**This document has been prepared as part of the implementation project of Legal Pathways to Deep Decarbonization (Michael B. Gerrard and John C. Dernbach, eds. Environmental Law Institute [2019]) (LPDD). For background information on the project, see https://lpdd.org**

**Memorandum to Accompany Interoperability Provisions**

A book published by the Environmental Law Institute, entitled *Legal Pathways to Deep Decarbonization in the United States* (Michael Gerrard & John Dernbach, Eds., ELI 2019) (“LPDD”)[[1]](#footnote-1), has identified more than 1000 legal strategies that can be taken to achieve dramatic greenhouse gas emission reductions in the United States. Many of those pathways are focused on shifting transportation fuel sources in the U.S. away from fossil fuels, at a level that would result in the deployment of approximately 300 million alternative fuel vehicles (“AFVs”) – particularly electric vehicles (“EVs”), plug-in hybrid electric vehicles (“PHEVs”) and hydrogen fuel cell vehicles (HFCVs”). "The goal is to shift 80%-95% of the miles driven from gasoline to lower carbon energy sources like electricity and hydrogen." [[2]](#footnote-2)

The importance of achieving this goal is readily apparent: in the United States the transportation sector accounts for 28% of the total energy consumed, 72% of petroleum usage and about a third of GHG emissions.[[3]](#footnote-3) Cars and trucks use about half the total energy consumed by the transportation sector, which also includes trains, subways, planes, ships and other watercraft.

Although most EV charging takes place at home or work, consumers expect to be able to use the vehicles they purchase for extended trips. For that reason, the limited range of EVs, combined with the lack of adequate charging infrastructure along longer distance travel corridors stands as a major impediment to the widespread adoption of this technology. According to experts, “[c]onsumer reluctance towards EVs . . . arises from the limited range of the battery pack. The nearest charging station may be prohibitively far, or its wait time far too long. With no charging nearby. . . EV drivers could become stranded.”[[4]](#footnote-4)

Thus, the proliferation of publicly accessible and convenient electric vehicle charging stations -- capable of providing Level 2 or direct current (“DC”) fast charging service[[5]](#footnote-5) -- is essential to addressing these “range anxiety” issues and promoting the expanded consumer acceptance of electric vehicles.

One obstacle to the widespread availability of publicly accessible, convenient Level 2 charging equipment and DC fast chargers is the inadequate interoperability that currently exists among the various charging networks. Such equipment is provided by “electric vehicle service providers” (“EVSPs”) operating under a variety of business models that rely on proprietary software and subscriber service arrangements.[[6]](#footnote-6) As a result, charging services are provided under different pricing structures and terms of service for subscribers versus non-subscribers.[[7]](#footnote-7) The various networks operate independently and are not well integrated with each other, causing confusion and inconvenience to drivers seeking to charge their vehicles on longer trips.

In addition, electric vehicle charging equipment purchased from EVSPs comes with proprietary software that may not be capable of communicating with other networks.[[8]](#footnote-8) Thus, where the EVSP goes out of business or is otherwise not providing adequate service the host may be unable to switch over to another EVSP, and may in the worst-case wind up with stranded assets.

The attached language would address these issues by directing the Secretary administering the federal funding program to establish by regulation minimum interoperability criteria for Level 2 charging equipment and DC fast charging equipment receiving incentives under the program. Those criteria would require that commercial Level 2 and DC fast charging equipment be: accessible to the general public without any membership or subscription requirement (allowing, however, differing monetary charges for members and non-members); and capable of accepting payment: (i) by credit card; (ii) through “universal roaming,” whereby a payment through one provider is processed by the exchange of billing data with another service provider; or (iii) by some other means determined by the Secretary to facilitate the convenient use of the commercial Level 2 and DC fast charging equipment by the general public.[[9]](#footnote-9) The statute would also mandate that the regulations require all Level 2 and DC fast charging equipment be equipped with an open communications protocol allowing “back end” network interoperability, so that electric vehicle charging equipment hosts are not locked into dealing with only one EVSP.

The statutory language would provide the Secretary with the discretion to identify and address other issues relating to the interoperability of commercial DC fast charging equipment through the establishment of alternative and additional criteria.

It should be noted that much of the language in the model statute attached to this memorandum is based upon model procurement agreement provisions prepared by Northeast States for Coordinated Air Use Management (“NESCAUM”).[[10]](#footnote-10)

1. Michael Gerrard and John Dernbach, *Legal Pathways to Deep Decarbonization in the United States* (“LPDD”)(Environmental Law Institute, 2019). [↑](#footnote-ref-1)
2. LPDD, Ch. 14, at 353; *see also*, Chris Gearhart, Implications of Sustainability for United States Light-Duty Transportation Sector, 3 MRS Energy & Sustainability 1, 7, note 6 (2016) [↑](#footnote-ref-2)
3. U.S. Energy Information Agency: Annual Energy Review: 2011 (2012), available at: http://www.eia.gov/totalenergy/data/annual/; *see also*, http://www.eia.gov/todayinenergy/detail.php?id=29612. [↑](#footnote-ref-3)
4. Clint Cohen, *Blowing Smoke: Why the Current Government Incentive Regime Makes EVs and PHEVs A Distant Prospect-and How to Fix It* (2013) 38 Colum. J. Envtl. L. 375, 384. [↑](#footnote-ref-4)
5. “Level 3” chargers – commonly called “DC Fast Chargers” -- provide DC service that can recharge a car battery to 80% capacity in less than an hour.  *See* SAE J 1772. There are two other levels of electric vehicle charging, provided by “Level 1”and “Level 2” chargers, respectively. “Level 1” charging is serviced by a standard wall outlet providing AC 120 volts/20 amps of power, and can fully recharge a car battery in 8-12 hours; Level 2 chargers connect to outlets providing AC 208/240 volts/40 amps service (about the same required for a dryer plug) and can

   recharge a car battery in 4-8 hours. Available at: https://www.boston.gov/sites/default/files/file/2020/06/How%20To%20Install%20an%20EVSE%20.pdf. [↑](#footnote-ref-5)
6. Electric Power Research Institute, *Interoperability of Public Vehicle Charging Infrastructure*, August, 2019, at 2, available at: <https://www.epri.com/research/products/3002017164> (the “EPRI Report”). [↑](#footnote-ref-6)
7. *Id.* [↑](#footnote-ref-7)
8. Northeast States for Coordinated Air Use Management, Multi-State ZEV Task Force and Northeast Corridor Steering Committee, *Electric Vehicle Charging Interoperability Recommendations for State Policy Makers*, May 2020, available at: <https://www.nescaum.org/documents/ev-charging-interoperability-reccomendations_5-1-20.pdf/> [↑](#footnote-ref-8)
9. With universal roaming, “EV drivers can access public charge points from any owner/operator through a common platform and a single network subscription or contract ….” EPRI Report at 3. [↑](#footnote-ref-9)
10. Kathy Kinsey, Elaine O’Grady, Jesse Way, *Building Reliable EV Charging Networks: Model State Grant And Procurement Contract Provisions For Public Ev Charging,* NESCAUM, August, 2019, available at: https://www.nescaum.org/documents/model-contract-provisions-for-public-evse-5-24-19.pdf/ [↑](#footnote-ref-10)