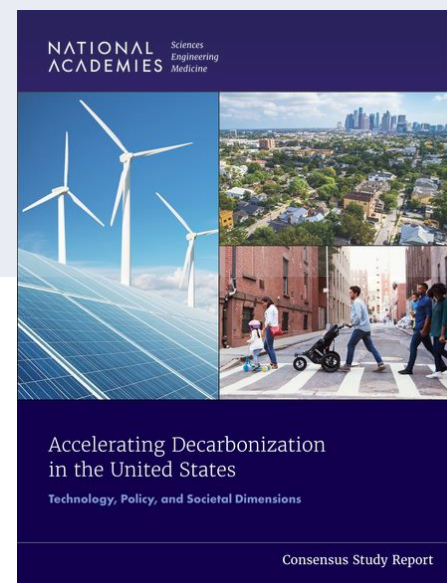


Accelerating Decarbonization in the United States Policy, Technology, and Societal Dimensions

Decarbonization is essential and possible, and it offers a host of benefits—from better public health to improved economic opportunity. The National Academies of Sciences, Engineering, and Medicine have released a comprehensive report with sector-by-sector recommendations to guide policymakers on decarbonizing the U.S. economy over the next decade and beyond.

The report makes 84 total recommendations—across technology, policy, and societal dimensions. **Table S-1** below summarizes the policies recommended in the report and details how they address specific sectors, objectives, and overarching categories. Explore the full text for each recommendation by downloading the report at nationalacademies.org/decarbonization-report.



Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
1-1: Enact Two Federal Policies Recommended in the First Report: National Greenhouse Gas Emissions Budget and Economy-Wide Carbon Tax.	Congress, Treasury Department, EPA	<ul style="list-style-type: none"> • Electricity • Buildings • Land use • Transportation • Industry • Finance • Fossil fuels 	<ul style="list-style-type: none"> • GHG reductions 	A Broadened Policy Portfolio

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
1-2: Leverage the Evidence Act to Execute Data Collection and Evaluation on Decarbonization Investments and Programs	Congress and Office of Management and Budget	<ul style="list-style-type: none"> • Electricity • Buildings • Land use • Transportation • Industry • Finance • Fossil fuels 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Employment • Public engagement 	Rigorous and Transparent Analysis and Reporting for Adaptive Management
1-3: Identify and Provide Resources for a Central Entity to Provide Timely, Public-Facing Information on the Nation’s Progress Toward Decarbonization	Congress and single other agency (e.g., Energy Information Administration, Global Change Research Program, OMB)	<ul style="list-style-type: none"> • Electricity • Buildings • Land use • Transportation • Industry • Finance • Fossil fuels 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Employment • Public engagement 	Rigorous and Transparent Analysis and Reporting for Adaptive Management
2-1: Develop a Core Set of Metrics for Disadvantaged Communities for Program Design and Evaluation	Council on Environmental Quality (CEQ)		<ul style="list-style-type: none"> • Equity 	<p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
2-2: Codify the Justice40 Initiative	Congress	<ul style="list-style-type: none"> • Buildings • Transportation 	<ul style="list-style-type: none"> • Equity • Health • Employment 	<p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Building the Needed Workforce and Capacity</p>
2-3: Implement Federal Legislation for Equitable Outcomes	Federal policymakers	<ul style="list-style-type: none"> • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity 	<p>Rigorous and Transparent Analysis and Reporting</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p>
2-4: Build Multi-level Capacity to Support Community-led Transitions	Congress, National Transition Corporation, Environmental Protection Agency and Department of Energy, state legislatures	<ul style="list-style-type: none"> • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Employment • Public engagement 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Building the Needed Workforce and Capacity</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
2-5: Develop Equitable Technical Assistance Guidelines	Federal Interagency Thriving Communities Network, White House Environmental Justice Advisory Committee	<ul style="list-style-type: none"> • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Public engagement 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p>
2-6: Evaluate the Equity Impacts of the Just Transition	Omnibus entity, White House Environmental Justice Advisory Council		<ul style="list-style-type: none"> • Equity • Transparency • Health • Employment 	<p>Rigorous and Transparent Analysis and Reporting</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p>
3-1: Phase Out Incentives for the Highest Greenhouse Gas Emitting Animal Protein Sources	Congress and U.S. Department of Agriculture (USDA)	<ul style="list-style-type: none"> • Land use 	<ul style="list-style-type: none"> • Health 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p>
3-2: Increase Use of Health Impact Assessment Tools in Energy Project Decision-Making	Congress, Center for Disease Control (CDC) National Center for Environmental Health / Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) and the Department of Health and Human Services (HHS) Office of Climate Change and Health Equity	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Fossil fuels 	<ul style="list-style-type: none"> • Equity • Health 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
3-3: Assess Occupational Health Risks Associated with Clean Energy Technologies	Center for Disease Control (CDC) National Center for Environmental Health / Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) and Occupational Safety and Health Administration (OSHA)	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Fossil fuels 	<ul style="list-style-type: none"> • Equity • Health • Employment 	Ensuring Equity, Justice, Health, and Fairness of Impacts
4-1: Support the Development of Net-Zero Curriculum and Skill Development Programs for K--12 Students	U.S. Department of Education, local governments, and school districts	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment • Public engagement 	Building the Needed Workforce and Capacity
4-2: Invest in Linking People from Disadvantaged Communities to Quality Jobs	Congress	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Building the Needed Workforce and Capacity</p>
4-3: Extend Unemployment Insurance Duration for Fossil-Fuel-Related Layoffs and Develop Decarbonization Workforce Adjustment Assistance Program	Congress	<ul style="list-style-type: none"> • Transportation • Fossil fuels 	<ul style="list-style-type: none"> • Equity • Employment • Public engagement 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Building the Needed Workforce and Capacity</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
4-4: Collect and Report Data on Net-Zero-Relevant Professions	U.S. Department of Energy (DOE)	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment 	Building the Needed Workforce and Capacity
5-1: Encourage Prospective, Inclusive Dialogue at National and Regional Levels	The National Climate Task Force (NCTF), DOE, and U.S. Environmental Protection Agency (EPA)	<ul style="list-style-type: none"> • Electricity • Fossil fuels • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment • Public engagement 	<p>A Broadened Policy Portfolio</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Building the Needed Workforce and Capacity</p>
5-2: Accelerate the Development, Implementation, Assessment, and Sharing of Energy System Policy and Approaches that Deliver Local Benefits	Subnational government staff, elected officials, and their representative coalitions, federal partners	<ul style="list-style-type: none"> • Electricity • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Public engagement 	<p>A Broadened Policy Portfolio</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
5-3: Fix Policy Gaps that Limit Role of Public Land in Decarbonization	Congress and state legislatures	<ul style="list-style-type: none"> • Electricity • Non-federal actors • Land use 	<ul style="list-style-type: none"> • Equity • Public engagement 	<p>A Broadened Policy Portfolio</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Siting and Permitting Reforms for Interstate Transmission</p>
5-4: Address Barriers to Local Benefits from Renewable Energy Facilities	State legislatures	<ul style="list-style-type: none"> • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Public engagement 	<p>A Broadened Policy Portfolio</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p>
5-5: Convene a National Working Group on Siting Processes Innovation with Input from State Energy Officials	DOE, CEQ, Federal Energy Regulatory Commission (FERC), National Association of Regulatory Utility Commissioners, and National Association of State Energy Officials (NASEO)	<ul style="list-style-type: none"> • Non-federal actors • Electricity 	<ul style="list-style-type: none"> • Equity • Public engagement 	<p>A Broadened Policy Portfolio</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Siting and Permitting Reforms for Interstate Transmission</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
<p>5-6: Mandate and Allocate Resources for National Assessment on the Public Engagement Workforce and Gaps</p>	<p>Congress, DOE, NCTF</p>	<ul style="list-style-type: none"> • Electricity • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment • Public engagement 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Siting and Permitting Reforms for Interstate Transmission</p> <p>Building the Needed Workforce and Capacity</p>
<p>5-7: Develop Collaborative Regional Renewable Energy Deployment Plans</p>	<p>Civil society leaders and philanthropic organizations</p>	<ul style="list-style-type: none"> • Electricity • Buildings • Land use • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment • Public engagement 	<p>A Broadened Policy Portfolio</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Siting and Permitting Reforms for Interstate Transmission</p>
<p>5-8: Address the Priorities of Native American and Environmental Justice Communities</p>	<p>Congress, and federal agencies involved in renewable energy and transmission deployment leads, and federal program designers</p>	<ul style="list-style-type: none"> • Electricity 	<ul style="list-style-type: none"> • Equity • Public engagement 	<p>A Broadened Policy Portfolio</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
5-9: Invest in and Integrate Social Science Research into Transition Decision-Making	DOE, U.S. Department of Transportation (DOT), U.S. Department of Defense (DoD), EPA, and National Science Foundation (NSF)	<ul style="list-style-type: none"> • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment • Public engagement 	<p>Building the Needed Workforce and Capacity</p> <p>Research, Development, and Demonstration Needs</p>
5-10: Establish an Energy Systems Education Network	DOE and Department of Education	<ul style="list-style-type: none"> • Electricity • Buildings • Land use • Transportation • Industry • Finance • Fossil fuels 	<ul style="list-style-type: none"> • Public engagement 	<p>Building the Needed Workforce and Capacity</p>
6-1: Adopt National Policy to Limit Power Sector Greenhouse Gas Emissions	Congress	<ul style="list-style-type: none"> • Electricity 	<ul style="list-style-type: none"> • GHG reductions • Health 	<p>A Broadened Policy Portfolio</p>
6-2: Support the Expansion of the Transmission Grid	FERC, DOE, states, transmission companies, public stakeholders, and the U.S. Department of the Interior (DOI)	<ul style="list-style-type: none"> • Electricity • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Health • Public engagement 	<p>Siting and Permitting Reforms for Interstate Transmission</p>
6-3: Expand Regional Power Markets Consistent with Decarbonization Objectives	Congress, FERC, RTOs	<ul style="list-style-type: none"> • Electricity • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health 	<p>Siting and Permitting Reforms for Interstate Transmission</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
6-4: Provide Rate Options to Encourage Flexible Demand While Ensuring Affordable Electricity	Decision makers on utility rates (i.e., state utility regulators for jurisdictional investor-owned utilities and boards of cooperatives, municipal electric utilities, and other publicly owned utilities)	<ul style="list-style-type: none"> • Electricity • Non-federal actors 	<ul style="list-style-type: none"> • Equity 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Siting and Permitting Reforms for Interstate Transmission</p>
6-5: Support Equitable Deployment of Distributed Energy Resources	States, localities, and Tribal governments	<ul style="list-style-type: none"> • Electricity • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Public engagement 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Siting and Permitting Reforms for Interstate Transmission</p>
6-6: Support Planning, Public Participation, and Investment in Modernizing Local Grids	Decision makers on utility service provision (i.e., state utility regulators for jurisdictional investor-owned utilities and boards of cooperatives, municipal electric utilities, and other publicly owned utilities)	<ul style="list-style-type: none"> • Electricity • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Public engagement 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Siting and Permitting Reforms for Interstate Transmission</p>
6-7: Invest in Research, Development, and Demonstration of On-Demand Electric Generating Technologies and Long-Duration Storage Technologies	Congress	<ul style="list-style-type: none"> • Electricity 	<ul style="list-style-type: none"> • GHG reductions • Equity 	<p>Research, Development, and Demonstration Needs</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
7-1: Ensure Clarity and Consistency for the Implementation of Building Decarbonization Policies	DOE	<ul style="list-style-type: none"> • Buildings 	<ul style="list-style-type: none"> • GHG reductions • Equity • Public Engagement 	<p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>
7-2: Promote an Equitable Focus Across Decarbonization Policies	DOE	<ul style="list-style-type: none"> • Buildings • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Public Engagement 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>
7-3: Expand and Evaluate the Weatherization Assistance Program	DOE	<ul style="list-style-type: none"> • Buildings 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health 	<p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
7-4: Coordinate Government Agencies to Align Decarbonization Policies and Implementation	State and municipal government offices	<ul style="list-style-type: none"> • Buildings • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment 	<p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p> <p>Building the Needed Workforce and Capacity</p>
7-5: Build Capacity for States and Municipalities to Adopt and Enforce Increased Regulatory Rigor for Buildings and Equipment	Congress	<ul style="list-style-type: none"> • Buildings • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Employment 	<p>A Broadened Policy Portfolio</p> <p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p> <p>Building the Needed Workforce and Capacity</p>
7-6: Increase Research, Development, Demonstration, and Deployment for Built Environment Decarbonization Interventions	Congress	<ul style="list-style-type: none"> • Buildings • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Health • Employment • Public engagement 	<p>Siting and Permitting Reforms for Interstate Transmission</p> <p>Research, Development, and Demonstration Needs</p>
7-7: Extend Current Decarbonization Incentives Beyond the Next Decade While Scaling Up Mandates	Congress	<ul style="list-style-type: none"> • Buildings 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Employment 	<p>A Broadened Policy Portfolio</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
8-1: Convene an Expert Group to Recommend Ways to Measure Forest Sinks	Secretary of Agriculture	<ul style="list-style-type: none"> Land use 	<ul style="list-style-type: none"> GHG reductions 	Rigorous and Transparent Analysis and Reporting for Adaptive Management
8-2: Prioritize Ecosystem-Level Carbon Storage	Secretary of Agriculture	<ul style="list-style-type: none"> Land use 	<ul style="list-style-type: none"> GHG reductions 	A Broadened Policy Portfolio
8-3: Establish a Permanent, National-Scale, High-Quality Soil Monitoring Network	USDA	<ul style="list-style-type: none"> Land use 	<ul style="list-style-type: none"> GHG reductions 	Rigorous and Transparent Analysis and Reporting for Adaptive Management
8-4: Build Out Long-Term Agricultural Field Experiments	USDA	<ul style="list-style-type: none"> Land use Non-federal actors 	<ul style="list-style-type: none"> GHG reductions 	<p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Research, Development, and Demonstration Needs</p>
8-5: Fund Research to Quantify Indicators That Influence Adoption of Regenerative Agriculture Practices	USDA	<ul style="list-style-type: none"> Land use 	<ul style="list-style-type: none"> GHG reductions Equity Public engagement 	Research, Development, and Demonstration Needs
8-6: Incentivize the Abatement of CH ₄ and N ₂ O Emissions and Improve Soil Carbon Sequestration	USDA	<ul style="list-style-type: none"> Land use 	<ul style="list-style-type: none"> GHG reductions Equity 	A Broadened Policy Portfolio
8-7: Release a Comprehensive Research, Development, and Deployment Program for Biomass Energy with Carbon Capture and Storage	DOE	<ul style="list-style-type: none"> Land use 	<ul style="list-style-type: none"> GHG reductions 	Research, Development, and Demonstration Needs
8-8: Convene an Expert Group to Recommend Policies That Could Encourage Sustainable Diets	Secretary of Agriculture	<ul style="list-style-type: none"> Land use 	<ul style="list-style-type: none"> GHG reductions Health 	A Broadened Policy Portfolio

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
9-1: Accelerate the Adoption of Battery Electric Vehicles	Federal, state, and local governments	<ul style="list-style-type: none"> • Transportation • Finance • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Public engagement 	<p>A Broadened Policy Portfolio</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>
9-2: Promote Vehicle Electrification at Ports and Airports	Ports and airports and their state and local government owners	<ul style="list-style-type: none"> • Transportation • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Health 	Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector
9-3: Pursue Cost-Effective Efficiency Improvements to Reduce Greenhouse Gas Emissions	Private companies and state and local governments	<ul style="list-style-type: none"> • Buildings • Transportation • Fossil fuels • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health 	<p>A Broadened Policy Portfolio</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>
9-4: Pursue Infrastructure Design, Standards, Specifications, and Procedures That Effectively Reduce Transportation Carbon Emissions	State DOTs, the American Association of State Highway and Transportation Officials, the American Road and Transportation Builders Association, and other specialized transportation infrastructure materials and construction associations	<ul style="list-style-type: none"> • Transportation • Industry • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions 	Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
9-5: Enhance Transportation Equity and Environmental Justice Through Programs, Planning, and Services	States and local governments	<ul style="list-style-type: none"> • Buildings • Transportation • Finance • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Public engagement 	<p>Rigorous and Transparent Analysis and Reporting</p> <p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>
9-6: Support Advances in Battery Design and Recycling, Fuel Cell Electric Vehicles, and Net-Zero Liquid Fuels	DOE and NSF	<ul style="list-style-type: none"> • Land use • Transportation • Industry 	<ul style="list-style-type: none"> • GHG reductions 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Research, Development, and Demonstration Needs</p>
10-1: Develop and Enable Cost-Competitive Process and Waste Heat Solutions	DOE and industrial companies	<ul style="list-style-type: none"> • Buildings • Industry 	<ul style="list-style-type: none"> • GHG reductions 	<p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p> <p>Research, Development, and Demonstration Needs</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
10-2: Invest in Energy and Materials Efficiency and Industrial Electrification	Congress and DOE	<ul style="list-style-type: none"> • Buildings • Industry • Finance • Non-federal actors • Transportation 	<ul style="list-style-type: none"> • GHG reductions 	<p>A Broadened Policy Portfolio</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p> <p>Research, Development, and Demonstration Needs</p>
10-3: Spur Innovation to Achieve Price-Performance Parity for Low-Carbon Solutions	Congress, DOE, NGOs, industry associations (e.g., American Chemistry Council [ACC], American Iron and Steel Association [AISA], Portland Cement Association [PCA], National Association of Manufacturers [NAM], and others), and industry	<ul style="list-style-type: none"> • Industry • Finance • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions 	<p>A Broadened Policy Portfolio</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>
10-4: Pursue Technologies that Reduce Both Greenhouse Gas and Air Pollution Emissions	DOE, NGOs, industry, industry associations, (e.g., ACC, AISA, PCA, NAM, and others), and engineering companies	<ul style="list-style-type: none"> • Industry • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Health 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p> <p>Research, Development, and Demonstration Needs</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
10-5: Use Mass-Based Rather Than Concentration-Based NO _x Standards	Regulatory and permitting organizations	<ul style="list-style-type: none"> • Industry • Electricity • Transportation 	<ul style="list-style-type: none"> • GHG reductions • Health 	Rigorous and Transparent Analysis and Reporting for Adaptive Management
10-6: Develop and Standardize Life-Cycle Assessment Approaches for Carbon Intensity of Industrial Products.	DOE, EPA, National Institutes of Standards and Technology (NIST), and other relevant agencies	<ul style="list-style-type: none"> • Industry • Buildings • Transportation • Non-federal actors 	<ul style="list-style-type: none"> • GHG Reductions 	<p>A Broadened Policy Portfolio</p> <p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p> <p>Research, Development, and Demonstration Needs</p>
10-7: Establish a Program Connecting Market-Pull Approaches to the Deployment of Low-Carbon Technologies	Congress, DOE, U.S. Department of Commerce (DOC), General Services Administration (GSA), DoD, and DOT	<ul style="list-style-type: none"> • Buildings • Transportation • Industry • Non-federal actors • Finance 	<ul style="list-style-type: none"> • GHG reductions 	<p>A Broadened Policy Portfolio</p> <p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>
10-8: Develop Effective Workforce Development Programs for Industry	Congress, DOE, labor associations, NGOs, industry leaders, and academia	<ul style="list-style-type: none"> • Industry • Non-federal actors 	<ul style="list-style-type: none"> • Employment 	Building the Needed Workforce and Capacity

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
10-9: Implement a Product-Based Tradeable Performance Standard for Domestic Manufacturing and Foreign Trade	Congress, DOE, DOC, and EPA	<ul style="list-style-type: none"> • Industry • Finance 	<ul style="list-style-type: none"> • GHG reductions 	<p>A Broadened Policy Portfolio</p> <p>Tightened Targets for the Buildings and Industrial Sectors and a Backstop for the Transport Sector</p>
11-1: Expand and Extend Funding and Financing Assistance for Actions Benefiting Low-Income and Disadvantaged Households and Communities	Congress and EPA	<ul style="list-style-type: none"> • Buildings • Transportation • Finance • Non-federal actors 	<ul style="list-style-type: none"> • Equity 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Reforming Financial Markets</p>
11-2: Disclose Equity Indicators for Federal Funding of Clean Energy	OMB	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Finance • Non-federal actors 	<ul style="list-style-type: none"> • Equity 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Reforming Financial Markets</p>
11-3: Address Limited Access Faced by Low-Income and Marginalized Households	Treasury Advisory Group on Racial Equity	<ul style="list-style-type: none"> • Finance 	<ul style="list-style-type: none"> • Equity 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Reforming Financial Markets</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
11-4: Fill Gaps in Federal Financial Risk Data and Information Collection Rules	Federal agency decision makers that are members of the Financial Stability Oversight Council (FSOC)	<ul style="list-style-type: none"> • Finance 		<p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Reforming Financial Markets</p>
11-5: Strengthen Climate Disclosure Rules and Standardize Data and Methods	U.S. Securities and Exchange Commission (SEC)	<ul style="list-style-type: none"> • Finance • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions 	<p>Rigorous and Transparent Analysis and Reporting for Adaptive Management</p> <p>Reforming Financial Markets</p>
11-6: Implement FSOC Recommendations to Ensure the Stability of U.S. Financial Markets	FSOC members and the Federal Reserve	<ul style="list-style-type: none"> • Finance 		<p>Reforming Financial Markets</p>
12-1: Authorize and Provide Appropriations for State Transition Offices to Address Coal, Oil, and Natural Gas Community Transitions	Congress and state transition offices	<ul style="list-style-type: none"> • Fossil fuels • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment 	<p>Ensuring Procedural Equity in Planning and Siting New Infrastructure and Programs</p> <p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Building the Needed Workforce and Capacity</p> <p>Managing the Future of the Fossil Fuel Sector</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
12-2: Consider Whether Proposed Natural Gas Pipeline Projects are Needed, Incorporate GHG Emissions Impacts into NEPA Analyses, and Require the Use of Depreciation Periods for Pipeline Application Reviews	Congress and FERC	<ul style="list-style-type: none"> • Fossil fuels • Transportation 	<ul style="list-style-type: none"> • GHG reductions 	<p>A Broadened Policy Portfolio</p> <p>Managing the Future of the Fossil Fuel Sector</p>
12-3: Require Utilities and Service Providers to Plan for the Transition	State regulators of natural gas distribution utilities and fossil-fuel supplier/service providers	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Fossil fuels • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Public engagement 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Managing the Future of the Fossil Fuel Sector</p>
12-4: Consider Adoption of Moratoria on New Gas Lines in Previously Unserved Areas	States and communities	<ul style="list-style-type: none"> • Fossil fuels • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions 	Managing the Future of the Fossil Fuel Sector
12-5: Modify the Design of Taxes on Gasoline, Diesel, and Petroleum Products	Congress and states	<ul style="list-style-type: none"> • Transportation • Fossil fuels • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions 	Managing the Future of the Fossil Fuel Sector
12-6: Require Recipients of Federal Funding to Provide Advance Notice of Facility Closures	Congress and recipients of federal agency funding	<ul style="list-style-type: none"> • Fossil fuels • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Employment • Public engagement 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Managing the Future of the Fossil Fuel Sector</p>
12-7: Fund the Decommissioning, Clean-up, and Just Transition for Communities Historically Dependent on Fossil Fuels	Congress, state legislatures, state agencies, and state regulators	<ul style="list-style-type: none"> • Finance • Fossil fuels • Non-federal actors 	<ul style="list-style-type: none"> • GHG reductions • Equity • Health • Public engagement 	<p>Ensuring Equity, Justice, Health, and Fairness of Impacts</p> <p>Managing the Future of the Fossil Fuel Sector</p>

Short-Form Recommendation	Actor(s) Responsible for Implementing Recommendation	Sector(s) Addressed by Recommendation	Objective(s) Addressed by Recommendation	Overarching Categories Addressed by Recommendation
13-1: Establish an Ongoing Process to Integrate Feedback into Federal Application and Technical Assistance Processes	Executive Office of the President	<ul style="list-style-type: none"> • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Public engagement 	Building the Needed Workforce and Capacity
13-2: Disburse Capacity-Building Funds for State, Local, and Community Recipients Flexibly and Speedily	Department of Energy, Environmental Protection Agency, Department of Transportation, Department of Agriculture, and other federal agencies	<ul style="list-style-type: none"> • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment • Public engagement 	Building the Needed Workforce and Capacity
13-3: Designate an Official or Entity to Track Decarbonization Program Opportunities and Deadlines	Governors, mayors, and county officials; states, counties, and cities	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Public engagement 	Building the Needed Workforce and Capacity
13-4: Structure Competitive Opportunities as Noncompetitive Planning Grants Followed by Competitive Grants	Federal agencies	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Non-federal actors 	<ul style="list-style-type: none"> • Equity 	Building the Needed Workforce and Capacity
13-5: Continue and Expand Reliable and Flexible Funding to Subnational Governments	Congress and federal contracting officials	<ul style="list-style-type: none"> • Electricity • Buildings • Transportation • Industry • Non-federal actors 	<ul style="list-style-type: none"> • Equity • Employment • Public engagement 	Building the Needed Workforce and Capacity

FOR MORE INFORMATION

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