

STAFF REPORT

DATE: April 25, 2022

TO: Natural Resources Commission

FROM: Stan Gryczko, Director, Public Works Utilities and Operations
Kerry Loux, Sustainability Coordinator, Community Development and Sustainability
Adrienne Heinig, Assistant to the Director, Public Works Utilities and Operations

SUBJECT: Electric Vehicle Charging Infrastructure Phase I Final Report

Recommendation

1. Receive the Electric Vehicle Charging (EV) Infrastructure Phase 1 Final Report (Attachment 1) and presentation from staff and Frontier Energy for the City of Davis Phase 1 component of the project.

City Council Goals

The proposed actions directly support the City Council Goal to Pursue Environmental Sustainability.

Background

Electrify Yolo is a regional project, with City of Davis as the lead agency, and includes Yolo County, Valley Clean Energy Alliance (VCE) on behalf of City of Winters, and City of Woodland. The project is funded under a SACOG Green Region grant, with a total funding of \$2,911,752. The City of Davis will be implementing approximately \$2 million of the total grant award, with the remaining \$1 million being implemented by the other partners, as per the Electrify Yolo agreement. All funds for the entire project were defederalized through a Fund Exchange Agreement (FEA) between SACOG and Davis.

The goals of the project are to:

- Install public charging stations
- Benefit Davis residents
- Build internal capacity for Davis as a destination
- Improve multi-modal hub development in Davis downtown

The City of Davis Phase 1 component of the project is to develop a planning framework for EV charging infrastructure in Davis that addresses and completes the commitments in the FEA with SACOG in advance of the December 2023 deadline and includes:

- At least two network DC Fast Chargers (DCFC) that have easy highway access and three Level 2 charging stations on publicly owned land
- Fiscally prudent construction and operation
- Locations that can encourage adoption of EVs by people who drive to or through

Davis

- Identification of Phase 2 locations that can serve a variety of Davis residents
 - Evaluation of these locations will be done in Phase 2
 - Anticipated remaining grant funding from Davis' \$2 million total following Phase 1 completion of FEA commitments, will be used by Davis to implement Phase 2

Recommendations

The attached report provides a planning framework for EV charging infrastructure in Davis, including fiscally prudent construction and operation and recommended locations that can encourage adoption of EVs by people who drive to or through Davis.

Based on consultant research and recommendations included in the attached report, and as agreed by City of Davis project management staff, the optimal method of City EV charging infrastructure delivery is City ownership with contracted vendor technical support including maintenance agreements. The models studied are summarized in the attached report.

Through an iterative site recommendations process that included community input, data analysis, utility data, and site inspections and described in Appendix 1, the consultant has recommended sites for installation in Phase 1.

Key considerations for selected locations are:

- Visibility to people who live, work, and visit Davis to encourage them to switch to an EV.
- Potential for expansion to other forms of electric or active transportation.
- Replacing existing “dumb” chargers with smart chargers so that the City can collect fees to offset energy use and maintenance costs.
- Minimizing construction time and costs associated with upgrading or adding electrical panels, replacing underground conduit, and increasing the electrical service from PG&E.

On November 29, 2021, the consultant team recommend five sites to the City's Natural Resources Commission (NRC) for public input. Comments were received from the Commission, the public and Cool Davis during the meeting.

As a result of input, the consultant team added Central Park and H Street to the list of public sites to evaluate and contacted the owners of the privately-owned retail properties and parking lots recommended. The surface parking lot suggested is too small to add charging stations and curbside charging on H Street does not have access to a City-owned meter. Private property owners didn't return calls and the consultant team couldn't obtain electric use data.

After physical inspections, the consultant team revised its recommendations as listed in Table 1 table below.

Location	Existing	Proposed
City Hall	Two dumb pedestal mount Clipper Creek	Two smart dual-port Level 2 stations and one DCFC
4 th & G Garage	Two dumb pedestal mount Clipper Creek	Two smart dual-port Level 2 stations (wall mount)
E Street Parking Lot	Two dumb pedestal mount Clipper Creek	Two smart dual-port Level 2 stations or one quad-port station
Amtrak	Two dumb pedestal mount charging stations	One dual-port DCFC
Olive Drive	Configured for a DCFC	One dual-port DCFC, potentially a high-speed 150kW charger

Table 1: Revised Site Recommendations

Attachments

- ATT 1 Electric Vehicle Charging Infrastructure Phase I Final Report
- ATT 2 PowerPoint Presentation EV Charging

Background

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- Locations that can encourage adoption of EVs by people who drive to or through Davis
- Identification of Phase 2 locations that can serve a variety of Davis residents
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Site Recommendations

Through an iterative process that included community input, data analysis, utility data, and site inspections and described in Appendix 1, the following sites are recommended for installation in Phase 1.

Key considerations for selected locations are:

- Visibility to people who live, work, and visit Davis to encourage them to switch to an EV.
- Potential for expansion to other forms of electric or active transportation.
- Replacing existing “dumb” chargers with smart chargers so that the City can collect fees to offset energy use and maintenance costs.
- Minimizing construction time and costs associated with upgrading or adding electrical panels, replacing underground conduit, and increasing the electrical service from PG&E.

City Hall currently has two dumb charging stations that appear to be underpowered. These stations enable people to charge for free and it is likely that the stations charge very slowly. Replacing these will enable the City to collect fees for charging, manage energy use during peak hours, communicate with the users, and reduce staff time for maintenance and trouble shooting. Drivers will receive a faster, more-reliable charge. Pay-per-charge will discourage people from parking while not actively charging.

The City is slated for a major electrical upgrade that will add a generator for backup power. Because this project includes extensive electrical upgrades and parking lot resurfacing, the City could add up to four dual port Level 2 charging stations. Yolo County is considering installing Level 2 stations at A Street side of the lot.

E Street parking lot currently has one dumb single-port Level 2 charging station at the end of the parking lot nearest F Street that can be replaced with a dual-port smart station.

Community feedback was that this parking lot is slated for renovation and to be cautious about investing in this location. Development, however, is several years in the future. Replacing this station now will enable the City to collect fees for charging, manage energy use during peak hours, communicate with the users, and reduce staff time for maintenance and trouble shooting. Drivers will receive a faster, more-reliable charge. Pay-per-charge will discourage people from parking while not actively charging.

The electric meter is at the other end of the parking lot, closest to E Street, and the existing conduit is too small to accommodate additional wires from the meter. Therefore, the consultant team recommends replacing the existing charging station using the wires and breaker that supply power to the current charging station. One parking space will need to be reconfigured to meet the requirements for ADA access.

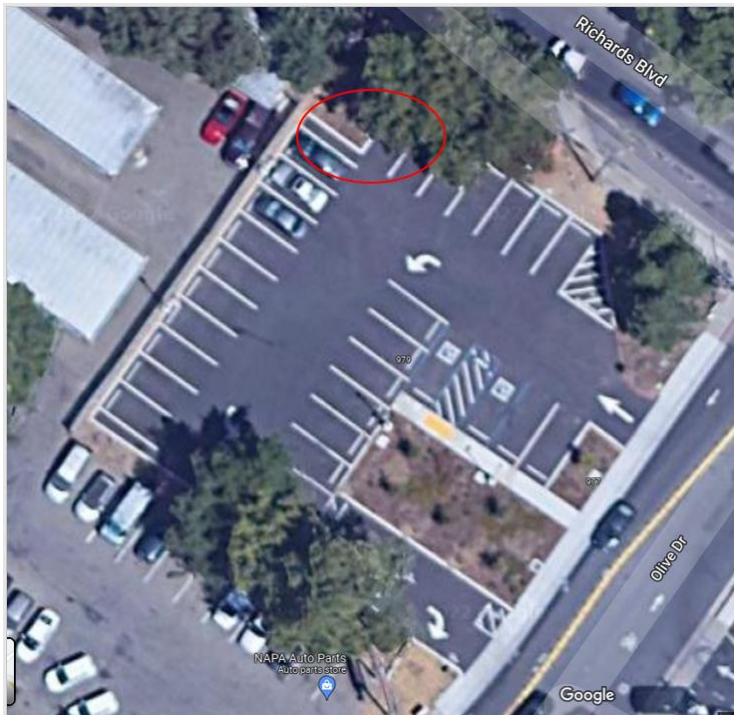
This location doesn't need additional coordination to move into planning.

979 Olive Drive is a newer park and ride lot. It is an excellent location to add a dual-port DCFC and potentially add the conduit and wiring for additional charging spaces in the future. This could potentially be a high-powered DCFC (150kW), which would be the first in the Sacramento area. This site also presents an opportunity to plan for an e-bike hub or transit charging location.

The parking lot currently has only low-voltage electricity for lighting that is powered from a meter that is across the intersection of Olive Drive and Richards Blvd. However, a PG&E transformer is mounted on a power pole on Richards Blvd less than 10 feet from the parking lot (circled in Figure 2) and the ground is covered by dirt, not concrete. It should be cost-effective to drop power from the pole and install the electrical for one or more charging stations in the area circled in red.

The consultant team is coordinating with PG&E about their ability to upgrade the PG&E meter and to estimate costs and determine the number of charging stations.

Figure 2: Olive Drive



Ownership Models

The consultant team identified and evaluated three owner/operator models that are summarized in Table 1. Based on discussions with charging vendors and local jurisdictions, most cities own their own EV charging stations but contract with their charging vendors for technical support including maintenance. This is the optimal structure for Davis, too.

Table 1: Owner/Operator Models for Public EV Charging

Model	100% Davis Owned and Operated	Shared with Vendor	100% Vendor Owned and Operated
Brief Description	Davis purchases and installs the charging stations and keeps 100% of the charging and LCFS revenue	Davis purchases equipment, vendor installs and operates stations; Davis and vendor share ownership	Vendor purchases equipment and operates, Davis or vendor pay for construction
100% Availability	Via a maintenance contract; equipment provider provides individual driver support	Vendor provides technical support, maintenance, and operation	Vendor provides technical support, maintenance, and operation
Staff Role	Potentially to issue work orders and financial reporting	Pay (or collect) monthly fees to/from vendor, and for charging station fees	Pay annual fee to vendor
Revenue Option 1	100% Davis; Davis sets price at charging station	Split: Davis keeps station revenue; vendor keeps LCFS credits	Split: Davis keeps 40% of station revenue; vendor keeps 60% station revenue and LCFS credits ¹
Total Rough Costs for Five Years²	\$678,200	\$700,200	\$919,500
Total Potential Revenue for Five Years	\$305,000	\$190,000	\$76,000

Charging Station Providers

Davis expressed interest in using a vendor that has stations in the Sacramento area so that the Davis stations extend an existing network. The networks that are most prominent in the Sacramento/Yolo/Solano County area are:

ChargePoint has nearly 100 Level 2 and DCFCs in the region. Users can pay with the ChargePoint card, phone app, or credit card at some locations. Pricing is unique in that the company allows the property

¹ Percentage depends on the vendor

² Average costs for EVSE purchase and operation; does not include the potential cost of the Amtrak lot upgrade

Appendix 1: Site Selection Approach

In 2017, City Council adopted the [City of Davis EV Charging Plan \(EVCP\)](#) which included a list of 31 sites for public Level 2 and DC Fast Charging. Between the time the plan was written, and the Green Region grant was funded, charging stations were installed at several of the sites. The aim of this project is to identify locations at which the City can make public charging available.

Through an iterative process, project site locations were identified for Phase 1:

- City Hall
- Downtown E Street parking lot
- Downtown Parking garage at 1st and F
- Downtown Parking garage at 4th and G streets
- South Davis Nugget shopping center
- Sutter Davis Hospital/Medical Offices
- Davis Police Department
- Davis Public Works Department (1717 5th Street)
- Davis Fleet/ Parks (1818 5th Street)

The consultant team added additional sites identified in the 2017 EVCP that did not already have Level 2 and/or DC Fast Chargers additional sites that have been developed or acquired since 2017.

Sites that are privately owned, like Sutter Health and Nugget Market, are challenging for a local government project because it raises issues about ownership, operational responsibility, and insurance/risk. If private sites are desired, the consultant team recommends offering property owners incentives and technical support so that they install charging stations.

Using a data-driven approach, Frontier and DKS evaluated 38 locations within Davis (excluding the UC Davis campus).

All locations were entered into a GIS map that also included existing and planned public charging stations and building projects that would result in charging stations as required by California's CalGREEN building code. The consultant team prioritized sites based on:

- Distance from a highway exit
- Estimated traffic flows from SACOG's models
- Number of jobs and employers
- City-controlled property

Sites were assigned a color base on the match to Phase 1 criteria, as shown in Figure 6. Green circles are the closest match and red are the farthest match. The colors do not indicate that a site is "good" or "bad," and some sites may closely match other criteria.

The following sites were identified to continue to a feasibility study. Bold text indicates it was from the original list.

1. Amtrak Station
2. Central Park
3. 979 Olive Drive
4. **City Hall/Davis Senior Center**
5. **Parking garage (4th & G)**
6. **Parking garage (1st & F)**
7. **E Street parking lot**
8. Oxford Park
9. **Public Works**
10. Cedar Park
11. Davis Community Gardens
12. **Davis Fleet/Parks**
13. **Police Station**

The consultant team used a score sheet to evaluate the feasibility of each of the 13 sites, as shown Table 2.

Table 2: Site Evaluation Criteria

Criteria	Score Type
Parking spaces available	Pass/Fail
Site control	Pass/Fail
24/7	Pass/Fail
Safety	Numerical
Activities for DCFC	Numerical
Activities for Level 2	Numerical
Public restroom	Numerical
Lot configuration	Numerical
EV readiness	Numerical
Panel capacity	Numerical
Transformer capacity	Numerical
Ease of access to electrical	Numerical
Civil upgrades	Numerical
Signing and striping	Numerical
Distance between EVSE and transformer	Numerical

The **first three** are pass/fail—for example, locations that don’t have public parking spaces failed and were not evaluated further.

The **second set** of criteria are about useability by the driver—is the location well-lit and visible, are appropriate amenities onsite or close by on a safe walking route?

The **third set** are about installation and help to identify the cost of installing charging stations at each site.

We're getting charged up!



Public EV charging stations are coming, courtesy of VCE and our grant partners.



Grant goals:

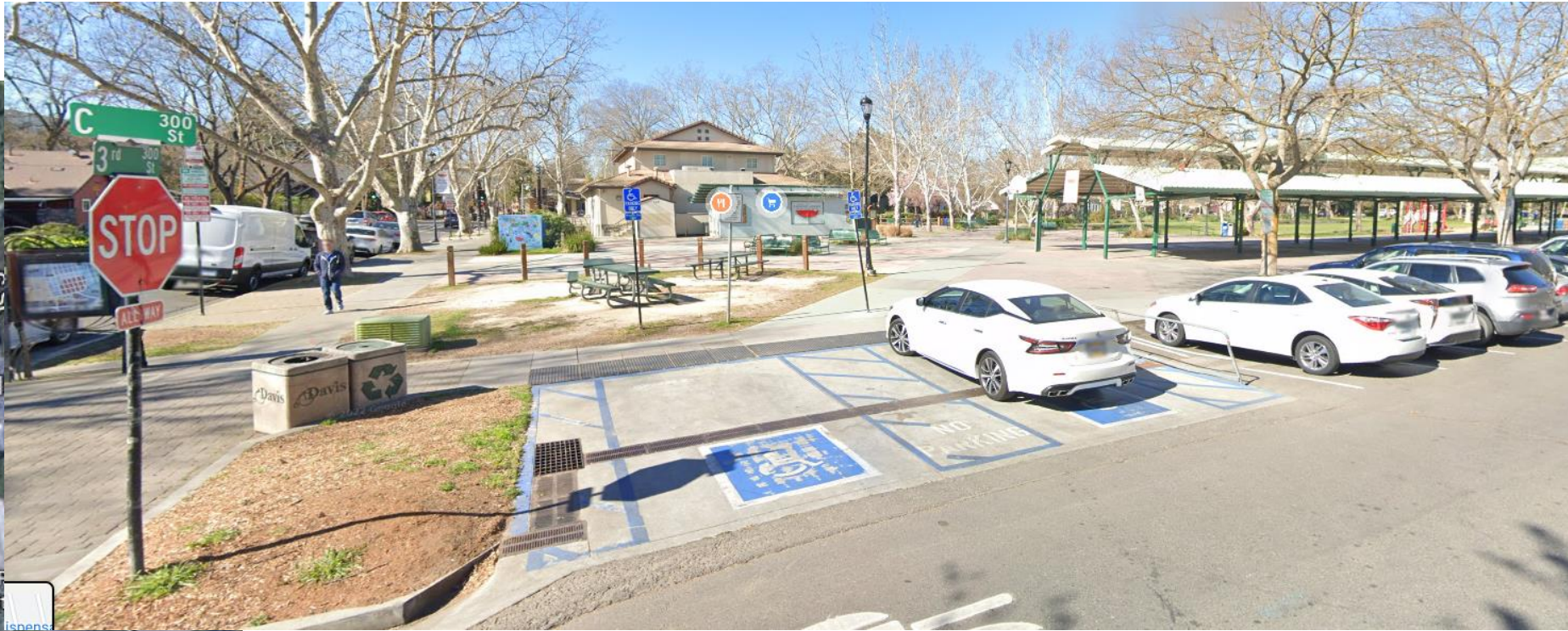
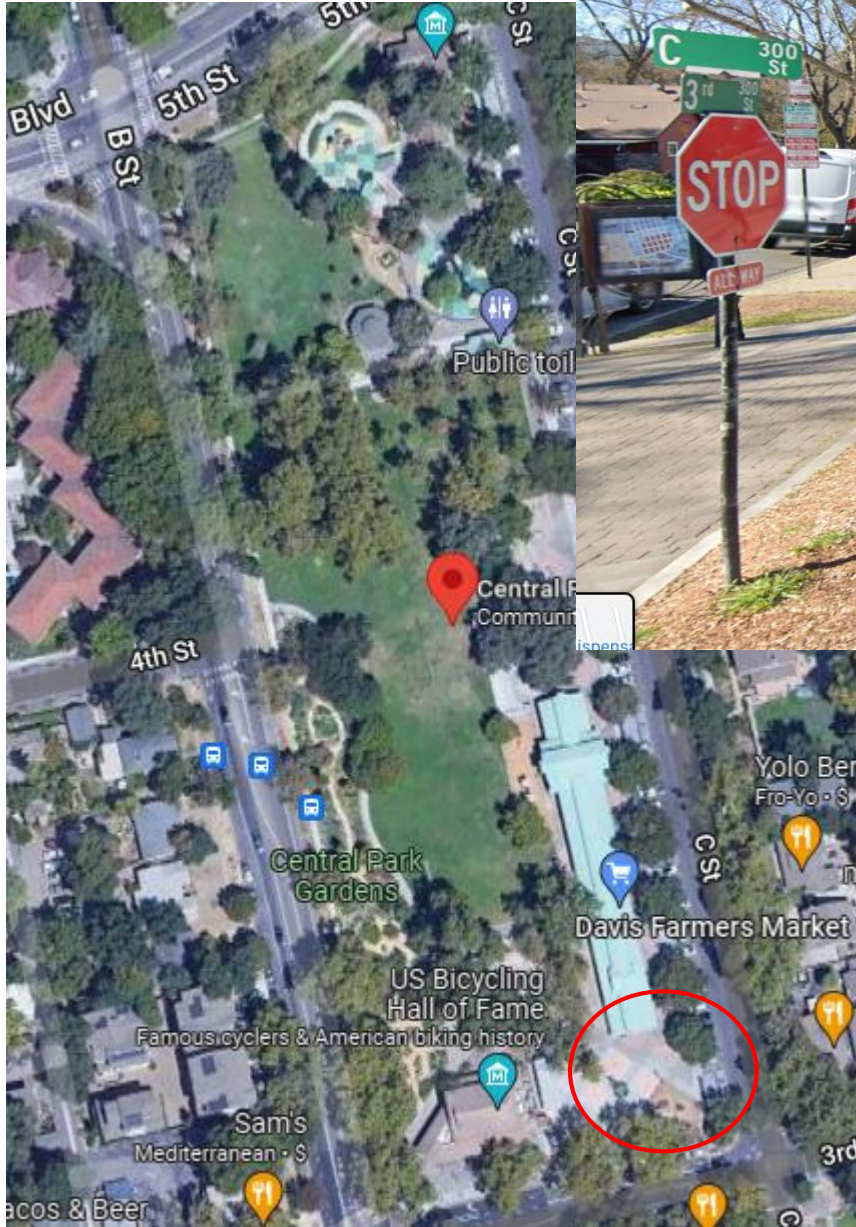
- Public charging stations
- Benefit Davis residents
- Build internal capacity for Davis as a destination
- Improve multi-modal hub development in Davis downtown

Phase 1 Sites

Site	Original	Revised	Reason
City Hall -- Existing dumb chargers	Replace with two dual-port Level 2 stations and one DCFC	Replace with 4 to 6 dual-port L2 during generator project	Leverage existing electrical work to save costs
4 th & G garage – Existing dumb chargers	Replace with two dual-port Level 2 stations	Unchanged	Low-cost upgrade from free charging to paid charging
E Street parking lot -- Existing dumb charger	Replace with two dual-port Level 2 station	One dual-port L2 station	Low-cost upgrade from free charging to paid charging; existing electrical will not support two
Olive Drive	New dual-port Level 2	New high-power DCFC	Excellent location for fast charging; available electricity
Amtrak – Existing dumb charger	Replace with dual-port DCFC	Dual-port DCFC and wall-mount Level 2; add capacity for future e-bike hub and bus charging	Supports the goal of multi-modal hub development
Central Park	Added at NRC request	Consider for future grant	Better opportunity for multi-modal hub



- Easy power drop from transformer
- Can expand in the future
- Easy to make an ADA spot
- Trees provide shade during charging
- Safe walk to coffee shop and stores



- Improve park power supply
- Add street lighting
- Improve drains to remove culvert
- Add a bike lane and e-bike hub
- Add charging stations



Thank you!