GRID IMPACTS AND INTEGRATION OF EVS

JOHN GARTNER, NAVIGANT RESEARCH
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200-MILE RANGE BEVS TO BE THE NORM

Battery Electric Vehicles = BEVs
**DC FAST CHARGER FORECAST**

**DC Fast Chargers in the U.S.; 2017-2025**

- DC charging market will be spread from 50 to 300kW+

*Source: Navigant Research*
PREPARING FOR HIGHER POWER DC FAST CHARGING

• 350+ kW charging in development
  - Much greater effect on host sites and local distribution grid
    ▪ Demand charge relief is needed to encourage ownership
  - Demonstration project similar to European EVA+ (Italy and Austria) and Ultra-E projects is needed
  - Future-proofing current EV supply equipment installations
    ▪ Streamlining installation
  - Potential coordination between Combined Charging System (CCS) and CHAdeMO to reduce the cost of dual port equipment
DC fast-charging corridors can satisfy majority of intra-city travel
VW’S ELECTRIFY AMERICA TO SIGNIFICANTLY EXPAND CHARGING INFRASTRUCTURE

• $2.7B in mitigation trust divided amongst the states
  - Each state can spend up to 15% of the funds on L1, L2 or DCFC
    ▪ States administer all funds and have submitted allocation plans
  - Equipment can be used for public, workplace or MDU charging, but not residential
    ▪ The percentage of equipment, installation and maintenance costs that can be reimbursed depends on application

• ZEV Investment plan to spend $800M in CA, $1.2B in rest of U.S. through 2026
  - Cycle 1 national allocation is $250M in infrastructure, $190M for 150kW+ DCFC and $40 million for community charging
  - Cycle 1 CA allocation is $200M in infrastructure, $75M in DCFC and $45M in community charging
CONTACTS

JOHN GARTNER
Director
1.303.493.0364
John.Gartner@navigant.com