DC Fast Charging at Different Temperatures for the 2012 Mitsubishi i-MiEV

The ambient air temperature around the car may heat or cool an electric vehicle's (EV's) battery pack when it is not being used. The temperature of the battery pack at the start of a direct current (DC) fast charge can make an impact on how long it takes to fast charge EVs. For this reason, testing was performed to determine how fast DC fast charging can recharge EVs when they have been sitting for 24 hours at 0, 25, and 50° C (32, 77, and 122° F) temperatures.

The testing measured the battery state of charge (SOC) after 30 minutes, total charge time and electricity used, and how much electricity was used by the vehicle's battery climate control system (BCCS) to heat or cool the battery during DC fast charging events. The testing results and highlights are listed below and the full testing report can be found at:
https://avt.inl.gov/sites/default/files/pdf/fsev/2012IMiEVDCFCAtTempBOT.pdf.

These tests were performed as part of the U.S. Department of Energy's Advanced Vehicle Testing Activity (http://avt.inl.gov), which is conducted by Idaho National Laboratory and the Intertek Center for Evaluation of Clean Energy Technology.

Lithium-ion
Battery type

16 kWh
Total capacity

Active - Air
Battery climate control system

62 miles
EPA estimated range

Two
Test vehicles

August 2014
Date tested

0° C (32° F)	25° C (77° F)	50° C (122° F)
31.8% Average SOC at 30 minutes	**43.5%** Average SOC at 30 minutes	**32.0%** Average SOC at 30 minutes
81 minutes Average charge duration	**53 minutes** Average charge duration	**38 minutes** Average charge duration
10.75 kWh Average DC charge electricity	**12.2 kWh** Average DC charge electricity	**9.45 kWh** Average DC charge electricity
n/a Average electricity used by the BCCS during charge events	**0.35 kWh** Average electricity used by the BCCS during charge events	**0.98 kWh** Average electricity used by the BCCS during charge events

Idaho National Laboratory

For more information, visit avt.inl.gov
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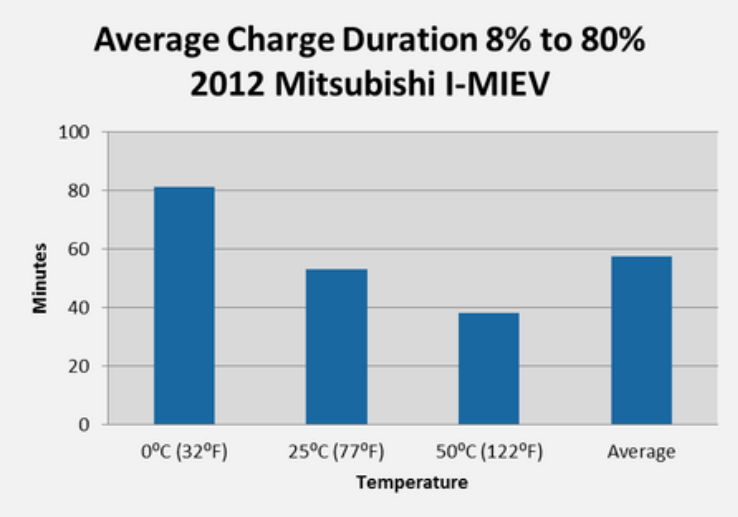
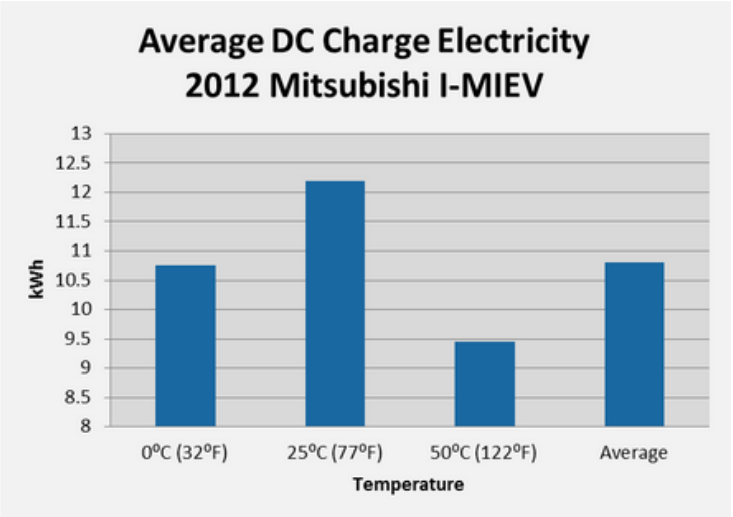
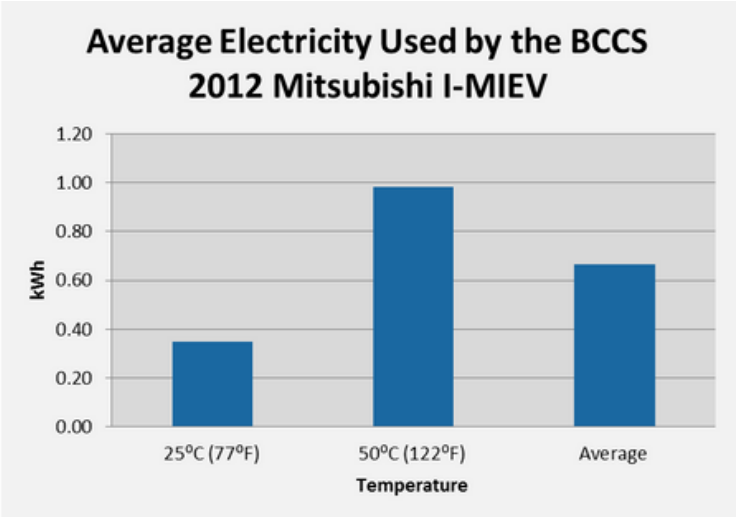
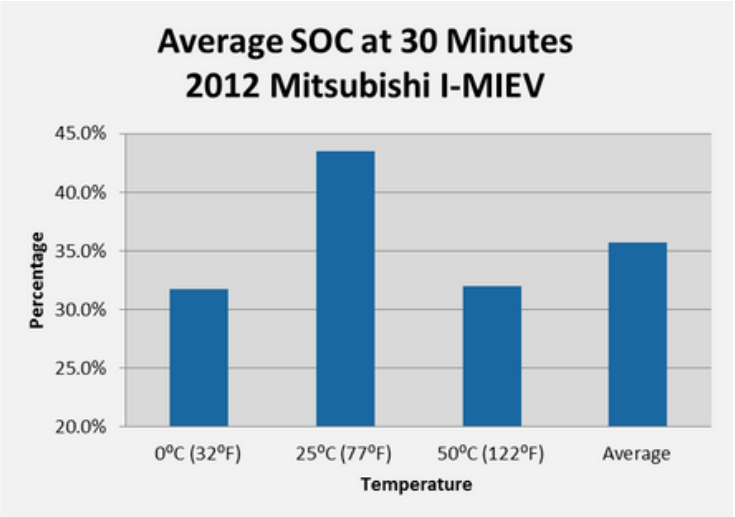
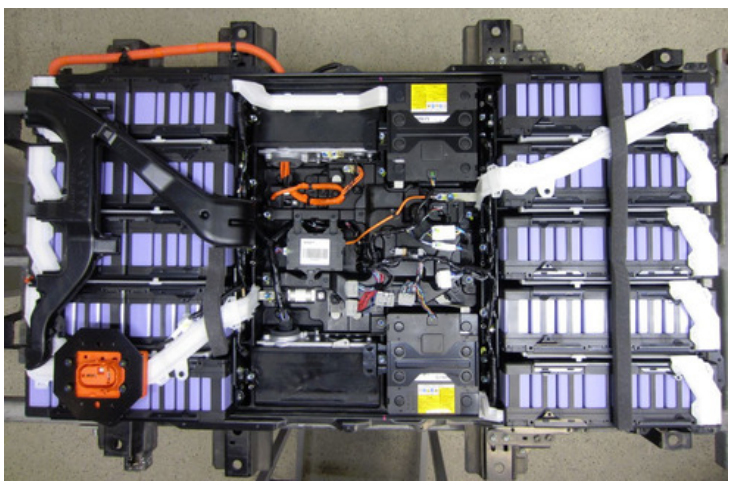








NOTE: The i-MiEV BCCS is limited to only cooling and it was not activated during 0° C testing.



2012 Mitsubishi I-MIEV battery pack top view when removed from the vehicle