MEMORANDUM OF UNDERSTANDING

Between the
THE U.S. DEPARTMENT OF ENERGY,
THE U.S. DEPARTMENT OF TRANSPORTATION,
THE U.S. ENVIRONMENTAL PROTECTION AGENCY, and
THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

This memorandum of understanding (MOU) is entered into this 15th day of September, 2022, by and between the United States Department of Energy (DOE)[1], the United States Department of Transportation (DOT)[2], the United States Environmental Protection Agency (EPA),[3] and the United States Department of Housing and Urban Development (HUD),[4] in coordination with the Executive Office of the President (EOP) through the National Climate Task Force (NCTF).

The DOE Office of Energy Efficiency and Renewable Energy (EERE) will serve as the program office responsible for carrying out the goal of the MOU on behalf of DOE, in consultation with other DOE offices; the DOT Office of the Under Secretary of Transportation for Policy (OST-P) will serve as the program office responsible for carrying out the goals of the MOU on behalf of DOT; the EPA Office of Air and Radiation (OAR) will serve as the program office responsible for carrying out the goals of the MOU on behalf of EPA, in consultation with the Office of Policy (OP); and the HUD Office of Community Planning and Development (CPD) will serve as the program office responsible for carrying out the goals of the MOU on behalf of HUD. EERE, OST-P, OAR and CPD shall be referred to as the "Party" or "Parties" as appropriate. In the EOP, the Climate Policy Office will serve as the coordinating office.

**Purpose:**

The United States is committed to aggressively reducing greenhouse gas (GHG) emissions and achieving net-zero emissions economy-wide no later than 2050, while growing domestic jobs and the economy, supporting U.S. industry global competitiveness, and ensuring equitable access to affordable energy, mobility options, and climate resilient communities. The transportation sector is responsible for more GHG emissions than any other sector of the U.S. economy and is a key driver of air pollution. Transportation also plays a critical role in building a strong and equitable American economy. Thus, transportation must play a leading role in achieving our climate, economic, and equity goals, which requires a comprehensive and coordinated approach across all modes of passenger and freight transportation, as well as the associated infrastructure and energy supply.

**In recognition of the critical role that the transportation sector will play in addressing the global climate crisis and building a clean economy, the Parties undertake this MOU to ensure the highest level of collaboration and coordination. The Parties plan to coordinate**

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[1] DOE's Authority to enter into this agreement is section 646 of the Department of Energy Organization Act (Pub. L. 95-91, as amended; 42 U.S.C. § 7256).
[2] DOT enters this agreement under 49 U.S.C. § 301.
[3] EPA's Authority to enter into this agreement comes from Section 103(a) of the Clean Air Act, 42 U.S.C. 7403(a).
[4] HUD enters into this agreement under 42 U.S.C. 3535(b).

**on policy and accelerate the research, development, demonstration, and deployment needed for innovative solutions and technologies that enable a clean, safe, accessible, equitable, and decarbonized transportation system for all.**

Decarbonizing the transportation sector is a major challenge, and a major opportunity. The U.S. transportation sector generated 33% of US GHG emissions in 2019, generated over 70% of total petroleum demand in the U.S., and is a major cause of poor air quality, particularly affecting low-income populations, populations of color, and overburdened communities. Between 2010 and 2020, transportation has represented the second highest household expense, and is often considered a hidden cost of housing. Transportation allows businesses to receive goods and to transport products to consumers, connects people to jobs, schools, recreation, and health care, and puts Americans to work, as one of the largest industrial and manufacturing sectors in the economy. Creating a robust, clean, and well-functioning transportation system can create jobs, enhance equity, improve air quality, and help secure economic prosperity.

The transportation sector is currently undergoing fundamental changes that will impact its future, including new mobility solutions, automation and connectivity, electrification, and the use of sustainable fuels for air and maritime travel, new business models, e-commerce, telepresence, and the on-going impacts from the COVID-19 pandemic. Understanding and leveraging these rapidly evolving trends will play a critical role in building a modern and sustainable transportation system.

In light of these challenges and opportunities, the Parties resolve to work closely with States, local communities, Tribal communities, labor unions, nonprofits, the private sector and other stakeholders to make substantial progress implementing low- and zero-carbon transportation solutions and associated infrastructure. In particular, the Parties will focus first and foremost on actions that can be taken this decade, recognizing that achieving full decarbonization of the transportation sector by 2050 will require reaching milestones decades in advance. For example, it takes several years, or even decades, for fleets to turnover, demonstrating the urgency of action in the transportation sector.

The Parties seek to maximize the public benefits gained from the development and deployment of sustainable transportation technologies and solutions and to position the U.S. to lead international efforts to decarbonize the transportation sector. The Parties also intend to explore collaborative efforts to achieve better integration of transportation, housing, and community development investments in underserved or disadvantaged communities that prevent displacement; support equitable transit-oriented development; and maximize economic development opportunities through small business development, employment, and entrepreneurship.

To achieve the 2050 net-zero emissions target set by the President and as demanded by science, and recognizing the mutual interest across the agencies in: (1) affordable, safe, accessible, and equitable mobility solutions for all; (2) social and environmental benefits of decarbonizing transportation; (3) economic development and job opportunities as the transportation industry transforms; (4) U.S. industrial competitiveness, national security and resiliency; and (5)

positioning the U.S. as leader in global efforts to develop solutions to decarbonize transportation systems, the Parties set out the following goals, and corresponding actions.

**Goals:**

The Parties resolve to work together towards the following high-level goals:

1. **Decarbonize the transportation sector:** Rapidly decarbonize the transportation sector, including all passenger and freight transportation modes, based on common goals shared across all Parties, and in cooperation with States, regional entities, and local and Tribal governments, by implementing sound policies, incentivizing industry action, and catalyzing private investments in clean energy and transportation. Moreover, the Parties seek to ensure that transportation infrastructure accounts for sustainability comprehensively, including: the full life-cycle emissions and costs of transportation vehicles, fuels, and materials; the impacts of land use planning and development patterns; and the interactions between decarbonized transportation and the broader energy system, especially the electrical grid.

2. **Reduce air pollution:** The Parties recognize the air quality co-benefits associated with transportation decarbonization and seek to reduce local air pollution resulting from the production and use of transportation vehicles, fuels, and infrastructure, in order to improve air quality in all communities, particularly those communities disproportionately affected by air pollution.

3. **Cut costs for consumers by increasing affordability of energy efficient transportation options:** Decrease household mobility costs, travel times, and emissions by integrating affordable clean transportation and mobility options, including walking and biking, through land use planning and ensuring equitable access to clean transportation, enhancing mobility for all people, including people with disabilities. Moreover, provide options to shift trips to safe, reliable, accessible, and equitable low- and zero-GHG emission active transportation, intercity passenger rail, and public transit options.

4. **Enable an equitable transition:** Encourage innovative, fiscally responsible, and equitable-by-design solutions to help meet growing mobility demand in all corners of the country efficiently and affordably, including supporting historically disadvantaged communities in the deployment of clean energy and affordable mobility solutions. Meet the goal to provide at least 40% of the benefits of relevant transportation investments to underserved and disadvantaged communities while preventing displacement of underserved and disadvantaged communities. Address the interaction among housing, jobs, and development patterns that can often reduce transportation options and increase travel times. Prioritize transit-oriented development that supports revitalization and growth without displacement.

5. **Secure domestic supply chains and improve efficiency:** Reduce reliance on petroleum while securing and developing robust domestic and international supply chains for

materials and technologies needed for clean transportation and increase national security and resiliency. At the same time, improve the efficiency of our supply chain, in order to improve economic outcomes while reducing freight-related GHG emissions and air pollution.

6. **Support good-paying domestic jobs:** Spur new business development and create and maintain good paying jobs, particularly in historically disadvantaged communities, in the transportation and associated energy industries as new technology and global competition transform these industries.

7. **Lead global decarbonization efforts:** Position the U.S. to lead international efforts to decarbonize the transportation sector by developing, producing, and exporting innovative clean technologies and solutions while catalyzing collaborations that support domestic and allied partners' industrial competitiveness.

**Planned Actions of the Parties:**

Recognizing the mutual goals of the Parties listed above, the Parties intend to:

1. Establish a joint, executive-level team to implement this MOU across all levels of staff and report back to the heads of each agency within 45 days and every six months thereafter.
2. Take a "whole-of-government" approach to achieving the goals outlined above, coordinating with other Federal agencies (e.g., Departments of Agriculture, State, Commerce, Labor, and Defense), as well as the Executive Office of the President, including CPO, the Council on Environmental Quality and the NCTF).
3. Work jointly to gather input from key transportation and energy stakeholders across industry, labor, non-governmental organizations (NGOs), academia, and State, local and Tribal governments.
4. Within 90 days, draft a decarbonization strategy for the transportation sector across all transportation modes to guide future policy, research, development, demonstration, and deployment in the public and private sectors.
5. Ensure cross-agency coordination in the planning, formation and execution of transportation research, development, demonstration, and deployment plans, including data sharing to accelerate learning, promote transparency, and track progress.
6. Support the planning and deployment of additional transportation infrastructure needs, including electric infrastructure to support transportation decarbonization.
7. Coordinate government transportation policies at the Federal level through the NCTF to provide clear leadership nationally and internationally.
8. Coordinate place-based, interagency technical assistance particularly to disadvantaged communities with the goal to expand access to critical clean transportation and other green infrastructure investments.
9. Ensure that the executive-level team recognizes and coordinates with the Joint Office of Energy and Transportation, which was created by the Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act (IIJA)).

Supporting activities that the Parties will consider taking to support the goals outlined in this MOU are included in Appendix A.

**Points of contact**
The points of contact responsible for administration of the MOU are:

- DOE: Michael Berube, Deputy Assistant Secretary for Sustainable Transportation, EERE
- DOT: Andrew Wishnia, Deputy Assistant Secretary for Climate Policy, OST-P
- EPA: Karl Simon, Director, Transportation and Climate Division, Office of Transportation and Air Quality, Office of Air and Radiation
- HUD: Crystal Bergemann, Senior Advisor for Climate, Office of the Secretary

**Additional Terms and Termination**
This MOU shall remain in effect until terminated by any Party upon written notice to the other Parties. This MOU in no way restricts any Parties from participating in any activity with other public or private agencies, organizations, or individuals. This MOU is neither a fiscal nor a funds obligation document. Nothing in this agreement authorizes or is intended to obligate the Parties to expend, exchange, or reimburse funds, services, or supplies, or transfer or receive anything of value.

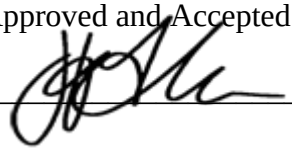
This MOU is strictly for internal management purposes for each Party. This MOU is a voluntary agreement that is not legally enforceable and shall not be construed to create any legal obligation on the part of any Party, including that of a Federal contractor. This MOU shall not be construed to provide a private right or cause of action for or by any person or entity. This MOU is subject to, and will be carried out in compliance with, all applicable laws, regulations, and other legal requirements.

Each party will bear its own expenses in connection with the preparation, negotiation, and execution of the MOU. No Party shall be liable to the other Parties for any such expense. The Parties will consult in advance on the form, content, and timing of any public statements or press releases regarding this MOU.

**Modifications**
This MOU may be modified by mutually acceptable written amendments duly executed by authorized officials of DOE, DOT, EPA, and HUD.

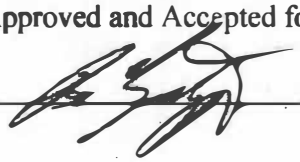
**Signatures of the Executing Officials and the Date Signed**

Approved and Accepted for U.S. Department of Energy



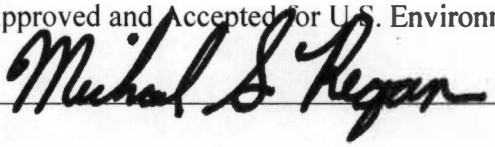
Date: 09/13/2022

Approved and Accepted for U.S. Department of Transportation



Date: 09/14/2022

Approved and Accepted for U.S. Environmental Protection Agency



Date: 09/14/2022

Approved and Accepted for U.S. Department of Housing and Urban Development

Date: 9/15/2022

# APPENDIX A

**Supporting Activities:**

To achieve the above goals, supporting activities the Parties will consider taking include, but are not limited to:

1. Coordinate amongst the Parties to ensure consistency of messages and collaborations with key State, local, Tribal, academic, non-profit, labor, and industry stakeholders.
2. Work with the Department of State to reposition the U.S. to lead international efforts in the development of sustainable transportation technologies and solutions in the 21st century and coordinate international collaborations (e.g., Clean Energy Ministerial).
3. Coordinate and revitalize engagement with industry, especially via expanding and re-aligning broad public-private partnerships like Driving Research and Innovation for Vehicle efficiency and Energy sustainability (USDRIVE) and 21st Century Truck Partnership, to the goals above to support economic growth and green job creation.
4. Develop a standing collaboration process across the Parties' research centers (e.g., DOE National Laboratories, EPA Ann Arbor National Vehicle and Fuel Emissions Laboratory, U.S. DOT Volpe National Transportation Systems Center) and others, including collaborating on mobility, land use and transportation data, modeling, and analysis to ensure consistency and sharing of approaches, tools, data, assumptions, and insights.
5. Leverage shared modeling assessment, data, and analysis products to support future regulatory work and use expertise and technical capabilities across all Parties in support of regulatory and policy actions.
6. Coordinate work that supports transformations of the electrical grid, charging infrastructure investments, and equitable, fair use of rights-of-way to support increased on-road vehicle electrification. This includes developing tools that can be used by States, Tribes, and local stakeholders to support the effective and equitable build out of electric vehicle (EV) charging, both in communities and along corridors, and support for necessary workforce development.
7. Accelerate utility, automotive, truck, fleet and electrical equipment manufacturer collaboration on smart electric vehicle charging to leverage the synergies between the transportation and power systems.
8. Seek technical and policy paths to decarbonize aviation through sustainable aviation fuels (see the Sustainable Aviation Fuel Grand Challenge launched in September 2021) and improvements in aircraft efficiency, including the possible use of zero-emission propulsion systems.
9. Identify and remove barriers to the use of hydrogen fuel cell and related infrastructure for heavy duty vehicles and other use cases.
10. Collaborate with private rail companies and other stakeholders to develop green energy sources for long-distance freight train systems, improve operational efficiency, and reduce emissions from rail facilities.

11. Identify additional solutions to decarbonize off-road vehicles, freight and passenger rail, and maritime vessels and port equipment that are operational, efficient, and affordable. Work jointly with industry to bring these solutions to market and demonstrate their feasibility.
12. Implement efforts to ensure energy resiliency and improve national security and defense by expanding the energy sector industrial base for clean transportation, implementing programs to strengthen domestic and international supply chains, and by investing in and sustaining a workforce with good paying jobs.
13. Develop clean, safe, and reliable transportation options for traditionally underserved and disadvantaged communities such as transit, intercity passenger rail, bicycle and pedestrian infrastructure, electric vehicles, and e-mobility solutions.
14. Align investments in transit-oriented development and as feasible incorporate location efficient decision-making in financing new housing, commercial or mixed-use development.