

DEPARTMENT OF TRANSPORTATION

[4910-22-P]

Federal Highway Administration

23 CFR Part 490

[Docket No. FHWA-2021-0004]

RIN 2125-AF99

National Performance Management Measures; Assessing Performance of the National Highway System, Greenhouse Gas Emissions Measure

AGENCY: Federal Highway Administration (FHWA), U.S. Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking (NPRM); request for comments.

SUMMARY: Extreme weather due to climate change threatens the safety and mobility of Americans and challenges the stability of supply chains. To help address the climate crisis, FHWA proposes to amend its regulations governing national performance management measures to require State departments of transportation (State DOTs) and metropolitan planning organizations (MPOs) to establish declining carbon dioxide (CO₂) targets and to establish a method for the measurement and reporting of greenhouse gas (GHG) emissions associated with transportation under Title 23, United States Code (U.S.C.). The proposed rule would not mandate the level of the targets. Rather, State DOTs and MPOs would have flexibility to set targets that are appropriate for their communities and that work for their respective climate change and other policy priorities, as long as the targets would reduce emissions over time. Specifically, the proposed rule would require State DOTs and MPOs that have National Highway System (NHS)

mileage within their State geographic boundaries and metropolitan planning area boundaries, respectively, to establish declining CO₂ emissions targets to reduce CO₂ emissions generated by on-road mobile sources relative to a reference year defined as calendar year 2021, that align with the Administration's net-zero targets as outlined in the national policy established under section 1 of Executive Order (E.O.) 13990, "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis", and E.O. 14008, "Tackling the Climate Crisis at Home and Abroad", and at the Leaders Summit on Climate. The proposed rule would require MPOs serving urbanized areas with multiple MPOs to establish additional joint targets. The proposed rule also would require State DOTs and MPOs to biennially report on their progress in meeting the targets and require FHWA to assess significant progress toward achieving the targets.

DATES: Comments must be received on or before [INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: To ensure that you do not duplicate your docket submissions, please submit comments by only one of the following means:

- **Federal eRulemaking Portal:** Go to <https://www.regulations.gov> and follow the online instructions for submitting comments.
- **Mail:** Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE, Washington, D.C. 20590.
- **Hand Delivery:** U.S. Department of Transportation, Docket Operations, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE,

Washington, D.C. 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The telephone number is (202) 366-9329.

All submissions should include the agency name and the docket number that appears in the heading of this document or the Regulation Identifier Number (RIN) for the rulemaking. All comments received will be posted without change to

<https://www.regulations.gov>, including any personal information provided.

FOR FURTHER INFORMATION CONTACT: Mr. John Davies, Office of Planning, Environment, and Realty, (202) 366-6039, or via e-mail at JohnG.Davies@dot.gov, or Mr. Lev Gabrilovich, Office of the Chief Counsel (HCC-30), (202) 366-3813, or via e-mail at Lev.Gabrilovich@dot.gov. Office hours are from 8:00 a.m. to 4:30 p.m., E.T., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Electronic Access and Filing

This document and all comments received may be viewed online through the Federal eRulemaking portal at www.regulations.gov using the docket number listed above. Electronic retrieval help and guidelines are also available at www.regulations.gov. An electronic copy of this document may also be downloaded from the Office of the Federal Register's Website at www.FederalRegister.gov and the Government Publishing Office's Website at www.GovInfo.gov.

All comments received before the close of business on the comment closing date indicated above will be considered and will be available for examination in the docket at the above address. Comments received after the comment closing date will be filed in the

docket and will be considered to the extent practicable. In addition to late comments, FHWA will also continue to file relevant information in the docket as it becomes available after the comment period closing date and interested persons should continue to examine the docket for new material. A final rule may be published at any time after close of the comment period and after DOT has had the opportunity to review the comments submitted.

Table of Contents for Supplementary Information

- I. Executive Summary
- II. Background and Regulatory History
- III. Statement of the Problem, Legal Authority, and Rationale
 - A. Confronting the Climate Crisis
 - B. Legal Authority for the Proposed GHG Measure
 - C. Additional Rationale for the Proposed GHG Measure
 - 1. Costs and Benefits
 - 2. Duplication of Efforts
 - D. Expected Schedule for Implementation
- IV. Section-by-Section Discussion of the Proposed Changes
 - A. Subpart A—General Information
 - B. Subpart E—National Performance Management Measures to Assess Performance of the National Highway System
- V. Additional Requests for Comments
 - A. Establishing Targets That Lead to Improved Environmental Performance

B. Summary of and Request for Comments on the Regulatory Impact Analysis

VI. Rulemaking Analyses and Notices

I. Executive Summary

FHWA proposes to amend its regulations on national performance management measures to establish a method for the measurement and reporting of GHG emissions associated with transportation under Title 23, U.S.C. The environmental sustainability, and specifically the carbon footprint, of the transportation system is a critically important attribute that State DOTs can and should use to assess the performance of the Interstate and non-Interstate National Highway System (NHS). 23 U.S.C. 150(c) directs FHWA to establish performance measures that the State DOTs can use to assess performance of the Interstate and non-Interstate NHS. Although the statute does not define the meaning of “performance” of the Interstate and non-Interstate NHS under 23 U.S.C. 150(c), Congress identified national goals under 23 U.S.C. 150(b), which include environmental sustainability. To support the environmental sustainability national goal, FHWA is proposing that “performance” of the Interstate and non-Interstate NHS under 23 U.S.C. 150(c) includes environmental performance. This definition of “performance” is also consistent with other Title 23, U.S.C. provisions, such as 23 U.S.C. 119, as discussed later in this preamble.

The proposed GHG measure would be codified among the National Highway Performance Program (NHPP) performance measures that FHWA established in 23 CFR Part 490 (Part 490) through prior rulemakings. The proposed rule would require State

DOTs and MPOs that have NHS mileage within their State geographic boundaries and metropolitan planning area boundaries, respectively, to establish declining targets that reduce CO₂ emissions¹ generated by on-road mobile sources relative to a reference year defined as calendar year 2021, that align with the Administration’s target of net-zero emissions, economy-wide, by 2050, as outlined in the national policy established under section 1 of E.O. 13990 and E.O. 14008 and at the Leaders Summit on Climate.

Declining targets also indicate a reduction in CO₂ emissions from one performance period to a subsequent performance period. The proposed rule uses “NHS” to mean the mainline highways of the NHS, consistent with the applicability of the measure described in proposed § 490.503(a)(2). State DOTs would establish 2- and 4-year statewide emissions reduction targets, and MPOs would establish 4-year emissions reduction targets for their metropolitan planning areas. In addition, the proposed rule would require certain MPOs serving urbanized areas to establish additional joint targets. The term “urbanized area” means a geographic area with a population of 50,000 or more, as designated by the Bureau of the Census. 23 CFR 450.104; *see* 23 U.S.C. 101(a)(34). Specifically, when the metropolitan planning area boundaries of two or more MPOs overlap any portion of an urbanized area, and the urbanized area contains NHS mileage, those MPOs would establish joint 4-year targets for that urbanized area. This joint target would be established in addition to each MPO’s target for their metropolitan planning

¹ The proposed GHG measure specifically applies to CO₂ emissions, which is the predominant human-produced greenhouse gas. CO₂ is also the predominant GHG from on-road mobile sources, accounting for 97 percent of total greenhouse gas emissions weighted by global warming potential in 2019. See EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks, *available at* <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019>.

area. Further, the proposed rule would require State DOTs and MPOs to set declining targets for reducing tailpipe CO₂ emissions on the NHS. State DOTs and MPOs would have the flexibility to set targets that work for their respective climate change policies and other policy priorities, so long as they are in line with the net-zero goals by 2050 set forth in this rule. The proposed rule also would require State DOTs and MPOs to report on their progress in meeting the targets. The proposed rule would apply to the 50 States, the District of Columbia, and Puerto Rico, consistent with the definition of the term “State” in 23 U.S.C. 101(a).

The proposed GHG measure would help the United States confront the increasingly urgent climate crisis. The Sixth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC), released on August 7, 2021, confirms that human activities are increasing GHG concentrations that have warmed the atmosphere, ocean, and land at a rate that is unprecedented in at least the last 2000 years.² According to the report, global mean sea level has increased between 1901 and 2018, and changes in extreme events such as heatwaves, heavy precipitation, hurricanes, wildfires, and droughts have intensified since the last assessment report in 2014.³ These changes in extreme events, along with anticipated future changes in these events due to climate change, threaten the reliability, safety and efficiency of the transportation system and the

² See IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, available at <https://www.ipcc.ch/report/ar6/wg1/#SPM>.

³ IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press. In Press.

people who rely on it to move themselves and transport goods. The National Oceanic and Atmospheric Administration (NOAA) has documented billion-dollar weather and climate disasters since 1980. According to the NOAA data, which are adjusted for inflation, five of the six years with the greatest total annual costs occurred between 2012 and 2021.⁴ Many of these disasters have impacted a variety of Federal, State, and local resources, including FHWA funding programs, in a number of ways, including recovery and response. Action to significantly reduce global GHG emissions can reduce climate-related risks to communities. At the same time, transportation contributes significantly to the causes of climate change,⁵ and each additional ton of CO₂ produced by the combustion of fossil fuels contributes to future warming and other climate impacts.

The proposed GHG measure would align with recent Executive Orders described later in this preamble and a U.S. target of achieving a 50 to 52 percent reduction from 2005 levels of economy-wide net GHG pollution in 2030, on a course toward reaching net-zero emissions economy-wide by no later than 2050.⁶ The first step toward reducing

⁴ NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2022). <https://www.ncei.noaa.gov/access/billions/>, DOI: 10.25921/stkw-7w73

⁵ Jacobs, J.M., M. Culp, L. Cattaneo, P. Chinowsky, A. Choate, S. DesRoches, S. Douglass, and R. Miller, 2018: Transportation. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 479–511. doi: 10.7930/NCA4.2018.CH12.

⁶ White House Fact Sheet: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies (Apr. 22, 2021), *available at* <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>; White House Fact Sheet: President Biden’s Leaders Summit on Climate (Apr. 23, 2021), *available at* <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/23/fact-sheet-president-bidens-leaders-summit-on-climate/>; *see* U.S. Department of Transportation Strategic Plan FY 2022-2026, *available at* https://www.transportation.gov/sites/dot.gov/files/2022-04/US_DOT_FY2022-26_Strategic_Plan.pdf.

GHG emissions in every sector involves inventorying and monitoring those emissions. The transportation sector is both the largest source of U.S. CO₂ emissions⁷ and increasingly vulnerable to the higher temperatures, more frequent and intense precipitation, and sea level rise associated with the changing climate.

Accordingly, as a matter of transportation policy, DOT considers the proposed GHG performance management measure essential not only to improve transportation sector GHG performance and work toward achieving net-zero emissions economy-wide by 2050, but also to demonstrate Federal leadership in the assessment and disclosure of climate pollution from the transportation sector. Measuring and reporting complete, consistent, and timely information on GHG emissions from on-road mobile source emissions is necessary so that all levels of government and the public can monitor changes in GHG emissions over time and make more informed choices about the role of transportation investments and other strategies in achieving GHG reduction targets. In addition, a requirement for State DOTs and MPOs to establish declining targets for reductions in tailpipe CO₂ emissions on the NHS, informed by complete, consistent, and timely information on GHG emissions from on-road mobile source emissions, is vital to achieving 50 to 52 percent reductions by 2030 and net-zero emissions economy-wide by 2050.

Furthermore, the proposed rule responds to the direction in sections 1 and 2 of Executive Order 13990 that Federal agencies review any regulations issued or similar

⁷ See EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks, *available at* <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019>.

actions taken between January 20, 2017, and January 20, 2021, and, consistent with applicable law, take steps to address any such actions that conflict with the national objectives set forth in the order to address climate change. FHWA reviewed its 2018 final rule (83 FR 24920, May 31, 2018) that repealed a GHG measure FHWA adopted in 2017 (2017 GHG measure) and determined that the repeal conflicts with those objectives.

FHWA has the legal authority to establish the proposed GHG measure under 23 U.S.C. 150. Specifically, FHWA is directed under 23 U.S.C. 150(c)(A)(ii) to establish measures for States to use to assess the performance of the Interstate System and non-Interstate NHS. Although the statute does not define performance, 23 U.S.C. 150(b)(6) identifies environmental sustainability as a national goal of the Federal-aid highway program. To address this national goal, FHWA has determined that the performance of the Interstate System and the NHS under 23 U.S.C. 150(c)(3)(A)(ii)(IV)-(V) includes environmental performance. The proposed GHG measure is also appropriate in light of other provisions of Title 23, U.S.C., notably the National highway performance program provisions at 23 U.S.C. 119, which include requirements for State asset management plans that support progress toward the achievement of the environmental sustainability national goal to enhance the performance of the transportation system while protecting and enhancing the natural environment at 23 U.S.C. 150(b)(6). In addition, several other provisions support the measure, including: 23 U.S.C. 101(b)(3)(G) (transportation policy); 134(a)(1) (transportation planning policy); 134(c)(1) (metropolitan planning); and 135(d)(1) and (d)(2) (statewide planning process and a performance-based approach).

The proposed GHG measure does not conflict with the on-road mobile source emissions provision in 23 U.S.C. 150(c)(5), which requires that the Secretary establish performance measures to carry out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program to reduce criteria pollutants under 23 U.S.C. 149. As discussed below, performance measures may overlap to achieve the national goals set forth in the statute.

In addition, there are two other lines of support for the proposed GHG measure. First, the proposed measure would inform transportation planning at all levels of government, including by State DOTs, MPOs, and FHWA. By providing consistent and timely information about on-road mobile source emissions on the NHS, the proposed GHG measure has the potential to yield benefits including greater public awareness of GHG emissions trends, increased transparency and improved decision-making at all levels of government, and planning choices to reduce GHG emissions or inform tradeoffs among competing policy choices.

Second and related, the establishment of a national GHG measure would provide a new source of information that would be valuable to State DOTs, MPOs, and the Federal government as they pursue GHG reduction goals and targets. The potential for duplication of efforts by other government entities was one reason FHWA cited in 2018 when repealing the 2017 GHG measure. Upon further consideration, FHWA rejects the notion that the proposed GHG measure would duplicate other efforts and therefore is inappropriate. While the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) publish State-by-State CO₂ estimates for the transportation

sector, this data is not disaggregated to reflect CO₂ emissions from on-road sources, and can reflect significant fluctuations in CO₂ emissions from other transportation sources (such as aircraft, boats, and rail). The DOE and EPA data also lag FHWA's publication of fuel use data by up to a year. The proposed GHG measure would utilize FHWA's fuel use data very shortly after its publication and provide a more timely information source that is better suited for setting targets, monitoring trends, and evaluating the impact of strategies across various levels of government to reduce GHG emissions. In these capacities the proposed GHG measure is integral to a whole-of-Government approach to address climate change and its effects, and would provide State DOTs with valuable information that is not already addressed by other Federal agencies.

FHWA proposes changes to two subparts of Part 490: Subpart A—General Information, and Subpart E—National Performance Management Measures to Assess Performance of the National Highway System. The proposed changes to Subpart A include a new definition in § 490.101 and the addition of references to the proposed GHG measure and new provisions in the following sections: § 490.105 Establishment of performance targets; § 490.107 Reporting on performance targets; and § 490.109 Assessing significant progress toward achieving the performance targets for the National Highway Performance Program and the National Highway Freight Program. The proposed changes to Subpart E would incorporate the GHG measure into existing regulations on NHPP performance measures. Specifically, the proposed changes would affect the following sections: § 490.503 Applicability; § 490.505 Definitions; § 490.507 National performance management measures for system performance; § 490.509 Data

requirements; § 490.511 Calculation of National Highway System performance metrics; and § 490.513 Calculation of National Highway System performance measures.

The draft regulatory impact analysis (RIA) prepared pursuant to Executive Order 12,866, and which is available in the rulemaking docket (Docket No. FHWA-2021-0004), estimates the costs associated with establishing the GHG measure, derived from the costs of implementing the GHG measure for each component of the rule that may involve costs. To estimate the costs, FHWA assessed the level of effort that would be needed to comply with each applicable section in Part 490 with respect to the GHG measure, including labor hours by labor category, over a 10-year study period (2022–2031). Total costs over this period are estimated to be \$11.0 million, discounted at 7 percent, and \$12.9 million, discounted at 3 percent. The RIA discusses anticipated benefits of the rule qualitatively; they are not quantified because they are difficult to forecast and monetize.

II. Background and Regulatory History

The 2012 Moving Ahead for Progress in the 21st Century Act (MAP-21, Pub. L. 112-141) and the 2015 Fixing America’s Surface Transportation (FAST Act, Pub. L. 114-94) transformed the Federal-aid highway program by establishing performance management requirements and tasking FHWA with carrying them out. To implement this program, FHWA established an organizational unit with dedicated full time staff to coordinate with program staff from each of the performance areas to design and establish an approach to effectively implement the Title 23 performance provisions. FHWA has

technical and policy experts on staff to provide State DOTs and MPOs assistance implementing performance management, and to oversee program requirements.

FHWA conducted several rulemakings to implement the new performance management framework. The rulemakings established in Part 490 the performance measures and requirements for target establishment, reporting on progress, and how determinations would be made on whether State DOTs have made significant progress toward applicable targets.

The transportation performance management requirements provide increased accountability and transparency, and facilitate efficient investment of Federal transportation funds through a focus on performance outcomes for the seven national transportation goals concerning safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays. *See* 23 U.S.C. 150(b). Through performance management, recipients of Federal-aid highway funds make transportation investments to achieve short-term performance targets and make progress toward the longer-term national goals. Performance management allows FHWA to more effectively evaluate and report on the Nation's surface transportation conditions and performance.

Prior to MAP-21, there were no explicit statutory requirements for State DOTs or MPOs to demonstrate how their transportation programs supported national performance outcomes, making it difficult to assess the effectiveness of the Federal-aid highway program. The new TPM requirements established in MAP-21 changed this paradigm by requiring State DOTs and MPOs to measure condition or performance, establish targets,

assess progress towards targets, and report on condition or performance in a nationally consistent manner for the first time (23 U.S.C. 150(e) and 23 CFR 490.107).

As previously noted, FHWA conducted several rulemakings implementing the performance management framework. Most relevant to this proposed rule are three related national performance management measure rulemakings in which FHWA established various measures for State DOTs and MPOs to use to assess performance, found at 23 CFR Part 490. The first rulemaking focused on Safety Performance Management (PM1), and a final rule published on March 15, 2016 (81 FR 13882) established performance measures for State DOTs to use to carry out the Highway Safety Improvement Program (HSIP). The second rulemaking on Infrastructure Performance Management (PM2) resulted in a final rule published on January 18, 2017 (82 FR 5886) that established performance measures for assessing pavement condition and bridge condition for the NHPP. The third rulemaking, System Performance Management (PM3), established measures for State DOTs and MPOs to use to assess the performance of the Interstate and non-Interstate NHS for the purpose of carrying out the NHPP; to assess freight movement on the Interstate System; and to assess traffic congestion and on-road mobile source emissions for the purpose of carrying out the CMAQ Program. The PM3 final rule was published on January 18, 2017 (82 FR 5970).

The PM3 rule addressed a broad set of performance issues and some of the national transportation goals, such as environmental sustainability, that were not addressed in the earlier rulemakings focused solely on safety and infrastructure condition. In the preamble to the PM3 proposed rule, published on April 22, 2016 (81 FR 23806),

FHWA requested public comment on whether to establish a CO₂ emissions measure in the final rule and, if so, how to do so. FHWA acknowledged the contribution of on-road sources to over 80 percent of U.S. transportation sector GHG emissions, and the historic Paris Agreement in which the United States and more than 190 other countries agreed in December 2015 to reduce GHG emissions, with the goal of limiting global temperature rise to less than 2 degrees Celsius above pre-industrial levels by 2050. FHWA recognized that achieving U.S. climate goals would require significant GHG reductions from on-road transportation sources. *See* 81 FR at 23830. Against this backdrop, FHWA stated that it was considering how GHG emissions could be estimated and used to inform planning and programming decisions to reduce long term emissions. FHWA sought comment on the potential establishment and effectiveness of a GHG emissions measure as a planning, programming, and reporting tool, and FHWA requested feedback on specific considerations related to the design of such a measure. 82 FR at 23831.

In the PM3 final rule, FHWA established a GHG emissions performance measure to measure environmental performance in accordance with 23 U.S.C. 150(c)(3) after considering extensive public comments on whether and how FHWA should establish such a measure. Specifically, the GHG measure involved the percent change in CO₂ emissions from the reference year 2017, generated by on-road mobile sources on the NHS. Had the GHG measure remained in effect, State DOTs would have been required to estimate CO₂ emissions based on annual fuel sales, Energy Information Agency (EIA) published emission conversion factors, and the proportion of statewide vehicle miles traveled (VMT) that occurs on the NHS. MPOs would have been given options as to

how they would calculate CO₂ emissions. All State DOTs and MPOs with NHS mileage in their State geographic boundaries and metropolitan planning areas, respectively, would have been required to establish targets and report on progress. A State DOT would have reported annual CO₂ emissions every 2 years to FHWA in its Biennial Performance Report. FHWA would have assessed and determined every 2 years whether a State DOT had made significant progress toward achieving its targets. *See* 82 FR at 5974 and 5981.

On October 5, 2017 (82 FR 46427), however, FHWA proposed to repeal the 2017 GHG measure. FHWA requested public comment on whether to retain or revise the 2017 GHG measure. *See* 82 FR at 46430. In light of policy direction to review existing regulations to determine whether changes would be appropriate to eliminate duplicative regulations, reduce costs, and streamline regulatory processes, and after considering public comments received, on May 31, 2018 (83 FR 24920), FHWA repealed the GHG measure, effective on July 2, 2018. FHWA identified three main reasons for the repeal: (1) reconsideration of the underlying legal authority; (2) the cost of the GHG measure in relation to the lack of demonstrated benefits; and (3) potential duplication of information produced by the GHG measure and information produced by other initiatives related to measuring CO₂ emissions.

All other performance management measures remained in place and implementation is underway. FHWA continues to expect that State DOTs and MPOs will use the information and data generated in response to Part 490 to inform State or local planning and programming decisions. FHWA, in turn, will continue to use the

information and data to improve national performance on all of the statutory goals and to assess more reliably the impacts of Federal funding investments.

III. Statement of the Problem, Legal Authority, and Rationale

FHWA believes that establishment of performance management requirements remains a powerful tool for achieving all seven of the statutory national transportation goals, including environmental sustainability. As FHWA acknowledged in the preamble to the PM3 final rule, implementation of the performance management requirements should evolve over time for various reasons, including shifts in national priorities for the focus on a goal area. *See* 82 FR at 5974. In light of the agency’s policy emphasis on using its available authorities to confront worsening climate change—as well as the new facts identified in reports issued between 2018 and 2021 that expand our knowledge of the severe consequences of climate change—FHWA reconsidered its legal authority, reexamined the assumptions regarding potential costs and potential duplication that underlay the repeal of the 2017 measure, and proposes adopting a GHG performance measure. Consistent with the purpose and text of the statute, FHWA believes establishing a GHG performance measure could be an effective means for supporting the environmental sustainability of the Federal-aid highway program.

A. Confronting the Climate Crisis

Scientific literature published since the 2018 GHG measure repeal provides greater certainty on the impact of human activities on the earth’s current and future climate, as well as the urgency of actions to reduce human GHG emissions. The IPCC Sixth Assessment Report states that it is now unequivocal that human activities have

increased atmospheric GHG emissions concentrations and resulted in warming of the atmosphere, ocean, and land, with average surface temperature having increased by approximately 2 degrees Fahrenheit since the 1800s.⁸ The IPCC Sixth Assessment Report also points to growing evidence linking human production of GHG emissions to extreme events such as heatwaves, heavy precipitation, droughts, and hurricanes. The report warns that human-produced GHG emissions already in the atmosphere have assured that global surface temperatures will continue to increase until at least the mid-century, even with significant reductions in CO₂ emissions. This warming will result in other changes that are irreversible for centuries to millennia, including the continued melting of mountain and polar glaciers, the loss of ice from the Greenland Ice Sheet, and the continued rise in global mean sea level. The IPCC Sixth Assessment Report further notes that every ton of CO₂ emissions contributes to climate change.

Other research also shows that CO₂ and other GHG emissions have accumulated rapidly as the world has industrialized, with concentrations of atmospheric CO₂ increasing from roughly 278 parts per million in 1750⁹ to 414 parts per million in 2020.¹⁰ Human-produced GHG emissions have increased over this time period, with larger

⁸ See IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, available at <https://www.ipcc.ch/report/ar6/wg1/#SPM>.

⁹ Wuebbles, D.J., D.R. Easterling, K. Hayhoe, T. Knutson, R.E. Kopp, J.P. Kossin, K.E. Kunkel, A.N. LeGrande, C. Mears, W.V. Sweet, P.C. Taylor, R.S. Vose, and M.F. Wehner, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, (U.S. GCRP 2017 Climate Science Special Report) pp. 82, doi: 10.7930/J08S4N35, available at <https://science2017.globalchange.gov/>.

¹⁰ National Oceanic and Atmospheric Administration (2021). Trends in Atmospheric Carbon Dioxide (NOAA 2021 Trends in Atmospheric Carbon Dioxide), available at <https://www.esrl.noaa.gov/gmd/ccgg/trends/>.

absolute increases since 2000 despite a growing number of climate change mitigation policies.¹¹ Since GHGs, such as CO₂, methane (CH₄), and nitrous oxide (N₂O), have atmospheric lifetimes ranging from a decade to a century or more,¹² atmospheric concentrations have increased every year measurements have been recorded since 1959, even when GHG emissions have decreased on a year-over-year basis.¹³ This phenomenon was demonstrated in 2020 when global mean CO₂ concentration increased by 2.7 parts per million (ppm) relative to 2019¹⁴ despite a 5.8 percent decrease in global energy-related CO₂ emissions, which represented the largest percentage decline since World War II.¹⁵

Scientists have warned that significant and potentially dangerous shifts in climate and weather are possible with climate change of 2 degrees Celsius (3.6 degrees Fahrenheit) beyond preindustrial levels.¹⁶ Stabilizing at this level would likely require atmospheric CO₂ concentrations of approximately 450 ppm or lower;¹⁷ achieving this concentration would likely require a decrease in global net anthropogenic CO₂ emissions of about 25 percent below 2010 levels by 2030, leading to net-zero CO₂ emissions by 2070.¹⁸ The Paris Agreement goal is to limit global warming well below that level, and

¹¹ Intergovernmental Panel on Climate Change. Climate Change 2014 Synthesis Report Summary for Policymakers (IPCC 2014 Report), *available at* https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FINAL_SPM.pdf.

¹² U.S. GCRP 2017 Climate Science Special Report at 80.

¹³ NOAA 2021 Trends in Atmospheric Carbon Dioxide.

¹⁴ *Id.*

¹⁵ International Energy Agency (2021) Global Energy Review: CO₂ Emissions in 2020.

¹⁶ *See* Intergovernmental Panel on Climate Change (2018) Summary for Policymakers. In Global Warming of 1.5 Deg. C. An IPCC Special Report, *available at* <https://www.ipcc.ch/sr15/chapter/spm>.

¹⁷ IPCC 2014 Report.

¹⁸ Intergovernmental Panel on Climate Change. Climate Change 2018: Summary for Policymakers. (IPCC 2018 Report), *available at* https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf.

preferably to 1.5 degrees Celsius (2.7 degrees Fahrenheit),¹⁹ which the IPCC estimates would likely require decreasing global net anthropogenic CO₂ emissions 45 percent below 2010 levels by 2030, reaching net-zero around 2050.²⁰ The IPCC Sixth Assessment Report includes new estimates of the likelihood of crossing the 1.5 degree Celsius threshold, concluding that without immediate, rapid and large-scale reductions in GHG emissions, it will no longer be possible to limit warming to 1.5 degrees or even 2 degrees Celsius.²¹

Given the urgency of the climate crisis, several recent Executive orders and other commitments prioritize actions throughout the Government to address climate change. Section 1 of E.O. 13990, “Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis,” 86 FR 7037 (Jan. 25, 2021), articulates national policy objectives, including listening to the science, improving public health and protecting the environment, reducing GHG emissions, and strengthening resilience to the impacts of climate change. E.O. 14008, “Tackling the Climate Crisis at Home and Abroad,” 86 FR 7619 (Feb. 1, 2021), recommits the United States to the Paris Agreement and calls on the United States to begin the process of developing its nationally determined contribution to global GHG reductions with analysis and input from executive departments and agencies and outreach to domestic stakeholders. 86 FR at

¹⁹ U.S. Department of State (2021). U.S. - China Joint Statement Addressing the Climate Crisis, *available at* <https://www.state.gov/u-s-china-joint-statement-addressing-the-climate-crisis/>.

²⁰ Intergovernmental Panel on Climate Change (2018). Special Report: Global Warming of 1.5 Degrees. Summary for Policymakers. https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf.

²¹ See IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, *available at* <https://www.ipcc.ch/report/ar6/wg1/#SPM>.

7620. Under that nationally determined contribution, the U.S. will target reducing emissions by 50 to 52 percent by 2030 compared to 2005 levels.²²

E.O. 14008 also calls for a Government-wide approach to the climate crisis and acknowledges opportunities to create jobs to build a modern, sustainable infrastructure, to provide an equitable, clean energy future, and to put the United States on a path to achieve net-zero emissions, economywide, no later than 2050. 86 FR at 7622. Notably, section 201 of E.O. 14008 calls on the Federal Government to drive assessment, disclosure, and mitigation of climate pollution and envisions Federal actions combined with efforts from every level of government and every economic sector. 86 FR at 7622. It also supports the principle set forth in section 213 “to ensure that Federal infrastructure investment reduces climate pollution.” 86 FR at 7626. This principle affirms that reducing GHGs is part of the expected performance of transportation infrastructure, making it an appropriate and necessary metric for the NHS.

In addition, sections 1 and 2 of E.O. 13990 direct that all agencies immediately review Federal regulations promulgated and other actions taken between January 20, 2017, and January 20, 2021, and, consistent with applicable law, take action to address regulations that conflict with the national objectives stated in section 1 of E.O. 13990 and to begin work immediately to address the climate crisis. 86 FR at 7037. In response to this direction, FHWA has reviewed the May 2018 final rule that repealed the 2017 GHG

²² White House Fact Sheet: President Biden’s Leaders Summit on Climate (Apr. 23, 2021), *available at* <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/23/fact-sheet-president-bidens-leaders-summit-on-climate/>. In addition, E.O. 14057, “Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,” 86 FR 70935 (Dec. 13, 2021), highlights the Federal Government’s role in transforming the ways the Government builds, buys, and manages electricity, vehicles, buildings, and other operations to be clean and sustainable.

measure and has concluded that the repeal conflicts with those national objectives, which include reducing GHG emissions. Because reducing GHG emissions is clearly established as a national priority and national goal in section 1 of E.O. 13990 and E.O. 14008, FHWA has concluded that it is appropriate to propose to reestablish a GHG performance measure for the reasons set forth in this preamble. The proposed measure is similar to the repealed 2017 GHG measure. However, FHWA is updating analyses and proposing updated requirements associated with the measure. Additionally, FHWA is proposing to require State DOTs and MPOs to set declining targets for reducing tailpipe CO₂ emissions on the NHS that align with the 2030 and 2050 targets set out in the Executive Orders discussed previously in this section.

By establishing the proposed GHG measure, FHWA would be taking action to address the largest source of U.S. CO₂ emissions. In 2019, the transportation sector accounted for 34.6 percent of total U.S. CO₂ emissions, with 83.2 percent of the sector's total CO₂ emissions coming from on-road sources.²³ The transportation sector is expected to remain the largest source of U.S. CO₂ emissions through 2050, increasing at an average annual rate of 0.3 percent per year despite improvements in the energy efficiency of light-duty vehicles, trucks, and aircraft.²⁴ Factors such as population growth, expansion of urban centers, a growing economy, and increased international trade are expected to result in growing passenger and freight movement. These changes

²³ U.S. Environmental Protection Agency (2021). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019, *available at* <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019>.

²⁴ U.S. Energy Information Administration (2021). Annual Energy Outlook 2021, *available at* https://www.eia.gov/outlooks/aeo/tables_ref.php.

can make GHG reductions and environmental sustainability both more challenging to implement and more important to achieve.²⁵

In addition to being the largest source of U.S. CO₂ emissions, the transportation sector is increasingly vulnerable to the effects of climate change. As highlighted in FHWA's 2013 Conditions and Performance Report²⁶ and in *A Performance-Based Approach to Addressing Greenhouse Gas Emissions through Transportation Planning*,²⁷ there are two main types of climate change risk affecting transportation infrastructure: continued emissions of GHGs, such as CO₂, that adversely affect the atmosphere, leading to climate change effects; and threats to the transportation system posed by climate change impacts (*e.g.*, damaged or flooded facilities).²⁸ In other words, the transportation system both contributes to climate change and suffers from the impacts of climate change.

²⁵Jacobs, J.M., M. Culp, L. Cattaneo, P. Chinowsky, A. Choate, S. DesRoches, S. Douglass, and R. Miller, 2018: Transportation. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 479–511. doi: 10.7930/NCA4.2018.CH12, available at <https://nca2018.globalchange.gov/chapter/12/>.

²⁶ FHWA 2013 Conditions and Performance Report (PDF Version), “Advancing Environmental Sustainability” at 5-6 through 5-7, available at <https://www.fhwa.dot.gov/policy/2013cpr/pdfs.cfm>.

²⁷ *A Performance-Based Approach to Addressing Greenhouse Gas Emissions through Transportation Planning*, FHWA (December 2013) at iii-iv, available at https://www.fhwa.dot.gov/environment/climate_change/mitigation/publications/ghg_planning/index.cfm.

²⁸ Extreme weather and other impacts related to GHG emissions, such as sea level rise, can harm, disrupt, and damage transportation systems, particularly through flooding, resulting in costly disruptions. For discussions of the potential disruptive effects of climate change on the transportation system, see also *Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: The Gulf Coast Phase 2, Task 3.2 Engineering Assessments of Climate Change Impacts and Adaptation Measures* (FHWA and DOT Climate Change Center) (August 2014) at 273 (available as of September 14, 2016, at http://www.fhwa.dot.gov/environment/climate_change/adaptation/ongoing_and_current_research/gulf_coast_study/phase2_task3/task_3.2/task2phase3.pdf); and *Hampton Roads Climate Impact Quantification Initiative, Baseline Assessment of the Transportation Assets and Overview of Economic Analyses Useful in Quantifying Impacts*, DOT (September 13, 2016) (available as of November 1, 2016 at <https://rosap.ntl.bts.gov/view/dot/12379>).

Transportation infrastructure is increasingly at risk from increased intensity and frequency of precipitation, sea level rise and resulting coastal flooding, heat, wildfires, and other extreme events associated with a changing climate. These impacts threaten to increase the cost of maintaining, repairing, and replacing infrastructure, particularly assets that are approaching or beyond their design life. Climate impacts also threaten the performance of the entire network, as defined by national goals identified in 23 U.S.C. 150(b). Basic mobility and economic needs will be compromised by both short-term and long-term impacts of climate change. Potential consequences include effects on safety, environmental sustainability, economic vitality and mobility, congestion, and system reliability. Given the increased severity of extreme weather events resulting from climate change, ensuring safe and effective emergency evacuation routes will become increasingly difficult. These effects may disproportionately affect vulnerable populations and urban transportation assets.²⁹

In the face of these climate challenges, establishing a GHG measure in FHWA's Transportation Performance Management Program would provide a consistent basis for addressing the environmental sustainability of the system and estimating on-road GHG emissions. The measure would aid State DOTs and MPOs in planning GHG emissions reductions and evaluating progress toward national, State, and local GHG targets. Comprehensive transportation planning processes require consideration of strategies that

²⁹ Jacobs, J.M., M. Culp, L. Cattaneo, P. Chinowsky, A. Choate, S. DesRoches, S. Douglass, and R. Miller, 2018: Transportation. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 479–511. doi: 10.7930/NCA4.2018.CH12

protect and enhance the environment, promote energy conservation, improve the quality of life, and improve the resiliency and reliability of the transportation system. *See* 23 U.S.C 134(h)(1)(E) and (I) and 23 U.S.C 135(d)(1)(E) and (I). Statewide and metropolitan transportation planning processes are required to use a performance-based approach to transportation decision-making to support the national goals described in 23 U.S.C. 150(b). Such an approach includes establishing performance targets that address the performance measures established by FHWA under 23 U.S.C. 150(c), where applicable, to track progress toward attainment of critical outcomes for the State or MPO region. 23 U.S.C. 134(h)(2)(A)-(B) and 135(d)(2)(A)-(B). Further, States and MPOs are required to integrate the goals, objectives, performance measures, and targets into their transportation planning processes, and States consider them when developing policies, programs, and investment priorities reflected in the statewide transportation plan and the Statewide Transportation Improvement Program (STIP). 23 U.S.C. 134(h)(2)(D) and 135(d)(2)(C) and (D); *see* 23 CFR 450.218(q) and 450.326(d).

Establishing a GHG measure also would result in a consistent set of data that could inform the future investment decisions of the Federal Government, State DOTs, and MPOs towards achieving their targets or goals. In addition, an on-road GHG emissions measure would advance the Federal-aid highway program's national goal for environmental sustainability identified under 23 U.S.C. 150(b)(6). In implementing the proposed measure, FHWA intends to consider a wide range of data and tools from EPA the DOE National Laboratories. and other federal agencies.

An on-road GHG emissions measure would allow State DOTs, MPOs, and FHWA to analyze transportation GHG trends and could facilitate DOT contributions to the National Climate Task Force established in section 203 of E.O. 14008 to facilitate the organization and deployment of a Government-wide approach to the climate crisis. *See* 86 FR at 7623. The proposed GHG measure would inform DOT-wide efforts to engage with domestic stakeholders and to identify U.S. contributions to needed reductions under the Paris Agreement and the U.S. target of reducing emissions by 50 to 52 percent by 2030 compared to 2005 levels, as well. While on-road tailpipe CO₂ emissions on the NHS represent one discrete component of U.S. transportation sector GHG emissions, measuring and reporting on-road tailpipe CO₂ emissions on the NHS under the proposed GHG measure would be useful for all of these reasons.

B. Legal Authority for the Proposed GHG Measure

FHWA is proposing to establish a GHG emissions performance measure under 23 U.S.C. 150(c)(3), which calls for performance measures that the States can use to assess performance of the Interstate and non-Interstate NHS for the purpose of carrying out the NHPP under 23 U.S.C. 119. 23 U.S.C. 150(c)(3)(A)(ii)(IV)–(V). Since Congress did not define the term “performance,” as used in 23 U.S.C. 150(c)(3), FHWA must interpret this term in the context of the statute. Accordingly, FHWA is interpreting “performance” of the Interstate and non-Interstate NHS under 23 U.S.C. 150(c) to include the system’s environmental performance, an interpretation that is consistent with the national goals established under 23 U.S.C. 150(b). Assessing environmental performance will further the environmental sustainability national goal to enhance the performance of the

transportation system while protecting and enhancing the natural environment. 23 U.S.C. 150(b)(6). This national goal is incorporated into the NHPP under 23 U.S.C. 119(e), which calls for a performance-driven asset management plan that would “support progress toward the achievement of the national goals identified in section 150(b).” Assessing environmental performance also provides support for activities to increase the resiliency of the NHS to mitigate the cost of damages from sea level rise, extreme weather events, flooding, wildfires, or other natural disasters, which is one of the purposes of the NHPP. 23 U.S.C. 119(b)(4). This measure would only apply to the Interstate and non-Interstate NHS. Since 23 U.S.C. 150(c)(3)(IV)-(V) refers only to the performance of the Interstate system and the non-Interstate NHS, FHWA only has authority to apply this measure to the Interstate system and the non-Interstate NHS. This interpretation is also consistent with 23 U.S.C. 150(c)(2), as further described in this preamble.

In the May 2018 final rule repealing the GHG performance requirements in the PM3 rule, FHWA reconsidered its interpretation of the statute and determined that the statute did not specifically direct or require FHWA to adopt a GHG measure. In deciding to repeal the GHG measure in 2018, FHWA adopted a narrow interpretation of the statute. FHWA has reconsidered its interpretation of the statute and believes that adopting a GHG measure is both consistent with the agency’s statutory authority and the implementation of sections 1 and 2 of E.O. 13990.

First, Congress specifically directed FHWA to establish measures for States to use to assess the performance of the Interstate System and the non-Interstate NHS. *See* 23

U.S.C. 150(c)(3)(A)(ii)(IV)-(V). Although Congress did not define the meaning of performance under this provision, the statute identifies seven national goals to inform performance management. Environmental sustainability is one of the specifically identified goals, which is defined as “enhance[ing] the performance of the transportation system while protecting and enhancing the natural environment.” 23 U.S.C. 150(b)(6). In light of this explicit goal and FHWA’s past practice, as described further in this section, FHWA believes that it is appropriate to interpret the meaning of performance of the Interstate System and the NHS under 23 U.S.C. 150(c)(3)(A)(ii)(IV)-(V) to include environmental performance. When FHWA enacted a GHG performance measure in the PM3 final rule, the Agency determined that it is appropriate to adopt the measure under 23 U.S.C. 150(c)(3), as that section does not impose any limitation on what type of NHS performance may be measured in rules promulgated under 23 U.S.C. 150(c)(3)(A)(ii)(IV)-(V), and because environmental performance is an integral part of the Federal-aid highway program, as reflected by the national goal of environmental sustainability in 23 U.S.C. 150(b)(6), transportation planning provisions in 23 U.S.C. 134 and 135, and environmental provisions in 23 U.S.C. 109(c), (g), (h), (i), and (j). The Agency also noted that this interpretation is supported by the many FHWA actions to treat the environment, and specifically sustainability and climate change, as part of system performance. 82 FR 5970, 5995. When FHWA repealed the GHG performance measure, the Agency took a narrow view and determined that since 23 U.S.C. 150(c)(2)(C) directs FHWA to limit performance measures only to those described in 23 U.S.C. 150(c), FHWA’s previous interpretation that performance of the Interstate System

and the National Highway System under 23 U.S.C. 150(c)(3)(A)(ii)(IV)-(V) includes environmental performance was overly broad.

FHWA has reexamined this determination from the 2018 repeal final rule and is proposing to reassert FHWA's earlier determination in the PM3 final rule that FHWA has authority under 23 U.S.C. 150(c)(3) to establish a GHG performance measure. Congress has not directly addressed the meaning of "performance" under the NHPP. Rather, FHWA is proposing that Congress has directed FHWA to determine the nature and scope of the specific performance measures that will fulfill the statutory mandate in 23 U.S.C. 150(c). Accordingly, FHWA is proposing that the performance of the Interstate System and the NHS includes environmental performance. This interpretation is reasonable in light of FHWA's statutory mandate to address the national goal of environmental sustainability under 23 U.S.C. 150(b)(6), as well as resilience under 23 U.S.C. 119, as further described in this preamble. Notably, 23 U.S.C. 150(c)(2)(C) limits performance measures to those described in 23 U.S.C. 150(c). The provision limits FHWA's authority to establish measures States use to assess performance only to the Interstate System and the NHS. However, the provision does not otherwise limit the meaning of "performance".

Second, FHWA's proposed adoption of the GHG measure is consistent with other parts of Title 23 of the U.S.C., notably 23 U.S.C. 119. In the PM3 final rule, the Agency identified that 23 U.S.C. 119 provides additional statutory support for the GHG measure. 82 FR 5995. Section 119 of Title 23, U.S.C. sets forth the purposes of the NHPP, eligibilities for NHPP funding, purposes and requirements for State performance

management (including asset management, significant progress and reporting requirements for performance measures), Interstate and bridge condition penalty provisions for falling below minimum conditions established by the Secretary, and environmental mitigation. FHWA noted that the performance management provisions in 23 U.S.C. 119(e) call for a performance-driven asset management plan that would “support progress toward the achievement of the national goals identified in section 150(b).” The 2017 GHG measure was developed to enhance the performance of the transportation system while protecting and enhancing the natural environment, consistent with the national goal under 23 U.S.C. 150(b)(6). Thus, by supporting the achievement of the national performance goals, the 2017 GHG measure, and by extension this proposed rule, supports FHWA’s implementation of 23 U.S.C. 119. Additionally, the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. 117-58, also known as the “Bipartisan Infrastructure Law”), amended 23 U.S.C. 119 to indicate that one of the purposes of the NHPP is “to provide support for activities to increase the resiliency of the National Highway System to mitigate the cost of damages from sea level rise, extreme weather events, flooding, wildfires, or other natural disasters.” IIJA Section 11105. By addressing the performance of the transportation system related to the largest source of U.S. CO₂ emissions, FHWA is implementing Congress’s express direction regarding NHPP goals. As described in this proposal, measuring environmental performance through the GHG performance measure will assist States to consider CO₂ emissions from transportation in the performance management framework and help frame responses to the growing climate crisis. Reducing GHG emissions that are causing increases in

temperature, sea level, extreme weather events, flooding, wildfires, and other natural disasters should then decrease the severity and impact of those conditions in the future. This NPRM will provide support for activities to increase the resilience of the NHS.

When FHWA repealed the 2017 GHG measure, the Agency exercised its discretion to reinterpret the definition of performance to exclude environmental performance due, in part, to the eligibility criteria for projects under the NHPP 23 U.S.C. 119(d). Under 23 U.S.C. 119(d)(1)(A), eligible projects must be “a project or part of a program of projects supporting progress toward the achievement of national performance goals for improving infrastructure condition, safety, congestion reduction, system reliability, or freight movement on the National Highway System.” FHWA determined that these goals are consistent with an interpretation of “performance” that focuses on the physical condition of the system and the efficiency of transportation operations across the system, and do not support FHWA’s prior, broader interpretation of “performance” under 23 U.S.C. 150(c)(3), which encompassed environmental performance. 83 FR 24924.

FHWA has reexamined the rationale in the May 2018 repeal final rule and has determined that performance measures under 23 U.S.C. 150(c)(3) are not limited only to the national performance goals identified in 23 U.S.C. 119(d)(1). Section 119(d)(1), Title 23, U.S.C., establishes eligibility criteria for using funds apportioned to a State for carrying out the NHPP, but does not set forth all relevant considerations for carrying out the program. For example, 23 U.S.C. 119(d)(2) identifies purposes for eligible projects, including development and implementation of a State DOT’s asset management plan for the NHS under 23 U.S.C. 119(e) and environmental mitigation efforts related

to projects funded under 23 U.S.C. 119(g). As previously noted, 23 U.S.C. 119(e) calls for a performance-driven asset management plan that would “support progress toward the achievement of the national goals identified in section 150(b)”, which includes the environmental sustainability national goal under 23 U.S.C. 150(b)(6). Risk-based asset management planning under 23 U.S.C. 119(e) includes consideration of life-cycle costs and risk management, financial planning, and investment strategies. As previously discussed, rapidly changing climate and increased weather extremes due to fossil fuel combustion directly impact the condition and performance of transportation facilities due to increases in heavy precipitation, coastal flooding, heat, wildfires, and other extreme events. Extreme events will lead to increasing transportation challenges, inducing societal and economic consequences. The number of billion-dollar climate disaster events has been much higher over the last five years than the annual average over the last 30 years.³⁰ Low-income and vulnerable populations are disproportionately affected by the impacts of climate change.³¹ These impacts are not attributable to any single action, but are exacerbated by a series of actions, including actions taken under the Federal-aid highway program. Measuring environmental performance through the GHG performance measure will assist States to consider CO₂ emissions from transportation in the performance management framework and help frame responses to the growing climate

³⁰ NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2022). <https://www.ncdc.noaa.gov/billions/>, DOI: [10.25921/stkw-7w73](https://doi.org/10.25921/stkw-7w73)

³¹ Ebi, K.L., J.M. Balbus, G. Luber, A. Bole, A. Crimmins, G. Glass, S. Saha, M.M. Shimamoto, J. Trtanj, and J.L. White-Newsome, 2018: Human Health. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 539–571. doi: 10.7930/NCA4.2018.CH14

crisis. Therefore, the GHG performance measure is appropriate in light of 23 U.S.C. 119. FHWA therefore has determined that the Agency’s interpretation of “performance” to include “environmental performance” is consistent with 23 U.S.C. 119.

FHWA also reiterates the Agency’s statements in the PM3 final rule that several other provisions in Title 23, U.S.C., support FHWA’s proposal to address GHG emissions in this rulemaking:

- 23 U.S.C. 101(b)(3)(G) is a transportation policy declaration that “. . . transportation should play a significant role in promoting economic growth, improving the environment, and sustaining the quality of life”.
- 23 U.S.C. 134(a)(1) is a congressional statement of transportation planning policy that it is in the national interest “. . . to encourage and promote the safe and efficient management, operation, and development of surface transportation systems . . . while minimizing transportation-related fuel consumption and air pollution through metropolitan and statewide transportation planning processes identified in this chapter . . .”.
- 23 U.S.C. 134(c)(1) requires MPOs to develop long range plans and transportation improvement programs to achieve the objectives in 23 U.S.C. 134(a)(1) through a performance-driven, outcome-based approach to planning.
- 23 U.S.C. 134(h) defines the scope of the metropolitan planning process. Paragraphs (h)(1)(E) and (I), respectively, require consideration of

projects and strategies that will “. . . protect and enhance the environment, promote energy conservation, improve the quality of life . . .” and “. . . improve the resiliency and reliability of the transportation system . . .”.

- 23 U.S.C. 135(d)(1) defines the scope of the statewide planning process. Paragraphs (d)(1)(E) and (I), respectively, require consideration of projects, strategies, and services that will “. . . protect and enhance the environment, promote energy conservation, improve the quality of life . . .”, and “. . . improve the resiliency and reliability of the transportation system . . .”.
- 23 U.S.C. 135(d)(2) requires the statewide transportation planning process to “. . . provide for the establishment and use of a performance-based approach to transportation decision-making to support the national goals described in section 150(b) of this title . . .”.

FHWA reaffirms that these Title 23, U.S.C., provisions make it clear that assessing infrastructure performance under 23 U.S.C. 150(c)(3) properly encompasses assessment of environmental performance, including GHG emissions and other climate-related matters. As noted in FHWA’s May 2018 repeal of the 2017 GHG measure, nothing in the statute specifically requires FHWA to adopt a GHG emissions measure. 83 FR 24923. However, consistent with all of the statutory provisions cited above, no provision of law prohibits FHWA from adopting a GHG emissions measure.

Third, FHWA’s decision to adopt the GHG measure under 23 U.S.C. 150(c)(3) does not conflict with the on-road mobile source emissions provision in 23 U.S.C.

150(c)(5). Section 150(c)(5), Title 23, U.S.C., requires that the Secretary establish performance measures for the purposes to carrying out the CMAQ Program under 23 U.S.C. 149. FHWA has established performance measures pursuant to 23 U.S.C. 150(c)(5) to assess traffic congestion and on-road mobile source emissions under 23 CFR 490.701-811. In the May 2018 repeal final rule, FHWA stated its belief that because Congress specifically designated a part of 23 U.S.C. 150(c) for on-road mobile source emissions measures, it is reasonable to conclude that Congress did not intend the other parts of 23 U.S.C. 150(c) to be used to address other similar or related performance measures, such as the GHG measure, and that by placing the on-road mobile source emissions provision in 23 U.S.C. 150(c)(5), Congress limited the types of emissions that could be the subject of a performance measure to those listed in the CMAQ statute. 83 FR 23924. FHWA has reexamined this reasoning and has determined that 23 U.S.C. 150(c)(5) is consistent with FHWA's proposal to adopt performance measures related to emissions if they support the achievement of the national performance goals.

Under 23 U.S.C. 150(c), Congress requires FHWA to establish performance measures for a number of programs, including the CMAQ Program under 23 U.S.C. 149. This language indicates Congressional intent that FHWA establish a performance measure for on-road mobile source emissions for the purposes of carrying out the CMAQ Program. However, nothing in 23 U.S.C. 150 limits measures that take into account emissions only to measures established for the purposes of carrying out the CMAQ Program. FHWA is proposing that it is appropriate to examine relevant emissions as part

of assessing performance of the Interstate and non-Interstate NHS in support of the NHPP.

Notably, Congress's inclusion of a specific CMAQ measure indicates that Congress was contemplating CMAQ and its coverage in terms of geography and types of emissions when drafting 23 U.S.C. 150. Since Congress did not expressly limit emissions measures to those related to CMAQ, it is reasonable to conclude that Congress intended FHWA to retain the discretion to adopt other emissions measures, such as the GHG measure.

In addition, the measures described in 23 U.S.C. 150(c) inherently include overlapping topics. For example, freight movement in 23 U.S.C. 150(c)(6) (see also 23 CFR Part 490, Subpart F) clearly involves congestion reduction or management, but CMAQ measures under 23 U.S.C. 150(c)(5) do not foreclose a congestion-related measure. Therefore, the best interpretation of 23 U.S.C. 150 contemplates measures that may overlap to achieve the national goals.

For all of these reasons, upon reexamination of FHWA's repeal of the 2017 GHG measure, FHWA asserts the proposed measure is consistent FHWA's authority under 23 U.S.C. 150(c).

C. Additional Rationale for the Proposed GHG Measure

FHWA is proposing to establish a GHG emissions measure for environmental performance in accordance with 23 U.S.C. 150(c)(3). This measure will incorporate an important environmental aspect of system performance into the set of national performance measures and support the national transportation goal of environmental

sustainability in the Federal-aid highway program and the national performance management program established in 23 U.S.C. 150. FHWA has previously identified that a GHG performance measure will help address transportation GHG emissions. In the 2017 PM3 final rule, FHWA noted that reducing GHG emissions involves strategies to reduce the growth in future travel activity, such as the shift of travel to public transportation and non-motorized options, and improve system efficiency, such as optimizing the operation, use, and maintenance of transportation networks. The PM3 final rule noted that these activities are influenced by the planning activities and investment decisions of State DOTs and MPOs. 82 FR 8997. FHWA is reasserting that establishing a GHG measure in FHWA's Transportation Performance Management Program would help implement a national policy to reduce GHG emissions. As discussed in Section III(A) of this notice, the GHG performance measure would provide a consistent basis for estimating on-road GHG emissions and would aid States and MPOs in planning GHG emissions reductions and evaluating progress toward national, State, and local GHG goals. In addition, establishing a GHG measure also would inform the future investment decisions of the Federal Government, State DOTs, and MPOs towards achieving their targets or goals.

As discussed in Section III(A) of this notice, FHWA anticipates this measure will assist with comprehensive transportation planning. Current performance measures are integrated into the planning process and used to track progress and attainment of critical outcomes of the goals. 23 U.S.C. 135(d)(2) and 23 U.S.C. 134(h)(2). Establishment of the GHG emissions performance measure aligns with current requirements, goals, and

processes under the planning requirements. Through these processes, the GHG performance measure would advance the Federal-aid highway program's national goal for environmental sustainability identified under 23 U.S.C. 150(b)(6). In addition, transportation investments advanced to achieve GHG performance measure targets can have co-benefits that would assist States and MPOs make progress towards other performance measures listed in 23 U.S.C. 119(d)(1)(A). For instance, the construction of a new grade-separated transit facility has the potential to reduce travel on neighboring roadways, which in turn would reduce congestion, improve safety, and reduce criteria pollutant emissions in addition to reducing on-road GHG emissions.

FHWA acknowledges that in proposing to establish this measure, FHWA would be largely reestablishing the measure repealed in 2018. 83 FR 24920. FHWA expects that States and MPOs have no reliance interests resulting from the repeal or, for that matter, from the 2017 GHG measure. FHWA repealed the 2017 GHG measure before the respective due dates for target setting or reporting, and FHWA assumes that no State DOTs or MPOs incurred any costs due to the promulgation and prompt repeal of that measure. Nor did the repeal itself impose any compliance costs on State DOTs or MPOs. Accordingly, FHWA does not expect this proposed rule to result in any increased burden on State DOTs or MPOs by virtue of the fact that FHWA previously established a similar measure that was repealed before any State DOTs or MPOs relied on and implemented its target setting and reporting requirements. The proposed measure would be a new one. As a result, FHWA expects that States or MPOs would not have any reliance interests based on the repeal of the 2017 GHG measure. Moreover, it is FHWA's policy judgment

that implementation of the proposed GHG measure, which would advance the national policy objectives stated in section 1 of E.O. 13990 and E.O. 14008 and the Department's strategic goal of reducing GHG emissions from transportation and would increase accountability through reporting requirements, would outweigh any minimal reliance interests, to the extent they exist.

1. Costs and Benefits

The May 2018 repeal final rule determined that “the measure imposes unnecessary regulatory burdens on State DOTs and MPOs with no predictable benefits,” and stated that “FHWA does not believe the speculative and uncertain benefits are a sufficient reason to retain the GHG measure, especially given the very definite costs associated with the measure.” 83 FR 24924-25. FHWA previously noted that since benefits that may possibly flow from the GHG measure came from its potential to influence State DOT and MPO investment decisions, and it is not possible to conclude with certainty the GHG measure would cause State DOTs and MPOs to make decisions that change CO₂ emissions levels. 83 FR 24925. Thus, FHWA concluded that it was not possible to predict, with any reasonable degree of certainty, the extent to which the influence effects of the GHG measure might result in actual changes in emissions levels.

FHWA has reexamined this approach and anticipates that this proposed rule would result in substantial benefits that are neither speculative nor uncertain. This measure would create environmental sustainability benefits by supporting more informed choices about transportation investments and other policies to help achieve net-zero emissions economy-wide by 2050. Reporting GHG emissions and setting GHG

emissions targets would increase public awareness of GHG emissions trends, promote the consideration of GHG emissions in transportation planning decisions, and more transparently characterize the impact of these decisions on GHG emissions. These benefits are not easily quantifiable.

Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. The totality of climate change impacts is not attributable to any single action, but is exacerbated (or reduced) by a series of actions, including actions taken under the Federal-aid highway program. Policies to reduce GHG pollution from transportation align with environmental performance and are essential to minimize the impacts from climate change discussed in the Fourth National Climate Assessment, which include sea level rise and increased frequency and severity of heat waves and heavy precipitation, coastal flooding, wildfires, and other extreme events.³²

As stated in section 101 of E.O. 14008, U.S. engagement to address the climate crisis is both necessary and urgent to avoid “a dangerous, potentially catastrophic, climate trajectory.” Significant short-term global reductions in GHG emissions and net-zero global emissions by 2050 or before will be important. 86 FR 7619.

Achieving CO₂ reductions of this magnitude will depend on actions such as increasing the adoption of zero emission vehicles, improving system efficiency, and reducing the growth in future on-road travel activity through the shift from single occupant vehicles and other measures that reduce on-road travel demand. Actions such

³² See U.S. GCRP 2017 Climate Science Special Report, at 12-34.

as these are significantly influenced by the planning activities and investment decisions of State DOTs and MPOs. A GHG measure emerged as a leading candidate for measuring the environmental aspect of the performance of the highway system during FHWA and stakeholder discussions in 2009. Subsequently, FHWA initiated a research project to investigate GHG measures that would align with performance-based planning and programming, as well as how State DOTs and MPOs could go about implementing such a measure.³³

The proposed GHG measure aligns with the national goal of reducing CO₂ emissions 50 to 52 percent below 2005 levels by 2030 in support of the Paris Agreement. The proposed GHG measure could be utilized to drive decisions that help to meet or exceed the national goals under that agreement and create transparency for policy maker decisions to achieve those goals and as a means to measure progress. The process of setting targets creates transparency, allowing stakeholders and the public to see what goals are being set, how they are being pursued, and results produced by the measure. The proposed GHG measure also provides greater visibility and accountability for GHG emissions due to mandatory reporting requirements.

FHWA has also re-evaluated the costs of compliance with the proposed measure and estimated total 10-year costs of \$11,022,835 at a 7% discount rate and \$12,887,491 at a 3% discount rate. These costs, which reflect 2020 loaded wage rates,³⁴ are marginally

³³ A Performance-Based Approach to Addressing Greenhouse Gas Emissions through Transportation Planning, FHWA 2013, *available at* https://www.fhwa.dot.gov/environment/sustainability/energy/publications/ghg_planning/ghg_planning.pdf.

³⁴ A loaded wage rate reflects an annual salary, including benefits, that is converted to an hourly wage rate.

greater than costs calculated in the 2018 repeal final rule, which used 2014 loaded wage rates, and estimated total costs of \$10,891,892 at a 7% discount rate and \$12,805,709 at a 3% discount rate. FHWA has determined that implementation of a GHG measure would require fewer hours of State DOT and MPO staff time than estimated for the 2018 repeal final rule, primarily since the cost analysis for this proposed rule no longer assumes that MPOs will adjust their targets during mid-performance periods of 2024 and 2028. The reduction in estimated labor hours from this revised assumption is partly offset by additional estimated labor hours that would be required to address the new requirement for joint urbanized area targets.

2. Duplication of Efforts

The 2018 repeal final rule evaluated whether the 2017 GHG measure was potentially duplicative of other government efforts, both at the Federal and State level, based on direction from previously applicable E.O.s to reduce regulatory costs and burdens.³⁵ FHWA concluded at that time that the data needed to support the 2017 GHG measure was at least somewhat duplicative of the EPA and DOE data on CO₂ emissions, and this duplication was a concern and a factor that supported repeal of the GHG measure. However, FHWA has reexamined this duplication in light of recent E.O.s prioritizing actions to address climate change.³⁶ FHWA has determined that the GHG measure is appropriate even if DOE and EPA data or other government efforts provide

³⁵ See E.O. 13771, “Reducing Regulation and Controlling Regulatory Costs,” E.O. 13777, “Enforcing the Regulatory Reform Agenda,” E.O. 13783, “Promoting Energy Independence and Economic Growth.”

³⁶ E.O. 13990, “Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis,” section 1; see E.O. 13992, “Revocation of Certain Executive Orders Concerning Federal Regulation” (revoking E.O. 13771 and E.O. 13777).

some information about CO₂ emissions trends in the transportation sector, for the reasons discussed below.

Specifically, the 2018 repeal final rule identified that several States and MPOs were already tracking CO₂ emissions voluntarily or to comply with State requirements. However, FHWA has examined a 2018 survey of 52 State DOTs to evaluate whether States are tracking CO₂ emissions. The survey indicates that relatively few State DOTs are currently addressing GHG emissions, and even fewer are using performance measures and quantitative approaches to do so.³⁷ In response to the survey, nine States reported they “externally communicate progress regarding plans or projects which contribute to achieving GHG targets or goals” (Question 8). A smaller subset of this group reported they have established quantitative or performance-based approaches related to GHG emissions, with three States reporting the implementation of quantitative measures with reduction targets, and one reporting the implementation of quantitative measures without a reduction target (Question 5). Similarly, four States indicated that they have developed an inventory and/or forecast specifically to support performance metrics (Question 4). Therefore, FHWA now concludes that the proposed GHG measure would not be duplicative of existing efforts as the majority of State DOTs are not currently tracking and addressing GHG emissions.

In addition, the 2018 repeal final rule asserted that other Federal agencies, such as the EPA and the DOE, had undertaken regulatory and other efforts to address

³⁷ NCHRP 25-56, Methods for State DOTs to Reduce Greenhouse Gas Emissions from the Transportation Sector. Currently under pre-publication review by the Transportation Research Board.

CO₂ emissions, including the annual DOE publication of State-by-State data on CO₂ emissions for the transportation sector, which includes data on CO₂ emissions from all mobile sources (e.g., aviation, highway), not just motor vehicles (although the published table does not break the CO₂ emissions data into subcategories, such as CO₂ emissions on the NHS). The 2018 repeal final rule concluded that this information, while not precisely identical to the information provided by the 2017 GHG measure, provides States with trend information on CO₂ emissions from mobile sources in each State, and the highway component is based on the same fuel sales information used for the GHG measure. However, upon reevaluation, FHWA has determined that the proposed GHG measure would provide State DOTs with valuable information that is not already covered by other Federal agencies. Data published by DOE and the EPA do not specifically cover the NHS. In addition, while the 2018 repeal final rule identified that DOE publishes State-level CO₂ estimates for the transportation sector, this data is not disaggregated to reflect CO₂ emissions from on-road mobile sources. Sector-level data is not ideal for evaluating CO₂ emissions trends associated with roadways or the NHS, since fluctuations in CO₂ emissions from other transportation sources (such as aircraft, boats and rail) can significantly influence year-over-year changes. Finally, transportation sector CO₂ emissions trends published by DOE and the EPA lag FHWA's publication of fuel use data by up to a year, and accordingly the GHG measure will be more useful for setting targets, identifying CO₂ reduction strategies, and monitoring outcomes. For these reasons, FHWA has determined that the GHG measure would provide a valuable source of data and is not duplicative of the DOE and EPA data discussed in this section of the

preamble. Indeed, FHWA believes that the GHG measure is an integral part of the whole-of-Government approach to the climate crisis as described in E.O. 14008.

D. Establishing Targets and Schedule for Implementation

The 2017 rule did not include any language about how the State DOTs and MPOs were to establish GHG performance targets. Since that time, however, the United States has committed to achieving net-zero GHG emissions by 2050 and established an aggressive national goal of reducing CO₂ emissions 50 to 52 percent below 2005 levels by 2030 in support of the Paris Agreement. As noted above, in 2019 the transportation sector accounted for 34.6 percent of total U.S. CO₂ emissions, with 83.2 percent of the sector's total CO₂ emissions coming from on-road sources, and the sector is expected to remain the largest source of U.S. CO₂ emissions through 2050. This proposed measure would require State DOTs and MPOs to establish declining targets for GHG emissions from such sources to achieve the national goals for 2030 and 2050. The declining targets should be consistent with national, State, and local GHG emission reduction goals for 2030 and 2050. However, State DOTs and MPOs would have flexibility in setting targets. For example, a State DOT might set targets that would result in steady, incremental progress toward net-zero emissions, or that achieve aggressive early GHG emissions reductions, or be more gradual at first and become more aggressive later. When setting targets, a State DOT also could draw on any relevant work by State environmental agencies or other State bodies. FHWA is not proposing to prescribe what declining targets would look like in each State. However, the States should be able to

demonstrate how their targets fit into a longer timeframe of emissions reductions that will reach the national GHG goals for 2030 and 2050.

In addition, FHWA is proposing to require that MPOs establish a single joint target for each urbanized area that contains NHS mileage and that is overlapped by the boundaries of two or more metropolitan planning areas. This requirement would help ensure a coordinated approach to GHG emission reductions in areas where multiple MPOs serve a single urbanized area. For example, the urbanized area for Boston, Massachusetts-New Hampshire-Rhode Island is overlapped by 11 MPOs, and the urbanized area for Tampa-St Petersburg, Florida is overlapped by 4 MPOs. Coordinated systems and region-based approaches to reduce GHG emissions are intended to ensure the collaboration necessary to achieve meaningful reductions in GHG emissions. FHWA has not proposed joint targets with State DOTs because State DOTs and MPOs are already required to coordinate on the establishment of targets to the maximum extent practicable. 23 CFR 450.206(c) and 450.306(d)(2)(ii); *see also* 23 CFR 490.105(f)(2). As discussed in Part V of this preamble, FHWA is seeking comment on the efficacy of the proposed approach and how it could best be implemented.

As the recent IPCC report emphasizes, time is of the essence in addressing GHG emissions, including those from the transportation sector. FHWA also anticipates that States should have adequate time to establish targets for the proposed GHG measure before targets are reported in the State Biennial Performance Report due to FHWA by October 1, 2022. This expedited schedule is proposed to allow this new measure to be in place at the start of TPM's 4-year reporting period, represented by the baseline

performance period report due by October 1, 2022. FHWA recognizes that it is possible the due date to report State DOT initial targets for the proposed GHG measure may need to be adjusted. FHWA requests comment on what the due date should be in the event a final rule is not effective in advance of the October 1, 2022, reporting date. As stated elsewhere in this proposal, FHWA also will consider public comments to establish a GHG measure for States and MPOs in a final rule based on this proposed rule.

For the proposed measure, State DOTs would be required to establish 2- and 4-year targets, and report on progress biennially. MPOs would be required to establish 4-year targets for their metropolitan planning area. MPOs would establish additional 4-year targets for select urbanized areas. MPOs would report progress toward the achievement of targets every 4 years to the State DOT in a manner that is documented and mutually agreed upon. Pursuant to 23 U.S.C. 135(d)(2)(B)(i)(II), the proposed measure would be subject to 23 CFR 490.105(e)(2), which requires State DOTs to coordinate with relevant MPOs to establish targets, to the maximum extent practicable. The coordination would be accomplished in accordance with the transportation planning process set forth in 23 CFR Part 450. FHWA recognizes the need for State DOTs and MPOs to have a shared vision on expectations for future condition/performance and target establishment process, one that is consistent with national, State, and local policies and targets for total GHG emission reductions.

IV. Section-by-Section Discussion of the Proposed Changes

FHWA proposes changes to two subparts of 23 CFR Part 490: Subpart A—General Information, which applies to all of the regulations throughout Part 490; and

Subpart E—National Performance Management Measures to Assess Performance of the National Highway System, where FHWA proposes to locate the GHG measure. This section of the preamble describes the proposed changes and the reasons behind them. The proposed rule would apply to the 50 States, the District of Columbia, and Puerto Rico consistent with the definition of the term “State” in 23 U.S.C. 101(a). FHWA also invites comments on the proposed changes and identifies areas where comments may be particularly useful in facilitating implementation of the GHG measure.

Subpart A—General Information

§ 490.101 Definitions.

FHWA proposes to amend § 490.101 by adding a new definition of the term *Fuels and Financial Analysis System-Highways (FUELS/FASH)* for purposes of Part 490. The term refers to FHWA’s system of record for motor fuel, highway program funding, licensed drivers, and registered vehicles data. The FUELS/FASH system is used to facilitate the collection, validation, review, analysis, and finalization of data reported by State agencies. Currently, FHWA uses the FUELS/FASH data to respond to legislative requests or prepare reports to the Congress; analyze existing and proposed Federal-aid funding methods and levels and the assignment of user cost responsibility; maintain a critical information base on fuel availability, use, and revenues generated; and calculate apportionment factors. The system is used to facilitate the collection, validation, review, analysis, and finalization of data reported by State agencies on an annual or monthly basis. Including the definition in § 490.101 is consistent with the inclusion in this section of definitions of other systems and databases used in performance management reporting,

including *Highway Performance Monitoring System (HPMS)* and *National Bridge Inventory (NBI)*.

§ 490.105 Establishment of performance targets.

FHWA proposes to add five new paragraphs to § 490.105 regarding the establishment of performance targets and proposes adjustments to five existing paragraphs due to the proposed GHG measure. First, proposed new § 490.105(c)(5) would add a reference to proposed § 490.507(b) for the GHG performance measure to the existing list of applicable performance measures for State DOTs and MPOs that include, within their respective geographic boundaries, any portion of the applicable transportation network (*i.e.*, for the GHG measure, all mainline highways on the Interstate and non-Interstate NHS). Second, proposed changes would affect the target scope provisions of § 490.105(d). Proposed new § 490.105(d)(1)(v) would require that State DOTs and MPOs establish statewide and metropolitan planning area wide targets, respectively, that represent the condition/performance of the NHS as specified in proposed § 490.503(a)(2) for the GHG measure for the NHS specified in proposed § 490.507(b). Proposed new § 490.105(d)(4) would require that certain MPOs also establish joint targets for the GHG measure for select urbanized areas specified in proposed new § 490.105(f)(10). Additionally, FHWA proposes to revise the introductory text of § 490.105(d) to include the scope of urbanized areas, consistent with proposed § 490.105(d)(4). In Part V of this preamble, FHWA encourages submission of comments on the type of target setting requirements that would best help MPOs improve the

environmental performance of their transportation systems with respect to GHG emissions.

Furthermore, FHWA proposes changes to § 490.105(e) regarding the establishment of targets. FHWA proposes to revise existing § 490.105(e)(1), which addresses the schedule by which States are required to establish performance targets. The proposed revisions would clarify that State DOTs are required to establish initial targets for the GHG measure identified in proposed § 490.507(b) no later than October 1, 2022. The structure of the paragraph also would change to clarify the distinct deadline for performance targets for the GHG measure.

In addition, the proposed revisions would clarify the existing requirement that State DOTs were to establish initial targets for all other performance measures no later than February 20, 2018, by correcting the date to May 20, 2018. Under 23 U.S.C. 150(d)(1), State DOTs are required to establish such targets not later than one year after the promulgation of FHWA's final rule establishing performance measures. As discussed previously, FHWA promulgated the PM3 final rule establishing NHPP performance measures on January 18, 2017 (82 FR 5970), with an effective date of February 17, 2017. That effective date corresponds to the February 20, 2018, deadline for target establishment in the current regulations. However, FHWA later delayed the effective date of the PM3 final rule until May 20, 2017 (82 FR 14438), which corresponds to an initial date of May 20, 2018, for establishing targets for NHPP performance measures other than the proposed GHG measure. The proposed rule would codify the May 20, 2018, date in § 490.105(e)(1) for accuracy, even though the date has passed.

FHWA proposes to require that State DOTs establish initial targets for the GHG measure no later than October 1, 2022, to facilitate implementation of the GHG measure on the same schedule as the other NHPP performance measures. The proposed initial target establishment date is expected to synchronize this new GHG measure with the reporting cycle in Part 490 for NHPP measures. FHWA believes that such a schedule will increase the potential for efficiencies and ease administrative efforts on the part of State DOTs and MPOs. FHWA anticipates that State DOTs would be able to establish targets to be reported in the State DOT's Biennial Performance Report due to FHWA by October 1, 2022. However, the proposed GHG measure is important to advancing the national policies discussed in the "Statement of the Problem, Legal Authority, and Rationale" section of this preamble to confront the climate crisis. FHWA encourages State DOTs to consider preparing for implementation of the proposed GHG measure to help advance those national policies.

Proposed new § 490.105(e)(10) would require declining targets for reductions in tailpipe CO₂ emissions on the NHS that align with the 2030 and net-zero by 2050 emissions reduction targets discussed earlier. In addition, FHWA proposes revising paragraph § 490.105(f)(1)(i) to include the requirement that the targets established by an MPO for the GHG measure will also be declining targets for reducing tailpipe CO₂ emissions on the NHS.

FHWA also proposes revisions to § 490.105(f) regarding MPO establishment of targets. FHWA proposes to revise paragraph § 490.105(f)(3) to clarify that the existing target establishment options for MPOs apply to the targets established for the

metropolitan planning area. Specifically, FHWA proposes to add language clarifying that the MPOs shall establish targets “for the metropolitan planning area” by either of the two options described. No other changes to § 490.105(f)(3) are proposed, but the entire provision is included for convenience. In Part V(A) of this preamble, FHWA encourages submission of comments on the important issue of how targets established by State DOTs and MPOs for reduced emissions might be implemented in order to lead to improved environmental performance.

Proposed new § 490.105(f)(10) would require that certain MPOs establish joint targets for the GHG measure for select urbanized areas. These targets would be in addition to the targets for the metropolitan planning area required in § 490.105(f)(1)(i). FHWA proposes that when an urbanized area that contains mainline highways on the Interstate or non-Interstate NHS, and any portion of that urbanized area is overlapped by the metropolitan planning area boundaries of two or more MPOs, those MPOs would need to coordinate to establish a single, joint target for that urbanized area. FHWA proposes to require a joint target for select urbanized areas in recognition of the importance of all MPOs that serve the same urbanized area working together regionally to solve common transportation problems in order to address GHG emissions.

FHWA proposes in § 490.105(f)(10)(i) that NHS designations and urbanized areas shall be determined from the data, contained in HPMS, one year before the State DOT Baseline Performance Period Report is due to FHWA. This is consistent with existing requirements in § 490.105(f)(5)(iii)(E) and would not add additional burden. FHWA proposes to specify in § 490.105(f)(10)(ii) that only one target shall be

established for the entire urbanized area regardless of roadway ownership and that each MPO shall report the joint target for the urbanized area. In § 490.105(f)(10)(iii), FHWA proposes that any joint target established for an urbanized area would be a quantifiable target. This is different than the existing options in § 490.105(f)(3) that allow MPOs to agree to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target. For the MPOs' joint urbanized area targets, MPOs would need to establish a quantifiable value for the joint target. Under the proposed rule, that value could be the same as the State DOT's target. MPOs would not be required to adjust their joint target if the State DOT adjusts its target.

§ 490.107 Reporting on performance targets.

The proposed GHG measure would be subject to the biennial reporting requirements in § 490.107, which includes reporting targets and performance. Proposed § 490.107 would revise existing regulations governing biennial performance period progress reporting to provide the date for State DOTs to submit initial reports to FHWA that contain the GHG measure information, and would add references to the GHG measure identified in § 490.507(b). Proposed § 490.107 would add metric reporting requirements as part of the biennial reports State DOTs submit to FHWA that would be unique to the GHG measure. In addition, proposed § 490.107 would add that MPOs report to the State DOT their metric calculation method, along with the calculation of tailpipe CO₂ emissions for the NHS (the metric used in calculating the measure) and all public roads within the MPO (the step before calculating the metric).

As proposed, revised § 490.107(b)(1) would update the existing requirement that State DOTs submit their first Baseline Performance Period Report (Baseline PPR) to FHWA by October 1, 2018, by providing that for the GHG measure, State DOTs are required to submit their first Baseline PPR containing information for the proposed GHG measure by October 1, 2022. This provision also would require State DOTs to submit subsequent Baseline PPRs to FHWA by October 1 every 4 years thereafter, which is consistent with other measures in 23 CFR Part 490. FHWA proposes corresponding revisions to § 490.107(b)(2) and (3) to provide the first time information for the GHG measure would be included in the Mid Performance Period Progress Report (Mid PPPR) would be October 1, 2024, and October 1, 2026, for the Full Performance Period Progress Report (Full PPPR). These additions would fold performance reporting for the proposed GHG measure into the existing reporting requirement and schedule for other performance measures in 23 CFR Part 490.

Proposed new § 490.107(b)(1)(ii)(H) would revise the existing regulations governing the content of Baseline PPRs to include a requirement that the State DOT report the GHG metric for the GHG measure and tailpipe CO₂ emissions on all public roads in each Baseline PPR. Specifically, such reporting would cover tailpipe CO₂ emissions on the NHS for the reference year and the two calendar years preceding the Baseline PPR and tailpipe CO₂ emissions on all public roads for the same time periods.

Similarly, proposed § 490.107(b)(2) would amend the existing regulations governing Mid PPPRs to provide the schedule for State DOTs to submit the first such reports to FHWA for the proposed GHG measure and to include information pertaining

to the proposed GHG measure in the required content of such reports. First, proposed revisions to the second sentence of § 490.107(b)(2)(i) would update the existing requirement that State DOTs submit their first Mid PPPR to FHWA by October 1, 2020, to require that the first Mid PPPR containing the proposed GHG measure information be submitted to FHWA by October 1, 2024. This provision also would require State DOTs to submit subsequent Mid PPPRs containing the proposed GHG measure information to FHWA by October 1 every 4 years thereafter, which is consistent with other measures in 23 CFR Part 490.

Proposed new § 490.107(b)(2)(ii)(J) would revise the requirements for the content of Mid PPPRs to include the GHG metric for the GHG measure and tailpipe CO₂ emissions for all public roads in each Mid PPPR. Such reporting would cover tailpipe CO₂ emissions for the NHS and all public roads for the two calendar years preceding the Mid PPPR.

Proposed § 490.107(b)(3) would amend the existing regulations governing Full PPPRs to provide the schedule for State DOTs to submit the first such reports to FHWA containing the proposed GHG measure and to include information pertaining to the proposed GHG measure in the required content of such reports. Proposed revisions to the second sentence of § 490.107(b)(3)(i) would update the existing schedule requiring that State DOTs submit their first Full PPPR to FHWA by October 1, 2022, to require that the first Full PPPR containing the proposed GHG measure information be submitted to FHWA by October 1, 2026. This provision also would require State DOTs to submit

subsequent Full PPPRs containing the proposed GHG measure information to FHWA by October 1 every 4 years thereafter, which is consistent with other measures in Part 490.

Proposed new § 490.107(b)(3)(ii)(I) would revise the content requirements for the Full PPPRs to include the GHG metric for the GHG measure and tailpipe CO₂ emissions for all public roads in each Full PPPR. Such reporting would cover tailpipe CO₂ emissions for the NHS and all public roads for the two calendar years preceding the Full PPPR.

Finally, proposed revisions to § 490.107(c)(1) would require each MPO to report in the system performance report in the metropolitan transportation plan, a description of its GHG metric calculation method, described in § 490.511(d), including the calculation of tailpipe CO₂ emissions for the NHS and all public roads. FHWA considers documenting the method used to calculate the metric used in calculating the measure itself important for achieving consistency, providing transparency, and maintaining quality control in the reported measure calculations. FHWA also expects that MPO reporting of tailpipe CO₂ emissions on the NHS would provide useful information for State DOTs since these estimates would be expressed in absolute terms and could be easily summed to evaluate progress across MPOs. FHWA requests comment on whether MPOs should be required to provide the metric calculation method and their tailpipe CO₂ emissions to the State DOT outside of the system performance report to provide for more frequent information sharing. FHWA also requests comment on whether to specify a uniform metric calculation method for MPOs, as opposed to allowing a range of approaches that are referenced in the description of § 490.511.

§ 490.109 Assessing significant progress toward achieving the performance targets for the National Highway Performance Program and the National Highway Freight Program.

FHWA proposes to amend § 490.109 to update the sources of information that FHWA will use to assess NHPP target achievement and condition/performance progress for the GHG measure.³⁸ First, FHWA proposes to add new § 490.109(d)(1)(v), to provide that FHWA will extract data contained within FUELS/FASH on August 15 of the year in which the significant progress determination is made. This data would account for fuel use from the prior calendar year and the reference year. FUELS/FASH is proposed as the source of this information because it is a national, established, and validated data source for total fuel use as reported annually to FHWA by the States, Washington, D.C., and Puerto Rico. FUELS/FASH is also the most accurate and up-to-date source known for this sort of information.

FHWA desires to use national datasets in a consistent manner as a basis for making its significant progress determinations. Thus, consistent with existing § 490.109(d), FHWA proposes to use specific data sources that could be accessed by State DOTs and others if they choose to replicate FHWA's determinations.

³⁸ FHWA regulations at 23 CFR 490.109 describe the method FHWA uses to determine if State DOTs have achieved or have made significant progress toward the achievement of their NHPP targets. Under the existing regulation, progress toward the achievement of an NHPP target would be considered "significant" when either of the following occur: the actual condition/performance level is equal to or better than the State DOT established target; or actual condition/performance is better than the State DOT identified baseline condition/performance. If a State DOT fails to achieve significant progress, the State DOT must document in its next report the actions it would take to achieve the targets.

For consistency with existing requirements in Part 490 that use August 15 as the date data will be extracted, FHWA is proposing to establish August 15 as the date on which FHWA will extract data from the HPMS and FUELS/FASH related to the proposed GHG measure. Providing a specific as-of-date related to the data used will create an incentive to ensure the data is submitted correctly and accurate information is available on that date. The August 15 date is considered the earliest time data reasonably would be available in a national data source. This proposed date considers the time State DOTs typically need to submit the relevant data to HPMS and FUELS/FASH, to process raw data, and to address missing or incorrect data that may be identified as a result of quality assessments conducted by the State DOT or FHWA. The proposed date also is necessary for FHWA to make the significant progress determination for the proposed GHG measure in a timely manner.

FHWA additionally proposes to revise § 490.109(d)(1)(vi), which would provide that baseline condition/performance data contained in FUELS/FASH, HPMS, and NBI of the year in which the Baseline PPR is due to FHWA represents baseline conditions/performances for the performance period for the measures in §§ 490.105(c)(1) through (c)(5).

Finally, FHWA proposes to add § 490.109(d)(1)(vii) to indicate that FHWA will extract data contained within the HPMS, on August 15 of the year in which the significant progress determination is made. These data would account for VMT from the prior calendar year and the reference year.

FHWA proposes to add a new § 490.109(e)(4)(iv) to specify that in order for the FUELS/FASH data to be sufficient for FHWA’s significant progress determination, it must be cleared by August 15th. The requirement for data submitted by a State DOT to be cleared prior to use in the significant progress determination is consistent with the requirements for other such data sets in 23 CFR Part 490.

In addition, FHWA proposes to revise the existing regulations governing performance achievement by adding § 490.109(f)(1)(v) to require that if significant progress is not made for the target established for the GHG measure in § 490.507(b), the State DOT must document the actions it will take to achieve that target in its next biennial report. This provision would apply the same approach to the proposed GHG measure that the existing regulations use for other NHPP performance measures.³⁹

Subpart E—National Performance Management Measures to Assess Performance of the National Highway System

In addition, FHWA proposes to amend several sections of 23 CFR Part 490, Subpart E, to incorporate the GHG measure into existing regulations on NHPP performance measures.

§ 490.503 Applicability.

FHWA proposes to amend § 490.503 by adding a new paragraph (a)(2) providing that the GHG measure specified in § 490.507(b) is applicable to all mainline highways on

³⁹ See 23 CFR 490.109 (regulations governing FHWA’s assessment of significant progress toward achieving NHPP performance targets, among others). FHWA is not proposing specific penalties for failure to achieve performance targets. Failure to comply with Federal requirements, including requirements to set performance targets, may be subject to penalties under 23 CFR 1.36.

the Interstate and non-Interstate NHS. FHWA believes this applicability is appropriate because the measure, which is limited to CO₂ emissions on the NHS, aims to assess the performance of the NHS. *See* 23 U.S.C. 150(c)(3)(A)(ii)(IV) and (V) (concerning measures to assess the performance of the Interstate System and the performance of the NHS (excluding the Interstate System), respectively).

§ 490.505 Definitions.

Proposed § 490.505 would add two new definitions to the Definitions section of the National Performance Management Measures to Assess Performance of the National Highway System. First, FHWA proposes to define the term *greenhouse gas (GHG)* as any gas that absorbs infrared radiation (traps heat) in the atmosphere. The proposed definition further notes that 97 percent of on-road GHG emissions are CO₂ from burning fossil fuels, and that other transportation GHGs are methane (CH₄), nitrous oxide (N₂O), and hydrofluorocarbons (HFCs). This information comes from EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks.⁴⁰ This information supports that CO₂ is the appropriate pollutant to examine in the GHG measure. The proposed definition also establishes the acronym, "GHG," that FHWA uses throughout the section to refer to greenhouse gas.

Second, FHWA proposes to define the term *Reference year* as calendar year 2021 for the purpose of the GHG measure. As explained later in this preamble, under the proposed rule, the reference year would be used in calculating the GHG measure. FHWA

⁴⁰*See* EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks, *available at* <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019>.

proposes to use calendar year 2021 for the reference year for the GHG measure because it is the most recent year for which data will be complete and available.

§ 490.507 National performance management measures for system performance.

FHWA proposes to revise the introductory text of § 490.507 to refer to “three” performance measures to assess the performance of the Interstate System and the performance of the non-Interstate NHS for purposes of carrying out the NHPP. The three measures would include the proposed GHG measure in addition to the two Travel Time Reliability measures in the existing regulations. In addition, FHWA proposes to add a new paragraph § 490.507(b) to describe the GHG measure as the percent change in tailpipe CO₂ emissions on the NHS compared to the reference year. FHWA proposes a GHG measure that uses existing data sources in order to minimize the burden on transportation agencies. Because FHWA is establishing this measure under 23 U.S.C. 150(c)(3), it applies to the NHS in all States and metropolitan planning areas. The measure would be calculated by multiplying motor fuel sales volumes already reported by State DOTs to FHWA through the FUELS/FASH system by FHWA-supplied emissions factors for the CO₂ per gallon of fuel, and the percentage of VMT on the NHS. The percent change from the current year to the reference year would then be calculated. As defined in proposed § 490.505, the reference year would be calendar year 2021.

§ 490.509 Data requirements.

FHWA proposes to revise § 490.509 to add three new paragraphs regarding the GHG measure. Proposed § 490.509(f) would provide that FHWA plans to post on the FHWA Website the CO₂ emissions factors for each on-road fuel type. The emissions

factors are needed to calculate the GHG metric for the GHG measure in § 490.105(c)(5). FHWA would post this information in order to ensure that a consistent factor is used by all DOTs and MPOs for each fuel type. For these factors, FHWA is considering using information from EPA's MOVES⁴¹ model, Argonne National Laboratory's GREET⁴² model, CO₂ coefficients published by the Energy Information Administration, or other U.S. Government published data sources. FHWA requests comments on any U.S. Government emissions factors or calculation methods that may be useful.

Proposed § 490.509(g) would establish a data source for total fuel use by fuel type, which is needed for the calculation of the GHG measure, as described in § 490.513. The proposed data source is FHWA's FUELS/FASH system, which reports gallons of fuel used by State across multiple fuel types.

Proposed § 490.509(h) would require that VMT data used come from HPMS. This data would include estimates of both NHS VMT and total VMT developed from HPMS data available as of August 15 and would represent the previous calendar year.

§ 490.511 Calculation of National Highway System performance metrics.

FHWA proposes to include in § 490.511 new provisions for the calculation of a "GHG metric," the annual total tailpipe CO₂ emissions on the NHS, for the GHG measure. Under the existing performance management regulations, the term "metric" means a quantifiable indicator of performance or condition. 23 CFR 490.101. Proposed § 490.511(a)(2) would add a reference to the "GHG metric" to the existing regulations

⁴¹ Motor Vehicle Emissions Simulator

⁴² Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies

that describe the performance metrics that are required for the NHS performance measures specified in § 490.507. The proposed rule uses “NHS” to mean the mainline highways of the NHS, consistent with the applicability of the measure described in proposed § 490.503(a)(2). The definition of the term “mainline highways” specifically excludes ramps, shoulders, turn lanes, crossovers, rest areas, and other pavement surfaces that are not part of the roadway normally traveled by through traffic. 23 CFR 490.101.

In addition, FHWA proposes to add a new § 490.511(c) to require that tailpipe CO₂ emissions on the NHS for a given calendar year be estimated millions of metric tons (mmt) and rounded to the nearest hundredth mmt using a formula set forth in the proposed regulation. Specifically, the calculation is based on State reported fuel use by fuel type (such as gasoline and diesel), as reported to FHWA. These fuel use values are then multiplied by a corresponding CO₂ emissions factor (amount of CO₂ per gallon of each fuel type). The CO₂ emissions factor would be posted on FHWA’s Website no later than August 15 each year. These values are then summed and multiplied by the NHS VMT relative to the total VMT. A key assumption in using the proportion of NHS VMT to total VMT, is that there is a similar rate of GHG emissions on NHS and non-NHS facilities per VMT.

FHWA also proposes to add a new § 490.511(d) to address the expectations for MPOs in implementing the GHG measure. Proposed § 490.511(d) would state that MPOs have additional flexibility, compared to State DOTs, in how they calculate the GHG metric, since MPOs may employ various models and data collection methods that can be used to estimate CO₂ emissions. Proposed § 490.511(d) would allow an MPO to

use a range of approaches, including: the MPO share of the State's VMT as a proxy for the MPO share of CO₂ emissions; VMT estimates along with emissions factors from EPA MOVES model EMFAC;⁴³ or FHWA's Energy and Emissions Reduction Policy Analysis Tool (EERPAT) model. Alternatively, proposed § 490.511(d) would also allow an MPO to use another method if the MPO can demonstrate to its State DOT that it has a technically valid and useful approach to estimating CO₂ emissions.

Finally, FHWA proposes § 490.511(f) to require the reporting of two related CO₂ emissions calculations in State DOT's Biennial Performance Reports for the reference year and the 2 years preceding each reporting year. The first of these is a calculation of total tailpipe CO₂ emissions from on-road sources travelling on all roadways, which represents a component of the calculation of the metric, as described in § 490.511(a)(2). The second of these is a calculation of the metric itself. FHWA is proposing to require the reporting of total tailpipe CO₂ emissions on all roadways to ensure a consistent basis for monitoring tailpipe CO₂ emissions trends, since year-over-year variation in NHS mileage would impact the calculation of the metric. Reporting on this data is not believed to add burden since State DOTs would need to perform this calculation as part of calculating the metric.

§ 490.513 Calculation of National Highway System performance measures.

The existing performance management regulations define the term "measure" as an expression based on a metric that is used to establish targets and to assess progress

⁴³ The California Air Resources Board (CARB) maintains the Emission Factors (EMFAC) model, which is approved by EPA for developing on-road motor vehicle emission inventories and analyses in California.

toward achieving them. 23 CFR 490.101. In proposed § 490.513, FHWA would add a new § 490.513(d) to require computation of the GHG measure, specified in proposed § 490.507(b), to the nearest tenth of a percent according to a formula that would be set forth in the regulation. The computation would involve: (1) determining the difference between tailpipe CO₂ emissions on the NHS in the calendar year and tailpipe CO₂ emissions on the NHS in the reference year (calendar year 2021); (2) dividing that amount by tailpipe CO₂ emissions on the NHS in the reference year (calendar year 2021); and (3) multiplying the total by 100 so that the result is expressed as a percent change from the reference year (calendar year 2021). As noted, the proposed rule uses “NHS” to mean the mainline highways of the NHS, as defined in § 490.101, consistent with the applicability of the measure described in proposed § 490.503(a)(2).

FHWA has provided an example of the metric and measure computation in the rulemaking docket (Docket No. FHWA-2001-0004) and invites comments on the proposed method.

V. Additional Requests for Comments

A. Establishing Targets That Lead to Improved Environmental Performance

The proposed measure is intended to support the national policy established under section 1 of E.O. 13990 and E.O. 14008 and at the Leaders Summit on Climate. This policy calls for GHG emissions reductions of 50 to 52 percent below 2005 levels by 2030 and for the U.S. to achieve net-zero emissions by 2050. FHWA encourages comments that address whether the proposed measure would support those national policies, the

ways in which the proposed measure would do so or why it would not, and whether the final rule should contain any other provisions to better support those national policies.

FHWA is proposing to require declining targets for reducing tailpipe CO₂ emissions compared to the reference year. State DOTs would establish 2- and 4-year statewide targets, and MPOs would establish 4-year targets for the metropolitan planning area. In addition, MPOs would establish 4-year targets for select urbanized areas jointly with other applicable MPOs.

However, it may be appropriate to implement improving targets that are structured to support longer-term GHG reduction goals. FHWA encourages comments on how to structure improving targets for the GHG measure, as well as the associated reporting and significant progress requirements in 23 CFR Part 490, Subpart A. F

For example, FHWA seeks comment on potentially introducing a new requirement for State DOTs and MPOs to establish 8- and 20-year targets at the beginning of each 4-year performance period. These targets could inform decision-making to support of longer-term GHG reduction goals. The 8- and 20-year improving targets established as part of the first 4-year performance period would indicate a reduction as compared to the reference year, while subsequent 8- and 20-year targets would indicate a reduction as compared to previous 8- and 20-year targets. These targets could inform decision-making to support of longer-term GHG reduction goals. FHWA also seeks comments on how these targets could align with and inform existing transportation planning and programming processes.

Additionally, FHWA invites comments on the following:

- Besides requiring targets that reduce GHGs over time, are there any specific ways the proposed GHG measure could be implemented within the framework of TPM to better support emissions reductions to achieve national policies for reductions in total U.S. GHG emissions?
 - What changes to the proposed measure or its implementation in TPM could better the impact of transportation decisions on CO₂ emissions, and enable States to achieve tailpipe CO₂ emissions reductions necessary to achieve national targets?
- Finally, this NPRM proposes that when there are two or more MPOs with metropolitan planning area boundaries that overlap any portion of an urbanized area, and the urbanized area contains NHS mileage, the MPOs would be required to establish a joint urbanized area target in addition to metropolitan planning area targets. FHWA invites comments on the following questions:
- In instances that MPOs are establishing a joint urbanized area target, should FHWA require that the individual MPO-wide targets be the same as the jointly established urbanized area target?
 - Should MPOs that establish a joint urbanized area target be exempt from establishing individual MPO-level targets, and instead only be required to adopt and support the joint urbanized area target?
 - In cases where there are multiple MPOs with boundaries that overlap any portion of an urbanized area, and that urbanized area contains NHS mileage, should each of those MPOs establish their own targets, with no requirement for a joint urbanized area target?

- Are there other approaches to target setting in urbanized areas served by multiple MPOs that would better help MPOs reach net-zero emissions?

B. Summary of and Request for Comments on the Regulatory Impact

Analysis

The RIA for the proposed rule estimates the costs associated with establishing the GHG measure, which are derived from the costs of implementing the GHG measure for certain components of the rule. The sections of Part 490 amended by this proposed rule for which FHWA assumes associated costs in the RIA are target establishment by State DOTs and MPOs (23 CFR 490.105), reporting by State DOTs and MPOs (23 CFR 490.107), FHWA's assessment of significant progress toward State DOT targets and action plans by State DOTs that do not make significant progress (23 CFR 490.109), calculating the GHG metric (23 CFR 490.511), and calculating the GHG measure (23 CFR 490.513). To estimate the costs of this proposed rule, FHWA assessed the level of effort that would be needed to comply with each applicable section in Part 490 with respect to the proposed GHG measure, including labor hours by labor category. The level of effort by labor category was monetized with loaded wage rates to estimate total costs. The RIA covers a 10-year study period (2022–2031). Total costs over this period are estimated to be \$11.0 million, discounted at 7 percent, and \$12.9 million discounted at 3 percent.

Benefits of the rule are not quantified since FHWA is unable to reasonably forecast the number and extent of actions of State DOTs and MPOs in response to this rule. However, it is anticipated that the measure will influence transportation decisions

and result in significant reductions in GHG emissions. OMB Circular A-4 (Regulatory Analysis) provides guidance on implementing a break-even analysis when benefits of a rule cannot be fully quantified. The RIA estimates the break-even threshold for tons of transportation-related CO₂ emissions reduced, since it is reasonable to assume the GHG performance measure will influence tons of transportation-related CO₂ emissions. At a discount rate of 7 percent, the number of tons of CO₂ emissions reduction that would be required for the proposed rule to be cost-beneficial range from 75,669 to 835,044 over the total 10-year analysis period, representing 0.0004 percent to 0.005 percent of total transportation CO₂ emissions. Similarly, at a discount rate of 3 percent, the total number of tons of CO₂ emissions reduction that would be required for the proposed rule to be cost-beneficial range from 88,772 to 983,896 over the total 10-year analysis period, representing 0.0005 percent to 0.006 percent of total transportation CO₂ emissions. These estimates were developed using interim estimated values of the social cost of CO₂ published by the Interagency Working Group on Social Cost of Greenhouse Gases, as FHWA has reviewed those estimates and determined that they are appropriate for use in this kind of break-even analysis. The break-even estimates are not intended justify the proposed rule, but are provided as context to illustrate the magnitude of CO₂ reductions required to equal estimated compliance costs. The RIA also notes a range of potential benefits, including more informed decision-making, more comprehensive performance and practices, greater accountability and progress on national transportation goals.⁴⁴

⁴⁴ The potential benefits that may flow from the proposed GHG measure stem from its potential to support more informed choices about transportation investments and other policies to help achieve net zero

FHWA is seeking comment on assumptions that were developed as part of the RIA, as well as information on **other** benefits or costs that would result from implementation of the rule.

- The RIA includes assumptions regarding the applicability, level of effort and frequency of activities under proposed Sections 490.105, 490.107, 490.109, 490.511, and 490.513. Are these assumptions reasonable? Are there circumstances that may result in greater or lesser burden relative to the RIA assumptions?
- Would the staff time spent implementing this measure reduce the burden of carrying out other aspects of State DOT and MPO missions, such as forecasting fuel tax revenues? If so, please describe and provide any information on programs that would benefit from this measure and estimate any costs that would be reduced by implementing this measure.
- Would the proposed rule result in economies of scale or other efficiencies, such as the development of consulting services or specialized tools that would lower the cost of implementation? If so, please describe such efficiencies and provide any information on potential cost savings.
- Would the proposed rule result in the qualitative benefits identified in the RIA, including more informed decision-making, greater accountability, and progress on National Transportation Goals identified in MAP-21? Would the proposed rule

emissions economy-wide by 2050, including projects eligible under the Carbon Reduction Program and the National Electric Vehicle Infrastructure Program, both established under the Bipartisan Infrastructure Law.

result in other benefits or costs? Would the proposed measure change transportation investment decisions and if so, in what ways? For State DOTs and MPOs that have already implemented their own GHG measure(s), FHWA welcomes information on the impact and effectiveness of their GHG emissions measure(s).

VI. Rulemaking Analyses and Notices

A. Executive Order 12866 (Regulatory Planning and Review), Executive Order 13563 (Improving Regulation and Regulatory Review), and DOT Regulatory Policies and Procedures

The Office of Management and Budget (OMB) has determined that the proposed rule would be a significant regulatory action within the meaning of E.O. 12866 because it may raise novel legal or policy issues arising out of the President's priorities. However, it is anticipated that the proposed rule would not be economically significant for purposes of E.O. 12866. The proposed rule would not have an annual effect on the economy of \$100 million or more. The proposed rule would not adversely affect in a material way the economy, any sector of the economy, productivity, competition, or jobs. In addition, the proposed changes would not interfere with any action taken or planned by another agency and would not materially alter the budgetary impact of any entitlements, grants, user fees, or loan programs. As described above, FHWA estimates that total costs associated with this proposed rule would be \$11.0 million, discounted at 7 percent, and \$12.9 million discounted at 3 percent. While FHWA is unable to quantify the benefits of the proposed rulemaking, FHWA describes the expected benefits qualitatively in the

preamble and the regulatory impact analysis. These benefits include potentially significant reductions in GHG emissions resulting from greater consideration of GHG emissions in transportation planning, public awareness of GHG emissions trends, and better information on the impact of transportation decisions on GHG emissions. FHWA also performed a break-even analysis to analyze the relationship between the costs and potential benefits of the proposed rule. The full regulatory impact analysis is available in the docket.

B. Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (Pub. L. 96-354, 5 U.S.C. 601-612), FHWA has evaluated the effects of this proposed rule on small entities and has determined that it is not anticipated to have a significant economic impact on a substantial number of small entities. The proposed rule would affect two types of entities: State governments and MPOs. State governments are not included in the definition of small entity set forth in 5 U.S.C. 601. The MPOs are considered governmental jurisdictions, and to qualify as a small entity they would need to serve fewer than 50,000 people. The MPOs are designated to serve urbanized areas with populations of 50,000 or more. *See* 23 U.S.C. 134(d)(1). Therefore, FHWA certifies that the proposed rule will not have a significant economic impact on a substantial number of small entities.

C. Unfunded Mandates Reform Act of 1995

This proposed rule would not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4, 109 Stat. 48). This proposed

rule would not result in the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector, of \$168 million or more in any one year (2 U.S.C. 1532). In addition, the definition of “Federal Mandate” in the Unfunded Mandates Reform Act excludes financial assistance of the type in which State, local, or Tribal governments have authority to adjust their participation in the program in accordance with changes made in the program by the Federal Government. The Federal-aid highway program permits this type of flexibility.

D. Executive Order 13132 (Federalism Assessment)

This proposed rule has been analyzed in accordance with the principles and criteria contained in E.O. 13132, and FHWA has determined that this proposed rule would not have sufficient federalism implications to warrant the preparation of a federalism assessment. FHWA also has determined that this proposed rule would not preempt any State law or State regulation or affect the States’ ability to discharge traditional State governmental functions.

E. Paperwork Reduction Act of 1995

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct, sponsor, or require through regulations. FHWA has determined that this proposal contains collection of information requirements for the purposes of the PRA. This proposed rule introduces a GHG performance measure that would be implemented as part of the overarching TPM regulations in 23 CFR Part 490, which includes State DOT reporting on performance.

The collection of biennial report information in support of 23 CFR 490.107 is covered by OMB Control No. 2125-0656.

FHWA has analyzed this proposed rule under the PRA and has determined the following:

Respondents: 52 State DOTs.

Frequency: Biennial reporting.

Estimated Average Burden per Response: Approximately 88 hours to complete and submit the biennial report, or 44 hours annually.

Estimated Total Annual Burden Hours: Approximately 2,288 hours annually.

In addition, MPO coordination and reporting activities are covered by OMB Control No. 2132-0529, Metropolitan and Statewide and Nonmetropolitan Transportation Planning. FHWA invites interested persons to submit comments on any aspect of the information collection in this NPRM. FHWA anticipates updating the burden estimates for the applicable OMB control numbers to reflect the final rule.

F. National Environmental Policy Act

FHWA has analyzed this proposed rule pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.) and has determined that it is categorically excluded under 23 CFR 771.117(c)(20), which applies to the promulgation of rules, regulations, and directives. Categorically excluded actions meet the criteria for categorical exclusions under the Council on Environmental Quality regulations and under 23 CFR 771.117(a) and normally do not require any further NEPA approvals by FHWA. This proposed rule would establish in FHWA regulations a performance measure for on-

road CO₂ emissions on the NHS for use by States and MPOs in measuring transportation performance. FHWA does not anticipate any adverse environmental impacts from this proposed rule, the purpose of which is to inform decisionmaking about the transportation sector's contribution to GHG emissions, and thereby contribute to environmental sustainability; no unusual circumstances are present under 23 CFR 771.117(b).

G. Executive Order 13175 (Tribal Consultation)

FHWA has analyzed this proposed rule in accordance with the principles and criteria contained in E.O. 13175, "Consultation and Coordination with Indian Tribal Governments." The proposed rule would implement statutory requirements under 23 U.S.C. 150(c)(3)(A)(ii)(IV)-(V) to establish measures for States to assess the performance of the Interstate and non-Interstate NHS, which FHWA interprets to include environmental performance. This measure applies to States that receive Title 23 Federal-aid highway funds, and it would not have substantial direct effects on one or more Indian Tribes, would not impose substantial direct compliance costs on Indian Tribal governments, and would not preempt Tribal laws. Accordingly, the funding and consultation requirements of E.O. 13175 do not apply and a Tribal summary impact statement is not required.

I. Executive Order 12898 (Environmental Justice)

E.O. 12898 requires that each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its

programs, policies, and activities on minorities and low-income populations. FHWA has determined that this proposed rule does not raise any environmental justice issues.

J. Regulation Identifier Number

A RIN is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this action with the Unified Agenda.

List of Subjects in 23 CFR Part 490

Bridges, Highway safety, Highways and roads, Incorporation by reference,
Reporting and recordkeeping requirements

Issued under authority delegated in 49 CFR 1.81 and 1.85 on:

7/1/2022

Stephanie Pollack
Deputy Administrator
Federal Highway Administration

In consideration of the foregoing, FHWA proposes to amend Title 23, Code of Federal Regulations, part 490, as set forth below:

PART 490—NATIONAL PERFORMANCE MANAGEMENT MEASURES

1. The authority citation for part 490 continues to read as follows:

Authority: 23 U.S.C. 134, 135, 148(i), and 150; 49 CFR 1.85.

2. Amend § 490.101 by adding the following definitions in alphabetical order:

§ 490.101 Definitions.

Fuels and Financial Analysis System-Highways (FUELS/FASH) as used in this part means the FHWA's system of record for motor fuel, highway program funding, licensed drivers, and registered vehicles data.

* * *

Net-zero as used in this part means that human activities produce no more greenhouse gases than they remove from the atmosphere.

3. Amend § 490.105 by adding paragraph (c)(5), revising the introductory text of paragraph (d), adding paragraphs (d)(1)(v) and (d)(4), revising paragraph (e)(1), adding

paragraph (e)(10), revising paragraphs (f)(1)(i) and (f)(3), and adding paragraph (f)(10) to read as follows:

§ 490.105 Establishment of performance targets.

* * * * *

(c) * * *

(5) 490.507(b) for the greenhouse gas (GHG) performance for the NHS;

* * *

(d) Target scope. Targets established by State DOTs and MPOs shall, regardless of ownership, represent the transportation network or geographic area, including bridges that cross State borders, that are applicable to the measures as specified in paragraphs (d)(1), (2), and (4) of this section.

(1) * * *

(v) 490.503(a)(2) for the GHG measure specified in § 490.507(b);

* * *

(4) MPOs shall establish targets for the GHG measure specified in § 490.507(b) that represent performance of the transportation network specified in § 490.503(a)(2), for urbanized areas meeting the criteria specified in paragraph (f)(10) of this section.

(e) * * *

(1) *Schedule.* State DOTs shall establish targets not later than the due dates provided in paragraphs (e)(1)(i) and (e)(1)(ii) of this section, and for each performance period thereafter, in a manner that allows for the time needed to meet the requirements

specified in this section and so that the final targets are submitted to FHWA by the due date provided in § 490.107(b).

(i) State DOTs shall establish initial targets not later than May 20, 2018, except as provided in paragraph (e)(1)(ii) of this section.

(ii) State DOTs shall establish initial targets for the GHG measure identified in § 490.507(b) not later than October 1, 2022.

* * *

(10) *Targets for the GHG measure.* Targets established for the GHG measure in paragraph (c)(5) of this section shall be declining targets for reducing tailpipe CO₂ emissions on the NHS, that demonstrate reductions toward net-zero targets.

(f) * * *

(1) * * *

(i) The MPOs shall establish 4-year targets, described in paragraph (e)(4)(iv) of this section, for all applicable measures, described in paragraphs (c) and (d) of this section. For the GHG measure described in (c)(5) of this section, the targets established shall be declining targets for reducing tailpipe CO₂ emissions on the NHS.

* * *

(3) Target establishment options. For each performance measure identified in paragraph (c) of this section, except the CMAQ Traffic Congestion measures in paragraph (f)(5) of this section, MPOs meeting the criteria under paragraph (f)(6)(iii) of this section for Total Emissions Reduction measure, the MPOs shall establish targets for the metropolitan planning area by either:

(i) Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target for that performance measure; or

(ii) Committing to a quantifiable target for that performance measure for their metropolitan planning area.

* * *

(10) *Joint Targets for the GHG Measure.* Where an urbanized area contains mainline highways on the NHS, and any portion of that urbanized area is overlapped by the metropolitan planning area boundaries of two or more MPOs, those MPOs shall collectively establish a single joint 4-year target for that urbanized area, described in paragraph (e)(4)(iv) of this section. This joint target is in addition to the targets for the metropolitan planning area required in paragraph (f)(1)(i) of this section.

- (i) NHS designations and urbanized areas shall be determined from the data, contained in HPMS, 1 year before the State DOT Baseline Performance Period Report is due to FHWA.
- (ii) Only one target shall be established for the entire urbanized area regardless of roadway ownership. In accordance with paragraph (f)(9) of this section, each MPO shall report the joint target for the urbanized area.
- (iii) The target established for each urbanized area shall represent a quantifiable target for that urbanized area.

4. Amend § 490.107 by revising the second sentence of paragraph (b)(1)(i), adding paragraph (b)(1)(ii)(H), revising the second sentence of paragraph (b)(2)(i),

adding paragraph (b)(2)(ii)(J), revising the second sentence of paragraph (b)(3)(i), and adding paragraph (b)(3)(ii)(I), and adding a second sentence in (c)(2).

§ 490.107 Reporting on performance targets.

* * * * *

(b) * * *

(1) *Baseline Performance Period Report*—(i) * * * State DOTs shall submit their first Baseline Performance Period Report to FHWA by October 1, 2018, and subsequent Baseline Performance Period Reports to FHWA by October 1st every 4 years thereafter, except for the GHG measure specified in § 490.105(c)(5), State DOTs shall submit their first Baseline Performance Period Report to FHWA by October 1, 2022, and subsequent Baseline Performance Period Reports to FHWA by October 1st every 4 years thereafter.

(ii) * * *

(H) GHG metric for the GHG measure. Tailpipe CO₂ emissions on the NHS, as described in § 490.511(f), for the reference year and the 2 calendar years preceding the Baseline Performance Period Report, and tailpipe CO₂ emissions on all public roads for the reference year and the 2 calendar years preceding the Baseline Performance Period Report.

* * * * *

(2) *Mid Performance Period Progress Report*—(i) * * * State DOTs shall submit their first Mid Performance Period Progress Report to FHWA by October 1, 2020, and subsequent Mid Performance Period Progress Reports to FHWA by October 1st

every 4 years thereafter, except for the GHG measure specified in § 490.105(c)(5), State DOTs shall submit their first Mid Performance Period Progress Report to FHWA by October 1, 2024, and subsequent Mid Performance Period Progress Reports to FHWA by October 1st every 4 years thereafter.

(ii) * * *

(J) GHG metric for the GHG measure. Tailpipe CO₂ emissions for the NHS and all public roads, as described in § 490.511(f), for the 2 calendar years preceding the Mid Performance Period Progress Report for the GHG measure in § 490.105(c)(5).

* * * * *

(b)(3) *Full Performance Period Progress Report*—(i) * * * State DOTs shall submit their first Full Performance Period Progress Report to FHWA by October 1, 2022, and subsequent Full Performance Period Progress Reports to FHWA by October 1st every 4 years thereafter, except for the GHG measure specified in § 490.105(c)(5), State DOTs shall submit their first Full Performance Period Progress Report to FHWA by October 1, 2026, and subsequent Full Performance Period Progress Reports to FHWA by October 1st every 4 years thereafter.

(ii) * * *

(I) GHG metric for the GHG measure. Tailpipe CO₂ emissions for the NHS and all public roads, as described in § 490.511(f), for the 2 calendar years preceding the Full Performance Period Progress Report for the GHG measure in § 490.105(c)(5).

(c) * * *

* * * * *

(2) * * * For the GHG measure in § 490.105(c)(5), the MPO shall report a description of its metric calculation method, as described in § 490.511(d), and the calculation of tailpipe CO₂ emissions for the NHS and all public roads.

* * * * *

5. Amend § 490.109 by adding paragraph (d)(1)(v), revising paragraph (d)(1)(vi), and adding paragraphs (d)(1)(vii), (e)(4)(vi), and (f)(1)(v), to read as follows:

§ 490.109 Assessing significant progress toward achieving the performance targets for the National Highway Performance Program and the National Highway Freight Program.

* * * * *

(d) *Source of data/information.* (1) * * *

(v) Data contained within FUELS/FASH on August 15th of the year in which the significant progress determination is made that represents performance from the prior year and for the reference year for targets established for the GHG measure in § 490.105(c)(5);

(vi) Baseline condition/performance data contained in FUELS/FASH, HPMS, and NBI of the year in which the Baseline Period Performance Report is due to FHWA that represents baseline conditions/performances for the performance period for the measures in §§ 490.105(c)(1) through (5).

(vii) Data contained within the HPMS on August 15th of the year in which the significant progress determination is made that represents performance from the prior

year and for the reference year for targets established for the GHG measure specified in § 490.105(c)(5).

* * * * *

(e) *Significant progress determination for individual NHPP and NHFP targets.*

* * * * *

(4) * * *

(vi) A State DOT reported data are not cleared in the FUELS/FASH by the data extraction date specified in paragraph (d)(1) of this section for the GHG measure in § 490.105(c)(5).

* * * * *

(f) *Performance achievement.* (1) * * *

(v) If significant progress is not made for the target established for the GHG measure in § 490. 105(c)(5), then the State DOT shall document the actions it will take to achieve the target for the GHG measure.

* * * * *

Subpart E - National Performance Management Measures to Assess Performance of the National Highway System

6. Amend § 490.503 by adding paragraph (a)(2) as follows:

§ 490.503 Applicability.

(a) * * *

(2) The Greenhouse Gas (GHG) measure in § 490.507(b) is applicable to all mainline highways on the Interstate and non-Interstate NHS.

* * * * *

7. Amend § 490.505 by adding the following definitions in alphabetical order:

§ 490.505 Definitions.

Greenhouse gas (GHG) is any gas that absorbs infrared radiation (traps heat) in the atmosphere. Ninety-seven percent of on-road GHG emissions are carbon dioxide (CO₂) from burning fossil fuel. Other transportation GHGs are methane (CH₄), nitrous oxide (N₂O), and hydrofluorocarbons (HFCs).

* * * * *

Reference year is calendar year 2021 for the purpose of the GHG measure.

* * * * *

8. Amend § 490.507 by revising the introductory paragraph and adding paragraph (b) to read as follows:

§ 490.507 National performance management measures for system performance

There are three performance measures to assess the performance of the Interstate System and the performance of the non-Interstate NHS for the purpose of carrying out the National Highway Performance Program (referred to collectively as the NHS Performance measures).

* * * * *

(b) One measure is used to assess GHG emissions, which is the percent change in tailpipe CO₂ emissions on the NHS compared to the reference year (referred to as the GHG measure).

9. Amend § 490.509 by adding paragraphs (f) through (h) to read as follows:

§ 490.509 Data requirements.

* * * * *

(f) The FHWA will post on the FHWA Website, no later than August 15th each year, the CO₂ factor for each on-road fuel type that will be used to calculate the GHG metric for the GHG measure in § 490.105(c)(5).

(g) Fuel sales information needed to calculate the fuel consumed for the GHG measure in § 490.507(b) shall:

(1) Represent the total number of gallons of fuel consumed by fuel type;

and

(2) Be based on fuels sales data for the previous calendar year, and reported to FUELS/FASH.

(h) Annual total vehicle-miles traveled (VMT) needed to calculate the GHG measure in § 490.507(b) shall come from HPMS data as of August 15, for the prior calendar year.

10. Amend § 490.511 by adding paragraphs (a)(2), (c), (d), and (f) to read as follows:

§ 490.511 Calculation of National Highway System performance metrics.

(a) * * *

(2) Annual Total Tailpipe CO₂ Emissions on the NHS for the GHG measure in § 490.507(b) (referred to as the GHG metric).

* * * * *

(c) Tailpipe CO₂ emissions on the NHS for a given year shall be computed in million metric tons (mmt) and rounded to the nearest hundredth as follows:

$$(\text{Tailpipe CO}_2 \text{ Emissions on NHS})_{\text{CY}} = \left(\sum_{t=1}^T (\text{Fuel Consumed})_t \times (\text{CO}_2 \text{ Factor})_t \right) \times \left(\frac{\text{NHS VMT}}{\text{Total VMT}} \right)$$

Where:

$(\text{Tailpipe CO}_2 \text{ Emissions on NHS})_{\text{CY}}$ = Total tailpipe CO₂ emissions on the NHS in a calendar year (expressed in mmt, and rounded to the nearest hundredth);

T= the total number of on-road fuel types;

t = an on-road fuel type;

$(\text{Fuel Consumed})_t$ = the quantity of total annual fuel consumed for on-road fuel type "t" (to the nearest thousand gallons);

$(\text{CO}_2 \text{ Factor})_t$ = is the amount of CO₂ released per unit of fuel consumed for on-road fuel type "t";

NHS VMT = annual total vehicle-miles traveled on NHS (to the nearest one million vehicle-miles); and

Total VMT= annual total vehicle-miles traveled on all public roads (to the nearest one million vehicle-miles).

(d) For the GHG measure specified in § 490.507(b), MPOs are granted additional flexibility in how they calculate the GHG metric, described in § 490.511(a)(2). MPOs may use the MPO share of the State's VMT as a proxy for the MPO share of CO₂

emissions in the State, VMT estimates along with MOVES⁴⁵ emissions factors, FHWA's Energy and Emissions Reduction Policy Analysis Tool (EERPAT) model, or other method the MPO can demonstrate has valid and useful results for CO₂ measurement. The metric calculation method shall be mutually agreed upon by both the State DOT and the MPO.

* * * * *

(f) Tailpipe CO₂ emissions generated by on-road sources travelling on the NHS (the GHG metric), and generated by on-road sources travelling on all roadways (the step in the calculation prior to computing the GHG metric) shall be calculated as specified in paragraph (c) of this section. The calculations shall be reported in the State Biennial Performance Reports, as required in § 490.107, and shall address the following time periods.

(1) The reference year, as required in § 490.107(b)(1)(ii)(H); and

(2) The 2 years preceding the reporting years, as required in § 490.107(b)(1)(ii)(H), (b)(2)(ii)(J) and (b)(3)(ii)(I).

10. Amend § 490.513 by adding paragraph (d) to read as follows:

§ 490.513 Calculation of National Highway System performance measures.

* * * * *

⁴⁵ MOVES (Motor Vehicle Emission Simulator) is EPA's emission modeling system that estimates emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics. See <https://www.epa.gov/moves>. The EMFAC model is used in California for emissions analysis.

(d) The GHG measure specified in § 490.507(b) shall be computed to the nearest tenth of a percent as follows:

$$\frac{(\text{Tailpipe CO}_2\text{Emissions on NHS})_{\text{CY}} - (\text{Tailpipe CO}_2\text{Emissions on NHS})_{\text{reference year}}}{(\text{Tailpipe CO}_2\text{Emissions on NHS})_{\text{reference year}}} \times 100$$

Where:

(Tailpipe CO₂ Emissions on NHS)_{CY} = total tailpipe CO₂ emissions on the NHS in a calendar year (expressed in million metric tons (mmt), and rounded to the nearest hundredth); and

(Tailpipe CO₂ Emissions on NHS)_{reference year} = total tailpipe CO₂ emissions on the NHS in calendar year 2021 (expressed in million metric tons (mmt), and rounded to the nearest hundredth).