



Metro

Los Angeles County  
Metropolitan Transportation  
Authority  
One Gateway Plaza  
3rd Floor Board Room  
Los Angeles, CA

## Board Report

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**SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE  
SEPTEMBER 21, 2017**

**SUBJECT: ORAL REPORT ON SYSTEM SAFETY, SECURITY  
AND OPERATIONS**

**RECOMMENDATION**

RECEIVE oral report on System Safety, Security and Operations.

# Non-Revenue Fleet Electric Vehicle (EV) Pilot Project

*Operations*

*In partnership with Environmental Compliance & Sustainability and General Services*



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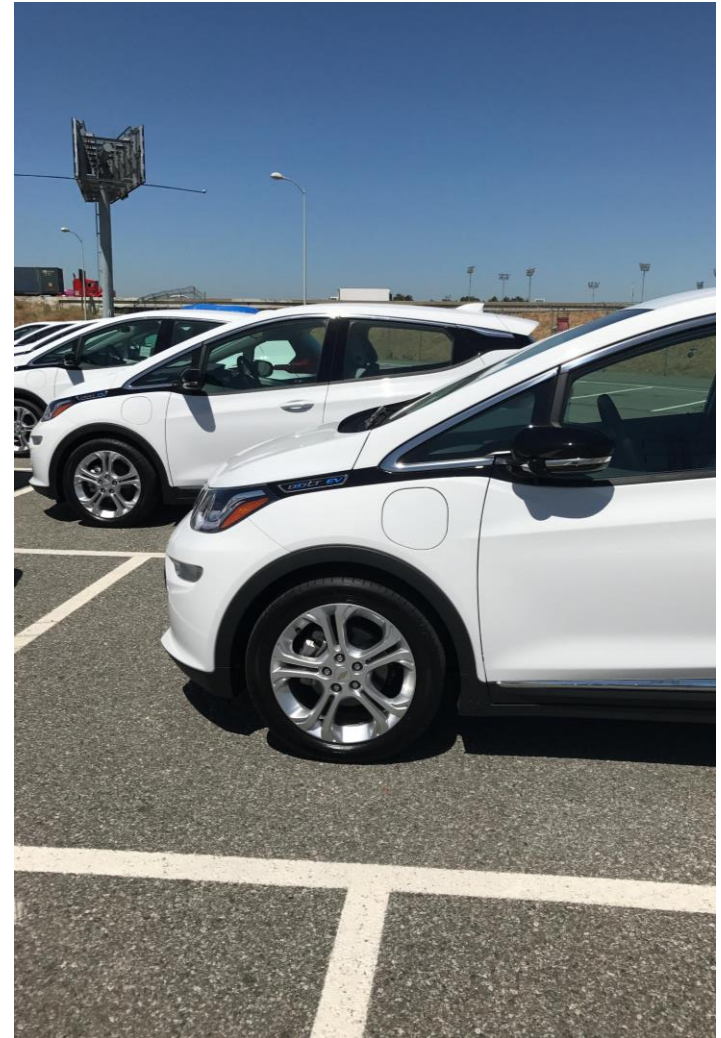
# GOAL

Evaluate the economic viability and suitability of replacing conventional non-revenue fleet vehicles with Electric Vehicles (EVs)



## PILOT DETAILS

- 10 Chevy Bolt EVs procured for vehicle pool and manager use
- EV charging infrastructure installed at Gateway, Division 13, 18 and CMF
- On-board and networked charger data collection
- Online EV driver training





## BENEFITS

- Lower maintenance costs
- Lower fuel costs
- State & regional emission reduction goals
- Sustainable power source
- Public health improvements
- Reduced energy dependence



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# CHALLENGES

- Driving range
- Recharge time
- Vehicle cost
- Charging infrastructure
- Charging logistics
- Driver education



## MEASUREMENT AND VERIFICATION OF PILOT

Collect and evaluate data to determine Total Cost of Ownership (TCO) and viability:

- User data
  - Vehicle use, miles driven & typical charge period
- Infrastructure
  - Required quantity of chargers and location
- Maintenance and operating expenses
  - Fuel cost, maintenance cost & battery/vehicle longevity



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\*See appendix for TCO matrix and Bolt selection criteria

## NEXT STEPS

- Expand pilot project and replace additional conventional fleet vehicles with EVs
- Evaluate alternate EV manufacturers and models that meet Metro criteria, as developed in pilot
- Evaluate additional non-revenue uses for EV deployment





Picture	Year, Make, and Model	Passenger Volume	Electric Motor /Battery	Time to Charge with Level 2 (240V)	Range with Full Tank / Charge	Fuel Economy Miles Per Gallon (MPG) & Equivalent (MPGe)	Grams CO <sub>2</sub> per vehicle mile traveled <sup>1</sup>	MSRP (Rebate) <sup>2</sup>	Operating Costs			Total Cost of Ownership (10 Years)	Cost per Mile
									Fuel <sup>3</sup>	Maintenance and Repair <sup>4</sup>	Residual Value <sup>5</sup>		
	2017 Hyundai Ioniq Electric	96 ft <sup>3</sup>	88 kW	4 hours	124	MPGe 150 City 122 Highway 136 Combined	100	TBD \$10,000	\$3,250	\$3,656	-\$3,600	TBD	TBD
	2017 BMW i3 BEV	84 ft <sup>3</sup>	125 kW	5 hours	114	MPGe 129 City 106 Highway 118 Combined	120	\$43,600 \$10,000	\$3,770	\$3,656	-\$4,360	\$36,666	\$0.38
	2017 Chevrolet Bolt	95 ft <sup>3</sup>	150 kW	9.3 hours	238	MPGe 128 City 110 Highway 119 Combined	110	\$36,000 \$10,000	\$3,640	\$3,656	-\$3,600	\$29,696	\$0.31
	2017 Kia Soul Electric	97 ft <sup>3</sup>	81 kW	4 hours	93	MPGe 120 City 92 Highway 105 Combined	130	\$37,500 \$10,000	\$4,160	\$3,656	-\$3,750	\$31,566	\$0.33
	2017 Toyota Camry Hybrid LE	103 ft <sup>3</sup>	2.5 L, 4 cyl	N/A	680	MPG 42 City 38 Highway 40 Combined	260	\$26,790	\$5,900	\$6,770	-\$2,679	\$39,441	\$0.37
	2017 Honda Accord Hybrid	103 ft <sup>3</sup>	2.0 L, 4 cyl	N/A	758	MPG 49 City 47 Highway 48 Combined	223	\$29,000	\$4,917	\$6,770	-\$2,900	\$40,667	\$0.38
	2017 Hyundai Sonata Hybrid SE	106 ft <sup>3</sup>	2.0 L, 4 cyl	N/A	777	MPG 39 City 45 Highway 42 Combined	274	\$26,000	\$5,619	\$6,770	-\$2,600	\$38,370	\$0.36
	2017 Chevrolet Malibu Hybrid	100 ft <sup>3</sup>	1.8 L, 4 cyl	N/A	598	MPG 49 City 43 Highway 46 Combined	222	\$27,875	\$5,130	\$6,770	-\$2,788	\$39,756	\$0.37

<sup>1</sup> Data from [www.fueleconomy.gov](http://www.fueleconomy.gov)

<sup>2</sup> California Air Resources Board Clean Car Rebate (\$10,000/vehicle) is available for the first 30 vehicles for public fleets

<sup>3</sup> Assumes Total Mileage of 100,000 per vehicle and a fuel cost for Gasoline (\$2.36/gallon) and Electricity (\$0.13/kWh)

<sup>4</sup> Maintenance Cost Methodology provided by Metro Non-Revenue Staff

<sup>5</sup> Residual Value is estimated at 10% of the MSRP (Including Rebate for BEV)



Thank you



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