

Mapping The Transport Sector's Road To Zero Emissions

By **Levi McAllister and Pamela Wu** (January 31, 2023, 3:19 PM EST)

The Biden administration released the U.S. National Blueprint for Transportation Decarbonization Jan. 10, 2023, setting forth a strategy for decarbonizing the transportation sector in order to achieve economywide emissions-reduction goals by 2030.

The blueprint was developed by the U.S. Department of Energy, U.S. Department of Transportation, U.S. Environmental Protection Agency, and U.S. Department of Housing and Urban Development. It identifies specific decarbonization opportunities and challenges for each major mode of transportation and discusses various applications for assorted clean technologies.

The blueprint identifies three key strategies to implement immediately to achieve the nation's 2030 emissions-reduction goals:

1. Increase convenience by improving community design and land use to prioritize access and proximity to work opportunities, community services and entertainment to reduce commute burdens.
2. Improve efficiency by expanding access to a variety of travel options and reducing reliance on energy-intensive modes of transport.
3. Transition to clean options by deploying zero-emission vehicles and fuels for all passenger and freight travel modes.

While the blueprint acknowledges that "the first two strategies will contribute to reducing [greenhouse gas] emissions and produce significant co-benefits," it also notes that it expects the third transition strategy to drive most emissions reductions.

The third strategy requires adopting highly efficient zero-emission electric vehicles, hydrogen fuel cell vehicles and — to decarbonize hard-to-electrify forms of transportation such as air transport and long-haul shipping — sustainable fuels produced from biomass and waste feedstocks. This strategy will require addressing the need for more EV charging and clean fuel infrastructure, as well as continued innovation and development of clean technologies.

The milestones to be achieved before 2030 include investing in further clean technology research and



Levi McAllister



Pamela Wu

development to achieve battery, hydrogen electrolysis, and sustainable fuel cost targets, better integrating with existing energy systems, expanding funding and market incentives to accelerate the uptake of low- or zero-emission vehicles, and supporting the creation of more EV charging infrastructure.

Light-Duty Vehicles

As the primary mode of passenger travel and the source of about 50% of total transportation energy use and emissions, light-duty vehicles are major contributors to air pollution. EV sales have increased, but a rapid acceleration of new EV sales is critical to achieving the administration's decarbonization goals.

The federal greenhouse gas emissions-reduction goals for light-duty vehicles include:

- Having 50% of new vehicle sales be zero-emission by 2030 and ensuring maximum efficiency of new internal combustion engine vehicles;
- Deploying 500,000 EV chargers by 2030 to expand the charging ecosystem; and
- Ensuring 100% of federal fleet procurement is zero emissions by 2027.

With the influx of EVs and the expectation that EVs will become one of the largest electricity load categories by 2050, it is critical to develop and implement solutions for effective vehicle-to-grid integration.

Medium- and Heavy-Duty Trucks and Buses

Although medium-duty and heavy-duty vehicles make up only 5% of the total vehicles on the road, they are responsible for about 21% of transportation emissions. A variety of fuel sources and zero-emission technology solutions continue to be explored for use by medium- and heavy-duty vehicles, including hydrogen, EVs and sustainable fuels.

Among the near-term action items for medium- and heavy-duty vehicles are the continued investment in demonstration and deployment to support building interoperable EV charging and refueling infrastructure through coordinated planning, policy and funding opportunities.

Aviation

Aviation contributes to about 11% of transportation emissions. Sustainable aviation fuels, which can be created from renewable or waste materials, have been identified as the most viable way to rapidly decarbonize the aviation industry. Battery electrification and hydrogen fuel have also been identified as potential options for replacing petroleum-based aviation fuels for short-distance flights and dedicated regional cargo routes.

Near-term actions include demonstrating aircraft technologies that achieve a 30% improvement in fuel efficiency and reducing aviation emissions by 20%.

Legal Implications and Considerations

To be sure, the administration's stated plans and the goals identified in the blueprint are aspirational in

nature. To pursue those goals, private sector market participants will have to consider a host of commercial and legal issues if they hope to play a leading role in decarbonizing transportation.

This is equally true whether the subject concerns light- and medium-duty vehicle electrification, heavy-duty fuel cell transportation, or aviation powered by hydrogen cells or sustainable fuel.

Transportation Electrification and EVs

In 2023, some of the most germane issues that EV market participants must consider relate to the following.

Commercially Successful Siting of EV Charging Infrastructure

Charge point operators or real estate owners will need advantageous site host agreements that address numerous issues to protect their rights and provide them monetary success in the arrangement. These agreements should consider elements like:

- Exclusivity in installation;
- Operations and maintenance responsibility;
- Revenue sharing and leasing payments;
- Ownership of property after termination; and
- Indemnification and insurance.

In addition, charge point operators must take care to consider the impact of utility rate design mechanisms and applicable usage patterns when modeling the extent to which energy sales opportunities can be commercially successful.

Battery and EV Component Supply Sourcing and Recycling

The limited U.S. or North American production of battery and EV components creates uncertainty as to how and whether original equipment manufacturers will be able to meet EV deployment goals and whether consumers will qualify for incentives based on U.S. supply chain success.

Further questions exist as to how batteries can be reused or disposed of at end of life and whether the U.S. has proper regulatory mechanisms in place.

EV Infrastructure and Interconnected Utility Data Protection and Cybersecurity

Undeveloped cybersecurity and data protection standards and requirements for EV infrastructure could make consumer data vulnerable to hackers. This could also create entry points for hackers seeking to disrupt the U.S. electric grid.

Vehicle-to-Grid Market Access, Monetization and Regulatory Implications

Bidirectional charging allows EV customers or fleet lessors to use vehicle-to-grid capabilities to run power from the EV back into the grid, which can facilitate market access. However, vehicle-to-grid use may also trigger the need for energy services management functions between the EV operator and either its owner or the charge point operator.

There are also regulatory implications of engaging in vehicle-to-grid activities by either the charge point operator or customer.

EV Tax Credit Eligibility and Access

Conditions and eligibility requirements for tax credits remain somewhat opaque with respect to battery sourcing requirements, component requirements, and eligibility for the commercial clean vehicle credit.

Fuel Cell and Hydrogen Transportation

Although the blueprint views EVs as key to decarbonizing the light-duty sector, it also identifies hydrogen fuel cells as an important player in decarbonizing long-haul heavy-duty trucks as well as other forms of transportation. Unlike EVs, hydrogen can accommodate transportation modes that require longer ranges and faster refueling.

The DOE is expected to continue investing in further research in hydrogen electrolysis, hydrogen fuel cell technologies and clean hydrogen infrastructure.

Over the last several months, the DOE has announced several open and upcoming funding opportunities, starting with the September announcement of a \$7 billion program to establish regional clean hydrogen hubs across the U.S.

The regional hydrogen hubs, which are expected to form the foundation of a national clean hydrogen network, will consist of hydrogen producers, consumers and connective infrastructure in close proximity. The hubs are meant to accelerate the use of hydrogen and achieve large-scale, commercially viable hydrogen ecosystems.

The regional hydrogen hub announcement was followed by two DOE notices of intent to issue funding. A funding opportunity announced in December 2022 will make \$500 million available to support the development of clean hydrogen manufacturing and recycling technologies and \$1 billion for electrolyzer development.

The other funding opportunity will support the research, development and demonstration of hydrogen and fuel cell technologies, in particular key hydrogen delivery and storage technologies, along with durable fuel cell technologies for use by heavy-duty trucks.

While the development of clean hydrogen hubs, clean hydrogen technologies, and fuel cell technologies is under way, the industry will also need to determine how to best incorporate existing infrastructure for hydrogen use. For example, interstate natural gas pipelines will need to determine whether, if, and how much hydrogen can be incorporated into and transported on their systems.

Coupled with this is the need for regulators to clarify which agencies will exercise jurisdiction over infrastructure used to produce, transport and store hydrogen. For example, it is still unclear whether the Federal Energy Regulatory Commission or the Surface Transportation Board will assert jurisdiction over interstate hydrogen pipelines, which can help further the establishment of a nationwide hydrogen network.

Addressing these regulatory uncertainties will be critical in facilitating the development of interstate hydrogen pipelines.

Sustainable Aviation Fuel

The blueprint recognizes the importance of aviation to decarbonizing transportation, which requires close consideration of the production, processing, purchase and sale of sustainable aviation fuel.

Unlike other products in the oil and gas sector, the purchase and sale of sustainable aviation fuel is not governed by industry-standard pro forma contracts. Rather, contractual provisions must be carefully developed to meaningfully address some issues unique to the sustainable aviation fuel sector, which is growing by the day.

Just a sampling of the issues includes:

- Title transfer points and assumption of risk prior to and following the transfer of title;
- Pricing mechanisms and ability to alter indexed pricing references;
- Rights to environmental attributes and tax-credit opportunities that may exist at a future time;
- Qualification for sustainable aviation fuel certification and applicability of ASTM International standards; and
- Representations and warranties concerning non-U.S. legal and regulatory compliance with respect to sustainable aviation fuel produced abroad.

The blueprint is the next step in the Biden administration's overall plan to support net-zero emissions in the transportation industry and more broadly, a national transition to cleaner energy.

Levi McAllister is a partner and head of the electric vehicles working group and energy commodity trading and compliance working group at Morgan Lewis & Bockius LLP.

Pamela T. Wu is a partner at the firm.

The opinions expressed are those of the author(s) and do not necessarily reflect the views of their employer, its clients, or Portfolio Media Inc., or any of its or their respective affiliates. This article is for general information purposes and is not intended to be and should not be taken as legal advice.