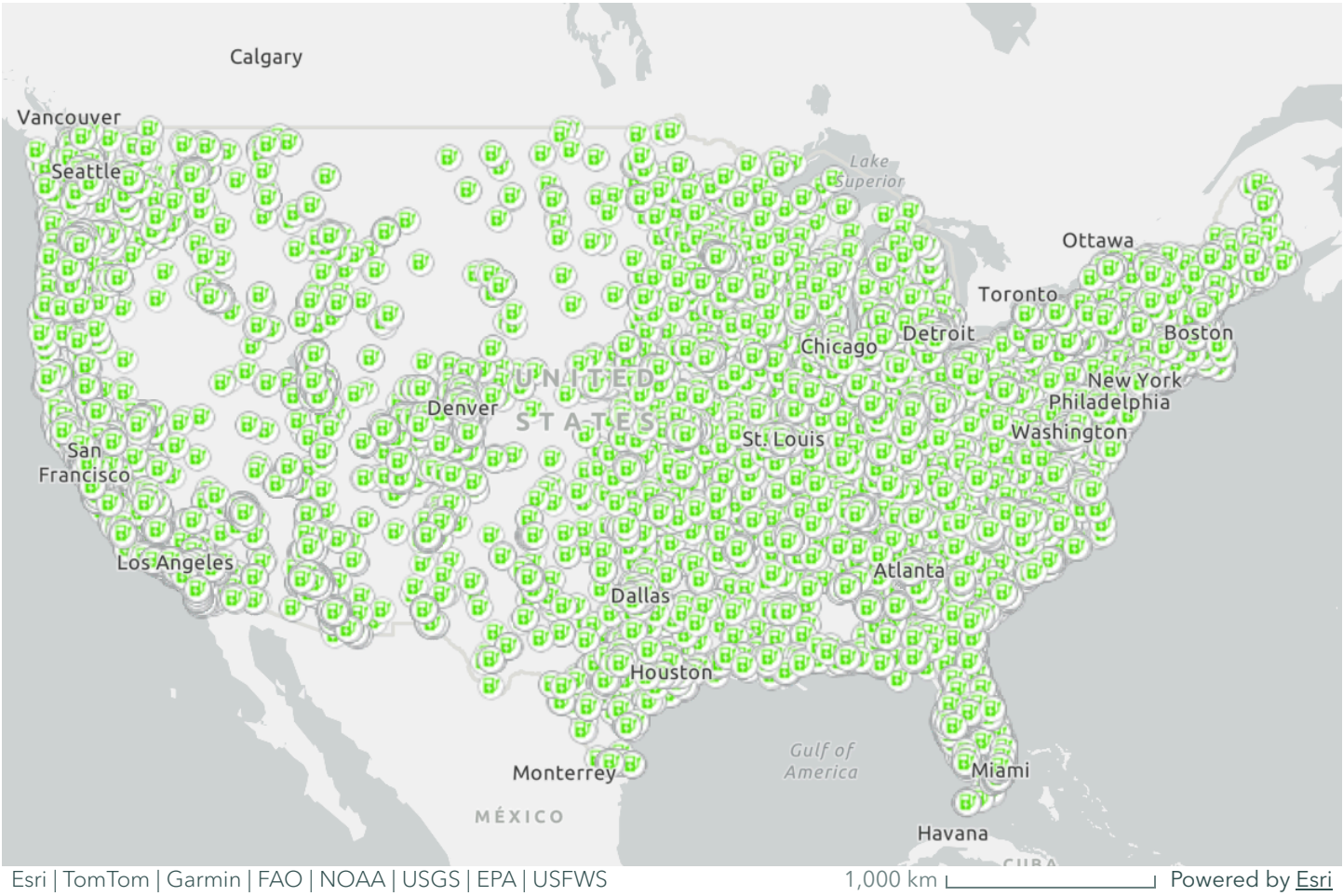
Charging an Electric Vehicle

Connecting Drivers to Charging Stations

April 19, 2025



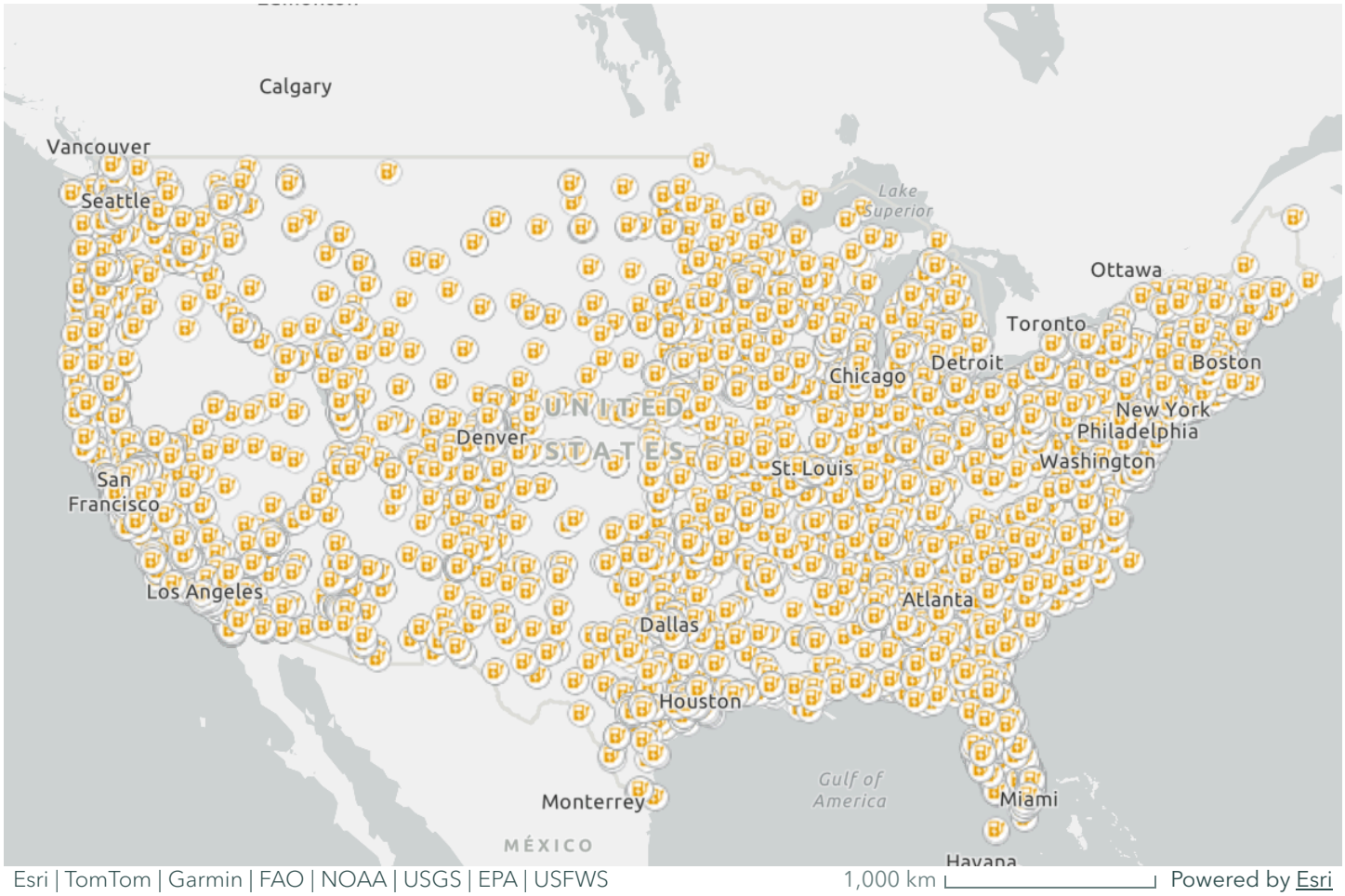
AC Level 2 Charging (J1772)

AC Level 2 equipment offers charging through 240 V or 208 V electrical service. Most homes have 240 V service available, and because Level 2 equipment can charge a typical EV battery overnight, EV owners commonly install it for home charging. Level 2 equipment is also commonly used for public and workplace charging and can operate at 40 to 80 amperes. Most residential Level 2 chargers operate at up to 30 Amps, delivering 7.2 kW of power. These units require a dedicated 40-Amp

circuit to comply with the National Electric Code requirements in Article 625. As of 2023, nearly 80% of public EV charging ports in the United States were Level 2.

Level 2 charging equipment uses the same J1772 connector that Level 1 equipment uses. All commercially available EVs in the United States have the ability to charge using Level 1 and Level 2 charging equipment.

The map in this section interactively provides locations of charging stations that deliver Level 2 charging service with a J1772 connector only.

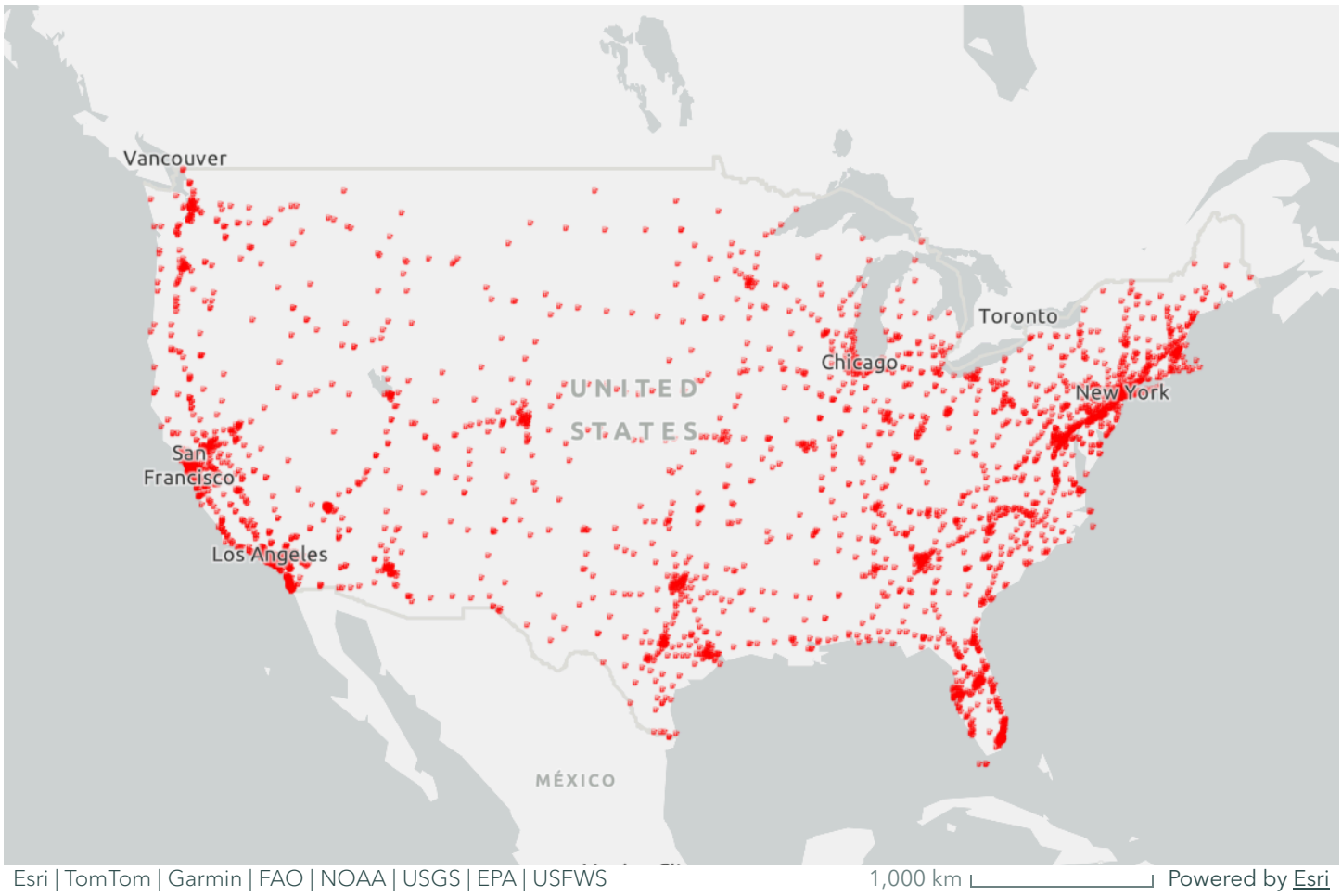


Combined Charging System (CCS)

Direct-current (DC) fast charging equipment enables rapid charging along heavy traffic corridors at installed stations at power outputs up to 500 kW. This is also referred to as Level 3 charging. As of 2023, more than 20% of public EV charging ports in the United States were DC fast chargers. The availability of DC fast charging is expected to increase as a result of federal funding to build a national EV charging network, such as the National Electric Vehicle Infrastructure Formula Program, the national Alternative Fuel Corridors grant program, and the Charging and Fueling Infrastructure Grants.

The **CCS** connector lets drivers use the same charge port with AC Level 1, Level 2, and DC fast charging equipment. The only difference is that the DC fast charging connector has two additional bottom pins. Most EV models on the market can charge using the CCS connector.

The map in this section interactively provides locations of charging stations that deliver Level 3 charging service with at least one CCS connector.



North American Charging Standard (NACS)

Society of Automotive Engineers (SAE) International is standardizing the **J3400** connector based on Tesla's design for the NACS connector, which works for all charging levels, including Tesla's fast charging option, called a Supercharger. Although Tesla vehicles do not have a CCS charge port, they come with a limited CCS adapter that supports charging up to 19.2 kW. Tesla does sell full power adapters for both connector types. Several vehicle

manufacturers have announced adopting the J3400 connector as early as 2025, which will allow non-Tesla EVs to charge at Tesla stations with the J3400 connector.

The map in this section interactively provides locations of charging stations that deliver Level 3 charging service with a J3400 NACS connector.

Created by Richard Lee for GIS 515, Cartographic Design. NC State University, Spring 2025

Data Sources: Department of Energy, Alternative Fuels Data Center