

Stop TxDOT I-45: Response to TxDOT's Final Environmental Impact Statement

December 8, 2020

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Environmental and Racial Justice (displacement)

Many comments to the DEIS referenced concern for the NHHIP's disproportionate impact on low-income communities and communities of color along the corridor (#6, 151, 894, 551, 603, 832, 847, 1276, 1368, 1074, 1412, 1559, 1560, 1578, 1579, 1596, 1619, 1620, 1625, 1669). In the FEIS, TxDOT responds, "*The project is primarily bounded by minority and/or low-income communities, thus by definition the project meets the criteria for 'disproportionately high' impacts on minority and/or low-income populations...TxDOT is continuing to engage with the Houston Housing Authority and the representatives of other community facilities, housing, social services, and businesses used by low-income, minority, and other vulnerable populations, to discuss the proposed project and develop mitigation options.*" TxDOT claims that it has mitigated disproportionate impacts by implementing the following:

1. TxDOT will provide 27 million dollars to support affordable housing (FEIS 7-4). In the Community Impacts Factsheet it states that 25 million dollars will be used for construction of affordable housing. It is unclear if this is part of or in addition to the 27 million.
2. 70 percent of replacement housing within one mile of the existing Clayton Homes location.
3. Engaging the public and holding meetings

This is an inadequate response. It is vague what the money will be used to accomplish, \$27 million is insufficient to replace affordable housing, and it is an insignificant amount within a budget of \$7-10 billion, which highlights the lack of concern TxDOT has for replacing affordable housing in Houston. TxDOT provides no evidence that the amount of money or the strategy will be effective to keep people in their communities or specifically reduce impacts on low-income and minority neighborhoods along the corridor. Additionally, it does not consider the non-monetary burdens of losing a beloved home and being forced to move. TxDOT additionally did and continues to do an absurdly poor job at engaging the public. TxDOT takes meetings with developers and the Downtown Management district but will not respond to specific questions in public meetings or even respond to the requests made in the City of Houston's public engagement process. TxDOT does not go door-to-door, and residents often complain that they have no idea what is happening and on what timeline. Instead, TxDOT should:

1. Clarify whether the 27 and 25 million are two separate allocations of funding.
2. Clarify what these funds would be used for. Support of affordable housing is very broad and could mean many things.
3. Provide a clear definition of "affordable" housing. Clayton Homes, Kelly Village as well as other smaller properties are considered public housing and are run by a governmental agency. Affordable housing is generally owned by a private entity and a portion of the units may be rented at market rate and not available to low-income residents.
4. Engage directly impacted residents by offering socially-distant outdoor meetings where residents may ask questions and get accurate, timely

responses.

5. Go door-to-door informing residents *even if* the residents will not lose property to this project. Suddenly and unexpectedly living on a feeder road, living with construction, living with noise pollution, or dropping property values are also direct impacts.

TxDOT states (“minimizing community impact fact sheet”) that 100% of Clayton Homes and Kelly Village units will be replaced. It also says that, “TxDOT and HHA have entered into an agreement where HHA, funded by TxDOT, will construct replacement housing for displaced residents.” Kelly Village residents will also have similar options. The FEIS (p.6-9) states that they are working with HHA to develop new housing to help address displacements at Clayton Homes and a portion of Kelly Village. Table A-2 of the FEIS cites a goal to replace 70% of the Clayton Homes units within one mile.

This is an inadequate response because it is contradictory and vague. Additionally, residents are being told that they will be able to move back into the replacement housing, but the land being considered for that replacement housing is currently under litigation. There is no back up property location at this time. Neither TxDOT nor the Houston Housing Authority has begun construction on any replacement housing. There is no evidence that TxDOT or the Houston Housing Authority will be able to follow through on their promises. Residents do not have all the details. There is only one relocation agent assigned to relocate over 600 families in Clayton Homes. Clayton Homes residents repeatedly complain that they are unable to reach their relocation agent and that they do not understand their options. Instead, TxDOT should:

1. Clarify whether it is working with or HHA or have entered into an agreement with HHA to provide new housing for Clayton Homes and Kelly Village.
2. Commit to providing replacement housing 1:1 at a minimal distance from their original locations.
3. Commit to having replacement units built for residents of Clayton Homes and Kelly Village prior to requiring residents to vacate as requested by Mayor Turner, ensuring residents move only once.
4. Provide additional amounts in supplemental assistance as requested by Mayor Turner in his letter to Laura Ryan.
 - a. Payments to homeowners should cover the cost of similar properties in the neighborhood, not just market value of the property affected.
 - b. For renters these payments should cover deposit, first/ last month rent and other charges.
 - c. All residents must have access to navigators who understand the local communities.
5. Recognize that a “right to choose” as mentioned in the Community Impact Fact Sheet in reality currently doesn’t exist and isn’t a real option or solution for displaced families. According to the HHA website under Voucher Program it states, *“If you have trouble reading or understanding the information in the packet, contact the Housing Authority for assistance. Remember the wait time for a qualified applicant may take several years and is dependent on the availability of*

vouchers.” Displaced residents according to the Community Impact Fact Sheet will only be given 180 days notice of their need to vacate the property. Hardly enough time to obtain a voucher and locate an acceptable apartment within their current area.

Congestion, Car-Centrism, and Induced Demand

Adding lanes encourages Houston to continue to rely on single occupancy vehicles as the primary form of travel, which is unsustainable, unsafe, and undermines public transit. Many comments to the DEIS questioned whether added lanes would relieve congestion and requested mass transit in place of added car capacity (#11, 14, 18, 45, 47, 60, 65, 75, 87, 93, 141, 267, 271, 276, 300, 318, 355, 362, 412, 428, 428, 431, 444, 454, 455, 460, 461, 472, 473, 492, 504, 505, 506, 507, 510, 519, 553, 554, 555).

The I-45 expansion locks us into decades of unsustainable car-dependent exurban sprawl which makes Downtown Houston and the neighborhoods along the route, more difficult places to live, work, and even visit.

On page 3-12 of the FEIS, TxDOT states *“Minor change would occur in access to I-45; however, changes will not likely affect existing traffic patterns in neighborhoods or affect circulation and access to other cross streets”* and then immediately contradicts themselves by saying *“Changes in freeway access on I-45, I-10, and US 59/I-69 would likely affect existing traffic patterns in neighborhoods.”* By failing to consider impacts to neighborhood traffic, TxDOT does not adequately measure the impacts to land use along the corridor.

Furthermore, on page 3-15 of the FEIS TxDOT claims that *“In some of these areas there would be improvements over the existing conditions such as ... improving safety on cross-streets in EJ neighborhoods.”* Without studying the effects of the project on traffic on neighborhood streets TxDOT cannot claim that the streets will be made safer or “more accommodating” to pedestrians and cyclists. Certainly a child bound for Travis Elementary that uses the North Street bridge today would have a much longer and potentially more dangerous route.

Our concerns include:

1. The NHHIP will occupy land that is needed for METRO Next and the H-GAC High Capacity Transit Task Force vision network. Despite the “close and ongoing coordination with METRO”, there are still a number of unanswered questions. What will happen to the routes that ran on streets that will no longer exist? What happened to the exit driveway onto Fannin from the Wheeler Transit Center?
2. With an incomplete transit network, people who would be transit users will be forced to buy cars. Those people will be forced to pay for garaging or they will park

on the street, which will raise their auto insurance rate because it also increases their exposure to property damage.

3. Increasing single-occupant vehicle capacity will cause regional deforestation by inducing new sprawl development.
4. With a car-dependent population, businesses will be more expensive to operate because their customers and employees will demand parking spaces for their cars. Commercial properties in the Houston region often include parking lots that cover the majority of their land.
5. Goals for walkability will not be met because TxDOT fails to include transportation options that allow for high-density development near transit stations.
6. TxDOT predicts an increase in vehicular miles traveled as a result of the NHHIP, which means people will have longer commutes. Long commutes are linked to a myriad of health problems including obesity and high blood pressure. (Commuting Takes Its Toll" in SA Mind 16, 3, 14-15 (October 2005) doi:10.1038/scientificamericanmind1005-14.)
7. Longer commutes are also linked to social ills including increased rates of domestic violence. (Beland, L.P., & Brent, D.A. (2018). Traffic and crime. *Journal of Public Economics*, 160, 96-116.)
8. Every new car on the road is on average a commitment to 12 years of tailpipe emissions, plus the embodied energy of the production and destruction of the car.
9. For the electric vehicle transition TxDOT is banking on in its models, any emissions saved at the tailpipe are passed from the lungs of those communities of color along I-45 straight to the lungs of the communities of color disproportionately located near the dirty power plants powering our grid.
10. The transition to electric vehicles relies on lithium mined in the arid territories of Bolivia, Chile, and Argentina. These environments are expected to experience environmental pollution from open-air lithium evaporation ponds. (Datu Buyung Agusdinata *et al* 2018 *Environ. Res. Lett.* 13 doi:[10.1088/1748-9326/aae9b1](https://doi.org/10.1088/1748-9326/aae9b1))
11. While TxDOT promises to improve mobility options for those using I-45, it is harming mobility for communities located along the route. As connections such as the North Street bridge are removed, barriers to access and egress become much more extensive and continuous. At some points one could be as much as a mile from the nearest highway crossing. Some may make the journey around, but for those seeking to walk, bike, or even drive, it's not just an inconvenience - it may be a reason not to go all together. Multiply this by the hundreds of thousands of trips taken between neighborhoods walled off by highway and we see real costs to businesses and homes that are left standing beside the widened freeway.
12. Freeways separate those that benefit from those that pay. Beyond the immediate impacts of displacement, disruption, and cultural erasure, this project is fundamentally a weight around the neck of a generation of future Houstonians.

In the FEIS, TxDOT inadequately responds to the above comments by saying that they are designing two-way managed lanes. This is an inadequate response because it is still based on the faulty assumption that added lanes reduce congestion. Adding lanes will not reduce congestion for any meaningful amount of time and will actually make it worse. Adding managed lanes does nothing to mitigate induced demand on the mainlanes.

Instead, TxDOT should:

1. Not add any more mainlanes to I-45.
2. Commit to adding significant public transit capacity to move people rather than vehicles through the region.
3. Explore freeway removal with elevated mass transit as an alternative design:
 - a. No mainlanes lanes are built.
 - b. A surface-grade boulevard is built along the existing right-of-way, with separate spaces for pedestrians, bicycles, and cars.
 - c. Fully elevated bus rapid transit lanes are built on pylons in the boulevard's median with stops at Downtown, N. Shepherd and Greenspoint Mall. The METRO Next plan is matched as closely as possible.
 - d. A walkable street grid is established for the entire NHHIP study area. The street grid that existed in the early 1940s before the first freeways is reestablished in most cases.
 - e. Legacy freeways at the edges of Segment 3 (I-10 E, I-10 W, I-45 S, I-69 N, I-69 S, and US-288) are terminated with spurs, as close to the edge of the study area as possible.
 - f. The interchange with I-610 (the North Loop) is replaced with a standard freeway exit to the new boulevard.
4. Explore Vision C as an alternative design as requested by the City of Houston: remove mainlanes and feeder lanes to add two-way dedicated bus rapid transit lanes while maintaining the current footprint.
5. Study and publish the impacts of car dependence on health.

Growth Modeling

The NHHIP proposal is based on the assumption that the Houston region will continue to experience large growth in population, jobs, and travel volumes throughout the upcoming decades, with much of the growth following an outward growth pattern characterized by suburban sprawl. This assumption is problematic, however, for a variety of reasons, and was questioned by multiple commenters (#21, 38, 136, 460, 553) during the DEIS process.

The region's population/ jobs/ and travel growth projections are made using overly simplistic modeling methodology. The Houston-Galveston Area Council (H-GAC), the agency responsible for forecasting the region's travel and population growth, runs demographic and travel demand models based on historical data and trends that do not account for actual and likely disruptions or alternate scenarios. By limiting the models' inputs and parameters to historical data and trends, the results are skewed towards a business as usual development paradigm, which for the Houston-Galveston region is one of outward growth. However, a number of important factors, including the economy, flooding, advances in transportation technologies, and local policies are already changing the region's development pattern thereby challenging the models' results. DEIS commenters 136 and 460 were specifically concerned that traffic volume forecasts were based on old vehicle technologies and excluded consideration of autonomous cars and freight. Neither comment received a response other than H-GAC provides the region's forecasts. Without accounting for technology advances and economic, policy, and environmental drivers, the models are disconnected from reality and yield misleading results.

Concerns about the project's modeling methodology and forecasts were raised in DEIS comments (#21, 38, 136, 460, 553). These comments requested the forecasting methodologies, challenged whether forecasts justified the project, and questioned forecasting results. Neither do the FEIS nor the DEIS responses adequately respond to these material questions. In fact, nowhere in the FEIS documentation are the modeling methodology, data sets, and results found. This is a grave omission considering that traffic volume forecasts are the entire basis of the project and because this information was directly asked for by DEIS commenters (#21, 38, 136, 460, 553).

Instead, TxDOT and H-GAC should use a more robust modeling and planning process while forecasting regional growth and corresponding needs such as the one recommended in the City of Houston's DEIS comment # 553. In this comment, the City of Houston urged the project to utilize a variety of context sensitive design guidelines. None of which were integrated into the FEIS.

The travel demand model forecasts that justify the project are outdated and incorrect. The need for additional capacity, or added lanes, was determined based on a number of studies that were conducted between 2001 and 2005 (FEIS 1-2) whose results are now outdated. A 2014 TxDOT traffic study (using 2011 data) projected that traffic volumes along I-45 would increase by 25% between 2011 and 2035. However, actual travel counts show that traffic volumes have decreased by 10% since 2011 largely because the corridor's poor level of service (LOS)--presently rated between C and F (FEIS I-10) -- is already acting as a disincentive to additional drivers.

The model results justify investment in public transportation, not further freeway construction. H-GAC's models show that the region's vehicular travel would increase 64 percent between 2015 and 2040 from 170 million vehicle miles to 285 million vehicle miles on the average workday (FEIS 1-12). An obvious response to this finding is that the addition of 4 lanes (the NHHIP's proposal) could never provide sufficient capacity at an acceptable level of service. Instead the growth projection warrants investment in public

transportation, a more cost-effective method of transporting people rather than single-occupant vehicles. Two other findings from H-GAC's demographic models-- that of increased household density and an aging population—reinforce the strong case for investment in public transportation instead of freeway spending. To this point, the public has repeatedly stated their preference for maximizing investment in public transportation over road expansion as noted in the FEIS Project Background Section (FEIS 1-1) and in Draft EIS comments (#45, 150, 428, 448, 553) and during community engagement sessions.

The outward growth development pattern created by the original and continued funding of roads like I-45 is dangerous and financially unsound. Impervious surfaces are those that prevent water infiltration into the soil, and are a contributor to flooding. As land use types such as open space, agricultural land, and undeveloped land are converted into commercial, residential, or industrial land uses during an outward growth development regime, runoff and flooding increases because of the loss of land use types with greater drainage potential. A 2019 H-GAC analysis of land use types and imperviousness ratios within the Cedar Bayou Watershed, a watershed straddling Harris, Liberty, and Chambers counties, found that impervious surface coverage is expected to more than double between 2018 and 2045. Already a concern for residents, businesses, and elected officials, flooding risks will increase within the Cedar Bayou Watershed and everywhere else with increasing impervious surfaces. In addition to the dangers associated with increased flooding, COVID-19 is revealing that outward growth and suburbanization is financially unsound and leaving suburban cities bankrupt. More than ever, municipalities are focusing on resilient growth which risky short-term development gains are antithetical towards.

The modeling approach used to justify the NHHIP proposal is over simplistic and incomplete. For a project of such large scale, cost, and far-reaching impacts, TxDOT and H-GAC should instead:

1. Immediately implement scenario planning into all growth modeling and infrastructure project design.
2. Update models using additional factors and more recent data.
3. Validate new growth models against the Katy Freeway expansion (before and after scenarios) to ensure that the models can predict induced demand.
4. Propose new solutions in response to updated models and data.

Greenhouse Gas Emissions and Climate Change

According to the data presented in the 'Greenhouse Gas Emissions and Climate Change' section (4-1), Texas' on road transportation emissions accounts for .49% of the global CO2 emissions, despite Texas only having .37% of the global population. This is in transportation emissions alone; overall, in 2014, [Texas accounted for 626 MMT of CO2](#), or 1.7% of total global CO2 emissions.

According to the 2018 Special Climate Change Report by the International Panel on Climate Change (IPCC), net CO2e emissions must be reduced by 45% of 2010 levels by 2030 in order to keep pace with a 2050 target to avoid a global temperature increase of 1.5C and

the ensuing catastrophic consequences. In base year 2010, [global CO2e emissions hit 49 gigatonnes](#), with [Texas contributing 584 MMT of CO2](#) (171 MMT from on-road transportation) to that total. Assuming Texas' percentage share of the global population stays static, Texas would need to reduce its CO2e emissions to 321 MMT/annually by 2030. This would mean reducing on-road transportation CO2e emissions to at least 100 MMT, 61 MMT fewer than TxDOT's projected output in 2032.

TxDOT lists engine and fuel efficiency standards as the main mitigation measures to limit GHG emissions, but by their own calculations, it's abundantly clear that these alone are nowhere near sufficient to cut the emissions necessary to stave off impending climate crises.

Texans should be shocked and embarrassed that as a state, our CO2 footprint is far larger than our share of the global population. We should also recognize the urgency with which we need to act to cut that footprint. Finally, we should collectively recognize we can not carry on with business as usual or we will be party to mass ecological collapse; in the context of this project, that means understanding that giant infrastructure projects that will increase the number of cars on the road and encourage the unsustainable practices that put us on this track are untenable. The NHHIP cannot go forward as designed.

Air Quality

TxDOT's DEIS made the argument that congestion relief *could* offset increases in MSAT (Mobile Source Air Toxics) levels brought on by highway widening. See below:

"In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today."

Many interested parties (particularly Air Alliance Houston), raised several concerns regarding this analysis. Notably, TxDOT's analysis concludes that MSAT levels will remain at an acceptable level on a *regional* basis; they did not analyze local impacts on the neighborhoods directly adjacent to the highway. Additionally, TxDOT assumes long-term congestion relief will be maintained in arguing that air quality will improve. Finally, they also assume continued improving fuel efficiency standards based on the Obama-era [CAFE](#) standards, which the current administration is in the process of repealing.

Air Alliance Houston conducted a Health Impact Assessment (HIA) to analyze potential *local* air quality impacts, and found that the widened ROW footprint, rerouting of the highways around downtown, and increased VMT would have a substantial air quality

impact on the adjacent neighborhoods, including several schools who would be brought dangerously close to the roadway. The removal of the Pierce Elevated will effectively reroute I-45 traffic to the north and east side of downtown to more than double VMT in the N/S section of the 59/69 corridor and the I-10 corridor north of Downtown. This shifts the traffic - and the significant nuisances associated with it - towards communities that are predominantly lower-income communities of color (Near Northside, Fifth Ward, Second Ward) and away from other communities (Memorial Parkway/Washington Ave, Fourth Ward, Midtown). This is one of many reasons why localized air quality estimates are needed.

In the FEIS, TxDOT's air quality impacts analysis has not changed much from the DEIS. The information below is quoted from the TxDOT "Facts and Highlights" white paper and the MSAT Technical Report:

- "NHHIP VMT is projected to rise by 58%...The MSAT are projected to decrease even as VMT increases due to increasingly stringent fuel standards and improvements in vehicle technology."
- "Air quality would be improved by the proposed project in part because of reduced congestion. NHHIP would help reduce congestion on 12 segments of the "Texas 100 Most Congested Roadways" as reported by the Texas A&M Transportation Institute (TTI). These 12 segments annually account for 39 million person hours of delay, \$788 million in congestion costs, and 11.9 million gallons of excess fuel used. The wasted fuel produces an estimated 120,209 tons of excess carbon dioxide."
- "In sum, both the Build and No Build Alternative in the interim and design years are expected to be associated with lower levels of MSAT emissions compared to the base year. There is a minor increase in MSAT emissions expected between the No Build and Build Alternatives for both the interim and design years, due to slightly higher VMT. Under all alternatives, MSAT levels are likely to decrease over time due to nationally mandated cleaner vehicles and fuels"

TxDOT doubles down on nearly all of their original analyses. Their MSAT claims are still based on a *regional* analysis, disregarding localized impacts. TxDOT continues to rely on the promise of increasing fuel efficiency to justify a huge increase of VMT. They also continue to posit long-term congestion relief as an indisputable fact, again concluding that adding more vehicles will not harm air quality because they assuredly will be going faster. (As an aside, TTI's Urban Mobility Report - which produces the "Texas 100 Most Congested Roadways" list - is one of the most [highly criticized](#) and [oft-ridiculed](#) reports in the world of transportation research. TTI is criticised on everything from the [lack of peer review](#) to the [most basic broken metrics](#)).

While our organization understands that much of the design has yet to be finalized, it's imperative to note some of the inherent issues with basic assumptions around this project's air quality impacts. We acknowledge TxDOT has included commitments to improve air quality monitoring in adjacent neighborhoods, but enhanced air quality monitoring will do little when the project itself is built on flawed methodology.

Instead of going forward with the NHHIP as designed, TxDOT should:

1. Commit to a project that reduces the number of Vehicle Miles Traveled in the region.
2. Perform a new air quality analysis that accounts for local impacts near the freeway.
3. Use updated growth models in estimating traffic volumes for the purpose of analyzing air quality. See Growth Modeling section above.

The FEIS (Vol II, Appendix C) concludes that it is not possible to determine how much “mobile source air toxics” (MSAT) are, or could be present at a toxic level during or after the NHHIP construction / use. That conclusion is based on Federal agencies’ academic research trying to tie multiple immeasurable variables to each toxic element. Because such inconclusive lab research cannot give a measurable yardstick, the FEIS seems to conclude that nothing will be done because there is no measurable air toxic problem.

This conclusion completely contradicts what is known by Houston residents and is documented by numerous scientific health studies.

- Air Alliance Houston has previously presented an extensive analysis and report to TxDOT on the health effects of MSAT and how it would impact people in the environment.
<https://airalliancehouston.org/wp-content/uploads/2019/09/HIA-Report-final-06-10-19.pdf>
- According to the California Air Resources Board, burning fossil fuels for transportation causes approximately 80 percent of the nitrogen oxide (NOx) pollutants that form ozone.
- A study by the Union of Concerned Scientists in 2016 documented air toxic impacts on the Manchester Neighborhood of Houston, due largely to factory emissions, but combined with adjacent highway exhaust.
<https://www.ucsusa.org/sites/default/files/attach/2016/06/ucs-manchester-air-toxics-and-health-factsheet-2016.pdf>

FEIS Predicts reduced emissions due to EPA regulations and “Fleet Turnover”

- Fallacy based on EPA’s MOVES14 prediction of lower Vehicle Miles Traveled, yet FEIS itself predicts increased VMT in its own statements in this section.
- MOVES14 was developed under a previous federal government administration. Since that time, a large number of EPA regulations have been nullified. There is no assurance that EPA or any other government regulations on vehicle mpg will guide auto manufacture in the future.
- “Fleet Turnover” is dependent on the economy of the nation and the locale. Currently, because a large number of transport trucking is done by contractors with

privately owned vehicles, and because of economic stressors for them, reports are highlighting increased pollution from excessively old trucks in less than good repair.

The solution here is NOT to increase largely single occupancy vehicle capacity on NHHIP.

We can increase capacity through TRANSIT.

- Freeway lane with single occupant vehicles: 2,000 people / hr
- Busway, articulated bus every 30 sec.: 14,000 people / hr
- Light rail, 4 car train every 2.5 min.: 21,600 people / hr.

Instead, TxDOT should:

6. Not add any more mainlanes to I-45.
7. Commit to adding significant public transit capacity to move people rather than vehicles through the region.
8. Explore freeway removal with elevated mass transit as an alternative design:
 - a. No mainlanes lanes are built.
 - b. A surface-grade boulevard is built along the existing right-of-way, with separate spaces for pedestrians, bicycles, and cars.
 - c. Fully elevated bus rapid transit lanes are built on pylons in the boulevard's median with stops at Downtown, N. Shepherd and Greenspoint Mall. The METRO Next plan is matched as closely as possible.
 - d. A walkable street grid is established for the entire NHHIP study area. The street grid that existed in the early 1940s before the first freeways is reestablished in most cases.
 - e. Legacy freeways at the edges of Segment 3 (I-10 E, I-10 W, I-45 S, I-69 N, I-69 S, and US-288) are terminated with spurs, as close to the edge of the study area as possible.
 - f. The interchange with I-610 (the North Loop) is replaced with a standard freeway exit to the new boulevard.
9. Explore Vision C as an alternative design as requested by the City of Houston: remove mainlanes and feeder lanes to add two-way dedicated bus rapid transit lanes while maintaining the current footprint.

Decreasing VMT and reducing the number of cars on the road by providing viable alternative transportation options will have a significant impact on localized and regional air quality.

Construction Dust

Comments to the DEIS express concern for worsened air quality in the long term and also for the short term during construction (#422, 502, 555). In the FEIS TxDOT proposes To mitigate for potential short-term construction dust and/or noise impacts, TxDOT will develop a program to provide weatherization and energy efficiency for qualifying low-income single-family residences (Volume II: Appendix A: Final EIS Exhibits, Cumulative Impacts Technical Report Attachment C: CIA Mitigation Table, numbers 4 and 12).

There are no scientifically reported hazardous components available in TxDOT's reports of the "construction dust." Such particulate pollution may contain many toxic elements from petroleum-based waste products on highway structures, as well as cement which will be pulverized. This mitigation strategy is inadequate because it is vague and does not quantify or account for the health risks from concentrated exposure to this dust. It also calls construction dust "short-term" when 7+ years of construction and exposure to particulate matter may feel very long-term for a resident along the corridor.

Safety

Many comments to the DEIS express concerns for the safety of non-car users such as pedestrians and bicyclists (#53, 66, 141, 185, 283, 318, 324, 352, 354, 362, 373). How Safety and Congestion will be Improved (p.24 of I-45 North Houston Highway Improvement Project Facts and Highlights Papers 1-12) tells us that safety and congestion improvements will be quantified by using four Measures of Effectiveness (MOEs). These MOEs are: Reduction in crash frequency; Reduction in crash severity; Reduction in Travel Time and Average Speed Improvement.

Safety and congestion do not necessarily improve under the same conditions. An example of this is the well-documented increased rate of vehicle crashes during the stay at home periods during the COVID-19 pandemic. To reduce crash severity and to increase average speed are largely incompatible goals. There is almost a 1:1 correlation between a vehicle's speed and the severity of a crash.

A reduction in crash frequency would undoubtedly reduce travel times and raise average speeds. It is not clear, though, that crash frequency can be reduced dramatically by building this project as designed. According to NHTSA an estimated 90% of crashes can be linked to

driver error. If this is accurate, there is no way that crash frequencies can be reduced by 30% or 50% as is estimated by TXDOT's analysis referenced on p.25 of Project Facts and Highlights.

It is true that there are too many crashes on I-45. It is also true that there are too many crashes on existing frontage roads and the adjoining neighborhood streets and that many of those crashes are related to what is happening on I-45. TXDOT has not provided studies examining the impacts of this project on local streets.

TXDOT was required to look at alternative designs for this project including a No Build alternative. The Universe of Alternatives (table on page 2-10 of Volume 1) did not include a No Build/Enforcement of Traffic Laws alternative to compare using its Alternative Analysis. According to the Governors Highway Safety Association article "Spotlight on Highway Safety, Speeding Away from Zero: Rethinking a Forgotten Traffic Safety Challenge"

Speeding remains a publicly-accepted driving behavior that is reinforced among motorists, policymakers and transportation stakeholders. P.3

Efforts to improve driver behavior could achieve many of the safety goals enumerated in this project, but there is no way to accurately compare No Build/Programmatic Change alternatives without knowing how TxDOT made its crash frequency estimates.

TxDOT's response to these comments is that details will be decided in the design phase. This response is inadequate because expanded freeways, wider lanes, added lanes, and enforcing laws are in direct opposition to the tenets of Vision Zero. Their response does not have data to substantiate it, and there are no concrete details.