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November 18, 2015

John Schroer, Commissioner
Tennessee Department of Transportation
James K. Polk Building, Suite 700
505 Deaderick Street
Nashville, TN 37243-0349

via overnight express

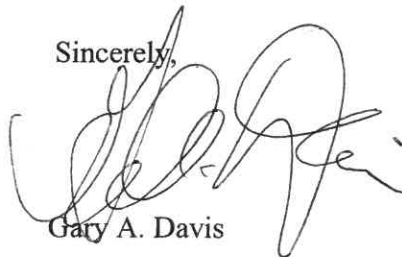
Tennessee Department of Transportation
FEIS Comments Attn: Pellissippi Parkway Extension (SR-162)
Suite 700, James K. Polk, Building
505 Deaderick Street
Nashville, TN 37243-1402

Re: Pellissippi Parkway Extension (SR-162) FEIS Comments

Dear Commissioner Schroer:

Enclosed please find the comments and attachments to the comments for the Final EIS on the proposed Pellissippi Parkway Extension (SR-162) by Citizens Against the Pellissippi Parkway Extension, Inc. (CAPPE). Thank you for your consideration of these comments.

Sincerely,



Gary A. Davis

GAD/pf

Enclosures



Citizens Against the Pellissippi Parkway Extension, Inc.
PO Box 494
Alcoa, TN 37701

TO: Public Comments, Tennessee Department of Transportation
FROM: Citizens Against the Pellissippi Parkway Extension, Inc.
DATE: November 18, 2015
RE: Comments for the Public Record on Final Environmental Impact Statement on the proposed Pellissippi Parkway Extension

CAPPE is submitting these formal comments on the 2015 FEIS as part of the NEPA process. We note that the FEIS contains new material that was not presented in the 2010 DEIS. Much of this new material is directly responsive to CAPPE's formal comments on the DEIS. However, significant deficiencies remain. These comments outline those deficiencies. Our comments refer directly to the FEIS, with reference to attachments, appendices and other documentation as appropriate.

I. Introduction and Summary

The FEIS continues the decade-long record of illustrating, at each stage in the NEPA process, further reduction in the marginal benefits of the proposed and costly Pellissippi Parkway Extension. The Purpose and Need for this project have been revised multiple times over the past 12 years, with each revision adjusting the objectives of the PPE downward to conform to traffic studies illustrating little to no benefit to Levels of Service, traffic congestion, and safety.

The FEIS does not alter two conclusions of 2010 DEIS that the Preferred Alternative:

“Does not substantially improve corridor LOS on existing network” (Table 2-4)

Does not address the identified need of “Poor local road network with substandard cross sections (with narrow lanes, sharp curves, and insufficient shoulders) in the eastern portion of the county.” (Table 2-3 p 2-9, also Table 2-8, p 2-22)¹

Even more noteworthy, TDOT's own data and analysis as presented in the FEIS and supporting documents demonstrate that the Preferred Alternative fails to yield benefits in any of the categories expected from new road projects.

Compared to No-Build, using the data provided in the FEIS, the Preferred Alternative:

¹ Table 2-3 is from the 2010 DEIS. The FEIS notes that changes in impacts since the approval of the FEIS are described in Section 2.3.2 and Chapter 3 of the FEIS and the 2014 reevaluation of the DEIS. However neither Section 2.3.2, Chapter 3, nor the 2014 reevaluation show the range of impacts that appear in Table 2-3, nor is there any subsequent attention to the impact of the Preferred Alternative on the poor local road network with substandard cross sections. The FEIS states that new information or circumstances identified in the reevaluation would not result in significant environmental impacts that were not identified in the DEIS.

- **Increases** vehicle hours of travel (VHT) in the year 2040
- **Increases** vehicle miles of travel (VMT) in the year 2040
- **Increases** crashes in the year 2040²

Significant for the NEPA process, the FEIS:

- fails to meet NEPA requirements to “rigorously explore and objectively evaluate all reasonable alternatives,” 40 C.F.R. § 1502.14(a), in at least the following respects:
 - fails to rigorously explore and compare alternatives
 - falls far short of objectively evaluating Alternative D
 - applies inconsistent methodologies
 - fails to project traffic for Alternative D
 - lacks computable measures of accomplishment of purpose and need statements

The FEIS fails to provide a “full and fair discussion of significant environmental impacts,” 40 C.F.R. § 1502.1, it at least the following respects:

- presents internal contradictions in reported traffic information and analyses;
- misrepresents project impacts by not reporting conclusions supported by the data provided, including negative impact on safety,
- demonstrates the project has a benefit/cost ratio of zero or negative
- is deficient in evaluation of geology and likely impacts on water and threatened and endangered species
- reports selectively on economic and fiscal impacts, visual impacts, air, noise, and farmland

Details of these failures and deficiencies are provided in these comments. Fundamentally, this FEIS failed to take a hard look at the potential environmental effects of this project and did not adequately consider and disclose the environmental impacts of this proposed project. Kentucky Riverkeeper, Inc. v. Rowlette, 714 F. 3d 402, 407, 411 (6th Cir. 2013).

TDOT has publicized for more than a year the \$6+ billion backlog of transportation projects in Tennessee. Spending \$165 million (and likely to be more) on a project with such marginal and short-lived benefit is irresponsible stewardship of the public’s resources. Tennessee has pressing maintenance and safety needs that should be priorities for spending our limited transportation funds. A benefit/cost analysis based on the data in the FEIS shows that the PPE is a colossal waste of limited taxpayer dollars for transportation projects. We further address the benefit/cost relationship later in these comments.

² Applying crash rates (2015 FEIS Table 1-5) to the year 2040 vehicle miles of travel (VMT) as given in the 2014 Addendum, Tables 5 and 7 results in an increase of 21 crashes in the year 2040.

The FEIS also failed to serve the public interest in two respects:

- The analysis presented in the FEIS demonstrates that the PPE does not fulfill the requirements of NEPA.
- The FEIS shows that the PPE does not satisfy TDOT's stated priorities of "Fix it First"³ and safety, particularly where there is consensus in our community about the priority of improving safety on US 129/Alcoa Highway.

II. Project rationale (Purpose and Need) undermined by repeatedly diminished objectives and questionable analysis.⁴

The Purpose and Need for this project have been revised and reduced multiple times over the past 12 years. Original objectives have been challenged in agency comments, then abandoned by TDOT and replaced with less significant objectives. The ever-shifting and evanescent purpose and need for this project is indicative of an arbitrary decision to proceed with this project whether it meets any transportation needs or not.

The traffic studies in the 2010 DEIS showed the PPE would produce little or no benefit to traffic congestion, no improvement to poor levels of service on major arterial roads, no change to the poor local road network with substandard cross sections, and questionable impact on safety. In response to evidence that the project would not improve roadway LOS, the 2015 FEIS now diminishes expectations even further and shifts attention away from roadway LOS to other measures, the analysis of which is suspect.

For the 2015 FEIS, project objectives have been reduced and new, smaller scale objectives have been substituted for former objectives that the project clearly will not fulfill. Even with dramatically reduced traffic volumes, the project will not improve LOS on major arterials, and conditions that lead to crashes will not be altered.

2.a. Purpose and Need in the 2015 FEIS are substantially diminished from the 2010 DEIS.

In project objectives, the early emphasis was on improving LOS to relieve congestion. This objective was then reduced to "acceptable LOS and/or not adversely affecting LOS" and the much less-specific "improving traffic operations." Intersections were added for analysis after the 2010 DEIS directly stated congestion would not be improved and after agency comments questioned the purpose and need of the project.

³ TDOT's home page on Nov. 17, 2015, contained the following in a presentation titled "Governor Haslam Highlights Transportation Project Needs": "Our focus and top priorities remain: Safety, Maintenance, Economic Development" <https://www.tdot.tn.gov/projectneeds> accessed Nov. 17, 2015 ; "TDOT chief: Don't expect new projects in next budget" Nashville Business Journal, Dec. 3, 2014

⁴ The material in this section draws from "Review of the Final Environmental Impact Statement for Pellissippi Parkway Extension (SR162)", 16 November 2015 by Walter Kulash.

Three needs identified in the 2010 DEIS are unaddressed by the project according to the 2015 FEIS:

- assist in achieving acceptable traffic flows (LOS);
- improve the poor local road network with substandard cross sections;
- improve traffic congestion and poor levels of service on the major arterial roads in the study area (US 129/Alcoa Highway, SR 33, US 411/SR 35 and US 321/SR 73)

The DEIS stated unequivocally that the PPE will not result in any improvement in Level of Service, and that Level of Service can be expected to deteriorate further even with construction of all three new projects included at the time (PPE, Southern Loop and Alcoa Bypass):

“Overall, this analysis does not demonstrate that any of the Build Alternatives would substantially improve the level of service for the existing highway network.” (2010 DEIS, 3-4)

“No substantial improvement of corridor LOS on existing network; sections of new roadway operate at LOS F in 2035.” (2010 DEIS 2-9, Table 2-3)

Where the DEIS (2010) aimed to “Assist in achieving acceptable traffic flows (LOS) on the transportation network,” (DEIS Chapter 1, Introduction, pp. 1-6/1-7), the 2015 FEIS now aims to “Assist in achieving acceptable traffic operations.” (FEIS S-2)

The FEIS demonstrates that the “Preferred Alternative” option and the “No-Build” option yield virtually identical projected levels of service in terms of outcomes for net traffic function. Whether the PPE is built or not, road segments projected to be failing in the future tend to be the same across the board, as do those anticipated to be functioning acceptably. (FEIS 3-8, Table 3-1)

Both the DEIS and the FEIS state that the project will not improve the poor local road network with substandard cross sections:

“Poor local road network with substandard cross sections (with narrow lanes, sharp curves, and insufficient shoulders) in the eastern portion of the county” will not be addressed by this project. (FEIS 2-9, Table 2-3, and DEIS 2-17, Table 2-3)

Further, safety, congestion, and LOS do not appear in the rationale for selection of Preferred Alternative (A) (FEIS 2-8).

Serious questions about Purpose and Need for this project are not new. Substantive questions arose in agency review of the 2010 DEIS. EPA expressed concerns about purpose and need and directed TDOT to address multiple specific issues (FEIS C-1-7 through C-1-9; for TDOT response see C-1-30ff, Table C-1). One example:

“EPA is concerned that TDOT hasn’t adequately documented the purpose and need for the project, especially given its contentious and controversial background and the level of its

impact to the local, rural, farmland nature of the community. TDOT readily admits, within the DEIS "...this analysis does not demonstrate that any of the Build Alternatives would substantially improve the level of service for the existing highway network." Additionally, the vehicle miles travelled (VMT), safety, and travel time savings data all seem insufficient to support the justification for constructing the build alternatives." (FEIS C-1-7 through C-1-9)

In EPA's detailed comments and directions to TDOT for additional study, we find confirmation of many of CAPPE's comments about inadequate analysis of Alternative D, VMT, travel time savings, safety, environmental mitigation, water, farmland, noise, health, and air quality.

In responses to EPA's questions about LOS, directions for further study and consideration of solutions with less environmental impact, TDOT eliminated LOS as an objective and redirected attention to a different issue, intersection delay:

"Improving traffic flow is one of several transportation purposes for the project as documented in Section 1.3, Purpose of the Project, in this FEIS document. The level of service is one measure of traffic analysis. Intersection delay and travel time savings are another. Intersection delay analysis shows improvement for the Build Alternative over the No-Build Alternative for several key intersections. This is explained in more detail in Chapter 3 of this FEIS. Additional discussion of traffic, based on the updated regional travel demand model, is in this FEIS." (FEIS C-1-30ff, Table C-1)

This record of abandonment of objectives and sequence of repeated reduction in what the project would accomplish, along with the significantly reduced traffic volumes in the study area, further undermine any "need" for the PPE.

2.b. Significantly reduced volumes undermine the need for the project

For more than eight years, the PPE was promoted as a solution to traffic congestion. The 2010 DEIS stated repeatedly that there will be little to no improvement in traffic congestion on our most heavily-traveled roadways because traffic volumes will not change regardless of alternative:

"Little change is predicted in the level of service of existing roadways between the No-Build and Build Alternatives since the traffic volumes do not change substantially for most roadways among the alternatives." (DEIS, 3-3. emphasis added)⁵

⁵ DEIS acknowledged that PPE wouldn't address congestion because, as shown by the license plate analysis reported in the DEIS, only a very small number of vehicles on US 129 and SR 33 may be coming from east Blount County: "Based on the license plate survey, it could be expected that six percent (3,000) of the 50,000 vehicles on US 129 could come from east of Blount County as could two percent (120) of the 6,000 vehicles on SR 33." (DEIS, 1-10) Moreover, the DEIS states "Traffic operations on US 129 shows minimal difference between the No-Build and Build scenarios, with some improvements in level of service for certain sections and worse levels of service for other sections." (Traffic Operations Technical Report 2008,31) The select/link analysis in the FEIS similarly showed very little traffic between US 129 and areas of east of Maryville and Alcoa. (FEIS Attachment A, Feb 25, 2015)

The 2015 FEIS no longer claims the PPE will provide congestion relief.

The 2015 FEIS revisits traffic volumes using the new Travel Demand Model. The FEIS contains adjusted and significantly lower projections for both traffic and population, based on the updated Travel Demand Model, which “resulted in substantial reductions in the forecasted travel demand volumes for the project.” (FEIS S-1)⁶ These reductions of as much as 50% in volumes on the PPE and 40% lower on the Relocated Alcoa Highway undermine the justification or “need” for the project:

“Under the updated regional travel demand model, there is a substantial decrease (40 to 52 percent) in the projected volumes on the proposed Pellissippi Parkway Extension to the design year 2040, compared with the previous (2035) projections.” (FEIS 3-14)

“The new forecasted traffic volumes for the proposed Relocated Alcoa Highway north of Pellissippi Parkway (I-140) are about 40 percent lower than what had been previously projected for 2035. South of Pellissippi Parkway (I-140), the volumes are only 2 to 3 percent higher than previously projected.” (FEIS 3-14)

2.c Determination of need is impossible because the FEIS provides no origin/destination data and only a very limited select/link analysis

The FEIS relies on a limited select/link analysis that does not provide a comprehensive picture of origins and destinations for all travel through the study area. The limitations of the select/link analysis means it is impossible to determine where travelers are going to and from.⁷ Moreover the FEIS acknowledges that the evaluation is “approximate since a formal origin-destination study was not conducted to evaluate this traffic pattern; rather the information was determined by approximation through available sources.” (FEIS Attachment A, A-17)

⁶ “In June 2013, the Knoxville Regional TPO adopted a major update of the regional travel demand model, which was the first major update since the initial traffic study for this project in 2007. TDOT and the TPO compared the updated Knoxville model to the model outputs used in the previous traffic forecasting efforts to determine if the new travel demand model had produced any meaningful changes to the traffic forecasts for the Pellissippi Parkway Extension project. That assessment revealed that future travel volumes for the project would be substantially lower under the new model than they were under the previous model. Among the reasons for the lower forecasts for the project was the lowered expectation for overall growth in population and employment in the region since the 2007–2009 economic recession. The travel demand model update, which was based on a modeling process that was reviewed and approved by the Knoxville TPO, included extensive revisions to the model’s structure, network, socio-economic assumptions, and calibration aimed at improving the accuracy of the model’s forecasts. The changes in the model resulted in lower forecasted traffic volumes for the project. The changes to the model are summarized in a memo dated June 9, 2014, which is included in Attachment A.” (FEIS 1-9, emphasis added)

⁷ In detailed comments on the DEIS, EPA noted that higher volumes of traffic are north and south, not east and west, and asked TDOT to address how the PPE would improve LOS for north-south travelers. (FEIS C-1-112)

The FEIS uses this limited study to report “The select link analysis notes very little traffic flow from US129/SR115 to areas of east of Maryville and Alcoa.” (FEIS Attachment A, Feb 25, 2015). Further,

- “• Very little traffic (1.7 percent) utilizes US 129 to travel between Knox County and areas east of Maryville and Alcoa.
- The remaining trips (88.7 percent) are either local in nature or have a different origin/destination than those identified above.” (FEIS pp 1-12, 1-13)

For the PPE study area, a comprehensive select link analysis would include not only origins/destinations along the eastern side of Maryville, but would also include origins/destinations around the entire periphery of the study area. Without comprehensive origin and destination data, the FEIS cannot describe the pattern of traffic through the study area and therefore cannot determine need.

2.d. Project contributes to unsafe conditions

Contrary to the claims in the FEIS, the project will increase unsafe conditions in the project area. None of the conditions listed in the FEIS that contribute to crashes will be addressed by the project:

“For the entire project area, rear-end and angle crashes are the most frequent type of crashes. The following conditions in the study area contribute to these types of crashes:

- Lack of access management along roads
- Numerous curb cuts for driveways and intersections
- Lack of exclusive turn lanes or passing lane” (FEIS 1-22)

The project will not improve access management, reduce curb cuts for driveways or intersections, or add exclusive turn lanes or passing lanes.

The FEIS shows that unimproved and unsafe routes in the County and the project area will continue to carry substantial and increasing traffic. The Preferred Alternative will not alter the conditions referred to in the following statement from the 2010 DEIS:

“There are numerous roadways in the region that were not designed to accommodate the type and amount of suburban development that is occurring, which leads to unsafe operating conditions.” (DEIS Traffic Operations Report, 3).

The continuing poor LOS on many of the area’s heavily traveled and unsafe and substandard roads is further evidence that the project will not enhance safety. With the Preferred Alternative, projections for 2020 and 2040 show large increases in traffic volume on roads not scheduled for improvement:

- Several miles of US 411 – a two lane federal highway with no shoulders – will see a 40% increase with the Preferred Alternative:

“US 411 traffic would be lower under the Preferred Alternative, with the exception of the section from the proposed interchange with Pellissippi Parkway Extension to Hitch Road where the traffic would be 40 percent higher under the Preferred Alternative.” (FEIS 3-5, emphasis added)

- US 129 from Hunt Rd to Hall Rd from 62,650 to 88,000-92,000
- US129 bypass between Hall Rd and 321 from 43,500 to 61,300 FEIS 3-6, Table 3-1)

And the FEIS further projects, in the section on economic impacts, that US411 will experience even more traffic as Sevier County residents use part of the proposed project to travel to the airport. The FEIS fails to note that travelers from eastern Blount County and Sevier County will have to use unimproved US411N to get access to the project at the new interchange:

“The Preferred Alternative may have a positive effect on airport services for the region in that a new or improved roadway would provide another travel path to and from the airport for persons in the eastern portion of Blount County and Sevier County.” (FEIS 3-17)

The FEIS did not evaluate safety of the new interchange at US321/73, stating “it will have no intersection.” (FEIS 3-15)

This intersection should have been evaluated for safety as it will be introducing new traffic onto a four lane road (two lanes each direction) with no traffic signal to control access onto and off the PPE.

As noted in Section III: Flaws in Transportation Analysis, TDOT’s analysis of safety in the 2015 FEIS and the updated *Crash Report* are inadequate since they present no conclusions from the safety data collected and analyzed. However, an important conclusion which can be made from the data and analysis provided in the *Crash Report* and the 2015 FEIS is that the Preferred Alternative INCREASES (not decreases) number of crashes areawide. The Preferred Alternative would result in an increase (relative to No Build) of 63 annual crashes on the Pellissippi Parkway in the study area. This is obtained by applying the statewide average crash rate of 0.981 crashes per million VMT (2015 FEIS Table 1-5) to the increase in annual vehicle miles of travel (VMT) on the Pellissippi Parkway (2014 Addendum, Tables 5 and 7). On the other hand, the reduction in traffic on roads (other than the Pellissippi Parkway) throughout the study area would result in a reduction of around 42 crashes. This is obtained by applying a rate of 4.0 crashes per million VMT (typical for roads with traffic reductions due to the Preferred Alternative) to the reduction in travel on these roads due to the Preferred Alternative.

For the entire study area, therefore, the crash rates from the 2015 FEIS (Table 1-5) and the *Crash Analysis* applied to the year 2040 vehicle miles of travel (2014 Addendum, Tables 5 and 7)

results in the projection of an INCREASE of 21 crashes annually in the year 2040 Preferred Alternative as compared to the year 2040 No-Build.

2.e. Changes in the area road system further undermine the “need” for PPE

The FEIS revisits the history of the PPE, stating “The concept of extending Pellissippi Parkway as a four-lane divided highway to US 321/SR 73 has been a part of the Knoxville regional transportation planning vision since 1977.” (FEIS S-1)

It is no surprise that the road system has changed in nearly 40 years. What is surprising is the persistence in promoting a 40-year old proposal and design.

Among significant changes to the regional transportation system since 1977 are the following:

- US 321/SR73 is now a four-lane highway from US11 in Lenoir City all the way through Maryville and to Townsend, gateway to the Great Smoky Mountains National Park
- SR 66 is becoming 6 lanes all the way from Exit 407 on I-40 into Sevierville
- Two traffic signals control on and off access at the current terminus of the Pellissippi Parkway, altering traffic flow on SR 33.
- A traffic signal in Rockford has altered traffic flow on SR 33.
- An on-ramp to the Pellissippi Parkway at Cusick Road has altered volumes and traffic flow at Pellissippi Parkway and SR 33.

Other roads have not changed, and will remain unchanged by the PPE. These include 411N, which is dangerous and heavily traveled, and roads identified by the Blount County Highway Commissioner as needing improvement for safety: Ellejoy Road, Old Niles Ferry Road, and Morganton Road.

The FEIS asserts the need for circumferential mobility, but provides no way to gauge adequate circumferential mobility by any alternative. Indeed with proposed termination at US321 and the removal of the “Southern Loop Beltway” from local transportation plans, the PPE is not a circumferential route. Instead, the project is a costly overbuilt 4.4 mile highway serving an admittedly small number of travelers that contributes to unsafe conditions. A few miles to the west, travelers in Blount County experience long delays on the US129 bypass, 411S, and Morganton Road.

There are many ways to accomplish alternatives to the area’s radial road system without building a costly interstate highway. On November 2, 2015, the City of Maryville announced improvements to Amerine Road and Woodland Acres Road, bordering a new big box retail site on US321(East Lamar Alexander Parkway).⁸ These improvements will create a new non-radial

⁸ “City plans infrastructure improvements for new Wal-Mart” by Leslie Bales-Sherrod, *The Daily Times*, Nov 2, 2015.

route between US411 and US321 with a safety feature the PPE lacks: a traffic signal where Woodland Acres intersects with US321/SR73.

2.f. The FEIS reports none of the usual benefits of transportation projects

The FEIS claims the project will improve the road network, but reports no data to support this assertion. Instead, the FEIS contains ample evidence that the project will make little difference:

The FEIS demonstrates that the “Preferred Alternative” option and the “No-Build” option yield virtually identical projected levels of service in terms of outcomes for net traffic function. Whether the PPE is built or not, road segments projected to be failing in the future tend to be the same across the board, as do those anticipated to be functioning acceptably. (FEIS 3-8, Table 3-1)

The Preferred Alternative is delivering neither of the two most important travel benefits (reduction in VMT and VHT) for which road improvements are usually made:

- The FEIS reports that the Preferred Alternative would result in a year 2040 increment of 8.6 percent (1,476,516 versus 1,359,807) in daily vehicle miles of travel (VMT) over the same year (2040) No-Build. (Table 3-21)
- Information provided by TDOT reports that the Preferred Alternative would result in a year 2040 increment in daily VHT from 32,752 hours to at least (and possibly more than) 33,543 hours over the same year (2040) No-Build. (Letter from Jim Ozment, TDOT to Nina Gregg, October 24, 2014)

These increments in year 2040 VMT and VHT indicate that, compared to the No-Build throughout the study area the Preferred Alternative adds to travel time and distance when these are aggregated over the study area.

2.g. The PPE Preferred Alternative benefit/cost ratio is near zero or possibly negative.

In computing the benefit/cost ratio of a road project, the travel-related components of the benefits typically include reductions in travel time, reductions in vehicle miles of travel and reduction in number and severity of crashes.

The Preferred Alternative fails to yield benefits in any of these three categories. Specifically, the Preferred Alternative, compared to the No-Build, increases vehicle hours of travel (VHT) in the year 2040, and also increases vehicle miles of travel (VMT) in the year 2040. Applying crash rates (2015 FEIS Table 1-5) to the year 2040 vehicle miles of travel (VMT) as given in the 2014 *Addendum*, Tables 5 and 7 results in an increase of 21 crashes in the year 2040.

Since all of the primary needs of the project as stated in the Purpose and Needs (2015 FEIS page 1-8) are travel related (as opposed to, say, economic development) the negative values in all

three categories of travel related benefits (VHT, VMT and safety) support a conclusion that the Preferred Alternative has a benefit/cost ratio of zero or less, indicative of an extraordinarily poor use of public funds..

The failure to obtain travel benefits is further underscored in the following Table 3, by gauging the accomplishment of the stated travel-related objectives of the PPE project (2015 FEIS, Page 1-8) by the Preferred Alternative.

**Table 3
Accomplishment of Travel-Related Objectives by Preferred Alternative**

<i>Objective, from Purpose and Need Statement</i>	<i>Accomplishment by Preferred Alternative (PA)</i>	<i>Explanation</i>
1. Travel options to existing radial network	Partial	PA yields new freeway link with one new interchange only. No new local roads or connections
2. Enhance regional transportation linkages	Partial	PA's only link is limited access. No new local roads or connections
3. Enhance roadway safety	Fails	PA INCREASES, not reduces study area crashes
4(a). Achieve acceptable traffic operations Corridor LOS, 2020 Corridor LOS, 2040 Intersection LOS, 2020 Intersection LOS, 2040	Negligible No net improvement No change at major LOS E or F intersections No change at major LOS E or F intersections	PA does not change any LOS PA improves one link, degrades two Does not improve LOS D or F except at 4 Alternative D intersections. Does not improve LOS D or F except at 4 Alternative D intersections
4(b) Avoid adversely affecting traffic	Fails	Overall, PA INCREASES miles and hours of travel in study area

Source: 2015 FEIS, Tables 3-1 and 3-2

2.h. The Pellissippi Parkway (I-140/SR162) already has a logical terminus

The current terminus of I-140/SR162 at SR33 meets the criteria of Logical Termini and Independent Utility. Indeed the current terminus at SR33 is far more “logical” than the proposed terminus at US321/SR73. The current terminus is a destination - the 400+ acre Pellissippi Place Research and Development Park and SR33 - and the current terminus has traffic signal- controlled on and off access between SR33 and I-140. In contrast, the proposed terminus of the PPE at US321/SR73 will require a bridge or traffic signals to ensure safe entry/exit for PPE travelers turning east on US321 or for travelers coming east on US321 who want to get onto PPE, all of whom will have to cross two lanes of traffic to enter or exit the PPE.

III. Flaws in Transportation Analysis⁹

The many deficiencies in the FEIS transportation analysis listed in this section indicate that TDOT and the FHWA failed to take a “hard look” either Alternative D or the Preferred Alternative.

3.1 The FEIS fails to meet NEPA’s requirement to “rigorously explore and objectively evaluate all reasonable alternatives.”

The analysis of alternatives is the “heart” of the EIS. 40 C.F.R. § 1502.14. Accordingly, TDOT and the FHWA must “rigorously explore and objectively evaluate *all* reasonable alternatives.” 40 C.F.R. § 1502.14(a) (emphasis added), and the failure to consider an alternative adequately renders an EIS inadequate. AWRTA v. Morrison, 67 F. 3d 723, 729 (9th Cir. 1995). The FEIS fails to meet these requirements in multiple ways outlined in sections 3.1 and 3.2.

3.1.a. The 2015 FEIS fails to rigorously explore and compare alternatives.

In exploring Alternative D, only one design option, a rural 50 miles-per-hour design speed with 44 feet of pavement in a 150 foot right of way was considered. This heavy-handed design would result in numerous property takings as well as large construction cost. Options with a far smaller footprint more appropriate for a suburban area were not examined. The same traffic capacity and almost the same travel speed as TDOT’s Alternative D could be accomplished by a 40 miles-per-hour design speed, with 28 feet of pavement in a 100 foot right of way, or by an “urban section” (curb and gutter) plus 10 foot shared use sidepath in an 80-foot right of way, either of which would have taken less property and had lower cost.

The Preferred Alternative, at various stages in its development, was “tweaked” to improve its performance and reduce its cost impacts. Alternative D was not given equivalent treatment.

3.1.b. The 2015 FEIS falls far short of objectively evaluating Alternative D

Two traffic-related evaluation measures of Alternative D appear in *FEIS* Table S-1. The first -- that “Traffic volumes would exceed the carrying capacity of a two lane road” -- is erroneous, possibly a result of attempting to apply a method intended for analyzing rural highways to an urban situation. The *Highway Capacity Manual* (HCM), properly applied, gives a capacity of up to 23,000 daily vehicles for a well-designed two-lane street, well beyond the year 2040 daily volumes of 14,890 – 20,580 projected (*May 14, 2014 Memorandum*) .

The second -- that because of “volumes expected to exceed capacity” in Alternative D, intersections throughout the study area “would perform poorly” -- is totally subjective,

⁹ The material in this section draws from “Review of the Final Environmental Impact Statement for Pellissippi Parkway Extension (SR162)”, 16 November 2015 by Walter Kulash.

unsupported by any analysis done for the 2015 FEIS and unsupported by any accepted LOS analysis method.¹⁰

3.1.c. The FEIS fails to apply consistent methodologies

A critical element of rigor in the NEPA requirements to “rigorously explore” and “objectively evaluate” alternatives is comparability; i.e., the ability to compare alternatives through consistently applied measures. The 2015 FEIS fails to apply consistent measures at all stages of the travel forecasting and traffic operations analysis, as summarized in the following table:

Table 1: Comparison of Travel Forecasting and Analysis Methods, 2015 FEIS

Stage of Forecast or Analysis	Method for Alternative D	Method for All Other Alternatives (No-Build, Preferred)
Underlying traffic forecast	“Prepared” for 4 segments only, from counts and growth factors (<i>May 14, 2014 Memorandum</i>)	<i>2013 Traffic Model</i> , for the 34 segments in study area (<i>2015 FEIS</i> , Table 3-1) other than 4 Alternative D segments.
LOS analysis, segment	Rural highway methods from HCS 2010 (<i>May 24, 2014 Memorandum</i>) for 4 segments. No analysis for remaining 34 segments.	HCS 2010 analysis (freeway, urban street, rural road methods as appropriate) for the 34 study area segments other than Alternative D segments (<i>2014 Addendum</i> , Tables 3 through 7)
LOS analysis, intersection	None performed; unsupported assertion that no intersections are improved (<i>2015 FEIS</i> , Table 3-1 FN 4)	HCS 2010 signalized and STOP controlled intersection analysis, 13 locations total (<i>2014 Addendum</i> , Tables 11 through 19)
Capacity, segment	HCS 2010 analysis, rural highway methodology, for 4 segments only. of segments “over capacity”	HCS 2010 analysis (freeway, urban street, rural road methods as appropriate) for the 34 study area segments other than Alternative D segments. (capacities not reported)
Capacity, intersection	Unsupported assertion that “Alternative D increases delay at most intersections” (<i>2015 FEIS</i> , Table 2-4)	HCS 2010 signalized and STOP controlled intersection analysis (13 locations, capacities not reported)

Note: HCS 2010 : *Highway Capacity Software* (proprietary) program, which applies LOS and capacity methods from the *2010 Highway Capacity Manual* (HCM)

The absence of comparability continues in the FEIS presentation of traffic forecasts in different scenarios (see 3.1.d., below). In its presentation of the Preferred Alternative, the 2015 FEIS fails

¹⁰ The 2015 FEIS did not, for Alternative D, analyze intersection LOS throughout the study area nor did it provide a traffic forecast on which to base such an analysis. The only such analysis of LOS for intersections throughout the study area under Alternative D was prior to the 2015 FEIS in the *June 30, 2011 Addendum*, made obsolete by the *2013 Traffic Model* used for the 2015 FEIS.

to include a traffic forecast for the four segments of road (Helton Road, Hitch Road, Peppermint Road and Sam Houston School Road) which comprise Alternative D. However, the *2015 FEIS* or its supporting documents do include: (a) traffic volumes for these four Alternative D road segments for existing conditions (*2014 Addendum* Table 3) and (b) traffic forecasts for the four segments in the No-Build (*2014 Addendum*, Tables 4 and 5).

Although the *2015 FEIS* and its supporting documents fail to provide a traffic forecast for the four Alternative D segments with the Preferred Alternative traffic forecast (*2014 Addendum*, Figure 2) they do present corridor level of service (*2015 FEIS* Table 3-1) and intersection level of service (*2015 FEIS* Table 3-2) that must have been based on traffic forecasts for these four segments. The selective exclusion of the four Alternative D segments from the Preferred Alternative traffic forecast (*2014 Addendum*, Figure 2) is not explained, nor is there any apparent reason for this lapse in reporting the most basic traffic data.

3.1.d. Failure to project traffic for Alternative D

The *2015 FEIS* and its supporting documents project year 2040 traffic volumes for only the four road segments comprising Alternative D (i.e., Sam Houston School Road, Peppermint Road, Hitch Road and Helton Road). The *2015 FEIS* and its supporting documents do not provide a forecast of the year 2040 traffic volumes for any of the other 32 road segments in Alternative D, although year 2040 projections are given for these segments for the No-Build (32 segments) and Preferred Alternatives (34 segments) in the *2014 Addendum* (Figures 1 and 2, Tables 5 and 7).

The presumed explanation for the absence of data for Alternative D – that Alternative D was eliminated on the basis of the earlier *2009 Traffic Model* and therefore needs no further analysis – is not valid because:

- Failure to update Alternative D to the same forecast violates the requirement to “objectively evaluate alternatives”
- Throughout the study area, traffic for the year 2040 based on the *2013 Traffic Model* is significantly less than year 2035 traffic from the 2009 model. This decrease in traffic and its resultant decrease in “need” for the Preferred Alternative mandates an update, using the 2013 traffic model, of the only build alternative (i.e., Alternative D) other than the Preferred Alternative regardless of whether it was previously “eliminated” on the basis of the now-obsolete *2009 Traffic Model*.

3.1.e. The FEIS lacks computable measures of accomplishment of purpose and need statements that would enable reviewers to “evaluate their comparative merits”

Three (of the four) travel-related objectives of the project (*2015 FEIS* pp 1-8) lack measures of effectiveness that would enable them to be applied to the alternatives:

- “Provide travel options ...to the county’s existing radial road network”
- “Enhance the regional transportation system linkage”

- “Assist in achieving acceptable traffic operations ... or avoid adversely affecting traffic operations on the existing transportation network”

The FEIS offers no definition, criteria or further measures to evaluate the first two objectives. The only “evaluation” applied to the first two of these objectives is one instance of circular logic (“complete the Pellissippi Parkway”) and a few other vague comments (2015 FEIS Table 2-4) stating the obvious, that the alternatives “enhance circumferential mobility or “provide[s] a new two-lane non-radial route”.

These evaluation measures fall far short of the rigorous and wide-ranging measures of effectiveness that should be applied to the above two objectives in the course of meeting the FHWA directive to “devote substantial treatment to each alternative ... so that reviewers may evaluate their comparative merits” (FHWA, *NEPA and Transportation Decisionmaking*). Such measures, easily computable from data already developed in the project, might include:

- Number of points of access to the new “circumferential”
- Flexibility to add future connections, as new interchanges or local street connections.
- Flexibility for new extensions of existing streets and roads to intersect or cross the “circumferential” connector
- Suitability of the “connector” as a school bus route
- Multi-mode capability of the “connector” to serve as a bicycle and pedestrian route
- Suitability of the “connector” to serve as an “address” for public facilities, such as parks, fire stations, schools, etc.

3.2. FEIS relies on traffic forecasting and capacity analysis methods that do not conform to standard practice.

3.2.a. The FEIS relies on unsupported assertions and assumptions (not data) to reject Alternative D

In its most important summary of traffic operations, the 2015 FEIS (Table 3-1) dismisses Alternative D as having no traffic benefit in the entire study area with the assertion: “traffic operations on those roads [the 32 road segments other than those four comprising Alternative D] are assumed to be similar to the No-Build Alternative.”

This astonishing assertion fails to meet even the most rudimentary standards of standard traffic engineering practice:

- Total lack of documentation: The 2015 FEIS and its supporting documents do not provide any further information supporting the assertion (above) made in the 2015 FEIS Table 3-1.
- Lack of accepted methodology: The use of the phrase “over capacity” [FEIS Table 3-1, Footnote 4] suggests that no conventionally accepted traffic analysis methodology was

applied. The term “over capacity” cannot be found in LOS analysis methodology. A road can no more be “over capacity” than a water glass can be filled to “over capacity”. Proper use of a traffic model for Alternative D would have revealed that as roads approach their capacity, the equilibrium-seeking features of the trip assignment algorithm become more aggressive in dispersing traffic to other, less congested routes.

- Vague, non-operational conclusion: The statement that Alternative D “would not significantly reduce volumes on existing routes” lacks the precision that is accorded to the description of traffic volumes on these routes in other alternatives (2015 FEIS Table 3-1).
- Non-reproducible finding: A fundamental precept of engineering practice is that findings be reproducible; i.e., so that qualified technicians, independently applying accepted practices to given data, will arrive at conclusions that correspond closely. It is unlikely in the extreme that qualified technicians, given the traffic forecast data for the Alternative D road segments, would uniformly arrive at a conclusion that this level of traffic on Alternative D would “not improve Corridor LOS” or even more unbelievably that Alternative D “increases delay at most intersections” (2014 FEIS, Table 2-4).
- Absence of professional judgment: Had in fact any data shown that Alternative D, with its projected year 2040 volume of 14,890 – 20,580 daily vehicles was yielding no significant change in any traffic volumes throughout the study area, proper engineering judgment would have mandated further investigation into such an anomaly. The 2013 Traffic Model and its outputs support readily accessible (but apparently unused by the 2015 FEIS) approaches to exploring anomalous results. Such approaches include (1) screenline analysis, a simple manual computation from published data which can explain how traffic shifts among routes as the network is changed and (2) select link analysis, a readily obtained procedure based on the 2013 Traffic Model which can trace the origins and destinations (O/D’s) of traffic travelling through a designated “select link”. The 2015 FEIS (page 1-13) does report one narrowly-focused select link analysis, limited to two “select links” (US 129/SR 115 and SR 33) and through those links, only those trips between Knox County and eastern Blount County. This analysis, revealing only a small volume of year 2040 trips between Knoxville and eastern Blount County (2015 FEIS, Table 1-1) raises the obvious question of “where then, if not to/from eastern Blount County, are trips to/from Knox County going and coming?” This question could have been readily answered by a more comprehensive select link analysis, looking not just at destinations to the east of Maryville but also to the south and west. However, no such analysis was performed.

3.2.b. Unexplained forecasting procedures for Alternative D

The 2015 FEIS and its supporting 2014 Addendum “did not include updated forecasts and analyses for DEIS Alternative D” (May 14, 2014 Memorandum, 1). Accordingly, traffic model results are presented only for the No-Build and the Preferred Alternative (2014 Addendum, Figures 2 and 3). The only travel forecast for any part of Alternative D is a forecast for the four road segments (Helton Road, Hitch Road, Peppermint Road and Sam Houston School Road) comprising Alternative D (May 14, 2014 Memorandum). No forecasts were made for the other

32 road segments throughout the study area in Alternative D. In the absence of any traffic model results for Alternative D, it was assumed that “Alternative D would not significantly reduce volumes on existing routes” (2015 FEIS, Table 3-1).

The *May 14, 2014 Memorandum* (page 2) states that forecasts for the four road segments comprising Alternative D were made “using existing volumes and the updated regional model”. However, no updated (presumably 2013) model results for Alternative D are shown in the 2015 FEIS or any of its supporting documents. There is no explanation of how an updated regional model was used to forecast traffic volumes on the four Alternative D road segments. Possibly, some sort of “growth factor” derived from model runs for the No-Build and Preferred alternatives was applied to the Alternative D forecasts made for the 2010 DEIS. However, these computations and results cannot be reproduced from the information provided.

3.2.c. Continued use of incorrect Level of Service (LOS) procedures for Alternative D

Despite comments from both CAPPE (Comments on 2010 DEIS) and the Knoxville TPO (Knoxville TPO to TDOT, January 6, 2010, in “Summary of TESA Concurrence Point #2, Comments”) and the acknowledgement in the 2011 Addendum that the surroundings of the Alternative D route are suburban in character, the 2015 FEIS persists in analyzing the traffic Level of Service (LOS) of the four road segments comprising the Alternative D route as “Class III Highways”, a category characterized by the 2010 Highway Capacity Manual (HCM) as having rural driving conditions.

Traffic Level of Service (LOS), defined by the HCM, is a qualitative measure of how drivers are likely to perceive traffic service. For suburban roads, the HCM correlates LOS primarily to the traffic volume, and therefore congestion, in the direction of travel. However, for the HCM’s two-lane “Class III Highway” capacity methodology, LOS is determined primarily by the ability to freely overtake (“pass”) slower vehicles. In the Class III Highway computations, difficulty in passing vehicles is due to (1) volumes of traffic in the opposite direction and (2) the “Percent No-Passing Zone” (the percent of road distance marked to prohibit passing). These reductions in ability to pass are then translated into degradations in LOS.

Linking LOS to the ability to freely pass, while appropriate for travel through rural areas, is inappropriate to the point of absurdity for the suburban areas surrounding the Alternative D route. Few of the trips on Alternative D would have characteristics typical of rural travel (long trip length and irregular frequency of travel on roads where passing is allowed) for which the ability to pass is important. To the contrary, the overwhelming majority of trips on Alternative D are “suburban” in character (short trips most of which are made on a daily basis, on roads where passing is prohibited). For these “suburban” trips, the ability to pass other vehicles is far less important than reliability, efficient traffic control devices (traffic signals, roundabouts) and freedom from congestion. The HCM Class III method for LOS addresses none of these qualities of travel.

Although the HCS 10 proprietary software does not offer a module for it, the HCM itself does provide a clear way to compute the LOS on two-lane suburban roads, simply by adjusting the

Multi-Lane Highways methods (Chapter 14 of the HCM) to two-lane roads. Various state DOT's, most notably Florida's, have published shortcut versions ("Generalized Guidelines") of this adaptation of the HCM Chapter 14, permitting an easily computed estimate of the capacity and LOS on urban two-lane streets.

3.3. The FEIS fails to compute the safety impact of the Preferred Alternative

The FEIS also fails to "rigorously explore" the Preferred Alternative, 40 C.F.R. § 1502.14(a), and fails to provide a "full and fair" discussion of the impacts of the Preferred Alternative. 40 C.F.R. § 1502.1.

The *2015 FEIS* (Table 1-5) compiles statistics on crashes within the PPE study area for the three-year period (2010, 2011, 2012) comparing the reported segment-by-segment crash rates for the three-year period to:

- (1) statewide averages for comparable road types and
- (2) statewide critical crash rate (rate significantly greater than that explainable through normal variation).

The *2015 FEIS* Table 1-5 shows that of the 24 road segments analyzed, ten have crash rates in excess of the statewide average.

The *2015 FEIS*, therefore, provides detailed information on recent (2010-2012) crash rates on the existing road system. However, the *2015 FEIS* does not discuss the impact, on safety, of the Preferred Alternative. Rather than answering the fundamental question of how much the Preferred Alternative improves or degrades safety, the *2015 FEIS* offers only the conjecture that "a transportation option [Preferred Alternative] that would divert some through travelers away from ...roadways in the Maryville core could help to reduce the number of crashes". (*2015 FEIS*, p. 1-24)

The *2015 FEIS* offers no information about the number of crashes projected for the Preferred Alternative for any year of its operation. Nor does the *2015 FEIS* offer any information about the number of crashes for the No-Build, the "baseline" to which the Preferred Alternative could be compared. Such projections are computable, from crash rates reported *2015 FEIS* Table 1-5 combined with the segment traffic volumes given in the *2014 Addendum*, Tables 5 and 7. However, the *2015 FEIS* fails to make these projections.

Failure to conclude the safety impact of the Preferred Alternative from the reported data falls short of standard practice for NEPA reporting for two reasons: (1) NEPA reporting should draw clear conclusions, particularly where the necessary information is readily available and (2) safety was given as a project need and objective (*2015 FEIS*, pages S-2 and 1-8) but no findings as to accomplishment of this objective are reported.

3.4. Failure to obtain basic origin/destination data misrepresents transportation needs in the study area

The *2015 FEIS* and its supporting documents make no mention, nor report findings, of any comprehensive origin/destination (“O/D”) data for the study area.

Two fragments of O/D data, focusing on a limited movement (between Knox County and eastern Blount County) through the study area were performed:

- (1) a license plate survey in 2006
- (2) a select link analysis based on the 2013 Knoxville regional travel demand model (*2015 FEIS*, pages 1-12 to 1-13).

Neither of these two studies was intended to furnish a comprehensive picture of origins and destinations for all travel through the study area. Rather, they focused on only one movement (between Knox County and eastern Blount County), apparently in attempt to show that the Preferred Alternative would address a “need” to improve travel between this O/D pair. The resulting data shows greatly diminished need.

Two descriptors fully define traffic flow in a study area:

- (1) the quantities of traffic, obtained from counts
- (2) the origin/destination pattern of traffic, obtained through field observation such as license plate surveys or from the “select link” capability of the travel demand forecast (“traffic”) model.

For the PPE study area, a comprehensive select link analysis would include not only origins/destinations along the eastern side of Maryville, but would also include origins/destinations around the entire periphery of the study area. The *2015 FEIS*, gathering no comprehensive O/D data of this scope, is therefore unable to describe the pattern of traffic through the study area.

The absence of comprehensive O/D data for the Pellissippi Parkway Extension project precludes any answer to the question of “what is the real transportation problem in the area?” The PPE project, never interested in this broad question, focused its O/D surveys only on trips that might establish the “need” for the extension of the Pellissippi Parkway.

3.5. The 2015 FEIS reports internally contradictory information

3.5.a. Contradiction between Intersection LOS and traffic model results produces overstatement of traffic and overstatement of delay

The year 2040 intersection Level of Service (LOS) analysis (*2015 FEIS* Table 3-2) bases its findings on projections from the *2013 Traffic Model* as summarized in the *2014 Addendum*, but yields travel times that, aggregated for the study area, differ drastically from those computed by that model.

For the four signalized intersections along Washington Street analyzed in the intersection capacity analysis for the Year 2040 No Build Alternative (2014 Addendum, Table 13) the total intersection travel time (delay plus run time) for the two peak hours (AM and PM) is 946 hours. Yet the traffic model reports that the total vehicle hours of travel (incorporating delay) on the road segments through these intersections is only 365 hours for the entire day in the year 2040.

The intersection capacity analysis, therefore, projects delay for the peak hours alone that is 2.6 times the travel time (delay plus run time) for the entire day as projected by the traffic model.

There are no published guidelines for correspondence between vehicle hours of travel (VHT) as projected by a traffic model and that obtained from intersection capacity analysis using traffic projections from that model. In theory, the two estimates of travel time should be comparable, since they both are based on the same projection of future traffic and compute delay from algorithms that while differing in detailed methodology are both derived from the *Highway Capacity Manual*, the definitive source of capacity computation.

Traffic modeling practice suggests a guideline that might be applied to the question of correspondence of VHT between the model itself and capacity analysis purporting to be based on modeled traffic volumes. For example, calibration of a traffic model calls for convergence of modeled and observed traffic within 15- 20 percent. Outside this range, a model would not be considered properly calibrated.

Beyond guidelines, engineering judgment and common sense dictate that capacity calculations based on identical source data but varying in their conclusions (as do the traffic model and capacity analysis above) by over 250 percent can not constitute a reliable basis for action. Such a variation in calculations would lead to an unreasonably wide variation in designs: for example, six lanes instead of four, traffic signal instead of STOP control, etc.

Three components of the analysis in the *Traffic Forecast Study* contribute to the discrepancy between the VHT from the capacity analysis (2014 Addendum) based on the *Traffic Forecast Study* traffic projections and the VHT (2015 FEIS, Appendix E):

1. Factors used to convert modeled traffic volumes (given as daily volumes in the traffic model) to the peak-hour volumes used in the intersection capacity analysis may not have been adjusted for future traffic conditions. Specifically, the “K” factor (peak hour traffic as percent of daily traffic, or AADT) and the “D” factor (directional split of peak hour traffic) appear to be based on past conditions, not anticipating a reduction in these factors reflecting a continued transition to more urban environment that is implied in the traffic model inputs. Increases in mixed use development, surge in “in-town” living, flexible work hours, increases in on-line retailing, increased percentage of retirement and “pre-retirement” households and increased traffic congestion are all factors calling for reductions in “K” and “D” factors, in turn reducing projected peak-hour traffic.

2. The intersection capacity analysis method used (HCS 2010, a proprietary program based on the *2010 Highway Capacity Manual*, HCM) most likely computes a peak hour delay based on the peak 15 minutes of the peak hour, extended to the full peak hour. This assumption, while appropriate for detailed design and timing of traffic signals for existing conditions, greatly overstates the delay under distant future conditions, where peak volumes are spread more evenly throughout a peak hour or even beyond.
3. The intersection LOS analysis assumes a continuation of existing road conditions, and does not appear to account for the improvements in intersection traffic engineering and improvements in local plans that would routinely occur over the next thirty years. Such improvements include addition of dual left-turn lanes, addition of right-turn lanes, improved vehicle detection, more sophisticated traffic signal controllers, more interconnection of signals, areawide signal optimization algorithms and driver information systems. Nor did the intersection analysis anticipate in-vehicle technology such as satellite-based GPS which already allows drivers to select routes to avoid congestion or collision-avoidance system which allows closer vehicle spacing with associated gains in vehicular capacity.

At four of the five signalized intersections analyzed in the intersection capacity analysis, the analysis starts with daily traffic projections (AADT's) that correspond well with the modeled volumes of traffic on the same links (i.e., entering the intersections). However, at the most critical intersection (i.e., South Washington Street at SR 73/US 321) with the greatest projected delay of any intersection, the capacity analysis is based on an entering traffic volume (24,560 daily vehicles, No Build in 2040) that is substantially greater than the 19,510 vehicles projected in the traffic model. This difference in approach volumes (5,050 vehicles or around one quarter of the modeled volume) calls into question the validity of the analysis of this location, the most critical in the entire study area. As traffic volumes approach the saturation level, as they do at this location, the peak hour delay increases disproportionately faster than the increase in entering traffic. Thus, the 25 percent overstatement of traffic entering from the major approach results in an overstatement of delay far greater than 25 percent.

3.5.b. Inexplicable variations in screenline volumes for Alternative D undermine traffic assignment figures and therefore undermine traffic analysis in the 2015 FEIS

The detailed traffic assignment diagrams underlying all of the traffic analysis in the *2015 FEIS* are shown in the *2014 Addendum*, Figures 1 and 3. These types of traffic assignment figures readily support a "screenline" analysis of the traffic forecasts. In such an analysis, a cordon line (the "screenline") is drawn across the study area, the road segments intersected by the screenline are identified and their relevant data (typically traffic volumes and capacity) are compiled. Screenlines provide an informative "cross section" of the road system, summarizing traffic volumes and capacity across an entire region, and providing quick assessment of the impact of changes in capacity. Screenline analysis is routinely used in preparing validating models, to verify that modeled traffic volumes for the base (current or recent) year are, in the aggregate, reasonably replicating the actual traffic counts across large swaths of the study area.

Year 2040 daily traffic volumes (AADT's) intersecting an east-west screenline across the study area at its midpoint (see Attachment A to this Report) for the No-Build and Alternative D are summarized in Table 2 below.

Table 2 Summary of Screenline Analysis

Alternative	Screenline Volumes Year 2040 AADT
No-Build	125,090
Alternative D	139,710
Difference	14,620

Source: No-Build traffic volumes from 2014 Addendum, Figure 1, Year 2040. Alternative D traffic volumes from May 14, 2014 Memorandum and 2015 FEIS, Table 3-1, FN 4, which states that all Alternative D segments (other than the 4 "Alternative D segments) traffic operations are "assumed to be similar to the No-Build."

When analyzing alternatives for providing new traffic capacity, screenline volumes across the alternatives' study area should remain fairly constant for all alternatives, build and no-build alike. This similarity in screenline volumes across alternatives simply reflects that the alternatives shift traffic from one route to another, generally reducing congestion and its related delay, but not generating additional traffic across the screenline. Additional traffic, if any, generated by alternatives is most likely to appear as increases in traffic on routes parallel to the screenline, as drivers shift laterally to reach a new, faster route. Screenline volumes are unaffected by changes in this lateral movement.

The enormous variation in screenline volumes (14,620 daily trips, Table 2 above) is far beyond the range of screenline variation typical among alternatives being evaluated in standard transportation planning practice. However, the 2015 FEIS offers no explanation for this deviation.

Possible explanations for the anomalous variation in screen line volumes all raise further questions about the validity of the Alternative D traffic forecast:

- *External trips to/from outside the study area:* One possible factor which could contribute to the anomalous variation in screenline volumes might be a large volume of "external" traffic (i.e., with neither origin nor destination within the study area), currently not passing through the study area but attracted through the study area by Alternative D. However, such a situation is hardly likely. For example, is traffic between Knoxville and the destinations along Route 321 to the east of the study area going to shift from some other route, currently entirely outside the study area, to new routes within the study area? No such reasonable shifts are apparent.

- *Increase in internal trip generation:* Another possible factor which could contribute to the anomalous variation in screenline volumes for Alternative D might be a large increase in “internal” trips, having origin or destination or both within the study area. However, attempting to explain the presence of such a large increment of internal trips raises questions further eroding the validity of the traffic forecast. For example, are different sets of traffic model inputs (zone-by-zone social and economic data) being used for the different alternatives? If so, why such deviations from standard modeling practice?

3.6. The 2015 FEIS presents “new” information that is not included in its supporting Attachments or Appendices

3.6.a Select Link Analysis Percentages cannot be duplicated from information provided

The *2015 FEIS* (1-12, 1-13) and *2015 FEIS Attachment A* describe a “select link analysis” which offers some insight into the component of “through” traffic (i.e., passing through the study area but with neither origin nor destination within it) that might be attracted to a PPE. The select link analysis in the *2015 FEIS* updates an earlier “license plate survey” (*2010 DEIS* at 1-10 and Figure 1-5).

The select link analysis in the *2015 FEIS* shows an interestingly small amount of through traffic, specifically a total of 1,494 daily vehicles in the year 2040 (*2015 FEIS* Table 1-1). This through traffic comprises only 1.6 percent of the total traffic on the select links (US 129/SR 115 and SR 33) examined. Other percentages shown in Table 1-1 cannot be duplicated from information given in the *2015 FEIS* or Attachment A.

Three conclusions can be drawn from the select link analyses, but these are not presented in the FEIS:

- (1) The Preferred Alternative would carry only a small amount of the study area’s through traffic
- (2) Almost all traffic on the Preferred Alternative is local in nature
- (3) The appropriate additions to the road network for local traffic are new, better-connected and expanded local roads, not high-speed limited-access freeways.

3.7. The 2015 FEIS misrepresents project impacts by not reporting conclusions supported by the data provided

3.7.a. The Preferred Alternative adds area-wide VMT and VHT

The *2015 FEIS* (Table 3-21) reports that the Preferred Alternative would result in a year 2040 increment of 8.6 percent (1,476,516 versus 1,359,807) in daily vehicle miles of travel (VMT) over the same year (2040) No-Build.

Information provided by TDOT (letter from Jim Ozment, TDOT to Nina Gregg, October 24, 2014) reports that the Preferred Alternative would result in a year 2040 increment in daily VHT from 32,752 hours to at least (and possibly more than) 33,543 hours over the same year (2040) No-Build.

These increments in year 2040 VMT and VHT indicate that, compared to the No-Build throughout the study area, the Preferred Alternative is delivering neither of the two most important travel benefits (reduction in VMT and VHT) for which road improvements are usually made. While improving (compared to the No-Build) LOS at some intersections, the Preferred Alternative adds to travel time and distance when these are aggregated over the study area.

3.7.b. The Preferred Alternative increases (not decreases) the number of crashes area-wide

The Preferred Alternative would result in an increase (relative to No Build) of 63 annual crashes on the Pellissippi Parkway in the study area. This is obtained by applying the statewide average crash rate of 0.981 crashes per million VMT (*2015 FEIS* Table 1-5) to the increase in annual vehicle miles of travel (VMT) on the Pellissippi Parkway (*2014 Addendum*, Tables 5 and 7). On the other hand, the reduction in traffic on roads (other than the Pellissippi Parkway) throughout the study area would result in a reduction of around 42 crashes. This is obtained by applying a rate of 4.0 crashes per million VMT (typical for roads with traffic reductions due to the Preferred Alternative) to the reduction in travel on these roads due to the Preferred Alternative.

For the entire study area, therefore, the crash rates from the *2015 FEIS* (Table 1-5) and the *Crash Analysis* applied to the year 2040 vehicle miles of travel (*2014 Addendum*, Tables 5 and 7) results in the projection of an increase of 21 crashes annually in the year 2040 Preferred Alternative as compared to the year 2040 No-Build.

3.8 Uncertain time horizons render the entire analysis unreliable

Throughout the FEIS and the supporting documents, the Relocated Alcoa Highway (RAH) Parkway and segmented improvements to US129 are factored into the traffic analysis. Therefore the asserted benefit of PPE depends on other projects with acknowledged uncertainty as to time horizons and actual completion. The FEIS does not analyze the impact on traffic operations of the PPE on its own, which means there is no way to evaluate its independent impact on traffic volumes, traffic operations, or safety.

Both the RAH and the four segments of improvements to US 129 are among area projects TDOT has publicly stated will not proceed because of uncertainties about transportation funding.¹¹

¹¹ <https://www.tdot.tn.gov/ProjectNeeds/Images/documents/Backlog-Projects-for-11-9-15.pdf> accessed 15 November 2015

Even if funding were to become available, and if these projects were prioritized ahead of others across the state, realistic time horizons for all three projects are unknown.

FEIS states a segment of RAH will be completed by 2019. (DEIS S-10) Horizon year is not an operational year. Horizon year of 2019 is in TPO plans for many projects, including the PPE. As a 'Horizon year' this is simply a place holder because highway funding is uncertain.

In fact, the FEIS acknowledges the unreliability of project schedules, contradicting assertions of impacts on area roadway volumes and reliability of projections, and therefore renders all projections suspect and unreliable:

"While the *Regional Mobility Plan 2040* and the 2014-2017 TIP identify specific years by which the transportation improvements are expected to be completed, budget issues and other considerations may delay the start or ultimate completion of a specific project. It is also possible that some projects currently listed in the *Regional Mobility Plan 2040* or 2014-2017 TIP may be modified or removed as a result of currently unforeseen land use changes or other changes in the community or local priorities." (FEIS 2-4)

3.9 Accessibility and time savings benefits rely on speculation, not data

The FEIS attempts to demonstrate accessibility and time savings benefits from the project, but these presumed benefits are speculation based on assumptions, not data.

The travel time analysis relies on undocumented "current traveler behavior" and an unproven assumption regarding the "alternate route" travelers would use in the absence of the project, resulting in unreliable "time savings" with the project.

In the Appendix D to the FEIS we find:

"A second measure of accessibility is travel times saving. To facilitate comparison between the Build and No-Build scenarios, it was assumed that in the absence of the Parkway extension, travelers would look for the next best alternatives on the adjacent arterial roads. Based upon current traveler behavior this route (shown in Figure 3) was approximated to be the section of East Lamar Alexander Parkway west of the proposed terminus of the I-140 extension up around S. Washington St. and through Route 33 to the current terminus of I-140 on Route 33 (and in the reverse direction for traffic going south from the current terminus of the Parkway extension)." (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis 2015, at 12, emphasis added.)

The FEIS provides no data to support the assertion of "current traveler behavior." Further, the "next best alternative" described in the FEIS and used to calculate travel time savings was "assumed based upon discussions with a Senior Transportation Engineer at the Knoxville Regional TPO." (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis 2015, at 12, Footnote 6)

Therefore “travel time savings” reported in the FEIS is entirely speculative.

Further, Appendix D acknowledges the travel time benefits are not distributed to individual trips but based upon VMT, diminish beyond the study area, and are net overall. This means travel time benefits, such as the 10 minute time savings touted by the FEIS - even if they were reliably computed - would not be experienced by most drivers and are not likely to be felt beyond the study area:

“However in the quantitative evaluation, benefits are distributed based upon Vehicle Miles Traveled (VMT) and not upon individual trips. It is unlikely that significant benefits are felt on VMTs beyond the study area since travel time impacts diminish as we go farther from the epicenter of the improvement. It is equally unlikely that all trips within the study area accrue exactly similar benefits and hence an average over the study area is considered a better metric to judge net overall travel time benefits. (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis 2015, at 13).

IV. Geology

The FEIS’s studies of geologic and hydrologic conditions failed to take a hard look at these likely impacts because the reported studies are inadequate to assess direct, indirect, and cumulative impacts of the PPE. 40 C.F.R. §§ 1502.16(a), 1502.16(b), 1508.7. Thorough field studies were not performed to assess impact of the project on geologic and hydrologic conditions for water quality and threatened and endangered species. These additional investigations should have been performed *prior* to selecting a preferred alternative route for public comment and review because all direct, indirect, and cumulative impacts could not be defined by the studies in the DEIS.¹²

4.a. The 2015 FEIS reports on geological studies done after the 2010 DEIS but still fails to thoroughly explore and document the impacts of the project on geologic and hydrologic conditions and water quality.

CAPPE’s formal comments on the DEIS identified a number of deficiencies in the DEIS and supporting technical memoranda and listed studies that “at minimum” should be conducted to accurately determine what effects the construction activities will have on the geologic and hydrogeologic conditions and water quality in receiving streams. Global Environmental Consulting stated, “unless field studies are performed to understand known sinkhole drainage, its connection to receiving streams, and its impact on threatened and endangered species, the design cannot avoid or minimize the impact.”

¹² Most of the material in this section is drawn from “Summary Report,” Global Environmental Consulting, August 18, 2010 (attached).

The FEIS continued the failure of the DEIS to thoroughly discuss the possible connection of surface water drainage into the bedrock drainage system, did not identify any springs outside the corridor that would be groundwater discharge points from sinkholes to surface waters (e.g. Little River), and did not discuss the impact of surface water flow introduced into the bedrock drainage system on threatened and endangered species that are known to exist in the Little River and Pistol Creek. Drainage into sinkholes would be expected to discharge into receiving streams and the direct, indirect, and cumulative impacts of that discharge have not yet been defined. According to the Geologic Hazards Map of Tennessee (Miller 1977, attached to “Summary Report”), the area along the proposed corridors is considered to have a high density of karst features, and such features can include sinkholes, caves, and sinking streams.

TDOT failed to perform thorough field studies. Moreover, these additional investigations should have been performed *prior* to selecting a preferred alternative route for public comment and review because all direct, indirect, & cumulative impacts could not be defined by the studies in the DEIS.

Many of the shortcomings we noted in the DEIS are not addressed adequately or addressed at all in the FEIS. CAPPE reiterates the importance of these studies, especially given the potential negative impacts to Little River, which has been designated by TDEC as an Exceptional Tennessee Water because it supports federal and state threatened and endangered species (FEIS 3-94). Little River is home to a number of species that have been designated as endangered, threatened, or in need of management, and it is also the source of Blount County’s water supply. Thus, protecting the ecological integrity and water quality of Little River should be a top priority of TDOT. TDOT’s failure to perform the necessary studies violated NEPA and is troubling, discouraging, and irresponsible to the citizens of Blount County.

4.b. The FEIS does not include a detailed karst inventory and field survey completed outside of the proposed corridor (i.e., between the corridor and possible receiving streams).

The DEIS inadequately considered the roll of karst geology for contaminant transport to the nearest receiving stream and the role this transport might have on the ecological integrity of caves and receiving streams.

The FEIS reports on additional on-the-ground field surveys in 2013 and 2014 (FEIS 3-77), but these surveys were only performed within the corridor of the Preferred Alternative. Thus, instead of searching for springs outside the corridors and along receiving streams where sinkhole drainage would emerge and discharge, the field surveys only attempted to identify springs where they emerge along and within the corridor (PB 2013, p 1).

A detailed karst inventory and field survey should be completed outside of the corridor for the Preferred Alternative that maps all sinkholes, springs, and exposed bedrock joint patterns from Little River and its tributaries to the corridor of the Preferred Alternative.

4.c. FEIS has not adequately identified sinkhole groundwater discharge points and therefore the FEIS's report on impact on receiving streams is inadequate. TDOT will not be able to avoid these areas and impacts on receiving streams during design, construction, and post-construction development.

The FEIS acknowledges that “the primary impact that the proposed project could have on the listed protected aquatic species is the potential to increase silt and sediment within the crossed stream channels. This introduction of silt and sediment to the Little River tributaries could migrate to the main channel of the Little River where there are known occurrences of the listed protected aquatic species” (FEIS 3-98). The FEIS states that “stringent BMPs, including erosion and siltation control measures, will be implemented during construction” to overcome this threat (FEIS 3-101).

Roadway construction projects have a history of introducing silt and sediment into receiving streams. According to “The Status of Water Quality in Tennessee” (TDEC 2008), silt is one of the most frequently cited pollutants in Tennessee impacting over 5,500 miles of rivers and streams of which over 1,000 miles are impaired due to highway construction and site clearance. This fact is especially relevant to the proposed project because of the occurrence of threatened and endangered species in Little River and Pistol Creek, which are expected to be groundwater discharge pathways for sinkholes located along and adjacent to the proposed corridors. Siltation is one of the primary causes of water pollution in Tennessee and can affect the biological, chemical, and physical properties of water in numerous ways (TDEC 2008). Without thorough studies, including dye trace of hydraulic connections between sinkholes, receiving streams and discharges, TDOT will not have the information needed to implement the extraordinary BMPs necessary to protect area waterways from the impacts of this project. In a letter from the Tennessee Wildlife Resources Agency (TWRA; 18 May 2012; Appendix K: Ecology Reports 2012-2014) to TDOT, TWRA requested, “... that the Tennessee Department of Transportation initiate a subsurface program designed to assess surface and groundwater connectivity to area streams, which may require dye-tracing studies, and commit to the protection of these unique resources which may be inhabited by species yet to be determined.”

CAPPE's geology consultant emphasized that “dye trace studies should be completed to determine what sinkholes are hydraulically connected to the receiving streams and where the discharges occur relative to protected species habitat. That information can then be used to avoid sensitive areas during design and construction and to implement extraordinary best management practices (BMPs) during and post-construction to prevent off-site contaminant transport to receiving streams.” Unless dye trace studies are performed to understand sinkhole drainage, its connection to receiving streams, and its impact on threatened and endangered species, the FEIS cannot disclose adequately these impacts and the design cannot avoid or minimize these impacts.

4.d. Field investigations should be performed to inspect the habitat between the corridor and receiving streams to locate actual threatened and endangered species relative to groundwater discharge points.

In addition to a detailed inventory and map of the karst topography both within and outside the corridor of the Preferred Alternative to assess the potential direct, indirect, and cumulative impacts from construction and post-construction on threatened and endangered species, field investigations should be performed to inspect the habitat between the corridor and receiving streams to locate actual threatened and endangered species relative to groundwater discharge points.

TDOT concluded that no caves, springs, or sinking streams exist along the corridor of the Preferred Alternative (FEIS 3-77). According to the Tennessee Cave Survey (Mony 2010, cited in “Summary Report”) caves exist along the Little River, and evidence suggests that the caves are “wet”, indicating that groundwater and stormwater are transported through them (see “Summary Report” for a summary of the caves along Little River). Caves and springs that exist beyond the proposed corridors are relevant to the proposed project even though they were not identified by TDOT in their investigations because:

- Their presence indicates a well-developed karst groundwater flow system that has been understated by TDOT’s investigations and conclusions.
- Their location along Little River and its main tributaries suggest that conduit groundwater flow recharge to Little River likely exists from upgradient sinkhole plains.
- Sinkhole and spring discharges along and within Little River and from tributary streams have the potential to impact the habitat of protected species.
- The current field investigations and their assessment of associated direct, indirect, and cumulative impacts are incomplete without more in-depth investigations.

Although TDOT did “survey” for the presence of Indiana bats (*Myotis sodalis*) within the corridor of the Preferred Alternative (FEIS 3-97; see also CAPPE’s comments in Section VI Threatened & Endangered Species, regarding inadequacies of TDOT’s survey to detect Indiana bats), they did not perform any investigations to determine where known populations of threatened or endangered species occur in Little River in relation to groundwater discharge points. As stressed above, dye traces should be completed to determine what sinkholes are hydraulically connected to the receiving streams and where the discharges occur relative to protected species habitat.

4.e. FEIS is inconsistent and contradictory in its definition and assessment of sinkholes

Sinkholes are introductory pathways to subsurface streams, caves, and bedrock groundwater flow pathways. TDOT identified several sinkhole locations within and surrounding the corridor of the Preferred Alternative from reviews of USGS topography maps, the findings of the 2009 Preliminary Geologic Report, and the field surveys (FEIS 3-77; Figure 3-15). However, because TDOT’s field surveys did not identify any “openings” (or any that they deemed karst topography) or sinkholes associated with watercourses within the corridor of the Preferred

Alternative, the FEIS reported “zero” sinkholes existing in the corridor of the Preferred Alternative (FEIS, Table 2-7). This finding is inconsistent with TDEC’s sinkhole definition: “The Tennessee Department of Environment and Conservation (TDEC) has noted that a sinkhole is considered to be the entire closed depression whether there is an open throat or not and not just the area near an open throat” (FEIS 3-79).

Furthermore, the FEIS acknowledges, “The sinkholes in the project area likely connect to the Little River; thus, impacted sinkholes could potentially impact the water supply intakes of the City of Maryville and the City of Alcoa along the Little River” (FEIS 7-79). These inconsistencies in the FEIS regarding sinkholes illustrate the deficiency of the reported studies concerning karst topography.

Missing entirely from the FEIS is any mention of a sinkhole on the Robert DeLozier farm, located well within the ROW of the Preferred Alternative. In years past, Robert DeLozier has seen large amounts of water gushing into the hole in the bottom of the sink and never back up. This natural structure could be an entrance to an underground water body in this area, but it was not mentioned in any section of the FEIS or accompanying reports. Based on flags found on the Robert DeLozier property, contractors for TDOT never looked at that area at all even though it lies well within the impact area of the Preferred Alternative.

V. Impacts on Water

5.a. The FEIS gave the wrong watershed location for the project and its impacts on water.

The FEIS incorrectly stated “The proposed project will affect streams and ponds within the Watts Bar Lake Watershed.” (FEIS 3-88) The project is located in the Little Tennessee River Watershed. This obvious error, and the other inadequacies outlined below, are indicative of the Final EIS’s failure to take a hard look at this project as required by NEPA.

5.b. The FEIS and Reevaluation of the DEIS are inconsistent regarding the impacts to streams.

The increased impact to streams as a result of the West Shift (i.e., the Preferred Alternative) is acknowledged in both the FEIS and the Re-evaluation. However, the estimate of length (linear feet) of streams impacted is inconsistent in the documents:

In the FEIS (Table S-1) & 2014 Reevaluation DEIS (Table 22, Table 24), the linear feet of stream impacts given for the Preferred Alt (with West shift) is given as 4,962 feet. However, in Table I-1 (Attachment I Ecology Resource Tables, Biological Assessment and Agency Coordination), the length is given as 5,637 feet.

5.c. The calculation for linear feet of streams that will be impacted by the Preferred Alternative should include "braided" stream channels that are currently in the wetland adjacent to Flag Branch (WTL-6; FEIS, Figure 3-18).

CAPPE's consultant (Sulkin 2013) conducted a field study of the impact of the West alignment shift (i.e., the Preferred Alternative) on streams and wetlands. The shift in alignment results in more impacts to streams, wetlands and floodplain, which the FEIS acknowledges. During Sulkin's field study, he noted beaver activity along Flag Branch which had resulted in a significant increase in the size of WTL-6 (FEIS, Figure 3-18). TDOT acknowledges the beaver activity associated with WTL-6 (e.g., FEIS, Figure 3-18). In addition to the main channel of Flag Branch, Sulkin also noted the braided, or secondary, channels flowing through the wetland (see photographs in Sulkin 2013) and stressed that calculation of linear feet of streams impacted should include these "braided" channels.

It is impossible to determine from the contents of the FEIS how the length of impacted streams was calculated. This problem is further exacerbated by the inconsistencies in the documents (e.g., FEIS & Reevaluation) regarding the estimate for linear feet of streams impacted (see 5.c above).

5.d. Questions stemming from TDOT's delineation of waterways during the 2008 field study remain unanswered.

CAPPE's consultant conducted field studies of the sites identified in the DEIS and Ecology report (Sulkin 2010, Sulkin 2013). He observed that TDOT's field study of waterways occurred in late September 2008, which is ordinarily a very dry time of year and in 2008 followed a drought. In the 2010 field verification of the Ecology Report, our consultant discovered that some of the water resources described as wet weather conveyances (WWC) were actually streams. As a result, we included these apparent discrepancies in CAPPE's comments on the DEIS. Although it appears that most of these discrepancies have been corrected (i.e., reclassified) by TDOT in the FEIS & accompanying reports, it is unclear whether the discrepancy associated with WWC-1 was clearly resolved (see details below).

In CAPPE's comments on the DEIS, we wrote (under "Alt A, WWC-1"), "recent development activities have severely damaged this stream [i.e., WWC-1], but this damage does not make it a WWC or remove it from regulatory jurisdiction and protection. During our consultant's field study there was flow in the absence of rainfall runoff, at least from under the development, thus fitting the state's definition of a stream. If this destruction was done without valid state and federal permits, then this is an illegal activity. In its present condition this would be considered a polluted or "impaired" stream with prohibition on additional sediment loads or impacts, at least until problems are corrected" (see Sulkin 2010 for his full description of WWC-1).

During their 2013 field surveys, TDOT discovered that some of the non-wetland waters determined in 2008 to be wet weather conveyances were actually more representative of a

wetland, intermittent stream, or a perennial stream. Based on these findings, TDOT appears to have made the appropriate reclassifications. However, we are still unclear and question how TDOT “reclassified” WWC-1.

The following is the description of WWC-1 in the Addendum to the 2009 Ecology Report (2013):

“**WWC-1** is a wet weather conveyance and tributary to the Little River. It is located approximately 0.3 miles northeast of the intersection of Old Knoxville Highway and Jackson Drive. Since the 2008 field surveys, a four-lane road with pedestrian paths has been constructed on the southwest side of the Preferred Alternative that appears to serve as an entrance for the Pellissippi Place Research and Development Park now under construction. In addition, a large retention pond (Pond-1A) has been constructed on the northeast side of the Preferred Alternative that also appears to be associated with the Pellissippi Place development. The construction of the four lane road and retention pond has impacted much of WWC-1 to the point that it has been eliminated on the southwest side and within the Preferred Alternative corridor. On the northeast side of the Preferred Alternative, remnants of the 2.0 feet wide by 1.0 foot deep conveyance were present; however, it was not a continuous definable feature as it was observed during the 2008 field surveys. Since the construction of the four lane road has eliminated the portion of WWC-1 that was within the Preferred Alternative corridor, WWC-1 would not be impacted by the Preferred Alternative. However, WWC-1 may be impacted by sediment run-off during the construction of the mixed use development project.”

Unfortunately, the damage to WWC-1, acknowledged in the FEIS as a tributary to the Little River, is an example of the secondary and cumulative impacts that can accompany new transportation projects, and these impacts need to be fully described and considered in the environmental review. As areas are opened up to development by new roads, often small, headwater streams and small wetlands are altered, damaged, or destroyed. Individually these impacts may seem minor, but cumulatively they cause great harm to downstream waters, the local environment, and humans in the area.

5.e. The FEIS did not adequately address the broader consequences of wetland disturbance and loss

According to the FEIS, approximately 8.72 wetland acres will likely be filled as a result of construction of build alternatives. (3-96, Table 3-31). The FEIS stated “The proposed project will use the compensatory mitigation option(s) that will achieve the required mitigation credits. The mitigation banking option will be given priority over the other available compensatory mitigation options.” (3-96)

This is a sizeable wetland for East Tennessee, and a significant portion of which will be lost or otherwise impacted by this project with the West-shift. Sulkin (2013, at 5) observes:

The West-shift will have increased direct and indirect impacts on water quality. It will cause an approximate doubling of the amount of wetlands and length of streams that

will be lost due to filling and other alterations in this section of road. The filling of wetlands will result in the loss of natural flood storage in the immediate area. Mitigation to replace the lost wetlands will likely be required, but such replacement is often at another location, such as a mitigation bank away from the impact site, thus not serving the same benefit to the adjacent areas. To place the road in this West-shift location, more lengths of stream channel will have to be covered, re-routed and/or placed in pipes and culverts. These new channels will obviously be unnatural and likely less beneficial for uses such as recreation, fish and aquatic life, livestock watering and wildlife.

Sulkin (2013, at 6) also states later in his review:

While direct and indirect water quality impacts would be expected from any such road project, the change of location with the West-shift will increase these impacts by moving the construction and road into significantly more acres of wetlands and length of streams.

Sulkin (2013, at 7) concludes:

While such off-site mitigation may create more and better wetlands and streams in general across the state, it may not benefit the water quality at or near the project. Therefore, especially with the West-shift, if off-site mitigation is allowed, there will be further water-related adverse impacts in the immediate area of the community and the waterways of which the altered wetlands and streams are a part.” The FEIS does not adequately address these further adverse impacts to waterways in the immediate area and the waterways of which the altered wetlands are a part.

The sizable difference in impacts to streams and wetlands from the West-shift versus the East-shift was also noted by numerous government entities. In fact, Tennessee Wildlife Resources Agency (TWRA; letter dated 6 June 2013; Attachment C of FEIS), U.S. Fish & Wildlife Service (USFWS; letter dated 10 June 2013; Attachment C of FEIS) and the City of Maryville (letter 10 June 2013; Attachment C of FEIS) all stated their support for the East-shift either because of decreased impacts to streams and wetlands (i.e. TWRA & USFWS) or decreased impacts to people living in the path of the project (i.e., West-shift). Despite these recommendations from engaged government entities, TDOT still chose the West-shift and ignored the route that would have the least impact on water resources.

5.f. The FEIS failed to adequately address the potential hazards to aquatic ecosystems that could result from groundwater contamination & siltation.

The following justification for the criticisms from our geology consultant regarding the DEIS also applies to the FEIS, given the lack of adequate studies, or absence thereof, since the DEIS:

“The report [*i.e.*, *the DEIS*] did not thoroughly discuss the possible connection of surface water drainage into the bedrock drainage system, did not identify any springs outside the corridor that would be groundwater discharge points from sinkholes to surface waters (e.g. Little River), and did not discuss the impact of surface water flow introduced into the bedrock drainage system on threatened and endangered species that are known to exist in the Little River and Pistol Creek. Drainage into sinkholes would be expected to discharge into receiving streams and the direct, indirect, and cumulative impacts of that discharge have not yet been defined.” (Global Environmental 2010)

In the FEIS, TDOT stated, “the primary impact that the proposed project could have on the listed protected aquatic species is the potential to increase silt and sediment within the crossed stream channels. This introduction of silt and sediment to the Little River tributaries could migrate to the main channel of the Little River where there are known occurrences of the listed protected aquatic species” (FEIS 3-98). The FEIS explains that “stringent BMPs, including erosion and siltation control measures, will be implemented during construction” to overcome this threat (FEIS 3-101). However, as pointed out by our geology consultant (Global Environmental 2010) and by Patrick Rakes, Director of Conservation Fisheries, Inc., (Rakes 2015), roadway construction projects have a history of introducing silt and sediment into receiving streams. According to “The Status of Water Quality in Tennessee” (TDEC 2008), silt is one of the most frequently cited pollutants in Tennessee impacting over 5,500 miles of rivers and streams of which over 1,000 miles are impaired due to highway construction and site clearance. This fact is especially relevant to the proposed project because of the occurrence of threatened and endangered species in Little River and Pistol Creek, which are expected to be groundwater discharge pathways for sinkholes located along and adjacent to the proposed corridors. Siltation is one of the primary causes of water pollution in Tennessee and can affect the biological, chemical, and physical properties of water in numerous ways (TDEC 2008).

The FEIS provides examples of procedures to protect water quality:

“Periodic inspection is also required to ensure that the plan is implemented and effective. If inspection shows that the installed erosion and sediment controls are failing or inadequate, they will be immediately repaired or upgraded.” (3-91)

“TDOT will also implement its *Standard Specifications for Road and Bridge Construction*, which includes erosion and sediment control standards for use during construction.” (3-91)

Given the history of failure of BMPs to protect aquatic ecosystems and aquatic species in the past, the usual procedures are insufficient to avoid or minimize impacts of this project.

As Rakes states, “Measures to Minimize Harm”, while greatly improved over past road construction projects, are grossly insufficient to honor the level of prevention warranted by the imperilment of the aquatic species that might be impacted downstream during construction activities. In particular, and given how much more frequent extreme weather events have been in recent years, we consider the “Typical” two-year storm event design for all BMP’s grossly

negligent and recommend replacement with at least a 25-year plan. Preventable “Acts of God” events should not be excusable. Weekly stormwater and BMP inspections and subsequent maintenance are a laudable baseline schedule, but should always be augmented before forecast storm events and immediately afterwards to ascertain function and to reduce failures.” (Rakes 2015)

VI. Threatened & Endangered Species

NEPA recognizes the unique importance of threatened and endangered species and consequent significance of thorough and adequate analysis and consideration of these species. 40 C.F.R. §§ 1502.25, 1508.27(9). The following sections outline the multiple ways in which the Final EIS failed to take a hard look at threatened and endangered species.

6.a. TDOT did not adequately survey for the presence of Indiana bats (*Myotis sodalis*) or long-eared bats (*Myotis septentrionalis*) within the corridor of the Preferred Alternative.

TDOT acknowledged that suitable habitat exists within the corridor of the Preferred Alternative for both the Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*Myotis septentrionalis*). (FEIS 3-98) Populations of both bats are known to exist in close proximity to the corridor of the Preferred Alternative, but it is unknown whether either bat inhabits or utilizes the immediate project area. Due to a minimal effort using antiquated methods to survey for Indiana bats in 2012 (CEC 2012), it remains unclear whether Indiana or northern long-eared bats actually occur within the corridor of the Preferred Alternative.

After reviewing the *2012 Indiana Bat Mist Net and Acoustical Survey Report* (CEC 2012), Riley Bernard, Ph.D., has concluded “although they did follow the USFWS survey guidelines based on the April 2007 draft recovery plan, there are several issues that must be addressed before this project can continue.” (Bernard Report). This statement is particularly true in light of:

- increased threats to local populations of Indiana bats from white-nose syndrome (WNS);
- the listing of the Indiana bat as an endangered species under the Endangered Species Act;
- listing of the northern long-eared bat as threatened under the Endangered Species Act after the 2012 survey was performed;
- inadequate survey conducted by TDOT consultants in 2012 using antiquated protocols that lack the thoroughness and improvements of the current minimum guidelines (see USFWS 2015);
- survey did not include habitat qualifications for suitable summer habitat of northern long-eared bats;
- lack of reanalysis of the acoustic data in light of most recent versions of the zero-crossing analysis software currently suggested by the USFWS (USFWS 2015b);

- length of time that has passed since the survey was conducted, especially in light of the new survey guidelines which only allow surveys to be valid for 2 years unless approved otherwise by the USFWS;
- the inadequacy of a single, 3-day survey that ignored the possibility that Indiana bats may be using areas in and around the corridor of the Preferred Alternative between May 15 to August 15 as they migrate to and from summer maternity sites throughout the region.

These comments incorporate material from Riley Bernard, Ph.D., (Bernard Report, attached) and Joy O’Keefe, Ph.D. (O’Keefe Letter, attached) Drs. Bernard and O’Keefe highlighted the following inadequacies in the FEIS and its analyses concerning bats:

(1) Since the 2012 survey, there have been a series of updates to the USFWS guidance plan, and two documents have been released that demonstrate the need for an increase in the sampling effort conducted for presence or probable absence surveys for the Indiana bat (Niver *et al.* 2014, USFWS 2015). In January 2014 study by Niver *et al.* found that the standard level of effort suggested in the 2007 survey guidance was not sufficient in determining accurate presence/probably absence of Indiana Bats.

(2) Between 2007 and 2011, white-nose syndrome (WNS), a novel fungal disease affecting bats, resulted in the decline in winter populations of Indiana bats by over 70% in the USFWS Northeast Recovery Unit (NERU). By 2013, the Indiana bat counts at winter hibernacula in the USFWS Appalachian Mountain Recovery Unit (AMRU) declined by nearly 46%. The most significant declines in Indiana bats in Tennessee (located within the AMRU) were recorded in Kelly Ridge cave and White Oak Blowhole cave (Carr *et al.* 2014). Both caves are located in the Great Smoky Mountains National Park and within 9 miles of the Pellissippi Parkway Extension, with White Oak Blowhole considered the largest Indiana hibernation site in the state (Harvey 2002). These declines have also been documented in the summer activity of all cave hibernating species in the region including Indiana and northern long-eared bats (*Myotis septentrionalis*; Bernard, unpublished data). With WNS-induced population declines, there is strong evidence that the 2007 Indiana bat survey guidelines needed to be revised to reduce the likelihood of false negatives in project surveys.

(3) The northern long-eared bat now is listed as a threatened species. Suitable habitat for the northern long-eared bats consists of a wide variety of habitats similar to the Indiana bat, however, this includes forests and wooded areas containing potential roosts with live trees and/or snags >3-inches diameter at breast height (as opposed to >5-inches diameter at breast height for Indiana bats; pg 10 [USFWS 2015]). According to the 2015 guidance, ‘the phase-approach, which includes coordination with the USFWS, habitat assessments, and acoustic, mist-net, radio-tracking, and emergence surveys, supersedes all prior summer survey guidance (including the 2007 and 2014 Indiana bat mist-netting guidelines). The 2012 survey was based on the 2007 survey guidance for the Indiana bat and did not include the habitat qualifications for suitable summer habitat for the northern long-eared bat. Although the habitat along the proposed Pellissippi Parkway extension may not have changed since the original survey date,

there are additional habitats that should be surveyed to accurately determine the absence of both the Indiana and northern long-eared bats.

In light of the recent updates to the Indiana bat surveillance guidelines and the listing of the northern long-eared bat, to comply with NEPA, TDOT must conduct a new survey for the presence/probable absence of Indiana and northern long-eared bats. At minimum, previously recorded acoustic data should be reanalyzed with the most recent versions of the zero-crossing analysis software suggested by the USFWS (BCID v2.7b, EchoClass v3.1, and Kaleidoscope Pro v3.0.0, USFWS 2015b). As it stands, the acoustic data CEC [i.e., TDOT] are basing their conclusion of 'probable absence' on were analyzed using out of date software, which has a high probability of providing false negative results. TDOT also should resurvey the area at the beginning and end of the summer season (May 15 to August 15), as bats may be using the proposed project area as they migrate to and from summer maternity sites throughout the region.

In light of these deficiencies, TDOT has not taken a "hard look" at the PPE's likely impacts on threatened and endangered bats, and TDOT's conclusion that the PPE is not likely to adversely affect the Indiana bat or northern long-eared bat is arbitrary and capricious.

6.b. The FEIS failed to adequately address the direct, indirect, and cumulative impacts of the Preferred Alternative on aquatic species found in Little River that are rare, threatened, or endangered (RTE).

As documented in the 2013 *Ecology Report Addendum* (PB 2013), no individual aquatic RTE species or suitable habitat for aquatic RTE species was found within the limits of the Preferred Alternative (FEIS 3-98). However, TDOT acknowledges that populations of these RTE species are known to occur in Little River only 1-2 miles downstream from where the PPE will cross several tributaries. TDOT's determination that this project is not likely to adversely affect the listed aquatic species downstream in Little River is arbitrary and capricious because it disregarded the role of karst topography and potential impact to receiving streams.

In CAPPE's comments regarding the DEIS, we echoed our geology consultant's conclusion that, "unless field studies are performed to understand known sinkhole drainage, its connection to receiving streams, and its impact on threatened and endangered species, the design cannot avoid or minimize the impact" (Global Environmental 2010). Additionally, these additional investigations should be performed prior to the selecting of a preferred alternative route for public comment and review because all direct, indirect, and cumulative impacts could not be defined by the studies in the DEIS (Global Environmental 2010). Unfortunately, TDOT did not perform a single investigation to determine where known populations of RTE species occur in Little River in relation to groundwater discharge points. At minimum, TDOT should have performed "dye traces" to determine what sinkholes are hydraulically connected to the receiving streams and where the discharges occur relative to protected species habitat (Global Environmental 2010). Without this knowledge, the potential adverse effects on the RTE species in Little River cannot possibly be understood, analyzed, or disclosed as required under NEPA.

In the FEIS, TDOT stated, “the primary impact that the proposed project could have on the listed protected aquatic species is the potential to increase silt and sediment within the crossed stream channels. This introduction of silt and sediment to the Little River tributaries could migrate to the main channel of the Little River where there are known occurrences of the listed protected aquatic species” (FEIS 3-98). TDOT explained that “stringent BMPs, including erosion and siltation control measures, will be implemented during construction” to overcome this threat (FEIS 3-101). However, roadway construction projects have a history of introducing silt and sediment into receiving streams. According to “The Status of Water Quality in Tennessee” (TDEC 2008), silt is one of the most frequently cited pollutants in Tennessee impacting over 5,500 miles of rivers and streams of which over 1,000 miles are impaired due to highway construction and site clearance. This is especially relevant to the proposed project because of the occurrence of threatened and endangered species in Little River and Pistol Creek, which are expected to be groundwater discharge pathways for sinkholes located along and adjacent to the proposed corridors.

According to aquatic ecologist Patrick Rakes, “the ‘Measures to Minimize Harm’, while greatly improved over past road construction projects, are grossly insufficient to honor the level of prevention warranted by the imperilment of the aquatic species that might be impacted downstream during construction activities. In particular, and given how much more frequent extreme weather events have been in recent years, we consider the ‘Typical’ two-year storm event design for all BMP’s grossly negligent and recommend replacement with at least a 25-year plan. (Rakes)

The Little River is one of the most diverse rivers in Tennessee and home to more than 90 native species of fish. As a product of this diversity, Little River supports a number of federal and state threatened and endangered species, and as such, is designated by TDEC as an Exceptional Tennessee Water (FEIS 3-94). Whether it is the construction of the PPE or future updates to existing roads, TDOT owes it to the citizens of Blount County and of Tennessee fully to protect the ecological integrity and water quality of Little River.

6.c. TDOT’s “not likely to adversely affect” conclusion is not supported by the 2013 Biological Assessment (TDOT 2013) or TDOT’s long history of failures to control sediment runoff.

TDOT’s conclusion that the proposed project is not likely to adversely affect the snail darter (*Percina tanasi*), marbled darter (*Etheostoma marmorinum*), fine-rayed pigtoe (*Fusconaia cuneolus*), ashy darter (*Etheostoma cinereum*), or longhead darter (*Percina macrocephala*) is arbitrary and capricious because, although the listed species noted are not found in the project right of way or tributaries crossed, they are found short distances downstream from every one of them in the Little River, which is where sediment that is allowed to leave the project has the potential to adversely affect the aquatic species present in these streams.

Road construction projects have a long history of too little effort and too little money and too little vigilance expended to prevent sediment runoff even where far less biologically valuable and imperiled resources have occurred. TDOT should recognize that the no build alternative still seems best for the continued existence of the rare organisms in the Little River.

6.d. The FEIS failed to acknowledge the updated status of the Sickie Darter (*Percina williamsi*; formerly the Longhead Darter, *Percina macrocephala*) which is currently petitioned for federal listing, and neglected to consider other rare species that should be considered important assessment indicators of the Exceptional Tennessee Water status of the Little River.

TDOT further failed to take a hard look in its failure to acknowledge the updated taxonomic status of the sickie darter and unwillingness to consider the other “assessment” species. Specifically, TDOT ignored equally important “assessment” indicators of the Exceptional Tennessee Water status of the Little River, including the Blotchside Logperch, *Percina burtoni*, the Tangerine Darter, *P. aurantiaca*, and the Eastern Hellbender, *Cryptobranchus alleganiensis*. The more recent Biological Assessment and references to it throughout the FEIS now appropriately recognize the Marbled Darter, *Etheostoma marmorinum*, but still fail to acknowledge the updated taxonomic status of the Sickie Darter, *P. williamsi*, formerly the Longhead Darter, *Percina macrocephala*. These changes in taxonomic status result in far greater imperilment due to decreased range and narrower endemism and make the Sickie Darter a species currently petitioned for federal listing (Federal Register, 2011, 76 FR 59835).

VII. Impacts on Air and Health

7. The FEIS, like the 2010 DEIS, is inadequate in its dismissal of likely impacts of the PPE on air quality.

During the TESA Concurrence Process for the 2010 DEIS, the EPA made a number of observations on December 18, 2009 disagreeing with TDOT's assumptions and data, including modeling, relative to VMT trends, Traffic Level of Service (LOS), local Smart Growth Strategies, prime farmland impacts, noise abatement and most importantly, TDOT's analyses and modeling for MSATs and the potential indirect and cumulative impacts to air quality in the region including the GSMNP.

In particular, EPA observed that the data relied upon by TDOT to draw its conclusion that air quality will not be impacted significantly appeared to be lacking. For example, the DEIS said the PPE will not have a negative impact on air quality because EPA's national control programs will reduce emissions, even though the PPE is predicted to increase regional vehicle miles traveled (FEIS Table 3-21).

7.a. The FEIS relies on speculation about the future regarding reductions in emissions

In the FEIS, we find the same assumption that national control programs will reduce emissions, but many people continue to drive older vehicles, and Blount County, Tennessee does not require motor vehicle emissions testing for vehicle registration. As noted in the FEIS, localized increases in MSAT concentrations are likely before any reductions occur:

“The localized increases in MSAT concentrations would likely be most pronounced along the new roadway sections that would be built near or adjacent to area subdivisions, such as Jackson Hills, Sweetgrass Plantation, and Kensington Place. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA’s vehicle and fuel regulations.” (FEIS 3-66, emphasis added)

Moreover the FEIS acknowledges that two new signalized intersections (Pellissippi Parkway (SR 162/I-140) and Old Knoxville Highway (SR 33) and Old Knoxville Highway (SR 33) and Sam Houston School Road) are likely to have an impact on air quality because “both of these intersections are predicted to operate at LOS D or worse in the design year during both the morning and afternoon peak hours, under the Preferred Alternative as well as the other alternatives considered.” (FEIS 3-65) Additional signalized intersections have been installed since the CO hot spot analysis was conducted, contributing to the cumulative impact on air quality of traffic operations across the study area.

Relocated Alcoa Highway and improvements to US 129 fit the definition of “foreseeable future actions” and are factored into the traffic analysis of the PPE. The cumulative impact of all of these road projects on air quality should be thoroughly evaluated.

7.b. The FEIS fails to address health risks of proximity to high volume traffic

EPA expressed concern about the health impacts of the project: “The DEIS has appropriately identified several locations of sensitive populations. It would be helpful to estimate the concentrations of MSATs at these locations to estimate the locations where higher concentrations of MSATs resulting from construction and operation of the different alternatives are likely to occur, and to identify these locations, concentrations, and potential health effects in the FEIS. Many reports published in peer-reviewed journals have linked proximity to high volume traffic with health effects. This literature should also be discussed in the FEIS.” (FEIS C-1-18)

More than a decade of research of smaller particles from auto emissions demonstrates health impacts of living in proximity to highways:

“There is growing evidence of a distinct set of freshly-emitted air pollutants downwind from major highways, motorways, and freeways that include elevated levels of ultrafine particulates (UFP), black carbon (BC), oxides of nitrogen (NO_x), and carbon monoxide (CO). People living or otherwise spending substantial time within about 200 m of highways are exposed to these pollutants more so than persons living at a greater distance, even compared to living on busy urban streets. Evidence of the health hazards of these pollutants arises from studies that assess

proximity to highways, actual exposure to the pollutants, or both. Taken as a whole, the health studies show elevated risk for development of asthma and reduced lung function in children who live near major highways. Studies of particulate matter (PM) that show associations with cardiac and pulmonary mortality also appear to indicate increasing risk as smaller geographic areas are studied, suggesting localized sources that likely include major highways.”¹³

“The American Lung Association's "State of the Air" report for 2013 concluded that living or working 0.2 to 0.3 miles from a highway or road is more dangerous than people have been lead to believe.”¹⁴

“Unlike fine particulates (PM2.5), which don't change much from day to day, ultrafines can fluctuate dramatically over the course of a morning or afternoon, depending on the weather and how many cars and trucks are on the road.”¹⁵

The health impacts of the PPE on residents of adjacent subdivisions and mobile home parks living in proximity to highways should be of concern to community leaders and planners, to local health department and health care providers and institutions, and to the State of Tennessee. Lower income people are most likely to live near highways and are least likely to have the financial means to relocate.¹⁶

VIII. Visual Impacts

8.a. The FEIS presents a “visual impact assessment” but provides no evidence of consulting with ‘associated viewers’ and fails to acknowledge the scope and impact of the project on the visual environment and on the physical and mental health of residents.

There is description but no data provided to support the ‘evaluation’ and conclusions of the FEIS visual impact assessment, which is supposed to assess “the change in the visual resources that would be introduced by the project and the associated viewer responses.” (3-59, emphasis added) There is no evidence presented to show that any associated viewers were consulted. This omission explains the astonishing insensitivity expressed in this section’s flawed description of the visual impact on residents living in proximity to the highway, including residents whose home places are farms in active production or are adjacent to agricultural land:

“The construction of the proposed alternative will result in a visual split of the project area, which in turn may result in a loss of visual connectivity for residents within the study area. The lack of existing vegetation to buffer views of the new roadway may also

¹³ “Near-highway pollutants in motor vehicle exhaust: A review of epidemiologic evidence of cardiac and pulmonary health risks.” Doug Brugge, John L Durant and Christine Rioux’ *Environmental Health* 2007.

¹⁴ “Living near highways may be hazardous to your health.” Karen Graham. Nov 6, 2013 <http://www.digitaljournal.com/article/361634>

¹⁵ “Big Road Blues.” David Levin Aug 16 2012 <http://now.tufts.edu/articles/big-road-blues-pollution-highways>,

¹⁶ Brugge, Durant and Rioux, *Environmental Health* 2007.

further increase the amount of visual impact the new roadway will have on residents within the study area.” (3-62, emphasis added)

The “new interchange with US 411/Sevierville Road [that] will be approximately 20 feet high” most certainly will “result in a loss of visual connectivity for residents within the study area.” (3-62) Six lanes¹⁷ of interstate highway with barrier fencing carrying automobiles and trucks at 60+ mph, dividing agricultural land currently in production, most certainly will “result in a loss of visual connectivity for residents within the study area.” To question these impacts, or to assert that “the viewshed for adjacent residents whose views are important to them will be altered somewhat” (3-62, emphasis added) is simply ignorant of the documented evidence of the role of landscape in human health and well-being and in the lives, experiences, and values of people who are active stewards of the land.

Although the visual impact of the project on residents of agricultural areas is indefensibly undervalued in this assessment, in contrast the visual impact of the project on residents of Kensington Place is appropriately acknowledged:

“The presence of the wall will be a major change in view, from the open view of agricultural lands to that of a wall up to 1,300 feet in length and 15 feet in height.” (3-62, emphasis added)

Over the past decade numerous evidence-based studies¹⁸ have documented the significance of landscape for human physical and mental health, wellness and productivity. Policy recommendations call for embedding the role of landscape in delivering public health and wellbeing benefits at all levels of government and at all spatial scales. The FEIS fails to address the impact of the altered visual landscape on the physical and mental health of area residents.

8.b. The FEIS failed to address the contradiction between the proposed project and the values expressed in the Blount County Green Infrastructure Plan (July 2009).

The FEIS references several regional plans to rationalize the project, but the FEIS failed to reference the Blount County Green Infrastructure Policy Plan (2009).

“The purpose of this Green Infrastructure Plan is to extend previous work, in particular to: focus on the reasons for pursuing green infrastructure by addressing why it is important and what benefits accrue; identify avenues of implementation; identify priority geographical areas for green infrastructure to guide future activities; and identify and prioritize actions and resources necessary to address green infrastructure.” (Blount County Green Infrastructure Policy Plan, 2)

According to the Blount County Green Infrastructure Plan (July 23, 2009):

¹⁷ “During the design phase of the project, TDOT would consider the use of an auxiliary lane in each direction to assist traffic exiting and entering the proposed roadway.” (FEIS 2-6)

¹⁸ “Public Health and Landscape: Creating healthy places.” Landscape Institute, November 2013; “Green environments essential for human health, research shows”, University of Illinois College of Agricultural, Consumer and Environmental Sciences, April 26, 2011, <http://www.sciencedaily.com/releases/2011/04/110419151438.htm>

“Green infrastructure includes but is not limited to farmlands, forestlands, rivers, streams, wetlands, mountains, parks, greenways, recreation facilities, and the natural and constructed areas of green and open space that enhance and preserve rural character, provide recreation opportunities, conserve and protect the natural environment, and enhance the livability of the county.” (4)

Unlike the Visual Impact Assessment presented in the FEIS, the Blount County Green Infrastructure Plan was developed with the participation of many residents of Blount County.

The acknowledged impacts of the proposed project conflict with the following priorities of the Blount County Green Infrastructure Plan:

“Approximately 25 percent of land area is in the Great Smoky Mountains National Park and is protected, but much of the remainder is subject to varying degrees of growth pressure. This green space is valued by the citizens of the county, and by those visiting the county as tourists. The value of green space indicates a need to address its long term integrity in the face of continued growth.” (9)

“Farmland should be preserved both for open space and to conserve prime agricultural production areas.” (9)

“Food Production. Productive farmlands are an important part of green infrastructure, and provide products for consumption and sale. Farmlands are also an important part of the rural character of the county valued by citizens.” (12)

These unacknowledged conflicts and other failures render the FEIS inadequate in its analysis and disclosure of visual impacts.

IX. Impacts on Farmland

9.a. The FEIS relied on flawed assumptions about local zoning and planning practices.

As in other sections of the FEIS, the analysis of impact of the PPE on farmland relied on flawed assumptions about the zoning policies and planning practices of local authorities. TDOT references the guiding policies for the 2008 Blount County *Growth Policies Plan*, which include “to preserve the area’s rural character.” The PPE is inconsistent with this policy as it takes active farmland out of production and, as the FEIS shows, produces marginal and short-lived benefit.

The FEIS fails to address the contradiction between the proposed project and the priorities in the Blount County Green Infrastructure Plan (July 23, 2009), which include the following:

“Farmland should be preserved both for open space and to conserve prime agricultural production areas.” (9)

“Food Production. Productive farmlands are an important part of green infrastructure, and provide products for consumption and sale. Farmlands are also an important part of the rural character of the county valued by citizens.” (12)

TDOT commits “to work with farm owners to reduce the impact on farmlands as much as possible based on available design solutions. TDOT will endeavor to minimize the amount of division of farms and ensure that remnants are viable.” (FEIS 3-51)

To mitigate the inevitable destruction of building an interstate highway through an agricultural area, the FEIS asserts that “Zoning and land use controls enacted by Blount County can assist in minimizing future effects.” FEIS 3-52 This wishful speculation is contradicted later in the FEIS, which acknowledges that “Blount County has not made progress toward the implementation of a smart growth plan.” FEIS 3-113. Past practice shows that “local growth policies” are unlikely to minimize influence of the highway on the cumulative loss of farmland in the area.

9.b. The FEIS continues to fail to recognize farms as businesses and fails to assess displaced farmland as displaced businesses.

We noted in our comments on the 2010 DEIS that concern continues to grow about the sources of our food and food security. These trends in local food production and concerns about food security have accelerated since 2010, as evident in multiple thriving farmers’ markets in Blount County and the work of the Food Policy Council in Knoxville. (<http://knoxfood.org/>)

In 2012 Governor Haslam called for strengthening Tennessee’s agriculture sector: On December 3, 2012, the Governor addressed the Tennessee Farm Bureau Convention and challenged the Farm Bureau, the Tennessee Department of Agriculture, and the UT Institute of Agriculture to develop a program to double the cash receipts from agriculture and forestry in 10 years.¹⁹ We should be taking measures to sustain agriculture, not eliminate it.

The FEIS continues the failure of the 2010 DEIS to recognize that farming operations are businesses and as such should be included in the assessment of business displacements due to the project.

9.c. The FEIS’s discussion of project impacts on farmland does not include input from farmers.

The FEIS justifies the west-shift in alignment in part because the east shift would affect two operating farms. However, the Preferred Alternative also affects operating farms.

¹⁹ <http://video.tnfarmbureau.org/tfbf-convention/gov.-bill-haslam-challenge-to-grow-ag-industry/2235756814001>

EPA recommended TDOT “identify mitigation measures to lessen impacts to the farming community and conduct an aggressive outreach effort to the farming community to solicit their input.” (FEIS C-1-8). EPA further requested that TDOT “outreach to farmers and the NCRS to determine the least impacting alternative to farmlands. EPA also requests that farmer and NRCA input should be solicited and more thoroughly discussed in the Final EIS.” (FEIS C-1-14)

There is nothing in the FEIS that suggests TDOT has done any outreach to the local farming community, and there is no discussion of farmer input in the FEIS.

X. Noise

10.a. The FEIS’s deference to local regulation and local developers to avoid or limit noise-sensitive development near the project is unrealistic.

The FEIS updates noise studies to account for TDOT’s new noise standards. The new standards and the alignment shift led to a commitment to provide a noise barrier at Kensington Park, pending preference of property owner and residents (the procedure for making this decision is not clear. (FEIS S-5, S-12)

Beyond the significant noise impact at Kensington, the FEIS notes noise increases all along the highway and suggests local regulators and developers avoid development that would be impacted by noise from highway:

“Tracts of undeveloped land are adjacent to the alignment of the Preferred Alternative. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers of these lands, to practice noise compatibility planning in order to avoid future noise impacts. The following language is included in TDOT’s *Noise Policy*:

Highway traffic noise should be reduced through a program of shared responsibility. Local governments should use their power to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway or that the developments are planned, designed and constructed in such a way that noise impacts are minimized.” (FEIS 3-75)

This is an unrealistic recommendation, as the FEIS (and TPO staff) readily acknowledge that Blount County’s development process does not generally consider smart growth principles and local realtors have no policy requiring that they inform clients that homes being shown are located near the proposed route of the PPE.

10.b. The FEIS gives insufficient attention to noise abatement other than one physical barrier

The FEIS improves on the DEIS by acknowledging the significant noise impact of the project on residents living near the project route. However the only noise abatement method discussed is a physical barrier at one location, the Kensington Place mobile home park. (FEIS S-5)

As EPA commented, “23 CFR 722.13 discusses more than just noise barriers as noise abatement measures that should be considered in the noise abatement analysis. As cited in 722.11 (d), “When noise abatement measures are being considered, every reasonable effort shall be made to obtain substantial noise reductions.”” (FEIS C-1-14) EPA continues, citing 722.13(d): “noise abatement measures other than those listed in 722.13(c) of this chapter may be proposed for Types I and II projects by the highway agency.” (FEIS C-1-14)

XI. Economic and Fiscal Impacts

The most significant changes in economic and fiscal impacts from the 2010 EEIS come from dramatically reduced projections for growth in population, employment and traffic. Even with these updates and associated reductions in projected economic benefits, the FEIS failed to take a hard look because it relied on unsupported assertions and incomplete analysis regarding the economic impacts of the PPE.

11.a. FEIS asserted positive economic impact from taxpayer funds spent to construct the project but there are no requirements that funds be spent locally.

The FEIS focuses on the “one time demand for construction labor and materials needed to implement the proposed improvements.” (FEIS 3-39) “Creation of jobs related to the construction of the proposed project” is elsewhere identified as among the primary benefits of the Build Alternative. (FEIS, S-7)

One-time job creation is not a defensible rationale for transportation projects. Moreover, there is no requirement that contracts for construction of the project be awarded to a local company, or that the successful bidders hire local workers, or that they purchase materials from local suppliers. Without such requirements, there is no assurance that one-time spending of \$165 million for this project will generate “substantial benefit” for any local residents or businesses.

Beyond the one-time construction jobs, the FEIS projects a very small number (41-79) of jobs (Table 3-35, 3-111) from induced development, with no way to determine the type, compensation, or duration of those jobs nor whether local people would be hired.

11.b. Blount County already has an enviable record of recruitment of new business investment and job growth without the Pellissippi Parkway Extension.

The FEIS contains an unattributed statement that “Local officials see the extension of Pellissippi Parkway as an important component in the financial viability of Pellissippi Place.” (S-10, 1-29) The FEIS provides no citation, no evidence, no analysis, no data, nor any explanation to support this statement. Further, the FEIS offers no explanation of the relationship between the PPE and Pellissippi Place. The website for marketing of Pellissippi Place contains no reference to Pellissippi Parkway Extension (<http://www.pellissippiplace.com/>). Contrary to the FEIS, the Pellissippi Place website accurately asserts that Pellissippi Place has “4-lane access”... “with

interstate highway 140 at its doorstep” and is “supported by an excellent transportation network that includes I-140 and S.R. 33.”

Blount County has, by any measure, been extremely successful in recruiting new economic investments, new businesses and new jobs in recent years. Major roadway improvements will accompany or have already accompanied these new enterprises. The following are four examples of the new investments and employers choosing to locate in Blount County without the Pellissippi Parkway Extension:

- Advanced Munitions International will build its global headquarters and a state-of-the-art munitions manufacturing facility in Alcoa’s Partnership Park, investing \$553 million in a new campus for its manufacturing, distribution and R&D operations and creating 605 new jobs.
- Denso will expand its automotive components and systems manufacturing plant in Maryville making it one of the largest operating campuses in DENSO Corporation’s worldwide operations. The company will create 500 new jobs and invest \$400 million to expand its manufacturing capabilities and construct a new warehouse.
- Duluth, Minn.-based Cirrus Aircraft will build a \$15 million “Vision Center” in the Knoxville Airport’s West Aviation area, creating 170 jobs.
- ALCOA, Inc. in September 2015 started up its facility at Tennessee Operations that will produce aluminum sheet for auto manufacturers and has brought in 125 new jobs, with 75 more jobs when full production ramps up.

11.c. The 2015 FEIS continues the failure of the 2010 DEIS to recognize that farming operations are businesses, to assess the economic impact of the project on those businesses, or to include farming businesses in assessments of displacement of existing businesses.

The Economic and Fiscal Impact Analysis does not assess the impact of the project on the agricultural sector in Blount County. The project will take active farmland out of production, with a distinct economic impact on the affected farming business owners and additional impact on the services supported by agricultural activity.

Farms are not included in the Table 3-14, Displacement of Existing Businesses. Agricultural operations should be included in the assessment of business displacements caused by the project. (FEIS 3-40 and 3-41)

The FEIS fails to document the impact on the local economy of taking farmland out of production and the secondary impact on the agriculture economy of construction of a limited access highway through an active agricultural area.

11.d. The FEIS projects positive economic impact on the Knoxville airport but fails to note this would generate increased traffic on unimproved US411N, adding to already unsafe driving conditions.

The FEIS asserted that :

“The Preferred Alternative may have a positive effect on airport services for the region in that a new or improved roadway would provide another travel path to and from the airport for persons in the eastern portion of Blount County and Sevier County.” (FEIS 3-17)

The FEIS failed to disclose that the twelve miles of unimproved US411 from Sevier County to the new interchange will experience even more traffic as travelers from eastern Blount County and Sevier County will have to use US411N to reach the new interchange on Sevierville Road.

11.e. The FEIS’s projected travel time savings, used as a factor in projecting induced growth from the project, is based on assumptions, not data, and is therefore entirely speculative and unreliable.

The FEIS analysis of travel time savings relied on undocumented “current traveler behavior” and an unproven assumption regarding the “alternate route” travelers would use in the absence of the project, resulting in unreliable “time savings” with the project and therefore an unreliable conclusion regarding induced growth.

In the Appendix D to the FEIS we find:

“A second measure of accessibility is travel times saving. To facilitate comparison between the Build and No-Build scenarios, it was assumed that in the absence of the Parkway extension, travelers would look for the next best alternatives on the adjacent arterial roads. Based upon current traveler behavior this route (shown in Figure 3) was approximated to be the section of East Lamar Alexander Parkway west of the proposed terminus of the I-140 extension up around S. Washington St. and through Route 33 to the current terminus of I-140 on Route 33 (and in the reverse direction for traffic going south from the current terminus of the Parkway extension).” (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis 2015, p 12, emphasis added.)

The FEIS provides no data to support the assertion of “current traveler behavior.” Further, the “next best alternative” described in the FEIS and used to calculate travel time savings was “assumed based upon discussions with a Senior Transportation Engineer at the Knoxville Regional TPO.” (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis 2015, p 12, Footnote 6)

Therefore, the “travel time savings” reported in the FEIS is entirely speculative and is an unreliable factor in the economic analysis.

11.f. Different models were used for analysis of Economic and Fiscal Impacts in the DEIS and the FEIS, rendering comparison between the DEIS and the FEIS needlessly complex for members of the public, and the explanation given in the FEIS for the change in methods is not sustainable.

The 2009 Economic and Fiscal Impacts analysis reported in the 2010 DEIS used the Regional Input-output Modeling System II (RIMS II). The Economic and Fiscal Impacts analysis reported in the 2015 FEIS used a different model (IMPLAN). The explanation for using a different model appears in Appendix D of the FEIS:

“In 2014, the Bureau of Economic Analysis (BEA) announced that it would no longer produce the multipliers because of sequestration and reduced funding levels. Thus, the updated economic impact analysis uses the IMPLAN input-output impact model.” (FEIS Appendix D, Addendum to 2009 Economic and Fiscal Impacts Analysis, April 2015 PB, p 3)

However, BEA continued to provide RIMS multipliers during and after sequestration:

“Last year, as a result of budget sequestration and reduced funding levels, BEA discontinued updates to RIMS II. Orders for RIMS II multipliers, however, have continued to be accepted because the cost of fulfilling these orders is covered by a nominal processing fee.” (<https://bea.gov/regional/rims/rimsii/> accessed 12 November 2015) (emphasis added).

XII. Conclusion

This FEIS violated NEPA because it failed to take a hard look at multiple aspects of this project, including (1) inadequate consideration of and failure to objectively evaluate Alternative D, and inadequate analysis of the Preferred Alternative; (2) a constantly-shifting and evanescent purpose and need because the project carries little, if any, transportation benefits, and (3) multiple flaws in the analyses of environmental impacts, as described in these comments. Accordingly, TDOT should choose the no action alternative and spend its limited resources on other, more effective projects. If TDOT continues to pursue this project, it should prepare a supplemental EIS that complies with NEPA by addressing the flaws outlined in these comments.