



SAVE TODAY. SAVE TOMORROW.
SAVE FOR GOOD.

Electrifying Transportation with **ENERGY STAR**® Electric Vehicle Charging

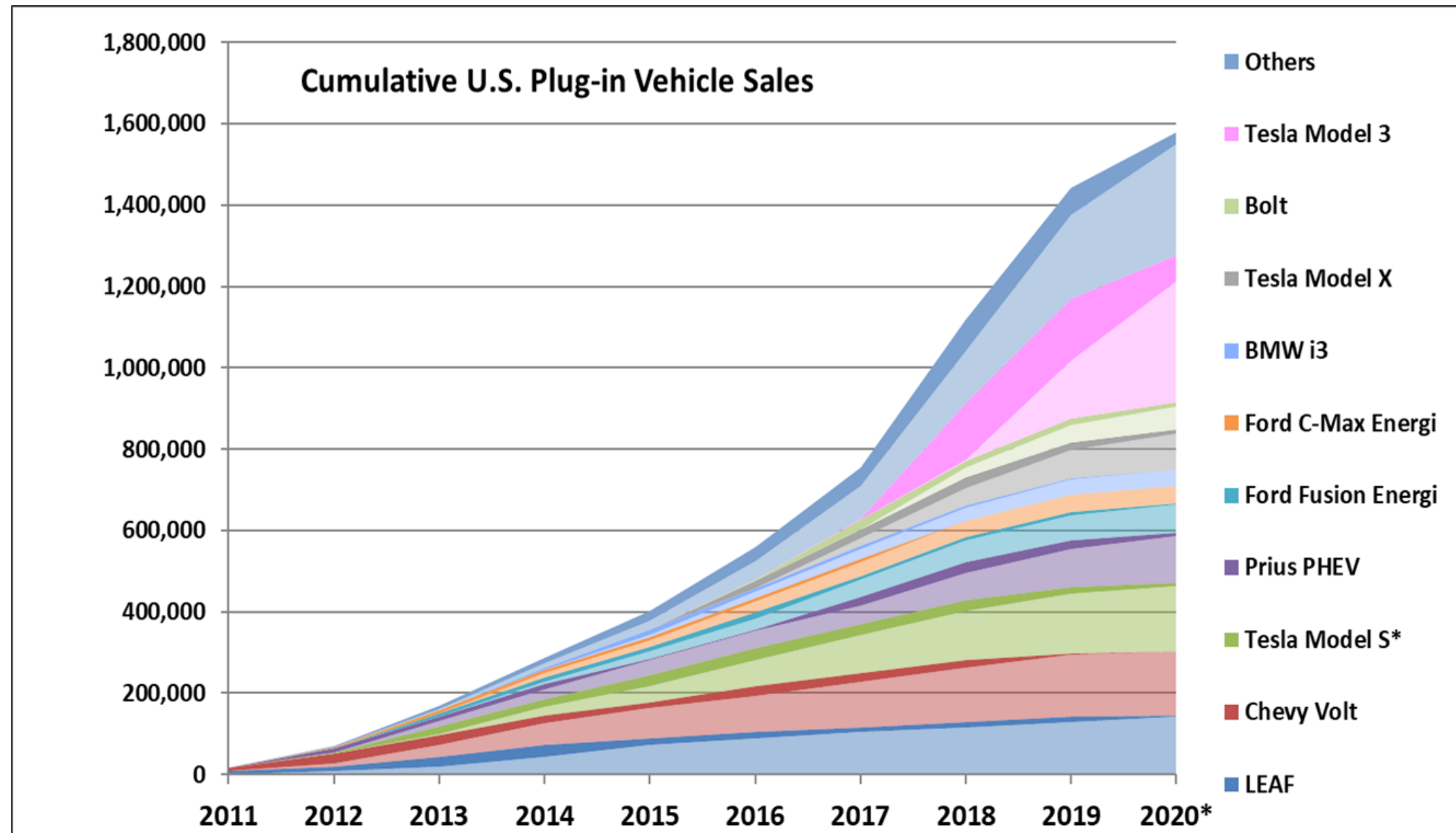
Peter Banwell, Senior Manager
U.S. EPA





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Electric Vehicles and Energy Efficiency





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**California sets 2035 ban on new
gas-powered passenger vehicles**



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ENERGY STAR EV Charger Specification Today

Level 1 (120V) and Level 2 (240V)
alternating current (AC) chargers

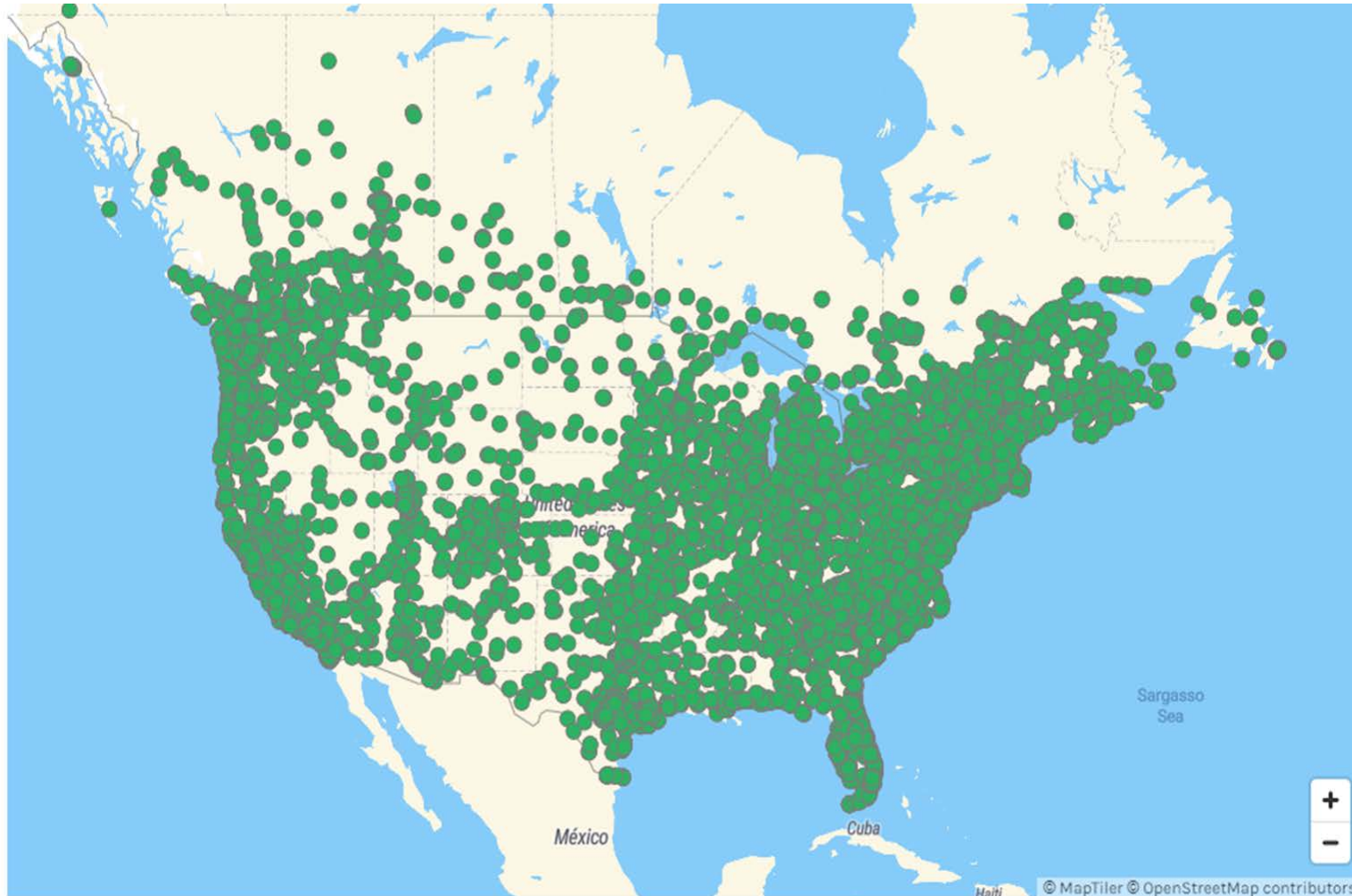
- 40% energy savings
- Safety certification
- Open communications standards





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EV Chargers: Tools & Resources



Consumer Facing Resources

- Electric Vehicle Finder
- Charging Station Locator
- Incentives Search
- Emissions Calculator

Utility, Business, Gov Resources

- One Pagers for:
 - Commercial Buildings
 - Home Builders
 - Utilities
- Additional Guidance for:
 - Fleet Managers
 - Government Agencies



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Partners

blink[®]

enel x



solar**edge**

BTCPOWER

EVBOX

loop
ev charging network



chargepoint[™]

flo

NUVE

TELLUS POWER GREEN



CLIPPERCREEK, INC.

LITEONI[®]

SemaConnect

Webasto

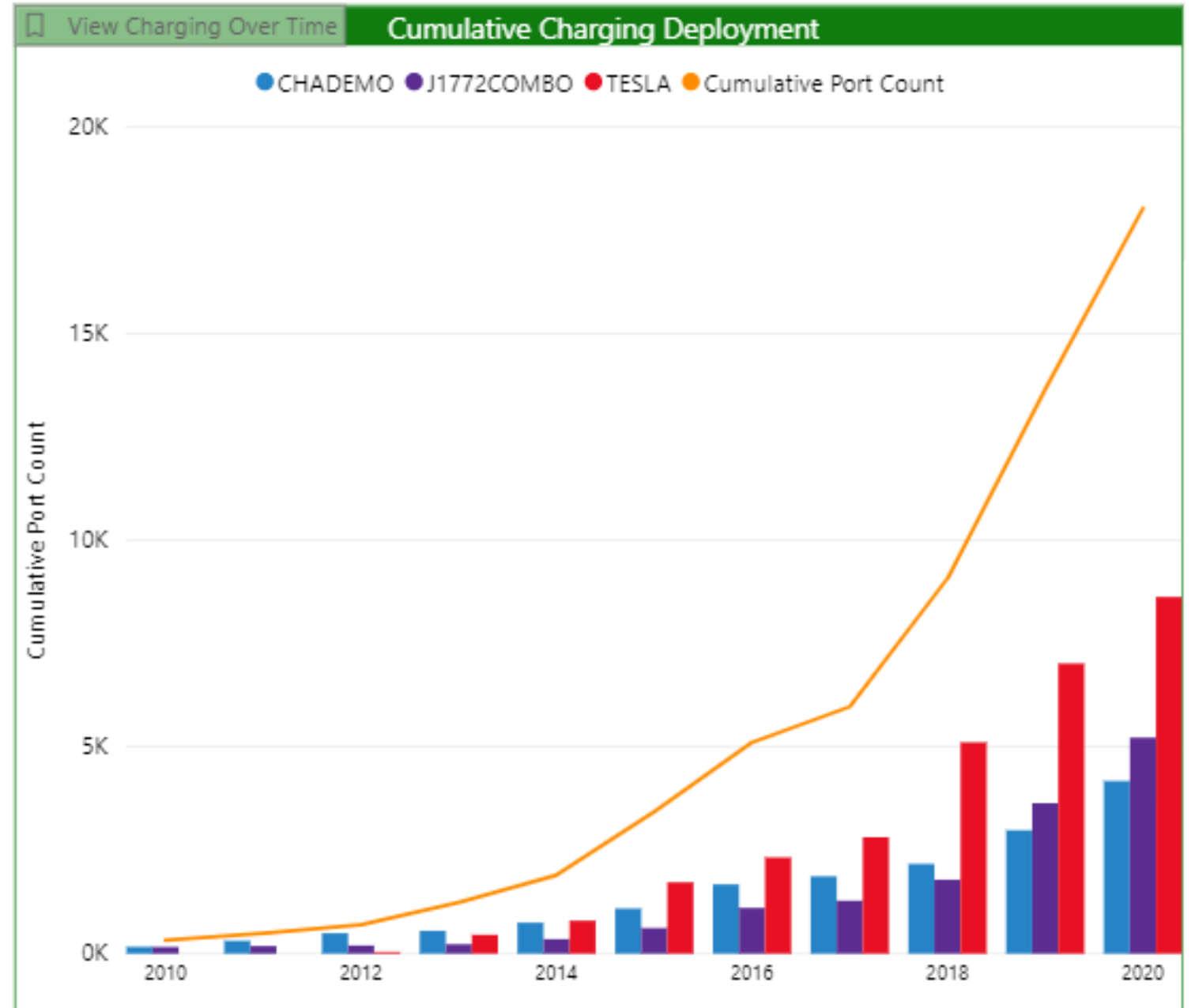


as of October 2020



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New Savings Opportunity: ENERGY STAR DC Fast Chargers





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Operational Efficiency (%)	Savings per Unit (kWh/year)
90	0.0
91	534
92	1058
92.5	1315
93	1569
94	2070
95	2561



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Contact the ENERGY STAR EV Charging Team

Marketing & Promotion

https://www.energystar.gov/products/other/ev_chargers

- Peter Banwell: Banwell.Peter@epa.gov
- Stacy Noblet: Stacy.Noblet@icf.com

Specification Development

https://www.energystar.gov/products/spec/electric_vehicle_supply_equipment_version_1_1_pd

- James Kwon: Kwon.James@epa.gov
- Emmy Feldman: Emmy.Feldman@icf.com



SAVE TODAY. SAVE TOMORROW.
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Up Next:



Jason Bobruk

Director of Code Compliance,
SolarEdge Technologies Inc.





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Up Next:



Neal Callinan

EV Product Manager, Xcel Energy






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Up Next:



David McCabe
Project Manager, NYSERDA





Electrifying Transportation With ENERGY STAR EV Charging

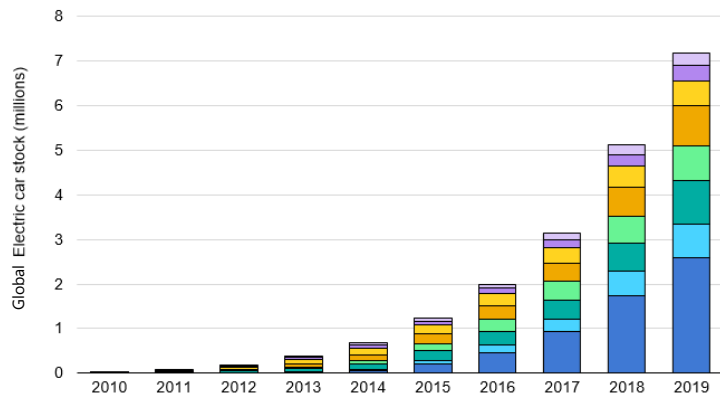
Jason Bobruk
Director Codes
and Compliance

October 2020



Industry Overview

- Global EV adoption is increasing 40% YOY creating a need for efficient EV chargers
- In the United States 80% of EV owners charge at home totaling over 1.5 million private chargers today
- Roughly 1 out of 3 EV owners have solar panels



Meet SolarEdge

Who we are

SolarEdge is a global leader in high-performance smart energy technology. By leveraging world-class engineering capabilities and with a relentless focus on innovation, we create smart energy products and solutions that power our lives and drive future progress

Mission

Through engineering excellence and relentless innovation, we drive progress by creating the smart energy solutions that power the future

SolarEdge in Numbers

58.5M 
Power Optimizers
Shipped

28
Countries
Presence

358 Awarded
Patents and **282**
Additional Patent
Applications

> 1.6M
Monitored systems
around the world

#1 
Solar
Inverter
Company

2,726
employees



2.4M
Inverters
Shipped 

19.5GW
of our systems
shipped worldwide

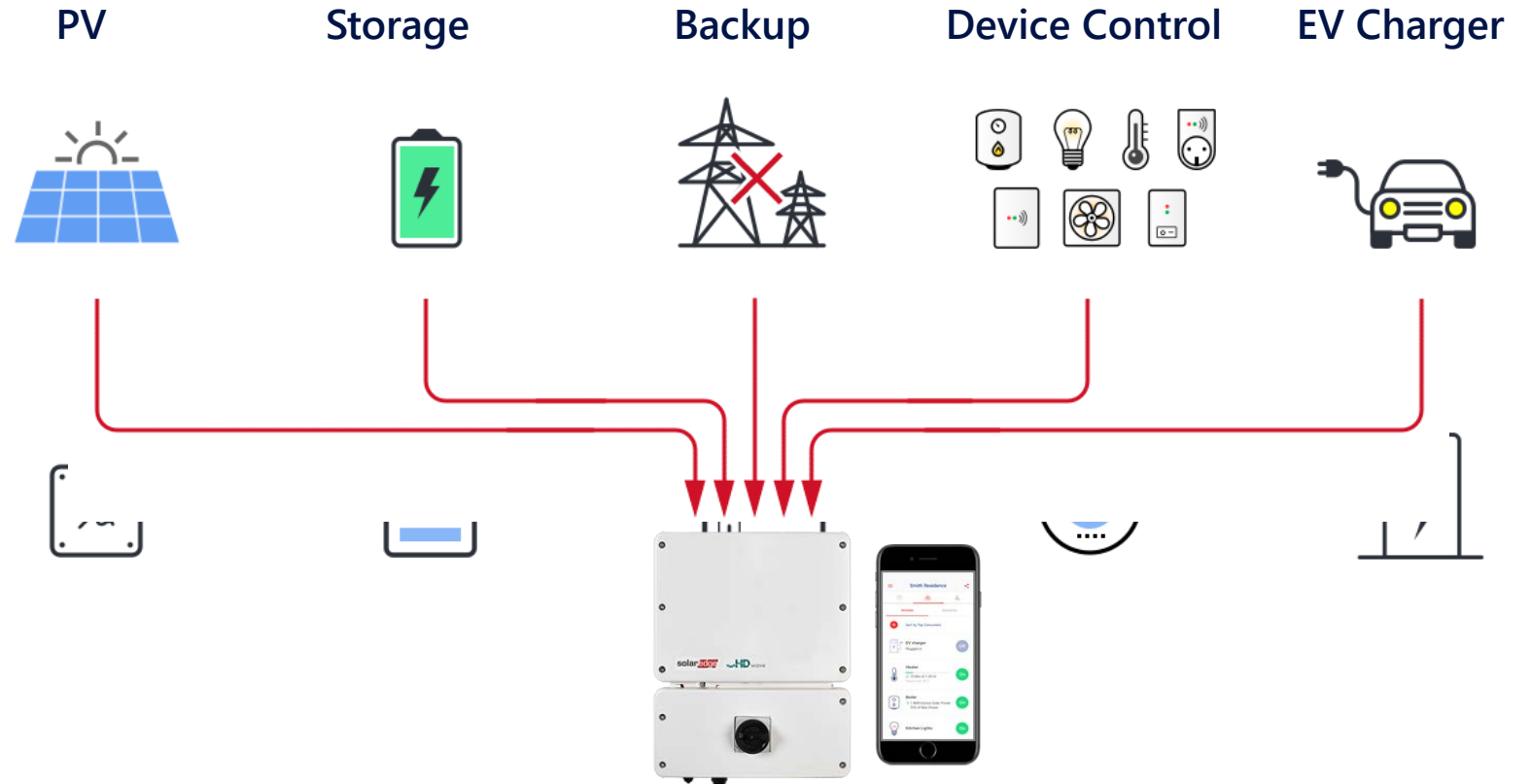
Home Is Where the Smart Is

Enter a new era of smart home energy. Offer a highly flexible and resilient solution that powers everyday life with more efficiency, more convenience and more savings.

One Inverter for All Applications

Energy Hub

- Simple design
- Fast installation
- Cost effective
- Centralized energy management
- Designed to work together; seamless and synchronized



An EV Charger Powered by the Sun

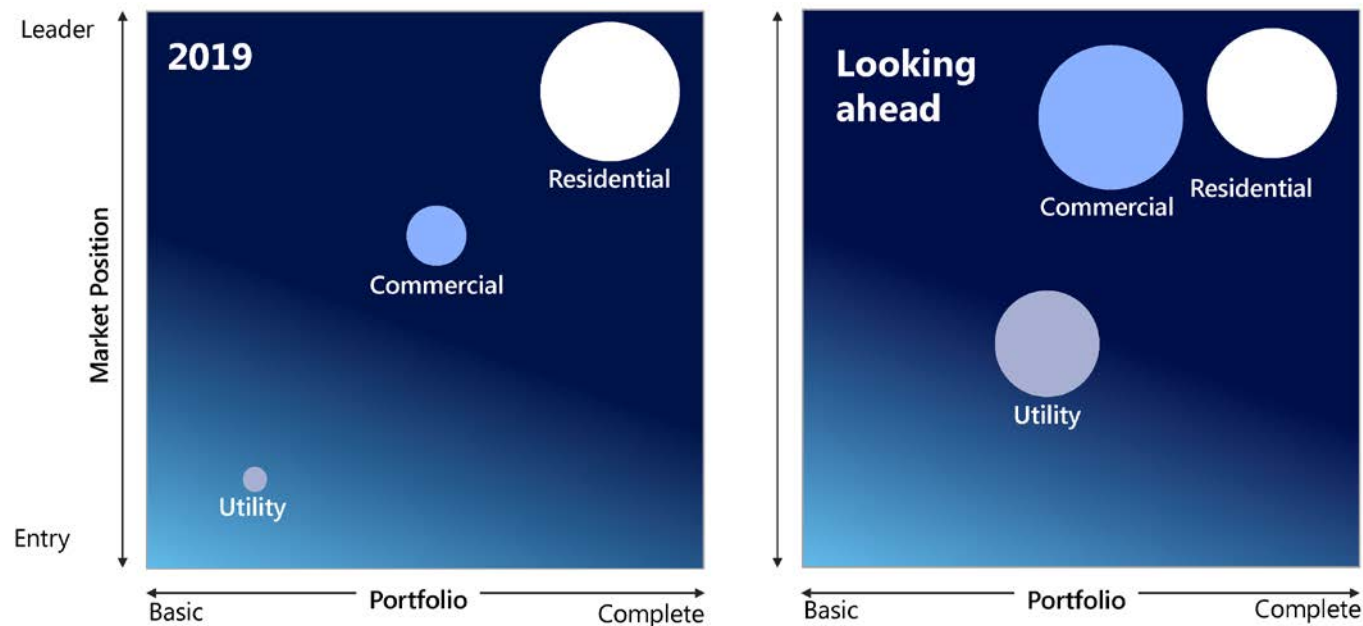
■ Stand Apart with Our Level-2 Smart EV Charger

- Charge up to 100% on sunshine vs grid-only
- Solar boost mode allows 25% faster charging than standard level-2 chargers
- Installing EV with PV helps homeowners save money, time, and hassle
- Minimal installation costs, no electrical upgrades
- No additional components or 3rd party installers
- Peace-of-mind with the industry's leading warranty of 5 years (2-4 years industry standard)



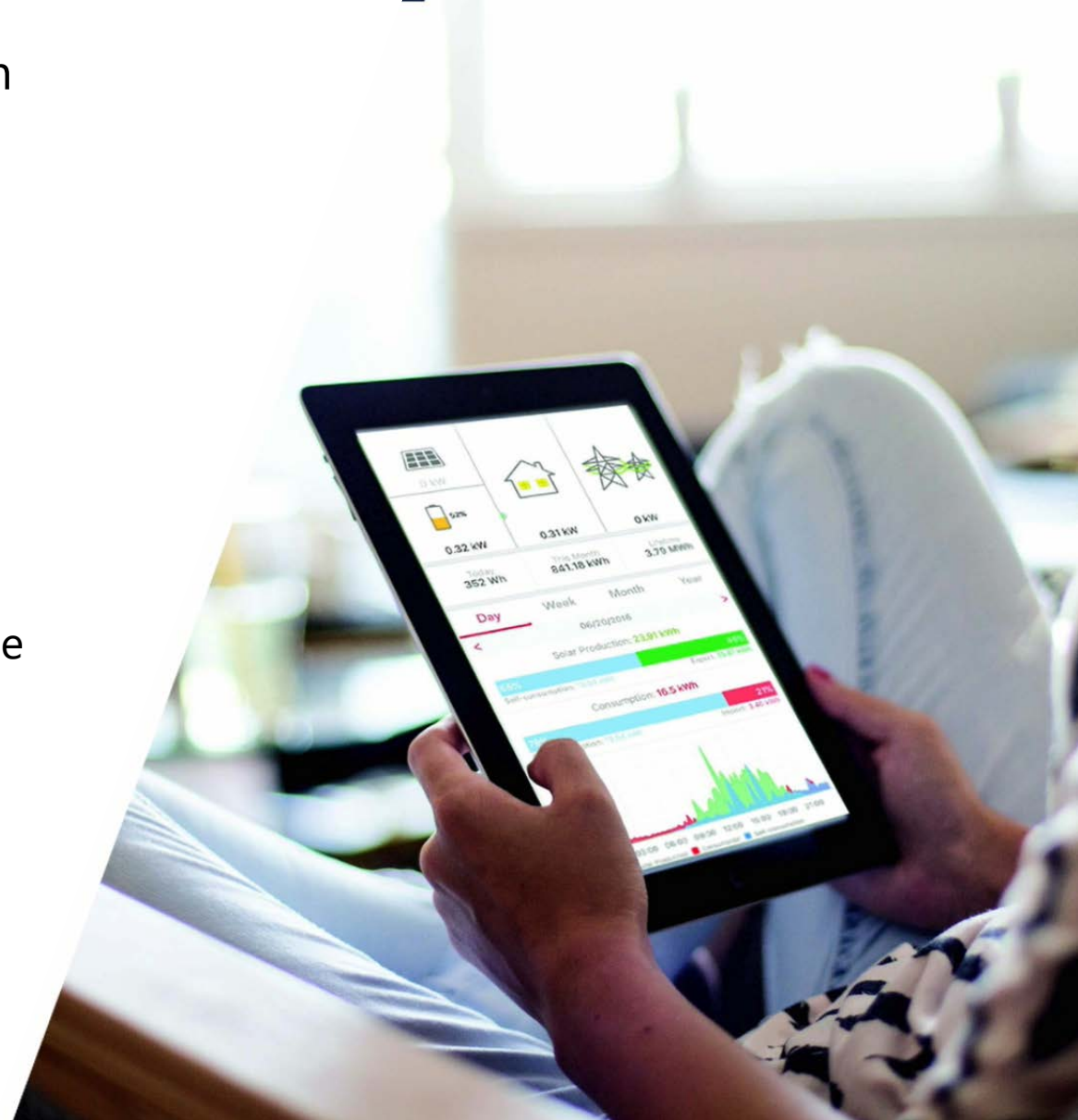
SolarEdge Customers

- We want to advance better living by powering everyday life with clean, responsible energy, and changing the way we produce and consume it
- Residential, Commercial, and Utility customers have common goals but at a different scale



Importance of Energy Efficiency

- Every photon counts when energy is harvested from the sun
- SolarEdge products are designed for maximum efficiency to reduce needless losses
- This has several advantages
 - More usable energy harvested and stored from each rooftop
 - Increases return on investment
 - Lower stress on components = longer system lifetime
- The ENERGY STAR rating on appliances like EV chargers ensures minimal loss of precious energy



Rebates, Incentives, and Safety

- ▀ Rebates and incentives for customers are designed to promote efficient use of energy
- ▀ Many rebate programs require a 3rd party verified efficiency rating
 - ▀ EV chargers – Energy Star
 - ▀ Hot Water Heaters- Energy Star
 - ▀ Air Conditioning – Energy Star
 - ▀ Solar Modules – CEC eff. rating
 - ▀ Solar Inverters – CEC eff. rating
 - ▀ Energy Storage Batteries – SGIP round trip eff.
- ▀ Product safety is a key element
 - ▀ Certification is required ensuring safe adoption of efficient technology



Collaboration is Key

- State and government agency engagement
 - Department of Energy, Grid Modernization
 - California, Hawaii, Smart inverter working groups
 - California Vehicle to Grid Integration Roadmap
 - National Standardization
- Utilities
 - Grid Services use Solar, Storage, and EV charging to stabilize the grid
- Customers
 - One stop, integrated, home energy ecosystem

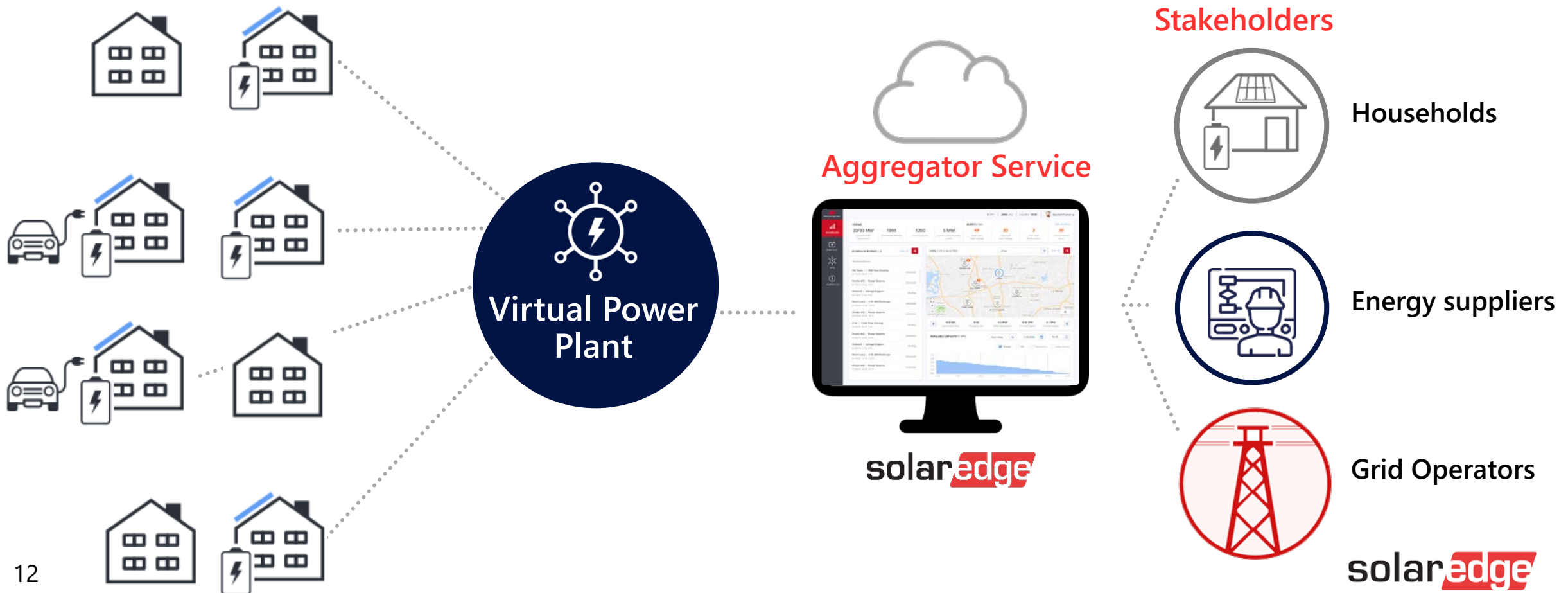
EV HOME CHARGER DEMAND RESPONSE

You can earn rewards of up to \$300 by enrolling your home electric vehicle (EV) charger in Eversource's ConnectedSolutions.

The program rewards you for using less energy during periods of peak demand, when others are using more.

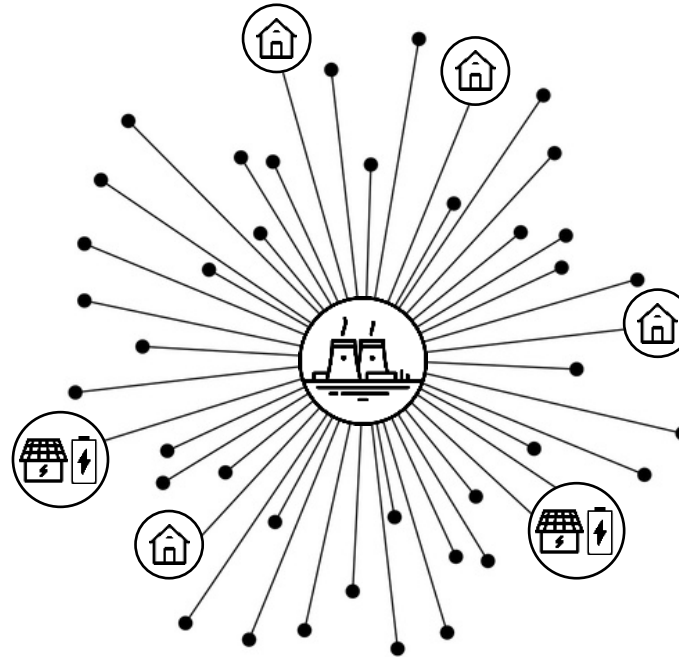
Grid Services

Pooling PV, storage, and EV in the cloud enables new grid services & revenue streams for all involved stakeholders

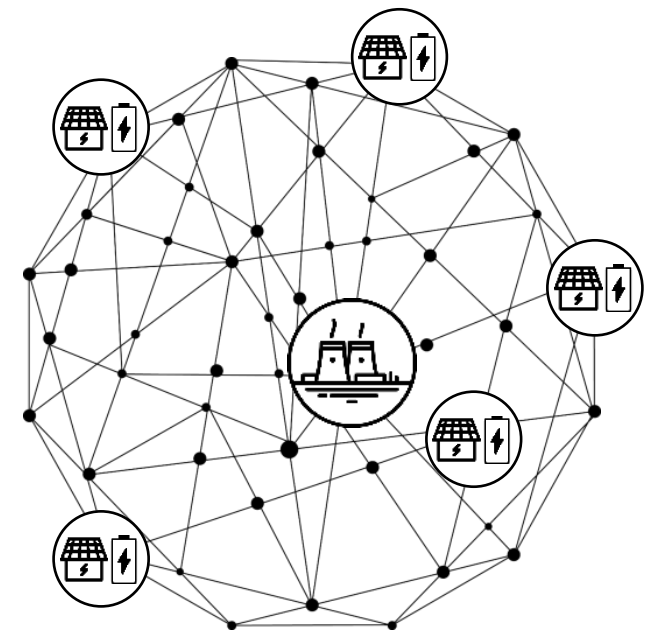


A New Model for Generation and EV charging

- Centralized power production is outdated, inefficient, and unchanged for nearly a century
- High-tech industries, i.e. computing, moved towards a distributed model
 - Improved reliability, service, security, and costs
- Grids can leverage this model
 - Minimized transmission costs
 - Redundancy to improve stability
 - Lower cost to all stake holders
 - Strategic diversification to lower risk of cyber or terror attack



Centralized Network



Distributed Network

Contact Info:
Jason.Bobruk@SolarEdge.com

Thank You!

Cautionary Note Regarding Market Data & Industry Forecasts

This power point presentation contains market data and industry forecasts from certain third-party sources. This information is based on industry surveys and the preparer's expertise in the industry and there can be no assurance that any such market data is accurate or that any such industry forecasts will be achieved. Although we have not independently verified the accuracy of such market data and industry forecasts, we believe that the market data is reliable and that the industry forecasts are reasonable.

Version #: V.1.0

solar**edge**

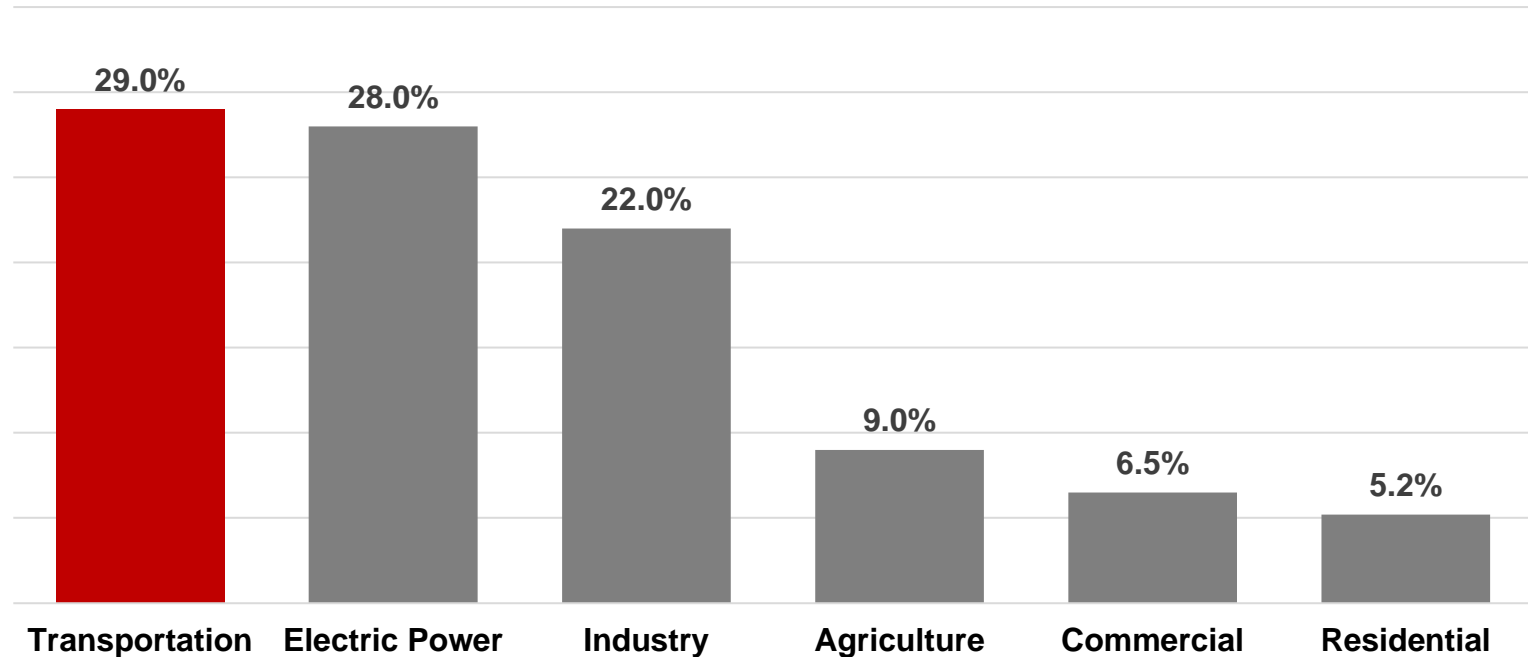


Electrifying Transportation with ENERGY STAR EV Charging



Neal Callinan
Electric Vehicle Product Manager
Xcel Energy

In 2017, the transportation sector became the highest source of carbon emissions in the US





The Future is Electric

Our vision is to power 1.5 million electric vehicles by 2030.

Driving the future of clean, affordable transportation

Our EV vision will allow everyone in the communities we serve to experience the benefits of electric transportation and improved air quality.



1.5 MILLION EVs

On the road in the areas we serve by 2030, replacing gas-powered models

That's **20% of all vehicles**, a **30-fold** increase in EVs



\$1 BILLION

In customer fuel savings annually by 2030

An EV would cost **\$700 less per year** to fuel than a gas-powered car



5 MILLION TONS OF CARBON EMISSIONS

Eliminated annually by 2030 with our clean energy

That's about **3 tons of carbon reduction** per vehicle

Planning to invest over \$300M with over 50 different EV programs across our footprint to advance our vision



\$9M approved
\$104M pending



\$25M+ approved
\$160M pending



\$4M+ approved



\$3M pending

Constructive collaboration with regulators and a variety of industry stakeholders has led to supportive policy that enables our programs.

Ongoing stakeholder meetings in several states to maintain collaboration

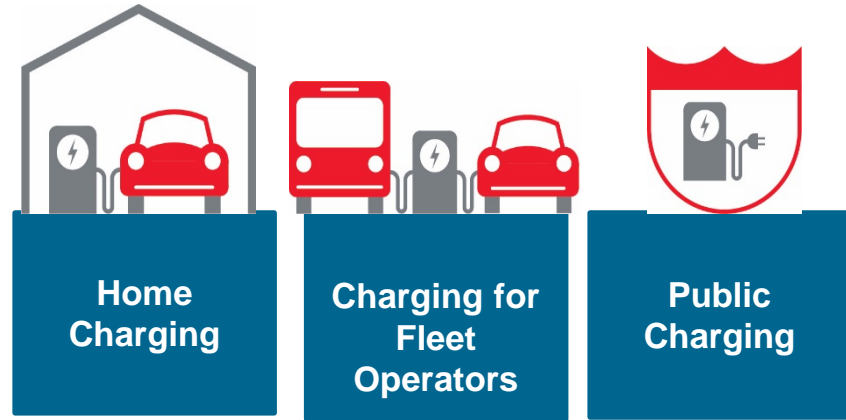
State laws in CO and NM for Transportation Electrification Plans

Policy and legislation supporting utility investment

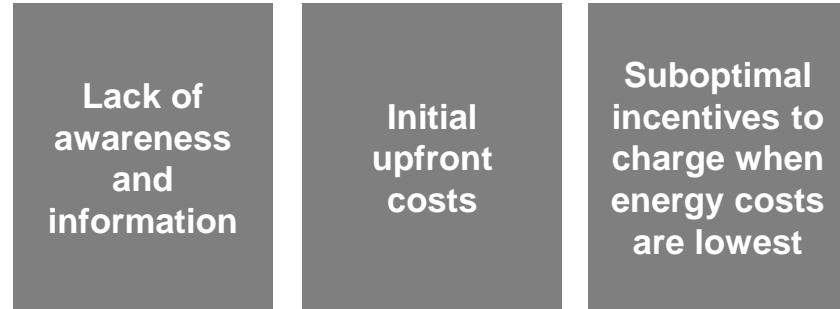
State Commissions focusing on EVs

Xcel Energy EV plans and programs

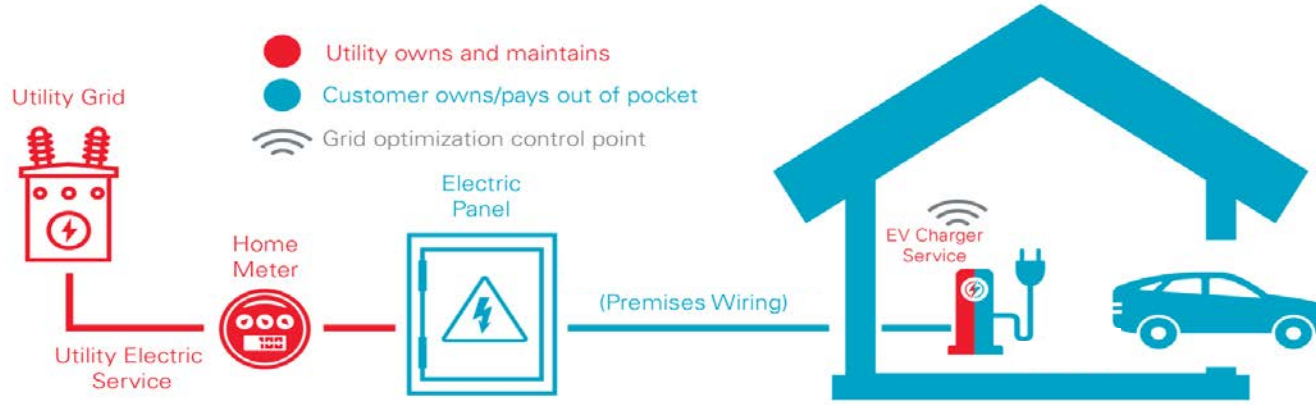
Focus on 3 market segments:



Key barriers to address:



EV Home Charging Service program



Remove the hassle-factor for charging at home	Charging equipment installation and ongoing maintenance service
Encourage EV charging at the right time to reduce grid impact	Fuel savings with access to EV TOU rates and smart charging plans
Reduce upfront costs for home charging	No separate meter and option to pay for the service on monthly utility bill – no upfront cost
Maintain affordable, reliable, and safe electric service	Choice in utility-vetted charging equipment and electricians

Success and learnings from initial pilots



Customers save \$2,000 on average in upfront costs from not having to install a separate meter



80% of customers choose to pay monthly, further reducing upfront costs



90% overall enrollment satisfaction and 96% overall satisfaction with the installation experience



Over 90% of all EV charging activity occurs during off-peak system hours, reducing grid impact



Xcel Energy service standards were maintained to deliver affordable, reliable, and safe energy for EV charging

Importance of ENERGY STAR in electric vehicle charging programs

Xcel Energy uses ENERGY STAR certification as a requirement when selecting qualified charging equipment for programs



- ✓ A seal that consumers trust and recognize boosts customer confidence
- ✓ Energy efficient charging equipment saves customers energy and fuel costs
- ✓ Ensures charging equipment meets industry standards for battery charging performance
- ✓ Initial and on-going procedures for charging equipment product testing



ElectricVehicles@xcelenergy.com

Electric Vehicle Vision

Electrifying Transportation with ENERGY STAR EV Charging

**David McCabe, Project Manager
NYSERDA
Charge Ready NY**



Gov. Cuomo's EV Agenda

- > Signatory of Light-Duty and recent Medium-/Heavy-Duty Zero Emission Vehicles (ZEV) Memorandum of Understanding (MOU)
- > Electric Vehicle (EV) infrastructure enabling statewide EV travel
 - 10,000 Electric Vehicle Supply Equipment (EVSE) by end of 2021
- > Major EV investments
 - NYSERDA-administered rebate programs for EVs, EVSE
 - \$250M New York Power Authority (NYPA) EVolveNY program
 - \$700M Public Service Commission (PSC) make-ready order
- > VW Settlement funds focused primarily on truck and bus electrification

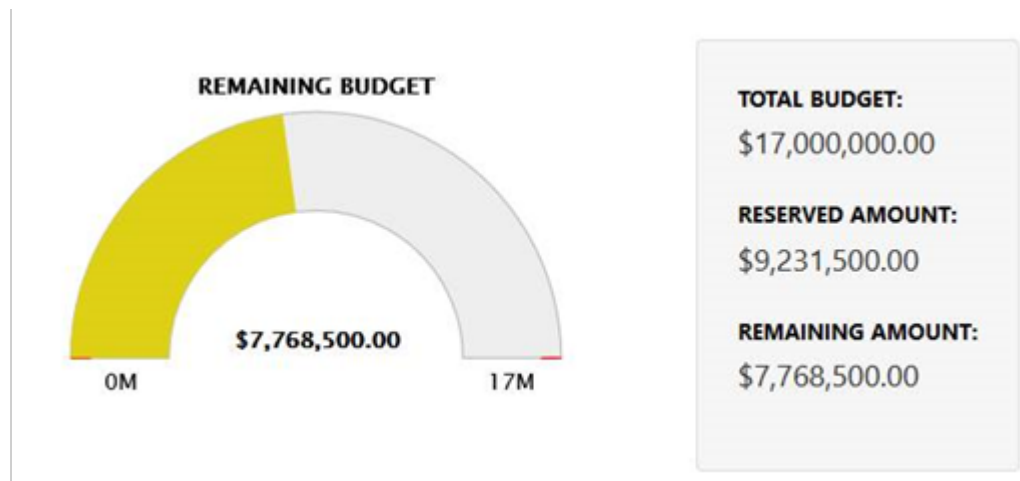


Current NYS Charging Station Programs

- > Charge Ready NY - \$4,000 per port for Level 2 chargers
- > 50% NYS business tax credit through 2022
- > NYPA EVOlve NY
- > PSC Make-Ready Order

Charge Ready NY

- > Designed to accelerate deployment of Level 2 chargers in public, workplace, and multi-unit dwellings (MUDs) locations
- Provide incentive of \$4,000 per charging port upon completion



Charge Ready NY

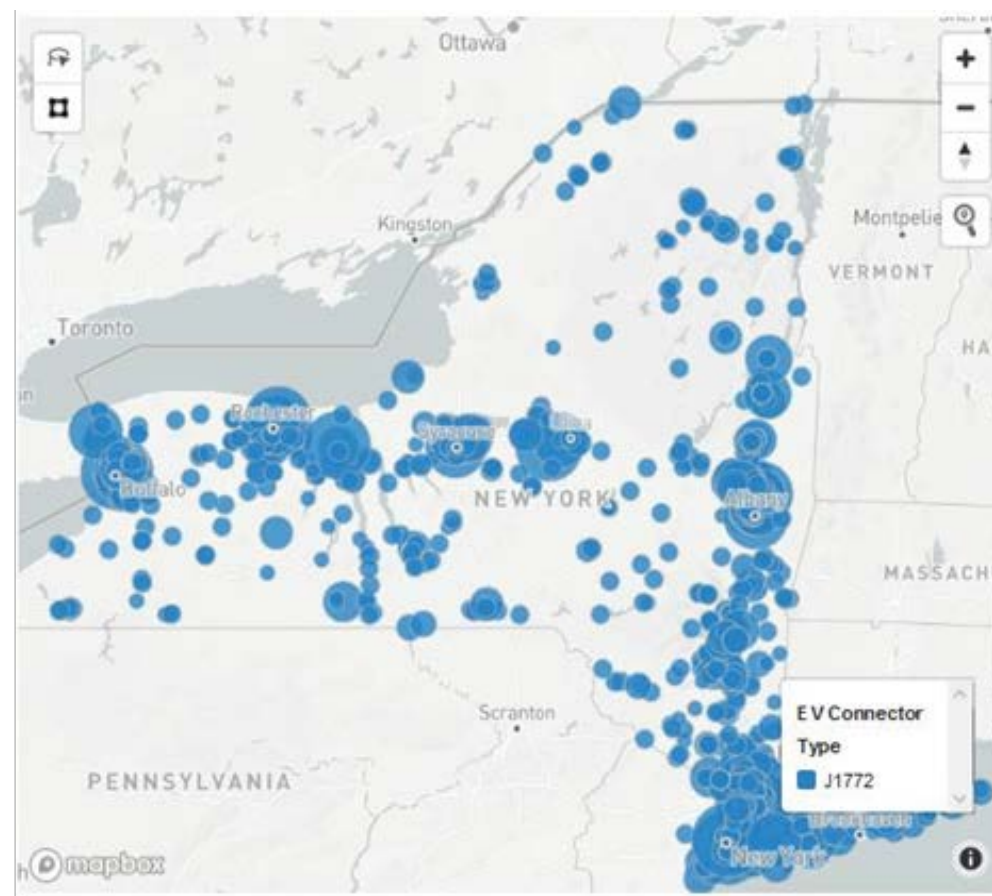
- > Prequalified equipment and networks (75 models from 20 manufacturers and 20 network providers)
- > Required Energy Star certification beginning October 1, 2019
 - This encouraged equipment manufacturers to comply in order to remain eligible for the Charge Ready NY Program
 - Contributes toward New York meeting its energy efficiency goals
 - Provides safety for EVSE installers and the consumers using them

Charge Ready NY Lessons Learned

- > Provide as much info as possible to consumers
 - This is most likely their first time buying EVSE, they don't know where to start
- > Aim for simplicity
 - Make the incentives understandable – flat \$/port
 - Keep the number of documents required to a minimum
- > Be flexible if possible
 - Keep an open mind and be willing to make program adjustments
 - Don't give consumers another reason NOT to install EVSEs

Charge Ready NY Data to Date

- > Applications approved for over 2,300 charging ports
- > Over 1,500 charging ports completed at more than 300 locations
- > Installed cost range from \$3,500 - \$9,000 per port



For More Information

- > Contact David McCabe, David.mccabe@nyserda.ny.gov
- > More info at <https://www.nyserda.ny.gov/Charge-Ready-NY> or contact ChargeReadyNY@energycenter.org