

# Fleet Management Department

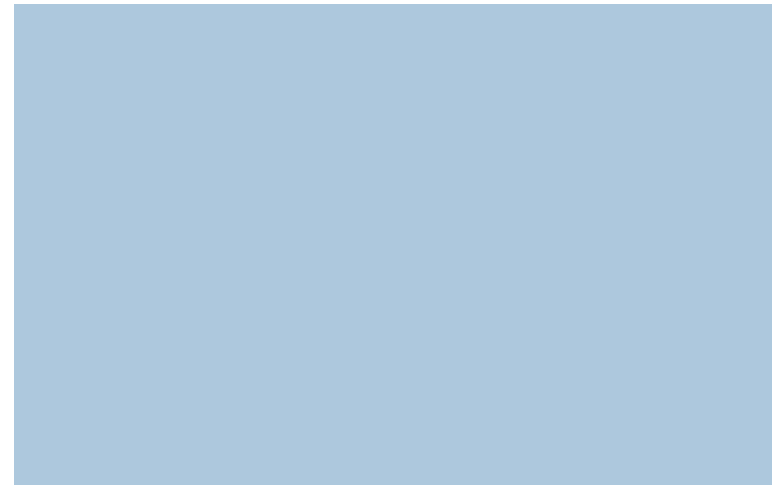
STATUS REPORT:

BATTERY ELECTRIC VEHICLE PROGRAM

SEPTEMBER 9, 2021

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FLEET MANAGEMENT DIRECTOR



# Battery Electric Vehicle Program: *Current State*



## **Vehicles**

- 15 Each, Chevy Bolts
- 25 Each, Nissan Leafs

## **Electric Vehicle Charging Infrastructure**

- 6 each, Chargers at City Hall Annex
- 3 each, Chargers at 611 Walker
- 1 each, Charger at 2805 McKinney



# Battery Electric Vehicle Program: *Program Layout*



## City of Houston Fleet

Light-Duty  
Vehicles

CAP Goal:  
All Non-emergency  
converted to EV by  
2030

Heavy-Duty  
Vehicles

Non-emergency  
applications

Electric Vehicle  
Supply Equipment  
(EVSE)

Battery Chargers

Facility Modifications

# Battery Electric Vehicle Program: *Light-Duty Vehicles*



## PROPOSED PROJECT

- Goal: Purchase 100 each, EVs in FY22

## PROJECT STATUS

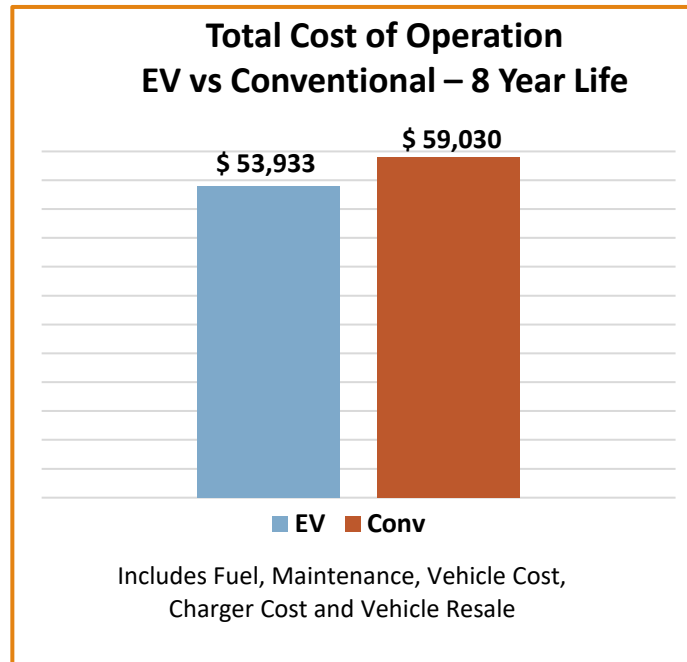
### **Complete**

- Research vehicle specifications
- EV Report (Evolve & eIQ)
- EVSE Strategy Recommendations (RMI)
- 100 EVs reserved with Ford
- Funding Allocation

### **Underway/Pending**

- Discussions with depts.
- Discussions with vehicle manufacturers/dealers
- Solicitation
- Auto technician training

| EV Model              | MSRP     | Range (miles) |
|-----------------------|----------|---------------|
| Ford F-150 Lightening | \$39,974 | 230           |
| Ford E-Transit        | \$43,295 | 126           |
| Chevrolet Bolt        | \$31,000 | 259           |
| Nissan Leaf           | \$31,670 | 149           |





## **Evolve eIQ Study: Summary**

1. 4,157 vehicles can be replaced immediately with an EV.
2. 1,345 vehicles can be replaced cost effectively to achieve a savings of \$6.9M over 8-year life.
3. Replacing the 1,345 cost effective vehicles can result in an annual CO2 decrease of 2,810 metric tons.

## **RMI Study Recommendations: Summary**

1. Be strategic – Establish a long-term EV & charger procurement roadmap.
2. Explore a range of potential financing options: bonds, grants.
3. Explore home charging.

# Battery Electric Vehicle Program: *Light-Duty Vehicles*



## FY22 EV Purchases

| City of Houston Departments   |
|-------------------------------|
| Fire                          |
| Police                        |
| Solid Waste Management        |
| Public Works                  |
| General Services              |
| Airport System*               |
| Fleet Management (Fleetshare) |

\* Not yet confirmed

# Battery Electric Vehicle Program: *Heavy-Duty: Refuse Truck Pilot*



## PILOT PROJECT

- 1 Each, Rear-loader, Downtown Operation
- Truck to be based at NE Service Center

## VEHICLE DETAILS

- Two chassis manufacturers: Mack & Peterbilt
- Range: 80 to 120 miles
- Cost: \$600,000/truck

## PROJECT STATUS

### ***Complete***

- Research & specifications for trucks & recharging infrastructure
- Allocation of funding

### ***Underway/Pending***

- Installation of charging infrastructure - EVSE
- Procurement of truck – Delivery expected Spring 2022



Current Rear-loader





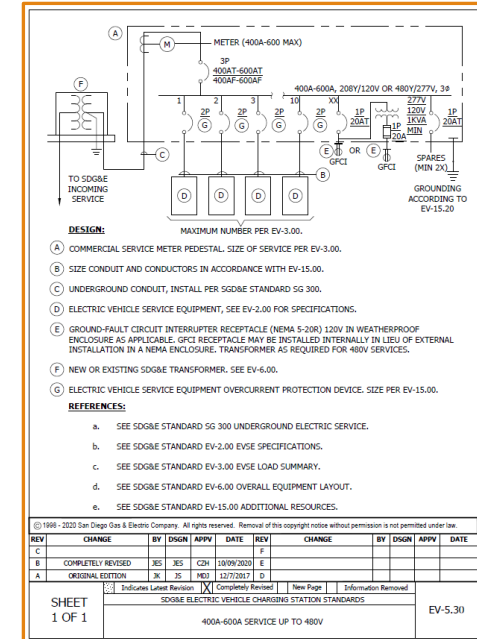
## PROJECT STATUS

### Complete

- Contract awarded for replacement of 42 chargers (*Phase 1*).
- Specifications complete for retrofit of facilities with recharging infrastructure (*Phase 2 & beyond*).
- Allocation of funding
- Charger installation locations identified (*Phase 2*).

### Underway/Pending

- Replacement of 42 chargers (*Phase 1*).
- Contracted JOC performing site surveys and design work (*Phase 2 & beyond*).
- Discussions with departments to prepare *Phase 3* package.
- Chargers to be purchased by COH and provided to JOC for installation (*Phase 2 & beyond*).





# Battery Electric Vehicle Program: *Charging Infrastructure - EVSE*



## Phase 2, EVSE Installations

| City Facility            | Primary Dept. | Address            |
|--------------------------|---------------|--------------------|
| Dart                     | HFD           | 1205 Dart          |
| HPD North                | HPD           | 9455 W. Montgomery |
| Northeast Service Center | SWD           | 5617 Neches        |
| City Hall Annex          | GSD/FMD       | 900 Bagby          |
| Dalton                   | GSD/FMD       | 2707 Dalton        |
| Berry                    | GSD           | 3026 Berry         |

Note: HPW to install EVSE using Enterprise funding and HPW contractors.

## Phase 3, EVSE Installations – In Development

| City Facility      | Primary Dept. | Address          |
|--------------------|---------------|------------------|
| Hermann Park       | HPRD          | 6001 Fannin      |
| Memorial Park      | HPRD          | 6501 Memorial Dr |
| HPARD Headquarters | HPRD          | 6200 Wheeler     |
|                    |               |                  |
|                    |               |                  |

# Battery Electric Vehicle Program: *Looking Forward*

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- Develop total cost of operation models using City of Houston data.
- Pursue grant opportunities – shovel ready projects.
- Explore alternative funding mechanisms.
- Explore utility rate structures for potential cost savings.
- Regional partnerships for coordinated efforts.

# Battery Electric Vehicle Program: *Road to 2030*



## Conversion of 4,000 Non-Emergency Light-Duty Vehicles to EV in 2030

| Year:                     | 2023              | 2024              | 2025              | 2026              | 2027              | 2028              | 2029              | 2030              |                     |
|---------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|
| # EV Vehicles in Fleet:   | 500               | 1,000             | 1,500             | 2,000             | 2,500             | 3,000             | 3,500             | 4,000             | <b>Totals (\$)</b>  |
| New Vehicle Cost (\$):    | 19,000,000        | 19,380,000        | 19,767,600        | 20,162,952        | 20,566,211        | 20,977,535        | 21,397,086        | 21,825,028        | <b>163,076,412</b>  |
| New Charger Cost (\$):    | 1,681,322         | 1,714,948         | 1,749,247         | 1,784,232         | 1,819,917         | 1,856,315         | 1,893,441         | 1,931,310         | <b>14,430,731</b>   |
| Fuel Savings (\$):        | (713,680)         | (1,455,907)       | (2,227,538)       | (3,029,452)       | (3,862,551)       | (4,727,762)       | (5,626,037)       | (6,558,352)       | <b>(28,201,279)</b> |
| Maintenance Savings (\$): | (741,375)         | (1,512,405)       | (2,313,980)       | (3,147,012)       | (4,012,441)       | (4,911,227)       | (5,844,361)       | (6,812,855)       | <b>(29,295,655)</b> |
| <b>Totals (\$):</b>       | <b>19,226,267</b> | <b>18,126,636</b> | <b>16,975,329</b> | <b>15,770,720</b> | <b>14,511,136</b> | <b>13,194,860</b> | <b>11,820,129</b> | <b>10,385,131</b> | <b>120,010,208</b>  |
| <b>FY22-26 CIP Fleet:</b> | <b>31,020,000</b> | <b>31,310,000</b> | <b>25,909,000</b> | <b>32,094,000</b> |                   |                   |                   |                   |                     |

# Battery Electric Vehicle Program

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