Morgan Lewis

REACHING NET ZERO TOGETHER

Transportation Decarbonization

February 23, 2023

Presenters

Levi McAllister

Pam Wu

Morgan Lewis

Agenda

- US National Blueprint for Transportation Decarbonization
- Electric Vehicles
- Decarbonization of Medium- and Heavy-Duty Vehicles
- Decarbonization of Aviation Emissions
- Carbon

US National Blueprint for Transportation Decarbonization

Morgan Lewis

Three Key Strategies

Source: National Blueprint

Transition to Clean Options

1 icon represents limited long-term opportunity 2 icons represents large long-term opportunity 3 icons represents greatest long-term opportunity	BATTERY/ELECTRIC	HYDROGEN	SUSTAINABLE LIQUID FUELS
Light Duty Vehicles (49%)*	3	—	TBD
Medium, Short-Haul Heavy Trucks & Buses (~14%)	2	1	1
Long-Haul Heavy Trucks (~7%)	1	3	2
Off-road (10%)	2	1	1
Rail (2%)	2	2	2
Maritime (3%)	1	2†	3
Aviation (11%)	1	1	3
Pipelines (4%)	2	TBD	TBD
Additional Opportunities	• Stationary battery use • Grid support (managed EV charging)	• Heavy industries • Grid support • Feedstock for chemicals and fuels	• Decarbonize plastics/chemicals • Bio-products
RD&D Priorities	• National battery strategy • Charging infrastructure • Grid integration • Battery recycling	• Electrolyzer costs • Fuel cell durability and cost • Clean hydrogen infrastructure	• Multiple cost-effective drop-in sustainable fuels • Reduce ethanol carbon intensity • Bioenergy scale-up

* All emissions shares are for 2019

† Includes hydrogen for ammonia and methanol

Source: National Blueprint


Electric Vehicles
Morgan Lewis

Light-Duty Vehicles

- Largest contributor to transportation GHG emissions (49% of all emissions)
- Federal GHG emissions reduction goals:
  - Achieve 50% of new vehicle sales being zero-emission by 2030
  - Ensure new internal combustion engine vehicles are as efficient as possible
  - Deploy 500,000 EV chargers by 2030
  - Ensure 100% of federal fleet procurement is zero-emission by 2027

Key Issues in EV Development and Deployment

- Commercially Successful Siting of EV Charging Infrastructure
  - Range anxiety impact
  - Regulatory and permitting considerations
  - The best way in which to monetize charging infrastructure
  - The best type of contractual protections in infrastructure licensing or site host agreements
- Battery and EV Component Supply Sourcing and Recycling
  - Government funding impact
  - Tax credit eligibility impact
  - Existing uncertainty absent Treasury and IRS guidance
- EV Infrastructure and Interconnected Utility Data Protection and Cybersecurity
  - Status of DoT standards?
  - Intersection with existing emphasis on hacking entry points

Key Issues in EV Development and Deployment

- Public Funding Opportunities for EV Infrastructure or Component Manufacturing, Development, and Installation
  - Status of NEVI funding disbursement

- Vehicle-to-Grid Market Access, Monetization, and Regulatory Implications
  - Bidirectional charging enables EV customers or fleet owners to utilize V2G capabilities, which can facilitate market access
  - Impact on utility planning; role of V2G capability to serve as effective virtual power plant

- EV Tax Credit Eligibility and Access
  - IRA revisions to Section 30D and Section 45 of IRC
  - Inherent friction between Administration goals and tax credit eligibility provisions

Decarbonization of Medium- and Heavy-Duty Vehicles

Morgan Lewis

Medium- and Heavy-Duty Vehicles

- 2nd largest contributor to transportation GHG emissions (21% of all emissions)
- Federal GHG emissions reduction goals:
  - 30% of new vehicle sales to be zero-emission by 2030 and 100% by 2040
  - Ensure 100% of federal fleet procurement is zero-emission by 2035
- Near-term actions:
  - RD&D for lower-cost and higher energy density batteries and fuel cell applications
  - Incorporation of hydrogen and sustainable fuels
  - Support build-out of interoperable EV charging and refueling infrastructure

Opportunities in MHDV Industry

- DOE Funding Opportunity for RD&D of Hydrogen and Fuel Cell Technologies
  - $47 million available
  - Areas of focus:
    - R&D of hydrogen carriers
    - Onboard storage systems for liquid hydrogen
    - Liquid hydrogen transfer and vehicular fueling technologies to enable high-flow transfers
    - Development of membrane electrode assemblies

Opportunities in MHDV Industry

- Expected DOE Funding Opportunity for RD&D and Manufacturing of Hydrogen Technologies
  - Up to $750 million in funding expected
  - Areas of focus:
    - Increase manufacturing capacity for proton exchange membrane fuel cells designed for heavy-duty vehicle applications
    - Support RD&D for stable and high-volume supply chain of proton exchange membrane fuel cell materials and components


Decarbonization of
Aviation Emissions
Morgan Lewis

Aviation Emissions

- 3rd largest contributor to transportation GHG emissions (11% of all emissions)
- Federal GHG emissions reduction goals:
  - Reduce aviation emissions by 20% by 2030
  - Achieve net-zero GHG emissions by 2050
  - Catalyze the production of at least three billion gallons of sustainable aviation fuel per year by 2030 and ~35 billion gallons by 2050, enough to supply the entire sector
- Near-term actions:
  - Demonstrating aircraft technologies that achieve a 30% improvement in fuel efficiency and reducing aviation emissions by 20%

Sustainable Aviation Fuels

- DOE Sustainable Aviation Fuel Grand Challenge
- DOE: $118 million in funding to accelerate domestic production of sustainable biofuels
- Section 40B Tax Credit
  - Applies to fuel sold or used after December 31, 2022
  - Potential credit for qualifying mixtures of SAF of $1.25/gallon credit, with increase to up to $1.75/gallon if certain requirements related to the production and the lifecycle GHG emissions rating of the fuel are met

SAF Transactions: Contractual Considerations

Contractual issues for consideration:

- What specifications will apply to the SAF?
- Where and how will the SAF be delivered?
- Who bears the risk of loss?
- When does title to the SAF pass to the buyer?
- What happens if there is a quantity shortage or quality defect?


Carbon
Morgan Lewis

Carbon Offsets

- Carbon offset: an instrument that represents a permanent reduction in greenhouse gas (GHG) emissions or increase in carbon removal or storage that is used to compensate for emissions that occur elsewhere
- Voluntary carbon markets
  - Continuing to scale
  - Standards under development
- Regulation over the voluntary carbon markets is forthcoming
  - CFTC regulation
  - Proposed SEC climate-related disclosures

Carbon Offset Transactions: Contractual Considerations

Contractual issues for consideration:

- What standard applies to the carbon offsets?
- How will the carbon offsets be verified?
- Do the carbon offsets reflect the permanent removal or reduction in GHG emissions?
- Have the carbon offsets been double counted?


Questions
Morgan Lewis

Biography

Levi McAllister
Washington, D.C.
+1.202.739.5837
levi.mcallister@morganlewis.com

Levi McAllister, head of the firm's Electric Vehicles (EV) Working Group and Energy Commodity Trading and Compliance Working Group, helps energy companies navigate the quickly evolving regulatory and investment environment for both conventional and emerging energy technologies. As more sectors look to creative solutions to mitigate the effects of climate change, Levi guides clients seeking to reduce their carbon footprints and take advantage of new and evolving energy storage and infrastructure assets, while also advising on energy commodity trading and the deployment of EVs and EV infrastructure in US markets. He is a member of the National Native American Bar Association and a frequent public speaker on energy issues.

Biography

Pamela T. Wu
Washington, D.C.
+1.202.739.5199
pamela.wu@morganlewis.com

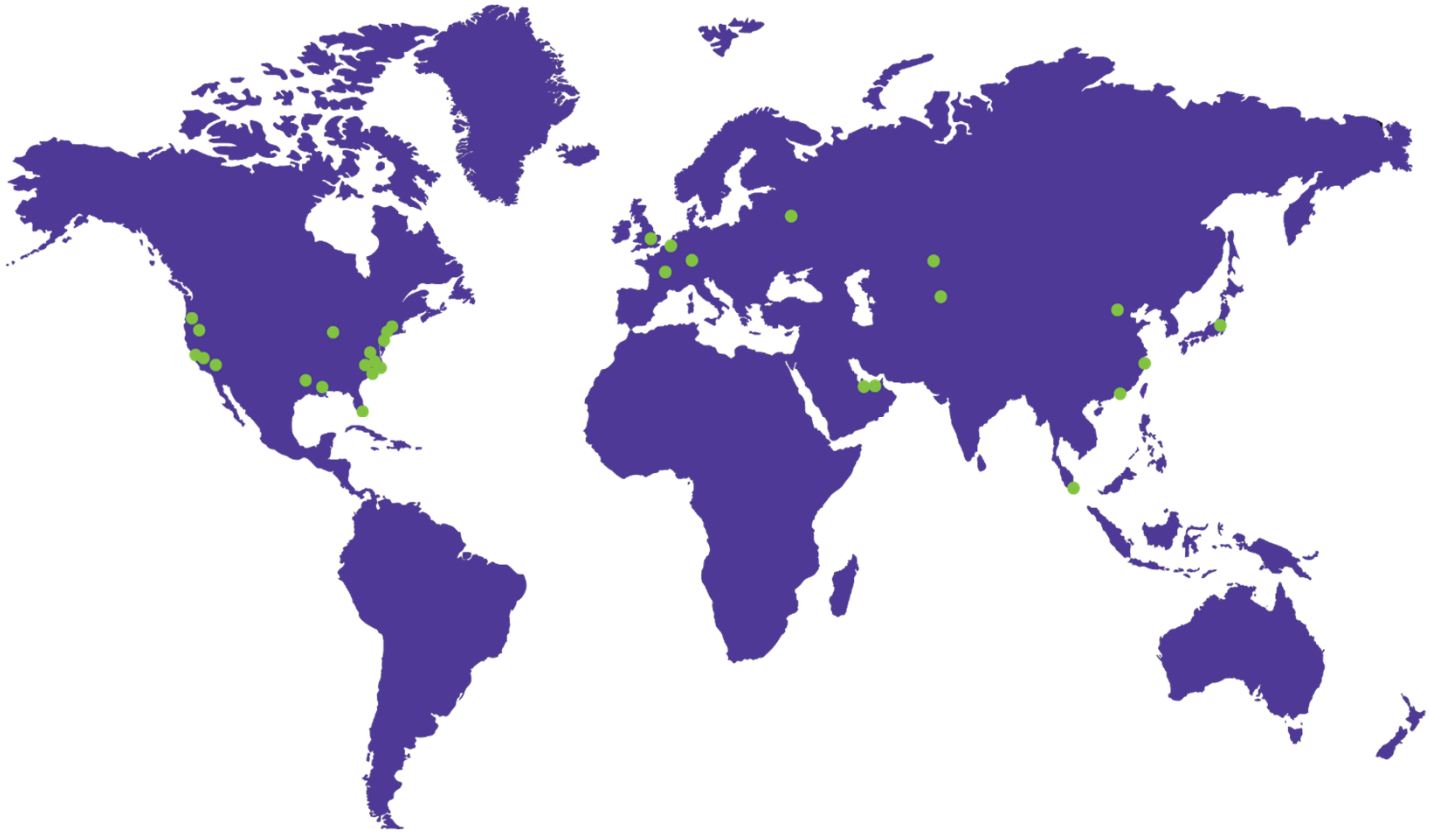
Pamela T. Wu represents companies in the energy industry in a broad range of matters involving rates, market rules and regulation, and energy commodity trading before the Federal Energy Regulatory Commission (FERC) and Commodity Futures Trading Commission (CFTC). She advises clients seeking to reduce their carbon footprint through new infrastructure assets, clean energy technologies, and transacting carbon credits and carbon offsets. Pam is an active member of the firm's Energy Commodity Trading and Compliance Working Group, Hydrogen Working Group, Electric Vehicles Working Group, and Renewables Working Group.

Our Global Reach

Africa
Asia Pacific
Europe
Latin America
Middle East
North America

Our Locations

Abu Dhabi
Almaty
Beijing*
Boston
Brussels
Century City
Chicago
Dallas
Dubai
Frankfurt
Hartford
Hong Kong*
Houston
London
Los Angeles
Miami
Moscow
New York
Nur-Sultan
Orange County
Paris
Philadelphia
Pittsburgh
Princeton
San Francisco
Shanghai*
Silicon Valley
Singapore*
Tokyo
Washington, DC
Wilmington



Morgan Lewis

THANK YOU