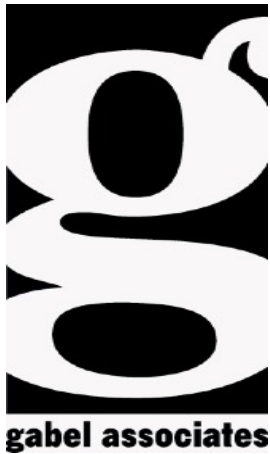


## Study Results Preview December 14, 2017

Mark Warner

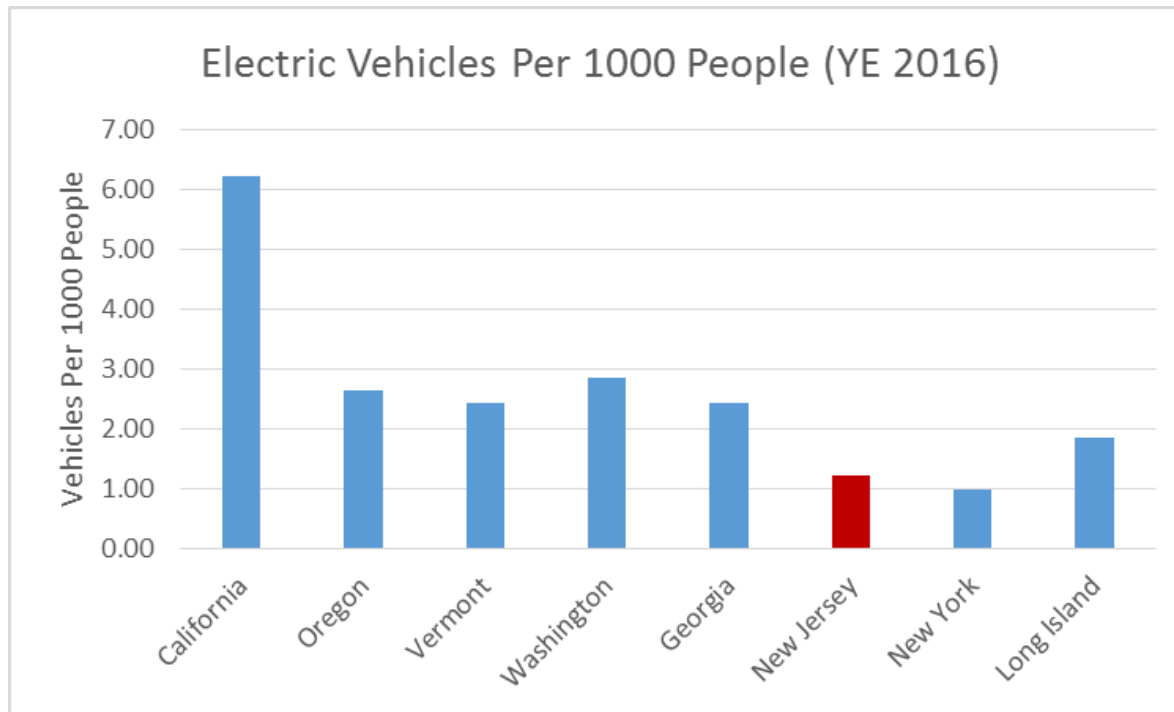


Vice President  
Advanced Energy Solutions  
Gabel Associates



- **The “NJ EV Market Study” Provides A Foundation For The ChargeVC Roadmap**
- **Key Questions:**
  - Where is the NJ EV market today?
  - What are the opportunities for growth?
  - What are the costs and benefits of expanded EV adoption?
  - What are the implications for infrastructure and utilities?
- **Scope**
  - Focus on light duty vehicles, consider various scenarios from 2018-2050
  - Explored EV implications through the lens of energy market impacts
  - Detailed Market Simulation Model Based On NJ Parameters
  
  - Evaluate economic impacts
  - Evaluate environmental impacts
  - Specifically consider “natural” and “managed” vehicle charge scheduling

## New Jersey Lags Other Adoption-Leaders By Almost A Factor Of Two



## Finding Highlights:

### •Untapped Opportunity, Potential For Growth In New Jersey

- New Jersey could increase its EV adoption by a factor of TWO to FOUR

### •Full Economic Benefits Portfolio

- EV adoption changes grid loading, resulting in significant economic benefits for ALL RATEPAYERS
- Energy cost efficiencies will deliver as much as \$4.3B by 2035 under “Scenario Two”, increasing to \$19.4B by 2050
- At current prices, it costs 10.67 cents/mile to fuel with gasoline, 4.49 cents/mile to “fuel” with electricity
- New Jersey drivers will save an estimated \$16.7B on vehicle operating expense through 2035 (Scenario Two)
- The “Social Cost Of Carbon”, using federal metrics, represents \$5.6B of additional savings through 2035 (Scenario Two)
- NET Benefits, after accounting for estimated costs, are also strongly positive (>\$2B by 2035, Scenario Two, Managed)

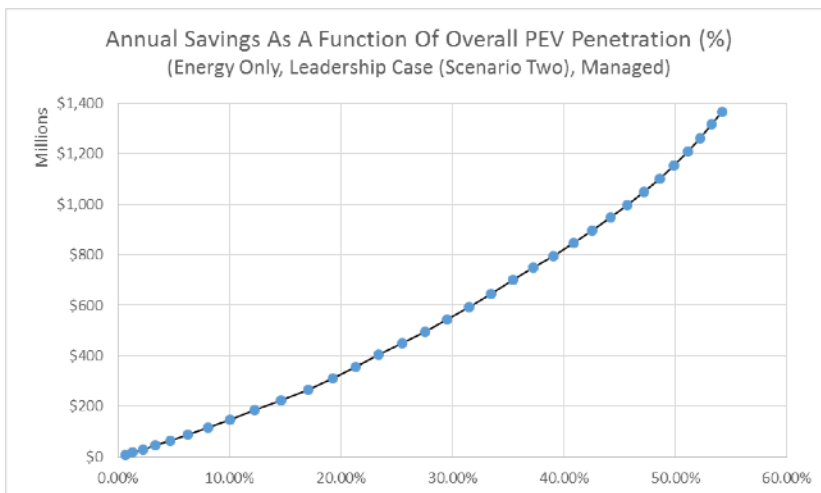
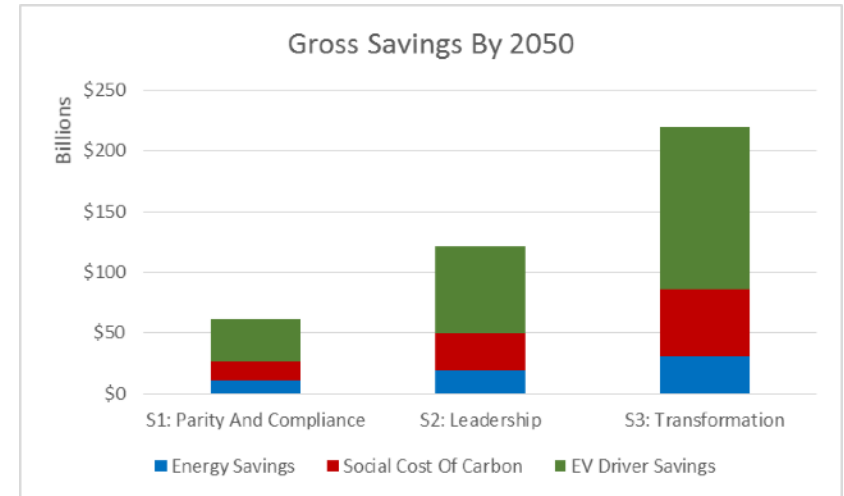
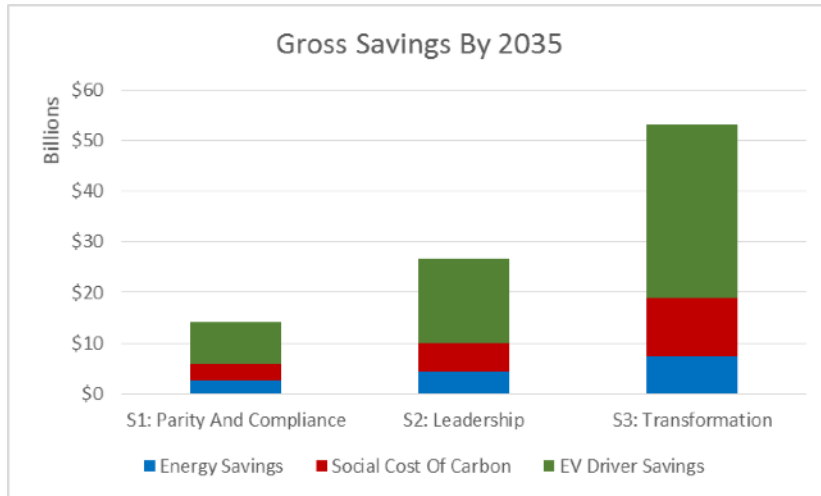
### •Environmental Benefits

- Every electrically fueled mile is 69% - 79% cleaner than an average gasoline fueled mile
- Both CO2 and NOx are reduced dramatically with increased EV use, necessary to achieving state goals (GWRA, NOx)
- Improvements in air quality directly affect public health, especially in the urban core and along high-travel corridors

### •Significant Implications For Infrastructure And Utilities

- Utility will realize increased revenues, cost efficiencies, and strategic opportunities for load shaping
- Past 5-10% penetration, grid reinforcement will be necessary, supports other modernization efforts

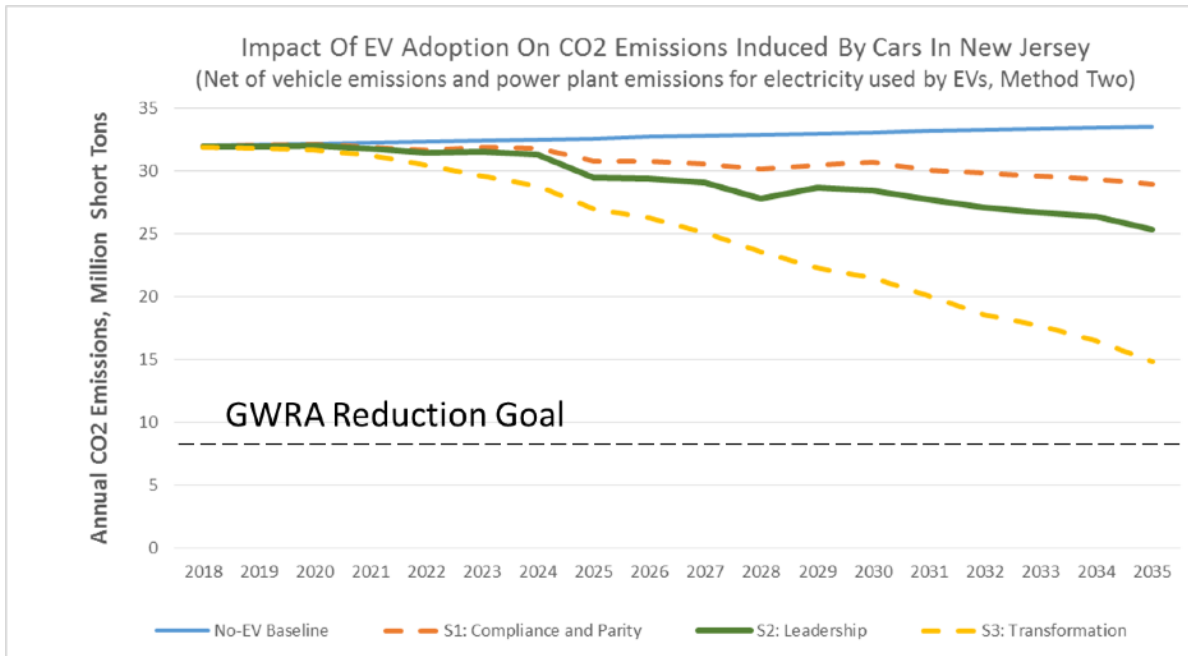
## EV Benefits Continue To Grow With Adoption, 2050 Benefits 4X 2035 Benefits



Energy Cost Efficiencies Are Delivered Through Reduced Wholesale Energy Prices, And Scale

# Findings: CO2 Impacts (transportation only)

- Scenario Two Reduces CO2 emissions 24.4% by 2035, a reduction of 40.1% by 2050
- For GWRA Goals:
  - Gas CO2 emissions must reduce to 8.4M tons
  - By 2050:
    - S1: 28.1 M tons
    - S2: 21.7 M tons
    - S3: 10.3 M tons
    - These results assume “business as usual” generation



Reductions  
Are Greater  
If The  
Grid Is  
Further  
Maximum  
De-

Adoption,  
And A  
Cleaner  
Grid, Are  
BOTH  
Required To

# Findings: Infrastructure Impacts

