CHAdemo

“Worldwide application and V2X”

10 October 2017

Naotaka SHIBATA
Tokyo Electric Power Company Holdings, Inc.
WHAT’S CHAdeMO?

CHAdeMO = "CHArge de MOve"

= "move by charge"

CHAdeMO = “O cha demo ikaga desuka?”

= “Let’s have a cup of tea while charging”
WHAT’S CHAdemO?

- TEPCO has developed the first ever global fast charging protocol “CHAdemO” to disseminate EVs in the modern society.
- CHAdemO Association was established in 2010, taking initiative by TEPCO.

CHAdemO Association

358 GLOBAL MEMBERS
36 COUNTRIES

Board members:
TEPCO, Nissan, Toyota, Honda, Mitsubishi Motor, SUBARU, Hitachi, Panasonic

As of September 2017

Consortium of stakeholders
- Manufacturers
- Power distributors
- Charger operators
- IT/communication
- Installers
- Certification bodies
- R&D
- Municipalities
- …
GLOBAL INSTALLATION

As of September 2017

GLOBAL TOTAL

16,609

CHAdemO IN EUROPE

167

700

241
Share of CHAdeMO Chargers (Excluding China)

BEVs

- None: 26%
- AC: 9%
- Combo: 14%

Total: 909,000

CHAdemo: 32%

Tesla: 19%

PHEVs

- None: 79%
- CHAdemo: 21%

Total: 474,000

Source: IHS Automotive; 2010-2016 cumulative data; passenger vehicles only
V2X OVERVIEW
“Benefits”

- Back-up for blackout
- Electricity peak shaving
- Connecting with solar power
V2X OVERVIEW
CHAdeMO V2X products in the market

V2V (Vehicle)  V2L (Load)  V2H (OFF Grid)  V2G/B/H (Grid)
Grid integrated vehicle fleet platform; 30 PCS+EVs
Serve frequency regulation to the Danish TSO
Currently generating 1300€/EV/year

Source: Nissan Automotive Europe
V2X PROJECTS

- JUMPSmartMaui
  - USA
- LA Air Force Base
  - USA
- Danville City
  - USA
- PowerStream
  - Canada
- Nikola Project / Parker Project
  - Denmark
- Amsterdam Smart City
  - Netherlands
- Nissan HQ Project
  - France
- Nissan-Enel Project
  - UK
- Yokohama Smart City Project
  - Japan
- Liikennevirra-Nissan project
  - Finland
- DriveElectric
  - UK
- OVO
  - UK
V2X PROJECTS
RES integration and VPP (V2H/G)

- Phase I: 2013 – 2016
  - 200 EVs, 9 DC chargers
  - DC fast charger stations
  - EV energy control center (EVECC)

- Phase II: 2015 – 2017
  - 500 EVs, 13 DC chargers
  - V2G/H
  - EV charge/discharge to power Home/Business
  - Grid services using V2G systems and DR (80EVs)
All possible with CHAdeMO!

- OFFICE/HOME CHARGING
- DESTINATION CHARGING
- PATHWAY CHARGING

- VPP DR
- Lower Power
- Billing Authentication PnC
- High Power
- Dynamic Wireless Pantograph
- Geographic diversity

Vehicles of all size

- : Already Developed
- : Now Developing
THANK YOU FOR YOUR ATTENTION!