
**THE CNG FUELING FOR TRANSIT AGENCIES
PARTNERSHIP PROJECT**

FINAL TECHNICAL PROVISIONS – ADDENDUM 1

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1 GENERAL

1.1 Project Description

The Project consists of the financing, design, demolition, construction, operation and maintenance of CNG Fueling Station Facilities for twenty-five (25) Transit Agencies with a total of twenty-nine (29) sites throughout the Commonwealth which are identified in Table 1: Participating Transit Agencies. The Term is twenty years beginning on the date of CNG Readiness in respect of the first Project Site. At the Termination Date, all equipment and associated infrastructure shall be returned to the Department in a condition described in these Technical Provisions. These facilities will be located on Transit Agency property. They will include fueling dispensers for Transit Agency vehicles as well as separate fueling dispensers for “public access” users. It is generally at the discretion of Proposer to have public access. However, the Department reserves the right to require public access at specific sites which are described in Table 2: Site Specific Performance Requirements. Public access area(s) shall be located outside Transit Agency’s secure area.

The Development Entity will also be responsible for designing and constructing modifications to existing maintenance and storage facilities to accommodate CNG-fueled vehicles. The Development Entity will not be responsible for operations and maintenance for the maintenance and storage facilities.

Additionally, the Development Entity will be responsible for developing and implementing a marketing program to encourage use by non-Transit Agency users (Commercial Customers).

1.2 Project Scope

The Work includes:

- A. Designing, demolition, constructing, operating, and maintaining the CNG Fueling Station Facilities;
- B. Designing, demolition, and constructing modifications to existing maintenance and storage facilities to ensure they meet CNG Readiness Conditions and operate in an energy efficient manner;
- C. Receiving pipeline-delivered CNG supplied by the Department at each Transit Agency site or each Mother Station from which CNG will be delivered to Transit Agency sites;
- D. Compressing Department-provided natural gas for fueling Transit Agency CNG vehicles;
- E. Performing the CNG Commercialization Activities (sales of CNG to Commercial Customers through CNG Fueling Station Facilities on Transit Agency owned properties);
- F. Providing back office services in connection with the operation and maintenance of the CNG Fueling Station Facilities and CNG Commercialization Activities; and
- G. Financing each of the foregoing.

At all Transit Agency locations, the CNG Fueling Station Facilities will consist of one or more CNG Fueling Island including protective weather canopy and lighting, screening of CNG storage tanks, fuel management and tracking system, fencing and all ancillary-support systems.

At certain locations additional infrastructure (the CNG Equipment Compound) will be required. This CNG Equipment Compound shall contain gas dryer(s), particulate filter(s), CNG compressor unit(s), CNG-buffer and -dispensing systems, CNG piping, electrical distribution and motor control, programmable control system and related equipment,

At locations where a CNG Equipment Compound is not required, CNG may be supplied to the CNG Fueling Islands by mobile fueling units trucked in periodically from a Mother Station located on Transit Agency sites.

The Development Entity shall plan, manage, execute, and control all aspects of the Work. The Development Entity shall coordinate its activities with the Governmental Entities and other Persons that are directly or indirectly impacted by the Work. In addition, Development Entity shall document and report all Work in accordance with the Project Documents.

The Department reserves the right to perform or cause to be performed any Work in the vicinity of the Project Sites. The Development Entity shall cooperate and coordinate with the Department or its agent in the delivery of such Work and shall exercise Reasonable Efforts to prevent interference with and hindrance of the progress of such Work and shall join such Work as may be necessary.

Development Entity shall not damage overhead and underground facilities and structures or property within or adjacent to the Transit Agency site and shall use special care in the performance of the Work in order to avoid interference or damage to operating utilities or plants. Where there is any possibility of interference or damage, Development Entity shall make satisfactory arrangements, prior to Work being performed, with responsible personnel of the Transit Agency or other affected entity, covering the necessary precautions to be used during the performance of the Work.

Development Entity shall promptly make restitution for or satisfactorily repair or restore damaged public or private property.

1.3 Project Requirements

The Development Entity shall design and construct the Project in compliance with the following standards and codes as applicable at the Proposal Due Date. It is the Development Entity's responsibility to identify all applicable jurisdictions, applicable editions and relevant codes not identified below. Compliance with codes or standards that come into force or are modified following commencement of this Contract shall be the responsibility of the Development Entity and may be considered a Compensation Event under certain conditions described in the PPA. The Development Entity shall make all required filings for certifications, permits and licenses, and pay all related fees.

- A. American Institute of Steel Construction, Inc. (AISC): AISC 360 - Specification for Structural Steel Buildings (copyrighted by AISC, ANSI approved)
- B. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures (copyrighted by ASCE, ANSI approved)
- C. American Welding Society (AWS): AWS D1.1 - Structural Welding Code - Steel (copyrighted by AWS, ANSI approved).
- D. ASTM International (ASTM): ASTM A 36/A 36M - Standard Specification for Structural Steel.

- E. Illuminating Engineering Society (IES)
- F. International Building Code (base code, except for accessibility, for all buildings and structures not regulated by the International Residential Code)
 - 1) Chapter 1 is not adopted (most of its requirements are incorporated in Chapter 403 of the UCC regulation).
 - 2) Chapter 11 is adopted and requires that buildings and facilities also comply with the accessibility requirements found in other chapters of the International Building Code 2012 and in the ICC/ANSI A117.1-Accessible and Usable Buildings and Facilities standard.
 - 3) Chapter 27 (Electrical) requires that all electrical components, equipment and systems in buildings and structures covered by the IBC comply with the requirements of NFPA 70-, National Electric Code.
 - 4) Chapter 30 (Elevators) is not adopted. Elevator requirements are found in Chapter 405 of UCC.
 - 5) Appendix E (Supplementary Accessibility Requirements) is adopted.
 - 6) Appendix H (Signs) is adopted.
- G. International Energy Conservation Code
- H. International Existing Building Code
 - 1) Work on existing, non-residential buildings can comply with these code requirements or Chapter 34 of the International Building Code.
 - 2) All appendices and resource information are adopted.
- I. International Fire Code
 - 1) Adopted only to the extent referenced in the International Building Code.
- J. International Fuel Gas Code
 - 1) Any LPG requirements are superseded by the requirements of Pennsylvania's Propane and Liquefied Petroleum Gas Act (and regulations)
 - 2) No Appendices are adopted.
- K. International Mechanical Code
 - 1) No Appendices are adopted.

- L. International Performance Code for Buildings and Facilities (provides alternative compliance approach)
- M. International Plumbing Code
 - 1) No Appendices are adopted.
- N. Local Municipal Codes
- O. Local Fire Department Codes
- P. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM MFM - Metal Finishes Manual.
- Q. National Fire Protection Association
 - 1) NFPA 30A Code for Motor Fuel Dispensing Facilities and Repair Garages.
 - 2) NFPA 52: Compressed Natural Gas (CNG) Vehicular Fuel Systems Code
 - 3) NFPA 70: National Electric Code with any applicable state and local amendments
 - 4) NFPA 88A Standards for Parking Structures
- R. Occupational Safety and Health Act
- S. Pennsylvania Department of Labor and Industry (L&I)
- T. Other standards, manuals or other requirements of ASME, AASHTO, ASTM and FHWA referenced in these Technical Provisions

The Development Entity is responsible for compliance with all requirements of relevant authorities having jurisdiction (AHJ)s, including any traffic studies required for Commercial Customer CNG Fueling Station Facilities and the requirements of the Pennsylvania Department Environmental Protection Permitting Guide to Building and Operating Compressed Natural Gas (CNG) Stations in Pennsylvania.

Requirements for any portions of the Work are not limited to any individual section of these Technical Provisions and may be addressed within more than one section. The Development Entity shall review and follow all requirements related to the Work as described in all sections of the Technical Provisions.

2 PROJECT MANAGEMENT PLAN

2.1 General Requirements

The Development Entity shall administer and manage the execution of the Work described in these Technical Provisions and the PPA in accordance with the requirements in this Section 2 of these Technical Provisions and the Project Documents. The Work will be implemented consistent with the Project Management Plan (PMP) described in this Section 2. The PMP is a Discretionary Submittal which is subject to Department approval in its sole or absolute discretion. All component plans described in this Section 2 are also Discretionary Submittals, with the exception of the schedule-related submittals described in Section 2.2 below which are R&C Submittals.

The PMP shall detail the Development Entity's organization, staffing, systems, strategies, approaches, procedures, and methods for the administration and management of the Work in accordance with the Project Documents, as further described in this Section 2. The PMP shall address and distinguish between CNG Fueling Station Facilities and CNG Maintenance and Storage Facilities activities. The PMP will be consistent with and build upon the Preliminary PMP submitted with the Proposal. There shall be only one PMP for the Development Entity and all Development Entity-Related Entities. The PMP is a collection of several plans as further described in this Section 2 of the Technical Provisions. Each part of the PMP shall include details of internal and external auditing procedures.

The Department reserves the right to audit and monitor the activities described in the PMP to assess Development Entity performance and assess Noncompliance Points as set forth in Article 11 and Schedule 7 of the PPA.

2.2 Project Baseline Schedule

The Project Baseline Schedule (PBS) shall define the timeframe for completion of the design and construction of the Project and achievement of milestones, and be used to monitor progress and denote changes that occur during design, construction and maintenance.

2.2.1 Project Baseline Schedule

The Preliminary Project Baseline Schedule (PPBS) submitted with the Proposal shall detail the Work required to complete the Project as defined in Schedule 1 of the PPA. The Development Entity shall use the PPBS as a foundation to prepare a Project Baseline Schedule (PBS) and shall submit a draft of the PBS to the Department for review and approval. This PBS shall detail all Work required to complete Project. Approval of the PBS shall be a condition of NTP2. The PBS shall be developed using either Primavera 6 (P6) or Microsoft (MS) Project. Development Entity shall submit the PBS to the Department at least thirty (30) days prior to the anticipated NTP2. The Department will review the PBS within twenty-one (21) days of submission. In the event that the Department does not approve the PBS, Development Entity shall revise and resubmit it with changes clearly identified. The Department will review each resubmission of the PBS within fourteen (14) days of resubmission. Development Entity shall submit the PBS on full-size (22 inches x 34 inches) color PDF, along with an electronic version of the schedule in its native format for each submittal.

An updated PBS between PBS-1 and PBS-2 (PBS-1a) detailing any permitted activities which the Development Entity wishes to undertake prior to NTP2 (such as field investigations, surveys, preliminary Design Work) must be submitted to the Department prior to beginning such activities.

The approved PBS and all subsequent schedule revisions, Project Working Schedules, shall be submitted a minimum of fourteen (14) days in advance to obtain approval prior to performance of any activity changes to the PBS.

Development Entity shall submit to the Department a revised PBS within fourteen (14) days after each change order, Relief Event or Compensation Event is executed. All approved change orders, Relief Events or Compensation Events shall be incorporated into the originally planned execution of the Work. The Department shall confirm in writing the approval of each revised PBS. The approved PBS shall remain in force until a subsequent revised PBS is approved by the Department.

The PBS shall include a separate narrative report which describes, in general fashion, Development Entity's proposed methods of operation for designing and constructing each Element required by the Project Documents. The schedule narrative shall describe the general sequence of design and construction, the proposed Critical Path of the Project, and all milestones.

The PBS shall include all major Work activities required under the Project Documents, in sufficient detail to monitor and evaluate design and construction progress, from commencement of the Work to Final Acceptance of the Work. The PBS shall also include activities for Utility Relocations, permit acquisitions and maintenance during Construction Work and interfaces with other projects, localities, municipalities and other Governmental Entities. For each major activity, Development Entity shall indicate the duration (in days) required to perform the activity and the anticipated beginning and completion date of each activity. In addition, the PBS shall indicate the sequence of performing each major activity and the logical dependencies and inter-relationships among the activities.

2.2.2 Project Status Schedule Updates

The Development Entity shall include Project Status Schedule Update in the Monthly Performance Reports of the design and construction activities submitted to the Department no later than the tenth day of each month following the Commercial Closing Date. The Project Status Schedule Update shall be submitted monthly, if applicable, until Final Acceptance of the Work.

The Project Status Schedule Update shall accurately reflect the current status of the Project including all activities completed as of the Commercial Closing Date of the current PBS, recovery schedules, schedule revisions due to Relief Events, approved change orders, Development Entity's detailed schedule for completing the Work and all information and reporting required for the Project Baseline Schedule. At a minimum, the monthly Project Status Schedule Update (s) shall include the following current Work data:

- A. Detailed schedule of activities that clearly identify the Critical Path;
- B. Monthly Performance Report; and,
- C. Actual start and finish dates of Work, physical percent complete, and days remaining for Work in progress.

The date for use in calculating the Project Status Schedule Update shall be the first day of the following month. The Project Status Schedule Update shall accurately reflect updated progress as of the Commercial Closing Date of the updated PBS, forecast finish for in-progress schedule activities and reforecast early dates and late dates for remaining schedule activities and shall indicate the overall physically complete percent of the D&C Work. If any actual dates are changed or corrected in any following month, a narrative must be included providing explanation of the change.

Time-scaled network diagrams shall be submitted, on at least a monthly basis, on 22 inches X 34 inches sheets in PDF, using a scale that yields readable plots. The network diagrams shall be organized consistent with the Project work breakdown structure (WBS). Project activities shall be linked by logic ties and shown on their early dates. The Critical Path shall be highlighted and float, where applicable, shown for all Project activities.

The monthly Project Status Schedule Update(s) shall include additional, separate, filtered lists of Project activities and Elements included in the Project Baseline Schedule to create the following reports:

- A. Coordinating with and accomplishing Work associated with Utilities;
- B. Bar chart schedule sorted by Transit Agency indicating the physical status of all activities as of date of the update;
- C. Graphical report, which compares Development Entity's progress to planned progress by major item/WBS (maintenance and storage facility upgrades, CNG Equipment Compound, Transit Agency CNG Fueling Islands, CNG Fueling Islands for Commercial Customers), etc.;
- D. Design document submittals for the forthcoming period;
- E. Tabular report listing all activities with ten (10) days or less float;
- F. Sixty-day (60) look ahead report on all the Department and Governmental Approvals required;
- G. Ninety-day (90) look ahead bar chart schedule sorted by WBS and activity early start dates;
- H. Critical items graphical report for each Critical Path sorted by activity early start date;
- I. Time-scaled Critical Path network plot indicating the status of all activities as of the date of the update; and,
- J. Coordination with the Department regarding potential impacts to other Transit Agency projects.

The reports shall be accompanied by a narrative progress report describing the status of the Project in detail including progress made that period; plans for the forthcoming period; all potential delays and problems; their estimated effect on the Project Baseline Schedule and overall completion, and whether on, ahead of or behind schedule.

The Department will review the monthly Project Status Schedule Update(s) for consistency with Development Entity's WBS and the current approved Project Baseline Schedule and for conformance with the Project Documents. Development Entity shall correct any deficiencies and resubmit its monthly Project Status Schedule Update(s). The Department will notify Development Entity of corrections required within ten (10) Business Days of receipt of the Project Status Schedule Update(s).

The Department will use these updates to manage its activities to be responsive to Development Entity's Project Baseline Schedule, to analyze Invoices, and to measure Development Entity's performance with respect to its plan for accomplishing the Work.

Development Entity shall submit the Project Status Schedule Update on sheets no larger than 22 inches X 34 inches in color PDF along with an electronic version in its native format and a full-size color paper copy. Software settings shall not be changed or modified, for any schedule submissions, without prior Department approval.

2.2.3 Time Impact Analysis

Development Entity shall submit to the Department a written Time Impact Analysis (TIA) in accordance with Articles 10.3, 12.2, and 12.3 of the PPA.

Each TIA submitted by Development Entity shall consist of the following steps or Elements:

- A. Establish the status of the Project before the impact by using the most recent schedule update that has the closest data date prior to the event for TIA, or as adjusted by mutual agreement;
- B. Identify the impact event, estimate duration of the impact, determine appropriate logic, and insert the impact of the activity or fragments of activities into the schedule; and,
- C. Demonstrate any resulting affects from the impact through layouts generated from the scheduling software. Filter activities to show added or modified activities and activities impacted from changes. Note any other changes made to the schedule including modifications to the calendars or constraints.

Development Entity shall submit the following with each TIA Submittal:

- A. A narrative report which:
 1. Identifies the schedule update(s) used for analysis;
 2. Describes the procedures used to analyze schedule impacts, including: Additions, deletions, or modification to activities and or fragments of activities; modifications to the calendars or constraints; and modifications to relationships;
 3. Describes the impact or potential impact by comparing Work prior to the impact and Work affected or predicted to be affected after the impact;
 4. Describe mitigation efforts taken to date; and,
 5. Describe potential resolutions to mitigate or avoid impact.
- B. Schedule layouts in PDF. Filter activities to clearly show impacted activities and affects to the Critical Path. Multiple layouts may be required to adequately demonstrate the impact to the Critical Path. At a minimum, provide a layout demonstrating associated activities prior to the impact and a layout demonstrating associated activities after the impact is inserted and the schedule is progressed;
- C. One electronic copy, in Primavera P6 or MS Project format, of the impacted PBS; and,
- D. Other information or documentation pertinent to the analysis.

Incorporation of TIA activities into the Project Baseline Schedule Update submittal requires Department approval.

2.2.4 Recovery Schedule

If, from a Project portfolio approach, the Work is delayed on any Critical Path item for a period which exceeds the greater of either thirty (30) days in the aggregate or that number of days in the aggregate equal to five percent of the days remaining until Final Acceptance, the next Project Status Schedule Update shall include a recovery schedule demonstrating the proposed plan to regain lost Project Baseline Schedule progress and to achieve Project Final Acceptance by the specified date.

2.3 Management and Administration of the Project

2.3.1 Management and Staffing

As part of the PMP, the Development Entity shall prepare, implement, manage, and, as required, update a Management and Staffing Plan in accordance with this Section 2.3.1 of the Technical Provisions and the personnel and staffing requirements in the Project Documents. The Development Entity shall include a Management and Staffing Plan, which identifies Key Personnel consistent with the requirements of the PPA and as set forth in the Proposal, and sets out reporting lines, responsibilities, and authority.

Key Personnel as identified in the PPA are listed below.

1. Project Executive (if different from the Project Manager)
2. Project Manager
3. Project Chief Financial Officer
4. Design Lead
5. Construction Manager
6. Operations and Maintenance Manager
7. Safety and Training Officer
8. Project Controller

The plan shall also include details on how the various organizations within Development Entity will be interlinked and managed and shall demonstrate how the design, construction, maintenance, and Handback Requirements will be integrated. The plan shall also include details of management structures and management systems to be used for design management, construction management, and maintenance. The plan shall also include details of the interface protocols and systems Development Entity and Development Entity-Related Entities shall utilize for interaction among each other, with the Department, third parties, and the public.

2.3.2 Document and Data Management

As part of the PMP, the Development Entity shall establish, implement, populate, manage, maintain, and, as required, update a Document and Data Management Plan (DDMP). The DDMP shall set out the Development Entity's Electronic Document Management System (EDMS) for storing, maintaining, cataloging, searching, controlling, accessing, and promptly and conveniently retrieving all Project-related documents in an electronic format.

In the DDMP, the Development Entity shall describe:

- A. Methods by which all Project-related documents, data, and records shall be uniquely coded, stored, accessed in real-time as may be necessary and/or retrieved. The retrieval system shall allow for prompt, convenient retrieval of any Project-related document in a user friendly format;
- B. The routing, filing, control, access, and retrieval methods for all documents;
- C. Methods to facilitate fast and convenient sharing of data including procedures and software for accessing all Project-related documents; and,
- D. Methods for production, checking, storage and retrieval of all documents and data that shall support records required to be submitted by the Development Entity to the Department under the Project-related documents or any other Project-related records that the Department requires.

2.3.3 Risk Management

As part of the PMP, the Development Entity shall submit a Risk Management Plan that describes the approach to identification, management, mitigation, and allocation of Project-specific risks, includes a risk matrix and identifies the following at a minimum:

- A. Significant risk categories during the design, construction, maintenance and operation of the Project;
- B. The potential consequences of the identified risks;
- C. The likelihood of risks;
- D. Risk-mitigation strategies and specific measures to eliminate, prevent, or reduce the impact of risks; and,
- E. Specific procedures to respond in the event such risks occur and mitigate the consequences.

2.4 Quality Management

The Quality Management Plan (QMP) shall contain a complete description of the quality policies and objectives that Development Entity shall implement throughout its organization and in the execution of the Work. The policy shall demonstrate Development Entity senior management's commitment to implement and continually improve the quality management system for the Work. Components shall include a Design Quality Plan, Construction Quality Plan and Maintenance Quality Plan.

The QMP shall be consistent with the preliminary QMP submitted with the Proposal and expand on the quality control procedures to verify, check, and review the quality of all Work and quality assurance procedures to confirm that the quality control procedures are being followed. The QMP shall be a part of the Project Management Plan; is subject to the Department's approval at its sole discretion; and shall be compliant with all referenced laws, manuals and publications and as described in these Technical Provisions and the PPA in accordance with the requirements in this Section 2.4 of these Technical Provisions and the Project Documents.

The QMP shall contain detailed procedures for Development Entity's quality control and quality assurance activities for the Project in accordance with the Project Documents. Development Entity's quality process shall ensure that all performance requirements of these Technical Provisions are achieved throughout the Term and shall incorporate planned and systematic verifications and audits. Development

Entity shall conduct all quality control, quality assurance and performance verification in accordance with the QMP and the requirements of the Project Documents.

Development Entity shall revise its QMP when:

- A. Its own quality management organization detects a systemic or fundamental Nonconforming Work;
- B. Its own quality management organization detects a systemic issue with the manner the Work is inspected or tested; or,
- C. When the Department advises Development Entity of such a problem.

The QMP shall, at a minimum:

- A. Clearly outline the roles, rights, and responsibilities of the Department and the Development Entity consistent with the requirements of these Technical Provisions;
- B. Include procedures to report the status of, and the closeout of, all Nonconforming Work and Noncompliance Events throughout the Term. The QMP shall also include procedures for investigations and surveys undertaken by Development Entity as part of the monitoring process; and,
- C. Encompass Maintenance and Storage Facility upgrades, CNG Equipment Compounds, Transit Agency CNG Fueling Islands, CNG Fueling Islands for Commercial Customers and all Work performed throughout the Term by Development Entity and Contractors and suppliers of all tiers.

2.4.1 Design Quality Management

Development Entity shall prepare and submit to the Department for review and approval a Design Quality Plan (DQP) that describes its policies, procedures, and staffing to manage the quality of Design Work in accordance with the requirements of these Technical Provisions. It should address procedures for assigning Design Work to appropriately qualified personnel, checking of all Design Work, QA process to verify compliance with the Plan's QC requirements and compliance with all relevant standards and regulations.

2.4.2 Construction Quality Management

Development Entity's Construction Quality Plan (CQP) shall contain detailed procedures for Development Entity's quality control and quality assurance activities for the Construction Work, including upgrades/renovation of maintenance and storage facilities. The CQP shall establish a clear distinction between quality control and quality acceptance activities and persons performing them.

2.4.3 Operations and Maintenance Quality Management

The Development Entity shall develop, implement, manage, and, as required, update a Maintenance Quality Plan (MQP) including maintenance manuals, Renewal Work plans, Safety Plans, and Transition and Coordination Plans. Elements shall include, but not be limited to:

- A. Description of activities which will ensure that all manufacturers' maintenance requirements are met or exceeded;

- B. Description of activities which will ensure that all equipment and components Work together to meet all performance requirements of these Technical Provisions;
- C. Process to ensure that CNG Equipment Compounds and CNG Fueling Islands are maintained in good working order and safe and clean conditions, which shall identify the following at a minimum:
 - a. Requirements for Lawn Mowing and Landscaping, including maintenance of a maximum grass length of 9”, provisions to ensure that Landscaping activities do not impede vehicle sight lines, and minimum frequency of Lawn Mowing and Landscaping services;
 - b. Requirements for the removal of ice and snow so as to minimize service disruptions;
 - c. Requirements for the removal of litter in a timely fashion;
 - d. Requirements to keep CNG Fueling Facilities in a rust and decay free condition;
 - e. Requirements for maintaining conformance with lighting foot candle requirements from building code;
 - f. Requirements for repairing or replacing fences that no longer provide access control and/or a physical barrier. Fences need to be maintained in a fully functional condition free of damage;
 - g. Requirements to maintain signage in a good condition with appropriate visibility;
 - h. Requirements to maintain pavement at a Pavement Condition Index Rating of 85 or above in accordance with ASTM 6433-11; and,
 - i. Requirement for the general repair of permanent structures be repaired to original condition;
 - j. Requirements that all other equipment is maintained in good working condition in order to serve its intended function.
- D. Process describing regular reporting mechanisms to keep the Department and Transit Agencies informed of maintenance activities and condition of all equipment and components.
- E. Description of actions to be taken by the Development Entity prior to the Termination Date to ensure that the transition of responsibility for operations and maintenance to the Transit Agency or another party will not impact the efficient operation of the CNG Fueling Station Facilities.
- F. Process for delivering to the Department all required reports as set forth in the PPA and Technical Provisions.
- G. Process for establishing gas quality monitoring protocol which shall include the following at a minimum:
 - a. Anticipated average gas composition at each site based on available historical data as provided by the Utility;
 - b. Site specific gas composition requirements to ensure the proper operation and maintenance of:
 - i. Development Entity designed and/or specified equipment; and,
 - ii. Transit Agency vehicle engine specifications;

- c. Reporting requirements for gas composition out of required specification range, including:
 - i. Threshold for out of specification gas composition such as would require notification to Transit Agency
 - ii. Threshold for out of specification gas composition such as would require an automatic shutdown of the CNG Fueling Station Facilities
 - d. Reporting protocol for data generated by Gas Chromatograph
- H. Process for annual testing and calibration of:
- a. Dispensers servicing Transit Agency vehicles, calibrated in GGEs at 126 SCF per GGE
 - b. Gas Chromatograph, per manufacturer's requirements

2.5 Safety Plan

Development Entity shall be responsible for the safety of its personnel, Transit Agency personnel and the general public affected by the Work.

As part of the PMP, the Development Entity shall submit to the Department for review and approval a comprehensive Safety Plan that complies with OSHA requirements and is consistent with and expands upon the preliminary Safety Plan submitted with the Proposal. The Safety Plan shall fully describe Development Entity's policies, plans, training programs, Project Site controls, and Incident response plans to ensure the health and safety of personnel involved in the Project, Transit Agency personnel and the general public affected by the Project during the Term.

Development Entity's Safety Plan shall address procedures for immediately notifying the Department and the affected Transit Agency of all Incidents arising out of or in connection with the performance of the Work, whether on or adjacent to the Project Site. The Development Entity shall make necessary arrangements with the local authorities to provide fire protection at all times. The Development Entity shall keep the fire hydrants adjacent to the Project Site readily accessible to fire apparatus and shall not place material or other obstructions within 15 feet of any hydrant.

The Development Entity shall comply at all times with applicable Federal, State, and local laws and regulations, provisions, and policies governing safety and health, including the Federal Construction Safety Act (Public Law 91-54), 29 CFR Chapter XVII, Part 1926, Occupational Safety and Health Regulations for Construction, and the Occupation Safety and Health Act (Public Law 91-596), 29 CFR Chapter XVII, Part 1910 Occupational Safety and Health Standards for General Industry, and subsequent publications updating these regulations.

The Development Entity shall take any other needed action or proceed as directed, to protect the life, health, and general occupational welfare of personnel employed on the Project, Transit Agency personnel and the general public. Provide confined space training on the proper use of the testing equipment and all safety procedures to ensure a safe operation to all personnel required to access the area for inspection purposes and provide all safety and testing equipment required by 29 CFR 1910.146, to both the Department personnel and Development Entity personnel to ensure the safety of all workers and inspectors during Construction Work and inspection operations of any confined spaces. Also, provide proof of training, such as a course sign-in sheet or certificate of training. Provide appropriate rescue services, personnel, and equipment as per 29 CFR 1910.146(k).

If, in the Department's opinion, persons on a Project Site are exposed to extraordinary conditions which could or do constitute a hazard, modify such equipment, devices, and job procedures to ensure protection against the hazard or to reduce the risk.

Give special emphasis to providing safeguards for any specially or unusually hazardous operations and health hazards. Include initial indoctrination and continuing instructions for all employees to enable them to perform Work in a safe manner. Include in the instruction project safety practices, manner of reporting accidents, availability of medical facilities, and explanation of individual responsibility for accident-free operations.

Require all persons to wear high-visibility safety apparel that is intended to provide conspicuity during both daytime and nighttime usage, and that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" while in Work zones exposed either to traffic or to construction equipment. During Construction Work, Maintenance Work, and Renewal Work, a Project Site will be a hard hat area. Require all persons within the project limits to wear protective headgear and high-visibility vests, including persons in cement concrete and bituminous concrete plants operated exclusively for the Project, even though the plant(s) may be remotely located.

The Safety Plan shall include a description of the approach to achieving the requirements of Section 4 of Schedule 7 of the PPA. Noncompliance Points will be assessed for failure to comply with those requirements.

2.6 Commercialization Management Plan

The PMP shall address the activities which the Development Entity will utilize to manage and report on the CNG Commercialization Activities described in Section 9 of these Technical Provisions. The Development Entity shall develop and submit for the Department's review and approval a CNG Commercialization Management Plan which addresses:

- A. Estimated CNG fuel commercialization volumes and process
- B. Pennsylvania market potential and sector plans
- C. Leadership team
- D. Existing commercialization enablers
- E. Expected competitive advantages
- F. CNG fuel pricing strategy
- G. grant application support
- H. Management, implementation and tracking of sales to commercial customers
- I. CNG royalty calculations and royalty protection
- J. Risks and risk management

2.7 Training Plan

The PMP shall describe the actions which the Development Entity will undertake to provide the initial and ongoing training described in Section 8 of these Technical Provisions.

3 ENVIRONMENTAL

The Development Entity shall comply with all existing and future environmental requirements set forth in Applicable Law, technical guidance and policy, and all Environmental Approvals required for the Project. The Department will conduct the NEPA studies and provide the NEPA approvals to the Development Entity for all CNG Fueling Station and Maintenance and Storage Facilities. The Development Entity is responsible for securing all other Environmental Approvals for the CNG Fueling Station Facilities in accordance with Applicable Law. The Development Entity is also responsible for design, construction, monitoring, inspection, and maintenance of the CNG Facilities and all required environmental mitigation measures during the Term.

3.1 Agency Coordination

The Project will necessitate coordination with the relevant Governmental Entities and other key stakeholders within and outside the Commonwealth that may include but not be limited to:

- The U.S. Federal Transit Administration (“FTA”)
- U.S. Army Corps of Engineers (“USACOE”);
- U.S. Environmental Protection Agency (“USEPA”);
- PA Department of Conservation and Natural Resources (“DCNR”);
- PA Department of Environmental Protection (“PADEP”);
- PA Department of Agriculture (“PDA”);
- PA Game Commission (“PGC”);
- PA Fish and Boat Commission (“PFBC”);
- U.S. Fish and Wildlife Service (“USFWS”); and
- PA County Conservation Districts.

For processes where FTA will be consulted, the Department will be involved with any consultations.

3.2 General Requirements and Process

The Department will develop the NEPA approvals for the CNG Facilities as outlined below. The Development Entity is responsible for developing all other environmental documents and securing all other Environmental Approvals for the CNG Facilities.

The Department is responsible for obtaining NEPA clearance for each Project Site based upon the Conceptual Drawings.

The Development Entity shall design the CNG Fueling Station Facilities to comply with the plan limits set forth in the Conceptual Drawings. Should the design of the CNG Fueling Station Facilities not comply with the plan limits as set forth in the Conceptual Drawings, the Development Entity shall be required, without additional compensation, to obtain the necessary NEPA clearances and to mitigate any related impacts in accordance with the requirements of Section 5.1(a)(iii) of the PPA.

Development Entity is the permittee and is responsible for securing all Environmental Approvals for air quality, underground storage tanks, water quality, waterway obstruction and encroachment, and erosion and sediment control necessary for Construction Work including (all required submittals required for the approvals described in this Section 3.2 are R&C Submittals):

- The National Pollution and Discharge Elimination System (NPDES) Permit, the Clean Water Act Section 404 permit and the Section 401 Water Quality Certification.
- Any permit and authorization required by Pennsylvania Code Title 25 Environmental Protection, Chapter 102 Erosion and Sediment Control, Chapter 105 Dam Safety and Waterway Management, and Chapter 106 Floodplain Management.
- The Development Entity will use processes and procedures established by the relevant Governmental Entities for securing other Environmental Approvals (e.g. Chapter 102/105/106, Section 404). The Development Entity is not exempt from permit application and/or review fees required as part of the permit submission. The Development Entity shall provide the Department with digital copies of permit applications and permits received.
- For any changes, including but not limited to, a Department Change, Development Entity Change, change in environmental impacts, regulation or policy, endangered species listing, etc. that occur after the Commercial Closing Date, the Development Entity is responsible for the following:
 - Notifying the Department of changes that require a NEPA document re-evaluation and providing design support information that would be required information for re-evaluation. The Department will conduct the additional studies if required and develop the NEPA re-evaluation. If the re-evaluation is due to a design change, the Development Entity will be responsible for any associated costs of the re-evaluation.
 - If no additional field studies (wetlands, T&E, etc.) are required, the Department will complete the development and approval of the CEE re-evaluations within sixty (60) days of submittal of required information by the Development Entity. If additional studies are required for the re-evaluation, the timeframes for evaluations will be followed.
 - The Development Entity is responsible for coordinating with the relevant Governmental Entities and the Department for any modifications or changes to the Environmental Commitments. For NEPA related commitments, the Department will be the lead for coordination with other agencies and responsible for securing NEPA related approvals. For other Environmental Approvals, the Development Entity is responsible for securing any necessary consents or approvals required for such modifications or changes.
 - The Development Entity is responsible for any and all permit modifications required to complete the Construction Work and Maintenance Work. The Development Entity will provide the Department with digital copies of the permit modification requests, any supporting documents and the permit decision.
- Any Environmental Commitments will be tracked by the Development Entity. The Department will provide access to the environmental mitigation information related to the NEPA approval. The Development Entity is responsible for implementing and completing any Environmental Commitments through the design, construction and maintenance phases of the CNG Fueling Station Facilities and updating required documentation for any changes or additional requirements.
- The Development Entity is responsible for compliance with the terms and conditions of all Environmental Approvals and Environmental Commitments as well as any resulting compliance action and/or litigation.

- The Development Entity is responsible for all fines and penalties that may be assessed by a Governmental Entity with jurisdiction in connection with the Development Entity's failure to comply with Applicable Law or Environmental Approvals, including but not limited to permit conditions, Environmental Commitments and monitoring commitments.
- The Development Entity is responsible for providing support and coordination with the Department and the relevant Governmental Entities for any third party challenges of Environmental Approvals.
- The Development Entity shall, within one (1) day of receiving a written Notification of Violation (NOV) or similar notification, contact the Department. The Development Entity shall be responsible for providing all correspondence and details of the resolution of these warnings and/or violations.
- In addition to any reporting obligation to the Department, the Development Entity will hold the Department harmless and be responsible for resolving any and all NOV's, compliance/enforcement actions, and/or violations noted in inspection reports issued by any local, state or federal agencies. Included but not limited to the resolution of any NOV/enforcement action is: corrective action to resolve the NOV/action, required plan and permit modifications, payment of all fines and penalties, and coordination with the affected parties and agencies.
- Upon completion of the Construction Work, the Development Entity is responsible for completing the necessary forms and obtaining acknowledgement and/or approvals for all PADEP and USACOE permits including but not limited to:
 - Notice of Construction Completion
 - Notice of Termination
 - Permit Compliance Self-Certification Form
- At the conclusion of the Term, the Development Entity will transfer any Environmental Approvals from the Development Entity name back to the Department. The permit/approvals cannot be transferred to the Department until the Development Entity proves that it has documentation that the relevant Governmental Entity acknowledged and approved the completion of construction and mitigation under the Environmental Approval and all NOV/enforcement actions have been resolved.

3.3 Environmental Approvals

The Development Entity is responsible for conducting non-NEPA related environmental studies and re-evaluations caused by actions not identified in the Environmental Approvals, actions not covered specifically by existing resource agency coordination, or incorporation of additional properties into the Project. The Development Entity is responsible for all coordination of non-NEPA environmental studies with appropriate Governmental Entities. The Development Entity is responsible for providing the Department a spreadsheet with the status of Environmental Approvals and permits for each CNG Facility on a quarterly basis for the purpose of managing the NEPA clearance and permitting process. The spreadsheet shall contain the following information: Transit Agency, CNG Facility location, Environmental Approval status, permits required, date(s) of submission, cycle times for administrative completeness, technical completeness and issuance of the approval or permit. All submittals required for obtaining Environmental Approvals shall be Non-Discriminatory Submittals.

3.3.1 Department Review and Approval of Development Entity Submissions

The Department will review, comment on, and, as applicable, require revisions to preliminary design support data submitted by the Development Entity for use in the Environmental Commitments or Environmental Approvals related to the NEPA Process. The Department reserves the right to review, comment on, and require revisions to documentation submitted for state and federal permit applications. Documentation shall conform to current Department submission standards and the requirements of all applicable Governmental Entities and Applicable Law. If the Department reviews documentation, the Department shall return approved documentation to the Development Entity for submittal to the appropriate Governmental Entity in cases where the Development Entity performs coordination. The Department, acting reasonably, shall approve those submissions for which the Department signature or other approval is required. Documentation not meeting current submission standards or requirements of Governmental Entities will be returned to the Development Entity, and shall be revised by Development Entity to meet standards or requirements.

3.3.2 Water Obstruction and Encroachment and Floodplain Management Permits

PA Code Title 25, Chapter 105 requires a Water Obstruction and Encroachment permit for any structure or activity which changes, expands or diminishes the course, current or cross section of a watercourse, floodway, body of water, or wetland. PA Code Title 25, Chapter 106 Floodplain Management requires a permit to construct, modify, remove, destroy or abandon an obstruction in a floodplain that is constructed, owned or maintained by the Commonwealth; a political subdivision of the Commonwealth or a public utility. The fee required for a project authorized under this permit shall be consistent with 25 PA Code §105.13 and 25 PA Code §106.12. The Development Entity will not be exempt from such fees. A Submerged Lands License Agreement (SLLA) is required for any regulated water obstruction or encroachment to occupy submerged lands of this Commonwealth located in a navigable lake or river or stream declared a Public Highway. A SLLA is not required for Commonwealth-owned structures, but is required for other public or privately owned obstructions, including those owned by the Transit Agencies. The Development Entity is responsible for and will bear the cost of such agreement.

Before starting any Construction Work affecting stream channels, floodways or floodplains, provide documentation to the Department that all required permits or approvals from DEP, ACOE and other related agencies have been obtained.

3.3.3 Erosion and Sediment Pollution Control/Stormwater Management

The Development Entity shall be responsible for developing, implementing and monitoring an Erosion and Sediment Control Plan in compliance with Applicable Law.

If required by Applicable Law or any Environmental Approvals, the Development Entity shall prepare a post-construction stormwater management (PCSM) plan. The Development Entity shall be responsible for the inspection, maintenance, remedial action and permit modifications of any PCSM facilities constructed or modified for the Project. The Development Entity shall perform inspections and maintenance in accordance with the current Department policy on PCSM facilities inspections. If the Department policy on PCSM facilities inspections is not available, the Development Entity shall perform inspections on PCSM facilities in accordance with the PCSM plan and inspection results must be reported to Department and PADEP. The Development Entity shall report any maintenance, remedial action or permit modifications of any PCSM facilities constructed for the Project to the Department.

For PCSM facilities, the long-term inspection and maintenance schedule developed by the Development Entity shall comply with any applicable Department policies and shall be transferred to the Department at the Termination Date.

3.3.4 Threatened and Endangered Species

The Development Entity shall comply with all aspects of the federal Endangered Species Act, including consultations. The Department will conduct as necessary a PA Natural Diversity Inventory (PNDI) screening. When it is determined that there are any Threatened and Endangered Species/habitat or rare natural communities in the vicinity of any of the CNG Facility, the Department will coordinate with the Governmental Entities with jurisdiction over potential impacts. In some instances surveys may be necessary to determine if the Work will impact a species or its habitat. The Department shall coordinate with the Development Entity to determine whether Work may proceed and what measures can be implemented to avoid or minimize the impacts of the Work to Threatened and Endangered Species and rare natural communities. Candidate species will be treated as listed species.

The Department is responsible for completing the biological assessment (BA) and all associated research, documentation and surveys to prepare the BA for consultation with the USFWS.

The Department is responsible for coordinating state listed species with the relevant Governmental Entities and providing the Development Entity with copies of clearance and mitigation requirement documents.

3.3.5 Cultural Resources

The Department will perform all Section 106 studies and coordination but the Development Entity will comply with requirements of Section 106 of the National Historic Preservation Act and the Pennsylvania State History Code, specifically the Statewide Section 106 Programmatic Agreement (PA) and the State History Code Memorandum of Understanding (MOU).

For archaeological investigations to complete NEPA, the Department will have the responsibility of either providing a deed of gift or evidence that Reasonable Efforts to obtain a deed of gift were not successful. The Department will have the responsibility of providing all recovered artifacts and records in a condition consistent with PHMC guidelines to the State Museum for permanent curation, including any payment of fees for accessioning and curation.

For archeological mitigation activities, the Development Entity will have the responsibility of either providing a deed of gift or evidence that Reasonable Efforts to obtain a deed of gift were not successful. The Development Entity will have the responsibility of providing all recovered artifacts and records in a condition consistent with PHMC guidelines to the State Museum for permanent curation, including any payment of fees for accessioning and curation.

3.3.6 Air Quality

Project level air quality analyses occur as part of the environmental clearance process and address requirements in the Clean Air Act (CAA) and PA Act 120. Projects that have potential air quality impacts must be considered for the incorporation of appropriate avoidance and/or relief strategies.

The Department will complete all required air quality analysis.

For projects that require a qualitative analysis, the Department will complete the analysis and accurately document the results. For projects that require a quantitative analysis, the Department will complete the analysis and accurately document the results.

The Development Entity is required to determine if the CNG Facility meets the exemption requirements of PADEP Title 25, Chapter 127.14(a)(8). If the exemption is not met, the Development Entity is responsible for any approvals or determinations before installation in accordance with Title 25, Chapter 127.

3.3.7 Hazardous and Regulated Waste Management

The Department will perform Environmental Site Assessments (ESAs), including as applicable Phase I or II investigations. The Department is responsible for any soil and groundwater testing deemed necessary but is not responsible for testing of building materials within standing structures or onsite debris piles for asbestos containing material or lead-based paint.

3.3.7.1 Asbestos Containing Material

The Development Entity shall perform environmental testing to identify asbestos on structures and facilities impacted by the Construction Work. The costs for environmental testing to identify asbestos shall be borne by the Development Entity. The Development Entity shall inspect, notify, amend notifications as necessary, and pay notification fees if asbestos is found on any structure or facility in accordance with appropriate or relevant regulations or guidance. The costs for any asbestos remediation or abatement required shall be borne by the Department.

3.3.7.2 Lead-Based Paint

The Development Entity shall perform environmental testing to identify lead-based paint on any structure or Element that is to be demolished or modified onsite during performance of the Construction Work. The costs for environmental testing to identify lead-based paint shall be borne by the Development Entity. The Development Entity shall inspect, notify, amend notifications as necessary, and pay notification fees if lead-based paint is found on any structure or Element, in accordance with Applicable Law and Department guidance. The costs for any lead-based paint remediation or abatement shall be borne by the Department. If materials are scrapped/recycled/sold, the Development Entity shall follow Applicable Law and Department guidance for the handling processes.

3.3.7.3 Public Lands

The Department shall coordinate with the Development Entity and appropriate Governmental Entities on the potential to impact public lands to facilitate avoidance or mitigation. Public lands may include parks, trails, State or National Forests, State Game Lands, State Parks and other recreational type lands; that could potentially be classified as Section 4 (f) or where federal or state grants were used to purchase said lands such as Section 6(f), Project 70, Project 500, and other Commonwealth grant programs.

In performing Work within or adjacent to public use lands, namely National or State Forests, State Game Lands, Wildlife or Waterfowl Refuges, recreation areas, parklands, and historic sites, the Development Entity shall comply with all applicable rules and regulations of the AHJ.

3.3.8 Waste, Borrow and Staging Areas

The Development Entity shall locate proposed areas for obtaining borrow material and/or areas for disposal of waste material, when required and ensure compliance with all Applicable Laws and regulations. The Development Entity shall locate waste, borrow, or staging areas in upland areas not impacting Waters of the United States, including jurisdictional wetlands, unless already authorized by the

U.S. Army Corps of Engineers and DEP. The Development Entity shall remove topsoil and stockpile it for replacement when removal of borrow material has been completed.

The Development Entity shall prepare and submit an Erosion and Sediment Control Plan to the Conservation District for approval. The Development Entity shall negotiate with the owner(s) of property to be obtained by using the Department's standard —Borrow and/or Waste Agreement, available from the Department. This standard agreement may be modified to cover unusual or special conditions, provided such conditions are acceptable to the Department. The Development Entity shall submit one copy of each executed agreement to the Department

The Development Entity shall submit one copy of applicable permits and of the approved Erosion and Sediment Control Plan to the Department before starting work. The Development Entity shall have the agreement provide for cleaning and leaving the premises and area in a well-drained and, if required, smoothly graded condition, blending into the existing topography. The Development Entity shall scarify, lime, fertilize, seed, and mulch any disturbed areas with material, and formulae, at rates typical for the project. When directed, the Development Entity shall satisfactorily remove and dispose of surplus material.

3.3.9 Construction Impacts

Development Entity shall be responsible for evaluating potential construction noise, dust and traffic impacts and for developing and implementing necessary impact mitigation measures.

3.4 Environmental Protection Plan

The Development Entity shall develop and implement an Environmental Protection Plan (EPP), applicable throughout the Term to establish the approach, requirements and procedures to be employed to protect the Environment. All component parts shall reflect in order of priority: impact avoidance, minimization and as last resort mitigation. The EPP shall satisfy applicable FTA, Department and resource agency requirements, including those detailed as commitments in any Environmental Approvals and associated PPC Plans. All submittals described in this Section 3.4 of these Technical Provisions shall be Non-Discriminatory Submittals.

3.4.1 Environmental Commitment and Mitigation Tracking System

The Environmental Commitments will include those made during the Environmental Approval and permitting processes, and other environmental requirements to be carried forward and reflected, as appropriate, in the design and implemented throughout the Work. Development Entity shall track ongoing issues, identify environmental compliances, Nonconforming Work and identify actions required/taken to correct any such Nonconforming Work.

3.4.2 Waste Management Plan

The Development Entity shall prepare a Waste Management Plan (WMP) for the safe handling, storage, treatment and/or disposal of Hazardous Materials, non-hazardous waste, contaminated soil and clean fill whether encountered or brought onto the Project Site by a third party, or otherwise, during the Term to ensure a safe working environment for personnel and visitors.

The WMP shall include provisions for making all on-site workers aware of and able to recognize the potential Hazardous Materials to which they may be exposed, limiting Contractors' and other Project Site workers' exposure to Hazardous Materials and providing all necessary personal protection equipment to protect workers from exposure. The WMP shall require Development Entity to provide any non-Development Entity personnel who visit the Project with the appropriate personal protection equipment.

The WMP shall require that all personnel of Development Entity-Related Entities handling Hazardous Materials be trained and certified at least to the minimum requirements established under the current guidelines of OSHA 1910.120.

Further, the WMP shall include procedures for ensuring that all applicable certifications, licenses, authorizations and Governmental Approvals for Development Entity-Related Entity personnel handling Hazardous Materials are current and valid through the duration of the Work.

3.4.2.1 Investigative Work Plans and Site Investigation Reports

If wastes or contamination are encountered within any of the Project Sites or additional properties used as the Development Entity's staging area, field office site, plant sites, borrow site, or stockpile location, the Development Entity shall prepare an investigative work plan that addresses the methods, techniques, and analytical testing requirements to adequately characterize the extent of the contaminated media (soil and/or groundwater) potentially impacting the Project. The Development Entity shall locate and assess the likely source of contamination.

A Professional Engineer and other qualified professionals, as needed, shall prepare the investigative work plan and other necessary reports in accordance with Applicable Laws and Department guidance.

Upon satisfactorily completing the investigative work, the Development Entity shall summarize the findings in a site investigation report and make recommendations regarding potential response actions necessary for Project development. Development Entity shall take Hazardous Materials contamination and all waste management considerations into account during all subsequent phases of Project development, including additional properties negotiation and acquisition, property management, design, and construction.

The site investigation report shall address the characterization of the impacted area; sampling efforts and findings; opportunities to avoid the contamination by adjusting the design; level of response action warranted if the contamination cannot be avoided; feasibility of initiating response actions prior to construction; pursuit of cost-reimbursement from responsible parties; the need for completing response actions concurrent with construction and nature of any special specifications and provisions necessary for incorporation into the Project.

The Development Entity may initiate a preventative or corrective action after the Department review and approval of the site investigation report from appropriate Federal or State agencies.

3.4.3 Communication Plan

The Development Entity shall develop a Communication Plan (CP) which describes in detail the communication hierarchy for information distribution related to environmental coordination. The CP will include names and contact information, including emergency contact information, and the preferred methods of routine, and emergency communication distribution.

3.4.4 Construction Monitoring

The Construction Quality Plan (CQP) in Section 2.4.2 of these Technical Provisions shall identify times, locations, and other conditions where monitoring of construction activities are to be performed to maintain and cause compliance with Environmental Laws, Environmental Approvals, and the Project Documents. All environmental monitoring reports shall be made available for review by the Department at the Department's request. Should any Nonconforming Work or violation be observed that represents

an imminent danger to human health or the environment, the CQP shall include procedures to cause immediate notification to the Department.

The Development Entity shall designate an environmental compliance manager (ECM) for the D&C Work. The ECM shall report and coordinate all issues directly with the Department and the Project Manager. In the event the ECM, in consultation with the Project Manager and the Department, is unable to reach satisfactory resolution of environmental issues, the ECM shall provide written notification to the Development Entity and the Department outlining the concerns, actions taken attempting to correct the concerns, and provide a recommendation as to the suggested course of action.

The ECM shall coordinate with the Department, Development Entity's team, and appropriate Governmental Entities. The ECM shall submit all necessary environmental documentation and monitoring reports to the appropriate Governmental Entities and when applicable, through the Department, to the extent necessary to maintain compliance with applicable Environmental Approvals.

3.5 Dust Control

The Development Entity shall institute dust control measures to minimize air quality impacts. The measures shall be adjusted as necessary based on construction traffic, forecasted wind speeds, and persistent dry weather conditions.

3.6 Submittals

The deliverables are discussed throughout this Section 3 of these Technical Provisions, but a summary of key deliverables are outlined below:

- Environmental Commitment or mitigation modifications or changes for approval by the Department;
- NOVs: Provide all correspondence and details of the resolution of warnings and/or violations to the Department;
- Provide the Department on a quarterly basis a spreadsheet detailing the status of all Environmental Approvals and permits ;
- Provide permit applications and permits received;
- If applicable, provide transfer of the Chapter 105/106 permits to the Department at the Termination Date;
- Development Entity shall report any maintenance, remedial action or permit modifications of any Post Construction Stormwater Management (PCSM) Facilities constructed for the CNG Fueling Station Facilities; and
- Development Entity shall provide PCSM inspection reports if PCSM facilities are constructed or modified as part the Project

4 DESIGN and CONSTRUCTION REQUIREMENTS

The Development Entity shall design consistent with all relevant codes and standards, obtain all permits, construct, install and start up all components and systems required for the CNG Fueling Station Facilities and upgrading of existing maintenance and storage facilities, including, but not limited to, the following:

- A. Upgrading of existing maintenance and storage facilities to meet code requirements and standards to accommodate CNG vehicles. The modifications shall consider energy efficiency and the trade-off between capital costs and operating costs;
- B. For an existing or stand-alone Bus Storage Facilities, minimum modification shall be performed by the Development Entity. The Development Entity shall design, demolish and construct modifications within Bus Storage Facilities where natural gas vehicles will be stored to include a continuous monitoring methane detection system. The system will be designed to activate when the gas concentration exceed 20 percent lower flammable level. Upon detection the gas monitoring system shall initiate audible and visual alarms, deactivate any spark generated equipment and activate the mechanical ventilation system. If natural ventilation can be utilized within an area through garage doors and/or roof hatches then natural ventilation can be substituted for mechanical ventilation. The intent of these requirements is to provide detection and deactivation along with adequate ventilation to purge an area or building within a 1-hour time. If purging of gas cannot be safely assumed within a 1-hour time frame then mechanical ventilation should be provided.
- C. Service connections for electrical power, natural gas, and telecommunications as required;
- D. Provide CNG equipment to meet the performance requirements as described in Articles 7.2 and 10.3 of these Technical Provisions;
- E. CNG Fueling Islands at all Transit Agency sites, including protective weather canopy and lighting;
- F. The Conceptual Drawings in the Disclosed Information indicate the plan limits of the CNG Equipment Compounds and CNG Fueling Islands. The Development Entity's detailed design shall conform to the constraints depicted in the conceptual drawings and to the process flow diagram (in the Disclosed Information) unless otherwise approved by the Department. Dispenser vents shall be routed to safe locations approved by the Department and the AHJs;
- G. During Construction Work, the Development Entity shall communicate with the Department and the relevant Transit Agency to minimize disruptions and interference with the on-going operations of the Facility; and
- H. Where existing gasoline and diesel fueling systems occur, the systems shall be not be disrupted during Construction Work.

4.1 Drawings and Information

4.1.1 General

Development Entity shall prepare construction drawings (all submittals required by this Section 4.1 of these Technical Provisions shall be R&C Submittals) with the following information, at a minimum:

- A. Site civil design including stormwater, utilities, roads, grading and earthwork, selective demolition and landscaping;
- B. Structural and foundation designs, including supporting calculations;
- C. Equipment plans;
- D. Piping plan;
- E. Piping and instrumentation diagram/mechanical flow schematic;
- F. Electrical one-line diagram, with load schedules, panel schedules and supporting calculations;
- G. Electrical plot plan, including conduit, cable and trench schedules, as well as bill of materials;
- H. Hazardous area and equipment ground-bonding plan;
- I. Cathodic protection of all direct-bury steel pipe;
- J. Mechanical, electrical and fire protection drawings related to facility upgrades;
- K. Safety and warning sign plan; and,
- L. Actual schedule of drawings is subject to concurrence by the Department and relevant Transit Agency and approval by jurisdictions having authority.

4.1.2 Purpose

The construction drawings are intended to show and prove constructability and for use in locating and connecting equipment. The drawings shall also be prepared as a means to indicate important features and functions of the facility, regardless of whether inclusion of these features on the drawings is needed to demonstrate constructability.

4.1.3 Drawing Format

Drawing format, including borders, title blocks, etc., shall be coordinated at the Department's direction. All drawings and details in plan view shall include a north arrow and a scale.

4.1.4 Requirements and Approvals

All drawings shall be sealed by a Pennsylvania-licensed architect and/or Professional Engineer with specialty that is appropriate for each drawing.

4.1.5 Drawing Approval

Drawings shall be approved for construction by the all authorities having jurisdiction (AHJ). Drawings shall also be reviewed for concurrence by the Department and Transit Agency for the purpose of verifying the general ability of the design to comply with the Requirements.

4.1.6 As-Built Drawings

Development Entity shall provide the Department with a complete set of as-built drawings of the CNG Facilities prior to Final Acceptance. As-built drawings shall be reviewed by the Department and shall reflect the configuration of the CNG Facility at the time of Final Acceptance. Each drawing shall be stamped by a Pennsylvania-licensed architect and/or Professional Engineer. The as-built drawings shall be submitted electronically in AutoCAD 2014 format, as well as two (2) complete, printed sets in "E"-size sheets. Any modifications to the CNG Facility made by the Development Entity during Term, either at its own direction or under direction from the Department, shall also be subsequently documented on as-built drawings prior to Final Acceptance of such work.

4.2 Submittals

Unless otherwise stated in the Project Documents, Development Entity shall provide to the Department a PDF electronic copy of each submittal along with the electronic files. The PDF submittal shall have the signature of an authorized representative of Development Entity. Development Entity shall include with each Submittal a transmittal cover sheet in a form acceptable to the Department. The minimum sheet size for the submittals shall be 8.5 inches by 11 inches, and the sheet size for plans shall be 22 inches by 34 inches. Every page in a submittal shall be numbered in sequence.

The Development Entity shall submit to the Department for its review and acceptance design drawings for the following equipment and materials:

- A. Gas dryer(s)
- B. Particulate filters(s)
- C. CNG compressor skids.
- D. Automatic site-supply valve.
- E. Valve panel.
- F. Transit CNG dispensers.
- G. Fuel-management terminals.
- H. Air compressor and dryer system.
- I. All piping and tubing used to connect pre-packaged equipment.
- J. Compressor-drive motors and complete motor-control center assembly.
- K. All electrical gear.
- L. Protective weather canopy
- M. Facilities upgrades

4.3 Roadways and Pavements

4.3.1 Roadway Design Requirements

Development Entity shall coordinate its access road designs with the Transit Agencies. Access roads shall be designed to integrate with streets and roadways that are adjacent or connecting to the Transit Agency sites. All lane widths and turning radii shall accommodate access to all Transit Agency Fueling Islands by the design vehicle shown in Table 2: Site Specific Performance Requirements. For required Commercial Customer Fueling Islands by the Department, the design vehicle shall be the largest vehicle permitted on Pennsylvania highways without a special permit.

Access roadways shall be designed to incorporate roadway appurtenances, including fences, guide rail, barriers, and hazard protection as necessary to promote safety for users of the CNG Facility and adjacent neighboring properties. Existing roadways and roadway appurtenances that are damaged by the Development Entity during the Construction Work shall be replaced to current standard.

4.3.2 Pavement Selection and Design

The Development Entity shall minimize the disturbance and replacement of pavements to the greatest extent possible. Where pavement replacement is necessary, the new pavement type shall match the existing pavement surface type. New pavements which are not replacements shall match nearby pavement surface types appropriate for transit vehicles. The subgrade below the pavement sections shall consist of suitable material and be properly compacted. New pavements shall have a Pavement Condition Index (PCI) of 100 at completion and shall be designed to maintain a PCI of not less than 85 for a two-year period beyond the end of the Term. Non-compliance points will be assessed for failure to meet the requirements of this Section 4.3.2 of these Technical Provisions, consistent with Schedule 7 of the PPA.

4.3.3 Reinstatement of Utility Cuts

Any asphalt and concrete pavement that is removed shall be saw-cut in neat and straight lines. Repairs shall be made to match pre-demolition conditions and documented by photographs. After installation of piping, drainage structures, storm sewers, or any other public or private Utility facility by open cut beneath existing pavements, the pavement structure and surface shall be restored and maintained to a normal satisfactory structure and riding surface equal to or better than the existing structure and riding surface. Coordinate so that planned relocations and installations are completed prior to final pavement surface construction.

4.4 Existing Utilities

On each Transit Agency site, the Development Entity is responsible for protection of existing underground and overhead Utilities and for the coordination of all Utility Relocations required for Construction Work. The Development Entity's action plan for each project shall be to design to avoid or minimize impacts to Utilities to the extent practicable. Betterments are not included in the Development Entity's Construction Work.

- identify and verify all existing Utilities located within the Project Site in compliance with the "Responsibilities of the Project Owner" and "Responsibilities of the Designer" under PA One Call, 73 P.S. §176, et seq. Provide PA One Call responses to the Department;
- having the appropriate level of SUE performed to confirm and or accommodate Utility conflicts. All SUE information shall be provided to the Department and the Transit Agency in a format acceptable to each respective party;
- providing all affected Transit Agencies and the Department a matrix of confirmed conflicts

- requiring a Utility Relocation;
- providing survey stake out services to assist and facilitate the Design Work and the Construction Work;
- inspecting all Utility Relocation Work to ensure compliance with Project Documents; and
- providing a primary contact person for Utility Relocations and coordination.

4.5 Structures

4.5.1 4.5.1 General Requirements

Protective weather canopies shall be center-island supported, steel pre-engineered with flat roof, perimeter fascia, downspouts, soffit lighting, and sized to accommodate dispenser numbers and configuration based on preliminary site layouts. The minimum plan dimensions of the canopies shall be 20 feet by 20 feet. Minimum canopy vertical clearance shall be 17 feet. The dispensers shall be on a raised concrete island with protective bollards meeting ADA requirements.

All structure modifications to existing maintenance and storage facilities shall conform to all relevant design standards.

4.5.2 Drawings

Provide plan, section and details drawings for review and comment to the Transit Agency prior to commencement of Construction Work.

4.6 Geotechnical Conditions

The Development Entity shall perform geotechnical investigations and shall be responsible for the accuracy and completeness of the geotechnical data and assumptions used for its foundation designs. Development Entity shall prepare and submit geotechnical reports as required for design and construction of the CNG Facilities to the Department for its review.

4.7 Property Acquisition

Any additional property required for the CNG Facilities for Transit Agency vehicles will be acquired by the Department. Any additional property required for Commercial Customer CNG Facilities and Mother Stations will be the responsibility of the Development Entity, except for sites where PennDOT or Transit Agencies have agreed to purchase the land, as is the case for CAMTRAN, COLTS, and INDIGO.

4.8 Land Surveying and Construction Layout

4.8.1 General Requirements

Development Entity shall be responsible for all land surveying and mapping needed for the Project.

Development Entity shall review existing survey and mapping data, if any, and determine the requirements for updating or extending the existing survey and mapping data. If no existing survey or mapping data is available, Development Entity shall determine the requirements for obtaining survey and mapping data. Development Entity is responsible for the final precision, accuracy, and comprehensiveness of all survey and mapping. All surveys will be done under the supervision of a Professional Land Surveyor.

4.8.2 Laws and Procedures

Development Entity shall comply with the most recent and applicable Commonwealth and federal laws.

4.8.3 Survey Control Requirements

All survey control points shall be set and/or verified by a Professional Land Surveyor.

Development Entity shall deliver to the Department a listing of all primary and secondary control coordinate values, original computations, survey notes, copies of field notebooks, and other records, including GPS observations and analysis made by Development Entity within ninety (90) days of Final Acceptance. Deliverables shall be in PDF and native electronic format using the software and version thereof being used by the Department at the time the deliverable is developed.

4.8.4 Legal Property Surveys

Obvious physical evidence such as iron pins, stone piles, blazed trees, fence rows, etc. shall be included in the survey as a normal part of obtaining topography. This survey data shall then be used to establish property lines as part of the property plan preparation. If required to establish property lines due to a lack of description in the deed or due to a dispute with the owner during settlement, property lines shall be established with field survey procedures. Retracement surveys or random traverse techniques shall be used as appropriate. Property corners shall be located directly based on retracements and through office fittings of random traverse surveys.

4.8.5 Survey Records and Reports

The Development Entity shall produce a horizontal and vertical control report including coordinate listing, maps showing control, the Department monument description and location description of all primary and secondary survey control points installed, marked and referenced along with a listing of the existing control used to create the installed control points. Development Entity shall provide survey records and reports to the Department upon request.

The Development Entity shall deliver to the Department for review and acceptance, a listing of all primary, secondary control coordinate values, original computations, survey notes and other records including GPS observations and analysis made by Development Entity within ninety (90) days of Final Acceptance.

4.8.6 Survey Monuments and Benchmarks

Reference monumentation and benchmarking requirements for Construction Work will be in accordance with Commonwealth laws.

4.8.7 As-Built Drawings and Documentation

Development Entity shall submit the following as part of the As-built Drawings and as a condition of Final Acceptance:

- A. A listing of all primary and secondary control coordinate values, original computations and other records including Global Positioning System (GPS) observations and analysis made by Development Entity;

- B. Copies of all survey control network measurements, computations, unadjusted and adjusted coordinate and evaluation values; and,
- C. Survey records and survey reports.

The Development Entity shall produce reports documenting the location of the as-built alignments, profiles, structure locations, Utilities, and survey control monuments. These reports shall include descriptive statements for the survey methods used to determine the as-built location of the feature being surveyed. The Development Entity's as-built data shall include the coordinate types (x, y, and/or z) and feature codes in the same format in which the preliminary construction data was generated. Where data has been provided to the Development Entity from the Department in an x, y, z only coordinate format, or z only coordinate format, Development Entity shall provide the Department with data in an x, y, z only coordinate format or z only coordinate format.

4.9 Sound Emissions

CNG- and air-compressor assemblies, and all other equipment provided and operated by the Development Entity shall be designed to minimize sound emissions, including the use of low-speed fans, sound-attenuated louvers, high-efficiency enclosures and hospital-grade muffler for generators as applicable. The maximum permissible sound level is 85 dBA outside the perimeter of the CNG Equipment Compound, operating at full load or less if required by local sound ordinance requirements.

4.10 Modifications to Maintenance and Storage Facilities

4.10.1 General Requirement

The intent is to perform all CNG fueling outside of the buildings. Several facilities currently utilize interior fueling for gasoline and/or diesel and it is the intent to maintain this existing interior fueling along with new exterior CNG fueling.

4.10.2 Code Compliance

Applicable codes and standards are referenced in Section 1.3 of these Technical Provisions. Areas of existing maintenance and storage facilities which are modified for use by CNG vehicles shall be made code compliant.

4.10.3 Design

The Development Entity is responsible for facility assessments to determine appropriate approach to code compliance. Facility modifications may include but are not limited to the following:

- A. Gas detection system with the ability to log faults and allow calibration of sensors. The detectors should be monitored by a central controller to provide low and high level detection alarms
- B. Audio-visual low and high level alarm;
- C. Emergency exhaust fans;
- D. Selected overhead doors should be designed to allow make-up ventilation air for the emergency evacuation fans;
- E. A trouble signal to be sent to the building fire alarm system;

- F. Open circuit electrical devices within certain locations should be de-energized with shunt-trip breakers;
- G. Relocation of electrical equipment within 18 inches of the roof deck in vehicle operating areas, or modify the electrical equipment to comply with requirements of a Class 1, Division 2, hazardous location;
- H. Replace and/or modify equipment with exposed surface temperatures of 750 degrees F or greater;
- I. Verify existing standby generator can support or supply new emergency power to the emergency ventilation system, designated overhead door operators, and a new gas detection system;
- J. In order to prevent fugitive methane from migrating from areas designed for CNG operations, seal any openings in shared walls;
- K. To support new mechanical equipment either suspended from the roof, wall-mounted or roof-mounted a structural analysis will be required to determine what if any structural reinforcing measures are required; and,

4.10.4 Construction

- A. The facilities are to remain operational during Construction Work, except for short periods if necessary which shall be coordinated with and approved by the Transit Agency. Noncompliance Points will be assessed for failure to meet the requirements of this Section 4.10.4 of these Technical Provisions, consistent with Schedule 7 of the PPA.
- B. Staging of the Work may be required. The Development Entity shall familiarize itself with the staging requirements of this project and shall be prepared to mobilize and demobilize at various stages with no additional cost to the Department;
- C. The Development Entity shall be responsible for the security within the Area of Work of the Project Sites twenty-four (24) hours per day, including but not limited to all equipment, materials, tools, facilities and vehicles while performing the Construction Work.

5 EQUIPMENT and COMPONENTS

5.1 General

The Development Entity is responsible for the design of the CNG Facilities, including their capacities and features, provided that they meet the performance requirements listed herein, including Drawing G-2 process flow diagram (in the Disclosed Information) and Table 2: Site Specific Performance Requirements. The design shall accommodate ambient temperature from 0 to 100 degrees Fahrenheit.

Several of the Transit Agencies currently operate a CNG station on their property. The Development Entity shall ensure that fueling capability is maintained throughout the Construction Work at a level capable of fueling the existing fleet of vehicles in the normal fill window.

The Department will allow Time-Fill fueling operation at the YATA – Gettysburg. The Development Entity shall meet the performance of Time-Fill requirements and Table 2: Site Specific Performance Requirements.

The Development Entity will be required to decommission and remove the existing CNG station equipment that is retired as a result of the Project. An exception is the CATA State College facility where existing CNG equipment shall be returned to CATA.

For mobile transport of CNG the Development Entity shall follow all of the regulations and standards established by PennDOT and the Federal Motor Carrier Safety Administration (FMCSA), or any other regulatory agency with jurisdiction over the transportation of CNG by vehicle.

Temporary fueling stations and daughter stations and all associated temporary and permanent equipment shall be treated the same as a permanent station with regard to meeting all of the defined codes and standards as established in Article 1.3.

5.1.1 Technology Enhancements

The Development Entity will be responsible for modifications, additions, refinements, substitutions, revisions, replacements and upgrades made to fuel management data systems deployed on or for the Project or to any other computer systems or other technology used for the operation of the Project, or to any related documentation, that accomplish incidental, performance or functional improvements. The term specifically includes modifications, updates, revisions, replacements and upgrades made to or in place of software, software source code or any related documentation that correct errors or safety hazards or support new models of computer hardware with which the software is designed to operate. Technology Enhancements also include such new models of computer hardware.

5.1.2 New Equipment

All equipment furnished by the Development Entity for the CNG Facilities shall be new.

5.1.3 Seismic Design

All equipment, foundations and supports and shall be suitable for Seismic Category D.

5.1.4 Time-Fill

The time-fill system shall be a NGV1 profile, type 2 time-fill system. Nozzle will have 3-way valve with

a flexible extender to accommodate multiple bus types and fueling locations and must be capable of refueling vehicles at night from single hose/dispensers positioned at each bus in the current parking stalls. Each fuel dispenser shall be mounted in a concrete casing with below grade distribution piping and protected by bollards. The time fill system should be capable of dispensing up to an adequate GGE overnight in an 8 hour window from 9 PM to 5AM. The system shall incorporate a time clock to control the fueling event at night to take advantage of off-peak electric. The compressors should be electric motor driven and operate at sufficient revolution per minute to minimize wear and tear on the electric motors.

The time fill posts should be designed for a discharge pressure, temperature compensated, of 3,600 pounds per square inch and mounted with a minimum hose length of 20 feet and include the recoil or retractable pulley arrangement to prevent the hose from lying on the ground and being run over. The time fill system shall enable metered dispensing and reporting for fleet operations.

Install sufficient pressure safety relief devices in accordance with NFPA 52 to allow each relief device to be individually isolated for testing or maintenance while maintaining the required pressure relieving capacity.

5.1.5 Manufacturer-Rated Pressures

All components downstream of compressor discharge shall have a maximum allowable working pressure of at least 5000 psig, except for the dispensing nozzles, and design safety factors in compliance with ANSI/ASME B31.3.

5.1.6 Complete Facility

The Development Entity shall be responsible for providing, installing, constructing (including detailed design and attainment of construction permits) and operating all components and equipment necessary to deliver a complete turnkey CNG Facility.

5.1.7 Natural Gas Metering Set

The Development Entity is responsible for the meter set assembly that is provided by the Utility Owner. The Development Entity shall coordinate with the Utility Owner to locate the meter set assembly in a location that will not interfere with the Transit Agency daily operations or Development Entity fueling operations.

5.1.8 Gas Dryer

The Development Entity shall provide a gas dryer to provide a discharge gas that complies with SAE standard J-1616 moisture requirements, based on 7 pounds of moisture per MMSCF natural gas, and a design low ambient temperature of 0°F. The dryer shall be provided with a dew point sensor and alarm. The dryer shall be designed to meet all applicable safety requirements and be provided with the appropriately sized pressure relief valves. Dryer bypass and isolation manual ball valves shall be provided so that the compressors may operate while the entire dryer is off line.

5.1.9 CNG Compressors

A. Compressors

Provide the appropriate number of compressors to meet the fueling requirements of this specification.

B. Compressor Prime Motors

Prime motor shall be 3-phase electric motors NEMA rated and shall be driven by electric starters, and shall include thermostatically controlled heater. Motors shall also include GFI protection. Gas-driven compressors are not permitted.

C. Discharge Pressure

Control-stop pressure for compressor discharge shall be 4200 psig, regardless of configuration.

D. Individual Enclosures

Provide individual enclosures as required.

5.1.10 Buffer Valve Panel

Provide a buffer valve panel sized to support continuous fueling operations between the compressors and buffer storage vessels.

5.1.11 Control System

The Development Entity shall provide and install a primary control system using storage, nitrogen or natural gas. The Development Entity shall provide and install a back-up for the primary control system which ensures redundancy in the event of a failure of the primary system.

5.1.12 CNG Buffer Storage Vessels

Provide the required storage capacity to meet the fueling and performance requirements of this specification.

5.1.13 Piping

A. General

All piping shall be fabricated and tested per ASTM/ANSI B31.3 minimums.

B. Routing

All piping between the equipment and the dispensers shall be below grade or slab.

C. Depressurization

All pipe runs and system components shall include a means to isolate them and bleed to atmospheric pressure.

D. Piping Corrosion Protection

All buried steel pipe not continuously protected by polyethylene sleeve or duct shall be protected by an engineered cathodic protection system. The system shall include factory-applied pipe coating, sacrificial anodes and test stations. The cathodic protection system shall be designed by a Professional Engineer, regularly engaged in the field of cathodic protection. Piping not buried shall be painted with industrial grade paint suitable for all-weather exposure and for the temperatures to which it will be exposed. Piping connections of dissimilar alloys shall include dielectric insulation comprised of flange-insulating kits. Pipe clamps shall use elastomeric insulators and shall be designed for piping.

5.1.14 Protective Weather Canopy

See Section 4.5.1 of these Technical Provisions for requirements.

5.1.15 Emergency Shutdown System

An emergency shutdown system shall be provided that, when activated, shall stop all compressor motors, shut off the gas supply to the compressors, shut off the discharge of CNG, and shut off the flow of CNG from the buffer storage vessels and to all CNG Fueling Islands. The system shall be on a 120 VAC or 24 VDC circuit, normally closed and trip open, and shall be expandable so that additional switches may be added.

5.1.16 Site Gas-Supply Valve

Provide a pneumatically operated spring-closed, normally closed ball valve immediately downstream of the meter set assembly. Valve shall be API 607 rated and shall be controlled to open only on compressor-run demand and shall close automatically under all other conditions, including ESD.

5.1.17 CNG Fuel-Management Terminals (FMT) and Services

A. General

CNG dispensers shall receive transaction authorizations from and transmit transaction data to a FMT, which shall be located on each of the two dispenser islands. The Development Entity shall provide terminals and local-host software for the fuel management system. FMTs shall be listed for service in a NEC class-1 division-2 hazard area or located outside of the hazardous area.

B. Vehicle Fueling

FMTs near each CNG dispenser shall provide authorization by numeric keypad or proximity sensor and shall automatically record transaction data, including time/date stamp, hose ID, vehicle ID, and fuel volume dispensed in gasoline gallon equivalents (GGE)s.

C. Appurtenances

Provide data readers and all equipment required for a complete FMT system as required by the Department.

D. Conduit and Wiring

Provide all conduit and wiring between dispensers, FMTs, proximity sensors, and local area network (LAN) connection as required to make a complete and functional system.

E. Data Interface

Fuel management data output shall be wired and configured to interface with the Department's maintenance management system as required.

5.1.18 CNG Dispensers

A. General

Heavy-duty CNG dispensers with internal fill-control logic and integrated into master programmable logic controllers (PLC) for controlling and balancing CNG flow from common header shall be provided. Each site shall be equipped with a minimum of 1 (one) heavy duty hose/nozzle and 1 (one) light duty hose/nozzle, in order that both a Paratransit Vehicle and a bus can be fueled simultaneously. A heavy duty hose/nozzle and a light duty hose/nozzle may be on the same dispenser. Light duty hose/nozzle shall be 3/8-inch by 12-foot-long, 5000 psig-rated with inline breakaways for supply and vent lines, and include an NGV1 type-2 P36 nozzle with a yellow collar.

B. Specifications

Dispensers shall be capable of delivering fills of 3,600 psig temperature-compensated to 70°F, based on control logic housed in the dispenser. Each dispenser shall include one Coriolis-type flow meter and mechanical vehicle pressure gauge for hose at exterior of cabinet and shall have a backlit data display. All CNG fuel and vent tubing shall be 304 or 316 SS to handle the expected fueling rates. Vent tubing shall be 3/8 inch by 0.04 inch, grade 304/316 SS. A means of preventing the escape of CNG from the fast-fill system in case the dispenser is knocked off of its base shall be provided, such as a vibration switch wired to the ESD circuit. Dispenser-control valves shall be 3/4-inch and 3/8-inch ball valves with air-actuated operators.

C. Status Lights

Provide status lights for yellow = active fill and green = fill complete.

D. PLC Controls

Provide stand-alone PLC system housed in CNG dispensers for control of CNG flow to lead-authorized vehicle. Wire dispenser-control PLC to master PLC to allow for indication of status by dispenser number at master PLC. Include status for standby, authorized, flow high, flow medium, and offline.

E. Hoses and Nozzles

Hoses shall be of sufficient length to accommodate Transit Authority- provided bus fuel receptacle location plus a range of 5 feet in each direction. Hoses shall be 3/4 inch with 3/8 inch vent lines, shall have retractors to keep the hoses off of the ground when retracted, shall have breakaway couplings, and shall be electrically conductive. Nozzles shall have steel locking jaws, and shall include an oversized keeper bucket anchored to the fueling island immediately beneath the natural hanging position of the nozzle. Keeper bucket shall be constructed out of schedule 80 PVC or other durable material and shall have an ID at least 2 inches larger than the nozzle OD. Dispenser vent shall be piped through roof, and shall include pipe tee with 6-inch GV horizontal arms and downward-facing bevel-cut ends. Bus nozzles shall be NGV1 type-1 P36 nozzle for heavy duty truck/bus type.

5.1.19 Vehicle De-fueling.

A. General

The Development Entity shall provide a defueling system for safe venting of CNG to atmosphere. System shall include a defueling nozzle compatible with Transit Agency vehicles, a 14-foot-long 6000 psig-rated hose that can extend a minimum 12 feet beyond the CNG Equipment Compound and a grounding system with ground electrode. System shall include a 6000 psig pressure gauge to monitor vehicle pressure, an inline manual ball valve and needle valve to throttle flow. Provide NEMA 3R cabinet to contain valves and to house hose and nozzle when not in use.

B. Performance

The atmospheric-vent system shall allow a vehicle with 73 GGEs of onboard CNG storage to defuel to atmospheric pressure within ninety (90) minutes. Atmospheric venting shall include a silencer or muffler appropriate for anticipated service pressures.

5.1.20 Protection and Location of Equipment.

A. CNG Equipment Compound

The CNG Equipment Compound shall be contained within the space shown on conceptual site drawing.

B. Protection of Electrical Equipment

The Development Entity shall install switchgear, PLC and motor controllers in a motor control center, to be located in the outdoor distribution enclosure. Provide air conditioning for PLC and motor control center if indicated by respective starter-manufacturer recommendations.

C. Impact Protection

The Development Entity shall protect the CNG Facilities from vehicular impact.

D. Grounding and Bonding

All anchored CNG equipment, including air compressor, gas dryer, compressor units, enclosures, shed, storage vessels, valve panel, dispensers and fuel-management terminals, shall be electrically grounded and bonded per NEC.

5.1.21 Signage

Provide all safety and warning signs as required by NFPA 52. Signs shall be constructed of UV-resistant all-weather material.

5.1.22 Area Lighting

Development Entity shall provide area lighting within the CNG Equipment Compound as required by its needs for servicing and maintainability, with a minimum lighting level required to meet IES standards based on safety and activity levels. Fixtures and conduits shall be class-1, division-2, group-D- rated as required under NFPA 52 (2010). Lights shall be LED and listed for outdoor installation, and final location of fixtures shall be coordinated with Transit Agencies. Lighting level shall meet IES Standards.

5.1.23 Methane Detection

A. CNG Equipment Compound

The Development Entity shall include a point-type infrared methane detector in each compressor-skid enclosure or in the CNG-equipment building if provided.

B. Annunciators

Detection system shall include green, amber and red strobe-status lights at the CNG Equipment Compound at a location most visible to Transit Agency personnel.

C. Alarm Requirements

Upon detection of 20% of the lower flammability limit in a compressor unit or the equipment building, green status-strobes shall turn off and amber strobe shall illuminate. Upon detection of 40% of the lower flammability limit within a compressor unit or the fueling building, an equivalent of an ESD signal shall cause the CNG compressors to stop, site gas-supply valve to close, compressor-suction and - discharge valves to close, dispenser- and dispenser-supply valves to close and gas dryer to de-energize, except all Facility lighting, PLCs and control panels shall remain powered.

5.1.24 Lightning Protection

Facilities shall be protected from lightning, per NFPA and NEC requirements.

5.1.25 Fire Extinguishers

The Development Entity shall provide, install and maintain hand-held fire extinguishers within 10 and 25 feet of each of the CNG dispensers, three (3) within the CNG Equipment Compound, three (3) at the outside perimeter of the compound, and as otherwise directed by the local Fire Department. Extinguishers shall be 20 lb. with B:C rating.

5.1.26 Security Cameras

Development Entity shall provide, install and maintain a minimum of two (2) security cameras to cover each public and transit agency dispenser.

Cameras shall be compatible with each Transit Agency security system. If no system currently exists, the new security camera system shall be able to be expandable to a minimum of 12 cameras. Security cameras shall be exterior grade-mounted, pole-mounted or structure-mounted. Security system shall have internet interface and recording capabilities.

5.1.27 Gas Chromatograph

Development Entity shall provide, install and maintain a gas chromatograph to collect gas composition data in real time at each Project Site. The Gas Chromatograph shall be capable of continuous online analysis for the common components found in natural gas including but not limited to; Methane, Ethane, Propane, N-Butane, Iso-Butane, N-Pentane, Iso-Pentane, Neo-Pentane, Nitrogen, Carbon Dioxide, C6+, and measurable moisture content. The system shall provide a local operator interface for field analysis and routine maintenance and Ethernet ports for SCADA connection. The system shall collect and record data logs and reports including; time and date, alarm logs, maintenance logs, gas analysis reports, and calibration reports. If the chromatograph detects or reports gas composition out of the ranges established per Section 2.4.3(G) the DE shall contact PennDOT and the Transit Agency within 1-hour of the event.

The system shall be capable of an automatic shutdown in the event of gas composition reaching the threshold established pursuant to Section 2.4.3(G)(c)(ii).

Gas specification shall be determined on a site by site basis.

5.1.28 Oil and Particulate Filter(s)

Development Entity shall provide, install and maintain oil and particulate filters per the manufacturer's recommendation. Oil and particulate filters shall ensure performance consistent with SAE J-1616 section 3.6 Particulate and Foreign Material.

5.1.29 Electric Meter

The Development Entity shall provide a revenue grade metering system with 15 minute reporting capability. Data downloads shall be available within a 24-hour period of electric use to PennDOT.

6 OFFSITE CONNECTIONS

6.1 Offsite Connections and Services

6.1.1 Electrical Power Service

The Development Entity will be responsible for contacting the local electrical provider and arranging for electrical service sufficient to meet the existing transit agency demand, and additional demand resulting from the Maintenance and Storage Facilities upgrades, and the electrical needs of the CNG Fueling Facilities.

6.1.2 Natural Gas Service

The Development Entity will be responsible for contacting the local natural gas provider (Utility Owner) and securing a connection to supply the on-site fueling stations if existing gas infrastructure at the site is not adequate for the project. The natural gas connection shall be independent of Transit Agency's system and all cost associated therewith shall be at the Development Entity's expense.

Where Mother Stations are utilized, the Utility Owner is not involved and supply will be provided by the Department.

6.1.3 Telephone/Data Service

The Development Entity will be responsible for contacting the local phone/data provider to secure a new service to supply the CNG Facility's needs. This new service will be registered in the name of the Development Entity until the Termination Date. Internet and telephone connections, required network equipment and services shall be independent of the Transit Agency's system and shall be at the Development Entity's expense.

6.1.4 Backup Electrical Power

The Development Entity will be responsible for providing for a backup electrical service to meet the safety and performance requirements for the CNG Facilities. The CNG Fueling Station Facilities shall perform at a minimum of 50 percent capacity during power outage. Failure to comply with this requirement will result in the assessment of Noncompliance Points as shown in Schedule 7 of the PPA.

Backup electrical power for CNG Maintenance and Storage Facilities shall be sized to meet code requirements.

7 INSPECTION and ACCEPTANCE

7.1 General

Development Entity shall be responsible for proving to the satisfaction of the Department that the minimum requirements for the CNG Fueling Station Facilities, as described herein, have been met. The Department may require the execution of various inspections and tests, including their documentation, prior to Final Acceptance and in compliance with the Project Documents, and at any time during the Term. Such inspections and tests may be based on recommendations by the Development Entity and the main equipment vendor and manufacturer/vendors of various components and systems of the Facility, as well as tests specified below. Neither inspections, witnessing of tests, nor waiving of any such procedure by the Department shall release the Development Entity, main vendor or other vendors from full responsibility for compliance with equipment, materials and functional requirements according to this specification.

7.2 Throughput-Performance Test

A. General

Tests shall be performed using the number of CNG dispensers that are required to meet the fueling window, to verify that the system meets the minimum flow rates specified in Section 10.3 of these Technical Provisions. The test shall be performed with the required number of CNG dispensers simultaneously in use. Dispensers shall be tested and approved according to the NIST Handbook 44, 2014 requirements (Specifications, Tolerances, and other Technical Requirements for Weighing and Measuring Devices).

B. Procedure

The Facility shall be tested to verify its actual throughput performance using the following procedure:

1. All fueling lanes and dispensers shall be on line. A test shall be performed with a minimum of four CNG vehicles per lane and each vehicle shall be at no more than 1800 psig prior to the test with the available number of transit agency fleet vehicle to meet the fueling window.
2. The test shall begin when all dispensers are connected to the first vehicle in each lane and all dispensers are started simultaneously. Heavy duty hoses shall be connected to buses and/or body on chassis (BOC) vehicles, and light duty hoses shall be connected to vans. The test-start time (time of day) shall be noted.
 3. Vehicles shall be fully filled as determined by the dispenser auto-fill completion. Vehicles shall be continuously fueled as each preceding vehicle completes fueling, regardless of lane.
 4. Actual fill volume dispensed at each fill event shall be logged, based on dispenser display following each dispenser auto-fill completion.
 5. Dwell time (i.e. time between auto-fill completion of vehicle A and start of fuel flow to vehicle B at a given lane/dispenser) between all test-fueling events shall be logged and limited as closely as possible to 120 seconds by Transit Agency fuelers.

6. Completion of filling of the final test vehicle shall mark the termination of the test and the time of day shall be logged and the elapsed time of the test shall be calculated.
7. Flow time from start to auto-fill completion, and volume will be recorded for each vehicle fill. Fleet average vehicle fill time is defined as the aggregate time required to fill each vehicle divided by total number of vehicles.
8. Dispensers shall be calibrated on site prior to test by a third party approved by the Department and Development Entity.

C. System Design

The system shall be designed to deliver the observed throughput performance on a continuous basis.

D. Annual Performance Test

The Facility shall be tested annually on the anniversary of CNG Readiness date to verify its actual throughput performance as described in Article 7.2.B above. If the test result is not in compliance with Section 10.3 of these Technical Provisions, the Development Entity shall immediately implement repairs so that it passes and shall verify compliance with a re-test.

E. System Performance Test

The Department may require a repeat of the performance test at any time during the Contract period in order to verify the performance of the facility. If the test result is not in compliance with Section 10.3 of these Technical Provisions, the Development Entity shall immediately implement repairs so that it passes and shall verify compliance with a re-test. Development Entity shall pay the Department's reasonable and documented costs associated with a deficient performance and all re-tests. If the System Performance Test result is in compliance with Section 10.3 of these Technical Provisions, the Department shall pay all reasonable and documented costs associated with the re-test.

7.3 Reliability-Functional Test

- A. A test fleet of eight (8) CNG-vehicles, or other test-fleet size as approved by the Department, shall be fueled for four consecutive days without any operational difficulties or problems resulting from deficiencies in performance of the CNG Fueling Station Facilities. This shall include absence of shutdown faults, and normal operation and availability of compressors, dryer, compressors, dispensers and ancillary systems, such as sensors, controls, fuel-management data and alarms. A full four-day re-test is required each time the Department deems the previous test unsuccessful.
- B. The gas monitoring and warning system at the vehicle-fueling building shall be tested per manufacturer's recommendations to show that the system is working properly and has been approved by the AHJs.
- C. All installed piping and tubing systems and sections shall be tested by maintaining a nitrogen or air charge of 110 percent of its respective design working pressures. Testing duration shall be 60 minutes with charge source disconnected and shall use a gauge that has a maximum scale of between 110 percent and 200 percent of the test pressure.

- D. The Development Entity shall be responsible for documenting the performance and completion of all tests, which will be observed by the Department.
- E. Gas piping design, fabrication, inspection, and testing shall be in accordance with ANSI/ASME B31.3. Development Entity shall retain a third-party testing firm approved by the Department to perform radiographic, dye-penetrant and other testing required under B31.3 and article 5.9 of the specifications, and provide copies of test data to the Department within five (5) Business Days of testing.
- F. Additional Inspections. Additional inspections will be carried out by the Department to determine compliance with materials and component specifications that may be beyond the scope of jurisdictional inspections. The Department will prescribe a final punch list as a result of start-up tests and end-to-end functional demonstrations. The content and completion schedule for the punch list will be agreed upon by the Department, Development Entity, and main-equipment packager/vendor.

7.4 Criteria

Proposed pass/fail criteria for the acceptance testing of CNG Fueling Station Facilities shall be included in the PMP.

8 TRAINING

8.1 General

Development Entity shall provide training to Transit Agency personnel for the basic operation of the Facility. Transit Agency will be given a minimum of fourteen (14) days' notice in advance of all training activities. Such training shall be provided prior to CNG Readiness. Initial training, as well as annual refresher and ongoing training, shall include the use of:

- A. Dispensers with fuel-management systems;
- B. Manual and automatic operation of compressors, electrical switch gear and control panel, to include all shutdowns, indicator lights, alarms and resets as needed;
- C. Defueling;
- D. Emergency response in case of leak or malfunction; and,
- E. Emergency-shutdown system.

Initial training prior to CNG Readiness shall be in person. Subject to Department approval, ongoing training may be done through the use of webinars and/or videos and on-demand refresher training may be permitted.

8.2 Fueling With CNG Dispensers

Development Entity shall provide in person training to Transit Agency vehicle fuelers prior to CNG Readiness for vehicle fueling using the fast-fill dispensers, including fuel-management systems.

8.3 Emergency Response

Development Entity shall provide in person response training prior to CNG Readiness in case of high-discharge CNG venting of CNG Maintenance Facility equipment, of vehicle during fueling or other emergency situations. Such training shall be provided to and coordinated with the local fire department and other first responders. Training should include:

- A. An illustration of the gas flow through the system, identifying the isolation and venting points present for major components (tanks, compressors, dispensers, etc.) in this station;
- B. Identification of the safety risks and the required safety precautions (clothing, procedures, etc.);
- C. Review of the emergency response procedures, including:
 - 1. Actions to be taken in case of fire, gas leak or venting, explosion;
 - 2. Response to system alarms;
 - 3. Actions to make the system safe after an Incident;
 - 4. Plan for evacuation in the event of an Incident;

5. Incident reporting protocol (who, when, etc.); and,
6. Treatment for those exposed to excessive CNG fumes.

8.4 Ongoing Training

Development Entity shall, in addition to initial in person training prior to CNG Readiness, provide in person refresher training annually at each Transit Agency for all personnel involved with CNG fueling activities.

Training for all new personnel as their employment begins, and training as necessary to address changes in technology and equipment may be conducted through the use of webinars, self-paced on-line trainings, and/or videos.

9 CNG COMMERCIALIZATION ACTIVITIES

9.1 General Requirements

A major objective of this Contract is to serve as a catalyst for expanded CNG usage by other governmental and private fuel consumers. To expand the use of CNG fuel, the Development Entity is required to commercialize the opportunity through an aggressive Commercialization Management Plan, which must be submitted for Department review.

While the Transit Agencies will provide fueling locations and the Department the required capital, the Development Entity is exclusively responsible for commercialization. In exchange for site access and capital support, the Development Entity must pay a volume-based royalty, but no less than the Guaranteed Revenue Amount, to the Department monthly on all commercial sales, which will be verified through monthly reporting. The sites which serve Commercial Customers and are owned by a Transit Agency will be limited to sales of CNG fuel, and the sale of other goods and services is prohibited.

The maintenance and operation of the Commercial Customer sites is the responsibility of the Development Entity. Routine maintenance and repair at these sites shall be performed consistent with Section 6 of Schedule 7 of the PPA. Failure to do so will result in the assessment of Noncompliance Points shown in Schedule 7 of the PPA.

9.2 Monthly Commercial Sales Status Report

The Development Entity will provide a monthly commercial sales status report to include the following:

- A. Brief narrative of major activities for the month
- B. Commercial CNG volume sales
- C. CNG volume sales vs. CNG Commercialization Management Plan
- D. New/ Lost customers and expected volumes
- E. Royalty calculation and payments resulting from CNG sales that month
- F. Sales detail (i.e. volume by dispenser and customer) for royalty confirmation

Noncompliance Points will be assessed for failure to meet the requirements of this Section 9.2 of these Technical Provisions, consistent with Schedule 7 of the PPA.

10 OPERATION and MAINTENANCE (O&M)

10.1 General

The Development Entity shall provide all maintenance as required to maintain the CNG Facilities fully functional in accordance with the Project Documents, including all labor, consumables, spare parts, repair, rebuild and replacement costs for all planned and unplanned service of the CNG Facility. O&M scope shall include all weekly, monthly and annual service as required and recommended by the manufacturers of the systems and components being provided by the Development Entity, including preventive maintenance. Maintenance Work shall also include handling and on-site storage of all waste generated during O&M activities in full compliance with all federal, state and local laws.

The Development Entity shall report to the Department sales to the Transit Agencies and Commercial Customers, which shall be available on a 24/7 basis, updated no less frequently than once per day, through the FMT which shall be functional during all fueling activities and shall be configured to be accessible by the Department. CNG dispensers are subject to registration and inspection by the Pennsylvania Department of Agriculture's (PDA) Bureau of Ride and Measurement Standards under authority of Pa. Code 7, Registration and Report of Inspection of Commercial Weighing and Measuring Devices. Comprehensive monthly reports shall be submitted to the Department no later than the 15th day of each month. Such monthly reports shall detail and summarize each month's fueling activities for each Transit Agency and shall include but not be limited to daily volumes of CNG delivered to each vehicle, daily start and finish time for each vehicle, a summary of volumes by month for each Transit Agency and a description of any operational problems or failures. Noncompliance Points will be assessed for failure to meet the requirements of this Section 10.1 of these Technical Provisions, consistent with Schedule 7 of the PPA.

10.1.1 Interface with the Department

Development Entity shall coordinate all such activities with the Department such that impacts to Transit Agency's normal activities are minimized. The Development Entity shall provide the Department with Internet access to the remote monitoring information and any on-site cameras installed and 24-hour contact information for the responsible maintenance technicians.

10.1.2 Exceptions

The Development Entity is not responsible for damage, neglect or misuse at Transit Agency sites not caused or controlled by the Development Entity, such as vandalism or a dispenser drive-away by Transit Agency personnel. The Development Entity shall be responsible for damage, neglect or misuse for any reason at CNG Fueling Islands serving Commercial Customers.

10.1.3 Reporting of O&M Activities

Development Entity shall submit to the Department every three months, records of all scheduled and unscheduled maintenance and repairs performed, shall submit maintenance records through the Termination Date, and shall include reports on any failures, accidents and other significant events. In case any component or system fails repetitively or affects safety or critical operations, at the request of the Department, the failure or failed component(s) shall be submitted for failure analysis by the respective manufacturer(s) or an unaffiliated failure analysis firm at the Development Entity's expense.

10.1.4 Timing of O&M Service

Development Entity shall be available to perform required O&M services 24 hours a day, seven days a week, as may be necessary to ensure the specified fueling performance. Development Entity may perform scheduled and unscheduled maintenance and repairs at its discretion, provided that facility's fueling function and vehicle-yard circulation are not impacted.

10.1.5 Permits and Fees

Development Entity shall be responsible for identifying, maintaining and paying all ongoing permits, fees and taxes associated with operation of the CNG Fueling Station Facilities.

10.1.6 Callout Service

- A. Critical-service problems (which prevent vehicle fueling, disable a safety system, cause a natural gas leak or present an immediate threat to safety) or that otherwise impact the ability of vehicles to meet dispatch time, must be addressed by Development Entity consistent with Table 2: Site Specific Performance Requirements.
- B. Non-critical service problems (those which do not meet the criteria of critical service problems specified above or that otherwise do not impact the ability of vehicles to meet scheduled rollout) must be addressed by Development Entity within four (4) hours of notification, and successful repairs performed within 24 hours, contingent on reasonable availability of parts.

10.1.7 Software

The right and license to use any software needed to operate and maintain the facilities shall be transferred to the Department at no additional cost, along with all Facility maintenance records and electronic records, programs and files upon termination of the Contract.

10.2 Operating and Maintenance (O&M) Manuals

10.2.1 General

Development Entity shall provide the Transit Agencies with three (3) identical bound sets of O&M manuals for each CNG Fueling Station Facility, including repair, maintenance and parts bulletins for all major components and systems, such as vessels, compressors, gas dryer, motors and motor starters, actuated valves, PLC, filters, dispensers and hoses, air compressors, and instrument air dryers. The O&M manual shall also be provided in text-searchable PDF format on CDR, including content and organization that matches the bound set. PDF shall include a text-searchable index that is subject to approval by the Department within 30 days of the CNG Readiness Date.

10.2.2 Summary Manufacturer Data

Include listing of manufacturers and serial numbers for all compressor frames and cylinders, compressor units, gas dryers, buffer vessels, and dispensers.

10.2.3 Recommended Spare Parts List (RSPL)

Include RSPL for all listed components. RSPL shall include listings for part name, manufacturer name, part number, recommended quantity and vendor source.

10.2.4 Updates

During the term, the Development Entity shall provide the Department with incremental O&M manual updates of each Transit Agency for any equipment or components that are replaced or added and that are not listed in the original manuals, with updated content provided in both bound and PDF formats.

10.3 Performance Requirements

10.3.1 CNG Fueling Performance

A. General

The CNG system shall be capable of fueling each transit agency's fleet within the fueling window and with all vehicles prepared for dispatch no later than the time defined in Table 2: Site Specific Performance Requirements.

B. Requirements

Facility compression/storage/dispensing system shall be capable of fueling vehicles to 3600-psig, temperature compensated to 70° F. Dispensing system shall compensate for heat of compression in the vehicle storage cylinders, in addition to compensating for ambient temperature. Temperature-compensated fills shall be achieved by Gas Research Institute Accufill algorithm or approved equal. The system shall be capable of filling each vehicle at an average rate of ten (10) minutes per vehicle based on the "Overall Vehicle Inventory and Fuel Use_121615" for each agency, in a Throughput-Performance Test as defined in Section 7.2. In no circumstance shall the system require longer than 15 minutes to fill a Transit Agency vehicle tank at any time.

10.4 Handback Requirements

All Elements of the Project, except for Consumables, shall have a Residual Life of two years at the Termination Date.

The Development Entity shall prepare a Handback Plan that contains the methodologies and activities that will be undertaken or employed to ensure that the Handback Requirements are achieved at the end of the Term (Discretionary Submittal). The Development Entity shall submit the Handback Plan to the Department for review and approval at least three years before the Termination Date or anticipated earlier termination of the PPA.

The Handback Plan shall describe the evaluation and calculation methodology by which the Residual Life of each Element will be calculated at the Termination Date and shall describe the method by which any necessary Renewal Work will be identified to ensure that each Element will have a Residual Life of two years at the Termination Date.

The Handback Plan shall identify any Consumables. The Development Entity shall be responsible for replacing all Consumables at the Termination Date.

The Department shall have thirty (30) days to review the Handback Plan.

After receiving Department approval of the Handback Plan, the Development Entity shall perform all inspections and Renewal Work necessary to meet or exceed the two-year Residual Life requirement at the Termination Date or earlier termination of the PPA. At the Termination Date or earlier termination of the PPA the Development Entity shall certify that all Elements of the Project have a Residual Life of two years.

The Department shall have the right and opportunity to witness any of the inspections and tests and shall be provided with a minimum notice of ten (10) days before the performance of any such inspections and tests. The Development Entity shall deliver to the Department, within ten (10) days after they are created, the output data arising from any testing and any interpretation thereof made by the testers.

If the Development Entity fails to undertake inspections within the relevant time periods specified below, the Department shall be entitled to undertake or arrange the relevant inspections itself, following thirty (30) days' notice to the Development Entity, in which case the Development Entity shall pay the Department's costs of such inspections.

11 APPENDICES

11.1 Table 1: Participating Transit Agencies

[Please see attachment]

PennDOT CNG P3 - DRAFT Final RFP - 12/14/2015 - Table: 1 Participating Transit Agencies

		Agency	Location	Project Site Address
Tier 1	CAMTRAN	Cambria County Transit Authority	Johnstown	502 Maple Avenue, Johnstown PA, 15901
	CATA	Centre Area Transportation Authority	State College	2081 West Whitehall Road, State College PA, 16801
	YATA	York Adams County Transportation Authority	York	415 Zarfoss Drive, York PA, 17404
Tier 2	MMVTA	Mid Mon Valley Transit Authority	Donora	72 East 8th Street, Donora PA, 15033
	CAMTRAN	Cambria County Transit Authority	Ebensburg	1226 North Center Street, Ebensburg PA, 15931
	INDIGO	Indiana County Transit Authority	Indiana	1657 Saltsburg Avenue, Indiana PA, 15701
	LANTa	Lehigh and Northampton Transportation Authority	Allentown	1060 Lehigh Street, Allentown PA 18103
	WCTA	Westmoreland County Transit Authority	Greensburg	1823 Business Route 66, Greensburg PA, 15601
	COLTS	County of Lackawanna Transit System	Scranton	800 North/South Road, Scranton PA 18504
	NCATA	New Castle Area Transit Authority	New Castle	311 Mahoning Ave, New Castle PA, 16102
	AMTRAN	Altoona Metro Transit	Altoona	3301 Fifth Avenue, Altoona PA, 16602
	BCTA	Beaver County Transit Authority	Aliquippa	131 Pleasant Drive, Aliquippa PA, 15001
	LANTa	Lehigh and Northampton Transportation Authority	Easton	3610 Nicholas Street, Easton PA 18042
	YATA	York Adams County Transportation Authority	Gettysburg	159 North 4th Street, Gettysburg PA, 17325
	LCTA	Luzerne County Transportation Authority	Kingston	315 Northhamton Street, Kingston PA, 18704
	MCTA	Monroe County Transportation Authority	Swiftwater	134 MCTA Drive, Swiftwater PA 18370
	CRATA	Crawford Area Transportation Authority	Meadville	13227 Dunham Road, Meadville PA 16335
	EMTA	Erie Metropolitan Transit Authority	Erie	127 East 14th Street, Erie PA, 16512
	COLT/LT	County of Lebanon Transit Authority	Lebanon	200 Willow Street, Lebanon PA, 17046
	STS	Schuylkill Transportation System	St. Clair	252 Industrial Park Drive, St. Clair PA, 17970
	ATA	Area Transportation Authority of North Central PA	Bradford	37 Rutherford Run Road, Bradford PA, 16701
			Johnsonburg	44 Transportation Center, Johnsonburg PA, 15845
	BTA	Butler Transit Authority	Butler	130 Hollywood Drive, Butler PA, 16001
MCRCOG	Mercer County Regional Council of Governments	Hermitage - Virginia Rd	5200 Virginia Rd, Hermitage PA, 16148	
FACT	Fayette Area Coordinated Transportation	Lemont Furnace	825 Airport Road, Lemont Furnace PA, 15456	
DuFast	DuBois, Falls Creek, Sandy Township Joint Transportation Authority	DuBois	178 Spider Lake Road, DuBois PA 15801	
TAWC	Transit Authority of Warren County	Warren	42 Clark Street, Warren, PA 16365	
Tier 3	CAT	Capital Area Transit	Harrisburg	[TBD] Harrisburg, PA
	PAAC	Port Authority of Allegheny County	Pittsburgh	[TBD] Pittsburgh, PA

11.2 Table 2: Site Specific Performance Requirements

[Please see attachment]

Table 2: Site Specific Performance Requirements (revised 5/2/2016)

Agency		Location	Date of CNG Readiness	Fueling Window	Dispatch Time	Maintenance & Storage Facilities Modification Part of the Project	Type of Fueling Station	Design Vehicle Length (feet)	Required CNG Commercialization Activities	
Tier 1	CAMTRAN	Cambria County Transit Authority	Johnstown	3-Jan-17	Monday - Friday: 3:00PM - 10:30PM Saturday - Sunday: 2:00PM - 7:30PM	Monday - Friday: 4:30AM Saturday 6:00AM Sunday 9:00AM	Yes	Permanent	35	Yes
	CATA	Centre Area Transportation Authority	State College	10-Jan-17	Full Service for 33 Weeks Monday - Friday: 12:30PM - 5:00AM Saturday: 6:00PM - 5:00AM Sunday: 10:00PM - 1:30AM Red Service for 19 Weeks Monday - Friday: 6:00PM - 2:30AM Saturday - Sunday: 6:00PM - 2:00AM	Monday - Friday: 4:20AM Saturday: 5:45AM Sunday: 6:45AM	No	Permanent	40	No
	YATA	York Adams County Transportation Authority	York	17-Jan-17	Monday - Saturday: 6:00PM - 12:00 AM Sunday: 9:00PM - 10:00PM	Monday - Sunday: 4:30AM (Paratransit) Monday - Sunday: 5:30AM (Fixed Route Buses)	No	Permanent	45	Yes
Tier 2	MMVTA	Mid Mon Valley Transit Authority	Donora	1-Feb-17	Monday - Sunday: 6:00PM - 10:00PM	Monday - Friday: 4:00AM; Saturday: 5:00AM; Sunday: 7:00AM	Maintenance - Yes Storage - No	Permanent	40	No
	CAMTRAN	Cambria County Transit Authority	Ebensburg	1-Mar-17	Monday - Friday: 7:00AM - 6:00PM	Monday - Friday: 6:30AM	Yes	Permanent	35	No
	INDIGO	Indiana County Transit Authority	Indiana	1-Mar-17	Monday - Sunday: 5:00PM - 3:00AM	Monday - Friday: 5:30AM Saturday: 7:00AM Sunday: 11:30AM	Yes	Permanent	35	Yes
	LANTa	Lehigh and Northampton Transportation Authority	Allentown	1-May-17	Monday - Saturday: 4:00PM - 12:30AM Sunday: 5:00PM - 8:00PM	Monday - Saturday: 4:40AM Sunday: 6:00AM	Yes	Permanent	40	No
	WCTA	Westmoreland County Transit Authority	Greensburg	1-May-17	Monday - Friday: 7:00AM - 10:00PM Saturday: 7:00AM - 5:00PM	Monday - Friday: 4:50AM Saturday: 7:00AM	Yes	Permanent	45	No
	COLTS	County of Lackawanna Transit System	Scranton	1-May-17	Monday - Saturday: 6:00PM - 2:00 AM	Monday - Saturday: 5:30AM	Yes	Permanent	35	Yes
	NCATA	New Castle Area Transit Authority	New Castle	1-May-17	Monday - Saturday: 3:00PM - 8:30PM	Monday - Friday: 4:00AM Saturday: 6:00AM	Yes	Permanent	40	Yes
	AMTRAN	Altoona Metro Transit	Altoona	1-May-17	Monday - Saturday: 3:00PM - 10:40PM	Monday - Saturday: 5:50AM	Yes	Permanent	35	No
	BCTA	Beaver County Transit Authority	Aliquippa	1-Jul-17	Monday - Friday: 4:00PM - 12:00AM Saturday: 12:00PM - 8:30PM	Monday - Friday: 4:30AM; Saturday: 6:00AM	Yes	Permanent	45	No
	LANTa	Lehigh and Northampton Transportation Authority	Easton	1-Sep-17	Monday - Saturday: 5:00PM - 8:00PM Sunday: 5:30PM - 7:30PM	Monday - Saturday: 5:00AM Sunday: 9:00AM	Yes	Permanent	40	No
	YATA	York Adams County Transportation Authority	Gettysburg	1-Oct-17	Monday - Sunday: 4:00PM - 10:00PM	Monday - Saturday (Paratransit Buses): 4:00AM Monday - Sunday (Fixed Route Buses): 7:00AM Monday - Friday (Express Buses): 5:45 AM & 1:45PM	Yes	Permanent	40	No
	LCTA	Luzerne County Transportation Authority	Kingston	1-Nov-17	Monday - Saturday: 3:00PM - 12:00AM	Monday - Saturday: 5:00AM	Yes	Permanent	35	No
CRATA	Crawford Area Transportation Authority	Meadville	1-Nov-17	Monday - Saturday: 4:00PM - 12:00AM	Monday - Friday: 6:00 AM; Saturday: 7:00 AM	No	Permanent	30	No	

Table 2: Site Specific Performance Requirements (revised 5/2/2016)

Agency		Location	Date of CNG Readiness	Fueling Window	Dispatch Time	Maintenance & Storage Facilities Modification Part of the Project	Type of Fueling Station	Design Vehicle Length (feet)	Required CNG Commercialization Activities	
Tier 2	EMTA	Erie Metropolitan Transit Authority	Erie	1-Feb-18	Monday - Sunday: 3:30PM - 10:30PM	Monday - Sunday: 5:00AM	No	Permanent	40	Yes
	COLT/LT	County of Lebanon Transit Authority	Lebanon	1-Apr-18	Monday - Saturday: 4:00PM - 7:00PM	Monday-Saturday: 6:00AM	Yes	Permanent	40	No
	STS	Schuylkill Transportation System	St. Clair	1-Apr-18	Monday - Saturday: 3:00PM - 7:00PM	Monday - Saturday: 6:30AM	Yes	Optional Daughter Site*	35	No
	MCTA	Monroe County Transportation Authority	Swiftwater	1-Apr-19	Monday - Saturday: 4:00PM - 10:00PM	Monday - Saturday: 4:00AM	Yes	Optional Daughter Site*	40	No
	ATA	Area Transportation Authority of North Central PA	Bradford	1-Apr-19	Monday - Friday: 11:00AM - 01:00PM and 3:00PM - 7:00PM Saturday: 2:30PM - 3:30PM Sunday: 11:00AM - 12:00PM	Monday - Friday: 5:30AM Saturday: 6:00AM Sunday: 11:45AM	Yes	Optional Daughter Site*	35	No
			Johnsonburg	1-Apr-19	Monday - Friday: 11:00AM - 01:00PM and 3:00PM - 7:00PM	Monday - Friday: 5:00AM Saturday: 8:00AM	Yes	Optional Daughter Site*	35	No
	BTA	Butler Transit Authority	Butler	1-Apr-19	Monday - Saturday: 4:00PM - 6:00PM (Paratransit) 6:00PM - 10:00PM (Others)	Monday - Saturday: 5:00AM (Paratransit) Monday - Saturday: 7:00AM (Others)	No	Optional Daughter Site*	45	No
	MCRCOG	Mercer County Regional Council of Governments	Hermitage - Virginia Rd	1-Apr-19	Monday - Saturday: 12:00PM - 8:00PM	Monday - Saturday: 4:15AM	Yes	Permanent	30	No
	FACT	Fayette Area Coordinated Transportation	Lemont Furnace	1-Apr-19	Monday - Saturday: 4:00PM - 6:00PM	Monday - Saturday: 5:30AM	Yes	Permanent	30	No
	DuFast	DuBois, Falls Creek, Sandy Township Joint Transportation Authority	DuBois	1-Apr-20	Monday - Friday: 11:00AM - 1:00PM and 6:00PM - 8:00PM, Saturday: 4:00PM - 6:00PM	Monday - Friday: 5:15AM Saturday: 6:00AM	No	Permanent	35	No
TAWC	Transit Authority of Warren County	Warren	1-Apr-21	Monday - Friday: 5:30PM - 8:00PM, Saturday: 4:00PM - 6:00PM	Monday - Friday: 4:00AM Saturday: 9:00AM	Yes	Permanent	30	No	
Tier 3	CAT	Capital Area Transit	Harrisburg	1-May-21	Monday - Saturday: 6:00PM - 9:30PM	Monday - Saturday: 3:45AM	No	Permanent	45	No
	PAAC	Port Authority of Allegheny County	Pittsburgh	1-May-21	TBD	TBD	No	Permanent	60	No

*Proposers have the option to deliver a permanent station or daughter arrangement for these sites based on the Proposer's estimated capital and life cycle costs.

11.3 Table 3: Required Developer Submittals

[Please see attachment]

Table 3: Required Developer Submittals

ID #	Required Submittal	TP Section	Type of Submittal	Page #
1	Project Management Plan (PMP)	2.1	Discretionary	5
2	Project Baseline Schedule	2.2.1	Discretionary	5
3	Project Baseline Schedule (PBS-1)	2.2.1	Discretionary	5
4	Project Baseline Schedule (PBS-1a)	2.2.1	Discretionary	5
5	Project Baseline Schedule (PBS-2)	2.2.1	Discretionary	5
6	Project Status Schedule Updates	2.2.2	Discretionary	6
7	Time Impact Analysis (TIA)	2.2.3	Discretionary	8
8	Management and Staffing Plan	2.3.1	Discretionary	9
9	Document & Data Management Plan (DDMP)	2.3.2	Discretionary	9
10	Risk Management Plan	2.3.3	Discretionary	10
11	Quality Management Plan (QMP)	2.4	Discretionary	10
12	Design Quality Management Plan (DQMP)	2.4.1	Discretionary	11
13	Construction Quality Management Plan (CQMP)	2.4.2	Discretionary	11
14	Operations & Maintenance Quality Management Plan	2.4.3	Discretionary	11
15	Safety Plan	2.5	Discretionary	12
16	Commercialization Management Plan	2.6	Discretionary	13
17	Training Plan	2.7	Discretionary	13
18	National Pollution and Discharge Elimination System (NPDES) Permit	3.2	Review & Comment	15
19	Clean Water Act Section 404 permit	3.2	Review & Comment	15
20	Section 401 Water Quality Certification	3.2	Review & Comment	15
21	Pennsylvania Code Title 25 Environmental Protection	3.2	Review & Comment	15
22	Chapter 102 Erosion and Sediment Control	3.2	Review & Comment	15
23	Chapter 105 Dam Safety and Waterway Management	3.2	Review & Comment	15
24	Chapter 106 Floodplain Management	3.2	Review & Comment	15
25	Notice of Construction Completion	3.2	Review & Comment	16
26	Notice of Termination	3.2	Review & Comment	16
27	Permit Compliance Self-Certification Form	3.2	Review & Comment	16
28	Post Construction Stormwater Management (PCSM) Plan	3.3.3	Non-Discretionary	17
29	Environmental Protection Plan (EPP)	3.4	Non-Discretionary	20
30	Environmental Commitment & Mitigation Tracking System	3.4.1	Non-Discretionary	20
31	Waste Management Plan (WMP)	3.4.2	Non-Discretionary	20
32	Investigative Work Plans	3.4.2.1	Non-Discretionary	20

33	Site Investigation Reports	3.4.2.1	Non-Discretionary	20
34	Communication Plan (CP)	3.4.3	Discretionary	21
35	Site civil design including stormwater, utilities, roads, grading and earthwork, selective demolition and landscaping	4.1.1	Review & Comment	24
36	Structural and foundation designs, including supporting calculations	4.1.1	Review & Comment	24
37	Equipment plans	4.1.1	Review & Comment	24
38	Piping plan	4.1.1	Review & Comment	24
39	Piping and instrumentation diagram (P&ID)/mechanical flow schematic	4.1.1	Review & Comment	24
40	Electrical one-line diagram, with load schedules, panel schedules and supporting calculations	4.1.1	Review & Comment	24
41	Electrical plot plan, including conduit, cable and trench schedules, as well as bill of materials	4.1.1	Review & Comment	24
42	Hazardous area and equipment ground-bonding plan	4.1.1	Review & Comment	24
43	Cathodic protection of all direct-bury steel pipe	4.1.1	Review & Comment	24
44	Mechanical, electrical and fire protection drawings related to facility upgrades	4.1.1	Review & Comment	24
45	Safety and warning sign plan	4.1.1	Review & Comment	24
46	Actual schedule of drawings is subject to concurrence by the Department and relevant Transit Agency and approval by jurisdictions having authority	4.1.1	Review & Comment	24
47	As-Built Drawings of the CNG Facility and modified Maintenance and Storage Facilities	4.1.6	Review & Comment	25
48	Geotechnical Report	4.6	Review & Comment	27
49	Survey Control Requirements	4.8.3	Review & Comment	28
50	Survey Records and Reports	4.8.5	Review & Comment	28
51	CNG Commercialization Management Plan	9.1	Review & Comment	44
52	Monthly Third Party Sales Status Report	9.2	Review & Comment	44
53	Operations & Maintenance (O&M) Manuals	10.2	Review & Comment	46

Legend:

Environmental
Construction Drawings