EV Charging Tech Toolbox: Impactful Access for Multifamily Charging Customers

Presented by:

CalETC

California Electric Transportation Coalition

CALIFORNIA ENERGY CODES & STANDARDS

A STATEWIDE UTILITY PROGRAM

WELCOME

- Who is in the room today?
  - Zoom Survey

- **Questions may be submitted through Zoom at any time during the session, but they will be saved until the Open Q&A.**
  - We may not be able to answer every question live, but there will also be opportunity for offline follow-up.

- To submit questions, use the "Q&A" button in Zoom.

SURVEY

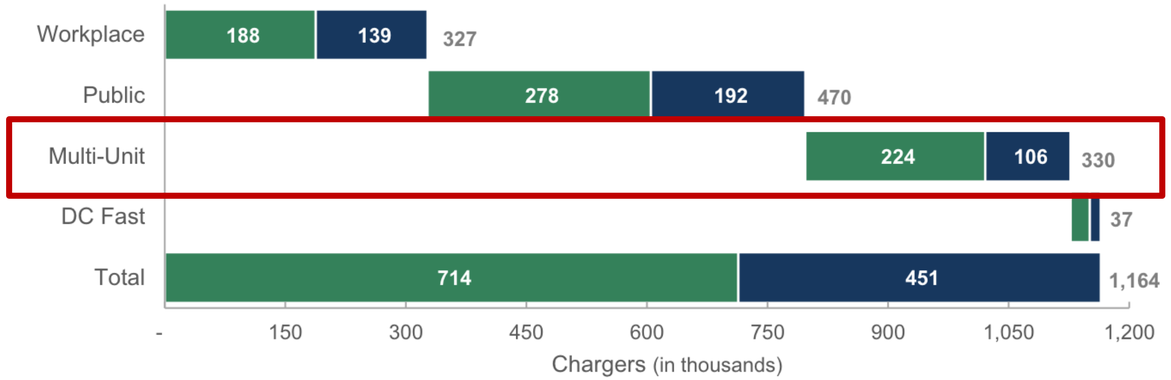
Which of these categories best describes your role in the EV charging ecosystem?

- Agency / Government
- Charging provider (manufacturer or service provider)
- Building owner / operator
- EV charging advocate
- Utility
- EV Owner (including fleet owners)
- Other

VISION / MOTIVATION FOR THIS EVENT

- Multifamily EV charging is a major barrier to EV adoption
- Millions of chargers will be needed by 2030 in CA alone
- Many stakeholders are working on parts of this problem, but rarely do we all gather in one place to discuss the issues
  - Each pain point could be the focus of a panel in our EV Tech Toolbox series. **The survey at the end will help us achieve this!**
- Our ultimate goal is to drive conversation around the next generation of EV-related code language using perspectives from diverse stakeholders
  - This could take the form of recommendations for the CalGreen Code
  - Code changes for existing buildings
  - New equipment standards

Figure 5: Projected 2030 Charger Counts to Support 5 Million and 8 Million Light-Duty Zero-Emission Vehicles from the First AB 2127 Assessment



The first AB 2127 assessment projected that California would need more than 700,000 shared private and public chargers in 2030 to support 5 million ZEVs as called for in AB 2127 and nearly 1.2 million chargers to support 8 million ZEVs to achieve the goals of the Executive Order N-79-20. Counts for chargers at workplaces, public destinations, and multiunit dwellings generally indicate the number of Level 2 chargers needed. In some cases, Level 1 chargers may be sufficient at select multiunit dwellings. These values do not include chargers at single-family homes.

Source: CEC and National Renewable Energy Laboratory

AGENDA AND EXPECTATIONS

[8:00 – 8:10] Introduction from CalETC

[8:10 – 8:35] Panelist Intro Presentations

[8:35 – 9:00] Moderated Panel Discussion

[9:00 – 9:45] Open Q&A

[9:45 – 10:00] Wrap-Up | Survey | What's Next

Reminder: This event is primarily an interactive dialogue with our panelists. **Questions may be submitted through Zoom at any time during the session, but they will be saved until the Open Q&A.**

PANELISTS

Mohammad Akhlaghi

CEO & Co-Founder
Plugzio

Zach Jennings

CEO
Chargie

Brad Juhasz

Product Line
Manager
Eaton

Maya Wolf

Principal, Clean Energy
Transportation
PG&E

INTRO PRESENTATIONS

PANELIST BIO – MAYA WOLF

Maya Wolf, Principal, Clean Energy Transportation at Pacific Gas & Electric Co.

Maya's work focuses on how PG&E can deploy charging infrastructure in its communities to enable an equitable, affordable, decarbonized and resilient state with 3M EVs connected to the grid in its service territory by 2030. Maya has developed utility pilots and programs to deploy EV chargers and support resiliency for electrified transportation. She interfaces closely with state agencies to align policy with the State's EV goals. Maya also touches vehicle-to-grid integration, grid capacity planning and utility tariffs, among other things.

Maya has held previous roles at the utility in Power Generation, Resource Adequacy, and Emergency Temporary Generation. She received her BA from Reed College and her MBA from Cornell University. She lives in Berkeley, CA and when not working on transportation electrification, rides her (non-electrified) bikes often.

Supporting Scaled EV Deployment for Multifamily Housing

Maya Wolf | Principal, Clean Energy Transportation
maya.wolf@pge.com

July 9, 2024

Together, Building
a Better California

PG&E's 10-YEAR "TRUE NORTH" STRATEGY

PURPOSE: WHY WE EXIST

Delivering for our hometowns

Serving our planet

Leading with love

STANDS: WHAT WE WILL DELIVER

PEOPLE

Everyone and everything is always safe

Catastrophic wildfires shall stop

It is enjoyable to work with and for PG&E

PLANET

A healthy environment and carbon-neutral energy system shall be the reality for all Californians

PROSPERITY

Our work shall create prosperity for all customers and investors

WHERE WE ARE HEADED

CUSTOMERS

Rebuild trust with our customers and our local communities by delivering **affordable energy** & **excellent customer experiences** every day

ENERGY SYSTEM

Architect an electric system that is:
- **Resilient** to climate change
- **Decarbonized** 24 x 7 x 365
- **Optimized** to local and system needs

Electric

Unleash the **full potential of electric vehicles**

Gas

Continue to **invest in a safe and reliable gas system**

Boldly shape the future through:
- **Targeted electrification**
- **Greening** the gas supply
- **Shaping** California's policy

HOW WE WILL DO IT

FOUNDATIONAL CAPABILITIES

- Public & workforce safety and risk mitigation
- Diversity, equity, inclusion & belonging
- PG&E Performance Playbook
- Co-worker development and well-being
- Simple, affordable financial model
- Efficient end-to-end work management system
- Regional service model
- IT platforms and data management capabilities
- Stakeholder, policy, and regulatory advocacy

VIRTUES: WHO WE ARE

Trustworthy, Empathetic, Curious, Tenacious, Nimble, Owners

PG&E's EV Offerings for Multifamily Housing

EV Charge Network (Closed)

- 2018-2021 flagship program that installed L2 charging at 192 multifamily and workplace sites
- Varying levels of cost coverage, up to 100%

EV Charging Solutions for Parking-Constrained Residences Pilot

Will test and evaluate on-site and off-site EV charging solutions for residents of a) multifamily housing and b) single-family housing with parking constraints, to help determine PG&E's path to rapid residential EV adoption

- Limited demonstration projects

Rule 29 - EV Infrastructure Tariff

- Pays for and coordinates the design and deployment of service extensions for EV charging stations

Multifamily Housing and Small Business EV Charger Program

- Installs Level 1 and Level 2 chargers at multifamily and small business sites with existing panel capacity
- Varying levels of cost coverage, up to 100%

Pre-owned EV Rebate Program

Post-purchase rebate for pre-owned EVs:

- Purchase or lease an eligible pre-owned EV
- Submit an application within 180 days
- If eligible, receive a $1,000 rebate

Income eligible applicants will receive an additional $3,000 rebate

EV-Specific Electricity Rates

To apply for open programs, visit **pge.com/ev**.

Multifamily Housing and Small Business EV Charger Program

Direct install of L1 / L2 chargers at MFH & SB sites to increase access to charging for underserved customers

Program Overview

Audience: Multifamily Housing & Small Businesses

Model: Turnkey install

Incentive: No-cost direct install

Timeline: 2022-2024

Status: Program Launched

Targeting to serve an estimated total of **450 sites** and install approximately **2,000 ports**

Eligibility

- Multifamily Housing or Small Business
- PG&E Electric Customer
- Excess panel capacity

Additional Program Details

- **Equity component: no-cost direct install; cost-share for sites outside of equity communities**
  - Outreach from PG&E and implementer community-based organization networks critical
- **Pilot aims to:**
  - Increase access to charging for underserved customers
  - Test ability to defer panel and/or grid upgrades while still meeting customer charging needs with low-power charging
- **Third-party implemented** (Ecology Action)
- **Program website**: www.pge.com/msevcprogram

CalETC

PANELIST BIO – ZACH JENNINGS

Zach Jennings, Chief Executive Officer, Chargie

As the Chief Executive Officer of Chargie, Zach is responsible for leading the company's strategic vision, guiding its growth and driving innovation within the EV charging ecosystem. With leadership experience in both the renewable energy and real estate industries, he has brought next-generation solutions to properties around the country for more than a decade. Prior to Chargie, Zach served as the Senior Vice President of Operations at PCS Energy, where he led the team to become the largest installer of commercial solar systems in Los Angeles. He also led acquisition efforts for the Indianapolis Neighborhood Housing Group and Cincinnati Neighborhood Housing Group. He holds a bachelor's degree in Business Administration and Real Estate from the University of San Diego.

Chargie

Energy for the road ahead.

Zach Jennings, Chief Executive Officer

CalETC EV Tech Toolbox | July 9, 2024

Meet Chargie

With deep roots in clean energy and a vision driven by real estate owner/developer Paul Jennings, Chargie began installing EV charging solutions in 2017.

Today, Chargie is a leader in EV charging. We provide a turnkey solution including engineering design, hardware options, OCPP-compliant software, installation, ongoing management, and 24/7 support.

1,000+
buildings

15,000+
installations

$100 million+
in rebate funds secured

98%+
network availability

Turnkey Solutions

We provide property owners with end-to-end project management, installation, ongoing maintenance, and support. Our in-house team does it all.

1. Survey & Evaluate

We send our team to provide a site survey and evaluation

2. Plan & Design

Our team of engineers designs and customizes a plan that works best for you

3. Permit & Approve

We work directly with the city and utility companies to get plans approved

4. Install & Validate

Installation can take as little as two weeks; users are ready to charge in no time

5. Manage & Operate

We manage and monitor your network with 24/7 network insights and metrics

RECENT PROJECT

The Riviera Apartments
Tulare, CA

- 96 Level 2 chargers
- 168 units and 306 parking spaces
- Networked stations allow Chargie to monitor station availability, diagnose issues quickly, troubleshoot remotely, and more
- Funded by SCE’s Charge Ready rebate program

State-of-the Art Hardware Solutions

Level 2 and Level 3 options provide right-sized solutions for multifamily communities, workplaces, fleets and more.

Level 2 Charging Stations

Recommended for Multifamily

- 32 Amps and 7.68 kW of output power
- Our software employs energy optimization and load management tools
- Wi-Fi & dual cellular connection offer backup connectivity
- RFID compatible
- Allow multiple users or assign parking depending on your needs
- 3-year coverage guaranteed
- Configurable to run any similar OCPP-compliant software

Level 3 Fast Charging Stations

- 76 Amps and 50 kW of output power
- Our software employs energy optimization and load management tools
- Allow users to pay via the credit card and mobile pay terminal
- 2-year coverage guaranteed
- Configurable to run any similar OCPP-compliant software

Funding Assistance

- We’ve saved properties over $100 million on EV charging projects through rebates, incentives, and grants
- Critical for properties, especially those in disadvantaged communities
- Since 2017, we’ve worked closely with CA utilities including:
  - Los Angeles Department of Water and Power
  - Southern California Edison
  - Sacramento Municipal Utility District
  - Peninsula Clean Energy
  - Silicon Valley Clean Energy

Chargie

sales@chargie.com

PANELIST BIO – MOHAMMAD AKHLAGHI

Mohammad Akhlaghi, Co-Founder and CEO, Plugzio

Mohammad Akhlaghi is the co-founder and CEO of Plugzio, his third successful startup.

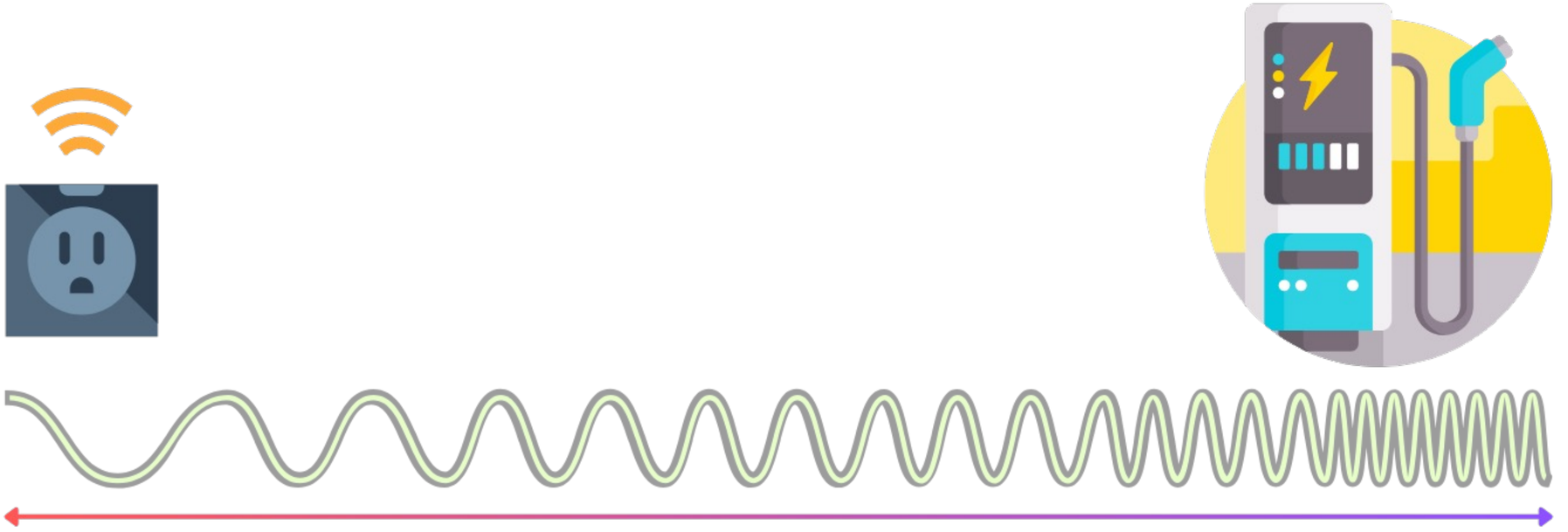
Recognized for his entrepreneurial achievements, Mohammad has received numerous awards, including the prestigious Top 30 Under 30 Award. He is also a proud member of the Forbes Technology Council.

2024

PLUGZIO

Make
Charging
Simple

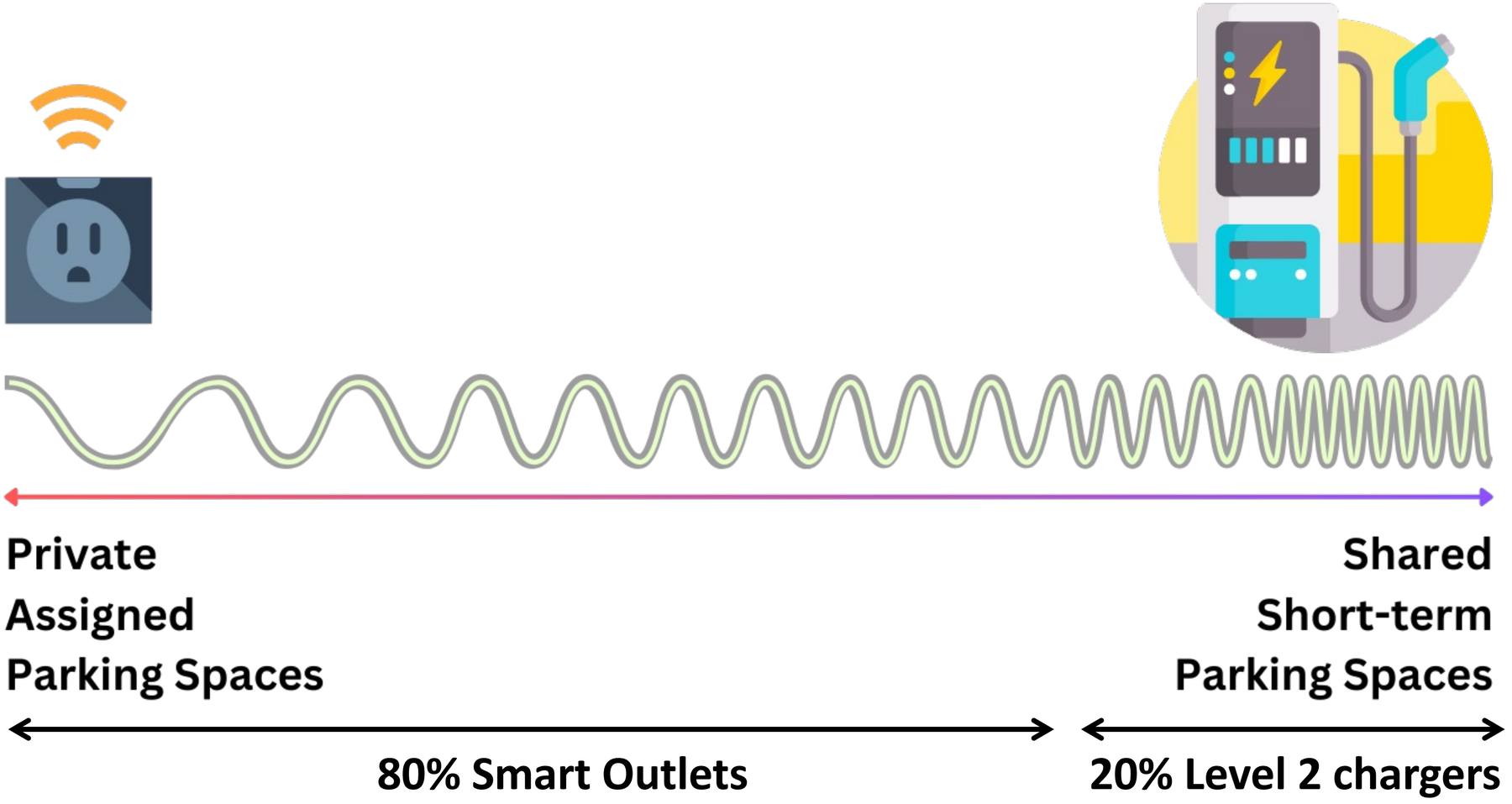
Monitor, Manage, Monetize
access to power in a single platform



Slow
Overnight
Smart Outlet

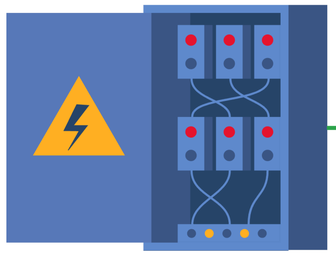
Fast
Load-balanced
EV Chargers

Most Common Installation



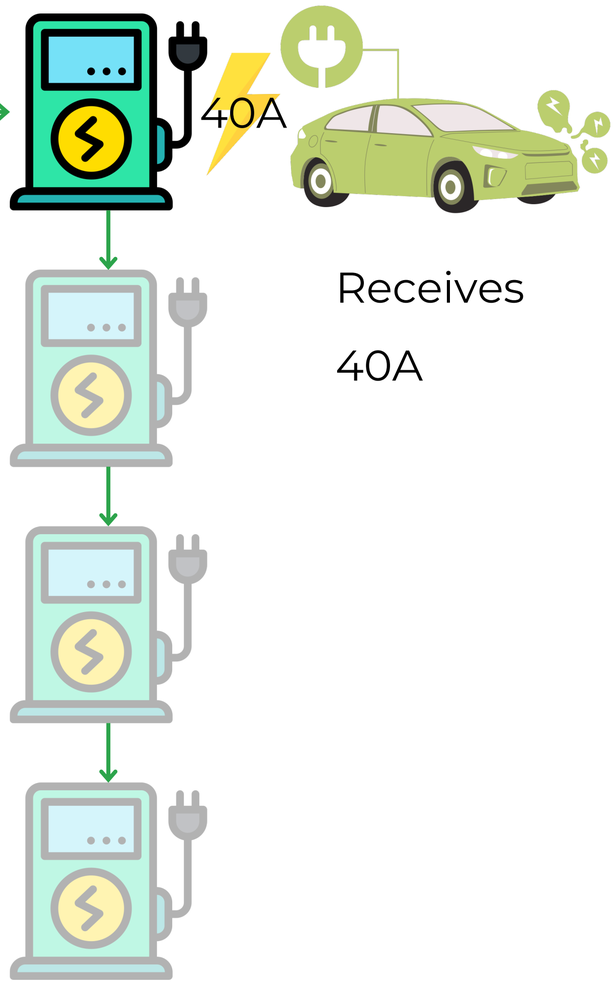
PLUGZIO


Limited Power
POWER
POWER



240V 40A

1 EV

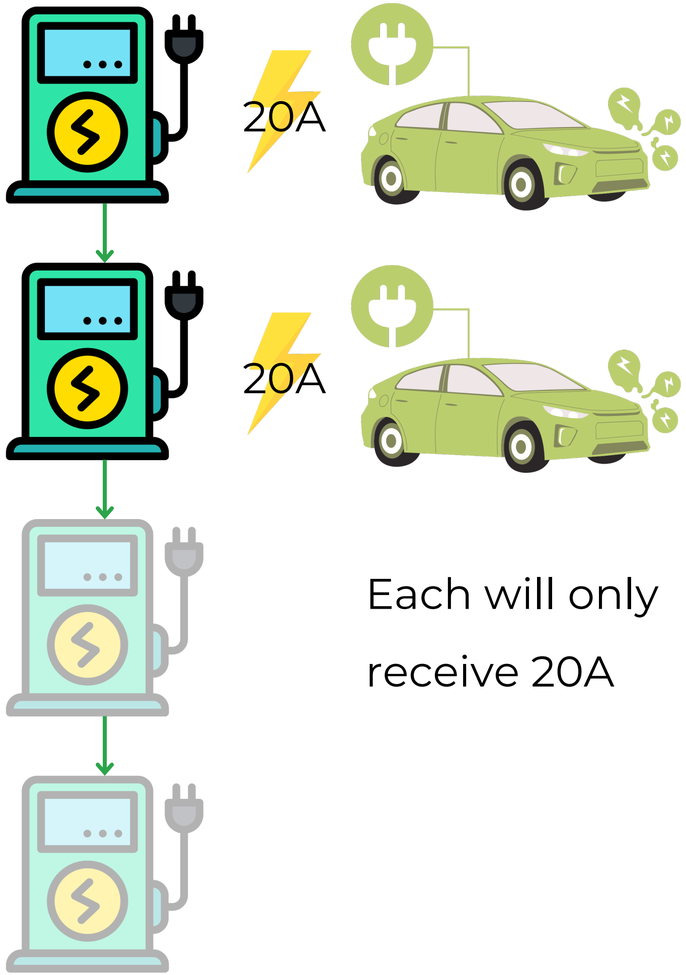


40A

Receives

40A

2 EVs



20A

20A

Each will only

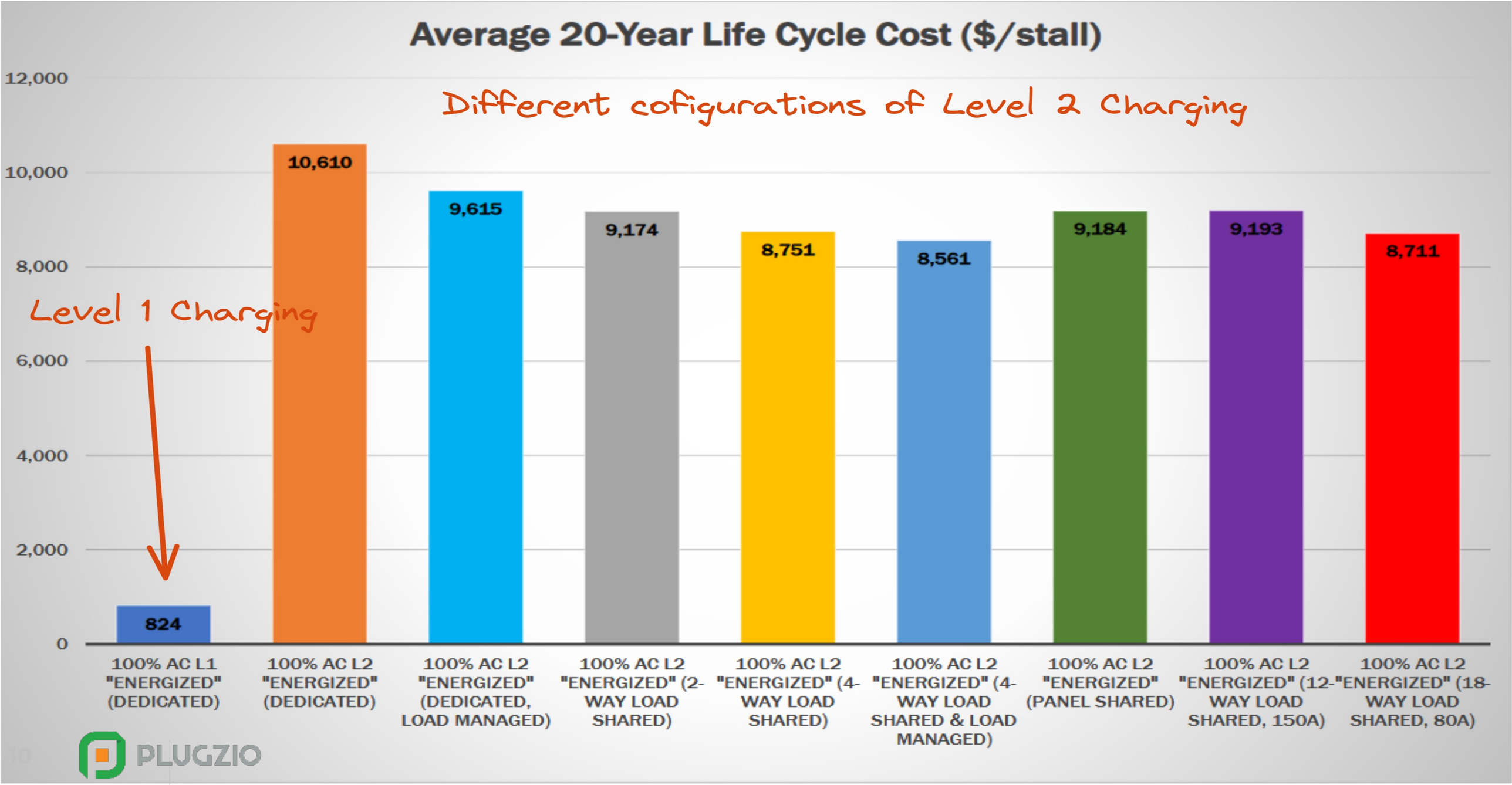
receive 20A

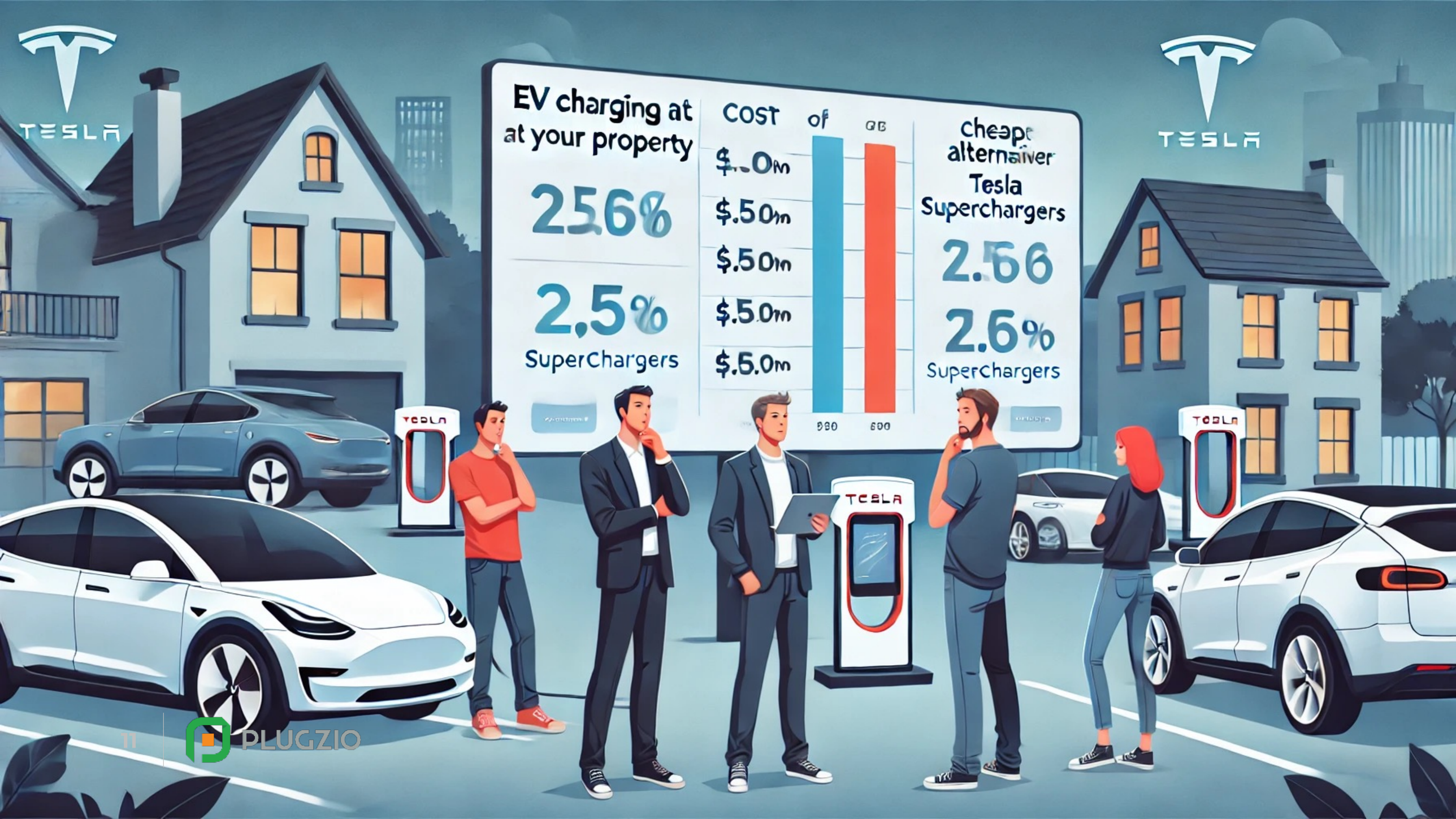
PLUGZIO

Property Limitations

1- Power
2- Budget

PLUGZIO


Average 20-Year Life Cycle Cost ($/stall)
Different cofigurations of Level 2 Charging
Level 1 Charging
12,000
10,000
8,000
6,000
4,000
2,000
0
824
10,610
9,615
9,174
8,751
8,561
9,184
9,193
8,711
100% AC L1 "ENERGIZED" (DEDICATED)
100% AC L2 "ENERGIZED" (DEDICATED)
100% AC L2 "ENERGIZED" (DEDICATED, LOAD MANAGED)
100% AC L2 "ENERGIZED" (2-WAY LOAD SHARED)
100% AC L2 "ENERGIZED" (4-WAY LOAD SHARED)
100% AC L2 "ENERGIZED" (4-WAY LOAD SHARED & LOAD MANAGED)
100% AC L2 "ENERGIZED" (PANEL SHARED)
100% AC L2 "ENERGIZED" (12-WAY LOAD SHARED, 150A)
100% AC L2 "ENERGIZED" (18-WAY LOAD SHARED, 80A)
PLUGZIO


TESLA
TESLA
EV charging at
at your property
256%
2.5%
SuperChargers
Cost of
$.0m
$.50m
$.50m
$.5.0m
$.5.0m
cheap
alternative
Tesla
Superchargers
2.56
2.6%
SuperChargers
TESLA
TESLA
TESLA


EV
EV

2024

PLUGZIO

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PANELIST BIO – BRAD JUHASZ

Brad Juhasz - Product Line Manager, Eaton

Brad Juhasz is a true veteran of the EV charging industry with nearly 20 years of product and technology leadership in the sector.

- *In 2005, he developed, marketed, sold and supported the first commercial EV charge station management platform in the world*
- *In 2010, he co-founded EV Connect where he developed and launched the first open-standards-based charge network in North America in 2011*
- *He's personally installed and commissioned more than 1,000 charge station in various applications from commercial to fleet to multifamily residential*
- *He is currently the product line manager for EV Charging Infrastructure products and initiatives at Eaton Corp, a $20B/year market leader in the power distribution market*
- *Brad holds a bachelors degree in mechanical engineering and masters degree in business from UCLA*

Eaton Electric Vehicle Infrastructure Solutions

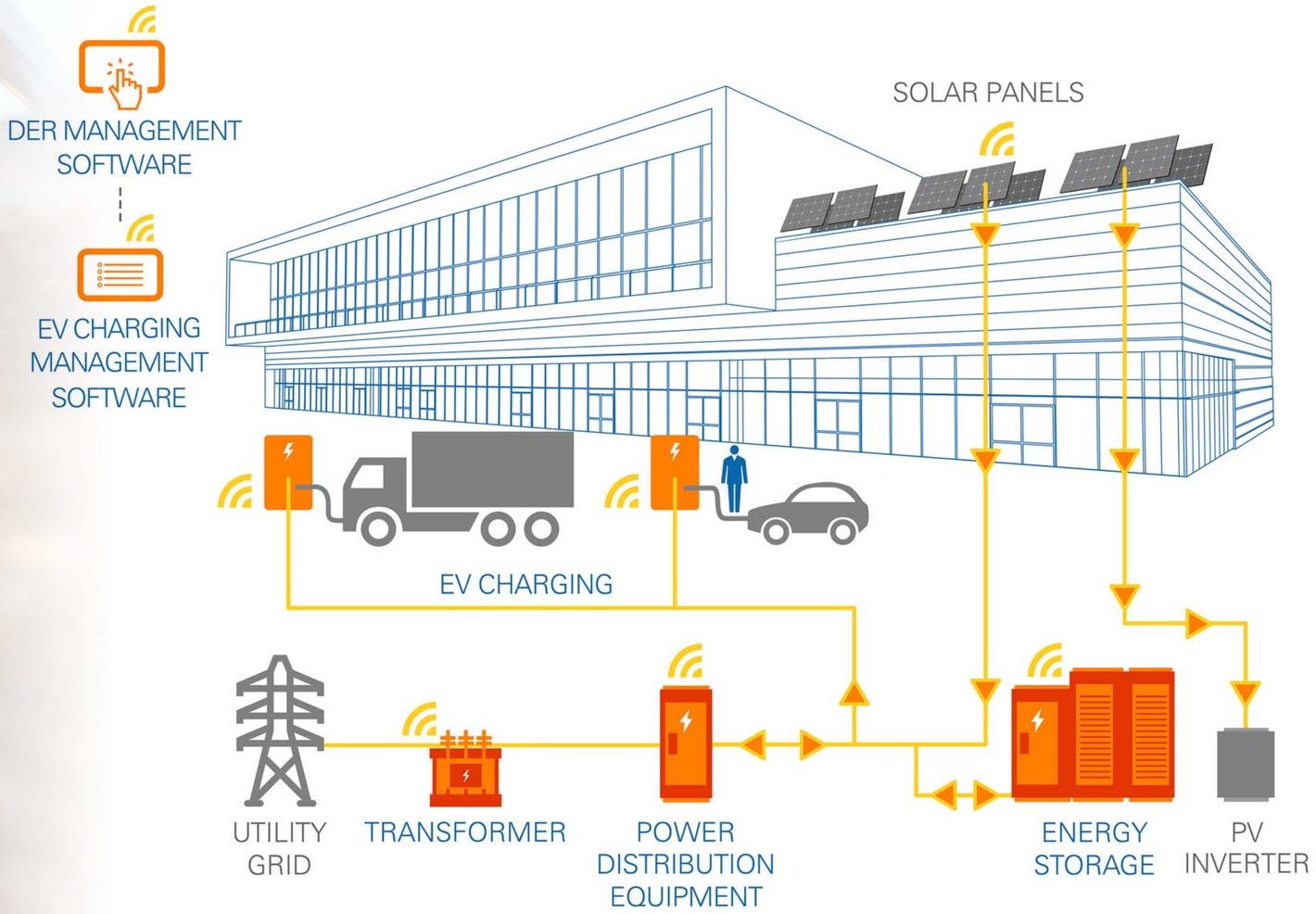
Brad Juhasz
Product Line Manager

Powering Business Worldwide

Who is Eaton?

We are an ***intelligent power management*** company made up of ***85,000+ employees***, doing business in more than ***175 countries*** with annual sales of over ***$22 billion USD***.

We make what matters work



EVERYTHING AS A GRID

EATON
Powering Business Worldwide

Eaton Connected Solutions are:

Easy

- Sell, Configure & Order
- Deploy & Commission
- Service & Support

Integrated

- Packaged in unique ways that add value

Complete

- From the grid interconnect to the EV

A comprehensive portfolio of hardware & software for EV charging applications







	GM EV smart breaker charger	Green Motion Building & Building Pro	Green Motion Fleet & Fleet Pro	EV charging panel and switchboard	EV charging busway	DC charging	Charging Network Manager
Residential	✓						
Multi-family/ workplace	✓	✓		✓			✓
Commercial/ destination		✓	✓	✓		✓	✓
Fleet/public			✓		✓	✓	✓

Powering Business Worldwide

Eaton.com

BradJuhasz@Eaton.com

MODERATED PANEL DISCUSSION

Q1: What is the one thing you wish building owners or residents knew about multifamily EV charging retrofits?

Q2: What do you view as the most formidable barrier when installing EV charging in existing multifamily buildings?

Q3: Do you see quality (power level) or quantity (number of ports) as the higher near-term priority?

Q4: What is the CALGreen EV code change that would most improve access to EV charging for multifamily residents?

OPEN Q&A

Reminders:

We may not be able to answer every question live, but there will be opportunity for offline follow-up.

To submit questions, use the "Q&A" button in Zoom.

WHAT MAY BE NEXT?

- Future event topics
  - Balancing customer charging session costs with site host needs for cost recovery
  - Parking lots that are grid-interactive and ready-to-export
  - Charging with the Universal EV Socket Connector?
  - **Contact us with ideas at evtechtoolboxideas@gmail.com**

- Materials from this event will be emailed to all participants
  - Tech Toolbox website is in development, and we will reach out when it is live

- Survey… coming right up!

SURVEY

- How would you rate the usefulness of this event [0-5]?
- What topics should we consider for the next Tech Toolbox session?
- Any other feedback on how we can improve the event?

Thank You For Attending!

CalETC

California Electric Transportation Coalition

https://caletc.com/

CALIFORNIA ENERGY CODES & STANDARDS

A STATEWIDE UTILITY PROGRAM

Pacific Gas and Electric Company · Southern California Edison Energy for What's Ahead · SDGE · LA DWP Los Angeles Department of Water & Power · SMUD

https://title24stakeholders.com/about-us/