

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

## Summary of Final Rulemaking

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

- The Federal Highway Administration (FHWA) and the U.S. Department of Transportation (DOT) have issued a final rule amending their regulations on national performance management measures and establishing a method for measuring and reporting greenhouse gas (GHG) emissions associated with transportation.
- The rule requires State departments of transportation (State DOT) and metropolitan planning organizations (MPOs) to establish declining carbon dioxide (CO<sub>2</sub>) targets for the GHG measure and report on progress toward achieving those targets.
- The rule does not mandate how low targets must be, but it allows State DOTs and MPOs to set targets that are appropriate for their communities and work for their respective climate change and other policy priorities, if the targets aim to reduce emissions over time.

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- State DOTs and MPOs serving urbanized areas (UZA) with multiple MPOs are required to establish additional joint UZA targets.
- The FHWA will assess whether State DOTs have made significant progress toward achieving their targets.
- The GHG measure established in this rule is the same as the measure proposed in the Notice of Proposed Rulemaking (NPRM), which is the percent change in on-road tailpipe CO<sub>2</sub> emissions on the NHS relative to the reference year.
- The final rule applies 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).

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- The Sixth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) confirms that human activities are increasing greenhouse gas (GHG) concentrations, which have warmed the atmosphere, ocean, and land at an unprecedented rate in at least the last 2000 years.
- This has threatened the reliability, safety, and efficiency of the transportation system and the people who rely on it to move themselves and transport goods. Transportation contributes significantly to the causes of climate change, representing the largest source of U.S. CO<sub>2</sub> emissions.

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- The GHG measure aligns with Executive Orders (E.O.) and supports the U.S. target of reducing GHG emissions 50-52% below 2005 levels in 2030, on course to reaching net-zero emissions economywide no later than 2021.
- The first step toward reducing GHG emissions involves inventorying and monitoring those emissions. By providing consistent and timely information about on-road mobile source emissions on the National Highway System (NHS), the GHG measure has the potential to increase public awareness of GHG emissions trends, improve the transparency of transportation decisions, enhance decision-making at all levels of government, and support better informed planning choices to reduce GHG emissions or inform tradeoffs among competing policy choices.
- The FHWA now concludes that it has the legal authority to establish the GHG measure under 23 U.S.C. 150, addressing the national goal of environmental sustainability and ensuring the performance of the Interstate System and non-Interstate National Highway System.
- By February 1, 2024, at the latest, State DOTs must set baseline goals for the GHG metric mentioned in §490.507(b).
- The performance period for the GHG metric in §490.105(c)(5) will start on January 1, 2022, and it will last for four years. The beginning of subsequent performance periods will be as specified in this final rule section's paragraph (4)(i)(A).

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- The 2012 Moving Ahead for Progress in the 21st Century Act (MAP-21) and the 2015 Fixing America's Surface Transportation (FAST Act) transformed the Federal-aid highway program by establishing performance management requirements.
- The Federal Highway Administration (FHWA) established an organizational unit with dedicated staff to coordinate with program staff from each performance area to effectively implement Title 23 performance provisions. The FHWA has technical and policy experts on staff to assist State DOTs and MPOs with implementing performance management and oversee program requirements.
- The TPM requirements provide increased accountability and transparency, facilitating 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. Performance management allows FHWA to more effectively evaluate and report on the Nation's surface transportation conditions and performance.

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- Previously, 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 TPM requirements established in MAP-21 changed this paradigm by requiring State DOTs and MPOs to measure condition or performance, establish targets, assess progress toward targets, and report on condition or performance in a nationally consistent manner for the first time.
- The Federal Highway Administration (FHWA) has published a National Proposed Rulemaking (NPRM) to establish a GHG measure. The proposed rule requires State DOTs and Metropolitan Planning Organizations (MPOs) to set declining targets for reducing CO<sub>2</sub> emissions generated by on-road mobile sources within their state geographic boundaries and metropolitan planning area boundaries.
- These targets align with the Administration's target of net-zero emissions, economy-wide, by 2050.

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- The rule also requires MPOs serving select urbanized areas (UZA) to establish additional joint targets. The NPRM specifies that when the metropolitan planning area boundaries of two or more MPOs overlap any portion of the same UZA, and the UZA contains NHS mileage, those MPOs would establish joint 4-year targets for that UZA.
- The FHWA also proposes requiring State DOTs and MPOs to report on their progress in meeting the targets. The rule will 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 FHWA has determined that measuring environmental performance of the Interstate and non-Interstate National Highway System (NHS) is vital to meeting the Agency's obligations under 23 U.S.C. 150. The agency interprets "performance" of the NHS to include the system's environmental performance, consistent with the program's goal to enhance the transportation system while protecting and enhancing the natural environment.



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- Congress directed the Federal Highway Administration (FHWA) to establish measures for States to assess the performance of the Interstate System and non-Interstate National Highway System (NHS).
- The statute identifies seven national goals to inform performance management, including environmental sustainability. FHWA has not clarified this authority even after finalizing three national performance management measure rulemakings.
- The agency believes that the meaning of performance of the Interstate System and the non-Interstate NHS under 23 U.S.C. 150(c)(3)(A)(ii)(IV)-(V) should include environmental performance due to the explicit statutory goal of environmental sustainability and the significant risks climate change-driven extreme weather poses to the condition and performance of NHS.

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- The GHG performance measure is consistent with other parts of Title 23, U.S.C., notably 23 U.S.C. 119. Section 119(d)(1) establishes eligibility criteria for using funds apportioned to a State for carrying out the National Highway Performance Program (NHPP) but does not set forth all relevant considerations for carrying out the program.
- Measuring environmental performance through the GHG performance measure will assist States in considering CO2 emissions from transportation in the performance management framework, including the impact of CO2 emissions on the medium- and long-term conditions of transportation assets arising from the risks of, and costs related to extreme weather, and help frame responses to the growing climate crisis.

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- The Federal Highway Administration (FHWA) has adopted a GHG emissions measure under Title 23, U.S.C., which includes assessing infrastructure performance under 23 U.S.C. 150(c)(3). This measure will help State DOTs and MPOs effectively use new transportation dollars to address GHG emissions, such as the Carbon Reduction Program (CRP) and national electric vehicle charging and hydrogen, propane, and natural gas fueling corridors
- The FHWA's GHG measure does not force investments in specific projects or strategies to reduce emissions or require the achievement of an absolute reduction target.
- However, the targets for the GHG measure should show a reduction in CO2 emissions, which is vital given the urgency of the climate crisis. Establishing declining targets will help State DOTs and MPOs plan toward reductions in GHG emissions and make Federal infrastructure investment decisions that reduce climate pollution, a principle set forth in E.O. 14008 (86 FR 7626).

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- The FHWA is not setting forth any requirements in this rulemaking to determine how State DOTs and MPOs should determine their declining targets. State DOTs and MPOs will set and determine targets based on appropriate data as informed by State DOT and MPO policies and priorities.
- This approach is consistent with the Agency's authority under 23 U.S.C. 150(c) to establish measures for States to use to assess the performance of the Interstate and non-Interstate NHS in the furtherance of the national goal to enhance the performance of the transportation system while protecting and enhancing the natural environment.
- The FHWA is not regulating CO2 emissions or mandating specific reductions. Instead, it is setting forth a program to measure performance on the Interstate and non-Interstate National Highway System (NHS), as directed by Congress. The FHWA has analyzed this rule under the National Environmental Policy Act of 1969 (NEPA) and determined that it is categorically excluded under 23 CFR 771.117(c)(20).

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- In conclusion, the FHWA's approach to supporting resilience through a GHG measure is not regulated or mandated, but rather aligned with the National Highway Program's goals.
- The Federal Highway Administration (FHWA) has retained the GHG performance measure proposed in the Notice of Proposed Rulemaking (NPRM), the percent change in tailpipe CO<sub>2</sub> emissions on the National Highway System (NHS) compared to the reference year.
- The FHWA acknowledges that the GHG footprint of on-road transportation extends beyond tailpipe CO<sub>2</sub> emissions and includes lifecycle processes supporting electricity generation, transportation fuel production, vehicle manufacture, and infrastructure construction.
- The FHWA believes that a GHG measure is preferable to a VMT-only measure, which would not account for benefits of highway operations, pavement strategies, electrification, or other improvements in vehicle efficiency. The FHWA also supports tracking progress toward GHG reduction goals and does not place an unequal burden on rural states or states with rapidly growing populations.
- The FHWA disagrees with the assertions about disadvantaging rural areas and asserts that a GHG measure is important for evaluating the impact of transportation agency decisions on GHG emissions.

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- The Federal Highway Administration (FHWA) has retained the proposed GHG measure, stating that it is useful for evaluating the impact of transportation investments and policies on GHG emissions.
- The FHWA also agrees that transportation investments have a meaningful impact on travel behavior, and that transportation agencies' policies and programs involving vehicle electrification, highway operations, and roadway maintenance practices provide further opportunities to reduce GHG emissions in absence of changes to travel behavior.
- The BIL provides over \$27 billion in Federal funding to help State DOTs and MPOs achieve their GHG reduction targets.
- The FHWA rejects the premise that transportation agencies have limited capacity to influence GHG emissions. It believes that a measure addressing total tailpipe CO2 emissions on the National Highway System (NHS) supports a whole-of-government approach to addressing climate change by implementing a consistent measure of CO2 emissions at the National, State, and metropolitan levels.

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- The FHWA is requiring State DOTs and MPOs to establish declining GHG emissions targets but does not require States to set specific declining target levels or achieve actual reductions in GHG emissions. States and MPOs can leverage their own programs to reduce GHG emissions by accounting for expected GHG impacts in the analysis and selection of transportation projects.
- Penalties for failing to achieve GHG targets are not proposed, but states must document the actions they will take to achieve that target no later than in their next biennial report. The FHWA does not set or approve the State DOT's or MPO's targets.
- The FHWA also addressed potential benefits of the proposed GHG measure, including empowering state and local leaders to align their transportation decisions with climate goals, enhancing transparency and accountability of investment decisions, supporting a consistent and coordinated approach to reducing GHG emissions across all levels of government, and supporting national GHG emission reduction goals in accordance with E.O. 13990 and E.O. 14008.

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

- The proposed rule for a GHG measure has been met with concerns from State DOTs and MPOs, who argue that it would duplicate established programs and be overly burdensome. However, the Federal Highway Administration (FHWA) disagrees, stating that the GHG measure is designed to provide an information source for setting targets, monitoring trends, and evaluating the impact of transportation investments on reducing on-road GHG emissions.
- The FHWA also acknowledges that the cost of complying with declining targets will not be burdensome for transportation agencies, as the BIL provides over \$27 billion in Federal funding to help State DOTs and MPOs achieve the declining GHG targets set under this rule. The rule does not impose compliance costs associated with achieving declining targets, as it does not require that emissions actually decrease or establish any penalties in the event that declining targets are not achieved.
- Several commenters have expressed support for the proposed performance measure's relationship to national GHG goals, while others have expressed concerns about its unattainable or unrealistic goals. FHWA has removed the definition of net-zero from 23 CFR 490.101 and the requirement in 23 CFR 490.105(e)(10) that targets for the GHG measure “demonstrate reductions toward net-zero targets.”
- The requirement to establish declining targets was opposed by many commenters, who argued that it is inconsistent with 23 U.S.C. 150 and would reflect FHWA’s influence on project selection. Some commenters suggested providing MPOs with a 5-year grace period before requiring the declining targets to be established.



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- In conclusion, the FHWA has acknowledged the concerns raised by commenters and has removed the definition of net-zero and the requirement for declining targets.
- The Federal Highway Administration (FHWA) has retained the requirement for State DOTs and Metropolitan Planning Offices (MPOs) to set declining targets for reducing CO2 emissions generated by on-road mobile sources. This is due to the urgency of responding to the climate crisis and the need for Federal infrastructure investment decisions that reduce climate pollution. State DOTs will establish targets no later than February 1, 2024, and MPOs are required to establish targets no later than 180 days after the State DOT establishes their targets.
- The FHWA determined that State DOTs and MPOs will establish or adjust targets every two years beginning in 2024. The first GHG targets will be due on February 1, 2024, after the effective date of this rulemaking.
- The FHWA believes that the start of the performance period serves as the benchmark that begins the TPM schedule, and the first GHG targets will be due on February 1, 2024, after the effective date of this rulemaking. The State Initial GHG Report requirements are similar to the Baseline Performance Period Report, and information on the GHG measure will be submitted as part of the biennial reports starting with the 2026 Full Performance Period Progress Report.

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- The Federal Highway Administration (FHWA) has received numerous comments regarding the MPO reporting requirements and proposed revisions. Some commenters suggested that the final rule should require MPOs to report every two years on progress towards the performance measure, as MPOs have a significant impact on transportation investment decisions in metropolitan planning areas. Others requested that the final rule not require additional reporting by MPOs outside of the system performance report to avoid increasing the reporting and tracking burden on MPOs and State DOTs.
- The FHWA considered the comments and determined that existing reporting requirements for MPOs in 23 CFR 490.107(c), which FHWA has successfully implemented for other performance measures, are appropriate for reporting on the GHG measure. MPOs are required to report on performance within their metropolitan transportation plan (MTP), which are developed every 4 or 5 years.
- Biennial reporting by MPOs would necessitate an additional report outside of the MTP. At this time, FHWA does not believe adding a new process for reporting on performance specifically for the GHG measure would provide benefits that would exceed the increased burden from additional reporting requirements.

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- The FHWA has retained the requirement for MPOs to report progress toward their GHG target in their system performance report in the metropolitan plan. The FHWA has removed the proposed requirement for MPOs to report tailpipe CO2 emissions on all roads and requires MPOs using metric calculation methods not specified in section 490.511(d) to include information demonstrating the method(s) has valid and useful results for measuring transportation-related CO2.
- Recommendations for increasing transparency and accessibility of reporting on performance included publishing a regular report on State DOT and MPO progress, which would help stakeholders hold State DOTs and MPOs accountable for progress toward their GHG targets. The FHWA has not made any changes in the final rule based on the comments, as it is part of its commitment to transparency and regularly publishes the State DOT's biennial reports and significant progress determinations on its website as part of the publicly available TPM Dashboards.
- The FHWA does not intend to use the significant progress determination process to be punitive or encourage State DOTs to establish easy-to-achieve targets. Instead, the documentation requirements represent the minimum information State DOTs are federally required to provide. If a State DOT does not make significant progress, FHWA expects the State DOT to provide data-supported explanations for not achieving significant progress and their plan to achieve said progress in the future.

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- Comments on the reference year were also discussed, with many commenters arguing that using CY 2021 as the reference year would be inappropriate due to the lingering effects of the COVID-19 pandemic on travel in 2021. To address these concerns, the FHWA is establishing 2022 as the reference year for the GHG measure. In 2022, travel activity is estimated to have nearly rebounded to pre-pandemic levels, with FHWA's December 2022 Traffic Volume Trends report showing cumulative mileage of 3.17 trillion miles in 2022, compared with 3.27 trillion miles in 2019.
- The Federal Highway Administration (FHWA) has been criticized for not providing a standard CO2 emissions factor for each fuel type. Some commenters suggested that FHWA should establish CO2 emissions factors, while others requested supplemental fuel blend information and State-specific carbon intensity values based on Low Carbon Fuel Standards reporting.
- Some also requested clarification on CO2 emissions factors, including their appearance, change over time, accessibility, location, and specific examples. The FHWA will publish uniform CO2 emissions factors for each fuel type to ensure consistency and comparability of states' estimates of tailpipe CO2 emissions.
- The FHWA acknowledges that some states have implemented or are considering low carbon fuels programs to reduce the overall carbon intensity of transportation fuels but believes that including emission factors for alternative fuel blends as part of a tailpipe-only measure would be overly complex. The FHWA will consider EPA's accounting practice for addressing biofuel CO2 emissions as it develops the standard CO2 emissions factors.

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- The final rule allows State DOTs to use their best available VMT data for reporting performance and GHG measure and metric information in biennial reports.
- The Federal Highway Administration (FHWA) has updated its significant progress determination for fuel sales data, stating that baseline performance will be based on data from the Highway Performance Monitoring System (HPMS) as of November 30th of the baseline report year and reference year will be based on HPMS data as of November 30, 2023.
- The FHWA also added section 490.109(e)(4)(vii) to clarify that the data used must be accepted by FHWA by the specified dates.
- The FHWA believes the data and methods specified in the Notice of Proposed Rulemaking (NPRM) are appropriate to evaluate performance related to the GHG measure. State CO<sub>2</sub> estimates are calculated by multiplying gallons of fuel taxed by each State by the CO<sub>2</sub> emissions for each fuel type.
- However, the FHWA recognizes that MPOs lack a data source comparable to Fuels & FASH and must estimate CO<sub>2</sub> emissions using an approach different from the States.

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- The Federal Highway Administration (FHWA) has retained the State DOT metric calculation method proposed in the Notice of Proposed Rulemaking (NPRM) for calculating the GHG performance measure.
- This method is based on fuel use data collected by states and reported to FHWA, ensuring comparability between state estimates. The FHWA believes this approach provides a more accurate estimate of total fuel use and CO2 emissions than model-based approaches.
- The FHWA also supports preserving MPOs' flexibility in calculating the GHG metric, recognizing that technical capabilities vary across MPOs and that some may not support a travel demand model or be required to use EPA's MOVES model. The FHWA also provides the data needed for MPOs to calculate a metric for the GHG measure.
- In response, the FHWA acknowledges that it is burdensome for both MPOs and States to have to reach a consensus over the MPO's metric calculation process. In response to the comments, FHWA is not mandating that the State DOT and MPO agree on the MPO's metric calculation approach; rather, MPOs are urged to collaborate with the State DOT on the data used as much as is practically possible.

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- Instead, the FHWA has added a requirement to section 490.107(c)(2)(ii) stating that the MPO must provide evidence of the method's validity and usefulness in measuring transportation-related CO2 emissions in the system performance report if the metric calculation method used is not mentioned in section 490.511(d).
- According to the FHWA, this modification will be adequate to guarantee accountability in the techniques MPOs employ to compute the GHG metric, unless both State DOTs and the methodology need to agree on it.
- FHWA encourages MPOs and State DOTs to collaborate to establish the techniques, resources, and information that the MPOs can utilize to compute the MPO's metric for the GHG measure, in accordance with the cooperation and coordination standards outlined in 23 CFR part 450.



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- The FHWA has responded by reexamining the RIA in light of public comments and any updated information. Based on this review, the FHWA has concluded that, in support of the NPRM, the RIA cost estimates should largely remain unchanged, with the exception of a small estimated burden reduction due to the removal of the NPRM requirement for States and MPOs to estimate CO<sub>2</sub> emissions for all roads in addition to the NHS.
- The FHWA acknowledges the observations made by commenters that a large number of State DOTs and MPOs will require capacity building in order to address GHG emissions through stakeholder engagement, interagency coordination, and the evaluation of initiatives to achieve GHG reduction targets.
- Furthermore, the FHWA restates that neither the establishment of specific declining target values nor the imposition of penalties for missing the set objectives will incur expenses for State DOTs or MPOs in accomplishing the GHG reduction targets.
- The FHWA is aware that funding for highways may be impacted by changes in fuel usage. However, this issue is outside the purview of this rulemaking, and FHWA lacks the power to alter the statutory funding mechanism that Congress established, as this rulemaking does not call for any reductions in fuel use.



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- (B) As required by this section's paragraph (e)(4)(iv), state DOTs must set a 4-year objective and publish it in their 2024 State Initial GHG report, which is required by § 490.107(d).
- (C) The reference year's performance will serve as the benchmark performance.
- For all applicable metrics, as stated in this section's paragraphs (c) and (d), the MPOs must set 4-year targets, as outlined in paragraph (e)(4)(iv). The targets set for the GHG metric mentioned in this section's (c)(5) will be decreasing targets for lowering CO2 emissions from the NHS's tailpipe.
- State DOTs are required to provide data on the greenhouse gas metric in the Baseline Performance Period Report, which is due to FHWA by October 1, 2026, and then every four years after that.

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- (v) Data from Fuels & FASH that represents performance for the reference year and data from Fuels & FASH on August 15th of the year that the significant progress determination is made, representing performance from the previous year for targets established for the GHG measure in § 490.105(c)(5).
- (vi) Baseline conditions and performance information for the performance period for the measures in §§ 490.105(c)(1) through (5) that can be found in Fuels & FASH, HPMS, and NBI of the year that the Baseline Period Performance Report is due to FHWA. The data found in HPMS on November 30 of the year that the Baseline Period Performance Report is due to FHWA will be used as the baseline performance data for the GHG measure, as per § 490.105(c)(5).
- (vii) Data from the HPMS as of November 30, 2023, which represents performance for the reference year, and data from the HPMS as of November 30, 2023, which represents performance from the previous year for targets established for the GHG measure specified in § 490.105(c)(5).
- (viii) The CO<sub>2</sub> factor for the baseline performance, previous year, and reference year for targets set for the GHG measure provided in § 490.105(c)(5), as stated in § 490.509(f).

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(f) The FHWA will post on the FHWA Website, no later than August 15th of each reporting year, the CO2 factors 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 prior calendar year and reported to Fuels & FASH.

(h) Annual vehicle miles traveled (VMT) needed to calculate the GHG measure in

§ 490.507(b) shall come from the best available data that represents the prior calendar year and is consistent, to the maximum extent practicable, with data submitted to HPMS. The VMT data needed to calculate the GHG metric in § 490.511(c) for the reference year, shall be the HPMS data as of November 30, 2023.

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## *§ 490.513 Calculation of National Highway System performance measures.*

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(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 CO<sub>2</sub> Emissions on NHS) <sub>CY</sub> = total tailpipe CO<sub>2</sub> emissions on the NHS in a calendar year (expressed in million metric tons (mmt), and rounded to the nearest hundredth); and

(Tailpipe CO<sub>2</sub> Emissions on NHS) <sub>reference year</sub> = total tailpipe CO<sub>2</sub> emissions on the NHS in calendar year 2022 (expressed in million metric tons (mmt), and rounded to the nearest hundredth).

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(c) The first state GHG report. State DOTs are required to submit an Initial GHG Report by February 1, 2024, for the GHG measure in §490.105(c)(5).

(1) What should be included in the State's Initial GHG Report?

(A) Objectives. The performance period's 4-year goal, as stipulated in § 490.105(e), and a summary, as much as is practical, of the assumptions that led to the goal's establishment;

(B) Performance baseline. Performance determined by utilizing the information gathered for the reference year for the four-year goal mandated by this section's paragraph (d)(1);

(C) How it relates to other performance standards. A discussion of how the target set forth in this section's paragraph (d)(1) supports the expectations outlined in longer-term plans, like the long-term statewide transportation plan provided in part 450 of this chapter and the State asset management plan mandated by 23 U.S.C. 119(e); and

(D) The GHG measure's metric and related metrics. The GHG meter for the reference year, as well as the specific values that went into calculating it, are explained in § 490.511(c).

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