



Memorandum

May 22, 2024

To: Board of Trustees

From: Ian Burnes, Director of Strategic Initiatives
Michael Stoddard, Executive Director
Peter Eglinton, Deputy Director

Re: Value of Non-Energy Benefits in Triennial Plan VI

Proposed Motion

The Board approves using the Societal Cost of Carbon as provided in the 2024 Avoided Energy Supply Cost Study using the OMB-recommended discount rate of 2%.

Discussion

In Triennial Plan V (currently being implemented), when estimated the benefit from carbon savings associated with measures in the plan the Trust employed the “marginal abatement cost” of carbon that was published in the 2021 edition of the New England region’s Avoided Energy Supply Cost Study (AESC 2021). The newly updated 2024 edition¹ of the AESC describes this approach as follows:

[One] approach to pricing carbon is the marginal abatement cost method. This method asserts that the value of damages avoided, at the margin, must be at least as great as the cost of the most expensive abatement technology used in a comprehensive strategy for emission reduction.

- AESC 2024, p. 210.

In assessing the most rigorous method of quantification of the cost of avoiding carbon emissions, the Trust’s Staff recognizes that both the marginal abatement and societal cost of carbon are both, at their core, quantifications of the harm caused by carbon emissions. In preparing for the upcoming Triennial Plan VI, Staff has been reviewing the values provided in AESC 2024 and identified the need to decide which option to choose regarding the value for avoided carbon. Staff reviewed the following information from the AESC 2024:

U.S. EPA’s SCC recommendations

... EPA ... proposed a set of [Societal Cost of Carbon] SCC estimates in November 2022, consistent with the National Academies’ recommendations. EPA provided these estimates alongside a report describing the methodological updates implemented in its calculations. While previous federal estimates of the SCC relied on default assumptions from three integrated assessment models (IAMs), EPA’s 2022 estimates rely on a detailed breakdown of the four modeling steps (“modules”) required to estimate the SCC. EPA’s approach is generally consistent with that used by Resources for the Future and that likely to have been adopted by the Federal IWG [Interagency Working Group on the Social

¹ Synapse, Avoided Energy Supply Components in New England: 2024 Report, Prepared for AESC 2024 Study Group February 7, 2024.

Cost of Greenhouse Gases]. It represents the best state of the science and can be viewed as the authoritative federally derived calculation of the SCC, replacing that of the Federal IWG.

The SCC calculation modules are socioeconomics and emissions, climate, damages, and discounting. EPA used the latest scientific literature and analysis to develop the modules and ensure that each component of the analysis is state-of-the-art in its respective discipline. The socioeconomics and emissions module results (based on projections from Resources for the Future) are input into the climate module to estimate emissions impacts such as temperature change and sea level rise. These impacts are then monetized in the damages module, which represents how willing people are to pay to avoid physical climate change impacts. The report averages results from three different damage functions—one at a subnational and sectoral scale, one at a country and sectoral scale, and one at a meta-analysis level. The discounting module takes the damages outputs and discounts them to the year of emissions.

Instead of selecting constant discount rates, EPA models dynamic discount rates to account for the relationship between economic growth and consumption. This dynamic framework gives greater weight to damages in a world with low economic growth compared to high economic growth. This is an improvement from previous federal SCC calculations, which only considered static discount rates. To reflect uncertainty in the starting rate, EPA provides outputs using near-term discount rates of 1.5 percent, 2 percent, and 2.5 percent. In general, these discount rates decline over time; as a result, these three specific discount rates (1.5 percent, 2 percent, and 2.5 percent) can be thought of as “starting” discount rates.

AESC 2024, pp. 203-204 (footnotes omitted).

Based on this review, Staff determined that the SCC was a more rigorous methodology in calculating the harm caused by carbon emission than the marginal abatement methodology we relied upon previously. Staff also notes that most other New England states use the SCC for this purpose. The Staff further recommends using the option of applying a 2% discount rate to the value of avoided carbon. This recommendation is made based on the analysis provided by the AESC 2024, which explained:

In its latest projection of the SCC, EPA includes a robust discussion of discount rates. First, EPA updates the formulation of discount rates originally performed in 2003, with some modifications. It provides two different values spanning two different time periods—one covering only the most recent 30 years (1991 to 2020), and one spanning the entire time series, inclusive of all of the years originally considered in the 2003 formulation through today (1973 to 2020). These two time periods are looked at for two reasons: first, the period covering nearer years is useful because it is more reflective of the low interest rate environment present since the early 1990s. The period covering the entire time period is useful because social discount rates should consider a long range of time. The discount rates derived for each of these two time periods are (when rounded) 1.5 percent for the more recent 30 years and 2 percent for the full 48-year time period.

Second, EPA considers additional information relevant to discount rates. It discusses discount rate formulations from the Social Security Administration's Trustees report, and three surveys of economists published in peer-reviewed economics journals on discount rates. In this literature review, EPA notes 2 percent as a commonly identified preferred social discount rate. EPA also derives 2.5 percent as a "high" end boundary of what is reasonable for social discount rates. EPA does not identify any of these as the "correct" social discount rate, instead saying:

Therefore, considering the multiple lines of evidence on the appropriate certainty-equivalent near-term rate, the modeling results presented in this report [published by EPA] consider a range of near-term target rates of 1.5, 2.0, and 2.5 percent. This range of rates allows for a symmetric one point spread around 2.0 percent.

After the publication of this EPA document, in November 2023 OMB finalized its recommendations for discount rates to be used in cost-effectiveness analysis across the federal government. In this most recent analysis, OMB described a switch away from its previous methodology for counting discount rates to one that now utilizes 10-year Treasury Inflation-Protected Securities (TIPS) in place of a combination of 10-year Treasury yield data and inflation adjustors. OMB's new method also makes an adjustment for the use of different inflation indices. Under this new methodology, and using more recent data than in its previous publications, OMB identifies a discount rate of 2 percent. OMB also announced a plan to update this value with the latest data every three years.

AESC 2024, pp. 206-207, (footnotes omitted).

Based on this information the Staff recommends using the 2% discount rate consistent with the OMB recommendation.

Other Non-Energy Benefits

Staff also reviewed the EPA's May, 2021 report "Public Health Benefits per kWh of Energy Efficiency and Renewable Energy in the United States: A Technical Report."² Staff do not recommend including benefits from this report in the quantification of benefits in Triennial Plan VI primarily because they are not included in the AESC 2024. In arriving at this determination, the Staff placed considerable weight on the MRSA 35A §10110 4-A (B), which provides:

The trust shall use, and the commission shall give deference to, values for each element of avoided energy cost from a regional avoided energy supply cost study as long as the analysis has been developed through a transparent process, with input from state agencies, public advocates, utilities or energy efficiency administrators from at least 3 other states in New England and the analysis has been published not more than 24 months prior to the trust's filing of the plan.

² https://www.epa.gov/sites/default/files/2021-05/documents/bpk_report_second_edition.pdf