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**TO:** Bill Dermody, Principal City Planner, PED, City of Saint Paul, MN

**FROM:**

Dan Collison, Senior Director of Business Development & Public Affairs

Bob Lund, Vice President of Facilities

**DATE:** 07/11/2023

**RE:** Speaking Notes from Public Hearing on Saint Paul's Consideration of a new Electric Vehicle Charging Policy

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**Background:** The City of St Paul has asked Sherman Associates to provide public testimony on July 7, 2023, to support their proposed draft for a new Electric Vehicle Charging policy. The basic elements are:

- 1) At least 5% of new parking spaces must be served by a Level 2 or greater electric vehicle charging connection (minimum of 208 Volts power level) and
- 2) at least 50% of new spaces must have either a Level 2 or greater electric vehicle charging connection or have conduit connection that operates at Level 2. (Full draft amendment below in appendix)

**Public Opinion:** We are in general support of this proposed policy change, as our firm is deeply committed to environmental sustainability in all of the properties that we develop, build, own and operate, including in Saint Paul. Our favorable opinion comes from the following perspectives and with a several points of caution and additional perspectives as discussed below in this document.

Sherman Associates owns and manages close to 8,000 units of very affordable to luxury housing, over 600,000 SF of commercial (40% of which is mixed-use within our residential properties), five hotels, and four Starbucks locations, we have been evaluating and monitoring the demand for EV charging requirements across all segments. Because of this experience, we believe that any city policy should be driven by the primary use of the property, not the number of parking spaces (whether existing or new). Below are three categories of use to consider:

- Primary business is parking (such as public parking garages)
- Parking is a convenience or necessity but not primary to the business:
  - o Restaurants
  - o Hospitality
  - o Retail
  - o Commercial
  - o Office
- Multi-family Residential (primarily rental)





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## Demand / Flexibility

- Public parking (either public or private)
  - o Areas open to the public
  - o First come first served
  - o Good candidate for city mandated EV stall counts based upon number of parking spaces
  - o Charger to be registered on the EV grid
    - A single dual charging pay-as-you-go EV charging stalls are removed from general parking and must be used by an EV Vehicle
    - To be effective, EV public charging stalls should have a 2 to 4 hour maximum limit
    - If parking all day, requires EV owner to relocate car to another stall (now two stalls taken)
- Parking as a convenience or necessity where EV charging would be considered a service or an amenity
  - o Controlled / influenced by the user adjacent to the parking spaces
  - o On average, customer turns are less than 90 minutes. Examples:
    - Fast Casual – over half the revenue is drive-through and a diner may be there 45 minutes
    - Coffee Shops – most are drive through with limited seating but may have more than 15 stalls. Again, more study about the average duration of a car sitting in the parking lot
  - o Potential conflict with non-guest EV owner using EV charging station on an adjacent property
  - o If dedicated to hospitality / restaurant – potential limited use due to time or limited need for charging
  - o Hard to regulate with a city ordinance
- Dedicated parking
  - o Residential or Commercial use
    - Individual assigned to a specific stall
    - Hard to regulate with a city ordinance
    - EV Charger only usable by Individual assigned to that stall and charger
    - Current method of billing:
      - Monthly convenience fee
      - Covers infrastructure / wiring; charger; electrical consumption
  - o Residential property expectations (experience thus far)
    - Twin City residential EV owners want a dedicated stall for their car and for charging
      - Renters are not interested in shared EV chargers as they do not want to move their car after it is charged



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- However, Denver does not have dedicated EV chargers as the market is fine with 'filling up' and moving their EV to their assigned stall. However, the developer has to create additional parking stalls for the shared EV charging stations. Each additional parking stall can cost \$30,000 to \$45,000 per parking stall.
- Luxury market (urban)
  - Significant uptick in demand over past 18 months
  - Potential resident (3 to 6 per month) have not leased due to no level 2 charger capacity or availability
- Mid to Upper market (urban)
  - Some demand
  - Potential residents (1 or 2 a month) have not leased due to no level 2 charger capacity or availability
- Mid to Upper market (suburban)
  - Minimal demand
  - Potential residents (1 or 2 per quarter) have not leased due to no level 2 charger capacity or availability
- Affordable and workforce
  - No demand for EV charging seen to date

**Solutions** (*Note*: costs provided are order of magnitude and are not to be relied upon)

- **Public parking**
  - Incremental installation of dual head Level 2 EV charging station (32A or 40A charger output) between two parking stalls is the most cost effective installation
    - Payment by credit card, app, or QR code
      - Cost dependent upon speed of charger and electricity consumed
    - Charging time limited to 2 to 4 hours to increase turns and drive revenue
    - 40 AMP to 60 AMP 240/480 V electrical power recommended to be run to the charging station
    - Providers:
      - 3<sup>rd</sup> party (e.g. ChargePoint) assumes all capital costs and receives all income with % going to landlord
      - 3<sup>rd</sup> party SAS; owner purchases equipment, receives all revenue; fee paid to SAS company
    - Average cost per stall (*assuming two stalls electrified with a single charger*):
      - Equipment: \$3,000 per stall
      - Infrastructure:
        - \$1,500 per stall if in a parking garage
        - Up to \$5,000 per stall if located in a surface parking lot
      - Annual subscription fee: \$400 per stall



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## - EV Charging as a service / amenity:

- Incremental installation of dual head Level 2 EV charging station
  - See above notes
- Dedicated single port
  - Controlled by Provider or Valet Parking
  - No public parking
  - Activated through QR code or employee app
  - Assumed that guest pays a flat fee per use
  - Average cost per stall:
    - Equipment: \$2,000 to \$3,000 per stall
    - Infrastructure:
      - \$1,000 per stall (assuming 40 AMP circuit in a parking garage)
      - Up to \$3,000 per stall (assuming 40 AMP circuit located in a surface parking lot)
    - Annual subscription fee:
      - \$0 if owned and operated as a private charging station
      - \$400 if identified as a public charging station

## - Dedicated parking

- Residential use
  - Option 1
    - Single 40 AMP 208 V circuit to two stalls; each stall gets a 40 AMP twist lock receptacle
    - Dedicated smart EV chargers provided by landlord based upon demand. Two smart EV Chargers are able to load balance on a single circuit
    - Each EV charger can be plugged in when the stall is leased to a resident with an EV and subsequently removed when the stall is no longer needed for an EV
    - Flat fee per month for charger and electrical consumption
      - Current industry range of cost to the resident is between \$15 to \$35 per month
    - Average cost per stall (assuming two stalls electrified with a single circuit):
      - Equipment: \$500 to \$700 per stall
      - Infrastructure:
        - \$500 per stall within a parking garage
        - Up to \$3,000 per stall if in a surface parking lot
      - Annual subscription fee: \$0 not enabling remote features
  - Option 2
    - Single 50 AMP 208 V circuit to a junction box next to a stall
    - Resident purchases their own charger and pays to have the charger connected to the existing owner provided circuit



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- Resident pays for use of electricity
- Average cost per stall:
  - Equipment: \$0 – provided by renter
  - Infrastructure:
    - \$1,000 per stall in a garage
    - Up to \$3,000 per stall if a surface parking lot
  - Annual subscription fee: by renter

## **Recommendations** (new development or change in use):

- Public parking
  - Set minimum requirements based upon parking stall count
  - Adding an EV stall does not allow for 100% utilization
  - The 15-stall minimum seems too low of a threshold
    - Consider two minimums:
      - 20 stalls and above – 10% EV charger Ready
      - Increments of 40 stalls – two EV chargers installed
- EV Charging as a service / amenity (not primary business)
  - 20 or more employees: 2 stalls EV charger ready
  - Each increment of 20 employees: 2 additional stalls EV charger ready
  - Chargers installed upon request by employee but not to exceed the number of stalls EV charger ready
- Multi-Family Residential
  - Less than 10 units – 0 stalls EV ready or chargers installed
  - 11 to 20 units – 2 stalls EV charger ready
  - Each subsequent 20 units – 2 stalls EV charger ready
  - 0% EV chargers installed at project completion
  - EV chargers installed upon request by resident or employee



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## APPENDIX

### Technology

- **Infrastructure** (commercial & multi-family residential)
  - o Components
    - Transformer (Xcel)
    - Incoming service, meter(s), switchgear or main panel
      - Panel switch board if large service
    - Electrical Panel + breakers
    - Raceway / conduit + wire
    - hardwired connection or twist lock plug
  - o Issues
    - Submeter for each charger or charging circuit?
    - Connected load vs. actual load for sizing the transformer (determined by Xcel)
- **Charging station types**
  - o Level 1 charger
    - Uses a standard 120V 15 amp circuit
    - is included with the EV
  - o Level 2 charger (dedicated)
    - Usually provides 16 AMP to 50 AMPS of DC charging power to the EV
    - Recommend 32 AMP or less as the charger can be plugged into an outlet
    - See attached dedicated charger spreadsheet (from 2022) for performance and equipment cost only parameters
  - o Level 2 charger (shared)
    - Minimum power recommended for dual port EV charger:
      - Charger: 32 AMP DC output
      - Electrical power to charger: shared 40 AMP 120/208 V AC
      - Charger is hard wired into the electrical box (no plug)
    - Maximum power available:
      - Charger: 48 AMP DC output
      - Electrical power to charger: single 60 AMP 240 / 480 V AC
    - Charger is hard wired into the electrical box (no plug)
    - Each charger requires a monthly subscription
  - o Level 3 charger (shared)
    - Power output:
      - 150 to 200 AMPS DC
    - Electrical circuit required
      - 80 AMP 480 V DC 3-phase
        - o At 120 volts (a typical house current) the 80 AMP circuit above would be equal to a 320 AMP panel (most homes have a panel ranging from 80 to 200 amps)
    - Equipment: \$30,000+ for dual port quick charger (\$15,000 per stall)





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- Infrastructure: \$15,000 - assumes dedicated panel board, transformer, meter (\$7,500 per stall)

## ADDITIONAL DOCUMENTATION:

- Level 2 Dedicated Charge Comparisons



NOTE: from Jan 2022

OUTPUT	Features				Level of Service		Infrastructure required			Cost	IMAGE		
	Brand	Model / Shared or Dedicated	Level	Fixed / Portable	Smart?	Operating Temp range	Output Amps to EV	Miles Charged per hour **	Plug or Hard Wired?	Input Voltage		Circuit breaker	Equipment Cost ONLY
50 AMP	Charge Point	Home Flex / Dedicated	2	Fixed	Yes	-22°F to 122°F	50	37	Hard wired	240	60	\$690	
	Pulsar	Wallbox 48 Amp	2	Fixed	Yes	-13°F to 104°F	48	35	Hard wired	240	60	\$699	
40 AMP	Grizzle-E	Classic / Dedicated	2	Fixed	No	-22°F to 122°F	40	29	Plug	120/208	50	\$459	
	LEFANEV	Wall EV Charging station	2	Fixed	Yes	-40°F to 158°F	40	29	Plug	120/208	50	\$499	
	Enel X	Juice Box 40 Smart / 40A output Dedicated	2	Fixed	Yes	-40°F to 140°F	40	29	Plug	120/208	50	\$649	
	Pulsar	Wallbox 40 Amp	2	Fixed	Yes	-13°F to 104°F	40	29	Plug	120/208	50	\$649	



NOTE: from Jan 2022

OUTPUT

32 AMP

Brand	Model / Shared or Dedicated	Features			Operating Temp range	Level of Service		Infrastructure required			Cost	IMAGE
		Level	Fixed / Portable	Smart?		Output Amps to EV	Miles Charged per hour **	Plug or Hard Wired?	Input Voltage	Circuit breaker	Equipment Cost ONLY	
Morec	32 Amp / Dedicated	2	Portable	No	-22°F to 122°F	32	24	Plug	120/208	40	\$330	
LEFANEV	Wall EV Charging station	2	Fixed	Yes	-40°F to 158°F	32	24	Plug	120/208	50	\$499	
Grizzle-E	Classic / Dedicated (limited circuit size)	2	Fixed	No	-22°F to 122°F	32	24	Plug	120/208	40	\$459	
Amazon	Basics	2	fixed	No	Not Listed	32	24	plug	120/208	40	\$534	
Blink	HQ150	2	Fixed	No	-22°F to 122°F	32	24	Plug	120/208	40	\$554	
EvoCharge	EVSE 32A	2	fixed	No	-22°F to 122°F	32	24	plug	120/208	40	\$568	
Enel X	Juice Box 40 Smart 32A Output/ Dedicated	2	Fixed	Yes	-40°F to 140°F	32	25	Plug	120/208	40	\$619	
EvoCharge	iEVSE 32A	2	fixed	Yes	-22°F to 122°F	32	24	plug	120/208	40	\$679	
Charge Point	Home Flex / Dedicated	2	Fixed	Yes	-22°F to 122°F	32	25	Plug	120/208	40	\$690	

NOTE: from Jan 2022

OUTPUT	Features				Level of Service		Infrastructure required			Cost	IMAGE		
	Brand	Model / Shared or Dedicated	Level	Fixed / Portable	Smart?	Operating Temp range	Output Amps to EV	Miles Charged per hour **	Plug or Hard Wired?	Input Voltage		Circuit breaker	Equipment Cost ONLY
16 A	MEGEAR	16A	2	Portable	No	-22°F to 122°F	16	13	Plug	120/208	20	\$205	