Global Certificate Course in EV Charging Policy and Regulations

Unit 2: Policy Frameworks for EV Charging

Alternating Current (AC) and Direct Current (DC): AC and DC are two types of electrical currents. AC is an electric current that reverses direction at regular intervals, while DC flows in one direction only. AC is the type of power that is delivered to most homes and businesses, while DC is the type of power used by electric vehicles (EVs) to charge their batteries.

Charging Level: There are three levels of EV charging: Level 1, Level 2, and Level 3 (also known as DC Fast Charging). Level 1 charging uses a standard household outlet and provides a slow charge, typically taking 8-20 hours to fully charge an EV. Level 2 charging uses a 240-volt outlet and provides a faster charge, typically taking 4-6 hours to fully charge an EV. Level 3 charging uses a high-powered DC charger and provides an even faster charge, typically taking 30 minutes to an hour to charge an EV to 80% capacity.

Charging Infrastructure: Charging infrastructure refers to the network of charging stations and other equipment needed to charge EVs. This includes both public and private charging stations, as well as the electrical grid infrastructure needed to support them.

Charging Station: A charging station is a physical location where EVs can be charged. Charging stations can be either public or private, and can provide Level 1, Level 2, or Level 3 charging.

Demand Charges: Demand charges are a type of electricity pricing that charges customers based on their peak electricity demand, rather than their total electricity usage. Demand charges can be a significant cost for charging station operators, as they can be charged for the peak electricity demand of all the EVs charging at their station at any given time.

Department of Energy (DOE): The DOE is a US government department responsible for energy policy and regulations. The DOE's Office of Energy Efficiency and Renewable Energy (EERE) has a Vehicle Technologies Office (VTO) which is responsible for research, development, and deployment of EV technologies.

Electric Vehicle Supply Equipment (EVSE): EVSE refers to the equipment used to charge EVs. This includes both the charging station and the charging cable.

Electric Vehicle Charging Association (EVCA): The EVCA is a trade association for the EV charging industry. The EVCA's mission is to promote the growth of the EV charging industry and to advocate for policies that support the widespread adoption of EVs.

Interconnection: Interconnection refers to the process of connecting a charging station to the electrical grid. Interconnection can be a complex and costly process, and requires coordination with the local utility company.

Level 1, Level 2, and Level 3 Charging: Level 1, Level 2, and Level 3 charging are the three levels of EV charging. Level 1 charging uses a standard household outlet and provides a slow charge, Level 2 charging

uses a 240-volt outlet and provides a faster charge, and Level 3 charging uses a high-powered DC charger and provides an even faster charge.

Open Charge Point Protocol (OCPP): OCPP is an open-source protocol for communication between charging stations and charging station management systems. OCPP allows charging station operators to manage and monitor their charging stations remotely, and allows EV drivers to locate and access charging stations using their smartphones or other devices.

Plug-in Electric Vehicle (PEV): A PEV is an electric vehicle that can be plugged in to recharge its battery. PEVs include both all-electric vehicles (AEVs) and plug-in hybrid electric vehicles (PHEVs).

Smart Grid: A smart grid is an electrical grid that uses digital technology to monitor and control the flow of electricity. Smart grids can help to balance the supply and demand of electricity, and can help to integrate renewable energy sources into the grid.

Standards: Standards are a set of rules, guidelines, or specifications that are used to ensure consistency and interoperability in a particular industry or technology. In the EV charging industry, there are several key standards, including the Society of Automotive Engineers (SAE) J1772 standard for EV charging connectors, and the Open Charge Point Protocol (OCPP) for communication between charging stations and charging station management systems.

Society of Automotive Engineers (SAE): The SAE is a professional organization for engineers and technical experts in the automotive industry. The SAE's J1772 standard for EV charging connectors is the most widely used standard for EV charging in North America.

Time-of-Use (TOU) Rates: TOU rates are a type of electricity pricing that charges customers different rates depending on the time of day. TOU rates can be a good option for charging station operators, as they can charge more for electricity during peak hours and less during off-peak hours.

Utility Company: A utility company is a company that provides electricity, gas, or other utility services to customers. Utility companies are responsible for maintaining the electrical grid infrastructure and for delivering electricity to customers.

Vehicle-to-Grid (V2G): V2G is a technology that allows EVs to send electricity back to the electrical grid when they are not in use. V2G can help to balance the supply and demand of electricity, and can help to integrate renewable energy sources into the grid.

Vehicle-to-Home (V2H): V2H is a technology that allows EVs to send electricity to a home or building when they are not in use. V2H can provide backup power during outages, and can help to reduce electricity costs by allowing EVs to charge during off-peak hours and then supply power to the home during peak hours.

Zero Emission Vehicle (ZEV): A ZEV is a vehicle that emits no tailpipe emissions. ZEVs include both all-electric vehicles (AEVs) and hydrogen fuel cell electric vehicles (FCEVs).

In summary, the key terms and vocabulary in Unit 2: Policy Frameworks for EV Charging of the Global Certificate Course in EV Charging Policy and Regulations include Alternating Current (AC) and Direct Current

(DC), Charging Level, Charging Infrastructure, Charging Station, Demand Charges, Department of Energy (DOE), Electric Vehicle Supply Equipment (EVSE), Electric Vehicle Charging Association (EVCA), Interconnection, Level 1, Level 2, and Level 3 Charging, Open Charge Point Protocol (OCPP), Plug-in Electric Vehicle (PEV), Smart Grid, Standards, Society of Automotive Engineers (SAE), Time-of-Use (TOU) Rates, Utility Company, Vehicle-to-Grid (V2G), Vehicle-to-Home (V2H), and Zero Emission Vehicle (ZEV). Understanding these terms is essential for anyone looking to learn about EV charging policy and regulations, as they are the building blocks for understanding the complex and rapidly evolving field of EV charging.