

Electric Vehicle Policies in the Northeast

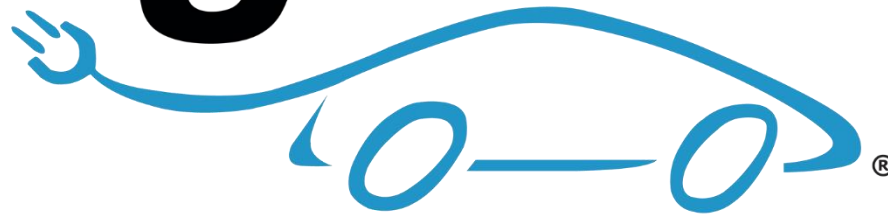


Peter A. O'Connor, Ph.D.

Plug In America

July 21, 2019

Plug In



America[®]

Plug In America

- Non-profit, supporter-driven advocacy group
- The voice of plug-in vehicle drivers across the country
- Drive change to accelerate the shift to plug-in vehicles
 - Powered by clean, affordable, domestic electricity
 - Reduce our nation's dependence on petroleum
 - Improve air quality
 - Reduce greenhouse gas emissions.

About Plug In America

- Arose from efforts to save the EV1 and other early EVs
 - Saved at least 1,000 Ford and Toyota EVs
- Organized as a 501(c)3 non-profit in 2008
- Nation's largest organization dedicated to educating the public, automakers and policymakers on the efficacy and benefits of electric drive

What We Do

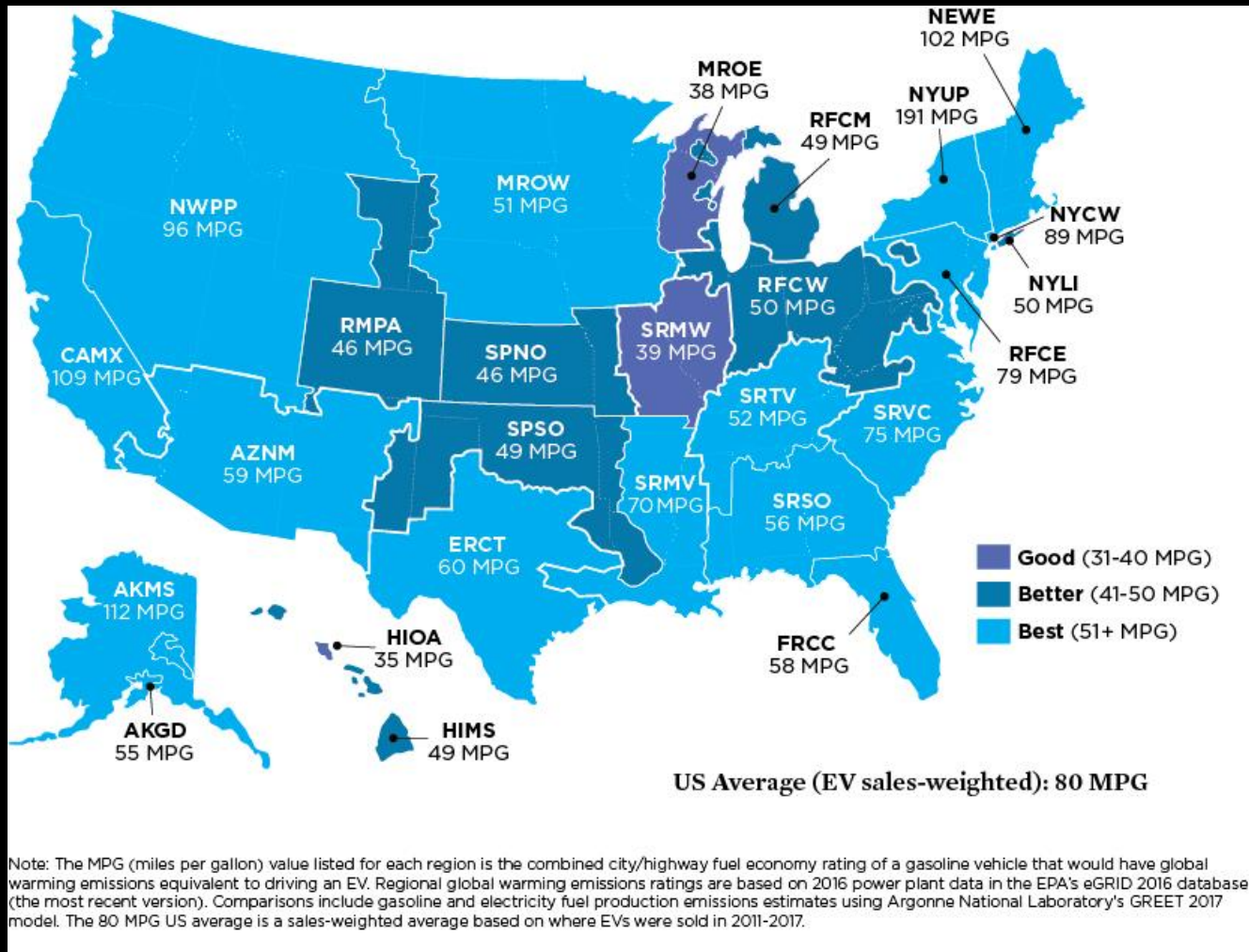
- National Drive Electric Week since 2001 (with Sierra Club and Electric Auto Association)
 - September 14-22, 2019
- Other driver education and outreach
- Dealer training (PlugStar)
- Policy advocacy

About Me

- Worked on energy and environmental technology and policy issues for 20 years
- Completed post-doctoral fellowship at Union of Concerned Scientists working on “smart charging”
- EV driver

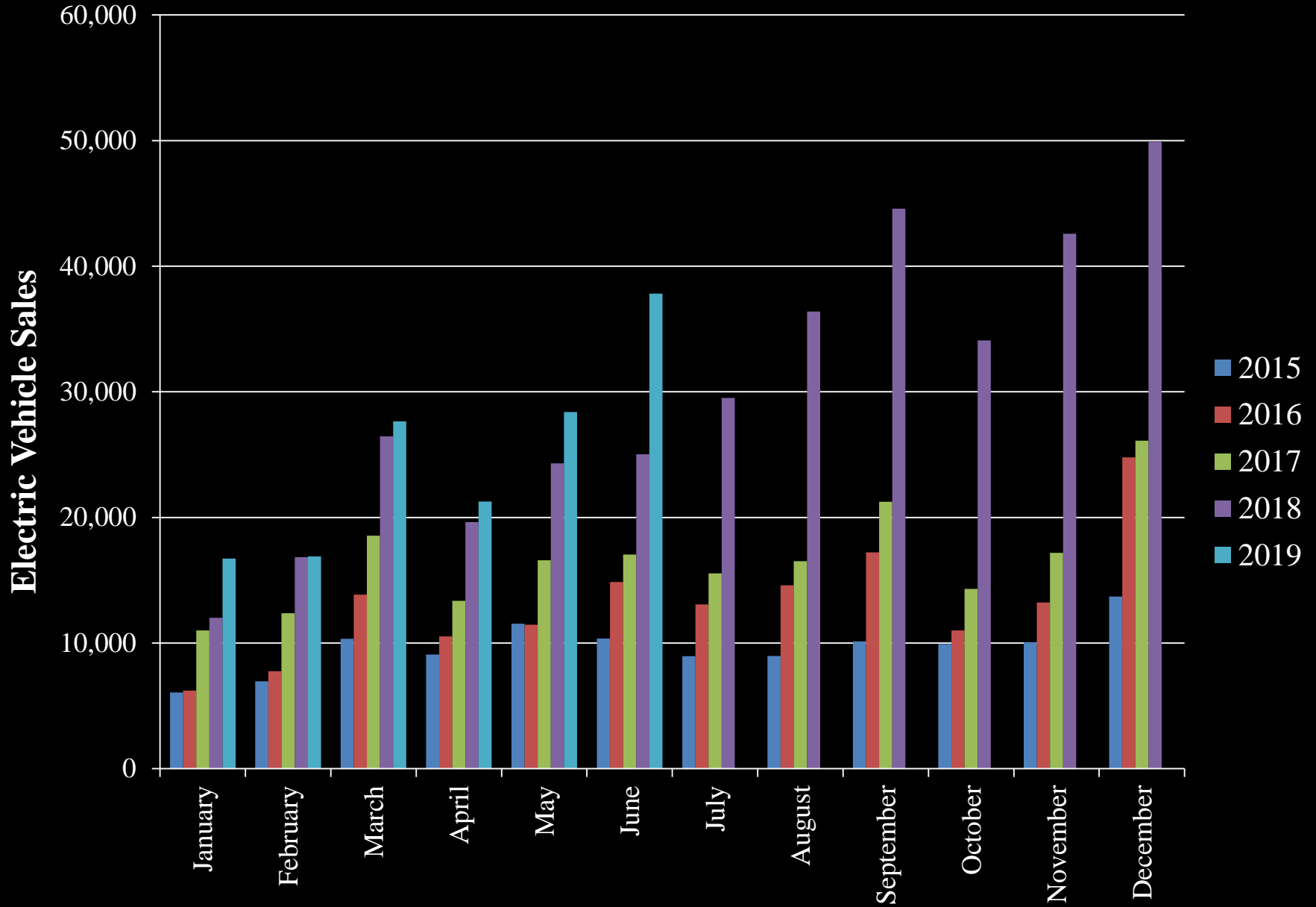


EVs on Current Grid



- Source: Union of Concerned Scientists
- Note: Doesn't account for green power purchase, rooftop solar, etc.

U.S. EV Sales



Market Share

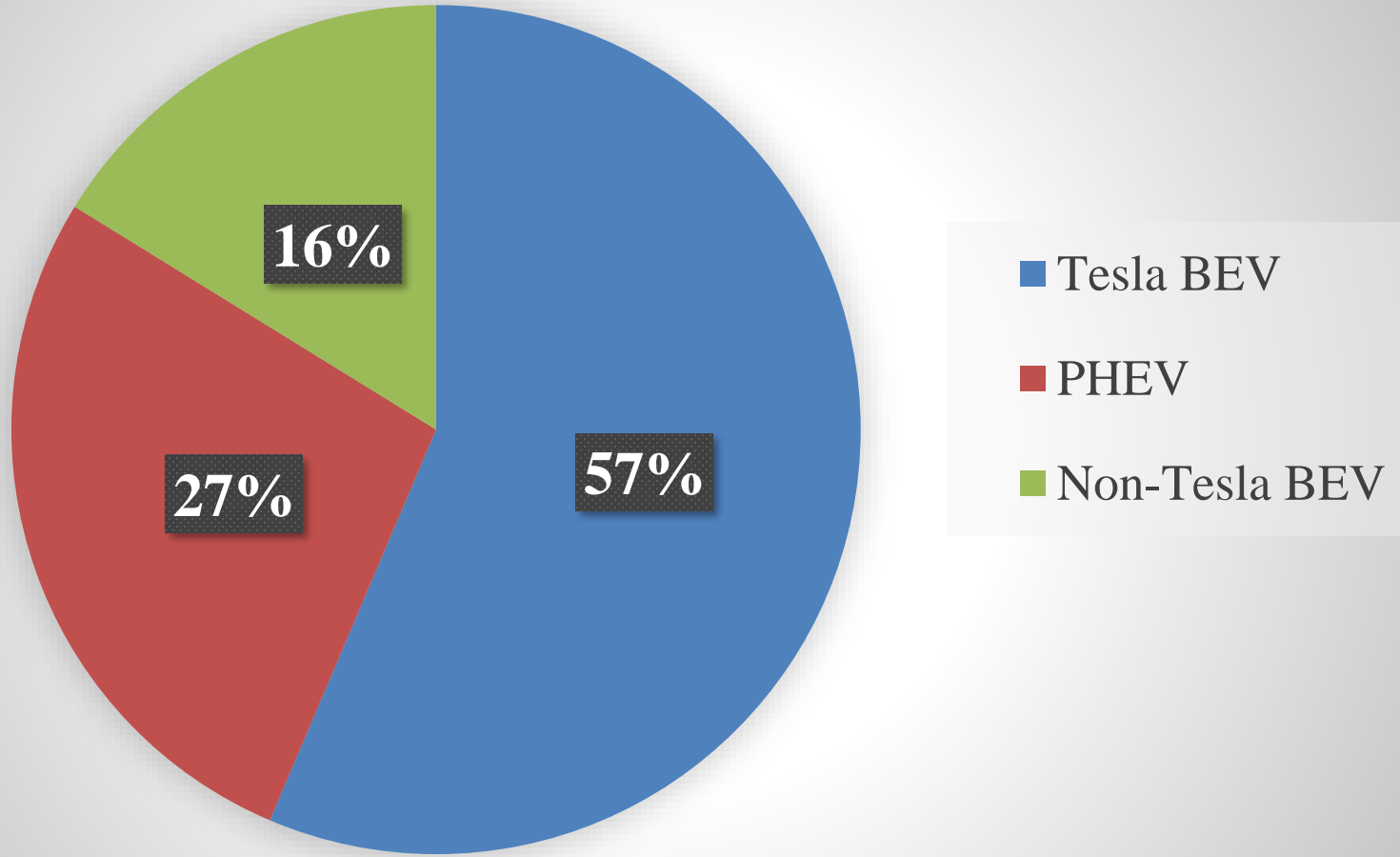
- ~2.5% of light-duty vehicle sales in June 2019
 - 1.5 million vehicles sold
 - 37,818 EVs
- 7% of passenger car market in June (32,246 out of 456,040)
- CA market share about 8% in 2018
- Several new BEV models this year, including SUV/Crossovers

Market Growth

- 41.4% growth is doubling every 2 years
- Sustained 42% growth will hit state ZEV targets (3.3 million ZEVs by 2025)
- 2018 was up 81% over 2017
- 2019 YTD is up 20% over 2018

- EV market is growing rapidly
- Adoption *is* accelerating
- States need to be ready

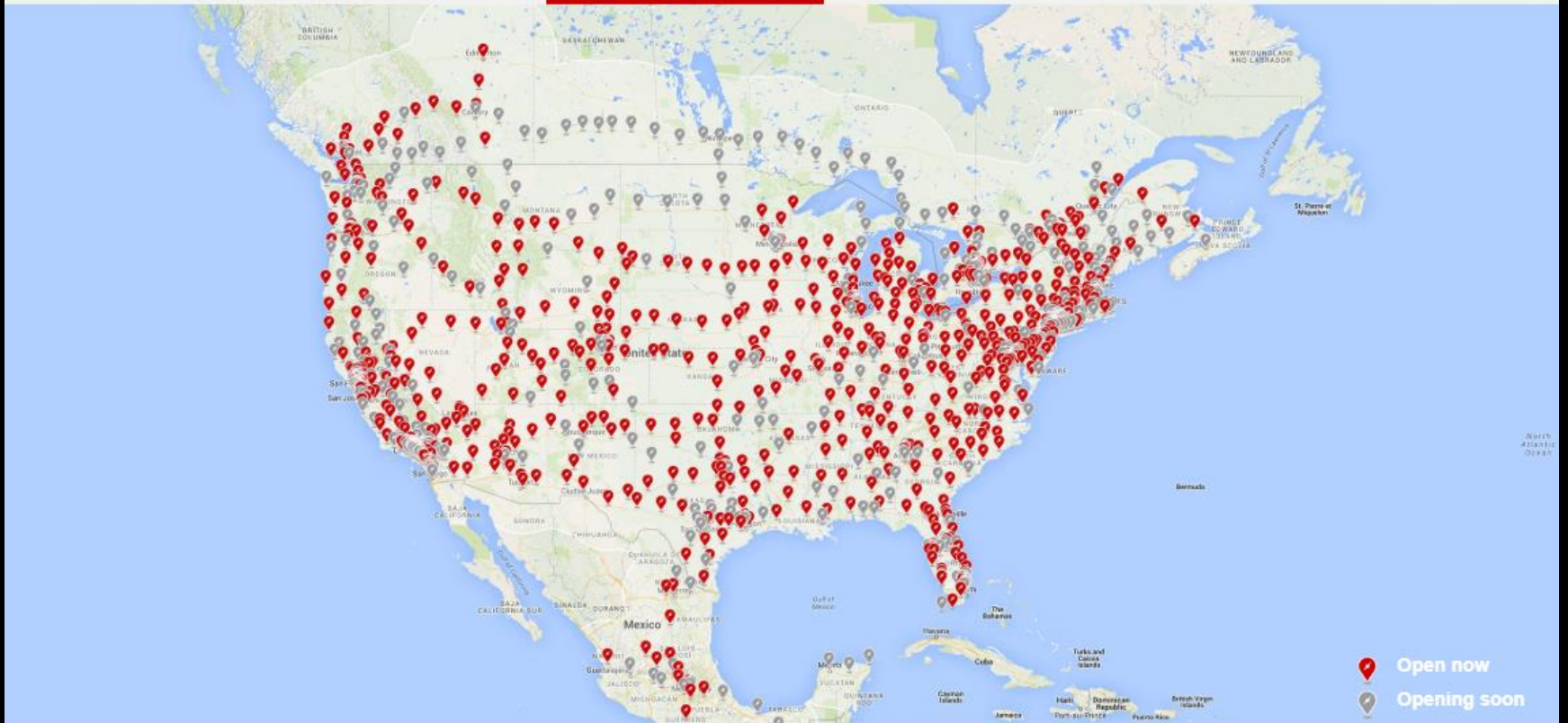
EV Market, Jan-Jun 2019



Asia

North America

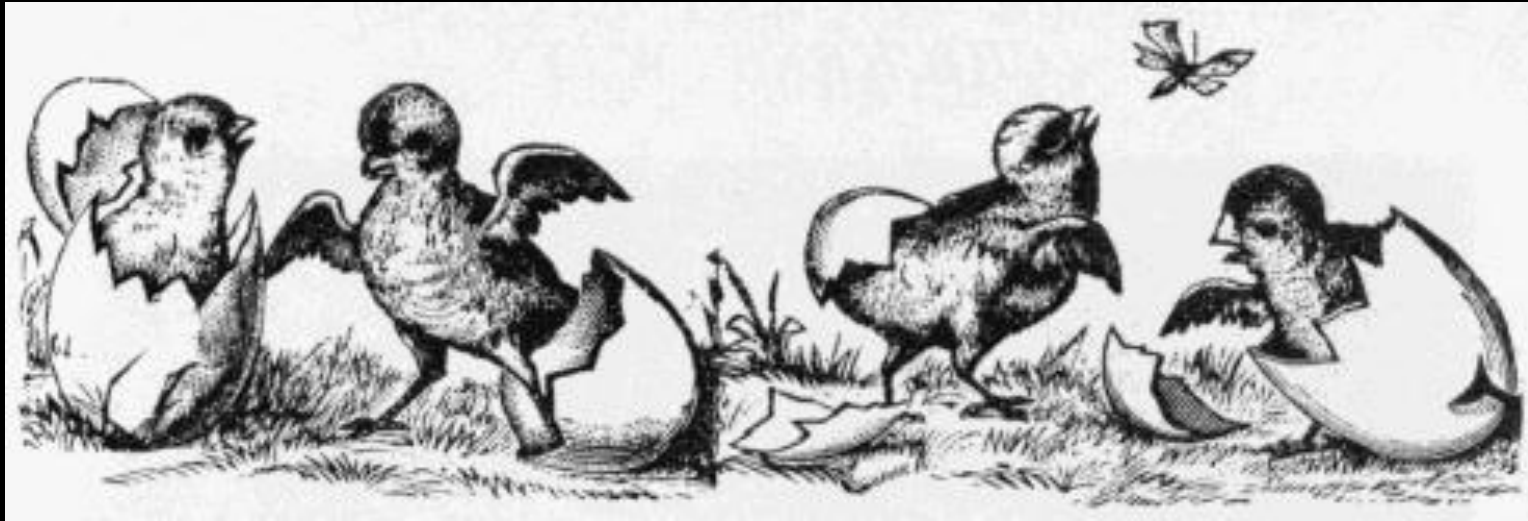
Europe & Middle East



Charging Networks

- Tesla isn't the only one
 - Electrify America
 - Utility investments
 - State funding (VW Settlement and other mechanisms)
 - Other networks
 - Destination charging
- Check out PlugShare.com for more

Enough, already



- Early adopters
- Second vehicles
- PHEV
- Tesla

PIA Policy Work in the Northeast

- Transportation Electrification
- Consumer Protection
- VGI
- NH EV Infrastructure Analysis
- VT PUC
 - “Investigation into promoting the ownership and use of electric vehicles in the State of Vermont”

Transportation Electrification

- Often a state goal
- Ground transportation
 - Personal vehicles
 - Buses, heavy trucks
 - Other fleets (govt; ride-sharing or car-sharing)

Transportation Electrification

- Reduced emissions
 - Criteria air pollutants
 - Greenhouse gases
- Cost savings
 - EV drivers
 - Non-EV-driver ratepayers

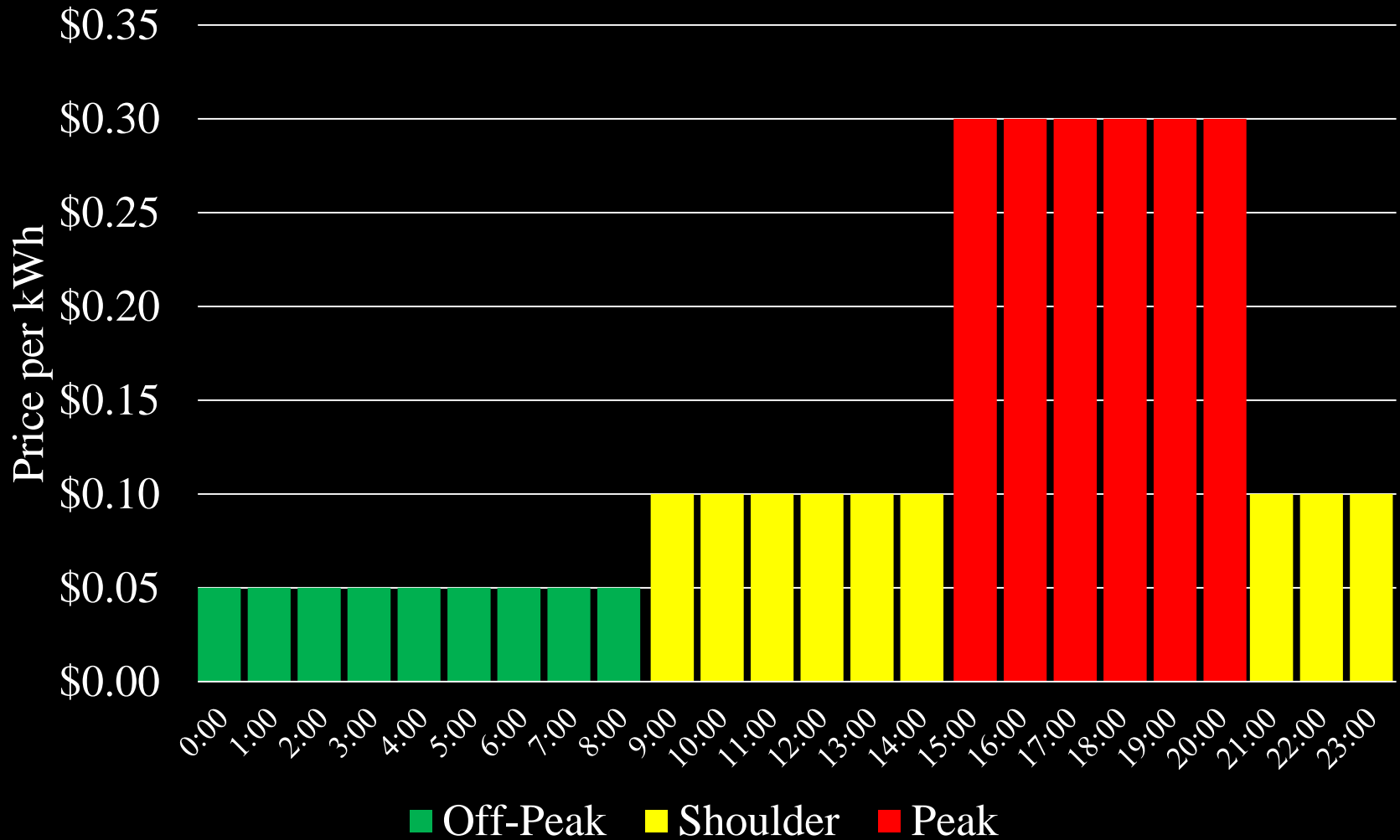
TE – the Utility Role

- Infrastructure
 - What role specifically?
 - Guidance to third parties?
 - Make-ready?
 - Own/operate?
- Education and outreach
- Rate design

TE – Rate Design

- Tiered usage
- Demand charges
- Time of Use
 - Whole-house or EV-only?
 - Shadow billing
 - ‘Hold harmless’ provisions
 - “Quasi-TOU” using technology

Time of Use Pricing



Consumer Protection

- Make charging as hassle-free as possible
 - Most occurs at home (>80%)
 - What about public charging?
 - Tesla charging is *very* easy, others not always so
- “Garage orphans” *will* need public charging
- Models – ATM networks? Cell phone networks?

Consumer Protection

- Access
- Interoperability
- Pricing transparency

Access

- Don't want to require stack of RFID cards
 - New driver or test driver?
 - New in region or traveling?
 - Multiple memberships cost too much?
 - Network controlling access is inoperative?
- Payment options?
- Station location and status
 - Functional?
 - Available?
 - Interaction with navigation apps

Interoperability

- Multiple levels of communication
 - Vehicle-station
 - Station-network
 - Network-utility
- Extensive technical efforts ongoing with protocols and standards

Pricing Transparency

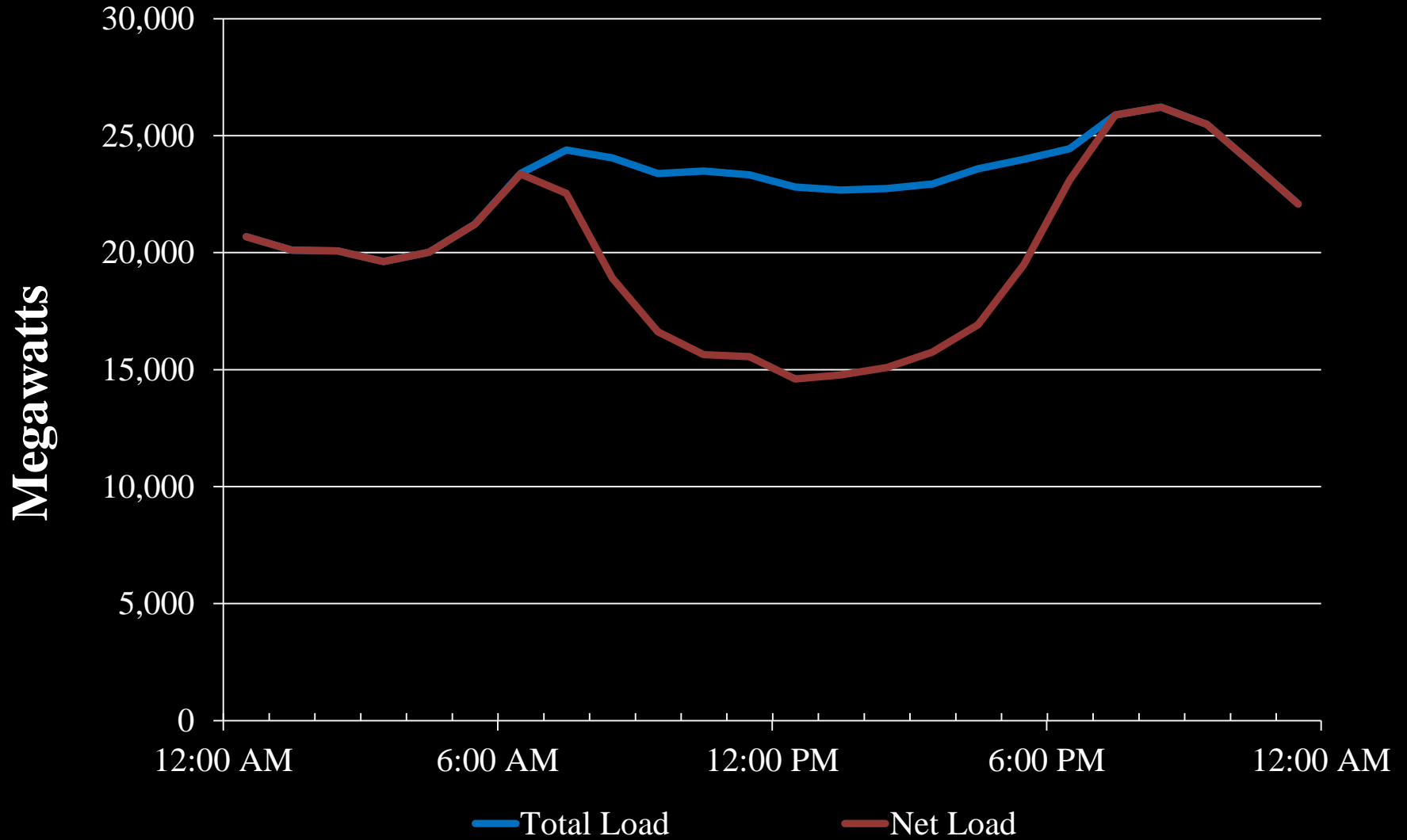
- Cost per minute?
- Cost per kWh?
- Fees for leaving vehicle once fully charged?
- Cost varies by time of day?
- See cost on navigation app?

Vehicle-Grid Integration (VGI)

Reduce EVs' own impact on the grid

Possibly help with other grid conditions

VGI: Hourly Variability of Solar California, March 31, 2017



Vermont

- Committed to reduce GHGs 80-95% by 2050
- About 2% EV Market Share in 2018
- Utilities must support “energy transformation projects” of non-electricity end uses in addition to procuring renewable energy
- Exceptional public process investigating EV issues (July 2018-July 2019)

REPORT TO THE VERMONT STATE LEGISLATURE

SUBMITTED BY THE VERMONT PUBLIC UTILITY COMMISSION TO THE SENATE AND HOUSE COMMITTEES ON TRANSPORTATION, THE SENATE COMMITTEE ON FINANCE, THE SENATE COMMITTEE ON NATURAL RESOURCES & ENERGY, AND THE HOUSE COMMITTEE ON ENERGY & TECHNOLOGY



PROMOTING THE OWNERSHIP AND USE OF ELECTRIC VEHICLES IN THE STATE OF VERMONT

June 27, 2019

 VERMONT
PUBLIC UTILITY COMMISSION

https://puc.vermont.gov/sites/psbnew/files/doc_library/Electric%20vehicles%20report.pdf

New Hampshire

- Less extensive charging infrastructure than VT
 - Especially north of Concord
 - Problematic for winter recreation
- Public charging can be a driver for other economic activity
- PIA and other partners surveyed EV drivers and other stakeholders
- To inform VW Settlement allocations
- Awaiting formal release of report

Thank You!

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