FREEWiRE

ELECTRIFICATION BEYOND THE GRID

LeRoy Fitzgerald
Director, Strategic Sales and New Markets
925-858-5217
LFitzgerald@FreeWireTech.com

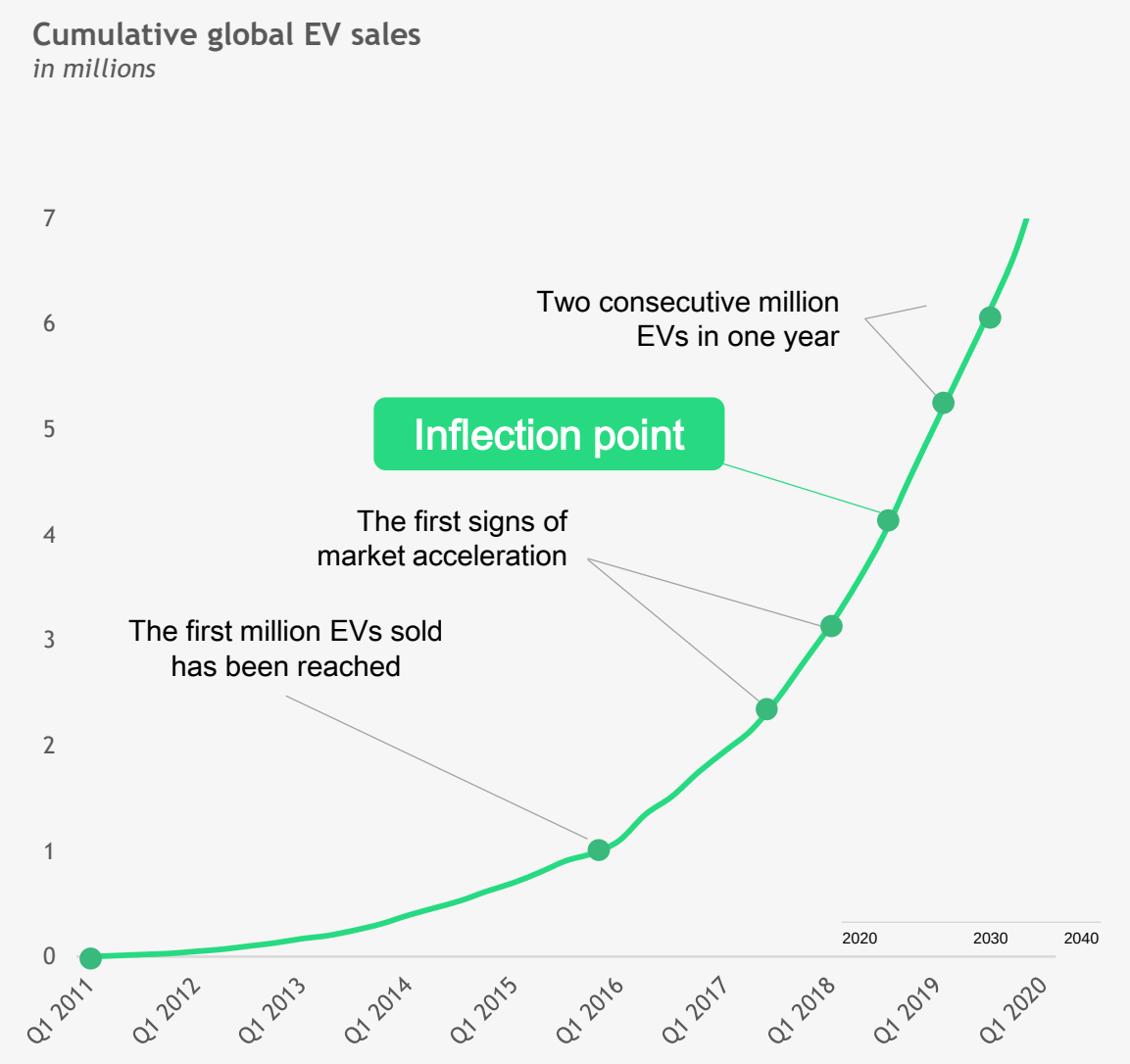
Some Housekeeping Items

- **Please make sure your line is muted**
- For technical problems, please email Greg Cannon at greg@njgca.org
- Enter questions in the question box in your dashboard
- If your question is not answered today, please email michelle@njgca.org

Agenda

1. Introductions
2. Why Take Electric Mobility Seriously?
3. EV charging overview
4. Considerations for EV Infrastructure deployment
5. Sample Financial Model
6. Summary

Electric Mobility is a Megatrend



Factors Driving Accelerated EV Adoption

Range: EV models are now in market with 300 – 400 km range, solving range anxiety

Choice: All major OEMs are accelerating their EV launch plans with over 500 different EV models to be available globally by 2022

Price parity: Price parity versus combustion engines is reached by mid-2020s in most segments

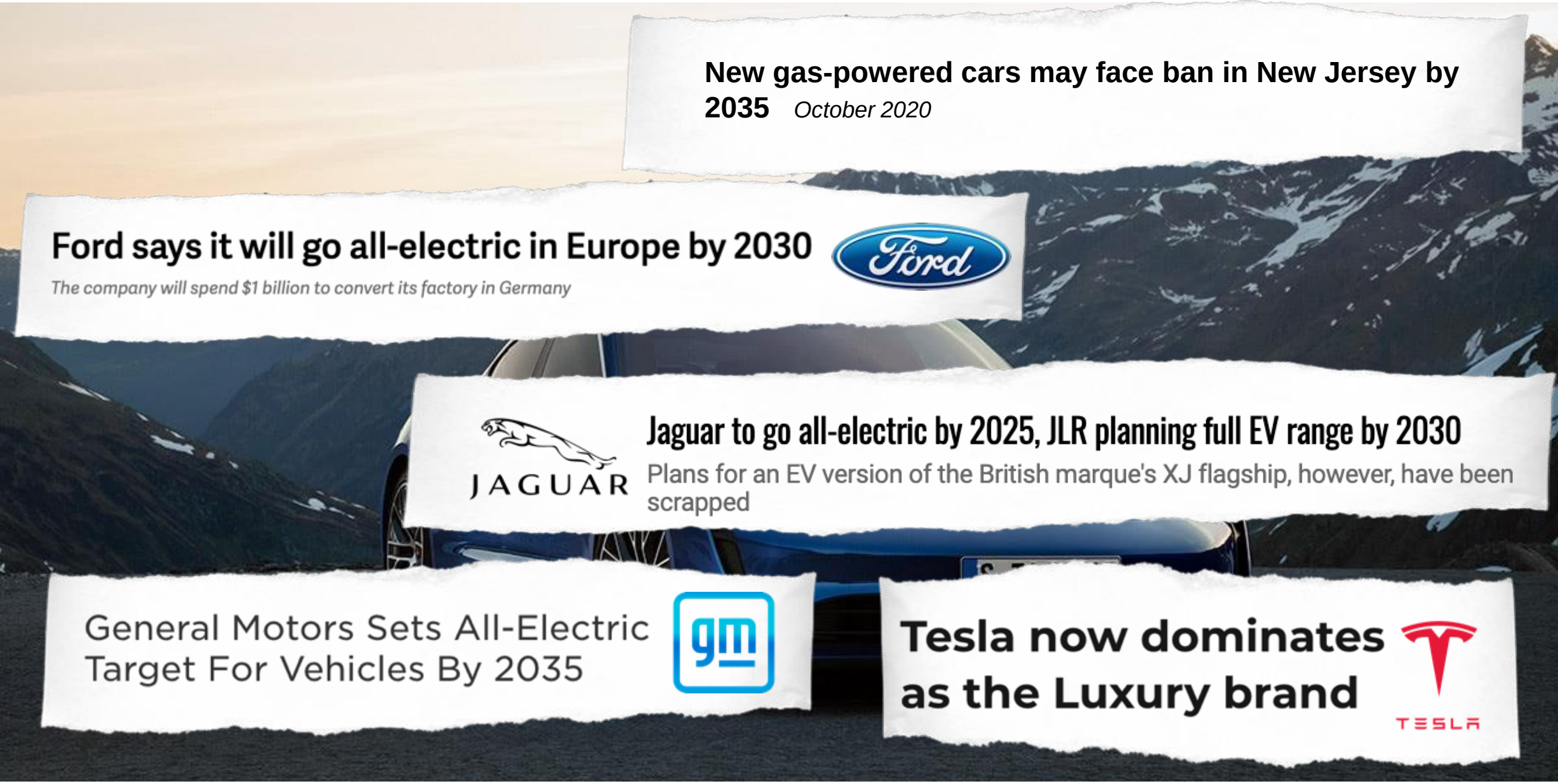
Performance: Electric powertrains are now higher performance than internal combustion

Emission Goals: Countries are aiming to cut emissions between 50-70%, and global corporate initiatives to electrify their fleets will further accelerate the adoption of EVs

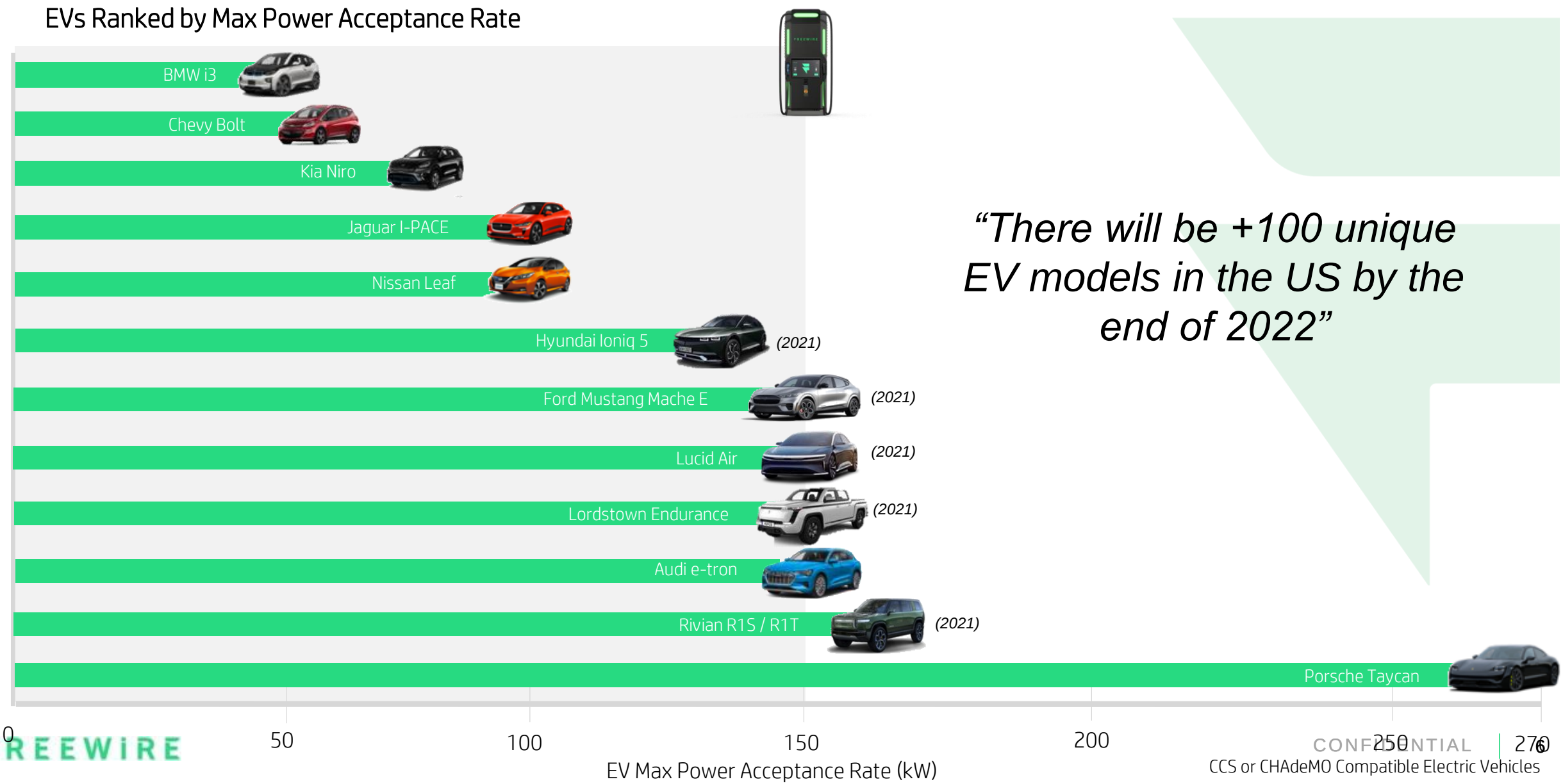
Infrastructure push: Mass adoption of EVs increase demand for EV charging infrastructure from both the EV driver and governmental bodies

Source: BNEF EV Outlook 2019, McKinsey

Momentum Behind Electrification



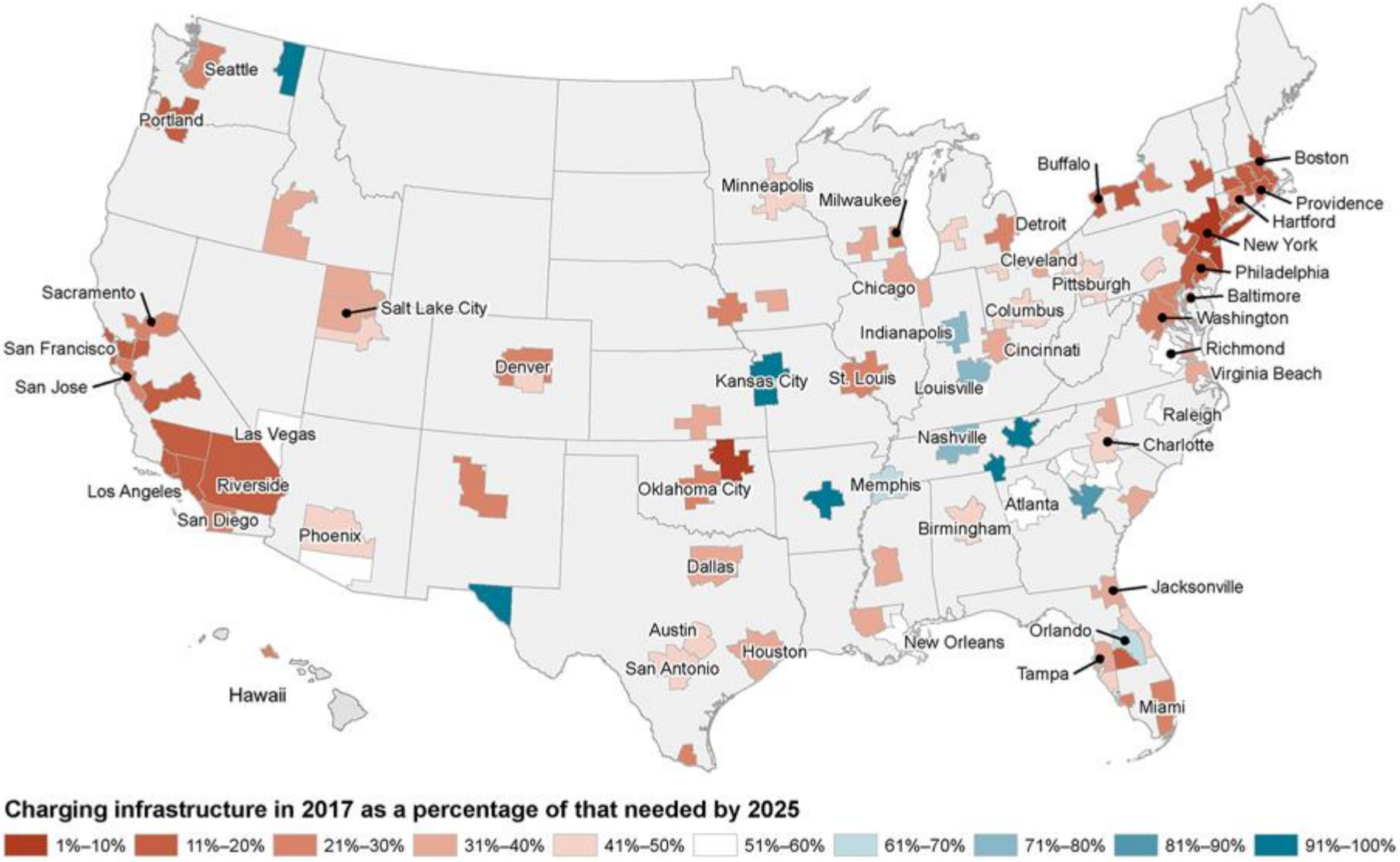
Meeting the Charging Demand



"There will be +100 unique EV models in the US by the end of 2022"

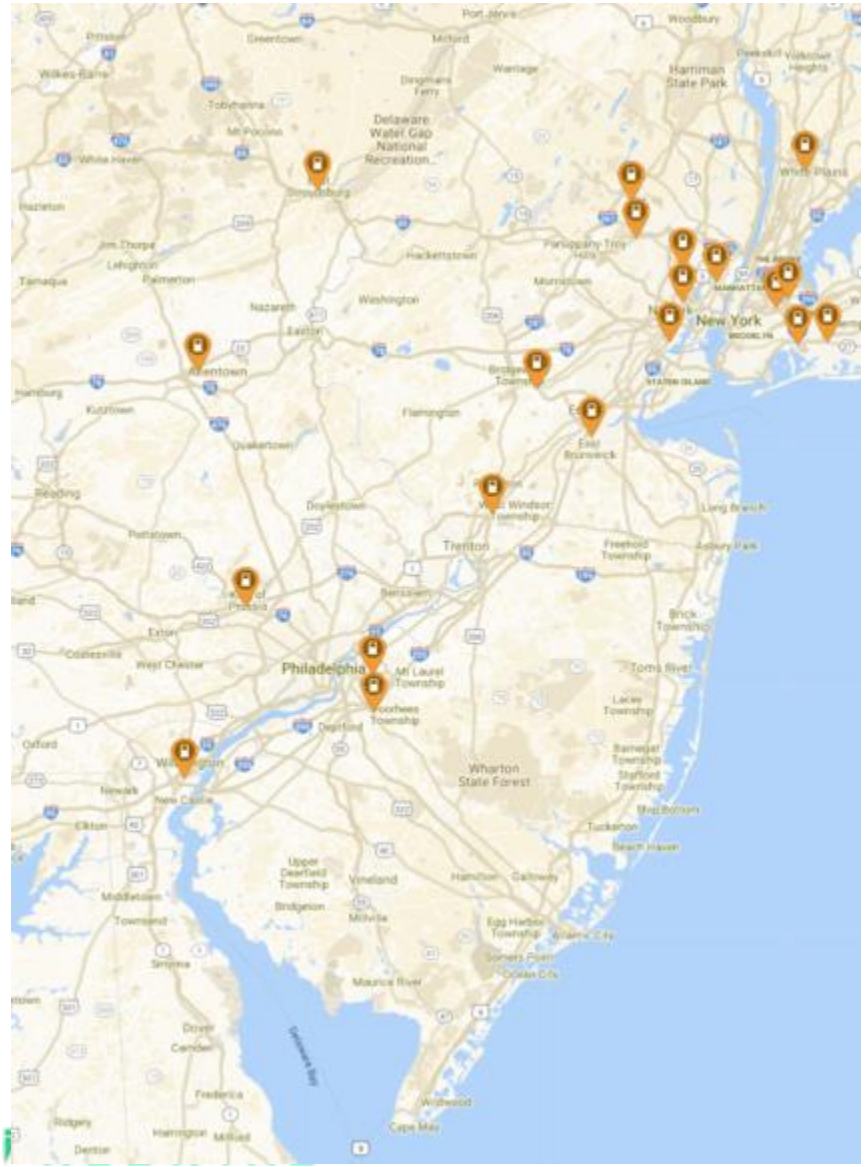
CCS or CHAdeMO Compatible Electric Vehicles

Measuring the Charging Gap



Much more charging infrastructure is needed to sustain the transition to electric vehicles

Charging Gap in New Jersey



New Jersey - Fast growing EV adoption, low EV to outlet ratio, & limited Fast Chargers*

State	EV Sales 2017	EV Sales 2018	2018-2017 YOY Sales Increase
New Jersey	5,033	9,230	83.39%

Rank	State	Charging Locations (1)	Charging Outlets (2)	EV Stock (3)	EVs to Charging Outlets
1	New Jersey	290	745	25,945	34.83
2	Oklahoma	67	169	4,918	29.10
3	California	5,095	19,687	506,608	25.73
4	Alaska	16	26	534	20.54
5	Hawaii	265	523	9,539	18.24
6	Illinois	487	1,255	22,475	17.91
7	Pennsylvania	433	1,029	18,248	17.73
8	Washington	874	2,383	41,459	17.40

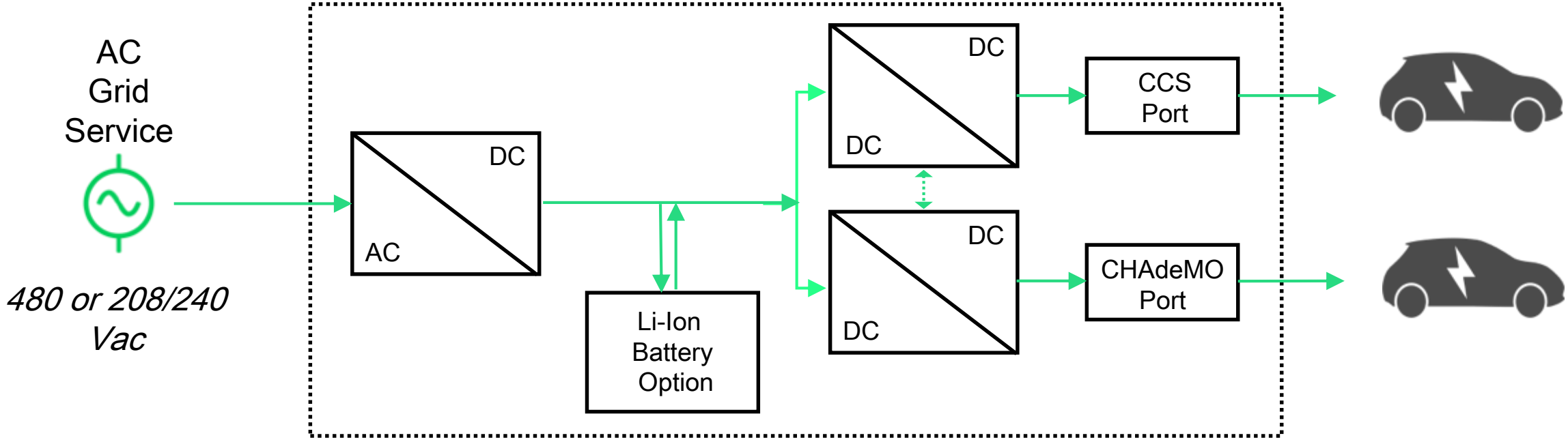
*CCS/CHAdeMO >120 kW

Know Your EV Charging Station Levels

Level 1	Level 2	DC Fast/Level 3
		
Voltage	**Voltage**	**Voltage**
120 V 1-Phase AC	208 or 240 V 1-Phase AC	208 or 480 V 3-Phase AC
Amps	**Amps**	**Amps**
12-16 Amps	12-80 Amps	<125 Amps
Charging Loads	**Charging Loads**	**Charging Loads**
1.4-1.9 kW	2.5-19.2 kW	>50 kW
Charging Time for Vehicle	**Charging Time for Vehicle**	**Charging Time for Vehicle**
3-5 Miles of Range Per Hour	10-20 Miles of Range Per Hour	80% Charge in 10-30 Minutes

How it Works - simplified

AC power input → AC power converted to DC → Integrated battery dis/charges (solution dependent) → DC converters communicate with EV → DCFC chargers typically include dual connectors →



Consideration for EV Charging at C-store or Fueling Sites

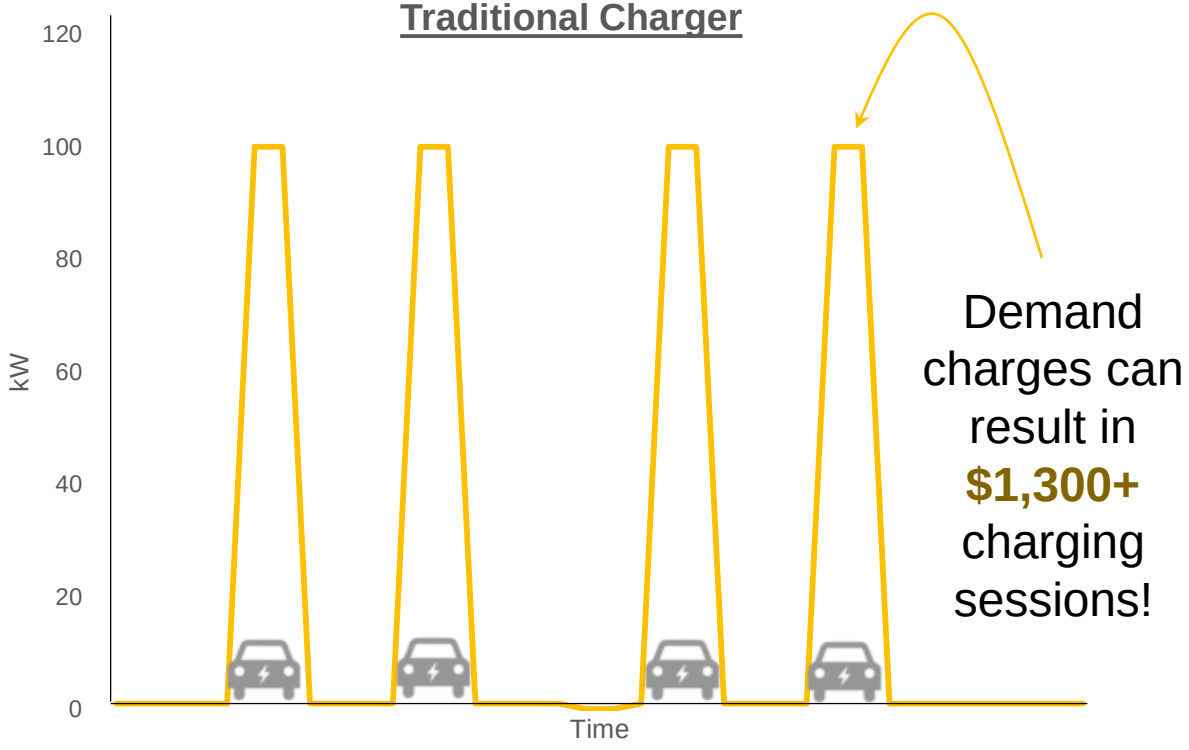
- Site characteristics
  - Site lot size and location (highway corridor, destination, community hub)
  - Number of available parking spaces, amenities, etc.
  - Available electrical power
- CAPEX and OPEX
  - Cost of utility services, permits, site preparation, and equipment
  - Ongoing cost of energy, warranty, maintenance, management, etc.
- Customer experience and support
  - Customer management and support
  - Branding, marketing, etc.
- Revenue generation
  - Charging (per kWh vs time), in-store retail, advertising, new revenue streams
- Deployment flexibility
  - Ease of moving a deployed installation
  - Site “future proofing”

Power Consumption

DCFC chargers can significantly impact your energy bill. Battery integrated chargers have ***predictable power consumption,*** *resulting in lower peak demand and associated energy costs*

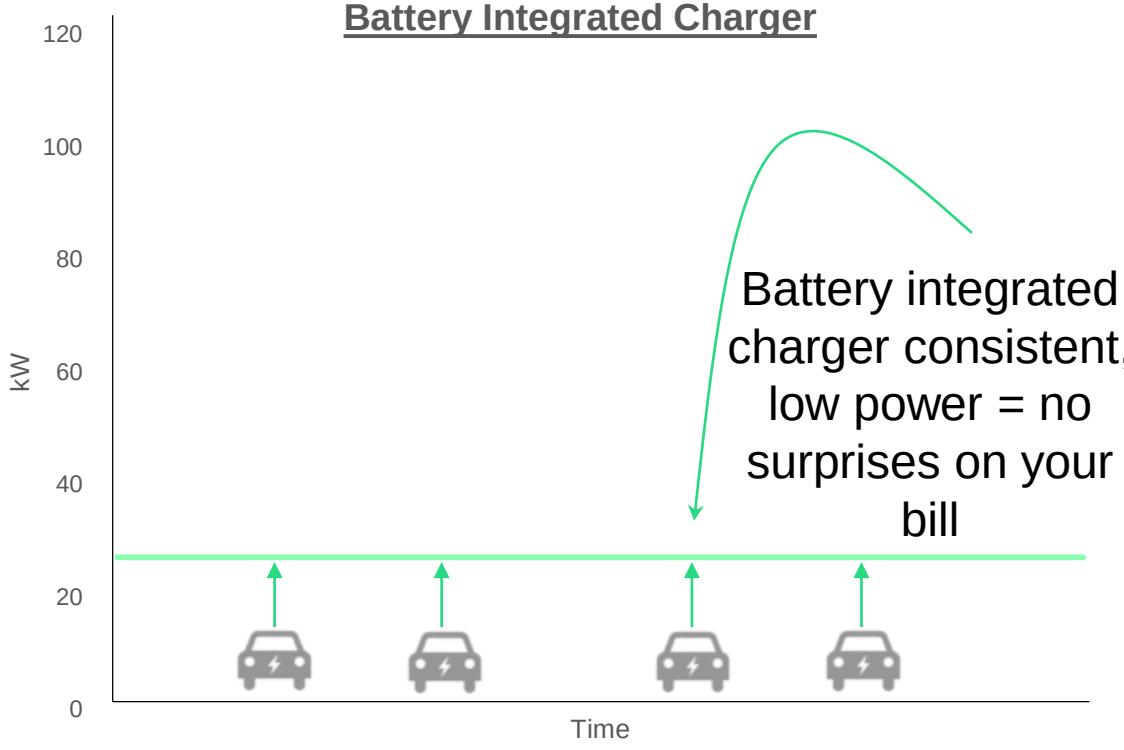
Charger Electricity Consumption

Traditional Charger



Demand charges can result in **$1,300+** charging sessions!

Battery Integrated Charger

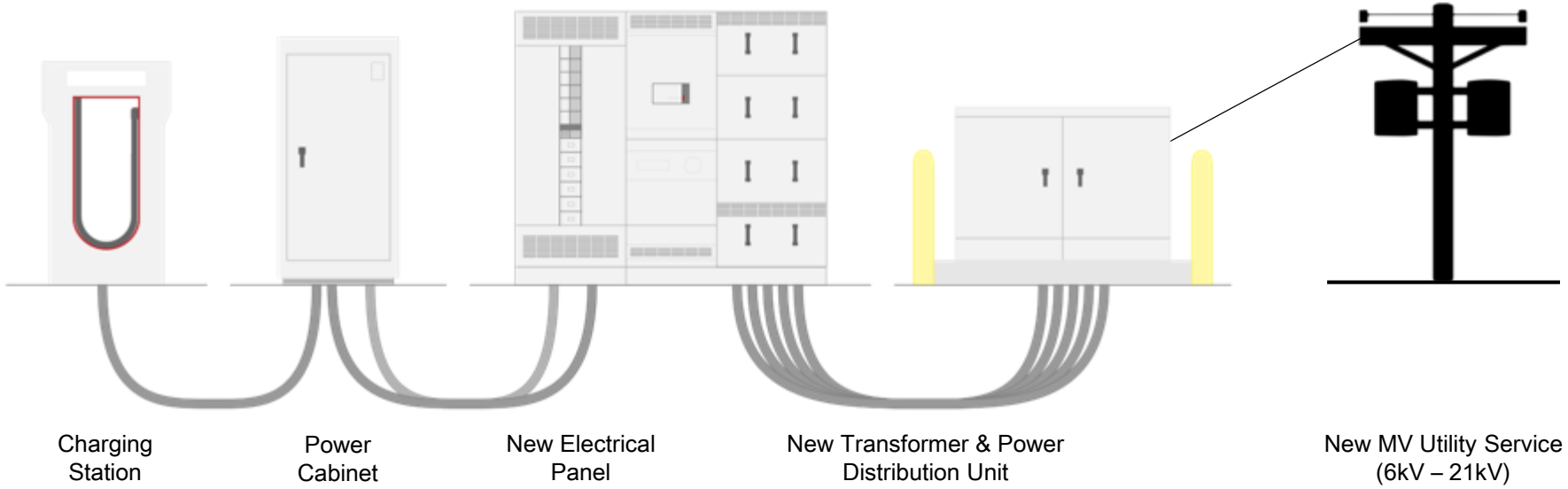


Battery integrated charger consistent, low power = no surprises on your bill

Fast Charger Installation Comparison

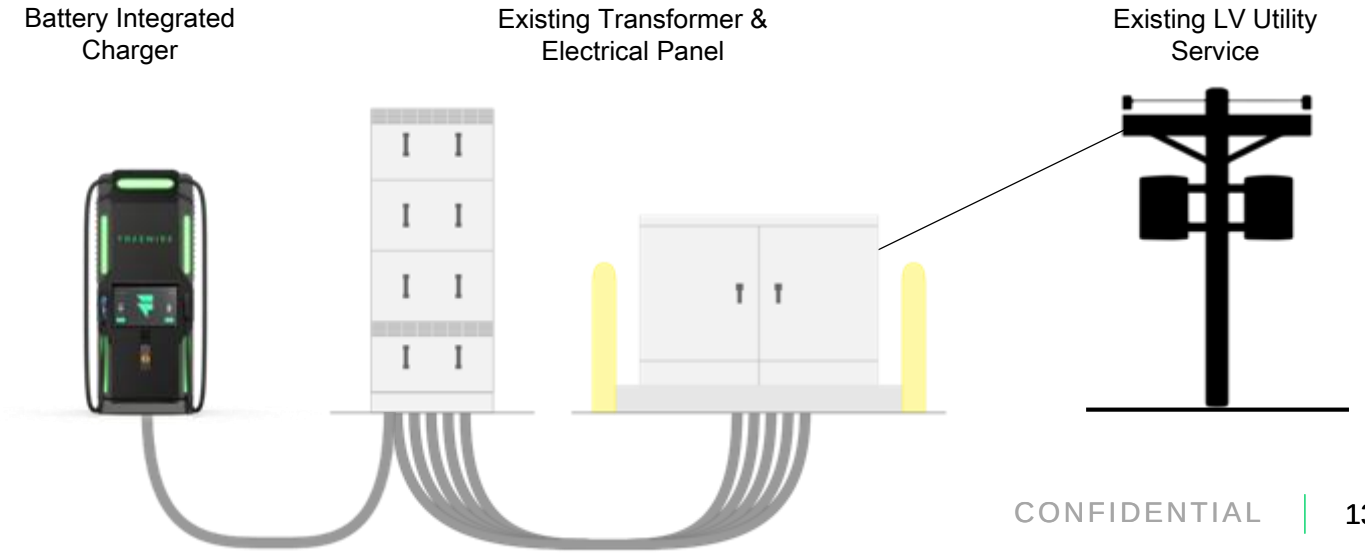
Conventional Ultrafast Charger (480v)

480v service required
Multiple Components
Longer Installation Time
Up to $250K total install cost



Battery Integrated Charger (208v/240v)

Leverages existing power
No additional equipment
Fast Installation
Up to $175K total install cost



Save Time and Space

18x

More space efficient

- Integrated energy storage and electrical infrastructure means no unsightly and expensive upgrades

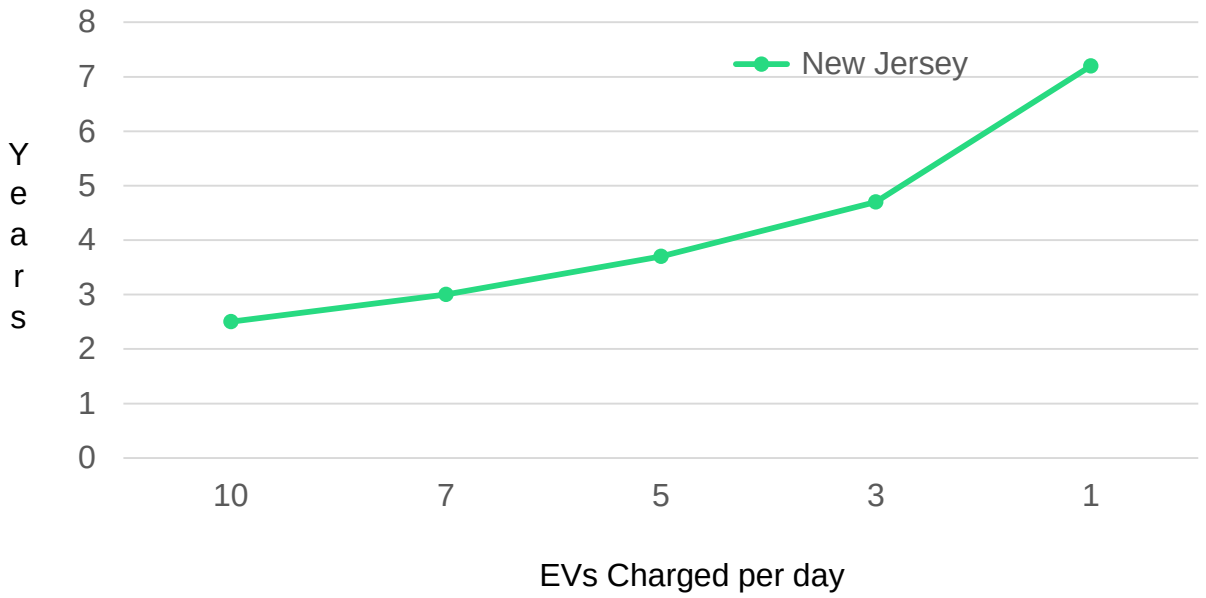
New Jersey EVSE Programs (partial list)

- US Department of Energy
  - Alternative Fuels Infrastructure Tax Credit of $30,000
  - Currently ends December 31,2021
- New Jersey Department of Environmental Protection
  - Drive Green New Jersey Program
  - Phase 2 funds expected late 2021 (Phase 1 closed July 2020)
  - Phase 1 covered up to $200,000 of installation costs
- Utility ”Make Ready” Programs
  - Covers cost of service upgrades and “meter to equipment” construction
  - Examples – Public Service Enterprise Group & Atlantic City Electric

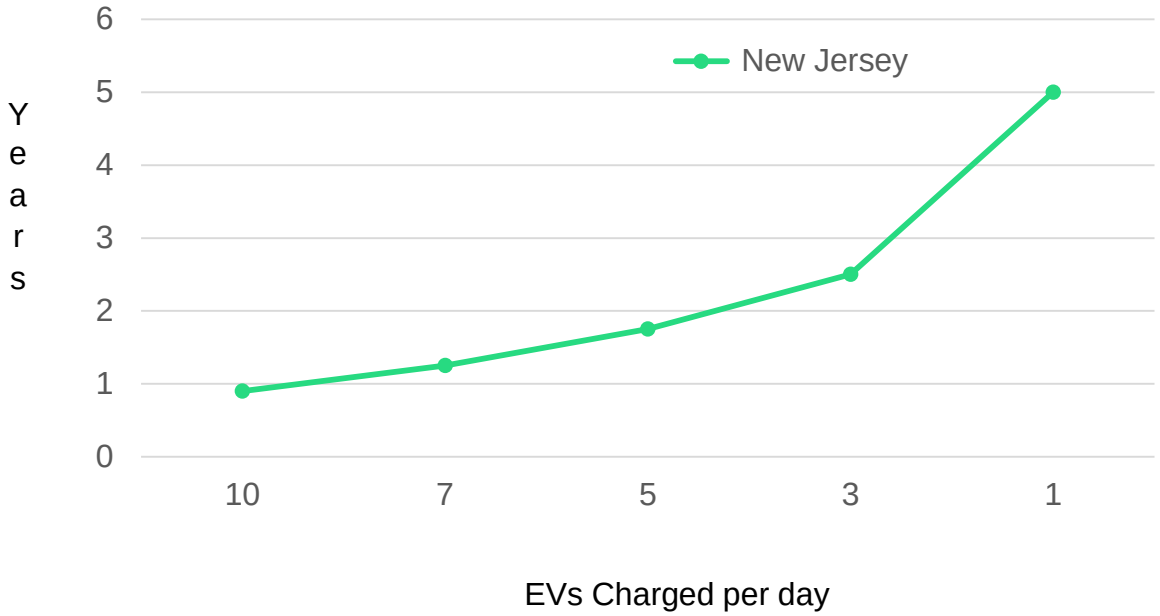
Financial Analysis – example only

ROI can vary widely based on the characteristics of each site, cost of installation, utilization, energy margins, alternative revenue streams, and available incentives/credit

Scenario 1 – no incentives



Scenario 2 – $100,000 in incentives



Takeaways

- EV adoption is growing exponentially
- Charging to meet EV demand is lagging, particularly in New Jersey
- Great opportunity to address the EV market
- Charging options: look for options to mitigate infrastructure and ongoing energy costs
- Look for incentives locally and federally to offset project cost

QUESTIONS?

Thank you

LeRoy Fitzgerald

Director, Strategic Sales and New Markets

lfitzgerald@freewiretech.com

+1 925 858 5217

4900 Rt 33W
Wall Twp, NJ 07753
T: 732-256-9646
F: 732-256-9666
www.njgca.org