one way vs two way frontage roads	12 months
SH 121	Frontage Roads	2003/2004	Coding error 4 vs 6 lanes frontage roads	12 months
Belt Line Road	Capacity 4 to 6 lanes	2004/2005	Incorrect # of lanes	9 months
US 75	Interchange	2006/2007	Incorrect Network Configuration	3 months
SH 289	Capacity 2 to 6 lanes	2006/2008	Incorrect # of lanes	22 months
FM 720	Capacity 2 to 6 lanes	2009/2010	Incorrect # of lanes. Let as 6 lanes, striped to 4 then opened as 6 once conformity was changed	18 months
SH 114	Construct 0 to 2 concurrent HOV/Managed Lanes	2008/2009	Description was changed from 1 lane Managed HOV to 2 lanes; also updated network tables to reflect 4 to 8 lanes	12 months
IH 35E	Capacity Project 4 to 6/8	2011/2012	Earlier ETC. Air Quality Technical Memorandum had to be done	13 months