DC – Quick Charge

Presentation to:

Maryland Department of Environment MDE

Presented by:

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Current Charging Technologies

Level 1 – 1.6kW

120 Volts / 15 Amps
Requires 20 amps

Charging Time*:
- 0%-100% = 15 hrs

* Illustrated charging time for:
Nissan Leaf:
24 kW Lithium ion battery
BMW i3:
22kW Lithium ion battery

Level 2 – 7.2 kW

240 Volts / 30 Amps
Requires 40 Amps

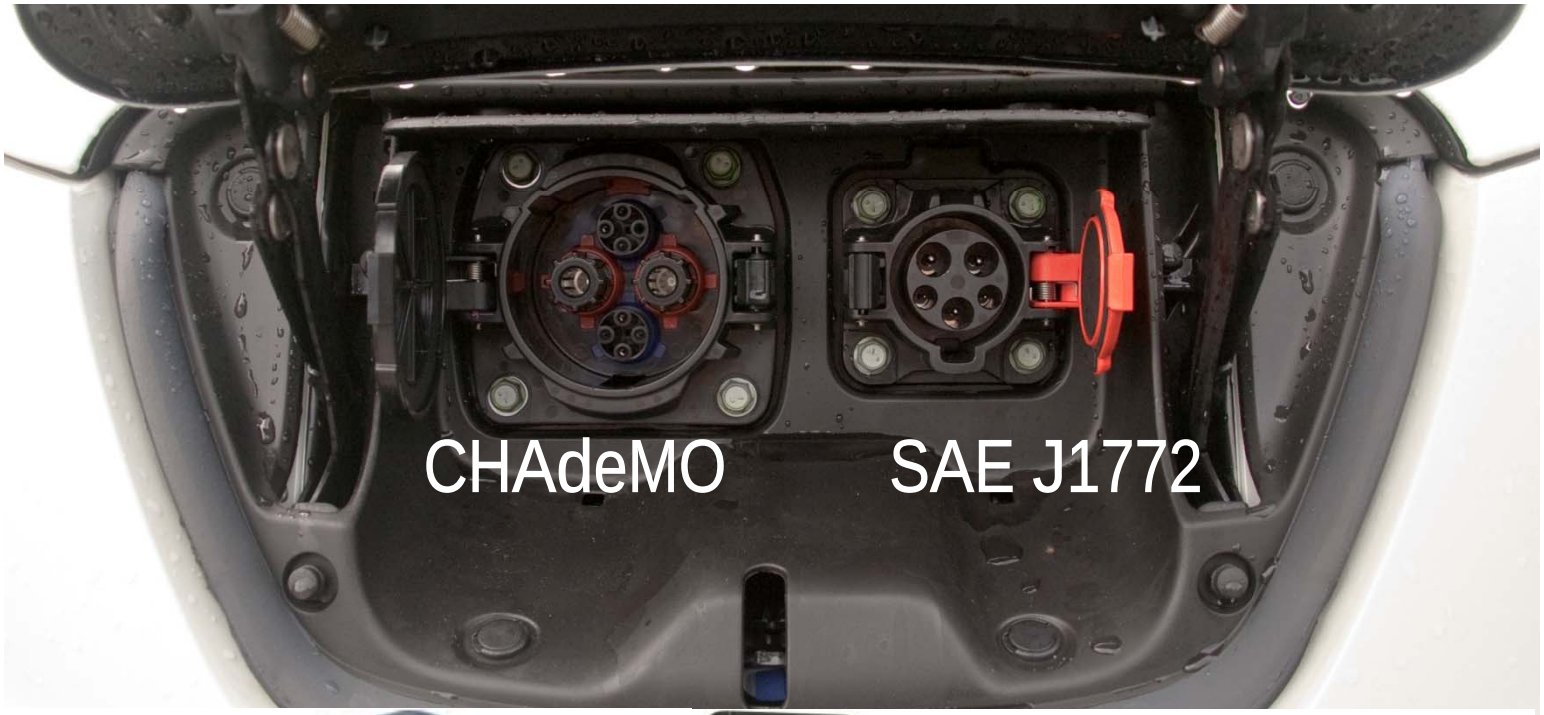
Charging Time*:
- 0%-100% = 4 hrs

DC Fast Charging - 50 kW

480 Volts / 80 Amps
Requires 100 Amps

Charging Time*:
- 0%-80% = 27 mins

CHAdeMO vs. SAE J1772 combo



Universal combined charging system

CHAdeMO Vehicles

Nissan LEAF

KIA Soul EV

Mitsubishi i-MiEV

SAE J1772 combo port & connector Combines L1/L2 and DC Fast Charge

BMW i3

Chevy Spark EV

Volkswagen e-Golf

Efacec QC50 DC Fast Charger

(1 piece)

Input Voltage:

- 480 v, 3 ph, 60 Hz
- 3ph + Grd + Neutral
- 100 Amp service
- 79 FLA

Dimensions:

•31.5” x 31.5” x 82” tall

•1,760 lbs.

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Output:

- 62.5 KW Max
- Up to 500 VDC
- Up to 125 Amps
- **Dual Connectors** –

CHAdeMO and SAE Combo

Charge Time = 15-30 min**

***Depends on vehicle and battery state of charge.*

QC50 DC Fast Charger
(2 piece: 1 Power Unit + 1 Kiosk)

Power Unit

Can be separated by up to 65 ft. with standard CAN-Bus communication.

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Kiosk (CHAdeMO + SAE)
(customizable)

Power Unit and kiosk up to 65 ft. apart. Unlimited distance with fiber optic cabling.

Efacec DC Combined
Fast Charging Remote Kiosk

SAE Combo port
(L2 + DC charging)

CHAdeMO port
(DC charging)

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Efacec DC Fast Charge Details

- Efacec has been developing solutions and products for the EV market since 2008.
- Over **340** fast charger installations around the world.
- **Certified** for both CHAdeMO and SAE Combo charging
- Customized remote user kiosk available
- Multiple methods of payment available – RFID, credit card, keypad
- Stand-alone, private network or integrated via OCPP
- On ChargePoint Network – Late summer 2014
- OCPP compliant: *Networks like Greenlots, OpConnect and EV Connect*
- Remote communication via internet through ISP or 3G cellular.
- Meets UL Safety Standards 2202 & 2231 and ADA requirements
- **15 – 30 minutes charge time** depending on vehicle and initial battery state of charge.

Dual Connector for both CHAdeMO and SAE Combo

208 VOLT vs. 480 VOLT

Product

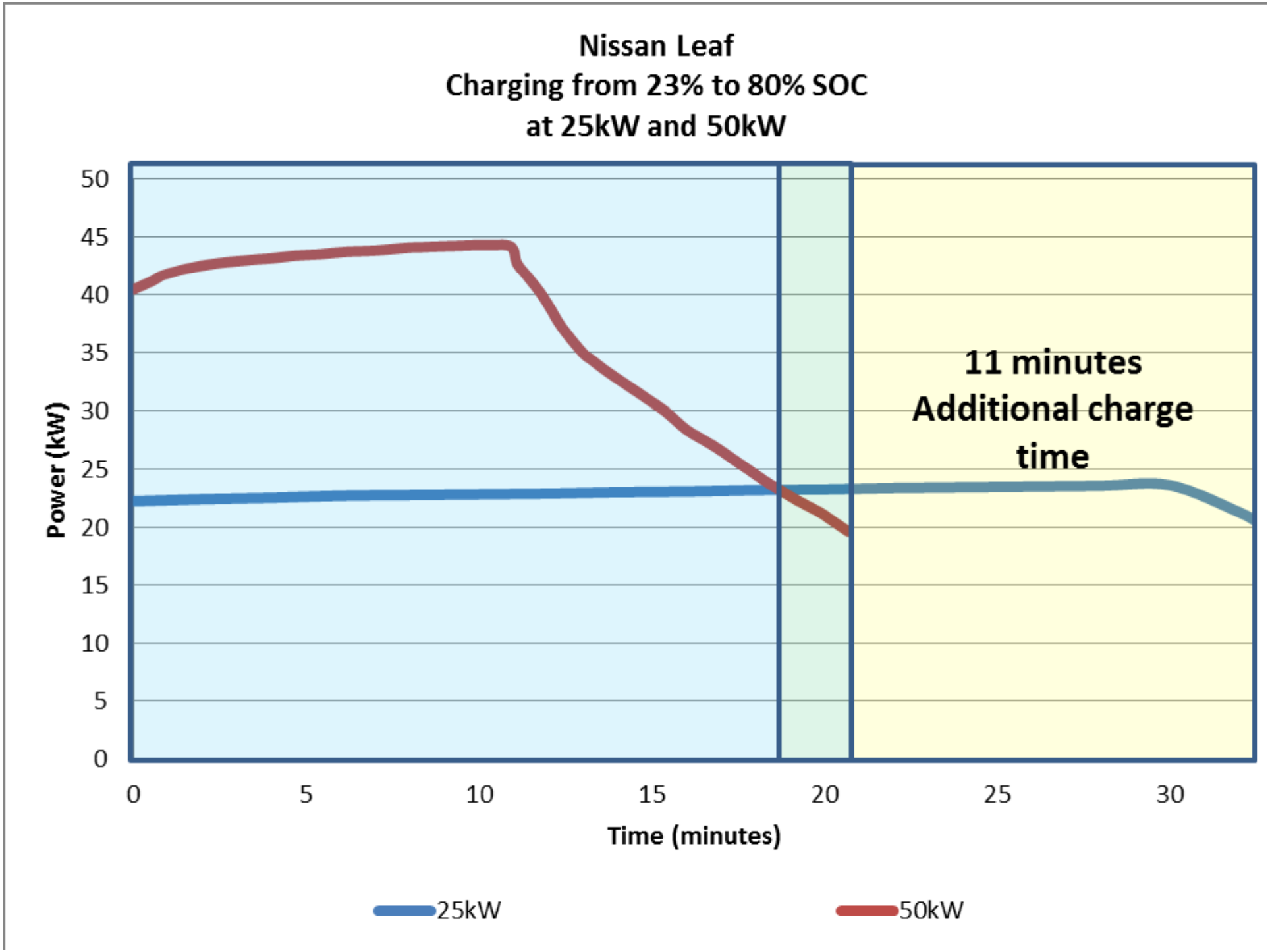
25kW vs 50kW

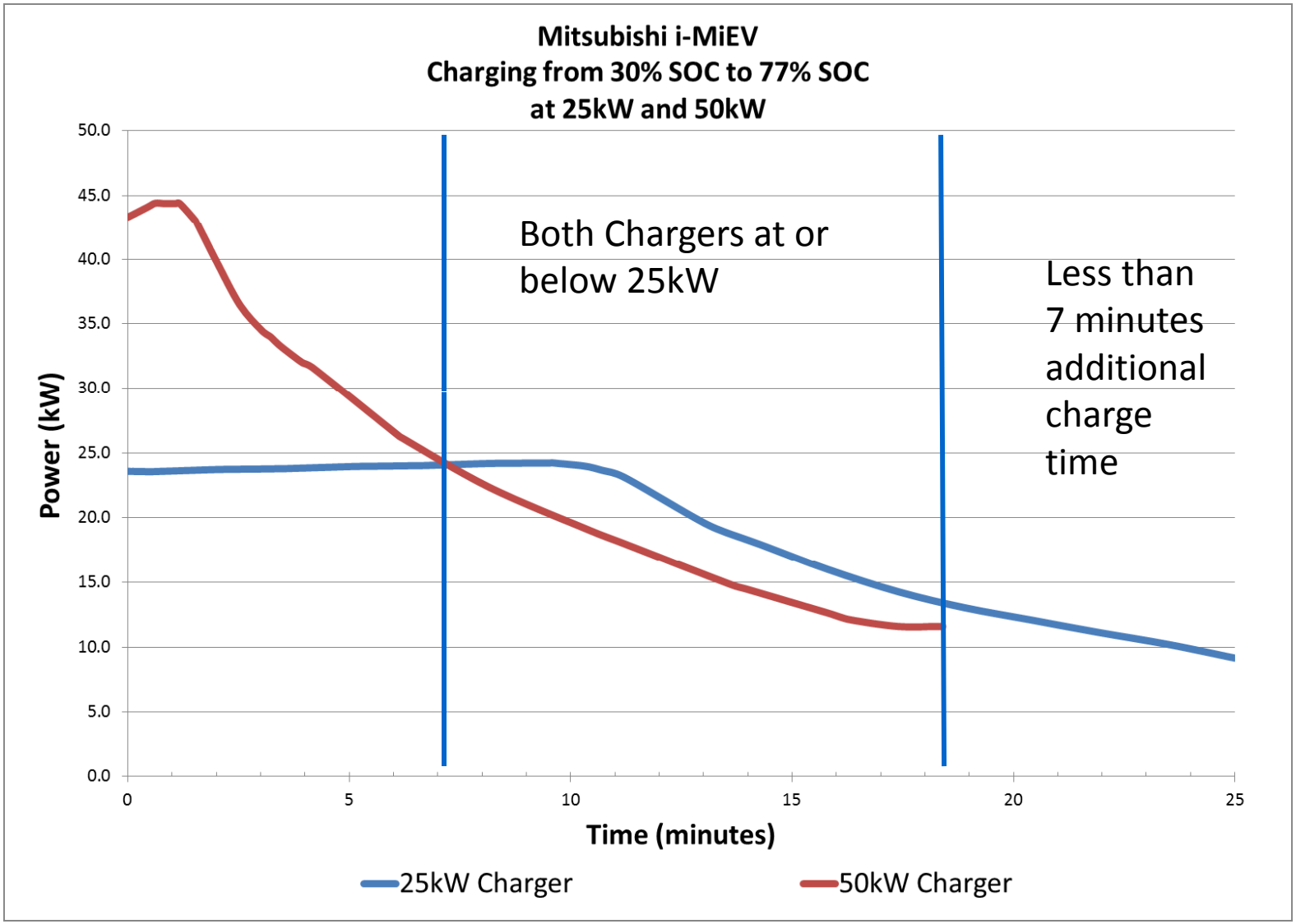
The Fuji Electric Generation 3 DC Quick Charger features a scalable 12.5 kW Power Supply Architecture. This reduces the size and weight of the charger while providing a reliable 25kW Charge.

	25kW Fuji Electric Gen 3 DC Quick Charger	50kW Fuji Electric Gen 2 DC Quick Charger and Others	Significance
Price	$25,000 (standalone)	$35,000 to $60,000	Lower unit price improves business case for station owners
Size	1/3 Smaller than Gen 2	Larger	Easier to find appropriate installation locations
Weight	430 lb.	1,500 lb. to 2,000 lb.	Ease of installation, No special foundation required
Scalability	12.5 kW Power Supply Architecture	Isolation Transformer	Smaller building blocks allow for multiple charger sizes with common building blocks
Maintainability	40 lb. Power Supply	More than 500 lb. Transformer	Smaller building blocks make field service easier
Reliability	Proven design, used in high uptime server power supplies	Reliable design used in many applications	Product improvements are achieved without sacrificing product reliability

Property of Fuji Electric Corp. of America

Fuji Electric


Nissan Leaf
Charging from 23% to 80% SOC
at 25kW and 50kW
Power (kW)
50
45
40
35
30
25
20
15
10
5
0
0
5
10
15
20
25
30
Time (minutes)
11 minutes
Additional charge
time
25kW
50kW


Mitsubishi i-MiEV
Charging from 30% SOC to 77% SOC
at 25kW and 50kW
Power (kW)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0
5
10
15
20
25
Time (minutes)
Both Chargers at or below 25kW
Less than 7 minutes additional charge time
25kW Charger
50kW Charger

Thank You

For further information on this topic,
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