Plug-in to Municipal Best Practices
Community EV Charging Station Workshop

Metropolitan Area Planning Council (MAPC)

Tuesday, May 8, 2018

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fleets for the future

Today's Agenda

9:00 AM	**Welcome & Poll Everywhere Activity**
9:10 AM	**EV Charging Station Selection & Group Purchasing with MAPC** – Megan Aki, MAPC
9:25 AM	**Installation & Maintenance Best Practices for EV Charging Stations** – Justin Ries, ChargePoint
9:40 AM	**EV Charging & Car Share in Newton** – Bill Ferguson, City of Newton
9:45 AM	**Community Conversations on Lessons Learned & Innovative Approaches**
10:35 AM	*Coffee break & stretch*
10:45 AM	**VEH102 Vendor Presentations on Equipment & Services with Q&A**
11:20 AM	**Next Steps with MAPC**
11:30 AM	*Networking with Vendors & Communities*

Housekeeping

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MAPC: ABOUT US

- Regional Planning Agency
- 101 cities and towns
- 90+ employees
- Wide range of planning expertise

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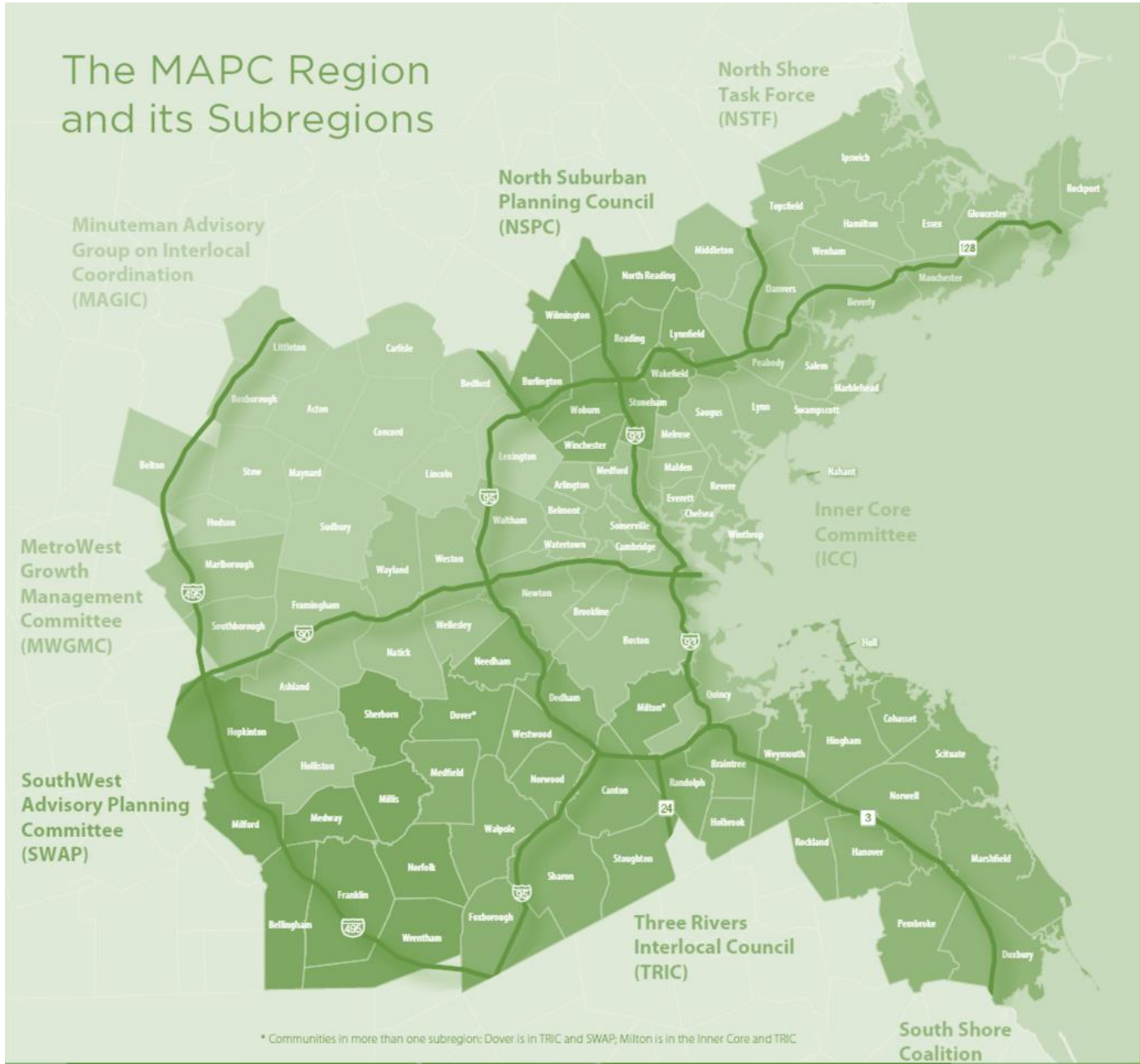
Smart Growth & Regional Collaboration



MAPC: CLEAN ENERGY

Regional Energy **Projects**

- ESCO Procurement
- Regional Solar Initiative
- LED Streetlight Purchasing Program
- Community Electricity Aggregation
- Green Mobility Program
- Energy Resiliency

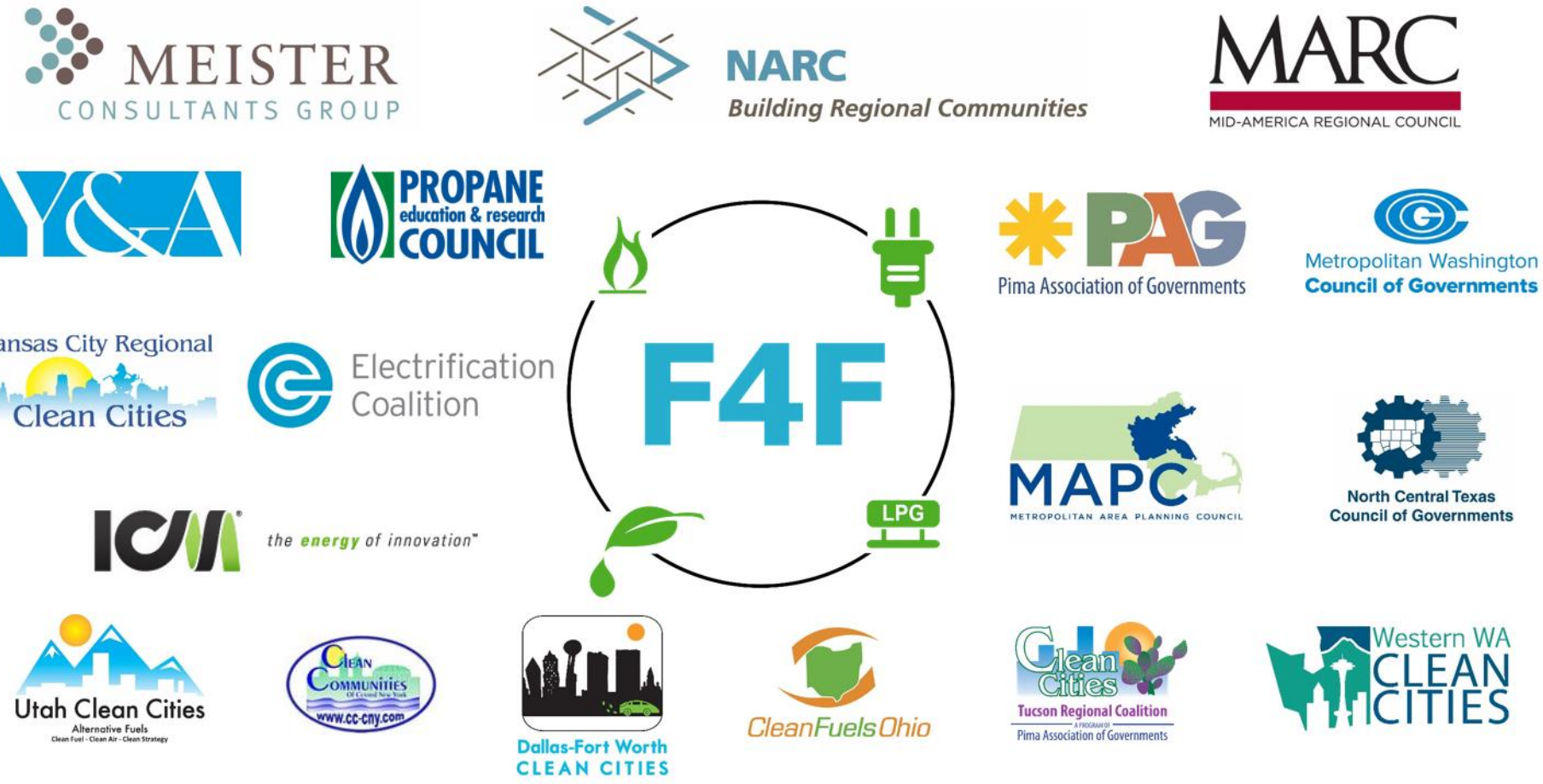
Climate and Energy **Planning**

- Connecting municipalities with incentives + plug-and-play programs
- Community energy and climate baselining, planning, and strategizing
- Outreach programming and education
- Net Zero Planning

Energy **Technical Assistance**

- Grant Writing
- Green Communities Designation
- Methane Leaks
- Solar Permitting and Zoning
- State and Local Policy
- Net Zero Guidance & Education

FLEETS FOR THE FUTURE



Accelerate the deployment of **alt. fuel vehicles (AFVs)** by reducing their incremental costs and building fleet capacity to plan procurements.

Propane, electric, and natural gas vehicles and infrastructure.

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Text "**MAPCMTG**" to **22333**
to join the poll activity

OR

Go to **PollEv.com/mapcmtg**
in a mobile browser

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EV Charging Station Selection & Group Purchasing with MAPC

Megan Aki, MAPC

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ASSESS THE NEED

WHO needs to use the station?

HOW will they use the station?

WHERE will they be parked?

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ASSESS THE NEED

City/town employees

Fleet operators

Residents

Visitors

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ASSESS THE NEED

- 9-5 work hours
- Re-charge midday
- Overnight parking
- Extend range for a trip

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ASSESS THE NEED

- City/town hall lot
- DPW garage
- At home or workplace
- Service stations

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SELECT A STATION

Level I		
Level II		
DC Fast Charging		

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SELECT A STATION

Level I

120V *6-10 hours for a charge*

Overnight charging for vehicles that will travel under 40 miles during the day

Use cases: staff during work day, long term parking at commuter lots or vehicles parked overnight

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SELECT A STATION

Level II

204-240V *1-3 hours for a charge*

Most practical municipal applications, can add 10-25 miles of range in one hour of charging

Use cases: Commercial use or work vehicles that are heavily used and need a midday charge

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SELECT A STATION

DC Fast Charging

480 V *30 minutes for a charge*

Applications make most sense along highways at rest areas for a short duration charge that provides range for long distance travel

Use cases: best for highway sites to enable longer vehicle trips

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SELECT A SITE

Proximity to Power

Mounting Type

ADA Compliance

Wayfinding & Visibility

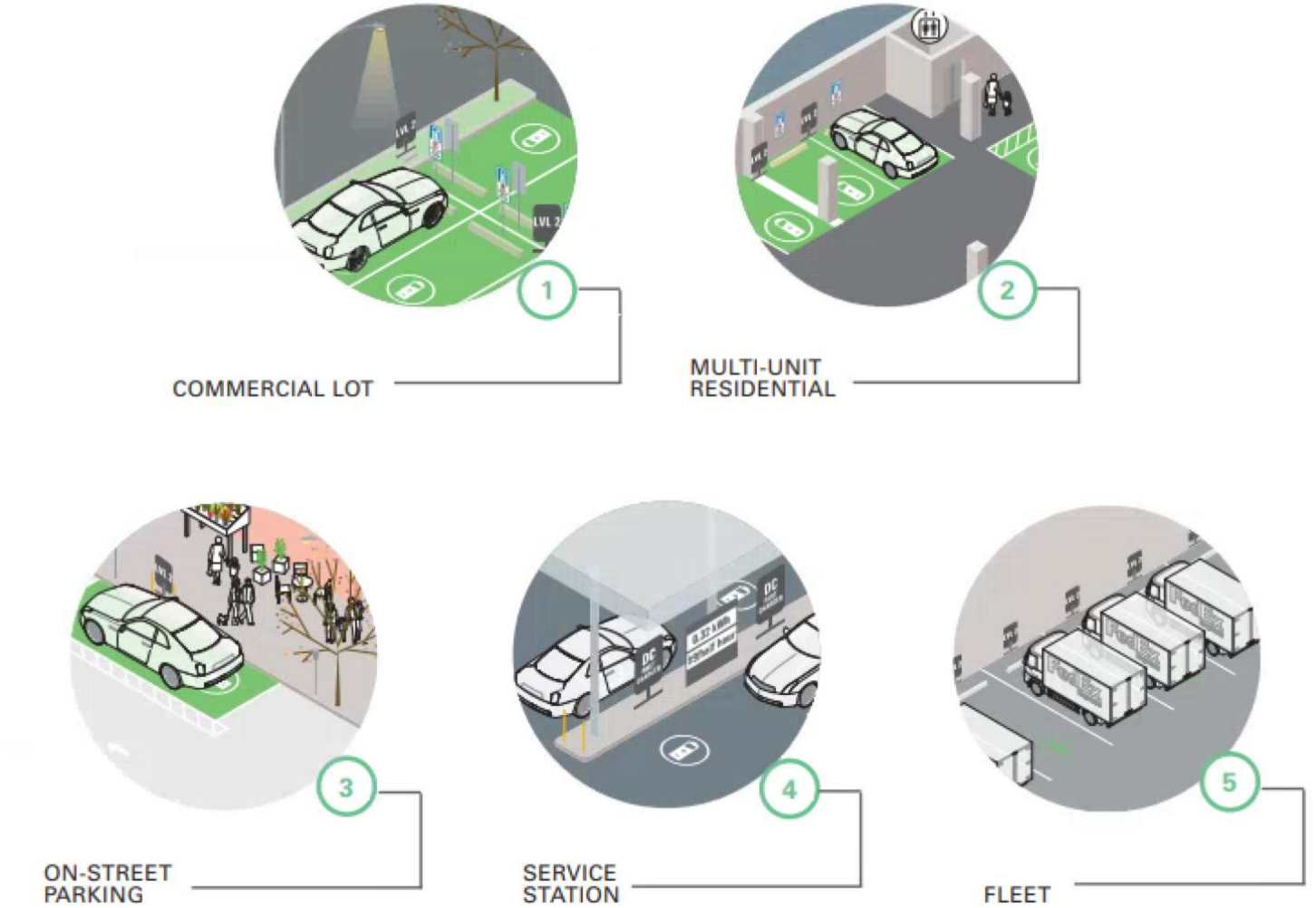

Image source: NYSERDA Siting and Design Guidelines for Electric Vehicle Supply Equipment, 2012

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PROCURE & INSTALL

1. Request 3 responses from vendors on COMMBUYS
2. Receive site assessment for install costs
3. Finalize statement of work and select best value vendor
4. Coordinate install with vendor

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VEH102 VENDORS

Category 1
CHARGING STATIONS

- ClipperCreek, Inc.
- Verdek
- GraybaR
- EVSE LLC
- WattZilla
- Voltrek

Category 2
IDLE REDUCTION

- enow

Category 3
AFTERMARKET CONVERSIONS

- Magmotor
- Verdek
- National Fleet Hybrids
- XLhybrids

VEH102: Statewide Contract for Advanced Vehicle Technology

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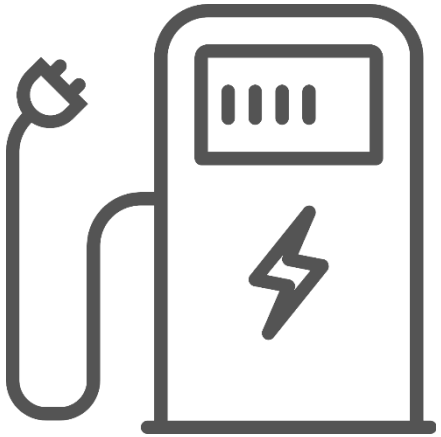
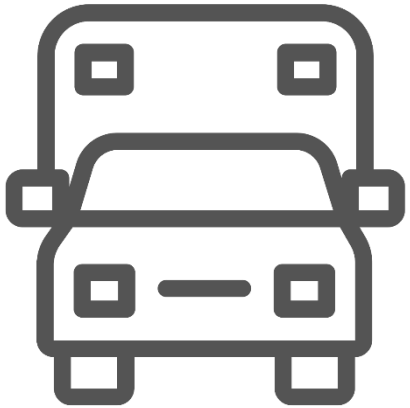
2018 GROUP PURCHASING WITH MAPC



EV CHARGING STATIONS



AFTERMARKET CONVERSIONS

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AFTERMARKET CONVERSION BID

AFTERMARKET CONVERSIONS

1. Hybrid electric conversions
2. Plug-in hybrid electric conversions

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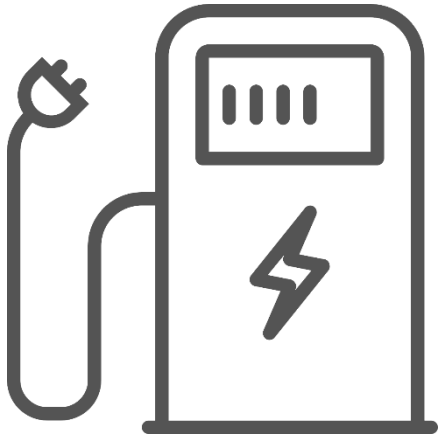
EV CHARGING STATION BID



EV CHARGING STATIONS

1. Level I and II stations
2. Coordinated site assessments
3. Installation

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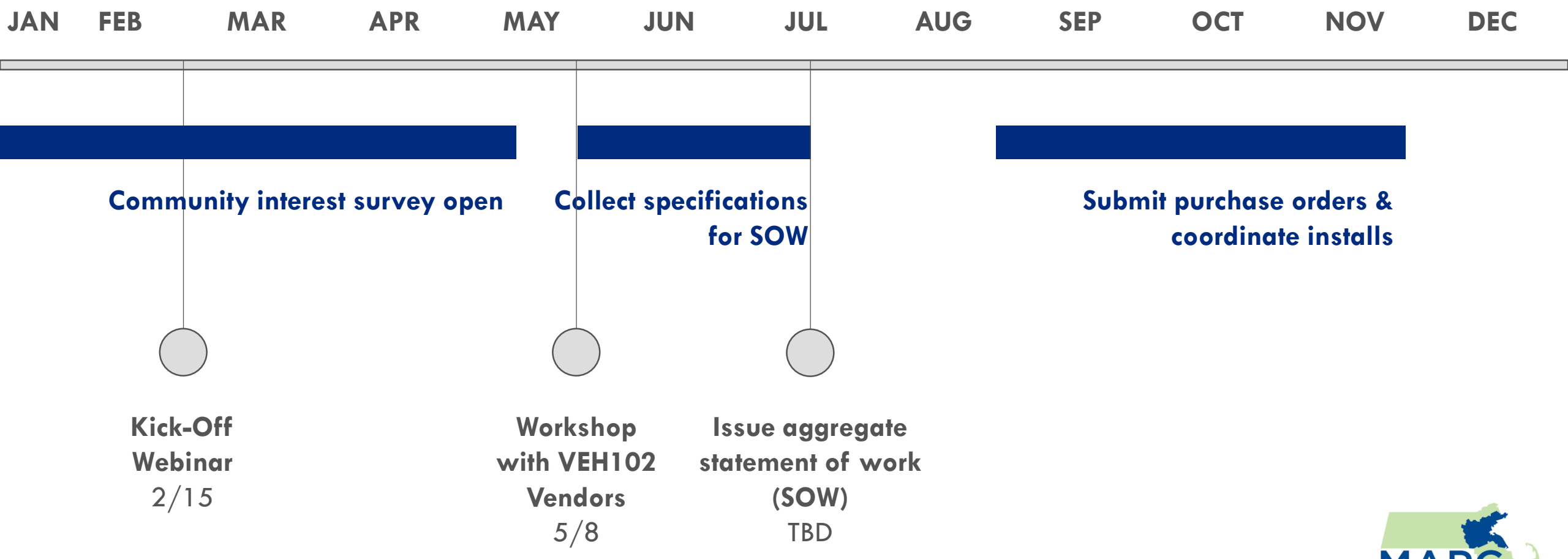
VEH102: CATEGORY 1 VENDOR OFFERINGS

VEH102 Vendor	Manufacturer	Volume discounts through VEH102	Level 1	Level 2	DCFC	Installation
ClipperCreek	ClipperCreek	3% (Level I) 4-13% (Level II)	X	X		Coordination with third party contractors
EVSE LLC	EVSE LLC	None	X	X		Yes, through their installation partner (ABM)
Liquidsky Technologies Inc.	Liquidsky Technologies Inc.	5-27%	X	X		-
Greybar Electric Co. Inc.	Leviton	5-15%		X		-
Verdek	ChargePoint, Inc.	4-10% (Level II) 2-5% (DCFC)		X	X	Yes
	AeroVironment	2-5%		X		Yes
	Schneider Electric	30-35%		X		Yes
	Efacec	2-5%			X	Yes
Voltrek	ChargePoint, Inc.	11-18% (Level II) 3-5% (DCFC)		X	X	Yes
	AeroVironment	10-15 (Level I) 40% (Level II)	X	X		Yes
	General Electric	10-24%		X		Yes

TIMELINE

Exact timing subject to change, per community purchasing needs



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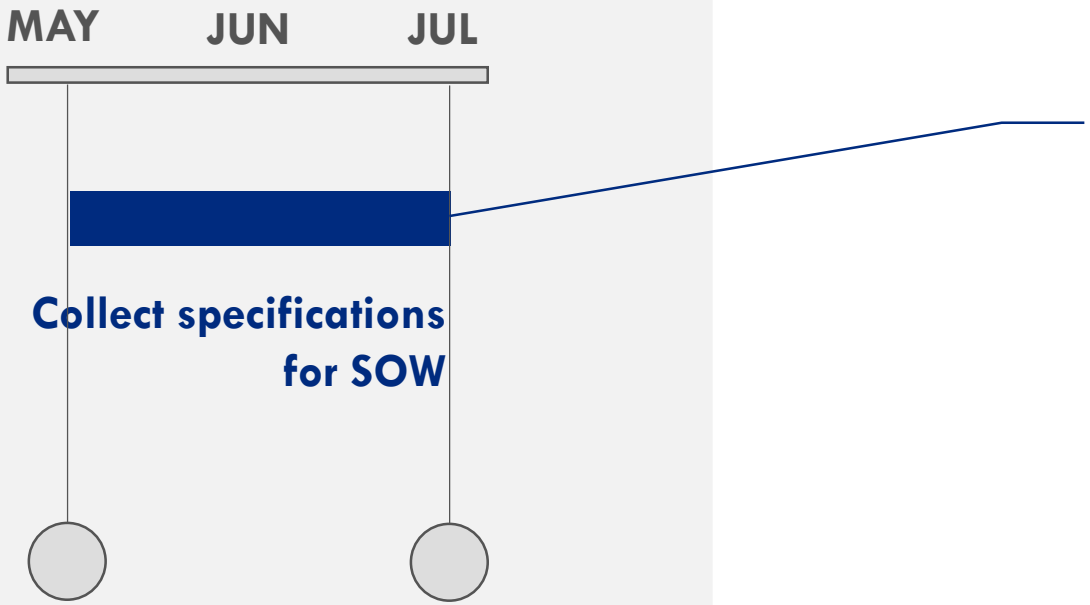
SPECIFICATIONS NEEDED



EQUIPMENT | **SITE**

For each station:

- ❑ Level of Charge
- ❑ Voltage
- ❑ # of Ports
- ❑ Payment System
- ❑ Network Capable (Y/N)
- ❑ Desired Network Functions
- ❑ Mounting Type
- ❑ Cable Management

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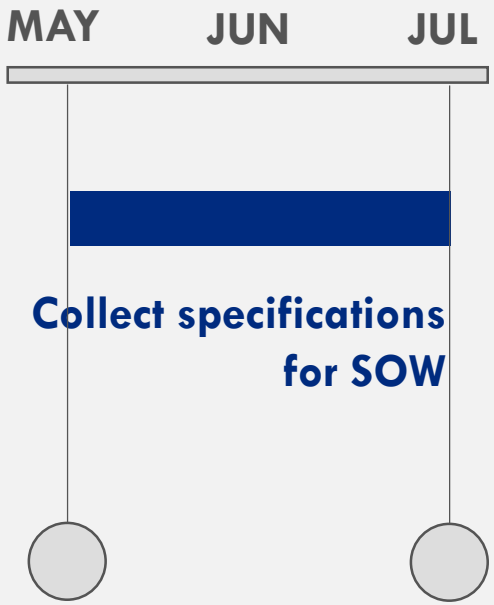
SPECIFICATIONS NEEDED



Workshop with VEH102 Vendors
5/8

Issue aggregate statement of work (SOW)
TBD

EQUIPMENT | **SITE**

For each station:

- ❑ Approx. site address
- ❑ Existing site load capacity
- ❑ Distance from power source
- ❑ Cell signal availability (Y/N)
- ❑ Excavation needed (distance /surface type)
- ❑ Physical protections needed

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Installation & Maintenance Best Practices for EV Charging Stations

Justin Ries, ChargePoint

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Driving Your EV Charging Project
chargepoint

The World's Largest and Most Open EV Charging Network

Largest Community of EV drivers

+ 80% of new EV drivers join ChargePoint network every month
+ A driver plugs into our network every 2 seconds

Charging Everywhere

+ 55,000+ charging spots in US alone
+ 800+ ports added every month

We're Established and Growing

+ Almost $300 million in funding
+ 74%+ share of commercial smart charging marketshare

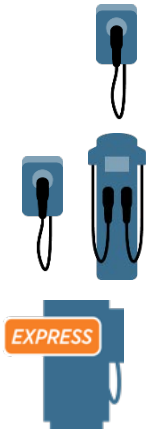
We Are the Industry Leader

According to Time, Bloomberg, CNBC, Navigant Research

Design and Planning Considerations

- 1) Choose the Right Hardware/Software/Vendor
  - Charging Speeds & Station Types
    - Value of a Network
    - Ongoing Maintenance/Repairs
- 2) Site Assessment for Install Costs
  - Installation Options
  - Site Considerations
- 3) Future Expansion
  - Laying Conduit
  - Power Management

Charging Speeds & Station Types



EV Charging Options						
	Amperage	**Voltage**	**Kilowatts**	**Typical Charging Time**	**Connector**	**Primary Use**
AC Level 1	12–16 amps	120 V	1.3–1.9 kW	12–60 hours 2–5 miles RPH	J1772 connector	• Backup charge • Some Home use
AC Level 2	6–80 amps	208 V or 240 V	Up to 19.2 kW	2–4 hours 10–30 miles RPH	J1772 connector	• Park and charge • Residential, commercial and public charging
DC Fast Charge	70–125 amps	208 V or 480 V	24–150+ kW	15–45 minutes 100–250 miles RPH	SAE Combo, Tesla, ChaDeMo connector	• Commercial, public • Charging while traveling long distances (en-route)

Commercial Level 2 Charging Station

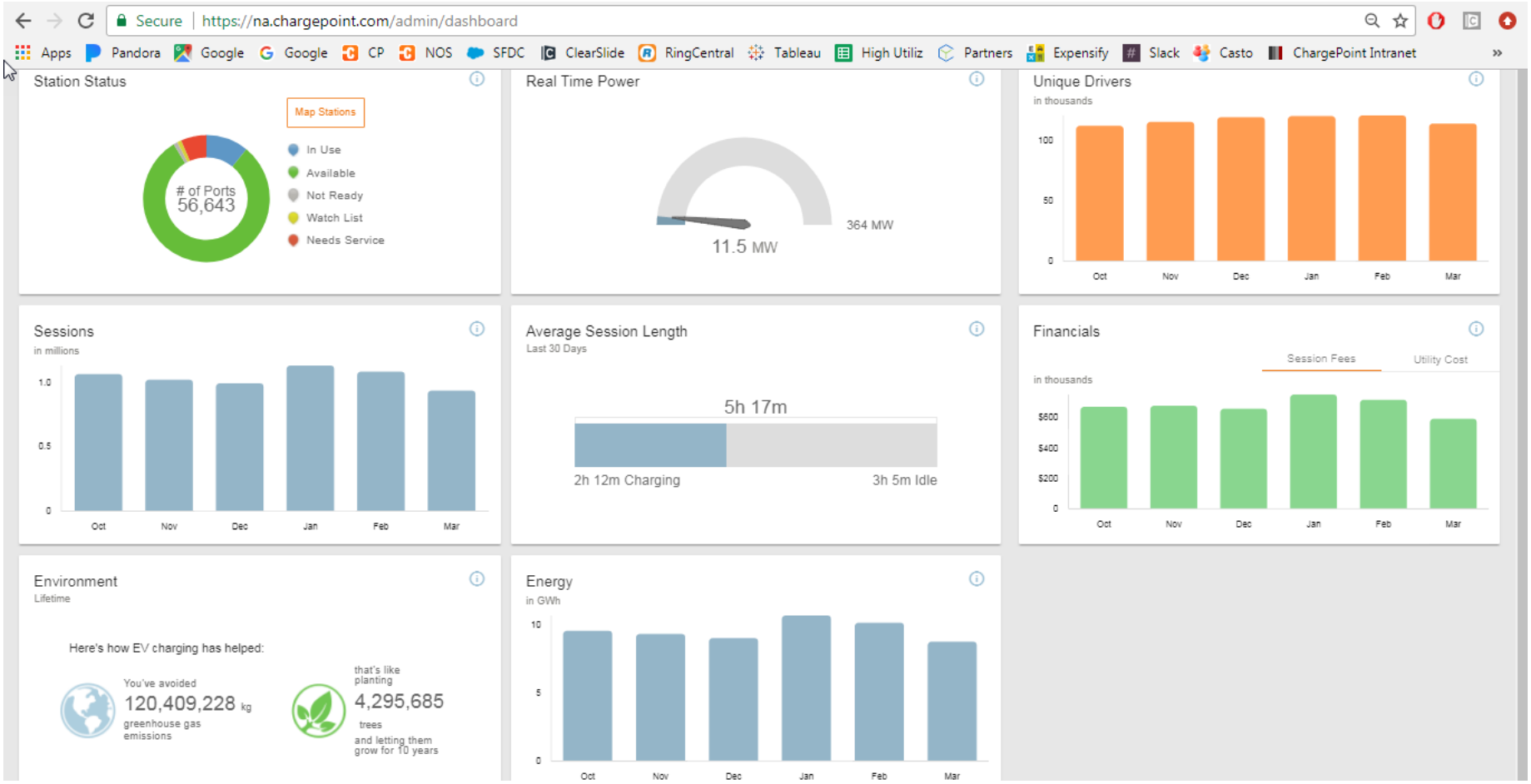
- **Speed**: Provides 20-25 RPH (miles of Range Per Hour).
- **Clean Cord Technology**: Self-retracting, maintenance free, ultra-lightweight cord management system.
- **Power Management Options**: Cut installation costs and double the number of parking spots served.
- **Branding and Customization**: Promote your brand with an LCD screen and customizable signage.
- **3G “Smart” Connectivity**: Allows for many driver experience enhancements as well as station owner flexibility controls.
- **Consumer Friendly User Interface**: Available in multi languages (English, French, and Spanish), interactive animated user interface, and touch buttons for input (glove and ice operations).
- **Compatibility**: 100% of EVs can charge with our Level 2 Chargers including Tesla

Value of “Smart” Networked Stations

Capability	Smart Charger	Dumb Charger
Dispense Electricity	✓	✓
Visible to Drivers * through mobile app, turn by turn directions, nearby amenities, real-time availability, 24/7/365 driver support	✓	✗
Ability to Charge $ per Session * by kWh, time of use, or drivers	✓	✗
Access Control * public/private, loyalty rewards	✓	✗
Remote Access and Maintenance * proactive monitoring, rules/software updates, etc.	✓	✗
Data Analytics * station usage, # of unique drivers, charging behavior, utilization, revenue, and costs	✓	✗
Sustainability Reporting *GHG savings, fuel savings	✓	✗

Visibility & Reporting: Dashboard

chargepoint+



Ongoing Maintenance: ChargePoint ‘Assure’ Coverage

Industry leading parts and on-site labor warranty that covers repair and/or replacement of defective stations included at no extra cost

+ Key Benefits:

- Proactive Monitoring… we view remotely to ensure proper functionality
  - ChargePoint often knows about a problem before the host and will contact the host for proactive repairs
  - Proactive support and reliability with virtually no administrative efforts or unexpected costs annually
- Includes all Parts and On-Site Labor to repair or replace product defects
  - One business day on-site response or one business day from parts delivery. ChargePoint assumes all triage and repair coordination responsibilities
  - Coverage in all 50 US states + Canada
- Monthly and quarterly reporting/analytics emailed to station owners
- 98% Annual Uptime Guarantee
- Can be purchased for up to 5 years, up-front or annual billing available

Station Installation Options

A Use Your Preferred Electrician for the Entire Project (make-ready & installation)
- We provide training @ www.chargepointuniversity.com

B Use Your Preferred Electrician to Provide Make-Ready Work (picture on next slide)
- We will send our electrician for final station hookup & provisioning

C Use ChargePoint's Preferred Electrician to Complete Entire Project
- We will help coordinate & schedule a site assessment

Examples of Make-Ready Sites

Wall Mount

Bollard Mount

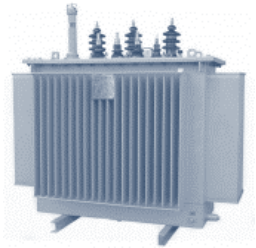
Site Assessment: Considerations

- Aspects to Consider
  - Proximity to power source
  - Cell signal
  - Potential trenching
  - Lighting and security
  - Visibility and signage
  - Future Expansion
    - Extra Conduit for Future Stations
    - Power Management (more on next slide)

Future Expansion Cost Considerations

Without Panel Sharing

- Each station requires a fully dedicated 40 amp circuit at all times, no matter how many vehicles plugged in
- Expensive service upgrade required in order to accommodate more than a small handful of stations



Expensive service upgrade

With Panel Sharing

- Panel Share works by setting a cap on the aggregate power of all stations, or groups of stations
- Vehicles draw full power when few are plugged in
- Power is intelligently shared when many vehicles are plugged in
- Capital Cost Savings: avoid service upgrades
- Electricity Bill savings: demand charge avoidance

Use Existing service

Let’s continue the discussion. Questions?

Justin Ries, LEED AP

Account Executive, New England

direct: 904.613.9363

Justin.Ries@chargepoint.com

ChargePoint

EV Charging & Car Share in Newton

Bill Ferguson, City of Newton

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55 Elliott Street

South High School

War Memorial

Matt Bradley
Boston

Bill Ferguson
Newton

Susan McPhee
Waltham, Woburn, & Winchester

Community Conversations on Lessons Learned & Innovative Approaches

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Split into **three groups** of 8-10.

Each group will have a **MAPC Facilitator** and **Community Leader**.

Small group discussion for **45 minutes.**

Report back on **1-2 lessons learned** and **1-2 outstanding questions.**

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Coffee break!

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VERDEK

Chris Hermey, Project Manager

VOLTREK
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Kathleen Connors, CEO

VEH102 Vendor Presentations on Equipment & Services

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GREEN TECHNOLOGIES FOR TODAY'S FUELING PRIORITIES

www.verdek.com

GREEN TECHNOLOGIES

EV CHARGING

ELECTRIC VEHICLES

CNG VEHICLES/ POWER GENERATION

CNG/LNG PROCESSING

BIOGAS TREATMENT

SALES, FINANCING, INSTALLATIONS, AFTER SALES SERVICE

VERDEK

EV CHARGING SOLUTIONS - LEVEL 2

- CHARGEPOINT (CELL NETWORKED)
- AEROVIRONMENT (CELL NETWORKED AND NON)
- JUICEBOX (WIFI NETWORKED AND NON)

POWER RATING

7.2 KW

7.2-10KW

EV CHARGING SOLUTIONS – LEVEL 2 KEY FEATURE

	NETWORK	PAYMENT	POWER (KW)	NOTES
CHARGEPOINT	CELLULAR	YES	3.6(*)/7.2	POWER SHARE
AEROVIRONMENT	NONE/CELLULAR(*)	NO/YES	3.6/7.2	CELL AVAIL. IN JUNE18
EMOTORWERKS	WIFI -ETHERNET	NO (*)	7.2/10	AVAIL. IN FUTURE RELEASE

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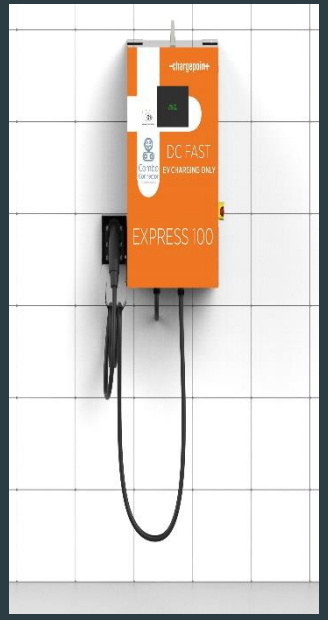
EV CHARGING SOLUTIONS – LEVEL 3

- CHARGEPOINT (CHARGEPOINT PLATFORM)
- EFACEC (CHARGEPOINT AND OCPP PLATFORM)



POWER RATING 20-25 KW

50-150 KW

150-350 KW

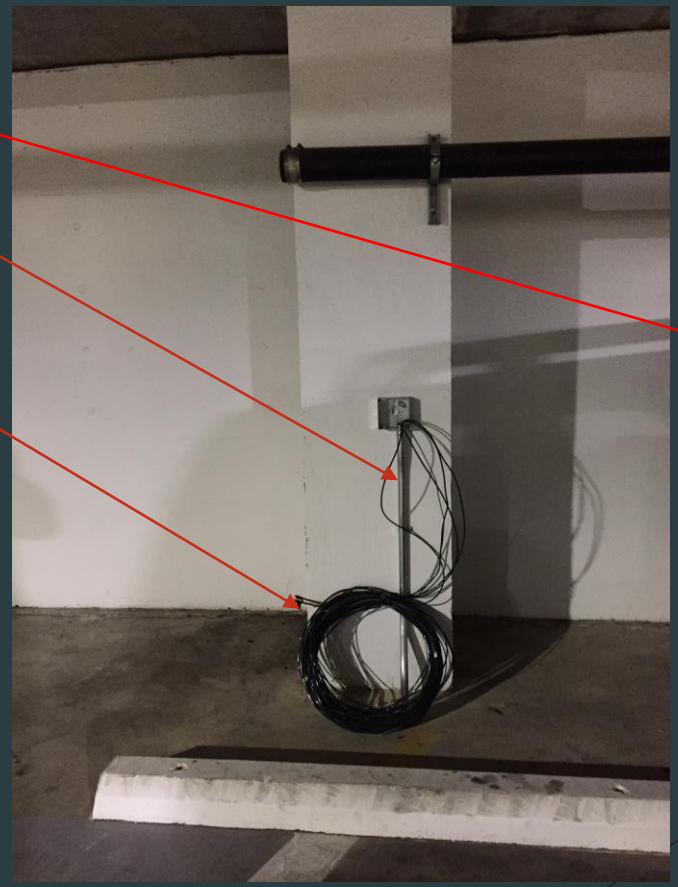
EV CHARGING SOLUTIONS – LEVEL 3 -KEY FEATURE

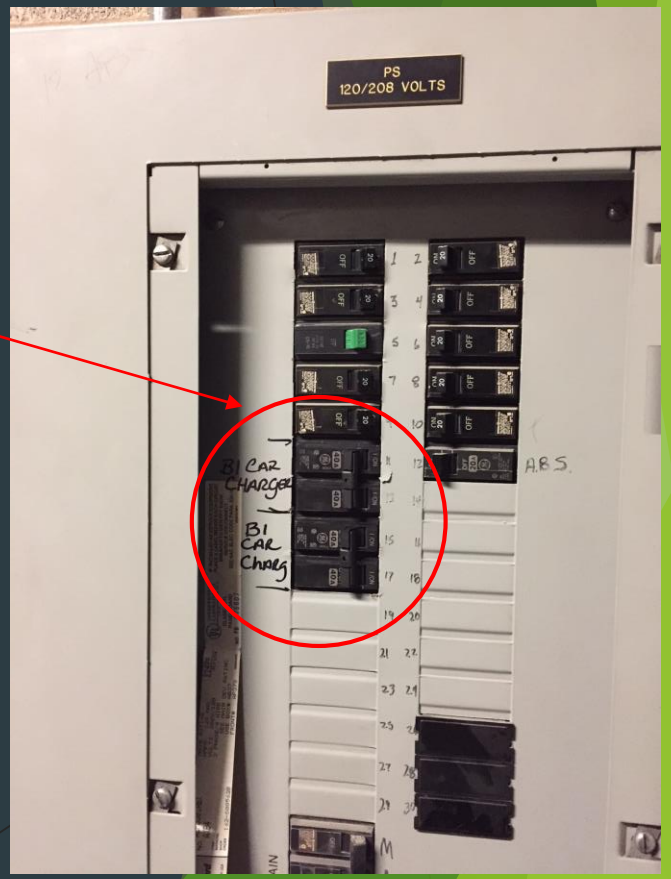
	NETWORK	PAYMENT	POWER (KW)	PLATFORM
CHARGEPOINT	CELLULAR	YES	25-50-62.5	CHARGEPOINT
EFACEC	CELLULAR	YES	25--50-EVs 40-90-150 Buses	CHARGEPOINT/OCPP

EV CHARGING SOLUTIONS
INSTALLATION GUIDELINES – OPTION 1 - WIRE-READY

- USE 1 40 AMP BREAKER PER PORT
- RUN WIRES TO FINAL LOCATION
- LEAVE AT LEAST 3’ STUB

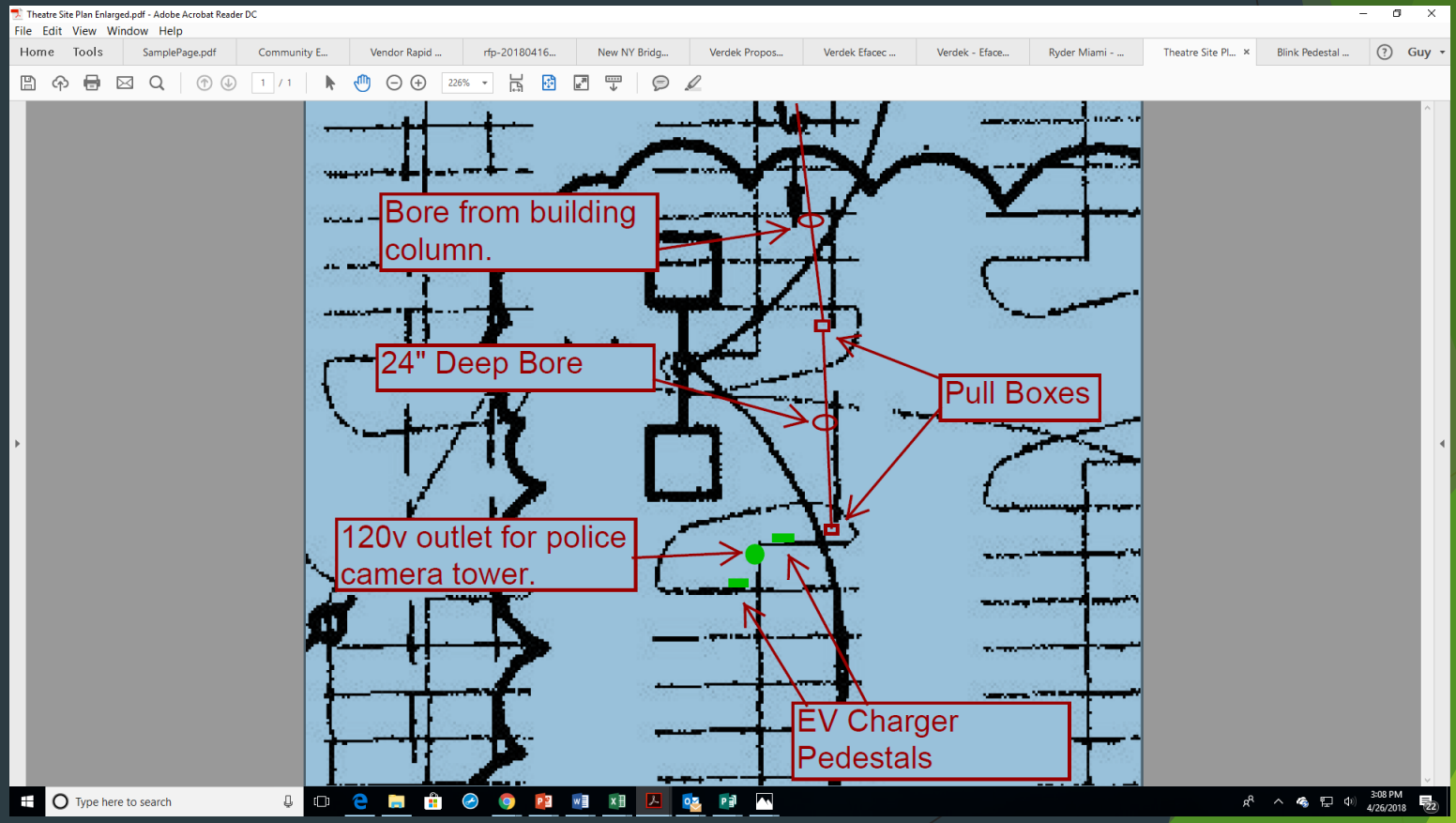
- VERDEK DOES
  - FINAL INSTALLATION
  - PROVISIONG
  - TRAINING





EV CHARGING SOLUTIONS – INSTALLATION GUIDELINES – OPTION 2 - TURNKEY

- SITE SURVEY
- PERMITTING
- INSTALLATION
- PROVISIONING
- TRANING



VERDEK

EV CHARGING SOLUTIONS – AFTER SALES SERVICES AND MAINTENANCE

- TRAINING OF STATION USERS
- SUBMISSION OF USAGE REPORTS
- DAILY MONITORING OF ALL INSTALLED STATIONS
- COORDINATION WITH OUR LOCAL SERVICE TEAM FOR ANY NEEDED REPAIR

Guy Mannino
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www.verdek.com

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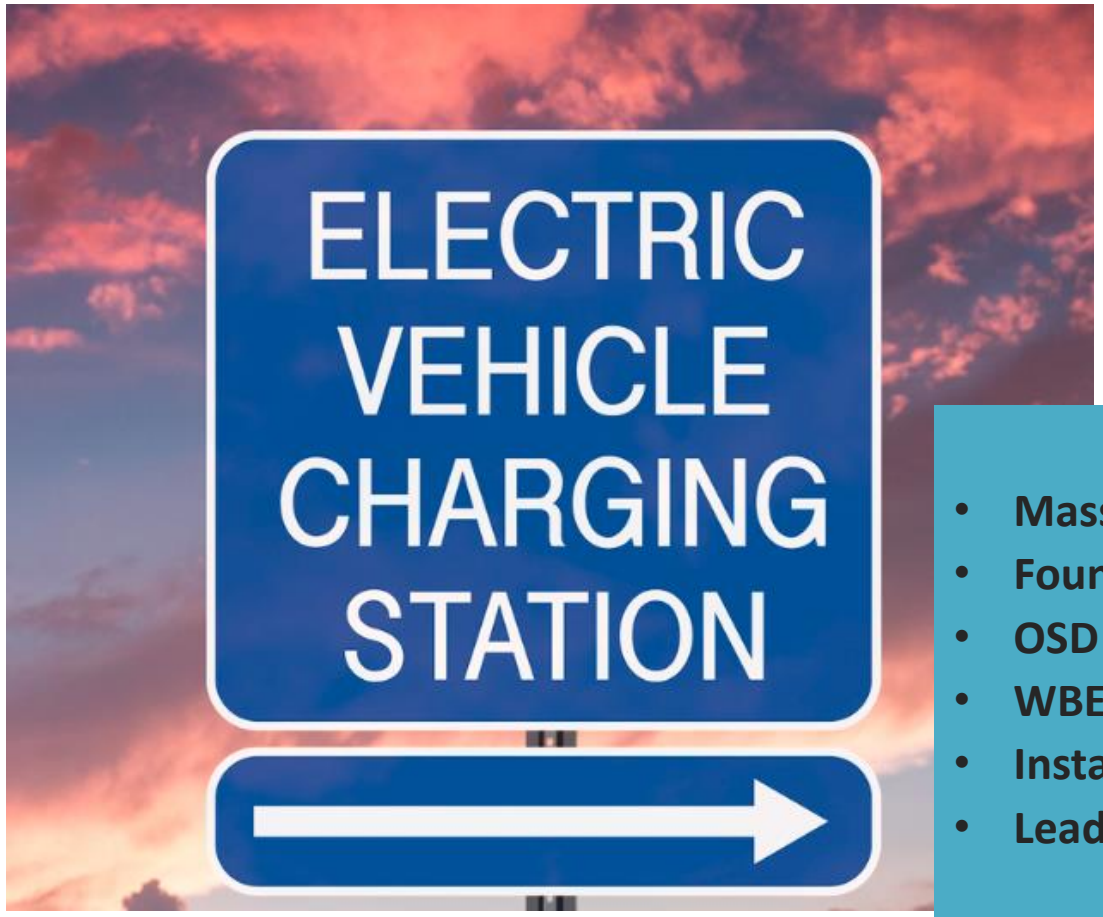
About Voltrek



- Massachusetts Company
- Founded in 2010
- OSD Vendor Contract VEH 102
- WBE/DBE Certified
- Installed 900+ Charging Ports
- Leader in EVSE Project Management

VOLTREK

Some of Our Clients

Our Services

Phase 1- Strategic Planning

- EVSE (charger) selection
- Site assessment for power availability & site design
- Engineering
- Best Practices: Usage policies, ADA accessibility
- Education

Phase 2- Implementation

- Installation/ Project management
- Programing
- Training
- Permitting

Phase 3- Maintenance & Management

- Monitoring (access, billing,
- Reporting
- Servicing

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Partnered with Multiple Manufacturers




EVBOX evconnect greenlots®

chargepoint™ oxygen INITIATIVE eVgo®

GE ClipperCreek RELIABLE. POWERFUL. MADE IN AMERICA. AV AeroVironment™

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Features and Price Points

ChargePoint

- Networked
- Cable Management
- Power Share
- Billing enabled
- Largest network/integrated system
- Dual Cost Range: $6,200-$7,200

EVBOX

- Upgradable/Network Capable
- Optional Cable Management
- Power Share
- Billing enabled w/ network
- Multiple Network Options
- Dual Cost Range: $4,000-5,200

AEROVIRONMENT

- Multiple Model lines offering different features
- Non networked Model
- Dual Cost range: $1,300-$3,400

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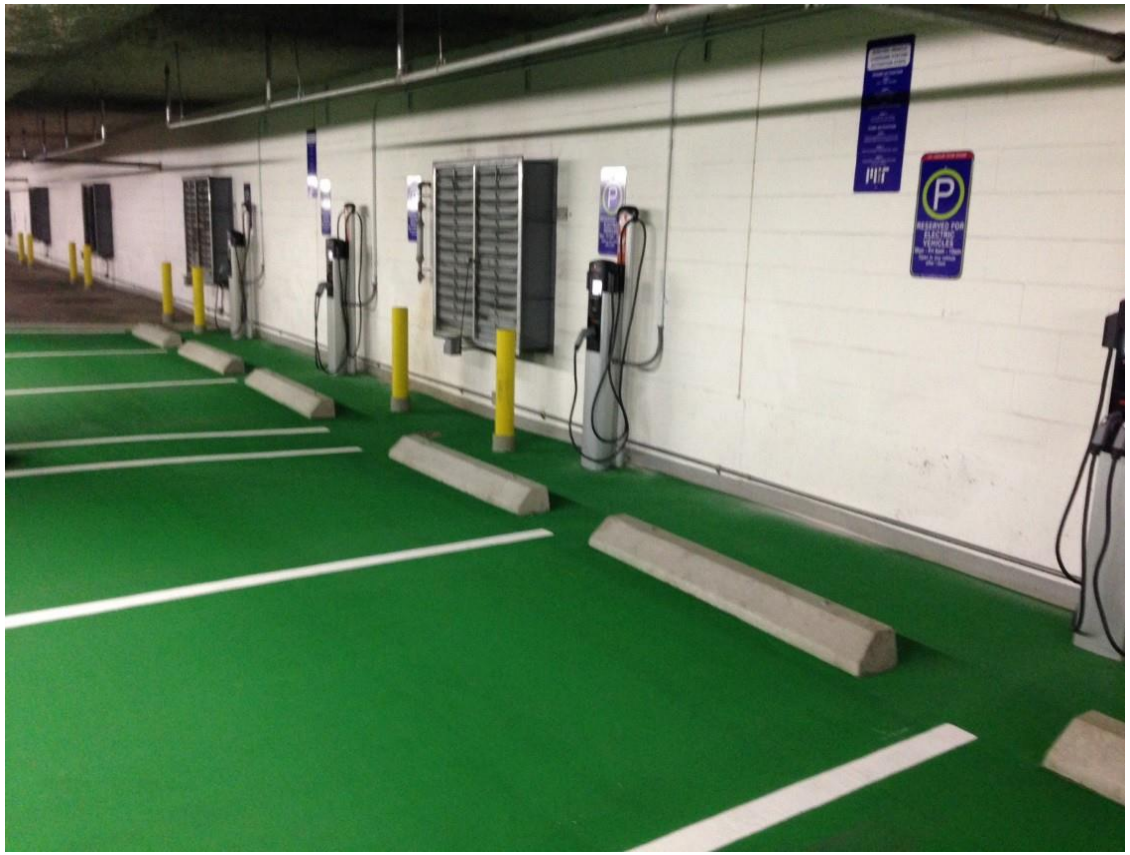
Our Work – Typical L2 Install

Teradyne Company, MA



MIT Cambridge, MA

VOLTREK

Our Work – Typical L2 Install

Above:
Lenox Hotel, Boston, MA

VOLTREK

Our Work- ADA Fast Charger Install

Natick, MA- I 90Service Plaza

VOLTREK

Contact Information

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www.voltrek.com

VOLTREK

Q&A

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Kathleen Connors, CEO
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Next Steps & Related Opportunities

EV Charging Station Specifications Template
Send to MAPC no later than **June 30, 2018**

VW Settlement Request for Information – responses due May 18, 2018
Let MAPC know if you would like to be a part of our response by **May 14, 2018**

Eversource Make-Ready Investment
More information to follow

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