

A Comparison of Electric Vehicle Level 1 and Level 2 Charging Efficiency







# Charging Equipment

Level 1 charging 120V Level 2 charging 208/240V

#### **DC fast charging** 480V







Level 2 2.7% - 12.8% efficiency gain Is there a difference in charging efficiency?

Effect of charge duration

> Effect of ambient temperature

man /

#### Methods



Efficiency = (energy taken up by vehicle battery) ÷ (total energy drawn from the grid) x 100



#### Methods

















#### Efficiency measure: Level 2 EV charging





#### Results

	Ν	Efficiency gain of Level 2 over Level 1
All charge events	114	5.6 %
Charge events < 4kWh	24	13%
Charge events < 50°F	41	7.6%
Charge events >70°F	32	8.5%











### Conclusions

- L2 charging was consistently more efficient than L1
- Efficiency gains were greatest for short charge events (< 3 hours)</li>
- Some efficiency gains for L2 at hot and cold temperatures
- Greatest gains may be achieved at public charging stations





## Thank You

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