NC STATE UNIVERSITY

SUSTAINABLE FLEET TECHNOLOGY CONFERENCE & EXPO 2021

Session #1: EVSE Planning & Best Practices for Today & the Future

September 09, 2021

NC CLEAN ENERGY TECHNOLOGY CENTER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SUSTAINABLE FLEET TECHNOLOGY
WEBINAR SERIES 2021

Sessions through December 09, 2021

SUSTAINABLE FLEET TECHNOLOGY
CONFERENCE & EXPO 2021

Sessions September 09, 2021 – October 19, 2021

https://www.sustainablefleetexpo.com/

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SFT Conference Series Upcoming Sessions

- 09/14: Alternative and Renewable Fuels for MD/HD Fleet Decarbonization
- 09/16: Natural Gas Transportation Applications and Success Stories
- 09/21: Working with your Utility and Understanding Fleet Charging Costs
- 09/23: Idle Reduction Simple and Impactful
- 09/30: Innovative Charging Solutions

2021 SFT Conference Series Sponsors

NC CLEAN ENERGY
TECHNOLOGY CENTER

Format

- Q&A at the end
- Submit questions and comments to “Panelists”
- Scheduled for 2:00p-3:30p
- Handout
- Recording

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EVSE Planning & Best Practices for Today & the Future
September 09, 2021

2:00-2:05 **Rick Sapienza, NCCETC--**Introduction and Welcome

2:05-2:20 **Dana Al-Qadi and Steven Hall, AECOM**—Planning and Modeling Best Practices for an Electrified Future

2:20-2:27 **Desmond Wheatley, Beam Global**—World's Fastest EV Charging Deployment

2:27-2:42 **David Dunn and Jonathan Ford, City of Orlando FL**—The City of Orlando Fleet Electrification and Public Charging Deployment

2:42-2:57 **Brent Taylor, NYC Fleet DCAS**—Electric Vehicle Infrastructure Planning

2:57-3:07 **Ralph Wilder, Spokane Transit Authority**—Spokane Transit Infrastructure

2:07-3:17 **Rendall Farley, Avista**—Transportation Electrification

3:17-3:30 **Q&A**

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Driving Clean Air & Renewable Energy

CleanTransportation.org

Supported by the NC Clean Energy Technology Center with funding from the North Carolina Department of Transportation

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

AECOM

Dana Al-Qadi, D. Eng., PE
Dana.AlQadi@aecom.com

- *Member AECOM's Smart Energy team*
- *Focuses on advancing communities and infrastructure, including transportation electrification and decarbonization*
- *Serves on the Women in Power National Leadership Advisory Board and on the editorial board for the IEEE Smart Cities Journal*
- *Recently recognized as 2020 CSE Top 40 under 40, 2020 ASCE New Face of Engineering, and 2020 Top Young Professional by Engineering News Record Midwest*
- *BS and MS in Civil Engineering from Universty of Illinois Urbana-Champaign, Doctorate in Engineering Management from George Washington University*

AECOM

Steven Hall, PE
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- *Project Manager in the AECOM Energy Business Line with a focus on transportation*
- *Background encompasses all aspects of project delivery, from planning and strategy development, design development, utility coordination, through project construction*
- *Worked with many types of charging infrastructure technologies including wireless inductive charging systems and is an industry advocate for the development of new charging systems, including dynamic wireless power transfer.*

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Planning and Modeling Best Practices for an Electrified Future

September 09, 2021

Transportation Electrification

Widespread electrification represents opportunity to improve communities and reduce greenhouse gas emissions

Successful transportation electrification should be driven by:

- Planning and coordination
- Data-driven decision making
- **Innovation**

With proper planning and modeling, transportation electrification be transformative, strategic, and collaborative.

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Electrification Planning

Planning for transportation electrification should be holistic and comprehensive by focusing on:

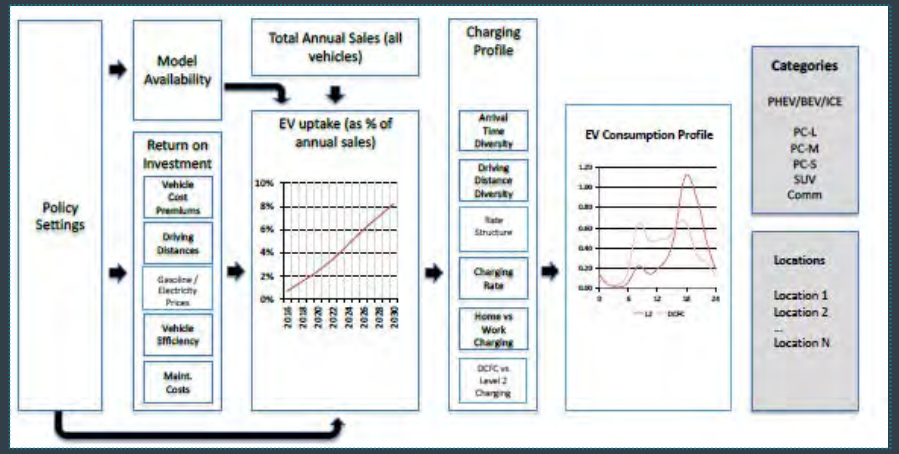
- Local priorities
- Future growth scenarios
- System needs
- Changing technology capabilities

Planning Case Study – City of Roseville

Goal and Objectives:

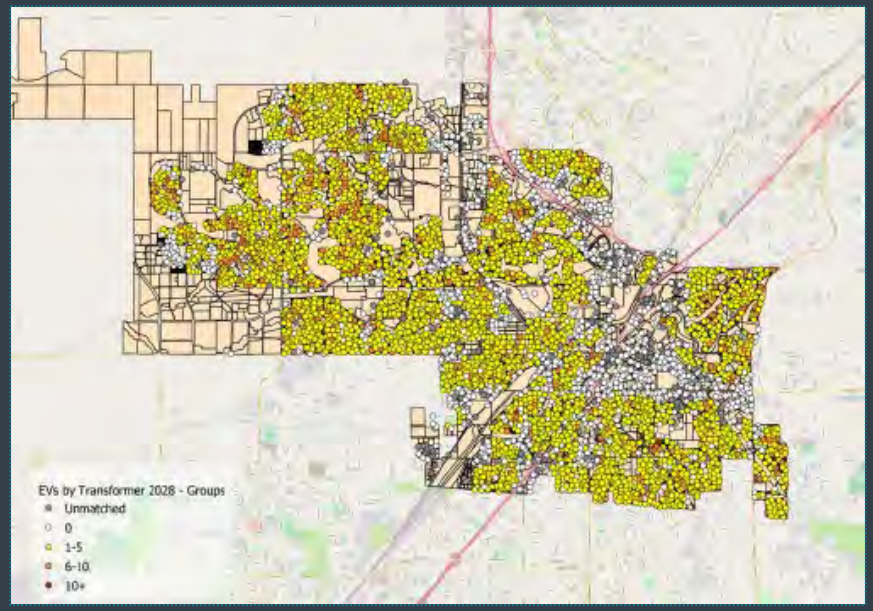
- Define EV growth anticipated in Roseville
- Forecast need for City EV charging infrastructure needs
- Evaluate impacts on the Roseville Utility Grid
- Strategies to manage PEV Impacts

City of Roseville Methodology



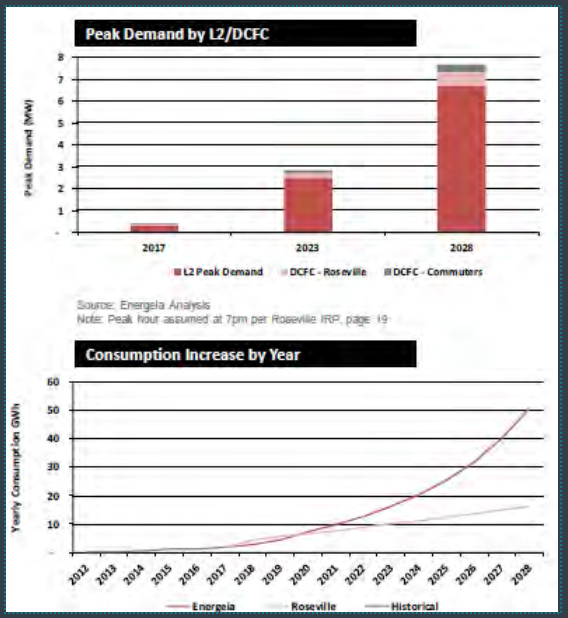
Uptake Forecasting System

- More defined forecast modeling based on policy, total vehicle sales, charging profile, and location
- Spatial distribution drivers such as single-family homes, education, PV adoption



Spatial Forecasting of EV Adoption

- Identification of EV “hot spots,” e.g. low commercial services, high education, high PV adoption
- Heat map showing EVs by transformers forecasted by 2028



Estimating System Peak and Utilization

- Forecasted peak demand impacts
- Forecast of annual consumption increase

City of Roseville: Takeaways and Best Practices

Strategies to Manage Impacts of PEV Adoption

- V2G technology and DR can significantly mitigate the impact of PEV adoption, a pilot with city owned vehicles was recommended
- PEVs could become a significant new form of DER for Roseville
- Rate design can be a strong mitigation to encourage off-peak charging
- Particular attention on DCFC and minimizing impacts with customer is a priority
- Infrastructure updates and changes will be needed for the future, with consideration for “hot spots”

Data-Driven Decision Making

EV-Readi was developed to support transportation electrification related efforts for utilities and other clients as they understand impacts of increased electrification on their systems

V1: Baseline Conditions → V2: EV Adoption Forecasting → V3: Charging Infrastructure Siting → V4: Grid Conditions Analysis

Reflects client electrification priorities

- Early EV Adopters
- Existing EV Network
- Mobility Access
- Land Use
- Equity

Forecast areas of EV adoption

- Economic vehicle and energy cost analysis
- Technical advancement
- Model availability + accessibility
- Regulatory mandates

Combine forecast outputs

- Modeled need for public charging
- Land use analysis
- Site prioritization
- Recommendations for charging technology, capacity, and quantity

Articulate grid impact from electrification

- Load growth forecasting and profiles
- Medium and heavy-duty vehicle considerations
- Future grid deficiencies
- Necessary system upgrades

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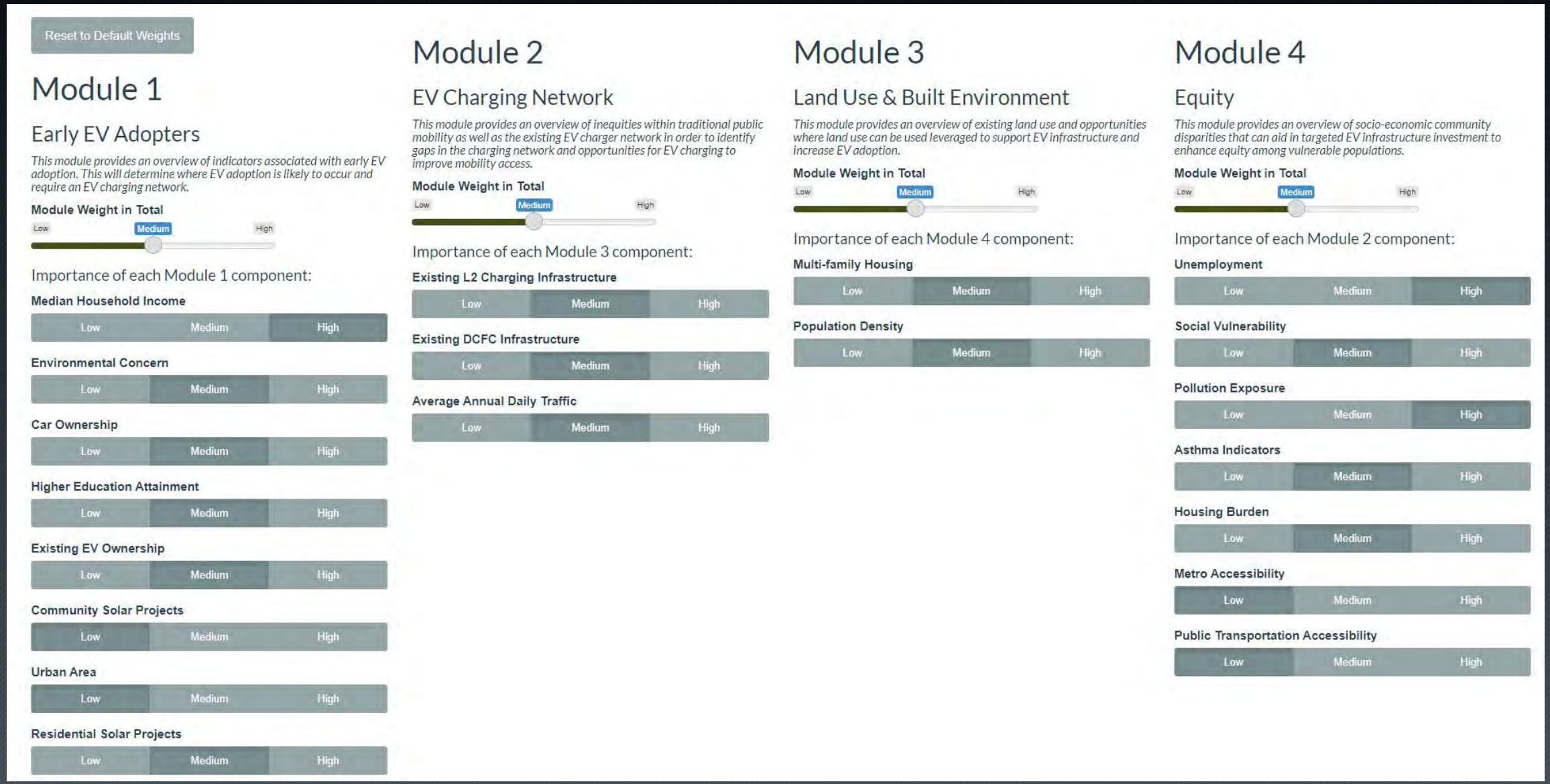
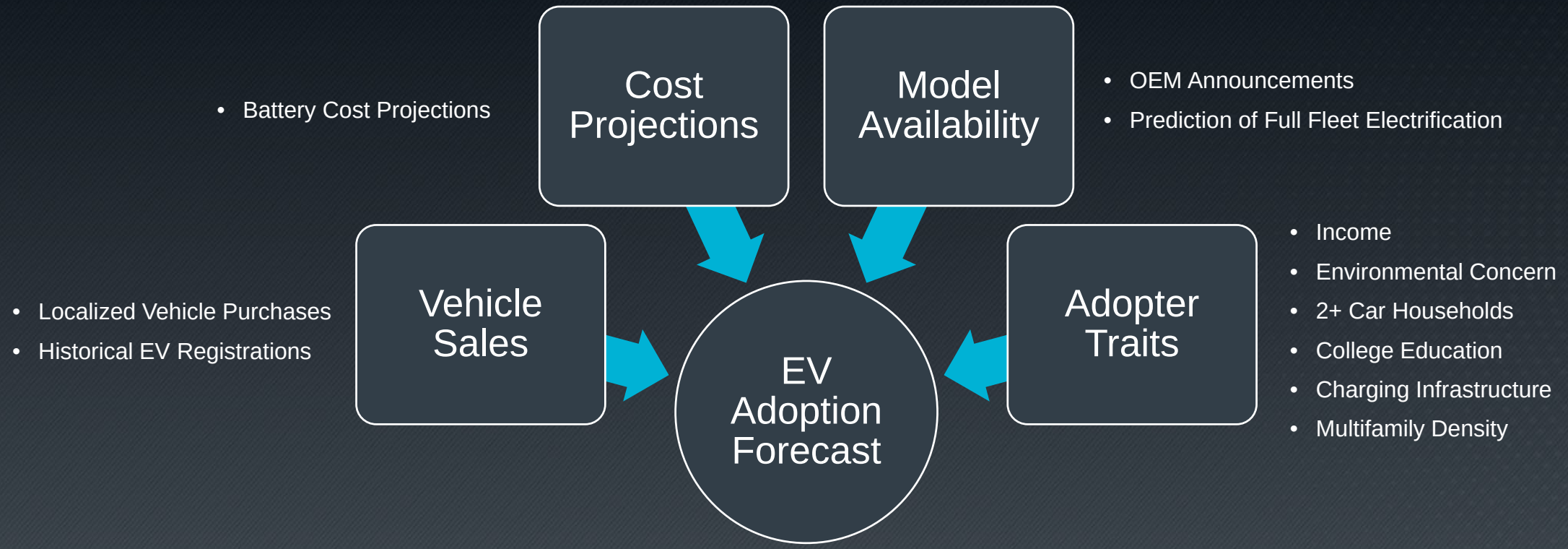
EV-Readi

Data-driven decision making should account for local needs, priorities, and assets



EV-Readi

Data-driven EV adoption forecasting utilizes localized data and technology trends



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Innovation

Transportation electrification can be integrated into a number of innovative technology deployments

Microgrids

- Enable continuous operation of critical infrastructure and community assets
- When paired with EV, can support critical transportation
- Vehicles can serve as DERs

Smart City Pilots

- Smart city, energy, and mobility pilots can create resilient, connected, green communities

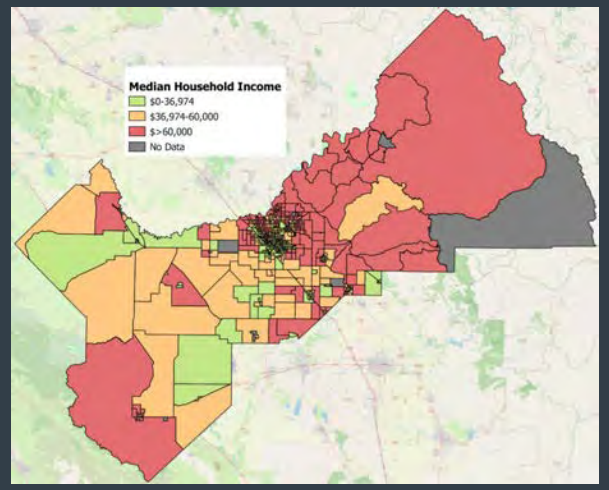
Renewables

- Integration can create opportunities to generate household/transportation cost savings and reduce cost burden for vulnerable populations

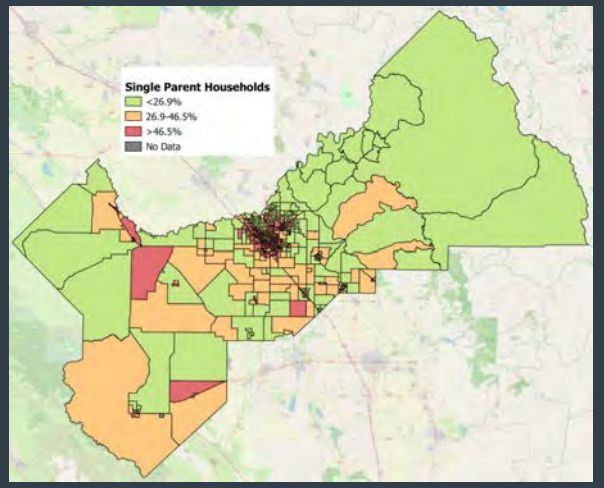
Deep Dive – FCOG EV Readiness Plan

Socioeconomic Indicators

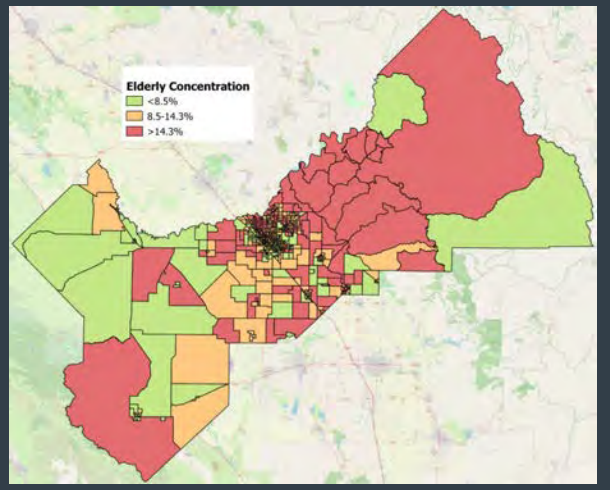
Household Income



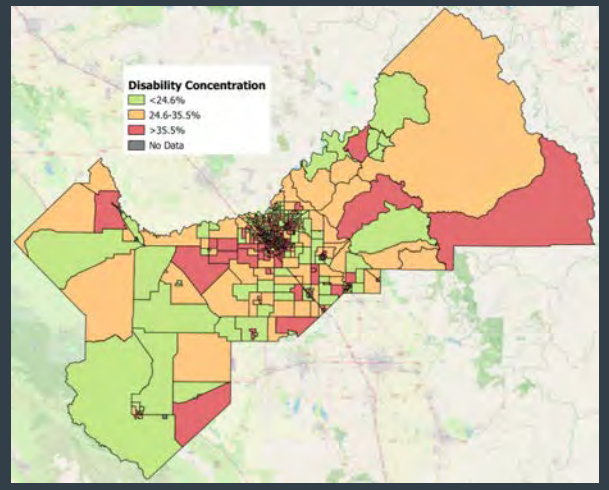
Single Parent Households



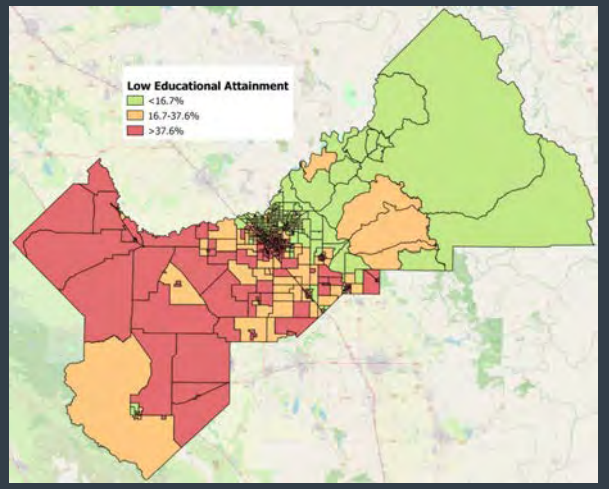
Elderly Concentration



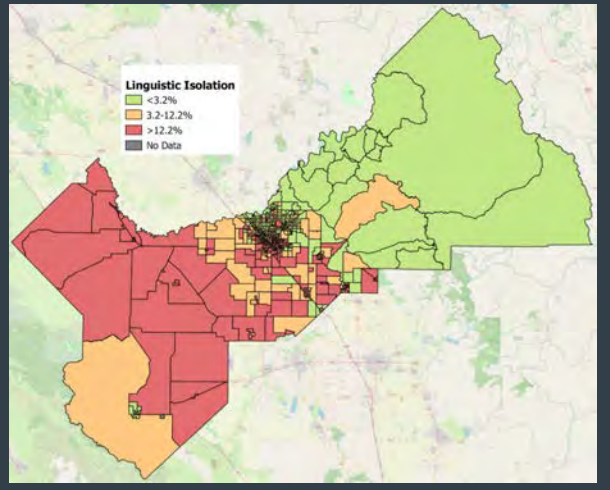
Disability Concentration



Low Education Attainment



Linguistic Isolation



Deep Dive – FCOG EV Readiness Plan

Ensuring equitable access to e-mobility benefits

- The table maps the roles that e-mobility can play in the delivery of key benefits to key disadvantaged segments

Disadvantaged segments can receive these benefits to these disadvantaged segments via:

- Enablement of listed benefits
- Solutions tailored to address disadvantages
- Equitable targeting and prioritization of activities

Transportation electrification can deliver an equitable share of e-mobility benefits to socio-economically disadvantaged regions

	eMobility Benefits				
Socio-Economic Disadvantages	Local Transportation Electrification	Transportation Cost Reduction	Multilingual Electrification Education	Electrification Service Training	Increased Transportation Accessibility
Air Quality Health issues/Pollution	•				
Low Income		•			•
Linguistic Isolation			•		
Employment				•	
Aged/Special Needs					•

Best Practices

Transportation Electrification is a quickly emerging market with opportunities to transform the energy framework and community investment

Diversify electrification

- Empower technical excellence through unique offerings that address solutions and enable achievement of electrification goals
- Quantify potential impacts to utility infrastructure from widespread electrification:
  - Multifamily dwellings, commercial centers, and public infrastructure
  - Identify where new loads will occur

Equitable + inclusive growth

- Support communities as they prepare for electrification growth with advanced modeling, infrastructure management, and new business models to support equity and inclusion
- Effective infrastructure siting requires deep understanding of current and future land usage patterns, infrastructure capacity and improvements, traffic patterns, and policy goals

Effective investment

- Utilize data-driven solutions to drive effective investments that increase impact and benefit of electrification initiatives
- Electrification efforts can be integrated into other localized policy objectives, goals, and requirements

AECOM

Conclusions

- Transportation electrification is a rapidly emerging area with potential to transform communities by joining transportation and energy disciplines
- AECOM is developing national expertise in transportation electrification planning and modeling capabilities
- Planning and modeling must account for local priorities, future growth scenarios, and system needs

Questions & Discussion

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BEAM

- President, CEO & Board Chairman Beam Global
- 20 years executive experience from start-ups to publically traded companies

Desmond Wheatley
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BEAM

SFT Electric Vehicle Infrastructure Planning

EV ARC™ 2020

World's Fastest EV Charging Deployment

BeamForAll.com

What to think about

Speed of Deployment

Get EV charging as quickly as you get EVs

Scalability

You are going to get more EVs.

Make sure you can grow your charging without a major project

Total Cost of Ownership

It’s not just the charger

Installation Costs

Ongoing Fees

Utility Bills

Grid upgrades

Grid Vulnerability

What are you going to do when the grid goes down?

At least 25% of your charging should be locally generated and stored electricity.

Distributed Charging

Avoid Hub and Spoke

Put charging where you want it – not where the grid or some vendor tells you

Daily Range Replenishment

DRR

Forget Full-Empty-Full-Empty

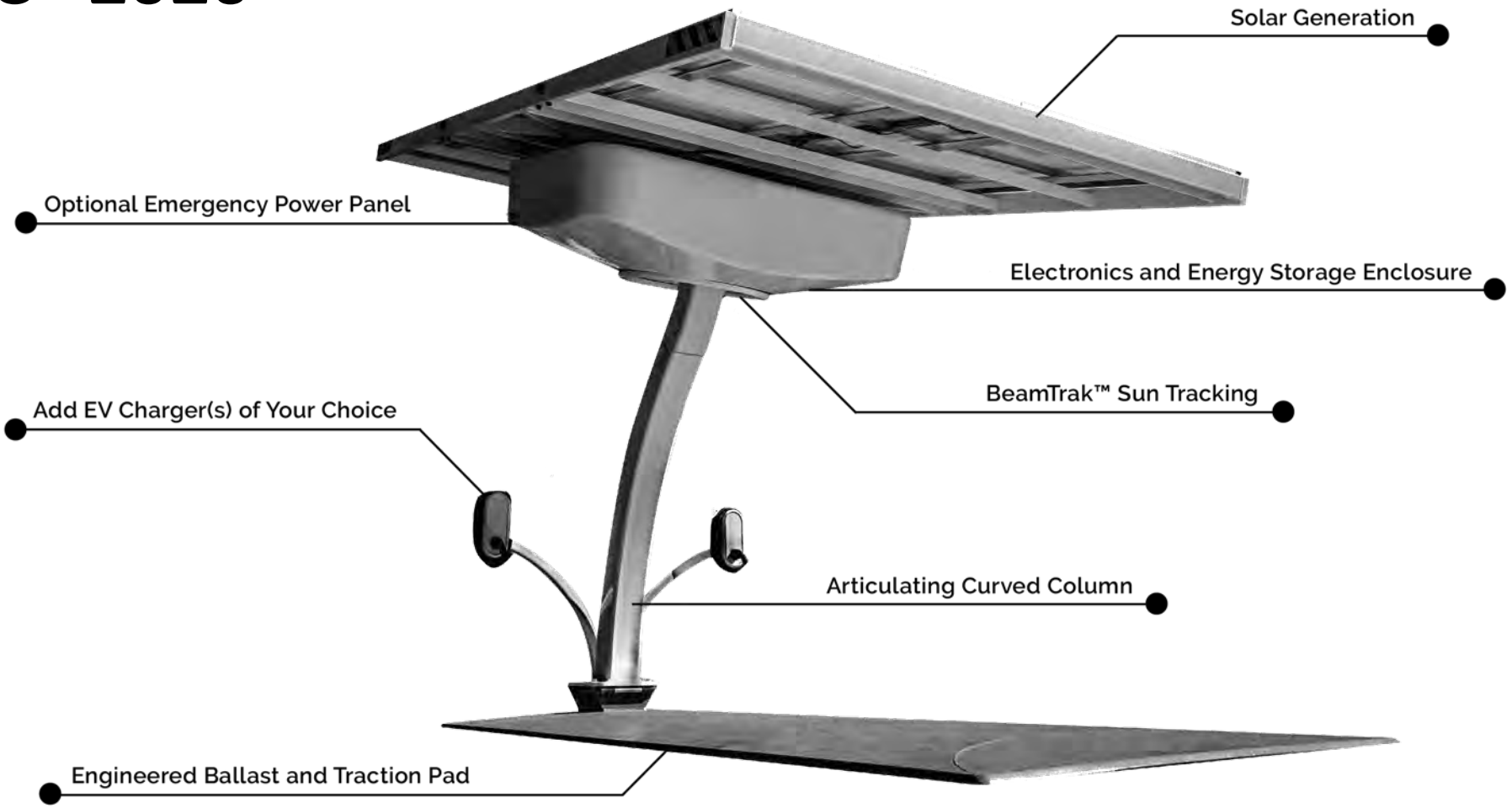
Plug in every time the vehicle is idle

BEAM

Get the EV Charger of Your Choice, Deployed in Minutes not Months

- No Permitting
- No Construction
- No Electrical Work
- No Utility Bill

EV ARC™ 2020



BEAM

EV ARC™ 2020
Solves Your Problems

No Permitting, No Construction, No Utility Bill

- Fastest and easiest to deploy solution on the market
- The EV charger brand and service of your choice
- Deploys in minutes, zero-contact delivery
- Avoided costs = Lowest total cost of ownership (TCO)
- Transportable
- Off-grid EV charging and emergency power
- Highly visible sustainability initiative
- Drive on Sunshine

BEAM

EV ARC™ 2020
Fits in a Standard Parking Spot

- Maintain full parking capacity
- Cars park on the base pad
- ADA compliant
- Reach as many as 12 parking spaces
- Charge up to 6 vehicles at the same time

BEAM

EV ARC™ 2020

Transportability = Flexibility

Drop and charge. Can be moved any time.

- Permanent yet transportable
- Scalable
- Can be moved short distances with a forklift
- Can be moved longer distances with the ARC Mobility™ Trailer, truck or in a 20 ft. container
- Ideal for leased or owned properties

BEAM

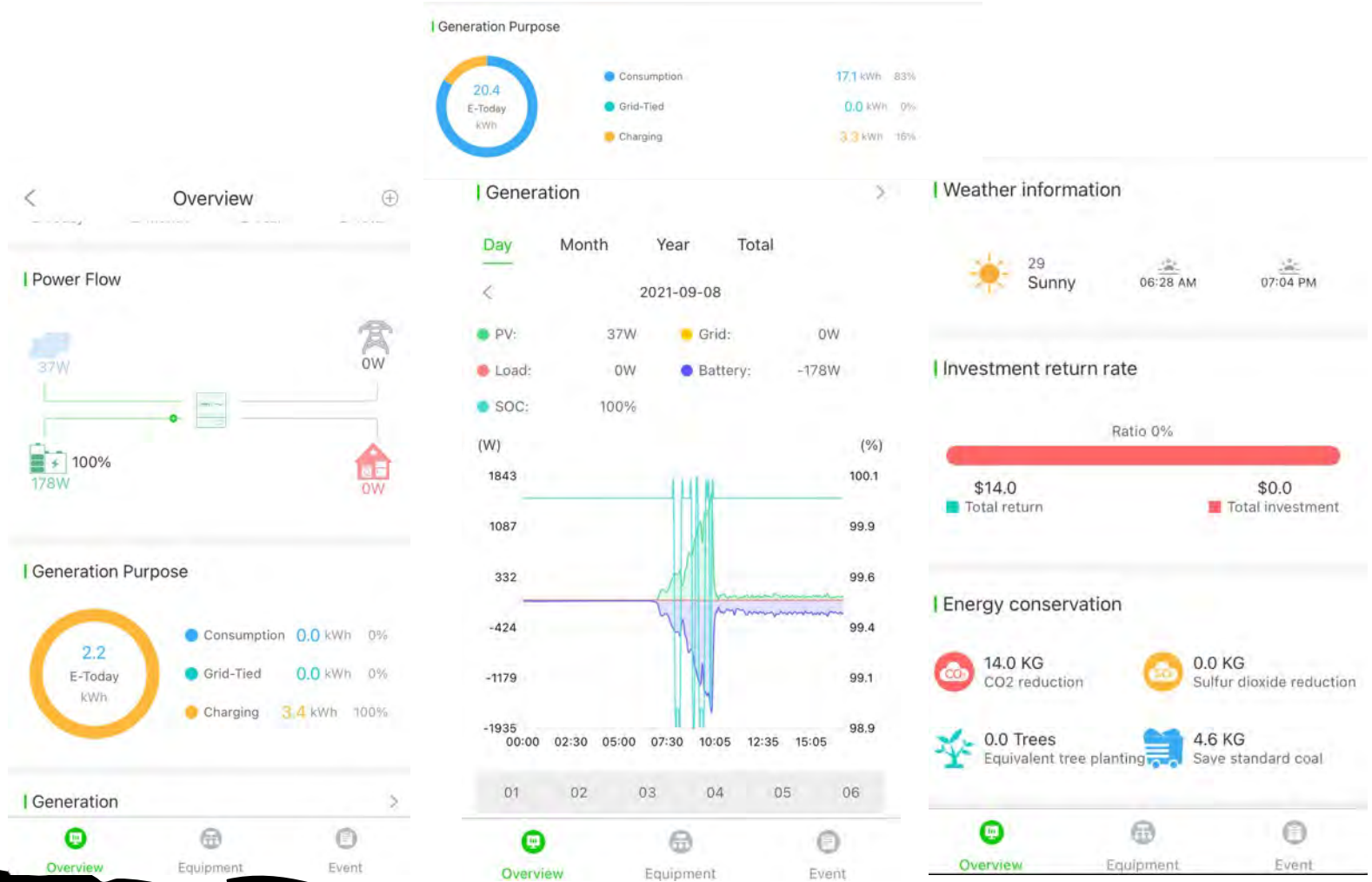
EV ARC™ 2020
Off-Grid Emergency Power

Energy when and where you need…

- Charge during blackouts, utility outages, weather events
- Relocate to high risk locations, hospitals, shelters…
- Wind-rated up to 120mph
- Flood-proof up to 9.5 feet
- Working asset during prosperity and emergencies
- Integrated emergency power panel

BEAM

Real Time Data & Reporting



Standard Reporting

Wireless connectivity transmits real time data for reporting on:

- State of batteries
- State of PV charging
- Rate and amount of energy delivery
- Time and duration of EV charging (approx.)
- Carbon offset

Optional Reporting

Wireless connectivity transmits real time data for reporting on:

- Time and duration of EV charging (exact)
- Time of charge
- Kilowatt hours (kWh) delivered
- Optional billing / access control
- Drive identification

BEAM

BEAM

Clean Mobility For All

- Founded in 2006
- Publicly Traded Company (Nasdaq: BEEM)
- Products manufactured at our facilities in San Diego, California
- We proudly employ combat veterans, disabled workers and other highly motivated individuals

Our Customers Have a Lot to Beam About

BEAM

Drive on Sunshine

Thank You

BeamForAll.com

Matthew Miller
Clean Mobility Practice

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David Dunn
david.dunn@cityoforlando.net

- Division Manager, Fleet & Facilities Management Division
- City of Orlando since 2006
- 23 years prior experience in the aerospace industry with NASA/Space Shuttle Program
- Leader in technology deployment in fleet and operations, helping Green Works goals
- Participation in several professional association, numerous professional certifications and industry recognition awards
- US Navy Veteran
- Pastor & Advocate for those diagnosed with mental illness

Jonathan Ford
jonathan.ford@cityoforlando.net

- Fleet Manger for the City of Orlando
- Involved in strategy and management in Green Works Orlando, a widely recognized and successful sustainability effort with attention to quality of life, economic growth, and equitable access for the entire Orlando community
- US Air Force Veteran Fleet Management and Logistics

Electric Vehicle Infrastructure Planning, Best Practices and Considerations for Today and the Future

David L. Dunn, CFM
Facilities Division Manager

Jonathan D. Ford, MPA, CAFM
Fleet Division Manager

City of Orlando Facilities Mgmt

A service support Division in the Office of Business and Financial Services

SUSTAINABLE FLEET TECHNOLOGY CONFERENCE & EXPO 2021

Didn't David run Fleet too?
Yup! Jonathan Ford promoted to Fleet Div Mgr June 13th as part of the succession plan!

We have grown! More bldgs., more vehicles, but Fleet & Facilities working together are stronger than ever before!

City of Orlando

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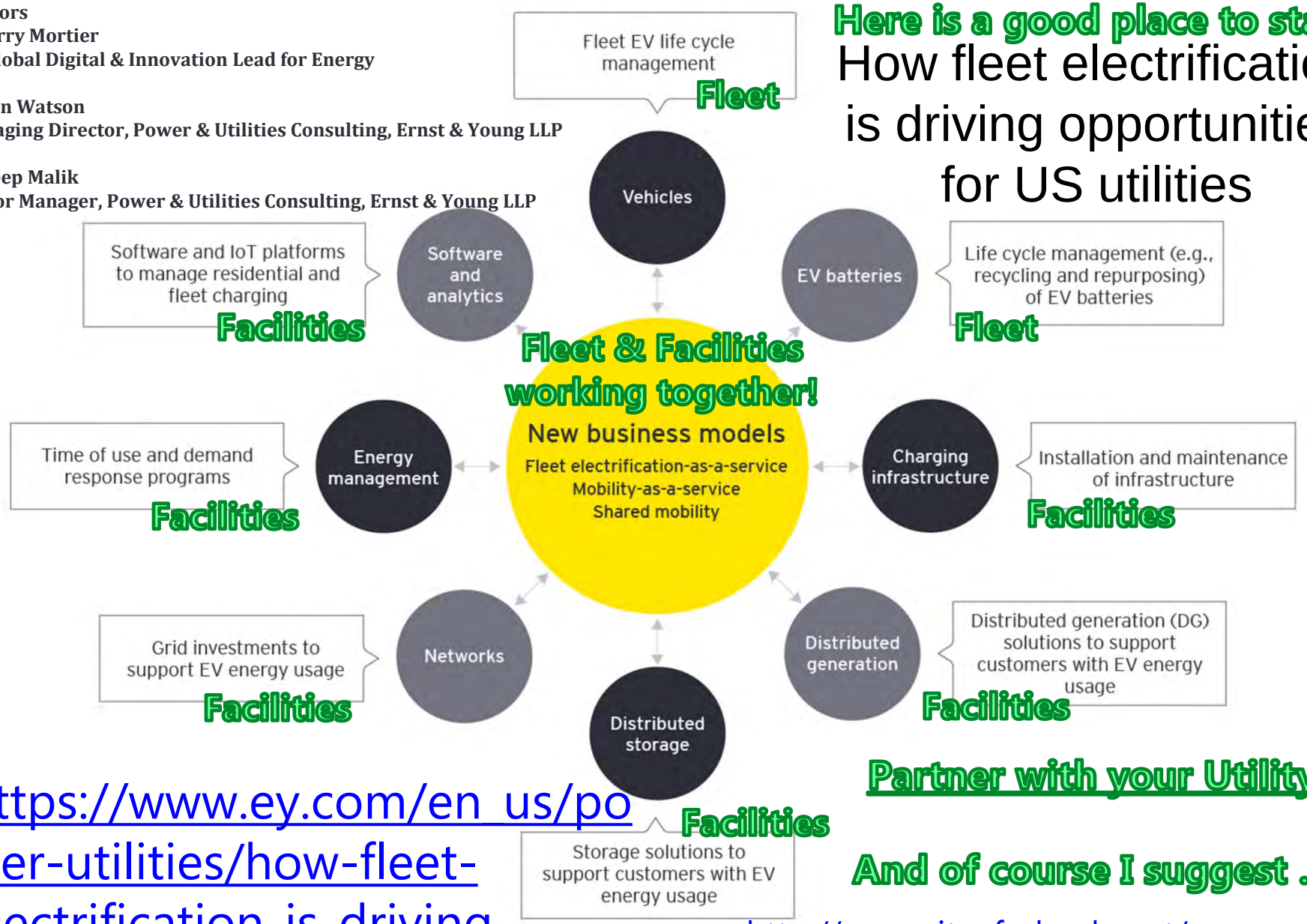
Thierry Mortier
EY Global Digital & Innovation Lead for Energy

Simon Watson
Managing Director, Power & Utilities Consulting, Ernst & Young LLP

Jaideep Malik
Senior Manager, Power & Utilities Consulting, Ernst & Young LLP

Here is a good place to start.

How fleet electrification is driving opportunities for US utilities



Partner with your Utility!

And of course I suggest ....

https://www.ey.com/en_us/power-utilities/how-fleet-electrification-is-driving-opportunities-for-us-utilities

RESOURCE!

http://www.cityoforlando.net/greenworks/

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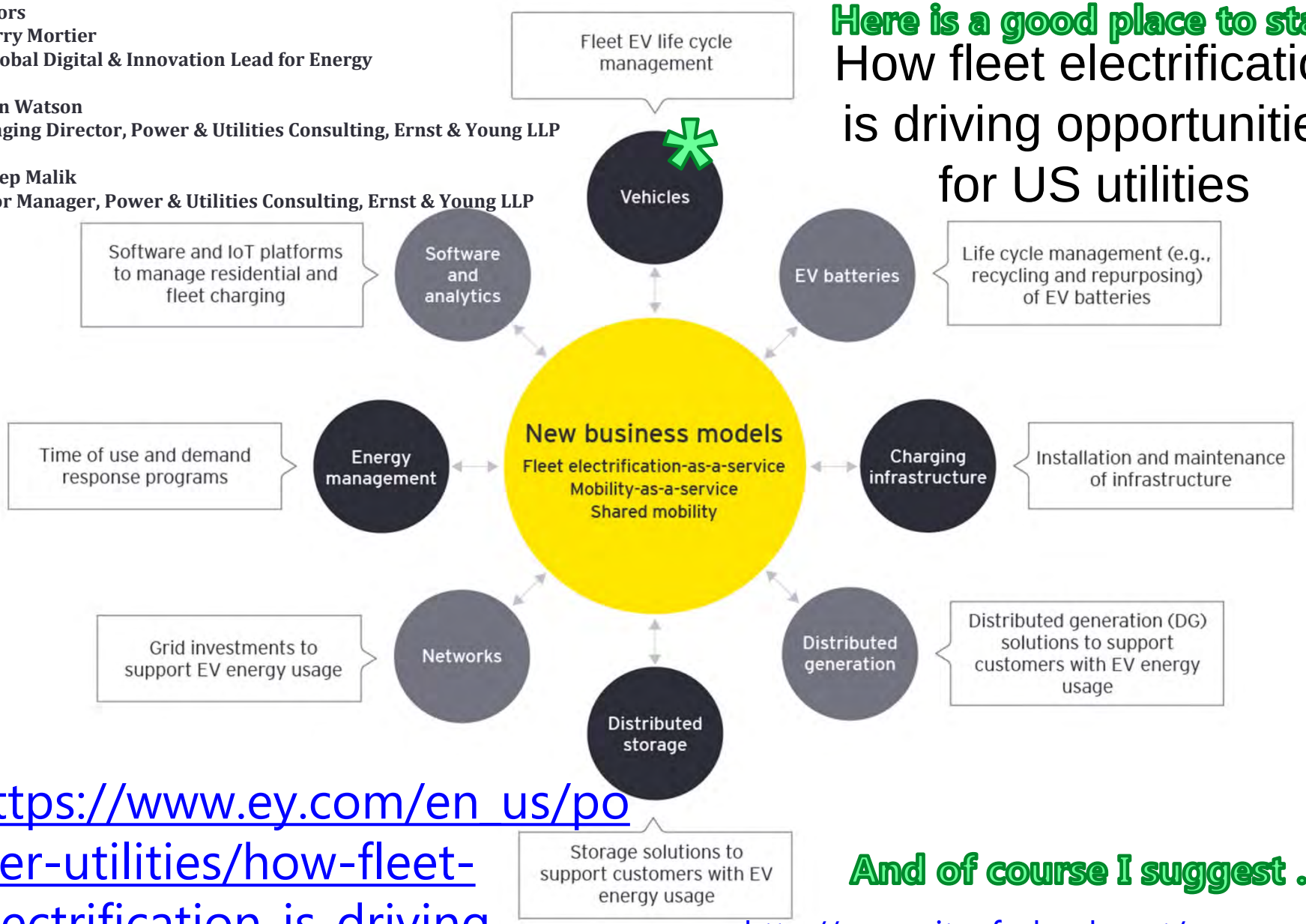

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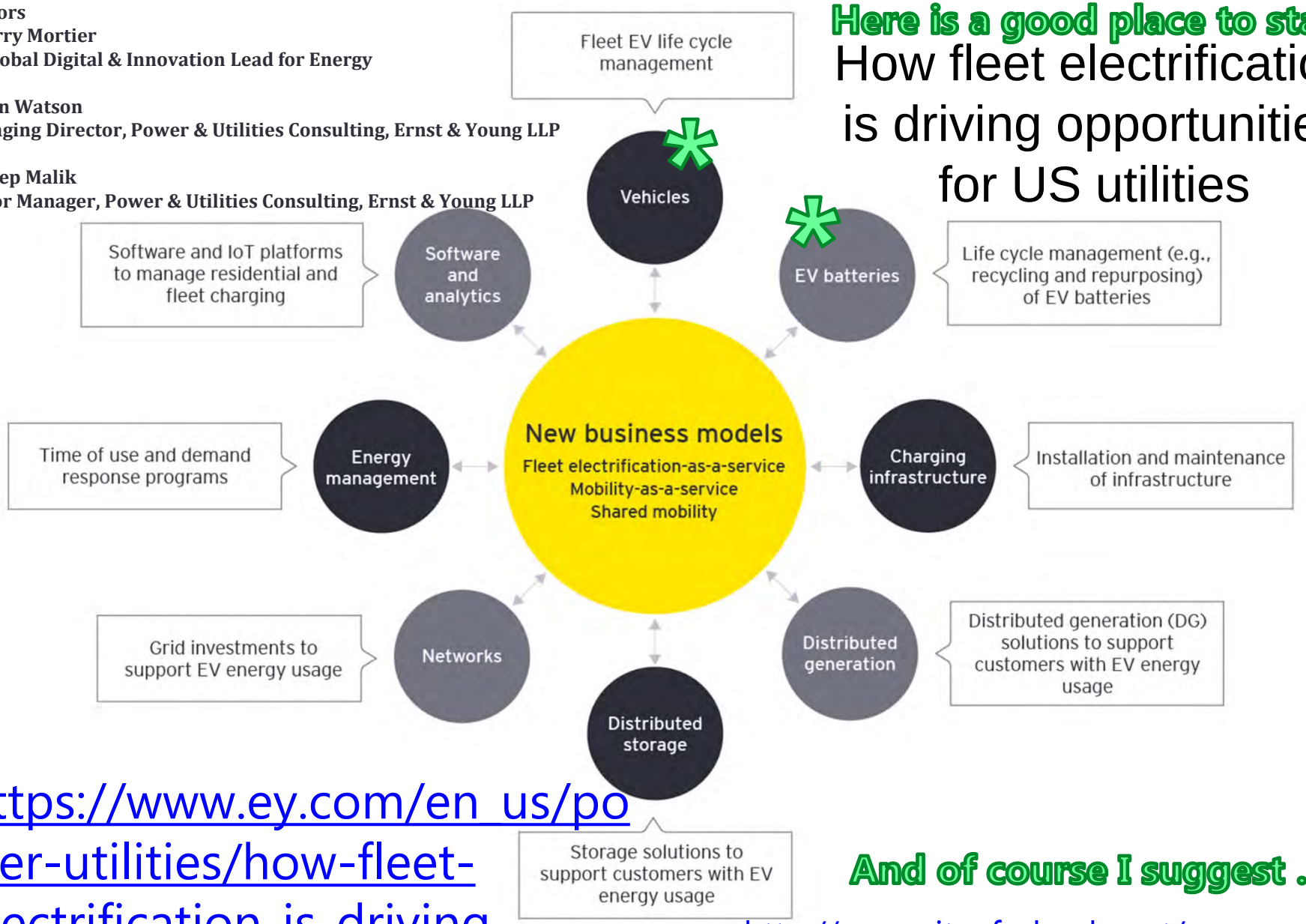

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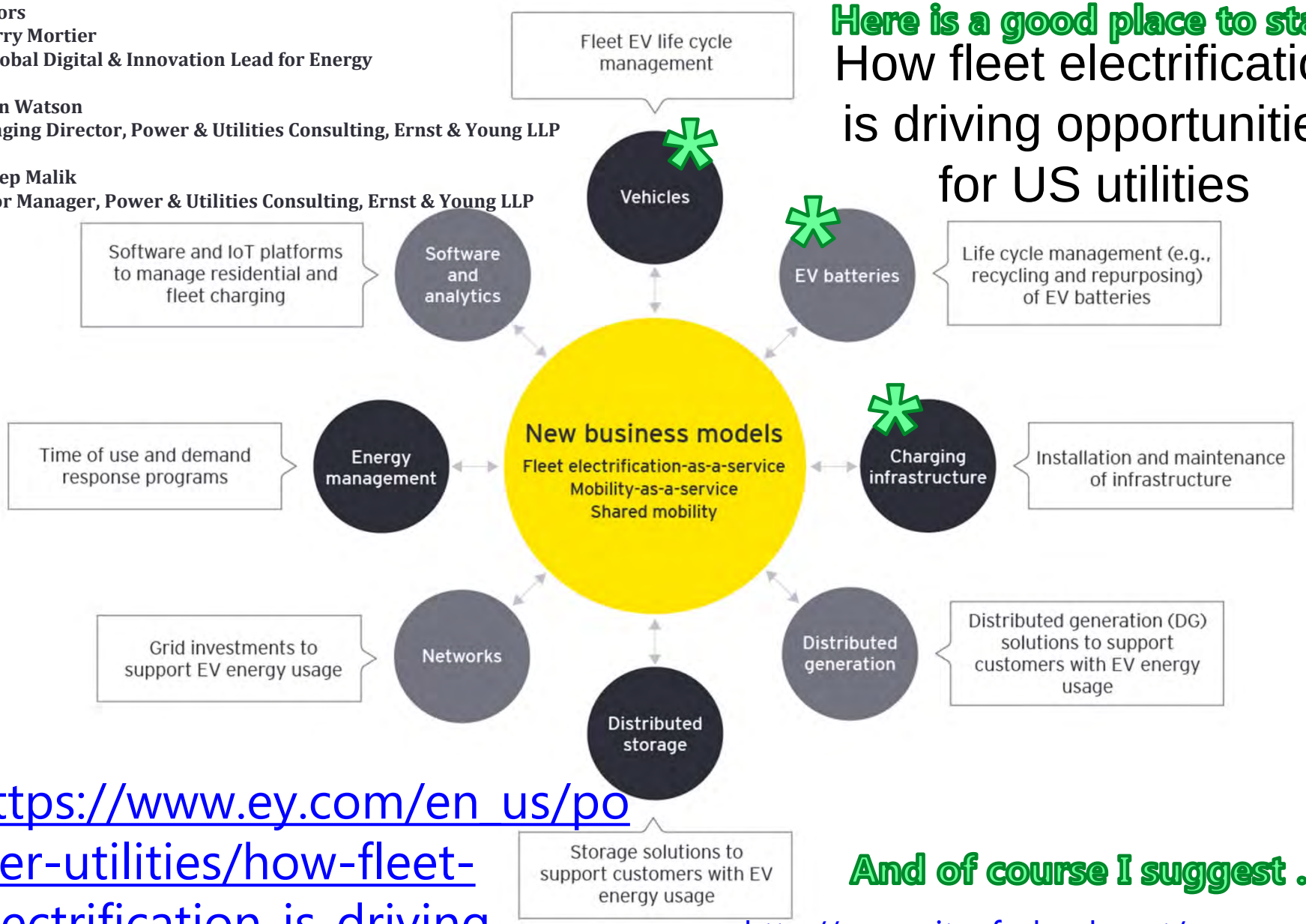

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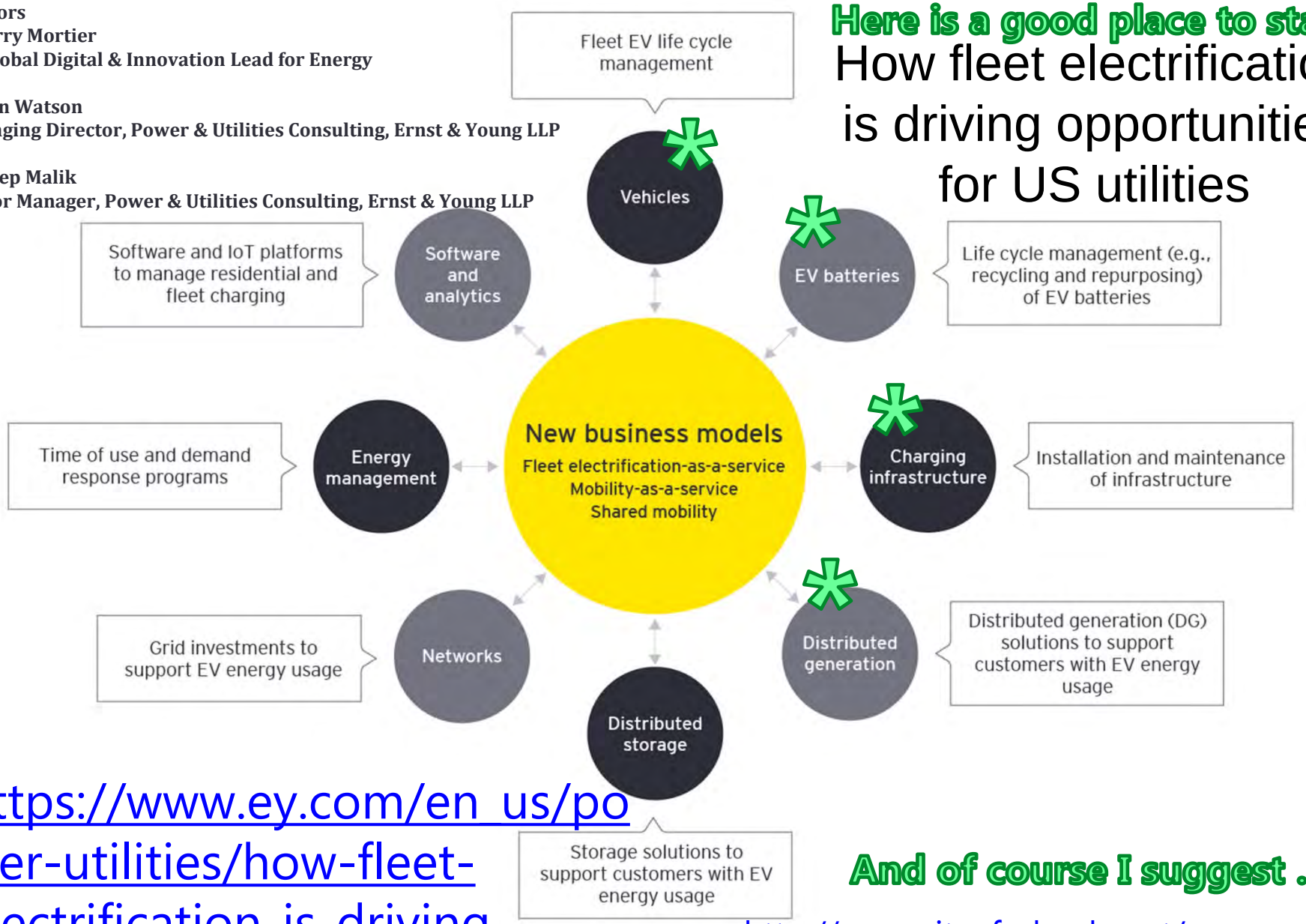

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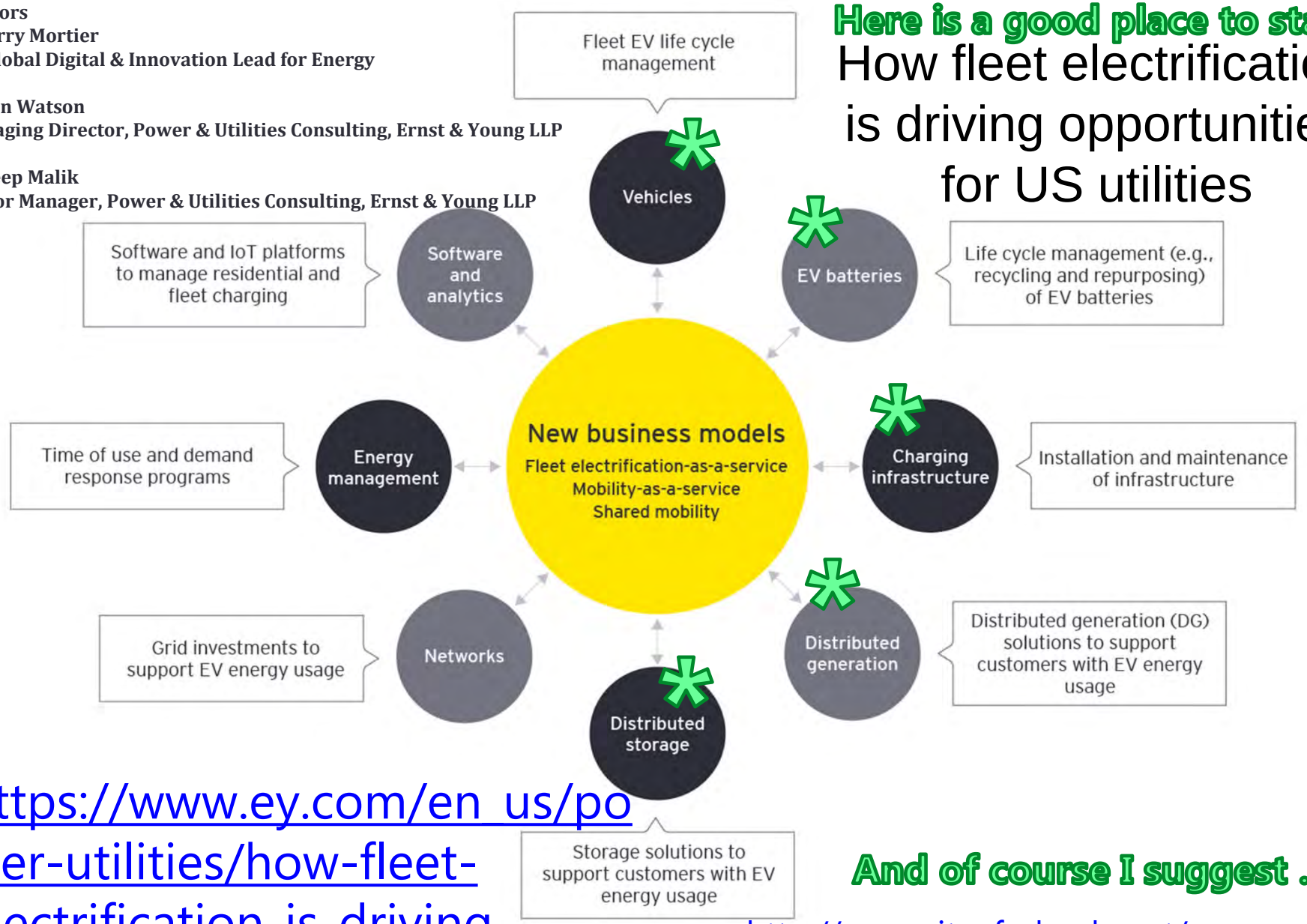

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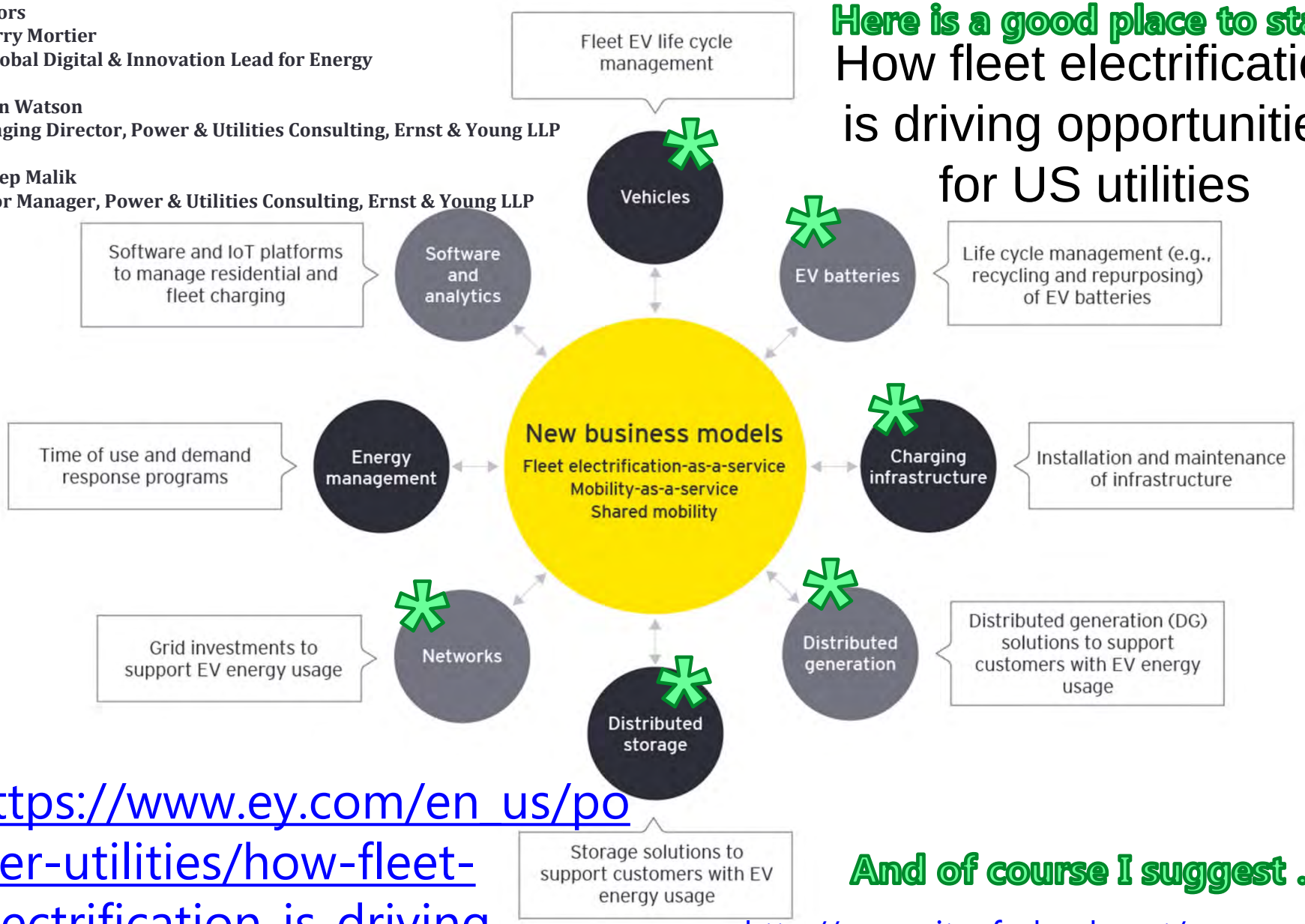

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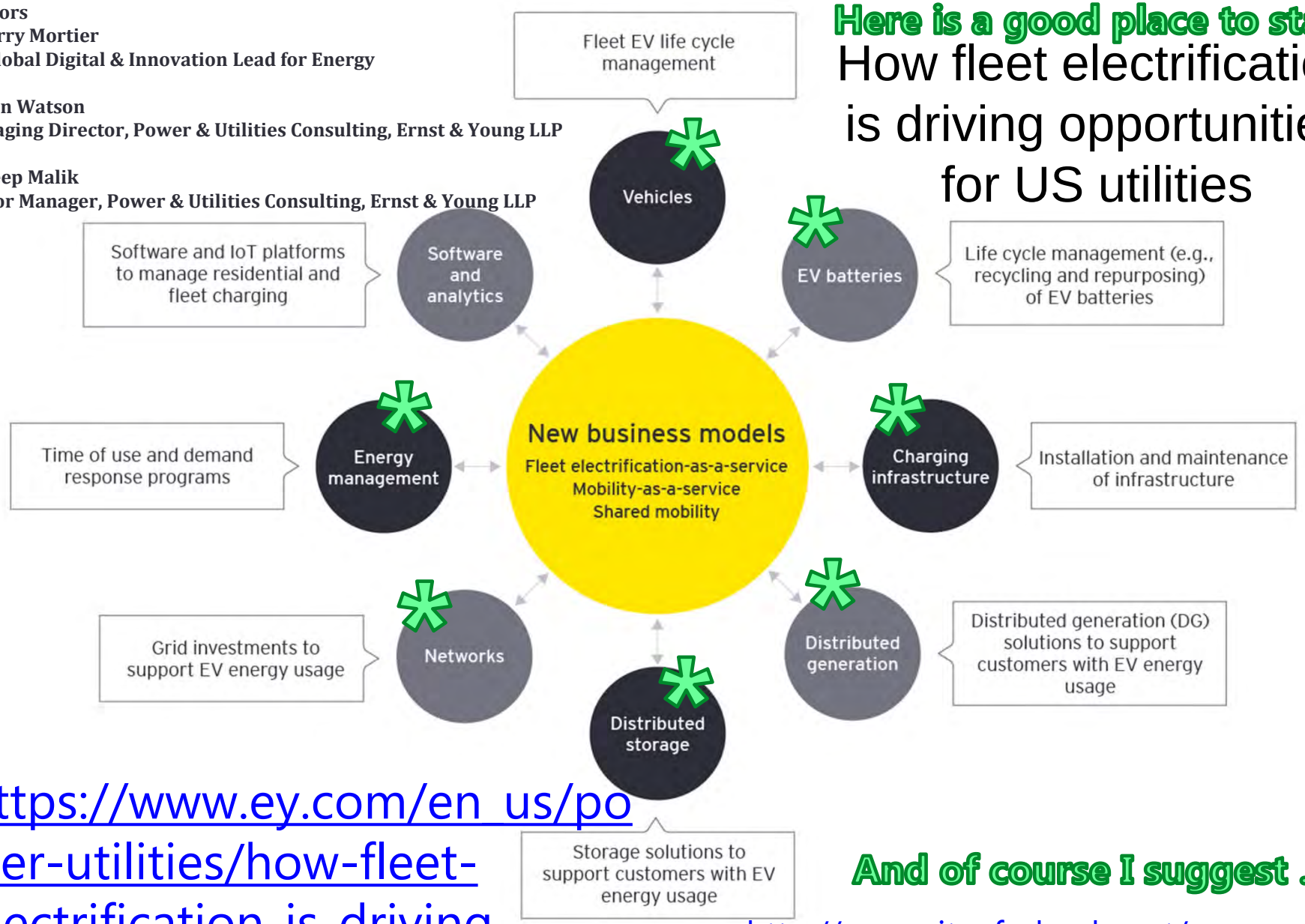

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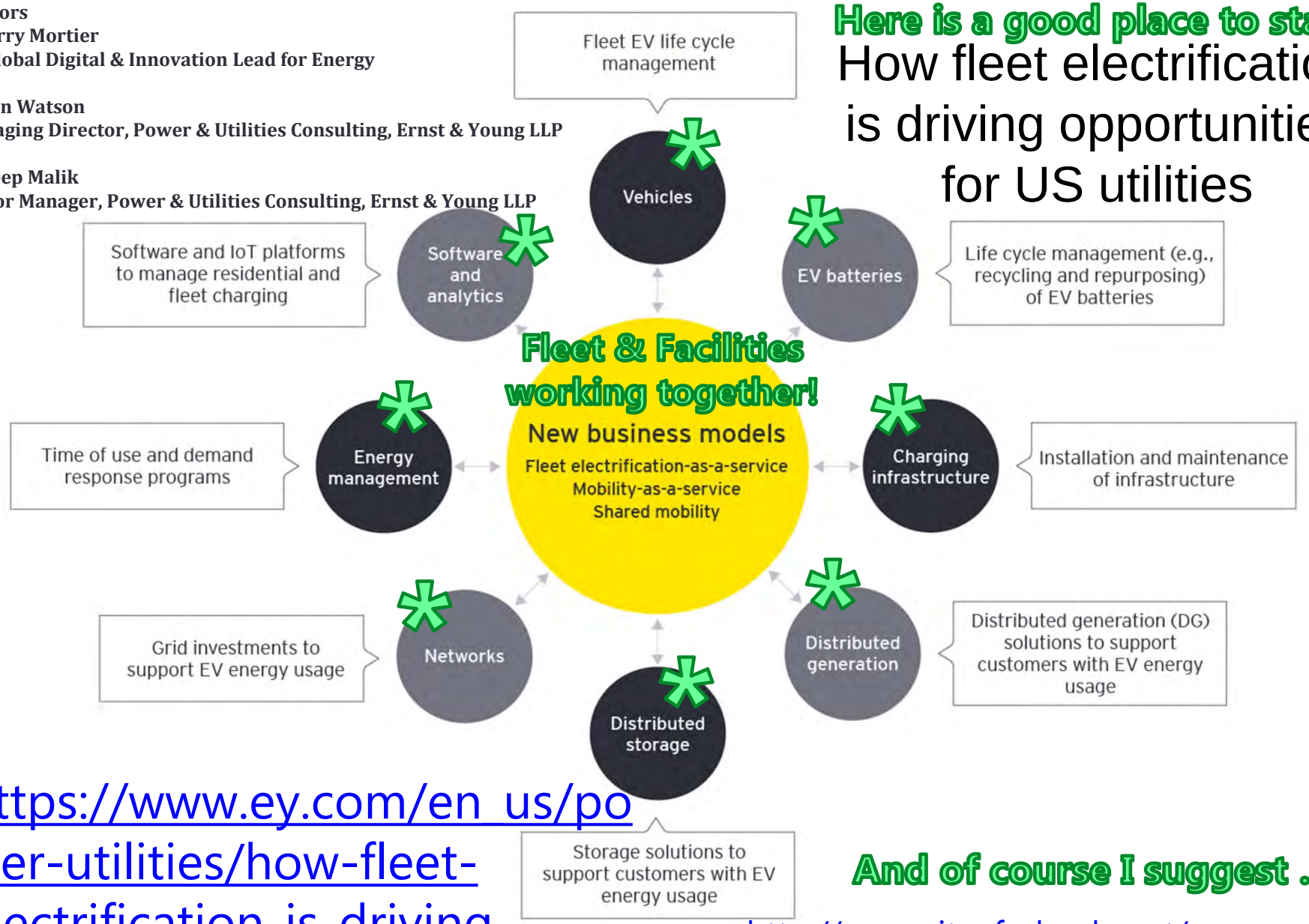

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City of Orlando

So where to begin?

Your focus is getting EV Chargers and/or battery storage in place before you replace an ICE vehicle with an EV.

Your Facilities team is your best internal asset to assist.

I know Public Charging Stations are not your primary concern, but you and your Facilities counterpart need to become SME's on this stuff!

How better to show your value internally than by being the SME for your locale!

& Partner with your Utility!

Partner with your Utility!

Electric Vehicles & Charging

Save Money and Go Green by Driving an Electric Vehicle

Whether you already own an electric vehicle or are considering buying one, OUC has resources to help you make a decision that's right for you.

City of Orlando, OUC Open 300th Public Electric Vehicle Charging Station 4-1-21

Why Electric?

Save Money
Lower fuel and maintenance costs.
Say goodbye to oil changes and brake maintenance is rarely required.
OUC, dealer and manufacturer discounts.

Make a Difference
Zero emissions means reducing your carbon footprint.

Drive a Better Car
Better performance, more torque.
Quieter inside & out. No vibration, smoother ride.

Convenient Charging
Charge at home or at more than 300 charging stations around town.

Go Farther Than You Think
Drive an average of 275 miles with a modern EV and some can go up to 450 miles before you need to stop and charge.

OUC & the City defined locations, infrastructure needs and deployment planning.

The City paid OUC for a turn-key installation of 100 dual head chargers.

The make up of Fleet is changing …….

“It is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be.”— **Isaac Asimov**

EV’s and Alt Fuels are here now, not on some foreseeable horizon for us to consider.

So embrace the change!

Be the agent of change!

Be the Go To person who get’s things done!

Our latest change & newest Motor Pool addition!

What electric vehicle Technology is on the near horizon?

https://www.aviationtoday.com/2020/11/14/lilium-launch-new-electric-air-mobility-network-florida/

Lilium Launched New Electric Air Mobility Network in Florida

GM Will Have 12 Electric Vehicles Soon, Releases Details on Them

The automaker has promised 20 new electric vehicles by 2023, and these Buick, Cadillac, Chevy, and GMC Hummer models will come first.

BY ROBERTO BALDWIN JUL 17, 2020

CHEVY

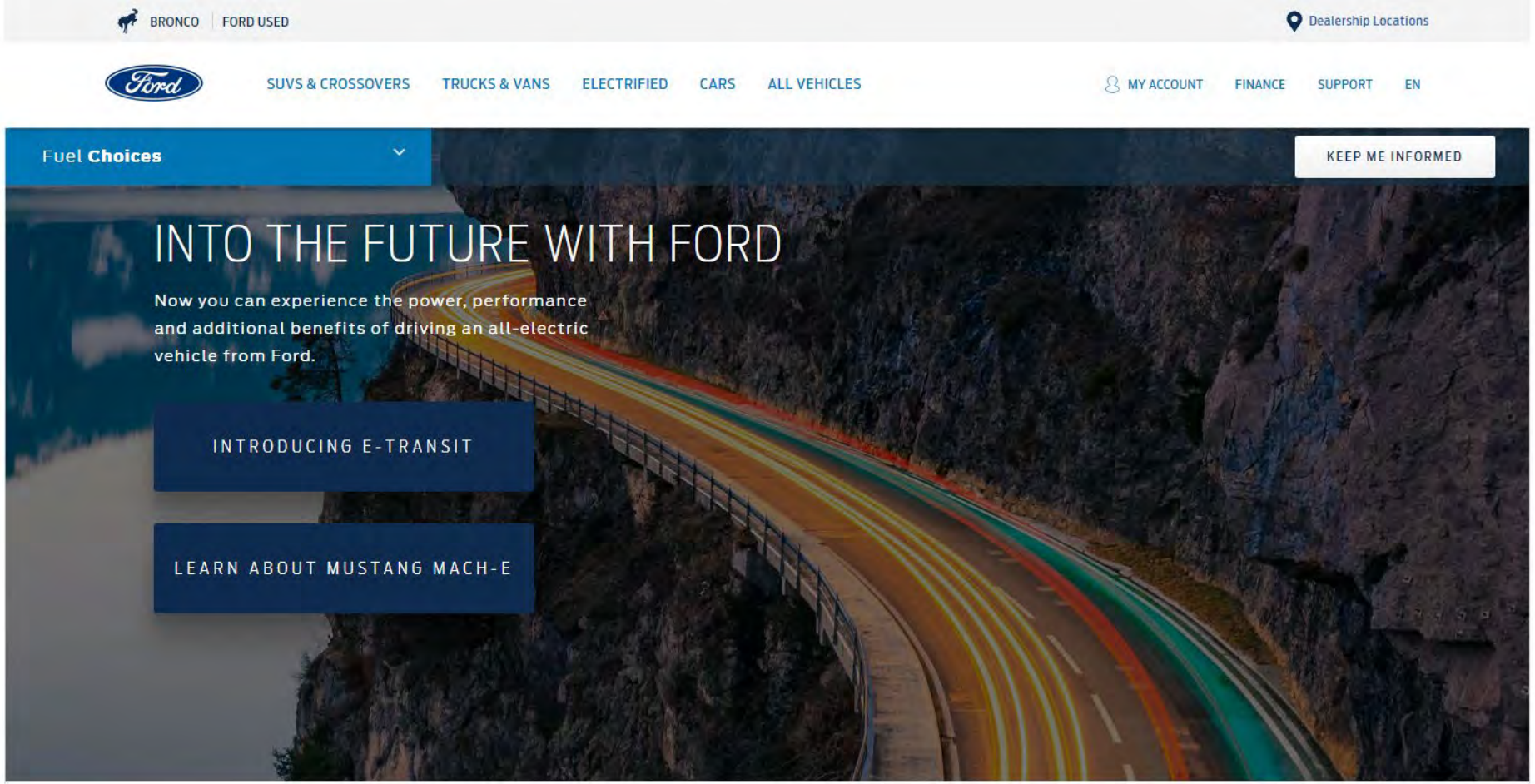
https://www.caranddriver.com/news/a33352012/gm-electric-cars-cadillac-chevy-buick-hummer-specs/

General Motors established an EV Visioning Board to get Feedback from several large Fleet Operators!

- General Motors' 2019 Sustainability Report, just released, shares some additional details about 12 of the 20 upcoming EVs promised by the automaker to go on sale by 2023.
- Electric vehicles will be coming from Buick, Chevy, Cadillac, and GMC.
- The automaker says it intends to sell a million EVs by the middle of the decade in North America and China.

DETAILS ON THE UPCOMING EVS

The electric Chevy Bolt will soon



INTRODUCING THE ALL-NEW 2022 E-TRANSIT

Make the switch to electrification with the only electric work van that has the backing of Ford Motor Company. Utilize an entire ecosystem of products, software and charging solutions that will allow you to transition seamlessly into the future of business.

https://www.ford.com/powertrains/battery-electric-vehicles/

FORD FLEET

Vehicles Programs Orders Parts & Service

Contact Us Locate a Dealer Sign in

Explore 2022 All-Electric **E-TRANSIT**

LEADING THE CHARGE

The best-selling commercial van brand in the U.S. * is about to lead business into the future. Introducing the all-new, U.S.-assembled Ford E-Transit. The only electric work van that has the backing of the Ford Motor Company. That means an entire ecosystem of products, software and charging solutions that will allow you to seamlessly transition to the future of business.

*Based on the total U.S. reported sales (1979-2019CY). Includes Ford E-Series, formerly called Econoline, van and chassis; Club Wagon; Transit Connect cargo van and passenger wagon; Transit cargo van, passenger van and chassis.

ey-how-commerci....pdf

Show all

Understanding Effects of Payload and Towing on Commercial EV Range

February 15, 2021 • by Chris Brown

The Ford E-Transit has a maximum published range of 126 miles.

Photo courtesy of Ford Motor Co.

Electrification is finally reaching the commercial vehicle market, with launches of new electric truck and van models starting later this year and ramping up in 2022. These new choices are great for the market, fleet operators, and the environment. But in contrast to the truck war upgrades with every new Silverado, F-150, or Ram 1500, electric propulsion performance is only beginning to be tested in the real world.

AUTOS

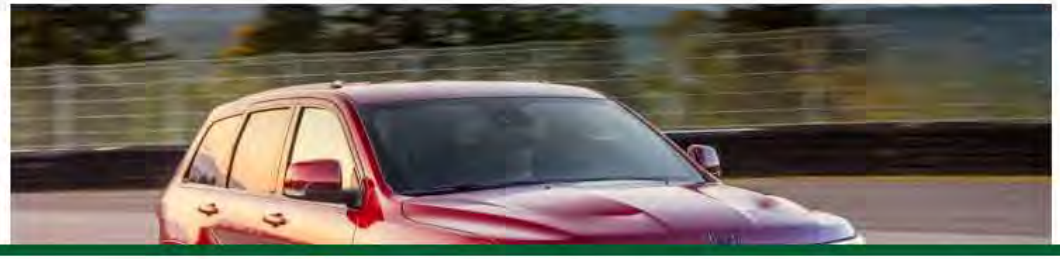
Fiat Chrysler outlines big plans for electric Jeeps and Ram pickup trucks

PUBLISHED TUE, MAR 5 2019·7:08 AM EST | UPDATED TUE, MAR 5 2019·10:18 AM EST

Paul A. Eisenstein
@DETROITBUREAU

KEY POINTS

- The automaker announces its most significant commitment yet to adding electric vehicles to its lineup, starting with at least four new Jeep plug-in hybrids.
- Fiat Chrysler will design future products to use a broad range of powertrains, from gas and diesel engines to mild, "conventional" and plug-in hybrids as well as pure battery-electric drivetrains.
- The challenge will be to come up with battery drive systems that can appeal to Jeep and Ram buyers.



TRENDING NOW


1 Here's who is likely to get a third stimulus check under the latest relief package


2 Cannabis stocks soar as Reddit crowd that spiked GameStop jumps in, Tilray surges 25%


3 Fed Chair Powell, citing bleak jobs picture, says policy will need to stay 'patiently accommodative'


4 Elon Musk's dogecoin tweets are worrying and people will lose money,

https://www.cnbc.com/2019/03/05/fiat-chrysler-outlines-big-plans-for-electric-jeeps-and-ram-pickups.html

Every Electric Pickup Truck Currently on the Horizon

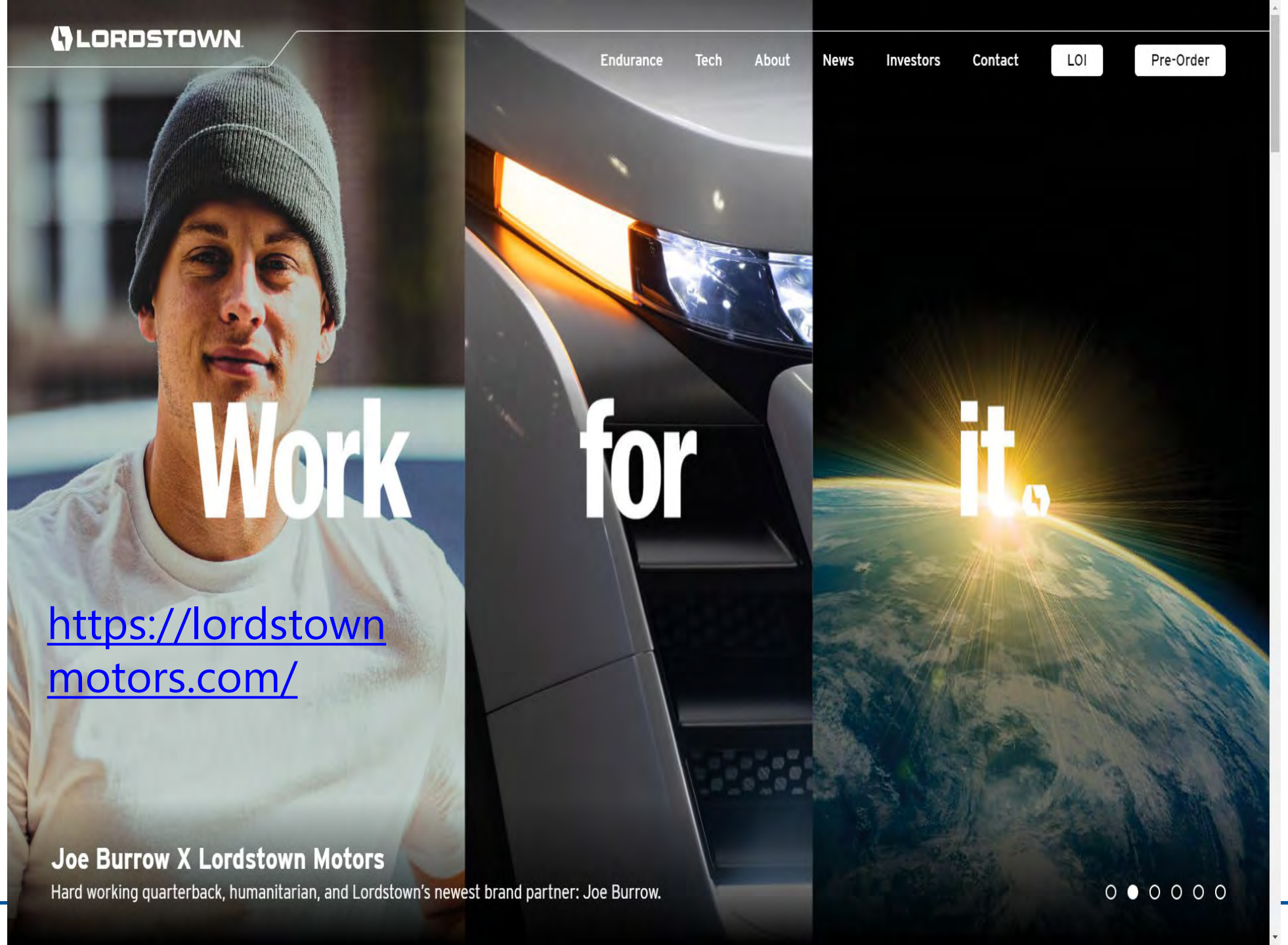
Tesla's Cybertruck isn't the only EV with a cargo bed that's coming soon.

C/D BY CAR AND DRIVER JAN 20, 2021

- Many automakers, both startups and well-established players, have announced plans to build all-electric pickup trucks.
- We rounded up all the electric trucks on the horizon from Tesla's new Cybertruck to Ford's upcoming electric F-150.
- However, the COVID-19 pandemic might affect the production timeline for some of these upcoming pickups.

Tesla is not the only car company preparing to build an all-electric pickup truck,

https://www.caranddriver.com/news/a29890843/full-electric-pickup-trucks/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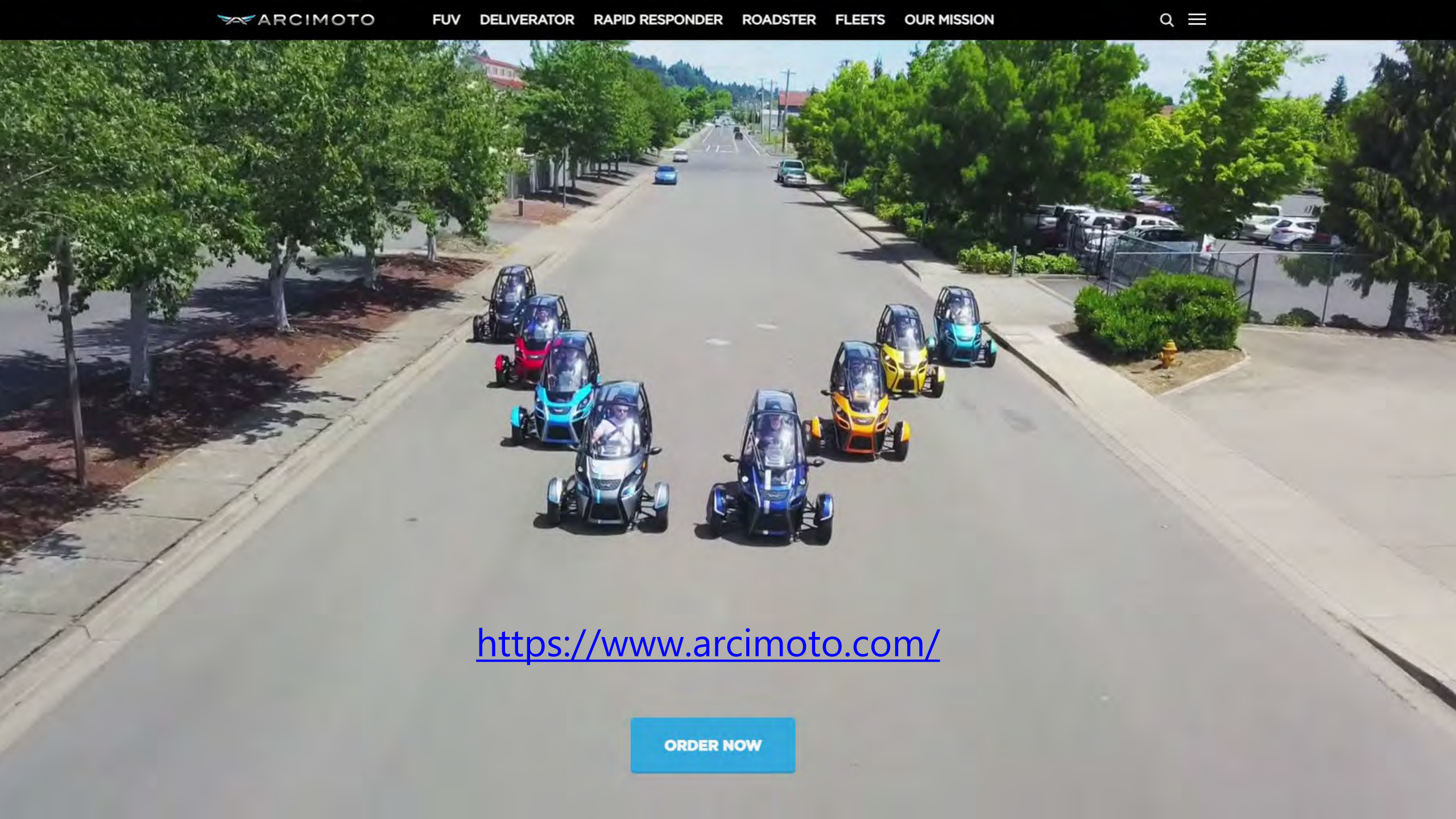
https://lordstownmotors.com/
Joe Burrow X Lordstown Motors
Hard working quarterback, humanitarian, and Lordstown's newest brand partner: Joe Burrow.

Thursday March 4th Purchasing and negotiated with Lordstown Motors to get two of the first run Vehicles when production begins in September '21

https://thelionelectric.com/en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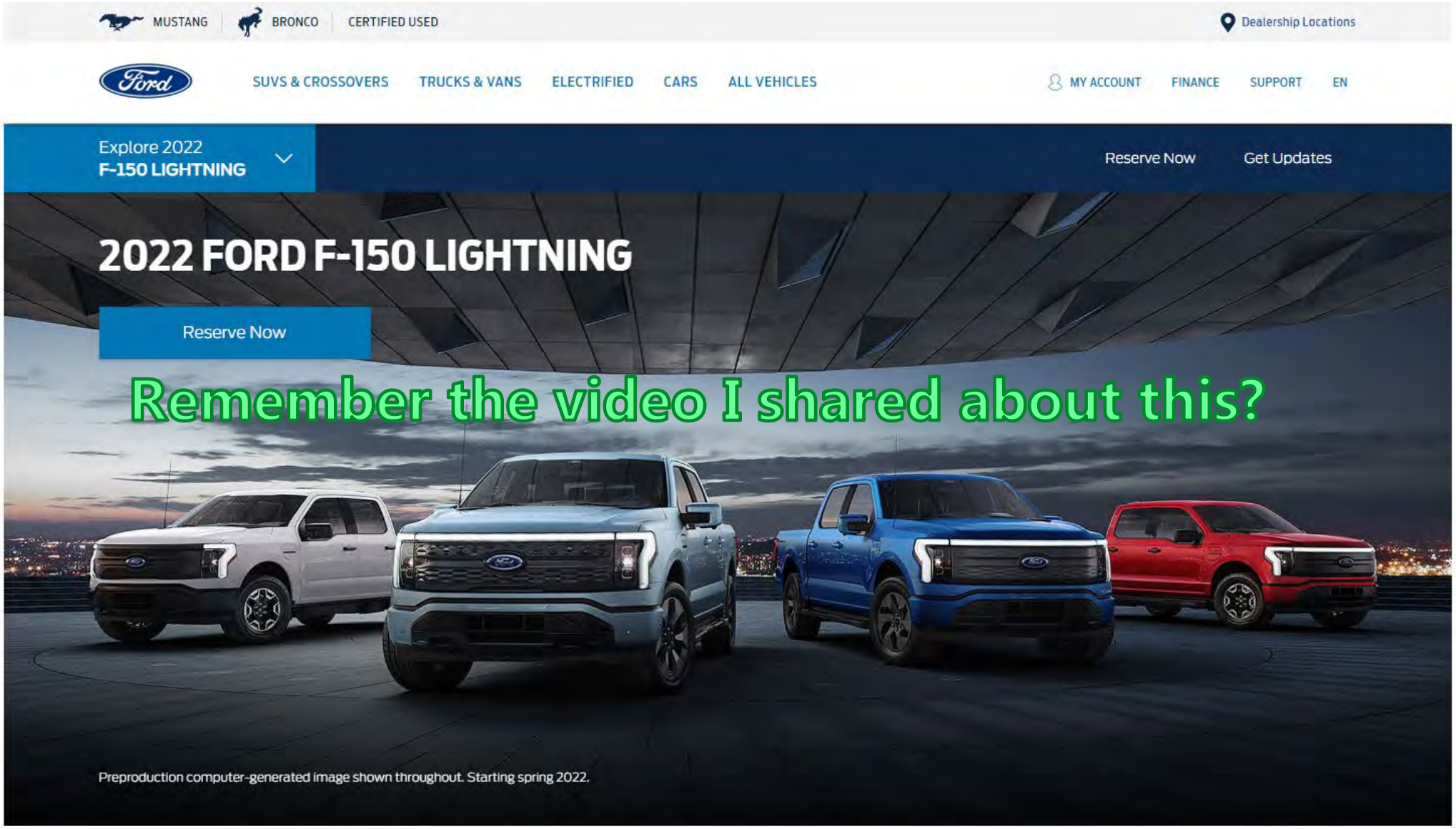

ALL ELECTRIC. ALL F-150.

F-series is America's best-selling truck for 44 years* for a reason. And now, it's charging into the future with the all-new, all-electric 2022 Ford F-150 Lightning. It's the first ever F-Series

Authors

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Simon Watson

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Jaideep Malik

Senior Manager, Power & Utilities Consulting, Ernst & Young LLP

6 minute read
17 Jun 2020

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The costs of EVs are expected to decline rapidly, opening up a new landscape for US fleet operators, utilities and other players.

Thanks to increasingly favorable economics, commercial fleet operators are now rapidly focusing on transitioning to a clean future through electric vehicles (EVs), one of the fastest-growing modes of transport in the US. As the trend intensifies, our latest report, "**How commercial fleet electrification is driving opportunities (pdf)**," examines how forward-thinking energy companies can position themselves to seize dramatic opportunities for growth by providing the underlying infrastructure and filling other needs across the value chain.

By 2050, the percentage of EVs on the road is expected to reach 65% in the US — up from just 2% estimated for 2020. That's a jump from 2 million EVs to 88 million over 30 years, with EVs and internal combustion engine (ICE) vehicles achieving cost parity in about five to six years in most regions. The percentage share of EVs within fleet sales quintupled from 2014 to 2018, and nearly 15 million EVs are expected to be part of corporate fleets in the US by 2040.[1] (Note: the EV penetration growth projections are pre-COVID-19 estimates; these projections are subject to change.)

Amid increasing demand, initiatives to expand charging infrastructure, and the growing availability of diverse vehicle models, how can US utilities try to seize a first-mover advantage to respond to the rapidly changing market?

Electrification

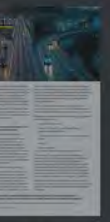
15m

EVs are expected to be part of corporate fleets in the US by 2040.

RESOURCE!

Here, and elaborated upon **in our full report (pdf)**, we explore this complex mix of developments across the life cycle, including higher electric loads, additional infrastructure requirements and other behind-the-meter EV services.

1



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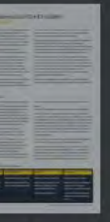

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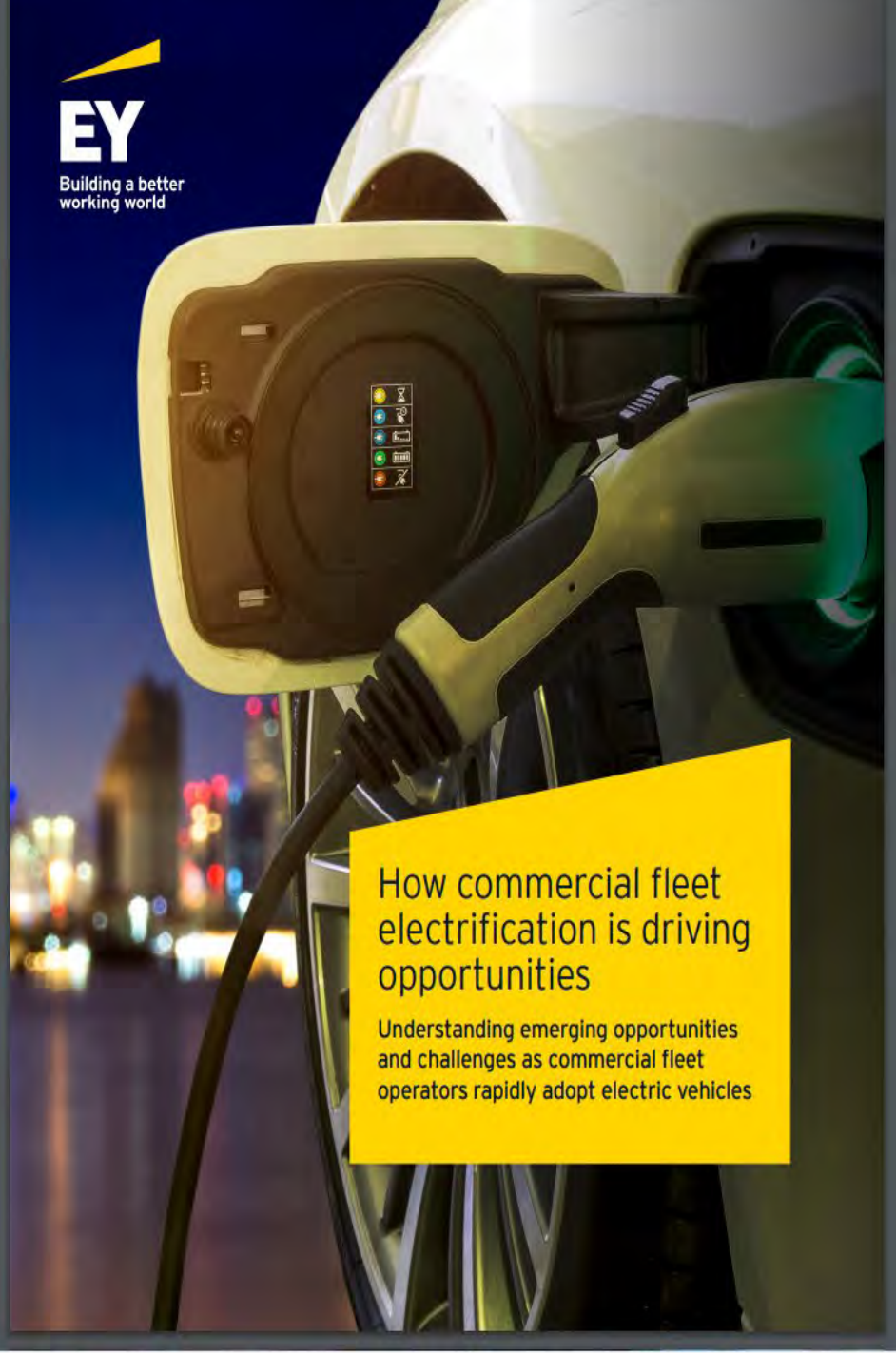
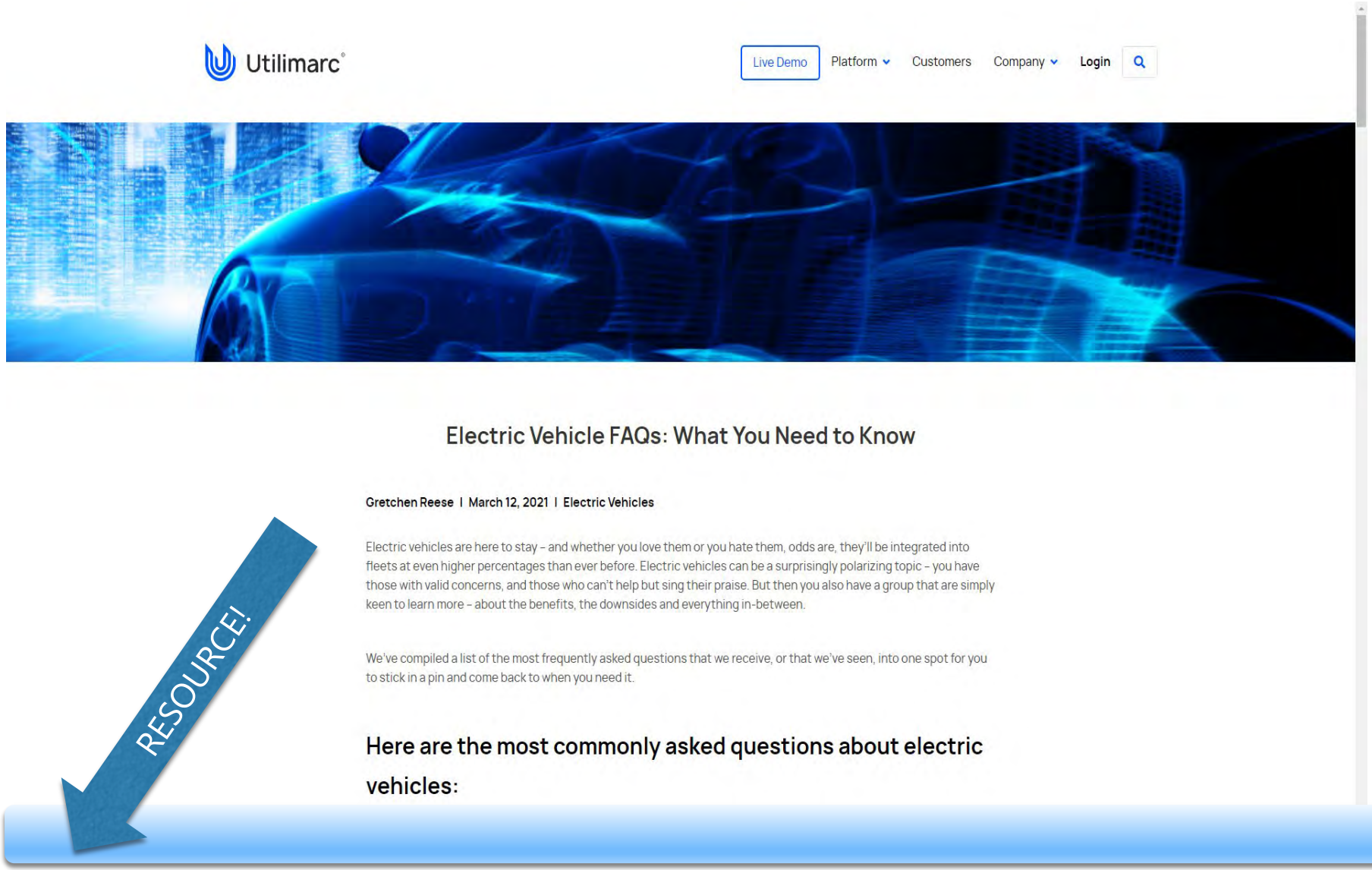
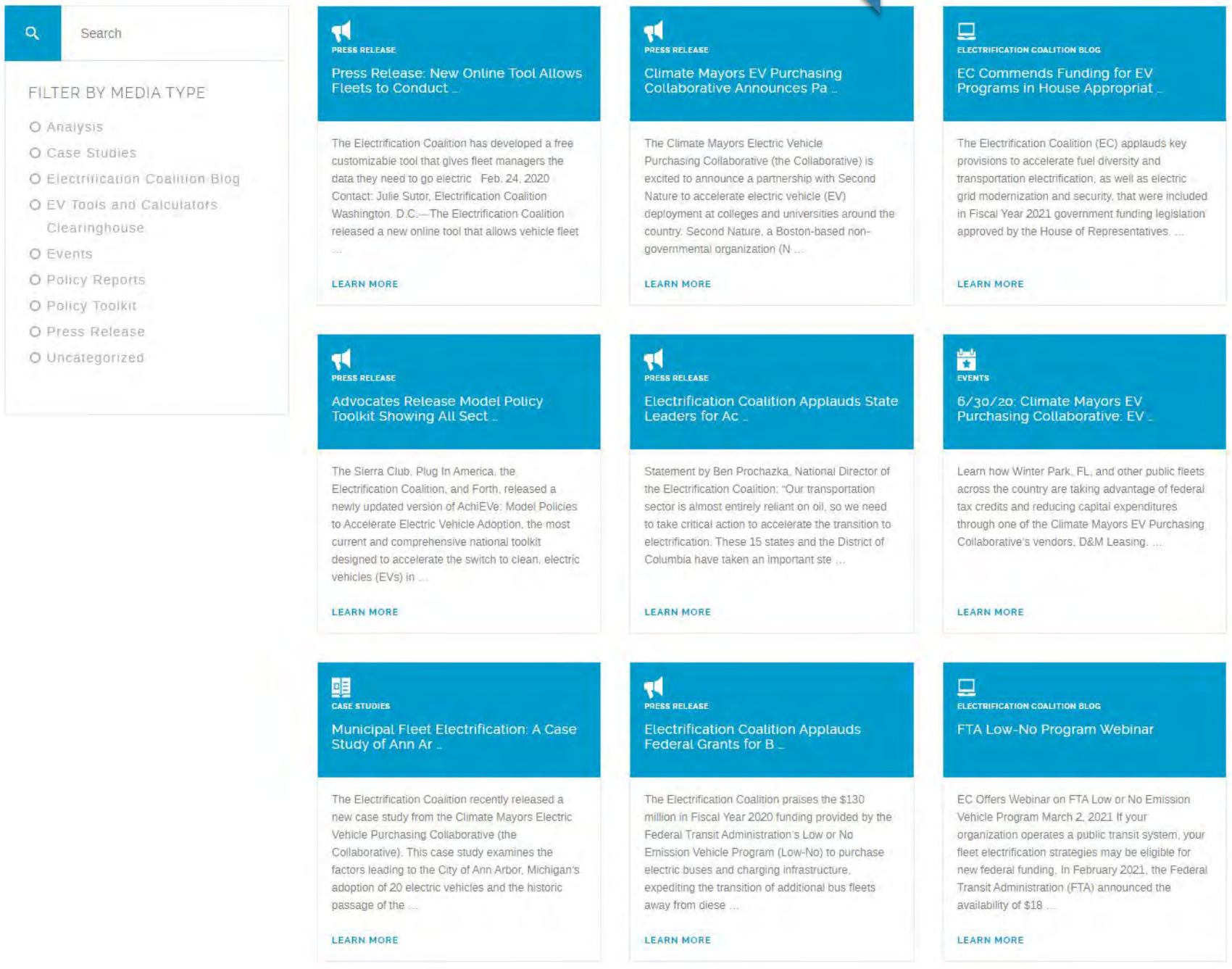

EY
Building a better working world
How commercial fleet electrification is driving opportunities
Understanding emerging opportunities and challenges as commercial fleet operators rapidly adopt electric vehicles



RESOURCE!

https://www.utilimarc.com/blog/electric-vehicle-faqs/?utm_campaign=Electric%20Vehicle%20Data&utm_medium=email&_hsmi=115621771&_hsenc=p2ANqtz-8YA0Gg77lvSD1YcqlqLPD9eH8mi92TUfSV0fGmMPkqM5p5L9BGrAWHehUpCtYdE4ssbCcQ9iCPvVAWAhWGSLpDeeRP-BJAznoPOGIcySUMQKiK68w&utm_content=115621771&utm_source=hs_email

https://www.electrificationcoalition.org/ RESOURCE!



https://afdc.energy.gov/ RESOURCE!

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Alternative Fuels Data Center

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Fuels & Vehicles

The Information Source for Alternative Fuels and Advanced Vehicles

The Alternative Fuels Data Center (AFDC) provides information, data, and tools to help fleets and other transportation decision makers find ways to reach their energy and economic goals through the use of alternative and renewable fuels, advanced vehicles, and other fuel-saving measures.

Information by State

select a state

Information by Fleet Application

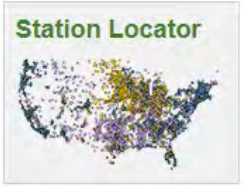
- Delivery Services
- Refuse Collection
- Public Transit
- School Transportation

Maps & Data

- U.S. Alternative Fueling Stations by Fuel Type
- U.S. Hybrid Electric Vehicle Sales by Model
- Light-Duty Alternative Fuel Vehicle Registrations

Tools

- Laws & Incentives
- Electricity Sources & Emissions
- Vehicle Cost Calculator
- Vehicle Search



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The Central Florida Clean Cities Coalition's mission is to support efficient, clean, and sustainable transportation fuel use. We work with our stakeholders to deploy advanced alternative fuel technologies, mass transit projects, and fleet optimization measures throughout our ten county region.
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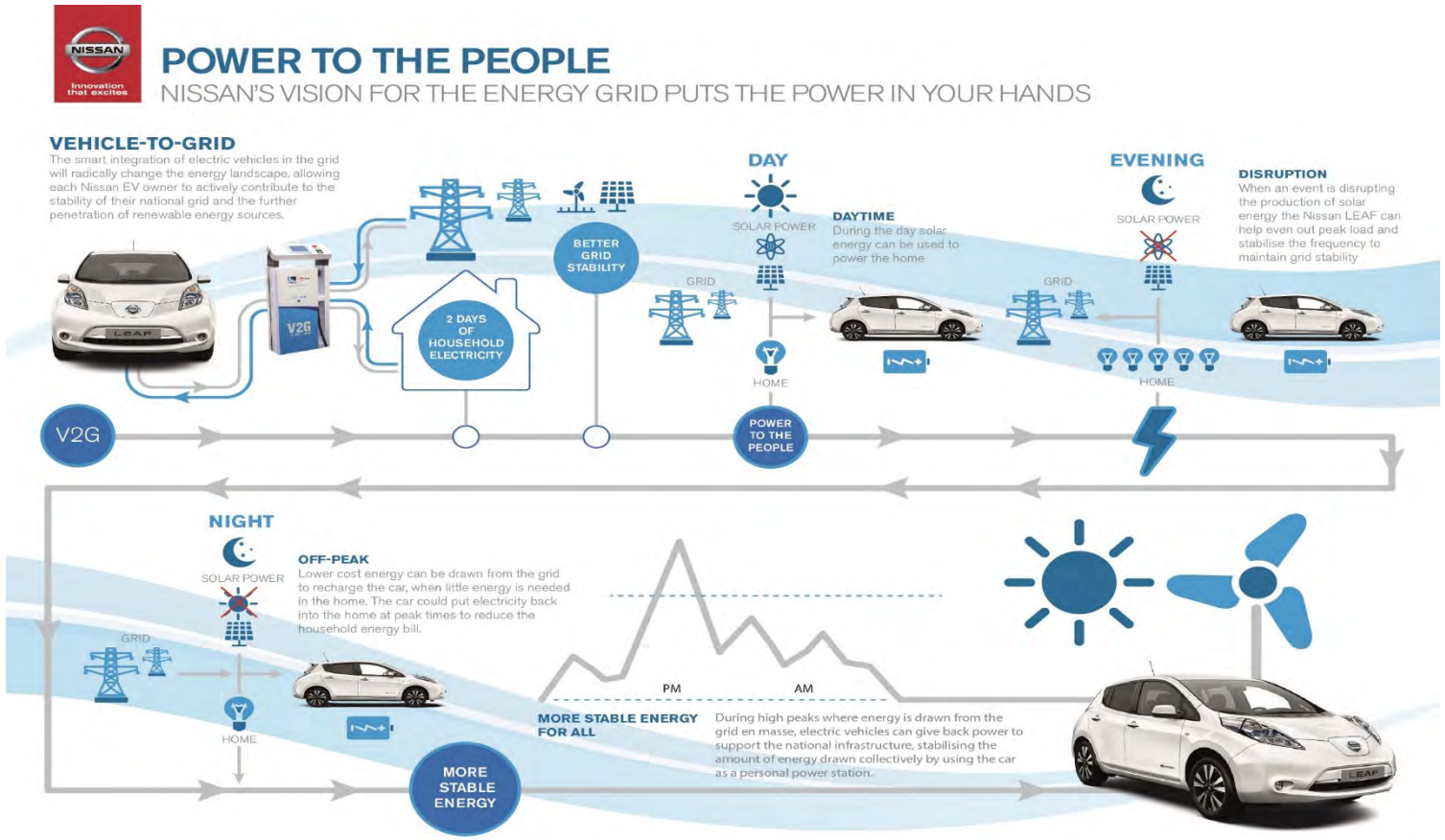
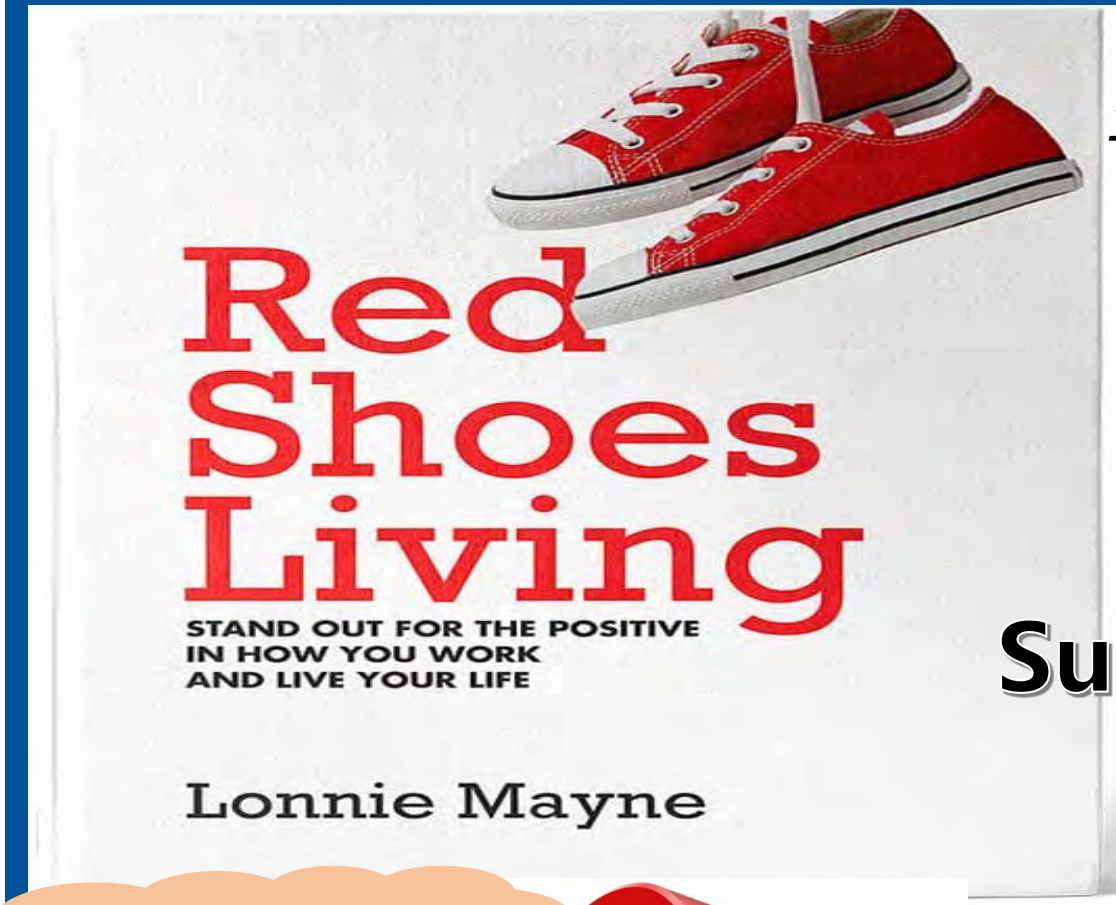


V2G

V2B

CITY OF ORLANDO


ENERGY STORAGE
LOCKHEED MARTIN
LOCKHEED MARTIN
The Utility is buying the battery!
Partner with your Utility!



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Orlando, Florida 32805
david.dunn@orlando.gov
Jonathan.Ford@orlando.gov

Suggested reading

https://lonniemayne.com/

CITY OF ORLANDO

NYC Fleet

NYC DCAS
Citywide Administrative Services

Brent Taylor
BreTaylor@dcas.nyc.gov

- Assistant Commissioner of Citywide Fleet Operations and Sustainability Infrastructure for the City of New York
- More than 20 years in fleet and operations leadership in the public and private sectors
- Managed the installation of 100 DC fast chargers throughout the five boroughs
- Assisted NYC Emergency Management logistics operations following Hurricane Sandy and the Citywide response to COVID-19
- Previous experience with Enterprise Rent-A-Car, GM Urban Mobility, Parcel Inc. and Time Warner Cable

NYC Fleet

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Electric Vehicle Infrastructure Planning

NYC Fleet

Sustainable Fleet Technology Conference 2021

Brent Taylor, Assistant Commissioner, Citywide Fleet Operations and Sustainability Infrastructure

September 9, 2021

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EV Beginnings

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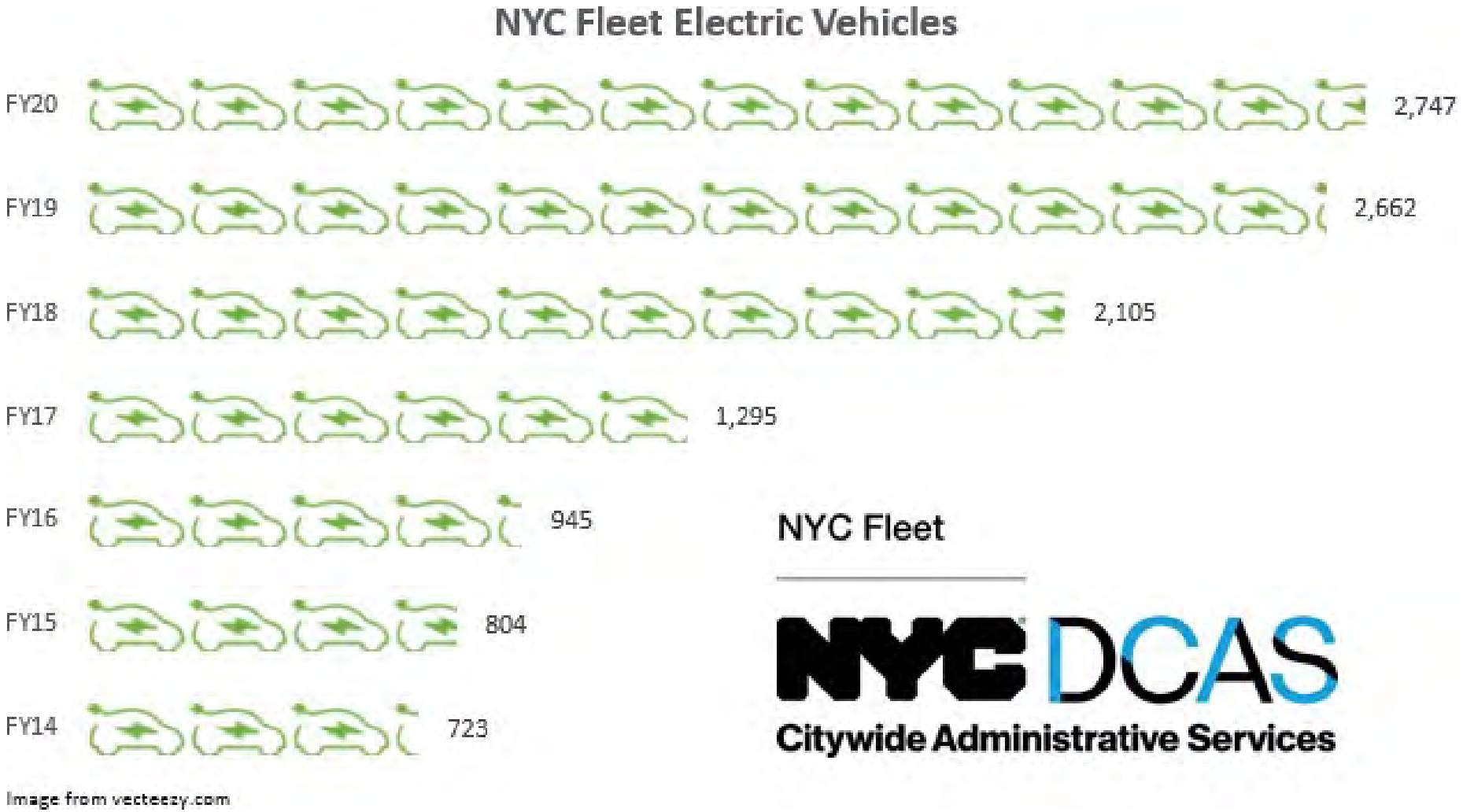
NYC Fleet EV Today



NYC Fleet

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Reducing Maintenance Costs

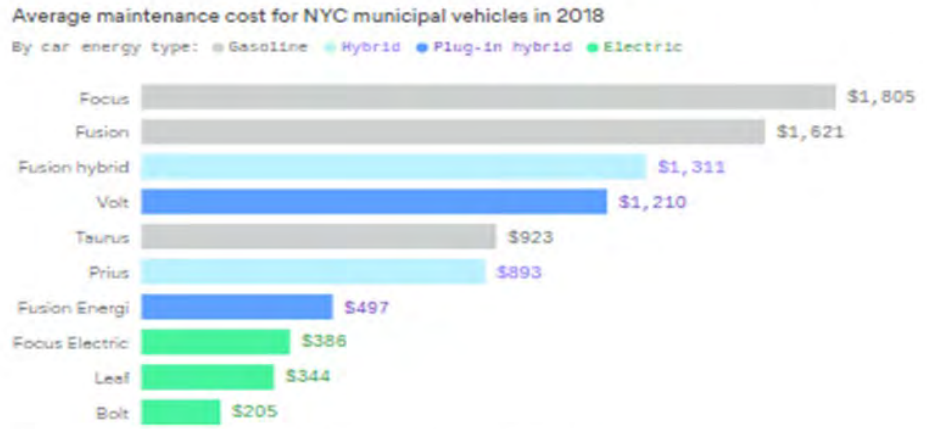
AXIOS Sections About Axios Sign up

Mar 19, 2019 - Energy & Environment

EV maintenance costs in NYC run lower than gas-powered cars

Ben Geman, author of Generate

The New York City government's maintenance costs for its electric vehicle fleet were much less per automobile than its gasoline-powered cars, city data released this month shows.



Data: NYC Department of Citywide Administrative Services; Chart: Andrew Witherspoon/Axios

Why it matters: Municipal and corporate vehicle fleets are a growth area for EVs, and not just for environmental reasons. That's the upshot of the latest edition of a newsletter I'd never seen until yesterday: the NYC Fleet Newsletter from Citywide Administrative Services.

NYC DCAS Citywide Administrative Services

Mayoral Executive Order 53, 2020

THE CITY OF NEW YORK
OFFICE OF THE MAYOR
NEW YORK, N.Y. 10007

EXECUTIVE ORDER No. 53

February 6, 2020

AN ALL-ELECTRIC AND SAFE NEW YORK CITY FLEET

WHEREAS, we face a clear global climate emergency, caused primarily by the burning of fossil fuels;

WHEREAS, we all have a moral, economic, public health, and security imperative to act to protect our planet, fellow human beings, and future generations;

WHEREAS, we must act, and act together at every level, as individuals, as cities, and as a global community;

NYC DCAS
Citywide Administrative Services

Fully Electric Sanitation

NYC DCAS
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All Electric Policing

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All Electric Policing

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All Electric Citywide Fleet Share

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Plug in Hybrid Ambulances

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The Mayor’s EV

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Portable Solar Carports

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New York's Largest EV Charging Network

Google Maps

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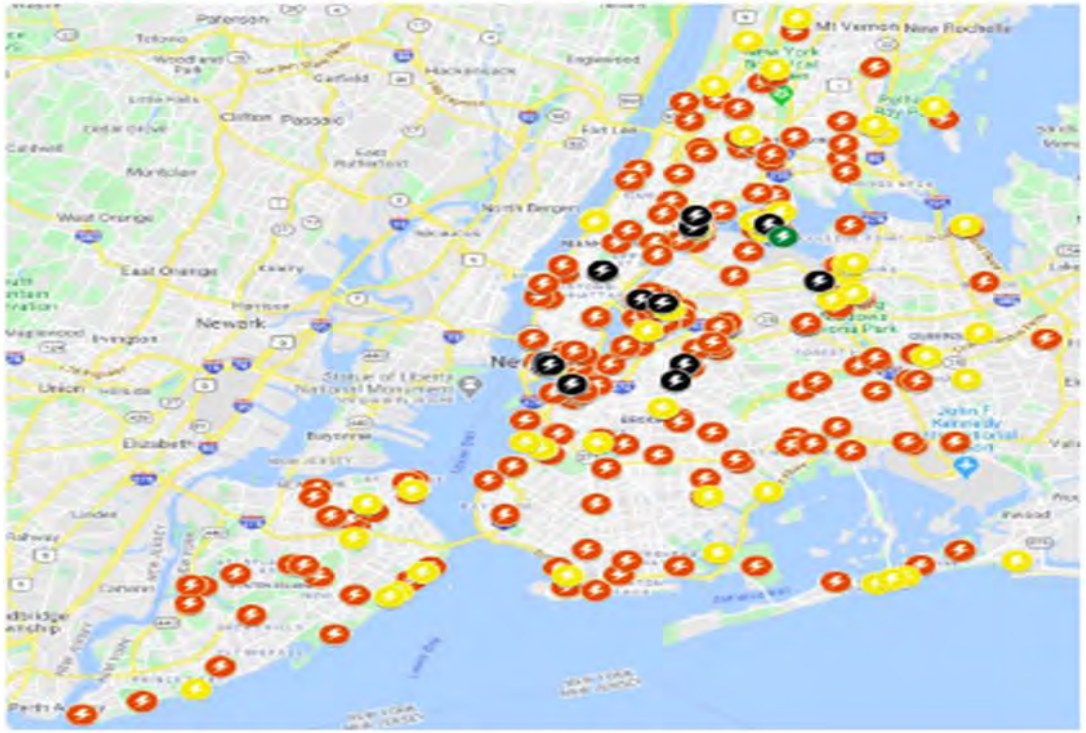
NYC Fleet

NYC Fleet EV Charging Network as of 9/21/2020



Total 1,015 Electrical Charging Ports Across 705 Stations

- 900 Charging Ports / 590 Reg Stations
- 87 Solar Carports
- 27 DC Fast Chargers
- 1 Mobi Mobile Charger

NYC DCAS
Citywide Administrative Services

Fast Charging Announcement Jan. 2021

For Immediate Release

NYC DCAS
Citywide Administrative Services

Media Contact:
Nick Benson
Director of Communications
communications@dcas.nyc.gov

City's Fast Electric Vehicle Chargers to Power Fleet Vehicles in a Fraction of the Time

In Addition to Supporting Greenest Municipal Vehicle Fleet in the Country, Some Chargers Now Open for Public Use

NEW YORK – New York City Department of Citywide Administrative Services (DCAS) Commissioner Lisette Camilo today announced that the City has opened 58 fast electric vehicle charging stations to power City fleet vehicles. Fast electric vehicle chargers can charge vehicles seven times as quickly as regular chargers – allowing for 120 miles of driving on a one-hour charge. Faster charging will enable DCAS to phase out more gas-powered vehicles and replace them with electric vehicles to help meet Mayor Bill de Blasio's goal of a fully-electric vehicle fleet by 2040. The City currently has over 2,700 electric vehicles in its fleet. By the end of the year, the City expects to have at least 100 fast charging stations in operation.

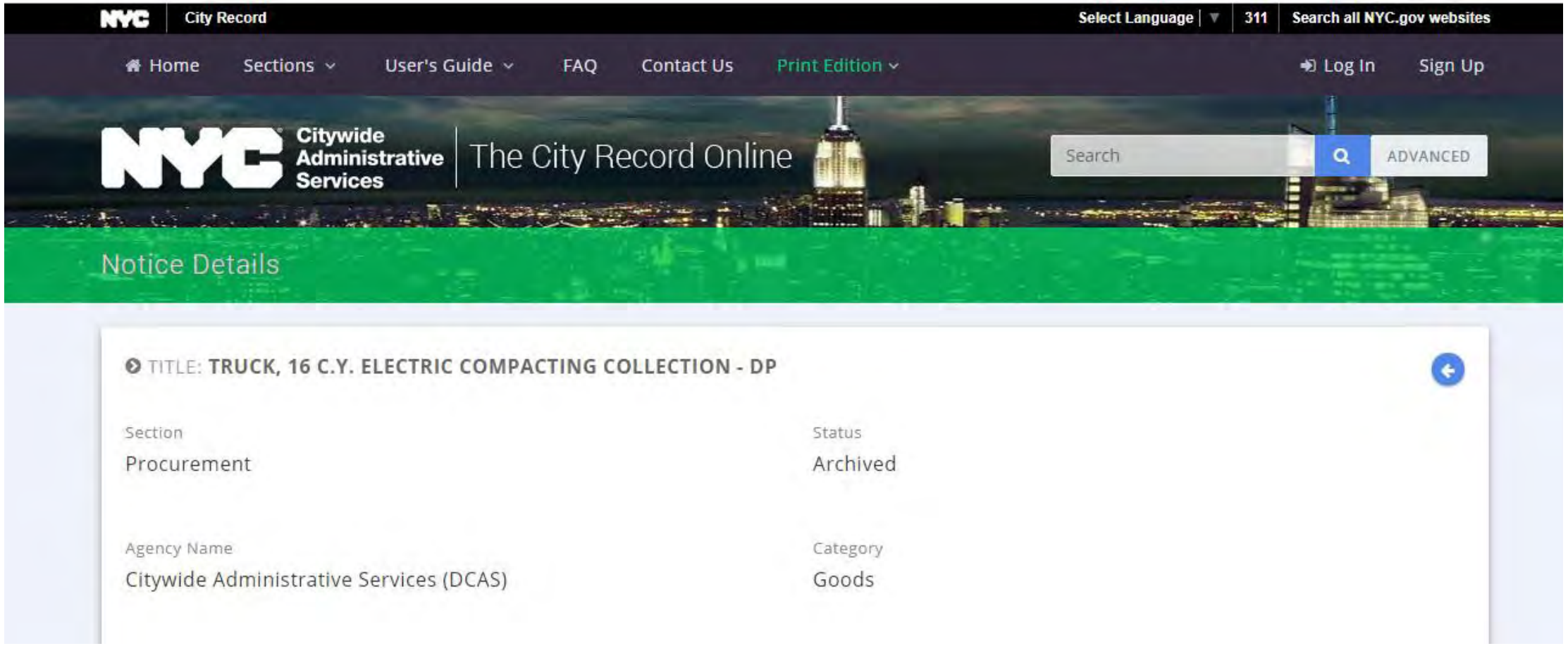
In addition to the fast chargers' use for City fleet vehicles, DCAS has opened two charging stations for public use: three fast chargers are available at Randalls Island and two at Midland Beach. At least five stations will be available for public use by June 2021.

NYC DCAS
Citywide Administrative Services

DC Fast Charging

NYC DCAS
Citywide Administrative Services

Specification and Bidding EV Contracts



NYC DCAS Citywide Administrative Services

Contact

For more information, go to the NYC Fleet website:
http://www.nyc.gov/html/dcas/html/employees/fleet.shtml

Brent Taylor
Assistant Commissioner, Fleet
New York City
Department of Citywide Administrative Services

bretaylor@dcas.nyc.gov

NYC DCAS
Citywide Administrative Services

THANK YOU

Ralph Wilder
RWilder@spokanetransit.com

- Zero Emission Fleet, Strategic Planning Senior Manager Spokane Transit Authority
- Has worked with CTE to design a plan to help STA move to a full Zero Emission Fleet and build the associated charging infrastructure
- One of the first to work on battery electric fast charge bus deployment in the nation with deployment of 5 Proterra buses with StarMetro in Tallahassee FL in 2010
- Previous work York Area Transit, York PA and Greater Hartford Transit District, Hartford CT

Spokane Transit

Spokane Transit Infrastructure

City Line

Spokane Transit


ABB
ABB
ABB
18

Monroe – Regal Update

Spokane Transit

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BOONE NW GARAGE

Spokane Transit


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FIRE
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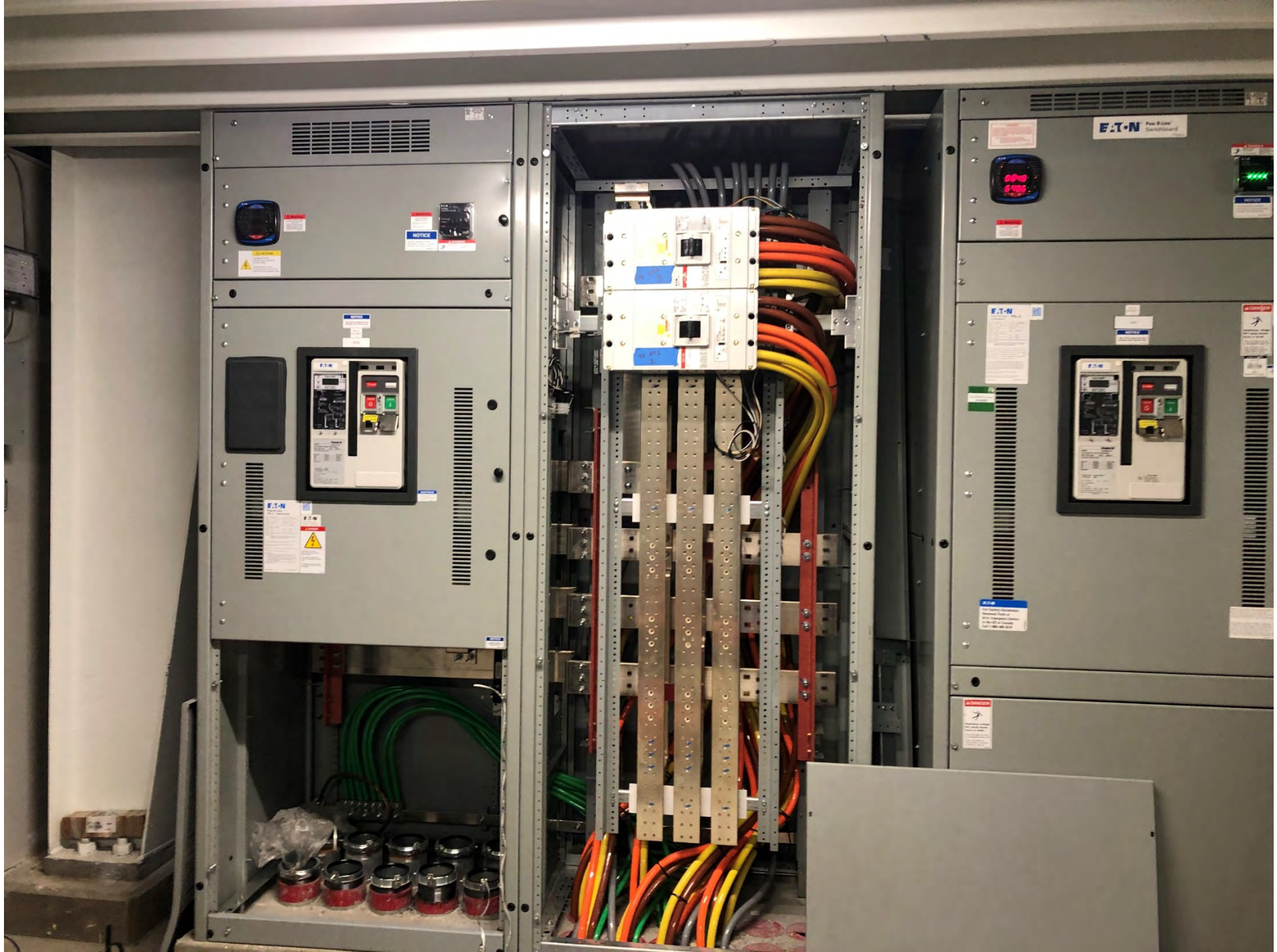
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QUESTIONS?

Spokane Transit

Rendall Farley, PE
Rendall.Farley@avistacorp.com

- Manager of Electric Transportation at Avista, an electric and gas utility headquartered in Spokane WA
- Works in a variety of roles in engineering, organizational development, operations management & research in both the public and private sectors
- Graduate of the U.S. Coast Guard Academy, earned graduate degrees from University of Michigan and an MBA from Eastern Washington University

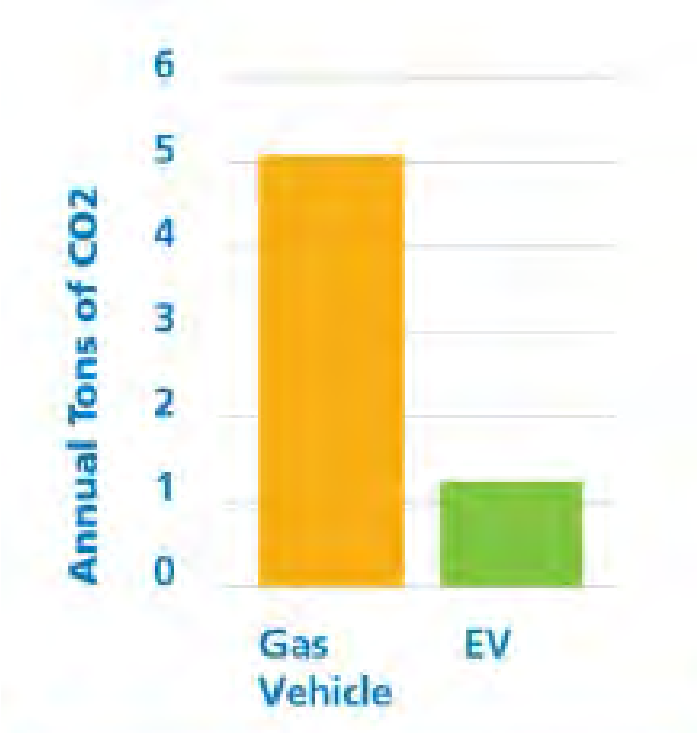
Transportation Electrification

Sustainable Fleet Technology Webinar

Rendall Farley, P.E.

September 9, 2021

Electric Transportation – a better energy future!



- $1 billion in annual fuel savings for our customers if light-duty vehicles electrified, even more with other forms of transport
- Half of emissions come from transportation in our region
- 80% carbon emissions reductions overall, 100% reduction local air pollution (zero tailpipe emissions)

Beneficial load growth – affordability for all customers

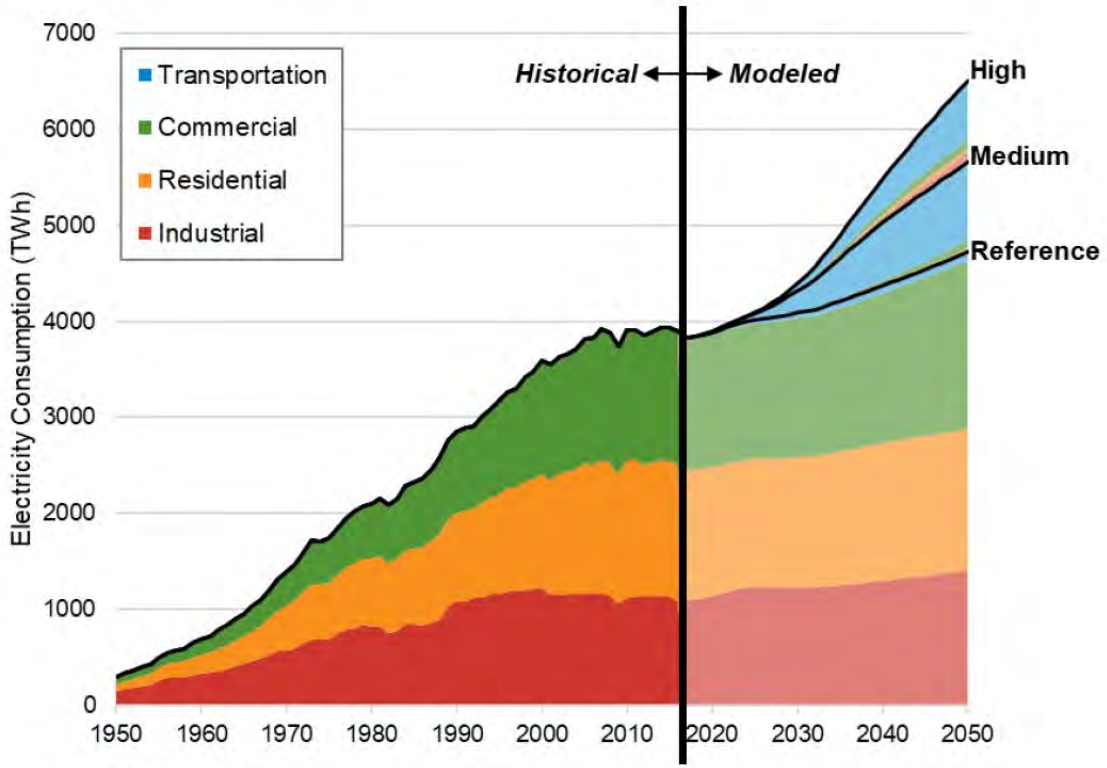


Figure ES-3. Historical and projected annual electricity consumption

- 20% or more of overall electric load from transportation by 2050
- Must work hard starting now to get this load shifted to off-peak
- What portion of the charging infrastructure should the utility own and maintain?


SUMMIT

- Transportation Electrification Plan (TEP) acknowledged October 15th by the Washington UTC
- Broad stakeholder engagement and support
- Long-term commitments, rate-based investments behind the meter
- It's not just about light-duty EVs!
- Establishes foundation for beneficial, long-term market growth in all segments
- Three tariffs effective April 26, 2021

Check it out at: myavista.com/transportation

Siting DC fast charging

- Inside 1 mile of major travel corridor, easy access
- Short walk to driver amenities (food & restrooms)
- Utility power nearby (3 phase)
- CCS-1 connector standard
- Minimal concrete and asphalt tear-out
- Future expansion built in
- Dependable site host

Working with the local utility

- Call customer service center to get started
- Request a quote from a Customer Project Coordinator for required utility power, be ready to provide:
  - map & address of preferred project location
  - electrical needs (kW) and expected use (kWh)
- Allow time – may take several weeks to get estimate

Our vision: better energy for life!

Imagine an electrifying future . . .

By the year 2045, renewable and clean energy sources power the electric grid and a vibrant modern economy, including the transportation sector. Whether moving people or goods on the road, off the road, by rail, in the air, or over water, clean electricity makes it happen. The majority of transportation is electrified and the use of fossil fuels is no longer dominant. Customers have new and exciting transportation choices. Major economic benefits of over $1 billion per year in fuel and maintenance cost savings are realized in the local economies served by Avista. This is accomplished while eliminating more than 80% of harmful air pollution and greenhouse gas emissions from transportation—formerly the largest source of emissions in the region.

Avista's Noxon Rapids Hydroelectric Generation Plant
– 562 MW of Clean Hydropower –

In this exciting future, transportation accounts for over 20% of utility electric load and revenue, helping to pay for fixed grid costs and keeping rates low for all customers. A combination of cost-effective load management and transfer technologies, energy storage, and price signals act to optimally integrate flexible transportation loads with the grid—including a wide array of new distributed energy resources. This reduces peak loads on the system, provides for better grid resiliency, and maximizes the use of renewable energy sources.

EVs Fueling Up with Clean Energy – The Future is Electric !

Autonomous electric transportation has also revolutionized the way we move people and goods, dramatically increasing vehicle and equipment utilization, driving down transportation costs, freeing up people's time, and saving thousands of human lives and serious injuries every year.

The vehicles themselves are integral parts of a new age in communications and connection, opening the door to a wide variety of new products and services that improve people's lives.

In just 25 years, an amazing transformation has occurred—the transportation sector has converged with the energy and information technology sectors—fundamentally changing the way we live our lives and making the world a better place. Avista has played a key role in this transformation, working over several decades with industry partners, policymakers and regulators, community leaders, and customers to innovate and create a better energy future for all.

AVISTA