Fleet electrification: Highlights from our latest voice-of-the-utility research

And the latest from Evergy and National Grid

Steve Day, Research Manager, Customer Energy Solutions, E Source
Julie Dietrich, Lead Electrification Manager, Evergy
Ryan Wheeler, Fleet Electrification Product Owner, National Grid

E Source
POWERING WHAT'S NEXT

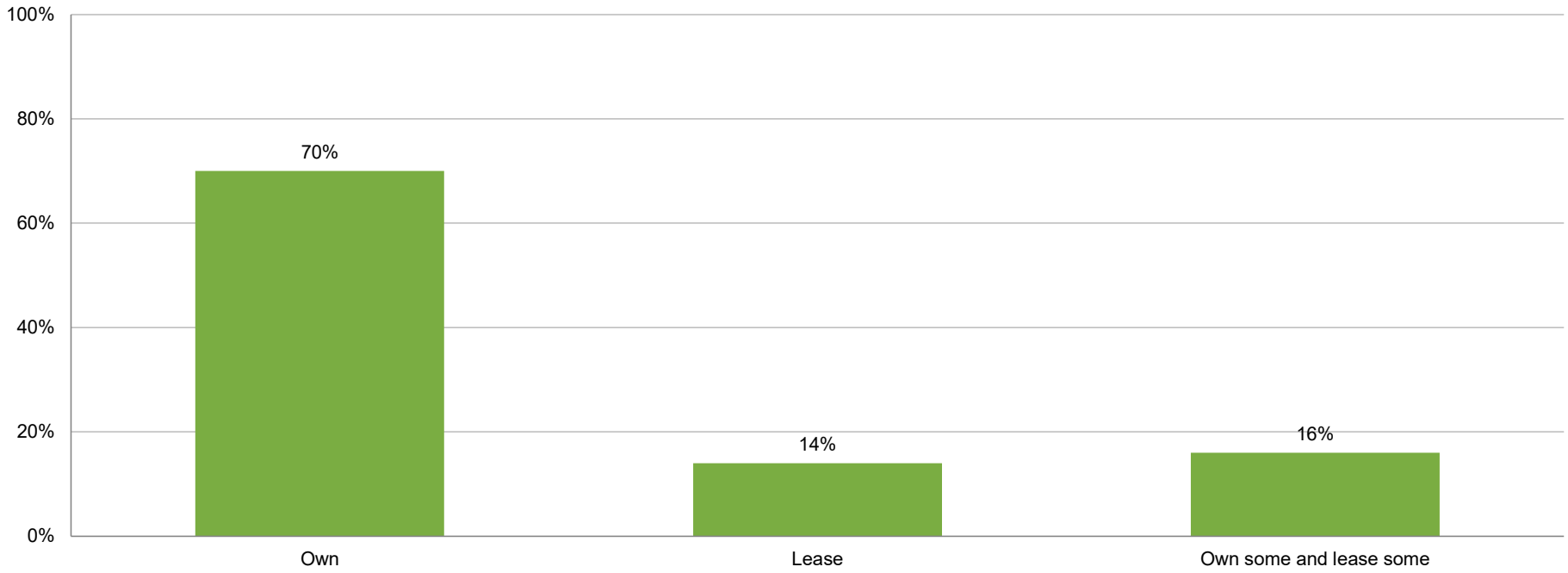
Thursday, June 29, 2023

Voice-of-the-customer EV fleet survey

Purpose: Get a better understanding of actionable strategies utilities and state agencies can adopt to support commercial customers and their fleet needs

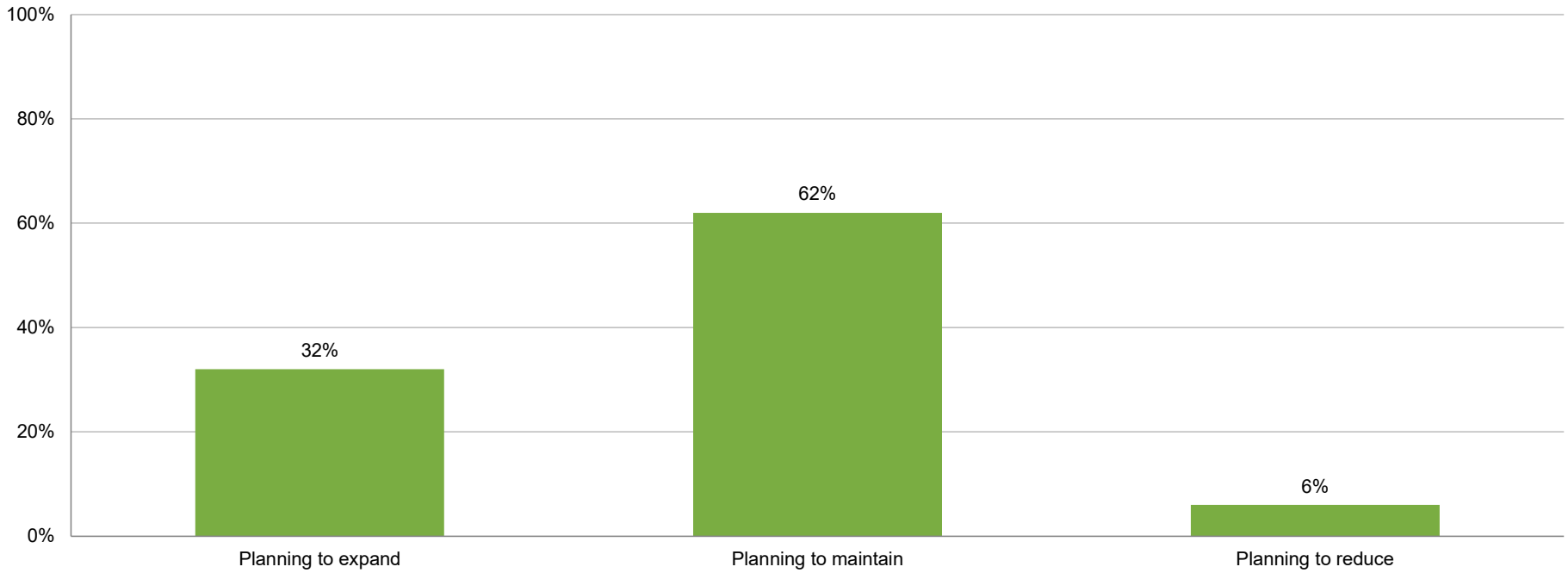
- Online survey of fleet operators, managers, or companies that operate fleets
- September 2022
- 50 respondents
  - 32 fleet operators or managers
  - 18 represent companies that operate fleets
- Small and midsize businesses and fleets
  - Fewer than 500 employees
  - Most have fewer than 50 vehicles
- US only
  - 8 West
  - 19 Midwest
  - 13 South
  - 10 Northeast

More likely to own than lease vehicles



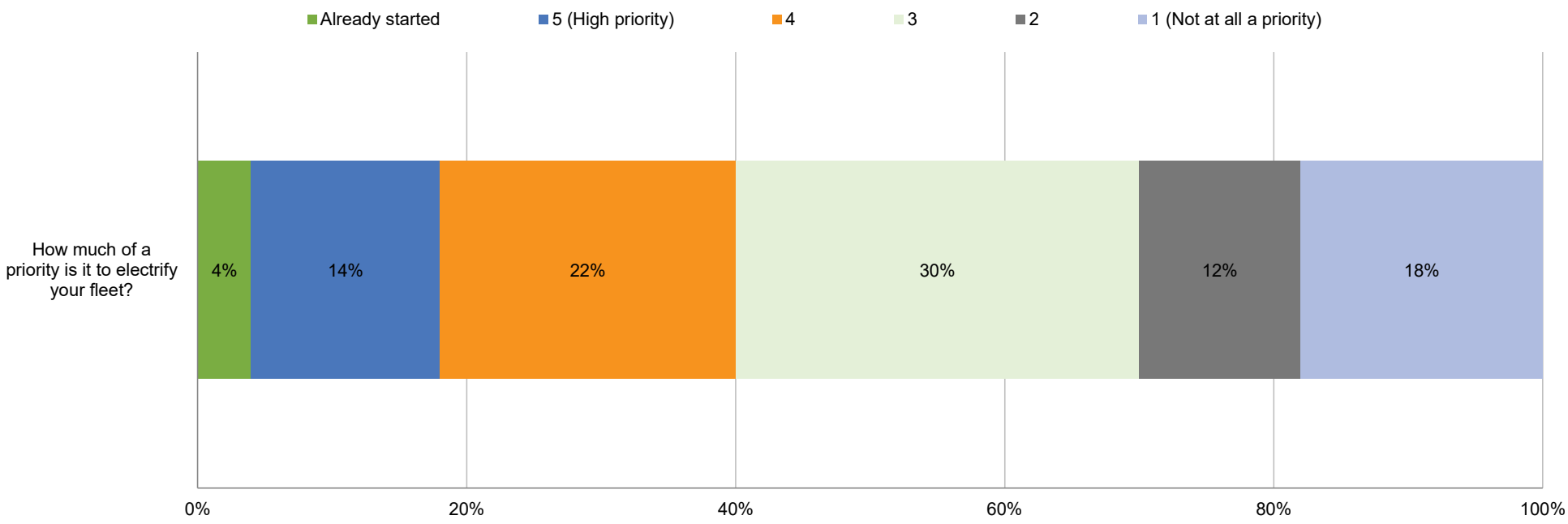
© E Source (Commercial EV Fleet Survey). **Base:** n = 50. **Question S1_6:** Which of the following best describes the ownership of the fleet you represent?

Only a third are planning near-term expansions



© E Source (Commercial EV Fleet Survey). **Base:** n = 50. **Question S1_8:** Which of the following best describes your vehicle fleet plan for the next three years?

Electrification is not a top priority for all



© E Source (Commercial EV Fleet Survey). **Base:** n = 50. **Question S1_10:** On a scale of 1–5, where 1 means not at all a priority and 5 means high priority, how much of a priority is it to electrify your fleet?

Reasons given for deprioritization of EVs

- Vehicle cost is too expensive (7)
- Electrification is a one-sided political agenda (5)
- Price of fueling or recharging is too expensive (4)
- Reliability and uptime (4)
- Don’t see the benefit of doing so (3)
- Infrastructure is too expensive (3)
- Unfamiliar with charging or refueling needs or process (3)
- Project timeline is too lengthy (2)
- Too busy or have higher priorities (2)
- Unsure of the process for conversion (2)
- Utility permitting process too complex or bureaucratic for line extensions (1)
- Payback term is too long (1)
- Vehicle availability (1)

© E Source (Commercial EV Fleet Survey). **Base:** n = 9. **Question S1_11:** Why isn’t it a priority to convert your fleet vehicles to electric? Select all that apply.

Top motivator → policy changes

- State mandates or regulations (2)
- Company sustainability goals (1)
- Environmental reasons (1)
- Take advantage of financial incentives (1)
- Price of gasoline or diesel fuel (1)
- None of the above (3)

© E Source (Commercial EV Fleet Survey). **Base:** n = 9. **Question S1_12:** Which of the following would most motivate you to electrify your fleet? Select all that apply.

Still mostly seeking up-front buy-downs

- Charger incentives (4)
- Vehicle incentives (4)
- Technical assistance (1)
- Special rates or tariffs (1)
- Managed or smart charging, where vehicles are charged in a way that supports the grid (1)
- Other (1)
- None of the above (3)

© E Source (Commercial EV Fleet Survey). **Base:** n = 9. **Question S1_13:** Should electrifying your fleet become a priority, what kind of utility-led programs or incentives would be most helpful in supporting the conversion? Select all that apply.

Voice-of-the-utility fleet electrification survey

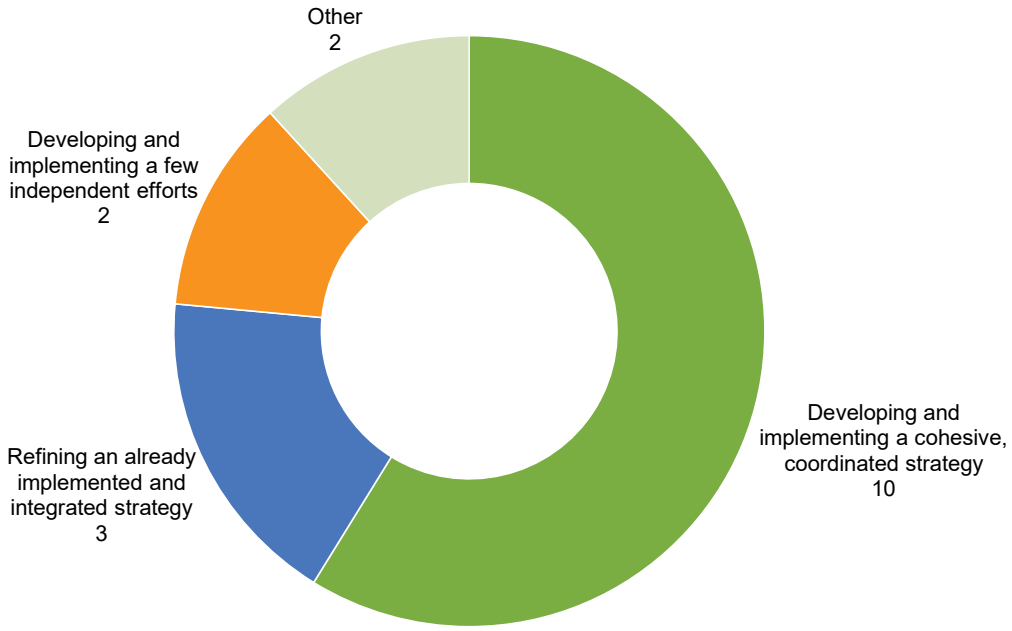
Purpose: Get a better understanding of the current state of utility fleet incentive and advisory programs, benchmark efforts, and learn what is and isn't working

- Online survey of utility program managers, EV division leads, and portfolio owners
- Survey completed in March and April 2023
  - Follow-up interviews to come
- US
  - 17 respondents
  - Investor-owned and municipal utilities
- All stages of deployment:
  - Well established
  - Just launched
  - Still in planning phase

Key takeaways from our study

- Utilities have started to focus on fleet electrification, but fleet teams, budgets, services, and incentives vary greatly
- Utilities are working with commercial customers to electrify their fleets
- Utilities look to each other for ideas and information
- Utilities have a long way to go on matching project timelines with customer needs
- Grid and distribution planning are top focus areas for fleet electrification teams
- Providing advisory tools and help remains a top priority for fleet electrification services
- Utilities need to find better ways to connect and communicate with commercial fleet customers

Utilities are in all stages of fleet electrification development and implementation



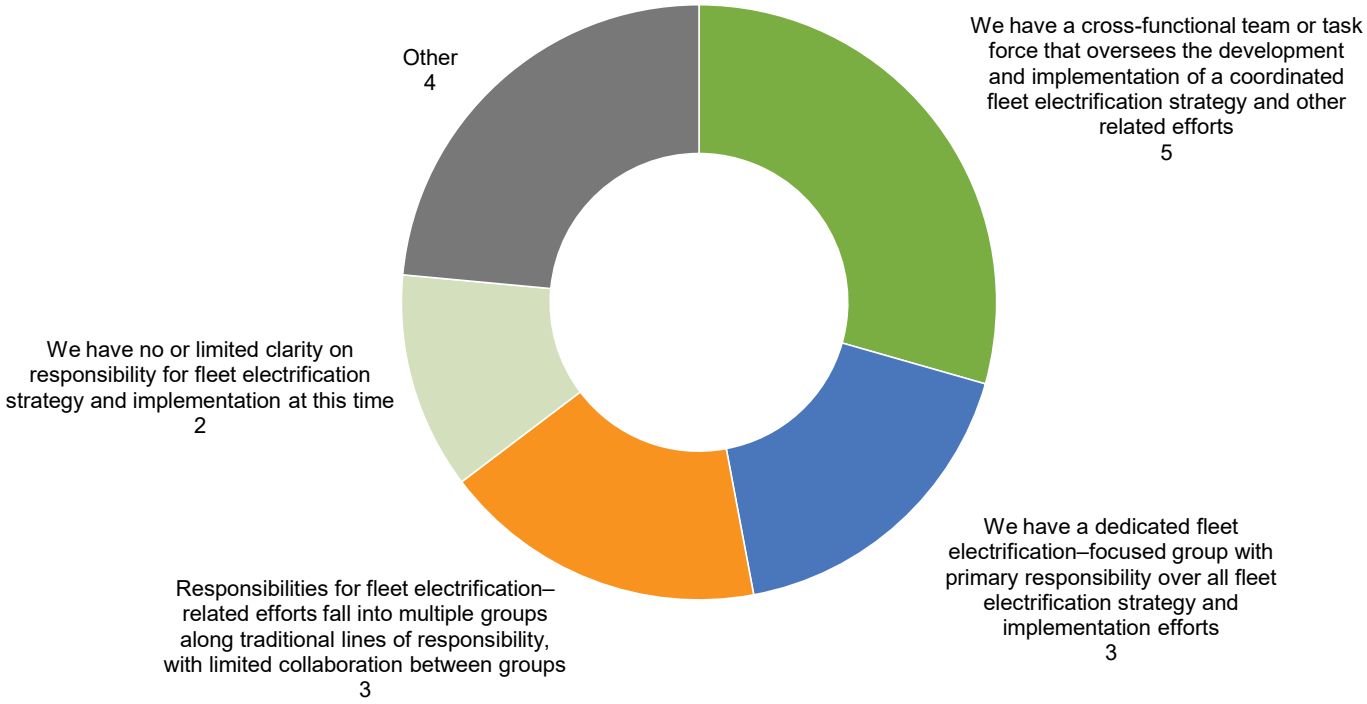
© E Source (2023 Fleet Electrification Utility Survey). **Base:** n = 17 utilities. **Question S1_1:** Choose the option that best reflects your utility's status in developing and implementing a nonresidential fleet electrification strategy. **Note:** Use caution with small sample size.

Scaling distributed energy resource (DER) and electrification efforts

- 12 utilities said their programs will scale
- 5 said they don't know

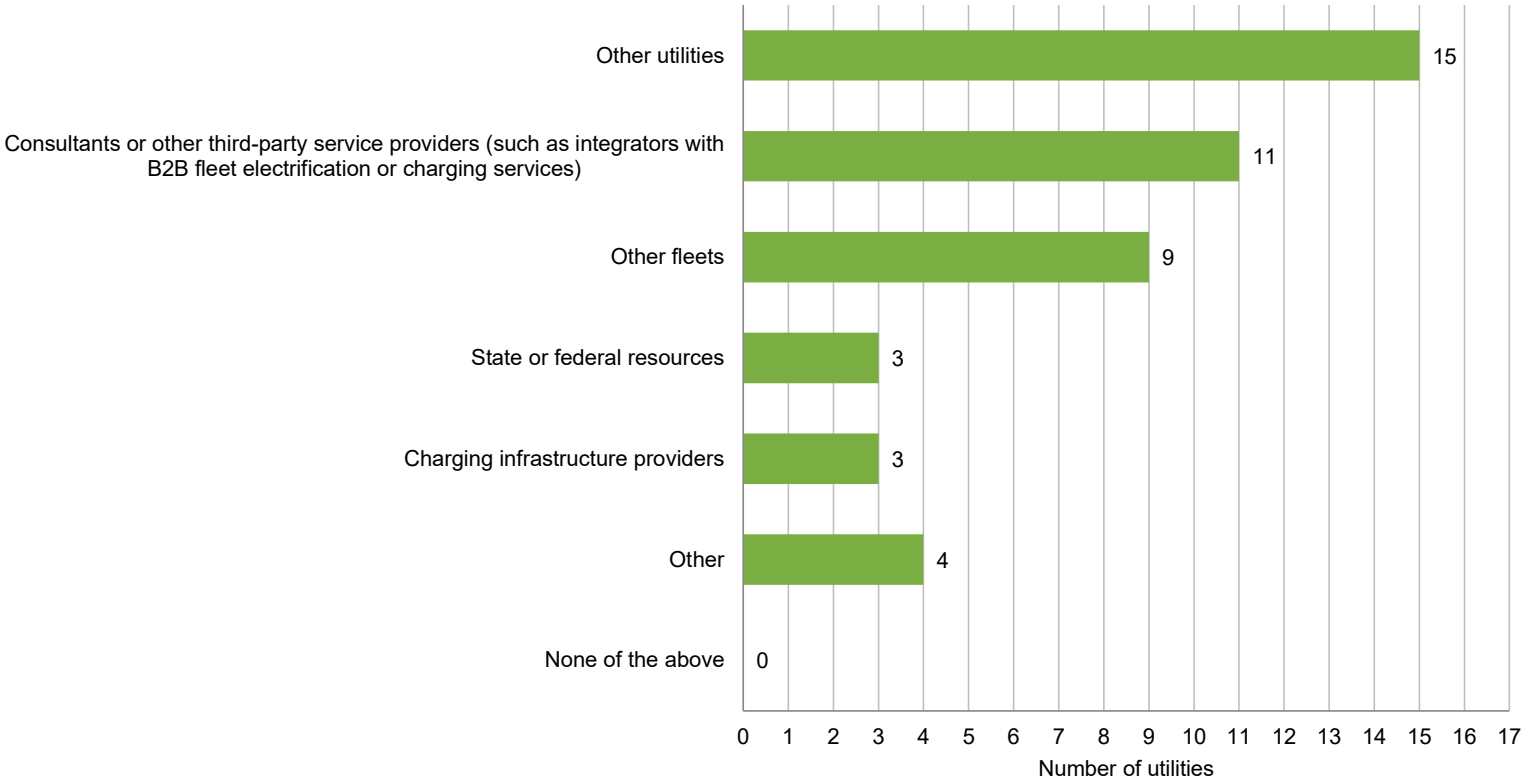
"We have approved programs through 2026 and are building program plans for the remaining period of the 10-to-15-year time window."

Fleet electrification teams are structured in a variety of ways



© E Source (2023 Fleet Electrification Utility Survey). **Base:** n = 17 utilities. **Question S2_1:** In which teams or departments does fleet electrification strategy reside at your utility? **Note:** Use caution with small sample size.

Where do utilities get their info?



© E Source (2023 Fleet Electrification Utility Survey). **Base:** n = 17 utilities. **Question S1_4:** Who do you look to for examples of nonresidential fleet electrification best practices? Choose all that apply. **Note:** Use caution with small sample size.

How is fleet electrification going?

- Customer knowledge?
  - 11 utilities said they know which customers *have started* electrifying their fleets; 8 utilities said they know which customers are *planning to* electrify their fleet
- Timeframe?
  - 9 utilities said they weren't sure if their timeframes for fleet electrification projects were meeting customer needs; 4 said they aren't meeting customer needs
- Internal buy-in?
  - 12 utilities said they have internal buy-in for their fleet electrification strategies

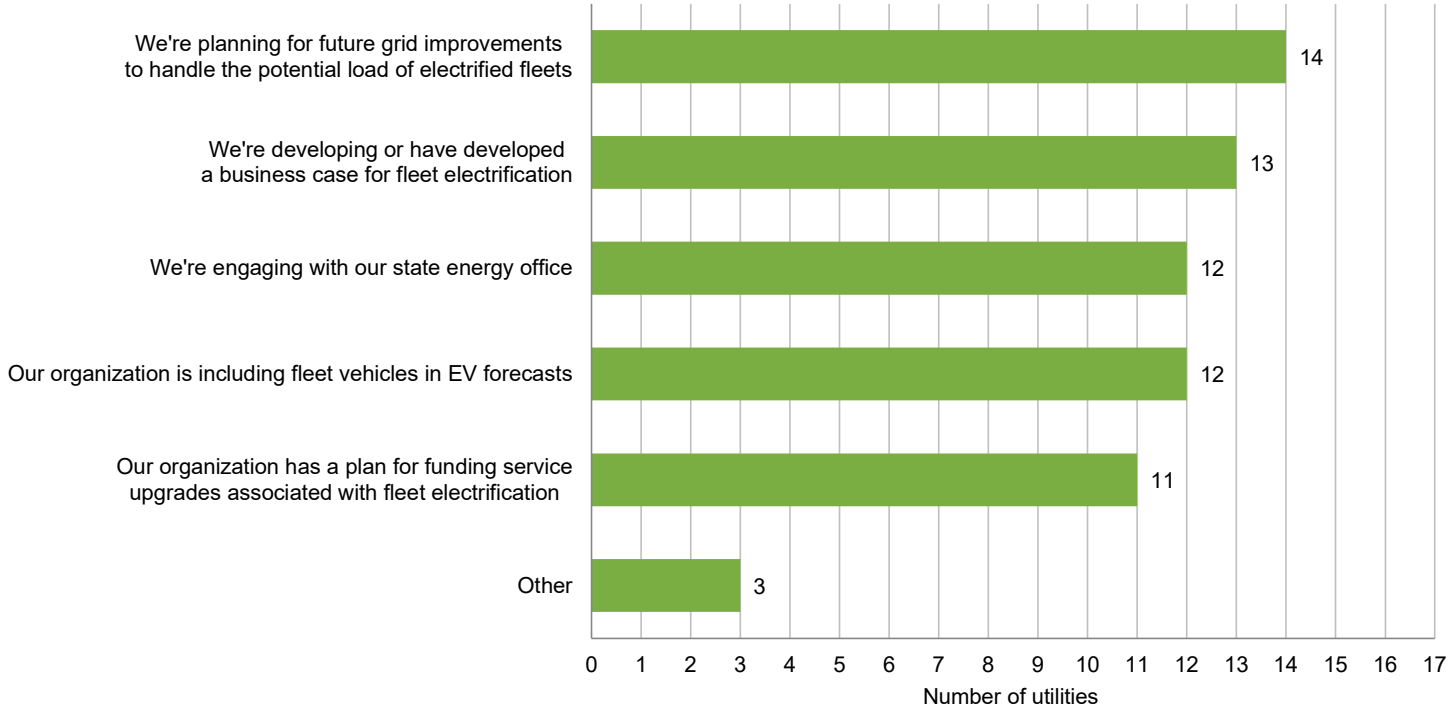
Top issues or challenges utilities face

1. Customer awareness and readiness
2. The supply chain and EV availability
3. Developing the right offerings

"Customer understanding their needs versus wants"

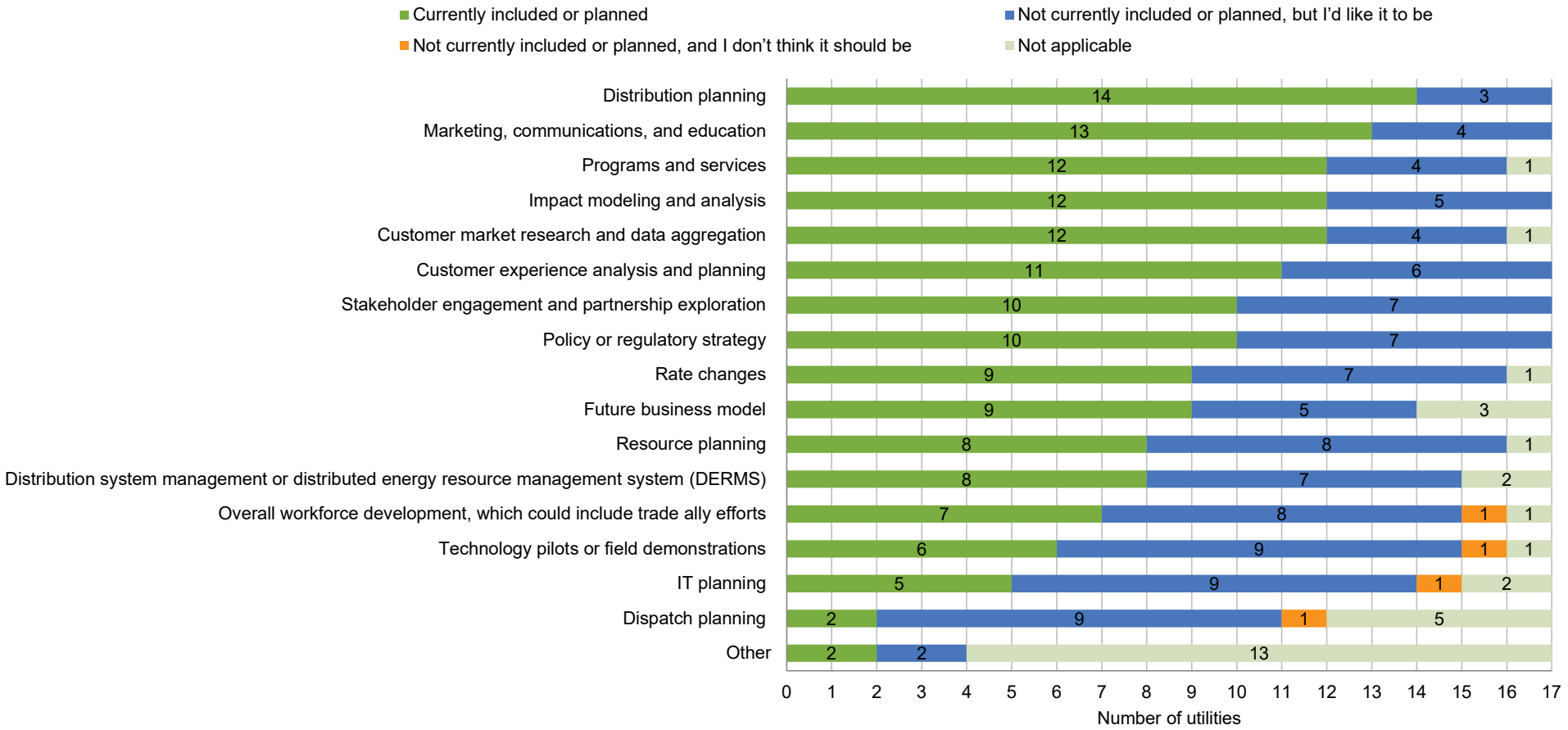
"Ensuring that fleet operators who historically never had a relationship nor an understanding of the utility and its rates, understand how charging can impact its fleet and costs"

Grid capacity planning is the top utility fleet electrification activity



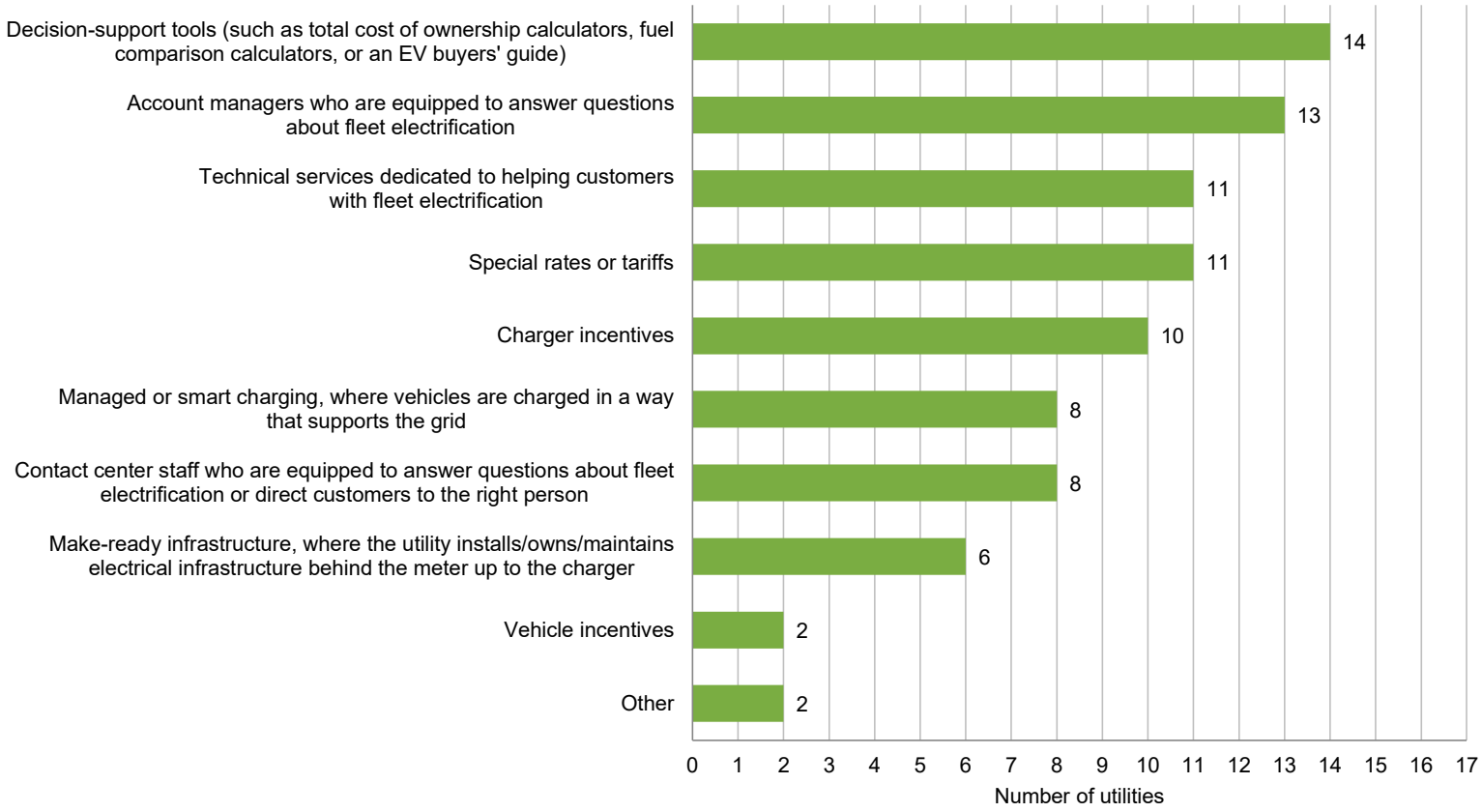
© E Source (2023 Fleet Electrification Utility Survey). **Base:** n = 17 utilities. **Question S1_6:** Which of the following are true for your organization regarding nonresidential fleet electrification strategy in your service territory? Choose all that apply. **Note:** Use caution with small sample size.

Distribution planning is the top element in fleet strategy



© E Source (2023 Fleet Electrification Utility Survey). **Base:** n = 17 utilities. **Question S1_7:** What elements are included (or would you like to include) in your utility's current or planned fleet electrification strategy efforts? **Note:** Use caution with small sample size.

Where are utilities focusing their fleet efforts?



© E Source (2023 Fleet Electrification Utility Survey). **Base:** n = 17 utilities. **Question S1_8:** Which does your utility include in its current or planned fleet electrification strategy? Choose all that apply. **Note:** Use caution with small sample size.

Are utilities working with fleet customers?

Yes!

- 14 of the 17 utilities we surveyed are actively working with commercial customers who have started or are planning to start electrifying their fleets
- 9 of those utilities have developed an intake process for customers interested in electrifying their fleets
- But only 1 utility is averaging less than 6 months to get fleet electrification projects completed

Top priorities and challenges

"Trying to offer incentives while keeping rates at a modest level means that offerings may not be where they should be to fully help customers which is why we need better understanding of how customers can acquire grants/incentives at the state/federal level"

"Too often, fleet operators build electrification plans without considering existing grid capacity and impact on other customers near their facility, and we would like to build more proactive engagement"

More data for members of the E Source Distributed Energy Resource Strategy or Mobility Services

- Do utilities know of available EVs?
- Do utilities know about and work with state plans?
- Which customers qualify for extra funding?
- Are contact centers meeting customer needs?
- How are utilities including fleet vehicles in EV forecasts?
- What are utilities' plans for funding service upgrades associated with fleet electrification?
- What are utilities' timelines, budgets, growth expectations, market barriers, incentives, services, enrolled customer numbers, and customer waitlist numbers for fleet electrification portfolios?
- Are utilities seeking funding for fleet electrification? If so, from where?
- What future grid improvements are utilities working on?
- What metrics are utilities using to measure the customer experience of fleet electrification?
- What utility teams or departments are focused on fleet electrification?
- How many FTE are working on fleet electrification?
- How have fleet electrification budgets grown and how is that money allocated?
- Which fleet programs need larger budgets?

Fleet Electrification *Cities, Transit, Schools, and Business Fleets*

Julie Dietrich

Lead Electrification Manager
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EVAdvisor@evergy.com

Evergy's Strategic Approach to Electrification

We are strategically aimed at catalyzing electrification while minimizing attendant costs

Support ***policies*** that promote electrification

Prepare the ***organization*** to support customer electrification at scale

Minimize grid impacts through ***customer*** programs and technology-based solutions

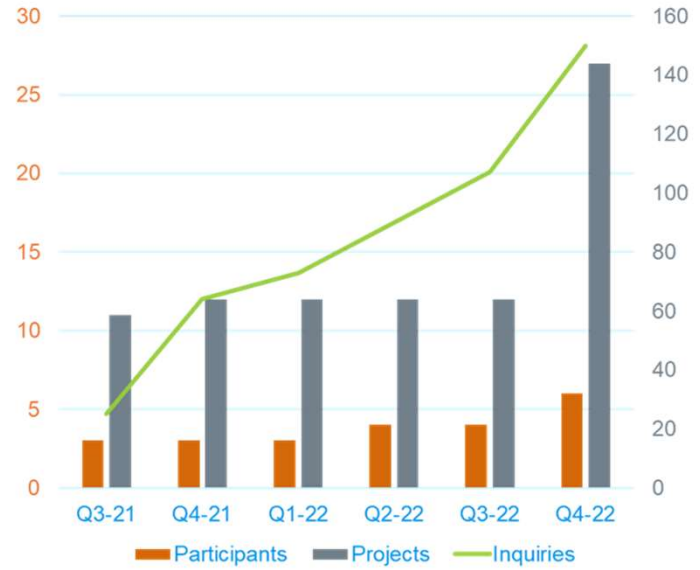
By accelerating the EV transition and attenuating grid impacts, Evergy accumulates benefits for all customers

Customer Fleet Electrification Will Continue to Drive Change

New cross-functional groups and processes are readying Evergy for increased volume

Key Organizational Policy/Procedure Activities:

- Worked with internal stakeholders and industry experts to define a customer journey for fleet electrification
- Created fleet electrification project tracking framework
- Reviewed procurement process and identified main supply chain risks
- Revised project intake forms to include questions related to fleet electrification
- Launched fleet advisory tool to support the customer intake process
- Standardizing the procedure used to create rough order of magnitude cost estimates for utility upgrades



Participants Large fleets have completed the first phase of electrifying

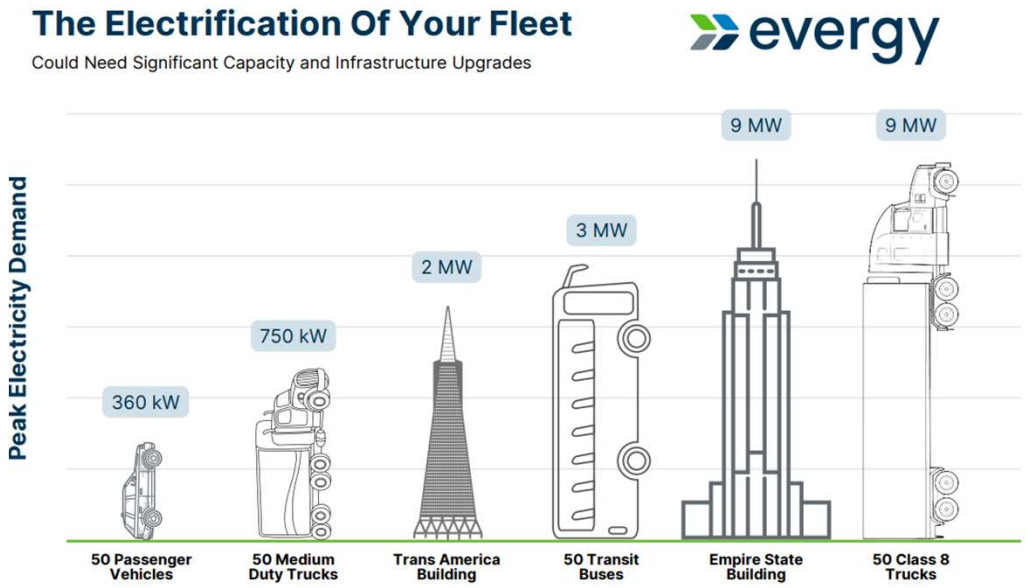
Projects Pipeline of new/active fleet electrification customers

Inquiries Documented fleet customers seeking support from Evergy

Ultimately, project volume is likely to justify a dedicated sub-org to support customer fleet electrification

Design Leadership Forum

This forum's goal is to ensure consistent, timely customer support across our territory



REPRESENTATION

- Dist Design (Co-Lead)
- Electrification (Co-Lead)
- External Affairs
- Distribution Engineering
- Corporate Strategy
- Regulatory
- Service Center Supervision
- Field Design Supervision

Stakeholders review ongoing projects to identify best practices and opportunities for new or improved processes

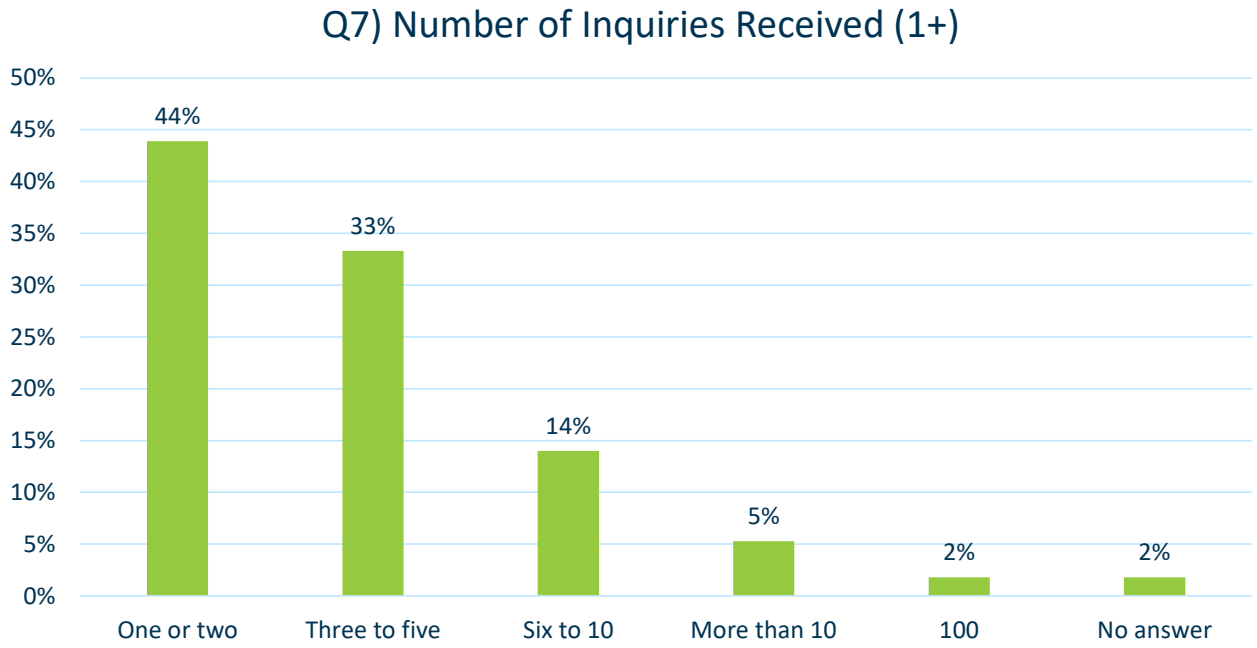
Methodology - 360 Degree Feedback

Surveyed 191 design team members across 40+ locations in two states

- Online survey
- 19 questions
- 57 completions

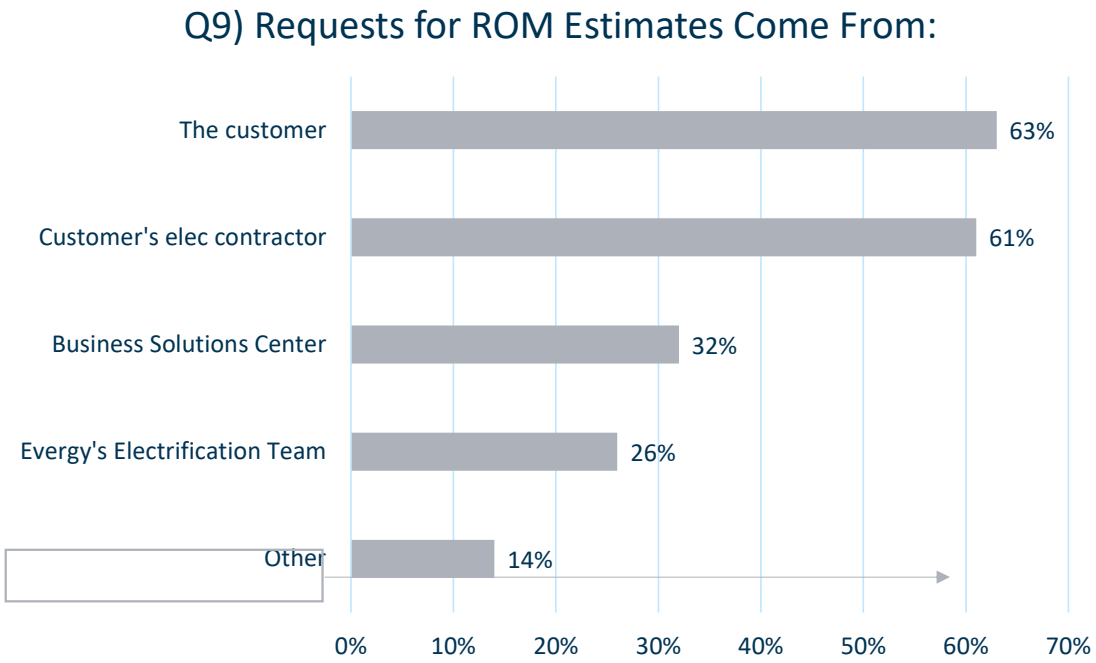
Number of Projects

Nearly half of respondents had received just one or two ROM inquiries



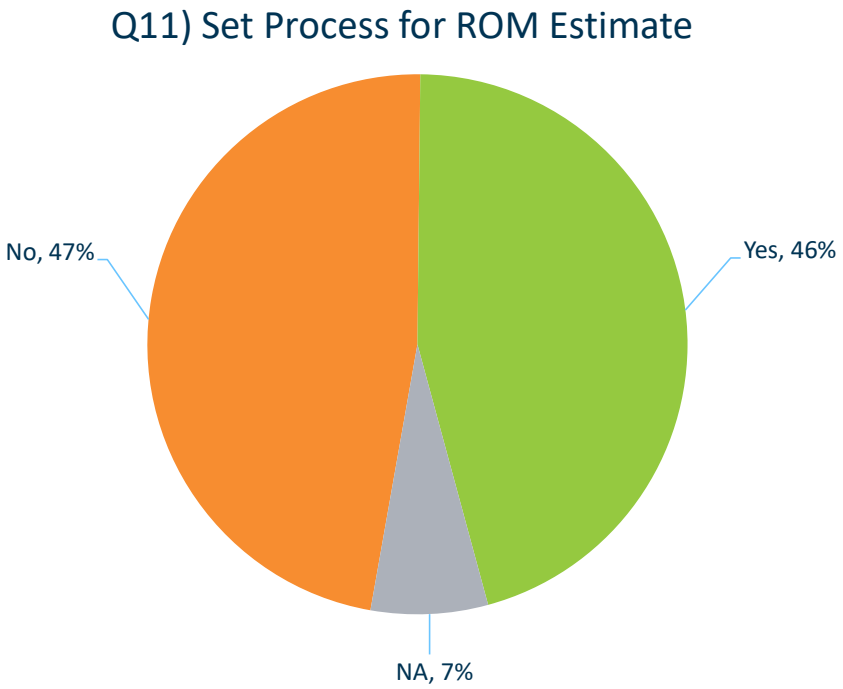
Source of Inquiries for ROM Estimates

Most requests come from the customer or the customer's electrical contractor



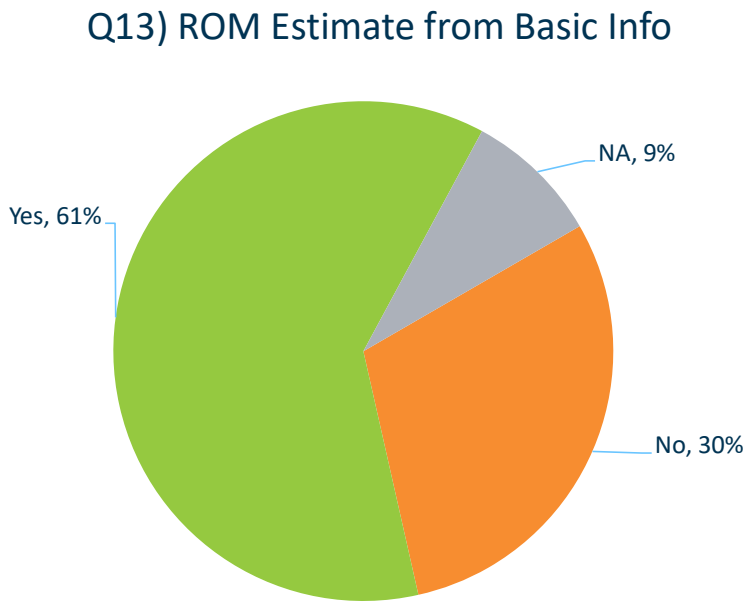
Set Process for ROM Estimate

Equal numbers said "No, there is not a set process" and "Yes, there is a set process"



ROM Estimate Calculated from Basic Information

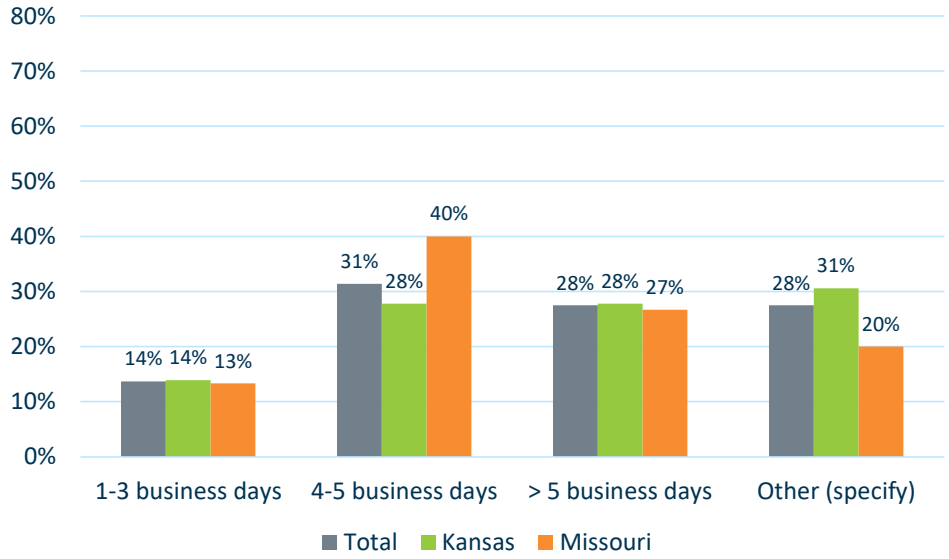
61% said Yes, an ROM estimate can be calculated from basic information



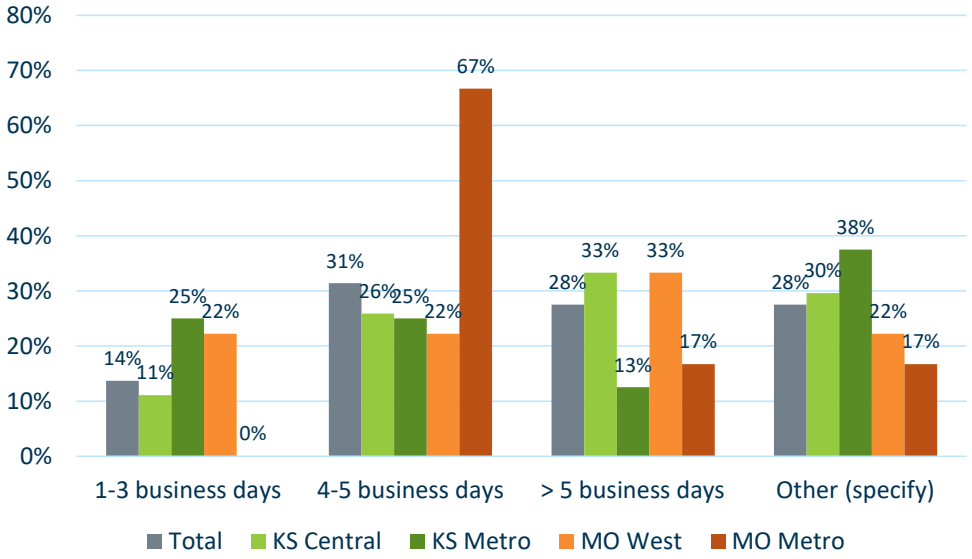
Turnaround Time: ROM Estimate (by State and Jurisdiction, excluding NA)

MO, and especially MO Metro, may have quicker completion times

Q16) Turnaround Time: ROM Estimate - by State

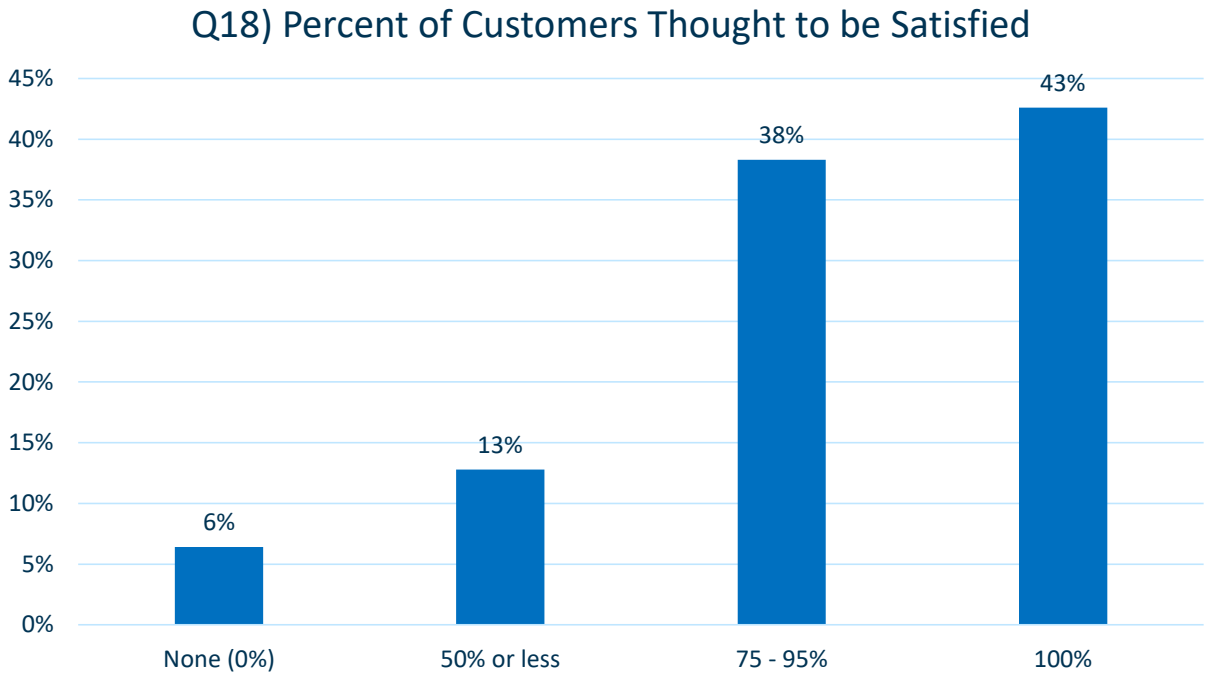


Q16) Turnaround Time: ROM Estimate - by Jurisdiction



Satisfied Customers

43% of respondents said that all their ROM estimate clients were satisfied



Key Findings

- Respondents listed 29 different work titles with a variety of experience levels, and most have received just one or two EV related projects requests in the last year
- Over half of the responses indicated there is not a set process to provide a ‘Rough Order of Magnitude’ and do this one of two ways: full design, estimator tool
- ROM estimates are typically completed in 1-3 or 4-5 business days, but open-end comments show up to six weeks depending on the workload and project backlog, 25% of designs for utility side upgrades are typically completed in 1-3 or 4-5 business days and open-end comments show up to 12 weeks.

Recommendations and Next Steps

Survey respondent's recommendations:
Standardization, more complete information from the customer, better communication, and more training.

Next Steps:
Central Design leadership team is creating a streamlined ROM process as a result of this effort and set a standard target for response time for these requests.

EV Charging Station Design Online Survey – Design Team

1. The purpose of this survey is to identify best practices and discover areas where we can get better together.

2. Name
3. Title
4. Work location name
5. Work location city
6. Work location state

7. In the past year, how many inquiries have you received for a rough order of magnitude estimate and/or provided a final design for utility side upgrades for an EV charging project?

   ____ (Terminate if answer = 0)

8. (Terminate skip)

9. How do the requests for this service typically come in? Please select all that apply.
   a. From the customer
   b. From the customer's electrical contractor
   c. From the Business Solutions Center
   d. From the Evergy Electrification Team (Julie Dietrich, Wendy Marine)
   e. Other (please specify)

10. How do you go about developing a rough order of magnitude estimate? (open-end)

11. Is there a set process to follow when providing a rough order of magnitude estimate?
    a. Yes
    b. No

12. What information is helpful for you to estimate the utility side upgrade cost? (open-end)

13. In your experience, can a rough order of magnitude (+/- 20%) can be calculated using basic information (i.e., maximum demand of the charging equipment that is being installed, aerial map that shows where the chargers will be in proximity to the electrical source)?
    a. Yes
    b. No

14. (IF Q13 = No) Why not?

15. What do you typically use to calculate revenue justification for fleet projects? Please select all that apply.
    a. Account load
    b. Site load
    c. Charger configuration max load
    d. Load profile for new fleet vehicles
    e. Standard allowance
    f. Other (please specify)

16. What is the typical turnaround time for a rough order of magnitude estimate?
    a. 1-3 business days
    b. 4-5 business days
    c. > 5 business days
    d. Other (please specify)

17. What is the typical turnaround time to deliver a final design for utility side upgrades for an EV charging project?
    a. 1-3 business days
    b. 4-5 business days
    c. > 5 business days
    d. Other (please specify)

18. Thinking about the customers that have requested rough order of magnitude estimates, what percent of them do you think are satisfied with Evergy at the completion of their project?

    _____%

19. Finally, based on your experience with providing rough order of magnitude estimates, what recommendations do you have to improve the process for both the customer and Evergy? (open-end)

Electrifying Fleet Transportation in the Northeast

Ryan Wheeler
Fleet Electrification Product Owner
National Grid
June 29, 2023

nationalgrid

It Comes Down to Clean Air and Climate Change

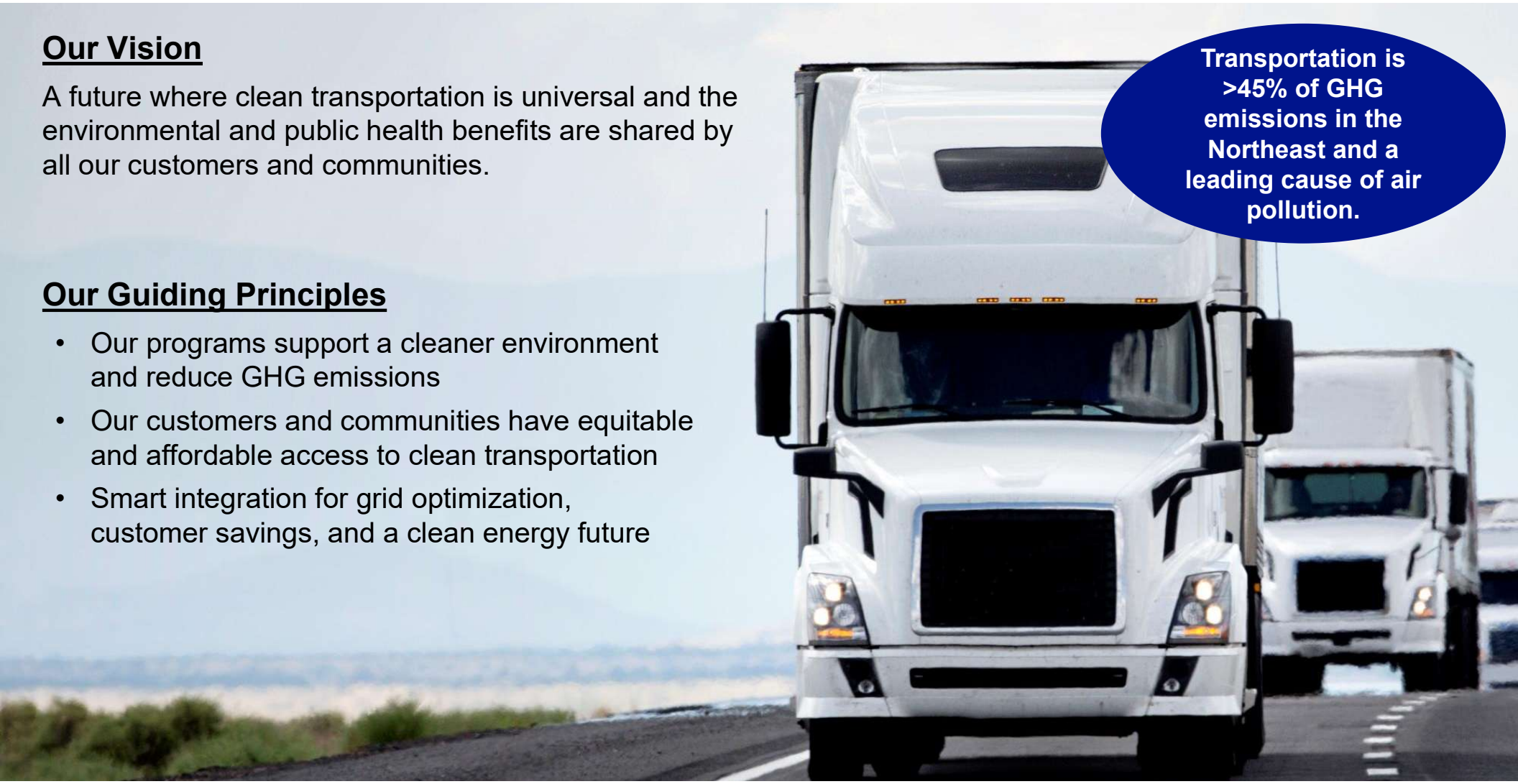
Our Vision

A future where clean transportation is universal and the environmental and public health benefits are shared by all our customers and communities.

Transportation is >45% of GHG emissions in the Northeast and a leading cause of air pollution.

Our Guiding Principles

- Our programs support a cleaner environment and reduce GHG emissions
- Our customers and communities have equitable and affordable access to clean transportation
- Smart integration for grid optimization, customer savings, and a clean energy future



We focus on three main customer segments

~$350M
of EV Programs

Public & Workplace Programs

Support customers to deploy publicly-available chargers and install & operate the stations more cost-effectively.

Why?
Limited public charging is one of the biggest barriers to EV adoption.

Residential Programs

Provide grid-optimized charging access and enable EV ownership for all residential customers.

Why?
Necessary to enable EV adoption, but barriers exist for >50% of customers.

Fleet Programs

Includes support for public & private fleets. Provides customers with a transition plan, guidance, & funding.

Why?
One MHDV EV truck or bus can reduce >8x more CO_2 and >30x $PM_{2.5}$ than a passenger vehicle.

Fleet Electrification: *A Path to Cleaner Air, Equitable Access, & Future Load Insight*

Why Fleets?

- **MHDV ZEV Goals:** ***30% of new sales by 2030***
- **CO_2:** *MHDV* ***8-30x CO_2 savings*** */ vehicle*[1]
- **Health:** *MHDV* ***30-150x $PM_{2.5}$ savings*** */ vehicle*[1]
- **Equity:** *Efficient path to* ***support LMI / EJC*** *communities*

Key Customer Sub-segments

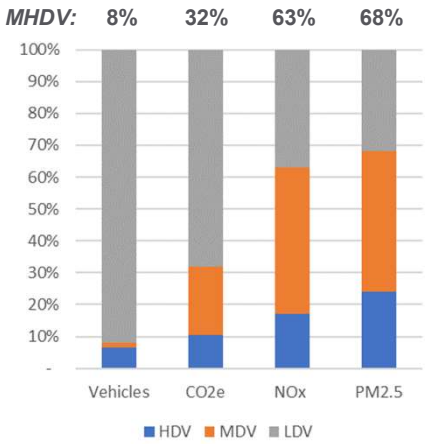
Fleet Assessments (*so far*)

275	MA public fleets eligible for no-cost assessments
90	Fleets completed or in process in MA[2]
~60%	Vehicles with EV options available are TCO positive
>$250M	Lifetime cost savings identified in 1st 71 MA fleets[2]
>200	Fleets investigating EVs in NY, including >79 schools[3]

Notes: 1) Savings / vehicle vs. passenger BEVs; 2) Fleet data as of May 2023. 71 assessments completed, and 19 in process; 3) NY fleets as of May 2023

MHDV electrification has many benefits

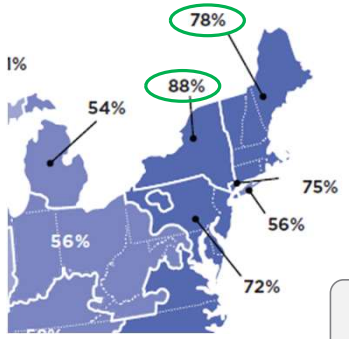
MHDV % of Vehicles & Emissions (US)[1]



Aggressive Clean Transportation Goals[2]

The Northeast Could be the Most Impactful to Electrify

Life Cycle GHG Emissions Reduction of Electric Delivery Trucks vs. Diesel[3]



CA: 80%
Northwest: 77%
TX: 63%

MHDV electrification is an efficient way to meet GHG & pollution goals… utilities are primed to support

Sources: 1) CALSTART, The Advanced Technology Truck Index: A US ZET Inventory Report, January 2022. 2) ny.gov, "Governor Hochul Announces Adoption of Regulation to Transition to Zero-Emission Trucks", December 30,2021. 3) Union of Concerned Scientists, Ready For Work, December 2019.

Fleet Electrification: *School Buses are crucial for our communities*

Beverly, MA V2G Project

School Bus Focus at National Grid:

- **>300 School districts in NY and MA…** external and internal goals to electrify
- **MA: School buses eligible for ~$30M fleet program (approved Dec '22) …** infrastructure, charging station rebates, and fleet assessments
- **NY: 100% of new bus sales by 2027…** all buses on the road ZEV by 2035, eligible for grid-side infrastructure and fleet assessments
- **Vehicle-to-grid (V2G) project experience…** Beverly, MA school buses provided ~7 MWh in 2022 (enough to power 233 homes for a day)

Customer Support: *Utilities Can Support the Fleet Electrification Journey*

~200 fleets to date

~$50M for fleets

$0.03-$0.05 per kWh rebate (MA)

	NAVIGATING THE UTILITY	PLANNING EV / EVSE ADOPTION	UTILITY INFRA.	CUSTOMER INFRA.	EV CHARGER (EVSE)	VEHICLE COSTS	OTHER SOFT COSTS	ONGOING OPERATIONS
	Single Points of Contact (SPOC)	Fleet Assessment Services	Infrastructure Make-Ready Programs		EVSE Rebates	State and Federal Rebates available	Fleet Operator Responsible	Fleet Operator Responsible, Utility Advises, Reduces Fuel Cost, Enables Resiliency
MA	• Hugh Reece, Program Mgr.	• 275 Public Fleets eligible for no-cost assessments (Transit, School Buses, Govt.)	• Up to 100% for L2 & DCFC Charging		• EJC: Up to 100% • Non-EJC: Up to 50%	• State and Federal Rebates available	• Fleet Operator Responsible	• Demand Charge Alternative • Off-Peak Rebate
NY	• Leslie Vishwanath, Program Mgr.	• All fleets eligible for site feasibility assessments & rate analysis	• Up to 90% for L2 & DCFC Charging	• *Pending regulatory order: TBD*	• State and Federal Rebates available	• State and Federal Rebates available	• Fleet Operator Responsible	• *Coming soon: Commercial Managed Charging Program*

Key: Primarily utility role | 3rd party options available | Customer primarily responsible | Customer & utility role

Note: Graphic for example purposes only – utility support models can vary significantly nationally. Graphic is not to scale nor exhaustive and contents are subject to change.

NY: MHDV Program

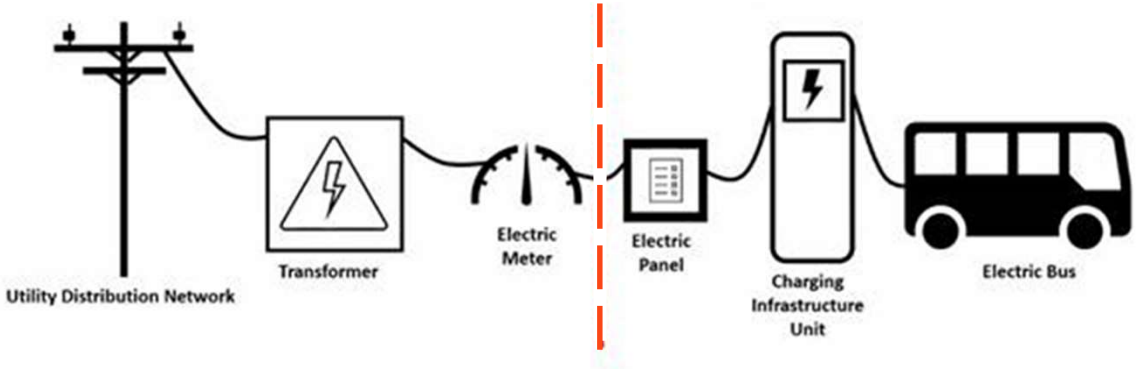
$6M Medium- and Heavy- Duty Vehicle (MHDV) Program

- Focused on disadvantaged communities (DACs)
- Covers up to 90% of *utility-side* make-ready costs
- Applicants must participate in the New York Truck Voucher Incentive Program (NYTVIP)

Disadvantaged Community (DAC) Map

Supported by National Grid (up to 90%)

Supported by EPA's Grant Program



Potential Changes Coming this summer…
NY Regulators may adjust eligibility, budget, and coverage

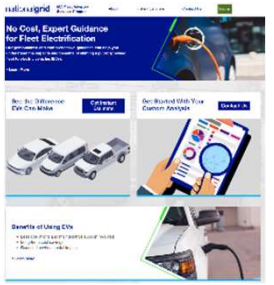
Source: EPA Clean School Bus Program Webinar, April 27, 2022.

MA: Fleet Offerings Summary

Fleet EV Charging Program:

- Supports fleet electrification by providing utility and customer-side EV infrastructure rebates for private and publicly owned fleets
- Tiered charger rebates for eligible public fleets

Fleet Advisory Services:



- No-cost, expert analysis to help 275 publicly-owned fleet customers in electrifying their fleet vehicles

EV Off-Peak Charging Program:

- Allows up to 1,000 fleet vehicles to earn rebates when they charge EV during off-peak times
- $0.03/kWh in the winter / $0.05/kWh in the summer

MHDV Charging Loads are Larger and Faster Than Projects Today

2030 MHDV Electricity Consumption

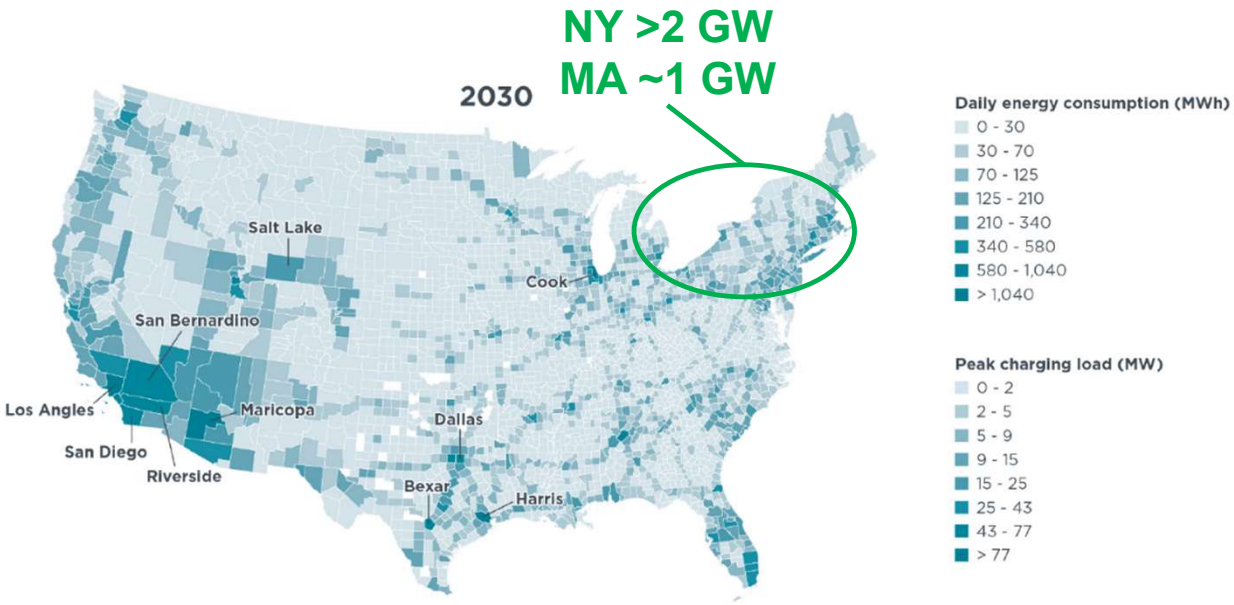
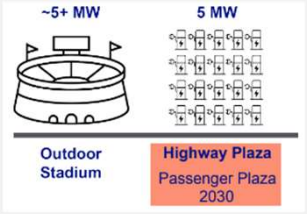


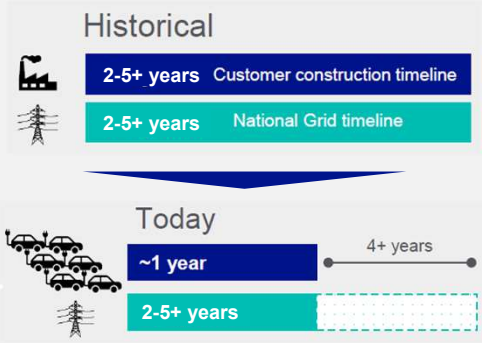
Figure ES1. County-level electric MHDV daily energy consumption in 2030 based on projections of near-term ZEV market growth (data labels indicate the ten counties with the highest energy consumption from electric MHDV).

Source: ICCT, Near-Term MHDV Infrastructure Deployment in the United States, May 2023.

MHDV Depot Characteristics:



- **Larger than stadiums:** Highway sites ***>30 MW in NY*** by 2045



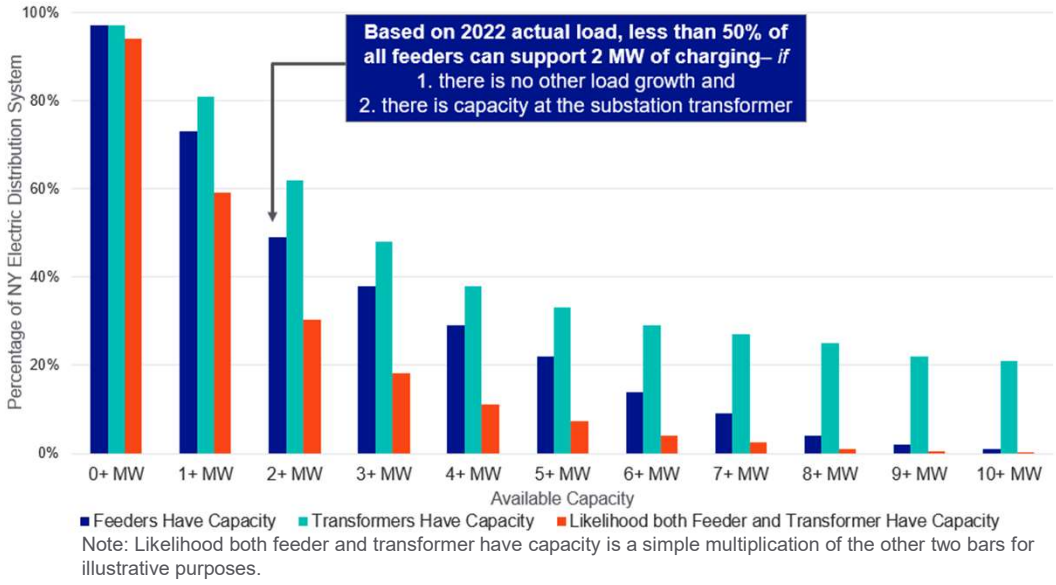
- **Faster than typical C&I:** Sites can be ***4+ years faster*** than typical timelines

National Grid Case Study: *New York Transmission and Distribution System Opportunities*

New York has a currently active proceeding to accelerate MHDVs:

1) ***Broad incentives to address financial challenges***
2) ***Additional technical advisory services***
3) ***Proactive grid investments to prepare the grid for these large spot loads***

Capacity of NY Distribution Feeders and Transformers



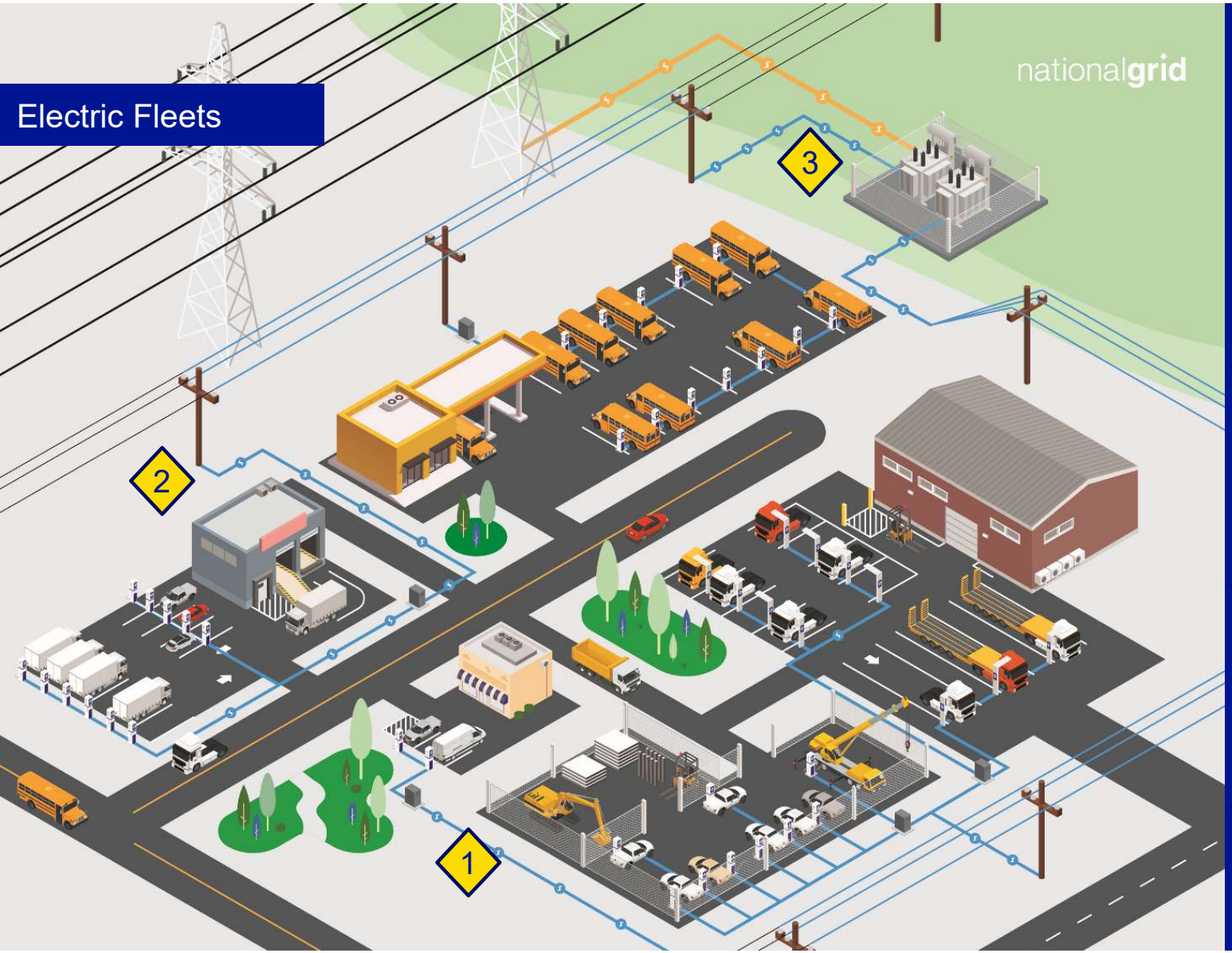
Note: Likelihood both feeder and transformer have capacity is a simple multiplication of the other two bars for illustrative purposes.

~50% of National Grid's distribution feeders can accommodate 2 MW loads:

- ***Areas of Capacity:*** Customers go "headroom hunting"
- ***Areas of Need:*** Proactively upgrade grid for known fleets

Source: National Grid distribution planning analysis, filed within NY PSC's Case 23-E-0070, June 5, 2023.

Electric Fleets



Why Contact the Utility Early?

1. **Fleet Clustering**
   Fleets tend to gather in certain areas, creating new electricity load centers

2. **Magnified Impact**
   Fleets lead to massive power – potentially larger than today's C&I sites

3. **Upgrade Timing**
   Grid upgrades require substantial lead-time, so 2027 requires planning now

National Grid EV Programs: *Program Resources*

Websites:

- EV Drivers Hub: **ngrid.com/evhub**
- Fleet EV Hub: **ngrid.com/evfleethub**

NY Additional Resources:

- Residential EV Charging Program: **ngrid.com/evhub-uny**
- Commercial Program site: **ngrid.com/uny-evcharging**
- Approved Contractor List
- EVSE Charging Station List
- Disadvantaged Community Map
- EV Load-Serving Capacity Map

MA Additional Resources:

- Commercial and Fleet EV Charging Program: **ngrid.com/ma-evcharging**
- Residential EV Charging Program: **https://www.nationalgridus.com/Residential-EV-Charging-Infrastructure-Program**
- Fleet Advisory Services Program: **https://fleetadvisoryma.nationalgrid.com/**

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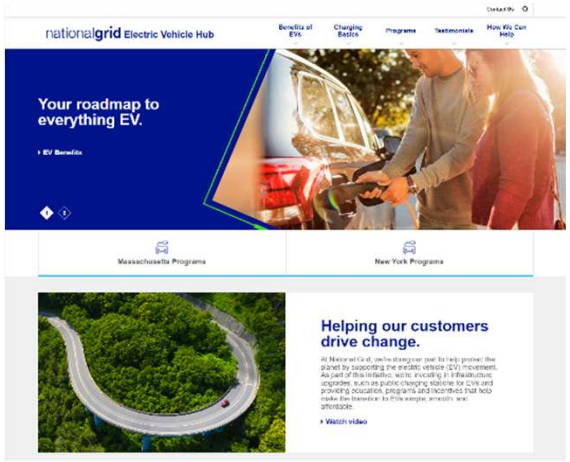
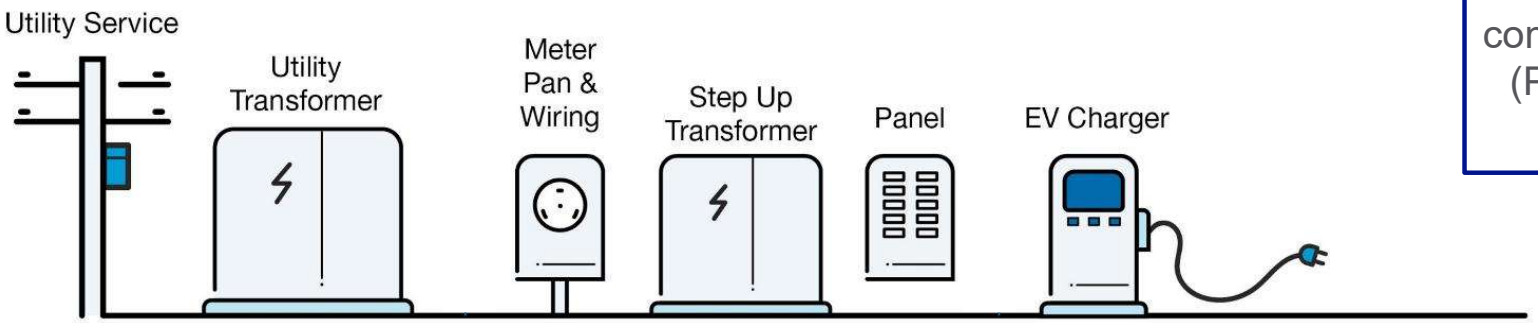
Email: Ryan.Wheeler@nationalgrid.com



Commercial Charging Infrastructure ("Make-Ready") Summary

What's Eligible?



Applies to all commercial customers (Public, Workplace, MUDs, Fleets)

Eligible for EV Charging Program Incentives | **Not Eligible**

Utility Constructs

- Customers may be required to pay for grid upgrades in excess of utility's design requirements

Customer Constructs

- Panel
- Conduit
- Trenching
- Design
- Permitting
- Step Up Transformers
- Wiring
- Customer Switchgear
- Charging Station (public only)
- Networking (comm. & MUD - public only)
- Station Installation
- Signs
- Bollard
- Maintenance

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Questions?


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