



# SHAKER HEIGHTS

## MEMORANDUM

**TO:** Sustainability Committee

**FROM:** Michael Peters, Sustainability Coordinator

**CC:** Mayor David E. Weiss  
Jeri E. Chaikin, Chief Administrative Officer

**DATE:** January 4, 2022

**RE:** **NOACA Electric Vehicle Charging Grant**

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The City was selected by the Northeast Ohio Areawide Coordinating Agency (NOACA) as one of several locations for the installation of additional electric vehicle charging. The Sustainability Committee is requested to approve the acceptance of this equipment and the obligation to operate and maintain it for five (5) years.

### **NOACA Program Background**

NOACA has allocated \$3 million in Congestion Mitigation and Air Quality (CMAQ) funding it receives from the federal government to expand accessibility and availability of electric vehicle charging in its service area. Locations were selected based on NOACA's internal data analysis and the City was invited to accept the installed equipment. This is not a traditional grant as NOACA will design, source and install (with its consultants) the equipment and then transfer ownership of the equipment to the City upon completion. The City will not be responsible for any costs of this installation but will agree to operate and maintain the equipment for 5 years. NOACA will provide a 5-year manufacturer warranty.

### **Equipment Being Granted**

The proposed equipment is referred to as "DC Fast Charge" or DCFC. This is different from the previous EV chargers the City has installed, which are AC Level 2. These AC Level 2 chargers, which cost on average \$5,000 per charger for the equipment and installation, provide a typical electric vehicle (EV) approximately 25 miles of range for every hour the EV is plugged in. They do this by supplying the EV with approximately 7 kilowatts (kW) of power.

DCFC provides a much faster charge as it typically supplies between 50 kW and 350 kW depending on the charger. This will recharge many EVs from 20% to an 80% charge (equivalent to 100 miles or more) in roughly 30 to 45 minutes (depending on the EV). This is ideal for locations such as The Van Aken District where an EV driver who does not have access to charging at home can recharge quickly while shopping or dining. Estimated cost for the equipment and installation is \$50,000 or more (depending on the equipment and power requirements).

### **Demand Charges – City Responsibility**

The much faster charging times are the result of much higher electricity capacity (these chargers require a commercial connection and operate at 480 volts and often 200 amps or more – double what an AC

Level 2 charger requires). One result of this high electric capacity is that the charger will incur “demand charges” from FirstEnergy.

The NOACA program requires the City to assume the operating costs of the chargers once installed. This includes both the electricity consumed by the cars and the costs of getting that electricity to the chargers. These latter costs include these “demand charges” that are unique to commercial electricity accounts (residential accounts are not subject to demand charges). These charges are imposed by the utility when a large amount of power (over 5kW) is drawn at any time during the billing month. The rationale is that the grid likes constant and stable consumption, but when a DCFC quickly asks the grid for 100kW the utility incurs additional costs.

There is little existing data to determine what these demand charges might be. The City’s Sustainability Coordinator consulted with FirstEnergy personnel to approximate total charges based on a theoretical charger (100 kW) that draws maximum power. The resulting total monthly costs were estimated to be between \$1,800 and \$1,900.

### **Cost Estimates**

The City is permitted, and is expected, to collect fees from the drivers using the chargers as we do with the AC Level 2 chargers to offset some of the costs of operating the equipment.

Under the agreement with NOACA, and due to the source of funds being the federal government, the City cannot profit from the chargers but can cover its costs. Given the expected demand charges and initial relatively low levels of utilization (as EV ownership increases we would expect utilization to also increase), there will be a net cost to the City.

Current commercial DCFC rates in the region vary, from \$0.30 per minute (EVgo – W. 29th Street) to \$0.43 per kWh (Electrify America – Sheetz in Mentor). The City currently has a price of \$0.20 per kWh for the AC Level 2 chargers and would work with NOACA on setting the price for the DCFC stations. This would cover a portion of the operating costs, but not the full costs in the near to medium term.

There is a mismatch between what the City can reasonably set as fees and the costs from the utility. As the table below demonstrates, if there is only one charging session per month the estimated cost is roughly the same as having multiple charging sessions. This is due to the demand charge being billed based on the highest power draw in a month – whether it occurs once or multiple times. There would only be one demand charge per meter, with the NOACA chargers (two are proposed) being on the same meter and thus incurring one demand charge.

Initial use will likely be low as most EVs continue to be owned by drivers who have access to charging at home. As more public chargers become available, more drivers who live in apartments, condos, and other places without access to charging will be able to benefit from the operating and maintenance costs savings of driving an EV. This is an important equity consideration and will allow any resident the ability to access EVs, for which the City will benefit through improved air quality, reduced environmental contamination, and higher resiliency.

Assuming an average charging session of 25kWh (roughly half the capacity of many current EV batteries) and 1 session per day (at \$0.40 per kWh) results in a net cost to the City of approximately \$1,500 per month (or \$18,000 per year). As the use of the chargers increases over time the costs reduce, but it is unlikely the use would ever achieve breakeven. While this type of charger along a freeway could conceivably break even or possibly generate a small amount of revenue, until the utility modifies how demand charges are calculated (or alternative strategies such as battery storage are more widely available) the investment in providing fast charging results predominantly in non-monetary benefits.

KWHrs	KW	Load						
Monthly usage	Peak Demand	Factor	Total	Sessions	per Day	per kWh	Revenue	Net Cost
1	100		\$ 1,887.47	1	0.03	\$ 1,887.47	\$ 0.40	\$ 1,887.07
2,100	100	2.92%	\$ 2,007.52	84	2.80	\$ 0.96	\$ 840.00	\$ 1,167.52
4,200	100	5.83%	\$ 2,136.05	168	5.60	\$ 0.51	\$ 1,680.00	\$ 456.05
6,300	100	8.75%	\$ 2,264.57	252	8.40	\$ 0.36	\$ 2,520.00	\$ (255.43)

### **Agreement with NOACA**

The equipment and operational requirements are contained in a Partner Agreement between NOACA and the City. The City's Law Director and Planning Department have reviewed this agreement.

There is no specific allocation for these new electric vehicle charging costs in the current budget, but they can be separately tracked.

### **Request**

The Sustainability Committee is requested to recommend the Mayor complete the partnership agreement with NOACA, which requires approval to continue the engineering work and acquire the equipment. This matter will then be referred to the Finance Committee and City Council.