

SBD Explores: NACS expansion and new standard

Why are automakers adopting NACS and what does the future look like for EV connectors?

10-minute Insight

Tesla's North American Charging Standard (NACS) is being widely adopted by many automakers. This change offers several advantages when it comes to expanding charging services.

Recently, SAE has also published their standard for the NACS connector (SAE J3400), giving automakers clarity and confidence in interoperability.

In this edition of SBD Explores, we dive into why NACS is being adopted and what the future of EV connectors will look like.

Target audience

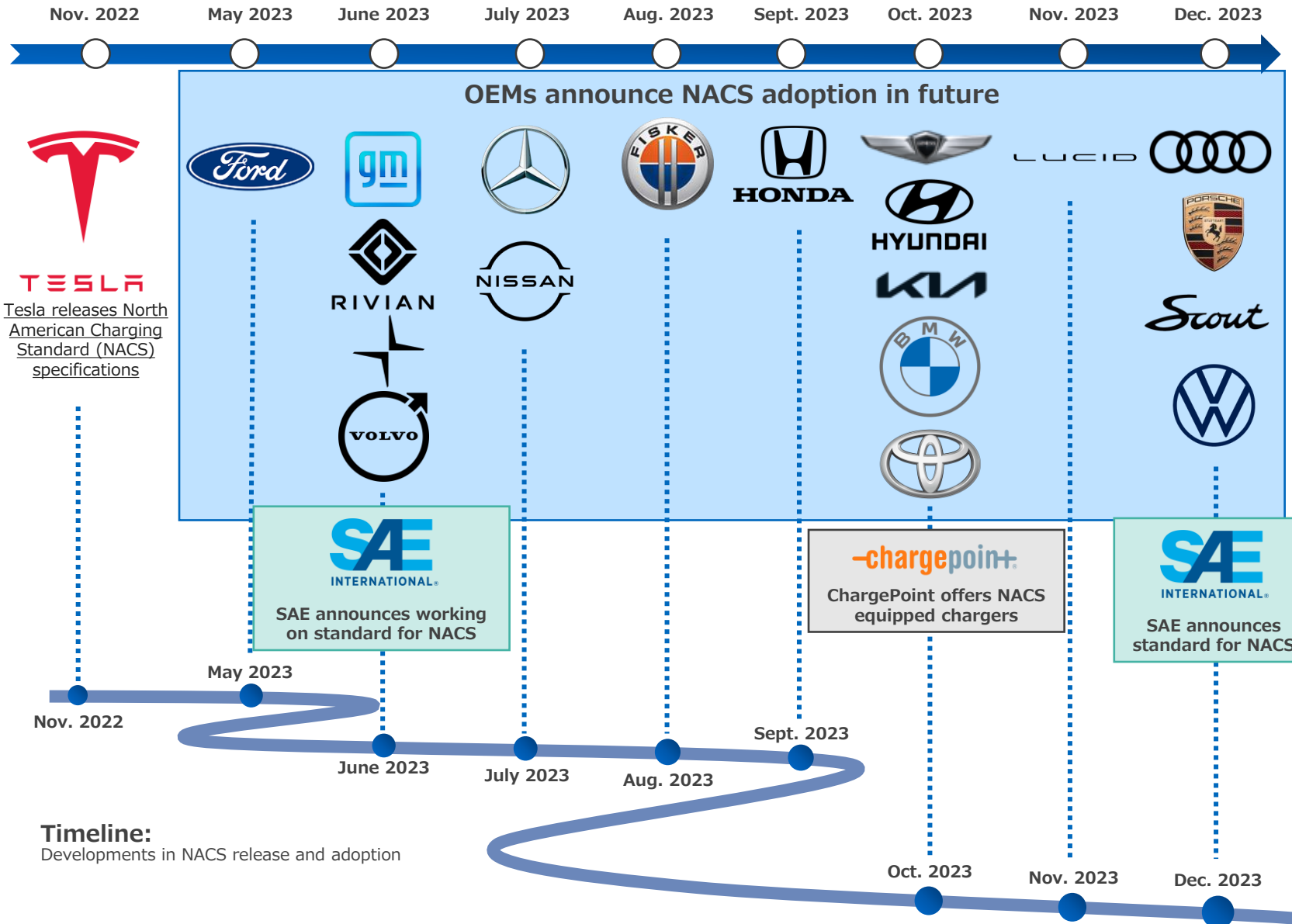
Strategy Engineering
Marketing Product Planning

Focus market(s)

Global



What is happening?



Key takeaway

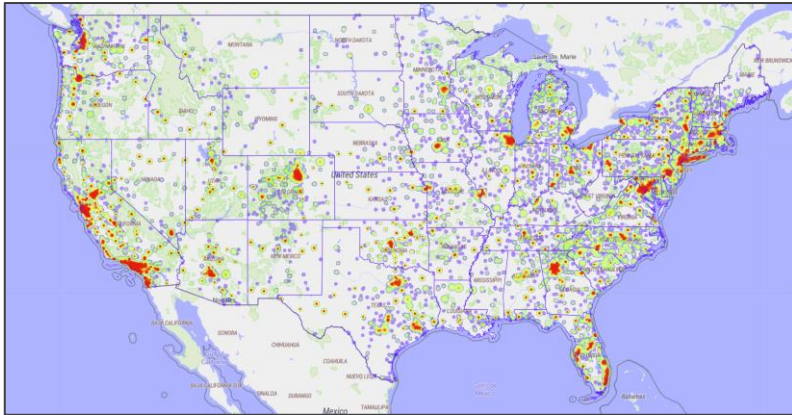
Tesla released the specifications and designs for their proprietary connector and adopted the moniker: North American Charging Standard (NACS). At the same time, they also began to discuss opening their Supercharger network to other automakers. This led to many companies considering a switch to the NACS connector.

- While automakers considered a switch to the NACS connector, the lack of a rigorous 3rd party standard raised concerns about interoperability and performance.
- With this, SAE stepped in and announced in June they will create a standard for NACS by the end of 2023, boosting confidence in the connector and spurring a wave of adoption.
- In October 2023, ChargePoint releases chargers with NACS connectors. This comes after an announcement of intent to do so a couple months prior.
- In December, SAE released their standard for NACS under SAE J3400.

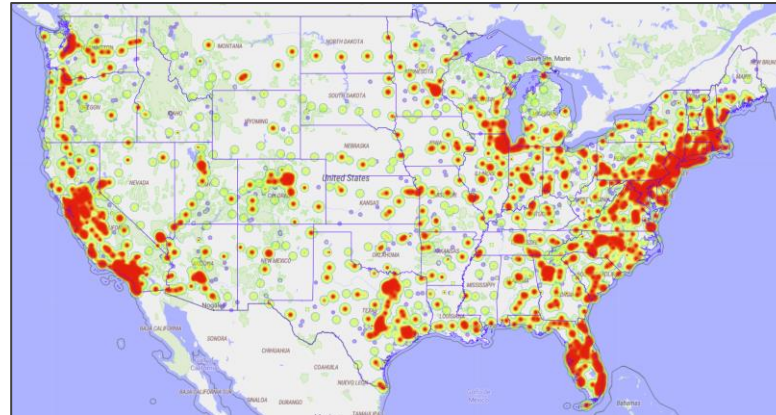
Why does it matter?



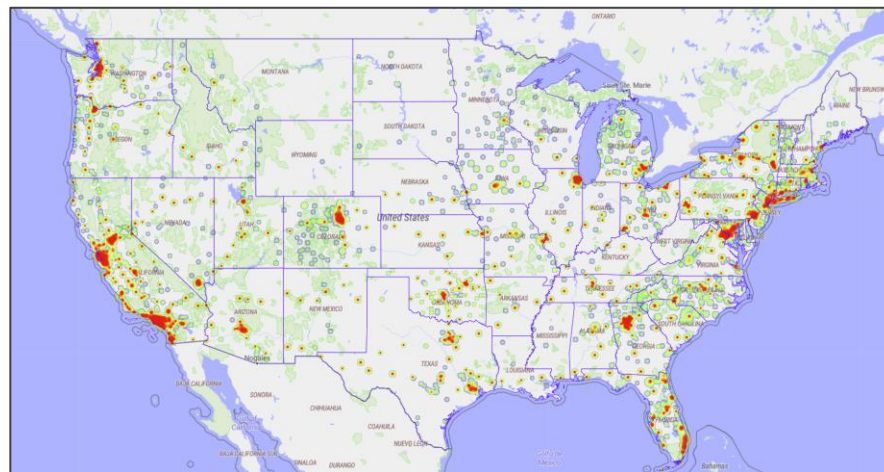
Density charts show where relevant charging connectors are available within the United States



CCS Type 1 / J1772



Tesla NACS



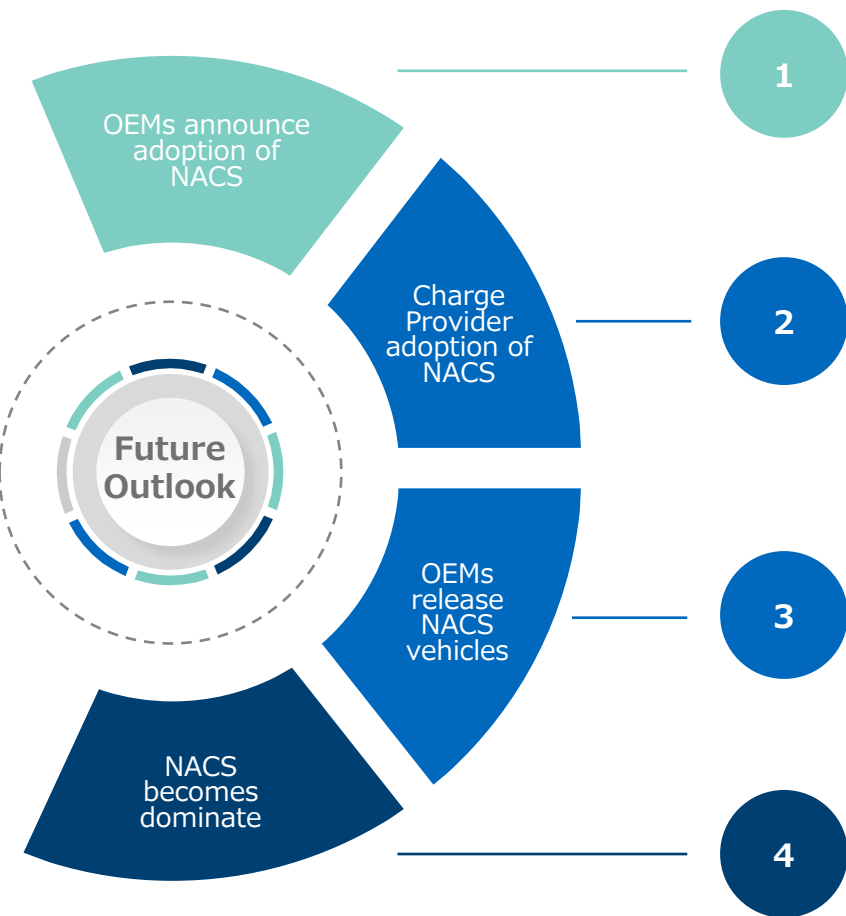
CHAdeMO

Key takeaway

Tesla has the largest charging structure in the world. Implementing capability with their systems provides OEMs with key advantages.

- Implementing the NACS will allow OEMs to nearly double the amount of charge points owners have access to. This can be key in supporting the user journey and reducing range anxiety.
- The Tesla charging network is one of the most reliable networks in the world. Availability and live status is accurate which helps when owners are selecting which stations to go to. This is very important in the US where many non-Tesla charging stations often face issues with reliability.
- The adoption also has key implications on charge providers. Charge providers will have to strategically decide how to swap over to NACS while not alienating existing customers that use non-NACS connectors (CCS, J1772, CHAdeMO).
- OEMs will need to decide how they approach supporting EV buyers before the switch is made. Adaptors will have to be shipped with vehicle purchase that allow for NACS to CCS/J1772 connections.
- The shift to NACS will not impact cyber security for connectors as they use the same standard as CCS.

Where next?



1 We have already seen many OEMs announce their adoption of the NACS. It is likely more will follow with the recent announcement of the SAE standard.

2 Charge providers will have to expand or swap their connectors to support NACS else they look to lose customers to Tesla.

3 OEMs have announced they will release vehicles with the NACS in 2024 and 2025. This is supported with the recent SAE standard which solves many concerns OEMs had when implementing the technology.

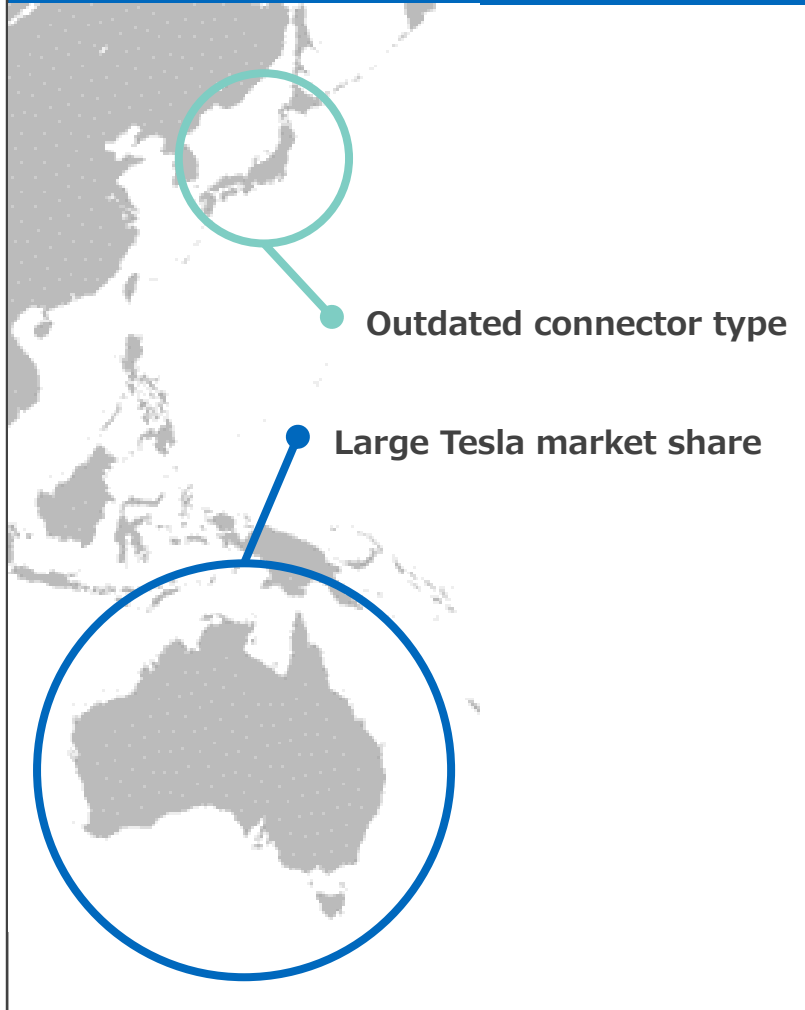
4 NACS / SAE J3400 will be present on all passenger vehicles in North America. All OEMs will ship vehicles with this connector and all charge points will support it.

Key takeaway

Most OEMs have announced they will release vehicles with NACS connectors as early as 2024 and 2025. Some key events will occur alongside the release of more vehicles with NACS.

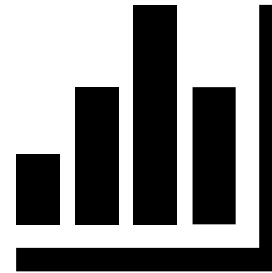
- Charge point operators will need to offer NACS connectors as well. Charge points with CHAdeMO connectors are in the best position to be replaced with NACS since CHAdeMO is no longer offered in new vehicles. Offering both NACS and CCS/J1772 will ensure compatibility for a majority of the market.
- OEMs will have to consider the customer experience for those adopting EVs in the middle of this transition. Consumers may expect OEMs to provide an adapter to enable compatibility with both CCS and NACS.
- Legislation may eventually mandate the use of the NACS connector.
- Eventually, automakers will not be expected to provide adapters and drivers may need to purchase these either from the automaker or a third party. This is similar to when [Apple removed the 3.5 mm headphone jack](#) and offered a lightning port adaptor for limited time.

Markets of interest



Technology of interest

Data requirements from Tesla



800V vehicle architecture



Key takeaway

The EV ecosystem is complex with several factors that should be monitored in the coming years.

- 800V vehicle architectures are on the rise and system voltages may continue to increase in the future. NACS is capable of supporting up to 1000V, yet future architectures (especially in commercial vehicles) may necessitate other connectors such as the Megawatt Charging System (MCS).
- In order for OEMs to enable seamless charging at Supercharger stations, they need to have an agreement with Tesla. The details of each agreement are unknown as of now but could include the transmission of vehicle, user, and charging session data.
- Japan could be a key market for NACS adoption as their charging infrastructure is still quite limited and relies on the CHAdeMO connector, which has lost much of its market share globally.
- Australia, with its large Tesla market share and expanding charging infrastructure, could be another market to watch. However, unlike the USA, Australia favors a 3-phase power network to the property, which limits the usefulness of the single-phase NACS connector.

How should you react?



1

Evaluate

If not done so already, evaluate how adopting the NACS can benefit your company.

2

Design

Incorporate the NACS design into your systems. Ensure you future proof the system to support future EV charging specifications (i.e. 800V)

3

Advertise

Let customers know of the swap and what benefits they get from the new technology in their vehicle.

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