



# City of Norman, OK

Municipal Building  
Council Chambers  
201 West Gray  
Norman, OK 73069

## Master

**File Number: GID-1920-46**

**File ID:** GID-1920-46      **Type:** Authorization for Purchase      **Status:** Consent Item

**Version:** 1      **Reference:** Item 16      **In Control:** City Council

**Department:** Public Works Department      **Cost:** \$104,250.00      **File Created:** 12/19/2019

**File Name:** CNG STORAGE VESSEL      **Final Action:**

**Title:** CONSIDERATION OF AUTHORIZATION FOR THE PURCHASE OF A COMPRESSED NATURAL GAS (CNG) FUELING FACILITY STORAGE VESSEL FROM CP INDUSTRIES IN THE AMOUNT OF \$104,250 TO ACCOMMODATE FAST FILL AND SLOW FILL EXPANSION NEEDS.

**Notes:** ACTION NEEDED: Motion to approve or reject authorization for the purchase of a CNG Fueling Facility storage vessel from CP Industries in the amount of \$104,250.

ACTION TAKEN: \_\_\_\_\_

**Agenda Date:** 01/14/2020

**Agenda Number:** 16

**Attachments:** 3-pack CNG Storage Vessel.docx, Quote cp industries storage vessel.pdf, TRANSIT CNG EXHIBIT - FY20 ACOG.pdf

**Project Manager:** Mike White, Fleet Supt

**Entered by:** sharon.hamilton@normanok.gov

**Effective Date:**

### History of Legislative File

Ver- sion:	Acting Body:	Date:	Action:	Sent To:	Due Date:	Return Date:	Result:
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### Text of Legislative File GID-1920-46

Body

**BACKGROUND:** On August 28, 2018, University of Oklahoma (“OU” or “University”) officials advised City staff of their desire to transfer non-campus bus services in Norman to another operator by the end of fiscal year 2019. On July 30, 2019, Council approved Contract K-1920-30 with EMBARK to provide transportation services for the City of Norman from August 3, 2019 through June 30, 2020, and a facility lease agreement with the University of Oklahoma for a portion of the current OU Transportation Center to operate the fixed routes, paratransit

routes and fleet maintenance operation of the Norman public transportation system until December 30, 2019. On December 10, 2019, Contract K-1920-32 was amended to extend the lease agreement with the University of Oklahoma until June 30, 2020.

On August 13, 2019, Council approved an amendment to Contract K-1617-114 with PDG, L.L.C., to provide design services for the City Parks/Transit/Public Safety Maintenance Facility. The timeline for the facility design was fast-tracked in order to meet the expectations of each stakeholder group. The Bus Transit Facility will receive high priority due to the urgent need for the City to move out of the OU Fleet Facility; however, the Park Maintenance Facility and the Emergency Vehicle Maintenance Facility are equally as important, and timelines are critical.

On August 5, 2019, the Public Works Fleet Division started performing night shift fueling, minor maintenance and cleaning service of thirteen (13) City of Norman transit vehicles that the University of Oklahoma formerly maintained. On October 1, 2019, the Public Works Fleet Division began the same services to an additional fifteen (15) transit vehicles, bringing the City of Norman transit vehicle total inventory count to twenty-eight (28) units. Fourteen (14) of the transit vehicles are dedicated Compressed Natural Gas (CNG) vehicles and are expected to consume 7,500 gallons of CNG each month. The City of Norman's CNG Fueling Facility already has monthly usage of approximately 33,000 gallons that is consumed by the public and internally by the City. In order to handle the growing load on this facility, it is critical to expand on-hand CNG storage and replace the underperforming, unreliable natural gas engine on the natural gas compressor package. The CNG Fueling Facility has two electric drive 125 horsepower (hp) compressors each, and one 72 horsepower (hp) natural gas engine-powered compressor. The natural gas engine-powered compressor is relied upon during power outages and overnight slow-fill for approximately 35 vehicles located at the North Base Facility. The current on-hand CNG storage is 900 gallons at a maximum pressure of 4200 pounds per square inch (PSI). As PDG, LLC works to develop a master plan for maintenance facilities, it is equally important to expand and upgrade our CNG Fueling Facility to handle the increased load needed with the additional Transit vehicles and guarantee the reliability of fuel to our public and private customers. It is recommended to add another 400 gallons of CNG storage capacity and have a new 145 horsepower (hp) natural gas drive engine that produces comparable output to the present electric drive compressors.

With this background in mind, Public Works staff has consulted with the original CNG Fueling Facility design and engineering firm, Small Arrow Engineering, LLC, of Joplin, MO. Small Arrow has over nine years of Alternative Fuels experience with the City of Norman, including grant writing/administration services, CNG Fueling Facility improvements and performance enhancements. Small Arrow Engineering has provided the following scope of work to include:

- Design upgrades to the present CNG station to increase CNG storage capacity (an additional 52,500 cubic feet (CF) at 4200 pounds per square inch (psi). This additional capacity will complete full station buildout, which has space previously allotted for these additional American Society of Mechanical Engineers (ASME) rated vessels.
- Installation of a new natural gas powered engine to increase the capacity and output of the present Arrow Engine based compressor package. This upgrade will then

allow full use of the natural gas drive compressor package during OG&E “SmartHours” and reduce electric charges to the City during the 2:00 to 7:00 p.m. timeframe for 5 months out of the year. The upgraded natural gas drive compressor will have the capacity to serve and fuel the entire City’s CNG fleet (including the new transit vehicles) that may require CNG during electrical outages.

- Design of station controls and slow-fill CNG systems expansion to serve the transit vehicles at the new City Parks/Transit/Public Safety Maintenance complex along the south side of Da Vinci Street. If approved, ten (10) additional dual-hose slow fill dispensers will be installed to allow twenty (20) CNG-based transit vehicles to refuel and five (5) dual-hose slow fill dispensers will be installed to allow ten (10) CNG-based Park Maintenance vehicles to refuel as well. Fast fill only allows a tank to be at no more than approximately 75% full. Allowing the tanks to fill overnight provides up to 90% fill on the tank; this ensures the vehicle’s daily mileage range, allowing the transit vehicles to fill at night during off-peak hours when electricity rates are lower. By utilizing the slow-fill dispensers at night, the technicians will not need to fill the buses, which can be as much as fifteen minutes per bus saved each day, translating into at least approximately three (3) hours of staff time that will no longer be spent waiting for the fast fill to be completed at the CNG Fueling Facility.

On October 8, 2019, Council approved Contract K-1920-52 with Small Arrow Engineering, LLC, for design upgrade and expansion to the CNG Fueling Facility to accommodate transit fast fill and slow fill requirements.

On December 15, 2019, Small Arrow Engineering, LLC, on behalf of the City of Norman, applied for a fiscal year 2019-2020 Round 1 Clean Air Grant, administered by the Association of Central Oklahoma Governments (ACOG) for the additional alternative fuel vehicle slow-fill refueling equipment to serve the Transit and Parks & Recreation Divisions. This is a proposed 50/50 split of costs for this improvement project, which is estimated to have a total cost of \$340,000, with \$170,000 to be reimbursed to the City by ACOG upon the completion of work in June 2020. The award notification for the grant will be announced on ACOG on January 31, 2020.

**DISCUSSION:** On March 8, 2016, City Council approved Contract K-1516-119 in the amount of \$106,760 to purchase a three-pack storage vessel from CP Industries of McKeesport, PA to be used for storage improvements. When this storage vessel site was originally designed, Small Arrow Engineering made accommodations for a second three-pack CP Industries vessel if the City’s CNG demand ever increased and an expansion of on-hand storage was needed. CP Industries’ storage vessels are proprietary for their large size, storage, and delivery of compressed gases required by the City’s CNG Fueling Facility. If approved, Staff recommends a second CP Industries storage vessel assembly as this location is pre-engineered for the same size and type of vessel (see attached photo).

**RECOMMENDATION:** It is recommended that City Council approve the purchase of a new three-pack storage vessel assembly from CP Industries of McKeesport, PA, in the amount of \$104,250 to accommodate CNG fast-fill and slow-fill expansion needs. Funds for this purchase

are available in the Public Transit Fund, Eight Dual Slow-Fill Pumps (account Org 27590078, Object 46101; project BG0079).