



Electric Vehicle (EV) Charging Infrastructure in the City of Berkley

May 2022 discussions for the
2022-2023 Fiscal Year



Discussion Topics

- Why install EV chargers in Berkley?
- How does this align with Berkley's strategies, plans, and guidelines?
- What types of EV chargers are being considered?
- Where might the initial EV chargers *potentially* be installed?
- What is the recent and projected EV growth?
- Who would use the EV chargers? How much would it cost to use?
- How much would it cost to install? To operate over time?
- What types of policies, ordinances, etc. might we revise as well?
- What additional information and resources are available?
- What are the recommended next steps?



Why install EV chargers in Berkley?



The Environment

- ✓ **High affinity** with state and national parks and the preservation of the environment and protecting green space
- ✓ More EV cars and trucks means **less harmful emissions** that damage the environment
- ✓ Reduces overall dependence on oil and **heightens our energy independence**

1. <https://blog.evsolutions.com/homes-close-to-evs-have-higher-property-values>
2. <https://uk.mer.eco/news/undeniable-benefits-of-ev-charging-stations-for-business-mer/>



City Operations

EV Chargers in Berkley Benefit Berkley!



- ✓ DPW has started the "**green transition**" for smaller yard equipment, blowers, etc. and perhaps in the future zero-turn mowers
- ✓ **Requires less maintenance** of the relatively quiet equipment, popular with employees
- ✓ Aligns with and **moves forward key ideas** in the City Master Plan, Parks and Rec Master Plan, and Environmental Action Plan



Residents

- ✓ **Increases property values**¹ and provides nearby charging options for friends, family
- ✓ Demonstrates **we live our principles** and ideals as a welcoming, sustainable community
- ✓ **Provides convenience** so that Berkley is an even more desirable place to live, learn, shop, work, and play



Businesses

- ✓ Studies show that nearby EV chargers **raise visibility** and attract new, loyal customers²
- ✓ **Marketing and promotions opportunities** to highlight that EV charging is available nearby
- ✓ Opportunity to add **business-owned EV charging stations** in partnership with the City

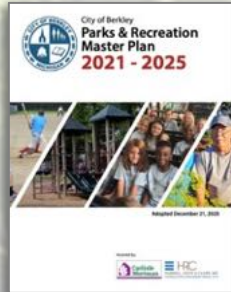


How does this align with Berkley's strategies, plans, and guidelines?



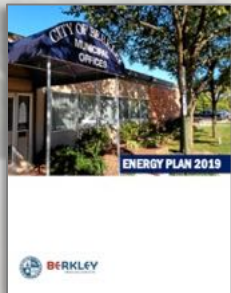
City of Berkley Master Plan – Adopted 2021

- (P. 69) The city should design transportation infrastructure to increase efficiency, create sustainability, decrease energy consumption and minimize pollution
- (P. 74) Berkley should prioritize energy savings and clean energy projects in the city's capital improvements program
- (P. 75) Berkley should support policy and infrastructure for sustainable transportation including construction of electric vehicle charging facilities



City of Berkley Parks & Recreation Master Plan – Adopted 2020

- (P. 2-5) Provide the highest quality recreation experience for Berkley residents at the City's nine existing park and recreation facilities through continued maintenance and by responding to changing park conditions
- (P. 3-9) Add wi-fi and electrical access at all city parks



City of Berkley Energy Plan – Adopted 2019




- (P. 1.1) Berkley should support progress toward achieving the city's vision for sustainability and resilience by promoting clean energy initiatives
- (P. 1.7) Berkley should uphold commitments to the climate change goals in the Mayor's National Climate Action Agenda
- (P. 1.9) Berkley should consider developing a clean vehicle fleet plan



What types of EV chargers are being considered?

- Berkley is considering AC Level Two (a.k.a., L2) for most municipal locations



AC Level One	AC Level Two	DC Fast Charge
		
VOLTAGE 120v 1-Phase AC	VOLTAGE 208V or 240V 1-Phase AC	VOLTAGE 208V or 480V 3-Phase AC
CHARGING LOADS 1.4 to 1.9 kW	CHARGING LOADS 2.5 to 19.2 kW (Typ. 7 kW)	CHARGING LOADS <90 kW (Typ. 50 kW)
CHARGE TIME FOR VEHICLE 3–5 Miles of Range Per Hour	CHARGE TIME FOR VEHICLE 10–20 Miles of Range Per Hour	CHARGE TIME FOR VEHICLE 80% Charge in 20–30 Minutes

1. [Source: https://www.paloaltoonline.com/blogs/p/2020/11/15/evs-for-everyone](https://www.paloaltoonline.com/blogs/p/2020/11/15/evs-for-everyone)



Where might the initial EV chargers *potentially* be installed?

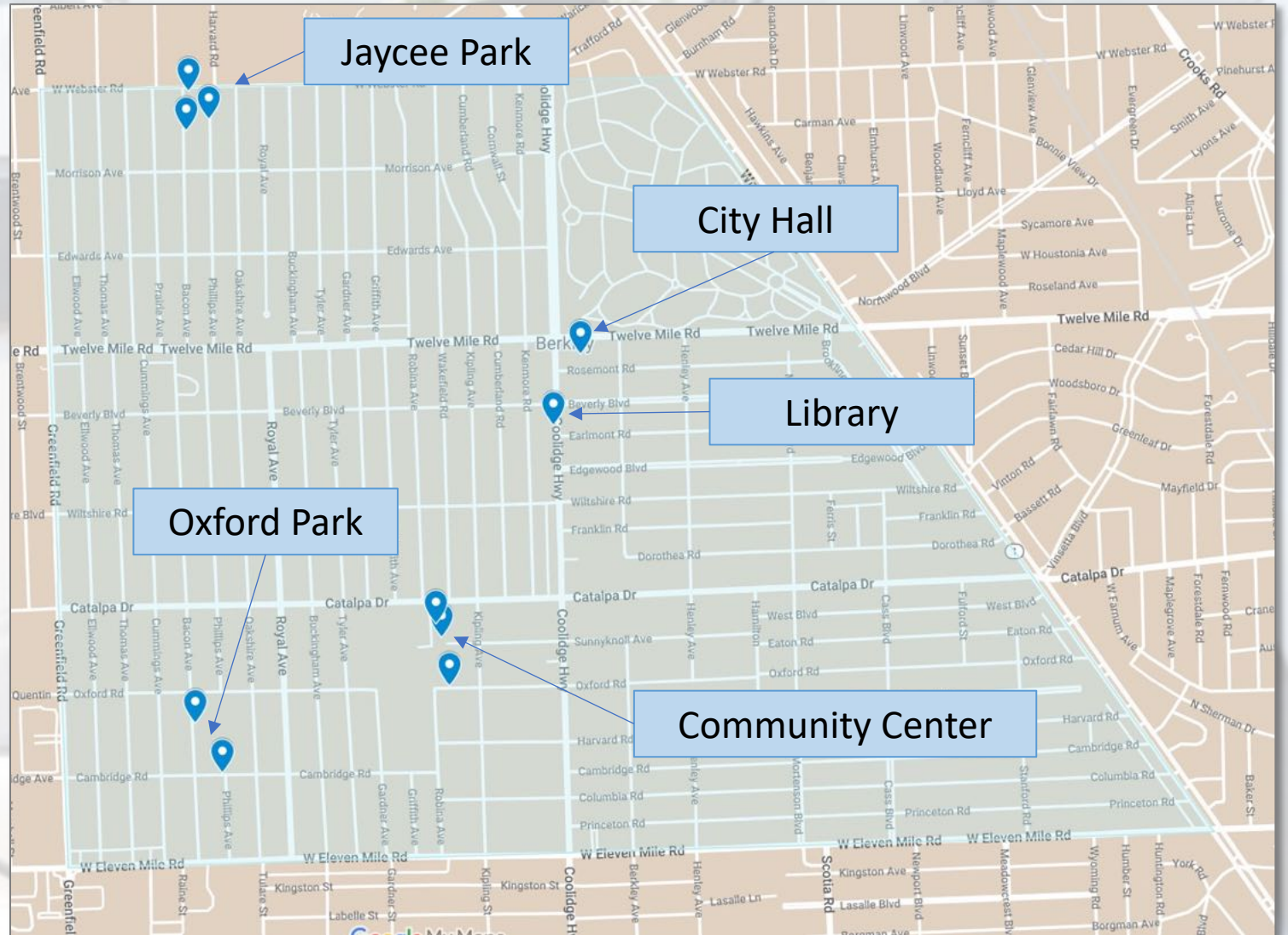
Potential locations for the initial EV chargers are:

Location	# Options
City Hall	1
Community Center	3
Library	1
Oxford Park	2
Jaycee Park	3

Each location has one or more options for EV charger infrastructure, based on cost, anticipated use, and future plans for the location.

These options are explored in more detail in the appendix.

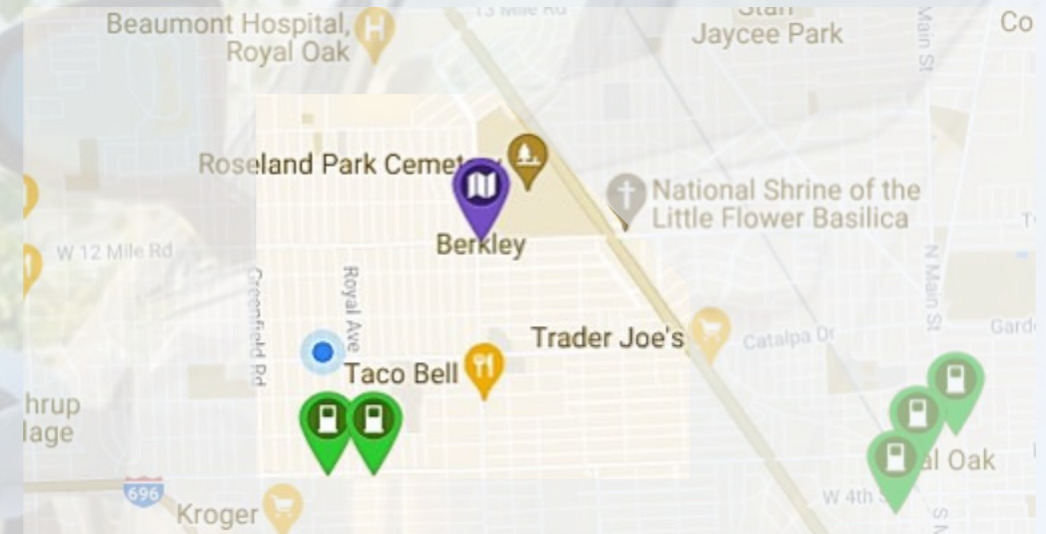
[Click here for the Google My Map](#)





What is the recent and projected EV growth?

- **EVs grew by 56%** in Michigan the past year (16,400 total now) and are anticipated to grow by **20% annually** through 2030
- With 1,694 charge ports, **Michigan ranks 19th** among the states for number of public chargers
- There are 8 plug-in vehicles per thousand people in Berkley, or about **1% of Berkley's vehicle population** are plug-in vehicles (116 registered electric vehicles)
- There are **1,202 plug-in vehicles** in Berkley and the surrounding communities
- Michigan is expecting **1 million plug-in vehicles** in the state by 2030
- Closest public chargers are located at auto repair and manufacturing facility on 11 Mile Road in **Oak Park** or in downtown **Royal Oak** parking garages



City	Total Plug-in EVs	PEVs/ thousand people	Public Charging Ports
Huntington Woods	126	20	0
Beverly Hills	222	15	0
Royal Oak (48067)	262	11	30
Berkley	116	8	0
Royal Oak (48073)	228	7	2
Lathrup Village	113	5	0
Oak Park	84	3	2
Southfield	51	2	6

1. [Source: https://mibiz.com/sections/energy/michigan-ev-registrations-climb-as-state-prepares-millions-for-charging-stations](https://mibiz.com/sections/energy/michigan-ev-registrations-climb-as-state-prepares-millions-for-charging-stations)



Who would use the EV chargers? How much would it cost to use?

- EV chargers in the City of Berkley would be used by...
 - **Residents and guests**, especially the chargers at the various Parks & Recreation locations
 - **Shoppers and visitors**, especially the chargers in the downtown locations (Library, City Hall)
 - **City employees** in subsequent years, as Berkley transitions to a “green fleet” (e.g., DPW)
- EV chargers in the City of Berkley would attract others from the region
 - Our region currently has **10 EV charging stations**¹ installed from Birmingham to Ferndale
 - The **demand will increase** – annual sales of electric vehicles jumped 37%² from 2020 to 2021
 - By 2025, **20% of all new vehicles**³ will be electric, and by 2030 it will be over 50%⁴ of all new vehicles
- EV chargers in the City of Berkley will be free to use (*yes, that's right – no cost*)
 - To raise awareness and encourage usage⁵, there will be **no cost to charge** vehicles
 - Electric consumption **costs are minimal** and easily accommodated in existing budgets
 - Usage will be monitored to **establish duration standards** (how long a car may use a charger, etc.)

1. <https://ev.dteenergy.com/charging-stations/> ... those chargers in proximity to the Woodward Corridor from Birmingham to Ferndale

2. <https://www.forbes.com/wheels/news/ev-sales-soar-in-2022/>

3. <https://www.torquenews.com/15475/good-news-tesla-20-all-cars-sold-worldwide-will-be-evs-2025>

4. <https://www.cnbc.com/2021/11/30/auto-executives-say-more-than-half-of-us-car-sales-will-be-evs-by-2030-kpmg-survey-shows.html>

5. <https://www.evconnect.com/blog/should-cities-offer-free-ev-charging>



How much would it cost to install? To operate over time?

Costs will be better-estimated while preparing the bid materials, and the following reflects a reasonable range of prices given what we know today. As such, we'll know more about what we can afford once the bids come in. *With that in mind...*

One-Time Installation Costs (Estimated)

The City's proposed 2022-23 budget includes **\$100,000** as an overall set-aside for EV charging infrastructure and will be considered a "not to exceed" limit.

- Five L2 charging stations at approx. \$1,000 ea.
- Installation for five potential locations at approx. \$12,000 ea.: City Hall, Library, Community Center, Oxford Park, and Jaycee Park (*see appendix*)
- Engineering and contingency for \$35,000
- As we learn more, this initial phase of EV chargers will **not exceed \$100,000** for FY 2022/23

Note: this does not include potential grants available from utility, county, state, and federal opportunities.

Annual Operating Costs (Estimated)

- Energy usage costs would be **accommodated in the department budget** that covers the installation location (e.g., the Library would cover the energy usage costs associated with its EV charger)
- Subsequent City budget cycles would incorporate additional funds for energy costs based on actual usage, plus anticipated usage growth in the subsequent year
- Equipment warranty and maintenance costs would be negotiated with the vendor, with an initial estimate of \$250/year per station = \$1,000 total

Note: This does not include potential grants available from utility, county, state, and federal opportunities.



What types of policies, ordinances, etc. might we revise as well?

To better position Berkley for the future, and bolster future EV infrastructure installations, several policy and zoning opportunities may be of interest. These may be separate items or combined as appropriate, following normal policy and zoning processes.

Type	Concept/Intent to be Explored
Policy	Future municipal vehicle purchases must at least consider all-electric and/or plug-in hybrid options
Policy	Enforce a per-user time limit (signs and some type of enforcement)
Policy	Enforce EV-only parking (ticket if a non-EV vehicle is parked in an EV spot)
Policy	Ensure the City of Berkley is protected from end-use liability, waiver of risk, etc.
Zoning	Municipal parking lot remodels or developments must include EV charging
Zoning	Business and residential building/garage remodels or developments exceeding a certain size must at least include conduits that enable the ability to subsequently install EV equipment
Zoning	Gas station remodels or developments must include EV charging



What additional information and resources are available?

Website Content	Link
Auto Innovators Announces EV Charging Infrastructure Principles	https://www.autosinnovate.org/posts/press-release/ev-charging-infrastructure-principles
DTE: Charging Forward eFleets	https://newlook.dteenergy.com/wps/wcm/connect/dte-web/home/service-request/business/electric/electric-vehicles/pev-biz-fleet
DTE: EV charging stations are good for business	https://newlook.dteenergy.com/wps/wcm/connect/dte-web/home/service-request/business/electric/electric-vehicles/plug-in-electric-vehicles-biz
Electric Vehicle Charger Selection Guide	https://afdc.energy.gov/files/u/publication/EV_Charger_Selection_Guide_2018-01-112.pdf
Equity Considerations in EV Infrastructure Planning	https://www.transportation.gov/rural/ev/toolkit/ev-infrastructure-planning/equity-considerations
EV Charging Infrastructure Fact Sheets	https://energycenter.org/tag/ev-charging-infrastructure
Southeast Michigan Electric Vehicle Resource Kit and Planning Hub	https://southeast-michigan-ev-resource-kit-and-planning-hub-semcog.hub.arcgis.com



What are the recommended next steps?

The intent is to install one or more EV chargers in the City of Berkley in the 2022-23 fiscal year (ideally, within the 2022 calendar year).

To move forward with the initial phase of the Berkley EV charging infrastructure initiative:

- ☐ **Include** the proposed budget line item in the City of Berkley 2022-23 fiscal budget
- ☐ **Nominate** one City of Berkley department director to lead/spearhead the EV charger initiative
- ☐ **Perform** detailed installation site walk-throughs to refine cost and timing estimates
- ☐ **Consider** including network cabling during installation for future network and data capabilities
- ☐ **Prepare** and issue bid packet(s) for the EV charging stations themselves and installation work
- ☐ **Create** more robust communication and outreach materials about the initiative
- ☐ **Reach out** to the DDA and Chamber about ways to enable private/business EV charger installs
- ☐ **Initiate** discussions on appropriate policy and/or zoning changes, including those described earlier



Appendix

Potential EV Charger Locations



Berkley City Hall – One potential location





Berkley Community Center – Three potential locations

Three potential locations include (a) the north parking lot strip, near a utility pole where an additional meter may be an option; (b) in the central parking lot next to the existing handicap spots; and (c) the recently finished pad where the ice arena garage used to be.



North parking lot strip



Central parking lot



Oxford potential parking pad



Berkley Library – One potential location





Oxford Park – Two potential locations

Two potential locations include (a) the north parking lot strip, near a utility box where an additional meter may be an option; and (b) toward the west end of the south parking lot.



North parking lot strip



South parking strip



Jaycee Park – Three potential locations

Three potential locations include (a) the south-east side of the park, where perhaps a bump-out may be needed; (b) the north parking lot strip, near a utility pole where an additional meter may be an option; and (c) the south-west side of the park, where again a bump-out may be needed.



South-east side of the park



Central parking lot



South-west side of the park



Special thanks to the ad-hoc EV infrastructure team

- **Steve Baker**, Berkley City Council
- **Alex Brown**, Berkley Facilities Manager
- **Matt Church**, Library Director
- **Ross Gavin**, Berkley City Council
- **Dave Hurst**, Berkley Environmental Advisory Committee (BEAC)
- **Mike Jones**, DG Energy Consultant
- **Theresa McArleton**, Berkley Parks and Recreation Director
- **Andy McIndoo**, Berkley Environmental Advisory Committee (BEAC)
- **Mike McGuinness**, Berkley Downtown Development Authority (DDA) Director
- **Natalie Price**, Berkley City Council
- **Mark Richardson**, Berkley Planning Commissioner and BEAC
- **Derrick Schuller**, former Berkley Public Works Director
- **Shawn Young**, Berkley Public Works Director