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RE: TCI Reference Case Assumptions for Vehicle-Miles Traveled

Thank you for the presentation via webinar on May 23 of the proposed approach to developing the reference case scenario for modeling the impacts of the Transportation and Carbon Initiative. We commend those engaged in TCI and the consultants for taking a thoughtful approach to the development of the reference case assumptions, and specifically for the revisiting of key assumptions on policies and technology costs embedded in the NEMS model.

This memo presents questions and concerns about the proposed approach to projecting vehicle-miles traveled (VMT) in the reference case. Specifically, the approach to VMT projection described on the webinar was not fully clear; the suggested VMT growth rates appear to be too aggressive given historical trends in the region; and it was unclear from the webinar how the modelers intend to represent the split between heavy- and light-duty vehicle VMT.

The presentation suggested that the VMT projections used in the reference case model would be based on a combination of factors, including VMT projections from individual states, possibly modified by additional factors such as fuel price assumptions. It is fully appropriate to modify projections from the *Annual Energy Outlook 2018* for the TCI region, and, given the variation in state VMT trajectories, states can provide useful information to provide more accurate forecasts. However, state forecasts of VMT have a history of significantly overshooting actual VMT growth.

The U.S. Department of Transportation, in its periodic *Conditions and Performance* reports, has historically used state projections of VMT included in the Highway Performance Monitoring System (HPMS) to develop its forecasts of expenditure needs. These estimates dramatically overstated growth in VMT for more than a decade. In its most recent report, U.S. DOT switched to a more sophisticated national methodology that incorporates demographic and economic factors. U.S. DOT's methodology yielded a significantly lower forecast of future VMT (1.04% average increase between 2012 and 2032) than that generated from HPMS (1.41%), suggesting that state VMT forecasts likely continue to overstate future growth. The seemingly small difference in growth rates matters: Over the course of 20 years, the U.S. DOT model forecasts a 22% increase in VMT versus a 32% increase in the HPMS model.

The May 23 presentation suggested that the reference case model will include an 8 percent increase in VMT from 2020 to 2030 and a 16 percent increase from 2020 to 2040. This rate of growth would exceed

the rate of VMT growth experienced in the TCI states over the past two decades, and is projected to do so during a period when the U.S. DOT forecasts the rate of VMT growth to slow.[1] The following statistics from the U.S. DOT's annual *Highway Statistics* report show that VMT *declined* across the TCI region from 2007 to 2017 and increased by 14% over the 1997 to 2017 period – both rates that are slower than the rate of growth in the proposed reference case scenario.

**Table 1. Vehicle-Miles Traveled in TCI States (millions, source: U.S. DOT)**

| State | 1997 | 2007 | 2017 | 2007-2017 | 1997-2017 |
|---|---|---|---|---|---|
| Connecticut | 28,552 | 32,053 | 31,500 | -2% | 10% |
| Delaware | 8,007 | 9,483 | 10,467 | 10% | 31% |
| Maine | 13,245 | 15,035 | 14,738 | -2% | 11% |
| Maryland | 46,609 | 56,503 | 60,045 | 6% | 29% |
| Massachusetts | 50,468 | 55,071 | 62,660 | 14% | 24% |
| New Hampshire | 11,202 | 13,459 | 13,681 | 2% | 22% |
| New Jersey | 63,308 | 76,152 | 77,509 | 2% | 22% |
| New York | 120,778 | 136,737 | 123,732 | -10% | 2% |
| Pennsylvania | 98,015 | 108,699 | 101,614 | -7% | 4% |
| Rhode Island | 7,071 | 8,636 | 8,001 | -7% | 13% |
| Vermont | 6,466 | 7,694 | 7,424 | -4% | 15% |
| Virginia | 70,320 | 82,077 | 85,263 | 4% | 21% |
| **TOTAL** | **524,041** | **601,599** | **596,634** | **-1%** | **14%** |

For a variety of reasons, including the aging of the population and slower overall population growth than other regions of the country, the Northeast and Mid-Atlantic could be expected to see VMT growth rates significantly lower than the national average going forward. To develop effective forecasts of VMT, it is important that TCI consider the role of demographic changes and evaluate the methodological rigor of any state forecasts used in the reference case modeling.

Finally, the May 23 presentation did not address how TCI intends to model the differing trajectories of light-duty versus heavy-duty VMT. The Federal Highway Administration's modeling of VMT trends nationally suggests significantly higher growth rates for travel in single-unit and combination trucks versus light-duty vehicles over the next several decades. This is consistent with recent technological and societal trends, including the growth of online shopping. The differing fuel consumption and emissions profiles of heavy-duty and light-duty vehicles will likely affect reference case emission forecasts and have a meaningful impact on the effectiveness of modeled mitigation measures. We encourage TCI and its technical team to clarify how it intends to forecast heavy-duty VMT as it continues to develop the reference case scenario.

[1] The Federal Highway Administration forecasts that VMT nationally will increase by 1.2% annually from 2016 to 2036 and 0.9% annually during the period from 2016 to 2046, suggesting a slowing of VMT growth over the forecast period. Source: Federal Highway Administration, *FHWA Forecasts of Vehicle Miles Traveled (VMT): Spring 2018*, May 2018, available at: https://www.fhwa.dot.gov/policyinformation/tables/vmt/vmt_forecast_sum.pdf.

Thank you for the opportunity to submit these comments and for all your diligent work to inform residents of the Northeast and Mid-Atlantic about the implications and benefits for carbon pricing for our region.

Sincerely,

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