

Appendix A-1

**STATEMENT OF WORK
"Gas Cylinder Basic Ordering Agreement"
September 11, 2023**

***Changes are shown in bold italic print**

The National Renewable Energy Laboratory (NREL) advances the science and engineering of energy efficiency, sustainable transportation, renewable power technologies, and provides the knowledge to integrate and optimize energy systems. To facilitate this work effort, NREL requires a reliable source of high-quality compressed scientific gases.

The objective of this Basic Ordering Agreement (BOA) is to procure gas cylinders on an as-needed basis that are the highest purity, quality, and quantity requested. It is imperative that the Vendor meet Contractor customer requirements and expectations, as outlined below.

The Vendor shall provide to the Contractor the type and size of the compressed stock gas cylinders listed below on an as-needed basis.

NREL's Stock Number	Description
G001	NITROGEN USP 224 CFT CGA 580
G002	ARGON INDUSTRIAL GRADE 330 CFT CGA 580
G003	HYDROGEN UHP 99.999% 80 CFT CGA 350
G005	HELIUM INDUSTRIAL GRADE 194 CFT CGA 580
G007	OXYGEN INDUSTRIAL GRADE 244 CFT CGA 540
G011	FORMING GAS 5% HYDROGEN BAL NITROGEN 279 CFT CGA 580
G013	FORMING GAS 10% HYDROGEN BAL NITROGEN 279 CFT CGA 350
G018	ARGON UHP 99.999% 246 CFT CGA 580
G019	HELIUM UHP 99.999% 215 CFT CGA 580
G020	HYDROGEN UHP 99.999% 249 CFT CGA 350
G021	CARBON DIOXIDE BONE DRY CGA 320
G022	NITROGEN UHP 99.999% 230 CFT 580
G023	OXYGEN HP 99.995% 300 CFT CGA 540
G024	ZERO AIR 220 CFT CGA 590
G025	PROPANE 33 lb.
<i>G126</i>	<i>ACETYLENE IND SZ MC 10CF</i>

The Vendor shall provide to the Contractor the type and size of the compressed gas cylinders listed below on an as-needed basis (Please Note: below is a preliminary list of non-stock gases – as the BOA work effort advances over time, non-stock gases may be added or removed).

Description	UNIT_QTY	QTY	Count
CARBON MONOXIDE	300	cf	21
ACETYLENE	100	cf	10
5% ARGON BALANCE HYDROGEN	198	cf	9
METHANE	277	cf	9
21% OXYGEN BALANCE NITROGEN	225	cf	8
4% CARBON MONOXIDE BALANCE NITROGEN	175	cf	7
10% CARBON DIOXIDE BALANCE NITROGEN	338	cf	6
0.1% CARBON MONOXIDE BALANCE NITROGEN	140	cf	5
10% OXYGEN BALANCE NITROGEN	228	cf	5
ETHYLENE	250	cf	5
15% METHANE BALANCE HYDROGEN	200	cf	4
2.5% HYDROGEN BALANCE AIR	144	cf	4
2% HELIUM BALANCE NITROGEN	277	cf	4
5% HYDROGEN 10% CARBON DIOXIDE BALANCE NITROGEN	249	cf	4
AMMONIA	277	cf	4
DEUTERIUM	237	cf	4
PHOSPHINE	433	cf	4
10% NITRIC OXIDE BALANCE NITROGEN	211	cf	3
SILANE	330	cf	3
ARSINE	150	cf	2

The following shall apply to all gas cylinder procurements placed under this BOA:

- Purchase orders will be placed with the Vendor under this BOA to acquire gas cylinders.
- The Vendor shall only provide the specific types and sizes ordered; substitutions will not be accepted.
- Quantities of gas cylinder purchases under this BOA will vary by purchase order and are dependent on the internal Contractor demand.
- Purchase orders for stock gas cylinders placed with the vendor by 2:00 P.M. shall require that the Vendor deliver the completed orders to Contractor by 9:00 A.M. the following business day. Back orders for stock gases are not acceptable.
- Purchase orders for non-stock gas cylinders placed with the Vendor by 2:00 P.M. shall require that the Vendor deliver the completed orders to the Contractor within two to five business days. Exceptions can be made for the delivery due dates for very uncommon gas mixtures.
- The Vendor shall honor the negotiated fixed unit prices under this BOA for each gas cylinder. Pricing shall include the cost of the gas cylinder and a one-time “adder” charge, regardless of the length of time the cylinder remains with Contractor. The Vendor shall not invoice the Contractor for delivery, hazardous materials handling, rental, or any other additional fees.

- Gas cylinders not originally quoted for this BOA shall be priced at 10% below the Vendor's GSA list price. Once a gas cylinder has been purchased that was not originally quoted for this BOA, that price shall remain the same for the duration of the BOA.
- If required by the Contractor, the Vendor shall ensure that gas cylinders containing highly toxic, pyrophoric, or highly corrosive gases have a pneumatic (automatic) cylinder valve with a DISS connection and a flow limiting orifice.
- All gas cylinders provided to the Contractor by the Vendor shall comply with all applicable Contractor regulations and industry standards.
- Prior to delivery, the Vendor shall ensure that none of the gas cylinders are leaking.
- Unless notified by the Contractor in advance of an alternate location, the Vendor shall deliver and pick-up the gas cylinders between the hours of 8:00 A.M. – 12 P.M. and 1:00 P.M. – 5:00 P.M., Monday through Friday at the location provided on the purchase order.
- The Vendor shall ensure that any of its, or its lower-tier vendors, officers, employees, or agents who are not U.S. citizens and who shall perform work at DOE facilities follow the site's security requirements. Access will be subject to DOE and the Contractor's approval.
- The Vendor shall provide a separate packing slip for each gas delivery. The packing slip shall contain the following information, at a minimum, for each cylinder delivered:
 - Contractor Purchase Order Number
 - Date Delivered
 - Description
 - Unique Vendor Barcode Number
 - Any other request identified on the purchase order
- The Vendor shall submit invoices according to the instructions provide on the individual purchase order.
- The Vendor shall pick up gas cylinders to be returned within two business days of being notified by Contractor.
- The quantity of used cylinders that need to be returned to the Vendor may vary, which may require that the Vendor schedule additional pickups.
- The Vendor shall provide the Contractor with a packing slip when used gas cylinders are picked up. The packing slip shall contain the following information, at a minimum, for each cylinder picked up:
 - Date picked up
 - Description
 - Contractor Stock Number (if applicable)
 - Unique Vendor Barcode Number
- On occasion, potential discrepancies related to the purity/contents of the gas cylinders are identified by Contractor personnel. When a discrepancy is identified, the Vendor will be notified of the circumstance. The Vendor shall pick up the gas cylinder within two business days of being notified and shall perform the required testing to validate the purity/contents of the gas.
- The Vendor shall provide written test results to the Contractor within two business days of picking up the gas cylinder that has been identified under the bullet above and the testing shall be performed at no cost to the Contractor. If the test results indicate that the Vendor is responsible for the discrepancy, the Vendor shall deliver a replacement

gas cylinder to the Contractor within two to five business days. Exceptions can be made for the delivery of very uncommon gas mixtures.