On the 14th day of September of 2018, the following proceedings came on to be heard in the above-entitled hearing before the Texas Commission on Environmental Quality.
APPEARANCES

Mr. Stephen Dayton  
Technical Specialist  
Texas Commission on Environmental Quality  
Air Quality Division

Mr. Gary Fickes  
County Commissioner  
Precinct 3, Tarrant County  
Chairman, North Central Texas Council of Governments Regional Transportation

Mr. Bay Scoggin  
State Director of the  
Texas Public Interest Research Group

Mr. Jim Schermbeck  
Director, Downwinders at Risk

Mr. Dave Aasheim  
Employed by Charge Point

Mr. James Ornstein  
Private citizen

Mr. Dennis Foose  
CEO of Nat-G CNG Solutions

Ms. Rita Beving  
North Texas Outreach Coordinator

Ms. Molly Rooke  
Private Citizen

Arlington Court Reporting
MR. FICKES: Gary Fickes, County Commissioner, Precinct 3, Tarrant County. I am the chairman of the North Central Texas Council of Governments Regional Transportation and I want to thank you for the opportunity today to submit these comments. In addition to the verbal comments today a formal written comments were approved yesterday by the Regional Transportation Council at our meeting and they have been transmitted to the Texas Commissioner of Environmental Quality.

The RTC appreciates the work the TCEQ put in to the plan and we agree with several key points. Requiring local match of all projects, setting aside a maximal allowed funding of 15% for electric vehicle infrastructure and focusing remaining funds in specific metro areas to maintain -- to maximize the impact and then we request some revisions -- five policies. I'll start with the first one. We will call and...
provide a fair share of funding allocation to the Dallas-Fort Worth area. Let me look at the map. If I recall it was mentioned that two-thirds of the funding goes to El Paso, San Antonio area and Beaumont-Port Arthur. One-third of the dollars goes to Houston -- the greater Houston, Galveston area and the DFW area which has 14 to 15 million people.

El Paso, San Antonio, Beaumont, if I recall, probably has less than five so that is like 25% via two-thirds. My Aggie math doesn't work on that, but anyway.

We would like you to relook at that. The draft plan proposes only approximately 28 million to the DFW area which is much lower than expected. Justification for geographic distribution is insufficient. It is critical that TCEQ distribute funds equitably across areas.

We also would prefer more funding to the DFW area which will benefit a larger population that is exposed to higher levels of ozone which respond to the one and two of the draft plan. A variety of technical analysis support previous RTC comments that the DFW area should get approximately $63,000,000 instead of 29. Details of analysis are in our written comments.

Number two is to allow regional agencies to serve...
as third-party administrators of mitigation trust funds.

The RTC reiterates our previous recommendation that the TCEQ allow Councils of Government, COGs to serve as third-party administrators of the trust in their area. Regional agencies add value by being more closely attuned to regional priorities and opportunities. The RTC supports the efforts to minimize administration costs. If allowed to serve as a third-party administrator administration costs would be charged to other funding sources.

Number three updated emission calculation methodology to the latest and greatest tools. RTC recommends that the TCEQ update its emission calculation practices to other commercially available and user-friendly tools that provide more robust project analysis.

Current methodologies do not provide multi-pollutant benefit. So, it only gives a partial picture of the impact. It takes emission certification at face value. One real-world research indicated that new heavy duty diesel engines often pollute worse than what they were certified for. Ironically this is somewhat similar to the problem with light duty diesel. Volkswagon cars are what led to this settlement.

Recommendations on specific qualifications and
quantification tools to use in place of current methodologies are provided in the written comments. I'm getting close.

Number four is to confirm and clarify equal eligibility of zero emission vehicle infrastructure. It's our understanding that for heavy-duty replacement or re-power projects involving a new all-electric vehicle, both hydrogen refueling and electric recharging infrastructures are eligible to receive up to 60% of funding.

The RTC supports this interpretation as it provides equity between multiple fuel types, within the constraints of the court settlement. We recommend clarifying this in final mitigation plans.

Number five quantify cost-effectiveness based on mitigation plan funding. Limit cost per ton analysis to Volkswagon funds only. Don't consider any other funding sources contributed as leverage.

Again, I want to thank you for the opportunity on behalf of the Regional Transportation Council. Thank you.

MR. SCOGGIN: Bay Scoggin, I am the State Director of the Texas Public Interest Research Group or TexPIRG for short. We are a public advocacy funded by Texans to promote consumer protection, public health,
and a 21st century transportation system.

I'm here today to comment on what the mitigation plan does for the public's interest. One thing to stress from me is I have no dogs in this race -- horses in this race I guess it would be to get the metaphor right because we don't take any corporate funding even from environmentalists or organizations. We are simply funded by the public. So, everything I am about to say is in the public's interest.

The first thing is that the 15% per station is exactly what needs to be done and we are very happy to see that.

The second thing is the part that concerns us, and that is the cost-effectiveness model is outdated and inefficient. To describe a CNG vehicle as ten times more effective than in its reductions of NOx emission seems ludicrous to me, as it should to you. On the one hand, if you incorporate a cost of ownership model electric buses, electric school buses and all electric vehicles continue to show that over the lifetime of the bus value will be recouped greater than the initial overage of price.

So, if you're paying 200,000 more for the very first time you buy the electric bus you'll save that same amount over the ten years that you own the bus.
So, that needs to be included in the cost-effectiveness model.

Second, we need to use an up-to-date calculator for how we're coming up with the emission numbers. We recommend using AFLEET calculator put out by Argonne National Laboratory. I know that it's been said before and I hope to just echo that with no need to further stress its importance.

The last thing that I would like to say is that using the current criteria for funding as first come first served and then second as cost-effectiveness seems to favor specific special interest in this state as natural gas and diesel interest.

If we're saying that diesel is ten times -- CNG diesel is 5 to 10 times cost effective and that's our only competitive criteria for selection then that's not going to be good enough. So, we need one of a couple of changes.

One to either make sure that some of the money is made available for things that should be going electric like school buses and transit buses. So, make some kind of pot of money that's devoted to really cleaning up our air that matters not for methane producing CNGs.

Second we could also very simply put in a criteria that zero emission vehicles should be given some weight;
considering that's the entire point of the mitigation plan in the first place. If we want to clean our air up we have to stop using fossil fuels.

I met a boy whose name was Lucas and he was adorable. When he came over to us crying because he could not do enough to protect the world from climate change. His mother told me that he was going to sleep crying on a mere nightly basis just for this reason. He's a 10-year-old boy that is already more aware of our problems then we seem to be.

So, I told him not to worry that all the people in the area he was in right there in that expo were working, and when it comes his time he can come join us. But, for right now we need to stand up and say, No, this is not okay.

Lucas would be here today and tell you that that's not an acceptable criteria for how we're going to spend clean air reductions money. We need to move forward.

One last note. CO beneficent should absolutely be included. School buses that take our children to work pollute the air around the school bus with particulate matter which is small bits of metal that you breathe in. They also pollute the air and the cars that drive behind the buses. And finally and most dangerously they pollute the air inside the bus themselves. Fifty
percent of our school-age children take a school bus to a school every day and they're being exposed to contaminants that worsen their asthma and increase their chance of pulmonary disease.

This is a public health aspect as well as environmental one. So, we need to move forward not backwards. Even if that means that we have to add some sort of criteria that zero emission vehicles will be favored. Thanks.

MR. SCHERMBECK: Jim Schermbeck, Director, Downwinders at Risk. These comments are far above your pay grade. I want to thank TCEQ for providing proof of analysis. This isn't such a convenient time for the public to attend.

I agree with the current RTC on the specifics, but I want to take aim at the general topic of allocations of money in this plan. You get a more effective employment level with DART. In fact at this moment we're recruiting local bovines to test this hypothesis and we'll let you know the results.

San Antonio getting 35% of this money or $75,000,000 of this money makes no sense when it's more than Houston and DFW combined. It's exactly the opposite of what it should be. It's on it's head. Moreover there's no science to back up this allocation.
There's no modeling to see whether the hypothesis of this money is going to do so much it's immature how it's going to work or not. There's no comparison to Dallas and Houston setbacks. There's no evidence to support this allegation.

In fact, if you're looking at areas where transportation money will do the most good to do all the things in those four goals DFW is probably going to be first on your list in getting that money and having a bigger bang for your buck.

We're not on the coast. We don't have a lot of industrial infrastructure that takes federal regulations to control. We could actually do quite a bit of reduction here in just vehicles if we had more money.

Taking a look at your four criteria it's clear that your allocation formula is a direct contradiction of these criteria. You say you want to reduce NOx in the non-attainment areas rather than in the attainment.

It's not the other way around. You put first priority on the areas that have been non-attainment for some time. Between them Dallas and Houston have almost 60 years of non-attainment categorization, San Antonio less than one.

There are millions and millions of more people in...
Houston and Dallas that suffer already from the effects of air pollution and they are at the risk for suffering the effects of air pollution from these vehicles than there are in San Antonio and the rest of the cities combined. So, if you're looking to reduce the risk on a population basis you're doing it the wrong way to prepare for zero emissions.

While Dallas-Fort Worth and Houston have already started spending money on our electric vehicles 100%, why not add to that momentum where it's already an interest in local areas that are already in non-attainment, add to their funding. They need it now. Especially because their own government is not such a reliable partner anymore to complement other incentives.

If you look at the way that TERP is being allocated right now this formula doesn't follow that formula at all. It's way out of whack with what it's getting right now. If it has no relationship to what the Dallas-Fort Worth area is getting in terms of that TERP money right now it's a fraction.

All this is to say that once again over the years TCEQ is making itself more and more irrelevant to clean-air issues in the Dallas-Fort Worth area. For the bright side for many of us, that's not necessarily a bad thing, as you whither away and other people take your
place. That is what happens the more that you ignore us the more we won't need you any more. Thanks. Bye-bye.

MR. AASHEIM: My name is Dave Aasheim. A-A-S-H-E-I-M. I am an EV driver since 2010, and I just happen to work for Charge Point the largest charging network in the nation. I've got some prepared statements. I don't want to read them all. I will submit them, but I just want to make some key points.

So, number one, Charge Point thanks TCEQ for this opportunity to provide feedback on the State's mitigation plan. We strongly support the decision to allocate 15% as it sounds like it is the majority here. We also believe that 15% allocation should be maintained.

There's over 40 states that are committed to the charging plan currently. With the allocation this will result in possibly thousands of additional electric vehicle charging stations, which can double the infrastructure in the state of Texas, which is great for everyone.

We'd like to stress that in this process the simplicity in the application process will be helpful not only to avoid an administrative burden for TCEQ, but for also streamlining applicants.

As far as allocation for some of the special
equipment like the DC fast chargers we strongly suggest in considering the maximum allowable 75% for private sites to encourage this complex economic project. We are thrilled that you are also considering electrifying buses and trucks and think that providing smart charging for these vehicles will help support environmental benefits for the state. Thank you, again.

MR. ORNSTEIN: Hello my name is James Ornstein. I'm a regular resident of Duncanville Texas. I'm here as a private citizen, but I do some volunteer work supporting the electric vehicles. There are some local groups North Texas Electric Auto Association, North Texas Tesla owners group and of course the NTCOG and the DFW clean Cities Coalition and the Electric Vehicles North Texas.

So, without going into detail, I would like to endorse proposals that are going to be submitted by the TXETRA, which is the Texas Electric Transportation Resource Alliance. In particular supporting putting EV chargers about every 50 miles on the interstates. The reallocation of funds to assure DFW gets its fair share. As popular as this particular form is setting aside 25% of the money to low income multifamily projects. My personal comment is that the low income family projects are extremely important.
MR. FOOSE: Dennis Foose, I'm the CEO of Nat-G CNG Solutions. I am also on the board with the Texas Natural Gas Vehicle Alliance. I really appreciate the opportunity from TXETRA, Texas Electric Transportation Resource Alliance.

Myself, TXETRA and many people here believe that the funding allocations are out away between the Dallas-Fort Worth area, and Houston, and San Antonio. If you look at just the basic facts of population and the number of registered EV owners Dallas is behind -- only behind Austin in EV registered owners.

If you look at the counties per region that are marginal non-attainment for the 2015 and 2008 ozone standards; you will find that the DFW area has eight counties. San Antonio -- the San Antonio area just being brought in on non-attainment in June of this year as one county, Bexar County. So, just look at the population number of EV owners and the number of counties in those two areas and you'll find that allocation should probably be flipped.

So, I'm going to be echoing some of TXETRA. If you recall the gentleman before me just mentioned recommending charging stations about every 50 miles on interstate highways and inner urban roads we're recommending several.
Think about the low income and minority areas of the larger cities and be sure to allocate money and charging stations to those areas where the people there may or may not be able to. They're taking right now transportation. If you were allowed to have some cities purchase electric vehicles they would have the charging station infrastructure. Those are the end of my comments. Thank you.

MS. BEVING: My name is Rita Beving, I'm the North Texas Outreach Coordinator for the public citizens. Thank you for having this hearing today.

Although I will say to the TCEQ that I do know some cities weren't even aware that this was happening today. I think public notice could have been much better. I want to refer to a couple number of things that the citizens have observed, so far, in this process. We feel that freight switchers, tows and tugs should have been included and they were not in the most recent TERP final report.

We think that 60% reimbursement for government privately owned vehicles should be increased to the maximum allowable or 80%. We think that there should have been a low income set aside such as 25% set aside for low income communities.

There are environmental groups promising for the
lopsided percentages in this process and frankly many of us think that this is more politically founded; that it is in fact. We would like TCEQ, for the sake of those that are here today, in writing articulate why this is so lopsided and how the cities were allocated money, since Houston and Dallas are the most polluted cities in the state.

We also feel that there should be an acknowledgment of the low income communities and there should be an explanation of effort to address the disproportionate impacts to those communities.

That basically sums up what I want to say. Thank you.

MS. ROOKE: My name is Molly Rooke, I am just representing myself today as a new electric car owner. I just want to say, I hope that you all will put enough money aside 25% or so for public and multifamily charging stations. I know, when I was getting my car I was a little concerned about the shortage of charging stations in south Texas. Because you may start out as I do in Dallas, but then you start heading further south into areas where it's not urban and it's hard to find a charging station.

I get a little nervous and rightly so. I hope that you will be making sure that the charging stations are
distributed in rural areas too. Because rural people need to be able to drive electric as well. An urban person who may have started out in an area with a lot of charging stations can get to its destination and then back to another charging station.

I would also you to make sure that there is enough money set aside for electric school buses and other buses, transit buses.

A concern separate from that, the distribution of funds in general. It looks like it is out of balance. I would like to see the funds distributed more evenly throughout the State than it currently looks like it will be.

Those are the main things. I will probably put some more comments together and submit them in written. But that's what I was thinking about today. Thank you very much for taking my comments.

Can I just say one more thing I meant to say. I think that there would be a lot more people here today if there had been better publicity about it. I talked to a lot of people that had no clue that this was going on. I just wanted to put that out there. Thank you.

Stephen Dayton: We will end the official public comment of this meeting.

(Meeting concluded at 3:20 p.m.)
REPORTER'S CERTIFICATION

VW BENEFICIARY MITIGATION PLAN FOR TEXAS

PUBLIC MEETING

SEPTEMBER 14, 2018

I, Catherine Vecchio, Certified Shorthand Reporter in and for the State of Texas, hereby certify to the following:

That the above and foregoing transcription of the VW Beneficiary Mitigation Plan for Texas public meeting contains a true and correct transcription to the best of my ability.

I further certify that I am neither employed nor related to any attorney or party in this matter and have no interest, financial or otherwise, in its outcome.

Certified to by me this 21st day of September, 2018.

[Signature]

Catherine Vecchio
Texas CSR No. 3383
Expiration Date: 12/31/18
Firm Registration No. 28
Arlington Court Reporting, Inc.
901 E. Avenue K
Grand Prairie, Texas 75050
972-641-6561
972-641-0800 - fax
- ChargePoint thanks TCEQ for the opportunity to provide feedback on the State’s draft mitigation plan and for your continued transparency during this process.
- ChargePoint is the largest network of EV charging stations in the nation.
- **ChargePoint strongly supports the State’s decision to allocate the maximum 15% to light-duty EV charging stations in a statewide program.**
- We believe that the 15% allocation should be maintained in the final plan. Over 40 states have committed to EV charging in their plans, and Texas should continue to support this critical element of the plan as well.
- This 15% allocation will result in thousands of charging stations installed throughout the state, and could double the amount of charging available to Texans today.
- **TCEQ’s open, competitive grants are the most appropriate method for implementation, and we would stress simplicity in the application process.** For EVSE alone, TCEQ may receive hundreds of applications, so a streamlined application will help achieve buildout without a high administrative burden for applicants and TCEQ.
- We support the State’s intent to have flexibility in determining the right level of coverage for grants for EV charging, but we believe that due to more complex project economics, **DCFC charging along corridors, a key part of the State’s plan, would be best covered at the maximum allowable 80% at private sites.**
- Coverage at this level would stimulate greater buildout of electric corridors and prevent clustering in certain areas along the highways.
- ChargePoint also supports TCEQ’s intention to provide opportunities to electrify buses and trucks, and provide funding for **smart charging infrastructure** to support those vehicles and **report environmental benefits to the state**
- We look forward to continuing to be a resource to TCEQ as the process moves forward.
September 13, 2018

Texas Commission on Environmental Quality
Air Quality Division
Implementation Grants Section, MC-204
P.O. Box 13087
Austin, TX 78711-3087
ATTN: VW Settlement

Re: Comments Regarding Draft Beneficiary Mitigation Plan for Texas

Dear Chairman Niemann:

On behalf of the Regional Transportation Council (RTC), the Metropolitan Planning Organization (MPO) for the Dallas-Fort Worth area, attached are formal comments on the Draft Beneficiary Mitigation Plan (Plan) for Texas. The RTC appreciates the hard work completed by the Texas Commission on Environmental Quality (TCEQ) staff in developing the draft Plan and supports the goals laid out by the TCEQ. We are in agreement with several elements of the Plan, including:

- Requiring some match for all projects;
- Setting aside funding for statewide zero-emission vehicle infrastructure; and
- Dedicating 81 percent of funds for eligible mitigation actions in certain "priority areas" of the state to maximize impacts.

However, after review of the Plan, the RTC requests that certain items be revised as the Plan is finalized. These items are detailed in the enclosed policy paper and accompanying attachments. We appreciate the TCEQ's recognition of the important role that Councils of Governments and MPOs play, and the commitment to give particular weight to comments received from our organization along with our peers across the state.

The RTC wishes to convey our commitment to partnership with regard to implementation of these funds. We appreciate your consideration of these recommendations, and will schedule a meeting to discuss these points in the event you have any questions. In the meantime, please contact Chris Klaus, Senior Program Manager of Air Quality Planning and Operations at the North Central Texas Council of Governments, at (817) 695-9286 or ckl@nctco.org.

Sincerely,

Gary Fickes
Chair, Regional Transportation Council
Commissioner, Tarrant County

LPC:ch
Enclosure

cc: Donna Huff, Director, Air Quality Division, TCEQ
    Joe Walton, Manager, Implementation Grants Section
    Steve Dayton, Technical Specialist, Implementation Grants Section
    Chris Klaus, Senior Program Manager, NCTCOG
Regional Transportation Council Policy Paper Regarding Requested Changes to the Draft Beneficiary Mitigation Plan (Plan) for Texas as Released August 8, 2018

The Regional Transportation Council (RTC) requests the following be revised as the Plan is finalized.

1. **Provide a Fair-Share Funding Allocation to the Dallas-Fort Worth (DFW) Area**

   The proposed funding allocation to the DFW Area, which is approximately $29 million, is inexplicably low and should be modified to properly reflect an equitable distribution based on realistic expectations and technical data. The Texas Commission on Environmental Quality (TCEQ) lists the first two goals as reducing nitrogen oxides (NOx) emissions in the areas most impacted by emissions, and reducing the potential for exposure of the public to pollutants. The Plan identifies a two-thirds to one-third division of funding between areas "close" to the ozone standard and the long-time ozone nonattainment areas. This proposal lacks sufficient technical details and ignores regional fair-share funding allocation. As the DFW Area is designated nonattainment for both the 2008 and 2015 ozone standards with a population of over 7 million persons, a higher allocation of funding to DFW is critical to meeting the stated goals of the TCEQ. The RTC previously recommended that the DFW Area receive approximately $63 million of the Texas allocation, and stands by this original recommendation.

   To aid the TCEQ's fair-share technical assessment, the North Central Texas Council of Governments (NCTCOG) staff evaluated various metrics to determine if the original $63 million request was valid. A summary of this evaluation is detailed in Attachment 1. This analysis shows that regardless of what metric is used to determine funding distribution across the state, the appropriate allocation to the DFW Area is far greater than what has been proposed. Thus, the RTC reiterates the need for a substantially higher allocation to the DFW Area and recommends a data-based, transparent explanation of methodology for geographic distribution in the final Plan.

2. **Allow Regional Agencies to Serve as Third-Party Administrators of Mitigation Trust Funds**

   The RTC reiterates our previous recommendation that the TCEQ allow Councils of Governments (COGs) to serve as third-party administrators of the Trust in their areas. Regional agencies add value by being more closely attuned to regional priorities and opportunities. Moreover, the NCTCOG houses the DFW Clean Cities Coalition, which focuses on working with fleets and is a natural conduit for connecting with potential applicants and leveraging national expertise on vehicle technologies eligible under the Plan. NCTCOG has also proven its abilities as a third-party administrator of Texas Emissions Reduction Plan (TERP) funds.

   The RTC respects the TCEQ's aggressive proposal to limit administrative costs to only four percent. We support the effort to maximize funding available for project implementation. Therefore, the RTC commits that if allowed to serve as a third-party administrator, the NCTCOG would not charge any administrative costs to the Mitigation Trust fund. All administrative costs would be paid through other funding sources available to NCTCOG, thus preserving 100 percent of the funds allocated to the DFW Area for project implementation.
3. **Update Emission Calculation Methodology to Use Latest/Greatest Tools**

The RTC recommends the TCEQ update its emissions calculation practices to other commercially available and user-friendly tools that provide more robust project analysis, rather than rely on the in-house TERP calculator that has been proposed. It is highly recommended that the TCEQ utilize the Argonne National Laboratory Alternative Fuel Life-Cycle Environment and Economic Transportation (AFLEET) Tool for quantification of all on-road vehicle projects. AFLEET includes adjustment factors for new diesel engines that reflect the higher emission rates at low speeds, based on the real-world research detailed in Attachment 2, and will also provide multi-pollutant emissions benefits. The Environmental Protection Agency’s Diesel Emissions Quantifier (DEQ) tool is recommended for non-road projects, as it also provides multi-pollutant benefits.

TERP methodology is inadequate for two reasons. First, it only estimates impacts of a single pollutant, NOx. While NOx emissions are the focus of the Trust, multi-pollutant benefits should be quantified in order to provide a more holistic view of Mitigation Plan impacts. Second, and more importantly, TERP methodology relies on engine certification to determine emission rates. Numerous studies have shown that the newest, cleanest diesel engines emit NOx at rates far higher than their certification levels under various conditions, especially when at low speeds. A sample listing of research projects on this topic is included as Attachment 2. Thus, relying on engine certification alone will underestimate the emissions of new diesel engines, and overestimate potential emissions reductions achieved. This not only delays progress in reaching attainment, but also has consequences for project selection. As the Volkswagen Settlement put much emphasis on all-electric technology, it is likely that submitted projects will include several all-electric projects, as well as other alternative fuels. These technologies typically cost more, but because they can achieve superior emissions reductions, have the potential to be competitive on a cost-effectiveness basis if real-world emissions expectations are considered. If a competitive evaluation is based only on certification data, the underestimation of new diesel emissions will likely result in a decision to award funding to a project that appears to be more cost-effective on paper only, at the expense of an alternative fuel vehicle project that would have achieved more emissions reductions. Ironically, the discrepancy between certified and real-world emissions rates is what led to the Volkswagen Settlement and development of the Mitigation Trust.

4. **Confirm and Clarify Equal Eligibility of Zero-Emission Vehicle Infrastructure**

It is our understanding that for heavy-duty replacement or repower projects involving a new all-electric vehicle, both hydrogen refueling and electric recharging infrastructure are equally eligible to receive up to 60 percent funding as part of the project costs. The RTC supports this interpretation as it provides equity between multiple fuel types, within the constraints of the court settlement. However, we recommend that the TCEQ clarify this by adding a definition of “charging infrastructure” that specifies both hydrogen and battery-electric eligibility, similar to the definition of “All-Electric”.

5. **Quantify Cost Effectiveness Based Only on Mitigation Plan Funding**

The RTC recommends that the TCEQ only consider the amount of Mitigation Plan funding requested for a project when calculating cost effectiveness. Applicants are likely to leverage Mitigation Plan funding with other sources to offset match requirements or to enable a smaller funding request that would make more expensive projects, such as those involving alternative fuels or infrastructure to support all-electric vehicles, more competitive on a cost-effectiveness evaluation. These projects should not be penalized for leveraging other funding sources to stretch limited dollars further.
Summary of DFW Area Fair-Share Allocation Under the Draft Beneficiary Mitigation Plan for Texas

Exhibit 1: Potential Fair Share Allocations to DFW Area Based on Various Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>DFW Area as % of Areas Originally Recommended by the Regional Transportation Council</th>
<th>DFW Area as % of Counties Proposed as Priority Counties by the TCEQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Violating Vehicles</td>
<td>32.77%</td>
<td>41.10%</td>
</tr>
<tr>
<td>Population</td>
<td>35.97%</td>
<td>41.21%</td>
</tr>
<tr>
<td>Vehicle Miles of Travel</td>
<td>38.82%</td>
<td>44.26%</td>
</tr>
<tr>
<td>NOx Emissions</td>
<td>37.14%</td>
<td>42.66%</td>
</tr>
<tr>
<td>VOC Emissions</td>
<td>36.13%</td>
<td>40.76%</td>
</tr>
<tr>
<td>Heavy-Duty Diesel Vehicles</td>
<td>34.04%</td>
<td>38.37%</td>
</tr>
<tr>
<td>Eligible for Replacement/Repower</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exhibit 2: Potential Fair Share Allocations to DFW Area Based on Various Metrics

Potential Fair Share Allocations to NCTCOG Based on Various Metrics

![Bar Chart]

- Registered Violating Vehicles
- Population
- Vehicle Miles of Travel
- NOx Emissions
- VOC Emissions
- Eligible Heavy Duty Diesel Vehicles

- RTC Recommended Councils
- TCEQ Recommended Counties
Exhibit 3: Estimated Distribution of Eligible Heavy-Duty Diesel Vehicles and Funding Need Among TCEQ-Proposed Priority Areas

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated Number of Eligible Vehicles</th>
<th>Minimum Funding Need (in Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dallas-Fort Worth</td>
<td>21,340</td>
<td>$782.8</td>
</tr>
<tr>
<td>San Antonio</td>
<td>6,877</td>
<td>$254.2</td>
</tr>
<tr>
<td>Houston–Galveston-Brazoria</td>
<td>23,989</td>
<td>$876.0</td>
</tr>
<tr>
<td>El Paso</td>
<td>2,475</td>
<td>$90.6</td>
</tr>
<tr>
<td>Beaumont-Port Arthur</td>
<td>726</td>
<td>$31.3</td>
</tr>
</tbody>
</table>

NCTCOG evaluated Department of Motor Vehicle Registration Data as of August 20, 2018 and identified potentially eligible heavy-duty diesel vehicles based on model year, gross vehicle weight, fuel type, and vehicle type. Minimum Funding Need is based on lowest estimated project cost identified by TCEQ in Table D.3 of the Draft Beneficiary Mitigation Plan for Texas, multiplied by the number of vehicles in each area of that type.

Exhibit 4: Comparison of TCEQ-Proposed Funding, Estimated Funding Needs from Exhibit 3, and Cumulative Texas Emissions Reduction Plan Funds Awarded from 2001-2017
Subset of Research Indicating that Heavy-Duty Diesel Engine Emissions Certification Levels are not an Accurate Indication of Real-World Emissions of Nitrogen Oxides (NOx)

   - Slide 14: "In-use NOx emissions from 2010 diesel trucks were higher than the certification standard and the certification level NOx."

   - Section 1.2, page 11: "Although the 2010 certification standards were designed to reduce NOx emissions, the in-use NOx emissions are actually much higher than certification standards for certain fleets... For diesel engines low load duty cycles have a significant impact in the NOx emissions... The cold start emissions were ten times higher than the certification standard and much higher than the corresponding hot start emissions... The main cause for the high NOx emissions is low selective catalytic reduction (SCR) inlet temperatures resulting from low power operation."

   - Pages 467-471: "...across 11 markets, representing approximately 80 per cent of global diesel vehicle sales, nearly one-third of on-road heavy-duty diesel vehicle emissions... are in excess of certification limits."

   - Pages 5236-5244: "The low percentage of activity SCR over the local and near-dock cycles contributed to a brake-specific NOx emissions that were 5-7 times higher than in-use certification limit."

   - Pages 156-172: "The ranking of certification NOx emissions for the seven engines reported during engine-dynamometer-based certification was not maintained during real-world testing; for example, highway driving NOx emissions were lower than certification values for some engine families and higher than certification values for others."

   - Summary Attached, courtesy of the Texas Propane Gas Association.
West Virginia University (WVU) In-Use Emissions and Performance Testing of Propane-Fueled Engines

West Virginia University performed a research program for PERC to establish exhaust emissions and performance characteristics of propane-fueled vehicles/engines through in-use testing methods in comparison to vehicles/engines fueled with other common transportation fuels. WVU used portable emissions measurement systems (PEMS) on each vehicle to collect the data (CO, CO₂, NOₓ, and total hydrocarbon emissions) as they drove predetermined test routes using hot and cold starts. The Morgantown route consisted of city and highway driving, while the Stop and Go route simulated low speed operation and passenger pick up. The table below shows the specifications of the tested school buses.

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Propane (LPG)</th>
<th>Ultra-Low Sulfur Diesel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>Blue Bird School Bus (6.8L, 10 Cylinder)</td>
<td>Blue Bird School Bus (6.7L, 6 Cylinder)</td>
</tr>
<tr>
<td>Model Year</td>
<td>2015</td>
<td>2014</td>
</tr>
<tr>
<td>Exhaust Aftertreatment</td>
<td>Three-Way Catalyst</td>
<td>Diesel Oxidation Catalyst, Diesel Particulate Filter, Selective Catalytic Reduction System</td>
</tr>
</tbody>
</table>

**Pros:** The approach to collect real-world data on specific propane-fueled vehicles/engines was robust and accurate. NOₓ results are very favorable for propane.

**Cons:** The results are specific to the conditions of the test environment and differ from the requirements (e.g., temperature) for engine certification testing.

**Noteworthy Results**
- 96% NOₓ reduction: Propane school bus vs. diesel school bus (stop-and-go route)
- >95% NOₓ reduction: Propane school bus vs. diesel school bus (Morgantown route, cold start)
- >93% NOₓ reduction: Propane school bus vs. diesel school bus (Morgantown route, hot start)
- >13% CO₂ reduction: Propane school bus vs. diesel school bus (stop-and-go route)

The findings from the WVU in-use tests of high NOₓ emissions for heavy-duty vehicles are supported by other tests in literature. See “Real-World Emissions from Modern Heavy-Duty Diesel, Natural Gas, and Hybrid Diesel Trucks Operating Along Major California Freight Corridors” (link) and “Emission rates of regulated pollutants from current technology heavy-duty diesel and natural gas goods movement vehicles” (link).