



Electric Vehicle (EV) Technology Open Payments Webinar

March 30, 2022

Polling Question

What industry stakeholder category best describes your organization?

- Charging Network Provider
- Vehicle Manufacturer
- Financial / Payments
- Retailer
- Technology Provider
- Utilities
- Fuel
- Government agency



U.S. Payments Forum Mission

- *... the cross-industry body focused on supporting the **introduction and implementation of payment technologies** that protect the security of, and enhance opportunities for payment transactions within the U.S.*

Current Topics and Issues

- COVID-era changes impacting the payments experience for consumers and merchants
- Petro, Transit and Hospitality merchants EMV-enablement issues
- EMV contactless/mobile acceptance testing & certification standards
- The latest trends and practices for fraud mitigation – EMV 3-D Secure, Secure Remote Commerce, PAR and other online mitigation tools

Beyond EMV – Advanced Payments Topics and Issues

- Mobile payment and tokenization
- Identity and authentication in payments: use of biometrics, mobile data elements, digital ID and payment at electric charging stations
- Digital currencies (crypto), blockchain and artificial intelligence tools (AI)

Forum Activities & Resources

- **Collaboration on projects to develop resources to assist with U.S. EMV migration and implementation of other new and emerging payments technologies**
 - White papers, educational resources
 - Best practices and technical recommendations
- **Education programs for members and the industry**
 - Webinars, workshops, Forum member meeting tutorials, published resources
- **Communications**
 - Market outreach with recommended best practices and industry positions
- **Networking**
 - Forum for industry stakeholders to interact with all payments industry stakeholders

Information and resources available at www.uspaymentsforum.org

EV Technology Open Payments Webinar

This webinar will provide implementation best practices for EV Technology open payments.

The goal is to:

- Understand the charging experience across all networks for open payments.
- Simplify and enhance the charging payments experience.
- Clarify misconceptions and reduce friction.
- Considerations for petroleum merchants scoping how to integrate existing infrastructure with EV technology.

Introduction: Today's Panel Speakers



Jason Bohrer
U.S. PAYMENTS FORUM



Carly Furman
NAYAX



Cindy Kohler
VISA



Gabriela Loayza
DISCOVER



Oliver Manahan
INFINEON TECHNOLOGIES



Nick Pisarev
G+D



Barton Sidles
bp

Agenda

- Market Status
- Reader Considerations
- Overview of ISO 15118
- Plug & Charge Considerations
- Global Payment Network Requirements
- Q&A
- Resources

In February 2021, the Secure Technology Alliance Payments Council published the white paper, “Electric Vehicle Charging Open Payment Framework with ISO 15118” and hosted the webinar, “Electric Vehicle Charging Payments Innovations”

Available at securetechalliance.org



EV Technology Payments: Market Status

Oliver Manahan, Infineon Technologies

EV Charging Interoperability

- No driver today questions the ability to approach a gas station and fill up with gas. This is **NOT** the case with EV charging today:
- Questions EV drivers ask themselves:
 - Will I understand the sign-in instructions easily or will I need to call customer service?
 - Is the charging port compatible with my vehicle? (is it Tesla, CCS, CHAdeMO?)
 - What do I need to do to gain access? Do I require an app, fob to gain access? Card? Plug & Charge?
 - Is it a secure payment?
 - How do I pay? Is it free, what is cost? If so, how much?
 - Are there peak/off-peak charges or idle charges?
 - How fast will I be able to charge (AC/DC)?



EV Charging Availability

- The number of charging stations will greatly exceed the number of gas stations/pumps today. The nature of electric vehicle supply equipment (EVSE) and supply of electricity differ compared to supply of gas.
- To scale, EV charging networks will need to have:
 - Simplistic and ubiquitous technology for access and payment
 - Deployment – paying for energy supply



U.S. EV Market Overview

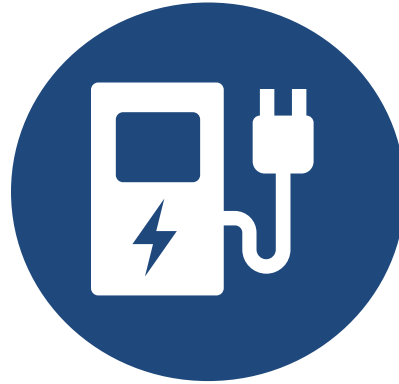
Growth Drivers

- Improved technology
- Sustainability, minimizing carbon footprints
- Government policy incentives



Electric Vehicles

- ~2M current
- EV 30% sales share in 2030 (~ 22M)



Public Charging Infrastructure

- ~90,000 current
- 1.3M projection 2030 (depending on policies)



Government

- \$7,500 federal tax credit (200,000 EVs / manufacturer)
- Additional state tax credit depending on state
- Infrastructure Bill under consideration, \$7.5 Billion EVC funding

Open Payment Benefits – Ease of Use – Charge and Go

Open payment solutions ensure that anyone can pay with their card, mobile wallet, or web payment solution to charge their electric vehicle. No subscription or signup required. Straightforward access for EV drivers to plug and charge.

EV drivers can realize the following benefits from direct payment:

- Eliminate uncertainty about the accessibility and availability of EV charging stations.
- Simplify and enhance the charging experience.
- Achieve a consistent charging experience across all networks.

Automaker Investment - Over \$100 Billion in EV

Electric vehicles (EVs) is one of the fastest growing sub-segments of the automotive industry.



2019 Audi e-tron



2018 Nissan Leaf



2020 Porsche Mission



2019 Jaguar I-Pace

Automaker	Electric Model Forecast	EVs- Share of Sales	Investment in EVs
BMW	12 electric models by 2021	50% by 2030	\$35B by 2025
Ford	6 electric models by 2021	40% by 2030	\$30B by 2030
General Motors	4 electrified models by 2020	40% by 2030	\$35B by 2025
Mercedes	4 electrified models by 2020	50% by 2025	\$47B by 2030
Volkswagen Group	11 electric models by 2022	50% by 2030	\$86B by 2025
Volvo	7 electric models by 2022	50% by 2025	Not yet announced
Tesla	4 models, 3 new models by 2022	100%	\$12B- EV & battery factories
Rivian	2 models by 2021, 6 models by 2025	100%	\$5B- second assembly plant
Lucid Motors	1 model by 2021, 3 models planned	100%	\$4.4B- accelerate production



2020 BMW iX3



2020 Mercedes-Benz EQ



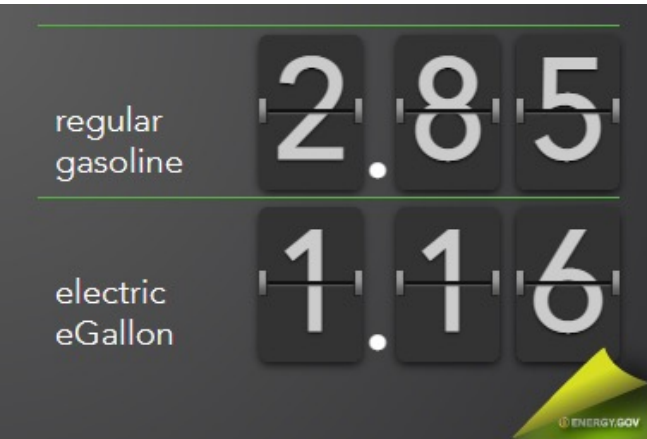
2020 Volvo XC40



Source: MJ Bradley

EV Stats

U.S. Average as of March 2021



One of the big selling points of electric vehicles (EVs) is that they're **cheap to run**.

Charging is often categorized into 3 levels:

Level 1	Level 2	DC Fast Charge
		
VOLTAGE: 120V 1-Phase AC	VOLTAGE: 208V or 240 V 1-Phase AC	VOLTAGE: 208V or 480V 3-Phase AC
AMPS: 12-16 Amps	AMPS: 12-80 Amps (Typ. 32 Amps)	AMPS: >100 Amps
CHARGING LOAD: 1.4-1.9 kW	CHARGING LOAD: 2.5-19.2 kW (Typ. 6.6 kW)	CHARGING LOAD: 50-350 kW
CHARGING TIME: 3-5 Miles per Hour	CHARGING TIME: 12-60 Miles per Hour	CHARGING TIME: 60-80 Miles in 20 Minutes

Charging Providers supporting Open Payments is growing

Charging Provider	# of charging stations*	% of market	Open /Close Loop
ChargePoint	26,523	55%	Open
Non-Networked	7,730	16%	N/A
Tesla	5,743	12%	Open Pilot
SemaCharge	1,993	4%	Open
Blink	1,377	3%	Close
Greenlots (Shell)	1,063	2%	Open
EVgo	862	2%	Open
Volta	1,056	2%	Close
EV Connect	743	2%	Open
Electrify America	777	2%	Open
FLO	269	<1%	Close
	48,647		



*Source: Data as 8/16/2021 taken from the Alternative Fuel Data Center (AFDC) website which is part of the US Department of Energy



EV Technology Payments: Reader Considerations

Carly Furman, Nayax



Getting to Know Nayax



Established
in Israel in **2005**



550+ employees
worldwide, >35% R&D



Offices in 8 countries
and distributors in
44 markets



Licensed payment
institution



Presenter:
Carly Furman, CEO,
Nayax LLC



> 30K
end customers



>517K active
connections,
in **>62 countries**



Accepts **> 80+ payment**
methods and 40+
currencies



0.8Bn transactions
processed in 2021

Nayax



www.nayax.com

www.evmeter.com



EV Technology Payments: Overview of ISO 15118

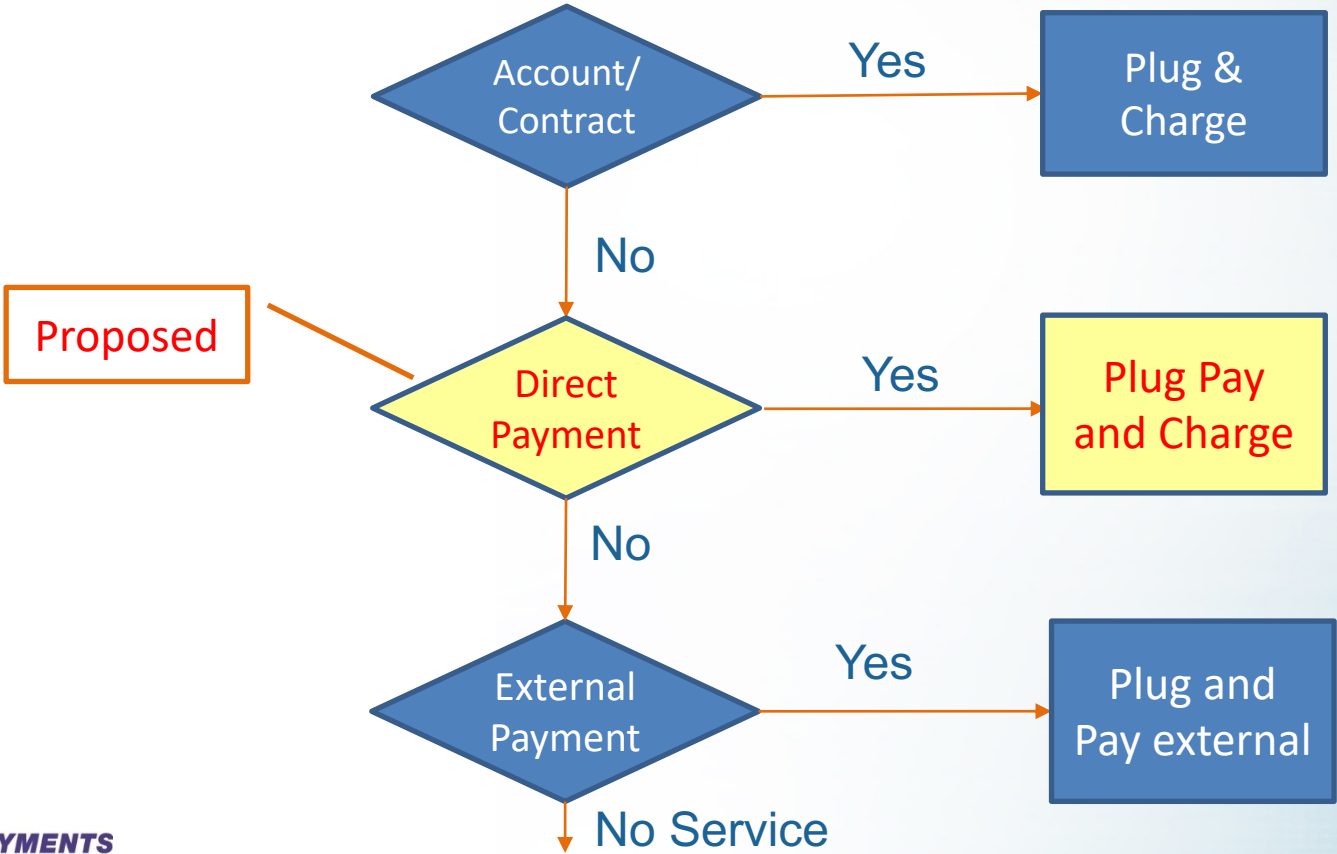
Nick Pisarev, G&D

ISO 15118

ISO 15118 specifies the digital communication between Electric Vehicle (EV) and the charger or Electric Vehicle Supply Equipment (EVSE)



ISO 15118 - Payment (Authorization) Path - Proposed



ISO 15118 EV Charging Use Cases

Plug &
Charge

Smart
Charging

Vehicle-to-
Grid (V2G)

Wireless

More and more companies are adopting and supporting the Plug & Charge standard worldwide

Many Original Equipment Manufacturers (OEMs), Electric Vehicle Service Providers (EVSE) and charging networks are adapting the Plug & Charge standard based on ISO 15118.

Just to list a few.....



PORSCHE



LUCID



TRITIUM





EV Technology Payments: Plug & Charge Considerations

Barton Sidles, bp



EV Technology Payments: Global Payment Network Requirements

What is the Merchant Category Code (MCC)?

It is a four-digit number assigned to describe a merchant's primary business based on annual sales volume.

It can also identify a specific merchant or type of transaction and data can be used for a range of purposes:

- Activity tracking and reporting
- Risk management

Note: Acquirers (and their agents) are required to assign the correct MCC to each of their merchants.

Q&A



www.uspaymentsforum.org



- **EMV Connection**
 - <https://www.emv-connection.com>
- **Get Contactless**
 - <https://www.getcontactless.com>
- **mDLConnection**
 - <https://www.mdlconnection.com>



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Thank You!



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