

Capital Project Appropriation Request

8/21/2024

FY 24/25

Project: 001394 **Electric Vehicle (EV) Charging Infrastructure Developm**
Agency: 0220 **Operations: Engineering**

| | |
|------------------|--|
| Oracle Date | |
| Commitments | |
| Obligations | |
| YTD Balance | |
| Amount Available | |
| Unfunded | |

Total Request: \$735,842.38

Part A - Description of Request

This request is for the purchase and installation of (10) Dual-Port Level II Electric Vehicle Chargers divided between the first and second floors of the Government Center parking garage and (3) Dual-Port Level II Electric Vehicle Chargers located on the ground floor of the Bell Street parking garage. All chargers will be publicly accessible to comply with grant requirements, and the future City EV fleet will utilize the chargers in the Government Center.

Included in the total cost are the chargers, electrical 'make-ready' components and infrastructure, engineering design, labor, a 5-year maintenance contract, and a 5-year networking subscription. This project is eligible to receive CT Department of Environmental and Energy Protection (DEEP) grant funding (65% Grant, 35% City Match).

Locations:

- Government Center Garage (Ground Floor and 2nd Floor closest to Tresser Blvd): 888 Washington Blvd, Stamford, CT 06901
- Bell Street Garage (Ground Floor): 28 Bell St, Stamford, CT 06901

Part B - Appropriation Request Detail

| Fund Source | FY 24/25 | Capital Forecast | | | | | | Total |
|--------------|---------------------|------------------|------------|------------|------------|------------|------------|---------------------|
| | Amount | FY 25/26 | FY 26/27 | FY 27/28 | FY 28/29 | FY 29/30 | FY 30/31 | |
| Bond (City) | 257,544.83 | 0 | 0 | 0 | 0 | 0 | 0 | 257,544.83 |
| State Grant | 478,297.55 | 0 | 0 | 0 | 0 | 0 | 0 | 478,297.55 |
| Total | \$735,842.38 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$735,842.38 |

Part C - Project History

Part D - Approvals

| | | | |
|------------------------------------|---------------------------|---------------------------------------|-------------|
| Preparer <i>OPM Dept</i> | Date 08/21/2024 | OPM Director/OPM Asst Director | Date |
| Department Head | Date | Director of Administration | Date |
| Director | Date | Mayor | Date |

SUMMARY OF ESTIMATE

| ITEM | DESCRIPTION | AMOUNT | COMMENTS |
|------|---------------------|---------------|----------|
| 1 | DIVISION 2 | | |
| 2 | DEMOLITION | \$ 25,000.00 | |
| 3 | | | |
| 4 | DIVISION 3 | | |
| 5 | CONCRETE | \$ 5,000.00 | |
| 6 | | | |
| 7 | DIVISION 5 | | |
| 8 | MISCELANEOUS METALS | \$ 2,000.00 | |
| 9 | | | |
| 10 | DIVISION 26 | | |
| 11 | ELECTRICAL | \$ 320,863.74 | |
| 12 | | | |
| 13 | DIVISION 32 | | |
| 14 | BOLLARDS | \$ 7,200.00 | |
| 15 | PAVEMENT MARKING | \$ 500.00 | |
| 16 | SIGNS | \$ 6,000.00 | |
| 17 | | | |
| 18 | SUB TOTAL | \$ 366,563.74 | |
| 19 | GENERAL CONDITIONS | \$ 43,987.65 | 12% |
| 20 | SUB TOTAL | \$ 410,551.39 | |
| 21 | OVERHEAD AND PROFIT | \$ 41,055.14 | 10% |
| 22 | SUB TOTAL | \$ 451,606.53 | |
| 23 | BOND | \$ 9,032.13 | 2% |
| 24 | SUB TOTAL | \$ 460,638.66 | |
| 25 | ESCALATION | \$ 27,638.32 | 6% |
| 26 | SUB TOTAL | \$ 488,276.98 | |
| 27 | CONTINGENCY | \$ 97,655.40 | 20% |
| 28 | TOTAL | \$ 585,932.38 | |

ABOVE IS CONSTRUCTION ONLY PROVIDED BY PROFESSIONAL CONSTRUCTION SERVICES, INC.

| | | | |
|-----|--------------------------------|--------------|--------------------------|
| *29 | ELECTRICAL CD DEVELOPMENT | \$ 25,000.00 | (MUSCO ENGINEERING) |
| *30 | 5-YEAR MAINTENANCE CONTRACT | \$ 17,000.00 | (ARTIS ENERGY SOLUTIONS) |
| *31 | 5-YEAR NETWORKING SUBSCRIPTION | \$ 32,800.00 | (ARTIS ENERGY SOLUTIONS) |

***ROWS 29-31 ARE SOFT COST ESTIMATES PROVIDED BY MUSCO ENGINEERING & ARTIS ENERGY SOLUTIONS**

| | | | |
|----|--------------|----------------------|--|
| 32 | TOTAL | \$ 660,732.38 | |
|----|--------------|----------------------|--|

IV. FINANCIAL SUMMARY

Incentives

The utility EV incentive program is capped at \$20,000 per site. The program will cover the following costs up to the incentive cap:

- Up to 50% of the EV charging station hardware
- Up to 100% of the qualifying make-ready sitework

We expect that this installation will qualify for \$20,000 of incentives.

Financial Tables: EV installation and Artis sitework

The table below includes pricing for the EV installation and Artis sitework as described in scope of work section.

| Town of Stamford: Bell Street Parking Garage Level 2 Dual-Port EV Charging Station & Sitework Pricing | |
|---|-----------------------|
| Description | ChargePoint CP6000/80 |
| Qty 3 Dual-Port Charging Station / Qty 6 Charging Ports | 3 |
| Total EV Charging Station Cost | \$33,297 |
| Total Shipping | \$1,050 |
| Gross Price EV Charging Stations | \$34,347 |
| Artis Make-Ready Scope of Work | \$23,723 |
| Installation of Bollards | \$2,100 |
| Subtotal Project Gross | \$60,170 |
| Sales Tax | \$0 |
| Gross Project Price | \$60,170 |
| Incentive Calculation | |
| EV Station Incentive | -\$18,264 |
| Applicable Site and Make-Ready Incentive | -\$1,736 |
| Estimated Total Incentives | -\$20,000 |
| Gross Price EV Stations and Sitework | \$40,170 |

Proprietary and Confidential to Artis Energy Solutions

Financial Tables: Networking/Software and Extended Warranty

A. The networking/software is required for five years to qualify for incentives. This can be prepaid or paid annually. Please select appropriate plan.

| Cloud Networking/Software for EV Station -Total for 3 EV Stations | | |
|---|-----------------------|--------------------------|
| Payment Option | ChargePoint CP6000/80 | |
| | Price | Option |
| 5-Year Prepaid | \$9,840 | <input type="checkbox"/> |
| Annual Billing | \$2,190 | <input type="checkbox"/> |

B. The stations are required be maintained for five years. The extended full parts and labor warranty is optional but highly recommended to avoid downtime and expensive one-off repairs. Please select desired option below.

| Extended Assure Warranty Full Parts and Labor Warranty – Total for 3 EV Stations | | |
|--|-----------------------|--------------------------|
| Payment Option | ChargePoint CP6000/80 | |
| | Price | Option |
| 5-Year Prepaid | \$5,100 | <input type="checkbox"/> |
| Annual Billing | \$1,290 | <input type="checkbox"/> |
| Decline Ext. Warranty | | <input type="checkbox"/> |

V. NEXT STEPS

1. City of Stamford to review proposal and select chargers along with networking and warranty options.
2. By signing, City of Stamford authorizes Artis to submit the EV applications and required documents on behalf of City of Stamford and commits to work collaboratively to provide Artis with any needed documentation to streamline the applications and installation.
3. Artis requires the utility bill for each site to submit the EV incentive application package.
4. To authorize Artis to submit the incentives on behalf of City of Stamford, the LOA – letter of authorization and utility terms and conditions in Exhibit A must be signed.
5. Once this document is signed and the utility incentive reward received and signed, Artis to develop installation implementation timeline.

EV Infrastructure Development (Gov Center and Bell St Garages)

Responses to Previously Asked Questions from Board Members

Last Updated 8/19/2024

1. Will the administration charge a fee for the public use of the chargers?

Yes, the administration will charge a fee for the public to utilize the chargers. This fee will be based on a \$/kWh rate to cover the cost of electric consumption and other potential operational/administrative costs (which may include increases in security, monitoring, insurance, etc.). The exact fee will depend on the price of electricity and other overhead expenses closer to when the chargers are installed. Note that this fee can be adjusted provided the City doesn't generate a profit during the first three (3) years of operation to comply with grant requirements. After three years, the administration will reevaluate the fee structure based on utilization and need. City fleet vehicles will not pay the fee, but utilization will be tracked accordingly.

2. Can these chargers support newer EVs with more advanced battery technology?

Based on multiple discussions with EV vendors and installers, while battery technology may evolve, charging connector standards will remain for the foreseeable future which will ensure that future vehicles can still accept a charge on older equipment.

3. Can the grant be used for other locations around the city? Why just the Government Center?

Yes, the CT Department of Energy and Environmental Protection (DEEP) confirmed that the grant funds can be used for other locations. This revised plan proposes chargers at both the Government Center parking garage and the Bell St parking garage.

4. What is the administration's plan for EVs and EV charging infrastructure from a broader perspective?

Regarding EVs, the City's administration intends to pursue the purchase of electric vehicles to replace the conventional internal combustion engine (ICE) vehicles to align with the broader sustainability goals and reduce operating costs. Fleet Maintenance has identified 20 vehicles that would be deemed a priority to replace based on their current condition and age, many of which are over two decades old. On average, these vehicles travel roughly 4500 miles per year per vehicle. Fleet Maintenance estimates that the \$/mile cost of maintenance work is approximately \$0.25/mile. Hence, the total annual maintenance cost for these 20 vehicles is about \$22,500. Conversely, a comparable electric vehicle variant has an estimated maintenance cost per mile of \$0.06/mile, according to the DOE¹. Therefore, for these 20 vehicles, the city would save roughly \$17,100 per year in avoided maintenance costs. For a more representative comparison, the DOE also reports that a new conventional ICE vehicle costs roughly 10.1 cents per mile compared to the 6.1 cents per mile of an EV, resulting in a \$3,600 savings per year in maintenance costs alone.

¹ <https://www.energy.gov/eere/vehicles/articles/fotw-1190-june-14-2021-battery-electric-vehicles-have-lower-scheduled>

Additionally, EVs have a substantially lower amount of carbon emissions compared to conventional gas vehicles. For example, a 2024 Nissan Leaf EV in CT is estimated to release about 86 grams of CO₂/mile, whereas a new gasoline vehicle emits about 400 grams of CO₂/mile². If we were to apply these metrics to 20 fleet vehicles that each drive roughly 4500 miles per year, then ICE vehicles account for 36 metric tons of CO₂ equivalent emissions per year, and EVs account for 7.74 metric tons of CO₂ equivalent per year (1 metric ton = 1,000,000 grams). This difference of approximately 28.3 metric tons of CO₂ equivalent per year equates to about 3.7 homes' energy use per year³. Note that this comparison to homes' energy use is based on national data from the EPA, state-level data is not available.

It's important to note that CT has experienced significant growth in EVs over the last few years⁴, and access to charging is in increasing demand. According to CT DEEP data, as recently as July 1st of 2024, the number of EVs registered in CT has risen from 2,346 to 52,691 over the last decade. Stamford saw an increase in EVs registered to the City from 109 in 2014 to 2628 in 2024 and currently ranks as the CT city with the second most registered EVs (Greenwich is first with 2962 EVs). To address the growing demand for EVs, the City will continue to review other locations that would be good candidates for EV charging infrastructure.

5. Are there any risks of fires?

Studies have shown that the rate of combustion accidents is significantly lower in EVs than in ICE vehicles. One such study conducted by the National Transportation Safety Board reported 1,530 ICE Vehicle fires per 100,000 sold, while EVs account for just 25 per 100,000⁵.

The chargers themselves are required to be built to comply with strict Underwriters Laboratories (UL) and International Electrotechnical Commission (IEC) safety standards, and the site electrical work must conform to National Electrical Code (NEC) installation standards. Close adherence with all manufacturing and installation codes helps ensure a low risk of accidents occurring.

The new proposed location of the chargers (Tresser Blvd side of GC garage on first and second floors) was reviewed and approved by the Stamford's Fire Department. While the risk of fire in EVs is statistically very low, this location would permit ease of access in the rare event a fire was to occur.

6. Can the parking garage withstand the extra weight of electric vehicles?

The government center parking garage slab is designed for a uniform live load of 50 lbs per square foot, based on available drawings from the original construction. In general, EVs vary in weight by an average of 20-30% over internal combustion engine (ICE) vehicles. However, the fleet vehicles the city is looking to procure include the Chevrolet Bolt EUV, Toyota bZ4X, Kia Niro,

² <https://fueleconomy.gov/feg/Find.do?action=bt2>

³ <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

⁴ <https://portal.ct.gov/-/media/deep/air/mobile/cheapr/ev-reg-fact-sheet.pdf>

⁵ <https://www.kbb.com/car-news/study-electric-vehicles-involved-in-fewest-car-fires/>

Nissan Leaf, and the Ford Mustang Mach-E (potentially for the police department) – all of which have gross vehicle weight ratings (GVWR) lower than the load rating of the garage slab for a typical 9' x 20' parking space. Note: the GVWR is the curb weight of the vehicle plus the total maximum weight of passengers, cargo, and any additional equipment.

Unless multiple ICE and/or EVs with total individual weights above 9,000 lbs are expected to be parked side-by-side in the garage, the overall impact on the garage based on the fleet vehicles proposed is in a range of what exists now. In the case where there is more demand or city operations see heavy EVs or ICE vehicles, those vehicles should remain on the ground level unless a more in-depth analysis is conducted to examine the effects those vehicles have on the structure that currently exists. It's also prudent for the city to post signage limiting heavy vehicles to remain on the ground level. The proposed plan for the Government Center garage calls for 10 dual port chargers divided between the ground floor and second floor.

The proposed chargers for Bell St. will be installed next to the existing chargers on the ground floor of the garage where added weight isn't a concern.