

TxDOT ENV: Research of Potential Interest

NCHRP 25-55 *quantifying the Contribution of Vehicle Emissions to Local Air Quality (\$700,000)*
(NOTE: TxDOT has a related state research project)

Will be looking at key data inputs/outputs and modeling uncertainty associated with MOVES and Dispersion Models, which emphasis on dispersion models. Research will also look at background concentrations. Currently in pre-award stage.

NCHRP 08-117 *Impact of Transformational Technologies on Land Use and Transportation (\$200,000)*

Currently in proposal review stage. The objective of this research is to develop a guidebook providing a template or procedure for practical assessment by DOT and other transportation-system decision makers of the likely impact of transformational technologies on future activity centers, land use, and travel demand, with examples illustrating application of the template to address issues encountered by these decision makers. The guidebook should include at least the following components:

- Characterization of the significant causal links between particular TTs or groups of TTs and land use and transportation demand;
- Identification of typical short- and long-term issues facing decision makers, decisions to be made, and consequences related TTs' impact on use of land and transportation system configuration and management;
- Identification of metrics of change attributable to TTs—for example, numbers and percentage of trips, travel-demand time peaking, road-use and parking revenues—for evaluating the significance of TTs for land use and transportation;
- Identification of the institutional or jurisdictional partnerships that are needed to manage land use and transportation-system investment and operations to respond to TTs
- Description of information needed to support effective transportation-system investment and management decisions

Transportation Pooled Fund Study: Near road monitors aren't typically showing substantive hotspots for PM2.5, NO2 or CO and are generally aligned with concentration values similar to other monitors for the given area. TxDOT is a member of the pooled fund study along with other DOTs and FHWA.

- If you would like a copy of any near-road air quality pooled fund reports, a few have been approved for sharing and others I can make a request of the research panel (TxDOT is part of panel).

Potential Policy Considerations: As more years of near-road monitor and other area monitor data is generated, if the trend continues that near road monitors and area monitors correlate and near road monitors do not demonstrate substantive "hotspots," then policy considerations may be warranted. Thus far, very small increments, if any, appear to be associated with the near-road environment (even with high FE AADT (up to 695k). The increments are substantially less than what current hotspot methodologies and models tend to predict. TxDOT anticipates a future policy review would include under what circumstances, if any, a quantitative hotspot analyses are necessary for conformity, or could qualitative analysis including regional conformity efforts and/or near road monitor data results would suffice. Even with our explosive population growth for Texas since 2000

we show major downward trends in criteria and air toxics emissions over time, see:

<https://www.tceq.texas.gov/airquality/airsuccess/airSuccessCriteria>)

- Since 2000, Texas population increased by more than 6.1 million people, an increase that is more than total state populations for 33 states.

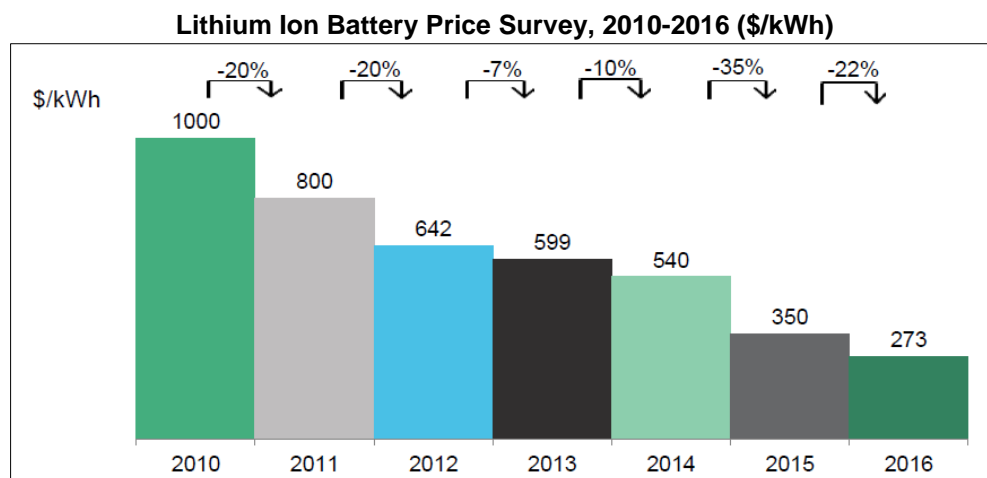
Electric Vehicle Market Projections

Experts are predicting major shifts from fossil-fuel (gas/diesel/methane/ethanol internal combustion engine-powered) passenger vehicles to passenger electric vehicles, with substantial increases beginning in 2025. For example, Bloomberg New Energy Finance (BNEF) issued “*Electric Vehicle Outlook 2017.*” In this report, BNEF reviewed economics, technology, policy and consumer behavior to predict EV adoption between now and 2040. The projections, account for existing policy, but do not anticipate any new policies to be implemented. The Bloomberg report analyzed five underlying factors likely to drive increased EV adoption:

- “Short-term regulatory support in key markets like the U.S., Europe and China
- Falling lithium-ion battery prices
- Increased EV commitments from automakers
- Growing consumer acceptance, driven by competitively priced EVs across all vehicle classes
- The growing role of car sharing, ride hailing and autonomous driving (termed ‘intelligent mobility’ here).”¹

BNEF projects that the cost for electric and internal combustion engines will be the same by 2025, due to reduced costs associated with electric battery manufacturing.² Various news articles indicated over 100 types of electric vehicles will be available for purchase by 2022. For new vehicle sales, BNEF anticipates that electric vehicles will surpass standard internal combustion engine-powered vehicle sales by 2038. BNEF projects that electric vehicle sales will reach 54% (> 60 million electric vehicle sales/year) market share by 2040.³

International Energy Agency (EIA) released “*Global EV Outlook 2017 Two Million and Counting*” which revised their global market projections for electric vehicles. From 2010 to 2016 global electric vehicles have increased from 0 to 2 million. EIA projects 60 million to 200 million electric cars will be deployed world-wide by 2030.⁴



Source: BNEF, Lithium-Ion Battery Costs and Market, July 5, 2017

¹ (BNEF 2017)

² (BNEF 2017)

³ (BNEF 2017)

⁴ (EIA, 2016)

