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STATE OF TEXAS
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2020 OCT 13 P 2:01

APPLICATION OF

TOLL ROAD INVESTORS
PARTNERSHIP II, L.P.

FOR AN INCREASE IN THE
MAXIMUM LEVEL OF TOLLS

CASE NO. PUR-2019-00218

REPORT OF D. MATHIAS ROUSSY, JR.,
HEARING EXAMINER

OCTOBER 13, 2020

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

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This case involves TRIP II's proposal to increase the maximum toll prices for driving the Dulles Greenway. Beginning on January 1, 2021, TRIP II's proposal would increase toll prices through a series of five annual increases ending on January 1, 2025. For two-axle vehicles, which comprise 98% of Greenway traffic, the proposed annual increases range from \$0.25 to \$0.50; the proposed cumulative increases are \$1.40 for off-peak travel and \$2.10 for peak travel.

Under applicable statute, the Commission may approve Greenway tolls that: (1) are reasonable to the user in relation to the benefit obtained; (2) will not materially discourage use of the roadway by the public; and (3) will provide the operator no more than a reasonable return as determined by the Commission. The proposed tolls will not provide the operator more than a reasonable return. Only the user benefit and material discouragement standards are disputed.

Conclusions about the Greenway's user benefits are significantly influenced by value inputs and traffic assumptions. Based on my assessment of the evidence, quantified benefits for Greenway travelers exceed the proposed toll prices if pre-COVID-19 traffic levels are assumed. However, April 2020 and July 2020 traffic levels show mixed results – the quantified benefits exceed the proposed tolls when compared to secondary alternatives to the Greenway, but not compared to its primary alternative. While the future is uncertain, the pre-COVID-19 and 2020 traffic levels present a reasonably wide range of conditions within which net user benefits were shown compared either to the primary alternative or the secondary alternatives. If the Commission adopts different inputs than I recommend, the results could be different.

The material discouragement evidence offered by TRIP II assumes that the historical relationship between toll prices and demand for the Greenway will continue into the future. In my view, the effects of the COVID-19 pandemic have undermined this assumption such that – absent any constitutional concerns – the Commission should consider either (a) denying the Application; or (b) deferring the effective date of the proposed toll increases until traffic on the Greenway returns to pre-COVID-19 levels.

However, constitutional protections recognized for rate-regulated entities appear to require the Commission to provide TRIP II with the opportunity to recover its costs. Accordingly, I recommend the Commission approve a toll increase that is more limited in magnitude and duration than proposed. Specifically, I recommend the Commission approve only TRIP II's proposed off-peak toll increases for 2021, 2022, and 2023. For two-axle vehicles, the recommended annual increases from this Staff alternative range from \$0.25 to \$0.30; the recommended cumulative increase is \$0.80 for off-peak travel and no increase for peak travel.

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- HE-2: Hearing Examiner's Benefit-Cost Results – 2019 Traffic
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- HE-4: Hearing Examiner's Benefit-Cost Results – July 2020 Traffic
- HE-5: Hearing Examiner's Benefit-Cost Results – July 2020 Traffic, Off-Peak Increase Only

HISTORY OF THE CASE

On January 23, 2020, Toll Road Investors Partnership II, L.P. (“TRIP II” or “Company”), filed with the State Corporation Commission (“Commission”) an Application for an increase in the maximum level of tolls on the Dulles Greenway (“Greenway”) pursuant to the Virginia Highway Corporation Act of 1988 (“Highway Act”), § 56-535 *et seq.* of the Code of Virginia (“Code”).¹ Also on January 23, 2020, TRIP II filed with the Commission a Motion for Protective Ruling pursuant to the Commission’s Rules of Practice and Procedure.²

On January 27, 2020, the Commission issued an Order for Notice and Hearing that, among other things, directed TRIP II to provide notice of its Application; established a procedural schedule, including a public evidentiary hearing; directed the Commission’s Staff (“Staff”) to investigate the Application and file testimony and exhibits containing Staff’s findings and recommendations; provided opportunities for interested persons to intervene and participate in this proceeding; and appointed a Hearing Examiner to conduct all further proceedings on behalf of the Commission and file a final report containing the Hearing Examiner’s findings and recommendations.

A Hearing Examiner’s Ruling issued on March 2, 2020, scheduled local public witness hearings. These public witness hearings were scheduled to convene in Leesburg and Ashburn on May 11-12, 2020.

On March 16, 2020, the Board of Supervisors of Loudoun County (“Loudoun Board” or “Board”)³ filed a notice of participation in this proceeding.

On March 24, 2020, the Loudoun Board filed its Motion of the Board of Supervisors of Loudoun County for an Extension of Time to File Direct Testimony and to Amend the Procedural Schedule (“Extension Motion”). In its Extension Motion, the Board requested an expedited ruling that modified the procedural schedule due to the public health emergency declared in response to the novel coronavirus (“COVID-19”) pandemic.

On April 9, 2020, after responses were filed by TRIP II and Staff and the Loudoun Board’s reply, a Hearing Examiner’s Ruling granted in part and denied in part Loudoun Board’s Extension Motion. The April 9, 2020 Hearing Examiner’s Ruling: (1) extended the dates for filing respondent, Staff, and rebuttal testimonies; (2) rescheduled the evidentiary hearing;⁴ (3) cancelled the in-person public witness hearings that were previously scheduled to convene in Leesburg and Ashburn;⁵ and (4) extended the public comment period.

¹ Supporting testimony and other documents were filed with the initial Application on December 20, 2019. The Company filed supplemental direct testimony, in public and confidential versions, on January 23, 2020.

² 5 VAC 5-20-10 *et seq.* A Hearing Examiner’s Protective Ruling was issued on February 4, 2020.

³ The record includes references to the Board of Supervisors of Loudoun County as “Loudoun County” or the “County.” This Report uses “Loudoun Board” or “Board” to distinguish this party from the geographic location of Loudoun County.

⁴ While the public witness hearings are also evidentiary hearings, the term “evidentiary hearing,” as used herein, refers to the hearing during which the parties and Staff offered their evidence into the record.

⁵ The April 9, 2020 Ruling indicated that oral public comment would be rescheduled by subsequent ruling, which would be noticed by a subsequent ruling and accompanying news release. Such ruling and news release were issued on May 29, 2020, and June 1, 2020.

On May 29, 2020, a Hearing Examiner's Ruling rescheduled the public witness hearings to receive public witness testimony telephonically. The public witness hearing was held, as rescheduled, on June 30, 2020.

On July 24, 2020, a Hearing Examiner's Ruling converted the evidentiary hearing from an in-person hearing to convene in the Commission's courtroom to an electronic format due to the ongoing public health emergency associated with COVID-19. The Hearing Examiner's Ruling also adopted additional procedures to facilitate an electronic hearing.⁶

On August 13-14, 2020, the evidentiary hearing using Skype for Business was convened.⁷ Timothy E. Biller, Esquire, and Andrea D. Gardner, Esquire, represented TRIP II. Stephen C. Piepgrass, Esquire, Andrew J. Flavin, Esquire, Leo Rogers, Esquire, and Ann M. Golski, Esquire, represented the Loudoun Board. William H. Chambliss, Esquire, and Andrea B. Macgill, Esquire, represented Staff.

On September 28, 2020, the parties and Staff filed their post-hearing briefs.

FILED PUBLIC COMMENTS

Approximately 730 public comments were filed, mostly by residents of Leesburg or Ashburn. While the comments were all unique and expressed a wide variety of views, several common themes emerged. These include: (1) the Greenway's current tolls are too high and cause drivers to avoid using the Greenway; (2) the proposed tolls are too high and should be denied; (3) the Greenway's tolls should be decreased, not increased, to see whether this might increase Greenway usage and TRIP II's revenues; (4) distance-based toll rates should be implemented because the current toll structure is unfair for short-distance travel on the Greenway. Many commenters expressed concern about affordability for low- and middle-income residents, in particular.⁸

Many commenters that avoid the Greenway, or would if the proposed tolls are approved, indicated they are willing – but not happy – to spend additional time in traffic on the surrounding roads.⁹ However, several commenters indicated that due to decreases in traffic resulting from the

⁶ Among other things, a prehearing conference on August 6, 2020, tested the technical capabilities of the attorneys and witnesses for the case participants.

⁷ Proof of notice was among the evidence admitted into the record. Exhibit ("Ex.") 1.

⁸ See, e.g., June 26, 2020 Comments of Donna Fortier ("To expect a struggling family to spend close to \$3,000 a year just to get to work, and in most cases to a minimum wage job, where the gross income is \$15,080/year is not only unrealistic but truly unfair."); July 6, 2020 Comments of Nikki Daruwala, Executive Director of Loudoun Literacy Council ("This is especially relevant given the COVID-19 pandemic crisis....This is the wrong time to impose economic burdens on the middle-class and working-class families across Northern Virginia that rely on our transportation infrastructure and are already struggling to cope with the current crisis.").

⁹ See, e.g., June 22, 2020 Comments of Matthew McConchie ("I have actively avoided use of the road unless travel time was critical. As a Brambleton resident, the lack of distance-based tolling is absolutely unacceptable (4.75-5.80 for 2 exits). I am more willing to sit in 10-15 minutes of extra traffic on 28/Old Ox/Waxpool Rds than to pay \$1/mile for use of the Greenway.").

COVID-19 pandemic, they can now avoid the Greenway's tolls without sitting in traffic on their chosen alternative.¹⁰

Many expressed concerns about corporate greed and the fact that a private entity owns a Virginia roadway. Several commenters advocated for the Commonwealth or Loudoun County to buy, or acquire by eminent domain, the Greenway.¹¹

Of the approximately 730 public comments, all but one commenter indicated opposition to TRIP II's proposed increase.

SUMMARY OF THE RECORD

Public Witnesses

Phyllis Randall, Chair of the Loudoun County Board of Supervisors, indicated she was the only person in Loudoun County or the Commonwealth who voted last year in support of a distance-based tolling idea by TRIP II.¹² However, she characterized the toll increases proposed in this case as "completely unsustainable."¹³ She emphasized the fact that Greenway ridership has decreased while Loudoun County has one of the fastest growing populations in the Commonwealth and traffic on surrounding roadways has increased.¹⁴ She testified that the Greenway is a "classist road," available only to those who can afford it.¹⁵

Senator Jennifer Boysko (33rd Senatorial District) opposed the proposed toll increases for the Greenway, which runs through her district. She believes the proposed toll increases will materially discourage usage on the Greenway, adversely impact alternative roads, and hurt Virginia families and businesses.¹⁶ She has observed an empty Greenway while alternative public roads are crowded.¹⁷ She challenged TRIP II's ability to justify toll increases based on pre-COVID-19 data and assumptions.¹⁸

¹⁰ See, e.g., August 14, 2020 Comments of Timothy Kim ("With the impact of COVID-19 and the shift we are seeing for more telework, there will be less drivers on the road. This is not just a temporary change. Major companies are shifting to remote work permanently. I have been driving to Reston every day for work since July and have rarely taken the [G]reenway toll, because I don't have to. There is not enough traffic and I am only saving five minutes on my commute but paying \$6.50? I used to take it more frequently because it would save me 15-20 minutes, but now I do not need to. If the toll rates increase, there is even less incentive to take the [G]reenway."); June 25, 2020 Comments of Vanessa Kennedy ("During the pandemic, I was deemed an 'essential worker' and still had to commute to Fairfax County. With the reduced number of people on the roads in this timeframe, I was actually able to avoid the Greenway and utilize the alternate routes that are usually severely overcrowded. As such, I was able to save significantly – to the tune of \$1,241 – simply by avoiding the Greenway since March 20th.").

¹¹ See, e.g., July 26, 2020 Comments of Mitchell Catanzaro.

¹² Tr. at 5-6 (Randall).

¹³ Tr. at 6 (Randall).

¹⁴ Tr. at 6-7 (Randall). Other public witnesses, including members of the Loudoun Board, expressed the same point. See, e.g., Tr. at 21 (Letourneau); Tr. at 31 (Subramanyam).

¹⁵ Tr. at 7 (Randall).

¹⁶ Tr. at 10-11 (Boysko).

¹⁷ Tr. at 11 (Boysko).

¹⁸ Tr. at 12 (Boysko).

The Greenway also traverses the district of **Delegate David Reid** (32nd House District), who serves on the House Transportation Committee and the Northern Virginia Transportation Commission.¹⁹ He routinely drives the Greenway for personal use and work.²⁰ He asked the Commission to be mindful of the impact toll increases have on household budgets.²¹ He expressed deep misgivings about the proposed toll increases, especially during the pandemic.²² He asked that VDOT's expertise on this matter be included and that its consultant be included as a material witness.²³ He testified that TRIP II's projections cannot be independently verified and do not account for travel behavior changes stemming from COVID-19, the necessity of telework in the future, and the Metro Silver Line ("Silver Line").²⁴

Matthew Letourneau, Loudoun County Board Supervisor – Dulles, serves as one of Virginia's two principal directors on the board of the Washington Metropolitan Area Transit Authority. His district directly abuts the Greenway in several locations.²⁵ He is also finance committee chairman for the County, making him responsible for the County's capital program.²⁶ In his opinion, the propensity for drivers to avoid the Greenway fundamentally altered the County's entire approach to transportation planning and budget development.²⁷ He believes the question before the Commission is existential and likened the proposed toll increases to taunting.²⁸ He explained that the Silver Line, which will arrive in Loudoun next year, runs in the middle of the Greenway.²⁹ He believes the Greenway "toll rate regime" is a major impediment to progress.³⁰ He testified that many cannot afford to choose the Greenway instead of sitting in traffic away from family.³¹

Senator John J. Bell (13th Senatorial District) indicated that most of the 250,000 people in his district use the Greenway. His constituents want distance-based pricing and are concerned about the high price of the Greenway for many people who only drive one or two exits.³² He advised the Commission that he sent a letter to the Secretary of VDOT asking for VDOT's involvement in this case. He believes VDOT has information about commuter movement through Northern Virginia, including Loudoun County, that is relevant to the Commission's consideration of material discouragement.³³ Senator Bell asked that the Commission consider economic impact and that delaying action would provide relief for people experiencing difficulties due to COVID-19.³⁴

¹⁹ Tr. at 14-15 (Reid).

²⁰ Tr. at 14 (Reid).

²¹ Tr. at 15 (Reid).

²² Tr. at 16 (Reid).

²³ Tr. at 17 (Reid). VDOT had the opportunity to intervene in this proceeding and did not.

²⁴ Tr. at 17-18 (Reid).

²⁵ Tr. at 20 (Letourneau).

²⁶ Tr. at 20-21 (Letourneau).

²⁷ Tr. at 21 (Letourneau).

²⁸ Tr. at 22 (Letourneau).

²⁹ Tr. at 23 (Letourneau).

³⁰ Tr. at 24 (Letourneau).

³¹ Tr. at 24-25 (Letourneau).

³² Tr. at 29 (Bell).

³³ Tr. at 27-28 (Bell).

³⁴ Tr. at 28 (Bell).

Delegate Suhas Subramanyam (87th House District) urged rejection of the proposed toll increases based on legal argument and what he called a practical argument.³⁵ In his opinion, the proposed toll increase does not satisfy the statutory material discouragement and reasonable rate of return standards. He called the business model behind the increases an attempt to discourage use on the road and make it “essentially a hot lane.”³⁶ He believes there has been a lack of transparency on what the “real rate of return is.”³⁷ As for the practical argument, he believes the proposal would be devastating to Loudoun County businesses.³⁸ He indicated some people in Loudoun County feel they have no choice but to pay the toll because they are choosing between spending time with their family or paying the toll. Like other public witnesses, he discussed the hardship many are experiencing during the pandemic.³⁹

Michael R. Turner, Loudoun County Board Supervisor – Ashburn, asked the Commission to reject the increases.⁴⁰ He identified the Claiborne Parkway and Belmont Ridge Road exits in his district as two of the most-used exits.⁴¹ He chairs the Transportation and Land Use Committee, sits on the Northern Virginia Transportation Commission, and facilitates the Fiscal Impact Committee in Loudoun County. He described avoidance of the Greenway as “part of our culture” in his district.⁴² When possible, he avoided the Greenway himself when he used to commute to downtown Alexandria.⁴³ He indicated the County’s entire transportation plan essentially evolved to adjust to the fact that many drivers that could use the Greenway do not, which increases pressure on surrounding roadways. He thinks the notion that the County is deliberately building roads to avoid travel on the Greenway is nonsensical because transportation projects are based on studies driven by volume and safety.⁴⁴ He called the tolls a “regressive tax,” meaning that the people who most need to use the Greenway are the least able to afford it.⁴⁵ He also indicated two new Metro stops in the County are based on free flowing traffic in the County and, depending on how they are absorbed, could tilt the County’s transportation plan.⁴⁶

Sylvia R. Glass, Loudoun County Board Supervisor – Broad Run, explained the drivers who get “priced out of using the road” instead travel local roads that are heavily congested.⁴⁷ While the County has spent millions of tax dollars to build, and continues to build, roads in response to high tolls on the Greenway, the County cannot keep pace with the growing traffic. Although the Greenway runs through the center of Ashburn, which is within her district, her constituents avoid the road and tell their visitors to do the same.⁴⁸ In her opinion, if the proposed toll increase is denied, TRIP II will be forced to explore alternative options like

³⁵ Tr. at 30-31 (Subramanyam).

³⁶ Tr. at 31 (Subramanyam).

³⁷ Tr. at 32 (Subramanyam).

³⁸ Tr. at 32 (Subramanyam).

³⁹ Tr. at 33 (Subramanyam).

⁴⁰ Tr. at 38 (Turner).

⁴¹ Tr. at 34 (Turner).

⁴² Tr. at 35 (Turner).

⁴³ Tr. at 37-38 (Turner).

⁴⁴ Tr. at 36 (Turner).

⁴⁵ Tr. at 37 (Turner).

⁴⁶ Tr. at 38 (Turner).

⁴⁷ Tr. at 40 (Glass).

⁴⁸ Tr. at 41 (Glass).

distance-based pricing, which she believes most Loudoun residents support.⁴⁹

Delegate Gwendolyn Wallace Gooditis (10th House District) urged the Commission to reject the proposed increase because of the economic impact it would have on residents and working families in Northern Virginia.⁵⁰ She testified that raising peak toll rates would present an additional economic burden during an unprecedented time.⁵¹

The district that **Caleb Kershner**, Loudoun County Board Supervisor – Catocin, serves encompasses the Greenway south of Leesburg, from mile marker 1 to mile marker 5.4 (Goose Creek).⁵² He associated himself with the comments of Supervisors Letourneau and Turner, and Senator Bell.⁵³ Citing his experience communicating with his constituents, he believes the toll prices discourage use of the Greenway. He believes the proposal would exacerbate the Loudoun County road system, which he indicated is already distressed.⁵⁴ He requested the proposed toll increases be denied.⁵⁵

Delegate Ibraheem S. Samirah (86th House District) opposed the proposed increase. He testified that the proposed toll increase changes the concept of a highway, which is supposed to connect regions.⁵⁶ He emphasized the interconnected nature of housing and transportation, and that toll increases allow economic and, in turn demographic, segregation. Another consideration is that drivers coming in from the job center of Washington, D.C., already pay a large amount from multiple tolls and a Greenway toll increase would add to this amount.⁵⁷

Kristen Umstattd, Loudoun County Supervisor – Leesburg, opposed the proposed increase and recommended limiting any approved increase to one year.⁵⁸ She called TRIP II's assertion that the County is trying to compete with the Greenway a "red herring."⁵⁹ She testified that if the County were trying to compete, it would actually support Greenway increases to drive more paying customers to the County's bus system.⁶⁰ She testified that County residents are desperate for cheap travel options, and the Greenway is already unaffordable for many residents.⁶¹ While years ago she "wouldn't think twice" about a roundtrip on the Greenway, now she only uses it for one way travel if she is picking someone up at the airport and running late.⁶²

Tony Buffington, Loudoun County Supervisor – Blue Ridge, opposed the proposed increase.⁶³ He took issue with TRIP II's assertion that it relieves the financial burden of local

⁴⁹ Tr. at 41-42 (Glass).

⁵⁰ Tr. at 43-44 (Gooditis).

⁵¹ Tr. at 44 (Gooditis).

⁵² Tr. at 46 (Kershner).

⁵³ Tr. at 46 (Kershner).

⁵⁴ Tr. at 47 (Kershner).

⁵⁵ Tr. at 48 (Kershner).

⁵⁶ Tr. at 49 (Samirah).

⁵⁷ Tr. at 50 (Samirah).

⁵⁸ Tr. at 52, 54 (Umstattd).

⁵⁹ Tr. at 52 (Umstattd).

⁶⁰ Tr. at 53 (Umstattd).

⁶¹ Tr. at 53-54 (Umstattd).

⁶² Tr. at 55 (Umstattd).

⁶³ Tr. at 56 (Buffington).

and state agencies charged with providing transportation.⁶⁴ He expressed no doubt that the proposal would materially discourage use.⁶⁵

Richard Black, former Senator of the 13th District, discussed activities during the 2019 General Assembly Session, including the enactment of Senate Joint Resolution No. 254, which directed a study of the feasibility of buying back the Greenway or an interest in it.⁶⁶ He was also involved in blocking an amendment to remove the sunset clause in Code § 56-542 I.⁶⁷ He believes the Commonwealth has now restored effective oversight to the Commission. He contrasted the magnitude of the proposed increase, which he called exorbitant, to current interest rates, which are historically low.⁶⁸

From his campaigning, **Delegate David A. LaRock** (33rd House District) understands that the Greenway tolls are a very high priority in the Leesburg area.⁶⁹ He believes the tolls materially discourage use to some degree because many people he interacts with would like to use the Greenway but cannot afford it.⁷⁰ He believes the reinvested earnings account was appropriate with the original developer of the Greenway, but it should have terminated with the transfer to the current owners. He asked that VDOT be involved in the Commission's deliberation on the proposed toll increase.⁷¹ He called the proposal to increase tolls over a five-year period effectively an end-run around the legislature and believes it could muddy future legislative discussions.⁷² He also indicated that the current pandemic makes it difficult to predict economic conditions over the next five years. He recommended denying the proposed increase.⁷³

David Ramadan, former Delegate, testified that the Commission's "hands are not tied anymore."⁷⁴ He recommended that the Commission deny the proposed increase and reduce current rates. He thinks it is an unquestionable fact that five to eight dollar tolls materially discourage use of the Greenway.⁷⁵ He raised a safety concern about commercial trucks driving on residential streets to avoid the Greenway tolls.⁷⁶ He also testified that a toll increase would hamper, rather than facilitate, people returning to work as the County and Commonwealth deal with the pandemic.⁷⁷

Louis DiMeglio is an Ashburn resident who opposes the proposed increase. He indicated the Greenway's tolls, especially for residents on the eastern end of the Greenway, are among the

⁶⁴ Tr. at 58 (Buffington).

⁶⁵ Tr. at 57-58 (Buffington).

⁶⁶ Tr. at 60 (Black).

⁶⁷ Tr. at 60-61 (Black).

⁶⁸ Tr. at 61 (Black).

⁶⁹ Tr. at 63 (LaRock).

⁷⁰ Tr. at 63 (LaRock).

⁷¹ Tr. at 64 (LaRock). The reinvested earnings account is explained and discussed below.

⁷² Tr. at 64-65 (LaRock).

⁷³ Tr. at 65 (LaRock).

⁷⁴ Tr. at 67 (Ramadan).

⁷⁵ Tr. at 68 (Ramadan).

⁷⁶ Tr. at 68-69 (Ramadan).

⁷⁷ Tr. at 69 (Ramadan).

highest in the world per mile. In his view, the tolls divert traffic through neighborhoods and retail areas, which hurts both residents and businesses.⁷⁸

The main point expressed by **Ron Meyer**, former Loudoun County Supervisor – Broad Run, was that Greenway drivers should not pay for excess debt incurred by the current owners to pay off the former owners of the Greenway. He testified that the Greenway's tolls discourage its use, which has required the County to spend hundreds of millions of dollars on numerous road improvements.⁷⁹ He added that the primary route drivers use to bypass the Greenway includes the intersection of Loudoun County Parkway and Waxpool, which he described as the most dangerous in the County.⁸⁰ He indicated that the benefits of the Greenway do not match the cost because users that drive shorter distances pay the same toll as users that drive longer distances.⁸¹

Geary Higgins, former Loudoun County Supervisor, does not find the proposed toll increases to be a viable solution for the Greenway or the County.⁸² He estimated that families using the Greenway to commute pay over \$350 per month and that these costs force drivers to use alternative roadways.⁸³ Because he has observed traffic is currently down on the alternative roads, he questioned why drivers would pay more to use the Greenway.⁸⁴ A viable solution needs to be affordable.⁸⁵

Scott M. Hamberger, an Ashburn resident, opposed the toll increases. While he understands the statute provides for the owner to earn a margin, he questions the basis of the investment and actual cost structure.⁸⁶ He believes the existing and proposed toll rates materially discourage use of the asset and indicated distance-based pricing would better encourage its use and avoid increased maintenance costs on alternative roadways.⁸⁷

Doug McCollum, a Purcellville resident, opposed the Application. Citing decreased usage on the Greenway, he believes repeatedly raising the toll rates is not working for the Applicant or for the drivers.⁸⁸ He testified that TRIP II should not be surprised that the County or Commonwealth would respond to the outcry of County residents and businesses about traffic conditions by improving alternative roadways.⁸⁹ He indicated that very soon drivers will be able to avoid the Greenway by using Routes 28 and 7 without a single traffic light. He believes TRIP II's justification for toll increases is now essentially worthless because of COVID-19.⁹⁰ According to him, the Code "is not a blank check for the Applicant."⁹¹

⁷⁸ Tr. at 73 (DiMeglio).

⁷⁹ Tr. at 76 (Meyer).

⁸⁰ Tr. at 77 (Meyer).

⁸¹ Tr. at 78 (Meyer).

⁸² Tr. at 82 (Higgins).

⁸³ Tr. at 81-82 (Higgins).

⁸⁴ Tr. at 82 (Higgins).

⁸⁵ Tr. at 83 (Higgins).

⁸⁶ Tr. at 85 (Hamberger).

⁸⁷ Tr. at 86 (Hamberger).

⁸⁸ Tr. at 88-89 (McCollum).

⁸⁹ Tr. at 89 (McCollum).

⁹⁰ Tr. at 90 (McCollum).

⁹¹ Tr. at 91 (McCollum).

Jason Garman, an Ashburn resident, opposed the proposed increases. He finds it difficult to justify paying the current toll prices, which he indicated are the most expensive per mile in the entire nation.⁹²

Gaelyn Robinson, a Leesburg resident, opposes any further toll increases. In her view, drivers are being penalized for tax assistance. She thinks ridership has decreased and will continue to decrease.⁹³

John Gallagher, a County resident, opposed the proposed increases. He explained that the toll road was built as a public-private partnership to benefit both the investors and the community but its toll rates already discourage use.⁹⁴ If TRIP II cannot operate at current pricing, he believes the toll road's ownership and management should be reconsidered.⁹⁵

For **Charles Bartlett**, who lives near the Greenway in Ashburn, the Greenway is the most convenient way for him to travel to many locations. He finds the proposed current tolls expensive and punitive for shorter-distance drivers, and described the proposed increases as egregious.⁹⁶

Christopher Tuck lives in Leesburg. His commute to or from his workplace in Reston can take approximately 29 minutes using the Greenway but 90 minutes using alternative roads. This means, by his calculation, that he would spend 22 days per year in traffic, rather than with his family, if he did not use the Greenway. He discussed how traffic causes people working in Northern Virginia to avoid peak travel periods and the federal government's accommodation of non-standard work schedules.⁹⁷ Next, he calculated a \$3,027 annual cost for using the Greenway twice a day for 260 days, plus an additional \$1,000 annual cost if the increases are approved. An increase of this magnitude will affect family budgets.⁹⁸

Joseph Carbone is an Ashburn resident who frequently drives the Greenway for personal and business use. He is concerned about the proposed increases and plans to not use the Greenway if they are approved. He speculated it might be easier now that fewer people are going to work.⁹⁹ Mr. Carbone recognized that many people have experienced financial harm due to the pandemic. He opposed the increases, which he does not think sit well with his community.¹⁰⁰

Barry Taylor is an Ashburn resident and president of the Dulles Area Association of Realtors ("Association"), which opposes the increases. He called the current tolls too high and does not understand how the proposed increases are justifiable. Association members use the Greenway out of necessity not desire, at an average monthly cost between \$50 and \$500. This

⁹² Tr. at 93-94 (Garman).

⁹³ Tr. at 96 (Robinson).

⁹⁴ Tr. at 98 (Gallagher).

⁹⁵ Tr. at 99 (Gallagher).

⁹⁶ Tr. at 102 (Bartlett).

⁹⁷ Tr. at 104 (Tuck).

⁹⁸ Tr. at 105-106 (Tuck).

⁹⁹ Tr. at 108 (Carbone).

¹⁰⁰ Tr. at 109 (Carbone).

cost comes out of members' bottom lines because they are independent contractors.¹⁰¹ Distance-based tolling would be a more palatable option in the County, where the median sales price for homes is over \$500,000. He raised quality of life concerns about commuters who use local roads to avoid paying the Greenway tolls.¹⁰² He found the timing of the proposed increase questionable because of the pandemic's effect on household income and Greenway usage.¹⁰³

Asim Shaikh identified a 400% cost differential between using the Greenway (\$1/mile) or Route 267/Interstate 66 (25¢/mile) to travel from his Ashburn home to Washington D.C. He recommended the increases be denied.¹⁰⁴

Nikhil Budhiraja, a Broadlands resident, opposed the proposed increases because they would be a hardship for him and others.¹⁰⁵

Fred Snowden is a Round Hill resident who opposed any further toll increase and recommended distance-based pricing.¹⁰⁶

Tim Connolly is an Ashburn resident with a daily commute to Washington D.C. Because he would rather sit in traffic than pay the Greenway's tolls he does not use the Greenway unless there is an accident on Route 28. On those occasions, he enjoys the Greenway because it is empty.¹⁰⁷

Jay McFarland of Brambleton would likely drive the Greenway less if the tolls are increased.¹⁰⁸

Sheetal Singh lives close the Greenway in Ashburn. While it is a great travel option for her family, unless there is an emergency she avoids the Greenway because of cost. She believes the tolls limit people from using it regularly.¹⁰⁹

While **Holly Gibson-Coe** lives near the Greenway in Ashburn, she avoids using it to commute to McLean because there is not distance-based pricing. To avoid the Greenway, she drives out of the way or uses public transportation, both of which add time to her trip.¹¹⁰

Amit Govil of Ashburn does not want the tolls increased.¹¹¹

Christopher Brown, an Ashburn resident who lives fairly close to the Greenway, is frustrated with the tolls. He has watched the number of residents and traffic on alternative

¹⁰¹ Tr. at 111-12 (Taylor).

¹⁰² Tr. at 113 (Taylor).

¹⁰³ Tr. at 114 (Taylor).

¹⁰⁴ Tr. at 116-17 (Shaikh).

¹⁰⁵ Tr. at 119 (Budharaja).

¹⁰⁶ Tr. at 121 (Snowden).

¹⁰⁷ Tr. at 123 (Connolly).

¹⁰⁸ Tr. at 124-25 (McFarland).

¹⁰⁹ Tr. at 126-27 (Singh).

¹¹⁰ Tr. at 129-30 (Gibson-Coe).

¹¹¹ Tr. at 133 (Govil).

roads grow tremendously in the area. He believes traffic has also increased on the Greenway. Route 28, in particular, now takes much longer to travel during his commute.¹¹²

Anthony Howard lives in Leesburg and is the President and CEO of the Loudoun Chamber of Commerce, which opposes the proposed increase and recommends implementation of distance-based pricing for the Greenway.¹¹³ Based on VDOT's annual traffic data report, he believes the existing tolls have demonstrably discouraged local drivers from using the Greenway.¹¹⁴ To him, the current and proposed tolls are not fair in relation to the benefit because they are not distance-based prices.¹¹⁵ He believes a fair rate of return should be based on the depreciated original cost of the Greenway plus costs for maintenance and improvements.¹¹⁶

Lisa Coleman of Ashburn testified that the Greenway's continuing toll increases make it cost-prohibitive for her to drive the length of one exit. She has begun exploring additional routes and additional roadways that are currently under construction near her that would allow her to completely avoid the Greenway in the future.¹¹⁷

Cynthia Sano is an Ashburn resident who likened the Greenway tolls to extortion and opposes any further increases. She described where she lives as a congested bottleneck due to drivers circumventing the Greenway.¹¹⁸

Geoff Kostal, a Purcellville resident, testified that the transportation studies in this case obscure common sense with sophisticated analysis.¹¹⁹ He described as critical the use of average benefits because he believes an extremely high-income resident can skew the results.¹²⁰ While he recognized that the decision to use the Greenway is an individual decision, he believes the assumption of an average user is broad and therefore TRIP II's benefit-cost analysis fails.¹²¹

Susan Wolford is a Brambleton resident who works in offices in Herndon and Leesburg. She can wake up a little later and get home a little later, but the Greenway's tolls have begun to impact her. Her firm, and many others, have taken pay cuts due to COVID-19, so a toll increase would impact both sides of her budget.¹²² Increasing tolls could cause her staff to use local roads to travel between the Herndon and Leesburg offices, even though it will increase travel time.¹²³ She testified that the Greenway has opened up opportunities to grow operations in Leesburg, pulling staff or potential employees from Fairfax County, Arlington, Alexandria, and

¹¹² Tr. at 134-36 (Brown).

¹¹³ Tr. at 137, 141 (Howard).

¹¹⁴ Tr. at 137-38 (Howard).

¹¹⁵ Tr. at 139 (Howard).

¹¹⁶ Tr. at 140 (Howard).

¹¹⁷ Tr. at 143 (Coleman).

¹¹⁸ Tr. at 146-47 (Sano).

¹¹⁹ Tr. at 149 (Kostal).

¹²⁰ Tr. at 150-52 (Kostal).

¹²¹ Tr. at 153 (Kostal). Mr. Kostal also described the average assumption as a "leap of faith that can leave huge portions of our society marginalized." *Id.*

¹²² Tr. at 155-56 (Wolford).

¹²³ Tr. at 156 (Wolford).

Washington D.C., but that increased tolls will negatively impact these opportunities. She opposed the proposed increase.¹²⁴

Joseph Darden, a South Riding resident, believes allowing toll increases is a flawed business strategy to recover revenues from low utilization. He believes prior toll increases have lowered utilization, which he called a textbook example of elasticity.¹²⁵ He also believes that the Greenway currently has an abundance of supply (*i.e.*, total utilization capacity).¹²⁶ If the Greenway were “a real business that’s subject to the normal economic forces,” it would seek to restructure its debt, implement distance-based tolling, reduce tolls, and/or conduct simple marketing. If current tolls were reduced by 50%, he testified that Greenway utilization could increase utilization to nearly 80% and retire \$1 billion in debt within ten years.¹²⁷ He testified that any increase in future tolls should be conditioned on, at a minimum, implementing distance-based pricing and setting a minimum for operating capacity.¹²⁸

Charles Wyant of Lovettsville does not see the justification for toll increases because drivers are not getting any better service from the Greenway.¹²⁹

Lynn Burkey of Bluemont testified that the Greenway has significantly impacted her decisions on taking jobs.¹³⁰

Scott York, a Sterling resident, is the Interim Executive Director of the Committee for Dulles and is a former Chair of the Loudoun County Board of Supervisors. The Committee for Dulles opposes the proposed toll increases and encourages TRIP II to lower its tolls to increase use of the Greenway.¹³¹ He discussed the economic fallout from COVID-19 on individuals and businesses, including the airline and hotel industries.¹³² He identified the Greenway as a major part of the road network in the County, but its tolls have pushed traffic to local roads that, in turn, require mitigation efforts at taxpayer expense.¹³³

Fred Westerlund lives in Aldie. He is the CEO of a company that has an office in Ashburn, is looking to open one in Leesburg, and is also looking for a new headquarters location potentially in Fairfax or Loudoun County.¹³⁴ He has employees who use the Greenway and seek reimbursement. He is concerned increased tolls would make it more difficult to attract employees or expand operations in the area because of the cost and impact on neighborhoods.¹³⁵ Given the pandemic, he also does not think now is right time to increase household expenses.¹³⁶

¹²⁴ Tr. at 156-57 (Wolford).

¹²⁵ Tr. at 160 (Darden).

¹²⁶ Tr. at 161 (Darden).

¹²⁷ Tr. at 162-63 (Darden).

¹²⁸ Tr. at 163-64 (Darden).

¹²⁹ Tr. at 165-66 (Wyant).

¹³⁰ Tr. at 168 (Burkey).

¹³¹ Tr. at 170, 173 (York).

¹³² Tr. at 170-71 (York).

¹³³ Tr. at 172 (York).

¹³⁴ Tr. at 174-75 (Westerlund).

¹³⁵ Tr. at 175-76 (Westerlund).

¹³⁶ Tr. at 176 (Westerlund).

Margot Halstead, an Ashburn resident, testified that the toll increases since the Greenway opened have far exceeded inflation.¹³⁷ She indicated this is not a legally binding reason to consider whether to approve the Application, she does not believe it is fair.¹³⁸ She asked several rhetorical questions, including “why are we not saying no to them?” and “[w]hat is our end game?”¹³⁹

Scott Walker lives in Hillsboro. While he uses the Greenway, the tolls have caused him to not take it on numerous occasions. He believes Greenway use would be further discouraged if tolls are increased.¹⁴⁰

Elizabeth Powell lives in Hamilton and owns a landscape company that pays more than \$60,000 in tolls for its approximately 25 vehicles. She opposed any toll increase and recommended a volume discount be provided for businesses like hers.¹⁴¹

Dave Morell lives in Sterling and is the director of sales and marketing for U.S. Sedan Service. He testified that only 50% of tolls are captured on a one-way chauffeured trip for his business and therefore any increase would require the company to either charge guests for the return toll or incur higher labor costs, risks, and vehicle wear by taking a non-toll alternative. He believes lowering the Greenway’s tolls would help alleviate existing congestion problems.¹⁴²

Mital Gandhi lives in Ashburn. While he has a home with a nice swimming pool, he does not take the Greenway because it is too expensive.¹⁴³ Based on his observations when he has driven the Greenway, he does not think the Greenway needs any improvements because it is a beautiful road.¹⁴⁴

William Weber lives in Ashburn, which he has watched grow during the past two decades. As the Greenway tolls have increased, his wife’s and his use of the Greenway has decreased from regular to rarely even though it is only one mile from his home. He instructs his children to only use the Greenway during an emergency. To avoid the Greenway, he currently uses Routes 7 and 28 and back roads, which he recognized adds to congestion.¹⁴⁵

Melissa Ciba of Aldie avoids the Greenway because of tolls she called exorbitant.¹⁴⁶

John Boylan, a Centreville resident, is the President and CEO for the Dulles Regional Chamber of Commerce. His message focused on timing, hearts, and minds. He thinks the timing is not good because of data centers, COVID-19, and the Silver Line, among other things.

¹³⁷ Tr. at 179-80 (Halstead). Based on a 2.1% inflation rate and the initial toll rate of \$1 in 1995, Ms. Halstead calculated an inflation-adjusted toll rate of \$1.68. *Id.*

¹³⁸ Tr. at 180 (Halstead).

¹³⁹ Tr. at 181-82 (Halstead).

¹⁴⁰ Tr. at 186 (Walker).

¹⁴¹ Tr. at 188 (Powell).

¹⁴² Tr. at 190-91 (Morell).

¹⁴³ Tr. at 192 (Gandhi).

¹⁴⁴ Tr. at 193 (Gandhi).

¹⁴⁵ Tr. at 196-97 (Weber).

¹⁴⁶ Tr. at 198 (Ciba).

He thinks an increase would harden hearts in the area with increased unemployment and furloughs.¹⁴⁷ As for minds, he indicated “[w]e all know there needs to be an increase ... but just not this much and not right now.”¹⁴⁸

Michelle Perez lives in Leesburg and, along with her husband, pays approximately \$600/month using the Greenway. Given more flexible work schedules due to COVID-19, and road openings that make it easier for them to get to Herndon and Reston, they are going to find alternate roads around the Greenway. She testified that the Greenway does not make sense for the two new drivers in her household.¹⁴⁹

Edward Valaer has lived in Ashburn since before the Greenway was built. He testified that the lack of distance-based tolling was a mistake that has become more pronounced with toll increases. He and his wife only use the Greenway in the case of emergency and discourage visitors from using the Greenway. In his opinion, the tolls should be frozen because once a road is built maintenance is modest.¹⁵⁰

Graeme Thomson lives in Hamilton and works in Reston. The Greenway’s continual toll increases have made it too expensive for him to use it. He now uses local roads, increasing his commute time by approximately 20 minutes. He expects his commute time on local roads would further increase if the toll increases are approved and more drivers avoid the Greenway.¹⁵¹

TRIP II - Direct

In support of its Application, TRIP II presented the direct testimonies of **James Lerner**,¹⁵² the US Operations Director of Atlas Arteria, which owns a 100% effective interest in TRIP II;¹⁵³ and **Albert Racciatti**, Chief Economist at Itinera Infrastructure & Concessions.

Mr. Lerner provided background on the Greenway. He discussed the public need for the Greenway that arose in the late 1980s, the 1988 legislation enabling development of the Greenway by a private entity, and prior Commission orders on the Greenway.¹⁵⁴ He explained the need identified by the Commonwealth Transportation Board for an extension of the Dulles Toll Road to Leesburg and VDOT’s indication then that such a project was not in its plans.¹⁵⁵

Mr. Lerner identified benefits of the Greenway, including greater safety, quicker travel times, and lower vehicle operating costs. He testified further that the Greenway alleviates

¹⁴⁷ Tr. at 200-201 (Boylan).

¹⁴⁸ Tr. at 201 (Boylan).

¹⁴⁹ Tr. at 203 (Perez).

¹⁵⁰ Tr. at 205-207 (Valaer).

¹⁵¹ Tr. at 210-11 (Thomson).

¹⁵² Mr. Lerner adopted the prefiled direct and supplemental direct testimonies of Graeme Bevens. Tr. at 251 (Lerner). Consequently, this Report discusses and cites to the prefiled direct testimony adopted by Mr. Lerner as his testimony, rather than that of Mr. Bevens.

¹⁵³ Mr. Lerner is also a member of the Board of Directors of Shenandoah Greenway Corporation, which is the General Partner of TRIP II.

¹⁵⁴ Ex. 3 (Lerner direct) at 2-4.

¹⁵⁵ *Id.* at 4.

congestion on surrounding public roads and relieves the financial burden on local and state agencies that have never been required to commit public funds to the Greenway.¹⁵⁶

Mr. Lerner explained the past and current ownership structure of TRIP II. TRIP II is a Virginia limited partnership with a common real estate private equity Limited Partner/General Partner structure.¹⁵⁷ Currently, Atlas Arteria, which is publicly traded on the Australian Stock Exchange, holds a 100% effective economic interest in TRIP II.¹⁵⁸

Mr. Lerner reported that when the Greenway opened in 1995, its total construction cost was \$315 million, excluding operating, funding, and development costs and the costs of additional planned improvements that were part of a Comprehensive Agreement with VDOT.¹⁵⁹ The Greenway was initially financed with a total of \$40 million in equity from the original limited partners and \$311 million of relatively high-cost debt.¹⁶⁰ As of June 30, 2019, this debt amount has grown to more than \$1 billion due to poor financial performance since the Greenway opened, resulting refinancings, and the type of debt TRIP II holds.¹⁶¹

Mr. Lerner explained that as part of ongoing financial obligations with regard to 1999 and 2005 bonds, TRIP II must meet two covenant tests before making distributions to equity holders.¹⁶² First, the minimum coverage ratio ("MCR") must equal at least 1.25. More specifically, the net toll revenue (essentially toll revenue less operating costs) must equal at least 1.25 times the debt service on all senior bonds outstanding for each fiscal year or distributable cash is locked up until the MCR has been satisfied for a consecutive period of 12 months. Second, the additional coverage ratio ("ACR") must equal at least 1.1. More specifically, the net toll revenue less transfers to the Improvement Fund and Operating Reserve Fund must equal at least 1.15 times debt service or distributable cash is locked up for a 36-month period.¹⁶³

While TRIP II bought back approximately \$64 million (face value) of bonds in 2011 and 2012, Mr. Lerner testified that the debt covenants described above are calculated based on the full debt service as if these bonds were not retired.¹⁶⁴ He reported that TRIP II has struggled to meet the MCR and ACR, and has not met the MCR since 2010. Consequently, TRIP II has been unable to make any distributions to its limited partners to repay them for the equity invested to construct and improve the road, much less to provide any return on that investment.¹⁶⁵ Since 1993, approximately \$144 million of equity capital has been invested while equity investors have received total disbursements of approximately \$102 million.¹⁶⁶ No distributions have been made since 2006.¹⁶⁷

¹⁵⁶ *Id.* at 5.

¹⁵⁷ *Id.* at 6; Tr. at 580 (Lerner).

¹⁵⁸ *Id.* at 7.

¹⁵⁹ *Id.* at 5-6. The Comprehensive Agreement was admitted into the record as Exhibit 8.

¹⁶⁰ *Id.* at 6.

¹⁶¹ *Id.* at 8-11.

¹⁶² *Id.* at 11.

¹⁶³ *Id.* at 12; Tr. at 252 (Lerner).

¹⁶⁴ Ex. 3 (Lerner direct) at 12-13.

¹⁶⁵ *Id.* at 13.

¹⁶⁶ *Id.* at 40; Ex. 2 (Application) at Attached Ex. 3.

¹⁶⁷ Ex. 3 (Lerner direct) at 25; Ex. 2 (Application) at Attached Ex. 3.

Mr. Lerner summarized the five series of outstanding bonds totaling approximately \$1 billion in principal and accumulated interest as of June 30, 2019, with the following table.¹⁶⁸

	1999A	1999B	2005A	2005B	2005C
Type	Senior Current Interest Insured Bonds	Senior Zero Coupon Insured Bonds	Senior Callable Zero Coupon Bonds	Senior Callable Zero Coupon Bonds	Senior Zero Coupon Bonds
Dated	15 April 1999	29 April 1999	2 March 2005	2 March 2005	2 March 2005
Amount	\$35,000,000	\$297,782,516	\$162,438,434	\$53,761,686	\$174,402,930
Current Balance	\$34,964,194	\$462,005,571	\$20,261,863	\$120,341,363	\$384,504,107
Rate	7.125% interest, payable semi-annually	7.300% YTM	5.425% YTM	5.7% YTM	Weighted average YTM ~5.60%
Term/Maturity	15 Feb 2035	Staggered (2003 to 2035)	15 Feb 2045 Early Redemption Scheduled target: 2021	15 Feb 2043 Early Redemption Scheduled target: 2035	Staggered (2036 to 2056)
Issuer Buyback	No	Yes (bonds maturing on or before 2021)	Yes	No	No
Early Redemption	Yes, but with make whole premium	Yes, but with make whole premium	Targets 2005A Early Redemption Schedule	Targets 2005 B Early Redemption Schedule	No
Defeasible	Yes	Yes	Yes	Yes	Yes

Mr. Lerner explained that most of TRIP II's debt was structured as zero-coupon bonds¹⁶⁹ to allow for lower toll prices earlier in the life of the Greenway with the anticipation that traffic volumes would increase over time, generating sufficient revenues and cash flows to cover increasing debt service obligations.¹⁷⁰ Traffic volumes have not increased as much as anticipated, resulting in TRIP II's struggles to meet the MCR and ACR.¹⁷¹

Mr. Lerner provided another table showing the annual debt service amounts for each of the above bonds and in total, from 2020 through 2056.¹⁷² He explained that total debt service in 2020 and 2021 (approximately \$30.5 and \$38.6 million, respectively) is significantly lower than in subsequent years (ranging from approximately \$68.5 to \$84.7 million) because of bond

¹⁶⁸ Ex. 3 (Lerner direct) at 13-14.

¹⁶⁹ Zero-coupon bonds do not pay interest in cash during the life of the bonds. Instead, they are sold at a discount to their face value at maturity and the interest accrues on top of the principal over the life of the bond. The principal and accrued interest are paid at maturity. *Id.* at 12.

¹⁷⁰ *Id.* at 12.

¹⁷¹ *Id.* at 12-13.

¹⁷² *Id.* at 15.

buybacks in 2011 and 2012.¹⁷³ These increasing debt service obligations, and the debt coverage requirements included in the bond indentures, will require steady toll increases, in his view.¹⁷⁴

Mr. Lerner discussed the history of tolls that have been set for the Greenway using a rate setting methodology unique to the Greenway.¹⁷⁵ He discussed Code § 56-542 D and I.¹⁷⁶ He explained approval of the Greenway's Certificate of Authority, which extends through 2056.¹⁷⁷ When the Certificate of Authority expires or is terminated, the Code provides that the Greenway assets and improvements, including all land held by TRIP II in fee simple, will be dedicated to the Commonwealth for highway purposes at no cost to the Commonwealth.¹⁷⁸

Mr. Lerner compared the toll prices of the Greenway to other toll roads, bridges, and a tunnel in the Commonwealth, on a per-trip and per-mile basis.¹⁷⁹ In his view, this comparison demonstrates the Greenway tolls provide a good value to users on a per-mile basis.¹⁸⁰ On cross-examination, he confirmed that the Greenway, unlike various roads in this comparison, does not use dynamic tolling or have any tunnels or bridges to traverse comparable bodies of water.¹⁸¹

Mr. Lerner listed a number of people who are statutorily exempt from paying the Greenway toll while in performance of their official duties.¹⁸² In 2018, he indicated more than 300,000 of these non-revenue trips occurred, representing approximately \$1.5 million in lost revenue. He indicated that since 2005 the Greenway has had 4 million non-revenue trips with an associated lost revenue of \$16 million.¹⁸³

Mr. Lerner compiled the annual loss/profit on the Greenway from audited financial statements. Except for a \$0.8 million profit in 2017, the Greenway generated losses each year since it opened. The cumulative amount shown over this period is a \$609.2 million loss.¹⁸⁴

Notwithstanding these losses reported on its profit and loss statement, TRIP II remains viable because it usually generates a small positive cash flow that covers the cash expenses of the business and allows it to continue operating.¹⁸⁵ Mr. Lerner attributed the differences between accounting losses/profits and actual cash flow largely to the reporting of non-cash expenses, such as depreciation and the realization of deferred costs, and the way debt service is recognized in

¹⁷³ *Id.* at 14-15.

¹⁷⁴ *Id.* at 16.

¹⁷⁵ *Id.* at 17-20.

¹⁷⁶ *Id.* at 16-17.

¹⁷⁷ *Id.* at 18. Initially, the Certificate of Authority covered a 40-year period ending 2036. As part of a subsequent debt refinancing, the Commission extended this period through 2056. *Id.* See also Ex. 60 (Armstrong) (citing *Application of Toll Road Investors Partnership II, L.P., For Approval of Refinancing and Amendment of Certificate of Authority*, Case No. PUF-2001-00017, 2001 S.C.C. Ann. Rep. 655, Final Order Approving Refinancing and Amending Certificate of Authority (Nov. 7, 2001)).

¹⁷⁸ Ex. 3 (Lerner direct) at 18.

¹⁷⁹ *Id.* at 21.

¹⁸⁰ *Id.* at 20.

¹⁸¹ Tr. at 262-63 (Lerner).

¹⁸² Ex. 3 (Lerner direct) at 22. While Mr. Lerner identified Code § 33.1-252 as the location of this exemption, it was moved to Title 33.2 when Title 33.1 was repealed. See Code § 33.2-613; 2014 Va. Acts Ch. 805.

¹⁸³ Ex. 3 (Lerner direct) at 23.

¹⁸⁴ *Id.* at 24.

¹⁸⁵ *Id.* at 25.

the accounts. For zero-coupon bonds, TRIP II reports the full interest expense on the profit and loss statement but the total debt service cash payment for each year can differ.¹⁸⁶ He clarified that a small positive cash flow does not mean TRIP II made distributions to investors while reporting losses. He reiterated that no distributions have been made since 2006 and equity investors have not yet received distributions equaling their total investment in the Greenway.¹⁸⁷

Mr. Lerner indicated that TRIP II incurs several significant annual costs that other state roads and private toll roads do not. Because the Greenway was built in part on private land owned by TRIP II in fee simple, TRIP II pays Loudoun County property taxes. These taxes totaled \$4 million in 2018 alone, and \$54 million since TRIP II acquired the land.¹⁸⁸ For another part of the Greenway that TRIP II does not own, TRIP II pays \$600,000 in annual land rental fees to the Metropolitan Washington Airports Authority (“MWAA”). These land rental fees totaled \$11 million through 2019.¹⁸⁹ TRIP II also pays nearly \$1 million annually to Virginia State Police for law enforcement on the Greenway.¹⁹⁰

Mr. Lerner identified several exogenous factors that he believes have negatively impacted Greenway traffic volumes. In particular, he cited improvements to Routes 7 and 28 that he characterized as aggressive investment by Loudoun County to directly compete with the Greenway and draw traffic away from it. These include five grade separations and de-signalizations on Route 7 and grade separations to 11 intersections on Route 28, all between 2005 and 2018. He referenced the conclusion of Company witness Racciatti testimony that the collective impact of these network improvements has reduced peak traffic on the Greenway by approximately 39,000 average daily trips, compared to a reduction of 18,000 average daily trips due to toll price changes for the Greenway or Dulles Toll Road.¹⁹¹ Mr. Lerner also contrasted the more than \$1 billion in taxpayer funding spent on the Route 7 and 28 improvements to the private investment in the Greenway, which “has never taken a single dollar of government funds and only charges users who actually drive on the road.”¹⁹²

Expanding on this point, Mr. Lerner detailed the \$20 million Sycolin overpass above Route 15. He provided satellite image pictures of the project area before and after its completion in August 2014. He testified that this project prevented Greenway traffic from merging onto Route 15 safely and efficiently, which in turn caused traffic backups down the Greenway. He testified that this project also made entering the Greenway at the Battlefield Parkway entrance the only realistic way for drivers on Sycolin Road to travel west. Since 2013, average speed on the Greenway after the Battlefield Parkway Ramp between 5:00 p.m. and 5:30 p.m. has fallen from 55 miles per hour to 21 miles per hour. Additionally, while average speeds on Route 15 initially rose with removal of traffic lights, since 2019 average speeds are now less than half the speeds of 2013 due to increased traffic exiting the Greenway westbound and the westbound traffic arriving from Route 7.¹⁹³ He identified two projects, one of which

¹⁸⁶ *Id.*

¹⁸⁷ *Id.*

¹⁸⁸ *Id.* at 26.

¹⁸⁹ He indicated the annual lease amount paid to MWAA is set to increase to \$2 million in 2036. *Id.*

¹⁹⁰ *Id.*

¹⁹¹ *Id.* at 27-28.

¹⁹² *Id.* at 28-29.

¹⁹³ *Id.* at 29-31.

would be co-funded by Loudoun County, to relieve westbound congestion at this end of the Greenway.¹⁹⁴

When asked during cross-examination about whether Loudoun County was pursuing local road improvements to compete with the Greenway, Mr. Lerner testified that he cannot speak to the incentive, directive, or objectives of Loudoun County.¹⁹⁵ He testified that the effect of these improvements, rather than Loudoun County's intent, should factor into the Commission's evaluation of whether the proposed tolls materially discourage Greenway usage.¹⁹⁶

Mr. Lerner also identified capital improvements planned for the east end of the Greenway, which would cost approximately \$18 million. He expects these projects to be completed during the first half of 2020.¹⁹⁷

Mr. Lerner identified the proposed maximum toll prices, which are included in my discussion below.¹⁹⁸ According to him, these new prices would allow TRIP II management to maintain a business plan consistent with its financial needs. He cited TRIP II's financial obligations associated with increasing debt service obligations, Loudoun County property taxes, operational and maintenance costs, and major capital improvements, all in the context of softening revenues due to the negative impact on traffic from improvements to the local road network.¹⁹⁹

Mr. Lerner explained the relationship between the Greenway's maximum off-peak and peak prices. While initially peak prices were set using a 20% premium to off-peak prices, this premium diminished in real terms with uniform price increases under Code § 56-542 I.²⁰⁰ He testified that the proposed toll increases would escalate off-peak prices at a slower rate than peak prices, which takes into consideration the lower net benefits exhibited by off-peak travelers that is expected to improve the Greenway's utilization and reduce congestion by encouraging off-peak travel.²⁰¹

As for voluntary discounts TRIP II currently provides on the western end of the Greenway, Mr. Lerner indicated that TRIP II is considering discontinuing these discounts when the tolls approved in this proceeding become effective. Simultaneously, TRIP II would remove the premium paid by credit card users at such locations.²⁰²

Mr. Lerner provided updated information on the methods of payment currently accepted due to coronavirus. For employee and customer safety, cash payments have been suspended

¹⁹⁴ *Id.* at 32, 34.

¹⁹⁵ Tr. at 266-67 (Lerner).

¹⁹⁶ Tr. at 269-70 (Lerner).

¹⁹⁷ Ex. 3 (Lerner direct) at 32-33. *See also* Exs. 60, 61C (Armstrong) at Appx. C, p. 4 (providing update on capital expenditures).

¹⁹⁸ Ex. 3 (Lerner direct) at 35, 37.

¹⁹⁹ *Id.* at 34.

²⁰⁰ *Id.* at 35-36.

²⁰¹ *Id.* at 37.

²⁰² *Id.*

since April. Credit card and E-ZPass payments remain available. E-ZPass remains the predominant payment method.²⁰³

Mr. Lerner echoed Company witness Racciatti's conclusions that the proposed toll rates would be reasonable in relation to the benefit obtained and would not materially discourage use of the roadway to the public. On the latter issue, he indicated that the proposed weighted average increase of 32% by 2025 is expected to result in a total traffic decline of 6.7% over the same five-year period.²⁰⁴

Mr. Lerner described the reinvested earnings account ("REA") the Commission established in 1990 to track the hypothetical balance of invested equity capital, authorized but unearned return on equity, and actual disbursements to equity investors in TRIP II.²⁰⁵ The REA is a simulated account that does not exist at a financial institution and has no real cash balance or value.²⁰⁶ From the Greenway's opening through June 30, 2019, TRIP II had accumulated a deficit REA balance of approximately \$7.1 billion.²⁰⁷ While he expressed hope the proposed tolls would allow TRIP II to meet its debt service and other obligations such that it may provide distributions to the ownership in the future, Mr. Lerner indicated that TRIP II did not specifically design the tolls to begin drawing down the REA.²⁰⁸

While Mr. Lerner testified that it is impossible to definitively forecast the impact the proposed tolls would have on the Greenway's finances, he sponsored indicative cashflows to equity projections under the following scenarios: (1) negative traffic growth of 2.5%, broadly in line with growth in 2019 and compound average growth from 2016 to 2019; (2) no annual growth, in line with compound average growth from 2009 to 2019; and (3) positive traffic growth of 2.5%, broadly in line with the compound average annual growth rate from 2011 to 2016.²⁰⁹ Under each of these hypothetical scenarios, TRIP II expects to earn an annual rate of return on equity ("ROE") that is significantly below the 14.0% ROE authorized by the Commission.²¹⁰ None of these scenarios would result in the REA balance reaching zero, which is when TRIP II would earn its allowed rate of return from the initial investment to date.²¹¹

Until the unlikely event that TRIP II recovers the full balance of the REA, which is currently over \$7 billion, Mr. Lerner testified that the Greenway's tolls will not provide more than a reasonable return.²¹² For perspective, Mr. Lerner indicated that for TRIP II to recover this balance, Greenway traffic would have to increase by 1,000% or its tolls would need to increase to approximately \$70 per trip with no decrease in traffic. He found these scenarios unrealistic, infeasible, and different from what TRIP II proposed in this case.²¹³

²⁰³ Tr. at 270-72 (Lerner). See also Ex. 10 (Racciatti direct) at WSP Report, p. 4.

²⁰⁴ Ex. 10 (Racciatti direct) at WSP Report, pp. 37-38.

²⁰⁵ *Id.* at 40.

²⁰⁶ Ex. 4 (Lerner supp. direct) at 5.

²⁰⁷ Ex. 3 (Lerner direct) at 40-41; Ex. 2 (Application) at Attached Ex. 3.

²⁰⁸ Ex. 3 (Lerner direct) at 41.

²⁰⁹ Ex. 4 (Lerner supp. direct) at 2; Ex. 5C (Lerner supp. direct – confidential) at Conf. Attachments I, II, III.

²¹⁰ Ex. 4 (Lerner supp. direct) at 3.

²¹¹ *Id.* at 3.

²¹² *Id.* at 6.

²¹³ *Id.* See also Exs. 6C, 7C.

Mr. Lerner indicated the Commission has previously considered, but not required, distance-based Greenway pricing. He identified constraints to implementing such pricing, including that it would violate the Comprehensive Agreement and result in significant infrastructure costs.²¹⁴ He found it reasonable to expect that distance-based pricing would increase usage of the road for short trips, likely worsening congestion at the eastern and western ends of the Greenway during peak periods.²¹⁵

Mr. Racciatti provided and sponsored a Report prepared by Louis Berger, U.S., Inc. (“WSP Report”), on behalf of TRIP II.²¹⁶ The WSP Report addresses two of the tests under Code § 56-542 – whether the proposed tolls: (1) are reasonable in relation to the benefit obtained; and (2) will not materially discourage use of the roadway by the public.²¹⁷

Mr. Racciatti described various data, and sources thereof, used for analysis by the WSP Report.²¹⁸ Mr. Racciatti explained the WSP Report’s analytical approach to measuring Greenway users’ benefit to cost. Consistent with past analysis related to the Greenway and industry practice, the WSP Report focused on benefits to the average user, with the benefit-cost ratio calculated by dividing the total user benefit by cost. The WSP Report calculated a benefit-cost ratio for various Greenway users based on historically observed data and then examined the proportion of the net benefit that would be reduced by the proposed toll prices.²¹⁹ Mr. Racciatti indicated this approach also followed guidance published in the U.S. Department of Transportation’s (“USDOT”) *Benefit-Cost Analysis Guidance for Discretionary Grant Programs*, 2018.²²⁰

As described by Mr. Racciatti, the WSP Report calculated a net benefit for Greenway users as the difference between the incremental benefit Greenway users realize – through faster and more reliable travel times, a reduced accident rate, lower operating costs – relative to a trip on an un-tolled alternate route. When the benefits exceed the costs paid through the Greenway’s tolls, there is, in aggregate, a net benefit to Greenway users.²²¹ To account for the potential variation in total benefits obtained by different Greenway users, the WSP Report segmented its analysis to calculate benefit-cost ratios for the following four user classes: (1) personal and commuting trips; (2) business trips; (3) airport access/egress; and (4) trucks.²²²

Mr. Racciatti explained how the WSP Report calculated user benefits. As discussed further in the analysis below, travel time savings were valued by multiplying (i) a proportion of median hourly income or some other benchmark measure by (ii) travel time savings calculated by comparing TomTom International BV (“TomTom”) travel time data for July 2018 through

²¹⁴ Ex. 3 (Lerner direct) at 42-43.

²¹⁵ *Id.* at 43.

²¹⁶ Ex. 10 (Racciatti) at Ex. B. Louis Berger, U.S., Inc., is a wholly owned subsidiary of WSP USA, Inc. *Id.* at 3. Mr. Racciatti is a former Vice President of WSP USA, Inc. *Id.* at 1.

²¹⁷ *Id.* at 4.

²¹⁸ *Id.* at 4-6.

²¹⁹ *Id.* at 7.

²²⁰ *Id.*

²²¹ *Id.* at 8.

²²² *Id.* at 8-9.

June 2019.²²³ In calculating the value of travel time savings per vehicle, the WSP Report assumed vehicle occupancy of 1.06 or 1.11, depending on the trip type.²²⁴ Mr. Racciatti characterized the Greenway's travel time savings presented in the WSP Report as attractive, with savings calculated during all times of day.²²⁵

The WSP Report also used TomTom data for this period to value travel time reliability. More specifically, the WSP Report measured "buffer times" by applying a standard deviation analysis to identify the difference between the 95th percentile travel time and the average travel time.²²⁶ This travel time reliability calculation was then multiplied by 1.5 times the value for travel time savings, based on literature cited in the WSP Report.²²⁷ Mr. Racciatti concluded that trips on the Greenway are predictably faster and more consistent than the un-tolled alternatives.²²⁸

Vehicle operating savings included monetary values calculated for reduced fuel consumption based on average travel speed and total distance traveled, as well as other variable operating costs and fixed operating costs per mile traveled.²²⁹ Mr. Racciatti attributed the lower vehicle operating costs identified in the WSP Report to the non-stop option offered by the Greenway, compared to the un-tolled alternatives, which all have multiple instances of stopping and starting at traffic signals and lower travel speeds.²³⁰

For safety benefits of the Greenway, the WSP Report calculated crash cost savings based on the number and severity of accidents, including consideration of direct and opportunity costs.²³¹ Mr. Racciatti reported that over the past five years the Greenway had only seven crashes with injuries and no fatal accidents for every 100 million vehicle miles traveled, compared to 80 crashes with injuries and 0.5 fatalities for every 100 million vehicle miles driven on other roads in Loudoun County.²³²

The value of time, reliability, operating savings, and safety benefit calculations in the WSP Report, and the resulting benefit-cost ratios, are discussed further in the analysis below. The WSP Report conducted benefit-cost analysis of the Greenway compared to the Route 28/Route 7 alternative and a composite alternative. The composite alternative is an average that is weighted by traffic share of several alternatives, as discussed further below.²³³

Mr. Racciatti testified that the benefits calculated in the WSP Report do not factor in any travel time improvements anticipated from major capital projects underway or planned on the

²²³ *Id.* at 9-10 and WSP Report, pp. 42-46, 48-55. The travel time data is collected from TomTom GPS devices used by drivers on the relevant routes, which is aggregated and anonymized for traffic analysis. *Id.* at WSP Report, p. 48, n.20.

²²⁴ *Id.* at WSP Report, pp. 43-44.

²²⁵ *Id.* at 11-12.

²²⁶ *Id.* at 10 and WSP Report, pp. 46-47, 49-52, 55-56.

²²⁷ *Id.* at WSP Report, p. 47.

²²⁸ *Id.* at 12.

²²⁹ *Id.* at 10 and WSP Report, pp. 56-59.

²³⁰ *Id.* at 12-13.

²³¹ *Id.* at 11 and WSP Report, pp. 60-65.

²³² *Id.* at 13.

²³³ *Id.* at WSP Report, pp. 52-54.

Greenway, including widenings and improvements at the eastern end where the road merges with the Dulles Toll Road and at the western end where it merges with the Route 7/15 Bypass.²³⁴ Nor do the calculations factor in the opening of two new Silver Line stations in the middle of the Greenway.²³⁵

Based on the analysis and findings of the WSP Report, Mr. Racciatti concluded that the proposed toll prices are reasonable to the user in relation to the benefit obtained.²³⁶

Mr. Racciatti explained how the WSP Report analyzed whether the proposed toll prices would materially discourage use of the roadway by the public. The WSP Report used an econometric regression analysis to evaluate the price elasticity of demand on the Greenway while controlling for the effect of factors other than the Greenway's toll prices.²³⁷

He listed the general steps used to conduct the regression analysis. First, a monthly data set of transactions on the Greenway – by vehicle type, entry/exit ramp (where available), and time of day – was compiled, excluding non-revenue transactions by users that are statutorily exempt from paying. Second, a weighted fixed effects panel regression was chosen as the model to incorporate the factors influencing traffic at each gantry, weighted by transaction volume so that the analysis was not unduly influenced by traveler behavior on ramps with significantly smaller traffic counts. Third, a range of possible explanatory variables were tested to identify variables that (a) have a high relative impact on Greenway traffic; (b) are independent from one another; (c) most accurately explain historical shifts in demand; and (d) provide as detailed a picture as possible to truly isolate the effect of toll price increases on Greenway traffic.²³⁸ Fourth, the model's integrity was tested by measuring the R-squared to ensure the model reasonably reflected the relationship between predictive variables and historical traffic levels.²³⁹

Mr. Racciatti defended his inclusion of a road improvement variable, which he testified does not present a multi-collinearity problem.²⁴⁰ He also clarified that the R-squared figure he provided to Staff in discovery differed from the panel model's R-squared.²⁴¹ He corrected coefficients for two variables presented in the WSP Report.²⁴²

Mr. Racciatti testified that all models used by the WSP Report have highly statistically significant explanatory variables that explain more than 98% of car demand and 79% of truck

²³⁴ *Id.* at 16.

²³⁵ Tr. at 295-96 (Racciatti). As explained by Loudoun Board witness Kroboth, the Silver Line extension into Loudoun County, the completion of which is expected in 2021, extends the western terminal station for the Silver Line Metro rail system from Reston to Ashburn. Tr. at 357 (Kroboth). West of Dulles International Airport, the extended rail line will be located in the median of the Greenway. Tr. at 581 (Lerner).

²³⁶ Ex. 10 (Racciatti direct) at 16.

²³⁷ *Id.* at 17.

²³⁸ The variables identified in this step include: Loudoun County population; Loudoun County per capita real income; gas prices; rain and snow amounts; toll prices on the Greenway; toll prices on the Dulles Toll Road; one-off special events, such as Hurricane Sandy; monthly seasonality; and widenings and improvements on un-tolled alternate routes that compete with the Greenway. *Id.* at 19.

²³⁹ *Id.* at 18-20.

²⁴⁰ Tr. at 300-03 (Racciatti).

²⁴¹ Tr. at 307-08 (Racciatti).

²⁴² Tr. at 309-12, 593 (Racciatti).

traffic on the Greenway. The WSP Report calculated toll price elasticities of -0.21 for two-axles vehicles and -0.23 for vehicles with three or more axles. Based on this analysis, he expects the approximately 31.8% weighted average toll price increase would result in an approximately 6.7% decline in traffic over the 2021 to 2025 period, or about a 1.3% decline per year. In comparison, he expects an approximately 3.4% decline in 2023 with an increase in the Dulles Toll Road tolls; and an approximately 0.7% to 5.7% decline in traffic volume each time an improvement on a competing un-tolled alternative is completed.²⁴³

The WSP Report included a chart to illustrate how the key variables included in its model for peak traffic by two-axle vehicles explain usage trends on the Greenway between 2005 and 2019.²⁴⁴ The WSP Report included a similar chart to explain weekday usage trends over the same period for vehicles with three or more axles.²⁴⁵

In Mr. Racciatti's opinion, the WSP Report and the data analyzed show that the proposed toll prices do not materially discourage use of the roadway by the public.²⁴⁶

During cross-examination, he acknowledged statements in the WSP Report that it "assumes no major recession or significant economic restructuring will occur which could substantially reduce trip-making and traffic in the region or alter travel patterns in the future" and "[a]ny significant departure from these basic assumptions could materially affect the conclusions of this Report."²⁴⁷ He indicated a purpose of this language is to ensure readers are aware of the limitations of the WSP Report and do not rely on its conclusions without adjustment or professional judgment regarding current developments and other factors.²⁴⁸

Loudoun Board

Loudoun Board offered the testimony of **Tim Hemstreet**, County Administrator for Loudoun County; **Joseph Kroboth, III**, Director of Transportation and Capital Infrastructure for Loudoun County; **David B. Roden**, Senior Consulting Manager at AECOM; and **Dr. Michael J. Webb**, Vice President²⁴⁹ with Regulatory Economics Group, LLC.

Mr. Hemstreet discussed the Board's motivation for participating in this case. He explained that the Greenway is a significant component of Loudoun County's transportation network between Leesburg and Route 28.²⁵⁰ While the Greenway was intended to be a reasonably priced and faster alternative to existing roads that would alleviate congestion on local roads, he believes this benefit has never transpired. He pointed to the fact that while Loudoun County's population has increased significantly since 2005, Greenway traffic has decreased and

²⁴³ Ex. 10 (Racciatti direct) at 21-22. The WSP Report provided more granular calculations of demand elasticity for two-axle vehicles (peak weekday, off-peak weekday, and weekend) and for three or more axle vehicles (weekday and weekend). *Id.* at 21 and WSP Report, p. 81.

²⁴⁴ *Id.* at WSP Report, p. 84.

²⁴⁵ *Id.* at WSP Report, p. 87.

²⁴⁶ *Id.* at 22.

²⁴⁷ Tr. at 279-80 (Racciatti) (quoting Ex. 10 (Racciatti direct) at WSP Report, p. 89).

²⁴⁸ Tr. at 319-20 (Racciatti).

²⁴⁹ Tr. at 401 (Webb).

²⁵⁰ Ex. 20 (Hemstreet) at 2.

traffic on major alternatives has increased.²⁵¹ On cross-examination, he acknowledged that vehicles using the Greenway to traverse Loudoun County or originating in Loudoun County would drive on public roads in Loudoun County if the Greenway did not exist.²⁵²

Based on the Board's analysis, the Greenway's high tolls are pushing users onto local roads, which creates more congestion on these roads and increases the state and local resources needed to maintain and improve these roads. He believes the Greenway should benefit all citizens and visitors, but that the toll prices are unaffordable to many.²⁵³

Mr. Hemstreet testified that until recently County employees regularly used the Greenway for business travel and commuting; however, the proposed toll increases are cost-prohibitive and, if approved, Loudoun County would advise employees to avoid the Greenway for business travel.²⁵⁴ He advised that Loudoun County is planning for a \$100 million revenue loss for the current fiscal year.²⁵⁵

Mr. Hemstreet explained that Loudoun County's population quadrupled between 1990 and 2018, increasing from approximately 86,000 to 406,850. The Board expects Loudoun County's population to increase to approximately 695,000 by 2040.²⁵⁶

Mr. Hemstreet identified Loudoun County's digital fiber network and Dulles International Airport as two primary drivers in Loudoun County's economic growth. He indicated Loudoun County is attempting to diversify its economic base through new corporate headquarters and tourism. In Loudoun County, domestic tourism has an estimated annual economic impact exceeding \$1.7 billion and approximately 17,000 tourism jobs.²⁵⁷ He recognized that Loudoun County's economic growth would be facilitated if drivers used, rather than avoided, the Greenway. However, he believes that increased tolls would result in lower Greenway usage. He added that COVID-19 has made it more difficult for many tourists, employees, and residents to afford using the Greenway.²⁵⁸

Mr. Hemstreet disagreed with Company witness Lerner's assertion that Loudoun County investment in local roads was to directly compete with, and drive traffic away from, the Greenway. Mr. Hemstreet explained that Loudoun County receives no toll revenue from local road usage and increased usage on such roads ultimately requires more investment by Loudoun County and Commonwealth.²⁵⁹ He described how Loudoun County obtains funding from the Smart Scale program and the Northern Virginia Transportation Authority. For both, funding is competitive and depends in part on a project's ability to reduce congestion.²⁶⁰

²⁵¹ *Id.* at 3.

²⁵² Tr. at 349-50 (Hemstreet).

²⁵³ Ex. 20 (Hemstreet) at 3-4.

²⁵⁴ *Id.* at 4.

²⁵⁵ *Id.*

²⁵⁶ *Id.* at 5.

²⁵⁷ *Id.* at 5-6. He also identified increasing agricultural opportunities and activities. *Id.*

²⁵⁸ *Id.* at 6.

²⁵⁹ *Id.* at 7-8.

²⁶⁰ Tr. at 338-41 (Hemstreet).

The Loudoun Board would prefer that the existing roads be used, rather than taking on the cost and responsibility for road projects to address congestion.²⁶¹ Mr. Hemstreet testified that Loudoun County is not competing with TRIP II and if it were the Loudoun Board would likely support toll increases for the Greenway.²⁶²

Mr. Hemstreet expressed concern that TRIP II has not attempted to revise the WSP Report or revisit its proposed toll increases to account for the impacts of COVID-19.²⁶³ He identified two developments in July that he testified will lower traffic, but that the WSP Report does not consider.²⁶⁴ First, Loudoun County Public Schools decided to use 100% distance learning to start the 2020-2021 school year, meaning fewer trips to schools and more parents working from home. Second, the Virginia Department of Labor and Industry (“DOLI”) issued workplace regulations that direct employers with office-based workplaces to maximize telework to the extent possible and limit the number of employees or customers in a building.²⁶⁵ Mr. Hemstreet testified that direct government intervention in the form of specific restrictions on businesses and people, such as the DOLI regulations, differentiate the current economic downturn from the Great Recession of 2007-2009.²⁶⁶

He explained Loudoun County’s response to COVID-19 and his responsibility as director of emergency management.²⁶⁷ He does not see an economic recovery with a return to regular commuting patterns until either a vaccine or reliable treatment becomes widely and commercially available. He believes this will not begin until at least this winter, and then commercial distribution will take time.²⁶⁸ He would not characterize this as a rapid recovery.²⁶⁹

Mr. Kroboth quantified recent transportation investment by Loudoun County and, like Mr. Hemstreet, testified that such investment is not to compete with, or lure traffic away from, the Greenway. Mr. Kroboth indicated that in recent years, Loudoun County has invested approximately \$576 million on transportation projects, including approximately \$521 million devoted to roads.²⁷⁰ According to Mr. Kroboth, many such investments enhance access to, or complement, the Greenway. He indicated that Loudoun County’s investment in the Belmont Ridge Road, Loudoun County Parkway, and Old Ox Road corridors creates Greenway connectivity opportunities.²⁷¹

He described local roads as a cost center, and not a revenue source, due to their constant need for improvement and maintenance.²⁷² He also characterized Loudoun County, the Commonwealth, and others that fund such improvement and maintenance on alternative local

²⁶¹ Tr. at 341-42 (Hemstreet).

²⁶² Tr. at 342 (Hemstreet).

²⁶³ Ex. 20 (Hemstreet) at 7-8.

²⁶⁴ Tr. at 333 (Hemstreet).

²⁶⁵ Tr. at 330-32 (Hemstreet); Ex. 21.

²⁶⁶ Tr. at 334-37 (Hemstreet).

²⁶⁷ Tr. at 327-28 (Hemstreet).

²⁶⁸ Tr. at 328-29 (Hemstreet).

²⁶⁹ Tr. at 329 (Hemstreet).

²⁷⁰ Ex. 22 (Kroboth) at 3.

²⁷¹ *Id.*

²⁷² *Id.*

roads as “providers of last resort.”²⁷³

To plan and prioritize transportation improvements, Loudoun County primarily relies on its Capital Improvement Program, and VDOT’s Six-Year Improvement Program. Planning for roadway locations and alignments contained in the Countywide Transportation Plan is determined by using computer modeling of trips generated by planned land uses. Additionally, some transportation funding provided to Loudoun County limits the types of projects on which it can be spent. Competitively awarded funding from the State and regional authorities is awarded for specific projects using a performance-based analysis process to address congestion mitigation, safety, economic development, and connectivity.²⁷⁴

Loudoun County prioritizes planned transportation improvements based primarily on congestion mitigation and safety, with priority improvements including projects that: (1) complete missing segments of arterial and major collector corridors; (2) add capacity to reduce congestion and the frequency of crashes; (3) provide connectivity in and around Metrorail stations; (4) provide significant economic developments to Loudoun County; (5) offer a multi-modal choice for citizens; and (6) incorporate “complete streets” concepts and features.²⁷⁵

Mr. Kroboth testified that several of Loudoun County’s transportation improvements over the past 15 years were needed (at least in part) to improve traffic on major alternative routes like Routes 7, 28, and 50. He believes the fact that many more citizens and visitors to Loudoun County are relying on local alternatives to the Greenway suggests that these former Greenway users no longer find the tolls reasonable in relation to the purported benefits of using the Greenway. He cited the fact that the Greenway is the only east-west roadway corridor designed and constructed to limited access highway standards as a competitive advantage for the Greenway, if it were “priced appropriately.”²⁷⁶ He testified that Greenway investors should have known a surrounding road network would be built, based on his review of a map in the 1995 County-wide transportation plan.²⁷⁷

Mr. Kroboth indicated that pursuant to the Code and TRIP II’s Comprehensive Agreement with VDOT, TRIP II must enlarge or expand the Greenway when “unsatisfied demand for use of the roadway makes it economically feasible to do so.”²⁷⁸ He explained that while the Greenway is currently six lanes, TRIP II maintains a right-of-way intended to accommodate 10 lanes. In his view, the existing and proposed tolls have and will materially discourage Greenway usage, which in turn negatively affects the economic feasibility of and pressure to expand the Greenway.²⁷⁹

Mr. Kroboth contrasted funding for the Greenway compared to public roads. He found no valid comparison between State and local governments and TRIP II.²⁸⁰

²⁷³ *Id.* at 4.

²⁷⁴ *Id.* at 4-5; Tr. at 357-58 (Kroboth).

²⁷⁵ Ex. 22 (Kroboth) at 6.

²⁷⁶ *Id.* at 7.

²⁷⁷ Tr. at 358-59 (Kroboth).

²⁷⁸ Ex. 22 (Kroboth) at 8 (citing Code § 56-543 B.2).

²⁷⁹ *Id.* at 8.

²⁸⁰ *Id.* at 9.

Mr. Kroboth pointed out the WSP Report indicates that approximately 67% of daily trips on the Greenway “cover a distance that yields a positive net benefit” in relation to the toll price charged. To him, this means that approximately one-third of daily Greenway users are inequitably cross-subsidizing the other 67% of daily users.²⁸¹

Mr. Roden discussed: (1) the current and future impacts of the COVID-19 pandemic on traffic patterns in Virginia and the Greenway; (2) the WSP Report, including aspects he believes are flawed; (3) the WSP Report’s elasticity study and the results of a similar modeling analysis conducted by AECOM; and (4) the findings of AECOM’s 2025 Analysis.²⁸²

Mr. Roden recognized that TRIP II’s Application was filed prior to the COVID-19 outbreak and therefore was based on conditions existing before the pandemic. He expects the short-term impacts of the pandemic on travel behaviors in 2020 and 2021 to be “devastating” while the longer-term impacts could be a “new normal” in which future travel behavior may be significantly different than it was in 2019.²⁸³

Mr. Roden identified several transportation authorities, including the Northern Virginia Transportation Authority and the Washington Metropolitan Area Transit Authority, which have engaged AECOM to estimate the short- and longer-term impacts of COVID-19 on travel behavior and identify potential issues and challenges for recovery.²⁸⁴ In Virginia, AECOM has used its Mobilities™ software tool to evaluate traffic pattern impacts from COVID-19 and identify a range of likely recovery scenarios that may occur in the next five years.²⁸⁵ Mr. Roden provided a promotional document describing the types of interactions and dependencies this customizable software was designed to model, including changes in public health, behaviors, and technologies.²⁸⁶ He testified that this software was recently enhanced to consider weekly changes in travel conditions based on COVID-19 travel restrictions and phased re-opening of the economy. He testified the software also considers safety concerns about returning to work and childcare, using transit and shared-ride services, and short- and longer-term impacts of unemployment, telework, and e-commerce.²⁸⁷

He provided the table below, which was presented at the Commonwealth Transportation Board’s June 17, 2020 meeting. Based on data collected by VDOT for freeways and major arterials in Northern Virginia, traffic in April and May was 50% and 30% lower, respectively, than in those months in 2019.²⁸⁸

²⁸¹ *Id.*

²⁸² Ex. 23 (Roden) at 3.

²⁸³ *Id.* at 3.

²⁸⁴ *Id.* at 4.

²⁸⁵ *Id.*

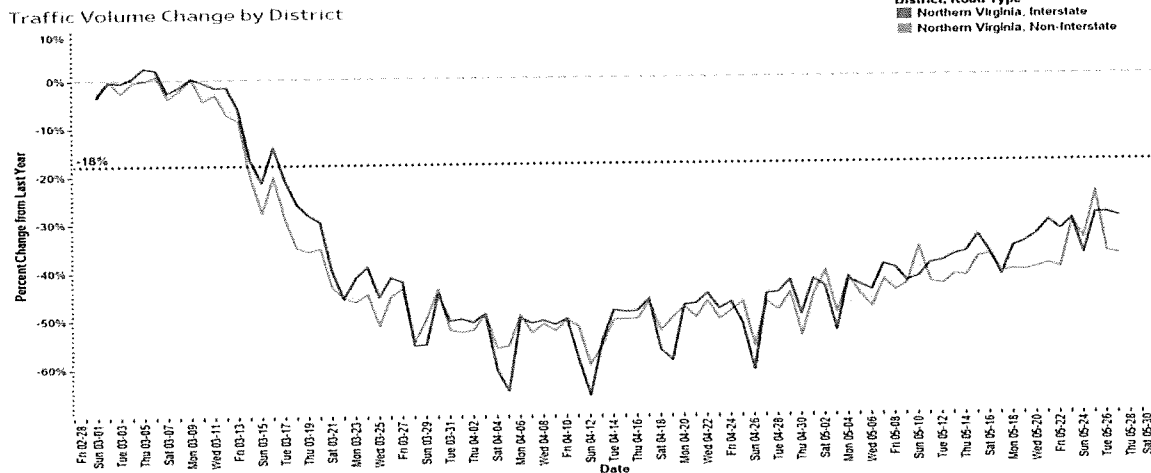
²⁸⁶ *Id.* at Attached Ex. B.

²⁸⁷ *Id.* at 4.

²⁸⁸ *Id.* at 4-5. The dates on the x-axis range from February 28 through May 30, 2020.

Volume Trends

All Vehicles Daily Volume Change in Northern Virginia



As for the Greenway, Mr. Roden testified that it has experienced traffic reductions significantly greater than those on Northern Virginia freeway and arterials. He provided a discovery response from the Company indicating that April and May 2020 Greenway traffic levels were 75% and 67% below April and May 2019 levels, respectively.²⁸⁹ In his opinion, these decreases were due to: (1) reduced traffic on alternative routes, which makes the Greenway benefits less attractive; (2) difficult economic conditions making toll-free alternatives preferable for cost-conscious drivers; and (3) increased unemployment and telework, resulting in less work travel.²⁹⁰ He expects reduced Greenway traffic, continued telework, remote business meetings and education, and a greater dependence on e-commerce due to the COVID-19 pandemic will continue to impact Greenway traffic “well into 2021 and beyond.”²⁹¹

Because TRIP II has not attempted to revise the WSP Report to reflect this “new reality,” he testified that the Application should be rejected. Alternatively, he recommended the Commission limit any current and future toll increases to annual, rather than multi-year, increases.²⁹²

According to Mr. Roden, the WSP Report follows the general practice of traffic studies for roadways. The WSP Report uses field data to establish existing conditions and historical trends, then uses modeling tools to analyze the impacts of various scenarios, such as a toll increase. However, Mr. Roden raised concerns about the WSP Report’s use of an economic regression model to calculate toll elasticity for Greenway users.²⁹³ He testified that regression models are essentially trend analyses that do not rely on travel theory. Furthermore, such models are subject to errors of aggregation and lack the ability to explain results in established traffic and driver behavior theory.²⁹⁴

²⁸⁹ *Id.* at 6 and Attached Ex. C; Tr. at 367 (Roden).

²⁹⁰ Ex. 23 (Roden) at 6-7.

²⁹¹ *Id.* at 9.

²⁹² *Id.*

²⁹³ *Id.* at 10.

²⁹⁴ *Id.* at 11.

While the input variables for the WSP Report's regression model represent the average condition of Greenway users, toll route choice is a complicated, individual decision-making process for Greenway users. Such decisions are impacted by roadway conditions (e.g., travel time savings, toll rate, route distance); trip type, purpose, origin and destination; and socioeconomic characteristics (e.g., individual income) that are different for each Greenway user. Mr. Roden believes "the error of aggregation manifests" in the regression model because individual users that have significantly different values of time and reliability from the mean value in the distribution will be underestimated or overestimated by the model.²⁹⁵ He found it difficult to verify TRIP II's regression model estimation with known traffic flow theories because the model's estimated parameters do not have meaningful units that can be explained with the traffic flow and toll choice theories.²⁹⁶ Mr. Roden further indicated that the WSP Report did not include a cross-validation step, although it is a common practice used to validate such models.²⁹⁷

Mr. Roden acknowledged that the WSP Report used a weighted fixed effects panel structure to try to mitigate the error of aggregation. However, he asserted that this does not address his concerns because the model still lacks the accuracy and capability of a travel demand model.²⁹⁸

In Mr. Roden's opinion, travel demand models are widely used to analyze traffic impacts in a manner superior to regression models.²⁹⁹ Travel demand models are established based on solid socioeconomic, traffic flow, and driver behavior theories. He indicated these models are scrutinized by transportation professionals and are trusted by the transportation community for their integrity and accuracy.³⁰⁰

Mr. Roden identified aspects of the WSP Report's benefit-cost analysis that he sees as flaws. He took issue with the method used to calculate the value of time, because he believed the factor for such calculations should be smaller at higher income levels.³⁰¹ In support of his opinion, he provided an illustration from the MWAA's comprehensive traffic and revenue study for the Dulles Toll Road in 2018.³⁰²

While Mr. Roden acknowledged the challenge in comparing value of time amounts from various sources due to market segment differences, he identified lower values used by transportation agencies in the Washington D.C. region.³⁰³ He identified the \$19.38 estimated average value of time from the 2018 Dulles Toll Road study, which is approximately 40% lower than the \$32.07 amount used in the WSP Report.³⁰⁴ He also identified a regional travel demand forecasting model, the "TPB Model", which sets single occupancy vehicle value of time between

²⁹⁵ *Id.* at 12.

²⁹⁶ *Id.*

²⁹⁷ *Id.*

²⁹⁸ *Id.*

²⁹⁹ *Id.* at 10.

³⁰⁰ *Id.* at 11.

³⁰¹ *Id.* at 13-14.

³⁰² *Id.* at 14. This study was admitted as Exhibit 28.

³⁰³ Ex. 23 (Roden) at 16.

³⁰⁴ *Id.* at 15.

\$29 and \$25 for peak and off-peak periods.³⁰⁵ The Loudoun County Model, which is based on the TPB Model with enhancements for local transportation needs, uses \$18 and \$12 values of time for peak and off-peak conditions, respectively.³⁰⁶

Next, Mr. Roden took issue with the WSP Report's method for calculating travel time savings, which he found to be over-simplified. Because this method estimated the time savings of all trips based on a comparison of only a few toll-free corridors, he believes the WSP Report method calculations fail to reasonably reflect the average time savings of all Greenway users. He asserted that most benefit-cost studies use travel demand models to provide more accurate disaggregated travel time savings estimations.³⁰⁷

Mr. Roden recognized that because the WSP Report's value of reliability is a multiple (1.5x) of its value of time, the former is overestimated if the latter is too high, as he asserts is the case.³⁰⁸ He indicated the regression model is more sensitive to the day-to-day variations in travel time that occur as a result of congestion and traffic accidents.³⁰⁹

Mr. Roden believes the operational cost savings and safety benefit calculations in the WSP Report also suffer from aggregation errors.³¹⁰

Mr. Roden reported that AECOM used the Loudoun County Model to verify the time savings benefit and toll elasticity analysis, based on existing 2019 traffic and toll conditions. He described the Loudoun County Model as a state-of-practice four-step travel demand model with four time periods and a sophisticated toll diversion algorithm in the assignment step. While the Loudoun County Model was built and calibrated to 2010 traffic conditions, AECOM developed a 2019 base year model by updating the socioeconomic data, adding recent roadway improvements, verifying toll rates on all toll facilities, and updating the transit model.³¹¹ AECOM also collected traffic and toll rates on the Greenway and Dulles Toll Road in addition to counts on the adjacent major roadways for model calibration.³¹²

Notwithstanding the methodological differences in the WSP Report's and AECOM's analyses, Mr. Roden reported that the WSP Report's time savings benefit "happens to be comparable to AECOM's estimate." It appears to him that the WSP Report's benefit estimation is within a reasonable range.³¹³

Turning to demand elasticity, Mr. Roden recommended using a toll sensitivity curve, which he believes offers a more comprehensive understanding of how toll changes impact

³⁰⁵ *Id.* at 15-16 (2019 dollars). Northern Virginia is included in the relevant region. *Id.* at 15. "TPB" refers to the Transportation Planning Board of the Metropolitan Washington Council of Governments ("MWCOC").

³⁰⁶ *Id.* at 16.

³⁰⁷ *Id.* at 17.

³⁰⁸ *Id.*

³⁰⁹ *Id.*

³¹⁰ *Id.* at 17-18.

³¹¹ *Id.* at 21. AECOM estimated socioeconomic data based on growth rates found in MWCOC-TPB's regional travel demand. *Id.*

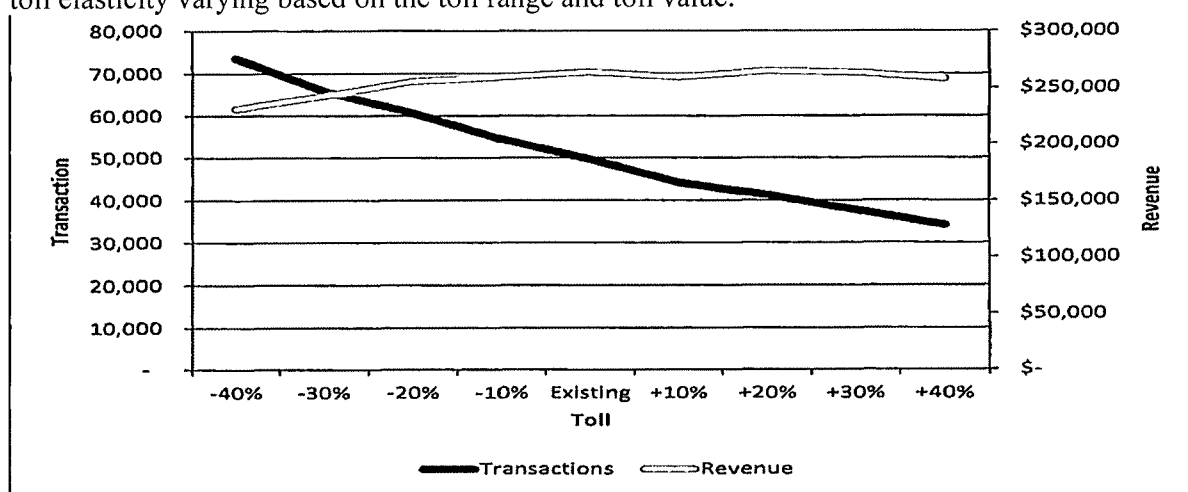
³¹² *Id.*

³¹³ *Id.* at 23-25. Mr. Roden confirmed the value(s) of time presented in his testimony are in 2019 dollars. Tr. at 362-64 (Roden); Ex. 24.

traffic.³¹⁴ In contrast, the WSP Report assumes traffic levels have a linear relationship with toll rate changes, which implies the traffic impact would be the same when the toll increases as the impact measured at the existing toll rate condition. While the WSP Report uses a single point of toll elasticity (-0.21) estimated at the existing condition, Mr. Roden testified this can be misleading because elasticity may vary drastically within the proposed range of toll increases over the next five years. He found it advisable to limit the application of a low toll elasticity to relatively small increases in toll rates.³¹⁵

AECOM calculated toll elasticity using the travel demand model. Mr. Roden testified that travel demand models provide "investment grade analysis," typically required by banks to finance investments in a new toll road.³¹⁶ These models are primarily forward-looking, but use historic data to validate their performance.³¹⁷ He believes the Loudoun County Model is superior to the TPB Model because the latter does not include toll choice with values of time by income.³¹⁸

AECOM used the Loudoun County Model to conduct multiple travel demand model runs at assumed toll levels, ranging from a 40% decrease of the Greenway's toll rates to a 40% increase.³¹⁹ Using this methodology, AECOM drew the following revenue curve, which shows toll elasticity varying based on the toll range and toll value.³²⁰



The relatively flat curve towards the top shows the existing tolls on the Greenway are already close to the level that maximizes revenue and the dark curve shows users are sensitive to toll rate changes. If the toll rate increases by 30%, AECOM estimates transactions would decrease by 24%, indicating -0.8 toll elasticity. If the toll rate increases by 10%, AECOM estimates transactions would decrease by 11%, indicating a -1.1 elasticity.³²¹ Based on this

³¹⁴ Ex. 23 (Roden) at 20.

³¹⁵ *Id.*

³¹⁶ Tr. at 373-74 (Roden). As support for this statement, Mr. Roden sponsored reports by the USDOT and the Transportation Research Board of the National Academies. Exs. 26, 27. Mr. Roden sponsored other studies that used travel demand models. Ex. 28 (Dulles Toll Road); Ex. 29 (I-66 Express Lanes); Ex. 30 (I-95/I-395 Hot Lanes).

³¹⁷ Tr. at 377-78 (Roden).

³¹⁸ Tr. at 381 (Roden).

³¹⁹ Ex. 23 (Roden) at 25. Tolls on other roads were not changed. *Id.*

³²⁰ *Id.* at 26.

³²¹ *Id.*

analysis, Mr. Roden concluded that further toll increases may not compensate for the lost revenue associated with users discouraged from the Greenway.³²² Mr. Roden indicated AECOM's estimate is comparable with the analysis of MWAA's traffic and revenue report for the Dulles Toll Road.³²³

AECOM also used the Loudoun County Model to perform what Mr. Roden called a "Year 2025 Analysis." This analysis incorporated estimated impacts of population and employment growth in Loudoun County, transportation network capacity improvements (e.g., the opening of the Silver Line expansion)³²⁴ and toll rates on the Greenway.³²⁵ These projections do not, however, incorporate any impact from the COVID-19 pandemic.³²⁶ AECOM's Year 2025 Analysis assumed 11% population growth and 16% employment growth, which will increase travel demand and, generally speaking, would positively impact Greenway traffic.³²⁷

The results of AECOM's Year 2025 Analysis showed little change in traffic levels with the increased toll rates, but showed a revenue increase of approximately 32%. Mr. Roden concluded that the proposed tolls did not cause significantly decreased traffic on the Greenway because of the strong growth of travel demand and congestion in Eastern Loudoun County. AECOM also ran toll sensitivity tests to gauge how much traffic the Greenway could accommodate in 2025 at different toll rates.³²⁸ These sensitivity tests indicated toll elasticities comparable to those calculated in AECOM's 2019 analysis.³²⁹

Mr. Roden responded to TRIP II witness Racciatti's contention that the Loudoun County Model does not appear to be well calibrated by time of day. Mr. Roden testified that larger errors are acceptable for low volume time periods. He pointed out that for the peak eastbound morning and peak westbound afternoon traffic, which account for 85% of Greenway traffic, the Loudoun County Model actually overestimated demand for the Greenway.³³⁰

According to Mr. Roden, consistently strong population and employment growth should rapidly increase Greenway traffic. However, AECOM's modeling indicates Greenway traffic would remain flat, if not decrease slightly, meaning more drivers will rely on alternatives to the Greenway.³³¹ In contrast, when AECOM ran the 2025 model with the existing tolls rates (instead of the proposed rates), Greenway traffic increased by 18% – or approximately 9,000 daily vehicles – over existing levels and revenue increased by 18%.³³² Mr. Roden concluded that "our analysis shows TRIP II's requested tolls will materially discourage use of the Greenway,

³²² *Id.* at 27.

³²³ *Id.*; Ex. 28.

³²⁴ This analysis also incorporated major corridor widening projects, including Route 28, adjacent to the Dulles Toll Road interchange, and Route 7 from west Tysons Corner to the Fairfax County Parkway in Reston. Ex. 23 (Roden) at 28.

³²⁵ *Id.* at 27. The 2025 socioeconomic inputs were generated based on MWCOG's TPB Model data. *Id.* at 28.

³²⁶ *Id.* at 28.

³²⁷ *Id.*

³²⁸ *Id.* at 29.

³²⁹ *Id.* at 30 (identifying toll elasticities of -0.87 and -1.1 if the toll rate increase by 30% and 10%, respectively).

³³⁰ Tr. at 378-79 (Roden) (discussing Ex. 69 (Racciatti rebuttal) at 21).

³³¹ Ex. 23 (Roden) at 30.

³³² *Id.* at 31.

completely negating expected traffic increase associated with aggressive population and employment growth assumptions.”³³³

Mr. Roden also discussed cost estimates for building a road to replace the Greenway that AECOM developed and provided to Dr. Webb for use in his Contestable Market Theory analysis, discussed below.³³⁴

Dr. Webb took issue with the fact that TRIP II’s user benefit and elasticity analyses are based on historical data, asserting they do not attempt to account for any future projections or local economic fluctuations.³³⁵ In the benefit-cost analysis, Dr. Webb believes the WSP Report’s 2.2% inflation adjustment is appropriate for some variables, but incorrect for others. He highlighted the time savings variable, which he asserted would decrease as alternative road improvements are completed in 2021 and beyond.³³⁶ He asserted that the ongoing economic disruption caused by COVID-19 highlights the flaws with the WSP Report’s approach of not testing its analysis based on future projections.³³⁷

Dr. Webb provided a discovery response from TRIP II indicating the Company anticipates the impacts of COVID-19 on driver behavior are short term and therefore do not provide a basis for longer-term assessment of driver behavior.³³⁸ Dr. Webb believes this position is at odds with a statement made in a May 2020 report by WSP U.S.A. (the WSP Report’s author) that “unemployment levels are not expected to quickly return to their low, pre-COVID-19 levels.”³³⁹ Dr. Webb provided other published statements attributed to WSP companies indicating an expectation that remote working – and the associated impacts on economic activity surrounding major urban areas – will likely remain at a higher level than before the pandemic.³⁴⁰

Based on economic data published on a Federal Reserve website, Dr. Webb indicated that from December 2019 to April 2020, the unemployment rate in Loudoun County increased from 1.9% to 9.9%.³⁴¹ This is an unprecedented increase that he believes creates significant uncertainty regarding the reliability of the economic and demographic data the WSP Report used to calculate Greenway usage benefits.³⁴² If adverse conditions persist, the median income is likely to fall, causing the reliability and time savings values to decline.³⁴³ If full or partial remote work arrangements become permanent, he indicated the time savings values may decline or disappear entirely.³⁴⁴

Given the disruptions caused by COVID-19, Dr. Webb finds it untenable to assume that

³³³ *Id.* at 30.

³³⁴ Tr. at 365-69, 391-95, 398-99 (Roden); Ex. 32.

³³⁵ Ex. 33 (Webb) at 4-5.

³³⁶ *Id.* at 5.

³³⁷ *Id.* at 6.

³³⁸ *Id.* at 6, Attached Ex. C.

³³⁹ *Id.* at 6-7, Attached Ex. D.

³⁴⁰ *Id.* at 7, Attached Ex. E.

³⁴¹ *Id.* at 8.

³⁴² *Id.* at 8-9.

³⁴³ *Id.* at 8.

³⁴⁴ *Id.* at 9.

the variables in the WSP Report's regression analysis will have the same effect in the future.³⁴⁵ He believes it is more reasonable to assume Greenway users will become more price sensitive if, for example, income or regional traffic decreases.³⁴⁶ To Dr. Webb, all of these factors indicate the future elasticity of demand for the Greenway will increase, although he indicated it is impossible to quantify the future elasticity with precision over a multi-year period.³⁴⁷ For this reason, Dr. Webb recommended that the Commission, at a minimum, evaluate a toll increase for only one year.³⁴⁸ In his opinion, it is impossible to say with any degree of certainty what future toll rates will be commensurate with user benefit or will not materially discourage use.³⁴⁹ He asserted that preventing TRIP II from increasing tolls rates during an economic downturn would be consistent with the market-based structure under which the Greenway is regulated.³⁵⁰

Dr. Webb discussed a market-based approach that he recommends for assessing TRIP II's proposed toll increase. He discussed basic economic concepts about price regulation.³⁵¹ He does not recommend the Commission apply a public utility regulation model to TRIP II.³⁵² He testified that regulation of TRIP II is more consistent with a market-based approach, rather than a public utility model, because TRIP II does not possess an exclusive service territory and its rates are not set based on cost of service.³⁵³

He described market-based regulation as "rather than constructing prices from the underlying costs ... a firm subject to market-based regulation is allowed to charge whatever prices it chooses as long as those prices meet certain conditions."³⁵⁴ He views the "reasonable in relation to the benefit obtained" and "will not materially discourage use of the roadway" as two such market-based regulation conditions.³⁵⁵ According to Dr. Webb, the "reasonable in relation to the benefit obtained" standard means TRIP II should not appropriate the consumer surplus.³⁵⁶ He opined further that because TRIP II does not propose distance-based pricing, it must demonstrate that the tolls provide benefits to the shortest distance users; otherwise, such users will subsidize the longer distance users.³⁵⁷

Dr. Webb explained why he believes the WSP Report's benefit-cost methodology is unsound from an economic theory perspective because it calculates the average benefit to the average user.³⁵⁸ Dr. Webb asserted the WSP Report's use of a weighted average benefit that incorporates a higher value for business and airport travelers overstates the Greenway's value to

³⁴⁵ *Id.*

³⁴⁶ *Id.* at 9-10.

³⁴⁷ *Id.* at 10.

³⁴⁸ *Id.*

³⁴⁹ *Id.*

³⁵⁰ *Id.* at 11.

³⁵¹ *Id.* at 12-14.

³⁵² *Id.* at 14.

³⁵³ *Id.* at 15.

³⁵⁴ *Id.* at 16.

³⁵⁵ *Id.* at 17; Tr. at 401 (Webb). Dr. Webb asserted the issue of whether the proposed tolls provide no more than a reasonable return is irrelevant. Ex. 33 (Webb) at 18.

³⁵⁶ Ex. 33 (Webb) at 17.

³⁵⁷ *Id.* at 19.

³⁵⁸ *Id.* at 20-21.

the personal and commuting travelers, which comprise approximately 68% of users.³⁵⁹ He pointed out that the WSP Report shows that the Greenway toll exceeds even the average benefit for most users paying a toll for a trip of five miles or less.³⁶⁰ In criticizing the WSP Report's approach, he provided an illustrative example of the impact one billionaire would have when calculating the average income of ten customers in a McDonald's. In his example, economic theory indicates McDonald's would price its hamburger at the point the consumer who places the lowest value on it, but places enough value to pay a price equal to the cost to produce the hamburger, will purchase the hamburger.³⁶¹

Dr. Webb continued his critique of the WSP Report's average benefit analysis by identifying groups of drivers with negative net benefits. These include users who drive relatively shorter distances. While Dr. Webb does not agree with the WSP Report's benefit-cost methodology, he highlighted that it shows 18 of 35 toll-paying entry and exit combinations generate a negative net benefit in both directions.³⁶² This equates to approximately 36% of eastbound traffic and 34% of westbound traffic.³⁶³ These figures increased to 19 of 35 entry and exit combinations, 37% of eastbound traffic and 34% of westbound traffic when Dr. Webb incorporated the proposed tolls into the WSP Report's calculations.³⁶⁴ Dr. Webb asserted that because the WSP Report does not acknowledge these negative net present value calculations it "is conceptually equivalent to arguing that TRIP II should be able to use cross-subsidies to justify its tolls" and it "does not provide a basis for the Commission to determine that these outcomes are consistent with ... Code § 56-542 D."³⁶⁵

Where benefits vary over factors such as distance, Dr. Webb indicated a single rate might be appropriate. However, he finds such pricing inappropriate for the Greenway because users travelling different distances enjoy different levels of benefits. If the Greenway continues to charge a single rate, he testified the rate should not exceed the smallest benefit Mr. Racciatti calculated, which is \$0.87.³⁶⁶ If, alternatively, the Greenway implemented distance-based pricing, Dr. Webb explained how he believes such pricing should be determined, and provided his calculations for this approach.³⁶⁷

In his opinion, the toll rates should be set equal to the long run marginal cost of the Greenway.³⁶⁸ Dr. Webb believes it is more meaningful and consistent with economic theory to assume that the statutory user-benefit test requires a reasonable sharing of the consumer and producer surplus.³⁶⁹ He recommended that if TRIP II elects to set one rate for all travelers, and ensures that the user benefit to Greenway traffic is reasonable in relation to the toll, the rate should be set at the marginal user benefit, because he believes this "attempts to simulate a

³⁵⁹ *Id.* at 23-24.

³⁶⁰ *Id.* at 24.

³⁶¹ *Id.* at 23.

³⁶² *Id.* at 33-34.

³⁶³ *Id.* at 34.

³⁶⁴ *Id.* at 34-36.

³⁶⁵ *Id.* at 37-38.

³⁶⁶ *Id.* at 39. The \$0.87 rate does not incorporate adjustments Dr. Webb recommended, which lower his recommended single toll rate to \$0.64, as discussed below. *Id.* at 50.

³⁶⁷ *Id.* at 39, Attached Ex. G.

³⁶⁸ *Id.* at 21.

³⁶⁹ *Id.* at 22.

competitive outcome and does not skew the rate upward by using average benefits.”³⁷⁰

Alternatively, Dr. Webb recommended setting rates using Contestable Market Theory, which he indicated is used for railroad and communication regulation.³⁷¹ The basic idea of this theory is that if a market has no barriers to entry or exit, the threat of entry will keep prices competitive.³⁷² While he acknowledged the Greenway does not operate in an environment with no barriers to entry, he believes the concept of Contestable Market Theory can be applied to simulate a competitive price by estimating the cost to building an optimally sized replacement road and the tolls charged through 2056 that would pay for its construction.³⁷³ He believes this approach “properly accounts for the long-run marginal cost to provide this service” and “equates the toll with user benefit.”³⁷⁴ To perform this calculation, he used: (1) an estimated cost of \$578 million, or a high-end cost of \$800 million, to construct a replacement road; (2) an initial traffic level of the 2018 Annual Average Daily Traffic; (3) estimated traffic levels for each entry and exit pair developed using the AADT data; (4) operating expenses equal to the Greenway’s; (5) an assumption that operating expense and tolls would increase at a 3% inflation rate; (6) a capital structure comprised of 50% equity and 50% corporate bonds; and (7) a 7.15% weighted average cost of capital based on a 2.95% cost of debt and a 11.35% cost of equity.³⁷⁵ Based on these assumptions, Dr. Webb calculated the replacement road toll would be \$3.47 or, for the high-end construction estimate, \$4.39.³⁷⁶ Because the Greenway’s existing toll exceeds \$3.47, he concluded that the Greenway tolls fail the benefit-cost test and increased tolls “would only exacerbate this issue.”³⁷⁷

Dr. Webb argued that the WSP Report should have altered its assumptions to test the robustness or sensitivity of its results.³⁷⁸ He identified the median household income estimate as a key assumption underlying the WSP Report’s benefit-cost analysis.³⁷⁹ He then altered the median household income for the personal and commuting market segment, which lowered the weighted average benefits over the Route 28/Route 7 alternative, from \$10.35 to \$9.52, and over the composite alternative, from \$12.51 to \$11.44.³⁸⁰ Based on these results, Dr. Webb asserted that the WSP Report’s estimates of time savings and reliability savings are unduly sensitive to how median income is estimated.³⁸¹

Data the WSP Report used to calculate the Greenway’s safety value included two inputs that Dr. Webb recommended adjusting. First, for per crash cost, he replaced Federal Highway Administration (“FHWA”) data from its *Crash Costs for Highway Safety Analysis* with Virginia-

³⁷⁰ *Id.* at 25.

³⁷¹ *Id.*

³⁷² *Id.*

³⁷³ *Id.* at 26.

³⁷⁴ *Id.* at 26-27.

³⁷⁵ *Id.* at 28-29. The cost of equity and debt cost figures used to calculate the 7.15% discount rate are shown on page 1 of Dr. Webb’s Attached Exhibit G.

³⁷⁶ *Id.* at 29.

³⁷⁷ *Id.* at 30.

³⁷⁸ *Id.* at 41-42.

³⁷⁹ *Id.* at 41.

³⁸⁰ *Id.* at 43. Dr. Webb altered the median income from Loudoun and Fairfax Counties to the Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical area. *Id.* at 42-43.

³⁸¹ *Id.* at 43.

specific data from VDOT's *Virginia 2017-2021 Strategic Highway Safety Plan*.³⁸² This adjustment reduced the safety savings from \$4.01 to \$2.12.³⁸³ Second, he altered the fatality factor applied to crashes from a statewide rate of 0.92 per 100 million vehicle miles to a Loudoun County rate of 0.5. This adjustment, in tandem with his per crash cost adjustment, lowers the Greenway's safety value to \$1.82.³⁸⁴

Dr. Webb presented recalculated net benefit figures incorporating his income and safety value adjustments. He showed Greenway weighted average net benefit ratios of 1.4 (vs. Route 28/Route 7 alternative); 1.7 (vs. composite alternative); and 1.1 (vs. composite alternative, using his distance-based methodology).³⁸⁵ Dr. Webb noted or questioned several other aspects of the WSP Report's benefit-cost analysis, though he did not attempt to quantify their impact.³⁸⁶

If the Commission accepts Dr. Webb's benefit-cost adjustments, he recommended: (a) a toll of \$0.64, if a single toll rate approach continues to be used; or (b) tolls ranging from \$0.64 to \$3.96, if distance-based tolling is implemented.³⁸⁷ Dr. Webb acknowledged that a single toll rate of \$0.64 may cause financial difficulties for TRIP II.³⁸⁸ To reach the \$4.2 million amount of property taxes TRIP II pays to Loudoun County would require approximately 17,000 daily tolls priced at \$0.64 cents.³⁸⁹

Dr. Webb took issue with the statistical analysis used by the WSP Report to assess whether the proposed tolls would materially discourage Greenway usage. As a threshold matter, Dr. Webb believes Mr. Racciatti's analysis should have analyzed whether the Greenway's existing tolls have already materially discouraged use. He asserted the fact that Greenway ridership on the mainline gantry is down 22% over a 15-year period when Loudoun County's population has increased by 64% suggests that some factor, such as tolls, has discouraged use of the Greenway.³⁹⁰ The fact that traffic on Routes 7 and 28 has increased over this period further suggests to Dr. Webb that drivers are selecting free public roads over the Greenway, which indicates to him that the Greenway's toll rates may already be discouraging use.³⁹¹ If existing tolls have already materially discouraged use, toll increases would only further shift traffic to Greenway alternatives in his view.³⁹² Dr. Webb also applied Mr. Racciatti's elasticity figures to the Greenway toll increases since 2005, which imply that these historic increases have decreased peak and off-peak traffic by 24% and 20%, respectively. He represented that a change of 10% or greater is considered material in financial accounting.³⁹³

Dr. Webb also pointed out that the WSP Report's regression analysis does not incorporate events occurring after the 2019 data cut off. These include the opening of the Silver

³⁸² *Id.* at 44-45.

³⁸³ *Id.* at 44-45, Attached Ex. K.

³⁸⁴ *Id.* at 45.

³⁸⁵ *Id.* at 46-49, Attached Ex. L.

³⁸⁶ *Id.* at 49-50.

³⁸⁷ *Id.* at 50, Attached Ex. G, pp. 9-13.

³⁸⁸ *Id.* at 50, n.26.

³⁸⁹ Tr. at 438 (Webb).

³⁹⁰ Ex. 33 (Webb) at 52-53, 60.

³⁹¹ *Id.* at 53-54.

³⁹² *Id.* at 54.

³⁹³ *Id.* at 56.

Line extension in 2021.³⁹⁴

Turning to the specifics of the WSP Report, Dr. Webb questioned relying on R-squared values to test an econometric model's integrity because these values can be misleading at times.³⁹⁵ Turning specifically to TRIP II's regression model, he identified his concerns.

First, Dr. Webb questioned the quality of the data used, although he found that ultimately not much can be done about data quality. When he ran Mr. Racciatti's model through his statistical package³⁹⁶ with different start years within the 2005 to 2019 period used by Mr. Racciatti (*e.g.*, 2006 to 2019, 2007 to 2019, etc.), the model produced elasticity figures ranging from -0.43 (2008 to 2019) to +15.5 (2019 only).³⁹⁷ When he ran the model with different end years (*e.g.*, 2005 to 2018, 2005 to 2017, etc.), the model produced elasticity figures ranging from -8.6 (2005 only) to +0.1 (2005 to 2009).³⁹⁸ When Dr. Webb removed data prior to 2011, the data from his model runs show that during the last eight years, a 1% increase in tolls leads to a 3.5% increase in Greenway demand – a result he found “defies logic and basic economic theory.”³⁹⁹ In his opinion, this result implies the WSP Report's regression equation is flawed, the quality of data is questionable, or both.⁴⁰⁰ Dr. Webb confirmed that he made no adjustments to the data used by Mr. Racciatti, other than focusing on different time periods within 2005 to 2019.⁴⁰¹

Next, Dr. Webb revised TRIP II's regression model to address what he believes are its most egregious errors. He asserted that two control variables used in TRIP II's model are biased, arbitrary, and incorrectly selected: (1) Improvements to Route 7 and Route 28; and (2) Improvements to Route 7 and not to Route 28.⁴⁰² Conceptually, the inclusion of these variables is inconsistent with the question of how toll increases impact the Greenway's use.⁴⁰³ He indicated that including the road improvements variables as a control attributes increased price sensitivity to the control variables and away from the estimate of toll elasticity.⁴⁰⁴

Inclusion of these improvements also introduces endogeneity into the model that he indicated is a serious problem.⁴⁰⁵ Including variables associated with events caused by increased tolls biases TRIP II's elasticity estimates downward.⁴⁰⁶ In his opinion, increased Greenway tolls have caused road improvements.⁴⁰⁷ He agreed that this issue can be characterized as “the chicken-and-the-egg problem.”⁴⁰⁸

³⁹⁴ Tr. at 406 (Webb).

³⁹⁵ Ex. 33 (Webb) at 57.

³⁹⁶ Tr. at 411-12 (Webb).

³⁹⁷ Ex. 33 (Webb) at 59.

³⁹⁸ *Id.* at 60.

³⁹⁹ *Id.*

⁴⁰⁰ *Id.*

⁴⁰¹ Tr. at 411-12 (Webb).

⁴⁰² Ex. 33 (Webb) at 62.

⁴⁰³ *Id.* at 62-63.

⁴⁰⁴ *Id.* at 63.

⁴⁰⁵ *Id.*; Tr. at 412 (Webb).

⁴⁰⁶ Ex. 33 (Webb) at 64.

⁴⁰⁷ Tr. at 413 (Webb).

⁴⁰⁸ Tr. at 413-14 (Webb).

Dr. Webb also expressed concern that these two control variables likely create a multicollinearity problem within the model.⁴⁰⁹ He pointed out that the Improvements to Route 7 and Route 28 variable has a 0.95 correlation with Loudoun County Population variable, meaning these variables are almost perfectly collinear, among other examples he provided.⁴¹⁰ According to Dr. Webb, including two road improvement variables that are highly correlated with other controls and fairly correlated with the main variable reduces the precision of the WSP Report's estimates and makes it more difficult to trust its results.⁴¹¹

Dr. Webb found variance inflation factors ("VIFs") provided by TRIP II in discovery to be further evidence of multi-collinearity in the WSP Report's regression model.⁴¹²

In addition, Dr. Webb believes the way the WSP Report created these two control variables is illogical. The WSP Report formula increases the variable by one for every improvement, assuming every improvement has the same impact on the Greenway.⁴¹³ Based on Dr. Webb's review of papers TRIP II provided during discovery as support for the inclusion of the road improvement variables, Dr. Webb concluded that these papers do not support the manner in which the WSP Report included these variables.⁴¹⁴

Due to these concerns about bias and arbitrariness, Dr. Webb recommended removing the road improvement variables from the analysis.⁴¹⁵ He noted that removing these variables did not change the R-squared value.⁴¹⁶ He reran the econometric model without these variables and provided his results, which are summarized in the table below.⁴¹⁷

Updated Price Elasticity of Demand Results					
	Car	Car	Car	Truck	Truck
	Weekday	Weekday	Weekend	Weekday	Weekend
	(peak)	(Off-peak)			
Webb	-0.41	-0.50	-0.29	-0.60	-0.38
Racciatti	-0.28	-0.23	-0.06	-0.22	-0.38

The results of his revised model indicate that TRIP II's proposal to cumulatively increase peak tolls by 36.2% and off-peak tolls by 29.4% would decrease car traffic by approximately 15% during weekday peak and off-peak and 9% during non-peak periods.⁴¹⁸ Based on this revised model, Dr. Webb also concluded that the 87% increase in Greenway tolls since 2005 has

⁴⁰⁹ Ex. 33 (Webb) at 65. Multicollinearity is when control variables are highly correlated with other control variables. *Id.*

⁴¹⁰ *Id.* at 65-66.

⁴¹¹ *Id.* at 66.

⁴¹² Tr. at 428-34 (Webb); Exs. 17, 38.

⁴¹³ Ex. 33 (Webb) at 64.

⁴¹⁴ Tr. at 414 (Webb); Exs. 35, 36.

⁴¹⁵ Ex. 33 (Webb) at 66.

⁴¹⁶ *Id.* at 72.

⁴¹⁷ *Id.*

⁴¹⁸ *Id.* at 72-73.

reduced automobile traffic by approximately 36% in peak periods, 43.5% during weekday off-peak periods, and 25% during weekend periods.⁴¹⁹

Dr. Webb provided additional analysis to determine whether demand for the Greenway is constant or non-constant.⁴²⁰ He concluded that demand for the Greenway is non-constant, meaning elasticity of demand is sensitive to the toll level and increases as the toll increases.⁴²¹ He showed his results, both with and without his recommendation to remove the two road improvement control variables from the model.⁴²² Applying his non-constant elasticity estimates to toll increases since 2005, Dr. Webb concluded that the Greenway's tolls have discouraged 56% of the traffic that otherwise would have used the Greenway.⁴²³

Dr. Webb conducted time series analyses to test his conclusions about demand elasticity.⁴²⁴ Based on annual data for 2005 to 2019, Dr. Webb observed that as the Greenway's toll increased, traffic on Route 7 and Route 28 increased while the Greenway's traffic decreased.⁴²⁵

On surrebuttal, Dr. Webb responded to Mr. Racciatti's criticism of his testimony. He explained that Mr. Racciatti's assertion that his model shows an illogical negative elasticity for Loudoun County income is wrong because his analysis shows that this point estimate is not statistically significant, meaning it could be negative, zero, or positive.⁴²⁶ He explained that when he combined Loudoun County income and population variables together to address what he viewed as a multi-collinearity problem, this combined income variable has the expected positive sign and is statistically significant.⁴²⁷

Dr. Webb disagreed with the suggestion that the COVID-19 pandemic is comparable to the Great Recession. In support of his position, he cited unemployment and gross domestic product statistics. He also pointed out that during the Great Recession, the labor force continued to commute to work.⁴²⁸

Staff

Staff presented the results of its investigation through the testimonies of **Scott C. Armstrong**, Deputy Director in the Commission's Division of Utility Accounting and Finance ("UAF"); **Mark K. Carsley**, Utilities Manager in the Commission's Division of Public Utility Regulation ("PUR"); **Georgianne Ferrell**, Utilities Analyst in PUR; and **Donna T. Pippert**, Deputy Director in UAF.

⁴¹⁹ *Id.* at 73.

⁴²⁰ *Id.* at 74-77.

⁴²¹ *Id.* at 75.

⁴²² *Id.* at 76.

⁴²³ *Id.* at 76-77.

⁴²⁴ *Id.* at 77-81 and Attached Exs. R and S.

⁴²⁵ *Id.* at 78.

⁴²⁶ Tr. at 419-21 (Webb).

⁴²⁷ Tr. at 425-26 (Webb).

⁴²⁸ Tr. at 403-05 (Webb).

Mr. Armstrong provided the results of Staff's audit of TRIP II's financial information since 2013.⁴²⁹ He identified the following as Staff's key audit findings: (1) TRIP II's financial results through 2019 showed marked improvement since the Commission last reviewed tolls pursuant to Code § 56-542 D in Case No. PUE-2013-00011; (2) the audited results through 2019 precede any impacts from the COVID-19 pandemic and initial 2020 results through May show a rapid deterioration of toll revenues due to reduced traffic; (3) the adoption of Service Concession Accounting in 2015 and new revenue recognition standards in 2019 significantly impacted financial statements; however, there is no evidence that they impact the toll setting process in the instant proceeding; (4) annual debt service obligations continue to be TRIP II's primary costs; and (5) TRIP II has begun excluding certain costs from its financial results, including political contributions, charitable contributions, and lobbying costs, which Staff recommends be excluded from future toll evaluations.⁴³⁰

As explained by Mr. Armstrong, Service Concession Accounting is specialized accounting prescribed under Generally Accepted Accounting Principles for arrangements, such as that of TRIP II.⁴³¹ From 2015, when TRIP II adopted such accounting, through 2018, cost of assets purchased and constructed to be dedicated to the Commonwealth were classified as Certificate of Authority assets, and were charged against income on a straight-line basis as Deferred Realized Cost. Upon adoption in 2015, TRIP II recognized a \$46 million increase to Partner's Equity as a result of writing off previously recognized net Property, Plant, and Equipment, and replacing it with net Certificate of Authority assets. However, Mr. Armstrong indicated that the impact on Partner's Equity did not impact any of the three Code § 56-542 D criteria because it did not impact: (a) earnings before interest, taxes, depreciation, and amortization, upon which the coverage ratio calculations are based pursuant to TRIP II's bond indentures; (b) distributions to partners that otherwise would or would not have occurred; or (c) the REA balance.⁴³²

Mr. Armstrong reported that in June 2019 Atlas Arteria recorded a \$115 million pre-tax write-down of its investment in the Greenway.⁴³³ The boards of the two companies that comprise Atlas Arteria decided to impair their investments in the Greenway, reflecting the Greenway's operating performance and a more conservative traffic outlook.⁴³⁴

In its 2019 financial statements, TRIP II adopted ASU 2014-09 Revenue from Contracts with Customers ("ASU 2014-09"). Mr. Armstrong explained that this accounting change has a massive impact on the 2019 financial statement which recognized \$66 million of revenue when TRIP II would have recognized \$89 million under prior standards.⁴³⁵ Additionally, \$274 million of Certificate of Authority assets, net of realized deferred cost previously recognized, were

⁴²⁹ Ex. 60 (Armstrong) at Appx. A.

⁴³⁰ *Id.* at 11-12.

⁴³¹ *Id.* at Appx. A, pp. 3-4.

⁴³² *Id.* at Appx. A, pp. 4-5.

⁴³³ Atlas Arteria's write-down did not impact TRIP II's financial statements. *Id.* at Appx. A, p. 5.

⁴³⁴ *Id.* at Appx. A, p. 5. *See also id.* at Appx. A, p. 2 (showing the ownership structure of TRIP II, including the two stapled companies known as Atlas Arteria).

⁴³⁵ *Id.* at Appx. A, p. 6.

replaced effective January 1, 2019, with \$1.3 billion of Contract Assets.⁴³⁶ However, Mr. Armstrong indicated that this accounting change does not impact the toll-setting process.⁴³⁷

Mr. Armstrong reported that TRIP II's financial results have generally improved since 2012. Toll collections increased from \$72 million to \$90 million, while interest expense – the largest expense, by far, on the income statement – increased from approximately \$65 million to \$68 million. Mr. Armstrong noted that cash payments on much of TRIP II's interest expense are deferred.⁴³⁸

Under prior revenue recognition standards, Mr. Armstrong showed TRIP II's net gain/loss improving from a \$16.7 million loss in 2012 to a net gain of \$0.8 million in 2017. He attributed net losses of \$1.9 million and \$11.4 million in 2018 and 2019, respectively, to capital expenditures for the DTR Connector and West End Projects that were expensed.⁴³⁹ However, when Mr. Armstrong incorporated the effect of TRIP II's adoption of ASU 2014-09, the 2019 net loss that TRIP II showed on its financial statements was \$27.4 million, or \$16.0 million greater than the net loss Mr. Armstrong calculated under prior revenue recognition standards.⁴⁴⁰ Based on his income statement analysis described above, Mr. Armstrong concluded that TRIP II “has been break-even from 2017-2019”, aside from the Company's: (1) expensing of certain capital expenditures; and (2) the adoption of ASU 2014-09.⁴⁴¹ Like the Company's adoption of ASU 2014-09, the Company's expensing of capital expenditures does not impact the toll-setting process for TRIP II.⁴⁴² Neither partner distributions nor the REA balance are impacted by such accounting treatment.⁴⁴³

The adoption of ASU 2014-09 also had a significant impact on the Company's balance sheet. The Company's total assets and partner's surplus (which had been a deficit) were approximately \$1 billion higher on its December 31, 2019 balance sheet than under prior accounting standards.⁴⁴⁴

Turning to TRIP II's cash flow statement, Mr. Armstrong showed that the Company's end-of-year cash balance grew from approximately \$153 million in 2012 to approximately \$215 million in 2019.⁴⁴⁵ He noted that much of this cash is restricted in escrowed payments pursuant to bond indenture requirements and the positive cash flows are largely attributed to the Company's deferral of interest payable on its zero-coupon bonds.⁴⁴⁶

⁴³⁶ *Id.* at Appx. A, p. 6.

⁴³⁷ *Id.* at Appx. A, p. 7. The 2019 accounting change does not affect cash flows or financing of TRIP II, and the Company's Application reflects revenues based on toll collections. *Id.* at Appx. A, p. 7.

⁴³⁸ *Id.* at Appx. A, p. 8.

⁴³⁹ *Id.* at Appx. A, pp. 8-9.

⁴⁴⁰ *Id.* at Appx. A, p. 9.

⁴⁴¹ *Id.* at Appx. A, p. 10. Mr. Armstrong testified that such capital expenditures would generally be capitalized and depreciated over their useful lives; however, Staff did not take issue with the Company's accounting treatment for these costs because accounting standards provide that infrastructure that is the subject of a service concession arrangement is expensed. *Id.* at Appx. A, pp. 13-14.

⁴⁴² *Id.* at Appx. A, p. 14.

⁴⁴³ *Id.*

⁴⁴⁴ *Id.* at Appx. A, pp. 10-12.

⁴⁴⁵ *Id.* at Appx. A, pp. 12-13.

⁴⁴⁶ *Id.* at 13. See also *Id.* at Appx. D, discovery response 1-12.

Mr. Armstrong discussed the Company's political contributions and charitable contributions since 2013. In no year did these cause TRIP II to fail a coverage ratio test that it otherwise would have passed absent such costs.⁴⁴⁷ However, because these costs could otherwise potentially exert upward pressure on toll rates, Staff recommended TRIP II exclude such costs from the toll setting process.⁴⁴⁸ Mr. Armstrong further indicated that charitable contributions have no material impact on the financial projections in this proceeding because in 2019 such contributions by TRIP II were reimbursed by Dulles Greenway Partnership.⁴⁴⁹

Mr. Armstrong indicated that lobbying costs did not impact TRIP II's 2019 financial statements, nor do they impact coverage ratios calculated pursuant to the bond debenture requirements.⁴⁵⁰ Staff recommended that such costs continue to be excluded from the costs recovered through toll rates.⁴⁵¹ Mr. Armstrong also discussed the Company's employee compensation, secondment, meals and entertainment, new office lease, legal, and consulting expenses.⁴⁵²

Mr. Armstrong recognized Staff's audited results of the Company through 2019 precede any impacts from the COVID-19 pandemic. While the long-term financial impacts of COVID-19 are currently unknown, the pandemic began to materially impact Greenway traffic in March 2020.⁴⁵³

Mr. Armstrong compared revenue, expense, and capital expenditure projections shown in TRIP II's January 23, 2020 supplemental testimony, which were based on -2.5%, 0%, and +2.5% traffic growth assumptions, with updated forecasts shown in a June 2, 2020 discovery response.⁴⁵⁴ The Company has not revised its capital expenditure budget because, among other reasons, the funds for such projects are already set aside in escrow, reduced traffic conditions make project work safer, and pursuing multiple projects simultaneously provides cost savings.⁴⁵⁵ Based on Staff's review of TRIP II's updated financial forecasts, Staff concluded there is a strong likelihood of depressed financial results during 2020 (due to COVID-19) followed by uncertainty for the 2021-2025 period.⁴⁵⁶ Mr. Armstrong acknowledged the challenge associated with making financial projections at this time.⁴⁵⁷

Staff prepared exhibits that incorporate additional forecast scenarios. Staff's exhibits include: (1) base toll revenue scenarios provided by Moody's Investors Service ("Moody's") and Standard & Poor's ("S&P") Global, and a stress traffic revenue scenario provided by Moody's; and (2) certain revisions based on the results of Staff's audit or anticipated changes.⁴⁵⁸ Staff's

⁴⁴⁷ *Id.* at Appx. A, pp. 16, 19.

⁴⁴⁸ *Id.* at Appx. A, pp. 16, 19.

⁴⁴⁹ *Id.* at Appx. A, p. 18.

⁴⁵⁰ *Id.* at Appx. A, p. 17.

⁴⁵¹ *Id.*

⁴⁵² *Id.* at Appx. A, pp. 19-23.

⁴⁵³ *Id.* at Appx. A, p. 24.

⁴⁵⁴ *Id.* at Appx. B, pp. 2-4.

⁴⁵⁵ *Id.* at Appx. B, p. 4.

⁴⁵⁶ *Id.* at Appx. B, pp. 8-9.

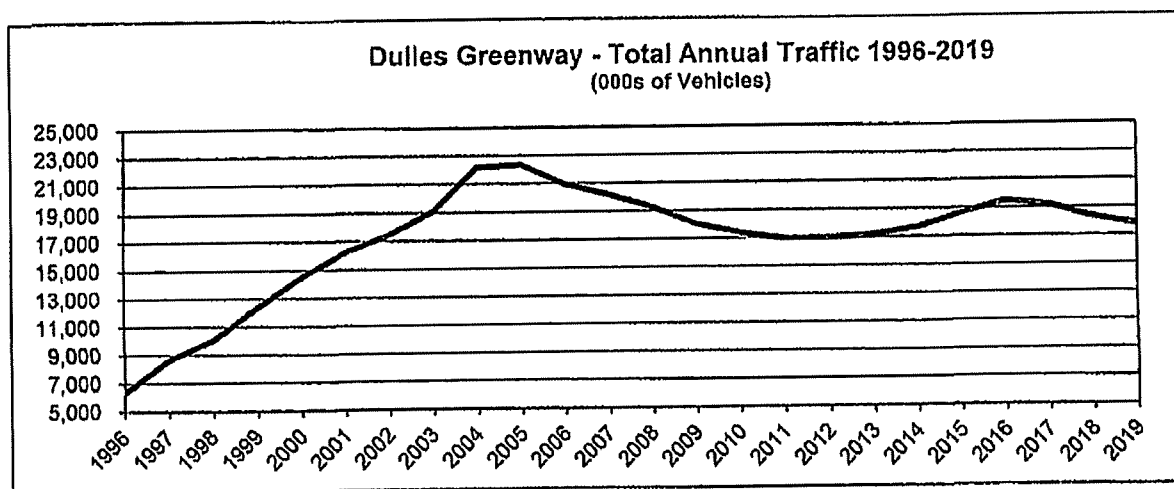
⁴⁵⁷ *Id.* at Appx. B, p. 9.

⁴⁵⁸ *Id.* at Appx. B, pp. 5-9, and Appx. C.

calculations otherwise adopted TRIP II's model, which incorporated, among other things, no projected demand elasticity impacts.⁴⁵⁹

Mr. Armstrong also sponsored a document showing projected coverage ratios that incorporate (a) the proposed tolls increase; and (b) only the proposed off-peak toll increase. Coverage ratios for each of these were calculated using the three Moody's and S&P Global traffic scenarios identified above.⁴⁶⁰ For the middle and high traffic scenarios, but not the stress case scenario, TRIP II is projected to cover its operating costs and debt service payments in 2021, 2022, and 2023.⁴⁶¹ This is the case for scenarios that incorporate the proposed toll increase, or only the proposed off-peak toll increase.⁴⁶²

Mr. Carsley analyzed the issue of whether the proposed tolls "materially discourage use of the roadway by the public." He illustrated the total annual traffic on the Greenway from 1996 through 2019 with the following chart.⁴⁶³



Mr. Carsley found that the WSP Report's standard econometric regression analyses included several appropriate and relevant variables. He specifically cited Loudoun County population and per capita income, toll prices on the Greenway and the Dulles Toll Road, monthly seasonality, and state road improvements on competing roadways.⁴⁶⁴

However, Mr. Carsley did not agree that the price elasticity of demand adequately indicates whether the Greenway tolls "materially discourage" use of the Greenway. He described the WSP Report's finding that the Greenway's estimated price elasticities of demand are inelastic as unremarkable.⁴⁶⁵ He cited a 2003 study that reported such estimates for toll roads

⁴⁵⁹ *Id.* at Appx. B, pp. 7-8.

⁴⁶⁰ Exs. 62, 63C.

⁴⁶¹ Tr. at 570-71 (Armstrong).

⁴⁶² Tr. at 571 (Armstrong).

⁴⁶³ Ex. 55 (Carsley) at 5. Because this chart shows traffic through 2019, it does not reflect the effects of COVID-19 that began in 2020. *Id.*

⁴⁶⁴ *Id.* at 13.

⁴⁶⁵ *Id.* at 14.

in the U.S. and several European countries in the range of -.03 to -.50.⁴⁶⁶ He described the result of any toll elasticity evaluation as predetermined because toll roads typically have market power.⁴⁶⁷

Mr. Carsley also pointed out that because WSP estimated price elasticity of demand from data covering 2005 through 2018, these estimates do not reflect what a more current price elasticity over a shorter, more current period might be.⁴⁶⁸ Additionally, he testified that estimated price elasticities of demand cannot be projected into the future.⁴⁶⁹ He made clear that this criticism applied to any regression (TRIP II's and Loudoun Board's) in this case.⁴⁷⁰

Mr. Carsley described Staff's "level of service" analysis, which he found useful because it is an absolute measure of the level of roadway usage. He indicated that non-optimal distribution of traffic results in an under-utilization of a toll road when a toll road operator attempts to maximize revenues by raising tolls to a point where the toll road is operated at less than an appropriate level of capacity.⁴⁷¹ He identified the six level of service ratings, summarized below.⁴⁷²

Level of Service	Density - passenger cars per mile per lane ("pc/mi/ln")
A	≤ 11
B	$11 \leq \text{pc/mi/ln} < 18$
C	$18 \leq \text{pc/mi/ln} < 26$
D	$26 \leq \text{pc/mi/ln} < 35$
E	$35 \leq \text{pc/mi/ln} < 45$
F	$45 \leq$

While Mr. Carsley acknowledged that level of service is a qualitative descriptor of roadway conditions, it is based on actual quantitative empirical data measured on roadways (*e.g.*, traffic speeds and volumes).⁴⁷³ Furthermore, a roadway's level of service has a direct relationship with its available vehicular capacity.⁴⁷⁴

The Greenway's design capacity is determined in its Comprehensive Agreement with VDOT. The Comprehensive Agreement specifies that the Greenway's design capacity is level of service D, except for within the Leesburg town limits where it is level of service C.⁴⁷⁵

⁴⁶⁶ *Id.* at 15.

⁴⁶⁷ Tr. at 530 (Carsley).

⁴⁶⁸ Ex. 55 (Carsley) at 15.

⁴⁶⁹ *Id.* at 15-16; Tr. at 532 (Carsley).

⁴⁷⁰ Tr. at 533 (Carsley).

⁴⁷¹ Ex. 55 (Carsley) at 18.

⁴⁷² *Id.* at 18-19.

⁴⁷³ Tr. at 527-28 (Carsley); Ex. 58.

⁴⁷⁴ Tr. at 528-30 (Carsley).

⁴⁷⁵ Ex. 55 (Carsley) at 19-20.

Next, Mr. Carsley showed the densities⁴⁷⁶ and the associated levels of service at which the Greenway has operated for peak periods during 2013 through 2019.⁴⁷⁷ He displayed these using the alphabetic ratings.⁴⁷⁸

AM Peak							
(Eastbound)							
	2013	2014	2015	2016	2017	2018	2019
To Dulles Toll Road	D	D	D	D	D	D	D
From Rte 28 & Dulles Airport							A
Old Ox Road (Rte 606) - Mainline Plaza	C	D	D	C	C	C	C
Loudoun County Pkwy. (Rte. 607) - Old Ox Road (Rte 606)	D	D	D	D	C		C
Ryan Road (Rte 772) - Loudoun County Pkwy. (Rte 607)	C	C	C	C	C	C	B
Clalborne Parkway (Rte 901) - Ryan Road (Rte 772)	C	C	C	C	B	B	B
Belmont Ridge Road (Rte 659) - Shreve Mill Road	B	B	B	B	B	B	B
Shreve Mill Road - Battlefield Parkway	B	B	B	B	B	B	B
Battlefield Parkway - Route 7 EB	B	B	B	B	B	B	B

PM Peak							
(Westbound)							
	2013	2014	2015	2016	2017	2018	2019
From Dulles Toll Road	D	D	D	D	D	D	D
From Rte 28 & Dulles Airport							A
Old Ox Road (Rte 606) - Mainline Plaza	D	D	D	D	D	D	C
Loudoun County Pkwy. (Rte. 607) - Old Ox Road (Rte 606)	D	D	D	D	D	D	C
Ryan Road (Rte 772) - Loudoun County Pkwy. (Rte 607)	C	C	C	C	C	C	C
Clalborne Parkway (Rte 901) - Ryan Road (Rte 772)	C	C	C	C	C	B	B
Belmont Ridge Road (Rte 659) - Shreve Mill Road	B	B	B	B	B	B	B
Shreve Mill Road - Battlefield Parkway	B	B	B	B	B	B	
Shreve Mill Road - Compass Creek							B
Compass Creek - Battlefield Parkway							B
Battlefield Parkway - Route 7 WB	B	B	B	B	A	B	B

Mr. Carsley observed that peak travel density during the morning peak and the afternoon peak has declined since 2016.⁴⁷⁹ However, he recognized the measured densities do not explain why traffic has declined.⁴⁸⁰

In Mr. Carsley's opinion, the observed travel densities in recent years support decreasing, if not eliminating, the differential between peak and off-peak pricing. Lowering or eliminating congestion tolls could counteract declining peak travel demand, in his view.⁴⁸¹ He identified

⁴⁷⁶ *Id.* at 21-22.

⁴⁷⁷ For the one road segment shown with level of service D during 2019, Mr. Carsley indicated that segment was in the lower range of level of service D. Tr. at 561 (Carsley).

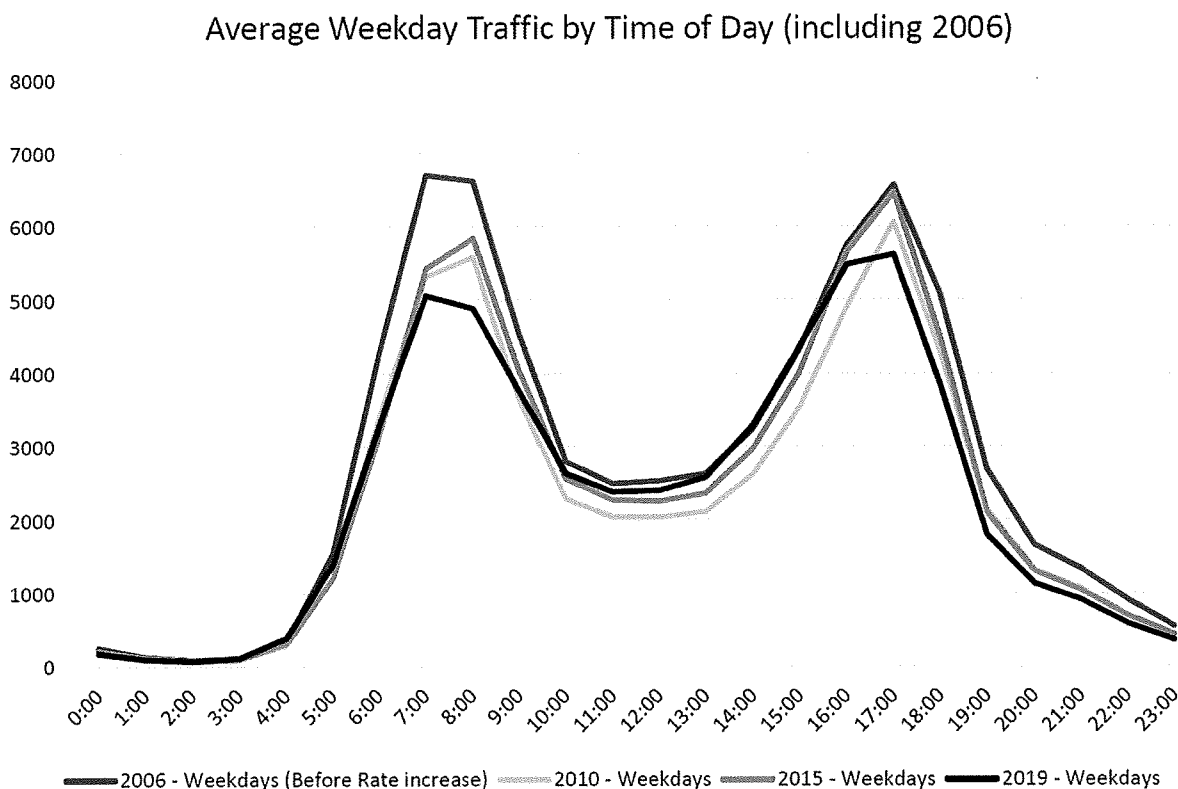
⁴⁷⁸ Ex. 55 (Carsley) at 20-21. The level of service ratings are taken from data contained in reports prepared by Dewberry for TRIP II. Tr. at 539-40. The 2019 ratings in Mr. Carsley's table match the ratings found on page 34 of the 2019 Dewberry Report admitted as Exhibit 59. The 2019 Dewberry Report indicates that the traffic data was furnished by TRIP II for the time period of October 15-28. Tr. at 554 (Carsley). See also Ex. 56. For the first chart of Exhibit 56, the second line of the header should read "East Bound AM Peak." Tr. at 522-23.

⁴⁷⁹ Ex. 55 (Carsley) at 22.

⁴⁸⁰ *Id.* at 23.

⁴⁸¹ *Id.*

increasing the off-peak toll and holding the peak toll constant as one option for narrowing the pricing differential.⁴⁸² He believes this option would be justified based on the decline in peak vehicle density since 2015.⁴⁸³ He also provided the following chart to illustrate his opinion that peak pricing on the Greenway has shifted peak travel on the Greenway to other roads, rather than to off-peak times on the Greenway.⁴⁸⁴



Using the average price elasticity demand for passenger cars estimated in the WSP Report, Mr. Carsley indicated the proposed toll increases would discourage approximately 1.04 million total (cumulative) passenger car trips on the Greenway, from 2021 to 2025.⁴⁸⁵ He recognized that declining travel could continue the Greenway's under-utilization, discussed in his level of service analysis.⁴⁸⁶

Finally, Mr. Carsley recognized that the COVID-19 pandemic inserted a significant degree of uncertainty in the nature of travel demand in the future. In his view, "[a] significant point is that decisions related to Greenway tolls made now might not reflect the economic character of the Greenway that will exist in the future."⁴⁸⁷

⁴⁸² Tr. at 519-20 (Carsley).

⁴⁸³ Tr. at 521 (Carsley).

⁴⁸⁴ Ex. 57.

⁴⁸⁵ Ex. 55 (Carsley) at 24.

⁴⁸⁶ *Id.* at 25.

⁴⁸⁷ *Id.*

Ms. Ferrell addressed whether the proposed maximum tolls are “set at a level which is reasonable to the user in relation to the benefit obtained.”⁴⁸⁸ She described the various components of the WSP Report’s benefit-cost analysis, as discussed further in the analysis below.

Ms. Ferrell summarized Staff’s review of the WSP Report’s benefit-cost analysis. Staff found annually updated benefit-cost analysis guidance by the USDOT to be useful, while acknowledging this guidance is provided for purposes of determining whether a proposed project is cost-beneficial.⁴⁸⁹ Staff used this guidance as the primary source for deriving benefits, unless such guidance was not available or a reason for deviating was clear.⁴⁹⁰

Although Staff found the WSP Report’s benefit-cost analysis is “largely consistent with generally accepted principles,” Staff presented benefit-cost results using alternative assumptions or inputs.⁴⁹¹ The results of Staff’s alternative analysis are discussed below. Staff found that benefit-cost analyses based on historical data indicates it is cost-beneficial for most full-length trips except for truck travel during peak or off-peak times and personal/commute travel during off-peak times.⁴⁹²

Due to the intervening COVID-19 pandemic, Ms. Ferrell offered sensitivity analyses conducted by Staff to illustrate the impact of potential changes in travel time savings over a period of several years.⁴⁹³ All else equal, this analysis found that a 50% reduction in travel time savings reduced the total benefits of Staff’s alternative benefit-cost analysis by \$5.72 for peak travel and \$4.08 for off-peak travel, which results in negative net benefits for every year during 2021 to 2025 based on the proposed maximum tolls. She also updated her calculations to incorporate April and July 2020 traffic data the Company introduced on rebuttal, as discussed further below.

Ms. Ferrell believes that while certain impacts from COVID-19 may not be long term, the pandemic adds more uncertainty to the expected Greenway benefits through the next several years, which calls into question the accuracy and reliability of the benefit-cost results through 2025.⁴⁹⁴

Ms. Pippert discussed the REA’s creation in 1990 and the phased ROEs authorized for the Greenway by the Commission in 1990 and 1991, including the 14% ROE that currently applies.⁴⁹⁵ She described the REA as an off-books tracking mechanism designed to capture explicitly the difference between allowed dollars of return and amounts actually earned by equity investors.⁴⁹⁶ In adopting the REA, the Commission stated that “[u]se of the [REA] is reasonable in order to permit the Applicant an opportunity to earn a fair return without providing a

⁴⁸⁸ Ex. 45 (Ferrell) at 2.

⁴⁸⁹ *Id.* at 13.

⁴⁹⁰ *Id.*

⁴⁹¹ *Id.* at 14-19, Attachments GF-1 and GF-3.

⁴⁹² *Id.* at 17, 21.

⁴⁹³ *Id.* at 20-21, Attachment GF-4.

⁴⁹⁴ *Id.* at 22.

⁴⁹⁵ Ex. 41 (Pippert) at 2-8.

⁴⁹⁶ *Id.* at 4.

guaranteed return.”⁴⁹⁷

Staff agreed with TRIP II’s recognition, in the instant case, that “the REA is unlikely to ever be substantially recovered by equity investors.”⁴⁹⁸ By Staff’s calculation, the total toll revenue through 2055, assuming 5% annual growth, would be approximately \$8.6 billion.⁴⁹⁹ Assuming the REA continues compounding until 2056, the REA balance will far exceed any reasonable projection of revenue or cash for distribution. Ms. Pippert added that the REA may create confusion “due to the sheer size of the balance.”⁵⁰⁰

For these reasons, Ms. Pippert identified three additional financial measurement options to assess the adequacy of returns earned by equity investors:⁵⁰¹

- (1) discontinue the compounding feature of the REA beginning January 1, 2020, but maintain the practice of monitoring distributions (which will draw down the REA balance).
- (2) compare an internal rate of return based on equity investors’ contributions and distributions over the life of the project to the average allowed ROE.
- (3) compare the average of annual returns on the \$144 million of invested equity to the average allowed returns over the life of the project.

Under all three approaches, Staff considered financial results since 1993 and concluded that the proposed tolls would not produce more than a reasonable rate of return through 2025.⁵⁰² In Ms. Pippert’s view, the unique nature and history of the Greenway make it inappropriate to evaluate ROE over any single year, rather than over the life of the Greenway. She asserted that changing to a traditional utility view now would be inconsistent with the Greenway’s nature and regulatory oversight by the Commission. While changed circumstances may warrant modifying the way ROE is evaluated, she believes the core concept that higher returns in later years of the Greenway’s life are required to offset early year losses should not be abandoned.⁵⁰³

Ms. Pippert also analyzed the effect of undistributed cash on Staff’s options 2 and 3 shown above. These effects did not alter Staff’s conclusion that the proposed tolls would produce results below the average allowed ROE.⁵⁰⁴

Ms. Pippert also recommended a process be implemented to consider expenses that may be disallowed by the Commission – either through the REA or (Staff’s preference) the creation of a regulatory income statement. Staff suggested an annual filing of a regulatory income statement that includes TRIP II’s coverage ratios, cash available to equity investors,

⁴⁹⁷ *Id.* at 8.

⁴⁹⁸ *Id.*

⁴⁹⁹ *Id.*

⁵⁰⁰ *Id.* at 9.

⁵⁰¹ *Id.* The second and third options are both calculations based upon external equity contributions and cash distributions. *Id.*

⁵⁰² *Id.* at 10-12, Attached Schs. 1-3.

⁵⁰³ *Id.* at 13.

⁵⁰⁴ *Id.* at 13-14, Attached Sch. 2, p. 2, and Sch. 3, p. 2.

distributions, and use of cash that is retained in the business.⁵⁰⁵

Ms. Pippert updated TRIP II's outstanding debt balances from the June 30, 2019 balances provided by Company witness Lerner to December 31, 2019 balances. She showed total debt of \$1.053 billion and invested equity of \$144 million⁵⁰⁶

She reported the following current credit ratings for TRIP II's debt, which are either below investment grade (Moody's and Fitch) or at the bottom of investment grade (S&P):⁵⁰⁷

Moody's	Ba1 (Outlook Stable)
Fitch	BB- (Outlook Negative)
S&P	BBB- (Outlook Negative)

Ms. Pippert identified various credit strengths and challenges for TRIP II. She indicated the most significant near-term credit challenges are from the effects of the COVID-19 pandemic.⁵⁰⁸

Ms. Pippert also recommended changing the current authorized ROE for the Greenway from 14% to a point within 11-12%, prospectively. She indicated that the 14% ROE was established in 1990. Her 11-12% ROE recommendation was based on a risk premium assessment based on cost of equity estimates recently approved by the Commission for two utilities; and a CAPM estimate for the auto parts industry – both of which included consideration of TRIP II's relatively high leverage.⁵⁰⁹

TRIP II – Rebuttal

TRIP II offered the rebuttal testimony of **Messrs. Lerner** and **Racciatti**.

Mr. Lerner confirmed that the spread of COVID-19 and the associated lockdown measures led to significant drops in traffic volume. In early April 2020, overall mobility was approximately 53% and 54% lower nationwide and in Virginia, respectively, compared to the same period in 2019. While traffic volumes rebounded as lockdown measures were relaxed, travel remains lower than before COVID-19. He indicated that, as of July 2, 2020, mobility was down approximately 22% nationally and 25% in Virginia, compared to 2019.⁵¹⁰

Mr. Lerner testified that traffic on privately operated toll roads in Europe, Australia, and the United States has steadily recovered and is nearing 2019 levels for some countries.⁵¹¹ He described traffic recovery in France, Germany, and China, including on some roads operated by Atlas Arteria.⁵¹² While he observed a similar pattern of recovery for the Greenway, he

⁵⁰⁵ *Id.* at 10.

⁵⁰⁶ *Id.* at 15.

⁵⁰⁷ *Id.* at 16. *See also id.* at Appx. C, pp. 7-40.

⁵⁰⁸ *Id.* at 16-17.

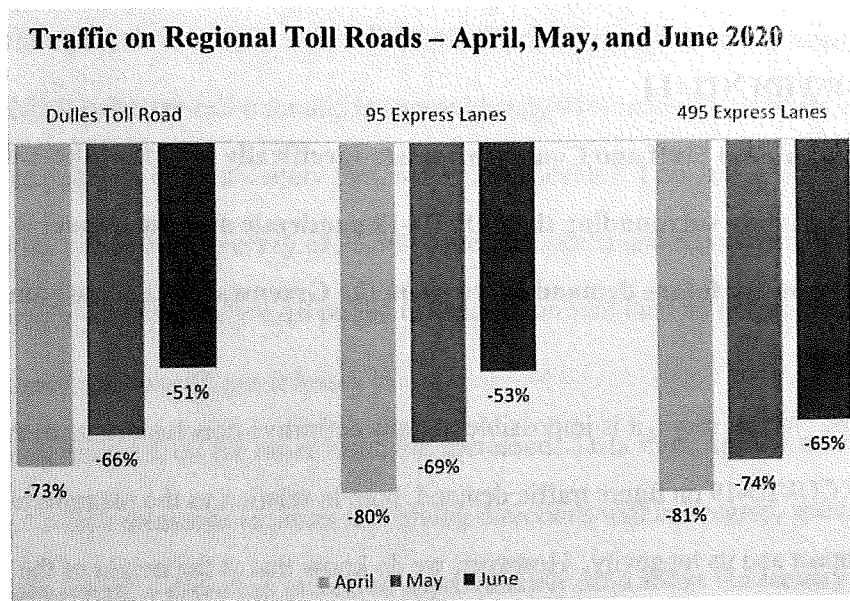
⁵⁰⁹ *Id.* at 17-18, Appx. A.

⁵¹⁰ Ex. 64 (Lerner rebuttal) at 2-3.

⁵¹¹ *Id.* at 3.

⁵¹² *Id.* at 4-5.

acknowledged that traffic recovery on U.S. toll roads has lagged due to slower containment of COVID-19 compared to other countries. However, he indicated the Greenway traffic shows a steady trend towards 2019 levels and closely tracks other roads in the region.⁵¹³ He provided the bar chart to illustrate traffic on these other roads.⁵¹⁴



Mr. Lerner indicated that Greenway ridership during April 2020 was approximately 13,000 vehicles on an average day, which he described as “meaningful ridership ... despite a lack of traffic in the broader network.”⁵¹⁵ He cited data that he believes suggests the demand for travel on the Greenway could increase from the COVID-19 pandemic.⁵¹⁶ For example, he cited data or survey data indicating that public transit is being, and will continue to be, used less; visits to gas stations have increased from pre-pandemic levels; car travel for summer trips increased; used car sales have recently increased; and traffic to car dealerships has increased.⁵¹⁷

Mr. Lerner does not necessarily agree with Loudoun Board witness Roden that the Greenway will likely experience reduced traffic well into 2021 and beyond due to continued work-from-home arrangements after the pandemic ends. Even if telework increases, demand for the Greenway could increase if people become more likely to use their private vehicle rather than public transit or ride share for trips.⁵¹⁸ On cross-examination, Mr. Lerner acknowledged that at the time his rebuttal testimony was filed the DOLI regulations had not yet been issued and the Loudoun County School Board had yet announced students would start the 2020 school year using 100% virtual learning.⁵¹⁹

⁵¹³ *Id.* at 5.

⁵¹⁴ *Id.*

⁵¹⁵ *Id.* at 6.

⁵¹⁶ *Id.* at 8-9.

⁵¹⁷ *Id.*; Tr. at 579 (Lerner). One article cited by Mr. Lerner indicates that used car sales increased 17% in June, after dropping 38% in April 2020. New car sales decreased nearly 30% in June. Ex. 66.

⁵¹⁸ Ex. 64 (Lerner rebuttal) at 9-10.

⁵¹⁹ Tr. at 584-86 (Lerner).

While Mr. Lerner believes it is impossible to predict the speed and extent of any economic rebound, he sees early signs of recovery in the local economy. After employment in Loudoun County fell by approximately 11.3% from February to April, it increased by 1.5% in May and statewide figures for June show an approximately 1.7% increase.⁵²⁰ Mr. Lerner also pointed out that Loudoun County and the Washington D.C. metropolitan area were less impacted by, and recovered more quickly from, the Great Recession compared to the rest of the Commonwealth.⁵²¹ Consumer spending and initial unemployment claims, the two most popular high-frequency metrics for predicting economic recovery, are showing signs of a rebound and continue to trend positively for Loudoun County and the Commonwealth more broadly.⁵²²

Panning out from COVID-19, Mr. Lerner recognized factors other than the pandemic create uncertainty about future travel demand. He cited business and financial risks for TRIP II, including those associated with the regulatory structure for the Greenway and the more than \$1 billion of surrounding network improvements completed with taxpayer funds since 2005.⁵²³ Mr. Lerner maintained that TRIP II's proposed toll increases are reasonable in the face of the COVID-19 pandemic, and that it is reasonable to expect TRIP II's toll price elasticity would not change materially because of the pandemic.⁵²⁴

Mr. Lerner responded to various recommendations by Staff. While he maintained that the proposed tolls through 2025 meet the statutory criteria for approval and are necessary to help TRIP II meet its financial obligations in 2021 through 2025, he deferred to the Commission as to the period over which to authorize the proposed toll increases.⁵²⁵ He also deferred to the Commission to determine the most appropriate and reasonable allowed ROE to the extent the Commission determines the ROE should be adjusted prospectively.⁵²⁶

However, Mr. Lerner opposed Staff's recommendation to discontinue the compounding feature of the REA prospectively while continuing to monitor equity distributions and draw-downs of the REA balance. Because this approach implies an allowed rate of return of 0% prospectively, investors would forego the opportunity for any future return on previously invested capital and on future investments in the Greenway.⁵²⁷ He also disagreed with Staff's financial measurement option of comparing a simple average of the ROE earned each year to a simple average of the allowed return because it does not account for the (i) size and timing of cash flows or (ii) time value of money.⁵²⁸ On the other hand, the Company would not oppose measuring TRIP II's return going forward based on a comparison of the allowed internal rate of return and the earned rate of return, if this comparison is properly calculated.⁵²⁹

⁵²⁰ Ex. 64 (Lerner rebuttal) at 10.

⁵²¹ *Id.* at 11.

⁵²² *Id.* at 11-13.

⁵²³ *Id.* at 13-14.

⁵²⁴ *Id.* at 14-15.

⁵²⁵ *Id.* at 15.

⁵²⁶ *Id.* at 18. He found it logical that if the Commission approves the proposed toll prices for a shorter period than requested then it would be reasonable to increase the allowed rate of return for the period covering the approved tolls. *Id.* at 18-19.

⁵²⁷ *Id.* at 16.

⁵²⁸ *Id.* at 18.

⁵²⁹ *Id.* at 16-18. Mr. Lerner disagreed with how Staff calculated this measure. *Id.* at 16-17.

Mr. Lerner offered TRIP II's continuing support for congestion management tolls during peak periods. He opposed lowering or eliminating the proposed congestion tolls because of the impact on TRIP II and Greenway users. He asserted such action would lower revenues and threaten TRIP II's ability to continue to pay its operating costs and meet its debt service obligations. He further asserted that it could lead to increased demand during peak times, which could, in turn increase travel times on the Greenway and reduce users' benefits.⁵³⁰ Mr. Lerner expanded on why TRIP II's operating costs, debt service, and financial integrity are relevant to the setting of reasonable tolls.⁵³¹ He indicated failing to account for debt and the recovery of TRIP II's prudently incurred expenses could also raise constitutional concerns.⁵³²

Mr. Lerner found no merit to the Board's assertion that increased population growth in Loudoun County along with decreased Greenway usage indicates Greenway users no longer find tolls reasonable in relation to the benefits. He indicated this argument would only be true if all else remained unchanged, which it has not.⁵³³ He reiterated the factors evaluated by the WSP Report, including investments in the surrounding network, and noted that the Greenway has been a major contributor to the economic prosperity and growth of the Loudoun County region.⁵³⁴

Finally, Mr. Lerner underscored that TRIP II is consistently one of the largest property taxpayers in Loudoun County and he stood by TRIP II's contention that Loudoun County has improved alternative roadways to compete with the Greenway.⁵³⁵

Mr. Racciatti disagreed with Staff's use of different assumptions and inputs in benefit-cost analysis of the Greenway. He pointed out that USDOT guidance does not recommend adjusting 50% of median household income to incorporate a lower dollar amount for the value of time travel savings.⁵³⁶ He acknowledged a traffic and revenue study for the Dulles Toll Road, offered as an example by Loudoun Board witness Roden, that indicates the value of time does not increase linearly with income and should be smaller at high income levels. However, Mr. Racciatti testified this is not a universal practice in travel modeling and provided the TPB Model as a counterexample.⁵³⁷ He indicated the TPB Model inputs are set at 75% of hourly income (median for the 22 county/jurisdiction TPB region) for work trips and 50% of hourly household income for non-work trips for each of four income quartiles.⁵³⁸

Mr. Racciatti testified further that the value of time travel savings used in the WSP Report are within the reasonable range of such values for the region. He indicated the Loudoun County Model values are substantially lower than the values used in the TPB Model that the Loudoun Board uses for many of its inputs.⁵³⁹ Compared to the USDOT guidance for value of time travel savings, the Loudoun County Model values are about half of the

⁵³⁰ *Id.* at 21.

⁵³¹ *Id.* at 21-22.

⁵³² *Id.* at 23.

⁵³³ *Id.* at 24.

⁵³⁴ *Id.*

⁵³⁵ *Id.* at 25-26.

⁵³⁶ Ex. 69 (Racciatti rebuttal) at 2-3.

⁵³⁷ *Id.* at 3.

⁵³⁸ *Id.*

⁵³⁹ *Id.* at 4. The Loudoun County Model estimates are in 2019 dollars while the TPB Model estimates are in 2020 dollars. *Id.*

recommended value for work-related trips. Mr. Racciatti expected that the modeled value of time travel savings would be closer to the USDOT guidance, or include a range of values based on income groupings, given that the median household income in Loudoun County is among the highest in the nation.⁵⁴⁰

For truck trips and purpose, Mr. Racciatti did not agree with Staff's recommendation to remove operating cost savings when calculating the value of travel time savings. The inclusion of such savings in this value is on a different basis than their inclusion in vehicle operating costs to avoid double counting. However, Mr. Racciatti agreed with Staff that this analysis should exclude fixed costs such as taxes and registration fees, which account for approximately \$0.10 of the total \$1.30 in operating costs estimated in the WSP Report.⁵⁴¹ He sponsored revised benefit-cost analysis results in his rebuttal testimony that excluded such costs.

Mr. Racciatti defended TRIP II's use of the 1.5 multiplier used to calculate the value of reliability, while acknowledging this "may be viewed as toward the higher end" of the multiplier range indicated in literature.⁵⁴² In his view, the higher the reliability for a road the higher the value that is placed on reliability; the Greenway has high reliability and thus the higher end of the indicated range is appropriate. He indicated this multiplier is also supported by the fact that three of the primary uses of the Greenway – commuting, business trips, and trips to the airport – place a higher value on reliability than personal trips.⁵⁴³ He found the Washington D.C. metropolitan region where the Greenway is located to be comparable to the New York metropolitan region on which the 1.5 multiplier was developed using survey data.⁵⁴⁴ Turning to the two standard deviations used to calculate buffer time, he considered this a more conservative approach than the one standard deviation used by Staff.⁵⁴⁵

Mr. Racciatti disagreed with Staff's reading of the USDOT guidance on crash cost estimates. Contrary to Staff's indication that USDOT guidance provides per crash values, Mr. Racciatti asserted that this guidance provides per-person values.⁵⁴⁶ Mr. Racciatti indicated his reading of the USDOT guidance is consistent with the FHWA study he used for per-crash values. The FHWA study indicates that the USDOT guidance provides person-injury units rather than crash units.⁵⁴⁷

In response to Staff and Loudoun Board using the crash rates for Loudoun County, rather than the Commonwealth, Mr. Racciatti indicated the Commonwealth rates provide a larger data set with more comparable limited access highways and toll roads that should experience similar crash rates to the Greenway. He also noted TRIP II's use of Commonwealth rates is consistent with its prior analysis in Commission proceedings for the Greenway.⁵⁴⁸

⁵⁴⁰ *Id.* at 4-5.

⁵⁴¹ *Id.* at 5-6.

⁵⁴² *Id.* at 6.

⁵⁴³ *Id.* at 7.

⁵⁴⁴ *Id.* at 7-8.

⁵⁴⁵ *Id.* at 9.

⁵⁴⁶ *Id.* at 9-11.

⁵⁴⁷ *Id.* at 11-12 and Rebuttal Attachment AR-2.

⁵⁴⁸ *Id.* at 12-13.

Mr. Racciatti found no problem with the fact that his benefit-cost analysis is not forward looking for each year through 2025. He indicated that projecting all potential costs and benefits into the future would be speculative such that relying on existing data makes more sense.⁵⁴⁹

Although TRIP II believes COVID-19 will have limited long-term traffic impacts on the Greenway and alternative roads in 2021 and beyond, TRIP II performed a simplified analysis of the potential impacts of reduced travel based on 2020 TomTom data for travel on the Greenway, the Route 28/Route 7 alternative, and the composite alternative during April (height of pandemic) and July 1-19 (most recent data available). This analysis updated for average travel times, gas and diesel prices, operating costs for fuel assumptions which were adjusted to match the speed differentials between routes, share of traffic by hour to weight of results, proportion of truck traffic, and the share of airport trips (which was estimated to reduce to 1%, with the difference between that and the original 7.4% shifted proportionally to personal/commuting and business trips).⁵⁵⁰ He did not change other assumptions, like median income.⁵⁵¹ The weighted average benefit-cost ratios with these adjustments ranged between 1.4 and 1.9.⁵⁵²

Mr. Racciatti disagreed with Loudoun Board witness Webb's recommendation to use the marginal benefit to users, rather than the average benefit, to determine the benefit-cost ratio. In his opinion, "it would be impractical to provide detailed benefit-cost-analysis for every possible iteration and then force the Commission to choose which of the users mattered most." He pointed out that Contestable Market Theory, which County witness Webb applies, only applies to circumstances where there is a low barrier to entry with limited sunk cost.⁵⁵³ He also found County witness Webb's estimated \$577.5 million cost for a replacement roadway unrealistically low and, in support of this opinion, cited the under-construction Transform 66 Outside the Beltway project with expected costs of approximately \$2 billion.⁵⁵⁴

Mr. Racciatti conceded that travel demand models are widely used in the industry, but not that they are the industry standard or superior to a regression model for the analysis needed in this case. While travel demand models are often used for forecasting travel for planning purposes in developing new routes, regression models are typically used to analyze traffic on mature, developed corridors where historic traffic data is available. He noted that the Commission accepted a regression-based approach for measuring price elasticity in proceedings on the Greenway in 2006 and 2013.⁵⁵⁵ Regression analysis uses actual historical data to analyze how multiple variables affect demand over time. Additionally, regression analysis is more powerful the longer the period of time the data is analyzed over so it can be adjusted for one-off shocks and cover different economic conditions over time. Given these benefits, and the fact that TRIP II has a record of historical traffic data on the Greenway and broader economic and demographic data is readily available for the region, TRIP II identified an econometric model as the preferable method for assessing statutory material discouragement standard.⁵⁵⁶

⁵⁴⁹ *Id.* at 14.

⁵⁵⁰ *Id.* at 15.

⁵⁵¹ Tr. at 612-13 (Racciatti).

⁵⁵² Ex. 69 (Racciatti rebuttal) at 16.

⁵⁵³ *Id.* at 17.

⁵⁵⁴ *Id.* at 17-18.

⁵⁵⁵ *Id.* at 18-19.

⁵⁵⁶ *Id.* at 19.

In contrast, Mr. Racciatti testified that travel demand models offer a way to forecast for travel behaviors where a detailed trend of historical data is not available. He indicated these models generally calibrate to one, or at most two, snapshots in time, and disregard historical data trends on mature modeled roads like the Greenway.⁵⁵⁷ He described a travel demand model as “an estimation based upon several other estimations.”⁵⁵⁸ He indicated they typically require a substantial amount of research effort and at least \$1 million.⁵⁵⁹

The Loudoun County Model discussed by County witness Roden was built around 2010 and Mr. Racciatti questioned whether it was calibrated to a level of detail suitable to evaluate toll price elasticity by time of day for 2010 or subsequent years. It appears to Mr. Racciatti that the model results were compared to aggregated counts for groupings by roadways by functional class. He also indicated the original model calibration was done before some important improvements on neighboring roadways, including Routes 7 and 28.⁵⁶⁰ While Mr. Roden indicated the overall volume on the Greenway produced by the Loudoun County Model was within 1% for daily numbers, and 6% for peak and off-peak, compared to 2019 Greenway traffic counts, Mr. Racciatti provided a table to show what he called “substantial differences by direction and time of day.”⁵⁶¹

To Mr. Racciatti, these differences indicate the Loudoun County Model is not well calibrated by time of day and, in turn, may not be well-suited to toll elasticity estimation, which depends heavily on the accuracy of volumes by time of day and direction of travel.⁵⁶² In support of this conclusion, he provided an excerpt of the Loudoun County Model’s Calibration Report.⁵⁶³ He emphasized the importance of time of day in accurately evaluating volumes on the Greenway, where tolls vary by time of day to regulate peak period congestion.⁵⁶⁴ In his opinion, the disparities between the Loudoun County Model results and actual conditions on the Greenway undermine the integrity of using this model’s analysis in the instant case.⁵⁶⁵

Another concern Mr. Racciatti identified with using the Loudoun County Model for this case was that the model was calibrated using “borrowed inputs from other toll road studies instead of local data or survey information.”⁵⁶⁶ Additionally, the Loudoun County Model’s Calibration Report does not detail the studies it relied upon.⁵⁶⁷

⁵⁵⁷ *Id.* at 20.

⁵⁵⁸ *Id.* at 22.

⁵⁵⁹ Tr. at 600 (Racciatti).

⁵⁶⁰ Ex. 69 (Racciatti rebuttal) at 20.

⁵⁶¹ *Id.* at 21.

⁵⁶² *Id.*

⁵⁶³ *Id.* at 21-22, Rebuttal Attachment AR-3 (“So it should be clear that this model estimates travel for fixed time periods, everywhere. This may or may not be the same as the peak volume for any particular roadway segment.”).

⁵⁶⁴ *Id.* at 22.

⁵⁶⁵ *Id.* at 24.

⁵⁶⁶ *Id.* at 23, Rebuttal Attachment AR-3 (“Typically in studies of toll roads, this model is calibrated by conducting a survey of travelers near the toll road, some of whom used the road and some of whom didn’t. This data can be used to determine the functional form and the coefficients of the utility equations, which reflect travelers’ value of time and willingness to pay tolls to save time. Unfortunately, the budget and schedule of this study did not permit such a survey to be conducted, so the consultant examined several prior toll road studies and synthesized a reasonable model from those coefficients.”).

⁵⁶⁷ *Id.* at 23.

Mr. Racciatti does not believe a level of service analysis, which Staff included, provides a better measure for determining whether the Greenway's tolls materially discourage use.⁵⁶⁸ Nor does he believe cross-validation is necessary for WSP Report's regression model estimation.⁵⁶⁹

Mr. Racciatti found substantial flaws in County witness Webb's proposal to remove road improvement variables, the inclusion of which Mr. Racciatti indicated is an industry standard.⁵⁷⁰ For example, he found several elasticity estimates – including negative elasticities for Loudoun County population and positive elasticities for Dulles Toll Road tolls – to be illogical.⁵⁷¹ He also indicated that omitting or not controlling for an important variable may create omitted variable bias and over-attribute the importance of toll rate changes on traffic.⁵⁷²

In response to County witness Webb's suggestion that TRIP II's models are biased because they include data back to 2005, Mr. Racciatti reiterated the purpose of the regression model analysis is to determine elasticity estimates that control properly for the effects of other variables. This undertaking requires measuring traffic response in periods with tolls changes, periods with no toll changes, and in periods showing the full range of changes in economic conditions. He asserted that it makes no sense to remove data from 2005 to 2010, when two of the largest percentage toll increases on the Greenway occurred.⁵⁷³

Mr. Racciatti explained that Dr. Webb's assertion that price elasticity is not linear is based on a projected, rather than observed, elasticity for the Dulles Toll Road. Mr. Racciatti testified that after the Dulles Toll Road increased toll prices on January 1, 2019 by 30% on the mainline and 50% at ramps, total transactions for 2019 decreased by 5.6% compared to 2018. The observed elasticity in this period was thus roughly between -0.112 to -0.187. Mr. Racciatti noted that AECOM concluded in 2013 that the empirical price elasticity for Greenway traffic was -0.139 for peak periods and -0.312 for off-peak periods.⁵⁷⁴ Mr. Racciatti indicated that Board witness Roden's workpapers indicate that the application of the Loudoun County Model produced lower – not higher – elasticities with higher toll increases.⁵⁷⁵

Finally, Mr. Racciatti explained why TRIP II did not update the demand elasticity analysis in response to COVID-19. By using 14 years of data, which includes data from the 2007-2009 Great Recession, he believes the effects of an external shock such as the COVID-19 pandemic is already accounted for in the model. He also cited some of the factors identified by TRIP II witness Lerner suggesting that the negative traffic impact and economic downturn in Northern Virginia from COVID-19 may be short term.⁵⁷⁶

⁵⁶⁸ *Id.* at 24-25.

⁵⁶⁹ *Id.* at 25-27. He indicated, among other things, that cross-validation is more commonly used in unsupervised machine learning. *Id.* at 25-26.

⁵⁷⁰ *Id.* at 27-28.

⁵⁷¹ *Id.* at 28.

⁵⁷² Tr. at 596 (Racciatti).

⁵⁷³ Ex. 69 (Racciatti rebuttal) at 28-29.

⁵⁷⁴ *Id.* at 30.

⁵⁷⁵ *Id.* at 31.

⁵⁷⁶ *Id.* at 31-32.

PROPOSED TOLL INCREASES

The Greenway's toll prices differ for peak and off-peak periods, with the peak periods defined as 6:30 a.m. to 9:00 a.m. for eastbound weekday traffic and 4:00 p.m. to 6:30 p.m. for westbound weekday traffic.⁵⁷⁷ In addition to differentiating between off-peak and peak periods, the Greenway's tolls vary depending on the number of axles on a paying vehicle. Starting with two-axle vehicles, the Greenway's current and proposed maximum toll prices for off-peak and peak periods are included in the five tables discussed below.⁵⁷⁸

TWO AXLE VEHICLES - MAXIMUM PRICES							
	Current	2021	2022	2023	2024	2025	Cumulative
Off peak	\$4.75	\$5.00	\$5.25	\$5.55	\$5.85	\$6.15	\$1.40
% Increase	N/A	5.3%	5.0%	5.7%	5.4%	5.1%	29.5%
Peak	\$5.80	\$6.15	\$6.55	\$6.95	\$7.40	\$7.90	\$2.10
% Increase	N/A	6.0%	6.5%	6.1%	6.5%	6.8%	36.2%
Peak Premium	22.1%	23.0%	24.8%	25.2%	26.5%	28.5%	N/A

Most trips on the Greenway – approximately 97.6% – are by two-axle vehicles.⁵⁷⁹ As shown above, TRIP II proposes to increase the maximum off-peak toll for two-axle vehicles from \$4.75 to \$6.15 by 2025 through a series of annual increases ranging from 5.0% to 5.7%. TRIP II proposes to increase the maximum peak toll from \$5.80 to \$7.90 through a series of annual increases ranging from 6.0% to 6.8%. Because the proposed increases for peak exceed those for off-peak, the peak (or congestion) premium would increase, from the current 22.1% premium to a 28.5% premium by 2025.

As shown below, the maximum proposed toll prices for three-axle vehicles would be double the prices for two-axle vehicles. The maximum toll prices for four-axle vehicles, in turn, would be 50% higher than the prices for three-axle vehicles (or 2.5 times the two-axle prices).⁵⁸⁰ The off-peak and peak percentage increase ranges for three- and four-axle vehicles, as shown below, are comparable to those for two-axle vehicles. The peak premiums of 28.5% and 28.7% ultimately resulting from the proposed maximum prices in 2025 are also comparable to the proposed 28.5% premium for two-axle vehicles by 2025.

⁵⁷⁷ Ex. 55 (Carsley) at 7. Certain holidays are also exempt from peak pricing. Toll Road Investors Partnership II, L.P., Virginia S.C.C. Tariff No. 1, Twelfth Revised Schedule, Section 6.

⁵⁷⁸ Ex. 3 (Lerner direct) at 35, 37 (proposed maximum toll rates); Ex. 60 (Armstrong) at 5 (current maximum toll rates). The premiums and % increase were calculated from the proposed and current maximum toll rates. *See also* Ex. 55 (Carsley) at 6 (currently posted tolls below the authorized maximum).

⁵⁷⁹ Ex. 10 (Racciatti direct) at WSP Report, pp. 12-13.

⁵⁸⁰ Ex. 2 (Application) at 2.

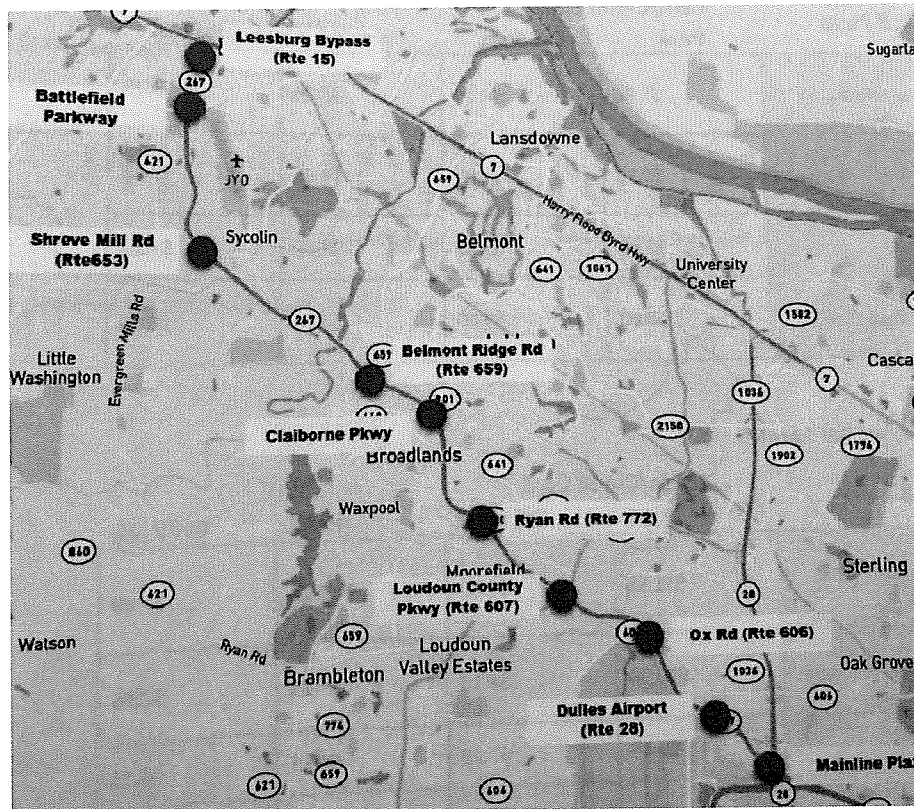
THREE AXLE VEHICLES - MAXIMUM PRICES							
	Current	2021	2022	2023	2024	2025	Cumulative
Off peak	\$9.60	\$10.00	\$10.50	\$11.10	\$11.70	\$12.30	\$2.70
% Increase	N/A	4.2%	5.0%	5.7%	5.4%	5.1%	28.1%
Peak	\$11.55	\$12.30	\$13.10	\$13.90	\$14.80	\$15.80	\$4.25
% Increase	N/A	6.5%	6.5%	6.1%	6.5%	6.8%	36.8%
Peak Premium	20.3%	23.0%	24.8%	25.2%	26.5%	28.5%	N/A
FOUR AXLE VEHICLES - MAXIMUM PRICES							
	Current	2021	2022	2023	2024	2025	Cumulative
Off peak	\$12.15	\$12.50	\$13.10	\$13.85	\$14.60	\$15.35	\$3.20
% Increase	N/A	2.9%	4.8%	5.7%	5.4%	5.1%	26.3%
Peak	\$14.60	\$15.35	\$16.35	\$17.35	\$18.50	\$19.75	\$5.15
% Increase	N/A	5.1%	6.5%	6.1%	6.6%	6.8%	35.3%
Peak Premium	20.2%	22.8%	24.8%	25.3%	26.7%	28.7%	N/A

As shown below, the proposed increases and ultimate 28.5% premium for five-axle vehicles are also comparable, on a percentage basis, to the proposals for vehicles with fewer axles. While the ultimate premium for vehicles with six or more axles, as proposed, would also reach 28.5% by 2025, the percentage toll increases for such vehicles would be lower than for other vehicles. This is because TRIP II proposes to merge the tolls for these two groups in 2021. Currently, the highest toll class is for vehicles with six or more axles; TRIP II proposes changing the highest toll class to vehicles with five or more axles.⁵⁸¹ The maximum proposed tolls for vehicles with five or more vehicles are triple the proposed two-axle prices.

FIVE AXLE VEHICLES - MAXIMUM PRICES							
	Current	2021	2022	2023	2024	2025	Cumulative
Off peak	\$14.60	\$15.00	\$15.75	\$16.65	\$17.55	\$18.45	\$3.85
% Increase	N/A	2.7%	5.0%	5.7%	5.4%	5.1%	26.4%
Peak	\$17.50	\$18.45	\$19.65	\$20.85	\$22.20	\$23.70	\$6.20
% Increase	N/A	5.4%	6.5%	6.1%	6.5%	6.8%	35.4%
Peak Premium	19.9%	23.0%	24.8%	25.2%	26.5%	28.5%	N/A
SIX OR MORE AXLE VEHICLES - MAXIMUM PRICES							
	Current	2021	2022	2023	2024	2025	Cumulative
Off peak	\$17.00	\$15.00	\$15.75	\$16.65	\$17.55	\$18.45	\$1.45
% Increase	N/A	-11.8%	5.0%	5.7%	5.4%	5.1%	8.5%
Peak	\$20.45	\$18.45	\$19.65	\$20.85	\$22.20	\$23.70	\$3.25
% Increase	N/A	-9.8%	6.5%	6.1%	6.5%	6.8%	15.9%
Peak Premium	20.3%	23.0%	24.8%	25.2%	26.5%	28.5%	N/A

⁵⁸¹ Ex. 3 (Lerner direct) at 36.

Greenway drivers pay a toll only once, either upon entry (when traveling west) or exit (when traveling east).⁵⁸² Tolls currently charged on the eastern 5.6 miles of the Greenway – from Mainline Plaza to Loudoun County Parkway – are the “Current” maximum prices shown above.⁵⁸³ This means, as emphasized by Loudoun Board witness Webb, a one-mile westbound trip from the Mainline Plaza gantry to the first exit at Old Ox Road costs the same as a fourteen-mile westbound trip from the Mainline Plaza gantry to the end of the Greenway.⁵⁸⁴



TRIP II does not charge the maximum authorized tolls at all gantries. Since 1996, the Commission has allowed TRIP II to voluntarily charge tolls less than those authorized.⁵⁸⁵ At the gantries between Shreve Mill Road and Ryan Road, TRIP II voluntarily offers: (1) tolls lower than the maximum prices; and (2) a discount for E-ZPass use.⁵⁸⁶ TRIP II does not currently charge tolls for vehicles that use only the westernmost 1.1 miles of the Greenway, from Battlefield Parkway west.⁵⁸⁷ However, if toll increases are approved in this proceeding, TRIP II is considering discontinuing the discounted rates between Shreve Mill Road and Ryan Road.⁵⁸⁸

⁵⁸² Ex. 55 (Carsley) at 8.

⁵⁸³ Ex. 10 (Racciatti direct) at WSP Report, p. 3.

⁵⁸⁴ Ex. 33 (Webb) at 19. See also Ex. 55 (Carsley) at 9.

⁵⁸⁵ *Application of Toll Road Investors Partnership II, L.P., For an Order Modifying its tariff*, Case No. PUA-1996-00009, 1996 S.C.C. Ann. Rep. 153, Final Order (Mar. 1, 1996).

⁵⁸⁶ Ex. 55 (Carsley) at 5-6.

⁵⁸⁷ *Id.* at 5, 6, 10.

⁵⁸⁸ Ex. 3 (Lerner direct) at 37; Ex. 55 (Carsley) at 9.

CODE AND CONSTITUTION

TRIP II filed its Application pursuant to Code § 56-542 D. This law states, with emphasis added, that:

The Commission also shall have the duty and authority to approve or revise the toll rates charged by the operator. Initial rates shall be approved if they appear reasonable to the user in relation to the benefit obtained, not likely to materially discourage use of the roadway and provide the operator no more than a reasonable rate of return as determined by the Commission. *Thereafter, the Commission, upon application, complaint or its own initiative, and after investigation, may order substituted for any toll being charged by the operator, a toll which is set at a level which is reasonable to the user in relation to the benefit obtained and which will not materially discourage use of the roadway by the public and which will provide the operator no more than a reasonable return as determined by the Commission.*

According to Loudoun Board, TRIP II, as “the party seeking to disturb the status quo,” bears a three-tiered burden of proof. First, the Company must persuade the Commission by a preponderance of the evidence that its factual assertions are true. Second, the Company must convince the Commission that those proven facts satisfy the three criteria set forth in Code § 56-542 D. Third, TRIP II must “convince the Commission to exercise its may-approve (not shall-approve) discretion to grant the relief requested.”⁵⁸⁹

According to TRIP II, the Constitutions of the United States and Virginia “add a final test that must be met in setting the tolls on the Greenway: tolls must be set high enough to allow a company to meet its financial obligations (including its prudently incurred operating expenses and pay the service on its debt), allow investors the *opportunity* to earn a reasonable return on their investment, and preserve the financial integrity of the company.”⁵⁹⁰ The Fifth Amendment of the United States Constitution states in part that “nor shall private property be taken for public use, without just compensation.” Article I, Section XI, of the Virginia Constitution provides in part that “[n]o private property shall be damaged or taken for public use without just compensation to the owner thereof.”

TRIP II further argued that a policy statement codified by the 1988 Highway Act “requires the Commission to look beyond the basic analysis of whether the proposed maximum authorized tolls meet the statutory criteria and determine whether its decision could result in TRIP II defaulting on its obligations, both in terms of its continued financial obligations as well as its ongoing obligations to operate and maintain the road.”⁵⁹¹ This policy statement provides as follows:

⁵⁸⁹ Loudoun Board’s Brief at 11-12 (quoting *Wal-Mart Stores East LP v. State Corporation Commission*, 844 S.E. 2d 676, 684 (2020) (“*Wal-Mart*”).

⁵⁹⁰ TRIP II’s Brief at 42 (emphasis in original).

⁵⁹¹ *Id.* at 6-7.

The General Assembly finds that there is a compelling public need for rapid construction of safe and efficient highways for the purpose of travel within the Commonwealth, and that it is in the public interest to encourage construction of additional, safe, convenient, and economic highway facilities by private parties, *provided that adequate safeguards are provided against default in the construction and operation obligations of the operators of roadways.*⁵⁹²

ANALYSIS OF PROPOSED TOLL INCREASES

TRIP II argues it has demonstrated that the proposed toll increases satisfy all three standards of Code § 56-542 D.⁵⁹³ In contrast, Loudoun Board argues that the Company has failed to satisfy the user benefit and material discouragement standards.⁵⁹⁴ Emphasizing the word “may” in the statute (“may order substituted”), Loudoun Board further argues that even if the Commission found all statutory criteria satisfied, the Commission should exercise its discretion to not approve any increase.⁵⁹⁵ Staff argued that “due in part to the unknown long-term impacts of the COVID-19 pandemic and whether TRIP II’s pre-pandemic studies adequately model future conditions, it is highly uncertain the proposed tolls will meet all the statutory criteria.”⁵⁹⁶

This Report’s analysis of TRIP II’s Application begins by addressing each of the three standards established by Code § 56-542 D. Namely, whether the proposed tolls would be set at a level which is reasonable to the user in relation to the benefit obtained (Section I); not materially discourage use of the roadway by the public (Section II); and provide the operator no more than a reasonable return as determined by the Commission (Section III). As the Commission has previously determined, “each of the three requirements may include a fact-intensive analysis.”⁵⁹⁷ The final section of my analysis (Section IV) addresses constitutional takings arguments by TRIP II and the Loudoun Board. The Report concludes with my conclusions, findings, and recommendations.

I. Reasonableness of the Proposed Tolls to the User in Relation to the Benefit Obtained

As previously recognized by the Commission, the “reasonable to the user in relation to the benefit obtained” standard may include consideration of benefits that are quantifiable,

⁵⁹² TRIP II’s Brief at 6, n.12 (emphasis added); 1988 Va. Acts Ch. 649. Other than adding in 1993 a sentence not shown above, 1993 Va. Acts Ch. 732, the General Assembly has not amended this statutory provision. However, the Code Commission has removed this statute from the Code.

⁵⁹³ See, e.g., TRIP II’s Brief at 8-41.

⁵⁹⁴ See, e.g., Loudoun Board’s Brief at 17-52.

⁵⁹⁵ *Id.* at 56 (citing *Board of Supervisors of Loudoun County v. State Corporation Commission*, 292 Va. 444, 454 (2016) (“2016 Greenway Opinion”) and *Wal-Mart*, 844 S.E. 2d at 682).

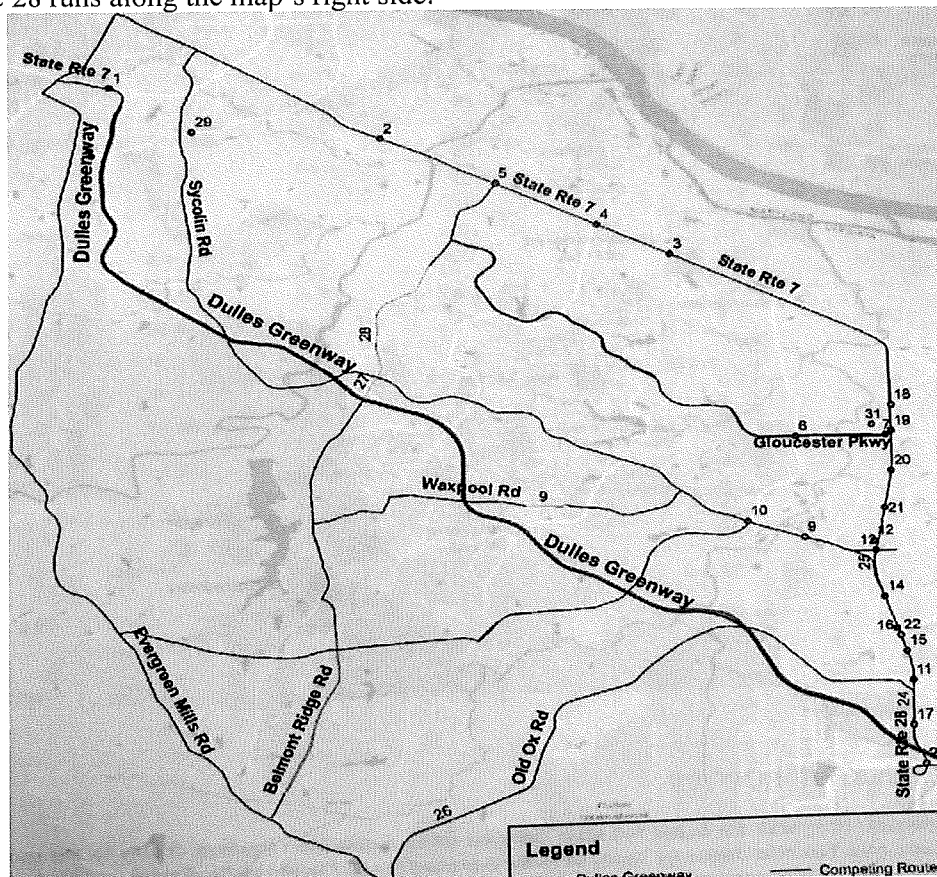
⁵⁹⁶ Staff’s Brief at 5.

⁵⁹⁷ *Commonwealth of Virginia, ex rel. State Corporation Commission, Ex Parte: In the matter of investigating the toll rates of Toll Road Investors Partnership II, L.P. under § 56-542 D of the Code of Virginia*, Case No. PUE-2013-00011, 2015 S.C.C. Ann. Rep. 190, 192, Order Concluding Investigation (Sep. 4, 2015) (“2015 Greenway Order”).

difficult to quantify, and qualitative.⁵⁹⁸ TRIP II's WSP Report calculated benefit-cost ratios by dividing quantifiable user benefits by the Greenway's toll price, with any benefit-cost ratio greater than 1.0 indicating a quantifiable net benefit.⁵⁹⁹ To account for the potential variation in total benefits obtained by different Greenway users, the WSP Report segmented its analysis to calculate benefit-cost ratios for the following four user groups: personal and commuting trips; business trips; airport access/egress; and trucks.⁶⁰⁰ TRIP II also examined the proposed tolls' effects on its benefit-cost calculations.⁶⁰¹

A. Route 28/Route 7 Alternative

The benefit calculations in the WSP Report are benefits compared to untolled alternative roads. According to TRIP II, a combination of Route 28 and Route 7 is the primary alternative to using the Greenway.⁶⁰² Route 7 is depicted as the darkened line near the top of the map below and Route 28 runs along the map's right side.⁶⁰³



⁵⁹⁸ 2015 Greenway Order, 2015 S.C.C. Ann. Rep. at 192.

⁵⁹⁹ Ex. 10 (Racciatti direct) at 7.

⁶⁰⁰ *Id.* at 8-9 (describing the four user groups).

⁶⁰¹ *See, e.g.*, Ex. 19.

⁶⁰² Ex. 10 (Racciatti direct) at WSP Report, p. 52.

⁶⁰³ *Id.* at WSP Report, p. 16.

Based on current toll prices, the WSP Report summarized its benefit-cost analysis of full-length trips on the Greenway compared to the Route 28/Route 7 alternative as shown below.⁶⁰⁴ TRIP II witness Racciatti indicated that these calculated net benefits, shown on a per trip basis, equate to approximately \$185 million each year.⁶⁰⁵

Market Segment	Share of Trips	Total Benefit	Toll Cost	Net Benefit	Benefit-Cost Ratio
Peak					
Personal and Commuting	23.2%	\$12.22	\$5.80	\$6.42	2.1
Business	7.6%	\$14.98	\$5.80	\$9.18	2.6
Airport Access/Egress	2.5%	\$14.79	\$5.80	\$8.99	2.5
Trucks	0.5%	\$23.15	\$14.60	\$8.55	1.6
Weighted Average	33.8%	\$13.18	\$5.92	\$7.26	2.2
Off-Peak					
Personal and Commuting	44.7%	\$8.30	\$4.75	\$3.55	1.7
Business	14.6%	\$9.68	\$4.75	\$4.93	2.0
Airport Access/Egress	4.9%	\$9.59	\$4.75	\$4.84	2.0
Trucks	2.1%	\$14.77	\$12.15	\$2.62	1.2
Weighted Average	66.2%	\$8.91	\$4.99	\$3.92	1.8
All Day					
Personal and Commuting	67.9%	\$9.64	\$5.11	\$4.53	1.9
Business	22.1%	\$11.49	\$5.11	\$6.38	2.2
Airport Access/Egress	7.4%	\$11.36	\$5.11	\$6.26	2.2
Trucks	2.6%	\$16.25	\$12.58	\$3.67	1.3
Weighted Average	100.0%	\$10.35	\$5.30	\$5.05	2.0

The WSP Report calculated the benefit-cost ratios shown above using the current toll prices as the cost. TRIP II also calculated the extent these net benefits would be reduced by the proposed toll prices.⁶⁰⁶ This calculation decreased the weighted average figures to 1.9 (peak), 1.6 (off-peak), and 1.8 (all day).⁶⁰⁷

With one exception (off-peak, personal and commuting), the majority of the “Total Benefit” figures shown above consist of “total value of travel time savings,” which, in turn, includes “travel time savings” and “reliability savings.”⁶⁰⁸ My analysis of competing benefit-cost inputs begins with these two categories.

⁶⁰⁴ *Id.* at WSP Report, pp. 66-67.

⁶⁰⁵ *Id.* at 15.

⁶⁰⁶ *Id.* at 16. The 2021-2025 toll prices were deflated to 2019 dollars based on an inflation forecast. Ex. 19.

⁶⁰⁷ Ex. 19 at calc-workbook_rev3_2025, p.1.

⁶⁰⁸ See Ex. 10 (Racciatti direct) at WSP Report, pp. 52, 65. For the one exception, the WSP Report’s “total value of travel time savings” is approximately 44%. $((\$1.62 + \$2.05) / \$8.30 = 44.2\%)$.

Travel Time Savings

Time is money. For the various benefit-cost analyses in this case, travel time savings were monetized by multiplying (i) a proportion of median hourly income or some other benchmark measure to value time by (ii) minutes of time saved by driving the Greenway instead of alternative local roads. The WSP Report used TomTom travel time data for July 2018 through June 2019.⁶⁰⁹

For its travel time savings calculation for personal and commute trips, the WSP Report used \$30.26 per person-hour as the value of time. This figure is 50% of the weighted average 2017 median hourly household income in Loudoun and Fairfax Counties, adjusted to 2019 dollars.⁶¹⁰ TRIP II used Loudoun County and Fairfax County income data because “these are the major residential and business activity centers in the vicinity of the Greenway.”⁶¹¹

Staff modified the WSP Report’s assumptions and inputs for value of time travel savings by (a) lowering the personal/commute value of time input, from \$30.26 to \$24.73 per person-hour; and (b) modifying the truck input to include only driver wages and benefits, but not mileage-based vehicle operating costs.⁶¹² Staff calculated its \$24.73 figure by increasing a 2018 USDOT recommended value of travel time by 60% and adjusting to 2019 dollars.⁶¹³ Staff indicated its recommendation “reflects the higher household incomes in the Loudoun area but incorporates research indicating that the valuation of travel time may not have a linear relationship with income.”⁶¹⁴

To test the sensitivity of the WSP Report to this assumption, Loudoun Board witness Webb adjusted the personal/commute value of time input to use 50% of the 2017 median hourly income in the broader Washington Metropolitan Statistical Area, adjusted to 2019 dollars.⁶¹⁵ His figure was \$24.42.⁶¹⁶

Based on my assessment of the record, any of the three recommended values of time travel savings for personal/commute trips are within the range of reasonableness. I favor the approaches of TRIP II and Loudoun Board because they are more location-specific than Staff’s value, which is derived from a national figure. Of these two, I find TRIP II’s approach more reasonable. By assigning Fairfax County a 76% weight in its calculation, the primary influence on TRIP II’s \$120,360 median income input is the median household income in Fairfax County, which is nearly 10% lower than that of Loudoun County.⁶¹⁷ Additionally, while residents beyond these counties undoubtedly are among the Greenway drivers, such drivers would in my

⁶⁰⁹ Ex. 10 (Racciatti direct) at 9-10 and WSP Report, pp. 42-46, 48-55. The travel time data is collected from TomTom GPS devices used by drivers on the relevant routes, which is aggregated and anonymized for traffic analysis. *Id.* at WSP Report, p. 48, n.20. In calculating the value of travel time savings per vehicle, the WSP Report assumed vehicle occupancy of 1.06 or 1.11, depending on the trip type. *Id.* at WSP Report, pp. 43-44.

⁶¹⁰ *Id.* at WSP Report, p. 43. A weighted average of Loudoun and Fairfax Counties is calculated.

⁶¹¹ *Id.* at WSP Report, p. 42.

⁶¹² Ex. 45 (Ferrell) at 14.

⁶¹³ *Id.* at 14, nn.19-20, and Attachment GF-2 (Table A-3). $\$15.45 * (\$15.45 * 0.60) = \$24.73$.

⁶¹⁴ *Id.* at 14.

⁶¹⁵ Ex. 33 (Webb) at 42-43; Ex. 40 (Response #18- Income Changed - Exhibit J) at “calc.” tab.

⁶¹⁶ Ex. 40 (Response #18- Income Changed - Exhibit J) at “calc.” tab.

⁶¹⁷ Ex. 10 (Racciatti direct) at WSP Report, p. 43. $(\$129,588 - \$117,515)/\$129,588 = 9.3\%$.

view likely be overrepresented by the Board's \$97,148 regional median income figure, which gives Fairfax and Loudoun Counties – combined – only a 24% weight.⁶¹⁸ The Board's regional median household income figure is lower due to higher concentrations of lower income households across the region compared to only Loudoun and Fairfax Counties. These are the basic mechanics of a median. But the data underlying the regional figure show, in particular, higher concentrations of more distant households with income levels that would make it difficult to afford a car, much less drive to Loudoun County and pay the Greenway toll very often.⁶¹⁹ For this reason, and because of the low weight the regional calculation gives to the counties closest to the Greenway, I recommend TRIP II's 50% median income input.⁶²⁰

To be clear, in evaluating the value of time for a Greenway driver – the “user” under this part of the Code – I am mindful of the affordability concerns raised by many public witnesses who testified.⁶²¹ However, the extent to which a toll affects affordability and roadway usage falls within the statute's material discouragement standard, rather than its user benefit standard.

I also note that because total value of travel time savings includes travel time savings (discussed above) and reliability savings (discussed below), an increase in one of these components can be mathematically offset by a decrease in the other. For example, the impact on the total value of travel time savings from a higher income input can be offset by a lower reliability ratio, as recommended below.⁶²²

Reliability Savings

“[R]eliability savings” measures the benefit of “not having to plan for significant variations from average travel time due to unreliability.”⁶²³ To account for the potential of bad traffic, drivers planning to use a road with less predictable traffic are more likely to start their trip earlier than drivers using a road with more predictable traffic. The record refers to “the number of additional minutes a traveler would need to budget for a trip to be confident of on-time arrival” as “buffer time.”⁶²⁴

⁶¹⁸ Ex. 40 (Response #18- Income Changed - Exhibit J) at “Regional Income ACS” tab. $(393,380+121,299)/2,170,034 = 23.7\%$.

⁶¹⁹ For example, 12% of households in the region excluding Loudoun and Fairfax Counties have income and benefits less than \$25,000. Ex. 40 (Response #18- Income Changed - Exhibit J) at “Regional Income (ACS)” tab. $(88,936-2,195-11,309+46,171-1,268-5,682+98,745-3,146-11,325)/(2,170,034-393,380-121,299) = 12.02\%$. In comparison, the Board's data shows only 7% of Fairfax County households and 5% of Loudoun County households have income and benefits less than \$25,000. *Id.* $2.9\%+1.4\%+2.9\% = 7.2\%$. $1.8\%+1.0\%+2.6\% = 5.4\%$.

⁶²⁰ I was unpersuaded by the record that an adjustment was warranted to reflect a non-linear relationship between income and the value of time travel savings. Even if this non-linear relationship exists at some income level, I was not convinced this would be applicable at the median income levels at issue in this proceeding. Compare Ex. 23 (Roden) at 13-14 with Ex. 69 (Racciatti rebuttal) at 3-4. See also Ex. 28 (Dulles Toll Road study referenced by Mr. Roden).

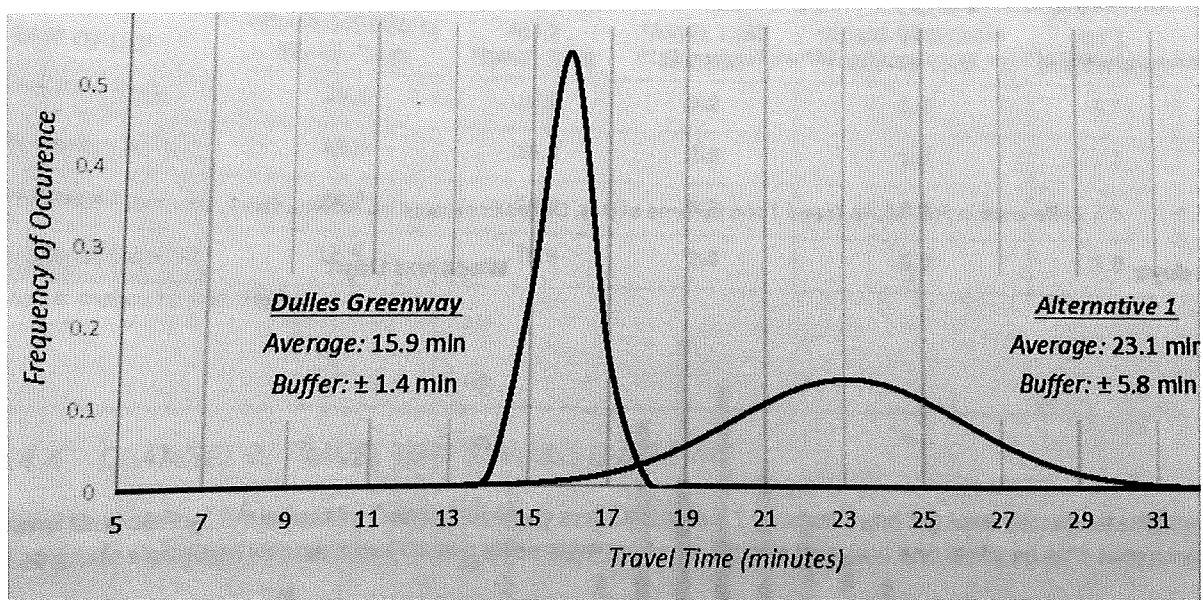
⁶²¹ See, e.g., Tr. at 7-8 (Randall), 11 (Boysko), 31-33 (Subramanyam), 41 (Glass), 143 (Coleman).

⁶²² Incorporating the \$30.26 value of time recommended above in combination with a 1.2 reliability ratio and one standard deviation, as recommended below, results in benefit calculations lower than shown in Loudoun Board witness Webb's Exhibit J. Ex. 40 (Response #18-Income Changed-Exhibit J) at Travel Time Savings Tab (modifiable inputs) and Total Benefit Calc Tab (outputs).

⁶²³ Ex. 10 (Racciatti direct) at WSP Report, p. 46.

⁶²⁴ *Id.*

Based on a standard distribution analysis compiled using TomTom data,⁶²⁵ the WSP Report calculated weighted buffer time savings for Greenway users ranging between 2.1 to 4.4 minutes, depending on the time of day and vehicle type.⁶²⁶ The chart below⁶²⁷ illustrates buffer time savings of 4.4 minutes (5.8 minus 1.4) for weekday peak automobiles. The tighter (*i.e.*, taller) distribution curve on the left illustrates less travel time variability on the Greenway than for the Route 28/Route 7 alternative depicted with the flatter distribution curve on the right. The buffer time for each curve was calculated by comparing the mean travel time for each to the total travel time for two standard deviations of data.⁶²⁸ Two standard deviations capture the 95th percentile of the travel time data used to construct the distribution curves below (*i.e.*, all but the symmetric 2.5 percentile tails on each end of the curve).⁶²⁹ Accordingly, based on the probabilistic analysis by TRIP II, the WSP Report's additional "buffer time" minutes indicate how early a driver using the Greenway or an alternative should depart for a timely arrival 95% of the time.



Based on travel time reliability literature, the WSP Report valued the per-minute "buffer time" savings at 1.5 times the value of time savings, as described above.⁶³⁰ Staff lowered the multiplier of time travel savings used to calculate reliability value, from 1.5 to 1.2.⁶³¹ Staff based its recommendation on the same reliability literature as the WSP Report, after finding the 1.5 multiplier was "at the high end of the range produced in the cited research."⁶³² TRIP II witness

⁶²⁵ Bell distribution curves show how "spread out" a data set is around its mean/average. See Ex. 10 (Racciatti direct) at WSP Report, p. 49. The 95th percentile of such curves includes two-standard deviations from (above and below) the mean. *Id.*

⁶²⁶ *Id.* at WSP Report, p. 51.

⁶²⁷ *Id.* at WSP Report, p. 49.

⁶²⁸ *Id.*

⁶²⁹ Ex. 69 (Racciatti rebuttal) at 9.

⁶³⁰ Ex. 10 (Racciatti direct) at WSP Report, p. 47.

⁶³¹ Ex. 45 (Ferrell) at 15.

⁶³² *Id.*

Racciatti agreed the 1.5 multiplier “may be viewed as toward the higher end of this range” but asserted it is appropriate to use for the Greenway because it “has a high level of reliability.”⁶³³ He also indicated a higher value of reliability is consistent with three of the primary uses of the Greenway: commuting, business trips, and trips to the airport.⁶³⁴ He explained how a 1.5 multiplier was developed from survey data from the New York metropolitan region, which he believes is comparable to the metropolitan region that encompasses the Greenway.⁶³⁵

Based on my review of the relevant literature provided by TRIP II and Staff,⁶³⁶ the 1.5 and 1.2 multipliers are *both* at the high end of this research.⁶³⁷ While the record of this case supports a multiplier at the high end, I find a multiplier of 1.2 is sufficient to recognize the primary uses of the Greenway and the characteristics of the surrounding area.

Another issue Staff contested was whether the buffer time should be measured at one or two standard deviations from the mean travel time. TRIP II recommended using two standard deviations based on FHWA’s definition of buffer time.⁶³⁸ However, Staff used one standard deviation because that is how the reliability ratios from the relevant literature are derived.⁶³⁹

TRIP II did not dispute Staff’s assertion that one standard deviation is consistent with the reliability ratio literature.⁶⁴⁰ TRIP II, Staff – and ultimately my recommendation – rely on this literature in support of a reliability ratio for this case. Consequently, I find it appropriate and consistent to use one standard deviation with the ratio I recommend based on such literature.

Safety Benefits

Beyond the travel time and reliability savings, the next largest component of the WSP Report’s “total benefit” is a \$4.01 per trip savings attributed to the safety benefits of using the Greenway.⁶⁴¹ As Staff witness Ferrell points out, when the total value of time travel time savings is unbundled to its two components, the safety benefits from crash cost savings provide the greatest benefit the WSP Report calculated for most Greenway users.⁶⁴² The WSP Report attempted to calculate crash cost savings based on: (1) the relative number of accidents with no injuries, injuries, and fatalities, calculated using five-year average crash rate data per 100 million vehicle miles travelled;⁶⁴³ and (2) per crash costs based on FHWA’s cost valuations.⁶⁴⁴ Staff illustrated this calculation as follows.⁶⁴⁵

⁶³³ Ex. 69 (Racciatti rebuttal) at 6.

⁶³⁴ *Id.* at 7.

⁶³⁵ *Id.* at 7-8; Ex. 12.

⁶³⁶ Exs. 13, 48, 49, 50, 53, 54.

⁶³⁷ *See, e.g.*, Tr. at 515 (Ferrell); Ex. 54 (showing 18 of 25 average reliability ratio values below 1.25).

⁶³⁸ Ex. 69 (Racciatti rebuttal) at 8-9.

⁶³⁹ Tr. at 512 (Ferrell).

⁶⁴⁰ Ex. 45 (Ferrell) at 15. Nor did TRIP II dispute Staff’s associated calculations.

⁶⁴¹ Ex. 10 (Racciatti direct) at WSP Report, p. 65.

⁶⁴² Ex. 45 (Ferrell) at 10-11.

⁶⁴³ Ex. 10 (Racciatti direct) at WSP Report, p. 60.

⁶⁴⁴ *Id.* at 11 and WSP Report, pp. 60-65.

⁶⁴⁵ Ex. 45 (Ferrell) at 10.

Crash	Monetary Value	Crashes per 100 mm VMT		Cost per 100 mm VMT	
		DG	Alt	DG	Alt 1
No Injury	\$ 12,647	55.0	70.9	\$ 695,559	\$ 896,576
Injury	\$ 229,781	7.2	78.7	\$ 1,644,820	\$ 18,080,928
Fatality	\$ 12,004,239	0.0	0.9	\$ -	\$ 11,000,494
Total				\$ 2,340,379	\$ 29,977,998
			Cost Per Trip:	\$ 0.34	\$ 4.35
				Savings	\$ 4.01

As shown above, TRIP II's data indicated that over the past five years the Greenway ("DG") had only 7.2 crashes with injuries and no fatal accidents for every 100 million vehicle miles traveled (top row), compared to 78.7 crashes with injuries and 0.9 crashes with fatalities for every 100 million vehicle miles driven on roads throughout the Commonwealth ("Alt").⁶⁴⁶

However, Staff's investigation revealed that TRIP II misinterpreted the crash data used to calculate numbers of accidents with no injuries, with injuries, and with fatalities. VDOT, the source of this information, explained to Staff that the "Fatality" and "Injury" data represents the actual total number of *people* killed or injured in accidents – and not the number of *crashes* involving fatalities or accidents.⁶⁴⁷ Consequently, this data cannot be combined with FHWA's per crash valuations (the "Monetary Value" column) without overstating the safety benefit.⁶⁴⁸ Rather than using the per crash FHWA valuations, Staff recommended using the USDOT per-person valuations.⁶⁴⁹ Based on the record, I find it more appropriate to use the USDOT's valuation than FHWA's per crash valuation.⁶⁵⁰ The USDOT data is provided on a per-person basis⁶⁵¹ that is more compatible with the VDOT statistics (injured persons and fatalities) used to calculate relative safety values.

Another point of contention was whether the Greenway's safety data should be compared to Commonwealth-wide safety data, as recommended by TRIP II, or to Loudoun County safety data, as recommended by Staff and Loudoun Board.⁶⁵² This issue matters primarily due to the relatively higher number of fatalities per 100 million vehicle miles driven throughout the Commonwealth (0.9) compared to Loudoun County (0.5). This seemingly small difference is significant because of the high cost of fatalities (*i.e.*, approximately \$12 million in the table above).⁶⁵³ TRIP II contended that Commonwealth-wide data is appropriate because "using the crash rate for the Commonwealth of Virginia provides a larger data set with more comparable limited access highways and toll roads that should experience similar crash rates to the

⁶⁴⁶ Ex. 10 (Racciatti direct) at WSP Report, pp. 61, 64-65.

⁶⁴⁷ Tr. at 487-88 (Ferrell); Ex. 51.

⁶⁴⁸ Tr. at 488 (Ferrell); Tr. at 600-601 (Racciatti); Ex. 69 (Racciatti rebuttal) at 10-11 ("These values account for the average number of fatalities and injuries per fatal crash, as well as the average number of injuries per injury crash.").

⁶⁴⁹ Ex. 45 (Ferrell) at 16; Tr. at 473-74 (correction).

⁶⁵⁰ Staff and TRIP II both escalate their recommended valuations to 2019 dollars.

⁶⁵¹ See, e.g., Ex. 69 (Racciatti rebuttal) at 9 ("The 2020 USDOT guidance actually clarifies this point and confirms that the USDOT guidance is a per-person value and not a per-crash value.").

⁶⁵² Ex. 33 (Webb) at 45.

⁶⁵³ See, e.g., Ex. 10 (Racciatti direct) at WSP Report, pp. 62-63.

Greenway.”⁶⁵⁴ However, the Company also acknowledged that an alternative to the Greenway chosen by a driver will likely be a road in Loudoun County.⁶⁵⁵

Since the relevant drivers are likely faced with a choice between the Greenway and other Loudoun County roads, I find the accident data for Loudoun County best matches the safety conditions experienced by drivers traveling an alternative to the Greenway.⁶⁵⁶ Using this data allows a more meaningful comparison of the Greenway’s safety compared to alternatives. While Company witness Racciatti indicated inclusion of the unique Greenway in the Loudoun County data could bias the data, the record provides the Greenway data that can be excluded in the safety calculations to eliminate any such bias.⁶⁵⁷ Attachment HE-1 to this Report, for example, recalculates Staff’s reliability calculation by subtracting the Greenway data from the Loudoun County data. This attachment shows a per-trip safety value of \$2.22, rather than the \$4.01 safety value calculated by the WSP Report.

Vehicle Operating Cost Savings

The final, and lowest value, component of the WSP Report’s total benefits is vehicle operating savings. This component monetized reduced fuel consumption based on average travel speed and total distance traveled, as well as other variable operating costs and fixed operating cost savings per mile traveled.⁶⁵⁸ TRIP II witness Racciatti attributed the lower vehicle operating costs identified in the WSP Report to the non-stop option offered by the Greenway, compared to the un-tolled alternatives, which require multiple instances of stopping and starting at traffic signals and lower travel speeds.⁶⁵⁹

The WSP Report calculated peak and off-peak savings of \$0.87 and \$0.63, respectively, for cars taking a trip on the Greenway instead of Route 28/Route 7.⁶⁶⁰ However, Staff identified certain fixed costs included in these calculations that TRIP II subsequently agreed should be excluded.⁶⁶¹ By excluding these fixed costs, the peak and off-peak savings discussed above modestly increased to \$0.91 and \$0.66.⁶⁶² For trucks, Staff excluded driver wages and benefits from its operating cost calculation.⁶⁶³ This increased peak and off-peak savings from \$2.07 and \$2.73 per trip to \$2.22 and \$2.88, respectively.⁶⁶⁴

I find Staff’s operating cost recommendations to be reasonable.⁶⁶⁵

⁶⁵⁴ Ex. 69 (Racciatti rebuttal) at 12.

⁶⁵⁵ Tr. at 291 (Racciatti).

⁶⁵⁶ *Id.*

⁶⁵⁷ Tr. at 618-19 (Racciatti). A similar adjustment would also appear appropriate should the Commission instead use the Commonwealth-wide data to evaluate safety benefits.

⁶⁵⁸ Ex. 10 (Racciatti direct) at 10 and WSP Report, pp. 56-59.

⁶⁵⁹ *Id.* at 12-13.

⁶⁶⁰ Ex. 45 (Ferrell) at 9.

⁶⁶¹ Ex. 69 (Racciatti rebuttal) at 5-6.

⁶⁶² Ex. 46 (corrected Attachment GF-1, p. 1 of 2).

⁶⁶³ Ex. 45 (Ferrell) at 16; Ex. 69 (Racciatti rebuttal) at 5.

⁶⁶⁴ Ex. 46 (corrected page 17 and Attachment GF-1, p. 1 of 2).

⁶⁶⁵ Loudoun Board witness Webb indicated that the WSP Report used Central Atlantic Region EIA gasoline and diesel prices even though EIA aggregates Virginia’s prices into the Lower Atlantic Region. Ex. 33 (Webb) at 49. However, Dr. Webb acknowledged this issue is immaterial to the benefit-cost calculations. Tr. at 445 (Webb).

**Overall Benefit-Cost Results Compared to Route 28/Route 7 Alternative
– Using 2019 and 2020 Data**

As discussed above, the WSP Report calculated positive weighted average net benefits for Greenway users even after the proposed toll increases are incorporated through 2025 as compared to the Route 28/Route 7 alternative.⁶⁶⁶ Based on its recommended assumptions, Staff calculated positive net benefits (*i.e.*, benefits exceeding costs) for each time of day and user group except (1) off-peak personal and commuting and (2) trucks.⁶⁶⁷ My recommendations above, which adopt income and safety assumptions higher than Staff, result in positive net benefits for off-peak personal and commuting while truck benefits remain lower than costs, as shown below. These results incorporate the higher costs from the proposed toll increases.⁶⁶⁸

Net Benefits Based on Hearing Examiner's Recommendations (**2019 Traffic Data**)						
Compared to Route 28/Route 7 Alternative		2021	2022	2023	2024	2025
PEAK						
Personal and Commuting		\$ 2.52	\$ 2.32	\$ 2.14	\$ 1.94	\$ 1.72
Business		\$ 4.49	\$ 4.29	\$ 4.11	\$ 3.91	\$ 3.69
Airport Access/Egress		\$ 4.36	\$ 4.16	\$ 3.98	\$ 3.78	\$ 3.56
Trucks		\$ (3.30)	\$ (3.82)	\$ (4.27)	\$ (4.79)	\$ (5.33)
OFF-PEAK						
Personal and Commuting		\$ 0.56	\$ 0.46	\$ 0.33	\$ 0.22	\$ 0.13
Business		\$ 1.47	\$ 1.37	\$ 1.24	\$ 1.13	\$ 1.04
Airport Access/Egress		\$ 1.40	\$ 1.30	\$ 1.17	\$ 1.06	\$ 0.97
Trucks		\$ (3.79)	\$ (4.01)	\$ (4.33)	\$ (4.60)	\$ (4.82)

Because truck trips comprise the smallest market segment of Greenway users,⁶⁶⁹ a weighted average benefit-cost ratio exceeds the 1.0 threshold for positive net benefits during all five years.⁶⁷⁰ Additionally, while the net benefit results for trucks were consistently negative under various scenarios in this proceeding, Staff witness Ferrell testified that the benefit-cost model does not capture all benefits for trucks. For example, the model considers the benefits to a truck driver, and does not consider the value of the cargo transported. Additionally, the model values accident cost savings no differently for cars and trucks, although crashes involving trucks could intuitively be much costlier.⁶⁷¹

However, none of the above calculations reflect the impact of COVID-19 on traffic. TRIP II and Staff also presented benefit-cost calculations using April 2020 and July 2020 traffic data, which lowered travel time savings, reliability, and operating cost savings.⁶⁷² When alternative roadways are less congested, as the record indicates occurred during the first several

Mr. Racciatti explained that Northern Virginia has gasoline and diesel prices comparable to Maryland and the District of Columbia, which are in the Central Atlantic Region. Tr. at 320-21 (Racciatti).

⁶⁶⁶ See, e.g., Ex. 19.

⁶⁶⁷ Ex. 46.

⁶⁶⁸ See Attachment HE-2 to this Report. "2019 Traffic Data" or "2019 traffic level(s)", as used in this attachment and elsewhere in this Report, refers to the traffic data used by the WSP Report, including TomTom data for July 2018 through June 2019. Ex. 10 (Racciatti direct) at WSP Report, p. 48, n.20.

⁶⁶⁹ See, e.g., Ex. 10 (Racciatti direct) at WSP Report, p. 66.

⁶⁷⁰ See Attachment HE-2 to this Report.

⁶⁷¹ Ex. 45 (Ferrell) at 18.

⁶⁷² The April and July 2020 data also lowered the share of airport trips from 7.4% to 1.0%. See Ex. 69 (Racciatti rebuttal) at 15.

months of the pandemic, the beneficial time savings offered by the Greenway decrease. In particular, quantifiable peak benefits decrease as peak time congestion on alternatives decreases.

With significant “lockdown” or “stay at home” measures in place at that time, April 2020 traffic data turned Staff’s benefit-cost calculations negative and significantly lowered the results of TRIP II’s analysis. Staff summarized these recalculations based on current tolls.⁶⁷³

	As Filed		April 1-30, 2020		July 1-19, 2020	
Peak	TRIP II	Staff	TRIP II	Staff	TRIP II	Staff
Personal/Commute	\$6.42	\$1.49	\$1.34	(\$1.81)	\$2.26	(\$1.32)
Business	\$9.18	\$4.42	\$2.29	(\$0.90)	\$3.56	(\$0.07)
Airport	\$8.99	\$2.99	\$2.22	(\$1.34)	\$3.47	(\$0.68)
Truck	\$8.55	(\$3.43)	(\$1.76)	(\$7.79)	\$0.24	(\$6.99)
Off-Peak						
Personal/Commute	\$3.55	(\$0.01)	\$2.26	(\$0.88)	\$2.87	(\$0.54)
Business	\$4.93	\$1.35	\$3.15	(\$0.08)	\$3.99	\$0.48
Airport	\$4.84	\$0.69	\$3.09	(\$0.47)	\$3.91	(\$0.02)
Truck	\$2.62	(\$4.18)	(\$0.48)	(\$5.77)	\$0.97	(\$5.23)

This Staff table shows the extent to which the Greenway’s net benefits estimated by TRIP II and Staff decreased using April 2020 traffic data, then rebounded somewhat using July 2020 traffic data. My table below shows the per-trip net benefits calculated using my recommended inputs and the July 2020 traffic data.⁶⁷⁴ Like Staff’s and TRIP II’s recalculated figures, the benefit-cost results using the Hearing Examiner’s recommended assumptions change significantly with the updated July 2020 traffic data, in the benefit cost-analysis of the Greenway compared to Route 28/Route 7.

Net Benefits Based on Hearing Examiner's Recommendations (**July 2020 Travel Data**)							
Compared to Route 28/Route 7 Alternative				2021	2022	2023	
PEAK							
Personal and Commuting				\$ (0.84)	\$ (1.04)	\$ (1.22)	\$ (1.42) \$ (1.64)
Business				\$ (0.00)	\$ (0.20)	\$ (0.38)	\$ (0.58) \$ (0.80)
Airport Access/Egress				\$ (0.06)	\$ (0.26)	\$ (0.44)	\$ (0.64) \$ (0.86)
Trucks				\$ (6.86)	\$ (7.37)	\$ (7.83)	\$ (8.35) \$ (8.88)
OFF-PEAK							
Personal and Commuting				\$ (0.09)	\$ (0.19)	\$ (0.32)	\$ (0.43) \$ (0.52)
Business				\$ 0.61	\$ 0.51	\$ 0.38	\$ 0.27 \$ 0.18
Airport Access/Egress				\$ 0.56	\$ 0.46	\$ 0.33	\$ 0.22 \$ 0.13
Trucks				\$ (4.84)	\$ (5.06)	\$ (5.38)	\$ (5.65) \$ (5.88)

The updated July 2020 traffic data, when combined with the Hearing Examiner’s recommended assumptions, results in negative weighted average net benefits with the first step of the proposed toll increase in 2021, as shown by the 0.95 benefit-cost ratio in Attachment HE-4 to this Report.

⁶⁷³ Ex. 52 (with the “WSP” header changed to “TRIP II”).

⁶⁷⁴ See Attachment HE-4 to this Report. Attachment HE-3 to this Report incorporates my recommended inputs and April 2020 traffic data.

B. Composite Alternative

All figures shown above present benefit-cost calculations compared to the Route 28/Route 7 alternative, which TRIP II recognized as the primary alternative to using the Greenway.⁶⁷⁵ TRIP II and Staff also provided benefit-cost calculations compared to a composite alternative.⁶⁷⁶ The composite alternative, as described by the WSP Report, is an average that is weighted by traffic share of the following alternatives: (1) Routes 7/Route 28 (80%); (2) Sycolin Road/Ashburn Farm Parkway/Waxpool Road (10%); and (3) Evergreen Mills Road/Ryan Road/Loudoun County Parkway or Evergreen Mills Road/Ryan Road/Old Ox Road (collectively, 10%).⁶⁷⁷ With an 80% weighting for Route 28/Route 7, the composite alternative reflects that Route 28/Route 7 is the primary – but not the only – alternative to the Greenway. The composite alternative effectively assumes that approximately 20% of the drivers that choose an alternative to the Greenway might not use Route 28/Route 7.

The Greenway becomes more cost-beneficial when these lesser-used roads are incorporated with the same weights as the WSP Report. Indeed, the Greenway has net positive benefits compared to the composite alternative even if: (1) the Hearing Examiner's assumptions are adopted; and (2) either April 2020 or July 2020 traffic data is used.⁶⁷⁸ The associated per-trip net benefits using July 2020 traffic data are shown below.⁶⁷⁹

Net Benefits Based on Hearing Examiner's Recommendations (**July 2020 Traffic Data**)						
Compared to Composite Alternative		2021	2022	2023	2024	2025
PEAK						
Personal and Commuting		\$0.74	\$0.54	\$0.36	\$0.16	(\$0.06)
Business		\$2.06	\$1.86	\$1.68	\$1.48	\$1.26
Airport Access/Egress		\$1.97	\$1.77	\$1.59	\$1.39	\$1.17
Trucks		(\$4.53)	(\$5.05)	(\$5.50)	(\$6.02)	(\$6.56)
OFF-PEAK						
Personal and Commuting		\$1.52	\$1.42	\$1.29	\$1.18	\$1.09
Business		\$2.70	\$2.60	\$2.47	\$2.36	\$2.27
Airport Access/Egress		\$2.62	\$2.52	\$2.39	\$2.28	\$2.19
Trucks		(\$2.41)	(\$2.63)	(\$2.95)	(\$3.22)	(\$3.45)

Consequently, the record establishes that compared to the composite alternative, the Greenway provides positive net benefits to users under significantly altered benefit and traffic assumptions. Even with the Greenway's benefits significantly decreased due to COVID-19's traffic impacts in April and July 2020 in combination with my recommended assumptions, which decrease the benefit calculations, the Greenway offers net benefits to its drivers that would otherwise use secondary alternatives to the Greenway. Another way to interpret this data is that if it is assumed that approximately 20% of drivers choosing between the Greenway and alternatives would use alternative roads other than Route 28/Route 7, the Greenway yields

⁶⁷⁵ Ex. 10 (Racciatti direct) at WSP Report, p. 52.

⁶⁷⁶ See, e.g., Ex. 46 at Corrected Attachment GF-1, p. 2; Ex. 10 (Racciatti direct) at WSP Report, pp. 67-68.

⁶⁷⁷ Ex. 10 (Racciatti direct) at WSP Report, pp. 52-54.

⁶⁷⁸ See Attachments HE-3 and HE-4 to this Report.

⁶⁷⁹ See Attachment HE-4 to this Report.

positive net benefit calculations on a weighted average basis at 2019 traffic levels or the depressed April and July 2020 traffic levels.

C. Benefit-Cost Approach

In addition to specific inputs, the Loudoun Board challenged several fundamental aspects of the benefit-cost analysis approach used by the WSP Report, which carried through to Staff's analysis and the calculations shown above.

Projecting Future Roadway Improvements and Future Benefit Inputs

As highlighted by the Loudoun Board, the WSP Report does not attempt to project the effects of improvements to alternative roadways or the completion of the Silver Line expansion, which could narrow the travel time benefits of the Greenway or decrease Greenway traffic.⁶⁸⁰ However, the WSP Report also does not attempt to project any travel time improvements anticipated from major capital projects underway and planned on the Greenway, including widenings and improvements at the eastern and western ends of the Greenway.⁶⁸¹ I find it speculative at this time to estimate the net effect of all such changes on the Greenway's benefits.⁶⁸² The analysis discussed above treats consistently all improvements that could increase or decrease the Greenway's benefit-cost ratio. I do not find this approach to be unreasonable and my analysis above did not attempt to adjust for the unknown net effect of future infrastructure projects.

Nor do TRIP II's benefit-cost analyses attempt to explicitly project benefit values through 2025, when the Application proposes the final step increase. Instead, TRIP II calculated benefit-cost ratios using 2019 benefits (numerator) and costs (denominator), then updated the 2021 through 2025 costs to the proposed tolls, adjusted to 2019 dollars.

Loudoun Board took issue with this approach, asserting that several key benefit inputs lack a meaningful relationship with economy-wide inflation.⁶⁸³ Loudoun Board argued further that benefits must be projected, as a matter of law.⁶⁸⁴ TRIP II responded to this criticism with the following argument:

Importantly, the Commission has not previously relied upon projections in evaluating tolls under the criteria set forth in the [Highway] Act. The valuation of the benefits is inherently subjective in many respects as it seeks to attach a value to benefits that are personal and greatly dependent on individual circumstances. Moreover, there are both quantitative and qualitative benefits that cannot easily be quantified and may vary greatly by user.... Seeking to project these benefits into the future

⁶⁸⁰ See, e.g., Ex. 23 (Roden) at 28; Tr. at 295-96 (Racciatti).

⁶⁸¹ Ex. 10 (Racciatti direct) at 16.

⁶⁸² See, e.g., Ex. 45 (Ferrell) at Attachment GF-5 (Company's Response to Staff IX-106).

⁶⁸³ See, e.g., Loudoun Board's Brief at 18-19.

⁶⁸⁴ See, e.g., *id.* at 6, 25.

adds multiple layers of complexity to the analysis that is simply not practical and likely would not ultimately lead to a meaningful way to evaluate the tolls.... Moreover, the Commission routinely rejects projections of future data in a wide variety of proceedings and contexts. The Commission routinely holds that projections insert additional bias into analyses and/or are not reliable for purposes of setting rates in the future. The Commission should similarly not require that the evaluation of benefits received by Greenway users be dependent on uncertain, and likely controversial, projections of those benefits into the future.⁶⁸⁵

I generally agree with the Company's position. On the cost-side of the equation, my benefit-cost calculations incorporate all the proposed step increases (*i.e.*, through 2025) brought back to 2019 dollars. I find this is a reasonable way to recognize the proposed toll increases and put the costs and benefits on equal footing. Additionally, using an inflation adjustment in the increased denominator for 2021 through 2025 calculations is comparable to using the nominal proposed toll rates for 2021 and 2025 and increasing the benefits for inflation.⁶⁸⁶ As such, it is mathematically comparable to a forward-looking adjustment to estimated benefits. Some benefit components may escalate more or less than inflation, but I am not certain that projecting all the benefit data will provide a better estimate. For example, safety benefits are the highest Greenway value in most of the benefit-cost results attached to this Report. Can the number of fatal and non-fatal car accidents that will happen next year, or the years after, in Loudoun County be accurately predicted?

I do not view the use of speculative projected benefit data as a legal requirement. Loudoun Board argues that "[w]hen asking for five years of future rate increases, this necessarily requires forward-looking analyses, including (among other things) assumptions about future socioeconomic conditions, public transportation options, and alternative routes."⁶⁸⁷ I do not see such a prescriptive requirement in Code § 56-542 D. Nor does the statute include language that differentiates a multiple-step/year rate proposal from a one-step proposal,⁶⁸⁸ both propose rates that, if approved, would be implemented in the future.

Distance-Based or Marginal Pricing

Loudoun Board witness Webb asserts that the law requires either distance-based or marginal pricing after criticizing fundamental aspects of the WSP Report. Namely, the WSP Report (and the above calculations) calculates positive net benefits by aggregating benefits for four types of user groups and comparing those benefits and costs of driving the entire length of the Greenway to driving the entire length of alternatives. However, the WSP Report shows

⁶⁸⁵ TRIP II's Brief at 22-23.

⁶⁸⁶ See, e.g., Ex. 33 (Webb) at 5.

⁶⁸⁷ Loudoun Board's Brief at 23.

⁶⁸⁸ Most, if not all, toll rates approved under Code § 56-542 D have been implemented using a series of increases over several years. See, e.g., *Application of Toll Road Investors Partnership II, L.P., Application for an Increase in the Maximum Authorized Level of Tolls*, Case No. PUE-2006-00081, 2007 S.C.C. Ann. Rep. 346, Final Order (Sep. 11, 2007) ("2007 Greenway Order") (approving increases from July 1, 2007, through January 1, 2012).

that the current cost of tolls for trips shorter than four miles exceeds the calculated benefits.⁶⁸⁹ Unquestionably, the evidence shows that the benefits of the Greenway, as quantified by the various analyses in this case, are greater for drivers traveling longer distances on the Greenway and that reasonable benefit-cost calculations can show negative net benefits for drivers traveling shorter distances.

I do not have a conceptual problem or legal concern with these aspects of TRIP II's benefit-cost analysis. TRIP II and Staff recognized a Hearing Examiner's conclusion in a prior proceeding that benefit-cost analysis "must, by necessity, use a more general approach that focuses on the average benefits realized by users of the Greenway as a group or subgroups, and not focus on any one individual user."⁶⁹⁰ I agree. A benefit-cost analysis such as this adds rigor beyond a reductionist view that each driver who intentionally chooses the Greenway values its use at least as much as the toll the driver is willing to pay at that point in time.⁶⁹¹ With millions of annual drivers on the Greenway, I see no feasible way to add such rigor without relying on averages.⁶⁹² As Loudoun Board witness Webb recognizes, toll road users are individuals with different preferences.⁶⁹³ The question in assembling such benefit-cost analysis is how – not whether – to aggregate data.

While TRIP II's proposal is not the only way to aggregate data or price the Greenway, I found Loudoun Board witness Webb's specific pricing proposals to be problematic. Dr. Webb offered two alternatives if his recommended benefit-cost analysis is approved: (1) a toll of \$0.64, if a single toll rate approach continues to be used; or (2) a toll of \$3.47, if TRIP II commits to pursuing distance-based tolling.⁶⁹⁴ For the first option, Dr. Webb recommends setting toll prices based on the lowest benefit calculated for any entry/exit combination because toll road users are individuals with different preferences, not composite averages.⁶⁹⁵ However, this "marginal user" that would establish the price for 100% of Greenway drivers is actually a small composition of drivers that represent less than 1% of estimated daily traffic.⁶⁹⁶ Dr. Webb also acknowledged that his first option may cause financial difficulties for TRIP II.⁶⁹⁷ Indeed, to reach the \$4.2 million amount of property taxes TRIP II pays to Loudoun County would require approximately 17,000 daily tolls priced at \$0.64.⁶⁹⁸ Constitutional questions aside, I cannot conclude that

⁶⁸⁹ Ex. 10 (Racciatti direct) at WSP Report, p. 73.

⁶⁹⁰ Ex. 45 (Ferrell) at 12-13 (quoting Hearing Examiner's Report in Case No. PUE-2013-00011).

⁶⁹¹ If so, Loudoun Board indicates that the converse must also be true – "drivers that stopped using or have never used the Greenway must perceive a total benefit per trip that is *less than* the toll expense incurred." Loudoun Board's Brief at 37 (emphasis in original). I note that the "user benefit" standard focuses on the benefits and costs to Greenway users.

⁶⁹² See also Ex. 69 (Racciatti rebuttal) at 16 ("[I]t would be impractical to provide detailed benefit-cost-analysis for every possible iteration and then force the Commission to choose which of the users mattered most.").

⁶⁹³ Ex. 33 (Webb) at 24-25.

⁶⁹⁴ *Id.* at 50, 83, Attached Ex. G, pp. 9-13.

⁶⁹⁵ Ex. 33 (Webb) at 24-25.

⁶⁹⁶ The 47 drivers that Dr. Webb identifies as the "marginal user" enter on Belmont Ridge Road and exit 0.9 mile later on Claiborne Parkway. See Ex. 33 (Webb) at Attached Ex. L, p. 3.

⁶⁹⁷ *Id.* at 50, n.26.

⁶⁹⁸ Tr. at 438 (Webb). See also Staff's Brief at 25-26 (calculating total annual revenues from a \$0.64 toll that are far below TRIP II's annual debt service expense); Ex. 3 (Lerner direct) at 15 (annual debt service).

reducing the Greenway tolls to historic lows is supported by the record or required⁶⁹⁹ for TRIP II to demonstrate that a uniform pricing structure is “reasonable to the user in relation to the benefit obtained.” On his second option, the record does not support setting a rate based on the Contestable Market Theory. Dr. Webb acknowledges this theory applies only to markets with low barriers to entry,⁷⁰⁰ which highway/road construction is not.⁷⁰¹

However, the premise of his second option – distance-based tolling – warrants further discussion. The Commission has previously recognized that “the implementation of distance-based tolls may significantly impact matters involving [VDOT] and issues related to the Comprehensive Agreement with VDOT, design capacity and [level of service], as well as the Greenway’s relation to the operation of the Dulles Toll Road.”⁷⁰² Additionally, as TRIP II points out, the Commission has, on multiple occasions, declined to require TRIP II to perform feasibility studies of distance-based tolling on the Greenway.⁷⁰³

Most recently, in 2015 the Commission directed TRIP II “to confer with VDOT on the efficacy of performing detailed feasibility studies of distance-based pricing for the Greenway” and to “file a report on the results of its discussions with VDOT.”⁷⁰⁴ The Company’s report, a letter from VDOT, and related filings were admitted into the record of the instant case.⁷⁰⁵ The VDOT letter included the following response:

[TRIP II’s May 27, 2016] letter⁷⁰⁶ concluded that further study of distance-based pricing (DBP) is not warranted. Three primary points were discussed:

1. The Greenway was not designed for DBP;
2. It would be prohibitively expensive to properly study and implement DBP; and
3. DBP would threaten the financial viability of TRIP II, result in higher tolls for some users, and/or overwhelm the capacity of the interconnection with the Dulles Toll Road causing significant congestion.

[VDOT] generally concur[s] with [TRIP II’s] conclusions and do[es] not find value in additional studies at this time. Converting

⁶⁹⁹ See, e.g., *2015 Greenway Order*, 2015 S.C.C. Ann. Rep. at 192 (“The Commission also finds that an analysis of benefits under this statute need not be limited to a calculation dependent upon the miles travelled.”).

⁷⁰⁰ Ex. 33 (Webb) at 39.

⁷⁰¹ Ex. 69 (Racciatti rebuttal) at 17. In addition, evidence and cross-examination by TRIP II effectively questioned the replacement road cost estimates used for the Contestable Market Theory. See, e.g., Ex. 69 (Racciatti rebuttal) at 17-18; Tr. at 391-95 (Roden); Ex. 32.

⁷⁰² *2015 Greenway Order*, 2015 S.C.C. Ann. Rep. at 193-94.

⁷⁰³ Ex. 3 (Lerner direct) at 42. See, e.g., *2015 Greenway Order*, 2015 S.C.C. Ann. Rep. at 193 (“Consistent with the Commission’s prior orders, we also will not direct TRIP II to perform a detailed feasibility study of distance-based tolls at this time.”) (citations omitted).

⁷⁰⁴ *2015 Greenway Order*, 2015 S.C.C. Ann. Rep. at 194.

⁷⁰⁵ Ex. 9.

⁷⁰⁶ The referenced May 27, 2016 letter from TRIP II to then VDOT Commissioner Charles Kilpatrick is also included as part of Exhibit 9.

the Greenway to a distance-based toll facility has many challenges which were not contemplated when constructed. Due consideration must be given to the potential impacts on the area transportation network and unintended consequences that may occur. We do agree that further study and analysis would be warranted if circumstances occur that could alleviate the existing obstacles and support such an enhancement to the Greenway.⁷⁰⁷

After the Company's report, including the VDOT letter, was filed and considered by the Commission, the Commission closed the case.⁷⁰⁸

The record of the instant case does not indicate that the first two circumstances identified in VDOT's letter have changed since 2016. How the Greenway was designed refers to historical events that cannot change. Additionally, Company witness Lerner testified that distance-based pricing would require significant costs to install necessary infrastructure.⁷⁰⁹ However, some evidence indicates that one aspect of the third circumstance may have lessened. The potential for distance-based pricing to worsen congestion at the eastern (or western) end of the Greenway during peak periods⁷¹⁰ should be alleviated – to some degree – by construction to be completed this year by TRIP II,⁷¹¹ although the actual effect of such projects remains to be seen.

Accordingly, I recommend that the Commission direct TRIP II to confer further with VDOT to determine whether this, or any other, changed circumstance warrants further study and analysis of distance-based pricing at this time. Given the history of this issue documented in the record, I do not find that the lack of such pricing should be used to the detriment of the Application. I see no legal basis for Board witness Webb's assertion that the only way for the Application to comply with Code § 56-542 D is through a commitment to distance-based pricing or a \$0.64 toll.⁷¹² I see no support in law or precedent for the assertion that "because TRIP II proposes to charge a single toll, invariant to distance, it must demonstrate that the tolls provide benefits to the shortest distance users."⁷¹³

Qualitative Benefits

As previously recognized by the Commission, the "reasonable to the user in relation to the benefit obtained" standard may also include consideration of benefits that are qualitative.⁷¹⁴ Staff recognized one substantial benefit not incorporated in the benefit-cost model analysis is the experience of driving on a road with fewer other drivers.⁷¹⁵ In its Application, TRIP II identifies

⁷⁰⁷ Ex. 9 (last two pages).

⁷⁰⁸ *Commonwealth of Virginia, ex rel. State Corporation Commission, Ex Parte: In the matter of investigating the toll rates of Toll Road Investors Partnership II, L.P. under § 56-542 D of the Code of Virginia*, Case No. PUE-2013-00011, 2016 S.C.C. Ann. Rep. 197, Order Closing Case (Sep. 20, 2016).

⁷⁰⁹ Ex. 3 (Lerner direct) at 42-43. *See also* Ex. 9.

⁷¹⁰ *See, e.g.*, Ex. 3 (Lerner direct) at 43; Ex. 10 (Racciatti direct) at WSP Report, pp. 25, 27 (showing low speeds during peak periods at the applicable end of the Greenway based on 2019 travel data).

⁷¹¹ Ex. 10 (Racciatti direct) at 16; Ex. 60 (Armstrong) at Appx. D, pp. 34-35; Ex. 61C (Armstrong) at Appx. B, p. 4.

⁷¹² Ex. 33 (Webb) at 50, n.26.

⁷¹³ *Id.* at 19.

⁷¹⁴ *2015 Greenway Order*, 2015 S.C.C. Ann. Rep. at 192.

⁷¹⁵ Ex. 45 (Ferrell) at 19.

the following as qualitative benefits of driving on the Greenway: peace of mind from driving on a well-maintained, limited access highway; an increased sense of safety from driving on a roadway with limited truck traffic; or additional enjoyment from driving on a free-flow road with no traffic signals.⁷¹⁶ Staff witness Ferrell noted Staff's experience on the Greenway was less stressful and more aesthetically pleasing, compared to the surrounding road network.⁷¹⁷ Loudoun Board witness Webb, however, contended that if qualitative benefits are considered so too should qualitative costs. He indicated that anger by people who cannot afford to drive the Greenway or feelings of exploitation by people who pay the toll could be examples of qualitative costs.⁷¹⁸ Loudoun Board also argued that TRIP II introduced no evidence of qualitative benefits.⁷¹⁹

To the extent the Commission considers qualitative benefits and costs, which the analysis above does not, the "reasonable to the user in relation to the benefit obtained" standard contemplates an evaluation of users of the Greenway. As such, while enjoyment or feelings of exploitation by Greenway drivers could potentially be considered, anger by people not using the Greenway appears to fall beyond the scope of this standard. If benefits and costs beyond Greenway users were to be considered, the Greenway's benefits to drivers avoiding the Greenway for alternatives – from the Greenway lowering alternative road traffic (which may be quantifiable) – would presumably need to be considered.⁷²⁰

According to TRIP II, the Greenway's qualitative benefits "may be even more important to travelers now than those that can be statistically valued, and the Company requests the Commission consider their value accordingly. Indeed, these benefits are highlighted by the more than 13,000 drivers a day that chose to use the Greenway in April of this year when there was little or no traffic or congestion on any other alternative roadways."⁷²¹ The Greenway's ridership in April 2020 could suggest that Greenway users obtain benefits, or a higher level of benefits, that are not captured by the benefit-cost analyses in this case. However, it could also suggest that the number of drivers choosing between the Greenway and secondary alternatives is reasonably approximated by the composite alternative.⁷²² As shown in Attachment HE-3 to this Report, even with the reduced traffic conditions in April 2020, I found positive net benefits from using the Greenway compared to the composite alternative.

D. Benefit-Cost Conclusions

Conclusions about the Greenway's user benefits are significantly influenced by value inputs and traffic assumptions. Based on my assessment of the evidence, the record demonstrates that quantified benefits for those who travel the Greenway exceed the proposed toll prices if pre-COVID-19 traffic levels are assumed. But April 2020 and July 2020 traffic levels

⁷¹⁶ Ex. 2 (Application) at 4.

⁷¹⁷ Ex. 45 (Ferrell) at 18, n.35.

⁷¹⁸ Tr. at 407-408 (Webb).

⁷¹⁹ Loudoun Board's Brief at 34.

⁷²⁰ Other benefits not considered in the above analysis include taxpayer benefits associated with the Greenway's funding through private, rather than public sources, and TRIP II's payment of property taxes. See Ex. 3 (Lerner direct) at 26, 28-29.

⁷²¹ TRIP II's Brief at 22. See Ex. 64 (Lerner rebuttal) at 6.

⁷²² See Attachment HE-3 to this Report.

produce mixed results – the quantified benefits exceed the proposed tolls when compared to the composite alternative, but not compared to Route 28/Route 7. If the Commission adopts different inputs than recommend herein, the results could be different. While the future is uncertain, the 2019, April 2020, and July 2020 traffic levels present a reasonably wide range of conditions within which TRIP II has demonstrated user benefits compared either to the primary alternative or the composite alternative.

II. Discouragement of the Greenway's Use by the Public

In addition to its benefit-cost analysis, the WSP Report analyzed the second statutory standard – whether the proposed toll prices “will not materially discourage use of the roadway by the public.” Basic economics indicate that a price increase should decrease demand to some extent.⁷²³ When considering under Code § 56-542 D whether toll prices “will not materially discourage use of the roadway by the public,” the Commission has applied the plain meaning of “materially,” which is “to a significant extent or degree.”⁷²⁴ TRIP II asserts that statutory inclusion of the word “materially” expressly recognizes that tolls inherently create some discouragement.⁷²⁵

A. Regression Model

For this standard, the WSP Report used an econometric regression analysis to evaluate the price elasticity of demand on the Greenway while controlling for the effect of factors other than the effect of the Greenway's toll prices on demand.⁷²⁶ As explained by Loudoun Board witness Webb, elasticity “measures the percentage change in quantity demanded that will result from a percentage change in price.”⁷²⁷ Negative elasticity of demand values between 0 and -1 indicate an inelastic demand, meaning the quantity demanded (here, traffic) decreases less in percentage terms than the percentage of a price increase (here, tolls).⁷²⁸ Negative values exceeding -1 (e.g., -1.1) therefore indicate an elastic demand.

The WSP Report calculated toll price elasticities of -0.21 for two-axles vehicles and -0.23 for vehicles with three or more axles.⁷²⁹ Based on this analysis, the approximately 31.8% weighted average toll price increase would result in an approximately 6.7% decline in traffic over the 2021 to 2025 period, or about a 1.3% decline per year.⁷³⁰ Staff equated the Company's elasticity estimate to the discouragement of approximately 200,000 two-axle vehicles annually, which would accumulate to approximately one million such vehicles by 2025.⁷³¹ One million

⁷²³ See, e.g., Ex. 55 (Carsley) at 12. See also 2007 Greenway Order, 2007 S.C.C. Ann. Rep. at 347 (“[A]n increase in tolls will almost certainly discourage some use.”).

⁷²⁴ See, e.g., 2016 Greenway Opinion, 292 Va. at 456 (“In doing so, the Commission appropriately determined that in order for the tolls to ‘materially’ discourage the Greenway's usage, they would need to discourage traffic ‘to a significant extent or degree.’”).

⁷²⁵ TRIP II's Brief at 24.

⁷²⁶ Ex. 10 (Racciatti direct) at WSP Report, p. 17.

⁷²⁷ Ex. 33 (Webb) at 50.

⁷²⁸ Ex. 55 (Carsley) at 12.

⁷²⁹ Ex. 10 (Racciatti direct) at WSP Report, pp. 83, 86.

⁷³⁰ *Id.* at 22.

⁷³¹ Staff's Brief at 17; Ex. 55 (Carsley) at Attachment MKC-1.

drivers by 2025 is approximately 5.9% of the Greenway's total transactions in 2019.⁷³² The WSP Report also provided more granular calculations of demand elasticity for two-axle vehicles and for three or more axle vehicles.⁷³³ For two-axle vehicles, these showed greater elasticity estimates for peak periods compared to off-peak (weekday and weekend) periods.

In comparison, TRIP II witness Racciatti estimated an approximately 3.4% decline in 2023 with an increase in the neighboring Dulles Toll Road tolls; and an approximately 0.7% to 5.7% decline in traffic volume each time an improvement on a competing un-tolled alternative is completed.⁷³⁴

TRIP II indicates that it "chose to use an econometric regression model to estimate the effects of toll prices on travel demand for this proceeding because the Commission has previously accepted this method and econometric regression models are typically used to analyze traffic on mature, developed corridors like the Greenway where accurate historic traffic data is available."⁷³⁵ However, Loudoun Board and Staff challenged the use of a regression analysis in this case. Loudoun Board witness Roden testified that a regression model is a good solution to take "an old historical trend and project it into the future for a relatively short period of time with a relatively minor impact."⁷³⁶ In this instant case, he questioned whether the proposed toll increases are minor enough and the environment stable enough for a regression model to be reliable.⁷³⁷ Staff witness Carsley questioned the suitability of using a regression model in this case.⁷³⁸ He argued that inelastic price elasticities of demand do not meaningfully address the material discouragement standard.⁷³⁹ Staff emphasized the fact that regression models provide elasticity estimates expressed in percentage terms and are based on data for a specific historic period.⁷⁴⁰

Whether estimated by a regression model or a planning model, I disagree that inelastic price elasticities of demand cannot inform the Commission's consideration of the material discouragement standard.⁷⁴¹ The Supreme Court of Virginia's *2016 Greenway Opinion* explicitly recognized the Commission's ability to consider such estimates under this standard.⁷⁴² While the Court upheld such use in the context of a Commission investigation of existing (not proposed) rates,⁷⁴³ that investigation considered the future effect of rates.⁷⁴⁴ The Court considered and upheld the Commission's use of evidence that the toll rates *were not* materially discouraging traffic – based on an analysis of historic data – to determine whether there was

⁷³² *Id.*

⁷³³ Ex. 10 (Racciatti direct) at 21 and WSP Report, p. 81.

⁷³⁴ *Id.* at 22.

⁷³⁵ TRIP II's Brief at 25.

⁷³⁶ Tr. at 371 (Roden).

⁷³⁷ Tr. at 370-71 (Roden).

⁷³⁸ See, e.g., Tr. at 556-59 (Carsley).

⁷³⁹ Ex. 55 (Carsley) at 15.

⁷⁴⁰ Staff's Brief at 18-19.

⁷⁴¹ See, e.g., Ex. 55 (Carsley) at 15.

⁷⁴² See *2016 Greenway Opinion*, 292 Va. at 466-68, n.13 (2016).

⁷⁴³ See Loudoun Board's Brief at 20.

⁷⁴⁴ *2016 Greenway Opinion*, 292 Va. at 467 ("In finding that the Greenway's existing toll rates 'will not materially discourage use of the roadway ...'").

B. Travel Demand Model

Loudoun Board witness Roden offered competing elasticity estimates from a travel demand model, the Loudoun County Model. He views travel demand models as superior to regression models.⁷⁵⁵ He described travel demand models as “one of the most widely used quantitative tools to evaluate transportation investments and future system performance concerns.”⁷⁵⁶

Using the Loudoun County Model, Mr. Roden estimated that if the Greenway’s toll rate increases by 30%, transactions would decrease by 24%, indicating -0.8 toll elasticity. If the toll rate increases by 10%, transactions would decrease by 11%, indicating a -1.1 elasticity.⁷⁵⁷ Mr. Roden indicated his elasticity estimate for the Greenway is comparable with MWAA’s 2018 analysis for the Dulles Toll Road, the Greenway’s neighboring public toll road with an almost identical length but lower tolls.⁷⁵⁸

Company witness Racciatti responded by pointing out that the Dulles Toll Road’s traffic actually decreased far less after a large toll increase in 2019 than the MWAA estimate Mr. Roden associated his travel demand model estimate with. Specifically, after toll prices increased by 30% (mainline) and 50% (ramps) on the Dulles Toll Road, Dulles Toll Road traffic during 2019 decreased by 5.6% compared to 2018.⁷⁵⁹ In other words, after a one-time toll increase on the Dulles Toll Road that – on a percentage, but not nominal, basis – is comparable to the more gradual five-year increase proposed for the Greenway, traffic on the Dulles Toll Road decreased by a percentage comparable to the decrease the WSP Report regression model estimates the Greenway tolls would cause by 2025.

Loudoun Board witness Roden also offered a 2025 Analysis using the Loudoun County Model with aggressive population and employments assumptions. The results of this modeling indicate that if the Greenway’s tolls remain at current levels, the Greenway will add approximately 9,000 daily vehicles by 2025, but that the proposed tolls would negate any growth on the Greenway.⁷⁶⁰

C. Level of Service

In the Commission’s investigation of the Greenway concluded in 2015, the Commission considered level of service “evidence showing that the Greenway is operating within its designed capacity during peak hours.”⁷⁶¹ The level of service evidence introduced by Staff in the instant case establishes that the Greenway continues to operate within its designed capacity. Except for westbound afternoon traffic at the Greenway’s far western and eastern ends – where, as noted

⁷⁵⁵ Ex. 23 (Roden) at 10-12.

⁷⁵⁶ *Id.* at 10.

⁷⁵⁷ *Id.* at 26.

⁷⁵⁸ *Id.* at 27; Ex. 28.

⁷⁵⁹ Ex. 69 (Racciatti rebuttal) at 30.

⁷⁶⁰ Ex. 23 (Roden) at 28-31.

⁷⁶¹ 2015 *Greenway Order*, 2015 S.C.C. Ann. Rep. at 193.

above, construction projects are to be completed this year⁷⁶² – the density of vehicles travelling the Greenway during peak times has decreased since 2015.⁷⁶³ Overall traffic on the Greenway has also decreased.⁷⁶⁴ Staff concluded that “[g]iven the decline in usage of the Greenway over the last several years, a continued decline would indicate under-utilization of the roadway, which further indicates that a large number of past or potential Greenway drivers have opted to use alternative travel routes.”⁷⁶⁵ TRIP II argued that the level of service analysis is “not appropriate for this proceeding because it can neither correlate toll prices to Greenway travel demand nor reach any conclusion on whether toll rate changes were the causes of the observed [level of service] changes.”⁷⁶⁶

D. Weighing of the Evidence

In general, I have given greater weight to the regression model analysis than the travel demand model analysis in this case. As evidenced by the Dulles Toll Road traffic in 2019, the additional sophistication of a travel demand model does not change the fact that it is attempting to simulate future decisions based on scenarios that include significant assumptions about the future.⁷⁶⁷ All models have strengths and limitations.⁷⁶⁸ With sophistication comes complexity that can produce better results, but with a potential trade-off in transparency. The Commission regularly conducts proceedings in which the parties serve exhaustive discovery to explore the inputs, parameters, assumptions, linkages, and constraints of complex algorithm-based modeling.⁷⁶⁹ Such extensive discovery of a model used over many years and cases builds familiarity and transparency for case participants and the Commission. Given the complex nature of such models, I find it hard to build such familiarity and transparency unless TRIP II itself conducts such modeling and produces its results with applications, which the Commission has not previously directed. That one aspect of the results Mr. Roden reported from his Loudoun County Model runs is the opposite of what he expected illustrates my concern in this regard. Loudoun Board asserts that elasticity *increases* as toll prices increase. However, Mr. Roden’s Loudoun County Model runs show elasticity *decreasing* as toll prices increase.⁷⁷⁰ If this type of modeling will be required prospectively, the Commission should direct TRIP II to submit such modeling results as part of future applications.

⁷⁶² Ex. 10 (Racciatti direct) at WSP Report, p. 16; Ex. 60 (Armstrong) at Appx. D, pp. 34-35; Ex. 61C (Armstrong) at Appx. B, p. 4. See also TRIP II’s Brief at 33.

⁷⁶³ Ex. 55 (Carsley) at 21-22; Ex. 56.

⁷⁶⁴ Ex. 57 (average weekday traffic by time of day); Ex. 10 (Racciatti direct) at WSP Report, p. 7 (revenue-generating average annual daily traffic).

⁷⁶⁵ Staff’s Brief at 20.

⁷⁶⁶ TRIP II’s Brief at 34.

⁷⁶⁷ See, e.g., Ex. 23 (Roden) at 11, 21 (indicating toll route choice is a complicated, individual decision-making process for drivers) and Attached Ex. B, p. 6 (indicating the need for scenario-based algorithm modeling because “[b]ehavioral trends and emerging technologies ... are transforming our cities; the future is increasingly unsettled.”).

⁷⁶⁸ See, e.g., Tr. at 560 (Carsley) (“It looked to me that rather than like a forecasting model or a regression model, it was a planning model, which is a model that’s set up and designed to put in a bunch of assumptions, and then it will do some type of algorithm to optimize it. And, you know, you’ve got the model set up correctly. That’s the first thing. And then the other thing is the thing they say about data: Bad data in, bad answer out. So that’s not going to necessarily be any better.”).

⁷⁶⁹ See, e.g., Loudoun Board’s Brief at 24 (discussing electric utility integrated resource plan proceedings).

⁷⁷⁰ See, e.g., Ex. 23 (Roden) at 18-20, 26; Ex. 69 (Racciatti rebuttal) at 29-31.

Turning to the regression model results, I do not view an annual decrease of less than 3% to be material, although 15% over five years could be. Dr. Webb testified that he viewed a 10% decrease as the threshold for materiality.⁷⁷¹ If the Commission agrees with Dr. Webb's adjustment to the WSP Report's regression model and his 10% materiality threshold, and otherwise finds that the Application satisfies the Code, the Commission could consider (i) approving the proposed toll increases only through 2023 or (ii) approving toll increases approximately 33% lower⁷⁷² than the proposed increases through 2025.

However, some of the COVID-19 related concerns raised by the Loudoun Board and Staff resonated with me. Namely, while I find a regression model generally appropriate for use under Code § 56-542 D and find no fault *per se* with its reliance on historic data, extrapolating the results of such a model to the future appears problematic in the instant case. Loudoun Board witness Roden explained that a relatively stable environment is needed for a historic trend from a regression model to be reliable.⁷⁷³ This observation is consistent with the assumption contained in the WSP Report that "no major recession or significant economic restructuring will occur which could substantially reduce trip-making and traffic in the region or alter travel patterns in the future."⁷⁷⁴ The elasticity analysis, which was conducted in 2019, was not updated even though COVID-19 caused a substantial decrease in traffic on the Greenway and surrounding roadways in 2020.⁷⁷⁵ TRIP II supported this decision in part by pointing out that the 2007-2009 Great Recession occurred during the pre-2020 period used to conduct the regression analysis.⁷⁷⁶ But the record identifies several reasons why the level of governmental intervention and traffic impacts associated with the COVID-19 pandemic differ significantly from the Great Recession.⁷⁷⁷ To address public health risks that are ongoing, a large portion of the workforce has restructured to work from home, when possible.⁷⁷⁸ The Commonwealth promulgated workplace regulations to maximize telework and limit building occupancy, among other restrictions.⁷⁷⁹ The extent and duration of such restructuring remains uncertain. For these reasons, the regression model analysis in the record of this case did not establish that the proposed toll rates will not materially discourage traffic on the Greenway, in my view.

The material discouragement evidence offered by TRIP II assumes that the historical relationship between toll prices and demand for the Greenway will continue into the future. In my view, the effects of the COVID-19 pandemic have undermined this assumption such that – absent any constitutional concerns – the Commission should consider either (a) denying the Application; or (b) deferring the effective date of the proposed toll increases until traffic on the Greenway returns to pre-COVID-19 levels.

⁷⁷¹ Ex. 33 (Webb) at 56, 73.

⁷⁷² 10%/15%= 67%.

⁷⁷³ Tr. at 370-71 (Roden).

⁷⁷⁴ Ex. 10 (Racciatti direct) at WSP Report, p. 89.

⁷⁷⁵ See, e.g., Ex. 64 (Lerner rebuttal) at 5-6; Ex. 65C (Lerner rebuttal) at 6. As discussed above, 2020 data was used to update the "user benefit" analyses in this case.

⁷⁷⁶ See, e.g., Ex. 64 (Lerner rebuttal) at 15; Ex. 69 (Racciatti rebuttal) at 19.

⁷⁷⁷ See, e.g., Tr. at 334-37 (Hemstreet).

⁷⁷⁸ See, e.g., Tr. at 404 (Webb).

⁷⁷⁹ Ex. 21.

III. Reasonableness of the Return

A. Undisputed Evidence

Staff evaluated TRIP II's earnings through 2019, and projected earnings through 2025, in several different ways.⁷⁸⁰ Staff calculated a negative 3.5% internal rate of return over the life of the Greenway through 2019 based on cash invested by and distributed to equity partners.⁷⁸¹ Next, Staff calculated a 2.6% simple average of the ROE earned each year through 2019.⁷⁸² Both calculations, when projected through 2025, remain below the average allowed ROE over the corresponding period.⁷⁸³ Both calculations also remain below the average allowed ROE if they are adjusted to assume (a) that cash directed to early debt redemption and capital expenditures is treated as reinvested equity; and (b) undistributed cash for equity investors was included as part of the ROE.⁷⁸⁴

Based on its analysis, Staff concluded that “[a]ll these calculations indicate that the ROE over the life of the Greenway is below what has been authorized on average and the ROE is projected to be below that authorized through 2025.”⁷⁸⁵ There is no evidence contrary to this conclusion. I also note that debt service expense is scheduled to increase significantly in 2022. Annual debt service of approximately \$30 million increases to approximately \$39 million and \$69 million in 2021 and 2022, respectively.⁷⁸⁶

B. The REA

Origin and Escalation to its Current Balance

The Commission has never regulated the Greenway using traditional cost-of-service ratemaking. It approved the REA as “reasonable in order to permit [TRIP II’s predecessor] an opportunity to earn a fair return without providing a guaranteed return.”⁷⁸⁷ The Commission found the REA “shall be a factor in establishing toll rates and the capital on which [TRIP II’s predecessor] will have an opportunity to earn a reasonable return, subject to the Commission’s continuing jurisdiction to set tolls prospectively which provide no more than a reasonable return and do not discourage use of the road.”⁷⁸⁸

⁷⁸⁰ Ex. 41 (Pippert) at 9-11, Attached Schs. 2-3.

⁷⁸¹ *Id.* at Attached Sch. 2, p. 1.

⁷⁸² *Id.* at Attached Sch. 3, p. 1.

⁷⁸³ Ex. 42C (Pippert confidential) at 11. This is true regardless of whether the average allowed return is 19% or 17.7%, as calculated by Staff, or 24.9%, as calculated by TRIP II. *See* Ex. 41 (Pippert) at 11; Ex. 64 (Lerner rebuttal) at 17-18.

⁷⁸⁴ Ex. 41 (Pippert) at 13-14 and Attached Sch. 2, p. 2, and Attached Sch. 3, p. 2.

⁷⁸⁵ *Id.* at 12.

⁷⁸⁶ Ex. 3 (Lerner direct) at 15.

⁷⁸⁷ *Application of Toll Road Corporation of Virginia, For a certificate of authority and approval of rates of return, toll rates and ratemaking methodology pursuant to the Virginia Highway Corporation Act of 1988*, 1990 S.C.C. Ann. Rep. 197, 199, Opinion and Final Order (July 6, 1990).

⁷⁸⁸ *Id.*

TRIP II's predecessor proposed the REA as "a bridge between the cost tracking done in rate regulation and the realities of a competitive marketplace."⁷⁸⁹ TRIP II's predecessor proposed the REA in conjunction with initial tolls proposed at levels expected to generate losses.⁷⁹⁰ Without the REA, TRIP II's predecessor indicated in 1990 that "regulators could have trouble judging whether the higher cash flows that are required in future years are reasonable ... [a] Commissioner standing in 2020, say, may find it difficult to follow the detailed record of this proceeding that justifies the decision today's Commission ultimately reaches."⁷⁹¹ According to TRIP II's predecessor, the REA also "gives investors assurance that future regulators will recognize that future ... cash flows have to be above those that would [be] obtain[ed] under traditional utility regulation."⁷⁹²

When the REA mechanism was adopted, its balance of unearned, authorized returns was expected to grow for 30 years.⁷⁹³ However, the REA balance – which was approximately \$7.5 billion by December 31, 2019 – is much higher than originally projected.⁷⁹⁴ Initial projections showed a maximum REA balance of \$0.4 billion by 2021.⁷⁹⁵ Initial projections also showed total distributions to equity investors exceeding \$1 billion over the Greenway's life, while approximately \$100 million has been distributed to equity investors to date.⁷⁹⁶

The record reflects that many events since the Greenway's opening put the REA balance on an upward trajectory that has grown significantly steeper in recent years. Indeed, during the seven years when Code § 56-542 I provided for specified increases, the REA grew from approximately \$3.0 billion to \$7.5 billion.⁷⁹⁷ Staff witness Pippert identified the following as contributing to the REA growing higher than originally projected:⁷⁹⁸

- a default on debt soon after the Greenway opened;
- a refinancing in 1999;
- an increase in invested equity to \$144 million (not including reinvested cash), from an original projection of \$34 million;
- a second major refinancing in 2005;
- changes in ownership structure;
- debt redemptions and capital projects funded with internally generated cash;
- the Great Recession; and
- statutory changes authorizing automatic toll increases under Code § 56-542 I.

The REA balance has now grown to a level where all case participants – including TRIP II – believe it unlikely "to ever be substantially recovered by equity investors."⁷⁹⁹ Staff

⁷⁸⁹ Ex. 41 (Pippert) at 5 (quoting Ex. 43 at 5).

⁷⁹⁰ Ex. 43 at 4-5.

⁷⁹¹ *Id.* at 12.

⁷⁹² *Id.*

⁷⁹³ Ex. 41 (Pippert) at 5-6.

⁷⁹⁴ *Id.* at 8.

⁷⁹⁵ *Id.* at 6, Attached Sch. 1.

⁷⁹⁶ *Id.* at 6.

⁷⁹⁷ *Id.* at Attached Sch. 1 (year-end 2012 and 2019 balances).

⁷⁹⁸ *Id.* at 7 and Attached Sch. 1.

⁷⁹⁹ Ex. 4 (Lerner supp. direct) at 6. *See also* Ex 41 (Pippert) at 8; Tr. at 243 (Piepgrass).

believes “the REA is growing at an unsustainable rate.”⁸⁰⁰ TRIP II and Loudoun Board provided illustrative toll prices that would mathematically draw down this \$7.5 billion balance to zero by 2056.⁸⁰¹ These calculations depend in part on whether you assume a very large toll increase up front or much larger increases later. TRIP II calculated \$70 toll rates would need to be approved – in this case – assuming traffic remains at 2019 levels.⁸⁰² If rates closer to current levels (instead of \$70) are in place in 2021, the compounding growth of the REA⁸⁰³ means toll rates far larger than \$70 would need to be in place later to fully recover the REA balance by 2056.⁸⁰⁴

Based on the record in this case, I find ample support for TRIP II’s conclusion that the REA balance is unlikely to ever be substantially recovered. Reasonable toll price and revenue projections cannot keep pace with the compounding growth of the REA.⁸⁰⁵

Constitutional Implications of the REA Balance

The Loudoun Board argued that the REA should be eliminated because it has outlived its usefulness. TRIP II, on the other hand, argues that such action would constitute an unconstitutional taking of property.⁸⁰⁶

The Commission’s approval of the REA was not “a guaranteed return” and was explicitly subject to, among other things, “the Commission’s continuing jurisdiction to set tolls prospectively which ... do not discourage use of the road.”⁸⁰⁷ Consequently, while adoption of the REA endorsed a long-term approach to assessing whether tolls would provide “no more than a fair return” to investors, the Commission simultaneously acknowledged the statutory consideration of Greenway traffic discouragement as a limiting factor on prospective tolls. In other words, while the REA was approved as one factor to consider when setting rates, it is not (and legally cannot be) the only factor. For these reasons, I do not understand the full balance of the REA to be a constitutionally protected property interest. Again, TRIP II has indicated – as supported by the record – that the REA balance is unlikely to ever be substantially recovered. Additionally, any constitutional assertion to the Commission regarding a sizable portion of the REA balance would appear to be misdirected. As discussed above, most (\$4.5 billion) of the REA balance – which TRIP II admits is unlikely to be substantially recovered – accrued under rates prescribed by the intervening legislation of Code § 56-542 I.

Usefulness of the REA or Other Financial Measures

A separate question is whether the REA should (not whether it must) continue to be used.

⁸⁰⁰ Tr. at 463 (Pippert).

⁸⁰¹ Exs. 6C, 71C. Both exhibits also identify assumptions underlying the calculations.

⁸⁰² Ex. 4 (Lerner) at 6. See also Ex. 71C.

⁸⁰³ Absent any drawdown, the balance continuously grows at 14%. A 14% increase to a \$7.5 billion balance exceeds \$1 billion.

⁸⁰⁴ Ex. 6C.

⁸⁰⁵ *Id.* See also Ex. 73C; Ex 41 (Pippert) at 8-9.

⁸⁰⁶ TRIP II’s Brief at 36-39.

⁸⁰⁷ *Application of Toll Road Corporation of Virginia, For a certificate of authority and approval of rates of return, toll rates and ratemaking methodology pursuant to the Virginia Highway Corporation Act of 1988*, 1990 S.C.C. Ann. Rep. 197, 199, Opinion and Final Order (July 6, 1990) (“1990 Order”).

The Loudoun Board argued that “it’s time to move on” from the REA.⁸⁰⁸ Staff recommended the adoption of financial measures to supplement the REA.

If the Commission continues to use a long-term approach to assess whether Greenway tolls would provide “no more than a fair return” to investors, I find some continuing regulatory value in understanding the extent to which Greenway investors have received distributions compared to the REA balance. However, the REA’s significance in the ratemaking process would be limited, given what appears to be tension between (a) the statutory requirements regarding material discouragement and user benefits; and (b) the current REA balance. While the Commission may not have anticipated in 1990 that the REA would grow annually by amounts that are double what TRIP II’s predecessor projected the entire balance would ever reach in total,⁸⁰⁹ the Commission was clear at the outset that the REA could not subordinate the three-part statutory framework.⁸¹⁰

I agree with Staff that, at a minimum, supplemental financial measures should be used to assess the reasonableness of TRIP II’s return. Specifically, I recommend the Commission adopt the internal rate of return and average annual return measures Staff and TRIP II used in this case.⁸¹¹

Staff also recommended discontinuing the REA’s compounding feature⁸¹² to recognize that the REA “has become less useful and even confusing due to the extremely high balance that will result” if compounding continues.⁸¹³ TRIP II witness Lerner objected and argued that such discontinuance, among other things, “implies an allowed rate of return going forward of 0% per annum and means that investors ... would forego the opportunity for any future return on [previously invested] capital.”⁸¹⁴ I view the compounding feature of the REA as a fundamental aspect of the REA.⁸¹⁵ Accordingly, I do not recommend discontinuing or modifying the REA.

Prospective ROE

If the Commission retains the compounding feature of the REA, or adopts other replacement or supplemental financial measures, Staff recommended lowering the current allowed ROE from 14% to a point within the 11-12% range.⁸¹⁶

⁸⁰⁸ Tr. at 242 (Piepgrass).

⁸⁰⁹ Ex. 41 (Pippert) at Schedule 1.

⁸¹⁰ *1990 Order*, 1990 S.C.C. Ann. Rep. at 199.

⁸¹¹ Ex. 41 (Pippert) at 9 (numbered as 2 and 3); Ex. 64 (Lerner rebuttal) at 16-18.

⁸¹² Ex. 41 (Pippert) at 10.

⁸¹³ Tr. at 461 (Pippert).

⁸¹⁴ Ex. 64 (Lerner rebuttal) at 16. He also argued that this discontinuance would ask investors to forego any opportunity for a return on future investments in the Greenway. *Id.*

⁸¹⁵ I also note the Commission found in Case No. PUE-2013-00011 that a reevaluation of the REA was not necessary at that time. In support of this decision, the Commission quoted TRIP II’s statement that “[i]f a time ever comes when the Company seeks rates that would begin to draw down the balance of the REA, then the Commission may seek to review the REA if it believes it is warranted, but that certainly is not the situation now.” *2016 Greenway Order*, 2015 S.C.C. Ann. Rep. at 193. As discussed above, the record is clear that the REA balance continues to grow.

⁸¹⁶ Ex 41 (Pippert) at 17.

TRIP II “defer[red] to the Commission to determine what it believes is the most appropriate and reasonable allowed ROE to the extent the Commission determines the ROE should be adjusted going-forward.”⁸¹⁷ However, TRIP II indicated that if the Commission uses COVID-19 as a basis for approving proposed toll prices for a shorter period than requested, as recommended by Staff and the Loudoun Board, then “it would logically follow that the Commission should find it reasonable to increase the allowed rate of return for TRIP II for the period covering the approved toll prices.”⁸¹⁸

The Commission has the discretion to adjust the Greenway’s ROE prospectively or retain the current ROE. If the Commission decides to exercise this discretion, I agree with Staff that TRIP II has a higher cost of equity than utilities regulated under cost-of-service rates.⁸¹⁹ I further agree that the relatively high level of debt carried by TRIP II indicates a higher level of financial risk compared to the auto parts industry previously evaluated when setting the ROE for TRIP II’s predecessor.⁸²⁰

IV. Constitutional Floor

TRIP II asserts that:

While the Commission can never guarantee that a Company will remain solvent, and TRIP II does not seek such a blanket guarantee, the Act charges the Commission with ensuring that its decisions do not unreasonably jeopardize the ability of the certificated operator of a road to meet its obligations. This can be accomplished by ensuring that TRIP II is able to maintain sufficient revenue in order to meet those obligations, such as ongoing expenses to operate and maintain the Greenway, major capital projects to ensure continued compliance with the Comprehensive Agreement, and annual debt service payments.⁸²¹

Loudoun Board agrees with TRIP II that the Constitution does not guarantee TRIP II’s financial solvency. Loudoun Board asserts further that regulators cannot force ratepayers (*i.e.*, Greenway drivers) to relieve companies from the results of their own economic business decisions. The Board contends that if TRIP II cannot propose toll rates that satisfy the three criteria of Code § 56-542 D while enabling it to meet its debt service obligations, the Commission is not obligated to rescue TRIP II from the risk of financial failure.⁸²²

In support of their opposing arguments, TRIP II⁸²³ and Loudoun Board⁸²⁴ cite a variety of case law by the U.S. Supreme Court and Virginia Supreme Court. Loudoun Board also cites two

⁸¹⁷ Ex. 64 (Lerner rebuttal) at 26.

⁸¹⁸ *Id.*

⁸¹⁹ Ex. 41 (Pippert) at 4-5.

⁸²⁰ *Id.* at 6-7.

⁸²¹ TRIP II’s Brief at 7.

⁸²² Loudoun Board’s Brief at 8.

⁸²³ TRIP II’s Brief at 42-44.

⁸²⁴ Loudoun Board’s Brief at 52-56.

Commission cases.⁸²⁵

Based on my review of these cases, none involves an entity regulated in the manner the Greenway is under statute and Commission implementation thereof. The Commission cases cited by Loudoun Board, for example, involved electric utilities that agreed to specific formulaic generation rates to obtain approval to divest ownership and operation of their generation assets.⁸²⁶ Here, TRIP II owns and operates the relevant asset used by the public (*i.e.*, the Greenway)⁸²⁷ and no comparable rate formula is at issue. Most of the other cases involve companies regulated using a cost-of-service methodology. The Greenway is not regulated using a traditional cost-of-service methodology.

Notwithstanding these differences, rate regulated companies appear to have a general – though not absolute – constitutional right to rates that provide such companies with the opportunity to recover their costs, including cost of capital.⁸²⁸ No constitutional guarantee to any specific revenues or return exists. Additionally, Loudoun Board identified one of the exceptions to this general constitutional protection. The Constitutions do not require an opportunity to recover imprudently incurred costs. The business decision the Board cites in this regard is the Company's level of debt financing.⁸²⁹

Undoubtedly, TRIP II's debt is significant. The record indicates that a weighted average of the Greenway's current maximum authorized tolls is approximately \$5.30.⁸³⁰ Annual debt expense of approximately \$69 million alone requires average tolls of approximately \$3.75,⁸³¹ assuming pre-COVID-19 ridership levels.⁸³² (Lower ridership would require higher average tolls.) Additionally, to make distributions to TRIP II's equity partners, debt covenants require

⁸²⁵ *Id.* at 53, 55.

⁸²⁶ *Id.* (citing *In re Potomac Edison Co.*, Case No. PUE-2007-00026, Order (June 28, 2007); *In re Delmarva Power & Light Co.*, Case No. PUE-2007-00013, Order (June 8, 2007)).

⁸²⁷ *See, e.g.*, Ex. 60 (Armstrong) at 3-4.

⁸²⁸ *See, e.g., Stone v. Farmers' Loan & Tr. Co.*, 116 U.S. 307, 331 (1886) ("Under pretense of regulating fares and freights, the state cannot require a railroad corporation to carry persons or property without reward; neither can it do that which in law amounts to a taking of private property for public use without just compensation, or without due process of law."); *Covington & L. Tpk. Rd. Co. v. Sandford*, 164 U.S. 578, 594-95 (1896) ("The cases to which we have referred related to the power of the legislature over rates to be collected by railroad corporations. But the principles announced in them are equally applicable, in like circumstances, to corporations engaged under legislative authority in maintaining turnpike roads for the use of which tolls are exacted. Turnpike roads established by a corporation, under authority of law, are public highways, and the right to exact tolls from those using them comes from the state creating the corporation.... And the exercise of that right may be controlled by legislative authority to the same extent that similar rights, connected with the construction and management of railroads by corporations, may be controlled. A statute which, by its necessary operation, compels a turnpike company, when charging only such tolls as are just to the public, to submit to such further reduction of rates as will prevent it from keeping its road in proper repair, and from earning any dividends whatever for stockholders, is as obnoxious to the constitution of the United States as would be a similar statute relating to the business of a railroad corporation having authority, under its charter, to collect and receive tolls for passengers and freight.").

⁸²⁹ Loudoun Board's Brief at 54-56.

⁸³⁰ *See, e.g.*, Ex. 10 (Racciatti direct) at WSP Report, p. 67.

⁸³¹ $\$69,000,000 / (50,000 \text{ AADT} * 365) = \3.78 . The 2022 debt service obligation is approximately \$69 million, exclusive of any additional amount required to meet both coverage ratios. Ex. 3 (Lerner direct) at 15.

⁸³² Ex. 10 (Racciatti direct) at WSP Report, p. 7.

coverage ratios of 1.1 and 1.25.⁸³³ The Supreme Court of Virginia has recognized that “if the proportion of debt obligation increases beyond a prudent ratio to equity (stock obligation), that increase of debt obligation will be reflected in rising interest charges on the debt and deteriorating stock value.”⁸³⁴ But the bare fact that TRIP II’s amount of debt is high does not, in my view, establish imprudence. The record in this case does not establish, for example, that TRIP II’s debt level is impacting its ability to obtain capital at a reasonable cost.⁸³⁵ The record does not indicate that TRIP II is actively seeking to obtain additional capital.⁸³⁶ Nor does the record establish a more prudent option available when the existing debt was obtained.

However, TRIP II’s high level of debt service does explain in large part why TRIP II has not made any distribution to equity investors since 2006. TRIP II also reasonably does not expect to meet either of its debt service coverage ratios in 2020, which would restrict the Company from making any distributions to its limited partners for at least three additional years.⁸³⁷ As discussed above, the levels of Greenway traffic during the April and July 2020 periods identified in the record were significantly depressed.

Loudoun Board is correct that the U.S. Supreme Court has recognized that the Constitution “cannot be applied to insure values or to restore values that have been lost by the operation of economic forces.”⁸³⁸ This principle is consistent with my analyses above that no constitutional protection ensures recovery of the full REA balance. However, I view that as far more than providing TRIP II the opportunity to recover its ongoing costs.

Staff offered as one alternative for the Commission’s consideration approval of TRIP II’s proposed off-peak increases for the first three years, which are 5.3% to 5.7% annual increases for two-axle vehicles.⁸³⁹ Consequently, this alternative differs from TRIP II’s proposal in that it: (1) is only a three-step, not a five-step, increase; and (2) includes only off-peak, but not peak, increases. Staff provided forecasted coverages ratios for this alternative under three traffic/revenue scenarios. For the two traffic/revenue scenarios that are closer to TRIP II’s expectations, Staff’s alternative is directionally consistent in large part with TRIP II’s full proposal with some differences.⁸⁴⁰ Such rates would provide TRIP II the opportunity to recover its ongoing costs. Additionally, while the statutory and constitutional standards differ, maintaining the current maximum peak tolls and truncating the period for off-peak toll increases improves the benefit-cost results, as shown in Attachment HE-5, and mitigates discouragement of the Greenway’s usage.

⁸³³ Ex. 60 (Armstrong) at Appx. B, pp. 6-8. This, of course, is not the Company’s only expense. The \$4.2 million in property taxes paid to Loudoun County, for example, equates to approximately \$0.25 in tolls based on pre-COVID-19 ridership levels. $\$4,200,000 / (50,000 \text{ AADT} * 365) = \0.23 .

⁸³⁴ *City of Norfolk v. Chesapeake & Potomac Tel. Co. of Va.*, 192 Va. 292, 317 (1951).

⁸³⁵ The record indicates that TRIP II’s zero-coupon debt and buydown of some debt obligations have provided a temporary cashflow “cushion.” See, e.g., Ex. 41 (Pippert) at Appx. C, p. 19.

⁸³⁶ No equity investment has been obtained since 1997 and debt obligations are primarily from 1999 and 2005 refinancings. See, e.g., Ex. 41 (Pippert) at 7-8, Schedule 1.

⁸³⁷ Ex. 23 (Roden) at Attached Ex. C, p. 2. See also Ex. 60 (Armstrong) at Appx. B, pp. 8-9 (finding a strong likelihood of depressed financial results during 2020 due to the COVID-19 pandemic).

⁸³⁸ Loudoun Board Brief at 53 (citing *Market Street Railway Co. v. R.R. Comm’n of State of Cal.*, 324 U.S. 548, 567 (1945)).

⁸³⁹ Tr. at 519-25 (Carsley); Ex. 62.

⁸⁴⁰ Tr. at 570-73 (Armstrong); Ex. 63C.

Staff's approach would blunt the differential between peak and off-peak maximum pricing. Whereas for two-axle vehicles TRIP II's Application proposes to increase the peak premium from the current level of 22.1% (\$1.05) to 25.2% (\$1.40) by 2023, Staff's alternative would shrink the peak premium to 4.5% (\$0.25) by 2023. However, ample evidence indicates that discouraging peak travel is not as significant a priority at this time. Staff's level of service analysis and recent Greenway improvements indicate the Greenway has available peak capacity.

Consequently, if the Commission finds that the Takings Clause under the U.S. Constitution or Virginia Constitution establishes a toll floor for the Greenway, I recommend approval of Staff's short-term alternative of off-peak increases. While such increases would provide the opportunity for TRIP II to recover its ongoing costs, they would not guarantee the solvency of TRIP II, nor would they guarantee any level of revenue or return on equity. Indeed, COVID-19 has illuminated this point. If traffic levels near those of April 2020 become a "new normal," it is hard to imagine any toll rate that could cover the Greenway's costs and leave many willing drivers. For TRIP II to recover \$69 million in annual debt expense alone from 13,000 daily drivers requires average tolls of approximately \$14.50.⁸⁴¹ If TRIP II's other ongoing costs are then priced into a toll rate, all the elasticity estimates in this case indicate an empty Greenway under this scenario. This illustration is not offered as an expectation of the future; it is offered to illustrate the practical limitations of the Commission's ratemaking authority under the Code or constitutional requirement. The Commission's approval of a maximum toll rate in this context guarantees nothing other than that the Company may charge the authorized rate or less.

FINDINGS AND RECOMMENDATIONS

Based on the record developed in this proceeding, and for the reasons set forth above, I find that:

- (1) Under the "reasonable to the user in relation to the benefit obtained" standard of Code § 56-542 D, conclusions about the Greenway's quantifiable user benefits are significantly influenced by value inputs and traffic assumptions;
- (2) Based on the Hearing Examiner's recommended value inputs, and assuming 2019 traffic levels, the Greenway's quantifiable user benefits exceed the cost of the proposed tolls compared to the Greenway's primary alternative and a composite alternative;
- (3) Based on the Hearing Examiner's recommended value inputs, and assuming April 2020 or July 2020 traffic levels, the Greenway's user benefits exceed the cost of the proposed tolls compared to the Greenway's composite alternative, but not its primary alternative;
- (4) Given the range of value inputs and traffic levels in the record, TRIP II has demonstrated that the Greenway provides positive quantified net user benefits under a wide range of conditions;

⁸⁴¹ $\$69,000,000 / (13,000 * 365) = \14.54 .

- (5) To estimate the Greenway's user benefits, using (a) speculative projected benefit data is not required and (b) aggregate data is appropriate, if not necessary;
- (6) If the Commission finds that recent roadway projects designed to alleviate congestion warrant revisiting the concept of distance-based pricing, the Commission should direct TRIP II to confer further with VDOT to determine whether such pricing warrants further study and analysis;
- (7) As it has previously, the Commission can consider regression model analysis in its evaluation of the "not materially discourage" standard under Code § 56-542 D;
- (8) The COVID-19 pandemic made TRIP II's regression analysis in the instant case unreliable. Extrapolating the historic relationships produced by a regression model into the future depends on a future with no significant economic restructuring that substantially reduces traffic or travel patterns, as has occurred this year in Northern Virginia;
- (9) If the Commission prefers that future evaluations under the "not materially discourage" standard include travel demand model analysis, the Commission should direct TRIP II to conduct and file such analysis with its applications to facilitate regulatory review of such analysis;
- (10) TRIP II's proposed toll increases would provide no more than a reasonable return;
- (11) The REA balance grew significantly – from approximately \$3.0 billion to approximately \$7.5 billion – during the seven-year rate period of Code § 56-542 I that expired on December 31, 2019;
- (12) The REA balance is unlikely to ever be substantially recovered by equity investors;
- (13) While the REA has some limited ongoing value, supplemental financial measures should be used to assess the reasonableness of TRIP II's return;
- (14) If the Commission decides to adjust the Greenway's ROE prospectively, Staff's recommended ROE range of 11-12% is supported by the record;
- (15) If the Commission agrees with the statutory findings above, the Commission should consider – absent any constitutional concerns – (a) denying the Application; or (b) deferring the effective date of the proposed toll increases until traffic on the Greenway returns to pre-COVID-19 levels;
- (16) The Takings Clauses under the U.S. Constitution and Virginia Constitution appear to protect TRIP II from confiscatory rates that do not allow TRIP II the opportunity to recover its costs;

- (17) If the Commission agrees that TRIP II's rates must provide it with the opportunity to recover its costs, the Commission should approve TRIP II's proposed off-peak toll increases for 2021, 2022, and 2023; and
- (18) While approval of TRIP II's proposed off-peak, but not peak, toll increases would lower the Greenway's congestion premium, level of service analysis and recent Greenway improvements indicate the Greenway has available peak capacity.

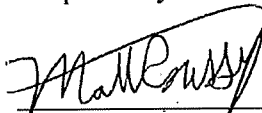
Accordingly, **I RECOMMEND** the Commission enter an order that:

- (1) **ADOPTS** the findings in this Report;
- (2) **APPROVES** TRIP II's proposed off-peak toll increases for 2021, 2022, and 2023, and otherwise **DENIES** the Application; and
- (3) **DISMISSES** this case.

COMMENTS

Staff and parties are advised that, pursuant to Rule 5 VAC 5-20-120 C of the Commission's Rules of Practice and Procedure and Code § 12.1-31, any comments on this Report must be filed on or before November 3, 2020. In accordance with the directives of the Commission's *COVID-19 Electronic Service Order*⁸⁴² the parties are encouraged to file electronically. If not filed electronically, an original and fifteen (15) copies must be submitted in writing to the Clerk of the Commission, c/o Document Control Center, P.O. Box 2118, Richmond, Virginia 23218. Any party filing such comments shall attach a certificate to the foot of such document certifying copies have been sent to all counsel of record and any such party not represented by counsel.

Respectfully submitted,



D. Mathias Roussy, Jr.
Hearing Examiner

Document Control Center is requested to send a copy of the above Report to all persons on the official Service List in this matter. The Service List is available from the Clerk of the State Corporation Commission, c/o Document Control Center, 1300 East Main Street, Tyler Building, First Floor, Richmond, VA 23219.

⁸⁴² *Commonwealth of Virginia, ex rel. State Corporation Commission, Ex Parte: Electronic service among parties during COVID-19 emergency*, Case No. CLK-2020-00007, Doc. Con. Cen. No. 200410009, Order Requiring Electronic Service (Apr. 1, 2020) ("*COVID-19 Electronic Service Order*").

ATTACHMENT HE-1
SAFETY VALUE RECALCULATION

201030198

CRASH COST SAVINGS – Greenway vs. Loudoun County (minus Greenway)

Attachment HE-1

	No Injuries Observed	Injuries	Fatalities
Loudoun County	95.1	80.0	0.5
Commonwealth	70.9	78.7	0.9
Greenway	55.0	7.2	0.0

USDOT Guidance 2020

CPI 18 to 19 1.016485

KABCO Level	2018 \$	2019 \$	
PDO (property damage only)	\$ 4,400	\$ 4,473	
O - No Injury	\$ 3,200	\$ 3,253	
C - Possible Injury	\$ 63,900	\$ 64,953	29%
B - Non-incapacitating	\$ 125,000	\$ 127,061	66%
A - Incapacitating	\$ 459,100	\$ 466,668	6%
K - Killed	\$ 9,600,000	\$ 9,758,255	
U - Injured (Severity unknown)	\$ 174,000	\$ 176,868	

share of injury crashes

	Loudoun	Greenway
Death (K)	0.15%	
Disabling (A)	0.76%	6%
Evident (B)	8.74%	66%
Possible (C)	3.81%	29%
No injury observed (O)	86.53%	
	100.00%	100.00%

		Cost per 100 million miles	
		Greenway	Alt
PDO	\$ 4,473	\$ 245,984	\$ 448,536
ABC Weig	\$ 128,760	\$ 921,689	\$ 11,097,512
Fatal	\$ 9,758,255	\$ -	\$ 5,258,930
Total		\$ 1,167,673	\$ 16,804,978
Per Trip Total		\$ 0.17	\$ 2.39
Greenway Savings		\$	2.22

miles from WSP op cost savings

Greenway	14.4
Alt	14.2

Loudoun					Greenway				Loudoun minus Greenway				
Crashes with no observed injury	Crashes w injury	Fatalities	Annual VMT (millions)		Crashes w no observed injury	Crashes w injury	Fatalities	Annual VMT (millions)	Crashes with no observed injury	Crashes w injury	Fatalities	Annual VMT (millions)	
2014	2158	2123	12	2588	2014	75	13	0	2014	2083	2110	12	2,425
2015	2681	2143	11	2598	2015	85	10	0	2015	2596	2133	11	2,430
2016	2632	2289	12	2676	2016	94	11	0	2016	2538	2278	12	2,503
2017	2794	2081	22	2785	2017	105	15	0	2017	2689	2066	22	2,611
2018	2,850	2,299	11	2809	2018	102	11	0	2018	2748	2288	11	2,648
Total	13,115	10,935	68	13456	Total	461	60	0		12654	10875	68	12,618
5 year average	2,623	2,187	13.6	2691.2	5 year average	92.2	12	0	5 year average	2530.8	2175	13.6	2,524
Per Hundred Mill.	97.47	81.26	0.51	26.91	Per Hundred Mill.	55.00	7.16	0.00	Per Hundred Mill.	100.287	86.188	0.539	25.236

Sources: WSP Report at 61 (2014-17 data)

Workbook - tab "Loudoun Crash data" (2018 data)

Source: WSP Report at 60

ATTACHMENT HE-2

**HEARING EXAMINER'S
BENEFIT-COST RESULTS**

2019 TRAFFIC

201030198

Benefits and Net Benefits of Greenway Using 2019 Traffic Data, Proposed Tolls, and Hearing Examiner Recommendations
Compared to Route 28/Route 7 Alternative*

ATTACHMENT HE-2

Benefits	VTTS	VOR	OCS	ACS	TOTAL
PEAK					
Personal/Commute	\$3.85	\$1.40	\$0.91	\$2.22	\$8.37
Business	\$5.29	\$1.92	\$0.91	\$2.22	\$10.34
Airport Access/Egress	\$5.19	\$1.89	\$0.91	\$2.22	\$10.21
Trucks	\$5.01	\$1.83	\$2.22	\$2.22	\$11.29
OFF-PEAK					
Personal/Commute	\$1.62	\$0.81	\$0.66	\$2.22	\$5.31
Business	\$2.23	\$1.11	\$0.66	\$2.22	\$6.22
Airport Access/Egress	\$2.18	\$1.09	\$0.66	\$2.22	\$6.15
Trucks	\$1.98	\$1.02	\$2.88	\$2.22	\$8.10

	Total Benefits H.E. Recommended	Proposed Maximum Tolls (in 2019 Dollars)					2025	2025 BCR	weight	weighted benefit	2025 wght. cost	2025 wght. BCR
PEAK		2021	2022	2023	2024							
Personal/Commute	\$8.37	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	1.26	0.232	5.75	4.56		
Business	\$10.34	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	1.56	0.076	2.33	1.50		
Airport Access/Egress	\$10.21	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	1.53	0.025	0.75	0.49		
Trucks	\$11.29	\$14.59	\$15.11	\$15.56	\$16.08	\$16.62	0.68	<u>0.005</u>	<u>0.17</u>	<u>0.25</u>	Peak	1.3
								0.338	\$8.99	\$6.80		
OFF-PEAK												
Personal/Commute	\$5.31	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.02	0.447	3.58	3.49		
Business	\$6.22	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.20	0.146	1.37	1.14		
Airport Access/Egress	\$6.15	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.19	0.049	0.45	0.38		
Trucks	\$8.10	\$11.88	\$12.11	\$12.42	\$12.69	\$12.92	0.63	<u>0.021</u>	<u>0.26</u>	<u>0.41</u>	Off-peak	All day
								0.663	\$5.66	\$5.43	1.0	1.1

Net Benefits Based on Hearing Examiner's Recommendations (**2019 Traffic Data**)

Compared to Route 28/Route 7 Alternative	2021	2022	2023	2024	2025
PEAK					
Personal/Commute	\$2.52	\$2.32	\$2.14	\$1.94	\$1.72
Business	\$4.49	\$4.29	\$4.11	\$3.91	\$3.69
Airport Access/Egress	\$4.36	\$4.16	\$3.98	\$3.78	\$3.56
Trucks	(\$3.30)	(\$3.82)	(\$4.27)	(\$4.79)	(\$5.33)
OFF-PEAK					
Personal/Commute	\$0.56	\$0.46	\$0.33	\$0.22	\$0.13
Business	\$1.47	\$1.37	\$1.24	\$1.13	\$1.04
Airport Access/Egress	\$1.40	\$1.30	\$1.17	\$1.06	\$0.97
Trucks	(\$3.79)	(\$4.01)	(\$4.33)	(\$4.60)	(\$4.82)

ATTACHMENT HE-3

**HEARING EXAMINER'S
BENEFIT-COST RESULTS**

APRIL 2020 TRAFFIC

20190198

Benefits and Net Benefits of Greenway Using April 2020 Traffic Data, Proposed Tolls, and Hearing Examiner Recommendations Compared to Route 28/Route 7 Alternative*

Attachment HE-3

Page 1 of 2

PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEF	TOLL COST
Personal/Commute	\$1.03	\$0.60	\$0.56	\$2.22	\$4.41	(\$1.39)	\$5.80
Business	\$1.41	\$0.82	\$0.56	\$2.22	\$5.02	(\$0.78)	\$5.80
Airport Access/Egress	\$1.39	\$0.81	\$0.56	\$2.22	\$4.98	(\$0.82)	\$5.80
Trucks	\$1.46	\$0.85	\$2.40	\$2.22	\$6.93	(\$7.67)	\$14.60

OFF-PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEFIT	TOLL COST
Personal/Commute	\$0.82	\$0.62	\$0.60	\$2.22	\$4.26	(\$0.49)	\$4.75
Business	\$1.13	\$0.85	\$0.60	\$2.22	\$4.80	\$0.05	\$4.75
Airport Access/Egress	\$1.10	\$0.83	\$0.60	\$2.22	\$4.76	\$0.01	\$4.75
Trucks	\$0.96	\$0.74	\$2.58	\$2.22	\$6.50	(\$5.65)	\$12.15

	Total Benefits HE	Proposed Maximum Tolls (in 2019 Dollars)					Benefit-Cost Ratios					2021 wght. cost	2021 wght. BCR
		2021	2022	2023	2024	2025	2025 BCR	weight	weighted benefit	2025 wght. cost	2025* wght. BCR		
PEAK													
Personal/Commute	\$4.41	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	0.66	0.13	3.13	4.72		4.15	
Business	\$5.02	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	0.76	0.04	1.19	1.57		1.38	
Airport Access/Egress	\$4.98	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	0.75	0.00	0.05	0.07		0.06	
Trucks	\$6.93	\$14.59	\$15.11	\$15.56	\$16.08	\$16.62	0.42	<u>0.01</u>	0.30	0.71	Peak	<u>0.63</u>	Peak
								0.19	\$4.67	\$7.08	0.66	\$6.23	0.75
OFF-PEAK													
Personal/Commute	\$4.26	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	0.82	0.58	3.01	3.67		3.36	
Business	\$4.80	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	0.93	0.19	1.14	1.23		1.13	
Airport Access/Egress	\$4.76	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	0.92	0.01	0.05	0.05		0.05	
Trucks	\$6.50	\$11.88	\$12.11	\$12.42	\$12.69	\$12.92	0.50	<u>0.04</u>	<u>0.29</u>	<u>0.57</u>	Off-peak All day	<u>0.53</u>	Off-peak All day
								0.81	\$4.49	\$5.52	0.81 0.78	\$5.07	0.89 0.86
Net Benefits		2021	2022	2023	2024	2025							
PEAK													
Personal/Commute		(\$1.44)	(\$1.64)	(\$1.82)	(\$2.02)	(\$2.24)							
Business		(\$0.83)	(\$1.03)	(\$1.21)	(\$1.41)	(\$1.63)							
Airport Access/Egress		(\$0.87)	(\$1.07)	(\$1.25)	(\$1.45)	(\$1.67)							
Trucks		(\$7.66)	(\$8.18)	(\$8.63)	(\$9.16)	(\$9.69)							
OFF-PEAK													
Personal/Commute		(\$0.49)	(\$0.59)	(\$0.72)	(\$0.83)	(\$0.92)							
Business		\$0.05	(\$0.05)	(\$0.18)	(\$0.29)	(\$0.38)							
Airport Access/Egress		\$0.01	(\$0.09)	(\$0.22)	(\$0.33)	(\$0.42)							
Trucks		(\$5.38)	(\$5.60)	(\$5.92)	(\$6.19)	(\$6.42)							

201030198

Benefits and Net Benefits of Greenway Using April 2020 Traffic Data and Hearing Examiner Recommendations
Compared to Composite Alternative*

Attachment HE-3

Page 2 of 2

PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEF	TOLL COST
Personal/Commute	\$2.23	\$0.70	\$0.85	\$2.22	\$6.01	\$0.21	\$5.80
Business	\$3.07	\$0.97	\$0.85	\$2.22	\$7.11	\$1.31	\$5.80
Airport Access/Egress	\$3.01	\$0.95	\$0.85	\$2.22	\$7.03	\$1.23	\$5.80
Trucks	\$3.06	\$0.97	\$3.26	\$2.22	\$9.51	(\$5.09)	\$14.60

OFF-PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEF	TOLL COST
Personal/Commute	\$2.06	\$0.71	\$0.89	\$2.22	\$5.89	\$1.14	\$4.75
Business	\$2.84	\$0.98	\$0.89	\$2.22	\$6.93	\$2.18	\$4.75
Airport Access/Egress	\$2.78	\$0.96	\$0.89	\$2.22	\$6.86	\$2.11	\$4.75
Trucks	\$2.64	\$0.88	\$3.30	\$2.22	\$9.04	(\$3.11)	\$12.15

	Total Benefits	Proposed Maximum Tolls (in 2019 Dollars)										Benefit-Cost Ratios			
	HE	2021	2022	2023	2024	2025	2025 BCR	weight	weighted benefit	2025 wght. cost	2025* wght. BCR	2021 wght. cost	2021 wght. BCR		
PEAK															
Personal/Commute	\$6.01	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	0.90	0.132	4.263	4.719		4.15			
Business	\$7.11	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	1.07	0.044	1.682	1.573		1.38			
Airport Access/Egress	\$7.03	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	1.06	0.002	0.076	0.072		0.06			
Trucks	\$9.51	\$14.59	\$15.11	\$15.56	\$16.08	\$16.62	0.57	<u>0.008</u>	<u>0.409</u>	<u>0.715</u>	Peak	<u>0.63</u>	Peak		
								0.186	\$6.43	\$7.08	0.91	\$6.23	1.03		
OFF-PEAK															
Personal/Commute	\$5.89	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.14	0.576	4.167	3.665		3.36			
Business	\$6.93	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.34	0.194	1.652	1.235		1.13			
Airport Access/Egress	\$6.86	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.32	0.008	0.067	0.051		0.05			
Trucks	\$9.04	\$11.88	\$12.11	\$12.42	\$12.69	\$12.92	0.70	<u>0.036</u>	<u>0.400</u>	<u>0.571</u>	Off-peak All day	<u>0.53</u>	Off-peak All day		
								\$0.81	\$6.29	\$5.52	1.14 1.10	\$5.07	1.24 1.20		
Net Benefits		2021	2022	2023	2024	2025									
PEAK															
Personal/Commute		\$0.16	(\$0.04)	(\$0.22)	(\$0.42)	(\$0.64)									
Business		\$1.26	\$1.06	\$0.88	\$0.68	\$0.46									
Airport Access/Egress		\$1.18	\$0.98	\$0.80	\$0.60	\$0.38									
Trucks		(\$5.08)	(\$5.60)	(\$6.06)	(\$6.58)	(\$7.11)									
OFF-PEAK															
Personal/Commute		\$1.14	\$1.04	\$0.91	\$0.80	\$0.71									
Business		\$2.18	\$2.08	\$1.95	\$1.84	\$1.75									
Airport Access/Egress		\$2.11	\$2.01	\$1.88	\$1.77	\$1.68									
Trucks		(\$2.84)	(\$3.06)	(\$3.38)	(\$3.65)	(\$3.88)									

ATTACHMENT HE-4

**HEARING EXAMINER'S
BENEFIT-COST RESULTS**

JULY 2020 TRAFFIC

201030198

Benefits and Net Benefits of Greenway Using July 2020 Traffic Data, Proposed Tolls, and Hearing Examiner Recommendations
Compared to Route 28/Route 7 Alternative*

Attachment HE-4

Page 1 of 2

PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEFIT	TOLL COST
Personal/Commute	\$1.42	\$0.81	\$0.55	\$2.22	\$5.01	(\$0.79)	\$5.80
Business	\$1.96	\$1.12	\$0.55	\$2.22	\$5.85	\$0.05	\$5.80
Airport Access/Egress	\$1.92	\$1.10	\$0.55	\$2.22	\$5.79	(\$0.01)	\$5.80
Trucks	\$1.91	\$1.09	\$2.51	\$2.22	\$7.73	(\$6.87)	\$14.60

OFF-PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEFIT	TOLL COST
Personal/Commute	\$1.08	\$0.75	\$0.61	\$2.22	\$4.66	(\$0.09)	\$4.75
Business	\$1.49	\$1.04	\$0.61	\$2.22	\$5.36	\$0.61	\$4.75
Airport Access/Egress	\$1.46	\$1.02	\$0.61	\$2.22	\$5.31	\$0.56	\$4.75
Trucks	\$1.30	\$0.93	\$2.59	\$2.22	\$7.04	(\$5.11)	\$12.15

Total Bene Proposed Maximum Tolls (in 2019 Dollars)											Benefit-Cost Ratios			
	HE	2021	2022	2023	2024	2025	2025 BCR	weight	weighted benefit	2025 wght. cost	2025* wght. BCR	2021 wght. cost	2021 wght. BCR	
PEAK														
Personal/Commute	\$5.01	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	0.75	0.13	3.55	4.72		4.15		
Business	\$5.85	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	0.88	0.04	1.38	1.57		1.38		
Airport Access/Egress	\$5.79	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	0.87	0.00	0.06	0.07		0.06		
Trucks	\$7.73	\$14.59	\$15.11	\$15.56	\$16.08	\$16.62	0.47	<u>0.01</u>	0.33	0.71	Peak	<u>0.63</u>	Peak	
								0.19	\$5.33	\$7.08	0.75	\$6.23	0.86	
OFF-PEAK														
Personal/Commute	\$4.66	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	0.90	0.58	3.30	3.67		3.36		
Business	\$5.36	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.03	0.19	1.28	1.23		1.13		
Airport Access/Egress	\$5.31	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.02	0.01	0.05	0.05		0.05		
Trucks	\$7.04	\$11.88	\$12.11	\$12.42	\$12.69	\$12.92	0.55	<u>0.04</u>	<u>0.31</u>	<u>0.57</u>	Off-peak All day	<u>0.53</u>	Off-peak All day	
								0.81	\$4.94	\$5.52	0.89 0.87	\$5.07	0.98 0.95	
Net Benefits														
		2021	2022	2023	2024	2025								
PEAK														
Personal/Commute		(\$0.84)	(\$1.04)	(\$1.22)	(\$1.42)	(\$1.64)								
Business		(\$0.00)	(\$0.20)	(\$0.38)	(\$0.58)	(\$0.80)								
Airport Access/Egress		(\$0.06)	(\$0.26)	(\$0.44)	(\$0.64)	(\$0.86)								
Trucks		(\$6.86)	(\$7.37)	(\$7.83)	(\$8.35)	(\$8.88)								
OFF-PEAK														
Personal/Commute		(\$0.09)	(\$0.19)	(\$0.32)	(\$0.43)	(\$0.52)								
Business		\$0.61	\$0.51	\$0.38	\$0.27	\$0.18								
Airport Access/Egress		\$0.56	\$0.46	\$0.33	\$0.22	\$0.13								
Trucks		(\$4.84)	(\$5.06)	(\$5.38)	(\$5.65)	(\$5.88)								

201030198

Benefits and Net Benefits of Greenway Using July 2020 Traffic Data, Proposed Tolls, and Hearing Examiner Recommendations

Compared to Composite Alternative*

Attachment HE-4

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PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEFIT	TOLL COST
Personal/Commute	\$2.64	\$0.87	\$0.86	\$2.22	\$6.59	\$0.79	\$5.80
Business	\$3.63	\$1.20	\$0.86	\$2.22	\$7.91	\$2.11	\$5.80
Airport Access/Egress	\$3.56	\$1.18	\$0.86	\$2.22	\$7.82	\$2.02	\$5.80
Trucks	\$3.54	\$1.16	\$3.14	\$2.22	\$10.06	(\$4.54)	\$14.60

OFF-PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEFIT	TOLL COST
Personal/Commute	\$2.33	\$0.81	\$0.91	\$2.22	\$6.27	\$1.52	\$4.75
Business	\$3.21	\$1.11	\$0.91	\$2.22	\$7.45	\$2.70	\$4.75
Airport Access/Egress	\$3.14	\$1.09	\$0.91	\$2.22	\$7.37	\$2.62	\$4.75
Trucks	\$3.01	\$1.02	\$3.21	\$2.22	\$9.47	(\$2.68)	\$12.15

Total Bene Proposed Maximum Tolls (in 2019 Dollars)											Benefit-Cost Ratios		
	HE	2021	2022	2023	2024	2025	2025 BCR	weight	weighted benefit	2025 wght. cost	2025* wght. BCR	2021 wght. cost	2021 wght. BCR
PEAK													
Personal/Commute	\$6.59	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	0.99	0.132	4.677	4.719		4.15	
Business	\$7.91	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	1.19	0.044	1.871	1.573		1.38	
Airport Access/Egress	\$7.82	\$5.85	\$6.05	\$6.23	\$6.43	\$6.65	1.18	0.002	0.084	0.072		0.06	
Trucks	\$10.06	\$14.59	\$15.11	\$15.56	\$16.08	\$16.62	0.61	<u>0.008</u>	<u>0.433</u>	<u>0.715</u>	Peak	<u>0.63</u>	Peak
								0.186	\$7.07	\$7.08	1.00	\$6.23	1.13
OFF-PEAK													
Personal/Commute	\$6.27	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.21	0.576	4.438	3.665		3.36	
Business	\$7.45	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.44	0.194	1.776	1.235		1.13	
Airport Access/Egress	\$7.37	\$4.75	\$4.85	\$4.98	\$5.09	\$5.18	1.42	0.008	0.072	0.051		0.05	
Trucks	\$9.47	\$11.88	\$12.11	\$12.42	\$12.69	\$12.92	0.73	<u>0.036</u>	<u>0.419</u>	<u>0.571</u>	Off-peak All day	<u>0.53</u>	Off-peak All day
								\$0.81	\$6.71	\$5.52	1.21 1.17	\$5.07	1.32 1.29

Net Benefits Based on Hearing Examiner's Recommendations (**July 2020 Traffic Data**)

Compared to Composite Alternative	2021	2022	2023	2024	2025
PEAK					
Personal/Commute	\$0.74	\$0.54	\$0.36	\$0.16	(\$0.06)
Business	\$2.06	\$1.86	\$1.68	\$1.48	\$1.26
Airport Access/Egress	\$1.97	\$1.77	\$1.59	\$1.39	\$1.17
Trucks	(\$4.53)	(\$5.05)	(\$5.50)	(\$6.02)	(\$6.56)
OFF-PEAK					
Personal/Commute	\$1.52	\$1.42	\$1.29	\$1.18	\$1.09
Business	\$2.70	\$2.60	\$2.47	\$2.36	\$2.27
Airport Access/Egress	\$2.62	\$2.52	\$2.39	\$2.28	\$2.19
Trucks	(\$2.41)	(\$2.63)	(\$2.95)	(\$3.22)	(\$3.45)

ATTACHMENT HE-5

**HEARING EXAMINER'S
BENEFIT-COST RESULTS**

**JULY 2020 TRAFFIC
OFF-PEAK INCREASE ONLY**

201030198

Benefits and Net Benefits of Greenway Using July 2020 Traffic Data, Proposed Off-Peak Tolls*, and Hearing Examiner Recommendations Compared to Composite Alternative*

Attachment HE-5

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PEAK

	VTTs	VOR	OCS	ACS	TOTAL	NET BENEF	TOLL COST
Personal/Commute	\$2.64	\$0.87	\$0.86	\$2.22	\$6.59	\$0.79	\$5.80
Business	\$3.63	\$1.20	\$0.86	\$2.22	\$7.91	\$2.11	\$5.80
Airport Access/Egress	\$3.56	\$1.18	\$0.86	\$2.22	\$7.82	\$2.02	\$5.80
Trucks	\$3.54	\$1.16	\$3.14	\$2.22	\$10.06	(\$4.54)	\$14.60

OFF-PEAK

	VTTS	VOR	OCS	ACS	TOTAL	NET BENEFIT	TOLL COST
Personal/Commute	\$2.33	\$0.81	\$0.91	\$2.22	\$6.27	\$1.52	\$4.75
Business	\$3.21	\$1.11	\$0.91	\$2.22	\$7.45	\$2.70	\$4.75
Airport Access/Egress	\$3.14	\$1.09	\$0.91	\$2.22	\$7.37	\$2.62	\$4.75
Trucks	\$3.01	\$1.02	\$3.21	\$2.22	\$9.47	(\$2.68)	\$12.15

Total Bene Proposed Maximum Tolls (in 2019 Dollars)										Benefit-Cost Ratios			
HE	2021	2022	2023	2024	2025	2023 BCR	weight	weighted benefit	2023 wght. cost	2023 wght. BCR	2021 wght. cost	2021 wght. BCR	
PEAK													
Personal/Commute	\$6.59	\$5.85	\$6.05	\$6.23		1.06	0.132	4.677	4.421		4.15		
Business	\$7.91	\$5.85	\$6.05	\$6.23		1.27	0.044	1.871	1.474		1.38		
Airport Access/Egress	\$7.82	\$5.85	\$6.05	\$6.23		1.26	0.002	0.084	0.067		0.06		
Trucks	\$10.06	\$14.59	\$15.11	\$15.56		0.65	<u>0.008</u>	<u>0.433</u>	<u>0.669</u>	Peak	<u>0.63</u>	Peak	
							0.19	\$7.07	\$6.63	1.07	\$6.23	1.13	
OFF-PEAK													
Personal/Commute	\$6.27	\$4.75	\$4.85	\$4.98		1.26	0.576	4.438	3.524		3.36		
Business	\$7.45	\$4.75	\$4.85	\$4.98		1.50	0.194	1.776	1.187		1.13		
Airport Access/Egress	\$7.37	\$4.75	\$4.85	\$4.98		1.48	0.008	0.072	0.049		0.05		
Trucks	\$9.47	\$11.88	\$12.11	\$12.42		0.76	<u>0.036</u>	<u>0.419</u>	<u>0.549</u>	Off-peak All day	<u>0.53</u>	Off-peak All day	
							0.81	\$6.71	\$5.31	1.26 1.23	\$5.07	1.32 1.29	
Net Benefits													
		2021	2022	2023	2024	2025							
PEAK													
Personal/Commute		\$0.74	\$0.54	\$0.36									
Business		\$2.06	\$1.86	\$1.68									
Airport Access/Egress		\$1.97	\$1.77	\$1.59									
Trucks		(\$4.53)	(\$5.05)	(\$5.50)									
OFF-PEAK													
Personal/Commute		\$1.52	\$1.42	\$1.29									
Business		\$2.70	\$2.60	\$2.47									
Airport Access/Egress		\$2.62	\$2.52	\$2.39									
Trucks		(\$2.41)	(\$2.63)	(\$2.95)									